발 간 등 록 번 호
11-1500239-000016-14

錦江水系 河川整備基本計劃

(錦江, 甲川, 柳等川, 美湖川, 論山川, 魯城川, 江景川)

附 錄 (Ⅱ)

건설교통부

2002. 12.

建 設 交 通 部

大田地方國土管理廳

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3. 댐의 홍수조절 능력 검토

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1. 홍수위산정 결과

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(금강호 내용적 및 내수위 검토)

1.2 공식에 의한 계획하폭 산정

1.3 홍수위산정 입력자료(횡단)

1.4 개수전 빈도별 홍수위 산정결과

1.5 개수후 빈도별 홍수위 산정결과

1.6 하천구역 결정을 위한 1년빈도 홍수위

1.7 홍수위 비교

(금회 홍수위 대비 기수립 계획홍수위)

1.1 기점홍수위

(금강호 내용적 및 내수위 검토)

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□ 금강하구 기점수위 검토 (100년 빈도)

구분	하구둑 설계홍수위	금회산정(EL.m)			비고
		실측 외조위	약최고 만조위	대조평균 만조위	
1		4.565	4.536	4.464	
2		4.464	4.531	4.478	
3		4.477	4.613	4.485	
4		4.485	4.521	4.488	
5		4.488	4.504	4.473	
6		4.473	4.467	4.436	
7		4.436	4.445	4.383	
8		4.383	4.457	4.319	
9		4.319	4.472	4.326	
10		4.326	4.495	4.377	
11		4.377	4.534	4.412	
12		4.412	4.537	4.444	
평균		4.434	4.509	4.424	
최대	4.620	4.565	4.613	4.488	

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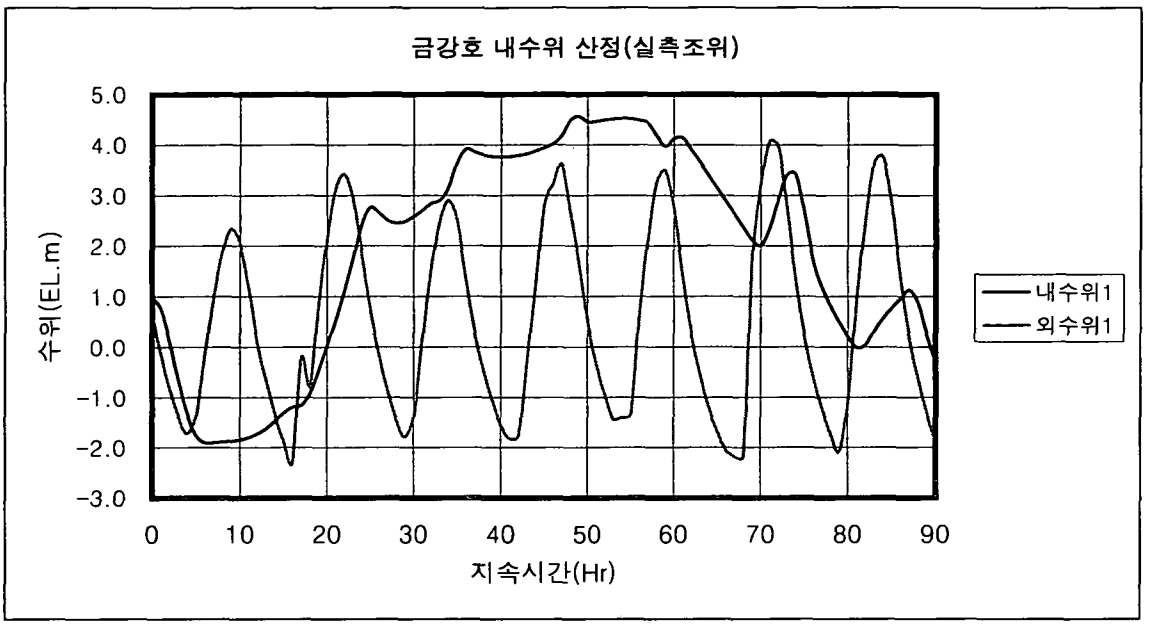
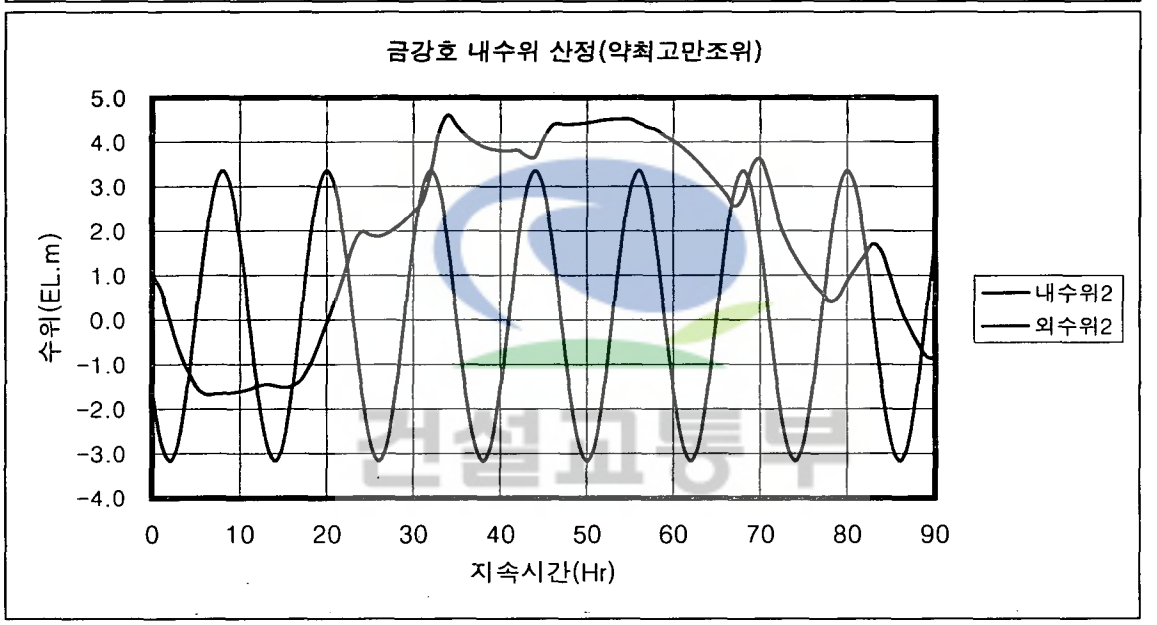
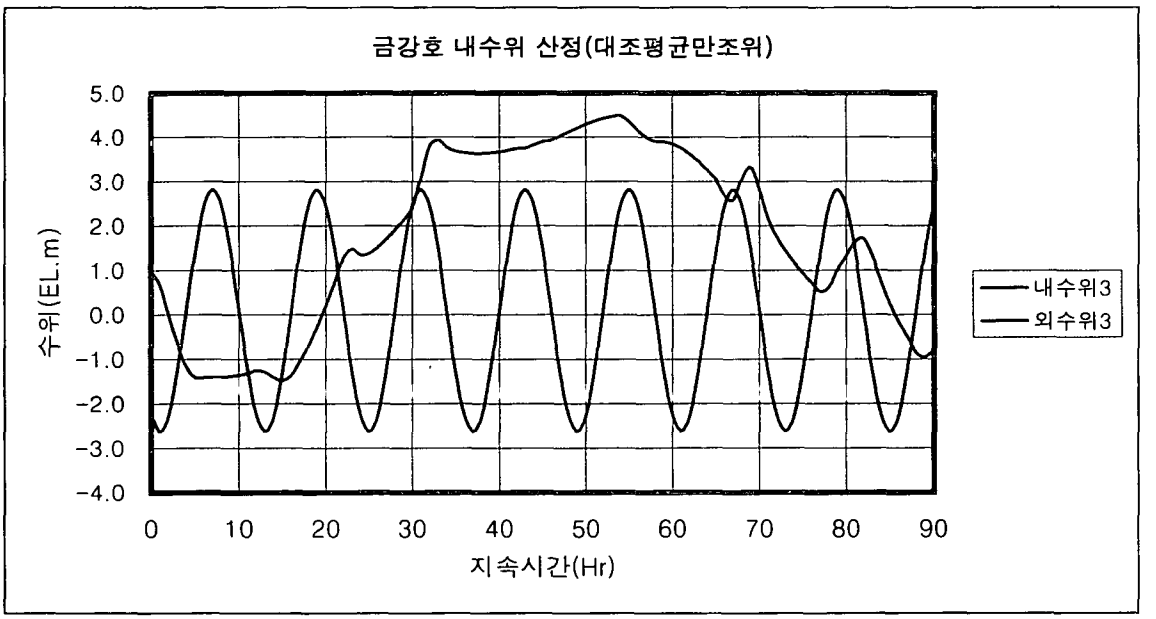
□ '88년 기본계획 기점홍수위(금강하구둑 설계홍수위)

빈도(년)	50	80	100	150	200
수위(EL.m)	4.52	4.59	4.62	4.69	4.71


금강호 내수위 산정(실측조위)
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
수위(EL.m)
0
10
20
30
40
50
60
70
80
90
지속시간(Hr)
내수위1
외수위1


금강호 내수위 산정(약최고만조위)
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
수위(EL.m)
0
10
20
30
40
50
60
70
80
90
지속시간(Hr)
내수위2
외수위2


금강호 내수위 산정(대조평균만조위)
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
수위(EL.m)
0
10
20
30
40
50
60
70
80
90
지속시간(Hr)
내수위3
외수위3

□ 금강호 내수위 검토

1. AREA-CAPACITY CURVE DATA

H(EL.m)	면적(㎡)	체적(㎥)
-3.0	12,006,891	29,542,927
-2.5	16,086,175	40,839,923
-2.0	19,097,847	50,171,529
-1.5	22,531,415	61,808,838
-1.0	25,576,589	74,971,333
-0.5	28,025,539	88,402,812
0.0	30,219,581	102,985,394
0.5	32,627,947	119,205,003
1.0	34,594,129	136,294,813
1.5	35,547,305	153,829,347
2.0	36,470,671	171,816,372
2.5	38,475,069	190,413,116
3.0	43,166,270	210,632,235
3.5	46,094,709	232,902,032
4.0	49,523,537	256,747,765
4.5	53,060,533	282,253,766
5.0	55,236,439	309,074,913
5.5	56,878,276	336,830,085
6.0	58,295,857	365,314,949

2. 하구호 및 배수갑문 제원

상시만수위 EL.M = 1.00 m
GATE BOTTOM EL.M = -3.00 m
GATE WIDTH = 30.00 m
GATE HEIGHT = 10.30 m
GATE TOTAL NUMBER = 20 EA
GATE SIZE B =30.0 m, H =10.3 m

3.금강호(92.8.26 13:00 - 9.1 22:00 실측조위) 100년빈도 내수위 검토

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.000	0.650
60	0.0	0.0	0.0	4882.1	8787.8	8787.8	-4882.1	-8787.8	-8787.8	0.743	-0.130
120	0.2	0.4	0.4	6853.5	21124.2	29912.0	-6853.3	-21123.8	-29911.6	0.105	-0.840

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
180	1.3	2.7	3.1	5762.4	22708.7	52620.6	-5761.1	-22706.0	-52617.6	-0.676	-1.390
240	4.3	10.1	13.1	3746.0	17115.2	69735.9	-3741.7	-17105.1	-69722.7	-1.319	-1.720
300	10.5	26.6	39.8	2082.0	10490.5	80226.4	-2071.5	-10463.9	-80186.6	-1.745	-1.380
360	21.8	58.1	97.9	0.0	3747.6	83974.0	21.8	-3689.5	-83876.1	-1.903	-0.170
420	42.0	114.8	212.8	0.0	0.0	83974.0	42.0	114.8	-83761.3	-1.899	1.040
480	77.3	214.7	427.5	0.0	0.0	83974.0	77.3	214.7	-83546.5	-1.889	1.910
540	136.1	384.1	811.6	0.0	0.0	83974.0	136.1	384.1	-83162.4	-1.873	2.340
600	228.1	655.6	1467.2	0.0	0.0	83974.0	228.1	655.6	-82506.8	-1.845	2.030
660	362.8	1063.6	2530.8	0.0	0.0	83974.0	362.8	1063.6	-81443.2	-1.799	1.140
720	548.6	1640.5	4171.3	0.0	0.0	83974.0	548.6	1640.5	-79802.7	-1.728	0.100
780	792.2	2413.4	6584.8	0.0	0.0	83974.0	792.2	2413.4	-77389.3	-1.625	-0.670
840	1098.7	3403.6	9988.4	0.0	0.0	83974.0	1098.7	3403.6	-73985.6	-1.481	-1.350
900	1472.0	4627.3	14615.6	0.0	0.0	83974.0	1472.0	4627.3	-69358.4	-1.305	-1.880
960	1914.7	6096.1	20711.7	1800.4	3240.7	87214.7	114.3	2855.4	-66503.0	-1.197	-2.300
1020	2427.4	7815.8	28527.5	1975.9	6797.4	94012.1	451.5	1018.4	-65484.6	-1.158	-0.220
1080	3008.5	9784.6	38312.1	0.0	3556.7	97568.8	3008.5	6227.9	-59256.7	-0.923	-0.780
1140	3653.7	11992.0	50304.1	0.0	0.0	97568.8	3653.7	11992.0	-47264.7	-0.478	0.830
1200	4356.2	14417.8	64721.9	0.0	0.0	97568.8	4356.2	14417.8	-32846.9	0.014	2.170
1260	5107.0	17033.8	81755.6	0.0	0.0	97568.8	5107.0	17033.8	-15813.1	0.537	3.140
1320	5894.9	19803.4	101559.1	0.0	0.0	97568.8	5894.9	19803.4	3990.3	1.114	3.430
1380	6706.5	22682.5	124241.6	0.0	0.0	97568.8	6706.5	22682.5	26672.8	1.754	2.910
1440	7526.4	25619.2	149860.8	0.0	0.0	97568.8	7526.4	25619.2	52292.0	2.451	1.820
1500	8337.5	28555.0	178415.8	8845.7	15922.2	113491.0	-508.2	12632.8	64924.8	2.767	0.700
1560	9122.9	31428.7	209844.5	11301.7	36265.2	149756.2	-2178.8	-4836.5	60088.4	2.648	-0.150
1620	9867.4	34182.5	244027.1	10951.9	40056.4	189812.6	-1084.5	-5873.9	54214.5	2.502	-0.880
1680	10559.4	36768.2	280795.3	10532.1	38671.3	228483.9	27.3	-1903.0	52311.4	2.451	-1.450
1740	11191.2	39151.1	319946.4	10386.2	37652.9	266136.8	805.0	1498.2	53809.6	2.492	-1.790
1800	11758.9	41310.2	361256.6	10501.5	37597.8	303734.6	1257.4	3712.4	57522.0	2.584	-1.400
1860	12260.3	43234.6	404491.1	10767.8	38284.8	342019.4	1492.5	4949.8	62471.8	2.707	0.150
1920	12693.3	44916.5	449407.6	11123.8	39405.0	381424.3	1569.5	5511.5	67983.3	2.843	1.540
1980	13056.8	46350.2	495757.8	13119.1	43637.2	425061.5	-62.3	2713.0	70696.3	2.910	2.510
2040	13352.5	47536.7	543294.5	7763.4	37588.5	462650.1	5589.1	9948.2	80644.5	3.142	2.910
2100	13587.3	48491.6	591786.2	6202.0	25137.8	487787.9	7385.3	23353.8	103998.3	3.655	2.500
2160	13773.8	49250.0	641036.2	14319.3	36938.5	524726.4	-545.5	12311.5	116309.8	3.913	1.370
2220	13928.2	49863.6	690899.8	14832.1	52472.6	577198.9	-903.9	-2609.0	113700.8	3.858	0.310
2280	14067.2	50391.7	741291.5	14656.4	53079.2	630278.1	-589.2	-2687.5	111013.3	3.802	-0.460

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
2340	14206.8	50893.2	792184.7	14476.1	52438.5	682716.6	-269.3	-1545.3	109468.1	3.770	-1.070
2400	14362.5	51424.7	843609.4	14372.8	51928.1	734644.7	-10.3	-503.3	108964.7	3.759	-1.540
2460	14548.6	52040.0	895649.4	14339.2	51681.6	786326.3	209.4	358.4	109323.1	3.767	-1.820
2520	14774.6	52781.8	948431.2	14363.1	51664.2	837990.5	411.5	1117.6	110440.7	3.790	-1.780
2580	15040.7	53667.5	1002098.7	14437.8	51841.7	889832.1	602.9	1825.9	112266.6	3.828	-0.310
2640	15335.7	54677.5	1056776.2	14560.1	52196.2	942028.3	775.6	2481.3	114747.9	3.880	1.220
2700	15643.2	55762.0	1112538.2	14726.8	52716.4	994744.7	916.4	3045.6	117793.5	3.944	2.830
2760	15948.4	56864.9	1169403.1	14743.8	53047.1	1047791.9	1204.6	3817.7	121611.2	4.023	3.230
2820	16239.5	57938.2	1227341.3	12787.2	49555.8	1097347.7	3452.3	8382.4	129993.7	4.187	3.610
2880	16503.5	58937.4	1286278.7	11291.1	43340.9	1140688.6	5212.4	15596.5	145590.1	4.493	2.660
2940	16726.1	59813.3	1346092.0	19798.3	55961.0	1196649.6	-3072.2	3852.3	149442.4	4.565	1.690
3000	16894.6	60517.3	1406609.3	16978.5	66198.2	1262847.8	-83.9	-5681.0	143761.4	4.457	0.510
3060	16999.4	61009.2	1467618.5	16616.1	60470.3	1323318.1	383.3	538.9	144300.4	4.467	-0.320
3120	17030.9	61254.5	1528873.0	16651.5	59881.6	1383199.7	379.5	1372.9	145673.3	4.494	-0.950
3180	16978.4	61216.7	1590089.8	16741.6	60107.4	1443307.1	236.8	1109.3	146782.6	4.515	-1.430
3240	16833.2	60860.9	1650950.6	16811.8	60396.1	1503703.2	21.4	464.8	147247.4	4.524	-1.400
3300	16587.1	60156.5	1711107.2	16840.9	60574.9	1564278.1	-253.8	-418.3	146829.1	4.516	-1.350
3360	16231.6	59073.7	1770180.8	16814.7	60580.1	1624858.2	-583.1	-1506.5	145322.6	4.488	0.640
3420	15763.6	57591.4	1827772.2	16718.5	60359.8	1685218.0	-954.9	-2768.5	142554.2	4.433	2.110
3480	15192.9	55721.7	1883493.9	21568.3	68916.3	1754134.4	-6375.4	-13194.6	129359.5	4.175	3.250
3540	14539.9	53519.0	1937012.9	14030.6	64078.0	1818212.4	509.3	-10559.0	118800.5	3.965	3.500
3600	13827.7	51061.7	1988074.6	9872.4	43025.4	1861237.8	3955.3	8036.3	126836.8	4.125	2.760
3660	13075.8	48426.3	2036500.9	16561.2	47580.5	1908818.3	-3485.4	845.8	127682.6	4.142	1.430
3720	12302.1	45680.2	2082181.1	15573.8	57843.0	1966661.3	-3271.7	-12162.8	115519.9	3.897	0.280
3780	11528.0	42894.2	2125075.3	14778.8	54634.7	2021296.0	-3250.8	-11740.5	103779.3	3.650	-0.520
3840	10777.5	40149.9	2165225.2	13994.6	51792.1	2073088.1	-3217.1	-11642.2	92137.1	3.400	-1.180
3900	10068.5	37522.8	2202748.0	13210.6	48969.4	2122057.6	-3142.1	-11446.6	80690.4	3.143	-1.660
3960	9406.0	35054.1	2237802.1	12422.9	46140.4	2168197.9	-3016.9	-11086.3	69604.2	2.883	-2.050
4020	8783.8	32741.6	2270543.8	11643.5	43319.5	2211517.4	-2859.7	-10577.9	59026.3	2.621	-2.180
4080	8193.1	30558.4	2301102.2	10875.6	40534.4	2252051.8	-2682.5	-9976.0	49050.3	2.364	-2.200
4140	7629.1	28480.0	2329582.1	10136.6	37822.0	2289873.8	-2507.5	-9342.0	39708.3	2.113	1.710
4200	7090.7	26495.6	2356077.8	6712.4	30328.2	2320202.0	378.3	-3832.6	35875.8	2.010	3.210
4260	6578.1	24603.8	2380681.6	0.0	12082.3	2332284.3	6578.1	12521.5	48397.3	2.346	4.080
4320	6091.9	22806.0	2403487.6	0.0	0.0	2332284.3	6091.9	22806.0	71203.3	2.922	3.950
4380	5633.1	21105.0	2424592.6	0.0	0.0	2332284.3	5633.1	21105.0	92308.3	3.403	2.770
4440	5203.0	19505.0	2444097.6	10473.5	18852.3	2351136.6	-5270.5	652.7	92961.0	3.418	1.360

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
4500	4801.7	18008.5	2462106.1	17475.1	50307.5	2401444.0	-12673.4	-32299.0	60662.0	2.662	0.250
4560	4427.2	16612.0	2478718.1	10993.2	51243.0	2452687.0	-6566.0	-34631.0	26031.1	1.736	-0.570
4620	4075.6	15305.0	2494023.1	8410.7	34927.1	2487614.1	-4335.1	-19622.1	6409.0	1.183	-1.230
4680	3742.9	14073.3	2508096.4	6980.5	27704.2	2515318.2	-3237.6	-13630.9	-7221.9	0.789	-1.730
4740	3427.3	12906.4	2521002.8	6017.7	23396.6	2538714.9	-2590.4	-10490.3	-17712.1	0.481	-2.090
4800	3130.4	11803.9	2532806.6	5299.2	20370.4	2559085.3	-2168.8	-8566.5	-26278.7	0.217	-1.090
4860	2854.4	10772.6	2543579.3	4707.8	18012.6	2577097.9	-1853.4	-7240.0	-33518.6	-0.007	0.910
4920	2598.7	9815.6	2553394.9	0.0	8474.0	2585571.8	2598.7	1341.6	-32177.0	0.035	2.530
4980	2359.6	8924.9	2562319.8	0.0	0.0	2585571.8	2359.6	8924.9	-23252.1	0.310	3.670
5040	2132.7	8086.1	2570405.9	0.0	0.0	2585571.8	2132.7	8086.1	-15165.9	0.556	3.770
5100	1916.1	7287.8	2577693.8	0.0	0.0	2585571.8	1916.1	7287.8	-7878.1	0.770	2.820
5160	1710.7	6528.2	2584222.0	0.0	0.0	2585571.8	1710.7	6528.2	-1349.8	0.961	1.380
5220	1517.9	5811.5	2590033.5	0.0	0.0	2585571.8	1517.9	5811.5	4461.6	1.127	0.210
5280	1337.5	5139.7	2595173.2	7777.5	13999.6	2599571.4	-6440.0	-8859.8	-4398.2	0.871	-0.610
5340	1167.6	4509.2	2599682.4	6215.6	25187.5	2624758.9	-5048.0	-20678.4	-25076.5	0.254	-1.300
5400	1007.7	3915.5	2603597.9	4789.3	19808.8	2644567.7	-3781.6	-15893.3	-40969.8	-0.263	-1.850
5460	858.2	3358.6	2606956.6	3695.6	15272.9	2659840.6	-2837.4	-11914.3	-52884.0	-0.686	-2.270
5520	719.0	2839.0	2609795.5	2872.7	11822.9	2671663.4	-2153.7	-8983.9	-61867.9	-1.021	-2.090
5580	588.8	2354.0	2612149.6	2272.3	9260.9	2680924.4	-1683.5	-6906.9	-68774.8	-1.283	0.070
5640	467.4	1901.2	2614050.7	0.0	4090.1	2685014.5	467.4	-2189.0	-70963.8	-1.366	2.060
5700	358.0	1485.7	2615536.4	0.0	0.0	2685014.5	358.0	1485.7	-69478.1	-1.310	3.510
5760	266.8	1124.6	2616661.1	0.0	0.0	2685014.5	266.8	1124.6	-68353.4	-1.267	4.100
5820	199.2	838.8	2617499.9	0.0	0.0	2685014.5	199.2	838.8	-67514.6	-1.235	3.670
5880	155.1	637.7	2618137.6	0.0	0.0	2685014.5	155.1	637.7	-66876.9	-1.211	2.200
5940	128.8	511.0	2618648.6	0.0	0.0	2685014.5	128.8	511.0	-66365.9	-1.192	0.830
6000	112.8	434.9	2619083.5	0.0	0.0	2685014.5	112.8	434.9	-65931.0	-1.175	-0.120
6060	101.2	385.2	2619468.7	0.0	0.0	2685014.5	101.2	385.2	-65545.8	-1.160	-0.910
6120	91.6	347.0	2619815.8	0.0	0.0	2685014.5	91.6	347.0	-65198.8	-1.147	-1.530
6180	83.0	314.3	2620130.0	2268.3	4082.9	2689097.4	-2185.3	-3768.6	-68967.4	-1.290	-2.040
6240	75.2	284.8	2620414.8	1824.1	7366.2	2696463.6	-1748.9	-7081.5	-76048.8	-1.567	-2.310
6300	68.1	257.9	2620672.7	1399.6	5802.6	2702266.2	-1331.5	-5544.7	-81593.5	-1.805	-0.630
6360	61.8	233.8	2620906.6	0.0	2519.2	2704785.4	61.8	-2285.4	-83878.9	-1.904	1.420
6420	56.0	212.0	2621118.6	0.0	0.0	2704785.4	56.0	212.0	-83666.9	-1.894	2.950
6480	50.8	192.2	2621310.8	0.0	0.0	2704785.4	50.8	192.2	-83474.6	-1.886	3.910
6540	46.1	174.4	2621485.3	0.0	0.0	2704785.4	46.1	174.4	-83300.2	-1.879	3.810
6600	41.8	158.2	2621643.5	0.0	0.0	2704785.4	41.8	158.2	-83142.0	-1.872	2.610

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
6660	37.9	143.5	2621786.9	0.0	0.0	2704785.4	37.9	143.5	-82998.5	-1.866	1.170
6720	34.3	130.0	2621916.9	0.0	0.0	2704785.4	34.3	130.0	-82868.6	-1.860	0.070
6780	31.1	117.7	2622034.6	0.0	0.0	2704785.4	31.1	117.7	-82750.8	-1.855	-0.720
6840	28.0	106.4	2622141.0	0.0	0.0	2704785.4	28.0	106.4	-82644.5	-1.851	-1.430
6900	25.1	95.6	2622236.6	0.0	0.0	2704785.4	25.1	95.6	-82548.9	-1.846	-1.950
6960	22.4	85.5	2622322.1	765.3	1377.6	2706163.0	-742.9	-1292.1	-83841.0	-1.902	-2.330
7020	20.0	76.3	2622398.4	938.9	3067.7	2709230.7	-918.9	-2991.4	-86832.4	-2.038	-1.450
7080	18.0	68.4	2622466.8	0.0	1690.1	2710920.8	18.0	-1621.7	-88454.0	-2.125	0.670
7140	16.3	61.7	2622528.5	0.0	0.0	2710920.8	16.3	61.7	-88392.3	-2.122	2.480
7200	14.9	56.2	2622584.7	0.0	0.0	2710920.8	14.9	56.2	-88336.1	-2.119	3.670
7260	13.6	51.3	2622636.0	0.0	0.0	2710920.8	13.6	51.3	-88284.8	-2.116	3.900
7320	12.4	46.8	2622682.8	0.0	0.0	2710920.8	12.4	46.8	-88238.0	-2.113	3.040
7380	11.3	42.7	2622725.5	0.0	0.0	2710920.8	11.3	42.7	-88195.4	-2.111	1.560
7440	10.2	38.7	2622764.2	0.0	0.0	2710920.8	10.2	38.7	-88156.7	-2.109	0.350
7500	9.3	35.1	2622799.3	0.0	0.0	2710920.8	9.3	35.1	-88121.6	-2.107	-0.500
7560	8.4	31.9	2622831.1	0.0	0.0	2710920.8	8.4	31.9	-88089.7	-2.105	-1.270
7620	7.5	28.6	2622859.7	0.0	0.0	2710920.8	7.5	28.6	-88061.1	-2.104	-1.830
7680	6.5	25.2	2622884.9	0.0	0.0	2710920.8	6.5	25.2	-88035.9	-2.102	-2.250
7740	5.3	21.2	2622906.2	692.4	1246.4	2712167.2	-687.1	-1225.1	-89261.0	-2.168	-2.070
7800	4.0	16.7	2622922.9	0.0	1246.4	2713413.5	4.0	-1229.6	-90490.7	-2.234	-0.050
7860	3.0	12.6	2622935.5	0.0	0.0	2713413.5	3.0	12.6	-90478.1	-2.233	1.910
7920	2.8	10.4	2622946.0	0.0	0.0	2713413.5	2.8	10.4	-90467.6	-2.233	3.390
7980	3.4	11.2	2622957.1	0.0	0.0	2713413.5	3.4	11.2	-90456.5	-2.232	4.030
8040	4.0	13.3	2622970.4	0.0	0.0	2713413.5	4.0	13.3	-90443.1	-2.231	3.660
8100	4.1	14.6	2622985.0	0.0	0.0	2713413.5	4.1	14.6	-90428.6	-2.231	2.270
8160	3.6	13.9	2622998.9	0.0	0.0	2713413.5	3.6	13.9	-90414.7	-2.230	0.910
8220	3.1	12.1	2623010.9	0.0	0.0	2713413.5	3.1	12.1	-90402.6	-2.229	-0.060
8280	2.6	10.3	2623021.2	0.0	0.0	2713413.5	2.6	10.3	-90392.4	-2.229	-0.830
8340	2.2	8.6	2623029.8	0.0	0.0	2713413.5	2.2	8.6	-90383.7	-2.228	-1.490
8400	1.9	7.4	2623037.2	0.0	0.0	2713413.5	1.9	7.4	-90376.4	-2.228	-1.980
8460	1.7	6.5	2623043.7	0.0	0.0	2713413.5	1.7	6.5	-90369.9	-2.228	-2.210
8520	1.5	5.8	2623049.5	0.0	0.0	2713413.5	1.5	5.8	-90364.1	-2.227	-0.540
8580	1.3	5.0	2623054.5	0.0	0.0	2713413.5	1.3	5.0	-90359.1	-2.227	1.360
8640	1.2	4.5	2623059.0	0.0	0.0	2713413.5	1.2	4.5	-90354.6	-2.227	2.950
8700	1.0	4.0	2623063.0	0.0	0.0	2713413.5	1.0	4.0	-90350.6	-2.226	3.910
8760	0.9	3.4	2623066.4	0.0	0.0	2713413.5	0.9	3.4	-90347.2	-2.226	3.810

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
8820	0.8	3.1	2623069.4	0.0	0.0	2713413.5	0.8	3.1	-90344.1	-2.226	2.610
8880	0.7	2.7	2623072.1	0.0	0.0	2713413.5	0.7	2.7	-90341.4	-2.226	1.170
8940	0.6	2.3	2623074.5	0.0	0.0	2713413.5	0.6	2.3	-90339.1	-2.226	0.070
9000	0.5	2.0	2623076.5	0.0	0.0	2713413.5	0.5	2.0	-90337.1	-2.226	-0.720
9060	0.4	1.6	2623078.1	0.0	0.0	2713413.5	0.4	1.6	-90335.5	-2.226	-1.430
9120	0.0	0.7	2623078.8	0.0	0.0	2713413.5	0.0	0.7	-90334.8	-2.226	-1.950
9180	0.0	0.0	2623078.8	0.0	0.0	2713413.5	0.0	0.0	-90334.8	-2.226	-2.330
THE HIGHEST EL.m		4.6									

4.금강호(약최고만조위 3.36와 약최저간조위 -3.18 적용의 가상조위) 100년빈도 내수위 검토

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.000	-1.545
60	0.0	0.0	0.0	6528.0	11750.4	11750.4	-6528.0	-11750.4	-11750.4	0.656	-2.742
120	0.2	0.4	0.4	5704.8	22019.0	33769.4	-5704.6	-22018.7	-33769.1	-0.016	-3.180
180	1.3	2.7	3.1	4206.7	17840.7	51610.1	-4205.4	-17838.0	-51607.0	-0.638	-2.742
240	4.3	10.1	13.1	2961.6	12903.0	64513.1	-2957.3	-12892.9	-64499.9	-1.121	-1.545
300	10.5	26.6	39.8	2405.7	9661.3	74174.3	-2395.2	-9634.6	-74134.6	-1.487	0.090
360	21.8	58.1	97.9	0.0	4330.3	78504.7	21.8	-4272.2	-78406.8	-1.668	1.725
420	42.0	114.8	212.8	0.0	0.0	78504.7	42.0	114.8	-78291.9	-1.664	2.922
480	77.3	214.7	427.5	0.0	0.0	78504.7	77.3	214.7	-78077.2	-1.654	3.360
540	136.1	384.1	811.6	0.0	0.0	78504.7	136.1	384.1	-77693.1	-1.638	2.922
600	228.1	655.6	1467.2	0.0	0.0	78504.7	228.1	655.6	-77037.5	-1.610	1.725
660	362.8	1063.6	2530.8	0.0	0.0	78504.7	362.8	1063.6	-75973.9	-1.564	0.090
720	548.6	1640.5	4171.3	0.0	0.0	78504.7	548.6	1640.5	-74333.4	-1.494	-1.545
780	792.2	2413.4	6584.8	713.1	1283.6	79788.3	79.1	1129.8	-73203.5	-1.451	-2.742
840	1098.7	3403.6	9988.4	1572.7	4114.5	83902.8	-474.0	-710.9	-73914.4	-1.478	-3.180
900	1472.0	4627.3	14615.6	1531.8	5588.0	89490.8	-59.8	-960.8	-74875.2	-1.517	-2.742
960	1914.7	6096.1	20711.7	1474.1	5410.5	94901.4	440.6	685.5	-74189.7	-1.489	-1.545
1020	2427.4	7815.8	28527.5	752.3	4007.5	98908.9	1675.1	3808.3	-70381.4	-1.344	0.090
1080	3008.5	9784.6	38312.1	0.0	1354.1	100263.0	3008.5	8430.5	-61950.9	-1.024	1.725
1140	3653.7	11992.0	50304.1	0.0	0.0	100263.0	3653.7	11992.0	-49958.9	-0.577	2.922
1200	4356.2	14417.8	64721.9	0.0	0.0	100263.0	4356.2	14417.8	-35541.1	-0.077	3.360
1260	5107.0	17033.8	81755.6	0.0	0.0	100263.0	5107.0	17033.8	-18507.3	0.456	2.922
1320	5894.9	19803.4	101559.1	0.0	0.0	100263.0	5894.9	19803.4	1296.1	1.037	1.725
1380	6706.5	22682.5	124241.6	0.0	0.0	100263.0	6706.5	22682.5	23978.6	1.679	0.090

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
1440	7526.4	25619.2	149860.8	8259.2	14866.6	115129.6	-732.8	10752.6	34731.2	1.978	-1.545
1500	8337.5	28555.0	178415.8	9063.1	31180.2	146309.7	-725.6	-2625.1	32106.1	1.905	-2.742
1560	9122.9	31428.7	209844.5	8864.6	32269.8	178579.5	258.3	-841.1	31265.0	1.882	-3.180
1620	9867.4	34182.5	244027.1	8801.2	31798.4	210377.9	1066.2	2384.1	33649.1	1.948	-2.742
1680	10559.4	36768.2	280795.3	8981.1	32008.2	242386.1	1578.3	4760.0	38409.2	2.078	-1.545
1740	11191.2	39151.1	319946.4	9336.5	32971.6	275357.7	1854.7	6179.5	44588.7	2.244	0.090
1800	11758.9	41310.2	361256.6	9798.5	34442.9	309800.6	1960.4	6867.3	51456.0	2.428	1.725
1860	12260.3	43234.6	404491.1	9257.1	34300.0	344100.6	3003.2	8934.6	60390.5	2.655	2.922
1920	12693.3	44916.5	449407.6	0.0	16662.8	360763.4	12693.3	28253.7	88644.2	3.321	3.360
1980	13056.8	46350.2	495757.8	0.0	0.0	360763.4	13056.8	46350.2	134994.4	4.285	2.922
2040	13352.5	47536.7	543294.5	16947.0	30504.6	391268.0	-3594.5	17032.1	152026.5	4.613	1.725
2100	13587.3	48491.6	591786.2	17140.9	61358.2	452626.2	-3553.6	-12866.6	139160.0	4.367	0.090
2160	13773.8	49250.0	641036.2	16315.5	60221.6	512847.8	-2541.7	-10971.6	128188.3	4.152	-1.545
2220	13928.2	49863.6	690899.8	15606.3	57459.2	570307.1	-1678.1	-7595.6	120592.7	4.003	-2.742
2280	14067.2	50391.7	741291.5	15121.4	55309.8	625616.9	-1054.2	-4918.1	115674.6	3.900	-3.180
2340	14206.8	50893.2	792184.7	14789.2	53839.2	679456.0	-582.4	-2946.0	112728.6	3.838	-2.742
2400	14362.5	51424.7	843609.4	14591.1	52884.6	732340.6	-228.6	-1459.8	111268.8	3.807	-1.545
2460	14548.6	52040.0	895649.4	14493.2	52351.7	784692.4	55.4	-311.8	110957.0	3.801	0.090
2520	14774.6	52781.8	948431.2	14472.3	52138.0	836830.4	302.3	643.8	111600.8	3.814	1.725
2580	15040.7	53667.5	1002098.7	18792.5	59876.6	896707.0	-3751.7	-6209.1	105391.7	3.684	2.922
2640	15335.7	54677.5	1056776.2	11929.5	55299.5	952006.5	3406.2	-622.0	104769.7	3.671	3.360
2700	15643.2	55762.0	1112538.2	7784.9	35485.9	987492.4	7858.3	20276.1	125045.8	4.090	2.922
2760	15948.4	56864.9	1169403.1	15389.2	41713.5	1029205.9	559.2	15151.4	140197.2	4.387	1.725
2820	16239.5	57938.2	1227341.3	16383.1	57190.3	1086396.2	-143.6	747.9	140945.2	4.402	0.090
2880	16503.5	58937.4	1286278.7	16431.9	59067.1	1145463.3	71.6	-129.7	140815.4	4.399	-1.545
2940	16726.1	59813.3	1346092.0	16423.5	59139.8	1204603.1	302.6	673.5	141489.0	4.412	-2.742
3000	16894.6	60517.3	1406609.3	16467.5	59203.7	1263806.7	427.1	1313.6	142802.6	4.438	-3.180
3060	16999.4	61009.2	1467618.5	16553.3	59437.4	1323244.2	446.1	1571.8	144374.3	4.469	-2.742
3120	17030.9	61254.5	1528873.0	16656.3	59777.4	1383021.5	374.6	1477.2	145851.5	4.498	-1.545
3180	16978.4	61216.7	1590089.8	16753.3	60137.2	1443158.7	225.1	1079.5	146931.1	4.518	0.090
3240	16833.2	60860.9	1650950.6	16821.1	60433.8	1503592.6	12.1	427.0	147358.1	4.526	1.725
3300	16587.1	60156.5	1711107.2	16847.8	60604.1	1564196.6	-260.7	-447.5	146910.6	4.518	2.922
3360	16231.6	59073.7	1770180.8	18752.9	64081.3	1628277.9	-2521.3	-5007.7	141902.9	4.420	3.360
3420	15763.6	57591.4	1827772.2	15465.3	61592.7	1689870.7	298.3	-4001.4	137901.5	4.342	2.922
3480	15192.9	55721.7	1883493.9	17393.9	59146.5	1749017.1	-2201.0	-3424.7	134476.8	4.275	1.725
3540	14539.9	53519.0	1937012.9	16011.5	60129.7	1809146.8	-1471.6	-6610.6	127866.2	4.145	0.090

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
3600	13827.7	51061.7	1988074.6	15585.6	56874.8	1866021.5	-1757.9	-5813.1	122053.1	4.031	-1.545
3660	13075.8	48426.3	2036500.9	15214.2	55439.7	1921461.2	-2138.4	-7013.4	115039.7	3.886	-2.742
3720	12302.1	45680.2	2082181.1	14746.5	53929.2	1975390.5	-2444.4	-8249.0	106790.7	3.714	-3.180
3780	11528.0	42894.2	2125075.3	14194.4	52093.5	2027483.9	-2666.4	-9199.3	97591.4	3.521	-2.742
3840	10777.5	40149.9	2165225.2	13587.1	50006.6	2077490.5	-2809.6	-9856.7	87734.7	3.301	-1.545
3900	10068.5	37522.8	2202748.0	12905.8	47687.1	2125177.6	-2837.3	-10164.3	77570.4	3.073	0.090
3960	9406.0	35054.1	2237802.1	12211.0	45210.2	2170387.8	-2805.0	-10156.1	67414.3	2.829	1.725
4020	8783.8	32741.6	2270543.8	12192.0	43925.5	2214313.3	-3408.2	-11183.8	56230.5	2.552	2.922
4080	8193.1	30558.4	2301102.2	0.0	21945.7	2236259.0	8193.1	8612.8	64843.2	2.765	3.360
4140	7629.1	28480.0	2329582.1	0.0	0.0	2236259.0	7629.1	28480.0	93323.2	3.426	2.922
4200	7090.7	26495.6	2356077.8	9443.8	16998.9	2253257.8	-2353.1	9496.8	102820.0	3.630	1.725
4260	6578.1	24603.8	2380681.6	17585.3	48652.5	2301910.3	-11007.2	-24048.6	78771.3	3.100	0.090
4320	6091.9	22806.0	2403487.6	12292.4	53779.9	2355690.2	-6200.5	-30973.9	47797.4	2.330	-1.545
4380	5633.1	21105.0	2424592.6	10041.3	40200.6	2395890.8	-4408.1	-19095.6	28701.8	1.810	-2.742
4440	5203.0	19505.0	2444097.6	8609.3	33570.9	2429461.7	-3406.3	-14065.9	14635.9	1.417	-3.180
4500	4801.7	18008.5	2462106.1	7575.9	29133.2	2458595.0	-2774.2	-11124.8	3511.1	1.100	-2.742
4560	4427.2	16612.0	2478718.1	6774.6	25830.9	2484425.9	-2347.4	-9218.9	-5707.8	0.833	-1.545
4620	4075.6	15305.0	2494023.1	6123.5	23216.7	2507642.5	-2047.9	-7911.6	-13619.4	0.602	0.090
4680	3742.9	14073.3	2508096.4	5214.7	20408.8	2528051.3	-1471.8	-6335.5	-19954.9	0.412	1.725
4740	3427.3	12906.4	2521002.8	0.0	9386.5	2537437.8	3427.3	3519.8	-16435.0	0.519	2.922
4800	3130.4	11803.9	2532806.6	0.0	0.0	2537437.8	3130.4	11803.9	-4631.2	0.865	3.360
4860	2854.4	10772.6	2543579.3	0.0	0.0	2537437.8	2854.4	10772.6	6141.5	1.175	2.922
4920	2598.7	9815.6	2553394.9	0.0	0.0	2537437.8	2598.7	9815.6	15957.0	1.455	1.725
4980	2359.6	8924.9	2562319.8	0.0	0.0	2537437.8	2359.6	8924.9	24882.0	1.704	0.090
5040	2132.7	8086.1	2570405.9	8325.8	14986.4	2552424.3	-6193.1	-6900.3	17981.7	1.512	-1.545
5100	1916.1	7287.8	2577693.8	7821.8	29065.6	2581489.9	-5905.7	-21777.8	-3796.1	0.889	-2.742
5160	1710.7	6528.2	2584222.0	6258.0	25343.6	2606833.6	-4547.3	-18815.4	-22611.5	0.330	-3.180
5220	1517.9	5811.5	2590033.5	4958.1	20189.0	2627022.6	-3440.2	-14377.5	-36989.0	-0.126	-2.742
5280	1337.5	5139.7	2595173.2	3975.4	16080.4	2643102.9	-2637.9	-10940.6	-47929.7	-0.501	-1.545
5340	1167.6	4509.2	2599682.4	3222.8	12956.9	2656059.8	-2055.2	-8447.7	-56377.4	-0.816	0.090
5400	1007.7	3915.5	2603597.9	0.0	5801.1	2661860.9	1007.7	-1885.5	-58262.9	-0.886	1.725
5460	858.2	3358.6	2606956.6	0.0	0.0	2661860.9	858.2	3358.6	-54904.3	-0.761	2.922
5520	719.0	2839.0	2609795.5	0.0	0.0	2661860.9	719.0	2839.0	-52065.3	-0.655	3.360
5580	588.8	2354.0	2612149.6	0.0	0.0	2661860.9	588.8	2354.0	-49711.3	-0.568	2.922
5640	467.4	1901.2	2614050.7	0.0	0.0	2661860.9	467.4	1901.2	-47810.1	-0.497	1.725
5700	358.0	1485.7	2615536.4	0.0	0.0	2661860.9	358.0	1485.7	-46324.4	-0.446	0.090

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
5760	266.8	1124.6	2616661.1	0.0	0.0	2661860.9	266.8	1124.6	-45199.8	-0.408	-1.545
5820	199.2	838.8	2617499.9	3405.8	6130.5	2667991.3	-3206.6	-5291.7	-50491.4	-0.597	-2.742
5880	155.1	637.7	2618137.6	3040.1	11602.6	2679594.0	-2885.0	-10964.9	-61456.3	-1.005	-3.180
5940	128.8	511.0	2618648.6	2299.3	9610.8	2689204.8	-2170.5	-9099.8	-70556.1	-1.351	-2.742
6000	112.8	434.9	2619083.5	1728.4	7249.7	2696454.5	-1615.6	-6814.8	-77371.0	-1.624	-1.545
6060	101.2	385.2	2619468.7	0.0	3111.0	2699565.6	101.2	-2725.8	-80096.8	-1.741	0.090
6120	91.6	347.0	2619815.8	0.0	0.0	2699565.6	91.6	347.0	-79749.8	-1.726	1.725
6180	83.0	314.3	2620130.0	0.0	0.0	2699565.6	83.0	314.3	-79435.5	-1.713	2.922
6240	75.2	284.8	2620414.8	0.0	0.0	2699565.6	75.2	284.8	-79150.7	-1.700	3.360
6300	68.1	257.9	2620672.7	0.0	0.0	2699565.6	68.1	257.9	-78892.8	-1.689	2.922
6360	61.8	233.8	2620906.6	0.0	0.0	2699565.6	61.8	233.8	-78659.0	-1.679	1.725
6420	56.0	212.0	2621118.6	0.0	0.0	2699565.6	56.0	212.0	-78446.9	-1.670	0.090
6480	50.8	192.2	2621310.8	0.0	0.0	2699565.6	50.8	192.2	-78254.7	-1.662	-1.545
6540	46.1	174.4	2621485.3	0.0	0.0	2699565.6	46.1	174.4	-78080.3	-1.654	-2.742
6600	41.8	158.2	2621643.5	1273.7	2292.6	2701858.2	-1231.9	-2134.4	-80214.7	-1.746	-3.180
6660	37.9	143.5	2621786.9	1145.7	4354.8	2706213.0	-1107.8	-4211.4	-84426.0	-1.927	-2.742
6720	34.3	130.0	2621916.9	906.9	3694.6	2709907.6	-872.6	-3564.6	-87990.7	-2.100	-1.545
6780	31.1	117.7	2622034.6	0.0	1632.4	2711540.0	31.1	-1514.6	-89505.3	-2.181	0.090
6840	28.0	106.4	2622141.0	0.0	0.0	2711540.0	28.0	106.4	-89398.9	-2.176	1.725
6900	25.1	95.6	2622236.6	0.0	0.0	2711540.0	25.1	95.6	-89303.4	-2.170	2.922
6960	22.4	85.5	2622322.1	0.0	0.0	2711540.0	22.4	85.5	-89217.9	-2.166	3.360
7020	20.0	76.3	2622398.4	0.0	0.0	2711540.0	20.0	76.3	-89141.5	-2.162	2.922
7080	18.0	68.4	2622466.8	0.0	0.0	2711540.0	18.0	68.4	-89073.1	-2.158	1.725
7140	16.3	61.7	2622528.5	0.0	0.0	2711540.0	16.3	61.7	-89011.4	-2.155	0.090
7200	14.9	56.2	2622584.7	0.0	0.0	2711540.0	14.9	56.2	-88955.2	-2.152	-1.545
7260	13.6	51.3	2622636.0	0.0	0.0	2711540.0	13.6	51.3	-88903.9	-2.149	-2.742
7320	12.4	46.8	2622682.8	640.6	1153.1	2712693.1	-628.2	-1106.3	-90010.2	-2.208	-3.180
7380	11.3	42.7	2622725.5	574.9	2187.9	2714880.9	-563.6	-2145.2	-92155.4	-2.323	-2.742
7440	10.2	38.7	2622764.2	454.3	1852.6	2716733.5	-444.1	-1813.9	-93969.3	-2.420	-1.545
7500	9.3	35.1	2622799.3	0.0	817.8	2717551.3	9.3	-782.7	-94752.0	-2.462	0.090
7560	8.4	31.9	2622831.1	0.0	0.0	2717551.3	8.4	31.9	-94720.1	-2.461	1.725
7620	7.5	28.6	2622859.7	0.0	0.0	2717551.3	7.5	28.6	-94691.5	-2.459	2.922
7680	6.5	25.2	2622884.9	0.0	0.0	2717551.3	6.5	25.2	-94666.3	-2.458	3.360
7740	5.3	21.2	2622906.2	0.0	0.0	2717551.3	5.3	21.2	-94645.1	-2.457	2.922
7800	4.0	16.7	2622922.9	0.0	0.0	2717551.3	4.0	16.7	-94628.3	-2.456	1.725
7860	3.0	12.6	2622935.5	0.0	0.0	2717551.3	3.0	12.6	-94615.7	-2.455	0.090

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
7920	2.8	10.4	2622946.0	0.0	0.0	2717551.3	2.8	10.4	-94605.3	-2.454	-1.545
7980	3.4	11.2	2622957.1	0.0	0.0	2717551.3	3.4	11.2	-94594.1	-2.454	-2.742
8040	4.0	13.3	2622970.4	329.3	592.8	2718144.1	-325.3	-579.5	-95173.6	-2.485	-3.180
8100	4.1	14.6	2622985.0	301.6	1135.7	2719279.8	-297.5	-1121.2	-96294.8	-2.537	-2.742
8160	3.6	13.9	2622998.9	256.9	1005.5	2720285.3	-253.3	-991.6	-97286.4	-2.581	-1.545
8220	3.1	12.1	2623010.9	0.0	462.5	2720747.8	3.1	-450.4	-97736.8	-2.601	0.090
8280	2.6	10.3	2623021.2	0.0	0.0	2720747.8	2.6	10.3	-97726.5	-2.601	1.725
8340	2.2	8.6	2623029.8	0.0	0.0	2720747.8	2.2	8.6	-97717.9	-2.600	2.922
8400	1.9	7.4	2623037.2	0.0	0.0	2720747.8	1.9	7.4	-97710.5	-2.600	3.360
8460	1.7	6.5	2623043.7	0.0	0.0	2720747.8	1.7	6.5	-97704.0	-2.600	2.922
8520	1.5	5.8	2623049.5	0.0	0.0	2720747.8	1.5	5.8	-97698.3	-2.599	1.725
8580	1.3	5.0	2623054.5	0.0	0.0	2720747.8	1.3	5.0	-97693.2	-2.599	0.090
8640	1.2	4.5	2623059.0	0.0	0.0	2720747.8	1.2	4.5	-97688.7	-2.599	-1.545
8700	1.0	4.0	2623063.0	0.0	0.0	2720747.8	1.0	4.0	-97684.8	-2.599	-2.742
8760	0.9	3.4	2623066.4	207.5	373.4	2721121.2	-206.6	-370.0	-98054.8	-2.615	-3.180
8820	0.8	3.1	2623069.4	194.9	724.2	2721845.4	-194.1	-721.1	-98775.9	-2.647	-2.742
8880	0.7	2.7	2623072.1	210.5	729.7	2722575.1	-209.8	-727.0	-99502.9	-2.679	-1.545
8940	0.6	2.3	2623074.5	0.0	378.9	2722953.9	0.6	-376.6	-99879.4	-2.696	0.090
9000	0.5	2.0	2623076.5	0.0	0.0	2722953.9	0.5	2.0	-99877.5	-2.696	1.725
9060	0.4	1.6	2623078.1	0.0	0.0	2722953.9	0.4	1.6	-99875.8	-2.696	2.922
9120	0.0	0.7	2623078.8	0.0	0.0	2722953.9	0.0	0.7	-99875.1	-2.696	1.725
9180	0.0	0.0	2623078.8	0.0	0.0	2722953.9	0.0	0.0	-99875.1	-2.696	0.090
THE HIGHEST EL.m		4.6									

5.금강호(대조평균만조위 2.82와 소조평균간조위 -2.63 적용의 가상조위) 100년빈도 내수위 검토

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.000	-2.265
60	0.0	0.0	0.0	6528.0	11750.4	11750.4	-6528.0	-11750.4	-11750.4	0.656	-2.630
120	0.2	0.4	0.4	5704.8	22019.0	33769.4	-5704.6	-22018.7	-33769.1	-0.016	-2.265
180	1.3	2.7	3.1	4206.7	17840.7	51610.1	-4205.4	-17838.0	-51607.0	-0.638	-1.268
240	4.3	10.1	13.1	3628.6	14103.6	65713.7	-3624.3	-14093.5	-65700.5	-1.166	0.095
300	10.5	26.6	39.8	0.0	6531.5	72245.2	10.5	-6504.9	-72205.4	-1.413	1.458
360	21.8	58.1	97.9	0.0	0.0	72245.2	21.8	58.1	-72147.3	-1.411	2.455
420	42.0	114.8	212.8	0.0	0.0	72245.2	42.0	114.8	-72032.4	-1.407	2.820
480	77.3	214.7	427.5	0.0	0.0	72245.2	77.3	214.7	-71817.7	-1.399	2.455

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
540	136.1	384.1	811.6	0.0	0.0	72245.2	136.1	384.1	-71433.6	-1.384	1.458
600	228.1	655.6	1467.2	0.0	0.0	72245.2	228.1	655.6	-70778.0	-1.359	0.095
660	362.8	1063.6	2530.8	0.0	0.0	72245.2	362.8	1063.6	-69714.4	-1.319	-1.268
720	548.6	1640.5	4171.3	0.0	0.0	72245.2	548.6	1640.5	-68073.9	-1.256	-2.265
780	792.2	2413.4	6584.8	1878.7	3381.6	75626.8	-1086.5	-968.2	-69042.1	-1.293	-2.630
840	1098.7	3403.6	9988.4	1819.6	6656.8	82283.6	-720.9	-3253.2	-72295.3	-1.417	-2.265
900	1472.0	4627.3	14615.6	1625.6	6201.2	88484.8	-153.6	-1573.9	-73869.2	-1.477	-1.268
960	1914.7	6096.1	20711.7	0.0	2926.0	91410.8	1914.7	3170.1	-70699.1	-1.356	0.095
1020	2427.4	7815.8	28527.5	0.0	0.0	91410.8	2427.4	7815.8	-62883.4	-1.059	1.458
1080	3008.5	9784.6	38312.1	0.0	0.0	91410.8	3008.5	9784.6	-53098.7	-0.694	2.455
1140	3653.7	11992.0	50304.1	0.0	0.0	91410.8	3653.7	11992.0	-41106.8	-0.267	2.820
1200	4356.2	14417.8	64721.9	0.0	0.0	91410.8	4356.2	14417.8	-26689.0	0.204	2.455
1260	5107.0	17033.8	81755.6	0.0	0.0	91410.8	5107.0	17033.8	-9655.2	0.718	1.458
1320	5894.9	19803.4	101559.1	0.0	0.0	91410.8	5894.9	19803.4	10148.2	1.289	0.095
1380	6706.5	22682.5	124241.6	9037.1	16266.8	107677.7	-2330.6	6415.7	16563.9	1.472	-1.268
1440	7526.4	25619.2	149860.8	7717.7	30158.8	137836.4	-191.3	-4539.5	12024.4	1.343	-2.265
1500	8337.5	28555.0	178415.8	7385.1	27185.1	165021.6	952.4	1369.9	13394.2	1.382	-2.630
1560	9122.9	31428.7	209844.5	7485.0	26766.2	191787.7	1637.9	4662.6	18056.8	1.515	-2.265
1620	9867.4	34182.5	244027.1	7827.2	27562.0	219349.7	2040.2	6620.6	24677.4	1.699	-1.268
1680	10559.4	36768.2	280795.3	8310.7	29048.3	248397.9	2248.7	7720.0	32397.4	1.913	0.095
1740	11191.2	39151.1	319946.4	8886.5	30955.0	279352.9	2304.7	8196.1	40593.5	2.136	1.458
1800	11758.9	41310.2	361256.6	8594.2	31465.3	310818.2	3164.7	9844.9	50438.4	2.401	2.455
1860	12260.3	43234.6	404491.1	0.0	15469.6	326287.8	12260.3	27765.0	78203.4	3.087	2.820
1920	12693.3	44916.5	449407.6	6583.5	11850.4	338138.1	6109.8	33066.1	111269.5	3.807	2.455
1980	13056.8	46350.2	495757.8	15709.3	40127.0	378265.2	-2652.5	6223.2	117492.6	3.938	1.458
2040	13352.5	47536.7	543294.5	14912.0	55118.2	433383.4	-1559.5	-7581.5	109911.2	3.779	0.095
2100	13587.3	48491.6	591786.2	14402.4	52765.9	486149.2	-815.1	-4274.2	105636.9	3.689	-1.268
2160	13773.8	49250.0	641036.2	14117.7	51336.2	537485.5	-343.9	-2086.3	103550.7	3.646	-2.265
2220	13928.2	49863.6	690899.8	13979.5	50575.0	588060.4	-51.3	-711.4	102839.3	3.631	-2.630
2280	14067.2	50391.7	741291.5	13932.4	50241.4	638301.9	134.8	150.3	102989.6	3.634	-2.265
2340	14206.8	50893.2	792184.7	13942.4	50174.7	688476.5	264.4	718.5	103708.1	3.649	-1.268
2400	14362.5	51424.7	843609.4	13989.9	50278.1	738754.6	372.6	1146.7	104854.8	3.673	0.095
2460	14548.6	52040.0	895649.4	14065.9	50500.3	789254.9	482.8	1539.6	106394.4	3.705	1.458
2520	14774.6	52781.8	948431.2	14168.0	50821.0	840076.0	606.6	1960.8	108355.2	3.746	2.455
2580	15040.7	53667.5	1002098.7	15251.9	52955.9	893031.8	-211.2	711.7	109066.9	3.761	2.820
2640	15335.7	54677.5	1056776.2	13292.8	51380.4	944412.2	2042.9	3297.1	112364.0	3.830	2.455

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
2700	15643.2	55762.0	1112538.2	15880.1	52511.2	996923.4	-236.9	3250.9	115614.8	3.899	1.458
2760	15948.4	56864.9	1169403.1	14785.2	55197.6	1052120.9	1163.2	1667.3	117282.2	3.934	0.095
2820	16239.5	57938.2	1227341.3	14897.7	53429.3	1105550.2	1341.8	4508.9	121791.1	4.026	-1.268
2880	16503.5	58937.4	1286278.7	15197.6	54171.6	1159721.8	1305.9	4765.8	126556.9	4.120	-2.265
2940	16726.1	59813.3	1346092.0	15501.7	55258.7	1214980.5	1224.4	4554.6	131111.5	4.209	-2.630
3000	16894.6	60517.3	1406609.3	15794.2	56332.6	1271313.1	1100.4	4184.6	135296.2	4.291	-2.265
3060	16999.4	61009.2	1467618.5	16064.6	57345.8	1328658.9	934.8	3663.4	138959.6	4.363	-1.268
3120	17030.9	61254.5	1528873.0	16302.5	58260.7	1386919.5	728.4	2993.9	141953.5	4.421	0.095
3180	16978.4	61216.7	1590089.8	16497.8	59040.5	1445960.1	480.6	2176.2	144129.7	4.464	1.458
3240	16833.2	60860.9	1650950.6	16640.3	59648.5	1505608.6	192.9	1212.4	145342.0	4.488	2.455
3300	16587.1	60156.5	1711107.2	20634.5	67094.5	1572703.0	-4047.3	-6937.9	138404.1	4.352	2.820
3360	16231.6	59073.7	1770180.8	17993.7	69530.7	1642233.8	-1762.1	-10457.1	127947.0	4.147	2.455
3420	15763.6	57591.4	1827772.2	18196.1	65141.7	1707375.5	-2432.5	-7550.3	120396.7	3.999	1.458
3480	15192.9	55721.7	1883493.9	15108.7	59948.7	1767324.1	84.2	-4227.0	116169.7	3.910	0.095
3540	14539.9	53519.0	1937012.9	14822.6	53876.5	1821200.6	-282.7	-357.4	115812.3	3.903	-1.268
3600	13827.7	51061.7	1988074.6	14798.5	53318.1	1874518.7	-970.8	-2256.4	113555.9	3.855	-2.265
3660	13075.8	48426.3	2036500.9	14646.6	53001.3	1927520.0	-1570.8	-4575.0	108980.9	3.759	-2.630
3720	12302.1	45680.2	2082181.1	14340.3	52176.4	1979696.4	-2038.2	-6496.2	102484.7	3.623	-2.265
3780	11528.0	42894.2	2125075.3	13909.0	50848.7	2030545.1	-2381.0	-7954.5	94530.2	3.453	-1.268
3840	10777.5	40149.9	2165225.2	13377.4	49115.4	2079660.5	-2599.8	-8965.5	85564.7	3.252	0.095
3900	10068.5	37522.8	2202748.0	12756.4	47040.7	2126701.2	-2687.9	-9517.9	76046.8	3.038	1.458
3960	9406.0	35054.1	2237802.1	14724.0	49464.7	2176165.9	-5318.0	-14410.6	61636.2	2.686	2.455
4020	8783.8	32741.6	2270543.8	5727.6	36812.9	2212978.9	3056.2	-4071.3	57564.9	2.585	2.820
4080	8193.1	30558.4	2301102.2	0.0	10309.7	2223288.5	8193.1	20248.8	77813.6	3.078	2.455
4140	7629.1	28480.0	2329582.1	9846.8	17724.3	2241012.8	-2217.7	10755.7	88569.3	3.320	1.458
4200	7090.7	26495.6	2356077.8	16523.6	47466.8	2288479.6	-9432.9	-20971.2	67598.2	2.833	0.095
4260	6578.1	24603.8	2380681.6	11496.5	50436.3	2338915.9	-4918.4	-25832.5	41765.7	2.168	-1.268
4320	6091.9	22806.0	2403487.6	9586.5	37949.4	2376865.3	-3494.6	-15143.4	26622.3	1.753	-2.265
4380	5633.1	21105.0	2424592.6	8454.5	32473.9	2409339.2	-2821.4	-11368.9	15253.4	1.435	-2.630
4440	5203.0	19505.0	2444097.6	7621.2	28936.4	2438275.5	-2418.2	-9431.4	5822.0	1.166	-2.265
4500	4801.7	18008.5	2462106.1	6938.6	26207.7	2464483.2	-2136.9	-8199.2	-2377.2	0.930	-1.268
4560	4427.2	16612.0	2478718.1	6358.5	23934.8	2488418.0	-1931.3	-7322.8	-9699.9	0.716	0.095
4620	4075.6	15305.0	2494023.1	5877.5	22024.7	2510442.7	-1801.9	-6719.7	-16419.6	0.520	1.457
4680	3742.9	14073.3	2508096.4	0.0	10579.4	2521022.1	3742.9	3493.9	-12925.7	0.622	2.455
4740	3427.3	12906.4	2521002.8	0.0	0.0	2521022.1	3427.3	12906.4	-19.4	0.999	2.820
4800	3130.4	11803.9	2532806.6	0.0	0.0	2521022.1	3130.4	11803.9	11784.5	1.336	2.455

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
4860	2854.4	10772.6	2543579.3	0.0	0.0	2521022.1	2854.4	10772.6	22557.1	1.640	1.458
4920	2598.7	9815.6	2553394.9	4146.9	7464.5	2528486.6	-1548.2	2351.1	24908.2	1.705	0.095
4980	2359.6	8924.9	2562319.8	8327.7	22454.4	2550941.0	-5968.1	-13529.4	11378.8	1.324	-1.268
5040	2132.7	8086.1	2570405.9	7338.2	28198.7	2579139.6	-5205.5	-20112.5	-8733.7	0.744	-2.265
5100	1916.1	7287.8	2577693.8	5912.6	23851.4	2602991.0	-3996.5	-16563.6	-25297.3	0.247	-2.630
5160	1710.7	6528.2	2584222.0	4774.3	19236.4	2622227.5	-3063.6	-12708.2	-38005.5	-0.161	-2.265
5220	1517.9	5811.5	2590033.5	3903.3	15619.8	2637847.3	-2385.4	-9808.3	-47813.8	-0.497	-1.268
5280	1337.5	5139.7	2595173.2	4189.7	14567.4	2652414.7	-2852.2	-9427.7	-57241.5	-0.848	0.095
5340	1167.6	4509.2	2599682.4	0.0	7541.4	2659956.0	1167.6	-3032.2	-60273.7	-0.961	1.457
5400	1007.7	3915.5	2603597.9	0.0	0.0	2659956.0	1007.7	3915.5	-56358.1	-0.815	2.455
5460	858.2	3358.6	2606956.6	0.0	0.0	2659956.0	858.2	3358.6	-52999.5	-0.690	2.820
5520	719.0	2839.0	2609795.5	0.0	0.0	2659956.0	719.0	2839.0	-50160.5	-0.584	2.455
5580	588.8	2354.0	2612149.6	0.0	0.0	2659956.0	588.8	2354.0	-47806.5	-0.497	1.458
5640	467.4	1901.2	2614050.7	0.0	0.0	2659956.0	467.4	1901.2	-45905.3	-0.432	0.095
5700	358.0	1485.7	2615536.4	0.0	0.0	2659956.0	358.0	1485.7	-44419.6	-0.381	-1.267
5760	266.8	1124.6	2616661.1	3458.7	6225.6	2666181.6	-3191.9	-5101.0	-49520.6	-0.561	-2.265
5820	199.2	838.8	2617499.9	3108.9	11821.6	2678003.3	-2909.7	-10982.8	-60503.4	-0.969	-2.630
5880	155.1	637.7	2618137.6	2361.0	9845.9	2687849.2	-2205.9	-9208.2	-69711.6	-1.319	-2.265
5940	128.8	511.0	2618648.6	1779.0	7452.1	2695301.3	-1650.2	-6941.1	-76652.7	-1.593	-1.268
6000	112.8	434.9	2619083.5	0.0	3202.3	2698503.6	112.8	-2767.4	-79420.1	-1.712	0.095
6060	101.2	385.2	2619468.7	0.0	0.0	2698503.6	101.2	385.2	-79034.9	-1.695	1.457
6120	91.6	347.0	2619815.8	0.0	0.0	2698503.6	91.6	347.0	-78687.8	-1.681	2.455
6180	83.0	314.3	2620130.0	0.0	0.0	2698503.6	83.0	314.3	-78373.6	-1.667	2.820
6240	75.2	284.8	2620414.8	0.0	0.0	2698503.6	75.2	284.8	-78088.8	-1.655	2.455
6300	68.1	257.9	2620672.7	0.0	0.0	2698503.6	68.1	257.9	-77830.9	-1.644	1.458
6360	61.8	233.8	2620906.6	0.0	0.0	2698503.6	61.8	233.8	-77597.0	-1.634	0.095
6420	56.0	212.0	2621118.6	0.0	0.0	2698503.6	56.0	212.0	-77385.0	-1.625	-1.267
6480	50.8	192.2	2621310.8	0.0	0.0	2698503.6	50.8	192.2	-77192.8	-1.616	-2.265
6540	46.1	174.4	2621485.3	1328.2	2390.7	2700894.3	-1282.1	-2216.3	-79409.1	-1.712	-2.630
6600	41.8	158.2	2621643.5	1193.5	4539.0	2705433.3	-1151.7	-4380.8	-83789.8	-1.900	-2.265
6660	37.9	143.5	2621786.9	1256.7	4410.4	2709843.6	-1218.8	-4266.9	-88056.7	-2.104	-1.268
6720	34.3	130.0	2621916.9	0.0	2262.1	2712105.8	34.3	-2132.2	-90188.9	-2.218	0.095
6780	31.1	117.7	2622034.6	0.0	0.0	2712105.8	31.1	117.7	-90071.2	-2.212	1.457
6840	28.0	106.4	2622141.0	0.0	0.0	2712105.8	28.0	106.4	-89964.8	-2.206	2.455
6900	25.1	95.6	2622236.6	0.0	0.0	2712105.8	25.1	95.6	-89869.2	-2.201	2.820
6960	22.4	85.5	2622322.1	0.0	0.0	2712105.8	22.4	85.5	-89783.7	-2.196	2.455

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
7020	20.0	76.3	2622398.4	0.0	0.0	2712105.8	20.0	76.3	-89707.4	-2.192	1.458
7080	18.0	68.4	2622466.8	0.0	0.0	2712105.8	18.0	68.4	-89639.0	-2.188	0.095
7140	16.3	61.7	2622528.5	0.0	0.0	2712105.8	16.3	61.7	-89577.2	-2.185	-1.267
7200	14.9	56.2	2622584.7	0.0	0.0	2712105.8	14.9	56.2	-89521.1	-2.182	-2.265
7260	13.6	51.3	2622636.0	483.7	870.7	2712976.4	-470.1	-819.4	-90340.5	-2.226	-2.630
7320	12.4	46.8	2622682.8	555.7	1870.9	2714847.4	-543.3	-1824.1	-92164.6	-2.324	-2.265
7380	11.3	42.7	2622725.5	0.0	1000.3	2715847.6	11.3	-957.6	-93122.2	-2.375	-1.268
7440	10.2	38.7	2622764.2	0.0	0.0	2715847.6	10.2	38.7	-93083.5	-2.373	0.095
7500	9.3	35.1	2622799.3	0.0	0.0	2715847.6	9.3	35.1	-93048.4	-2.371	1.457
7560	8.4	31.9	2622831.1	0.0	0.0	2715847.6	8.4	31.9	-93016.6	-2.369	2.455
7620	7.5	28.6	2622859.7	0.0	0.0	2715847.6	7.5	28.6	-92987.9	-2.368	2.820
7680	6.5	25.2	2622884.9	0.0	0.0	2715847.6	6.5	25.2	-92962.7	-2.366	2.455
7740	5.3	21.2	2622906.2	0.0	0.0	2715847.6	5.3	21.2	-92941.5	-2.365	1.458
7800	4.0	16.7	2622922.9	0.0	0.0	2715847.6	4.0	16.7	-92924.8	-2.364	0.095
7860	3.0	12.6	2622935.5	0.0	0.0	2715847.6	3.0	12.6	-92912.2	-2.364	-1.267
7920	2.8	10.4	2622946.0	0.0	0.0	2715847.6	2.8	10.4	-92901.7	-2.363	-2.265
7980	3.4	11.2	2622957.1	0.0	0.0	2715847.6	3.4	11.2	-92890.5	-2.363	-2.630
8040	4.0	13.3	2622970.4	415.2	747.4	2716595.1	-411.2	-734.1	-93624.7	-2.402	-2.265
8100	4.1	14.6	2622985.0	0.0	747.4	2717342.5	4.1	-732.9	-94357.5	-2.441	-1.268
8160	3.6	13.9	2622998.9	0.0	0.0	2717342.5	3.6	13.9	-94343.7	-2.440	0.095
8220	3.1	12.1	2623010.9	0.0	0.0	2717342.5	3.1	12.1	-94331.6	-2.440	1.457
8280	2.6	10.3	2623021.2	0.0	0.0	2717342.5	2.6	10.3	-94321.4	-2.439	2.455
8340	2.2	8.6	2623029.8	0.0	0.0	2717342.5	2.2	8.6	-94312.7	-2.439	2.820
8400	1.9	7.4	2623037.2	0.0	0.0	2717342.5	1.9	7.4	-94305.3	-2.438	2.455
8460	1.7	6.5	2623043.7	0.0	0.0	2717342.5	1.7	6.5	-94298.9	-2.438	1.458
8520	1.5	5.8	2623049.5	0.0	0.0	2717342.5	1.5	5.8	-94293.1	-2.438	0.095
8580	1.3	5.0	2623054.5	0.0	0.0	2717342.5	1.3	5.0	-94288.1	-2.437	-1.267
8640	1.2	4.5	2623059.0	0.0	0.0	2717342.5	1.2	4.5	-94283.6	-2.437	-2.265
8700	1.0	4.0	2623063.0	0.0	0.0	2717342.5	1.0	4.0	-94279.6	-2.437	-2.630
8760	0.9	3.4	2623066.4	344.7	620.5	2717963.0	-343.8	-617.0	-94896.6	-2.470	-2.265
8820	0.8	3.1	2623069.4	0.0	620.5	2718583.5	0.8	-617.4	-95514.0	-2.503	-1.268
8880	0.7	2.7	2623072.1	0.0	0.0	2718583.5	0.7	2.7	-95511.3	-2.502	0.095
8940	0.6	2.3	2623074.5	0.0	0.0	2718583.5	0.6	2.3	-95509.0	-2.502	1.457
9000	0.5	2.0	2623076.5	0.0	0.0	2718583.5	0.5	2.0	-95507.0	-2.502	2.455
9060	0.4	1.6	2623078.1	0.0	0.0	2718583.5	0.4	1.6	-95505.4	-2.502	1.458
9120	0.0	0.7	2623078.8	0.0	0.0	2718583.5	0.0	0.7	-95504.7	-2.502	0.095

◆ 내용적 검토성과 비교

수 위 (EL.m)	면 적 (㎡)		체 적 (㎥)		측 점 구 간	
	기수립('88년)	금회(2000년)	기수립('88년)	금회(2000년)	기수립('88년)	금회(2000년)
-4.0	5,464,342	8,620,853	13,988,863	19,278,625	No.-4 ~ No.27	No.0 ~ No.15+020
-3.5	8,247,122	10,236,353	20,400,480	24,006,828	No.-4 ~ No.52	No.0 ~ No.26+600
-3.0	9,676,731	12,006,891	24,864,848	29,542,927	No.-4 ~ No.52	No.0 ~ No.26+600
-2.5	12,328,729	16,086,175	32,182,759	40,839,923	No.-4 ~ No.65	No.0 ~ No.33+830
-2.0	14,649,774	19,097,847	38,898,003	50,171,529	No.-4 ~ No.65	No.0 ~ No.33+830
-1.5	17,887,426	22,531,415	47,511,104	61,808,838	No.-4 ~ No.77	No.0 ~ No.40+000
-1.0	20,625,838	25,576,589	57,096,775	74,971,333	No.-4 ~ No.77	No.0 ~ No.40+000
-0.5	23,806,775	28,025,539	68,514,360	88,402,812	No.-4 ~ No.83	No.0 ~ No.43+290
0.0	25,974,233	30,219,581	81,017,827	102,985,394	No.-4 ~ No.85	No.0 ~ No.44+450
0.5	28,608,652	32,627,947	95,370,342	119,205,003	No.-4 ~ No.101+080	No.0 ~ No.52+160
1.0	30,611,712	34,594,129	110,184,955	136,294,813	No.-4 ~ No.101+080	No.0 ~ No.52+160
1.5	32,505,896	35,547,305	126,530,744	153,829,347	No.-4 ~ No.108	No.0 ~ No.55+320
2.0	33,965,943	36,470,671	143,193,133	171,816,372	No.-4 ~ No.108	No.0 ~ No.55+320
2.5	37,088,094	38,475,069	161,104,619	190,413,116	No.-4 ~ No.113	No.0 ~ No.57+810
3.0	41,567,656	43,166,270	180,775,231	210,632,235	No.-4 ~ No.113	No.0 ~ No.57+810
3.5	45,920,164	46,094,709	203,237,725	232,902,032	No.-4 ~ No.125	No.0 ~ No.63+390
4.0	49,854,219	49,523,537	227,185,066	256,747,765	No.-4 ~ No.125	No.0 ~ No.63+390
4.5	52,895,858	53,060,533	252,916,812	282,253,766	No.-4 ~ No.125	No.0 ~ No.63+390
5.0	55,203,172	55,236,439	279,987,045	309,074,913	No.-4 ~ No.125	No.0 ~ No.63+390
5.5	56,950,791	56,878,276	308,030,805	336,830,085	No.-4 ~ No.125	No.0 ~ No.63+390
6.0	58,263,979	58,295,857	336,849,608	365,314,949	No.-4 ~ No.125	No.0 ~ No.63+390
6.5	59,124,392	59,613,176	366,179,427	394,562,694	No.-4 ~ No.125	No.0 ~ No.63+390

건설교통부

시 간	유입량		누가유입량	유출량		누가유출량	저수량(증/감)		누가저수량	수위(EL.m)	
(min)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	(㎥/sec)	(1000㎥)	(1000㎥)	내수위	외수위
9180	0.0	0.0	2623078.8	0.0	0.0	2718583.5	0.0	0.0	-95504.7	-2.502	-1.268
THE HIGHEST EL.m		4.488									

□ 금강하구둑 외조위

구분	외조위 비교(EL.m)			비고
	실측외조위	약최고만조위	대조평균만조위	
0				
1	0.650	1.725	1.458	
2	-0.130	0.090	0.095	
3	-0.840	-1.545	-1.268	
4	-1.390	-2.742	-2.265	
5	-1.720	-3.180	-2.630	
6	-1.380	-2.742	-2.265	
7	-0.170	-1.545	-1.268	
8	1.040	0.090	0.095	
9	1.910	1.725	1.458	
10	2.340	2.922	2.455	
11	2.030	3.360	2.820	
12	1.140	2.922	2.455	
13	0.100	1.725	1.458	
14	-0.670	0.090	0.095	
15	-1.350	-1.545	-1.268	
16	-1.880	-2.742	-2.265	
17	-2.300	-3.180	-2.630	
18	-0.220	-2.742	-2.265	
19	-0.780	-1.545	-1.268	
20	0.830	0.090	0.095	
21	2.170	1.725	1.458	
22	3.140	2.922	2.455	
23	3.430	3.360	2.820	
24	2.910	2.922	2.455	
25	1.820	1.725	1.458	
26	0.700	0.090	0.095	
27	-0.150	-1.545	-1.268	
28	-0.880	-2.742	-2.265	
29	-1.450	-3.180	-2.630	
30	-1.790	-2.742	-2.265	
31	-1.400	-1.545	-1.268	
32	0.150	0.090	0.095	
33	1.540	1.725	1.458	
34	2.510	2.922	2.455	
35	2.910	3.360	2.820	
36	2.500	2.922	2.455	
37	1.370	1.725	1.458	
38	0.310	0.090	0.095	
39	-0.460	-1.545	-1.268	
40	-1.070	-2.742	-2.265	
41	-1.540	-3.180	-2.630	
42	-1.820	-2.742	-2.265	
43	-1.780	-1.545	-1.268	
44	-0.310	0.090	0.095	
45	2.220	1.725	1.458	
46	3.230	2.922	2.455	

건설교통부

구분	외조위 비교(EL.m)			비고
	실측외조위	약최고만조위	대조평균만조위	
47	3.830	3.360	2.820	
48	3.610	2.922	2.455	
49	2.660	1.725	1.458	
50	1.690	0.090	0.095	
51	0.510	-1.545	-1.268	
52	-0.320	-2.742	-2.265	
53	-0.950	-3.180	-2.630	
54	-1.430	-2.742	-2.265	
55	-1.400	-1.545	-1.268	
56	-1.350	0.090	0.095	
57	0.640	1.725	1.458	
58	2.110	2.922	2.455	
59	3.250	3.360	2.820	
60	3.500	2.922	2.455	
61	2.760	1.725	1.458	
62	1.430	0.090	0.095	
63	0.280	-1.545	-1.268	
64	-0.520	-2.742	-2.265	
65	-1.180	-3.180	-2.630	
66	-1.660	-2.742	-2.265	
67	-2.050	-1.545	-1.268	
68	-2.180	0.090	0.095	
69	-2.200	1.725	1.458	
70	1.710	2.922	2.455	
71	3.210	3.360	2.820	
72	4.080	2.922	2.455	
73	3.950	1.725	1.458	
74	2.770	0.090	0.095	
75	1.360	-1.545	-1.268	
76	0.250	-2.742	-2.265	
77	-0.570	-3.180	-2.630	
78	-1.230	-2.742	-2.265	
79	-1.730	-1.545	-1.268	
80	-2.090	0.090	0.095	
81	-1.090	1.725	1.457	
82	0.910	2.922	2.455	
83	2.530	3.360	2.820	
84	3.670	2.922	2.455	
85	3.770	1.725	1.458	
86	2.820	0.090	0.095	
87	1.380	-1.545	-1.268	
88	0.210	-2.742	-2.265	
89	-0.610	-3.180	-2.630	
90	-1.300	-2.742	-2.265	
91	-1.850	-1.545	-1.268	
92	-2.270	0.090	0.095	
93	-2.090	1.725	1.457	
94	0.070	2.922	2.455	
95	2.060	3.360	2.820	

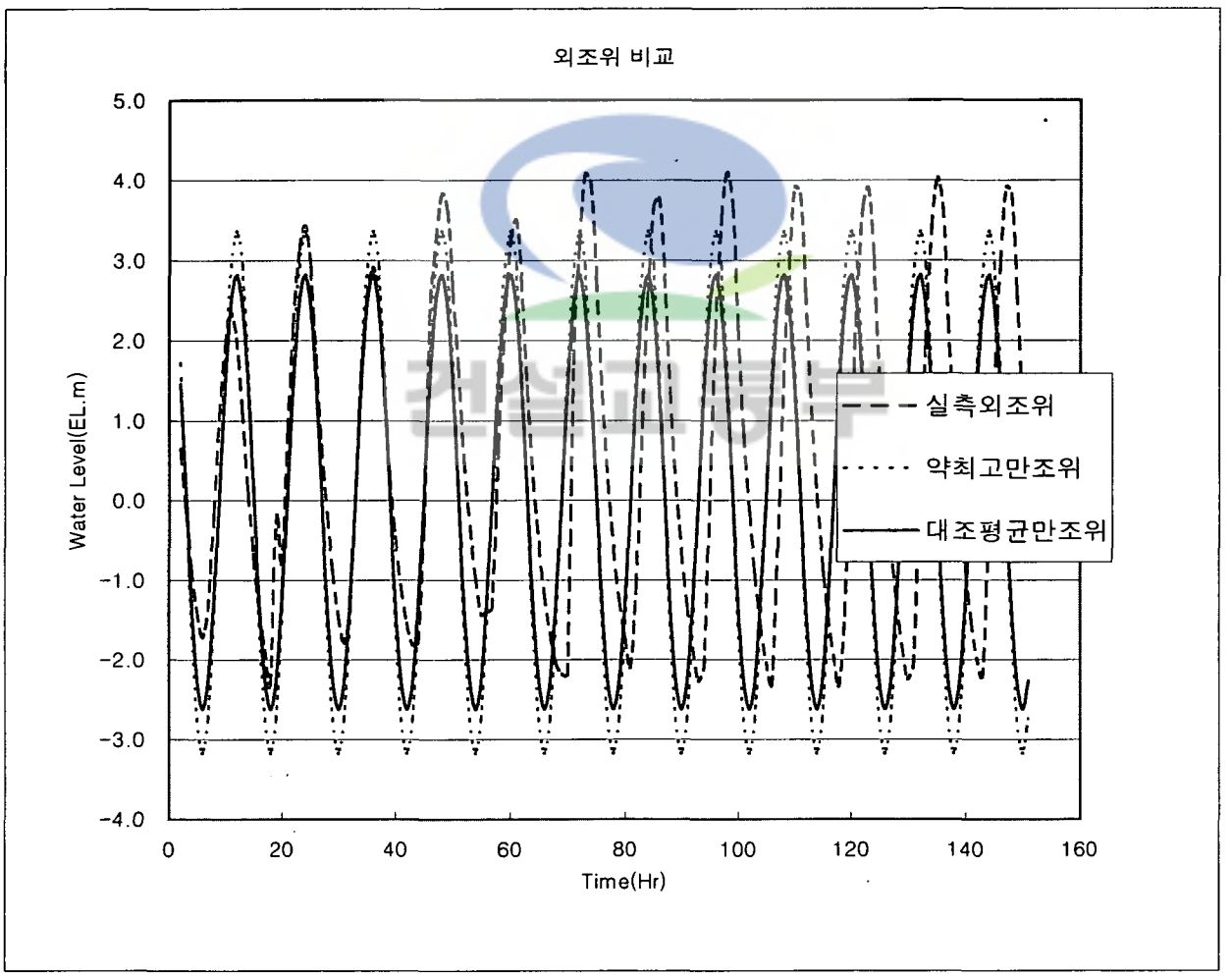
건설교통부

구분	외조위 비교(EL.m)			비고
	실측외조위	약최고만조위	대조평균만조위	
96	3.510	2.922	2.455	
97	4.100	1.725	1.458	
98	3.670	0.090	0.095	
99	2.200	-1.545	-1.267	
100	0.830	-2.742	-2.265	
101	-0.120	-3.180	-2.630	
102	-0.910	-2.742	-2.265	
103	-1.530	-1.545	-1.268	
104	-2.040	0.090	0.095	
105	-2.310	1.725	1.457	
106	-0.630	2.922	2.455	
107	1.420	3.360	2.820	
108	2.950	2.922	2.455	
109	3.910	1.725	1.458	
110	3.810	0.090	0.095	
111	2.610	-1.545	-1.267	
112	1.170	-2.742	-2.265	
113	0.070	-3.180	-2.630	
114	-0.720	-2.742	-2.265	
115	-1.430	-1.545	-1.268	
116	-1.950	0.090	0.095	
117	-2.330	1.725	1.457	
118	-1.450	2.922	2.455	
119	0.670	3.360	2.820	
120	2.480	2.922	2.455	
121	3.670	1.725	1.458	
122	3.900	0.090	0.095	
123	3.040	-1.545	-1.267	
124	1.560	-2.742	-2.265	
125	0.350	-3.180	-2.630	
126	-0.500	-2.742	-2.265	
127	-1.270	-1.545	-1.268	
128	-1.830	0.090	0.095	
129	-2.250	1.725	1.457	
130	-2.070	2.922	2.455	
131	-0.050	3.360	2.820	
132	1.910	2.922	2.455	
133	3.390	1.725	1.458	
134	4.030	0.090	0.095	
135	3.660	-1.545	-1.267	
136	2.270	-2.742	-2.265	
137	0.910	-3.180	-2.630	
138	-0.060	-2.742	-2.265	
139	-0.830	-1.545	-1.268	
140	-1.490	0.090	0.095	
141	-1.980	1.725	1.457	
142	-2.210	2.922	2.455	
143	-0.540	3.360	2.820	
144	1.360	2.922	2.455	

건설교통부

구분	외조위 비교(EL.m)			비고
	실측외조위	약최고만조위	대조평균만조위	
145	2.950	1.725	1.458	
146	3.910	0.090	0.095	
147	3.810	-1.545	-1.267	
148	2.610	-2.742	-2.265	
149	1.170	-3.180	-2.630	
150	0.070	-2.742	-2.265	
151	-0.720	-1.545	-1.268	
152	-1.430	0.090	0.095	
153	-1.950	1.725	1.457	
154	-2.330	2.922	2.455	
Max.	4.100	3.360	2.820	
Min.	-2.330	-3.180	-2.630	

(주) 1. 실측외조위는 '92 8 26 13:00 ~ '92 9 1 22:00 구간임
2. 약최고만조위와 대조평균만조위는 Sin파 곡선에 의한 12시간 주기의 가상조위임



1.2 공식에 의한 계획하폭 산정

건설교통부

□. 금강수계 국가하천구간 계획하폭 결정공식에 의한 하폭 산정결과

1. 대하천 계획하폭 산정공식

B = α× Q^0.73 where S = 1 / 1,000 일때 α = 1.09

S = 1 / 2,000 일때 α = 1.18

S = 1 / 3,000 일때 α = 1.27

S = 1 / 4,000 일때 α = 1.36

S = 1 / 5,000 일때 α = 1.45

2. 중.소규모 계획하폭 산정공식

B = 1.698 × A^0.318 / I^0.5 : 남부지방

B = 1.303 × A^0.318 / I^0.5 : 중부지방

하천명	지 점 명	위치 (측점)	면적 (㎢)	연장 (㎞)	하상경사	홍수량	α	공식1	공식2-1	공식2-2	비고
금강	하구언	000+000	9911.83	397.40	0.00024	14,320	1.09	1,178	2,038	1,564	
	길산천합류후	001+480	9908.76	395.90	0.00027	14,320	1.09	1,178	1,920	1,473	
	길산천합류전	002+020	9790.57	395.90	0.00026	14,230	1.09	1,173	1,951	1,497	
	옥포수위표	003+780	9785.32	394.00	0.00026	14,230	1.09	1,173	1,952	1,498	
	원산천합류후	013+450	9692.78	384.00	0.00026	14,180	1.09	1,170	1,967	1,509	
	원산천합류전	013+970	9653.47	384.00	0.00025	14,160	1.09	1,169	1,990	1,527	
	입포수위표	020+580	9603.39	376.70	0.00030	14,130	1.09	1,167	1,813	1,392	
	함열천합류후	024+050	9552.32	372.90	0.00027	14,090	1.09	1,164	1,922	1,475	
	함열천합류전	024+680	9430.21	372.90	0.00030	14,000	1.09	1,159	1,795	1,377	
	강경수위표 (논산천합류후)	032+920	9375.71	363.80	0.00039	13,970	1.09	1,157	1,578	1,211	
	논산천합류전	034+490	8708.88	363.14	0.00028	13,250	1.09	1,113	1,801	1,382	
	석성천합류후	038+220	8702.23	359.50	0.00030	13,250	1.09	1,113	1,741	1,336	
	반조원수위표 (석성천합류전)	038+620	8548.62	358.80	0.00035	13,130	1.09	1,106	1,613	1,238	
	금천합류후	049+400	8502.85	347.90	0.00036	13,090	1.09	1,104	1,591	1,221	
	금천합류전	049+820	8341.51	347.90	0.00033	12,930	1.09	1,094	1,651	1,267	
	규암수위표	052+160	8327.58	345.20	0.00038	12,920	1.09	1,093	1,528	1,173	
	지천합류후	057+330	8227.83	339.40	0.00037	12,830	1.09	1,088	1,552	1,191	
	지천합류전	057+810	7976.09	339.40	0.00034	12,450	1.09	1,064	1,608	1,234	
	진두수위표	071+110	7811.81	325.90	0.00042	12,300	1.09	1,055	1,429	1,097	
	유구천합류후	080+190	7690.61	317.30	0.00047	12,200	1.09	1,048	1,349	1,035	
	유구천합류전	080+640	7407.83	317.30	0.00047	11,800	1.09	1,023	1,328	1,019	
	정안천합류후	084+790	7369.78	312.40	0.00045	11,770	1.09	1,021	1,364	1,047	
	공주수위표 (정안천합류전)	085+070	7210.28	312.30	0.00044	11,600	1.09	1,010	1,366	1,048	
	마어구수위표	093+510	7135.07	303.80	0.00047	11,530	1.09	1,006	1,318	1,011	
	대교천합류후	098+360	7111.81	297.70	0.00056	11,530	1.09	1,006	1,204	924	
	대교천합류전 (용수천합류후)	098+930	7043.93	297.70	0.00062	11,460	1.09	1,001	1,145	879	
	용수천합류전	100+280	6946.58	296.30	0.00062	11,360	1.09	995	1,140	875	
	미호천합류후	108+750	6863.81	288.53	0.00060	11,300	1.09	991	1,149	882	
	미호천합류전	109+400	5011.03	288.53	0.00059	7,940	1.09	766	1,046	802	
	부강수위표	112+350	5004.60	284.50	0.00061	7,940	1.09	766	1,032	792	
	매포수위표	120+700	4939.57	276.40	0.00070	7,900	1.09	763	961	737	
	갑천하류후	124+960	4881.03	271.82	0.00105	7,870	1.09	761	779	598	
	갑천하류전	125+660	4232.75	271.82	0.00093	5,920	1.09	618	792	608	

하천명	지 점 명	위치 (측점)	면적 (㎢)	연장 (㎞)	하상경사	홍수량	α	공식1	공식2-1	공식2-2	비고
	금강4교	222+040	3000.53	175.10	0.00093	6,100	1.09	632	709	544	
	옥천수위표	227+610	2987.62	169.40	0.00090	6,100	1.09	632	721	553	
	이원수위표	235+710	2912.44	161.30	0.00079	6,060	1.09	629	761	584	
	초강합류후	243+940	2888.35	153.20	0.00087	6,050	1.09	628	724	555	
	초강합류전	244+360	2227.08	153.20	0.00195	4,670	1.09	520	447	343	
	양강교수위표 (영동천합류전)	246+330	2080.38	150.70	0.02114	4,520	1.09	508	133	102	
갑천	갑천하구	00+000	648.98	73.70	0.00150	3,410	1.09	413	343	263	
	관평천합류후	03+550	638.29	69.98	0.00155	3,400	1.09	412	336	258	
	관평천합류전	03+755	628.21	69.98	0.00156	3,350	1.09	408	333	256	
	회덕수위표지점	10+105	607.77	64.12	0.00169	3,330	1.09	406	317	244	
	유등천 합류후	11+545	600.75	62.02	0.00177	3,260	1.09	400	309	237	
	유등천 합류전	11+655	286.96	62.02	0.00177	1,690	1.09	248	244	187	
	유성천 합류후	14+945	314.21	59.00	0.00179	1,670	1.09	245	250	192	
	유성천 합류전	15+045	255.65	59.00	0.00185	1,530	1.09	230	230	177	
	진잠천 합류후	17+035	248.41	56.61	0.00189	1,500	1.09	227	225	173	
	진잠천 합류전	17+135	222.82	56.61	0.00192	1,370	1.09	212	216	166	
	무명천 합류후	20+690	217.01	52.96	0.00197	1,350	1.09	210	212	162	
	무명천 합류전	20+795	209.20	52.96	0.00199	1,350	1.09	210	208	160	
	가수원 철교	21+895	208.25	51.61	0.00194	1,350	1.09	210	211	162	
	매노천 합류후	30+105	193.20	43.32	0.00241	1,350	1.09	210	184	142	
	매노천 합류전	30+290	175.48	43.32	0.00201	1,250	1.09	199	196	150	
	금곡천 합류후	31+290	174.71	42.02	0.00223	1,250	1.09	199	186	142	
	금곡천 합류전	31+470	157.90	42.02	0.00212	1,150	1.09	187	184	141	
	두계천 합류후	33+270	155.94	40.17	0.00358	1,120	1.09	183	141	108	
유등천	유등천 하구	00+000	286.54	44.40	0.00258	1,700	1.09	249	202	155	
	대전천 합류후	02+640	276.78	41.82	0.00273	1,630	1.09	241	194	149	
	대전천 합류전	02+820	187.56	41.82	0.00278	1,160	1.09	188	170	131	
	유등교	07+010	173.08	37.28	0.00303	1,020	1.09	171	159	122	
	안영교	10+735	158.52	33.56	0.00311	1,000	1.09	169	153	117	
	정생천 합류후	14+030	142.19	30.24	0.00415	980	1.09	166	128	98	
	정생천 합류전	14+190	124.80	30.24	0.00384	880	1.09	154	127	98	
	금산군복수면 경계	15+400	123.84	28.87	0.00525	880	1.09	154	108	83	
미호천	미호천하구	00+000	1852.78	89.20	0.00063	6,820	1.09	686	739	567	
	연기천합류후	03+390	1846.26	85.80	0.00064	6,820	1.09	686	731	561	
	연기천합류전	03+620	1832.79	85.80	0.00066	6,790	1.09	683	722	554	
	월하천합류후	05+660	1812.22	83.34	0.00067	6,750	1.09	680	715	549	
	월하천합류전	05+920	1769.80	83.34	0.00066	6,650	1.09	673	711	546	
	조천합류후	08+560	1758.82	80.57	0.00067	6,620	1.09	671	707	543	
	조천합류전	08+760	1623.43	80.57	0.00067	6,230	1.09	642	691	530	
	석화수위표지점	15+730	1591.94	73.41	0.00071	6,190	1.09	639	663	509	
	병천천합류후	16+500	1575.02	72.83	0.00067	6,160	1.09	637	681	523	
	병천천합류전	16+680	1209.19	72.83	0.00070	4,990	1.09	546	613	470	
	석남천합류후	21+070	1194.46	68.13	0.00070	4,980	1.09	545	611	469	
	석남천합류전	21+280	1156.35	68.13	0.00068	4,880	1.09	537	615	472	
	무심천합류후	27+230	1116.42	61.82	0.00068	4,820	1.09	532	607	466	
	무심천합류전	27+520	926.16	61.82	0.00060	4,140	1.09	476	611	469	

하천명	지 점 명	위치 (측점)	면적 (㎢)	연장 (㎞)	하상경사	홍수량	α	공식1	공식2-1	공식2-2	비고
	석화천합류후	33+080	897.52	56.44	0.00099	4,090	1.09	472	469	360	
	성암천합류후	34+390	814.18	54.95	0.00103	3,900	1.09	456	446	342	
	성암천합류전	34+570	744.39	54.95	0.00097	3,690	1.09	438	447	343	
	보강천합류후	38+900	737.51	50.37	0.00044	3,720	1.09	440	658	505	
논산천	논산천하구	00+000	665.02	57.70	0.00090	3,360	1.09	409	446	342	
	강경천 합류후	00+420	660.87	57.11	0.00082	3,340	1.09	407	467	358	
	강경천 합류전	00+620	536.05	57.11	0.00085	2,830	1.09	361	429	329	
	방축천 합류후	04+225	520.90	53.17	0.00115	2,830	1.09	361	367	281	
	방축천 합류전	04+435	484.71	53.17	0.00096	2,620	1.09	341	392	301	
	노성천 합류후	09+245	459.62	48.39	0.00142	2,560	1.09	335	316	243	
	노성천 합류전	09+465	265.72	48.39	0.00139	1,620	1.09	240	268	206	
	아호교	11+380	261.83	46.08	0.00162	1,620	1.09	240	248	190	
	왕암천 합류후	16+035	246.21	41.21	0.00493	1,600	1.09	238	139	107	
	왕암천 합류전	16+320	220.81	41.21	0.01251	1,600	1.09	238	84	65	
강경천	강경천 하구	00+000	124.82	20.90	0.00040	980	1.09	166	394	302	
	어량천 합류후	03+810	113.27	16.96	0.00012	980	1.09	166	698	536	
	어량천 합류전	03+985	91.16	16.96	0.00012	950	1.09	163	658	505	
	마산천 합류후	06+385	85.14	14.27	0.00012	950	1.09	163	644	494	
	마산천 합류전	06+565	47.04	14.27	0.00024	350	1.09	78	373	286	
노성천	노성천 하구	00+000	193.90	26.80	0.00094	1,800	1.09	259	296	227	
	연산천 합류후	04+750	178.90	21.85	0.00047	1,730	1.09	252	406	312	
	연산천 합류전	04+980	102.76	21.85	0.00053	770	1.09	139	321	246	

주) 상기의 산정결과는 공식에 의한 계산결과치로 최종적인 하폭 결정 수치는 아님.

건설교통부

1.3 홍수위산정 입력 Data

■ 홍수위산정 (횡단자료)

▶ 금강(대청댐하류) - 횡단자료

X1	.00	98	163.40	882.90	.00	.00	.00			
GR	8.58	.0	9.13	163.4	9.15	165.9	6.08	165.9	6.08	166.7
GR	1.22	166.7	-3.38	166.7	-3.38	175.7	1.22	175.7	6.08	175.7
GR	6.08	178.7	1.22	178.7	-3.38	178.7	-3.78	180.4	-3.48	182.1
GR	-3.28	186.1	-3.98	192.9	-4.48	198.7	-4.28	205.8	-4.78	213.0
GR	-5.68	218.8	-5.18	220.2	-5.08	227.4	-4.88	238.9	-5.28	250.4
GR	-5.48	253.7	-5.88	257.0	-5.68	258.6	-6.08	260.3	-5.78	261.9
GR	-6.18	270.5	-5.98	279.1	-6.18	292.1	-6.08	296.4	-6.48	296.4
GR	-6.48	312.4	-6.48	318.6	-7.08	324.7	-6.78	329.7	-6.58	330.9
GR	-6.48	342.4	-5.28	352.0	-5.58	365.4	-5.88	367.3	-5.78	373.1
GR	-5.78	376.9	-6.08	388.4	-6.78	392.2	-6.68	396.1	-6.58	399.9
GR	-6.88	406.0	-6.38	408.0	-6.78	434.4	-6.88	436.4	-7.08	468.9
GR	-7.38	503.4	-7.38	516.3	-7.48	525.0	-7.38	531.4	-7.28	537.9
GR	-7.28	544.0	-7.28	554.1	-7.28	572.4	-7.28	578.5	-7.28	606.9
GR	-7.18	641.4	-7.28	671.6	-6.78	675.9	-7.28	680.2	-7.08	684.5
GR	-6.58	688.8	-6.78	693.1	-6.88	695.3	-6.78	699.6	-7.18	708.2
GR	-7.18	710.4	-6.98	744.9	-6.78	746.9	-7.08	749.0	-7.08	757.1
GR	-7.18	779.4	-7.18	813.9	-7.28	828.3	-7.18	836.9	-7.28	848.4
GR	-7.18	876.4	-7.18	881.9	1.22	881.9	6.07	882.9	9.12	882.9
GR	10.60	983.6	7.23	1086.2	7.53	1086.2	7.13	1244.9	7.41	1825.9
GR	7.41	1826.9	7.11	1826.9	7.13	1949.0				
X1	.35	144	100.00	1741.50	350.00	350.00	350.00			
GR	8.01	.0	8.01	76.0	7.11	76.0	7.11	97.0	6.91	100.0
GR	6.91	101.5	4.41	108.5	1.22	118.5	.22	120.0	-.58	123.0
GR	-.88	123.5	-1.48	133.8	-4.28	159.6	-4.18	172.4	-5.08	187.9
GR	-5.68	198.2	-3.98	211.1	-4.30	218.8	-5.78	229.1	-6.48	239.4
GR	-5.58	247.1	-4.88	257.4	-4.48	267.7	-4.78	280.6	-5.08	285.8
GR	-4.48	298.6	-5.08	314.1	-4.78	334.7	-4.78	347.6	-4.38	360.5
GR	-4.57	368.2	-4.50	375.9	-4.27	381.1	-4.47	383.6	-4.86	396.5
GR	-4.47	399.1	-4.47	409.4	-4.97	417.1	-4.28	422.3	-4.08	432.6
GR	-3.97	437.7	-4.28	448.0	-3.98	455.8	-4.28	481.5	-3.97	491.8
GR	-4.28	497.0	-4.28	504.7	-4.47	512.4	-4.47	517.6	-4.28	525.3
GR	-4.49	535.6	-4.49	543.3	-4.27	548.5	-4.27	561.4	-4.27	563.9
GR	-6.58	582.0	-5.97	589.7	-3.89	594.8	-3.97	607.7	-5.08	612.9
GR	-8.47	643.8	-8.99	654.1	-10.78	669.5	-10.78	677.3	-12.47	687.6
GR	-10.97	690.1	-10.78	697.9	-10.40	705.6	-9.78	715.9	-9.78	744.2
GR	-10.39	752.0	-10.39	759.7	-11.27	764.8	-11.27	772.6	-11.10	777.7
GR	-11.20	782.9	-12.07	790.6	-12.28	798.3	-13.28	811.2	-14.28	824.1
GR	-14.28	834.4	-14.57	844.7	-14.68	855.0	-12.27	865.3	-11.27	873.0
GR	-11.48	878.2	-12.48	891.0	-13.08	903.9	-12.78	916.8	-11.07	929.7
GR	-10.97	934.8	-11.49	942.5	-11.49	950.3	-10.27	981.2	-9.78	1019.8
GR	-9.78	1025.0	-9.98	1030.1	-9.27	1037.8	-7.78	1050.7	-7.28	1068.7
GR	-6.78	1115.1	-6.97	1148.6	-7.18	1189.8	-7.28	1228.4	-7.28	1251.6
GR	-7.48	1277.4	-7.18	1287.7	-6.57	1295.4	-6.48	1300.6	-6.27	1323.7
GR	-2.58	1352.1	-.77	1388.1	-.77	1401.0	-.28	1405.0	.22	1412.0
GR	.42	1416.0	1.02	1421.0	1.12	1427.0	.92	1432.0	1.12	1439.0
GR	.72	1446.0	1.12	1451.0	.52	1512.0	.22	1563.0	.02	1598.0
GR	.22	1621.0	.52	1673.0	1.22	1681.0	5.05	1683.5	5.05	1685.5
GR	4.11	1714.5	4.21	1723.0	4.21	1732.0	5.41	1735.0	6.79	1741.5
GR	6.83	1750.8	2.61	1767.5	2.61	1769.5	2.91	1770.5	2.91	1784.5
GR	3.91	1789.5	3.91	1792.5	3.51	1797.5	3.51	1852.0		
X1	.72	113	29.00	1643.30	370.00	370.00	370.00			
GR	13.55	.0	15.15	29.0	4.85	50.0	4.85	56.0	3.72	71.0
GR	1.22	87.5	-.58	99.5	-2.78	114.0	-3.18	117.5	-3.18	126.5
GR	-4.57	139.9	-4.28	148.8	-4.28	162.3	-3.78	189.1	-4.48	211.5
GR	-4.37	220.4	-4.79	233.9	-4.79	247.3	-5.48	256.3	-4.98	269.7
GR	-4.47	287.6	-4.58	310.0	-4.79	318.9	-4.28	332.3	-4.98	341.3
GR	-4.47	368.1	-4.97	377.1	-4.59	381.6	-4.38	390.5	-4.58	408.4
GR	-4.98	417.4	-4.48	426.3	-4.48	453.2	-4.97	462.1	-4.97	466.6
GR	-4.78	480.0	-4.68	484.5	-5.08	497.9	-4.78	506.9	-4.48	515.8
GR	-4.78	529.3	-5.28	542.7	-5.48	547.2	-4.98	556.1	-5.18	560.6
GR	-5.18	574.0	-4.88	578.5	-5.28	591.9	-4.88	600.9	-5.38	605.4
GR	-5.58	614.3	-5.08	618.8	-5.98	632.2	-5.78	636.7	-5.98	645.6
GR	-5.28	650.1	-5.58	659.1	-5.58	677.0	-6.08	690.4	-5.28	699.3
GR	-5.58	708.3	-5.08	721.7	-5.28	739.6	-5.08	753.0	-5.08	770.9
GR	-5.78	793.3	-7.28	802.3	-7.48	820.2	-8.38	829.1	-8.38	838.1
GR	-7.98	851.5	-8.38	873.9	-6.08	887.3	-6.08	918.6	-7.08	941.0
GR	-6.48	981.3	-5.38	1039.5	-4.08	1111.1	-4.78	1120.1	-3.98	1129.0
GR	-4.58	1133.5	-3.98	1142.4	-3.98	1160.3	-3.78	1169.3	-4.38	1191.7
GR	-4.78	1218.5	-7.48	1263.3	-9.18	1294.6	-10.08	1308.0	-9.18	1325.9
GR	-6.48	1343.8	-6.78	1352.8	-8.08	1379.6	-8.08	1388.6	-6.88	1406.5

```
GR -4.98  1451.2   -2.48  1464.7    -.38  1496.0    -.08  1529.0     .22  1551.0
GR   .92  1556.0     .42  1566.0     .52  1577.0     .62  1591.0    1.22  1596.0
GR  4.43  1610.5    5.08  1628.5    7.95  1643.3    8.03  1654.5    2.15  1664.0
GR  2.15  1665.0    3.35  1666.5    3.35  1806.0
X1  1.14       89 257.00 1621.50  420.00  420.00  420.00
GR 16.14       .0    9.94    20.5    7.64    25.2    7.64    26.7    8.67    29.0
GR  8.68      49.0    8.68    50.0    7.38    54.2    8.05    58.5    7.59   228.5
GR  6.78   257.0    3.42   267.6    3.42   271.5    1.23   273.0    -.07   276.0
GR  -.77   281.0   -1.17   283.0   -1.57   309.4   -2.57   346.4   -2.87   399.2
GR -3.37   415.1   -4.47   441.5   -4.17   446.8   -3.97   457.4   -3.97   478.5
GR -4.47   494.4   -4.77   504.9   -4.77   515.5   -4.57   526.1   -5.27   547.2
GR -4.77   557.8   -4.97   573.6   -5.77   584.2   -4.97   600.0   -6.17   615.9
GR -5.67   642.3   -6.27   647.6   -5.77   658.1   -6.77   674.0   -5.77   695.1
GR -6.37   732.1   -6.97   753.3   -6.77   769.1   -5.97   790.2   -5.27   811.4
GR -5.27   832.5   -4.77   853.7   -4.47   864.2   -5.07   885.4   -4.57   895.9
GR -7.27   975.2   -7.47   991.0   -6.27  1017.4   -7.77  1033.3   -5.77  1043.9
GR -6.57  1059.7   -6.27  1065.0   -6.27  1080.9   -7.07  1091.4   -6.27  1102.0
GR -5.57  1112.6   -5.87  1128.4   -5.77  1165.4   -5.97  1186.5   -5.97  1207.7
GR -5.37  1244.7   -5.07  1313.3   -4.37  1350.3   -2.77  1392.6   -2.27  1408.4
GR -1.07  1456.0    -.77  1460.0    -.07  1468.0     .23  1474.0    1.23  1476.0
GR  3.50  1566.5    4.45  1568.5    4.30  1609.0    3.90  1609.0    3.90  1609.4
GR  4.30  1609.4    4.69  1615.5    5.02  1616.5    5.02  1617.5    6.72  1621.5
GR  7.31  1626.5    7.23  1636.0    3.12  1644.0    3.12  1726.0
X1  1.48       50     .00 1024.50  340.00  340.00  340.00
GR 16.43       .0   11.43     4.0    3.63     8.0    3.43    10.0    2.89    16.5
GR  1.24     17.5    -.76    19.0   -2.26    24.0   -2.76    25.5   -1.96    63.0
GR -2.76     81.7   -2.96    91.0   -4.06   128.5   -4.06   137.9   -4.26   147.2
GR -4.26   194.1   -5.16   203.4   -5.36   222.1   -5.76   240.9   -6.16   250.2
GR -5.96   287.7   -7.06   297.1   -7.26   306.4   -6.86   315.8   -6.86   325.1
GR -7.06   372.0   -7.46   390.7   -7.26   390.7   -9.06   400.1   -7.16   400.1
GR -7.06   409.4   -8.96   428.2   -6.56   437.5   -5.06   484.3   -3.86   549.9
GR -5.46   624.8   -5.66   652.9   -6.26   671.6   -6.36   681.0   -7.16   690.3
GR -6.96   699.7  -10.56   784.0  -11.06   830.8   -3.46   990.0   -3.26   993.0
GR  -.76   996.0    1.24   997.5    2.77  1006.5   10.85  1011.7   12.83  1024.5
X1  2.02       86 340.60 1620.00  540.00  540.00  540.00
GR  3.68       .0    3.68   100.0    5.15   104.0    5.34   124.5    3.76   128.5
GR  3.39   131.2    3.39   132.2    5.39   135.9    5.39   138.5    3.89   272.2
GR  5.36   276.5    7.89   340.6    6.89   343.1    5.00   361.6    3.40   365.0
GR  2.99   393.1    1.24   395.3   -1.26   398.5   -3.26   401.5   -3.46   402.5
GR -4.26   436.0   -4.46   442.7   -4.36   462.8   -5.36   476.2   -5.36   482.9
GR -5.46   489.6   -5.56   509.6   -5.46   516.4   -7.66   650.4   -7.86   657.1
GR -7.86   663.8   -9.56   677.0   -7.86   683.7   -8.36   690.4   -7.46   703.8
GR -7.56   717.2   -7.46   730.6   -7.46   744.0   -6.36   790.9   -6.36   797.6
GR -5.96   804.3   -4.06   958.3   -4.46  1085.5   -4.96  1105.6   -5.06  1119.0
GR -4.96  1125.7   -5.16  1132.4   -4.96  1139.1   -5.26  1145.8   -5.06  1152.5
GR -5.16  1165.9   -5.06  1172.6   -5.16  1179.3   -5.06  1199.3   -4.56  1219.4
GR -4.96  1239.5   -5.46  1279.7   -5.96  1299.8   -4.76  1340.0   -4.56  1373.4
GR -2.76  1406.9   -2.26  1413.6   -2.16  1420.3   -1.56  1427.0   -1.46  1440.4
GR -1.16  1460.5    -.76  1478.5    -.26  1528.5     .54  1536.5     .64  1548.5
GR   .54  1559.5    1.24  1560.8    2.39  1570.9    2.89  1572.6    2.89  1574.6
GR  3.69  1580.0    2.99  1581.5    2.99  1612.1    4.39  1615.3    6.42  1620.0
GR  6.42  1621.5    6.60  1631.1    2.29  1639.6    2.29  1642.1    3.29  1643.1
GR  3.29  1740.6
X1  2.45      113  88.80 1622.50  430.00  430.00  430.00
GR 23.25       .0    5.99    50.0    6.20    61.4    7.25    63.0    7.25    64.0
GR  7.25     64.5    5.49    67.9    5.49    68.4    6.17    70.3    6.22    79.4
GR  4.97     81.5    4.97    83.0    5.81    83.8    5.81    88.8    5.08    90.2
GR  3.95   165.0    4.05   165.7    4.05   167.2    2.85   169.0    2.85   173.0
GR  3.55   173.3    3.35   187.4    3.25   189.3    3.25   191.3    3.25   192.3
GR  2.55   235.8    1.24   236.9    -.26   239.0   -1.76   245.0   -2.26   247.0
GR -2.56   260.1   -5.06   292.8   -4.96   299.3   -5.26   338.6   -5.46   377.8
GR -5.66   404.0   -5.56   443.3   -6.36   495.6   -6.36   528.3   -7.06   534.8
GR -7.06   541.4   -6.36   554.5   -7.16   567.6   -6.26   587.2   -6.06   593.7
GR -5.46   600.3   -5.76   606.8   -4.86   619.9   -5.06   626.4   -4.66   633.0
GR -5.06   639.5   -4.36   652.6   -4.36   672.2   -4.06   678.8   -4.96   691.9
GR -3.96   711.5   -3.86   718.0   -4.76   724.6   -4.06   737.6   -2.86   750.7
GR -3.16   822.7   -3.06   875.0   -3.36   914.3   -4.16   947.0   -4.76   966.6
GR -5.26   973.2   -5.06   979.7   -4.66   986.2   -5.06   986.2   -4.66   992.8
GR -4.96   999.3   -4.86  1005.9   -4.56  1012.4   -4.06  1032.0   -3.36  1084.4
GR -2.46  1143.3   -2.16  1169.4   -2.16  1182.5   -2.06  1195.6   -2.16  1254.5
GR -2.06  1306.8   -2.86  1346.1   -2.76  1352.6   -2.86  1359.1   -2.86  1372.2
GR -3.26  1411.5   -3.46  1418.0   -3.16  1424.6   -3.26  1450.7   -2.76  1463.8
GR -1.16  1483.4    -.76  1503.0    -.46  1515.0    -.36  1523.0     .24  1526.0
GR   .54  1529.0     .44  1539.0    1.24  1543.0    1.75  1550.5    2.88  1552.6
GR  2.88  1556.0    3.93  1557.4    3.93  1559.5    3.14  1560.5    3.14  1609.5
GR  4.64  1613.1    4.64  1618.1    6.71  1622.5    6.65  1631.7    1.75  1640.5
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GR	1.75	1642.0	3.25	1644.6	3.25	1744.0				
X1	2.92	127	125.10	1619.90	470.00	470.00	470.00			
GR	2.97	.0	2.97	100.0	3.65	101.9	7.51	116.1	7.60	125.1
GR	3.56	134.5	1.24	193.9	-1.76	196.1	-5.26	202.1	-5.66	204.1
GR	-4.66	221.9	-4.46	239.7	-6.76	263.5	-4.76	281.3	-6.26	299.1
GR	-5.35	311.0	-5.97	316.9	-5.76	322.9	-6.26	334.7	-6.26	340.7
GR	-6.35	352.5	-4.26	376.3	-6.36	388.2	-4.36	406.0	-6.75	429.7
GR	-5.46	447.5	-5.86	459.4	-5.25	465.4	-5.75	471.3	-6.26	489.1
GR	-5.96	489.1	-6.66	495.0	-6.15	501.0	-6.46	506.9	-5.86	512.9
GR	-5.26	530.7	-5.65	542.5	-5.26	566.3	-5.66	578.2	-4.95	590.0
GR	-5.46	596.0	-4.76	601.9	-5.26	607.9	-4.56	619.7	-5.05	625.7
GR	-4.46	631.6	-4.95	637.5	-4.56	643.5	-4.46	655.4	-3.96	667.2
GR	-4.45	673.2	-3.76	679.1	-4.46	685.0	-2.95	696.9	-3.46	720.7
GR	-3.76	768.2	-3.76	833.5	-4.26	857.2	-4.26	869.1	-4.06	875.0
GR	-3.26	892.9	-3.76	898.8	-3.45	904.7	-2.76	928.5	-1.75	958.2
GR	-1.75	976.0	-1.56	981.9	-1.46	1005.7	-1.36	1023.5	-1.26	1041.3
GR	-.96	1100.7	-1.26	1166.0	-.96	1177.9	-.76	1189.7	-.65	1201.6
GR	-.36	1219.4	-.26	1231.3	-.26	1237.2	-.16	1243.2	-.16	1249.1
GR	-.05	1255.0	-.16	1266.9	-.16	1272.9	-.26	1284.7	-.56	1296.6
GR	-.76	1302.5	-.56	1308.5	-.76	1320.4	-.86	1326.3	-.86	1338.2
GR	-1.26	1344.1	-1.06	1356.0	-1.26	1361.9	-.96	1367.9	-1.16	1373.8
GR	-1.16	1379.7	-1.26	1385.7	-1.56	1391.6	-.96	1397.5	-1.86	1403.5
GR	-1.06	1409.4	-1.86	1421.3	-2.16	1433.2	-2.26	1439.1	-1.56	1445.0
GR	-2.56	1451.0	-2.16	1456.9	-2.56	1468.8	-2.76	1474.7	-2.95	1492.5
GR	-3.46	1504.4	-4.26	1546.0	-4.26	1551.9	-4.36	1581.6	-3.76	1585.1
GR	-2.76	1588.1	1.24	1591.6	2.39	1592.7	3.40	1609.3	4.45	1611.9
GR	5.37	1614.1	5.37	1617.1	6.82	1619.9	6.60	1630.1	2.90	1639.4
GR	2.90	1644.4	3.70	1645.4						
X1	3.33	115	100.50	1613.50	410.00	410.00	410.00			
GR	6.02	.0	6.02	70.5	6.08	82.0	4.88	83.5	4.88	85.0
GR	7.48	89.0	7.48	90.0	7.48	90.5	6.98	90.5	7.52	100.5
GR	3.68	109.3	2.58	124.3	1.25	126.0	-3.75	126.0	-4.85	138.1
GR	-4.85	144.2	-3.65	156.3	-3.75	162.4	-4.15	174.6	-4.05	180.6
GR	-5.25	192.8	-5.55	204.9	-5.15	211.0	-5.65	217.0	-5.25	223.1
GR	-5.75	229.2	-5.85	241.3	-5.45	247.4	-4.85	253.4	-5.15	259.5
GR	-6.75	277.7	-6.55	283.8	-5.85	302.0	-6.75	308.1	-5.75	320.2
GR	-6.35	326.3	-5.75	350.6	-7.25	368.8	-6.35	380.9	-6.05	393.0
GR	-5.95	411.2	-6.55	417.3	-5.45	429.4	-6.55	441.6	-5.25	447.7
GR	-5.85	459.8	-6.45	471.9	-6.25	478.0	-6.55	484.1	-6.25	490.1
GR	-6.55	496.2	-6.15	502.3	-6.25	514.4	-5.95	526.6	-5.85	538.7
GR	-5.55	550.8	-5.45	563.0	-5.05	569.0	-5.45	575.1	-4.95	587.2
GR	-5.25	593.3	-4.75	599.4	-5.75	605.5	-4.05	623.7	-3.75	629.7
GR	-4.45	635.8	-3.65	654.0	-3.85	708.6	-3.85	720.8	-3.45	763.2
GR	-.35	915.0	-.05	925.0	.05	966.0	.05	991.0	.15	1011.0
GR	.55	1024.0	.35	1066.0	.25	1088.0	.25	1110.0	.25	1118.0
GR	-.75	1254.1	-.75	1324.5	-.65	1390.3	-3.75	1498.2	-4.55	1517.0
GR	-4.25	1521.7	-4.65	1535.8	-.65	1549.8	-.55	1563.9	-.35	1578.0
GR	-.05	1582.0	.25	1586.0	1.25	1588.3	2.56	1589.5	2.56	1592.5
GR	3.25	1594.7	3.42	1602.2	3.42	1604.2	4.32	1605.7	5.63	1608.7
GR	5.63	1611.2	6.58	1613.5	6.78	1622.7	3.48	1628.2	3.48	1630.2
GR	1.98	1632.2	1.98	1635.2	3.18	1636.2	3.18	1639.5	3.58	1640.7
GR	3.58	1643.2	2.68	1646.0	2.68	1646.3	3.18	1646.8	3.18	1746.8
X1	3.78	113	100.00	1485.00	450.00	450.00	450.00			
GR	6.69	.0	6.69	50.5	11.10	57.0	7.65	65.5	7.53	71.7
GR	4.86	75.0	4.86	77.0	5.93	78.0	5.93	80.3	4.09	82.9
GR	4.09	85.4	7.29	90.2	6.79	100.0	4.48	105.6	3.90	111.5
GR	3.17	114.0	2.36	125.3	1.25	126.8	-.25	128.0	-1.25	135.0
GR	-1.55	137.0	-4.05	167.9	-4.25	183.4	-4.25	198.8	-4.35	214.3
GR	-4.05	229.7	-2.55	353.3	-1.85	446.0	-.35	554.2	-.85	569.6
GR	-.25	616.0	-.05	755.0	.15	817.0	.45	820.0	.55	823.0
GR	1.25	830.0	2.93	845.0	2.63	1090.0	1.25	1103.0	.25	1109.0
GR	-.15	1111.0	-.25	1125.0	-.45	1130.0	-.85	1133.0	-1.75	1149.7
GR	-2.75	1186.3	-3.05	1206.3	-3.85	1232.9	-3.95	1239.6	-3.95	1246.2
GR	-4.75	1252.9	-4.45	1256.2	-5.05	1262.9	-5.75	1266.2	-5.95	1272.9
GR	-6.55	1276.2	-6.05	1282.9	-6.25	1286.2	-7.05	1289.5	-6.45	1292.9
GR	-6.95	1299.5	-6.55	1302.8	-6.95	1306.2	-7.05	1309.5	-6.55	1312.8
GR	-6.95	1316.2	-7.25	1319.5	-6.75	1322.8	-7.45	1326.1	-7.55	1332.8
GR	-7.55	1336.1	-7.95	1339.5	-8.05	1342.8	-8.45	1346.1	-8.25	1349.5
GR	-8.45	1349.5	-8.05	1352.8	-8.75	1356.1	-7.75	1362.8	-8.35	1366.1
GR	-7.95	1369.6	-9.05	1376.1	-7.95	1379.4	-8.25	1379.4	-7.95	1382.8
GR	-8.25	1386.1	-8.55	1392.7	-7.65	1396.1	-7.45	1402.7	-7.25	1406.1
GR	-7.05	1409.4	-7.85	1412.7	-6.75	1416.1	-5.35	1422.7	-6.25	1426.0
GR	-5.65	1432.7	-5.95	1436.0	-5.25	1439.4	-1.45	1449.4	-.85	1459.5
GR	-.45	1463.0	-.25	1465.0	-.05	1467.0	1.25	1469.5	3.19	1472.0
GR	3.19	1475.5	5.00	1480.0	7.23	1485.0	7.14	1492.0	5.99	1495.7
GR	5.99	1497.1	10.30	1504.2	15.30	1576.2				

```
X1  4.24     123    93.00 1445.90   460.00   460.00   460.00
GR  3.35      .0     3.86    1.0     3.86      4.5     3.05      5.9     4.05     46.0
GR  7.09    53.1     6.75   64.0     5.63     68.7     5.58     93.0     1.26     97.1
GR   .06    99.0    -1.24  101.0    -2.14    102.0    -2.24    107.4    -2.94    118.2
GR-10.74   161.4   -10.94  166.8   -11.04    172.2    -9.54    193.8    -9.24    204.6
GR -9.94   215.4    -9.74  220.8    -9.44    231.6    -9.74    242.4    -9.54    253.2
GR-10.04   258.6   -10.54  264.0    -9.94    274.8   -10.54    280.2   -10.34    285.6
GR-10.64   291.0   -10.04  296.4   -10.54    312.6    -9.52    324.8    -8.74    334.2
GR -9.04   350.4    -8.14  355.8    -7.34    366.6    -7.74    372.0    -7.24    377.4
GR -7.34   382.8    -6.84  393.6    -6.24    409.8    -5.74    415.2    -6.04    420.6
GR -4.44   431.4    -5.44  436.8    -3.74    447.6    -2.24    474.6    -2.24    480.0
GR -1.74   485.4    -2.74  490.8    -1.74    496.2    -1.54    507.0    -1.64    512.4
GR -1.24   523.2    -1.84  528.6     -.84    534.0     -.94    544.8    -2.04    561.0
GR -1.14   571.8    -1.84  577.2     -.94    593.4    -1.34    598.8     -.64    609.6
GR  -.94   615.0     -.14  625.8     -.54    642.0     -.14    669.0     -.04    675.0
GR   .26   690.0     1.26  694.0     3.15    709.0     3.10   1096.0     1.26   1106.0
GR   .46  1108.0      .56 1110.0      .56   1111.0      .26   1114.0      .16   1116.0
GR  -.74  1122.4    -1.74 1135.3    -1.24   1141.7    -1.74   1148.2    -1.14   1154.6
GR -1.64  1167.5    -2.14 1173.9    -1.84   1180.3    -2.04   1199.6    -1.54   1231.8
GR -1.54  1238.2    -1.54 1257.5    -2.64   1276.8    -2.84   1283.2    -3.34   1296.1
GR -2.94  1302.5    -3.34 1309.0    -3.04   1321.8    -2.74   1328.3    -2.04   1341.1
GR -1.74  1354.0    -1.24 1356.0      .26   1360.0     1.26   1361.3     2.45   1361.5
GR  2.45  1362.5     2.95 1365.8     4.75   1366.7     4.75   1367.7     2.45   1371.2
GR  2.45  1433.2     5.00 1440.3     7.29   1445.9     7.29   1449.1     6.87   1454.6
GR  4.95  1458.8     4.95 1460.8     2.15   1466.0     2.15   1467.0     3.45   1469.0
GR  3.45  1469.5     2.75 1470.0     2.75   1534.0
X1  4.57     139   335.10 1696.30  327.00   327.00   327.00
GR 22.72      .0    22.48   86.1    22.26     93.8    18.86     93.8    18.86     95.4
GR 17.66    95.4    17.66   96.4     9.08    120.2     9.08    120.7     9.68    120.7
GR  7.28   144.3     5.58  194.3     4.77    244.3     4.45    294.3     4.68    319.1
GR  6.65   324.8     6.83  335.1     4.23    344.3     4.23    371.3     1.26    373.8
GR -2.74   376.1    -7.74  383.1    -9.24    394.3   -12.24    403.8    -8.54    433.8
GR-10.24   444.3    -6.94  460.5    -7.24    471.6    -7.54    482.7    -8.34    488.2
GR -8.04   494.3    -8.94  503.8    -8.74    513.8    -8.64    518.8    -9.04    528.8
GR -9.24   538.8    -9.04  544.3    -9.64    556.3    -9.54    568.8    -9.04    581.3
GR -8.84   587.6    -9.24  594.3    -8.64    607.4    -7.54    616.5    -7.64    621.1
GR -6.94   644.3    -6.14  658.1    -4.84    679.5    -6.04    694.3    -4.24    710.5
GR -4.54   716.0    -2.44  727.1    -2.04    732.7    -2.54    744.3    -1.54    754.9
GR -1.94   760.5    -2.14  766.0    -1.34    771.6    -2.34    777.1    -1.04    788.2
GR -1.74   794.3    -1.54  803.8    -3.94    823.8    -2.34    844.3    -1.84    853.8
GR -2.44   860.5     -.44  867.1     -.44    880.5     -.44    887.1     -.14    894.3
GR   .06   903.8     -.04  944.3      .26    994.3      .26   1002.1      .56   1024.1
GR  1.26  1024.5     1.80 1044.3     2.20   1094.3     2.26   1144.3     2.00   1194.3
GR  1.70  1244.3     1.26 1258.8      .26   1281.1     -.24   1294.3     -.54   1299.7
GR  -.14  1305.6    -5.94 1323.2    -7.24   1329.1    -3.74   1337.9    -3.54   1344.3
GR -3.54  1350.9    -1.54 1358.1    -1.54   1361.7    -1.84   1368.8    -2.34   1372.4
GR -2.74  1379.5    -3.34 1383.1    -3.04   1386.7    -4.24   1390.2    -3.74   1394.3
GR -2.74  1397.7    -3.34 1409.2    -4.34   1416.9    -5.24   1424.6    -1.44   1440.0
GR -1.94  1444.3     -.04 1451.5     -.14   1455.3     -.24   1466.9    -1.54   1482.3
GR -1.14  1490.0     -.94 1494.3      .26   1544.3     1.26   1544.9     3.15   1550.5
GR  3.47  1560.1     3.47 1562.1     2.48   1568.6     2.48   1594.3     2.38   1644.3
GR  2.87  1684.6     5.08 1690.6     6.48   1694.3     7.05   1696.3     8.05   1701.1
GR  5.78  1705.1     5.78 1708.6     3.68   1713.6     2.58   1715.6     2.58   1717.6
GR  3.78  1718.4     6.34 1722.7     8.84   1734.7     9.43   1743.2    10.60   1743.2
GR 10.60  1744.8    14.00 1744.8    14.01   1758.1    14.00   1856.1
X1  4.59     139   335.10 1696.30  26.00    26.00    26.00
GR 22.72      .0    22.48   86.1    22.26     93.8    18.86     93.8    18.86     95.4
GR 17.66    95.4    17.66   96.4     9.08    120.2     9.08    120.7     9.68    120.7
GR  7.28   144.3     5.58  194.3     4.77    244.3     4.45    294.3     4.68    319.1
GR  6.65   324.8     6.83  335.1     4.23    344.3     4.23    371.3     1.26    373.8
GR -2.74   376.1    -7.74  383.1    -9.24    394.3   -12.24    403.8    -8.54    433.8
GR-10.24   444.3    -6.94  460.5    -7.24    471.6    -7.54    482.7    -8.34    488.2
GR -8.04   494.3    -8.94  503.8    -8.74    513.8    -8.64    518.8    -9.04    528.8
GR -9.24   538.8    -9.04  544.3    -9.64    556.3    -9.54    568.8    -9.04    581.3
GR -8.84   587.6    -9.24  594.3    -8.64    607.4    -7.54    616.5    -7.64    621.1
GR -6.94   644.3    -6.14  658.1    -4.84    679.5    -6.04    694.3    -4.24    710.5
GR -4.54   716.0    -2.44  727.1    -2.04    732.7    -2.54    744.3    -1.54    754.9
GR -1.94   760.5    -2.14  766.0    -1.34    771.6    -2.34    777.1    -1.04    788.2
GR -1.74   794.3    -1.54  803.8    -3.94    823.8    -2.34    844.3    -1.84    853.8
GR -2.44   860.5     -.44  867.1     -.44    880.5     -.44    887.1     -.14    894.3
GR   .06   903.8     -.04  944.3      .26    994.3      .26   1002.1      .56   1024.1
GR  1.26  1024.5     1.80 1044.3     2.20   1094.3     2.26   1144.3     2.00   1194.3
GR  1.70  1244.3     1.26 1258.8      .26   1281.1     -.24   1294.3     -.54   1299.7
GR  -.14  1305.6    -5.94 1323.2    -7.24   1329.1    -3.74   1337.9    -3.54   1344.3
GR -3.54  1350.9    -1.54 1358.1    -1.54   1361.7    -1.84   1368.8    -2.34   1372.4
GR -2.74  1379.5    -3.34 1383.1    -3.04   1386.7    -4.24   1390.2    -3.74   1394.3
```

GR	-2.74	1397.7	-3.34	1409.2	-4.34	1416.9	-5.24	1424.6	-1.44	1440.0
GR	-1.94	1444.3	-.04	1451.5	-.14	1455.3	-.24	1466.9	-1.54	1482.3
GR	-1.14	1490.0	-.94	1494.3	.26	1544.3	1.26	1544.9	3.15	1550.5
GR	3.47	1560.1	3.47	1562.1	2.48	1568.6	2.48	1594.3	2.38	1644.3
GR	2.87	1684.6	5.08	1690.6	6.48	1694.3	7.05	1696.3	8.05	1701.1
GR	5.78	1705.1	5.78	1708.6	3.68	1713.6	2.58	1715.6	2.58	1717.6
GR	3.78	1718.4	6.34	1722.7	8.84	1734.7	9.43	1743.2	10.60	1743.2
GR	10.60	1744.8	14.00	1744.8	14.01	1758.1	14.00	1856.1		
X1	4.86	128	55.00	1479.60	267.00	267.00	267.00			
GR	16.27	.0	5.67	9.0	5.77	9.8	6.79	10.6	6.96	40.3
GR	6.65	41.1	7.36	55.0	4.08	64.0	4.02	110.3	1.26	113.4
GR	.06	118.0	-.74	131.0	-1.34	133.0	-1.24	154.3	-1.94	182.6
GR	-3.04	246.4	-4.34	267.7	-5.04	281.9	-4.84	288.9	-7.54	324.4
GR	-8.44	331.5	-8.74	345.6	-9.74	352.7	-9.14	359.8	-9.54	366.9
GR	-9.24	374.0	-9.74	381.1	-9.24	402.4	-9.34	416.5	-9.14	423.6
GR	-9.14	437.8	-9.54	444.9	-9.14	444.9	-8.74	459.1	-7.24	473.2
GR	-7.44	480.3	-7.04	487.4	-6.54	501.6	-5.74	508.7	-3.74	537.0
GR	-2.74	551.2	-2.44	572.5	-2.74	579.6	-2.04	586.6	-2.24	593.7
GR	-1.44	600.8	-1.24	615.0	-1.24	622.1	-.94	622.1	-1.44	636.1
GR	-.74	650.4	-1.04	657.5	-.94	664.6	-.34	678.8	-.34	721.3
GR	-.04	728.4	-.54	735.5	.06	742.6	-.74	749.7	.06	763.8
GR	.06	778.0	-.54	792.2	-.54	806.4	-.24	820.6	-.94	834.7
GR	-.34	848.9	-.74	856.0	-.24	866.0	.26	882.0	1.26	885.0
GR	2.36	895.0	2.26	971.0	1.26	983.0	.26	985.0	-.34	986.0
GR	-.44	987.0	-1.34	988.0	-1.34	993.8	-1.34	999.6	-1.34	1005.4
GR	-1.54	1011.2	-1.54	1022.8	-1.94	1034.4	-1.54	1034.4	-1.94	1040.2
GR	-1.74	1046.0	-1.94	1051.8	-1.74	1057.6	-1.94	1063.4	-1.64	1069.2
GR	-2.24	1075.0	-1.54	1086.6	-1.94	1092.4	-1.74	1098.2	-2.14	1104.0
GR	-1.74	1115.6	-1.74	1121.4	-2.14	1127.2	-2.04	1133.0	-2.04	1138.8
GR	-1.44	1144.6	-1.94	1156.2	-.94	1167.8	-.84	1173.6	-.64	1266.4
GR	-.54	1278.0	-.24	1285.0	.26	1295.0	1.26	1298.0	2.54	1303.2
GR	2.54	1308.0	3.03	1309.2	3.03	1311.5	3.68	1312.5	3.68	1313.5
GR	2.34	1314.5	2.34	1467.3	5.04	1473.5	7.34	1479.6	7.34	1484.5
GR	4.96	1489.0	4.96	1492.0	3.96	1494.2	3.96	1497.0	2.36	1499.0
GR	2.36	1500.5	2.74	1502.5	2.74	1605.0				
X1	5.39	161	45.10	1462.00	530.00	530.00	530.00			
GR	2.88	.0	4.01	2.1	3.91	10.1	3.48	10.8	3.48	12.3
GR	1.81	14.8	1.81	26.6	2.31	34.0	6.81	39.1	6.81	45.1
GR	4.71	49.9	2.31	55.7	2.32	60.9	3.02	61.9	3.02	63.9
GR	1.26	66.8	-.74	72.1	-2.74	75.1	-3.34	77.1	-4.54	89.0
GR	-5.24	101.0	-4.74	112.9	-4.94	124.8	-4.84	136.7	-5.54	148.7
GR	-5.34	154.6	-6.24	166.6	-6.34	178.5	-5.94	196.4	-6.04	214.3
GR	-5.74	220.2	-6.54	226.2	-5.14	232.1	-5.74	238.1	-4.74	250.0
GR	-5.34	262.0	-5.04	267.9	-4.84	273.9	-5.34	279.9	-4.94	285.8
GR	-4.34	291.8	-4.74	297.7	-4.14	303.7	-4.44	309.7	-4.05	315.6
GR	-4.55	327.6	-3.85	333.5	-3.34	345.5	-3.34	351.4	-3.04	369.3
GR	-3.24	381.2	-2.94	399.1	-5.74	440.9	-7.14	476.6	-8.04	494.5
GR	-8.14	500.5	-8.04	506.5	-8.34	524.4	-8.14	530.3	-7.64	536.3
GR	-7.84	548.2	-7.43	554.2	-5.75	572.1	-5.64	578.0	-5.54	590.0
GR	-5.04	595.9	-5.64	601.9	-5.14	607.8	-5.64	613.8	-5.44	619.8
GR	-6.34	625.7	-5.94	631.7	-5.74	661.5	-6.24	667.5	-5.43	679.4
GR	-6.45	697.3	-5.54	703.3	-6.04	709.2	-5.74	715.2	-5.94	721.1
GR	-4.44	745.0	-4.24	756.9	-3.74	762.9	-4.04	774.8	-3.54	786.7
GR	-3.34	798.7	-3.45	804.6	-3.04	816.6	-3.25	822.5	-2.73	834.5
GR	-2.73	846.4	-2.05	852.3	-2.64	858.3	-2.04	888.1	-2.04	894.1
GR	-2.25	900.0	-1.94	906.0	-2.44	912.0	-1.94	917.9	-1.94	929.9
GR	-1.84	935.8	-2.04	941.8	-1.74	947.8	-2.24	953.7	-1.74	959.7
GR	-1.84	971.6	-2.14	977.6	-1.84	983.5	-1.64	989.5	-1.64	1013.4
GR	-1.94	1019.3	-1.34	1037.2	-2.04	1043.2	-1.14	1049.1	-1.94	1055.1
GR	-1.25	1061.1	-1.14	1067.0	-1.55	1073.0	-1.14	1078.9	-1.04	1090.9
GR	-.84	1102.8	-1.24	1108.8	-.94	1114.7	-.84	1120.7	-1.15	1132.6
GR	-.74	1138.6	-1.04	1144.5	-.74	1150.5	-.94	1156.5	-.74	1162.4
GR	-.74	1168.4	-1.54	1174.4	-1.14	1180.3	-.74	1186.3	-.94	1192.3
GR	-.34	1198.2	-.34	1216.1	-.24	1223.1	-.04	1229.1	.26	1242.1
GR	.46	1245.1	1.26	1246.6	3.45	1250.3	3.45	1271.9	5.01	1273.9
GR	5.01	1276.4	2.91	1280.1	2.91	1416.1	2.41	1417.1	2.41	1418.6
GR	2.81	1419.8	2.81	1450.1	4.91	1456.6	7.16	1462.0	7.50	1467.5
GR	5.02	1473.0	5.02	1476.5	3.72	1481.5	2.42	1483.5	2.42	1484.5
GR	3.32	1487.0								
X1	6.11	131	177.00	1325.00	720.00	720.00	720.00			
GR	2.80	.0	2.80	99.1	2.53	99.1	2.53	133.3	4.09	136.0
GR	4.09	144.0	1.57	149.0	1.57	160.5	3.29	161.0	3.29	163.5
GR	6.99	171.0	6.99	177.0	4.91	182.0	2.79	187.5	3.74	202.0
GR	3.14	203.0	1.27	207.5	-1.73	210.0	-4.73	216.0	-5.53	217.0
GR	-5.43	236.5	-6.03	243.0	-6.13	249.5	-5.33	262.5	-5.53	275.4
GR	-5.33	288.4	-5.53	301.4	-4.73	307.9	-4.53	314.4	-3.93	320.9

GR	-3.53	327.4	-3.93	333.9	-3.73	340.4	-3.83	346.9	-3.33	353.4
GR	-3.13	359.9	-3.53	366.4	-3.53	385.8	-3.43	392.3	-3.53	398.8
GR	-4.33	405.3	-3.73	411.8	-4.43	418.3	-4.23	444.3	-4.43	457.3
GR	-4.53	463.8	-5.03	476.8	-4.73	483.3	-4.53	489.7	-4.23	502.7
GR	-4.03	515.7	-4.03	522.2	-3.93	535.2	-4.23	541.7	-3.93	548.2
GR	-5.03	561.2	-3.93	574.2	-4.23	580.7	-4.13	587.2	-3.73	593.7
GR	-3.93	600.1	-4.03	613.1	-3.33	619.6	-4.03	626.1	-3.33	632.6
GR	-3.63	645.6	-3.53	652.1	-3.43	658.6	-3.13	665.1	-3.53	671.6
GR	-2.83	678.1	-2.43	691.1	-2.23	697.6	-2.63	710.5	-2.23	717.0
GR	-2.03	723.5	-1.63	730.0	-2.03	736.5	-1.33	749.5	-1.03	756.0
GR	-1.03	769.0	-.63	782.0	-1.03	788.5	-.43	801.5	-1.13	814.4
GR	-1.03	820.9	-.63	833.9	-.53	846.9	-.63	866.4	-.33	885.9
GR	-.23	905.4	-2.13	911.9	-1.63	918.4	-3.33	944.3	-4.73	983.3
GR	-4.93	1002.8	-4.73	1074.2	-5.33	1093.7	-5.13	1100.2	-5.53	1106.7
GR	-5.53	1113.2	-5.03	1126.2	-5.53	1132.7	-5.13	1145.6	-4.73	1158.6
GR	-5.13	1171.6	-5.93	1178.1	-5.53	1191.1	-5.93	1204.1	-5.33	1223.6
GR	-5.33	1236.6	-5.03	1243.1	-5.33	1256.0	-4.33	1269.0	-3.63	1282.0
GR	-3.83	1288.5	-2.73	1295.0	-2.23	1300.0	-1.53	1304.0	-.23	1307.0
GR	1.27	1315.0	3.19	1325.0	7.79	1325.0	7.79	1328.0	4.39	1330.7
GR	4.39	1331.7	2.99	1334.0	2.99	1337.0	4.39	1341.2	4.39	1345.2
GR	12.29	1365.2								
X1	6.75	124	143.50	1667.50	640.00	640.00	640.00			
GR	2.91	.0	2.91	100.0	4.29	102.0	4.29	110.8	1.77	116.6
GR	1.99	129.1	7.29	137.5	7.29	143.5	5.45	148.8	3.19	154.5
GR	3.19	169.5	3.09	170.0	3.09	172.5	1.27	175.1	.57	179.5
GR	.27	184.5	-.13	185.5	-.03	196.2	-2.73	206.9	-4.03	212.3
GR	-4.43	217.6	-4.53	223.0	-4.03	228.4	-4.23	233.7	-4.03	239.1
GR	-3.33	249.8	-3.43	260.5	-3.03	271.2	-2.33	287.3	-2.73	292.7
GR	-2.73	298.0	-2.83	303.4	-2.33	314.1	-2.93	319.4	-3.03	330.2
GR	-2.63	346.2	-2.53	351.6	-2.63	356.9	-3.43	367.7	-3.33	373.0
GR	-3.13	378.4	-3.43	383.7	-3.33	399.8	-4.13	405.2	-3.53	415.9
GR	-3.33	421.2	-3.53	437.3	-3.93	448.0	-4.43	453.4	-4.23	464.1
GR	-4.23	469.5	-4.43	474.8	-4.93	485.5	-4.43	496.3	-4.73	507.0
GR	-5.13	517.7	-5.53	523.0	-5.33	533.8	-5.23	544.5	-5.83	549.8
GR	-5.83	555.2	-5.53	565.9	-5.13	576.6	-4.43	587.3	-5.13	592.7
GR	-5.13	608.8	-4.83	630.2	-5.03	635.6	-4.33	640.9	-4.43	646.3
GR	-3.83	657.0	-3.13	662.3	-2.63	683.8	-2.93	689.1	-2.33	694.5
GR	-2.63	699.8	-1.93	705.2	-1.63	710.6	-2.03	715.9	-1.63	721.3
GR	-1.13	726.6	-2.13	732.0	-.53	737.4	-.53	748.1	-.33	753.4
GR	-.13	780.2	.27	796.3	-.23	828.4	-.33	844.5	-.23	887.4
GR	-.33	898.1	-.23	908.8	-.73	930.2	-.83	946.3	-.73	957.0
GR	-.93	994.5	-.73	1064.2	-2.03	1107.0	-2.13	1133.8	-2.73	1160.6
GR	-6.53	1230.3	-6.23	1241.0	-6.73	1251.7	-6.63	1262.4	-7.33	1278.5
GR	-8.23	1299.9	-8.73	1310.6	-8.53	1316.0	-7.43	1326.7	-3.83	1353.5
GR	-1.73	1356.5	1.27	1358.5	2.77	1359.5	2.77	1651.5	.70	1653.5
GR	.70	1658.5	3.49	1659.3	1.99	1659.3	5.29	1663.0	7.32	1667.5
GR	7.45	1672.5	5.29	1676.8	2.79	1676.8	3.19	1776.5		
X1	7.21	142	141.00	1829.80	460.00	460.00	460.00			
GR	3.00	.0	3.00	99.4	4.24	101.4	4.24	109.4	1.67	115.6
GR	1.72	125.4	7.07	134.5	7.07	141.0	5.17	145.9	2.84	151.9
GR	3.21	160.8	1.28	163.6	-1.72	165.0	-2.72	167.0	-4.22	169.0
GR	-6.81	183.6	-8.22	188.4	-6.52	217.5	-5.71	251.5	-5.52	266.1
GR	-3.72	275.8	-4.22	290.3	-1.91	295.2	-2.22	300.0	-2.92	304.9
GR	-2.32	314.6	-2.52	319.5	-2.12	324.3	-2.41	329.2	-2.12	334.0
GR	-2.22	338.9	-1.92	353.4	-2.32	358.3	-2.32	363.1	-1.52	368.0
GR	-1.51	372.8	-2.12	382.5	-1.72	387.4	-1.41	402.0	-1.82	406.8
GR	-1.32	433.4	-1.22	445.6	-1.12	450.5	-.72	465.0	-1.12	474.8
GR	-.81	479.6	-.81	489.3	-.42	494.2	-.42	499.0	-.62	513.6
GR	-.82	518.4	-.82	523.3	-1.33	528.7	-.72	533.0	-.72	542.7
GR	-.71	547.5	-.52	552.4	-1.00	557.3	-.52	562.1	-.41	567.0
GR	-1.12	576.7	-.92	586.4	-.22	591.2	-.61	596.1	-.02	600.9
GR	-.33	610.6	-.82	615.5	-.32	620.4	.28	625.2	.18	630.1
GR	.18	639.8	-.42	644.6	.18	649.5	.38	654.3	.28	673.7
GR	.48	683.4	.58	698.0	.68	735.0	.78	773.0	.68	837.0
GR	.78	860.0	.48	862.0	.38	900.0	.58	953.0	.48	977.0
GR	.38	998.0	.28	1031.0	-.02	1036.0	-1.21	1105.4	-1.72	1124.4
GR	-2.92	1143.3	-2.62	1155.9	-3.22	1181.2	-2.82	1206.4	-4.22	1288.5
GR	-4.32	1320.0	-5.12	1357.9	-5.32	1376.9	-5.22	1389.5	-5.92	1408.4
GR	-5.71	1414.7	-5.81	1421.0	-5.62	1440.0	-5.32	1446.3	-5.72	1458.9
GR	-5.32	1465.2	-5.72	1477.8	-5.22	1484.2	-5.22	1490.5	-5.72	1496.8
GR	-5.51	1503.1	-5.71	1509.4	-5.02	1522.0	-5.22	1534.7	-5.41	1547.3
GR	-4.42	1559.9	-4.72	1566.2	-4.51	1572.5	-4.72	1578.8	-3.32	1597.8
GR	-3.72	1604.1	-3.12	1616.7	-3.42	1623.0	-3.12	1629.3	-2.72	1642.0
GR	-.92	1660.9	.28	1665.0	1.28	1665.9	3.00	1667.8	3.17	1680.0
GR	2.77	1683.2	.77	1685.0	.77	1698.0	2.77	1700.0	3.37	1702.8
GR	3.37	1703.8	2.91	1704.7	2.91	1789.6	3.50	1791.9	3.57	1816.4

GR	3.47	1819.8	9.67	1829.8						
X1	7.74	113	132.00	1712.60	530.00	530.00	530.00			
GR	3.71	.0	3.71	99.5	1.67	102.5	1.67	113.0	4.26	116.6
GR	4.26	119.6	7.27	126.0	7.27	132.0	5.11	137.0	2.90	142.8
GR	2.86	147.1	1.28	149.0	.28	152.0	-.52	156.0	-1.02	157.0
GR	-4.92	189.7	-5.42	200.6	-5.02	206.0	-5.52	211.5	-5.22	216.9
GR	-6.12	227.8	-5.92	233.2	-6.32	249.6	-6.52	260.5	-6.42	265.9
GR	-6.12	287.7	-6.22	293.1	-5.82	298.6	-6.02	304.0	-5.22	320.4
GR	-5.62	325.8	-5.12	331.3	-4.72	374.8	-2.52	429.3	-2.62	445.6
GR	-2.52	478.3	-3.92	527.3	-4.02	554.5	-4.32	576.3	-4.12	581.8
GR	-4.32	587.2	-4.02	592.7	-3.92	603.6	-3.62	609.0	-.72	612.0
GR	1.28	616.0	2.77	616.0	2.30	807.0	1.28	809.0	.58	813.0
GR	.48	830.0	.28	858.0	-.02	873.0	-.22	902.0	-.52	909.0
GR	-.62	914.3	-.32	925.0	-.72	941.0	-1.42	951.6	-1.02	957.0
GR	-1.52	962.3	-1.02	973.0	-1.72	994.3	-2.12	1005.0	-1.82	1015.6
GR	-2.22	1026.3	-1.82	1031.6	-1.82	1036.9	-2.32	1047.6	-1.92	1052.9
GR	-1.42	1074.3	-1.52	1079.6	-2.02	1084.9	-1.72	1106.3	-2.92	1383.5
GR	-2.72	1388.8	-3.02	1399.5	-3.32	1404.8	-3.12	1415.5	-2.82	1420.8
GR	-3.42	1431.4	-2.72	1436.8	-3.72	1442.1	-2.82	1447.4	-3.02	1452.8
GR	-3.72	1458.1	-3.72	1474.1	-1.82	1527.4	-6.42	1559.4	-7.42	1580.7
GR	-5.72	1596.7	-4.02	1607.4	-2.22	1618.0	-2.32	1628.7	-1.72	1630.0
GR	1.28	1633.7	3.18	1635.0	2.27	1694.7	.77	1695.5	.77	1697.5
GR	2.27	1699.5	3.07	1701.5	5.37	1707.4	7.52	1712.6	7.69	1717.6
GR	4.77	1723.5	4.77	1727.5	1.27	1733.5	1.27	1737.5	3.57	1740.0
GR	3.57	1742.5	2.97	1743.5	2.97	1832.0				
X1	8.16	123	370.10	1787.90	420.00	420.00	420.00			
GR	3.25	.0	3.25	200.0	3.05	200.0	3.05	213.3	3.55	215.7
GR	3.55	221.7	1.05	227.7	1.05	277.8	6.92	286.4	6.92	290.9
GR	4.98	296.5	4.25	302.1	4.25	305.1	3.12	309.4	3.12	312.9
GR	1.75	321.9	.05	322.9	1.55	340.1	2.75	343.1	4.51	348.1
GR	5.13	351.6	7.20	359.9	7.25	370.1	5.04	379.4	3.99	383.1
GR	4.22	393.6	3.16	396.1	3.16	399.1	1.28	400.6	.48	402.1
GR	.28	405.1	-.22	406.1	-.72	421.8	-11.52	479.4	-5.62	521.2
GR	-5.72	531.7	-5.82	542.2	-5.72	547.4	-5.72	557.9	-5.62	563.1
GR	-5.62	584.0	-3.32	631.1	-3.02	657.3	-3.42	673.0	-4.22	683.5
GR	-3.42	688.7	-3.22	699.2	-3.12	704.4	-3.42	714.9	-3.52	720.1
GR	-3.02	730.6	-3.22	741.0	-2.82	746.3	-2.52	756.7	-2.72	767.2
GR	-2.32	777.7	-2.22	788.1	-2.32	830.0	-2.42	840.5	-2.02	856.2
GR	-2.22	892.8	-1.72	945.2	-.42	997.5	-.22	1013.2	.08	1028.9
GR	.18	1044.6	.08	1112.6	-.52	1123.1	-1.02	1170.2	-1.12	1285.3
GR	-1.12	1306.3	-1.72	1322.0	-2.52	1348.1	-2.82	1405.7	-1.72	1452.8
GR	-2.42	1468.5	-1.52	1494.7	-2.62	1505.1	-2.22	1515.6	-2.02	1520.8
GR	-2.42	1526.1	-1.92	1531.3	-2.92	1536.5	-2.42	1541.8	-2.92	1547.0
GR	-2.72	1552.2	-3.72	1562.7	-3.22	1567.9	-2.82	1573.2	-2.27	1578.4
GR	-3.92	1583.6	-3.32	1588.9	-3.22	1599.3	-2.92	1609.8	-3.12	1620.3
GR	-2.72	1630.7	-2.72	1641.2	-2.62	1651.7	-3.22	1656.9	-2.52	1667.4
GR	-2.02	1677.8	-2.12	1688.3	-3.02	1704.0	-2.72	1714.5	-3.42	1719.7
GR	-2.92	1724.9	-2.92	1751.1	-1.72	1754.1	-.72	1760.1	1.28	1761.4
GR	4.17	1764.4	3.48	1777.2	5.44	1782.3	7.44	1787.9	7.44	1792.9
GR	3.95	1799.9	3.35	1808.1	1.65	1812.7	1.65	1814.2	3.05	1815.2
GR	3.05	1816.2	2.75	1816.7	2.75	1910.1				
X1	8.67	132	150.00	1413.90	510.00	510.00	510.00			
GR	3.34	.0	3.34	102.7	3.23	102.7	3.23	110.0	4.23	111.5
GR	4.26	125.0	2.01	128.2	2.01	133.2	7.41	144.0	7.41	150.0
GR	5.15	155.5	4.55	156.5	4.55	157.5	3.37	160.0	3.07	162.0
GR	1.29	167.8	-1.21	170.0	-3.21	177.0	-4.11	178.0	-3.81	193.2
GR	-4.41	238.8	-4.21	259.0	-4.41	274.2	-4.01	284.3	-3.71	304.6
GR	-3.31	319.8	-2.31	355.2	-4.10	365.4	-1.61	370.4	-1.31	375.5
GR	-1.11	390.7	-1.11	446.4	-2.71	451.4	-2.11	456.5	-3.81	466.6
GR	-1.91	471.7	-2.91	476.8	-2.61	481.8	-3.31	491.9	-3.71	497.0
GR	-4.71	502.1	-4.41	507.1	-4.91	512.2	-4.31	517.3	-4.41	537.5
GR	-5.01	542.6	-4.51	547.6	-4.71	557.8	-3.91	562.8	-4.31	567.9
GR	-4.51	573.0	-3.71	588.2	-4.71	598.3	-4.61	613.5	-2.71	628.7
GR	-2.91	638.8	-2.81	648.9	-2.31	659.0	-2.21	674.2	-.91	704.6
GR	-.91	724.9	-.31	740.1	-.51	745.1	-.21	755.3	-.01	775.5
GR	.09	790.7	.19	876.8	-.21	881.8	-.01	902.1	-.41	917.3
GR	.09	932.5	-.21	957.8	-.01	993.2	-.91	1008.4	-.51	1013.5
GR	-.71	1028.7	-2.91	1033.7	-1.41	1048.9	-3.01	1074.3	-2.91	1079.3
GR	-2.81	1084.4	-2.01	1089.4	-2.41	1094.5	-2.01	1099.6	-2.01	1109.7
GR	-2.71	1114.8	-2.11	1119.8	-2.21	1124.9	-3.41	1135.0	-3.71	1140.1
GR	-3.21	1145.1	-3.81	1145.1	-3.31	1150.2	-3.61	1160.3	-3.41	1170.5
GR	-3.51	1180.6	-2.41	1195.8	-2.51	1205.9	-2.01	1221.1	-1.71	1236.3
GR	-4.21	1246.4	-3.01	1251.5	-2.01	1261.6	-1.31	1271.7	-1.71	1276.8
GR	-.91	1281.9	-1.21	1286.9	-.81	1297.1	-.81	1307.2	-1.31	1327.4
GR	-2.11	1352.8	-1.71	1362.9	-1.71	1373.0	-.71	1377.0	1.29	1378.7
GR	3.41	1381.7	3.77	1405.7	4.57	1407.6	5.45	1409.9	7.40	1413.9

GR	7.69	1419.9	2.41	1428.7	2.41	1429.2	1.81	1429.2	1.81	1430.2
GR	2.41	1430.2	2.41	1431.0	2.41	1439.0	1.41	2044.0	1.41	2049.0
GR	2.41	2054.0	2.41	2150.0						
X1	9.17	127	100.00	1258.00	500.00	500.00	500.00			
GR	3.14	.0	3.14	56.5	2.89	57.0	2.89	58.5	3.97	60.0
GR	3.97	72.7	1.55	75.7	1.89	82.6	7.29	94.0	7.29	100.0
GR	4.95	105.4	4.23	107.3	4.23	108.3	3.23	110.3	2.84	113.7
GR	1.29	116.4	.29	119.0	-.71	125.0	-1.71	126.0	-2.51	131.6
GR	-1.91	137.3	-3.21	142.9	-4.91	154.2	-4.71	159.8	-4.71	171.1
GR	-4.51	199.3	-4.51	210.5	-4.71	216.2	-4.71	221.8	-4.21	233.1
GR	-3.71	244.3	-3.81	250.0	-2.91	266.9	-3.01	272.5	-1.91	278.1
GR	-2.41	283.8	-1.81	289.4	-1.31	312.0	-1.01	323.2	-1.01	334.5
GR	-.71	345.8	-.71	362.7	-.91	368.3	-.81	373.9	-.61	385.2
GR	-.41	402.1	-1.41	407.8	-.31	419.0	-.71	424.7	-.41	430.3
GR	-.91	441.6	-.71	447.2	-1.41	452.8	-1.11	458.5	-2.11	464.1
GR	-1.71	469.7	-2.11	475.4	-2.31	486.6	-2.61	492.3	-2.71	497.9
GR	-3.21	503.5	-3.31	509.2	-3.71	520.5	-3.81	526.1	-4.51	531.7
GR	-3.51	543.0	-3.71	565.5	-4.71	571.2	-5.11	582.4	-4.71	593.7
GR	-5.01	599.3	-4.81	605.0	-5.21	610.6	-4.71	616.2	-5.01	627.5
GR	-4.61	638.8	-5.11	644.4	-4.41	650.1	-5.51	678.2	-4.71	683.9
GR	-4.71	700.8	-6.71	712.0	-3.71	740.2	-3.51	751.5	-5.51	762.8
GR	-4.21	779.7	-2.61	807.8	-2.71	813.5	-.71	836.0	-.21	864.2
GR	-.51	960.0	-.61	971.3	-.61	988.2	-.81	993.8	-.71	1010.7
GR	-.21	1022.0	-1.51	1055.8	-2.11	1078.3	-1.71	1089.6	-1.81	1100.9
GR	-1.71	1112.1	-2.01	1129.0	-2.21	1140.3	-3.01	1145.9	-2.31	1151.6
GR	-3.31	1162.8	-3.21	1174.1	-3.61	1185.4	-3.31	1196.7	-4.61	1202.3
GR	-5.41	1213.6	-5.71	1224.8	-5.21	1236.0	-2.71	1239.0	1.29	1241.5
GR	2.38	1243.5	3.43	1249.3	5.19	1253.0	7.59	1258.0	7.53	1263.0
GR	2.49	1272.4	2.49	1272.7	1.89	1272.7	1.89	1273.7	2.49	1273.7
GR	2.49	1274.0	2.49	1320.0						
X1	9.64	124	123.00	1249.00	470.00	470.00	470.00			
GR	4.15	.0	4.15	99.7	5.06	102.5	5.33	110.1	6.68	123.0
GR	5.11	126.6	4.45	128.5	4.45	129.5	3.02	131.5	3.18	139.2
GR	1.30	142.2	.30	144.0	-.50	151.0	-.70	152.0	-1.40	162.8
GR	-2.90	168.2	-2.80	184.5	-3.10	189.9	-3.00	200.7	-3.70	206.1
GR	-4.20	216.9	-3.80	222.3	-3.90	233.1	-3.70	238.5	-3.70	244.0
GR	-3.70	254.8	-3.70	265.6	-3.30	276.4	-3.10	281.8	-2.60	287.2
GR	-2.50	292.6	-3.20	303.5	-2.60	308.9	-1.90	325.1	-1.80	341.3
GR	-1.70	352.1	-1.70	357.5	-1.60	368.4	-1.10	379.2	-1.50	384.6
GR	-1.20	390.0	-1.20	400.8	-.90	406.2	-1.30	417.0	-1.00	427.9
GR	-1.00	438.7	-1.10	449.5	-1.30	454.9	-1.40	460.3	-1.20	465.7
GR	-1.30	476.5	-1.80	481.9	-1.50	487.4	-1.80	519.8	-2.00	530.6
GR	-1.80	552.3	-1.80	557.7	-1.40	568.5	-1.80	584.7	-1.60	590.1
GR	-1.30	595.5	-1.50	600.9	-1.50	611.8	-2.20	622.6	-3.80	644.2
GR	-6.30	676.7	-6.10	687.5	-5.80	709.1	-6.10	719.9	-5.90	730.8
GR	-6.00	736.2	-5.50	741.6	-5.90	757.8	-5.40	763.2	-5.40	774.0
GR	-5.20	779.4	-5.20	784.9	-4.80	790.3	-5.00	795.7	-4.60	806.5
GR	-4.10	822.7	-2.60	849.8	-2.10	866.0	-1.70	876.8	-1.20	893.0
GR	-.90	909.3	-.50	920.1	-.40	925.5	-.70	930.9	-.30	936.3
GR	-.40	941.7	-.30	952.5	-.50	968.8	-.50	974.2	-.40	979.6
GR	-.50	995.8	-.50	1028.3	-1.50	1044.5	-1.30	1049.9	-1.50	1066.1
GR	-2.20	1076.9	-3.10	1093.2	-4.10	1104.0	-3.70	1109.4	-3.80	1114.8
GR	-4.70	1125.6	-4.60	1131.0	-4.90	1152.7	-6.70	1174.3	-5.70	1190.5
GR	-3.60	1206.8	-2.50	1223.0	-1.20	1226.0	1.30	1228.0	3.18	1229.5
GR	3.68	1240.2	5.68	1244.8	7.67	1249.0	7.84	1255.0	3.08	1262.8
GR	2.48	1262.8	2.48	1263.8	3.08	1263.8	3.08	1363.0		
X1	10.13	123	61.00	1170.00	490.00	490.00	490.00			
GR	4.27	.0	4.27	10.0	4.27	13.0	4.75	14.0	4.74	25.5
GR	3.61	26.5	3.61	50.2	6.83	56.5	6.83	61.0	5.45	64.2
GR	3.39	68.5	3.39	95.5	2.80	98.5	1.30	100.1	-1.70	102.0
GR	.70	103.1	-2.70	104.0	-3.20	105.0	-3.10	115.8	-3.00	121.3
GR	-2.80	137.5	-2.70	142.9	-2.90	148.3	-2.70	148.3	-2.80	159.2
GR	-2.60	164.6	-2.70	170.0	-2.30	180.8	-2.40	186.3	-2.10	197.1
GR	-2.40	202.5	-2.00	207.9	-1.80	218.8	-1.90	218.8	-1.80	235.0
GR	-2.10	240.4	-1.70	245.8	-2.00	251.3	-1.90	256.7	-2.00	262.1
GR	-2.00	272.9	-2.30	278.3	-2.10	283.8	-2.30	300.0	-2.30	305.4
GR	-2.30	316.3	-2.50	321.7	-2.50	332.5	-2.60	343.3	-2.60	348.8
GR	-2.90	359.6	-2.70	365.0	-2.80	375.9	-2.70	381.3	-3.30	386.7
GR	-2.70	397.5	-3.10	413.8	-3.00	419.2	-3.30	430.0	-3.00	435.4
GR	-3.00	446.3	-2.90	457.1	-3.10	467.9	-3.20	473.4	-3.00	484.2
GR	-3.20	489.6	-3.10	500.4	-2.90	505.9	-2.80	511.3	-3.30	516.7
GR	-3.00	522.1	-2.90	532.9	-2.40	543.8	-2.10	560.0	-2.30	565.4
GR	-1.60	576.3	-2.00	581.7	-1.80	587.1	-1.80	592.5	-1.80	597.9
GR	-1.70	603.4	-2.30	614.2	-2.00	625.0	-1.70	630.5	-2.00	663.0
GR	-2.50	679.2	-2.00	695.5	-2.70	755.0	-3.40	820.0	-3.50	874.2
GR	-4.20	885.0	-4.20	895.9	-4.20	901.3	-3.20	906.7	-3.10	917.6

GR	-2.60	928.4	-2.20	944.6	-2.20	955.5	-2.20	960.9	-.80	1004.2
GR	-.20	1058.4	.10	1080.1	-1.00	1123.4	-1.40	1145.0	-.40	1148.0
GR	1.30	1150.0	3.50	1150.3	3.33	1160.0	3.93	1161.0	3.93	1162.0
GR	7.53	1170.0	7.60	1176.0	3.03	1184.5	3.03	1201.2	3.63	1202.2
GR	3.63	1204.2	1.93	1206.9	1.93	1209.9	3.43	1211.4	3.43	1212.4
GR	3.03	1213.5	3.03	1311.0	3.03	1363.0				
X1	10.60	98	100.00	1090.20	470.00	470.00	470.00			
GR	3.75	.0	3.75	36.0	2.99	37.0	2.99	85.5	7.21	94.5
GR	7.21	100.0	4.46	106.6	3.21	108.6	2.81	111.1	1.30	114.3
GR	-.50	116.0	-1.70	118.0	-2.40	119.0	-2.90	130.6	-2.80	142.3
GR	-3.00	148.1	-3.00	153.9	-3.20	159.7	-3.10	165.6	-3.30	171.4
GR	-3.00	183.0	-3.20	194.7	-3.20	200.5	-3.40	206.3	-3.40	218.0
GR	-3.60	223.8	-3.60	229.6	-3.60	241.2	-4.30	252.9	-4.30	258.7
GR	-4.30	264.5	-4.10	270.3	-4.40	276.2	-4.40	282.0	-4.10	293.6
GR	-4.20	305.3	-4.30	311.1	-4.50	322.7	-4.30	328.6	-4.30	340.2
GR	-4.40	351.8	-4.40	357.7	-4.40	363.5	-4.30	375.1	-4.40	386.8
GR	-4.30	404.2	-4.10	415.9	-4.30	421.7	-4.10	427.5	-4.30	433.3
GR	-4.00	445.0	-4.10	450.8	-3.70	456.6	-4.10	462.4	-3.90	468.3
GR	-3.90	474.1	-3.90	485.7	-3.80	491.5	-3.50	503.2	-3.80	509.0
GR	-3.40	514.8	-3.40	520.6	-4.10	532.3	-2.10	543.9	-2.30	561.4
GR	-1.80	573.0	-2.30	619.6	-2.20	637.1	-2.80	660.4	-3.80	689.5
GR	-3.70	695.3	-3.70	706.9	-3.90	741.8	-3.70	753.5	-2.90	776.8
GR	-3.30	788.4	-2.10	811.7	-1.70	823.3	-.20	835.0	.00	858.3
GR	.20	875.7	.60	963.0	.60	992.0	.70	1016.0	.70	1039.0
GR	.70	1070.0	1.30	1072.9	3.18	1076.0	3.18	1079.0	5.40	1085.0
GR	7.60	1090.2	7.66	1095.2	3.61	1102.0	3.61	1105.0	1.67	1106.7
GR	1.67	1110.7	3.07	1112.2	3.07	1200.2				
X1	11.06	104	.00	902.60	460.00	460.00	460.00			
GR	23.36	.0	5.35	10.0	5.36	56.0	1.31	63.7	-.69	65.0
GR	-1.69	68.0	-2.99	69.0	-7.59	103.6	-7.59	108.6	-7.69	118.4
GR	-6.59	133.3	-7.19	143.2	-6.89	153.0	-6.99	158.0	-6.79	162.9
GR	-6.79	172.8	-6.89	177.8	-6.69	182.7	-6.89	187.7	-6.19	197.5
GR	-6.09	212.4	-6.09	222.3	-6.09	227.2	-6.09	232.2	-5.79	242.0
GR	-5.09	251.9	-5.29	261.8	-4.89	266.8	-4.89	271.7	-4.59	281.6
GR	-4.69	286.5	-4.59	291.5	-4.59	296.4	-3.79	311.3	-4.29	316.2
GR	-3.29	331.0	-3.29	355.8	-2.69	385.4	-3.19	395.3	-2.79	410.1
GR	-4.39	444.7	-4.09	454.6	-3.89	489.2	-3.09	514.0	-3.09	523.8
GR	-3.19	528.8	-3.39	533.7	-3.29	538.7	-3.49	543.6	-3.09	548.6
GR	-3.69	553.5	-1.99	563.4	-2.09	568.3	-2.09	578.2	-1.29	588.1
GR	-.69	598.0	-.59	607.9	-.59	612.8	-.59	617.8	-.49	627.7
GR	-.49	637.6	-.69	642.5	-.59	647.4	-.99	657.3	-.79	662.3
GR	-1.09	667.2	-.99	672.2	-.59	682.1	-.69	687.0	-1.09	691.9
GR	-1.09	696.9	-.69	706.8	-.09	716.7	-.19	721.6	-.29	726.6
GR	-.39	731.5	-.29	736.4	-.29	741.4	-.29	746.3	-.69	756.2
GR	-1.19	761.2	-1.19	766.0	-.89	771.0	-.79	776.0	-1.19	785.9
GR	-.39	795.8	-.09	830.4	-.09	845.2	-.19	860.0	.31	865.0
GR	.41	868.0	1.31	869.5	3.36	871.5	3.36	892.5	5.76	897.8
GR	7.83	902.6	5.46	911.8	5.35	935.0	1.06	946.5	1.06	952.5
GR	3.56	955.5	3.56	960.5	3.36	963.0	3.36	1006.0		
X1	11.52	45	41.00	889.00	460.00	460.00	460.00			
GR	5.93	.0	5.93	26.8	5.96	40.0	5.96	41.0	2.16	41.0
GR	1.31	44.0	.31	47.0	-.39	53.0	-.89	54.0	-1.09	76.1
GR	-.29	87.2	-.09	125.8	-20.29	197.7	-24.89	236.4	-24.99	252.9
GR	-19.19	308.2	-15.49	385.6	-15.49	391.1	-12.89	429.8	.31	529.2
GR	.11	556.9	.11	579.0	.51	606.6	.51	695.0	.51	703.0
GR	.61	712.0	.71	741.0	.31	756.0	.01	771.0	-.99	786.0
GR	-1.69	803.0	-1.39	835.0	-.49	840.0	1.31	845.8	3.07	847.7
GR	3.07	864.5	3.76	866.0	3.76	877.9	5.88	883.5	7.97	889.0
GR	8.08	894.0	.96	908.7	.96	911.7	2.96	913.2	2.96	940.0
X1	12.25	104	90.00	1150.00	730.00	730.00	730.00			
GR	3.12	.0	3.12	76.0	3.62	76.2	3.62	77.2	7.62	84.0
GR	7.62	90.0	5.32	95.5	5.32	96.0	2.85	101.0	2.85	118.0
GR	3.33	118.5	3.33	119.5	1.32	123.0	-.38	125.0	-.68	127.0
GR	-1.48	128.0	-1.58	133.1	-4.68	158.8	-4.28	174.2	-4.28	179.4
GR	-4.78	199.9	-4.28	210.2	-4.48	225.6	-4.58	241.0	-5.18	256.4
GR	-6.28	277.0	-5.58	287.2	-5.78	297.5	-5.68	312.9	-5.58	333.5
GR	-5.98	338.6	-6.18	343.7	-5.38	348.9	-5.18	354.0	-5.48	359.1
GR	-4.88	369.4	-4.78	395.1	-4.48	405.4	-4.18	410.5	-4.18	420.8
GR	-4.18	425.9	-3.98	436.2	-3.88	441.3	-3.78	446.5	-3.08	456.7
GR	-3.18	467.0	-2.58	482.4	-3.48	487.5	-3.38	492.7	-2.48	503.0
GR	-2.58	513.2	-2.18	518.4	-2.18	523.5	-2.58	528.6	-2.08	533.8
GR	-2.08	544.0	-2.78	549.2	-3.18	564.6	-2.98	574.9	-2.48	585.1
GR	-2.88	590.3	-2.18	595.4	-2.58	605.7	-1.78	616.0	-1.28	667.3
GR	-1.28	677.6	-1.28	687.9	-1.08	723.8	-1.18	739.2	-1.18	749.5
GR	-1.38	764.9	-1.68	780.3	-1.48	790.6	-2.08	795.7	-1.58	806.0
GR	-1.48	816.3	-1.48	821.4	-1.58	852.2	-1.68	857.4	-2.28	872.8

GR	-3.98	913.9	-2.28	944.7	-1.68	955.0	-.68	1001.2	-.78	1011.5
GR	-.78	1016.6	-.58	1026.9	-.78	1032.0	-.18	1035.0	1.32	1037.0
GR	2.92	1039.0	3.32	1139.5	5.76	1145.0	7.89	1150.0	3.48	1164.5
GR	1.32	1166.0	3.28	1167.0	1.28	1168.0	1.32	1169.0	1.28	1171.0
GR	3.42	1173.7	3.42	1174.5	2.92	1175.0	2.92	1250.0		
X1	12.85	131	74.10	1278.60	600.00	600.00	600.00			
GR	4.53	.0	4.53	10.0	4.53	15.0	4.23	15.5	4.60	20.6
GR	4.60	21.1	4.60	23.1	4.16	24.6	3.63	60.6	7.63	68.6
GR	7.63	74.1	5.26	75.6	3.41	84.6	3.20	87.7	2.90	90.2
GR	1.32	92.5	-1.18	94.1	-2.68	96.1	-3.28	97.1	-3.58	112.7
GR	-4.58	159.5	-4.18	175.1	-4.08	190.7	-4.18	206.3	-3.68	237.5
GR	-3.78	253.0	-3.18	284.2	-2.98	315.4	-2.78	331.0	-2.78	346.6
GR	-3.08	362.2	-2.58	377.8	-2.28	409.0	-1.78	455.8	.22	611.7
GR	.42	674.1	.52	719.1	.62	770.1	.62	784.1	.62	795.1
GR	.52	823.1	.42	829.1	.32	834.1	-.08	869.1	-.58	874.1
GR	-.68	875.7	-.58	877.3	-1.08	879.0	-.48	880.6	-.38	882.2
GR	-1.08	885.5	-.98	887.1	-1.08	888.7	-.88	892.0	-.88	893.6
GR	-.98	898.4	-1.18	901.7	-1.08	906.6	-1.08	909.8	-1.18	911.4
GR	-1.48	914.7	-1.48	916.3	-1.28	917.9	-1.88	919.5	-1.68	921.2
GR	-1.78	922.8	-2.08	924.4	-1.38	926.0	-1.78	929.3	-1.68	932.5
GR	-1.88	934.1	-2.48	935.8	-2.48	937.4	-2.18	939.0	-2.38	940.6
GR	-3.38	943.9	-2.48	945.5	-2.18	950.4	-2.78	953.6	-2.48	956.9
GR	-2.78	960.1	-2.68	961.7	-2.88	965.0	-2.88	974.7	-2.98	978.0
GR	-2.98	981.2	-2.88	986.1	-2.98	989.3	-2.58	992.6	-2.78	995.8
GR	-4.38	999.1	-5.48	1002.3	-5.28	1005.5	-6.98	1010.4	-7.38	1012.0
GR	-8.18	1013.7	-7.78	1015.3	-9.18	1016.9	-9.38	1018.5	-8.18	1020.2
GR	-9.18	1021.8	-9.78	1025.0	-10.98	1028.3	-9.58	1029.9	-9.48	1031.5
GR	-9.58	1034.8	-9.38	1038.0	-10.48	1039.6	-8.88	1041.2	-.58	1059.1
GR	-.18	1061.1	1.32	1063.6	3.31	1066.1	3.33	1226.1	2.03	1227.1
GR	2.03	1228.1	3.33	1229.1	3.33	1230.1	3.03	1230.6	3.03	1266.7
GR	6.03	1273.6	8.17	1278.6	8.37	1283.6	3.73	1292.1	3.73	1294.1
GR	2.83	1294.6	2.83	1295.6	3.33	1296.1	3.33	1296.6	3.03	1297.1
GR	3.03	1347.1								
X1	13.45	148	88.90	1545.70	600.00	600.00	600.00			
GR	8.28	.0	8.28	3.5	4.44	10.4	4.44	16.6	4.30	17.1
GR	4.30	34.4	3.76	34.9	3.76	69.4	4.80	71.1	4.70	78.9
GR	4.40	80.4	3.90	80.4	3.90	80.9	4.40	80.9	7.00	84.9
GR	7.00	88.9	5.44	92.9	2.92	99.1	3.00	106.9	1.32	109.6
GR	.32	111.9	-.18	118.9	-.78	119.9	-3.38	157.3	-5.68	178.6
GR	-5.48	184.0	-5.88	194.6	-2.48	290.7	-2.48	301.4	-2.78	306.7
GR	-2.18	312.1	-1.68	322.7	-1.98	333.4	-2.98	338.8	-.88	349.4
GR	-1.18	360.1	-2.18	370.8	-1.48	376.1	-2.38	397.5	-2.98	434.8
GR	-2.98	445.5	-2.98	450.9	-2.98	456.2	-2.98	461.5	-2.98	472.2
GR	-2.88	482.9	-2.58	520.3	-1.58	552.3	-.78	563.0	-.78	584.3
GR	-1.28	595.0	-1.18	600.3	-1.58	605.7	-1.08	611.0	-1.08	616.3
GR	-1.08	621.7	-.88	632.3	-1.38	643.0	-.78	653.7	-1.18	669.7
GR	-.88	675.1	-.98	680.4	-1.28	691.1	-1.28	701.7	-1.58	717.8
GR	-1.58	728.4	-1.58	739.1	-1.68	744.4	-1.58	749.8	-1.88	755.1
GR	-1.58	760.5	-1.88	776.5	-1.98	781.8	-1.98	787.2	-2.28	792.5
GR	-1.98	797.8	-2.38	803.2	-1.98	808.5	-2.08	819.2	-2.28	824.5
GR	-2.18	829.9	-2.38	835.2	-2.18	845.9	-2.38	851.2	-2.68	867.2
GR	-2.68	872.6	-2.78	877.9	-2.38	888.6	-2.58	893.9	-2.18	920.6
GR	-2.18	925.9	-2.18	931.3	-2.38	936.6	-1.88	942.0	-1.68	968.6
GR	-1.88	974.0	-1.88	979.3	-2.08	990.0	-1.68	1006.0	-2.18	1022.0
GR	-1.98	1027.0	-1.88	1043.4	-2.18	1054.1	-1.78	1059.4	-1.78	1064.7
GR	-1.48	1070.1	-1.58	1080.7	-1.48	1086.1	-2.28	1102.1	-1.78	1107.4
GR	-2.38	1118.1	-2.48	1128.8	-2.28	1134.1	-2.38	1134.2	-2.08	1139.5
GR	-2.48	1139.5	-2.48	1144.8	-3.18	1160.8	-3.08	1166.1	-3.18	1176.8
GR	-3.08	1182.2	-3.18	1187.5	-2.58	1192.8	-2.88	1198.2	-2.48	1203.5
GR	-2.58	1214.2	-3.08	1224.9	-2.18	1235.5	-2.08	1256.9	-1.18	1259.9
GR	1.32	1261.9	2.20	1262.9	2.20	1504.9	1.70	1507.4	1.70	1512.4
GR	2.20	1513.4	3.40	1533.9	5.97	1540.4	8.04	1545.7	8.11	1551.7
GR	3.70	1560.7	3.70	1563.2	3.00	1563.6	3.00	1599.4	2.20	1599.9
GR	2.20	1600.9	3.00	1601.4	3.00	1658.9				
X1	13.97	134	70.00	1406.40	520.00	520.00	520.00			
GR	4.06	.0	4.06	49.0	5.67	51.0	5.54	61.2	5.04	61.2
GR	5.04	61.7	5.54	61.7	7.29	65.5	7.29	70.0	5.74	73.8
GR	3.10	80.2	3.22	86.0	1.33	89.0	.03	90.0	-1.47	93.0
GR	-1.97	94.0	-2.27	99.8	-2.97	111.3	-3.17	122.9	-3.17	128.6
GR	-4.17	134.4	-4.97	145.9	-4.27	174.8	-4.17	180.6	-3.67	192.1
GR	-2.77	197.9	-2.77	209.4	-2.47	221.0	-1.97	226.7	-.77	261.4
GR	-1.77	365.2	-1.87	388.3	-2.17	399.9	-2.37	423.0	-2.37	434.5
GR	-2.07	434.5	-2.27	440.3	-2.27	446.0	-1.37	451.8	-1.57	457.6
GR	-1.17	463.4	-1.17	474.9	-.87	486.4	-1.17	492.2	-1.17	498.0
GR	-.87	509.5	-1.27	515.3	-1.17	521.1	-.87	532.6	-1.17	561.5
GR	-1.17	567.2	-1.27	578.8	-1.17	584.5	-1.97	590.3	-.37	601.9

GR	-.27	659.6	-.37	665.3	-.27	671.1	-.17	682.7	-.17	700.0
GR	-.27	711.5	-.27	723.0	-.37	740.4	-.47	746.1	-.97	757.7
GR	-.87	763.4	-1.17	780.8	-1.17	803.8	-2.37	821.2	-2.17	832.7
GR	-2.87	844.2	-2.77	861.6	-2.77	867.3	-3.17	878.9	-2.77	884.6
GR	-3.07	890.4	-2.87	896.2	-3.07	907.7	-3.07	919.3	-3.37	942.4
GR	-3.17	953.9	-3.67	965.4	-3.37	971.2	-3.27	977.0	-3.27	982.7
GR	-3.27	988.5	-3.37	994.3	-3.27	1005.8	-3.67	1017.4	-3.57	1023.1
GR	-3.47	1034.7	-3.47	1040.5	-3.77	1046.2	-3.37	1052.0	-3.37	1057.8
GR	-3.37	1069.3	-3.87	1080.9	-3.57	1086.6	-3.77	1098.2	-3.67	1103.9
GR	-3.67	1109.7	-3.27	1121.3	-3.27	1127.0	-3.17	1132.8	-3.27	1138.6
GR	-3.27	1144.3	-3.27	1155.9	-3.77	1161.7	-3.17	1167.4	-3.27	1179.0
GR	-3.57	1190.5	-2.57	1194.0	1.33	1195.5	2.29	1196.0	2.29	1221.8
GR	4.55	1228.4	4.55	1231.4	4.05	1234.0	4.05	1384.5	2.19	1385.0
GR	2.19	1386.0	2.89	1388.0	2.89	1390.5	2.49	1391.0	2.49	1392.0
GR	2.99	1392.5	8.35	1406.4	8.46	1411.4	3.59	1422.0	3.59	1425.0
GR	2.49	1428.0	2.49	1429.5	3.29	1431.5	3.29	1520.0		
X1	14.49	135	150.00	1373.50	520.00	520.00	520.00			
GR	3.24	.0	3.24	99.1	3.82	100.0	3.82	103.5	1.49	108.7
GR	1.49	130.3	2.64	132.8	8.04	144.0	8.04	150.0	5.61	155.7
GR	2.83	162.7	2.83	191.0	4.18	192.5	4.18	193.5	3.88	196.0
GR	2.80	204.5	1.33	207.0	-1.57	209.0	-2.57	211.0	-2.97	212.0
GR	-2.67	218.4	-2.37	243.8	-2.47	256.6	-2.37	262.9	-2.17	282.0
GR	-2.07	313.9	-1.77	333.0	-2.57	339.3	-2.37	345.7	-2.37	352.1
GR	-1.47	358.4	-1.27	364.8	-.87	371.2	-1.37	377.5	-1.57	383.9
GR	-1.27	390.3	-.97	396.6	-1.17	403.0	-.57	409.4	-.87	415.7
GR	-.67	428.5	-.67	441.2	-.67	447.6	-.67	460.3	-.57	466.7
GR	-.67	485.8	-.57	492.2	-.57	504.9	-.47	517.6	-.57	524.0
GR	-.37	536.7	-.77	543.1	-.37	549.5	-.47	562.2	-.47	600.4
GR	-.47	606.8	-.47	645.0	-.57	657.7	-.47	664.1	-.57	676.8
GR	-.57	683.2	-.87	689.5	-.67	695.9	-1.17	702.3	-.97	708.6
GR	-1.87	721.4	-1.27	727.7	-1.67	740.5	-2.27	746.8	-1.97	759.6
GR	-1.77	765.9	-1.97	772.3	-2.37	785.0	-2.37	791.4	-2.67	797.8
GR	-2.27	804.1	-2.57	810.5	-2.67	816.9	-2.97	829.6	-2.47	836.0
GR	-2.67	848.7	-2.27	855.1	-2.57	861.4	-2.47	867.8	-2.17	874.2
GR	-2.87	886.9	-2.87	893.3	-2.97	899.6	-2.57	912.4	-2.37	925.1
GR	-3.27	937.8	-3.07	944.2	-2.87	950.6	-3.67	963.3	-3.27	969.7
GR	-3.57	976.1	-3.47	982.4	-3.77	995.2	-3.67	1001.5	-3.57	1007.9
GR	-4.17	1020.6	-3.67	1046.1	-3.97	1058.8	-4.17	1065.2	-4.77	1084.3
GR	-4.57	1097.0	-4.67	1103.4	-5.37	1122.5	-5.37	1128.9	-5.47	1141.6
GR	-5.67	1148.0	-5.87	1160.7	-5.67	1167.1	-5.17	1173.4	-5.17	1179.8
GR	-5.17	1192.5	-4.47	1205.3	-4.47	1218.0	-3.67	1221.0	-1.67	1227.0
GR	1.33	1228.0	3.20	1230.5	3.20	1231.0	2.35	1232.0	2.35	1343.3
GR	2.05	1348.8	2.05	1349.8	13.02	1357.0	13.44	1358.4	13.44	1359.4
GR	13.24	1359.4	13.00	1368.5	13.80	1368.5	13.80	1369.5	17.80	1373.5
X1	15.02	107	100.00	1094.70	530.00	530.00	530.00			
GR	3.08	.0	3.08	66.0	3.80	66.8	3.80	69.8	1.41	73.0
GR	1.41	83.5	2.88	84.5	8.28	94.5	8.28	100.0	5.63	106.0
GR	2.65	113.5	3.88	121.5	3.28	122.0	3.28	124.0	1.34	127.0
GR	.64	131.0	.54	145.0	.44	147.0	.44	160.4	-.96	214.0
GR	-.86	240.8	-.86	247.5	-.36	274.3	-.56	281.0	-.36	287.7
GR	-.66	334.6	-.76	354.7	-.86	388.2	-.96	435.1	-.96	441.8
GR	-.86	455.2	-1.16	455.2	-.76	468.6	-.66	482.0	-.76	482.0
GR	-.56	488.7	-1.36	502.1	-.66	502.1	-.66	508.8	-.86	515.5
GR	-1.06	528.9	-.96	535.6	-.96	549.0	-.96	582.5	-1.26	589.2
GR	-1.46	602.6	-2.36	616.0	-1.96	616.0	-2.66	636.1	-2.86	642.8
GR	-2.86	649.5	-3.06	662.9	-4.16	662.9	-3.56	669.6	-3.76	689.7
GR	-3.66	696.4	-3.96	696.4	-3.96	703.1	-3.96	716.5	-3.66	723.2
GR	-3.46	729.9	-3.46	736.6	-4.06	743.3	-4.06	750.0	-4.26	763.4
GR	-4.36	770.1	-4.36	776.8	-4.36	783.5	-4.46	803.6	-4.76	810.3
GR	-5.16	817.0	-5.06	823.7	-4.86	837.1	-5.66	857.2	-5.76	870.6
GR	-6.26	877.3	-6.26	884.0	-6.66	890.7	-6.26	904.1	-6.46	917.5
GR	-6.26	930.9	-6.46	937.6	-5.86	951.0	-6.16	957.7	-5.86	971.1
GR	-6.06	977.8	-4.26	991.2	-2.96	1004.6	-3.16	1004.6	-.66	1018.0
GR	.34	1021.0	1.34	1023.1	2.18	1024.1	2.18	1028.1	4.07	1030.7
GR	4.07	1031.7	2.99	1034.4	2.99	1080.6	5.97	1088.6	8.36	1094.7
GR	8.52	1100.7	3.28	1110.7	3.28	1111.7	4.08	1112.7	4.08	1116.5
GR	3.68	1117.0	3.68	1200.0						
X1	15.46	121	100.00	1022.30	440.00	440.00	440.00			
GR	2.96	.0	2.96	63.0	3.78	64.0	3.78	67.0	1.46	71.0
GR	1.46	82.5	4.75	83.0	4.75	88.0	8.31	94.5	8.31	100.0
GR	5.73	106.0	2.69	113.5	2.69	154.7	3.01	155.2	3.01	155.7
GR	1.34	157.6	-.16	159.0	-1.66	162.0	-1.86	163.0	-1.76	168.4
GR	-2.66	173.8	-2.56	177.4	-2.66	179.2	-2.66	182.7	-2.66	184.5
GR	-2.56	186.3	-2.46	188.1	-2.36	191.7	-2.36	195.3	-2.16	198.9
GR	-2.26	200.7	-1.76	206.1	-2.06	209.7	-2.06	211.5	-1.96	213.3
GR	-2.26	215.1	-2.26	216.9	-1.36	224.0	-1.36	225.8	-1.26	227.6

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GR -1.26   229.4   -1.26   231.2   -1.16   234.8    -.66   238.4    -.66   242.0
GR  -.86   245.6    -.76   247.4    -.36   251.0    -.56   254.5    -.16   256.3
GR   .64   261.7     .64   270.7     .74   291.0     .74   299.0     .64   313.0
GR   .74   329.0     .64   342.0     .64   356.0     .44   363.0     .34   372.0
GR   .04   377.0     .14   396.6     .14   411.3     .34   421.1     .54   465.1
GR   .54   484.7     .44   509.2     .34   523.9     .14   563.1    -.16   577.8
GR  -.06   587.6    -.26   602.3    -.16   612.1    -.26   626.7    -.66   641.4
GR  -.76   651.2   -1.46   665.9   -1.36   670.8   -2.06   685.5   -2.06   690.4
GR -2.66   705.1   -2.56   710.0   -3.16   714.9   -3.06   724.7   -3.26   729.6
GR -3.16   734.5   -3.46   739.4   -3.46   744.3   -3.66   749.2   -3.56   754.1
GR -4.26   778.6   -4.36   788.3   -4.56   798.1   -4.36   803.0   -4.56   812.8
GR -4.46   817.7   -5.36   822.6   -5.36   827.5   -5.46   832.4   -5.06   837.3
GR -5.26   842.2   -5.36   847.1   -5.36   852.0   -4.86   861.8   -5.36   866.7
GR -5.16   871.6   -5.26   876.5   -5.66   881.4   -6.46   891.2   -6.66   905.9
GR -7.46   920.6   -6.96   935.3   -7.76   954.8   -3.56   994.0    -.66   997.0
GR  1.34   999.0    2.97   999.5    3.53  1006.2    4.71  1008.2   10.23  1017.3
GR 12.23  1022.3
X1 15.96      86  235.40 1252.80  500.00  500.00  500.00
GR  2.84      .0    2.84   200.4    3.47   201.4    3.47   204.4    1.51   207.9
GR  1.51   214.9    8.28   229.9    8.28   235.4    5.90   241.4    2.78   249.4
GR  2.78   266.9    1.34   272.9    -.66   274.9     .14   297.2    1.34   300.2
GR  2.82   303.3    2.82   359.4    1.34   360.9     .34   361.4    -.16   405.4
GR   .54   455.4    1.04   545.4    1.14   585.4    1.34   595.4    1.54   600.4
GR  1.54   636.4    1.34   639.4     .64   681.4     .54   733.4     .24   739.4
GR   .24   745.4    -.26   763.3    -.16   769.4    -.36   775.3    -.36   781.3
GR -1.86   817.2   -1.96   823.2   -2.46   829.2   -3.76   853.1   -3.76   859.1
GR -4.66   871.1   -3.96   877.1   -4.16   883.0   -3.86   889.0   -3.86   901.0
GR -3.46   907.0   -3.96   919.0   -3.76   924.9   -4.26   924.9   -4.26   930.9
GR -4.56   936.9   -4.26   942.9   -5.36   948.9   -5.26   954.9   -5.66   960.8
GR -6.06   966.8   -5.86   972.8   -6.16   978.8   -6.16   984.8   -6.86   996.8
GR -6.66  1002.7   -7.26  1020.7   -7.16  1032.7   -7.56  1038.7   -7.46  1044.6
GR -7.66  1050.6   -7.46  1050.6   -7.86  1056.6   -7.36  1062.6   -7.56  1074.6
GR -7.76  1080.5   -5.86  1092.5   -3.66  1110.5   -2.76  1122.4    -.06  1140.4
GR   .34  1142.4    1.34  1144.9    3.98  1145.6    3.98  1157.8    3.28  1158.3
GR  3.28  1158.8    4.48  1163.1    4.48  1195.9    6.12  1199.0    9.42  1242.8
GR 13.42  1252.8
X1 16.42      94  235.40 1313.60  460.00  460.00  460.00
GR  2.89      .0    2.89   200.0    3.52   201.4    3.52   204.4    1.56   207.9
GR  1.56   214.9    8.33   229.9    8.33   235.4    6.00   240.9    3.12   247.7
GR  3.12   257.5    1.63   261.3    1.63   289.4    2.86   292.4    2.86   295.4
GR  2.76   296.4    2.76   566.6    3.97   568.1    3.97   571.6    1.35   575.6
GR   .35   605.4     .55   645.4    1.35   670.4    1.55   675.4    1.55   710.4
GR  1.35   715.4     .65   745.4     .35   792.4    -.15   794.4    -.05   805.6
GR  -.25   811.2    -.25   816.9    -.45   822.5    -.35   833.7    -.85   844.9
GR  -.65   856.2    -.95   861.8    -.85   867.4   -1.05   873.0   -1.35   878.6
GR -1.45   889.9   -1.65   895.5   -1.35   901.1   -1.75   906.7   -1.85   906.7
GR -1.75   912.3   -2.35   929.2   -2.55   934.8   -2.45   946.0   -2.45   951.6
GR -2.65   968.5   -2.85   974.1   -2.85   979.7   -3.35   985.3   -3.95  1002.2
GR -4.35  1019.0   -4.75  1035.8   -4.65  1041.5   -5.55  1052.7   -5.55  1058.3
GR -5.55  1063.9   -6.25  1069.5   -6.25  1075.2   -6.75  1080.8   -6.65  1086.4
GR -7.05  1092.0   -7.45  1097.6   -7.35  1103.2   -7.65  1114.5   -7.85  1125.7
GR -8.05  1131.3   -8.05  1142.5   -7.85  1153.8   -7.95  1159.4   -7.55  1176.2
GR -7.65  1176.2   -7.55  1181.8   -7.55  1187.5   -5.85  1204.3   -5.95  1209.9
GR -5.95  1215.5   -2.65  1232.4   -1.15  1235.4    1.35  1238.1    3.97  1241.9
GR  3.97  1244.4    3.94  1244.9    3.94  1268.3    4.41  1268.8    4.41  1288.6
GR  5.83  1289.8    7.29  1309.6   10.19  1313.6   10.19  1333.6
X1 16.91      66  235.40 1257.10  490.00  490.00  490.00
GR  3.23      .0    3.23   200.0    3.86   201.4    3.86   204.4    1.90   207.9
GR  1.90   214.9    8.67   229.9    8.67   235.4    6.13   241.4    2.84   249.3
GR  2.84   285.2    1.67   288.8    1.67   303.9    4.99   312.7    2.81   318.9
GR  2.81   592.8    3.22   593.3    3.22   597.2    2.50   597.7    2.50   626.9
GR  2.95   627.9    2.95   805.6    3.67   806.6    3.67   809.6    5.67   811.6
GR  5.67   812.6    1.35   820.3    -.65   821.4   -1.35   824.4   -1.85   825.4
GR -1.75   835.7   -2.15   851.2   -2.05   861.6   -2.35   866.8   -2.25   871.9
GR -2.15   882.3   -2.55   892.6   -2.25   897.8   -2.15   913.3   -2.65   923.6
GR -2.75   928.8   -3.05   939.1   -3.25   944.3   -3.25   949.5   -3.05   954.6
GR -2.95   965.0   -3.55   980.5   -3.85   985.6   -3.95   996.0   -4.15  1001.1
GR -4.25  1006.3   -5.45  1021.8   -7.15  1058.0   -7.55  1078.7   -8.55  1089.0
GR -8.65  1099.3  -12.95  1166.5  -12.15  1171.7  -12.35  1176.9  -11.15  1176.9
GR -3.15  1223.4   -1.65  1226.4    1.35  1228.9    6.12  1234.6    6.12  1237.1
GR 20.12  1257.1
X1 17.37      91  128.40 1308.50  463.00  463.00  463.00
GR 11.71      .0   12.88    74.0   13.14    82.5    9.91    82.5    9.91    84.5
GR  8.61    84.5    8.61    86.5    4.72    95.2    4.72    99.7    2.08   104.0
GR  2.08   111.5    8.55   122.4    8.55   128.4    6.15   133.9    6.15   137.9
GR  4.98   140.5    4.38   151.5    3.36   219.5    3.38   287.5    3.28   355.5
```

```
GR  3.41   423.5    3.54   491.5    3.67   559.5    3.80   627.5    3.94   695.5
GR  3.18   763.5    1.36   768.8   -1.14   771.0   -1.64   773.0   -2.64   774.0
GR -4.14   782.1   -6.44   794.4  -10.34   806.6  -10.44   818.8  -10.74   826.9
GR-10.84   831.5   -8.94   853.7   -7.74   876.3   -7.14   882.0   -7.94   899.5
GR -7.04   910.3   -7.54   916.0   -6.04   927.3   -6.24   933.0   -5.54   938.7
GR -5.24   955.7   -5.64   961.3   -5.14   967.5   -5.04   979.4   -5.04   985.5
GR -4.94   991.7   -4.94   997.9   -4.14  1022.6   -3.14  1035.5   -2.44  1046.3
GR -2.54  1057.7   -2.14  1069.0   -1.64  1080.3   -1.34  1086.0   -1.84  1097.3
GR -1.84  1103.5   -1.74  1108.7   -1.74  1120.0   -1.54  1131.3   -1.94  1137.0
GR -1.54  1148.3   -4.34  1171.5   -1.94  1181.5   -3.14  1197.2   -3.74  1202.4
GR -3.24  1207.6   -4.44  1212.8   -3.84  1218.1   -4.24  1228.5   -5.64  1239.5
GR -4.64  1244.0   -3.64  1251.0    -.64  1259.0    1.36  1263.0    3.24  1266.4
GR  3.53  1282.3    5.94  1286.8    5.94  1292.8    7.59  1296.5    7.65  1303.3
GR  8.92  1306.5   10.04  1306.5   10.04  1308.5   13.25  1308.5   12.93  1317.7
GR 12.08  1358.7
X1 17.39    91   128.40 1308.50   13.00   13.00   13.00
GR 11.71     .0   12.88    74.0   13.14    82.5    9.91    82.5    9.91    84.5
GR  8.61    84.5   8.61    86.5    4.72    95.2    4.72    99.7    2.08   104.0
GR  2.08   111.5   8.55   122.4    8.55   128.4    6.15   133.9    6.15   137.9
GR  4.98   140.5   4.38   151.5    3.36   219.5    3.38   287.5    3.28   355.5
GR  3.41   423.5   3.54   491.5    3.67   559.5    3.80   627.5    3.94   695.5
GR  3.18   763.5   1.36   768.8   -1.14   771.0   -1.64   773.0   -2.64   774.0
GR -4.14   782.1   -6.44   794.4  -10.34   806.6  -10.44   818.8  -10.74   826.9
GR-10.84   831.5   -8.94   853.7   -7.74   876.3   -7.14   882.0   -7.94   899.5
GR -7.04   910.3   -7.54   916.0   -6.04   927.3   -6.24   933.0   -5.54   938.7
GR -5.24   955.7   -5.64   961.3   -5.14   967.5   -5.04   979.4   -5.04   985.5
GR -4.94   991.7   -4.94   997.9   -4.14  1022.6   -3.14  1035.5   -2.44  1046.3
GR -2.54  1057.7   -2.14  1069.0   -1.64  1080.3   -1.34  1086.0   -1.84  1097.3
GR -1.84  1103.5   -1.74  1108.7   -1.74  1120.0   -1.54  1131.3   -1.94  1137.0
GR -1.54  1148.3   -4.34  1171.5   -1.94  1181.5   -3.14  1197.2   -3.74  1202.4
GR -3.24  1207.6   -4.44  1212.8   -3.84  1218.1   -4.24  1228.5   -5.64  1239.5
GR -4.64  1244.0   -3.64  1251.0    -.64  1259.0    1.36  1263.0    3.24  1266.4
GR  3.53  1282.3    5.94  1286.8    5.94  1292.8    7.59  1296.5    7.65  1303.3
GR  8.92  1306.5   10.04  1306.5   10.04  1308.5   13.25  1308.5   12.93  1317.7
GR 12.08  1358.7
X1 17.85   108   235.00 1357.00  464.00  464.00  464.00
GR  3.07     .0    3.07   200.0    3.73   201.2    3.73   204.7    2.23   207.4
GR  2.23   217.4   8.84   230.0    8.84   235.0    6.22   241.0    2.74   249.7
GR  2.74   255.2   2.29   256.4    2.29   256.9    2.72   257.8    2.72   513.0
GR  1.72   516.0   1.72   518.0    3.04   521.3    3.04   537.7    2.88   538.2
GR  2.88   575.5   1.36   576.5   -1.14   578.0   -1.64   580.0   -2.44   581.0
GR -7.24   614.2   -6.64  642.6   -6.74   652.1   -6.24   661.6   -5.94   666.3
GR -6.04   671.0   -5.64  680.5   -5.74   685.3   -6.14   690.0   -5.64   694.7
GR -6.14   699.5   -5.14  713.7   -5.54   727.9   -5.44   732.6   -7.54   746.9
GR -5.64   761.1   -4.64  765.8   -5.94   770.6   -4.74   784.8   -4.64   799.0
GR -4.94   803.7   -4.24  817.9   -4.44   822.7   -3.54   832.2   -3.24   846.4
GR -3.14   851.1   -3.04  855.9   -3.44   860.6   -1.94   865.3   -2.14   870.1
GR -2.04   874.8   -2.14  879.6   -2.14   893.8   -1.64   898.5    -.84   903.2
GR   .06   931.7    -.14  936.4    -.04   941.2    -.24   950.6    -.14   955.4
GR   .16   964.9     .36  979.1     .06   988.5     .16   998.0     .26  1002.8
GR   .46  1021.7     .46 1083.3     .26  1092.8     .46  1107.0     .36  1126.0
GR   .36  1135.5     .26 1149.7     .46  1159.1     .06  1173.4     .16  1178.1
GR   .16  1182.8     .06 1197.1     .16  1211.3    -.44  1216.0    -.34  1230.2
GR  -.64  1239.7    -.34 1249.2    -.44  1253.9    -.44  1258.7    -.64  1268.1
GR  -.74  1277.6    -.94 1282.4    -.84  1287.1   -1.64  1291.8   -1.04  1296.6
GR -1.24  1301.3    -.84 1306.1   -1.34  1310.8    -.94  1315.5    -.94  1320.3
GR  -.64  1325.0     .06 1330.0    1.36  1330.5    4.15  1334.4    4.15  1335.4
GR  3.62  1335.9    3.62 1342.0   10.62  1357.0
X1 18.19   114   248.50 1286.10  340.00  340.00  340.00
GR  3.12     .0    3.12   200.0    3.51   202.8    3.51   203.8    3.01   203.8
GR  3.01   204.3   3.51   204.3    3.51   205.3    3.11   207.1    3.11   210.1
GR  3.92   211.7   3.92   215.0    2.37   218.1    2.37   229.1    8.71   244.0
GR  8.71   248.5   6.21   254.5    3.11   262.5    3.11   267.5    2.45   268.9
GR  2.45   270.4   2.71   271.1    2.71   319.0    3.32   320.0    3.09   347.0
GR  2.63   351.5   2.63   456.7    1.36   457.7   -1.64   459.5   -3.14   461.5
GR -3.74   462.5   -5.14  498.0   -4.54   508.1   -4.44   518.3   -3.94   528.4
GR -3.84   533.5   -5.34  543.6   -3.84   553.8   -4.14   558.9   -3.74   563.9
GR -4.24   569.0   -3.64  574.1   -3.94   584.2   -3.94   604.5   -2.74   614.6
GR -2.74   624.8   -2.14  629.9   -2.14   640.0   -1.84   645.1   -2.24   650.1
GR -1.34   655.2   -1.14  675.5    -.74   680.6   -1.34   695.8    -.14   705.9
GR  -.54   711.0     .06  716.1    -.14   726.2     .36   736.4     .36   746.5
GR   .66   748.5     .76  749.5     .86   750.5     .86   751.5   -2.14   752.5
GR -2.24   758.6   -2.24  776.7   -2.84   788.9   -3.24   794.9   -3.04   807.1
GR -3.14   813.1   -3.14  825.2   -2.94   837.4   -2.74   843.4   -2.94   849.5
GR -2.54   867.7   -1.54  898.0   -1.34   910.1   -1.14   928.3   -1.04   995.0
GR  -.94  1007.1    -.94 1019.2   -1.14  1031.3    -.94  1037.4   -1.14  1049.5
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GR -1.14  1061.6   -1.54  1067.7   -1.44  1073.8   -1.74  1085.9   -4.14  1110.1
GR -2.94  1152.6   -2.14  1176.8   -2.44  1182.9   -1.24  1213.2   -1.14  1225.3
GR  -.84  1231.4    -.74  1243.5    -.14  1245.5    -.04  1252.5     .36  1261.5
GR  1.36  1263.3    2.99  1264.4    3.31  1272.5    5.81  1280.5    5.81  1282.5
GR  7.83  1286.1    7.83  1290.1    4.41  1298.7    3.91  1298.7    3.91  1299.2
GR  4.41  1299.2    4.41  1302.7    3.81  1303.7    3.81  1403.7
X1 18.71    86      .00 1169.10  520.00  520.00  520.00
GR  3.24     .0    3.24   200.0    4.34   200.7    4.34   204.2    1.92   207.2
GR  1.92   221.6    4.84   224.6    4.84   228.6    3.04   230.6    3.04   264.4
GR  4.04   265.6    4.04   268.1    3.24   269.6    3.24   272.6    2.49   273.6
GR  2.49   406.2    1.37   408.6     .07   410.6    -.33   412.6   -1.13   413.6
GR -3.63   434.6   -3.53   445.1   -3.93   460.8   -3.83   471.3   -3.93   476.6
GR -3.53   481.8   -4.93   492.3   -3.63   502.8   -3.93   518.5   -4.03   529.0
GR -3.73   534.3   -3.13   544.8   -3.13   560.5   -2.73   565.7   -2.73   576.2
GR -2.53   586.7   -2.03   597.2   -1.93   623.4   -1.63   628.7   -1.63   639.2
GR  -.93   649.7    -.83   660.2    -.03   702.1    -.13   717.9     .17   728.4
GR   .47   754.6     .57   767.6     .67   787.6     .77   814.6     .87   825.6
GR   .87   832.6     .77   843.6     .67   848.6     .57   853.6     .57   855.6
GR   .37   868.3    -.73   880.9   -1.23   899.9   -1.83   912.5   -1.73   918.9
GR -2.03   937.8   -2.23   950.5   -2.53   956.8   -3.13   969.5   -3.53   982.1
GR -3.53   988.4   -4.03   994.8   -3.93  1007.4   -4.03  1020.1   -3.73  1032.7
GR -3.93  1051.7   -4.23  1064.4   -4.33  1070.7   -4.03  1083.3   -4.53  1096.0
GR -4.23  1108.6   -4.43  1115.0   -4.43  1121.3   -4.43  1127.6   -4.43  1133.9
GR -3.83  1146.6   -2.63  1150.6    1.37  1152.0    4.41  1156.6    4.41  1162.1
GR 11.41  1169.1
X1 19.18    107      .00 1360.50  470.00  470.00  470.00
GR  9.62     .0    5.00    10.5    4.30    10.5    4.30    21.5    5.62    23.7
GR  5.62    24.2    4.72    24.2    4.72    25.5    5.62    25.5    5.62    31.5
GR  2.96    34.5    2.96   236.0    3.66   237.2    3.66   237.8    3.16   237.8
GR  3.16   238.3    3.66   238.3    3.66   238.8    3.12   241.5    3.12   286.0
GR  4.11   287.5    4.11   290.5    1.82   294.2    1.82   306.6    4.51   311.6
GR  4.51   313.6    3.13   316.5    3.13   356.0    4.43   357.5    4.43   359.0
GR  3.76   360.5    3.76   364.5    1.82   367.4    1.82   369.9    2.62   372.5
GR  2.62   477.9    3.34   478.9    3.34   481.0    1.37   483.4   -1.13   484.5
GR -1.63   487.5   -3.03   488.5   -3.33   527.4   -3.63   549.7   -3.23   566.4
GR -3.53   577.5   -2.83   588.6   -2.23   594.2   -1.93   605.3   -1.53   610.9
GR -1.93   627.6   -1.53   638.7   -1.63   644.2   -1.63   655.4   -1.63   677.6
GR -3.43   699.9   -1.53   705.4   -1.83   727.7   -1.53   733.2   -1.83   744.4
GR -1.63   749.9   -1.73   772.2   -1.93   777.7   -1.73   783.3   -1.53   800.0
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GR -1.63   889.0   -1.73   894.5   -1.53   905.7   -1.33   922.3    -.83   933.5
GR -1.13   955.7   -1.43   966.8   -1.63   972.4   -1.43   978.0   -2.83  1005.8
GR -2.53  1011.3   -3.33  1022.5   -4.43  1050.3   -4.43  1055.8   -4.23  1061.4
GR -4.53  1072.5   -5.33  1083.6   -5.23  1089.2   -6.03  1117.0   -5.83  1133.7
GR -6.03  1139.3   -5.93  1150.4   -5.83  1161.5   -5.13  1165.5   -4.03  1168.5
GR  1.37  1171.6    4.30  1175.0    4.74  1187.0    4.74  1191.5    3.94  1192.5
GR  3.94  1228.1    3.89  1228.6    3.89  1289.4    4.59  1289.9    4.59  1357.5
GR  6.95  1360.5    6.95  1400.5
X1 19.62    106      .00 1202.60  440.00  440.00  440.00
GR 12.13     .0    7.35    30.2    5.14    33.4    5.50    38.5    4.70    38.5
GR  4.70    39.5    5.50    39.5    5.69    45.1    3.72    48.7    3.72   152.5
GR  3.17   153.6    3.17   379.1    4.20   380.1    4.20   383.1    2.41   385.7
GR  2.41   398.8    3.76   400.8    4.91   404.4    4.91   406.4    3.10   408.9
GR  3.10   448.6    4.30   450.1    4.30   451.6    3.80   453.3    3.80   457.3
GR  2.44   459.6    2.44   460.6    2.90   463.3    2.90   550.1    3.30   551.1
GR  3.30   554.1    1.38   555.6    -.12   556.6   -1.62   558.1   -2.12   560.6
GR -3.42   584.6   -2.92   590.9   -2.32   597.0   -2.42   609.1   -2.22   615.1
GR -2.11   633.3   -2.01   639.4   -2.32   639.4   -1.82   645.4   -2.12   651.5
GR -1.92   657.5   -1.52   663.6   -1.72   669.6   -1.42   681.8   -1.12   693.9
GR  -.92   706.0    -.92   712.1   -1.32   724.2   -1.02   730.2   -1.82   742.4
GR -1.62   748.4   -1.72   754.5   -1.62   760.5   -1.92   772.6   -1.82   778.6
GR -1.82   790.8   -2.12   796.9   -1.72   803.0   -2.52   809.0   -1.82   815.1
GR -1.92   821.1   -2.52   839.3   -2.92   851.4   -2.72   857.5   -3.02   869.6
GR -2.72   881.7   -2.82   887.8   -2.52   893.8   -3.52   906.0   -2.82   924.1
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GR -3.42  1105.9   -3.82  1118.0   -3.72  1124.1   -5.72  1160.4   -3.62  1178.6
GR -2.62  1180.1    -.62  1182.1    1.38  1183.6    4.64  1188.1    4.64  1194.1
GR 14.39  1202.6
X1 20.13     91      .00 1165.50  510.00  510.00  510.00
GR 19.73     .0    4.72    28.9    4.72    43.7    5.11    44.2    5.11    45.2
GR  4.31    45.2    4.31    46.2    5.11    46.2    5.36    46.7    5.36    51.7
GR  3.81    53.2    3.81   160.7    3.08   162.7    3.08   433.3    3.97   434.3
GR  3.97   437.3    1.96   440.3    1.96   448.3    3.26   450.3    5.28   454.7
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GR  3.56   514.9    3.56   517.5    2.26   519.0    2.26   520.0    2.66   522.2
GR  2.66   533.5    3.40   534.5    3.40   535.5    2.60   537.5    1.38   589.2
GR   .38   590.7    -.12   592.7    -.52   594.2    -.82   605.9   -1.21   611.7
GR -1.22   617.5   -1.02   635.1   -1.42   652.6   -1.22   664.2    -.92   687.6
GR  -.41   699.2    -.42   716.7    -.12   722.6    -.72   740.1     .08   745.9
GR -1.12   757.6   -1.12   763.4   -1.92   775.1   -1.82   786.8   -1.72   798.5
GR -2.02   804.3   -2.52   821.8   -2.32   839.3   -2.72   851.0   -2.62   862.7
GR -4.32   897.7   -4.41   909.3   -4.62   921.0   -4.72   938.5   -5.02   956.0
GR -5.22   967.7   -5.42   973.5   -5.92   985.2   -5.42   991.0   -4.81  1002.7
GR -5.12  1020.2   -4.61  1037.7   -4.72  1043.6   -4.52  1049.4   -4.51  1061.1
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GR  -.42  1136.2    1.38  1141.1    3.36  1153.6    6.32  1160.3    8.70  1165.5
GR  8.70  1168.5    7.06  1178.9    6.53  1201.9    5.06  1206.2    -.44  1206.2
GR  -.44  1246.2
X1 20.58    73   90.00 1162.30  450.00  450.00  450.00
GR  5.24    .0    5.24    16.0    4.35    17.0    4.35    81.6    5.35    83.0
GR  5.35   83.5    4.35    83.5    4.35    84.5    5.35    84.5    5.35    90.0
GR  4.05   91.5    4.05   285.9    3.45   286.4    3.45   405.7    3.05   406.5
GR  3.05  568.5    4.05   570.0    4.05   573.0    2.35   576.2    2.35   581.2
GR  3.55  585.0    4.55   588.8    4.55   590.8    2.95   593.4    2.95   671.0
GR  4.55  672.3    4.55   677.8    2.45   679.0    2.45   699.0    1.39   700.0
GR   .89  702.0     .89   704.0     .79   705.0    -.81   786.2   -1.21   797.8
GR -1.51  809.4   -1.71   815.2   -2.71   832.6   -2.61   838.4   -3.71   855.8
GR -3.11  867.4   -4.91   890.6   -4.91   908.0   -5.11   913.8   -4.81   925.4
GR -6.21  942.8   -6.81   960.2   -7.31   966.0   -8.61   983.4   -8.41   995.0
GR -8.61 1006.6   -8.61  1018.2   -8.81  1035.6   -8.51  1047.2   -8.71  1053.0
GR -4.11 1076.2   -1.61  1105.0   -1.41  1109.0   -1.11  1117.0    -.61  1121.0
GR  -.11 1126.0    1.39  1135.0    2.75  1137.5    2.75  1141.5    6.75  1154.0
GR  9.16 1162.3    9.16  1168.3    6.31  1176.0    5.31  1176.0    5.31  1180.5
GR  4.05 1183.5    3.85  1183.5    3.85  1199.0
X1 21.00    53    3.00   999.00  420.00  420.00  420.00
GR  6.20    .0    6.20     3.0    4.50     4.5    4.50    50.0    3.80    51.0
GR  3.80   120.0    4.25   121.0    4.25   244.3    3.75   245.3    3.75   477.5
GR  4.22   480.0    4.22   481.0    3.72   481.0    3.72   481.5    4.22   481.5
GR  3.65   483.0    3.65   570.0    4.69   571.5    4.69   574.5    2.77   577.0
GR  2.77   584.0    5.28   589.5    5.28   592.5    3.38   594.5    3.38   685.5
GR  4.88   688.3    4.88   690.8    3.98   694.5    1.39   752.0    -.11   753.5
GR  -.60   755.5    -.91   757.0   -1.21   762.7   -2.00   774.0   -2.91   808.0
GR -9.61   881.6  -13.40   915.6  -12.91   932.5  -12.30   943.9  -12.11   949.5
GR-12.61   960.9  -12.80   972.2  -12.31   983.5  -11.40   989.5  -10.61   992.5
GR  1.39   993.5   10.54   999.0    8.68  1016.8    7.18  1018.8    7.18  1033.7
GR  9.78  1036.2   11.28  1051.2   31.28  1052.5
X1 21.40    67   90.00 1220.00  400.00  400.00  400.00
GR  4.64    .0    4.64    82.3    5.18    83.0    5.18    83.5    4.18    83.5
GR  4.18   84.5    5.18    84.5    5.19    90.0    4.18    92.0    4.18   452.0
GR  3.30   453.0    3.30   716.8    4.10   717.5    4.10   721.0    2.18   723.5
GR  2.18   730.8    4.68   735.5    4.68   738.5    2.68   741.5    4.88   768.0
GR  4.88   769.5    4.88   771.5    3.88   773.0    3.88   775.5    2.48   778.5
GR  2.48   804.0    3.28   805.5    3.28   810.0    1.40   811.0    -.61   813.0
GR -1.62   814.0   -2.21   816.0   -2.52   826.2   -2.41   841.5   -2.80   846.6
GR -2.91   856.7   -2.92   866.9   -3.51   892.4   -3.41   902.6   -3.51   912.8
GR -3.59   917.9   -3.60   933.1   -4.21   938.2   -3.50   948.4   -3.71   953.5
GR -3.40   968.8   -3.71   973.9   -3.21   984.1   -3.20   989.2   -3.01   994.3
GR -3.42  1004.4   -4.51  1014.6   -4.31  1024.8   -4.52  1035.0   -4.61  1040.1
GR -4.11  1050.3  -11.62  1085.9  -20.01  1131.8  -12.11  1152.1  -11.62  1162.3
GR -6.31  1172.5   -5.61  1174.0   -2.91  1176.0    1.40  1177.5    8.04  1193.0
GR  8.04  1194.5   15.48  1220.0
X1 21.66    91   57.50 1161.50  260.00  260.00  260.00
GR  4.32    .0    4.32    50.0    5.11    50.5    5.11    51.0    4.11    51.0
GR  4.11   52.0    5.11    52.0    5.12    57.5    3.89    59.5    3.89   169.6
GR  4.59  176.0    4.59   176.8    4.09   176.8    4.09   177.3    4.59   177.3
GR  3.75  182.0    3.75   421.5    3.33   422.0    3.33   511.5    4.02   512.5
GR  4.02  516.0    2.66   519.0    2.66   525.5    4.61   528.0    4.61   536.0
GR  2.41  538.5    2.41   539.5    2.71   540.5    2.71   599.5    4.71   602.0
GR  4.71  605.0    2.31   609.5    2.31   659.5    1.40   660.0   -1.60   660.5
GR -3.10  663.5   -3.70   664.5   -3.70   674.2   -4.00   683.9   -3.90   698.5
GR -4.40  708.2   -4.30   717.9   -4.00   727.6   -4.30   737.3   -4.10   751.8
GR -4.00  761.5   -3.80   771.2   -4.00   785.8   -3.70   790.6   -3.30   819.7
GR -3.60  829.4   -2.80   853.7   -2.90   863.4   -2.60   873.1   -2.30   882.8
GR -2.60  887.6   -3.40   892.5   -2.50   911.9   -2.40   921.6   -2.70   941.0
GR -2.60  950.7   -3.30   979.8   -2.80   989.5   -3.00  1004.0   -3.50  1008.9
GR -3.40 1013.7   -3.60  1028.3   -4.70  1038.0   -3.80  1047.7   -4.90  1067.1
GR -4.60 1076.8   -4.90  1086.5   -5.20  1096.2   -5.30  1105.9   -5.50  1110.7
GR -2.40 1135.0   -1.60  1136.5   -1.10  1138.5    1.40  1140.0    4.99  1143.0
GR  4.99 1144.0    4.99  1154.5    6.67  1158.5    7.75  1161.5    7.75  1165.0
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GR  3.61  1171.8    3.61  1174.8    2.11  1176.3    2.11  1194.5    3.31  1196.5
GR  3.31  1246.5
X1 22.11       95  19.50  984.10  450.00  450.00  450.00
GR  7.38       .0   7.38     8.0    6.38     9.0    6.38    11.0    4.88    13.7
GR  4.38     13.7   4.38    14.5    4.88    14.5    5.38    15.0    5.38    19.5
GR  4.51     21.2   4.51    53.9    4.30    54.9    4.30    89.5    4.06    90.0
GR  4.06    165.0   2.86   166.0    2.86   204.5    4.68   207.0    4.68   208.0
GR  2.18    211.0   2.18   211.5    2.48   212.5    2.48   256.0    4.78   258.0
GR  4.78    259.0   2.48   261.5    2.48   283.0    3.12   284.0    3.12   285.0
GR  1.40    286.0  -2.60   287.5   -3.60   289.5   -4.50   291.0   -4.20   296.5
GR -4.70    323.9  -4.30   334.9   -4.50   340.4   -4.20   356.9   -4.00   378.9
GR -4.20    395.3  -4.10   411.8   -3.80   422.8   -3.70   450.3   -4.10   455.7
GR -3.10    472.2  -3.10   499.7   -3.30   505.2   -2.90   527.1   -3.40   532.6
GR -3.10    554.6  -2.40   565.6   -2.60   576.6   -2.50   587.5   -2.90   593.0
GR -1.90    609.5  -2.10   615.0   -1.90   631.5   -2.30   642.5   -2.10   658.9
GR -1.80    669.9  -2.00   675.4   -1.50   686.4   -2.00   691.9   -1.40   708.4
GR -1.50    757.8  -1.80   763.3   -1.00   774.3    -.50   785.2   -2.50   807.2
GR -3.20    829.2  -3.30   845.6   -2.50   862.1   -2.70   878.6   -2.10   889.6
GR -2.70    906.0  -2.60   917.0   -2.40   922.5   -2.50   939.0   -1.60   940.5
GR -1.10    942.5   1.40   944.0    5.12   945.5    5.12   947.5    4.68   949.5
GR  4.68    950.5   3.28   954.0    3.28   973.5    6.68   981.5    7.77   984.1
GR  7.77    987.6   1.08  1001.5    1.08  1007.5    3.38  1010.0    3.38  1060.0
X1 22.55       72    .00  1013.00  440.00  440.00  440.00
GR 17.11       .0   5.11    16.0    5.11    21.0    3.79    22.0    3.79    50.0
GR  4.29     51.0   4.29    52.0    2.97    55.0    2.57    57.5    1.41    59.0
GR   .81     61.0    .51    63.0     .50    64.0     .31    69.0     .50    73.9
GR   .30     83.8    .31    88.8    -.59   113.6   -1.00   123.5   -1.69   133.4
GR  -.79    138.3  -1.98   148.2   -2.19   153.2   -2.89   178.0   -2.58   182.9
GR -4.27    207.7  -3.99   212.7   -5.20   232.5   -5.58   247.3   -5.48   252.3
GR -5.89    262.2  -5.80   267.2   -6.60   287.0   -6.59   291.9   -6.28   316.7
GR -6.20    321.7  -6.09   331.6   -6.20   346.4   -6.19   356.4   -6.18   366.3
GR -1.49    396.0   -.59   404.0     .41   424.0    1.41   426.0    2.21   446.0
GR  2.61    840.0   1.41   860.0   -1.59   865.0   -2.59   888.0   -3.19   890.0
GR -5.00    904.1  -4.19   914.6   -4.49   918.2   -3.70   921.7   -1.38   946.3
GR  -.19    963.9    .31   978.0     .60   980.0     .81   982.0    1.41   983.0
GR  3.31    983.5   3.99  1000.0    6.90  1008.0    6.90  1009.5    8.34  1013.0
GR  8.34   1019.0   5.61  1023.5    5.61  1027.5    2.81  1032.0    2.81  1033.0
GR  4.31   1035.0   4.31  1071.0
X1 23.25       88    .00  1021.70  700.00  700.00  700.00
GR 10.87       .0   3.97    11.2    3.77    17.2    3.77    18.2    1.41    19.2
GR -2.89     19.7  -3.59    23.2   -4.09    24.2  -11.59    48.3  -14.79    52.4
GR-14.69     56.4 -15.09    64.4  -10.69    92.6  -10.09    96.6   -8.89   112.7
GR -8.39    116.7  -4.39   165.0   -2.39   181.1   -1.69   197.1    -.99   201.2
GR  -.79    209.2   -.59   215.2     .41   228.2    1.41   229.2    2.27   234.7
GR  1.77    250.2   3.87   257.7    3.87   258.7    2.77   262.2    2.77   349.9
GR  4.77    354.2   4.77   357.7    3.07   360.0    3.07   512.2    5.12   515.2
GR  5.12    517.7   2.52   521.7    2.52   585.7    2.92   586.2    2.92   589.7
GR  2.17    590.2   2.17   678.2    5.21   684.7    5.21   685.7    2.07   690.7
GR  2.07    734.2   3.42   736.2    3.42   740.7    2.17   744.2    2.17   747.7
GR  1.41    749.7   -.09   751.2   -1.59   753.2   -2.19   754.7   -2.09   760.4
GR -1.99    766.1  -2.29   777.4   -1.79   783.1   -1.49   794.4   -1.79   811.5
GR -1.39    822.8  -1.49   828.5    -.99   845.5   -1.09   851.2   -1.09   856.9
GR  -.69    873.9   -.79   885.3    -.49   896.6     .21   930.7     .41   935.2
GR   .71    944.7   1.41   945.7    3.96   948.7    3.96   958.7    4.77   960.2
GR  4.77    966.2   2.37   971.7    2.37  1006.7    8.96  1021.7    8.93  1025.7
GR  5.17   1032.2   5.17  1035.2    2.57  1040.2    2.57  1044.2     .77  1046.2
GR   .77   1050.2   2.57  1052.2    2.57  1137.2
X1 23.55      104    .00  1220.30  300.00  300.00  300.00
GR 43.91       .0  17.11    49.5   14.11    68.5   13.31    70.5    9.91    97.3
GR  4.91    131.0   3.61   133.5    3.31   139.5    1.42   141.5   -2.58   143.0
GR -3.58    146.0  -4.18   146.5   -4.48   156.8   -6.18   167.1   -7.38   177.4
GR -7.18    187.7  -7.88   198.0   -6.08   208.3   -6.38   213.5   -5.68   218.6
GR -4.58    254.7  -4.18   280.5   -4.28   285.6   -3.88   295.9   -4.08   311.4
GR -3.88    316.5  -3.98   321.7   -3.68   326.9   -3.98   352.6   -3.58   373.2
GR -3.88    383.5  -3.78   388.7   -4.08   399.0   -3.68   404.2   -4.18   414.5
GR -3.78    419.6  -3.78   429.9   -4.18   450.5   -4.18   481.4   -4.28   507.2
GR -4.58    522.7  -3.88   533.0   -3.88   548.4   -3.58   550.0   -1.58   553.0
GR  1.42    553.4   2.26   553.9    2.26   653.5    2.91   655.7    2.91   656.7
GR  1.65    660.0    .15   665.0     .68   676.0     .68   681.0    3.71   690.5
GR  3.71    693.5   2.68   696.0    2.68   756.0    1.42   757.5     .42   759.0
GR  -.28    761.0   -.38   761.5    -.58   762.0   -1.48   762.5    -.28   809.6
GR   .42    880.2    .22   895.9     .62   911.6     .72   943.0     .72   961.0
GR   .82    985.0    .82   994.0     .92  1016.0    1.02  1042.0    1.42  1043.0
GR  3.11   1045.0   3.11  1049.0    4.91  1053.0    4.91  1055.0    2.91  1058.5
GR  2.91   1094.5   4.41  1096.5    4.41  1098.5    5.31  1099.4    5.31  1104.4
GR  3.41   1106.9   3.41  1118.5    2.91  1119.0    2.91  1152.2    3.71  1153.5
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GR  4.71  1168.0    2.71  1181.5    2.71  1204.5    8.90  1220.3    9.01  1224.3
GR  6.71  1228.0    6.71  1231.5    3.91  1238.0    2.91  1241.5    2.91  1243.5
GR  1.31  1243.5    1.31  1246.5    2.71  1246.5    2.71  1280.0
X1 24.05     118  140.00 1258.60  500.00  500.00  500.00
GR  3.01     .0    3.01    72.5    2.57    73.5    2.57   120.5    9.43   134.0
GR  9.43   140.0    7.03   145.0    3.20   154.5    3.20   157.5    4.87   164.0
GR  4.87   169.0    6.00   173.5    6.00   180.5    4.78   182.8    3.51   191.5
GR  2.61   193.0    2.61   226.0    3.20   227.0    3.20   228.0    2.20   230.0
GR  2.54   237.5    1.42   238.5    -.08   240.0   -1.58   242.5   -2.08   243.5
GR -3.98   259.2   -2.98   267.1   -3.18   267.1   -1.08   277.5   -1.38   280.2
GR  -.58   285.4    -.68   290.6    -.98   293.3     .42   298.5     .52   301.5
GR   .72   305.5     .82   307.5     .62   309.5     .52   311.5     .42   313.5
GR   .12   315.5     .02   317.5    -.08   318.5   -1.78   334.8   -2.98   372.8
GR -2.68   389.0   -2.48   399.9   -2.08   405.3   -2.18   416.2   -1.48   427.0
GR -1.78   437.9   -1.38   443.3   -2.48   448.7   -1.88   459.6   -1.98   465.0
GR -2.08   470.4   -2.58   481.3   -3.18   497.5   -2.78   503.0   -3.18   513.8
GR -2.98   524.7   -3.28   557.2   -2.78   584.3   -4.18   616.9   -3.98   638.6
GR -3.78   649.4   -3.68   654.9   -3.48   671.1   -3.58   687.4   -3.38   692.8
GR -3.38   703.7   -3.08   720.0   -2.88   725.4   -2.98   752.5   -2.98   763.4
GR -2.98   774.2   -2.78   779.6   -2.98   801.3   -2.68   823.0   -1.78   839.3
GR -1.68   861.0   -1.48   871.9    -.98   904.4    -.68   926.1    -.78   931.5
GR  -.08   942.4    -.08   953.2    -.18   958.7    -.08   964.1     .12   969.5
GR   .42   971.0     .42   980.0     .72   997.0    1.40   999.5    4.13  1024.3
GR  5.95  1026.8    5.95  1028.8    2.63  1033.5    2.63  1193.5    4.63  1195.5
GR  4.63  1200.0    2.43  1203.0    2.43  1242.0    1.93  1242.5    1.93  1243.0
GR  9.12  1258.6    9.19  1263.1    5.83  1269.0    5.83  1272.5    3.73  1275.5
GR  2.73  1279.5    1.23  1279.5    1.23  1282.5    2.73  1282.5    2.73  1285.5
GR  1.33  1288.0    1.33  1291.0    2.53  1295.0
X1 24.68     105  180.00 1543.80  630.00  630.00  630.00
GR  3.32     .0    3.32    90.5    4.05    92.0    4.05    96.5    1.30   102.3
GR  1.45   122.8    3.83   128.0    3.15   128.5    3.15   159.0    6.71   164.5
GR  6.71   169.5    8.95   174.5    8.96   180.0    7.11   184.5    4.75   191.0
GR  4.75   193.5    3.93   196.5    3.93   198.5    3.03   199.5    3.03   200.0
GR  3.93   200.5    3.93   201.0    3.15   202.0    3.15   314.5    4.22   315.0
GR  4.22   373.7    3.53   375.2    3.53   441.8    1.90   442.8    1.90   443.8
GR  2.58   445.5    2.58   499.0    2.76   500.0    2.76   549.8    3.80   551.3
GR  3.80   553.8    2.85   555.2    2.85   640.3    2.65   641.3    2.65   704.8
GR  2.89   705.8    2.89   743.2    5.06   746.2    4.56   750.2    1.45   755.5
GR  1.45   759.5    2.95   763.4    2.65   772.4    2.75   780.0    1.42   783.0
GR -1.08   788.0    -.68   800.0    -.58   830.0    1.27   863.2    1.42   876.5
GR  2.27   877.0    2.65   916.0    2.26   996.5    1.42  1001.0    1.02  1055.0
GR  1.02  1060.0    1.02  1071.0    -.08  1091.8     .22  1098.7    -.08  1119.5
GR  -.18  1126.4     .02  1133.3    -.48  1140.2    -.48  1154.1    -.78  1174.8
GR -3.68  1195.6   -5.18  1216.4   -6.48  1244.1   -7.18  1257.9   -6.58  1264.8
GR -7.28  1271.8   -6.58  1278.7   -6.78  1292.5   -6.58  1306.4   -6.68  1327.2
GR -7.28  1347.9   -7.38  1361.8   -7.88  1375.6   -6.88  1396.4   -6.78  1403.3
GR -2.78  1431.0   -2.58  1432.0   -1.58  1435.0    1.42  1436.0    5.34  1440.0
GR  5.34  1442.0    2.75  1516.5    2.75  1519.5    3.22  1525.0    3.22  1525.5
GR  3.22  1527.5    5.00  1533.5    8.97  1543.8    9.03  1547.8    5.85  1553.5
GR  5.85  1556.0    4.31  1559.0    4.31  1611.0    5.95  1613.0    5.95  1633.0
X1 25.33     116  150.00 1410.80  650.00  650.00  650.00
GR  3.37     .0    3.37    66.5    4.18    67.5    4.18    71.0    1.24    76.6
GR  1.24    92.5    4.04    98.0    4.04    99.5    3.13   100.5    3.13   129.5
GR  4.44   129.5    4.44   131.0    6.74   133.5    6.74   138.5    9.74   144.5
GR  9.74   150.0    6.93   157.0    3.47   165.0    3.47   177.0    4.84   178.0
GR  4.90   184.7    1.24   190.5    1.24   209.0    5.64   216.6    5.64   217.1
GR  2.74   221.5    2.74   318.0    4.47   320.5    4.47   322.5    2.74   327.5
GR  2.74   406.2    2.38   407.2    2.38   407.7    4.46   411.2    4.46   412.7
GR  2.64   416.5    2.64   452.5    2.85   453.0    2.85   568.5    3.23   569.0
GR  3.23   572.0    2.31   575.5    2.31   579.5    2.79   585.0    2.79   684.5
GR  5.07   688.5    5.07   689.5    2.74   693.5    2.74   717.5    5.63   722.0
GR  5.63   723.0    2.24   727.5    1.94   732.0    1.43   733.0     .43   737.0
GR  -.57   741.0    -.67   743.0   -1.17   766.4   -1.20   785.2    -.48   803.9
GR  -.56   808.6    -.76   813.3    -.57   827.3    -.96   836.7   -1.08   846.1
GR  -.96   864.8    -.97   869.5    -.87   883.6   -1.57   893.0    -.77   921.1
GR -1.07   935.1    -.76   958.6   -1.07   967.9    -.98   977.3    -.57   991.4
GR  -.66  1010.1    -.47  1033.5    -.36  1042.9    -.17  1057.0    -.17  1066.3
GR   .23  1080.4     .13  1094.4    -.77  1103.8   -1.36  1108.5   -2.17  1122.6
GR -2.36  1131.9   -2.77  1136.6   -3.47  1150.7   -4.37  1169.4   -5.16  1183.5
GR -5.08  1192.9   -5.17  1206.9   -5.16  1211.6   -5.37  1216.2   -5.27  1225.7
GR -5.46  1235.0   -4.97  1244.4   -4.98  1253.8   -4.17  1272.5   -4.37  1291.3
GR -3.87  1295.9   -4.27  1305.3   -4.37  1310.0   -3.56  1313.0   -1.57  1317.0
GR  1.43  1320.0    2.24  1320.0    2.89  1322.8    4.66  1324.5    4.65  1340.2
GR  4.17  1341.7    4.17  1378.0    4.55  1379.0    4.55  1400.8    5.42  1405.8
GR  7.42  1410.8
X1 25.81      86  100.00 1349.00  480.00  480.00  480.00
```

GR	3.26	.0	3.26	20.0	4.08	21.0	4.08	24.5	1.18	30.5
GR	1.18	43.5	3.47	50.0	3.47	51.5	3.18	52.0	3.18	78.0
GR	6.46	83.5	6.46	87.5	9.68	94.5	9.69	100.0	7.08	105.5
GR	2.38	118.0	2.38	162.0	5.28	166.5	5.28	167.5	1.18	175.0
GR	1.18	179.0	5.14	189.0	5.14	190.0	2.48	194.0	2.48	218.7
GR	4.54	221.2	4.54	223.7	4.26	332.0	4.26	334.0	2.73	341.8
GR	2.49	346.3	2.49	545.0	1.58	547.5	1.58	550.0	4.43	555.5
GR	4.43	557.0	2.68	561.0	2.68	654.5	5.84	659.5	5.84	660.5
GR	3.18	665.5	2.48	668.5	1.43	671.5	.93	673.0	.83	675.0
GR	.73	676.5	.73	740.1	.43	759.2	.73	771.9	.63	905.5
GR	.33	943.6	.63	950.0	.13	969.1	.23	994.5	.43	1007.2
GR	.13	1019.9	.23	1026.3	.23	1039.0	-2.37	1083.5	-3.47	1115.3
GR	-3.17	1128.1	-3.47	1134.4	-3.47	1153.5	-3.77	1166.2	-3.97	1198.0
GR	-4.97	1223.5	-5.77	1255.3	-5.67	1261.6	-6.47	1287.1	-3.87	1319.0
GR	-3.57	1321.0	-2.57	1323.0	1.43	1324.0	2.98	1327.0	3.77	1334.5
GR	7.15	1344.0	8.87	1349.0	8.77	1354.0	5.47	1357.5	5.47	1360.5
GR	1.77	1366.5	1.77	1367.0	2.71	1369.0	3.77	1369.5	2.27	1371.0
GR	2.27	1391.0								
X1	26.14	129	120.00	1403.20	330.00	330.00	330.00			
GR	3.59	.0	3.59	37.3	4.65	38.0	4.65	43.0	2.10	47.0
GR	1.50	47.0	1.45	62.2	2.05	62.2	3.64	65.0	3.64	66.0
GR	3.35	66.5	3.35	101.0	6.35	105.0	6.35	108.5	9.85	114.5
GR	9.85	120.0	7.42	126.0	3.78	135.5	3.78	137.5	2.91	138.0
GR	2.91	160.0	3.47	160.5	3.47	163.5	2.62	164.5	2.62	235.0
GR	1.79	236.0	1.79	238.0	5.09	241.5	5.09	242.5	2.65	247.0
GR	2.65	285.9	4.94	288.9	4.94	291.4	2.85	295.0	2.85	420.6
GR	2.32	422.1	2.32	423.6	2.85	424.5	2.85	448.0	2.41	452.0
GR	2.25	462.5	4.70	479.0	4.65	489.0	1.85	508.5	1.85	533.0
GR	2.75	540.0	2.75	584.0	2.35	587.0	2.35	593.0	4.71	596.5
GR	4.71	598.5	2.85	601.5	2.85	670.5	5.85	674.5	5.85	675.5
GR	2.65	680.5	1.44	685.5	-.06	687.5	-.56	689.0	-2.07	690.5
GR	-2.26	703.8	-2.36	717.1	-2.27	730.5	-2.65	734.9	-2.46	739.4
GR	-2.76	748.2	-2.65	757.1	-2.05	774.9	-2.06	779.3	-1.86	788.2
GR	-1.66	797.1	-1.86	810.4	-1.97	814.9	-1.76	819.3	-1.45	828.2
GR	-1.56	837.1	-.86	850.4	-.45	854.8	-.56	863.7	-.27	868.1
GR	-.06	877.0	-.16	885.9	-.05	908.1	.14	912.6	.04	925.9
GR	.43	948.1	.14	961.4	.24	965.9	.04	979.2	.34	1010.3
GR	.24	1041.4	.14	1081.3	.35	1116.9	.05	1143.5	.24	1156.8
GR	.04	1165.7	-.17	1174.6	.04	1183.5	-.16	1187.9	-.15	1196.8
GR	-1.36	1205.7	-3.16	1214.6	-4.95	1241.2	-5.15	1250.1	-4.56	1272.3
GR	-4.35	1285.6	-4.35	1290.1	-4.76	1312.3	.05	1330.0	-.16	1334.5
GR	.14	1338.9	-.35	1356.7	-.16	1370.0	.45	1374.0	.95	1378.0
GR	1.44	1380.0	1.87	1382.0	4.85	1386.5	4.83	1392.5	7.35	1398.5
GR	9.49	1403.2	9.65	1407.7	6.45	1413.0	6.45	1415.0	2.22	1423.3
GR	2.22	1423.8	3.72	1425.3	3.72	1425.8	3.32	1426.3		
X1	26.60	97	78.50	1277.70	460.00	460.00	460.00			
GR	3.49	.0	3.79	.5	3.79	5.5	2.26	9.0	1.63	9.0
GR	1.67	24.0	2.27	24.0	3.89	27.0	3.64	27.5	3.64	56.0
GR	4.69	58.0	4.69	59.0	6.64	61.3	6.64	65.3	9.79	72.0
GR	9.79	78.5	3.40	95.0	3.40	170.0	3.81	170.0	3.14	171.5
GR	2.85	240.3	2.41	241.5	2.41	276.5	2.59	277.0	2.59	278.0
GR	1.82	279.0	1.82	281.0	2.86	284.0	2.86	464.5	4.92	467.0
GR	4.92	479.5	2.79	482.5	2.79	562.0	5.24	567.0	5.24	569.0
GR	2.69	575.0	3.29	579.0	1.44	581.0	-.56	582.5	-2.56	584.5
GR	-2.77	586.0	-2.66	621.2	-2.76	627.1	-2.76	632.9	-2.26	656.4
GR	-1.86	674.0	-1.65	709.2	-1.86	726.8	-2.26	738.5	-1.76	744.4
GR	-2.06	750.2	-2.05	773.7	-1.96	779.6	-1.95	797.2	-1.76	814.8
GR	-1.86	820.6	-1.75	826.5	-1.76	844.1	-.75	873.4	-1.17	879.3
GR	-.86	885.1	-.87	896.9	-.56	908.6	-.66	926.2	-.25	949.7
GR	-.45	973.1	-.26	990.7	-.35	1003.4	-.16	1037.6	-.65	1067.0
GR	-.66	1084.6	-1.26	1102.2	-1.45	1125.6	-2.55	1131.5	-5.56	1178.4
GR	-5.66	1196.0	-4.55	1197.5	-2.55	1201.5	1.44	1206.0	3.09	1207.0
GR	4.91	1209.5	4.91	1211.5	2.79	1214.5	2.79	1264.5	7.22	1274.0
GR	9.04	1277.7	9.08	1282.7	5.99	1288.5	5.99	1292.0	3.49	1295.5
GR	3.49	1298.0	1.49	1300.5	1.49	1301.0	3.99	1305.0	4.29	1327.5
GR	3.09	1332.5	3.09	1378.5						
X1	26.99	121	100.00	1173.50	390.00	390.00	390.00			
GR	3.51	.0	3.51	23.5	4.01	24.4	4.01	29.4	2.48	33.5
GR	1.88	33.5	1.91	46.5	2.51	46.5	4.01	49.5	4.01	50.5
GR	3.61	51.0	3.61	80.0	6.15	83.5	6.15	88.0	10.01	94.5
GR	10.02	100.0	3.47	116.5	3.49	129.5	4.93	136.8	3.52	143.0
GR	3.52	194.0	4.96	196.0	4.96	197.0	3.51	199.0	3.51	203.0
GR	3.31	204.0	3.31	249.0	3.30	252.5	3.30	263.7	2.71	265.2
GR	2.71	431.5	4.33	433.8	4.33	435.8	2.71	439.5	2.61	494.5
GR	4.56	497.5	4.56	499.5	2.48	502.5	2.48	545.2	5.28	549.5
GR	5.28	550.5	2.11	556.5	2.41	561.5	1.44	564.5	.84	566.0

GR	.44	568.0	-.06	569.5	.24	579.7	.14	595.1	.24	605.3
GR	-.06	620.7	-4.76	646.2	-3.96	651.4	-4.76	661.6	-2.76	671.8
GR	-2.66	682.1	-3.66	702.5	-4.06	717.9	-3.96	728.1	-4.56	738.3
GR	-5.06	753.7	-4.96	763.9	-5.36	779.3	-5.16	804.9	-5.26	810.0
GR	-4.86	820.2	-4.86	825.3	-4.56	835.6	-3.26	856.0	-3.46	861.1
GR	-2.36	881.6	-2.56	891.8	-2.36	897.0	-1.76	907.2	-1.96	917.4
GR	-1.36	932.8	-1.26	943.0	-1.36	948.1	-1.16	968.6	-1.36	983.9
GR	-1.36	989.1	-1.46	999.3	-1.56	1019.8	-1.76	1024.9	-1.76	1030.0
GR	-1.86	1035.1	-1.86	1040.2	-1.86	1045.3	-1.86	1055.6	-1.96	1060.7
GR	-1.76	1070.9	-1.96	1076.0	-1.86	1081.2	-1.96	1086.3	-1.96	1091.4
GR	-1.96	1096.5	-1.56	1098.0	-.06	1100.0	1.44	1101.5	3.51	1105.0
GR	3.51	1119.9	3.87	1120.9	3.87	1159.2	6.51	1167.5	6.51	1169.0
GR	8.55	1173.5	8.55	1178.0	5.81	1184.5	5.81	1187.5	3.01	1194.0
GR	3.01	1195.0	4.01	1197.0	4.01	1220.5	4.51	1221.0	4.51	1229.0
GR	4.01	1229.0	4.01	1229.5	4.51	1229.5	4.51	1230.0	4.01	1235.0
GR	4.01	1300.0								
X1	27.40	93	130.00	1120.50	410.00	410.00	410.00			
GR	3.50	.0	3.50	54.5	4.00	56.0	4.00	59.5	2.80	62.0
GR	2.20	62.0	2.10	71.5	2.70	71.5	3.90	73.0	3.90	73.5
GR	3.60	74.0	3.60	109.5	7.30	113.5	7.30	119.5	10.00	124.5
GR	10.00	130.0	3.60	145.5	3.60	280.9	3.45	281.9	3.45	373.5
GR	3.40	378.0	3.40	406.0	4.60	407.5	4.60	409.5	1.60	419.5
GR	1.60	422.5	5.40	428.5	5.40	429.5	2.70	434.5	2.70	495.0
GR	2.92	495.5	2.92	499.0	2.76	499.5	2.76	622.0	2.50	622.5
GR	2.50	623.0	5.30	627.5	5.30	630.0	2.60	633.0	2.60	680.0
GR	5.97	683.5	5.97	684.5	2.70	691.5	3.50	708.5	5.30	711.0
GR	5.30	712.0	3.30	715.0	4.20	721.5	4.20	726.5	1.45	730.5
GR	.45	732.0	-1.05	735.0	-1.85	735.5	-1.75	739.2	-2.75	750.2
GR	-6.05	765.0	-11.15	798.2	-12.15	801.8	-20.75	835.0	-20.45	842.4
GR	-15.45	853.5	-21.35	871.9	-18.55	890.3	-16.25	905.1	-11.05	923.5
GR	-8.85	934.5	-6.55	941.9	-6.35	945.6	-5.55	947.0	-2.55	950.0
GR	1.45	950.6	3.60	958.5	3.00	975.0	5.19	979.5	5.19	984.0
GR	2.92	984.5	2.92	1033.5	4.30	1036.5	4.30	1072.1	4.00	1072.6
GR	4.08	1106.5	6.47	1114.0	6.47	1115.5	8.75	1120.5	8.84	1125.5
GR	6.10	1131.5	6.10	1138.5	5.00	1140.5	5.00	1145.5	3.10	1249.0
GR	3.10	1249.5	4.20	1250.0	4.20	1330.0				
X1	27.89	85	101.00	1016.00	490.00	490.00	490.00			
GR	3.63	.0	3.63	28.5	4.14	29.2	4.14	33.7	2.77	36.5
GR	2.17	36.5	2.15	45.5	2.75	45.5	3.91	48.0	3.91	48.5
GR	3.72	49.0	3.72	79.5	5.02	81.0	5.02	83.5	6.75	86.5
GR	6.75	89.0	10.17	94.5	10.18	100.0	10.17	101.0	3.79	116.5
GR	3.79	186.8	3.84	188.0	3.84	247.2	3.86	247.2	3.86	520.5
GR	5.67	522.5	5.67	524.5	2.47	530.9	2.47	567.5	5.47	576.5
GR	5.47	579.5	2.77	588.0	2.77	653.3	3.53	654.3	3.53	654.8
GR	1.45	657.3	-.35	659.0	-1.55	661.0	-2.35	662.3	-2.65	671.6
GR	-1.25	685.6	-2.05	699.6	-1.95	704.3	-2.75	727.6	-2.95	732.3
GR	-3.05	741.6	-3.35	755.6	-3.75	764.9	-3.65	769.6	-3.95	774.2
GR	-3.85	778.9	-4.65	783.6	-4.25	792.9	-4.35	797.6	-3.95	802.2
GR	-5.05	816.2	-4.95	820.9	-6.55	844.2	-6.45	848.9	-8.55	886.2
GR	-8.75	890.8	-8.85	895.5	-9.05	904.8	-9.15	909.5	-10.85	918.8
GR	-9.85	928.2	-2.85	956.1	-2.75	960.8	-2.55	962.0	-1.05	964.5
GR	1.45	965.8	2.42	967.2	2.42	970.2	4.60	974.5	4.60	1001.5
GR	7.27	1009.5	7.27	1011.0	9.23	1016.0	6.57	1026.5	6.57	1030.5
GR	4.67	1034.0	5.17	1034.5	5.17	1037.5	4.57	1038.5	4.57	1050.5
X1	28.29	98	100.00	1220.00	400.00	400.00	400.00			
GR	3.61	.0	3.61	26.5	4.11	27.0	4.11	32.0	2.71	35.0
GR	2.11	35.0	2.07	43.0	2.67	43.0	3.61	44.5	3.61	78.0
GR	6.67	84.5	6.67	88.5	10.11	94.5	10.11	100.0	9.01	102.0
GR	9.01	104.5	3.91	115.5	3.91	151.5	3.85	152.0	3.85	262.5
GR	4.42	263.5	4.42	267.0	3.31	269.5	3.31	270.5	3.61	273.0
GR	3.61	309.5	3.97	310.0	3.97	314.0	3.58	315.5	3.58	509.5
GR	4.11	510.0	4.11	513.5	3.61	514.5	3.61	601.0	5.41	602.5
GR	5.41	603.5	2.91	608.5	2.91	613.0	1.46	614.5	-.34	616.0
GR	-1.54	618.5	-2.44	619.5	-2.54	624.9	-3.14	635.7	-4.44	646.5
GR	-4.14	651.9	-4.14	656.8	-3.74	662.7	-3.64	678.9	-3.64	684.7
GR	-3.54	695.1	-3.64	700.0	-3.44	705.9	-3.24	722.1	-3.14	732.9
GR	-2.84	743.7	-3.04	759.5	-2.64	770.7	-2.94	792.3	-2.54	797.7
GR	-3.04	819.4	-3.54	830.2	-2.84	857.2	-2.54	873.4	-2.04	884.2
GR	-3.44	900.4	-5.04	927.4	-4.34	938.2	-4.94	954.4	-6.24	976.0
GR	-3.74	1003.0	-3.04	1005.0	-1.54	1007.0	1.46	1008.0	4.29	1008.5
GR	2.51	1012.0	2.31	1051.0	5.69	1055.5	5.69	1056.5	2.61	1059.5
GR	2.61	1072.5	5.47	1082.5	5.47	1084.0	1.81	1097.0	1.81	1106.0
GR	5.19	1125.5	4.77	1141.5	4.77	1142.5	5.37	1149.5	5.37	1151.0
GR	4.79	1171.5	5.47	1173.0	5.54	1174.0	5.11	1175.0	5.11	1179.0
GR	5.31	1189.0	6.51	1190.5	19.31	1220.0				
X1	28.63	118	90.00	1420.00	340.00	340.00	340.00			

GR	3.96	.0	4.44	1.9	4.44	7.9	2.76	11.5	2.16	11.5
GR	2.16	21.5	2.76	21.5	3.56	25.0	3.56	65.0	6.56	73.4
GR	6.56	77.4	10.36	84.5	10.36	90.0	4.76	106.0	4.76	107.5
GR	4.03	108.8	4.08	151.0	4.08	155.0	3.56	158.5	3.56	160.5
GR	4.03	161.5	4.03	348.0	3.60	349.0	3.60	445.5	4.56	448.0
GR	4.95	455.5	3.56	459.5	3.56	503.0	5.41	506.0	5.41	507.0
GR	2.36	508.0	1.46	510.0	-.04	512.0	-1.04	514.0	-1.74	515.0
GR	-2.04	520.1	-1.64	530.2	-1.84	545.4	-1.64	555.5	-1.74	575.8
GR	-1.74	580.8	-1.64	585.9	-1.94	596.0	-1.74	606.1	-1.34	621.3
GR	-1.54	636.5	-1.74	646.6	-2.74	672.0	-2.74	677.0	-3.34	692.2
GR	-3.24	697.3	-4.64	722.6	-4.14	732.7	-4.24	753.0	-4.04	783.4
GR	-4.14	798.5	-3.54	813.7	-4.24	818.8	-4.14	823.9	-4.24	828.9
GR	-3.54	849.2	-3.74	854.2	-2.64	869.4	-3.04	874.5	-2.14	884.6
GR	-2.54	889.7	-2.04	894.7	-1.84	904.9	-1.94	915.0	-1.54	918.0
GR	-.24	921.0	1.46	923.0	3.63	925.0	3.53	937.0	6.06	941.5
GR	6.06	942.5	2.26	947.0	2.26	1001.0	4.58	1004.0	4.58	1007.0
GR	2.66	1012.0	2.66	1050.8	2.86	1051.8	2.86	1085.0	2.56	1085.5
GR	2.56	1088.5	2.46	1089.5	2.46	1206.5	5.86	1206.7	5.86	1207.7
GR	1.66	1213.7	1.66	1229.0	5.89	1235.0	5.89	1236.5	2.86	1240.5
GR	2.86	1259.5	5.76	1262.5	5.76	1271.0	1.96	1277.0	1.96	1291.0
GR	5.26	1297.5	5.26	1299.5	2.26	1305.5	2.26	1307.5	5.26	1310.5
GR	5.26	1311.5	3.26	1315.5	3.26	1328.0	3.76	1329.0	3.76	1357.0
GR	3.56	1370.0	4.36	1375.0	4.36	1379.0	6.48	1390.0	6.29	1393.5
GR	11.28	1407.5	11.28	1410.0	14.56	1420.0				
X1	29.03	85	100.00	1360.50	400.00	400.00	400.00			
GR	3.66	.0	4.06	21.0	4.05	22.0	4.08	27.0	2.83	30.0
GR	2.23	30.0	2.23	37.5	2.83	37.5	3.93	39.5	3.93	40.5
GR	3.52	41.5	3.52	77.5	4.63	78.0	4.63	80.5	7.23	85.0
GR	7.23	87.0	10.23	93.0	10.24	100.0	6.53	111.0	6.53	115.0
GR	3.73	120.5	3.73	173.5	3.63	174.0	3.63	279.3	4.85	280.8
GR	4.85	288.5	3.78	290.0	5.71	346.5	5.71	347.5	1.46	353.5
GR	-1.04	355.0	-3.04	358.0	-3.54	360.5	-2.24	400.1	-2.44	413.2
GR	-1.84	433.0	-2.14	446.2	-1.84	452.8	-2.24	479.2	-2.14	492.4
GR	-3.24	538.5	-2.64	551.7	-3.44	564.9	-3.24	571.5	-4.44	604.4
GR	-6.44	637.4	-6.94	644.0	-6.64	657.2	-7.34	670.4	-2.74	723.1
GR	-1.44	749.5	-.54	753.0	.46	758.0	1.46	759.5	3.58	760.8
GR	3.00	768.5	5.63	778.5	5.63	779.5	3.18	784.5	3.18	813.5
GR	4.03	815.5	4.03	816.5	2.53	818.0	2.53	886.0	2.63	1164.5
GR	1.63	1165.5	1.63	1168.5	2.63	1169.5	2.63	1224.0	3.93	1226.0
GR	3.93	1227.5	2.13	1228.5	2.13	1231.5	4.03	1232.5	3.93	1341.0
GR	9.00	1355.0	11.07	1360.5	11.19	1365.5	5.67	1375.5	5.67	1382.5
GR	2.97	1387.5	2.97	1389.0	3.97	1390.5	3.47	1391.0	3.47	1410.0
X1	29.57	78	.00	1129.00	540.00	540.00	540.00			
GR	16.84	.0	7.64	15.0	7.79	23.0	7.80	27.0	6.29	30.0
GR	6.29	34.0	3.79	39.5	3.79	40.3	4.19	41.5	4.19	56.0
GR	2.93	58.5	2.93	80.5	4.26	82.5	4.26	84.0	2.29	86.5
GR	1.47	89.0	.77	91.0	.47	93.0	-.43	94.0	-8.42	147.3
GR	-8.23	152.2	-8.42	157.0	-8.53	171.5	-9.53	190.9	-8.23	210.3
GR	.47	307.3	.27	316.9	.37	321.8	-2.03	350.9	-1.93	355.7
GR	-2.53	360.6	-2.43	365.4	-2.73	370.3	-3.03	375.1	-2.03	380.0
GR	-3.73	389.6	-4.73	404.2	-4.43	409.0	-5.03	418.7	-4.23	428.4
GR	-4.13	438.1	-4.23	443.0	-2.13	457.5	-1.53	459.0	-.03	461.0
GR	1.47	462.5	6.19	467.8	6.19	468.8	2.99	474.5	2.99	509.5
GR	2.99	528.2	2.99	727.0	3.09	727.5	3.09	732.5	2.69	733.0
GR	2.69	808.0	2.79	809.5	5.59	811.5	5.59	813.5	1.19	827.5
GR	1.19	846.5	5.99	858.5	5.79	953.0	3.19	965.0	3.19	988.0
GR	4.29	989.0	4.29	991.5	2.99	992.2	2.99	1108.5	9.14	1123.5
GR	11.40	1129.0	11.39	1134.0	7.49	1142.5	7.49	1144.5	9.39	1151.5
GR	7.89	1161.5	6.79	1168.5	6.79	1227.0				
X1	30.16	122	100.00	1426.00	590.00	590.00	590.00			
GR	3.00	.0	3.00	40.0	3.58	40.5	3.58	41.1	3.18	41.1
GR	3.18	41.5	3.58	41.5	3.58	43.5	3.00	44.5	1.58	47.2
GR	1.58	57.5	2.88	60.0	3.68	61.5	3.88	81.0	7.88	87.0
GR	7.88	90.0	10.58	95.0	10.59	100.0	7.98	106.5	3.78	117.0
GR	3.38	118.5	3.28	146.5	1.47	149.0	-3.53	151.0	-5.52	152.0
GR	-6.43	154.0	-6.42	166.4	-6.41	178.7	-5.83	209.7	-5.53	222.0
GR	-2.63	271.5	-2.52	273.0	.47	276.0	1.47	276.5	3.21	278.5
GR	3.21	280.5	2.82	281.5	2.82	299.5	3.61	300.5	3.61	303.5
GR	3.22	304.6	3.22	388.0	3.83	388.5	3.83	389.0	3.44	390.0
GR	3.44	421.5	4.63	424.0	4.63	425.5	1.47	431.0	.77	433.0
GR	.47	434.0	-.05	436.0	.17	455.0	.03	478.8	.18	493.1
GR	.27	507.3	.27	521.6	.07	545.4	.27	554.9	.07	573.9
GR	.17	583.4	.07	592.9	-.03	602.4	-.23	612.0	-.22	635.7
GR	-.21	640.5	-.13	650.0	.18	652.0	.65	654.0	1.47	655.5
GR	2.22	657.0	2.58	686.5	2.96	764.0	1.47	766.0	.77	768.0
GR	.67	770.0	.66	771.0	.65	775.7	.65	780.4	.37	785.0

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GR   .37   799.1    -.33   808.4    -.33   827.1    -.55   841.2    -.23   850.5
GR  -.53   864.6    -.73   873.9   -4.03   916.0   -3.75   925.4   -3.72   934.7
GR -1.93   944.1   -1.93   948.8   -1.92   958.1   -1.73   967.5   -2.23   981.5
GR -1.52   983.0    -.05   985.5    1.47   986.5    3.44   989.0    3.44   992.0
GR  1.88   996.0    1.88  1020.5    5.38  1026.0    5.38  1027.5    3.28  1031.0
GR  3.28  1138.0    3.38  1138.0    3.38  1141.0    2.48  1142.0    2.48  1143.0
GR  3.48  1143.5    3.48  1144.5    3.18  1145.5    3.16  1408.5   10.41  1426.0
GR 10.36  1433.0    5.78  1441.0    5.78  1443.5    3.28  1447.5    3.28  1448.0
GR  3.88  1449.5    3.88  1500.0
X1 30.83    88   110.00 1398.00  670.00  670.00  670.00
GR  4.25    .0    4.25    28.5    3.75    30.5    1.75    34.5    1.75    61.5
GR  3.27   66.5    4.45    69.0    4.45    84.3    3.95    84.3    3.95    84.8
GR  4.45   84.8    7.85    92.5    7.85    98.0   10.75   105.5   10.76   110.0
GR  8.39  115.5    4.20   126.5    4.20   131.0    1.65   136.0     .85   137.0
GR  -.15  160.0    -.15   190.0     .95   216.0    1.65   220.0    2.15   224.0
GR  4.85  234.5    4.57   248.0    4.25   304.5    6.05   308.5    6.05   311.0
GR  1.48  313.0    -.42   317.0   -1.52   322.0   -2.32   323.0   -2.72   330.0
GR -2.92  358.1   -2.42   386.2   -2.52   400.3   -1.82   435.4   -2.22   477.5
GR -2.02  491.6   -2.22   512.6   -2.42   540.7   -2.52   561.8   -1.72   604.0
GR -1.62  625.0   -1.42   632.1   -1.62   646.1    -.82   702.3   -1.32   716.3
GR  -.72  737.4     .08   758.5   -1.02   786.6    -.52   793.6    -.42   800.6
GR   .08  814.7    -.02   828.7     .38   849.8    -.42   863.8     .38   906.0
GR   .48  911.0     .58   926.0     .68   931.0     .68   951.0     .78   967.0
GR   .78  984.0    1.48   986.5    5.57   990.6    5.57   991.6    2.95   995.5
GR  2.95 1049.5    4.25  1050.5    4.25  1051.5    2.95  1052.5    2.95  1150.5
GR  2.95 1252.5    2.95  1253.5    5.55  1257.0    5.55  1259.0    3.57  1261.6
GR  3.57 1380.0   10.63  1398.0   10.81  1403.0    7.75  1411.0    7.75  1413.5
GR  4.35 1418.5    4.35  1419.0    5.75  1420.0
X1 31.40    76   100.00 1120.00  570.00  570.00  570.00
GR  2.72    .0    2.72    30.0    3.72    31.5    3.72    35.5    1.42    39.5
GR  1.42   48.4    2.92    53.0    2.92    70.0    5.02    73.0    5.02    76.5
GR  8.02   83.0    8.02    90.0   10.72    95.0   10.73   100.0   10.52   101.0
GR  8.02  106.5    3.58   117.0    3.58   163.0    3.82   163.5    3.82   164.5
GR  1.48  169.0     .18   170.0   -1.02   173.0   -1.62   174.0   -6.42   195.2
GR -6.12  205.8   -6.02   211.1   -6.22   216.4   -6.22   221.7   -6.72   232.3
GR -7.02  242.8   -6.42   264.0   -6.62   269.3   -6.42   274.6   -6.42   285.2
GR -6.62  290.5   -6.52   295.8   -6.82   306.4   -6.82   311.7   -7.22   322.3
GR -5.32  348.8   -2.52   375.2   -2.62   380.5   -1.82   396.4   -2.32   407.0
GR -1.42  417.6   -1.72   422.9   -1.42   422.9   -1.72   428.2   -1.32   433.5
GR  -.52  435.0    1.60   437.5    1.60   438.5    1.60   443.0    1.60   472.2
GR  1.60  480.8    1.60   485.8    1.60   489.0    1.60   582.8    3.77   585.0
GR  3.52 1102.0    3.92  1102.5    3.92  1103.0    3.42  1103.5    3.72  1104.5
GR  9.22 1114.0    9.22  1118.0   10.79  1120.0   10.67  1124.5    9.95  1126.5
GR  9.95 1129.0    6.22  1136.0    6.22  1139.0    3.72  1142.0    3.22  1142.5
GR  3.92 1144.0
X1 32.12    56    80.00 1129.80  720.00  720.00  720.00
GR  2.92    .0    2.92    26.0    1.62    29.5    1.62    34.5    4.12    38.0
GR  4.12   49.5    4.34    51.5    5.55    57.0    5.55    60.0    8.62    65.0
GR  8.62   70.0   11.02    74.5   11.02    80.0    8.32    85.0    3.62    97.5
GR  3.67  115.5    3.32   123.7    1.48   126.5   -3.52   128.5   -5.52   130.5
GR -5.82  131.5  -11.92   144.8   -1.92   149.3  -13.72   176.0   -9.62   216.0
GR -8.62  233.8   -4.92   264.9   -8.62   278.2   -6.42   296.0   -5.52   298.0
GR -3.52  300.0    1.48   301.0    1.60   303.0    1.60   304.0    1.60   306.0
GR  1.60  356.4    1.60   357.4    1.60   443.5    1.60   466.0    1.60   469.5
GR  1.60  517.7    4.95   521.0    4.22  1063.5    4.22  1066.5    4.02  1067.0
GR  4.02 1103.0    5.22  1106.0    5.72  1116.5   10.83  1129.8   10.74  1134.8
GR  7.12 1145.0    7.12  1151.0    6.42  1152.0    6.42  1162.0    6.12  1162.5
GR  6.12 1180.0
X1 32.59    78   111.50 1228.00  470.00  470.00  470.00
GR  4.53    .0    4.43    17.7    4.43    23.7    5.79    25.8    5.79    32.8
GR  4.09   36.5    2.09    36.5    2.09    40.5    4.09    40.5    4.09    43.5
GR  3.79   44.0    3.79    82.5    4.73    85.5    4.73    89.0    8.72    98.0
GR  8.72  102.5   10.43   105.5   10.44   111.5    8.43   116.5    4.03   126.5
GR  4.03  136.0    3.73   136.5    3.73   230.0    3.93   230.5    3.93   232.0
GR  1.49  236.0   -1.51   237.5   -2.51   240.5   -2.81   241.0   -9.11   254.2
GR-11.81  264.7  -12.11   280.5  -11.91   288.4  -12.21   291.0   -9.71   309.5
GR -8.91  320.0   -8.31   330.6   -8.51   335.8   -7.41   349.0   -7.71   354.3
GR -7.31  359.5   -7.31   370.1   -6.01   385.9   -5.81   393.8   -5.31   399.0
GR -5.31  401.7   -4.81   417.5   -3.81   428.0   -3.51   429.5   -3.01   431.5
GR  1.49  433.0    1.60   433.5    1.60   441.5    1.60   443.5    1.60   444.5
GR  1.60  448.0    1.60   558.0    1.60   558.5    1.60   559.5    1.60   560.5
GR  1.60  641.0    3.57   643.0    3.57   645.5    4.33   646.5    4.33   806.0
GR  4.53  806.5    4.53   809.0    4.83   810.0    4.83  1132.0    4.33  1133.0
GR  4.33 1135.5    4.33  1183.5    4.93  1214.0   10.72  1228.0   10.75  1234.0
GR  7.43 1240.0    7.43  1245.0    5.23  1247.5
X1 32.91    80   98.00 1148.00  323.00  323.00  323.00
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GR 10.13      .0   13.38    88.5   13.63    98.0   10.45    98.0   10.45    99.0
GR  9.25    99.0    9.25   101.5    4.38   108.5    3.88   148.0    3.80   158.0
GR  3.80   163.0    1.49   163.0   -2.51   164.5   -5.51   165.5   -7.51   166.5
GR -9.71   178.0  -12.21   198.0  -13.30   203.0  -12.31   228.0  -13.90   240.5
GR-12.91   248.0   -8.91   265.5   -9.00   270.5   -8.41   278.0   -8.41   283.0
GR -8.90   290.5   -9.11   293.0   -8.61   298.0   -7.00   306.6   -6.71   310.1
GR -6.91   311.8   -6.41   317.0   -6.60   318.7   -5.50   332.5   -5.01   348.0
GR -3.01   352.5    1.49   355.3    1.60   356.5    1.60   364.5    1.60   367.5
GR  1.60   368.5    1.60   372.0    1.60   398.0    1.60   421.5    1.60   424.2
GR  1.60   430.2    1.60   433.5    1.60   438.5    1.60   440.0    1.60   448.0
GR  1.60   498.0    1.60   538.0    1.60   540.5    1.60   548.0    1.60   579.9
GR  3.72   582.0    3.88   598.0    3.88   648.0    4.38   698.0    4.38   748.0
GR  4.96   798.0    5.26   848.0    5.08   898.0    4.98   948.0    4.88   998.0
GR  4.68  1048.0    4.58  1098.0    4.78  1129.0    3.58  1132.0    3.58  1133.5
GR  5.08  1135.0    5.08  1139.0    8.50  1145.1    8.50  1146.5   10.44  1147.0
GR 10.44  1148.0   13.66  1148.0   13.44  1155.5   13.17  1172.5   13.17  1188.5
X1 32.93       80  98.00 1148.00   14.00   14.00   14.00
GR 10.13      .0   13.38    88.5   13.63    98.0   10.45    98.0   10.45    99.0
GR  9.25    99.0    9.25   101.5    4.38   108.5    3.88   148.0    3.80   158.0
GR  3.80   163.0    1.49   163.0   -2.51   164.5   -5.51   165.5   -7.51   166.5
GR -9.71   178.0  -12.21   198.0  -13.30   203.0  -12.31   228.0  -13.90   240.5
GR-12.91   248.0   -8.91   265.5   -9.00   270.5   -8.41   278.0   -8.41   283.0
GR -8.90   290.5   -9.11   293.0   -8.61   298.0   -7.00   306.6   -6.71   310.1
GR -6.91   311.8   -6.41   317.0   -6.60   318.7   -5.50   332.5   -5.01   348.0
GR -3.01   352.5    1.49   355.3    1.60   356.5    1.60   364.5    1.60   367.5
GR  1.60   368.5    1.60   372.0    1.60   398.0    1.60   421.5    1.60   424.2
GR  1.60   430.2    1.60   433.5    1.60   438.5    1.60   440.0    1.60   448.0
GR  1.60   498.0    1.60   538.0    1.60   540.5    1.60   548.0    1.60   579.9
GR  3.72   582.0    3.88   598.0    3.88   648.0    4.38   698.0    4.38   748.0
GR  4.96   798.0    5.26   848.0    5.08   898.0    4.98   948.0    4.88   998.0
GR  4.68  1048.0    4.58  1098.0    4.78  1129.0    3.58  1132.0    3.58  1133.5
GR  5.08  1135.0    5.08  1139.0    8.50  1145.1    8.50  1146.5   10.44  1147.0
GR 10.44  1148.0   13.66  1148.0   13.44  1155.5   13.17  1172.5   13.17  1188.5
X1 33.06       68  45.00 1128.50  133.00  133.00  133.00
GR  5.68      .0    5.68    14.0    9.01    20.0    8.69    30.0    8.48    31.0
GR  8.48    42.0    8.68    42.0    8.68    45.0    7.22    47.8    5.08    48.3
GR  5.08    54.3    2.68    84.0    4.18    98.0    3.44   113.0    1.49   116.0
GR  -.51   120.0   -2.51   124.0   -7.91   126.0   -9.71   138.3  -11.71   162.8
GR-11.51   168.9  -11.11   193.4  -11.31   202.6  -11.11   214.9  -11.31   224.1
GR-11.31   230.2  -11.51   239.4  -10.91   251.7  -10.91   257.8   -9.91   276.2
GR -8.11   303.8   -7.91   313.0   -1.51   315.0    1.49   318.5    1.60   320.0
GR  1.60   322.0    1.60   324.5    1.60   355.5    1.60   382.0    1.60   425.5
GR  1.60   426.5    1.60   427.5    1.60   428.0    1.60   537.5    1.60   538.1
GR  3.53   540.0    1.68   542.5    1.68   548.5    3.98   551.0    3.98   553.0
GR  3.38   554.0    3.38   677.0    4.98   681.0    4.98  1032.0    4.48  1094.5
GR  3.28  1096.5    3.28  1105.5    4.88  1107.5    4.88  1108.5    3.78  1109.5
GR  3.78  1110.5   10.76  1128.5   10.95  1140.0    7.68  1141.0    5.28  1144.5
GR  5.08  1170.5    5.08  1182.0    5.08  1190.0
X1 33.27       71   .00 1001.80  210.00  210.00  210.00
GR 13.69      .0    5.69     2.5    5.69    17.5    4.47    19.0    4.48    25.0
GR  4.47    25.5    3.67    26.0    1.49    40.5   -1.51    41.5   -2.51    45.0
GR -3.21    46.0   -6.21    55.8  -11.51    77.8  -14.31    87.6  -13.71    90.0
GR-13.41   102.2  -10.21   107.1   -8.41   121.8   -7.61   131.6   -7.61   136.5
GR -6.91   141.4   -6.91   146.3   -6.01   156.0   -5.51   165.8   -5.71   178.1
GR -5.11   190.3   -5.01   197.6   -4.71   200.1   -4.51   207.4   -3.91   214.7
GR -4.11   219.6   -3.81   227.0   -3.91   229.4   -3.41   239.2   -3.41   246.5
GR -3.11   249.0   -3.11   256.3   -3.41   258.8   -3.21   261.2   -3.61   268.5
GR -3.21   275.9   -3.11   280.8   -2.91   283.2   -3.01   293.0   -1.51   297.0
GR  1.49   298.0    1.60   300.0    1.60   340.5    1.60   342.0    1.60   345.0
GR  1.60   346.5    1.60   403.4    3.17   405.0    3.17   535.5    3.77   536.0
GR  3.77   539.5    3.47   541.0    3.47   572.0    4.77   573.0    4.77   688.5
GR  4.77   691.6    4.77   907.5    3.77   909.0    3.77   983.5   11.01  1001.8
GR 10.95  1007.8    7.77  1015.0    7.77  1019.0    4.37  1024.0    5.37  1025.0
GR  5.37  1075.0
X1 33.83       92  23.50 1290.00  560.00  560.00  560.00
GR  6.95      .0    8.49     4.0    8.71    11.5   10.99    15.5   10.99    23.5
GR  8.39    29.0    4.97    37.0    4.97    52.5    4.24    54.5    4.17   250.0
GR  4.17   255.0    3.09   256.5    2.76   280.9    1.50   283.5     .00   287.5
GR -1.50   291.5   -2.00   293.5   -4.70   299.5   -4.60   305.5   -5.20   311.5
GR -5.30   320.5   -5.40   326.5   -5.40   329.5   -5.50   335.5   -5.20   341.5
GR -4.90   344.5   -4.90   347.5   -4.40   353.5   -4.40   356.5   -3.40   368.5
GR -2.30   377.5   -2.30   383.5   -2.00   392.5   -1.60   416.5   -1.90   428.5
GR -1.80   434.5   -2.10   440.5   -2.10   449.5   -1.90   452.5   -2.10   455.5
GR -2.30   464.5   -2.40   470.5   -2.30   473.5   -2.30   482.5   -2.20   485.5
GR -2.40   488.5   -2.30   494.5   -2.80   503.5   -2.50   506.5   -2.60   509.5
GR -2.80   524.5   -2.50   533.5   -2.90   539.5   -2.90   548.5   -2.60   568.5
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GR	-2.90	575.5	-2.90	578.5	-3.20	590.5	-3.10	596.5	-3.30	605.5
GR	-2.70	623.5	-2.80	632.5	-2.70	641.5	-3.10	653.5	-2.90	659.5
GR	-2.50	663.5	-1.00	668.5	1.50	669.5	3.63	670.0	3.63	724.6
GR	4.14	725.4	4.69	1211.4	5.99	1212.4	5.49	1214.4	4.69	1215.9
GR	4.69	1225.0	4.93	1226.5	4.93	1230.5	4.49	1231.5	4.49	1274.0
GR	8.89	1283.0	8.89	1285.5	10.81	1290.0	10.33	1296.0	8.49	1300.0
GR	8.49	1303.0	6.29	1307.0	6.29	1311.5	4.39	1315.5	4.39	1316.0
GR	5.39	1316.5	5.39	1323.5						
X1	34.49	86	100.00	1186.50	660.00	660.00	660.00			
GR	4.19	.0	4.19	74.5	5.49	80.0	5.49	84.5	10.90	100.0
GR	8.89	104.3	4.65	113.5	4.65	122.0	3.03	127.5	3.03	129.0
GR	3.69	131.0	3.69	146.0	4.16	147.0	4.16	220.5	5.26	222.0
GR	5.26	223.0	1.50	230.5	.00	235.0	-2.00	239.0	-2.50	240.0
GR	-2.40	253.2	-2.60	259.8	-3.20	279.5	-3.00	286.1	-3.10	296.0
GR	-3.30	312.5	-2.90	315.8	-3.00	322.4	-3.00	332.3	-3.10	345.4
GR	-2.90	352.0	-2.90	355.3	-2.90	358.6	-3.10	371.8	-2.80	378.4
GR	-2.90	385.0	-2.70	391.6	-2.70	398.1	-2.50	404.7	-2.50	408.0
GR	-2.30	417.9	-2.50	421.2	-2.80	434.4	-2.80	437.7	-3.00	444.3
GR	-2.90	447.6	-3.00	457.5	-3.00	464.0	-3.00	467.3	-2.60	477.2
GR	-2.70	487.1	-2.70	493.7	-2.60	500.3	-2.60	510.2	-2.80	520.0
GR	-2.80	533.2	-3.00	546.4	-3.00	553.0	-2.50	557.0	-1.50	560.0
GR	1.50	563.0	4.89	567.5	4.89	568.0	3.89	569.5	3.89	725.0
GR	4.39	726.1	4.39	728.6	3.89	730.0	3.89	1140.5	1.39	1144.5
GR	1.39	1157.5	4.29	1160.5	4.29	1169.5	11.16	1186.5	11.34	1192.5
GR	10.44	1201.0	10.44	1205.0	3.99	1208.0	3.99	1245.5	4.89	1247.0
GR	4.89	1252.0	3.89	1252.0	3.89	1253.5	4.89	1253.5	4.89	1254.5
GR	3.44	1256.5								
X1	34.92	75	70.50	1086.00	430.00	430.00	430.00			
GR	3.17	.0	5.20	47.0	8.77	55.0	8.77	59.5	11.30	65.0
GR	11.30	70.5	9.06	75.5	4.78	86.0	4.13	118.5	2.20	122.5
GR	2.20	125.0	1.50	126.5	-1.00	128.5	-2.50	130.5	-3.20	131.5
GR	-3.50	134.5	-1.80	140.6	-4.70	149.7	-4.50	155.8	-4.30	161.8
GR	-4.30	167.9	-4.20	174.0	-4.30	183.1	-4.20	189.1	-4.50	195.2
GR	-5.10	207.3	-5.20	228.5	-3.70	249.8	-3.80	255.8	-3.60	264.9
GR	-3.60	271.0	-3.60	283.1	-3.50	307.4	-3.30	313.5	-3.10	340.8
GR	-3.20	346.8	-2.90	374.1	-2.60	380.2	-2.50	386.2	-2.50	392.3
GR	-2.40	398.4	-2.50	401.4	-2.40	410.5	-2.00	416.6	-2.00	422.6
GR	-1.80	443.9	-1.90	456.0	-1.50	460.5	-.20	464.5	1.50	466.0
GR	2.45	467.0	2.45	470.5	3.15	471.0	2.95	481.5	1.76	482.5
GR	1.76	493.5	4.82	500.0	4.82	502.0	4.02	502.5	4.02	602.5
GR	4.20	603.0	4.20	606.5	4.20	1070.5	10.81	1086.0	10.74	1090.5
GR	10.74	1092.0	10.25	1095.0	6.20	1102.5	6.20	1106.5	4.40	1107.5
GR	3.40	1107.5	3.40	1109.0	4.40	1109.0	2.90	1111.0	2.90	1120.5
X1	35.37	73	100.00	1159.00	450.00	450.00	450.00			
GR	3.56	.0	3.56	56.0	4.16	61.5	4.16	64.5	4.56	74.0
GR	5.55	75.5	5.55	79.0	8.66	90.0	11.56	95.5	11.56	100.0
GR	9.13	105.5	5.01	115.5	6.08	125.0	4.92	170.0	4.27	177.0
GR	2.16	182.5	2.36	198.5	1.51	200.5	.21	204.0	-1.49	209.0
GR	-1.99	210.5	-2.59	225.2	-2.59	231.1	-4.29	266.5	-5.19	290.0
GR	-5.69	298.9	-5.89	307.7	-5.89	310.7	-6.09	316.6	-6.19	322.5
GR	-6.29	325.4	-6.29	331.3	-6.59	337.2	-6.39	343.1	-6.69	357.8
GR	-6.89	363.7	-6.69	369.6	-6.89	378.4	-6.49	396.1	-6.49	402.0
GR	-4.59	425.6	-4.59	437.3	-3.89	443.2	-1.49	458.0	-1.19	481.5
GR	-.79	496.3	-.49	511.0	.01	516.0	.61	520.0	1.51	521.0
GR	2.96	524.5	2.62	604.0	4.06	606.5	4.06	608.0	3.82	608.5
GR	3.82	748.0	4.76	749.0	4.76	749.5	4.56	750.0	4.56	813.7
GR	1.36	816.7	1.36	1027.0	3.76	1030.0	3.76	1106.5	4.46	1107.0
GR	4.46	1126.5	6.95	1129.0	9.09	1129.5	5.06	1132.0	5.06	1133.5
GR	7.10	1135.5	7.10	1139.5	17.06	1159.0				
X1	36.00	86	.00	1024.00	630.00	630.00	630.00			
GR	15.25	.0	11.25	30.0	6.25	33.0	6.25	34.0	5.25	34.5
GR	5.26	40.0	3.55	44.0	3.55	122.0	4.10	122.5	4.10	123.5
GR	3.70	124.0	3.70	124.5	4.75	127.0	4.75	135.5	1.51	140.0
GR	.81	144.0	.01	149.0	-.49	150.0	-.49	153.3	-.69	166.6
GR	-.89	170.0	-.49	180.0	-1.59	189.9	-2.59	213.2	-2.99	223.2
GR	-3.29	246.5	-3.69	256.5	-3.79	266.5	-3.79	269.8	-3.99	279.8
GR	-3.99	283.1	-4.29	289.8	-4.39	293.1	-5.69	299.8	-5.89	303.1
GR	-5.69	329.7	-5.89	336.4	-5.79	346.4	-6.29	356.4	-5.89	363.0
GR	-5.99	376.3	-5.79	379.7	-4.99	386.3	-4.59	396.3	-3.29	422.9
GR	-2.19	432.9	-1.69	436.3	-1.69	442.9	-.99	452.9	-.99	459.6
GR	-.59	469.5	.01	489.5	.01	496.2	-.09	499.5	.51	501.0
GR	1.01	504.0	1.51	504.5	2.45	505.5	2.94	533.5	4.47	540.5
GR	4.47	794.5	5.05	795.5	5.05	894.7	4.35	895.2	4.35	941.5
GR	3.45	942.0	3.45	991.5	3.45	993.0	2.05	994.5	2.05	1002.5
GR	3.45	1004.0	3.45	1005.5	9.15	1019.5	11.37	1024.0	11.36	1029.0
GR	7.15	1037.5	7.15	1043.5	6.15	1044.5	4.95	1044.5	4.95	1046.0

GR	6.15	1046.0	6.15	1050.0	4.35	1052.5	4.35	1054.0	3.65	1055.0
GR	3.65	1140.0								
X1	36.56	92	100.00	1074.00	560.00	560.00	560.00			
GR	3.05	.0	3.05	56.5	3.45	57.0	3.45	57.5	2.05	61.0
GR	2.05	64.0	3.75	64.5	3.75	68.5	5.55	72.5	5.55	75.5
GR	9.45	87.0	9.45	91.0	11.65	94.5	11.65	100.0	9.43	105.5
GR	1.15	126.5	1.15	129.5	4.38	135.5	4.38	138.0	2.92	140.5
GR	2.92	209.0	2.55	209.5	2.55	210.5	4.85	213.5	4.85	214.5
GR	3.75	216.0	3.75	304.0	4.15	304.5	4.15	307.0	4.05	307.5
GR	4.05	373.5	3.75	381.5	1.52	391.5	.32	396.0	-.98	400.0
GR	-1.58	401.5	-1.48	407.8	-1.48	414.1	-1.48	420.4	-1.58	426.7
GR	-1.48	432.9	-1.18	436.1	-1.68	442.4	-1.58	448.7	-1.68	461.2
GR	-2.38	483.2	-2.38	489.5	-2.78	511.5	-2.68	514.7	-2.88	527.3
GR	-2.78	533.6	-2.88	558.7	-3.08	565.0	-3.28	583.9	-2.88	605.9
GR	-3.08	615.3	-2.58	631.0	-2.58	634.2	-2.58	643.6	-2.58	656.2
GR	-2.58	662.5	-2.18	684.5	-2.38	690.8	-2.28	703.3	-2.38	712.8
GR	-1.58	715.9	-2.28	722.2	-1.58	728.5	-1.48	731.0	.22	733.0
GR	1.52	733.5	3.89	734.0	4.71	789.0	2.15	794.5	2.15	797.5
GR	3.45	814.5	3.45	868.0	2.15	868.5	2.15	870.0	4.65	875.5
GR	4.65	876.5	4.15	877.0	4.15	1026.0	7.46	1029.0	7.46	1029.5
GR	5.45	1031.5	5.45	1034.0	6.85	1036.0	5.05	1040.0	5.05	1044.0
GR	13.15	1064.0	17.15	1074.0						
X1	37.01	90	99.00	1214.00	450.00	450.00	450.00			
GR	2.41	.0	2.41	67.0	3.11	68.5	3.11	69.5	6.01	76.0
GR	6.01	78.5	9.61	85.0	9.61	90.0	12.11	95.5	12.11	99.0
GR	11.62	100.0	9.51	105.0	8.11	109.0	8.11	112.5	1.26	125.5
GR	1.26	143.0	4.01	150.5	4.37	343.0	4.91	343.5	4.91	363.0
GR	5.11	368.5	4.88	386.5	5.38	387.5	4.71	414.0	5.10	415.5
GR	5.33	439.0	3.81	461.5	2.11	465.5	1.52	469.5	.52	471.0
GR	-1.48	478.0	-3.08	479.5	-3.08	484.9	-3.08	487.6	-2.78	492.9
GR	-2.68	506.4	-2.38	514.4	-2.28	519.8	-2.18	525.2	-2.18	527.9
GR	-1.88	533.3	-1.88	552.1	-1.48	562.8	-1.38	568.2	-1.48	570.9
GR	-1.38	573.6	-1.58	581.6	-2.18	603.1	-1.68	613.9	-1.58	622.0
GR	-1.18	638.1	-1.18	646.2	-.88	654.2	-1.08	667.7	-.98	678.4
GR	-.68	689.2	-.68	702.6	-.78	718.7	-1.98	729.5	-2.08	742.9
GR	-1.68	751.0	-2.18	761.7	-2.08	780.6	-2.18	785.9	-1.88	794.0
GR	-1.48	796.0	.32	802.0	1.52	804.0	4.51	814.0	4.51	864.5
GR	4.11	865.5	4.11	877.0	5.51	878.0	5.51	879.5	5.31	1001.5
GR	5.31	1004.0	4.67	1004.5	4.67	1046.0	4.25	1046.5	4.25	1067.7
GR	4.03	1068.2	4.03	1084.5	5.43	1087.0	5.31	1163.0	6.91	1165.5
GR	6.91	1185.0	7.59	1185.5	8.08	1193.0	9.08	1194.0	17.11	1214.0
X1	37.71	85	100.00	1087.00	700.00	700.00	700.00			
GR	4.51	.0	4.51	70.0	5.13	71.0	5.13	71.5	4.81	72.0
GR	4.81	73.0	6.01	75.5	6.01	78.5	9.31	85.0	9.31	90.0
GR	12.01	95.5	12.02	100.0	9.66	105.7	6.73	113.5	6.73	117.0
GR	4.01	124.0	4.01	253.5	4.23	254.0	4.23	257.0	3.89	257.5
GR	3.89	281.0	4.45	282.5	4.45	297.0	4.95	298.5	4.95	304.0
GR	4.72	304.5	4.72	438.5	4.94	439.0	4.94	468.0	5.31	468.5
GR	5.31	509.5	5.11	510.0	5.01	534.5	2.81	540.5	1.52	550.5
GR	.02	554.0	-2.48	559.0	-2.68	560.5	-2.48	566.9	-2.58	579.7
GR	-2.58	598.8	-2.68	608.4	-3.08	621.2	-2.48	637.2	-2.08	649.9
GR	-2.28	656.3	-2.38	665.9	-1.88	675.5	-1.98	685.1	-1.48	697.9
GR	-1.48	704.2	-.88	717.0	-.78	742.6	-.78	745.8	-.68	755.3
GR	-.68	764.9	-.98	771.3	-.58	784.1	-.78	790.5	-1.28	812.8
GR	-1.48	819.2	-1.28	825.6	-1.18	832.0	-1.38	835.2	-1.28	838.4
GR	-1.38	844.8	-1.68	851.2	-1.98	867.1	-2.38	876.7	-1.08	889.5
GR	-.48	892.0	.42	898.0	1.52	899.5	4.44	900.0	4.44	946.5
GR	5.01	947.5	5.01	1022.5	5.31	1023.0	5.83	1027.3	5.83	1028.0
GR	4.83	1030.0	4.83	1032.0	8.83	1042.0	12.90	1060.0	20.20	1087.0
X1	38.22	90	98.50	1120.00	510.00	510.00	510.00			
GR	3.72	.0	3.72	49.5	5.30	53.5	6.32	63.0	6.32	66.5
GR	9.52	80.5	9.52	86.0	12.22	93.0	12.22	98.5	11.73	100.0
GR	10.47	103.5	10.47	106.5	9.57	109.5	4.32	125.0	4.32	310.5
GR	4.96	311.0	4.96	314.0	4.32	314.5	4.32	366.0	4.40	366.5
GR	1.82	371.0	-.68	375.0	-.68	378.0	1.82	382.0	2.52	384.0
GR	4.47	395.0	4.47	438.5	4.80	439.0	4.80	458.5	4.98	459.0
GR	4.98	472.0	5.06	472.5	5.42	524.0	5.22	524.5	5.22	572.0
GR	5.58	572.5	6.02	618.5	4.86	705.0	5.26	706.5	5.26	724.0
GR	4.02	734.0	3.52	740.0	1.53	742.0	-.97	745.0	-2.47	750.0
GR	-3.37	752.0	-3.37	758.9	-3.67	769.3	-3.47	779.6	-3.67	793.4
GR	-3.37	803.8	-3.47	814.2	-3.37	821.1	-3.47	831.4	-3.37	834.9
GR	-3.57	841.8	-3.17	859.1	-3.87	883.2	-3.87	886.7	-4.07	893.6
GR	-2.67	907.4	-2.27	928.1	-2.27	931.6	-2.07	941.9	-2.07	945.4
GR	-1.87	948.8	-1.57	955.7	-1.47	959.2	-1.67	966.1	-1.27	973.0
GR	-1.27	976.5	-1.47	990.3	-1.77	997.2	-1.67	1004.1	-1.57	1011.0
GR	-1.47	1017.0	.23	1019.5	1.53	1021.0	3.52	1023.5	4.78	1028.5

GR	4.78	1042.0	6.10	1044.0	5.82	1044.5	5.82	1064.0	6.79	1065.5
GR	6.79	1091.0	7.72	1092.0	7.72	1096.0	9.42	1098.0	18.02	1120.0
X1	38.62	62	100.00	635.00	400.00	400.00	400.00			
GR	5.37	.0	5.37	76.0	8.88	82.0	8.88	88.5	12.09	94.5
GR	12.10	100.0	10.19	105.2	5.49	116.5	5.49	179.5	5.81	180.5
GR	5.29	274.5	4.79	330.0	5.39	334.0	1.53	339.0	.03	342.0
GR	-1.47	347.0	-1.67	349.0	-1.47	355.4	-1.47	361.9	-1.47	365.1
GR	-1.47	371.5	-1.47	374.8	-1.47	378.0	-2.47	390.8	-2.07	397.3
GR	-2.47	403.7	-2.37	410.2	-2.57	423.0	-2.57	426.3	-2.67	432.7
GR	-2.37	435.9	-2.87	442.4	-2.77	448.8	-3.97	474.5	-4.57	487.4
GR	-4.47	493.9	-4.67	503.5	-5.07	510.0	-5.47	522.8	-8.17	551.8
GR	-7.77	558.2	-7.87	561.5	-7.07	567.9	-4.27	584.0	-3.47	589.0
GR	-1.47	592.0	1.53	594.0	3.92	598.5	3.92	602.5	6.24	604.0
GR	6.24	612.0	9.24	616.0	9.18	621.0	7.48	621.0	7.48	625.0
GR	9.18	625.0	10.09	628.5	10.09	633.5	11.80	635.0	12.63	667.5
GR	12.93	668.5	12.93	674.5						
X1	39.05	66	100.00	677.00	430.00	430.00	430.00			
GR	5.37	.0	5.37	70.5	6.17	73.2	6.17	74.2	5.47	74.2
GR	5.47	75.0	6.17	75.0	8.87	81.5	8.87	85.5	12.17	91.5
GR	12.18	100.0	10.17	105.0	5.35	117.5	4.90	217.5	4.56	267.5
GR	4.35	308.5	4.97	309.5	4.97	313.5	1.54	318.2	.54	320.0
GR	.04	327.5	-.36	328.2	-.36	331.1	-.36	336.9	-.36	342.7
GR	-.66	354.4	-.46	360.2	-.86	368.9	-.66	371.8	-.26	380.5
GR	-.66	386.4	-.36	392.2	-.76	403.8	-.36	406.7	-.06	415.4
GR	-.26	424.1	.04	432.9	-.16	447.4	.14	453.2	-.06	461.9
GR	-.26	470.7	-.46	482.3	-.26	488.1	-1.76	508.5	-1.56	511.4
GR	-1.96	520.1	-2.46	528.8	-3.16	540.4	-4.26	555.0	-4.06	563.7
GR	-3.76	572.4	-4.06	581.2	-3.96	587.0	-5.66	624.8	-5.76	639.3
GR	-5.46	643.0	-4.96	649.0	1.54	649.3	12.10	677.0	11.37	708.2
GR	12.77	716.0	12.77	717.5	11.37	719.0	11.37	739.2	13.47	741.2
GR	13.47	748.2								
X1	39.52	100	100.00	948.70	470.00	470.00	470.00			
GR	5.10	.0	5.10	75.0	6.10	77.7	6.10	78.7	5.40	78.7
GR	5.40	79.5	6.10	79.5	8.80	85.5	8.80	88.5	12.10	94.0
GR	12.10	100.0	10.34	104.5	5.10	116.5	4.80	186.5	5.05	190.5
GR	5.05	191.5	2.90	196.0	2.90	199.5	1.40	200.8	1.40	203.8
GR	2.60	207.0	3.60	216.5	3.00	242.0	3.50	246.0	1.54	248.5
GR	.84	250.5	.54	257.5	.04	258.5	-.36	275.9	-.86	280.8
GR	-.86	285.8	-1.36	290.8	-2.06	300.7	-2.66	310.6	-2.66	315.6
GR	-2.66	320.5	-2.46	325.5	-2.36	332.9	-2.06	342.9	-1.86	365.2
GR	-2.16	370.2	-2.26	377.6	-2.36	392.5	-2.36	399.9	-2.16	409.9
GR	-2.16	419.8	-2.06	437.2	-2.06	449.6	-1.96	457.0	-1.76	464.4
GR	-1.66	481.8	-2.16	486.8	-2.66	494.2	-2.96	499.2	-3.46	506.6
GR	-4.16	519.0	-5.56	541.4	-6.06	571.1	-6.26	578.6	-5.76	591.0
GR	-5.46	595.0	-4.46	600.0	1.54	601.0	5.70	605.0	5.70	608.0
GR	2.60	612.0	2.60	613.0	3.80	614.0	3.80	615.0	2.90	615.5
GR	2.70	719.0	3.10	720.0	3.10	724.0	2.70	726.0	2.90	834.5
GR	2.70	836.0	2.20	836.0	2.20	836.5	2.70	836.5	6.10	841.0
GR	6.10	842.5	2.60	848.5	1.70	876.5	4.50	880.5	4.20	926.0
GR	9.10	942.5	11.34	948.7	8.20	953.7	8.80	960.5	8.80	964.5
GR	5.00	972.0	5.00	976.0	8.50	982.0	8.50	988.0	6.50	992.0
GR	5.90	992.0	5.90	992.6	6.50	992.6	6.50	993.0	5.00	994.5
X1	40.00	89	100.00	1046.00	480.00	480.00	480.00			
GR	4.34	.0	4.34	64.0	5.64	65.0	5.64	66.0	3.64	68.5
GR	5.04	70.5	5.04	73.5	6.74	76.0	6.74	79.0	9.83	84.5
GR	9.83	89.0	12.54	94.5	12.54	100.0	10.36	105.5	4.21	120.5
GR	4.32	129.0	6.04	131.5	6.04	135.0	2.82	141.5	1.69	156.5
GR	5.22	177.5	2.24	197.5	1.74	207.5	2.44	222.5	1.54	225.5
GR	-.36	227.0	-1.46	234.5	-1.66	235.5	-4.26	253.7	-7.46	282.4
GR	-9.06	295.4	-6.16	305.9	-6.66	316.3	-7.06	334.5	-5.36	347.6
GR	-3.46	363.2	-3.26	373.6	-3.76	389.2	-3.96	397.1	-4.76	412.7
GR	-4.16	425.7	-3.26	444.0	-2.76	457.0	-2.86	470.0	-4.56	490.9
GR	-5.36	503.9	-5.06	511.7	-4.76	519.5	-4.96	524.8	-4.66	530.0
GR	-4.46	535.2	-4.36	537.8	-4.06	543.0	-3.46	547.0	-2.96	552.0
GR	1.54	553.0	2.94	556.5	2.94	558.0	1.84	561.0	1.84	573.5
GR	3.08	581.0	3.08	587.0	2.64	588.7	2.64	595.0	4.81	603.0
GR	4.81	606.0	4.81	710.0	4.74	710.5	4.34	816.5	4.34	824.0
GR	1.94	842.0	1.94	846.0	5.09	850.0	4.74	852.0	4.74	912.0
GR	2.24	917.0	2.24	930.0	3.84	934.0	3.84	960.5	3.74	961.5
GR	6.33	974.4	6.33	978.9	6.58	988.5	7.58	988.5	7.59	996.0
GR	7.59	1013.0	10.09	1016.0	10.09	1019.0	20.10	1046.0		
X1	40.47	84	100.00	848.50	470.00	470.00	470.00			
GR	5.18	.0	5.18	67.0	3.87	68.0	3.87	70.5	5.39	73.0
GR	6.37	76.0	6.37	79.5	9.81	85.0	9.81	89.5	12.51	94.5
GR	12.51	100.0	10.43	105.0	3.99	121.0	3.33	181.5	1.51	184.0
GR	1.51	186.0	2.97	187.5	3.50	238.5	3.94	283.5	2.89	291.0

GR	1.55	293.5	.55	295.0	.05	301.0	-.45	303.5	-.95	309.0
GR	-2.15	320.1	-5.75	339.4	-5.65	347.6	-6.75	361.4	-7.45	369.7
GR	-6.65	380.8	-6.75	383.5	-6.55	391.8	-6.85	397.3	-6.75	402.8
GR	-6.95	408.4	-6.75	419.4	-6.85	430.4	-6.75	435.9	-6.25	447.0
GR	-5.45	455.3	-4.85	471.8	-4.45	477.3	-4.25	482.9	-4.25	485.6
GR	-4.15	491.1	-4.35	496.7	-3.95	504.9	-3.95	510.4	-3.75	516.0
GR	-3.75	518.7	-2.45	535.3	-.95	549.1	-.45	557.4	-.15	565.6
GR	-.05	571.2	-.05	573.9	-.05	576.7	-.05	582.2	-.25	590.5
GR	-.15	601.5	.55	609.5	.75	615.5	1.55	616.5	2.91	620.0
GR	3.47	637.5	4.77	640.9	4.77	643.4	4.01	645.5	4.01	725.9
GR	4.69	726.9	4.69	730.5	2.21	757.5	4.60	765.0	4.60	789.5
GR	5.01	790.5	5.01	798.5	7.10	802.5	7.03	812.5	6.53	812.5
GR	6.53	813.2	7.53	813.2	12.38	824.5	18.04	848.5		
X1	40.89	85	100.00	797.50	420.00	420.00	420.00			
GR	4.87	.0	4.87	65.5	5.38	66.0	5.38	66.5	4.56	68.0
GR	4.56	69.0	5.56	71.0	5.56	73.5	6.99	75.5	6.99	79.0
GR	10.78	84.5	10.78	88.5	12.38	94.0	12.39	100.0	10.47	104.5
GR	4.24	120.0	5.72	136.0	4.24	138.0	3.87	152.0	4.06	182.0
GR	4.30	190.0	2.88	193.0	1.55	196.0	.55	199.0	.05	204.0
GR	-.25	206.0	-.25	212.2	-.26	221.6	-.15	227.8	-.35	237.2
GR	-.45	246.5	-.35	262.1	-.95	271.4	-1.25	274.5	-1.25	287.0
GR	-1.15	293.2	-1.35	299.5	-1.35	308.8	-1.25	311.9	-1.25	315.1
GR	-1.05	327.5	-1.15	336.9	-1.05	340.0	-1.05	346.2	-1.65	371.1
GR	-1.75	380.5	-1.95	389.8	-1.95	399.2	-2.25	411.6	-2.25	433.5
GR	-2.55	442.8	-2.15	452.1	-1.75	461.5	-1.75	470.8	-2.15	480.2
GR	-1.85	492.7	-1.95	502.0	-1.45	507.0	.05	510.0	1.55	512.0
GR	2.18	547.5	2.18	558.0	2.86	565.5	4.87	570.7	4.87	571.7
GR	3.96	574.0	3.96	611.8	1.98	614.0	1.98	618.0	3.88	623.5
GR	3.88	638.5	2.08	643.5	2.08	651.5	6.81	664.5	6.47	676.5
GR	6.47	684.0	3.98	689.0	5.97	692.0	6.03	700.0	5.58	700.5
GR	5.58	764.0	7.78	767.0	7.78	769.5	7.90	777.5	23.86	797.5
X1	41.49	67	105.00	717.00	600.00	600.00	600.00			
GR	13.08	.0	9.43	13.5	9.08	70.0	6.34	77.0	6.34	84.5
GR	8.58	84.5	8.58	88.0	10.80	98.0	10.93	105.0	3.93	106.4
GR	4.93	127.5	2.03	137.0	1.56	137.5	.56	140.0	-.24	146.5
GR	-.54	147.5	-.44	152.1	-.44	154.4	-.14	163.7	-.34	173.0
GR	-.34	177.6	-.34	198.4	-.34	200.8	-.34	205.4	-.44	214.7
GR	-.44	219.3	-.74	223.9	-.94	228.5	-.64	233.2	-.94	237.8
GR	-1.44	240.1	-1.14	242.4	-2.44	247.1	-1.04	251.7	-1.34	256.3
GR	-1.24	261.0	-9.64	279.5	-2.44	290.1	-2.44	292.5	-5.54	298.0
GR	-1.34	305.0	-1.14	328.1	-.74	337.4	-.64	344.3	-.64	353.6
GR	-.94	358.2	-.74	365.2	-.94	369.8	-.44	373.0	.56	378.5
GR	1.56	379.8	2.18	483.0	2.18	487.0	2.23	488.0	3.70	490.5
GR	3.23	528.0	4.33	569.5	2.73	582.0	2.73	587.0	4.93	597.5
GR	7.33	647.5	7.23	658.0	7.56	682.0	8.43	704.0	6.93	707.0
GR	9.93	717.0	9.93	755.0						
X1	41.99	73	.00	705.50	500.00	500.00	500.00			
GR	25.59	.0	18.59	15.0	9.59	18.0	9.19	19.0	9.19	23.0
GR	8.89	26.5	6.49	33.5	6.29	39.5	4.77	48.5	2.39	54.5
GR	1.56	56.0	-.94	58.0	-2.44	65.0	-3.04	66.0	-2.74	71.8
GR	-2.44	80.5	-2.34	83.4	-2.44	89.2	-2.34	100.8	-1.94	103.7
GR	-1.74	121.1	-1.94	132.7	-2.74	150.1	-2.74	155.9	-2.74	158.8
GR	-2.74	161.7	-2.94	167.5	-2.94	173.2	-2.94	179.0	-2.94	184.8
GR	-3.04	196.4	-3.04	202.2	-3.04	205.1	-6.34	231.2	-2.74	237.0
GR	-3.04	239.9	-2.94	245.7	-2.44	257.3	-2.64	263.1	-2.74	266.0
GR	-2.64	274.7	-2.64	280.5	-2.44	285.5	-.94	289.5	1.56	290.5
GR	1.89	294.0	2.09	307.3	1.49	312.3	-.01	395.0	1.49	398.0
GR	4.40	406.5	4.91	409.5	5.19	609.5	5.19	613.5	1.79	618.0
GR	1.79	644.5	4.39	648.5	4.39	651.5	4.19	686.0	10.39	701.0
GR	12.47	705.5	12.47	711.0	10.19	715.0	10.19	720.0	7.59	727.0
GR	7.59	730.0	6.59	732.0	6.09	732.0	6.09	732.5	6.59	732.5
GR	6.59	733.5	5.89	734.5	5.89	776.5				
X1	42.54	67	.00	648.50	550.00	550.00	550.00			
GR	23.43	.0	10.43	20.0	9.43	25.0	9.43	29.5	4.85	39.0
GR	3.87	47.0	1.56	52.5	-1.44	55.5	-3.44	61.5	-3.84	62.5
GR	-4.44	65.2	-4.34	73.5	-4.04	78.9	-3.94	87.2	-4.34	100.9
GR	-4.54	111.8	-4.94	128.2	-4.44	144.7	-4.04	150.2	-3.54	163.9
GR	-3.04	174.8	-2.74	185.8	-2.84	191.3	-2.54	196.7	-2.54	199.5
GR	-2.94	210.4	-2.44	221.4	-2.04	229.6	-2.44	235.1	-2.24	240.6
GR	-2.44	243.3	-2.14	251.5	-2.04	257.0	-1.44	259.5	-.94	271.0
GR	1.56	272.0	1.83	274.0	1.23	275.5	1.33	308.2	2.43	309.0
GR	3.09	312.5	6.72	317.0	6.72	318.0	6.25	319.0	6.25	499.1
GR	6.03	500.0	6.03	501.0	5.13	501.7	5.13	504.7	5.83	505.5
GR	5.43	507.0	5.43	627.5	8.43	635.5	8.43	639.0	10.77	644.0
GR	12.73	648.5	12.63	654.0	9.63	659.5	9.63	665.5	3.23	667.5
GR	3.23	673.5	-1.27	683.5	-2.57	683.5	-2.57	690.5	-.57	693.5

GR	-.57	697.5	-1.27	698.0					
X1	43.29	72	.00	823.00	750.00	750.00	750.00		
GR	15.36	.0	7.36	50.0	6.56	58.0	6.56	60.0	4.86	62.0
GR	4.86	63.5	1.76	70.5	1.57	74.5	.37	77.0	-.43	83.5
GR	-.63	84.5	-.93	87.6	-1.83	106.3	-2.53	115.7	-2.53	118.8
GR	-2.63	121.9	-2.63	125.0	-2.63	131.2	-2.23	140.6	-2.23	146.8
GR	-2.13	149.9	-2.13	153.1	-1.93	159.3	-1.83	174.9	-1.93	178.0
GR	-1.93	187.3	-1.83	193.6	-1.73	206.0	-1.63	209.2	-1.93	221.6
GR	-2.13	227.9	-1.93	237.2	-2.03	246.6	-1.83	252.8	-1.83	262.1
GR	-1.83	271.5	-1.83	280.8	-1.73	293.3	-1.63	308.9	-1.63	327.6
GR	-1.63	333.8	-1.43	352.5	-1.33	355.6	-1.03	365.0	-.83	371.2
GR	-.83	377.5	-.63	386.8	.27	405.5	.57	408.0	.87	414.5
GR	1.57	415.5	1.55	418.5	6.74	428.0	6.74	429.0	5.96	429.5
GR	7.14	590.5	6.50	591.5	5.56	805.0	10.96	818.0	13.13	823.0
GR	13.06	828.0	10.66	832.5	10.66	835.5	7.76	841.0	7.76	845.0
GR	6.76	847.0	6.26	847.0	6.26	847.5	6.76	847.5	6.76	848.0
GR	6.26	848.5	6.26	888.0						
X1	43.85	79	.00	897.00	560.00	560.00	560.00			
GR	21.97	.0	3.97	30.0	3.97	31.0	6.37	33.0	6.37	38.0
GR	5.27	39.0	5.27	67.5	2.27	78.5	1.67	96.5	3.86	102.5
GR	3.96	120.0	1.07	124.5	.97	169.0	1.37	169.5	4.86	176.5
GR	5.07	238.5	3.07	241.5	1.67	259.5	1.57	268.5	.37	275.0
GR	-.43	286.0	-.83	288.5	-.33	302.4	-.33	308.0	-.53	316.3
GR	-.13	319.1	-.03	327.5	-.23	344.2	-.63	352.5	-.63	369.2
GR	-.93	372.0	-1.03	385.9	-.93	394.3	-.93	405.4	-.93	411.0
GR	-1.03	413.7	-.73	427.7	-.83	441.6	-.83	447.1	-1.13	461.0
GR	-1.33	480.5	-1.43	483.3	-1.23	486.1	-.83	497.2	-1.03	511.2
GR	-2.03	539.0	-1.03	541.8	-.93	544.6	-1.23	580.7	-1.43	603.0
GR	-.43	611.0	.07	621.0	1.57	623.0	1.87	626.5	3.37	629.5
GR	4.16	635.5	3.19	642.5	1.77	646.5	1.77	650.5	5.37	662.5
GR	4.37	677.0	4.27	878.5	4.27	891.5	10.97	892.5	13.23	897.0
GR	13.09	901.5	12.67	904.0	12.67	907.5	10.57	910.5	10.57	912.5
GR	8.07	917.0	8.07	920.0	7.47	922.0	6.67	922.0	6.67	922.8
GR	7.47	922.8	7.47	923.3	6.47	923.8	6.47	938.0		
X1	44.45	89	37.00	1022.50	600.00	600.00	600.00			
GR	7.84	.0	7.84	7.0	8.64	10.0	8.64	15.0	9.94	18.5
GR	9.94	24.0	12.94	30.0	12.95	37.0	11.16	42.0	6.05	56.5
GR	2.05	56.5	2.32	67.5	5.34	75.5	7.34	84.5	6.94	94.5
GR	3.94	101.0	2.44	104.5	2.44	107.5	3.44	113.5	5.54	118.0
GR	1.04	138.5	1.04	143.5	5.34	149.0	4.79	157.5	4.56	161.5
GR	4.56	201.5	4.79	202.5	5.24	292.5	5.24	296.5	1.84	303.5
GR	1.84	326.0	2.84	330.0	2.84	338.0	1.54	341.0	1.54	347.0
GR	3.34	350.0	2.14	365.0	2.14	368.0	4.29	378.0	4.34	465.5
GR	1.94	468.5	1.58	471.5	.88	476.5	.68	537.5	.68	571.5
GR	.38	588.6	.38	595.4	.28	598.8	.28	602.2	-.22	629.5
GR	-1.22	650.0	-1.12	656.8	-1.42	667.1	-1.42	677.3	-1.52	691.0
GR	-2.72	714.9	-3.32	742.2	-3.22	745.6	-3.32	749.0	-3.12	759.2
GR	-3.12	772.9	-3.32	790.0	-3.32	800.2	-4.42	824.1	-4.32	830.9
GR	-4.22	837.8	-3.82	848.0	-3.42	860.0	-1.42	866.0	1.58	868.0
GR	1.84	871.5	5.64	877.0	5.64	878.0	5.14	879.0	5.74	966.0
GR	6.23	994.5	10.96	1007.0	13.09	1011.5	12.86	1017.5	15.24	1022.5
GR	15.24	1027.5	7.74	1033.0	7.74	1038.5	6.94	1038.5	6.94	1039.4
GR	7.74	1039.4	7.74	1040.4	5.44	1041.5	5.44	1137.0		
X1	45.06	99	100.00	1008.50	610.00	610.00	610.00			
GR	6.23	.0	6.23	63.0	7.03	64.0	7.03	72.7	6.33	72.7
GR	6.33	73.5	7.03	73.5	7.03	75.0	8.13	76.5	8.13	80.5
GR	9.47	82.5	9.47	86.5	13.23	94.5	13.23	100.0	11.47	105.0
GR	5.05	121.5	5.05	132.5	7.05	135.5	7.05	138.0	1.73	147.0
GR	1.73	152.0	6.28	162.5	6.28	164.5	5.48	167.0	6.70	343.0
GR	6.90	344.5	6.90	348.0	6.80	348.5	6.80	427.0	5.93	428.0
GR	5.63	481.0	5.23	496.0	2.83	500.5	1.93	511.5	.93	530.5
GR	1.73	533.5	3.13	535.5	4.43	542.0	4.43	548.0	3.73	554.0
GR	1.73	558.5	.43	559.5	1.83	575.0	4.38	601.0	4.73	657.0
GR	4.23	677.0	3.53	680.0	2.03	681.0	1.58	683.0	-.42	686.0
GR	-1.42	692.0	-2.02	693.0	-3.62	713.1	-3.52	716.5	-3.82	726.5
GR	-3.62	729.9	-3.72	736.6	-3.52	739.9	-4.02	750.0	-4.02	766.7
GR	-3.12	793.5	-2.52	820.3	-2.52	830.4	-2.32	847.1	-1.52	863.9
GR	-1.42	880.6	-2.62	910.8	-2.42	914.1	-2.82	917.5	-3.92	930.9
GR	-3.42	937.6	-2.42	951.0	-1.92	954.0	.08	960.0	1.58	961.0
GR	2.13	973.5	6.13	982.0	6.13	989.0	11.42	1002.5	13.69	1008.5
GR	13.75	1014.0	11.03	1018.0	11.03	1021.5	8.53	1027.5	8.53	1032.5
GR	7.53	1032.5	7.53	1033.5	8.53	1033.5	8.53	1035.0	6.43	1036.5
GR	6.43	1070.5	7.13	1071.0	7.13	1075.5	6.63	1076.5	6.03	1076.5
GR	6.03	1077.1	6.63	1077.1	7.13	1078.5	7.13	1100.0		
X1	45.65	85	100.00	1080.00	590.00	590.00	590.00			
GR	5.95	.0	5.95	66.5	8.80	72.5	8.80	77.5	10.88	81.5

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GR 10.88   87.5  13.05   94.0  13.05  100.0  11.29  105.0   5.29  121.0
GR  5.29  128.0   6.05  129.0   6.05  131.0   2.05  140.0   2.05  142.5
GR  6.05  153.5   6.05  197.0   5.85  198.5   5.85  202.0   6.75  434.0
GR  3.25  449.5   3.25  507.3   3.65  508.3   4.65  512.0   2.65  516.0
GR  2.95  547.0   2.85  588.5   3.45  589.5   3.45  592.0   2.55  595.0
GR  2.55  597.5   3.45  605.0   3.45  611.0   3.65  627.5   1.85  635.0
GR  1.58  638.5   -.92  641.0  -2.42  647.5  -3.12  648.5  -2.92  657.8
GR -3.32  664.0  -3.42  673.3  -3.92  685.7  -3.82  691.9  -3.82  695.0
GR -3.12  701.2  -3.02  710.5  -3.12  713.6  -2.92  719.8  -3.02  732.2
GR -2.92  744.6  -3.12  750.8  -2.82  772.5  -2.02  781.8  -2.92  794.2
GR -3.12  803.5  -3.92  834.5  -3.72  837.6  -4.22  843.8  -4.42  859.3
GR -4.82  868.6  -6.92  887.2  -7.42  899.6  -7.32  908.9  -7.42  924.4
GR -4.52  939.9  -4.02  949.2  -3.02  955.4  -2.22  961.6  -1.92  970.9
GR -1.92  977.1  -2.42  989.5  -2.22 1005.0  -1.92 1009.0    .08 1014.0
GR  1.58 1015.0   3.85 1019.0   3.85 1023.0  12.79 1030.0  12.91 1032.0
GR 12.69 1036.0  12.21 1053.0  13.31 1053.0  13.88 1060.0  22.05 1080.0
X1 46.20   91  42.00 1278.50 550.00 550.00 550.00
GR 10.14    .0  10.14   29.5  12.74   34.5  12.74   42.0  11.32   46.5
GR  3.12   67.5   3.12  107.5   5.88  114.0   5.88  114.5   5.32  117.5
GR  5.32  252.0   1.94  257.0   1.94  274.5   5.74  281.0   5.74  283.5
GR  5.51  284.0   5.51  460.0   6.82  461.5   6.88  502.5   4.94  505.5
GR  4.94  596.5   5.24  604.4   5.24  607.4   4.92  620.4   1.59  626.4
GR   .89  633.0    .09  635.0   -.01  636.4   -.11  642.7   -.11  645.9
GR  -.41  658.5  -1.21  667.9  -2.91  677.4  -1.51  699.4  -1.11  721.5
GR -2.21  753.0  -2.21  762.4  -2.41  768.7  -2.11  793.9  -2.61  809.7
GR -2.41  816.0  -2.41  831.7  -2.71  841.2  -2.61  850.6  -2.71  856.9
GR -2.41  863.2  -2.71  866.4  -2.61  879.0  -2.41  882.1  -2.41  891.6
GR -2.51  901.0  -2.41  923.1  -2.31  935.7  -2.31  945.1  -2.41  954.6
GR -2.11  960.9  -1.91  973.5  -1.41  976.0   -.41  978.0   1.59  978.5
GR  2.74  981.5   2.74  986.5   2.04  988.0   2.04 1000.5   2.62 1002.0
GR  2.44 1011.0    .74 1011.5    .74 1100.5   4.44 1105.5   4.24 1109.0
GR  4.24 1111.5   3.84 1112.5   3.84 1193.0   5.74 1195.0   5.74 1222.5
GR  2.34 1224.0   2.34 1224.5   3.34 1229.5   3.54 1254.0  11.64 1273.0
GR 11.64 1278.0  13.78 1278.5  13.89 1283.5  10.24 1290.5  10.24 1293.5
GR  7.04 1299.5   7.04 1302.5   2.54 1310.5   2.54 1311.0   3.54 1312.0
GR  3.54 1342.0
X1 46.67  110 100.00 1318.50 470.00 470.00 470.00
GR  4.26    .0   4.26   64.0   4.86   64.5   4.86   66.0   4.46   67.0
GR  2.96   67.0   2.96   69.0   4.46   69.0   5.56   72.0   5.56   74.0
GR 10.57   84.5  10.57   88.5  13.26   94.0  13.26  100.0  12.85  104.5
GR  5.18  120.5   5.18  122.0   5.93  123.5   5.93  260.0   6.16  261.5
GR  6.06  262.0   6.06  264.0   5.93  294.5   5.93  299.0   2.96  302.5
GR  5.65  304.5   6.63  455.5   7.23  456.5   7.23  457.5   5.26  460.5
GR  4.46  464.5   1.59  470.5    .59  472.0    .09  478.0   -.31  480.5
GR  -.31  489.3   -.31  495.2   -.31  504.1   -.11  560.1   -.11  580.7
GR  -.21  586.6   -.21  610.2   -.61  624.9   -.61  630.8  -1.01  651.4
GR -1.01  657.3  -1.21  660.3  -1.11  672.1  -1.31  680.9  -1.21  686.8
GR -1.61  695.6  -1.41  704.5  -1.61  707.4  -1.31  713.3  -1.51  719.2
GR -1.41  725.1  -1.71  736.9  -1.51  742.8  -1.61  748.7  -1.51  757.5
GR -1.61  763.4  -1.41  766.4  -1.41  778.1  -1.51  781.1  -1.41  789.9
GR -1.41  801.7  -1.21  804.7   -.31  825.3   -.21  837.1   -.41  840.0
GR  -.41  854.8   -.51  860.7   -.61  869.5   -.41  872.0    .09  880.0
GR   .29  888.0   1.59  889.5   1.66  892.5   2.66  897.5   2.66  901.5
GR  2.86  902.5   4.26  904.5   4.56 1078.5   4.06 1079.0   4.06 1083.0
GR  4.16 1110.0   2.36 1113.5   2.36 1149.0   4.76 1153.5   4.76 1158.0
GR  5.16 1158.5   5.16 1246.0   1.76 1251.5   1.76 1258.0   4.36 1263.5
GR  4.36 1292.5   6.26 1297.0   6.26 1301.0  11.46 1313.0  13.83 1318.5
GR 12.62 1324.0   9.86 1330.5   9.86 1333.5   6.86 1338.5   6.86 1341.5
GR  4.85 1345.5   4.85 1346.0   5.15 1346.5   5.15 1390.0   5.15 1430.0
X1 47.27  105 100.00 1279.00 600.00 600.00 600.00
GR  5.60    .0   5.60   62.5   6.10   64.0   6.10   66.5   5.20   67.5
GR  3.70   67.5   3.70   69.5   5.20   69.5   6.18   71.0   6.18   74.5
GR 10.90   83.5  10.90   89.5  13.30   94.0  13.30  100.0  11.45  104.7
GR  6.30  118.0   6.30  140.2   5.90  140.7   5.90  161.5   3.70  166.5
GR  3.70  168.5   6.65  173.5   6.65  176.0   7.30  302.8   5.50  307.5
GR  4.90  309.5   2.30  314.0   3.00  324.0   2.70  363.0   1.40  367.0
GR  1.40  369.0   2.30  371.0   3.10  400.0   2.70  457.0   1.60  467.0
GR   .90  470.0    .60  475.0   -.20  477.0   -.40  485.7   -.40  491.5
GR  -.60  497.3   -.50  503.1   -.50  508.8   -.80  520.4   -.70  523.3
GR -1.00  543.6   -.80  563.8  -1.00  569.6  -1.20  575.4  -1.20  589.9
GR -1.30  598.6  -1.20  607.3  -1.40  613.1  -1.50  624.6  -1.40  644.9
GR -1.90  656.5  -1.90  662.3  -1.90  665.2  -1.30  676.7  -1.40  682.5
GR -1.10  691.2  -1.10  702.8   -.90  723.0   -.20  749.1   -.10  754.9
GR   .30  766.5    .50  780.9    .50  786.7    .30  795.4    .10  807.0
GR   .60  810.0    .90  815.0   1.60  817.0   2.80  821.0   2.80  830.0
GR  6.30  838.0   5.18  860.1   1.90  865.5   1.90  883.5   4.30  900.0
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GR	4.30	950.0	4.80	951.0	4.20	955.0	4.20	959.0	2.80	963.0
GR	3.00	997.5	4.50	1005.5	6.10	1006.0	6.30	1122.5	2.30	1124.5
GR	2.30	1126.5	5.20	1130.5	5.10	1133.0	5.10	1193.5	2.80	1196.5
GR	2.80	1212.0	5.70	1216.0	6.30	1252.0	11.90	1265.5	14.08	1273.5
GR	13.95	1274.5	15.36	1279.0	15.39	1293.5	11.00	1303.5	11.00	1308.5
X1	47.80	59	137.90	1159.10	530.00	530.00	530.00			
GR	6.90	.0	6.90	100.7	7.34	101.6	7.36	104.5	5.79	106.8
GR	5.83	107.4	4.43	107.5	4.43	109.1	5.83	109.1	11.64	122.9
GR	11.68	128.2	13.48	132.3	13.38	137.9	9.44	148.6	9.37	151.8
GR	7.35	156.7	7.23	187.6	7.90	188.7	7.66	229.0	7.13	230.9
GR	8.29	335.7	4.31	346.6	3.31	423.5	1.70	428.6	-1.49	433.9
GR	-3.29	448.9	-2.79	488.9	-2.49	528.9	-1.29	578.9	-1.49	648.9
GR	-1.69	707.9	-1.59	737.9	-.89	757.9	1.71	762.9	5.49	778.5
GR	6.91	799.4	3.44	806.3	3.52	825.8	6.02	831.2	5.42	944.0
GR	5.68	944.5	2.44	950.4	2.38	953.2	6.36	962.7	6.37	1013.5
GR	5.80	1015.0	5.96	1101.5	5.58	1104.2	5.57	1138.3	14.04	1159.1
GR	13.90	1164.9	10.72	1172.7	10.76	1175.1	5.25	1184.6	3.79	1209.7
GR	2.66	1210.6	2.66	1215.6	5.16	1220.7	5.16	1302.8		
X1	48.10	42	9.40	944.90	300.00	300.00	300.00			
GR	11.79	.0	13.37	3.4	13.48	9.4	9.03	21.6	8.87	25.0
GR	7.68	28.1	7.68	45.6	8.04	46.5	10.89	119.9	8.38	176.3
GR	8.37	176.3	8.14	182.5	8.63	185.7	8.11	261.4	7.21	262.8
GR	7.28	292.5	3.84	304.9	2.90	314.8	1.62	338.2	-1.38	357.4
GR	-4.38	387.4	-2.31	437.4	-3.38	492.4	-3.18	562.4	-2.78	617.4
GR	-2.38	696.4	-1.38	716.4	1.62	724.9	2.95	735.8	2.70	746.1
GR	5.75	757.6	5.11	919.2	7.12	924.2	7.17	928.4	14.03	944.9
GR	13.77	950.5	10.47	956.7	10.61	959.7	5.12	970.2	5.12	971.2
GR	5.89	971.8	5.89	1002.2						
X1	48.50	47	131.70	1051.10	400.00	400.00	400.00			
GR	6.49	.0	6.49	100.1	6.49	101.2	4.98	101.3	4.98	102.9
GR	6.34	102.9	9.88	104.8	11.95	117.2	12.00	122.6	13.50	125.4
GR	13.48	131.7	7.97	146.1	8.63	181.5	8.06	333.6	7.77	335.1
GR	6.70	358.8	5.72	361.8	6.64	443.5	7.22	511.5	6.80	570.8
GR	2.85	580.6	1.77	612.4	-.81	621.7	-2.91	651.7	-3.81	691.7
GR	-5.31	741.7	-5.31	781.7	-5.31	821.7	-2.31	871.7	.39	901.7
GR	1.69	908.4	2.76	916.4	2.81	952.6	5.19	957.1	5.28	1030.4
GR	13.98	1051.1	13.90	1056.8	10.61	1063.3	10.61	1066.4	6.61	1072.9
GR	6.61	1073.8	7.33	1074.3	7.33	1104.2	7.86	1105.3	7.86	1113.3
GR	7.35	1113.9	7.35	1195.1						
X1	48.97	52	135.90	1216.10	470.00	470.00	470.00			
GR	6.67	.0	6.67	100.3	7.54	101.9	7.44	105.3	6.78	106.4
GR	5.38	106.4	5.38	108.1	6.77	108.1	8.08	113.5	11.95	120.8
GR	11.87	126.5	13.69	130.0	13.74	135.9	7.00	153.5	7.08	172.7
GR	7.87	177.1	8.01	226.1	7.45	400.7	4.06	406.9	3.41	412.6
GR	3.60	430.7	6.40	438.0	7.02	594.4	7.44	747.9	6.32	870.8
GR	4.55	876.6	4.30	907.7	1.28	910.8	.78	914.9	.48	929.9
GR	-1.92	959.9	-3.72	979.9	-6.02	1009.9	-6.52	1059.9	-5.32	1086.9
GR	-.72	1093.9	1.28	1099.8	2.38	1103.5	7.87	1118.1	8.07	1123.2
GR	9.01	1125.5	9.23	1129.4	7.77	1129.9	7.56	1133.3	9.43	1133.7
GR	10.32	1135.3	10.36	1145.4	11.38	1147.9	11.57	1168.6	12.28	1181.6
GR	21.42	1206.0	21.42	1216.1						
X1	49.40	68	136.80	1732.20	430.00	430.00	430.00			
GR	6.56	.0	6.56	100.1	7.15	101.1	6.86	105.7	6.86	106.2
GR	5.45	106.2	5.45	107.8	6.85	107.9	11.99	123.9	12.00	127.3
GR	13.62	130.6	13.72	136.8	10.22	145.5	10.27	149.8	6.47	159.0
GR	5.98	164.5	5.46	166.2	5.45	180.6	5.94	183.2	7.44	186.8
GR	7.63	232.1	6.70	233.7	6.77	252.8	7.48	254.7	7.46	437.2
GR	6.21	439.8	6.28	455.8	3.60	460.3	3.09	464.2	4.40	466.5
GR	4.53	468.5	3.31	470.4	3.84	471.9	7.31	483.8	7.30	789.2
GR	6.83	791.3	6.93	878.2	4.60	885.6	5.33	920.4	6.06	983.2
GR	3.27	988.5	1.43	997.6	.22	1001.8	-.98	1016.8	-2.78	1051.8
GR	-3.38	1081.8	-3.68	1121.8	-5.08	1161.8	-2.58	1191.8	-2.78	1241.8
GR	-3.08	1271.8	-.78	1311.8	.92	1331.8	1.41	1336.9	1.46	1384.6
GR	5.34	1389.9	6.54	1408.6	1.92	1419.9	2.25	1449.1	6.31	1453.1
GR	5.96	1465.4	2.14	1505.8	2.74	1543.1	5.88	1549.5	7.47	1561.5
GR	7.62	1578.3	6.41	1581.9	6.41	1732.2				
X1	49.82	49	149.70	1432.00	420.00	420.00	420.00			
GR	6.93	.0	6.93	100.4	8.22	126.8	12.11	135.5	12.02	139.8
GR	13.83	143.5	14.01	149.7	6.25	168.8	6.38	196.0	5.11	198.0
GR	4.35	201.4	4.55	340.2	5.17	344.2	6.35	347.5	6.57	370.5
GR	7.44	372.0	7.69	473.4	3.42	483.0	3.44	493.3	7.71	500.6
GR	7.70	781.5	6.78	888.3	5.64	890.5	5.39	978.9	5.20	1015.5
GR	2.84	1016.9	1.46	1023.4	.16	1027.7	-.75	1047.7	-1.85	1072.7
GR	-2.55	1112.7	-2.55	1172.7	-.75	1217.7	-.75	1257.7	-1.75	1297.7
GR	-1.95	1312.7	-.85	1327.7	.96	1338.7	1.40	1349.4	2.61	1353.5
GR	3.22	1356.8	7.26	1363.4	7.61	1367.8	7.53	1420.4	8.57	1421.5

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GR 12.70  1432.0   12.63  1438.0    7.40  1450.8    7.40  1551.1
X1 50.30       36 105.80 1353.40 480.00  480.00  480.00
GR  7.87       .0  7.87    80.3   14.14    91.9   13.86   105.8   6.33   125.0
GR  8.14   710.8   8.26   767.3    7.77   769.0    7.41   810.9   6.99   812.4
GR  7.03   873.5   5.63   876.9    5.48   930.5    2.86   934.4   1.52   945.4
GR  1.02   949.8  -2.48   964.8   -1.78   979.8   -2.18  1049.8  -2.48  1109.8
GR -3.48  1162.8  -3.68  1207.8   -3.38  1247.8     .32  1267.8   1.52  1272.9
GR  1.84  1276.1   3.16  1278.7    8.09  1288.5    8.13  1340.6   9.22  1344.9
GR 12.91  1353.4  12.75  1358.6    9.01  1366.9    8.63  1371.3   8.35  1371.3
GR  8.35  1471.3
X1 50.80       52 112.70 1559.90 500.00  500.00  500.00
GR  9.90       .0  9.97    31.2   11.76    32.2   11.01    34.2  11.56    35.2
GR 11.68    62.2  10.79    64.0   10.68    90.4    9.49    94.9   9.69    98.1
GR 13.65   105.4  13.77   112.7    7.53   128.8    9.79   148.3   8.82   159.7
GR  7.00   164.5   6.98   166.7    7.54   167.9    5.72   176.2   5.91   178.7
GR  7.03   184.1   9.02   543.4    9.35   661.5    7.95   824.8   6.64   830.4
GR  6.53   856.6   3.00   866.7    1.56   901.5     .86   901.7  -1.04   916.7
GR -2.74  1006.7  -3.54  1136.7   -4.54  1206.7   -3.04  1346.7    .56  1391.7
GR  1.56  1402.3   2.77  1405.1    3.02  1407.9    7.69  1417.8   8.22  1531.9
GR  9.96  1547.5  10.58  1552.4   12.93  1559.9   13.09  1564.5  10.47  1570.2
GR 10.49  1581.9   9.57  1583.4    9.43  1592.3    9.23  1593.3   8.92  1597.0
GR  7.92  1601.5   7.92  1701.3
X1 51.22       43 98.70 1476.70 420.00  420.00  420.00
GR 12.92       .0 13.28    27.8   12.80    28.4   12.85    98.7   7.57   109.3
GR  7.66   117.8   7.21   118.8    7.14   141.4    5.70   142.6   5.75   153.7
GR  7.05   155.0   7.07   210.0    8.27   211.9    8.43   254.2   7.88   255.1
GR  9.88   543.4   8.78   723.4    2.23   740.2    1.46   745.4   2.46   755.4
GR  3.99   765.1   3.99   780.5    1.41   790.5     .51   795.7    .61   875.7
GR   .41   965.7    .31  1005.7     .21  1055.7     .31  1105.7    .41  1145.7
GR   .71  1205.7   -.59  1248.7   -1.09  1263.7    1.41  1269.7   2.84  1384.1
GR  3.44  1398.9   7.52  1408.0    7.28  1461.3    9.19  1464.8   9.35  1469.4
GR 12.52  1476.7  12.55  1484.9    9.06  1493.3
X1 51.54       46 117.20 1239.00 320.00  320.00  320.00
GR 13.19       .0 13.67    33.4   13.04    34.3   13.28   117.2   7.78   127.2
GR  7.88   135.5   7.33   136.9    7.25   160.2    5.93   161.8   5.99   172.3
GR  7.34   173.5   7.32   242.3    7.95   243.1    8.60   267.1   9.36   476.1
GR  8.64   674.3   8.66   674.3    8.22   764.3    1.46   781.0   -.24   785.2
GR -1.24   810.2  -1.34   850.2    -.74   900.2    -.84   950.2  -1.44   990.2
GR  -.54  1042.2    .36  1097.2     .66  1132.2    1.49  1140.0   3.41  1141.3
GR  4.61  1196.0   1.90  1204.6    2.16  1208.4    3.19  1211.1   3.32  1215.3
GR  6.91  1222.2   6.94  1225.2   13.51  1239.0   13.52  1240.2  12.55  1240.2
GR 12.76  1241.1  12.58  1244.3   11.71  1244.6   11.64  1249.3   8.91  1249.8
GR  8.91  1280.0
X1 52.09       56 88.70  933.30 550.00  550.00  550.00
GR  7.09       .0  7.09    50.4   12.36    69.1   12.79    74.0  12.66    85.7
GR 12.66    88.7  8.70    93.3    8.51    97.9    7.25    98.7   7.44   134.9
GR  6.44   136.0   6.44   144.7    5.96   146.0    4.36   147.2   4.36   153.0
GR  5.98   154.2   6.68   155.8    6.54   243.8    6.19   249.6   2.81   256.1
GR  2.68   257.1   2.68   259.2    2.71   260.0    8.72   271.3   8.20   380.0
GR  7.69   381.5   7.42   483.1    6.38   486.6    6.25   618.4   3.26   630.0
GR  2.09   651.6   2.09   654.6    3.86   657.6    5.47   669.6   5.55   678.4
GR  4.16   699.8   1.49   700.3   -1.11   705.7   -2.51   740.7  -6.11   770.7
GR-10.11   795.7 -15.11   820.7   -8.51   845.7     .49   862.7   1.43   870.3
GR  3.02   887.2   4.82   888.0    4.80   890.6    3.31   895.4   3.73   901.0
GR 12.15   908.8  13.14   918.9   13.99   933.3   13.99   937.6  11.68  1040.3
GR 11.23  1061.2
X1 52.16       47 76.50  906.50  66.00   66.00   66.00
GR 14.58       .0 16.36    72.9   16.43    76.5   13.79    76.5  13.79    77.8
GR 13.07    77.9  12.23    96.5    7.23   106.1    7.77   116.5   7.33   166.5
GR  6.35   183.3   3.35   183.3    3.35   192.5    6.27   192.6   7.80   216.5
GR  7.52   266.5   7.30   316.5    7.56   366.5    7.03   416.5   6.28   466.5
GR  5.88   516.5   5.45   566.5    3.80   616.6    2.18   626.5   1.59   641.1
GR  1.13   645.9   -.47   676.5   -1.07   692.9   -2.77   717.9  -5.47   736.5
GR -4.67   752.9  -5.67   772.9   -6.07   796.5   -4.37   806.9  -2.57   826.9
GR   .13   842.9   1.53   848.5    3.90   853.8    3.96   856.6   4.57   894.6
GR  8.58   895.0  11.38   905.0   13.88   905.1   13.88   906.4  16.46   906.5
GR 16.60   910.2  13.76  1015.2
X1 52.17       47 76.50  906.50  14.00   14.00   14.00
GR 14.58       .0 16.36    72.9   16.43    76.5   13.79    76.5  13.79    77.8
GR 13.07    77.9  12.23    96.5    7.23   106.1    7.77   116.5   7.33   166.5
GR  6.35   183.3   3.35   183.3    3.35   192.5    6.27   192.6   7.80   216.5
GR  7.52   266.5   7.30   316.5    7.56   366.5    7.03   416.5   6.28   466.5
GR  5.88   516.5   5.45   566.5    3.80   616.6    2.18   626.5   1.59   641.1
GR  1.13   645.9   -.47   676.5   -1.07   692.9   -2.77   717.9  -5.47   736.5
GR -4.67   752.9  -5.67   772.9   -6.07   796.5   -4.37   806.9  -2.57   826.9
GR   .13   842.9   1.53   848.5    3.90   853.8    3.96   856.6   4.57   894.6
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GR	8.58	895.0	11.38	905.0	13.88	905.1	13.88	906.4	16.46	906.5
GR	16.60	910.2	13.76	1015.2						
X1	52.19	47	76.50	906.50	22.00	22.00	22.00			
GR	14.58	.0	16.36	72.9	16.43	76.5	13.79	76.5	13.79	77.8
GR	13.07	77.9	12.23	96.5	7.23	106.1	7.77	116.5	7.33	166.5
GR	6.35	183.3	3.35	183.3	3.35	192.5	6.27	192.6	7.80	216.5
GR	7.52	266.5	7.30	316.5	7.56	366.5	7.03	416.5	6.28	466.5
GR	5.88	516.5	5.45	566.5	3.80	616.6	2.18	626.5	1.59	641.1
GR	1.13	645.9	-.47	676.5	-1.07	692.9	-2.77	717.9	-5.47	736.5
GR	-4.67	752.9	-5.67	772.9	-6.07	796.5	-4.37	806.9	-2.57	826.9
GR	.13	842.9	1.53	848.5	3.90	853.8	3.96	856.6	4.57	894.6
GR	8.58	895.0	11.38	905.0	13.88	905.1	13.88	906.4	16.46	906.5
GR	16.60	910.2	13.76	1015.2						
X1	52.54	47	131.00	1159.57	348.00	348.00	348.00			
GR	4.99	.0	4.99	99.6	9.16	99.8	9.42	117.8	13.49	125.0
GR	13.81	131.0	8.16	146.7	8.58	224.1	9.43	227.6	9.52	308.0
GR	8.58	310.8	5.00	568.2	3.43	577.5	3.52	592.9	1.30	610.0
GR	-1.32	620.0	-3.02	635.0	-3.72	650.0	-3.52	680.0	-2.72	720.0
GR	-.72	750.0	.48	770.0	.78	800.0	.58	825.0	-.72	865.0
GR	-.22	880.0	1.28	885.5	2.31	886.5	2.77	925.7	4.20	931.4
GR	4.57	940.6	3.01	944.0	3.04	946.4	7.08	962.2	6.90	964.6
GR	7.80	966.1	7.77	1108.6	6.46	1112.2	2.46	1114.2	2.46	1122.4
GR	6.10	1137.2	14.06	1159.6	14.06	1165.6	11.56	1171.4	11.67	1176.5
GR	8.56	1182.8	8.56	1189.9						
X1	52.91	38	115.90	841.70	370.00	370.00	370.00			
GR	8.68	.0	8.68	100.3	13.72	110.2	13.74	115.9	9.51	147.7
GR	9.55	262.6	8.72	265.1	8.78	283.4	6.84	287.1	6.09	404.7
GR	5.42	407.7	4.88	432.9	1.44	441.0	.53	443.9	-.17	453.9
GR	-.57	483.9	-1.37	533.9	-1.57	583.9	-3.07	638.9	-4.37	678.9
GR	-3.17	718.9	.93	729.9	.43	744.9	1.41	751.2	3.25	755.9
GR	3.47	760.0	1.78	764.5	1.58	770.4	2.72	771.6	10.27	814.9
GR	10.41	821.4	11.58	822.6	11.65	831.5	16.79	841.7	14.79	845.7
GR	14.79	849.7	14.57	849.7	14.57	899.8				
X1	53.35	43	96.10	750.70	440.00	440.00	440.00			
GR	10.63	.0	10.43	8.4	9.06	9.8	9.16	46.0	8.73	46.8
GR	8.69	52.0	9.46	53.2	9.47	59.5	8.30	61.9	8.21	80.4
GR	13.21	91.1	13.62	96.1	8.88	108.5	6.77	271.2	5.43	275.8
GR	5.46	305.9	1.32	335.3	-2.08	345.1	-3.08	360.1	-3.08	380.1
GR	-3.28	405.1	-1.48	435.1	-2.08	460.1	-2.38	500.1	-2.18	550.1
GR	-1.08	575.1	-.68	610.1	.52	625.1	1.22	630.1	1.12	640.1
GR	.62	645.1	.32	655.1	.92	660.1	1.12	690.1	.32	697.1
GR	.12	707.1	.52	717.1	1.26	723.0	6.95	733.0	7.55	737.0
GR	10.49	739.0	10.12	740.2	25.88	750.7				
X1	53.76	55	110.70	1015.70	410.00	410.00	410.00			
GR	10.21	.0	11.90	58.0	13.00	59.3	11.87	61.2	12.28	62.5
GR	12.31	64.2	13.48	65.4	13.36	66.7	10.03	72.5	9.82	95.2
GR	8.86	96.8	9.00	96.9	13.95	106.3	14.01	110.7	8.44	125.0
GR	6.40	236.5	4.05	282.0	1.36	288.5	.87	293.2	-2.14	313.3
GR	-2.96	363.6	-3.17	403.2	-2.16	443.5	-1.95	473.8	-2.96	523.2
GR	-3.25	558.3	.06	593.1	.17	625.5	.37	650.5	1.32	655.7
GR	2.62	664.2	2.61	678.7	7.71	694.1	7.93	951.6	6.77	953.4
GR	6.56	955.7	7.31	956.2	7.48	956.6	6.60	956.9	6.59	987.7
GR	6.97	987.9	6.95	988.5	6.49	988.6	6.64	989.9	7.99	994.2
GR	8.00	994.7	9.88	999.6	10.10	1002.9	14.36	1015.7	14.11	1021.4
GR	11.79	1026.6	11.51	1033.1	8.03	1043.8	7.55	1044.2	7.55	1144.5
X1	54.27	47	92.00	698.90	510.00	510.00	510.00			
GR	18.11	.0	14.53	16.9	14.39	23.3	11.09	49.9	9.96	78.2
GR	11.27	80.6	11.74	84.4	13.95	87.2	13.78	92.0	10.78	99.2
GR	8.13	141.2	5.32	165.7	1.42	172.8	-1.99	179.6	-1.89	199.8
GR	.44	229.6	.82	239.7	.89	250.0	-.11	256.2	-2.99	281.7
GR	-3.49	321.7	-1.68	358.8	.02	373.5	1.47	376.4	2.89	443.5
GR	5.86	448.1	6.29	468.2	7.25	470.8	7.14	472.0	6.66	472.6
GR	6.63	514.5	7.17	514.9	7.11	515.5	6.81	516.1	6.66	528.6
GR	7.47	530.0	7.69	553.9	8.39	555.6	8.92	593.7	7.95	595.0
GR	7.42	634.9	8.46	635.1	8.45	639.4	7.46	639.7	7.39	681.3
GR	9.30	683.9	25.00	698.9						
X1	54.73	46	.00	624.70	460.00	460.00	460.00			
GR	32.89	.0	14.28	20.7	1.58	28.4	-.72	30.2	-.88	45.5
GR	-1.53	65.3	-2.22	100.4	-2.45	135.7	-.63	178.3	-.43	203.1
GR	.19	223.3	1.58	227.9	3.38	234.2	5.17	287.1	5.29	294.0
GR	5.40	314.9	3.76	318.4	3.66	324.4	7.32	333.5	7.15	336.4
GR	6.65	336.9	6.92	337.8	7.11	391.9	7.50	392.6	7.42	392.8
GR	6.07	395.8	6.40	398.7	7.47	400.4	7.29	403.5	8.96	406.1
GR	8.77	465.8	9.06	466.2	9.12	466.8	7.98	468.2	8.01	487.4
GR	7.55	487.7	7.62	518.4	8.29	519.5	8.32	524.5	8.38	546.4
GR	9.47	547.0	10.40	580.0	10.87	580.4	11.04	584.3	11.46	604.5

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GR 21.89   624.7
X1 55.32      50      .00   976.90   590.00   590.00   590.00
GR 27.00      .0    13.90     18.6    14.99     20.1    13.77     33.1    14.22     36.0
GR  6.83    57.3     3.22     58.4     3.49     82.0     4.27     82.3     8.37    105.9
GR  8.85   113.6     8.40    134.0     3.48    150.2     3.60    157.3     6.14    162.5
GR  6.11   193.5     1.79    198.9     -.01    203.1      .19    223.1      .79    238.1
GR  1.19   268.1     1.09    338.1      .89    383.1     1.09    413.1     1.29    438.1
GR -3.51   468.1    -3.81    483.1    -2.01    508.1     -.71    528.1     1.79    533.0
GR  3.58   541.1     6.92    547.5     6.35    587.9     8.24    600.2     5.85    669.6
GR  7.17   671.6     7.63    809.0     5.85    815.3     5.50    820.4     8.94    831.2
GR  8.81   832.1     8.12    833.2     8.30    931.4     8.30    939.0     9.12    943.0
GR  8.60   943.6     8.57    952.6     8.90    953.1    10.22    956.7    28.67    976.9
X1 55.94      54    71.00   992.20   620.00   620.00   620.00
GR  8.01      .0     8.01     49.9     6.53     50.4     6.53     52.4    13.59     66.0
GR 13.62    71.0     7.32     83.3     7.29    104.3     3.11    114.5     2.27    132.9
GR  6.03   137.0     6.04    137.0     6.01    158.1     3.17    163.9     4.39    170.8
GR  7.83   184.5     7.51    224.6     8.30    226.4     8.88    303.6     1.98    315.6
GR   .39   319.3      .29    334.2      .79    359.7      .99    389.3      .89    409.3
GR   .99   449.3     1.19    479.9     1.69    509.2     1.98    531.2     2.24    621.7
GR  4.27   653.7     5.90    655.4     5.97    670.4     5.59    687.0     6.26    689.4
GR  7.82   793.6     9.57    797.3     9.72    798.4     8.75    799.5     9.02    924.6
GR  9.34   925.4     9.44    940.6     9.74    940.6     9.81    941.2     8.81    942.2
GR  8.81   943.2    10.60    945.2    10.60    953.2    12.15    954.2    12.15    984.2
GR 13.60   987.2    13.60    989.2    15.10    992.2    15.10   1047.2
X1 56.41      41    58.40   783.20   473.00   473.00   473.00
GR 17.67      .0    17.75     49.3    18.01     58.4    15.22     58.4    15.22     59.9
GR 11.40    59.9    11.52     63.9    11.46     70.0     8.58     75.1     9.05    108.1
GR  9.65   158.0     9.96    208.0     9.41    258.0     8.86    312.7     7.14    359.2
GR  1.51   373.1      .51    402.7    -3.91    425.1    -1.71    470.2     -.11    492.7
GR   .11   519.4      .81    529.8     1.51    531.9     1.83    583.1     3.52    605.4
GR  3.00   627.0     2.22    633.2     3.23    667.1     8.35    680.3     8.80    683.3
GR  9.39   733.2     9.51    755.2    10.53    757.1    10.52    771.9    12.71    776.7
GR 12.78   781.4    15.14    781.6    15.14    783.1    17.87    783.2    18.03    786.1
GR 17.90   886.5
X1 56.43      41    58.40   783.20    14.00    14.00    14.00
GR 17.67      .0    17.75     49.3    18.01     58.4    15.22     58.4    15.22     59.9
GR 11.40    59.9    11.52     63.9    11.46     70.0     8.58     75.1     9.05    108.1
GR  9.65   158.0     9.96    208.0     9.41    258.0     8.86    312.7     7.14    359.2
GR  1.51   373.1      .51    402.7    -3.91    425.1    -1.71    470.2     -.11    492.7
GR   .11   519.4      .81    529.8     1.51    531.9     1.83    583.1     3.52    605.4
GR  3.00   627.0     2.22    633.2     3.23    667.1     8.35    680.3     8.80    683.3
GR  9.39   733.2     9.51    755.2    10.53    757.1    10.52    771.9    12.71    776.7
GR 12.78   781.4    15.14    781.6    15.14    783.1    17.87    783.2    18.03    786.1
GR 17.90   886.5
X1 56.51      42   123.70   878.90    83.00    83.00    83.00
GR  8.07      .0     8.07    100.1     8.58    101.1     7.37    102.8     7.43    104.8
GR 10.48   108.6    10.60    111.9    14.36    118.4    14.39    123.7     6.27    132.9
GR  9.77   133.0    10.33    380.9     8.96    382.8     8.52    408.5     7.64    411.6
GR  7.70   430.3     1.72    438.3    -2.81    443.2    -2.61    453.4    -2.61    473.2
GR -1.31   493.3     -.30    523.5      .71    561.9     1.41    593.0     1.72    603.5
GR  3.16   660.7     2.84    719.2     3.51    722.3     4.93    725.4     5.97    747.5
GR  9.10   756.7     9.09    757.7     8.47    758.5     8.52    788.3     9.60    790.9
GR  9.54   815.0    11.01    816.7    10.98    820.5    10.69    820.9    11.64    861.3
GR 13.63   864.2    20.43    878.9
X1 56.97      25    80.00   711.70   460.00   460.00   460.00
GR  9.95      .0     9.95     55.3     8.87     56.9     8.87     57.9     9.95     59.3
GR  9.95    63.9    10.65     66.6    14.38     75.3    14.48     80.0    10.14     88.1
GR  8.54   372.0     8.54    372.1     5.20    377.7     5.12    433.4     1.79    437.5
GR  1.50   452.4     1.30    477.8      .30    517.6     -.62    567.6     -.30    607.2
GR  -.61   642.3     -.72    673.5     -.30    691.3     1.79    696.7    31.90    711.7
X1 57.33      25    70.70   835.60   360.00   360.00   360.00
GR  8.69      .0     8.69     50.2     7.69     50.7     7.69     51.7     8.69     51.7
GR 10.32    55.7    10.29     58.3    14.59     66.2    14.41     70.7     9.95     79.6
GR  9.87   336.5     5.62    346.8     6.05    483.7     4.58    487.9     1.84    658.1
GR  1.01   673.0      .01    686.1    -1.21    706.1    -2.01    745.9    -3.01    786.1
GR  1.11   795.9     1.84    800.5     5.32    805.3     6.83    814.1    36.80    835.6
X1 57.81      42    97.60   947.50   480.00   480.00   480.00
GR  9.47      .0     9.47     80.2    11.56     83.7    11.49     87.2    13.98     92.1
GR 14.38    97.6     9.97    106.7     9.27    311.2     6.28    318.3     6.29    443.2
GR  4.13   492.9     1.86    560.6     1.20    575.4     1.11    606.8      .89    646.9
GR   .81   676.9      .81    722.2      .51    762.1      .81    787.0     -.20    826.7
GR  -.51   851.9     1.84    856.4     4.21    861.3     4.41    864.5     7.24    870.1
GR  6.97   876.7     6.93    879.2     6.96    883.6     7.31    885.8     7.12    903.2
GR  5.82   911.3     5.94    922.8     6.66    924.7     6.78    927.3    13.65    947.5
GR 13.53   951.3     8.56    963.6     8.56    969.6     7.00    972.1     7.70    973.1
GR  9.40   975.1     9.40   1075.2
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X1	58.08	47	96.80	803.80	270.00	270.00	270.00			
GR	10.43	.0	10.43	80.1	11.41	81.8	11.45	85.5	13.82	91.7
GR	14.21	96.8	10.11	105.0	10.22	189.7	9.67	192.7	8.46	247.8
GR	5.83	253.3	4.67	298.7	2.74	306.0	1.90	333.7	1.71	343.1
GR	1.41	358.1	1.20	403.2	-2.51	433.3	-1.41	458.0	1.11	498.0
GR	-3.11	529.1	-2.21	548.0	-.41	563.5	1.51	583.5	.71	623.0
GR	.81	663.1	-.20	693.6	.41	711.1	2.00	715.4	4.18	719.9
GR	4.19	722.8	8.56	731.4	8.29	737.7	9.15	740.3	9.15	787.7
GR	8.99	789.4	8.93	797.3	13.27	803.8	13.84	824.5	13.50	828.5
GR	9.70	829.5	9.70	833.0	8.40	836.0	8.40	837.1	9.40	838.6
GR	9.60	840.0	9.40	938.4						
X1	58.57	41	.00	743.10	490.00	490.00	490.00			
GR	23.70	.0	13.67	20.1	13.44	26.3	11.43	29.4	11.43	53.4
GR	9.95	58.6	9.90	99.7	11.89	106.8	12.00	118.9	2.02	144.2
GR	1.61	148.2	-1.01	163.4	-1.11	188.4	.01	224.1	.70	259.1
GR	.81	299.2	.51	349.3	.71	369.2	2.03	374.4	4.69	389.2
GR	5.67	419.3	5.86	552.0	4.30	556.6	4.69	571.1	6.43	574.0
GR	6.70	599.6	7.74	602.7	7.87	667.4	9.81	672.6	9.97	737.2
GR	13.96	743.1	14.23	759.8	13.83	761.2	13.75	765.0	10.08	774.5
GR	9.05	774.6	9.10	775.7	10.03	775.7	10.03	780.0	9.35	780.6
GR	9.35	880.6								
X1	59.06	60	.00	965.10	490.00	490.00	490.00			
GR	24.70	.0	7.01	30.0	5.00	33.0	5.00	43.3	11.99	46.6
GR	11.99	49.8	13.35	52.7	13.64	59.7	9.48	70.1	5.55	70.2
GR	5.08	116.9	8.28	130.6	9.40	164.1	7.52	180.1	7.52	198.0
GR	4.19	204.7	2.27	233.2	1.98	235.9	1.88	246.9	2.29	248.9
GR	3.47	285.5	3.63	320.1	2.22	368.0	1.98	383.0	1.61	413.1
GR	1.31	460.0	1.00	502.1	.51	532.1	-.30	542.2	-1.81	560.0
GR	1.11	590.2	1.71	616.4	2.30	620.0	4.57	645.0	6.76	705.3
GR	6.55	713.5	6.05	715.7	6.96	751.8	8.51	755.6	8.01	756.6
GR	8.47	828.6	9.09	829.7	9.06	881.8	11.48	885.8	11.30	932.4
GR	10.83	951.3	10.63	959.0	14.31	965.1	14.23	981.1	13.70	982.3
GR	13.66	986.2	10.87	994.2	9.94	994.5	9.96	995.4	10.88	995.6
GR	10.93	1008.8	9.00	1012.2	9.05	1051.2	7.80	1052.7	7.80	1103.4
X1	59.52	53	117.50	980.40	460.00	460.00	460.00			
GR	9.50	.0	9.50	100.1	11.42	104.4	11.35	107.1	13.83	114.3
GR	13.81	117.5	8.86	129.0	8.88	174.6	9.38	175.8	9.35	182.9
GR	9.89	183.9	9.72	235.5	4.82	255.1	3.08	294.2	3.35	334.4
GR	5.76	348.0	5.93	365.3	2.25	392.5	1.50	396.8	.20	416.7
GR	-.10	447.4	-.30	482.0	.20	511.8	1.01	561.7	1.01	596.9
GR	.61	651.9	1.01	672.8	2.21	678.6	5.29	686.9	5.06	691.6
GR	2.85	694.6	3.27	749.4	6.85	753.5	7.44	792.5	7.70	794.0
GR	7.88	799.9	8.35	800.9	7.67	802.6	9.05	883.2	11.33	886.3
GR	11.47	952.1	10.61	953.7	10.60	973.5	13.92	980.4	13.43	996.6
GR	12.59	1006.7	11.47	1008.8	10.44	1008.9	10.50	1010.0	11.42	1010.5
GR	11.56	1013.8	10.44	1014.6	10.44	1115.2				
X1	59.99	43	124.90	894.60	470.00	470.00	470.00			
GR	10.39	.0	10.39	100.0	12.22	102.2	13.81	110.9	14.06	115.2
GR	16.73	120.1	16.71	124.9	10.48	141.0	10.64	263.1	9.23	266.4
GR	9.16	289.0	6.54	376.1	5.12	379.1	5.14	409.7	2.30	435.5
GR	1.80	441.2	-.52	456.5	-.92	476.1	-.71	507.2	.90	547.3
GR	1.29	577.4	1.50	597.0	1.70	622.4	1.80	637.2	2.26	642.1
GR	3.08	645.4	3.67	754.8	9.84	767.7	10.07	792.1	11.07	794.5
GR	10.86	858.1	10.23	859.4	10.38	888.2	13.39	894.6	13.71	917.6
GR	11.85	922.1	10.80	923.1	10.79	923.2	10.77	924.2	11.71	924.4
GR	11.62	927.1	10.32	929.6	10.32	1039.6				
X1	60.51	50	75.90	892.30	520.00	520.00	520.00			
GR	12.43	.0	12.43	50.0	12.67	50.8	12.80	55.2	14.42	60.0
GR	14.39	63.4	16.76	67.9	16.85	75.9	10.63	92.0	10.73	105.0
GR	10.33	106.4	10.41	143.7	9.91	146.0	9.52	166.5	6.81	175.7
GR	8.30	224.9	6.05	231.5	3.82	296.4	2.79	297.9	.71	301.1
GR	.91	336.6	2.31	360.2	1.41	400.4	.21	460.4	.61	512.6
GR	.71	550.2	2.10	590.6	2.75	600.0	3.73	626.1	3.95	647.1
GR	3.18	654.8	3.30	657.5	9.03	674.8	9.16	696.1	10.56	700.0
GR	10.82	729.8	13.67	733.6	13.61	734.5	11.41	735.8	11.70	738.4
GR	13.05	740.5	13.25	742.8	13.30	773.3	14.57	776.9	14.59	801.4
GR	15.49	803.3	15.65	819.6	17.00	825.1	17.20	843.5	30.21	892.3
X1	60.95	74	111.80	1025.20	440.00	440.00	440.00			
GR	11.64	.0	11.64	50.2	12.94	51.8	12.97	60.8	11.52	62.8
GR	11.55	88.0	12.45	89.1	12.58	92.8	14.52	97.5	14.67	101.7
GR	16.96	105.9	16.96	111.8	11.09	125.6	11.14	156.9	10.22	159.0
GR	10.40	173.2	9.63	174.9	8.92	228.7	8.72	244.1	2.79	256.1
GR	2.40	274.1	1.00	284.3	1.50	294.0	2.79	298.1	4.24	305.3
GR	4.04	331.6	6.54	337.0	6.16	367.9	5.17	372.3	3.72	456.1
GR	2.82	464.4	2.45	474.4	1.05	499.4	1.55	514.4	2.91	516.9
GR	5.79	522.4	6.95	533.7	6.75	544.7	3.55	549.2	3.85	558.2

GR	2.91	560.2	1.91	565.2	1.91	590.2	1.55	625.2	2.01	645.2
GR	2.91	650.3	3.11	655.6	5.97	660.6	7.26	681.3	5.25	695.2
GR	6.61	727.9	7.83	761.9	6.93	778.8	2.76	790.4	1.96	812.1
GR	1.96	837.5	1.55	868.2	1.36	901.0	2.76	904.9	6.37	909.0
GR	4.63	932.0	3.43	933.4	3.39	939.4	9.67	957.9	9.62	997.6
GR	10.48	999.8	10.49	1006.6	16.96	1025.2	16.52	1035.7	15.61	1049.5
GR	13.36	1052.6	13.29	1056.4	16.64	1068.1	26.65	1078.2		
X1	61.43	67	93.20	979.40	480.00	480.00	480.00			
GR	11.49	.0	11.49	30.2	13.07	32.3	13.08	40.8	11.43	42.6
GR	11.42	72.6	14.66	78.5	14.64	83.2	17.04	87.9	17.07	93.2
GR	11.42	106.6	11.34	144.4	10.62	145.7	10.27	172.7	9.18	175.8
GR	9.13	193.2	8.42	195.1	8.54	222.8	7.22	225.8	7.41	257.8
GR	4.34	262.0	5.09	295.9	3.18	298.4	2.59	318.5	2.49	338.9
GR	3.20	352.0	5.58	363.1	7.46	394.4	3.03	400.5	.43	425.4
GR	.03	460.8	2.34	495.6	2.53	510.6	3.11	515.4	7.31	530.4
GR	7.47	578.7	3.27	584.7	2.48	589.5	1.98	613.4	1.68	653.7
GR	2.38	693.5	2.18	733.5	1.98	763.8	2.90	788.8	2.58	790.6
GR	3.11	791.7	3.42	794.4	5.22	798.4	5.20	818.7	2.89	823.4
GR	2.89	823.5	2.76	833.3	5.50	838.4	5.91	878.4	5.19	925.1
GR	4.47	927.0	4.46	928.1	8.78	936.9	9.55	961.9	16.22	979.4
GR	16.23	985.1	14.79	987.1	14.65	990.7	10.16	999.2	10.16	1004.3
GR	9.46	1005.0	9.46	1104.9						
X1	61.87	39	102.00	808.60	440.00	440.00	440.00			
GR	11.75	.0	11.75	42.6	12.81	45.8	12.09	54.6	11.13	57.3
GR	11.00	91.1	14.49	96.8	14.53	100.6	14.59	102.0	12.60	106.1
GR	12.82	123.2	10.44	126.7	10.66	201.4	9.57	203.3	8.65	267.6
GR	6.51	272.1	5.46	291.0	3.08	301.1	2.88	310.8	2.68	356.8
GR	.33	387.8	-1.09	419.9	.29	438.2	.79	476.9	1.57	506.3
GR	2.09	537.3	2.90	599.0	2.88	687.4	3.10	691.0	4.07	698.7
GR	9.19	718.1	9.36	735.1	8.89	737.1	9.00	791.6	14.07	808.6
GR	13.94	812.6	12.31	841.2	10.56	843.6	10.56	943.6		
X1	61.88	50	82.60	768.80	14.00	14.00	14.00			
GR	18.02	.0	18.02	10.1	17.61	13.5	12.52	20.9	12.74	35.5
GR	11.19	37.3	11.61	62.8	11.79	69.6	14.37	75.3	14.53	82.6
GR	12.04	87.2	11.69	122.7	9.11	177.9	8.43	232.3	8.66	250.3
GR	4.97	263.7	3.42	292.6	3.65	347.5	3.32	372.3	3.12	402.4
GR	3.10	412.9	2.99	450.4	2.92	457.4	.32	480.0	-1.09	507.1
GR	2.63	512.4	.83	539.0	.32	561.4	2.63	567.4	2.83	595.8
GR	3.24	602.8	3.02	622.8	3.30	638.0	7.41	677.4	9.33	682.0
GR	9.99	732.6	9.43	753.4	12.07	759.9	12.62	764.8	14.20	768.8
GR	14.20	771.9	12.50	774.9	12.50	782.1	13.80	783.6	13.80	785.6
GR	13.15	786.9	17.05	790.0	17.05	790.5	21.05	790.5	13.20	822.1
X1	61.92	50	82.60	768.80	32.00	32.00	32.00			
GR	18.02	.0	18.02	10.1	17.61	13.5	12.52	20.9	12.74	35.5
GR	11.19	37.3	11.61	62.8	11.79	69.6	14.37	75.3	14.53	82.6
GR	12.04	87.2	11.69	122.7	9.11	177.9	8.43	232.3	8.66	250.3
GR	4.97	263.7	3.42	292.6	3.65	347.5	3.32	372.3	3.12	402.4
GR	3.10	412.9	2.99	450.4	2.92	457.4	.32	480.0	-1.09	507.1
GR	2.63	512.4	.83	539.0	.32	561.4	2.63	567.4	2.83	595.8
GR	3.24	602.8	3.02	622.8	3.30	638.0	7.41	677.4	9.33	682.0
GR	9.99	732.6	9.43	753.4	12.07	759.9	12.62	764.8	14.20	768.8
GR	14.20	771.9	12.50	774.9	12.50	782.1	13.80	783.6	13.80	785.6
GR	13.15	786.9	17.05	790.0	17.05	790.5	21.05	790.5	13.20	822.1
X1	62.32	41	85.50	668.50	404.00	404.00	404.00			
GR	13.78	.0	13.78	8.0	10.91	12.4	10.81	74.0	14.25	81.1
GR	14.21	85.5	10.65	92.4	10.64	92.9	11.18	93.7	10.99	187.7
GR	10.36	188.9	10.37	207.4	9.42	209.2	9.44	227.6	6.05	243.7
GR	5.07	253.6	3.50	258.3	2.79	262.8	2.09	292.9	1.39	323.1
GR	1.80	362.8	.80	392.9	1.00	412.7	2.90	437.7	2.40	458.1
GR	2.40	497.6	2.60	517.9	2.60	533.0	1.39	555.8	3.40	562.0
GR	7.28	567.7	7.03	575.9	6.92	580.8	7.79	656.5	14.01	668.5
GR	13.94	672.0	9.55	681.4	9.27	751.2	9.13	768.4	9.79	770.3
GR	10.34	804.3								
X1	62.79	33	.00	420.30	470.00	470.00	470.00			
GR	22.15	.0	3.34	23.4	1.83	28.3	-.57	41.2	-.87	71.5
GR	-.67	96.3	-.67	135.2	-.07	165.4	.83	195.4	1.84	225.2
GR	3.04	240.3	3.34	245.4	3.48	254.0	3.56	280.1	3.72	299.3
GR	9.53	312.4	9.60	408.6	10.61	410.4	13.17	420.3	11.78	421.3
GR	11.58	425.0	9.48	427.6	9.48	432.3	8.40	433.8	8.36	435.4
GR	7.34	435.9	7.40	442.2	8.30	442.4	8.23	444.3	10.25	446.7
GR	10.29	450.1	9.83	451.0	9.83	551.1				
X1	63.39	35	72.00	559.70	600.00	600.00	600.00			
GR	13.34	.0	14.26	25.0	18.20	36.4	18.57	72.0	3.49	106.3
GR	2.38	109.4	.57	124.3	.58	159.3	.67	189.2	.87	229.3
GR	1.47	261.3	-1.53	286.5	-3.04	316.3	-2.23	336.4	1.97	348.3
GR	3.47	352.1	5.26	433.9	4.93	444.4	11.47	459.9	12.04	553.8

GR	14.97	559.7	15.11	567.8	13.25	570.3	13.18	574.2	10.74	577.4
GR	10.77	585.1	9.77	585.1	9.86	586.2	8.84	586.3	8.87	592.1
GR	9.85	592.1	10.92	595.6	10.94	596.1	10.51	597.1	10.51	697.1
X1	64.04	39	.00	605.00	650.00	650.00	650.00			
GR	43.80	.0	18.72	12.7	18.73	25.5	22.67	30.6	21.78	37.8
GR	5.46	60.4	5.36	66.8	3.48	74.2	2.87	84.1	1.47	94.1
GR	-1.33	114.2	-1.35	140.1	.87	170.0	.57	210.1	1.27	245.0
GR	.47	275.0	.37	315.6	1.97	335.0	3.50	339.9	5.19	345.5
GR	5.86	419.1	8.22	425.4	8.33	433.1	8.96	434.8	7.69	437.5
GR	7.87	559.4	8.31	561.6	8.14	573.2	10.26	579.4	10.17	594.7
GR	15.24	605.0	15.08	609.9	9.60	625.2	7.80	625.2	7.80	626.2
GR	9.60	626.2	9.60	628.8	10.91	639.5	10.91	679.9		
X1	64.51	53	73.70	779.00	470.00	470.00	470.00			
GR	8.60	.0	8.60	10.0	15.49	40.4	16.22	73.7	14.12	78.8
GR	13.75	84.2	9.47	92.0	9.52	129.2	10.61	130.7	11.10	207.8
GR	9.43	210.2	9.65	223.1	5.17	230.3	5.17	233.8	9.43	253.0
GR	9.15	263.6	7.12	268.0	6.03	286.6	3.75	327.3	3.34	331.9
GR	3.54	347.1	2.84	367.2	3.24	375.9	3.96	381.4	4.11	386.6
GR	3.67	393.4	2.64	398.1	1.34	433.1	2.54	472.9	2.14	513.1
GR	2.54	553.0	2.54	612.9	3.74	618.6	7.80	625.8	7.15	659.8
GR	8.53	666.8	8.59	685.8	8.03	688.6	8.21	743.9	10.90	751.0
GR	11.53	771.4	15.28	779.0	15.26	783.3	9.80	796.4	9.80	840.5
GR	10.50	841.0	10.50	842.4	8.50	845.2	8.50	848.2	10.70	851.2
GR	10.70	854.7	9.70	855.9	9.70	906.1				
X1	65.04	35	148.10	821.50	530.00	530.00	530.00			
GR	9.19	.0	9.19	100.0	15.18	114.4	15.56	148.1	11.61	157.2
GR	10.97	161.8	10.11	165.4	10.16	177.5	10.49	177.9	11.16	211.6
GR	11.32	318.7	9.49	321.9	9.54	338.6	6.79	345.8	6.79	396.9
GR	3.89	399.9	2.58	405.8	1.68	412.3	1.98	438.4	2.08	488.3
GR	.28	527.4	.08	558.3	1.68	578.4	2.98	617.4	3.68	626.5
GR	3.89	630.9	5.47	744.8	7.47	749.9	7.88	777.6	10.81	785.0
GR	13.28	812.9	17.96	821.5	17.86	831.3	16.30	833.7	21.80	883.9
X1	65.47	39	.00	532.10	430.00	430.00	430.00			
GR	17.70	.0	11.28	20.0	11.40	24.2	10.71	25.7	10.72	31.7
GR	12.16	36.0	12.35	67.0	10.80	69.5	10.99	97.6	14.21	105.9
GR	14.28	132.9	6.82	156.2	6.87	164.2	4.39	169.3	4.20	177.3
GR	3.51	179.4	1.81	184.1	3.01	191.8	.23	230.1	.01	275.4
GR	1.31	330.7	3.01	380.5	3.21	425.2	3.51	445.6	5.30	484.0
GR	9.49	505.1	9.31	518.1	17.26	532.1	17.47	534.1	17.99	536.1
GR	17.84	545.2	17.43	547.1	11.80	557.1	11.80	575.7	13.30	578.2
GR	13.30	580.2	15.30	585.7	15.30	598.7	35.60	618.2		
X1	66.11	33	250.00	608.70	640.00	640.00	640.00			
GR	20.46	.0	13.75	30.0	13.75	79.0	12.76	80.0	12.76	116.0
GR	11.83	117.0	11.83	127.0	11.56	128.0	11.56	157.8	11.46	158.8
GR	11.46	208.5	10.74	210.2	11.26	218.0	17.34	231.1	17.38	250.0
GR	10.24	270.8	9.52	298.9	6.64	308.4	3.70	361.7	3.17	368.3
GR	1.87	398.3	-.63	433.5	-.70	468.7	-.13	503.4	.97	548.7
GR	1.17	568.3	3.67	574.7	8.48	582.5	13.44	598.4	23.21	608.7
GR	19.70	613.9	19.70	625.9	39.43	630.9				
X1	66.47	28	100.00	464.40	360.00	360.00	360.00			
GR	15.43	.0	12.53	36.2	12.68	71.1	17.02	80.6	16.64	100.0
GR	16.33	102.0	10.23	117.2	10.08	133.9	4.77	145.5	3.82	173.1
GR	3.39	188.4	1.99	208.9	1.69	245.3	.69	282.5	-.72	315.4
GR	-.22	358.7	1.09	401.2	3.19	434.5	3.79	437.6	9.18	446.0
GR	9.51	450.9	14.81	456.8	14.79	457.8	18.17	464.4	18.73	474.1
GR	17.61	476.8	17.21	496.9	30.07	535.3				
X1	66.92	45	182.10	673.30	450.00	450.00	450.00			
GR	25.20	.0	17.50	27.0	13.60	57.0	13.60	61.0	11.93	62.0
GR	11.94	81.9	11.94	112.2	13.33	113.7	13.99	123.6	12.53	124.5
GR	12.52	145.2	12.59	148.5	17.39	161.1	17.11	182.1	12.04	195.3
GR	11.97	201.8	11.24	203.2	11.39	216.2	10.90	217.9	11.19	271.1
GR	9.97	272.8	9.95	302.8	7.48	308.8	4.93	366.3	3.85	370.1
GR	3.30	380.4	3.00	400.4	2.70	440.4	2.10	470.6	1.70	501.7
GR	1.60	531.0	1.20	565.5	.50	601.3	.80	606.4	1.40	611.3
GR	3.80	617.1	5.75	627.0	12.00	639.6	16.91	645.2	16.83	646.5
GR	18.66	651.8	18.68	661.0	20.22	664.4	20.22	668.2	40.10	673.3
X1	67.40	38	76.90	578.40	480.00	480.00	480.00			
GR	17.58	.0	11.68	19.7	11.61	42.0	13.23	44.5	13.26	48.5
GR	15.36	56.0	15.51	76.9	10.81	90.2	10.81	91.7	12.36	95.6
GR	12.51	132.8	11.74	134.0	11.19	166.8	6.18	181.7	6.18	231.7
GR	3.62	234.6	3.02	244.2	2.23	264.5	1.42	298.2	.62	337.3
GR	.32	380.3	.52	418.1	.92	461.2	2.42	489.1	3.62	492.4
GR	3.71	503.6	4.86	506.4	4.85	513.1	3.73	516.0	3.73	531.5
GR	4.66	547.4	8.50	555.8	8.44	560.0	19.57	578.4	19.56	587.7
GR	18.93	590.8	13.30	600.8	13.30	630.8				
X1	67.91	35	36.90	680.80	510.00	510.00	510.00			

GR	22.14	.0	16.51	10.0	15.46	14.3	18.48	20.4	18.70	36.9
GR	11.20	55.8	11.12	95.8	10.18	97.0	10.13	110.9	6.22	123.2
GR	7.71	153.1	7.41	194.7	3.75	200.1	2.25	204.1	1.86	214.1
GR	-.78	235.6	.05	272.3	1.35	329.5	.02	365.8	-1.25	393.6
GR	3.74	396.6	4.37	407.4	7.70	488.4	9.28	491.3	7.81	592.3
GR	4.05	600.0	4.04	626.1	6.04	633.1	8.49	663.2	15.86	680.8
GR	15.90	683.8	13.19	689.8	13.04	692.3	10.42	697.6	10.00	797.1
X1	68.37	35	84.00	771.80	460.00	460.00	460.00			
GR	13.52	.0	11.67	40.3	12.63	47.3	12.43	84.0	4.78	112.4
GR	4.64	114.1	6.20	116.6	4.62	168.3	3.07	171.9	1.87	174.2
GR	-2.13	206.2	-3.22	243.3	-1.63	280.3	-.13	307.5	-.23	354.9
GR	-1.53	385.3	.97	395.3	3.07	399.8	4.98	404.2	5.63	451.5
GR	5.19	509.9	8.41	518.7	8.61	585.8	9.24	587.4	9.47	595.3
GR	8.62	597.4	7.16	683.1	7.98	687.0	7.93	688.3	6.74	690.0
GR	6.82	690.8	13.06	701.4	11.98	730.1	14.05	751.7	34.10	771.8
X1	68.97	42	70.50	926.90	600.00	600.00	600.00			
GR	14.56	.0	14.45	37.0	16.35	42.1	16.13	70.5	11.45	79.8
GR	12.26	92.9	11.69	93.8	11.54	112.0	8.08	129.2	10.09	134.7
GR	8.69	190.0	6.86	192.5	5.54	206.9	3.53	219.9	1.52	223.6
GR	1.92	239.7	2.22	269.9	2.12	299.7	1.02	340.0	2.82	399.8
GR	3.02	418.7	1.22	438.3	-.48	461.7	-.98	519.9	-1.48	553.7
GR	2.52	617.3	3.52	619.5	9.23	636.1	9.82	657.9	7.84	855.4
GR	9.12	863.7	8.94	896.8	9.40	899.9	18.65	926.9	18.23	934.7
GR	16.57	938.3	16.97	942.0	15.56	944.2	15.22	951.3	16.22	955.1
GR	15.47	962.4	23.68	1025.0						
X1	69.50	40	.00	765.30	530.00	530.00	530.00			
GR	27.08	.0	19.79	8.0	19.49	28.4	9.48	44.5	7.79	69.0
GR	6.57	72.8	5.65	123.3	3.78	150.1	1.78	153.6	-.22	166.2
GR	-1.42	193.8	-.52	217.7	2.58	234.7	3.80	240.4	4.60	249.5
GR	5.27	259.1	3.86	263.5	1.82	267.7	-.38	287.6	.32	314.0
GR	.52	339.5	1.42	365.1	-.08	386.1	.72	402.0	1.42	406.3
GR	3.82	410.8	7.24	421.5	9.01	443.4	10.20	564.5	9.89	596.2
GR	8.70	651.7	8.80	701.5	7.69	703.1	8.04	704.7	8.97	707.2
GR	9.60	731.9	15.05	740.8	15.11	744.4	19.20	745.3	39.20	765.3
X1	70.10	37	64.30	734.70	600.00	600.00	600.00			
GR	14.17	.0	13.85	30.8	18.33	42.6	19.24	64.3	7.58	84.3
GR	7.43	126.2	4.97	208.5	3.89	211.8	1.89	218.5	-.32	234.1
GR	.39	258.6	.09	298.5	2.49	338.8	1.79	368.8	2.49	398.5
GR	2.69	428.6	1.89	468.9	2.79	503.6	2.59	534.1	3.19	558.8
GR	3.90	566.0	5.60	577.3	7.54	627.9	8.71	631.7	9.79	664.5
GR	10.11	667.1	10.10	713.7	19.01	734.7	18.71	741.1	16.75	746.0
GR	16.65	747.2	11.60	757.2	11.60	758.2	12.60	759.2	12.60	763.2
GR	11.60	765.2	11.60	864.4						
X1	70.61	35	67.20	695.40	510.00	510.00	510.00			
GR	17.44	.0	17.42	42.2	17.28	67.2	11.36	81.5	11.45	89.2
GR	11.47	107.6	11.77	109.3	11.78	125.1	12.01	126.7	12.06	154.2
GR	13.02	155.7	12.96	159.2	8.52	176.0	8.84	187.4	6.94	191.5
GR	7.04	237.9	3.68	357.5	-.82	360.6	-1.92	376.6	-1.33	414.6
GR	-1.32	452.8	1.18	490.3	2.68	518.4	3.08	534.0	3.68	542.1
GR	5.73	591.0	8.03	599.0	8.03	606.7	9.18	610.6	9.13	640.3
GR	12.68	645.5	12.61	648.5	14.92	655.1	15.16	665.4	20.40	695.4
X1	71.11	34	.00	590.80	500.00	500.00	500.00			
GR	31.70	.0	18.97	10.0	18.87	26.5	17.65	29.5	12.24	42.8
GR	12.29	50.9	12.29	99.0	8.95	114.9	9.17	165.3	7.63	223.7
GR	3.98	236.5	1.98	240.6	-.02	276.8	1.58	302.9	2.68	319.7
GR	2.38	346.8	1.98	382.7	1.48	408.7	.15	439.9	-1.02	475.9
GR	.68	506.8	2.48	511.8	4.03	517.0	4.47	547.0	6.50	553.0
GR	6.92	557.8	19.16	590.8	19.03	595.9	16.54	601.3	16.39	605.9
GR	10.40	619.7	10.40	620.7	12.00	621.7	12.00	671.9		
X1	71.56	33	.00	661.60	450.00	450.00	450.00			
GR	41.60	.0	18.17	15.1	18.89	27.8	11.43	47.0	11.46	55.7
GR	7.60	71.3	7.56	75.2	9.56	77.5	10.54	203.3	3.90	220.4
GR	2.90	224.0	2.60	252.3	.90	277.9	1.50	288.3	1.70	298.0
GR	1.60	308.1	1.90	328.0	2.10	375.0	3.90	378.3	4.61	380.5
GR	4.81	460.1	3.82	462.7	1.82	463.0	-.38	465.1	-.48	466.0
GR	1.82	468.2	3.82	469.6	4.32	474.6	4.10	611.1	14.33	616.0
GR	14.33	616.2	18.50	622.0	28.85	661.6				
X1	72.06	22	71.90	731.50	500.00	500.00	500.00			
GR	11.88	.0	11.88	40.1	17.80	52.7	17.79	71.9	8.27	96.1
GR	7.95	120.6	3.81	135.9	1.61	142.2	.81	176.4	2.21	236.2
GR	1.01	266.1	1.91	296.5	3.82	299.0	6.11	303.2	5.29	440.4
GR	5.29	668.1	3.80	672.0	3.80	685.8	5.56	686.7	19.03	716.1
GR	18.72	725.0	36.28	731.5						
X1	72.57	46	82.20	719.20	510.00	510.00	510.00			
GR	11.70	.0	11.70	50.1	18.99	66.9	19.23	78.8	18.94	82.2
GR	9.93	98.7	9.94	106.5	3.89	132.1	2.38	137.1	.38	152.1

GR	-.62	176.9	-.82	197.7	-1.00	217.0	-1.12	243.0	.58	267.1
GR	1.08	297.7	.88	320.0	1.58	340.5	3.88	346.3	5.94	364.5
GR	5.81	423.9	9.10	430.8	11.24	481.9	12.53	499.0	12.90	501.1
GR	12.87	512.7	13.52	513.6	13.48	515.0	12.94	516.1	12.70	575.1
GR	12.28	576.8	12.22	596.6	11.82	598.0	11.87	611.8	11.31	613.2
GR	11.43	680.4	10.92	682.4	10.68	684.6	13.77	691.6	13.97	696.9
GR	14.39	698.0	14.33	699.0	21.60	710.3	26.80	713.6	26.80	717.7
GR	28.30	719.2								
X1	73.01	41	.00	659.30	440.00	440.00	440.00			
GR	34.70	.0	28.74	9.9	23.98	25.4	22.88	45.7	7.32	75.4
GR	7.12	82.4	4.28	87.2	2.67	90.0	-.73	110.5	-1.03	134.8
GR	-.73	159.9	-1.13	179.9	-1.73	200.3	-.73	230.4	.67	244.9
GR	2.66	270.0	3.27	285.6	4.29	295.6	6.34	325.3	7.38	397.9
GR	10.63	405.0	11.08	413.2	11.06	430.4	13.36	436.6	13.49	473.8
GR	13.79	474.8	13.83	501.5	14.45	502.5	14.39	503.7	13.20	505.7
GR	13.31	544.8	9.59	554.6	9.20	559.4	11.77	565.7	11.81	597.8
GR	12.55	599.5	12.63	606.6	13.48	636.1	14.30	638.8	26.60	649.3
GR	26.60	659.3								
X1	73.54	43	.00	688.40	530.00	530.00	530.00			
GR	28.50	.0	27.54	10.1	19.71	16.9	18.92	34.4	18.92	35.9
GR	13.90	35.9	8.99	79.0	4.09	91.2	2.33	93.7	1.83	108.9
GR	1.52	149.2	2.03	182.6	3.03	197.8	4.03	207.8	6.04	386.0
GR	6.00	409.6	4.51	437.2	6.61	451.6	9.73	457.4	9.98	460.0
GR	11.83	465.7	11.83	477.2	12.47	478.4	12.44	503.5	13.01	505.0
GR	13.09	536.5	13.93	537.6	13.90	539.0	13.15	540.4	12.95	585.0
GR	12.63	586.3	12.69	599.7	11.94	601.5	11.82	628.9	11.41	630.8
GR	11.44	646.5	11.79	646.9	11.78	647.6	11.10	648.2	10.89	651.3
GR	12.66	652.9	12.95	658.4	40.30	688.4				
X1	74.18	53	53.30	679.20	640.00	640.00	640.00			
GR	15.52	.0	15.84	20.7	16.93	35.9	19.80	41.7	22.38	41.7
GR	22.17	53.3	17.54	61.9	17.94	63.3	16.98	64.5	13.51	65.4
GR	13.65	76.5	8.19	97.4	8.50	107.9	7.46	110.7	6.33	166.3
GR	4.12	171.9	2.49	174.7	1.39	199.4	1.19	232.6	1.59	262.5
GR	2.09	327.5	2.89	382.5	4.09	393.0	6.48	408.7	6.66	415.2
GR	8.72	418.6	8.74	426.1	9.66	430.8	12.34	437.6	12.22	441.7
GR	12.93	444.6	13.02	458.4	13.51	459.7	13.48	489.7	15.14	492.0
GR	15.99	519.5	15.00	525.0	13.20	530.0	13.20	640.0	14.00	646.0
GR	14.00	650.0	12.00	657.0	12.00	660.0	17.61	679.2	17.60	696.3
GR	18.36	703.5	15.80	705.5	15.30	705.5	15.30	706.1	15.80	706.1
GR	15.80	706.9	14.40	708.1	14.40	793.4				
X1	74.64	45	.00	582.70	460.00	460.00	460.00			
GR	31.89	.0	19.87	10.5	20.37	29.6	20.37	30.6	15.37	30.6
GR	12.01	41.5	8.92	45.2	7.99	85.4	4.16	93.3	1.16	100.8
GR	-1.30	120.8	-1.16	146.3	.70	171.2	1.47	201.5	2.70	236.3
GR	2.90	261.3	3.28	291.0	4.15	296.7	6.78	306.5	8.07	334.2
GR	9.19	336.3	10.15	343.1	11.86	348.8	11.92	350.8	13.24	354.3
GR	13.38	391.8	13.86	393.2	13.95	421.7	14.56	422.7	14.62	424.9
GR	13.96	425.8	13.91	484.4	13.43	485.8	13.26	513.5	12.06	515.9
GR	12.09	537.5	12.99	538.6	13.00	543.3	11.27	545.7	10.80	546.7
GR	10.80	548.7	11.27	549.7	12.20	551.7	12.20	552.7	40.20	582.7
X1	75.12	37	.00	584.40	480.00	480.00	480.00			
GR	27.60	.0	26.23	20.0	20.89	26.5	21.04	44.7	9.25	59.9
GR	8.75	84.1	4.23	91.5	-.97	98.4	-.67	124.1	1.43	167.9
GR	2.03	198.0	2.43	228.1	3.23	268.3	3.23	288.2	4.25	298.9
GR	5.17	345.4	8.58	361.7	8.84	363.4	8.48	388.3	11.91	399.6
GR	11.69	404.4	13.94	408.4	13.99	409.5	13.67	409.8	14.11	452.3
GR	14.97	453.4	15.10	455.7	14.06	456.9	14.22	485.6	13.62	486.6
GR	13.57	527.0	14.34	528.0	14.50	530.9	16.75	547.7	25.93	570.6
GR	25.93	574.5	30.90	584.4						
X1	75.63	39	.00	581.80	510.00	510.00	510.00			
GR	28.00	.0	22.99	20.1	22.08	34.1	21.23	91.8	13.07	112.7
GR	12.76	116.7	12.83	138.4	12.34	139.4	12.42	174.1	12.65	176.7
GR	10.52	181.3	10.65	192.5	9.29	197.6	9.28	252.8	4.24	262.8
GR	1.16	270.1	1.46	295.2	1.16	314.2	1.76	339.3	1.86	364.0
GR	1.86	394.7	1.76	419.0	2.76	444.7	3.66	464.6	4.16	472.4
GR	4.81	476.1	5.67	478.3	5.78	482.6	9.23	494.7	10.26	505.5
GR	12.72	511.9	13.72	519.5	14.86	526.4	14.81	529.7	15.26	535.1
GR	15.26	553.4	18.79	558.6	22.88	561.7	32.99	581.8		
X1	76.27	21	67.80	458.70	640.00	640.00	640.00			
GR	15.14	.0	15.35	32.9	19.58	43.6	19.22	67.8	13.58	95.3
GR	12.26	137.9	6.44	163.7	3.50	221.3	1.60	226.0	2.20	246.1
GR	1.90	276.4	1.70	306.2	.51	326.2	.30	357.1	.91	377.5
GR	1.60	392.1	2.51	402.3	3.57	408.6	5.33	416.5	25.42	438.4
GR	40.54	458.7								
X1	76.72	24	64.40	455.00	450.00	450.00	450.00			
GR	17.90	.0	18.24	13.4	19.72	17.3	21.20	50.1	21.19	64.4

GR	12.21	87.7	13.70	133.9	8.25	148.2	6.99	186.8	4.00	204.3
GR	3.61	224.1	3.31	225.9	3.12	270.0	2.91	304.6	2.93	345.0
GR	1.51	359.7	.31	385.1	1.11	400.8	3.61	404.4	26.51	421.5
GR	26.62	424.3	28.65	428.0	28.70	432.4	36.28	455.0		
X1	77.32	21	106.50	567.30	600.00	600.00	600.00			
GR	14.96	.0	14.73	77.3	14.30	80.8	20.22	92.9	20.65	106.5
GR	12.11	127.8	11.24	192.9	10.63	195.3	9.77	240.2	4.82	268.5
GR	3.62	327.1	3.31	333.2	3.11	368.8	3.10	403.7	2.21	438.6
GR	2.91	479.0	2.51	503.9	2.41	524.3	3.71	529.0	9.35	537.4
GR	30.23	567.3								
X1	77.91	29	88.50	558.20	590.00	590.00	590.00			
GR	15.47	.0	15.46	14.7	13.99	19.4	13.98	34.2	14.71	35.5
GR	16.68	61.9	21.47	74.2	21.85	88.5	11.50	115.6	10.82	159.8
GR	7.38	248.6	3.70	258.4	2.93	264.9	3.30	284.9	-.40	315.0
GR	2.20	342.2	3.20	372.0	3.10	408.7	3.40	433.8	3.20	468.7
GR	3.30	498.6	3.86	504.0	4.92	526.7	6.73	535.4	18.01	558.2
GR	18.19	559.7	18.05	561.7	12.07	571.7	12.07	671.7		
X1	78.32	26	87.00	548.30	410.00	410.00	410.00			
GR	15.13	.0	15.53	59.5	15.04	60.9	20.56	72.0	20.56	83.6
GR	20.61	87.0	19.47	87.6	12.24	108.7	11.79	134.4	9.65	138.7
GR	10.15	150.2	8.35	158.8	8.84	168.1	5.65	174.7	3.78	386.5
GR	2.93	393.2	1.93	417.8	1.33	438.1	1.63	457.8	3.03	472.7
GR	3.83	475.8	3.82	475.8	15.17	496.4	19.12	508.1	28.16	528.1
GR	38.47	548.3								
X1	78.92	35	.00	587.00	600.00	600.00	600.00			
GR	28.60	.0	13.20	30.3	12.20	110.4	13.20	130.4	8.30	133.5
GR	8.00	143.6	3.90	157.8	2.96	164.2	1.16	194.1	1.06	213.2
GR	1.46	243.2	1.56	273.0	1.96	298.4	3.46	317.9	3.96	323.1
GR	4.46	330.9	7.79	340.7	8.02	345.8	9.06	349.7	9.64	402.6
GR	8.77	413.8	6.77	415.8	6.48	421.9	12.16	433.5	12.82	438.2
GR	11.83	439.7	11.68	501.4	12.59	502.0	12.58	507.0	13.20	508.6
GR	13.02	529.7	20.31	546.8	21.32	556.8	20.67	566.9	35.28	587.0
X1	79.49	30	.00	751.50	570.00	570.00	570.00			
GR	35.20	.0	22.60	30.0	14.29	100.1	15.45	130.2	3.96	182.5
GR	3.16	187.5	3.06	242.0	2.16	295.7	.96	366.6	.89	400.4
GR	4.10	404.2	6.73	408.6	9.72	452.2	8.91	551.0	8.78	554.9
GR	10.73	559.3	10.24	589.4	8.18	592.6	8.55	597.6	11.51	602.9
GR	13.82	648.4	13.96	652.9	11.41	655.9	10.10	658.4	9.10	694.1
GR	11.41	695.8	12.49	698.4	12.38	718.1	15.10	721.4	30.12	751.5
X1	80.19	28	.00	551.60	700.00	700.00	700.00			
GR	30.89	.0	22.78	30.6	16.74	31.2	15.14	52.7	3.46	62.8
GR	9.33	67.3	2.36	86.1	7.32	94.6	4.04	107.6	2.34	109.4
GR	2.66	133.1	2.96	161.1	.46	184.4	1.36	201.6	1.96	248.5
GR	4.10	253.0	5.10	262.4	7.40	428.2	9.31	448.2	12.53	501.7
GR	15.07	507.6	15.20	535.3	21.20	551.6	21.25	557.1	16.85	562.2
GR	16.85	565.2	15.25	570.2	15.25	670.2				
X1	80.46	51	50.15	611.20	275.00	275.00	275.00			
GR	42.99	.0	42.68	50.2	38.98	50.2	38.98	50.9	35.28	50.9
GR	17.26	72.8	15.14	98.9	14.88	100.1	7.44	127.4	7.46	145.4
GR	7.46	154.9	4.09	158.1	3.29	172.6	.19	182.4	3.59	192.5
GR	1.48	204.0	2.09	209.9	1.09	222.9	3.79	227.1	3.78	234.0
GR	2.20	237.4	3.39	247.6	3.59	256.2	3.49	265.0	3.69	273.1
GR	2.39	282.9	3.89	289.1	3.09	292.5	3.69	302.0	4.15	305.0
GR	4.68	309.8	8.48	316.4	9.29	319.6	9.83	346.1	10.64	375.9
GR	11.34	389.5	13.88	393.0	13.72	405.6	14.16	435.3	14.90	464.8
GR	13.81	494.2	12.86	524.0	12.45	553.3	11.95	582.5	19.10	610.5
GR	20.60	610.5	20.60	611.2	27.60	611.2	27.60	614.2	30.60	617.2
GR	27.57	654.3								
X1	80.50	51	50.15	611.20	30.00	30.00	30.00			
GR	42.99	.0	42.68	50.2	38.98	50.2	38.98	50.9	35.28	50.9
GR	17.26	72.8	15.14	98.9	14.88	100.1	7.44	127.4	7.46	145.4
GR	7.46	154.9	4.09	158.1	3.29	172.6	.19	182.4	3.59	192.5
GR	1.48	204.0	2.09	209.9	1.09	222.9	3.79	227.1	3.78	234.0
GR	2.20	237.4	3.39	247.6	3.59	256.2	3.49	265.0	3.69	273.1
GR	2.39	282.9	3.89	289.1	3.09	292.5	3.69	302.0	4.15	305.0
GR	4.68	309.8	8.48	316.4	9.29	319.6	9.83	346.1	10.64	375.9
GR	11.34	389.5	13.88	393.0	13.72	405.6	14.16	435.3	14.90	464.8
GR	13.81	494.2	12.86	524.0	12.45	553.3	11.95	582.5	19.10	610.5
GR	20.60	610.5	20.60	611.2	27.60	611.2	27.60	614.2	30.60	617.2
GR	27.57	654.3								
X1	80.64	37	.00	865.70	145.00	145.00	145.00			
GR	31.79	.0	21.99	10.0	14.57	20.0	8.46	29.2	8.46	41.2
GR	4.28	77.7	3.78	92.5	3.58	105.0	3.08	115.0	3.38	125.1
GR	1.68	134.9	.48	149.7	2.58	159.8	3.08	165.1	4.26	167.1
GR	4.79	175.3	4.82	272.7	7.16	347.8	10.02	359.2	10.24	374.3
GR	11.18	386.9	11.77	414.4	12.88	416.0	14.46	509.2	14.48	653.2

GR 12.48	656.2	12.30	689.2	6.35	709.2	7.40	780.2	12.31	800.2
GR 12.90	840.2	20.64	865.7	20.42	878.6	17.20	883.6	17.20	887.6
GR 15.70	890.7	15.70	959.9						
X1 81.12	39	117.90	651.10	480.00	480.00	480.00			
GR 22.90	.0	15.89	20.0	13.20	40.0	11.16	43.3	11.16	45.5
GR 12.60	49.0	12.60	76.7	21.65	89.7	21.66	117.9	20.26	122.5
GR 13.63	139.7	14.01	170.6	13.63	171.2	13.63	212.8	8.07	230.0
GR 7.87	300.8	6.68	311.3	6.96	341.3	5.86	358.8	4.95	363.5
GR 4.37	369.3	2.45	380.8	1.79	386.8	1.85	402.8	2.65	422.4
GR 1.85	448.5	1.95	474.2	3.15	495.5	3.45	516.2	4.92	521.1
GR 7.47	526.1	8.05	533.1	9.64	538.5	10.31	588.7	11.89	593.6
GR 12.43	599.2	15.29	616.3	18.89	644.1	19.85	651.1		
X1 81.61	36	94.80	548.10	490.00	490.00	490.00			
GR 17.30	.0	17.30	30.7	17.51	53.4	17.22	56.8	22.05	67.4
GR 22.71	94.8	20.25	100.7	14.36	115.4	14.23	117.8	14.60	119.4
GR 13.61	196.3	7.65	213.0	7.30	234.7	8.21	257.9	6.40	263.1
GR 5.71	295.8	5.03	300.7	3.18	305.0	2.68	331.6	1.87	366.1
GR 2.78	397.4	2.68	429.0	2.98	455.5	4.28	473.8	4.98	477.6
GR 8.79	490.6	10.24	525.7	11.43	529.7	10.93	531.5	11.13	534.9
GR 21.40	548.1	20.95	555.6	21.39	558.5	19.20	568.2	18.96	573.3
GR 18.96	623.6								
X1 81.98	26	112.80	570.90	370.00	370.00	370.00			
GR 17.57	.0	17.57	50.1	16.76	75.9	21.13	84.8	21.81	112.8
GR 20.31	117.1	15.10	130.3	9.25	226.3	8.60	296.2	5.99	300.7
GR 5.01	315.2	4.18	320.1	2.78	328.1	2.58	353.2	2.26	383.2
GR 2.78	413.1	3.78	443.1	4.18	473.0	4.58	493.1	4.98	498.1
GR 8.45	502.9	8.54	514.0	17.97	532.0	17.71	544.6	23.59	550.9
GR 38.57	570.9								
X1 82.60	36	90.20	538.00	620.00	620.00	620.00			
GR 14.50	.0	14.49	50.0	12.99	52.9	12.92	54.0	16.92	59.5
GR 16.73	70.3	19.78	77.1	19.85	90.2	13.39	107.5	13.38	119.6
GR 13.84	121.1	13.98	127.3	15.13	129.5	16.82	155.3	16.76	215.7
GR 16.71	222.9	16.62	228.7	15.02	259.7	14.20	261.0	11.57	291.1
GR 8.79	319.9	5.93	326.2	4.90	359.5	4.29	364.0	4.19	390.1
GR 3.89	420.1	1.89	453.3	.61	473.1	2.59	492.5	3.39	508.1
GR 4.94	513.5	11.26	518.9	13.30	523.0	13.29	527.0	20.57	528.2
GR 23.57	538.0								
X1 82.98	26	15.90	434.00	380.00	380.00	380.00			
GR 21.59	.0	21.59	15.9	19.59	34.4	14.68	52.7	15.45	68.7
GR 18.27	75.5	18.55	84.0	9.45	104.1	7.59	150.7	5.18	195.1
GR 4.57	202.3	3.77	235.5	3.87	262.3	3.97	300.5	3.87	327.6
GR 4.17	345.8	5.14	348.6	9.01	368.3	10.44	375.4	10.43	384.0
GR 7.96	394.6	8.14	407.1	7.40	412.7	11.97	422.9	15.99	423.9
GR 26.10	434.0								
X1 83.41	35	100.00	652.80	430.00	430.00	430.00			
GR 20.11	.0	20.37	82.8	20.23	100.0	18.73	103.8	18.56	110.3
GR 17.31	113.0	16.95	126.3	10.02	143.3	9.42	162.8	6.72	166.7
GR 2.30	290.7	5.12	292.0	3.32	295.4	2.32	318.4	.92	348.0
GR 2.72	373.5	.92	409.5	2.12	434.5	5.09	440.7	8.54	445.7
GR 8.79	451.9	7.97	457.9	8.37	496.0	10.12	508.7	10.11	528.5
GR 11.86	556.4	11.66	571.6	12.95	584.6	14.52	588.8	14.83	593.3
GR 16.44	601.8	16.64	609.1	23.22	622.3	22.25	632.3	34.68	652.8
X1 83.83	36	.00	598.40	420.00	420.00	420.00			
GR 26.52	.0	19.72	9.9	19.27	84.0	17.32	95.7	10.66	113.3
GR 10.17	121.8	5.62	129.6	5.27	135.0	4.32	139.5	4.42	159.4
GR 3.92	194.5	2.22	224.5	2.62	264.3	2.32	294.4	4.86	312.3
GR 5.25	317.2	5.45	370.1	8.66	377.3	8.80	381.6	6.52	385.3
GR 6.55	389.6	8.08	392.6	9.30	399.4	13.86	412.3	13.69	434.2
GR 13.11	437.0	13.11	485.8	12.35	490.2	12.99	529.9	14.56	551.8
GR 14.91	587.2	19.66	598.4	19.73	606.8	19.77	626.8	13.77	640.9
GR 13.77	744.9								
X1 84.30	35	77.70	698.10	470.00	470.00	470.00			
GR 28.92	.0	26.42	35.1	26.42	55.2	31.55	63.1	33.06	77.7
GR 18.02	109.4	17.35	114.7	5.54	141.1	5.04	146.6	4.94	166.4
GR 4.64	181.5	4.34	196.6	5.54	198.4	6.34	203.1	6.39	261.4
GR 6.00	279.0	5.96	356.7	7.93	362.5	7.92	438.2	8.44	442.7
GR 9.47	509.5	9.29	552.0	11.38	557.0	11.52	565.8	14.84	573.1
GR 14.05	641.3	16.49	645.3	17.22	664.7	16.73	690.0	20.15	698.1
GR 20.12	708.9	17.95	712.7	17.82	719.0	15.90	726.3	15.90	777.8
X1 84.69	43	188.80	825.70	387.00	387.00	387.00			
GR 17.79	.0	17.77	40.4	22.57	146.8	22.57	157.1	18.14	167.2
GR 23.75	175.2	23.93	183.8	25.54	188.8	22.11	188.8	22.11	190.0
GR 19.68	190.0	12.36	207.2	15.49	214.9	11.28	225.6	10.31	242.6
GR 10.04	265.3	5.83	274.4	3.73	300.7	5.22	370.3	5.93	416.2
GR 7.07	433.2	6.70	440.6	7.04	455.4	6.90	507.3	7.17	510.6
GR 9.89	580.6	8.59	638.3	10.38	643.3	10.11	650.6	9.59	683.2

GR	12.92	690.7	12.58	704.0	12.72	720.7	10.93	740.7	11.79	760.6
GR	12.30	780.6	13.74	796.0	13.65	810.6	13.94	824.5	20.94	824.5
GR	20.94	825.7	22.42	825.7	20.13	918.9				
X1	84.71	43	188.80	825.70	26.00	26.00	26.00			
GR	17.79	.0	17.77	40.4	22.57	146.8	22.57	157.1	18.14	167.2
GR	23.75	175.2	23.93	183.8	25.54	188.8	22.11	188.8	22.11	190.0
GR	19.68	190.0	12.36	207.2	15.49	214.9	11.28	225.6	10.31	242.6
GR	10.04	265.3	5.83	274.4	3.73	300.7	5.22	370.3	5.93	416.2
GR	7.07	433.2	6.70	440.6	7.04	455.4	6.90	507.3	7.17	510.6
GR	9.89	580.6	8.59	638.3	10.38	643.3	10.11	650.6	9.59	683.2
GR	12.92	690.7	12.58	704.0	12.72	720.7	10.93	740.7	11.79	760.6
GR	12.30	780.6	13.74	796.0	13.65	810.6	13.94	824.5	20.94	824.5
GR	20.94	825.7	22.42	825.7	20.13	918.9				
X1	84.79	33	157.70	880.20	77.00	77.00	77.00			
GR	18.35	.0	18.35	100.0	18.23	157.7	11.44	205.8	10.77	207.1
GR	10.74	228.1	11.45	229.3	11.50	248.0	12.29	250.7	13.01	270.3
GR	12.65	283.6	11.32	287.7	11.65	300.1	10.62	311.5	6.28	333.8
GR	4.06	337.4	3.66	371.8	5.06	414.9	4.96	454.4	6.03	459.3
GR	7.37	505.7	7.67	588.1	7.08	596.5	7.29	680.6	7.56	723.3
GR	8.88	733.6	9.71	751.2	13.03	757.8	13.94	879.0	20.94	879.0
GR	20.94	880.2	22.42	880.2	20.13	973.4				
X1	85.07	37	42.40	555.60	275.00	275.00	275.00			
GR	21.49	.0	22.00	40.1	22.13	42.4	20.29	42.4	20.29	43.7
GR	12.67	44.2	6.55	63.3	5.30	69.5	4.90	84.5	5.60	109.7
GR	5.40	136.7	4.40	156.7	4.10	176.6	5.60	189.5	6.60	193.6
GR	7.99	229.6	7.22	243.6	8.78	271.7	10.67	287.2	9.41	295.8
GR	10.08	329.9	10.76	354.1	9.50	387.9	9.09	411.8	8.64	446.0
GR	11.71	452.6	12.00	469.9	12.18	503.9	12.35	527.8	12.38	547.4
GR	15.47	554.4	20.07	554.4	20.07	555.6	22.13	555.6	22.28	561.5
GR	21.78	615.8	20.43	656.8						
X1	85.07	37	42.40	555.60	10.00	10.00	10.00			
GR	21.49	.0	22.00	40.1	22.13	42.4	20.29	42.4	20.29	43.7
GR	12.67	44.2	6.55	63.3	5.30	69.5	4.90	84.5	5.60	109.7
GR	5.40	136.7	4.40	156.7	4.10	176.6	5.60	189.5	6.60	193.6
GR	7.99	229.6	7.22	243.6	8.78	271.7	10.67	287.2	9.41	295.8
GR	10.08	329.9	10.76	354.1	9.50	387.9	9.09	411.8	8.64	446.0
GR	11.71	452.6	12.00	469.9	12.18	503.9	12.35	527.8	12.38	547.4
GR	15.47	554.4	20.07	554.4	20.07	555.6	22.13	555.6	22.28	561.5
GR	21.78	615.8	20.43	656.8						
X1	85.22	33	.00	530.30	145.00	145.00	145.00			
GR	28.68	.0	18.35	10.1	13.24	11.2	9.69	18.1	7.03	27.2
GR	5.37	31.9	5.17	56.6	5.07	77.8	5.77	102.9	6.27	122.9
GR	6.37	137.4	7.07	142.0	8.78	189.8	10.43	193.8	11.08	207.8
GR	9.24	212.3	9.04	225.2	11.23	235.6	11.06	253.4	10.07	257.4
GR	10.85	259.3	11.41	277.5	11.10	328.0	11.71	335.5	10.70	357.3
GR	8.85	368.6	9.02	398.5	11.91	404.2	12.60	498.3	14.14	501.0
GR	14.23	511.2	21.54	530.3	20.27	604.7				
X1	85.73	17	.00	520.70	510.00	510.00	510.00			
GR	25.68	.0	20.18	10.7	10.06	11.7	6.99	22.8	4.94	28.0
GR	5.44	48.3	5.34	71.4	5.14	91.4	6.24	106.4	7.04	109.2
GR	8.77	119.1	8.69	393.4	11.98	400.3	12.50	482.8	13.79	486.7
GR	22.05	520.7	20.98	603.3						
X1	86.24	20	.00	502.70	510.00	510.00	510.00			
GR	28.90	.0	25.79	5.1	17.68	5.4	17.17	7.9	12.77	17.9
GR	7.07	24.8	5.19	35.7	5.69	60.1	5.79	80.3	7.09	97.2
GR	7.92	107.3	7.89	363.4	9.17	370.8	12.15	376.6	12.78	475.8
GR	14.06	478.5	14.20	483.4	23.16	502.7	23.27	533.4	23.48	558.4
X1	86.49	37	63.90	543.70	248.00	248.00	248.00			
GR	24.30	.0	25.07	50.3	24.99	63.9	22.10	63.9	22.10	65.4
GR	21.32	65.4	21.32	66.4	15.67	78.1	15.54	119.2	14.97	120.7
GR	13.22	123.8	12.23	125.8	11.87	132.8	8.71	137.9	8.01	147.2
GR	7.45	153.1	6.78	183.8	6.58	243.8	4.66	303.8	5.56	333.8
GR	3.16	363.8	3.16	394.8	3.77	404.6	5.37	414.8	7.47	418.1
GR	8.24	423.8	8.61	433.0	12.10	440.8	12.51	483.7	12.78	524.4
GR	21.26	540.9	21.26	542.4	22.06	542.4	22.06	543.7	24.96	543.7
GR	25.15	547.4	24.19	639.9						
X1	86.51	37	63.90	543.70	24.00	24.00	24.00			
GR	24.30	.0	25.07	50.3	24.99	63.9	22.10	63.9	22.10	65.4
GR	21.32	65.4	21.32	66.4	15.67	78.1	15.54	119.2	14.97	120.7
GR	13.22	123.8	12.23	125.8	11.87	132.8	8.71	137.9	8.01	147.2
GR	7.45	153.1	6.78	183.8	6.58	243.8	4.66	303.8	5.56	333.8
GR	3.16	363.8	3.16	394.8	3.77	404.6	5.37	414.8	7.47	418.1
GR	8.24	423.8	8.61	433.0	12.10	440.8	12.51	483.7	12.78	524.4
GR	21.26	540.9	21.26	542.4	22.06	542.4	22.06	543.7	24.96	543.7
GR	25.15	547.4	24.19	639.9						
X1	86.78	43	.00	480.00	268.00	268.00	268.00			

GR	38.90	.0	31.65	9.6	28.87	14.3	28.51	19.9	23.45	24.2
GR	22.92	27.5	19.98	31.9	20.15	52.4	20.34	56.0	16.14	62.6
GR	15.95	66.2	12.56	72.5	12.39	77.9	9.60	81.9	8.09	84.1
GR	8.39	90.2	7.69	100.1	8.09	115.4	7.99	143.6	8.39	158.5
GR	9.29	178.6	8.29	188.7	7.79	203.7	8.29	223.7	7.19	243.6
GR	6.99	273.4	7.29	293.2	7.79	323.2	7.39	347.5	7.79	382.4
GR	8.19	412.6	8.09	429.6	7.39	444.6	9.59	447.2	11.33	449.6
GR	11.61	456.8	19.38	466.9	19.43	473.9	23.17	480.0	23.17	493.2
GR	22.93	497.2	23.93	497.5	23.94	512.5				
X1	87.28	43	.00	577.20	500.00	500.00	500.00			
GR	34.98	.0	26.81	20.0	19.88	27.1	18.68	33.2	18.07	34.2
GR	19.06	38.2	19.60	56.0	19.45	59.0	17.21	62.4	18.07	74.6
GR	14.69	78.6	14.77	102.2	9.61	108.7	8.14	114.1	8.05	136.5
GR	8.35	154.9	9.61	167.0	11.49	179.6	11.23	227.5	10.40	230.7
GR	10.83	252.5	10.12	259.7	9.61	261.8	9.28	266.3	9.08	286.3
GR	7.78	306.4	8.18	331.0	8.18	361.0	8.35	391.2	8.39	420.9
GR	6.39	456.1	5.29	476.3	5.88	488.9	9.58	496.2	11.54	498.3
GR	11.04	500.6	11.25	507.7	23.71	530.6	23.62	534.1	22.86	554.8
GR	23.87	555.3	24.04	556.9	44.23	577.2				
X1	87.68	39	.00	737.50	400.00	400.00	400.00			
GR	40.43	.0	20.43	20.0	18.43	29.0	18.43	48.0	15.20	57.5
GR	15.20	97.5	16.75	100.4	16.75	120.4	17.66	178.4	18.43	182.8
GR	18.26	184.0	11.10	192.8	11.13	196.0	9.87	198.7	9.63	202.2
GR	9.35	207.3	9.41	337.3	9.63	343.2	9.93	368.0	10.75	369.9
GR	10.36	371.2	9.65	397.6	9.01	401.5	7.82	466.7	8.36	534.4
GR	8.76	577.6	8.79	598.7	8.78	617.8	9.67	640.6	10.98	643.7
GR	14.26	660.4	14.61	683.3	15.07	685.5	16.40	723.3	23.38	737.5
GR	23.38	741.0	19.89	741.0	20.57	772.7	21.22	808.9		
X1	88.02	53	51.80	644.30	339.00	339.00	339.00			
GR	28.35	.0	28.81	50.3	29.00	51.8	25.90	51.8	25.90	53.4
GR	24.79	58.1	24.48	60.0	18.37	72.0	18.75	89.1	18.57	95.6
GR	17.81	113.8	17.33	164.6	15.74	167.1	15.76	167.8	10.10	179.1
GR	10.07	182.1	9.35	211.5	8.98	216.9	8.85	240.0	8.95	244.2
GR	8.45	255.9	8.55	287.0	8.65	306.2	8.37	327.0	8.65	346.4
GR	7.75	368.2	8.35	380.2	8.15	410.2	8.35	430.2	8.05	446.4
GR	7.75	467.2	8.15	492.2	7.55	507.2	8.25	527.2	8.85	554.2
GR	8.15	564.9	8.35	585.0	8.65	590.4	9.35	594.2	17.25	607.2
GR	17.25	616.2	17.25	622.2	22.85	644.3	23.25	679.0	20.91	683.1
GR	17.70	687.5	18.09	720.8	26.62	736.1	27.82	736.1	27.82	737.6
GR	30.87	737.6	30.50	745.2	29.08	814.1				
X1	88.04	53	51.80	644.30	21.00	21.00	21.00			
GR	28.35	.0	28.81	50.3	29.00	51.8	25.90	51.8	25.90	53.4
GR	24.79	58.1	24.48	60.0	18.37	72.0	18.75	89.1	18.57	95.6
GR	17.81	113.8	17.33	164.6	15.74	167.1	15.76	167.8	10.10	179.1
GR	10.07	182.1	9.35	211.5	8.98	216.9	8.85	240.0	8.95	244.2
GR	8.45	255.9	8.55	287.0	8.65	306.2	8.37	327.0	8.65	346.4
GR	7.75	368.2	8.35	380.2	8.15	410.2	8.35	430.2	8.05	446.4
GR	7.75	467.2	8.15	492.2	7.55	507.2	8.25	527.2	8.85	554.2
GR	8.15	564.9	8.35	585.0	8.65	590.4	9.35	594.2	17.25	607.2
GR	17.25	616.2	17.25	622.2	22.85	644.3	23.25	679.0	20.91	683.1
GR	17.70	687.5	18.09	720.8	26.62	736.1	27.82	736.1	27.82	737.6
GR	30.87	737.6	30.50	745.2	29.08	814.1				
X1	88.25	39	82.80	503.80	210.00	210.00	210.00			
GR	23.37	.0	23.37	50.0	24.11	82.8	18.58	93.4	19.30	94.3
GR	19.30	97.6	18.91	100.2	19.12	109.9	16.65	113.7	16.53	146.8
GR	16.54	147.3	15.43	149.1	15.39	149.8	10.39	159.6	9.54	167.6
GR	9.21	170.6	9.41	176.8	8.50	184.6	8.31	190.7	7.91	200.6
GR	7.81	218.6	7.71	237.9	7.61	263.6	7.81	283.6	7.71	308.6
GR	7.61	328.5	7.31	353.6	7.11	378.7	7.11	398.6	7.71	423.7
GR	8.12	448.6	8.21	465.5	9.61	470.1	11.53	473.4	11.40	478.7
GR	23.87	503.8	22.82	521.5	22.85	532.5	25.43	542.8		
X1	88.80	29	45.60	415.50	550.00	550.00	550.00			
GR	34.68	.0	29.77	10.1	26.38	20.3	21.36	32.8	21.34	45.6
GR	13.47	58.1	12.45	75.4	9.63	80.1	8.76	102.0	7.06	107.3
GR	6.96	135.3	6.56	142.0	6.46	172.0	6.06	197.1	6.16	221.6
GR	6.82	251.9	6.56	276.8	6.16	306.6	5.86	327.5	8.96	347.5
GR	9.66	350.5	13.10	362.0	12.73	393.2	23.36	415.5	23.55	434.2
GR	23.20	435.4	23.18	473.1	32.23	477.1	36.79	485.9		
X1	89.28	37	114.10	518.10	480.00	480.00	480.00			
GR	13.98	.0	14.98	50.0	17.13	55.2	17.31	62.1	16.48	64.8
GR	16.58	74.3	17.66	100.6	19.80	104.9	20.05	114.1	18.10	116.8
GR	17.72	130.6	11.10	148.4	11.82	153.3	11.53	166.9	9.50	171.6
GR	9.47	188.9	9.27	191.3	8.86	208.9	8.67	232.1	8.66	263.5
GR	6.96	283.6	6.66	308.9	5.90	328.2	5.96	356.2	6.80	382.1
GR	6.86	407.1	7.46	427.1	9.00	447.1	8.90	461.5	9.16	466.4
GR	9.46	471.8	11.61	480.5	12.11	493.0	24.65	518.1	23.83	535.6

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GR 16.90   548.5   17.99   603.6
X1 89.75      40     .00  440.90  470.00  470.00  470.00
GR 34.68      .0   23.27    30.8   20.37    41.1   19.84    47.8   18.62    49.4
GR 18.59    50.2   19.29    51.4   19.30    62.0   18.49    64.5   18.21    67.7
GR 20.08    71.0   20.20    78.0   16.94    85.1   16.40   114.2   10.47   126.4
GR 10.42   136.3    9.71   139.5    7.71   143.2    7.68   147.9    7.89   154.0
GR  7.09   183.1    6.89   213.3    6.39   234.9    6.00   257.0    5.69   277.2
GR  6.00   297.2    6.10   317.2    6.35   337.2    6.74   353.5    7.24   373.0
GR  6.67   388.1    8.18   398.1    9.73   401.3   11.83   403.7   12.65   417.9
GR 24.05   440.9   23.82   459.8   24.82   460.3   25.15   462.4   45.23   482.0
X1 90.23      34     .00  443.40  480.00  480.00  480.00
GR 35.27      .0   25.15    30.5   19.59    37.7   19.55    42.4   19.15    43.7
GR 19.12    44.4   19.92    45.7   20.14    53.9   12.98    70.7   12.17    82.7
GR 11.00    88.7   11.16    99.1    9.80   102.6    8.24   105.3    8.00   136.0
GR  7.47   167.1    6.90   184.3    6.56   207.3    6.16   217.2    6.10   232.0
GR  5.89   252.4    5.57   267.2    5.48   287.6    5.88   302.6    7.26   317.3
GR  7.57   337.1    7.18   347.1    7.88   350.7    9.83   353.1   11.48   355.2
GR 12.41   370.3   24.19   394.0   24.21   417.1   32.70   443.4
X1 90.73      40     .00  397.70  500.00  500.00  500.00
GR 32.68      .0   18.95    30.1   18.38    30.2   18.37    31.0   18.95    31.0
GR 19.39    38.6   19.18    40.1   15.56    46.6   14.66    69.9   13.24    72.5
GR 13.09    95.4    9.54   102.1    7.90   111.7    7.68   125.9    7.57   158.6
GR  7.45   178.8    7.24   199.7    7.00   204.3    6.77   224.3    6.46   239.8
GR  5.68   254.8    5.99   274.7    5.57   292.0    5.47   312.0    6.19   331.8
GR  6.99   347.0    8.35   357.0    9.45   360.8   17.52   378.6   20.58   379.9
GR 22.10   383.3   22.42   391.8   21.99   391.9   21.99   392.5   22.42   392.6
GR 25.71   397.7   25.72   423.0   26.72   423.1   26.72   425.2   41.24   445.2
X1 91.19      39     .00  500.30  460.00  460.00  460.00
GR 40.77      .0   20.67    29.7   19.01    29.7   19.01    30.6   19.67    30.6
GR 19.83    38.4   16.45    47.7   16.33    50.7   12.76    61.6   13.08    87.3
GR 11.68   104.0    9.70   109.6    8.36   113.1    8.47   123.1    7.91   142.7
GR  6.98   167.6    6.18   183.3    6.36   197.9    7.01   223.0    7.46   237.7
GR  8.35   257.7    8.68   298.9    9.00   328.8    9.10   349.1    9.73   353.7
GR 12.16   360.4   12.05   385.8   17.04   392.0   16.76   396.0   20.39   403.5
GR 20.15   469.8   22.00   474.4   22.22   496.6   24.15   500.3   23.82   507.1
GR 24.90   527.4   24.75   527.7   27.46   527.7   29.46   555.7
X1 91.72      43     .00  463.40  530.00  530.00  530.00
GR 31.68      .0   23.73    16.0   19.85    21.4   18.26    21.8   19.34    24.1
GR 19.27    31.1   17.06    40.5   12.47    50.7   12.57    61.7    9.75    72.8
GR  8.12    92.7    7.68   122.0    7.23   150.2    7.00   164.5    6.46   184.5
GR  6.58   199.9    6.90   219.9    6.78   239.8    7.01   254.3    7.00   269.9
GR  6.57   289.9    6.47   305.0    9.35   315.0    9.72   318.0   12.90   322.9
GR 13.55   332.7   14.57   336.4   15.29   344.7   16.13   346.5   16.46   384.7
GR 16.72   385.6   16.70   387.8   17.43   389.2   17.43   404.5   21.21   411.2
GR 20.96   419.5   19.32   422.8   20.66   441.9   22.12   443.3   22.45   451.0
GR 21.79   452.6   28.18   463.4   28.18   484.0
X1 92.16      44     .00  420.30  440.00  440.00  440.00
GR 41.46      .0   25.12    10.1   21.48    17.3   20.46    20.6   21.48    27.6
GR 20.56    28.7   20.64    30.6   21.94    31.9   22.18    40.6   19.19    45.3
GR 17.94    49.9   12.88    59.6   12.73    67.6    9.59    72.4    6.99    77.6
GR  6.78    93.1    6.57   121.6    6.24   141.0    6.07   171.7    5.78   181.6
GR  5.56   197.0    5.78   212.0    5.68   231.7    5.01   246.9    5.27   259.0
GR  5.79   273.6    6.71   284.1    9.59   287.1   13.05   291.4   13.57   307.4
GR 15.35   313.1   15.31   343.0   16.10   343.9   16.10   356.4   16.39   357.6
GR 16.42   385.9   17.58   387.3   17.46   401.5   17.31   402.6   19.15   405.8
GR 20.03   412.5   25.32   420.3   24.77   437.5   25.26   479.5
X1 92.61      41     .00  420.20  450.00  450.00  450.00
GR 48.68      .0   36.79    10.0   31.68    10.6   26.33    13.9   25.38    14.2
GR 25.53    15.1   25.60    23.4   25.66    24.6   24.57    25.2   23.64    27.1
GR 15.27    35.5   12.62    41.1    9.79    45.4    7.18    48.6    6.67    58.5
GR  6.25    74.0    6.01    93.5    6.00   113.2    7.36   129.0    7.46   145.7
GR  7.56   165.3    7.67   195.3    7.78   221.6    8.00   245.0    9.83   250.0
GR 13.10   254.5   12.46   269.6   16.22   278.0   16.28   310.1   17.06   311.7
GR 16.99   350.4   17.27   352.4   17.42   405.4   18.64   407.0   18.56   411.2
GR 24.37   420.2   24.52   439.0   22.57   442.6   23.46   461.2   29.41   477.0
GR 29.50   493.1
X1 93.06      36     .00  367.60  450.00  450.00  450.00
GR 57.37      .0   34.40    20.4   24.39    21.7   23.52    21.9   23.29    30.9
GR 22.72    31.2    9.72    48.9    8.89    64.0    8.24    69.8    7.00    88.9
GR  6.35   114.9    6.35   135.2    6.46   149.9    6.67   165.2    6.79   185.3
GR  7.10   205.3    7.69   224.7    8.38   240.3    8.79   250.6    9.79   253.7
GR 12.40   262.5   13.16   287.2   12.65   305.2   14.38   309.5   14.29   333.4
GR 16.30   336.9   16.26   347.0   16.72   348.9   16.66   357.4   22.67   367.6
GR 22.18   377.8   17.81   385.3   17.76   407.4   17.50   408.9   25.53   424.6
GR 25.53   445.6
X1 93.50      40   38.63  478.88  439.00  439.00  439.00
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GR 27.94     .0  28.13    29.0  28.15    38.6  25.99    38.6  25.99    39.4
GR 24.38    39.4 24.15    40.4  19.90    46.0  19.39    69.2  18.45    92.3
GR 17.18   100.0 15.42   111.3  10.87   119.4  10.50   123.0   9.70   124.7
GR  8.78   127.4  7.88   130.6   7.13   162.1   6.99   193.6   6.87   225.1
GR  6.72   256.7  7.72   288.1   9.72   294.8  14.76   301.4  14.77   319.9
GR 15.84   352.1 15.56   383.6  15.97   415.2  15.00   446.9  15.22   455.6
GR 12.49   455.9 16.29   465.1  16.65   471.7  22.27   478.1  22.27   478.7
GR 23.87   478.7 23.87   478.9  26.02   478.9  25.86   487.4  25.48   552.3
X1 93.52      40 38.63  478.88  21.00    21.00  21.00
GR 27.94     .0  28.13    29.0  28.15    38.6  25.99    38.6  25.99    39.4
GR 24.38    39.4 24.15    40.4  19.90    46.0  19.39    69.2  18.45    92.3
GR 17.18   100.0 15.42   111.3  10.87   119.4  10.50   123.0   9.70   124.7
GR  8.78   127.4  7.88   130.6   7.13   162.1   6.99   193.6   6.87   225.1
GR  6.72   256.7  7.72   288.1   9.72   294.8  14.76   301.4  14.77   319.9
GR 15.84   352.1 15.56   383.6  15.97   415.2  15.00   446.9  15.22   455.6
GR 12.49   455.9 16.29   465.1  16.65   471.7  22.27   478.1  22.27   478.7
GR 23.87   478.7 23.87   478.9  26.02   478.9  25.86   487.4  25.48   552.3
X1 93.59      46   .00  579.40  70.00    70.00  70.00
GR 15.77     .0  15.77    30.0  17.00    32.8  17.00    53.1  19.79    56.7
GR 19.79    82.2 18.77    88.0  18.84    99.1  20.07   101.5  19.85   119.0
GR 10.06   142.2 10.06   150.8  13.93   160.9  11.02   168.3  10.97   170.8
GR  9.83   177.8  7.98   183.0   8.01   197.7   7.89   216.8   7.33   231.8
GR  8.12   246.7  5.01   266.9   5.99   276.9   6.23   286.8   6.83   302.0
GR  7.06   329.8  7.78   361.3   7.33   381.4   9.83   385.8  16.41   399.9
GR 16.31   403.3 15.42   408.3  15.47   435.5  15.92   438.1  15.84   454.6
GR 17.38   458.3 17.25   480.9  17.87   481.9  18.90   495.5  18.91   500.4
GR 20.45   503.1 20.79   515.3  22.95   519.2  25.39   526.7  26.79   538.4
GR 30.12   579.4
X1 94.10      37   .00  405.60  510.00   510.00  510.00
GR 32.79     .0  26.30    10.7  13.10    30.8  12.49    34.4   9.24    40.0
GR  7.73    42.8  6.01    50.8   5.44    60.7   4.24    75.4   4.13    87.4
GR  3.74   102.7  5.24   122.9   5.99   137.9   8.35   152.9   8.23   172.1
GR  8.57   194.4  9.00   211.2   9.24   222.6  15.24   239.7  15.24   263.1
GR 20.67   273.9 20.67   275.9  18.78   278.1  18.61   310.5  17.89   311.0
GR 18.01   311.8 19.46   314.4  19.68   322.9  21.61   327.1  21.45   337.6
GR 22.68   339.6 23.76   349.2  26.17   355.0  26.40   360.1  26.28   369.1
GR 29.25   375.3 36.46   405.6
X1 94.79      30   .00  381.20  690.00   690.00  690.00
GR 34.68     .0  20.38    29.5  12.61    43.1  12.43    49.9  10.67    53.4
GR  9.65    57.3  9.34    60.2   8.35    73.1   7.12    94.5   6.88   128.1
GR  6.36   150.8  6.11   155.7   8.00   171.0   6.01   186.1   5.46   203.8
GR  7.01   224.0  7.78   239.1   7.77   258.6   8.47   274.4   8.56   294.1
GR  9.11   304.4  9.66   308.4  10.64   323.5  11.61   326.3  12.41   346.3
GR 21.77   362.4 21.92   376.9  24.01   381.2  24.80   389.3  28.18   458.8
X1 95.19      35 89.00  534.30  400.00   400.00  400.00
GR 24.57     .0  22.75    40.4  22.97    89.0  21.94    96.9  18.90   105.0
GR 17.73   139.4 16.52   142.1  16.72   176.4  17.51   178.7  17.65   184.8
GR 17.41   217.9 16.32   221.4  16.04   230.3  16.10   237.9  13.42   242.7
GR 12.98   275.0 13.03   281.7   9.78   286.0   7.89   294.1   5.78   311.1
GR  4.77   325.7  6.77   420.7   6.87   424.0   7.34   449.1   9.77   460.4
GR 13.54   470.3 15.91   512.3  19.65   516.3  24.65   531.3  25.61   534.3
GR 26.01   561.6 28.46   565.7  28.29   568.4  30.17   571.6  30.17   641.6
X1 95.21      35 89.00  534.30  20.00    20.00  20.00
GR 24.57     .0  22.75    40.4  22.97    89.0  21.94    96.9  18.90   105.0
GR 17.73   139.4 16.52   142.1  16.72   176.4  17.51   178.7  17.65   184.8
GR 17.41   217.9 16.32   221.4  16.04   230.3  16.10   237.9  13.42   242.7
GR 12.98   275.0 13.03   281.7   9.78   286.0   7.89   294.1   5.78   311.1
GR  4.77   325.7  6.77   420.7   6.87   424.0   7.34   449.1   9.77   460.4
GR 13.54   470.3 15.91   512.3  19.65   516.3  24.65   531.3  25.61   534.3
GR 26.01   561.6 28.46   565.7  28.29   568.4  30.17   571.6  30.17   641.6
X1 95.39      38   .00  416.20  180.00   180.00  180.00
GR 27.89     .0  23.57     6.3  19.94    12.9  20.10    14.5  17.34    17.7
GR 17.39    44.7 18.09    45.6  18.14    77.3  18.54    78.3  18.35    80.6
GR 17.06    82.1 16.99    99.4  17.17   100.2  17.47   100.9  13.56   108.6
GR 11.16   132.9  9.79   138.8   8.18   144.9   7.89   162.5   7.45   189.8
GR  6.13   209.9  5.55   229.9   5.28   242.9   5.78   262.9   5.87   277.9
GR  6.27   293.0  7.45   313.0   7.47   328.0   7.27   340.8   8.01   348.6
GR  9.78   351.6 13.53   363.3  19.69   370.3  19.85   378.0  25.88   388.1
GR 25.92   395.8 37.99   416.2  36.87   451.3
X1 95.99      39 51.50  501.40  600.00   600.00  600.00
GR 26.62     .0  25.48    17.3  24.64    28.6  25.21    51.5  24.15    56.5
GR 19.27    64.1 19.14    65.6  20.48    66.8  20.48    67.9  18.97    69.1
GR 19.09    81.3 18.62    82.3  18.19   172.0  18.88   173.0  18.77   173.4
GR 15.46   180.1 15.16   196.0  12.51   201.7  12.38   204.9  11.75   243.8
GR  9.67   254.8  8.89   257.8   8.58   268.1   8.17   282.9   8.26   303.0
GR  7.26   318.5  6.67   342.0   6.47   357.1   5.47   373.5   5.07   389.0
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GR  4.47   399.1    4.98   404.3    7.73   412.3    8.23   439.4    9.59   462.6
GR 32.36   489.8   32.50   491.3   32.40   496.9   39.50   501.4
X1 96.34      42     .00  463.30  350.00  350.00  350.00
GR 34.50      .0   24.20    13.4   19.49    20.9   19.49    21.7   20.10    23.1
GR 20.50    24.3   18.00    28.1   18.19    61.8   17.92    65.8   18.54    67.6
GR 17.32    87.3   16.72    88.6   16.70    88.7   16.16   104.7   15.98   112.2
GR 14.37   132.2   12.73   139.5   11.82   145.2   11.79   149.7   12.32   163.8
GR 11.90   165.7   12.81   183.7   12.92   189.1    9.79   220.6    8.89   229.2
GR  8.22   253.0    7.89   278.0    7.40   293.2    6.27   313.1    5.97   328.0
GR  5.67   348.1    5.20   365.1    5.00   385.2    5.00   400.2    5.51   406.1
GR  8.00   416.1    9.81   417.5   22.78   438.2   22.31   445.5   27.23   450.6
GR 27.37   455.3   35.80   463.3
X1 96.87      44     .00  482.50  530.00  530.00  530.00
GR 25.06      .0   22.83    20.7   21.97    21.7   21.96    25.2   19.53    28.0
GR 19.48    64.9   18.29    67.5   18.37    79.1   18.63    79.9   18.69    84.4
GR 17.76    85.5   17.82   112.5   16.32   114.8   16.26   157.4   16.95   158.4
GR 16.46   164.1   14.34   176.7   14.11   190.2   11.41   205.3   11.63   222.4
GR 12.15   224.4   12.19   227.5   11.75   232.1    9.63   233.2    8.10   237.4
GR  7.73   277.4    5.51   284.3    5.00   299.3    5.00   319.2    5.24   334.3
GR  6.00   349.4    6.73   369.1    7.54   389.1    8.00   404.2    7.73   414.1
GR  9.74   416.3   20.77   435.8   21.18   445.5   25.06   454.4   25.07   455.4
GR 24.66   462.2   25.50   462.3   25.50   463.3   50.50   482.5
X1 97.39      51  166.90  527.10  520.00  520.00  520.00
GR 35.50      .0   23.21    22.9   17.72    33.4   17.68    40.0   16.81    41.5
GR 16.73    42.3   17.60    43.1   17.60    43.3   16.83    44.9   16.86    99.6
GR 15.93   100.8   15.75   101.4   16.84   104.2   17.02   153.4   22.83   166.9
GR 22.51   169.7   19.72   177.2   19.44   184.0   19.01   190.0   12.81   206.2
GR 12.79   233.9   11.36   239.0   11.15   243.7   10.61   245.7   10.71   256.8
GR 11.50   263.6   11.35   271.2    9.63   275.4    8.79   280.1    8.66   318.1
GR  8.37   322.1    8.47   336.6    7.46   349.9    6.86   368.1    6.06   382.9
GR  5.36   402.8    4.66   427.8    4.96   442.8    7.06   457.9    9.66   465.0
GR 11.39   472.2   17.16   483.2   21.60   489.0   24.69   496.4   25.24   498.6
GR 25.10   500.1   24.82   507.9   25.63   508.2   25.67   512.3   29.52   516.7
GR 33.65   527.1
X1 97.81      39  162.60  622.80  420.00  420.00  420.00
GR 18.75      .0   18.82    25.0   17.28    28.8   17.46   100.8   17.27   102.7
GR 17.23   104.2   17.33   105.6   17.59   146.8   22.50   159.9   22.61   162.6
GR 18.14   175.5   16.67   185.9   15.88   217.6   15.87   225.2   13.85   239.1
GR 12.86   263.5   12.37   299.9    9.70   304.2    8.19   309.2    7.99   319.2
GR  7.89   339.7    7.99   349.7    7.98   376.7    8.01   406.5    8.29   454.2
GR  8.19   466.1    6.99   481.5    6.69   501.7    6.19   516.7    7.49   531.7
GR  9.69   535.6   12.77   537.7   13.76   565.4   18.15   573.7   18.98   584.0
GR 25.31   595.7   25.85   605.4   25.95   610.5   30.67   622.8
X1 98.36      59     .00  668.80  550.00  550.00  550.00
GR 30.50      .0   27.41    38.1   20.61    48.8   20.26    54.6   18.40    57.7
GR 18.59    86.2   19.16    87.3   19.22   112.3   20.32   113.7   20.38   121.9
GR 18.55   126.7   18.55   126.9   18.34   149.5   19.17   152.0   18.88   158.3
GR 16.95   164.9   16.73   175.9   16.93   177.1   16.50   189.5   12.85   197.0
GR 12.04   220.5   11.53   239.0   11.08   240.5   10.80   246.7    9.70   250.4
GR  8.60   254.0    8.40   260.0    7.45   264.0    6.14   277.7    6.05   300.2
GR  6.61   326.6    7.44   347.2    8.66   372.4    7.88   405.2    7.69   423.3
GR  9.69   437.0   12.17   444.7   12.89   481.8   15.72   490.5   17.19   497.1
GR 17.31   499.9   16.87   500.6   16.92   530.4   17.39   530.8   17.10   643.0
GR 17.19   649.2   18.00   649.5   18.00   650.0   16.46   650.6   16.50   651.8
GR 27.05   668.8   26.81   670.0   26.74   678.6   18.00   695.6   18.00   696.1
GR 18.99   698.0   18.99   743.6   18.19   744.9   18.19   831.8
X1 98.93      36    6.00  408.90  570.00  570.00  570.00
GR 39.22      .0   39.28     4.6   39.47     6.0   12.89    36.5   12.55    42.2
GR  9.91    48.3    7.35    58.1    6.41    71.7    4.62    95.1    4.84   116.4
GR  5.11   139.4    5.53   155.7    7.33   183.4    8.02   209.3    8.33   226.0
GR  8.85   237.9    9.97   249.2   12.40   256.5   12.10   320.5   14.00   325.8
GR 14.79   350.9   16.55   356.3   16.77   366.9   16.91   369.9   16.88   391.0
GR 17.24   392.0   17.39   394.4   20.82   402.1   23.91   408.9   24.11   411.5
GR 21.12   417.5   20.94   419.7   20.06   422.3   19.39   447.9   15.88   448.0
GR 15.92   480.2
X1 99.73      66  128.20  823.00  800.00  800.00  800.00
GR 22.90      .0   22.90    28.0   21.50    30.0   22.00    36.0   22.00    39.0
GR 24.89    44.0   26.20    54.0   26.40    94.0   26.40    98.0   27.70   103.0
GR 28.90   107.0   28.90   112.0   30.64   122.0   30.56   128.2   19.50   156.2
GR 19.40   160.7   18.41   161.5   18.33   211.1   18.15   212.5   18.18   236.2
GR 18.56   236.6   18.55   238.0   16.53   242.2   12.64   256.2   11.87   259.3
GR 12.39   268.4   14.11   272.0   12.62   278.1   12.51   284.4    9.86   289.2
GR  8.65   292.8    7.65   308.1    7.02   331.6    7.93   394.0    8.27   433.6
GR  8.67   451.8    7.56   476.0    8.07   505.0    9.86   515.9   10.44   522.2
GR 10.81   530.2   10.57   538.5    9.92   542.7    8.99   544.0    8.22   548.0
GR  8.12   553.0    8.00   577.0    8.72   592.0    9.92   598.4   11.59   657.0
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GR 13.69	661.2	13.02	715.6	19.77	729.1	19.91	730.5	19.29	731.5
GR 19.26	809.5	21.28	812.1	21.14	816.2	24.25	823.0	24.10	825.6
GR 19.98	833.7	20.04	841.8	19.57	842.8	19.58	879.4	19.33	881.5
GR 19.32	964.7								
X1100.28	58	106.90	782.00	550.00	550.00	550.00			
GR 17.24	.0	17.24	85.0	17.84	85.6	17.44	85.6	17.44	86.0
GR 17.84	86.0	22.04	92.8	22.20	97.1	25.43	104.0	25.64	106.9
GR 20.64	118.3	20.45	120.8	18.95	123.9	19.00	188.4	17.79	190.2
GR 17.70	199.6	17.90	200.8	17.78	242.3	18.58	244.6	18.77	290.0
GR 17.54	306.3	16.92	307.7	16.65	316.6	14.05	321.2	13.73	333.9
GR 11.22	338.7	11.59	385.4	9.45	390.2	6.96	411.0	7.69	426.6
GR 9.45	437.5	11.56	441.4	11.31	460.3	11.25	476.7	9.47	483.8
GR 7.38	487.3	7.04	535.6	7.31	588.2	5.46	626.2	7.45	649.4
GR 9.47	658.3	14.04	665.3	12.49	695.6	13.68	725.9	18.43	735.4
GR 18.55	736.8	17.56	738.2	17.66	766.3	17.34	767.2	17.22	767.4
GR 21.23	773.9	24.49	782.0	24.37	783.9	21.22	791.1	20.62	801.9
GR 18.13	809.2	17.93	856.9	20.62	867.6				
X1100.71	43	122.50	774.00	430.00	430.00	430.00			
GR 19.80	.0	19.80	39.5	20.10	40.0	20.10	100.0	19.40	100.0
GR 19.40	100.8	20.10	100.8	20.10	103.3	22.64	109.8	22.75	113.4
GR 26.03	119.4	26.20	122.5	19.64	137.4	19.61	189.1	18.61	191.8
GR 18.43	270.4	17.42	271.4	17.35	273.0	17.75	274.3	18.06	274.7
GR 16.66	277.3	15.61	342.0	10.34	356.1	10.40	376.6	11.83	428.5
GR 10.94	434.6	12.58	440.1	12.67	510.7	10.08	521.0	9.39	555.3
GR 7.00	560.8	6.92	585.0	6.65	617.6	6.13	654.4	6.62	683.0
GR 9.71	696.3	13.19	708.6	13.57	714.0	14.57	720.7	19.14	743.0
GR 24.99	774.0	18.76	815.4	35.27	905.5				
X1101.14	53	124.20	910.00	430.00	430.00	430.00			
GR 19.80	.0	19.80	97.0	24.79	109.1	25.04	117.1	27.53	121.1
GR 27.33	124.2	20.63	143.6	20.39	146.7	19.40	147.8	19.38	183.3
GR 18.92	185.0	18.79	228.8	18.74	230.0	18.73	251.6	17.96	252.9
GR 18.06	289.7	17.79	291.2	17.90	315.4	17.28	317.0	16.75	330.8
GR 14.77	336.0	14.55	347.4	13.60	353.0	11.05	357.3	11.25	377.4
GR 9.87	388.1	9.90	437.3	10.79	442.8	12.13	525.7	11.94	564.3
GR 11.30	573.0	9.77	578.0	8.99	582.0	8.88	609.0	8.77	631.1
GR 8.74	640.5	9.23	662.7	7.41	707.2	9.05	748.6	7.69	776.7
GR 9.75	783.0	15.39	793.1	15.08	844.8	18.30	850.9	18.20	868.9
GR 19.15	871.3	19.10	891.4	26.79	910.0	26.86	919.8	18.12	939.1
GR 18.21	957.0	18.01	958.2	17.93	1002.2				
X1101.62	80	102.70	869.00	480.00	480.00	480.00			
GR 18.60	.0	18.60	40.0	19.40	41.0	19.40	68.0	19.77	68.4
GR 19.77	68.9	18.17	72.0	17.47	72.0	17.47	72.8	18.17	72.8
GR 23.78	86.9	23.86	95.4	26.64	99.7	27.88	102.7	19.10	120.3
GR 19.00	122.8	18.05	124.6	17.94	202.5	18.25	202.8	18.24	220.8
GR 18.36	221.0	18.18	223.5	17.92	223.8	17.79	295.4	18.23	296.0
GR 18.26	297.1	16.03	302.0	15.99	329.7	16.85	331.5	16.76	333.3
GR 12.19	342.6	12.93	365.6	12.54	377.1	12.16	379.6	12.85	382.6
GR 12.68	401.1	10.50	411.2	9.33	424.8	9.30	467.1	10.21	470.2
GR 10.28	473.4	9.32	486.5	9.38	513.7	8.95	516.5	8.48	519.8
GR 8.60	527.0	8.01	536.2	7.80	541.0	7.60	547.4	8.10	562.3
GR 8.78	572.4	8.95	579.9	9.55	584.3	9.42	623.2	9.03	628.8
GR 8.37	636.2	7.89	658.4	7.34	671.0	7.77	682.5	7.75	691.0
GR 7.60	704.8	9.03	709.5	14.73	717.6	14.73	771.0	16.54	774.6
GR 16.54	792.9	17.11	793.9	17.11	811.4	18.43	813.8	18.43	850.5
GR 27.13	869.0	27.25	878.8	20.30	894.2	19.75	894.2	19.75	894.8
GR 20.23	894.9	19.22	896.0	19.22	896.9	18.63	897.5	18.63	961.3
X1101.86	82	67.00	717.00	238.00	238.00	238.00			
GR 29.96	.0	30.08	50.0	30.17	67.0	26.27	67.0	26.27	68.3
GR 24.77	68.3	24.77	71.5	19.46	88.4	18.92	113.9	19.57	134.0
GR 19.33	169.8	19.28	169.8	18.69	260.2	18.75	262.0	14.50	274.4
GR 14.14	281.8	12.60	294.8	11.91	315.6	10.43	317.3	10.11	320.2
GR 9.88	322.8	10.11	330.1	10.43	333.0	13.50	337.0	13.50	341.0
GR 10.43	345.0	9.78	348.9	8.67	354.3	8.55	368.6	9.66	384.3
GR 10.43	387.0	13.50	391.0	13.50	395.0	10.43	399.0	10.11	400.8
GR 9.12	403.7	8.56	413.6	9.77	438.4	10.43	441.0	13.50	445.0
GR 13.50	449.0	10.43	453.0	10.23	454.8	8.99	467.2	8.89	479.3
GR 9.78	491.8	10.43	495.0	13.50	499.0	13.50	503.0	10.43	507.0
GR 10.10	510.2	9.23	515.5	9.02	529.3	9.97	545.4	10.43	549.0
GR 13.50	553.0	13.50	557.0	10.43	561.0	10.00	570.4	9.87	573.5
GR 9.43	586.9	9.99	592.0	10.10	603.5	10.43	608.3	13.03	614.2
GR 13.30	618.0	11.20	626.6	11.58	638.6	13.29	642.6	13.74	652.3
GR 19.14	661.4	18.99	671.0	17.31	673.9	19.07	698.7	24.70	711.7
GR 24.70	715.7	26.20	715.7	26.20	717.0	30.08	717.0	30.17	730.5
GR 29.94	764.2	28.50	855.1						
X1101.88	82	67.00	717.00	24.00	24.00	24.00			
GR 29.96	.0	30.08	50.0	30.17	67.0	26.27	67.0	26.27	68.3

GR	24.77	68.3	24.77	71.5	19.46	88.4	18.92	113.9	19.57	134.0
GR	19.33	169.8	19.28	169.8	18.69	260.2	18.75	262.0	14.50	274.4
GR	14.14	281.8	12.60	294.8	11.91	315.6	10.43	317.3	10.11	320.2
GR	9.88	322.8	10.11	330.1	10.43	333.0	13.50	337.0	13.50	341.0
GR	10.43	345.0	9.78	348.9	8.67	354.3	8.55	368.6	9.66	384.3
GR	10.43	387.0	13.50	391.0	13.50	395.0	10.43	399.0	10.11	400.8
GR	9.12	403.7	8.56	413.6	9.77	438.4	10.43	441.0	13.50	445.0
GR	13.50	449.0	10.43	453.0	10.23	454.8	8.99	467.2	8.89	479.3
GR	9.78	491.8	10.43	495.0	13.50	499.0	13.50	503.0	10.43	507.0
GR	10.10	510.2	9.23	515.5	9.02	529.3	9.97	545.4	10.43	549.0
GR	13.50	553.0	13.50	557.0	10.43	561.0	10.00	570.4	9.87	573.5
GR	9.43	586.9	9.99	592.0	10.10	603.5	10.43	608.3	13.03	614.2
GR	13.30	618.0	11.20	626.6	11.58	638.6	13.29	642.6	13.74	652.3
GR	19.14	661.4	18.99	671.0	17.31	673.9	19.07	698.7	24.70	711.7
GR	24.70	715.7	26.20	715.7	26.20	717.0	30.08	717.0	30.17	730.5
GR	29.94	764.2	28.50	855.1						
X1102.03		50	165.00	856.80	148.00	148.00	148.00			
GR	20.57	.0	20.57	50.1	21.10	60.2	21.10	78.2	20.75	79.3
GR	20.75	136.7	20.17	137.5	19.30	137.5	19.30	138.4	20.17	138.4
GR	24.02	149.1	24.21	155.6	26.80	159.7	26.82	165.0	19.87	183.6
GR	19.00	194.5	18.79	343.1	17.26	345.8	17.36	359.4	14.15	368.9
GR	14.24	422.6	11.68	426.5	11.36	427.7	10.67	431.9	10.01	461.9
GR	10.78	504.1	10.20	535.1	11.01	560.2	11.11	575.0	11.41	585.3
GR	11.76	599.1	12.73	603.3	13.51	615.4	14.25	623.0	14.54	628.6
GR	12.44	636.7	12.05	647.2	11.35	654.4	10.96	662.8	11.00	671.9
GR	11.14	676.5	11.22	680.7	10.98	689.9	11.29	706.5	12.03	724.0
GR	13.59	729.5	14.07	792.4	17.89	801.0	18.64	816.7	28.90	856.8
X1102.61		51	126.20	861.60	580.00	580.00	580.00			
GR	20.21	.0	20.21	100.0	19.57	101.4	18.80	101.5	18.80	102.4
GR	19.57	102.4	23.29	111.9	23.40	116.7	25.71	122.1	26.06	126.2
GR	21.29	137.1	20.21	142.8	20.01	165.6	17.41	169.0	17.42	208.2
GR	14.77	286.7	11.78	323.5	9.91	328.1	9.57	342.0	8.73	361.8
GR	9.91	391.8	10.28	394.7	11.80	396.8	14.61	401.2	13.61	477.8
GR	12.94	483.8	11.83	489.3	10.30	493.7	9.21	521.8	8.98	568.0
GR	8.88	604.0	9.41	646.7	10.57	680.0	11.85	689.8	14.23	693.2
GR	13.56	781.8	15.07	790.8	13.51	794.5	13.68	805.9	17.33	815.7
GR	17.33	828.1	18.93	833.2	18.88	843.0	26.41	861.6	26.13	864.8
GR	24.31	868.5	24.12	875.9	17.87	886.8	17.90	888.7	18.91	891.7
GR	18.91	1042.2								
X1103.16		36	139.30	815.60	550.00	550.00	550.00			
GR	21.30	.0	21.30	100.0	23.26	122.5	23.17	130.3	26.00	135.8
GR	26.04	139.3	21.33	150.9	20.57	151.8	19.64	184.6	17.22	210.1
GR	15.80	213.3	15.57	248.1	11.91	263.0	10.58	272.8	10.59	319.7
GR	10.77	365.0	10.67	404.3	10.77	446.1	10.20	486.2	9.91	531.1
GR	11.68	560.7	11.99	571.5	14.04	574.6	15.52	744.2	19.12	751.6
GR	18.97	768.6	20.50	771.9	20.47	802.4	26.50	815.6	26.64	818.4
GR	25.30	820.9	25.07	827.6	18.40	841.2	18.40	843.1	19.29	845.3
GR	19.29	915.9								
X1103.72		57	124.50	901.30	560.00	560.00	560.00			
GR	20.42	.0	20.42	99.6	19.62	101.3	17.89	101.4	17.89	102.9
GR	19.62	102.9	23.15	111.0	23.31	115.1	26.58	120.3	26.96	124.5
GR	22.01	134.0	20.43	168.2	14.92	232.5	16.51	245.7	16.19	251.6
GR	13.52	258.1	14.74	262.2	14.08	265.8	14.11	309.3	14.94	311.8
GR	14.76	313.9	13.29	317.1	12.36	330.9	11.82	332.1	11.68	333.7
GR	10.46	349.9	10.21	384.8	10.65	431.0	10.81	478.7	11.30	532.0
GR	11.11	592.6	11.01	657.8	10.99	678.9	10.91	695.6	11.72	701.3
GR	12.32	750.4	13.99	752.3	15.50	816.3	17.76	826.1	17.82	859.2
GR	20.20	865.6	20.16	877.4	20.97	879.4	20.95	890.2	25.54	901.3
GR	25.78	902.3	25.40	905.8	23.52	911.3	23.20	916.7	21.01	921.4
GR	20.01	948.9	18.57	949.0	18.57	951.0	20.01	951.0	20.01	951.8
GR	19.45	952.3	19.45	1102.6						
X1104.23		37	125.00	864.80	510.00	510.00	510.00			
GR	20.80	.0	20.80	100.1	24.43	111.1	24.42	117.3	27.18	121.2
GR	27.20	125.0	22.17	135.7	21.69	152.7	17.41	160.1	15.11	169.8
GR	13.97	282.3	13.82	295.1	12.33	297.6	11.96	299.6	11.01	311.3
GR	10.11	326.0	9.35	362.4	10.11	410.4	10.91	464.9	11.01	514.3
GR	11.30	559.0	12.04	588.4	14.07	592.8	16.88	705.9	16.88	709.3
GR	17.27	714.7	17.06	774.7	21.23	778.9	20.94	851.2	26.15	864.8
GR	26.16	868.8	23.99	873.0	23.75	879.7	21.98	882.2	20.58	915.8
GR	19.81	917.3	19.81	1067.4						
X1104.74		44	200.00	1096.70	510.00	510.00	510.00			
GR	28.23	.0	28.23	200.0	23.66	210.7	22.41	236.3	21.00	238.6
GR	20.58	381.8	22.49	385.0	22.37	392.0	21.19	394.5	20.70	425.8
GR	16.60	434.6	16.48	438.8	14.63	441.9	15.11	539.4	14.77	546.0
GR	12.43	549.9	11.78	575.8	10.61	586.1	9.78	624.0	9.98	666.0
GR	9.91	720.1	9.61	764.2	10.81	817.0	11.10	836.8	11.81	848.1

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GR 13.28   868.8   16.10   875.5   16.14   881.7   16.95   886.9   16.97   926.8
GR 18.43   930.8   18.46   972.6   19.47   975.7   19.44  1004.7   19.80  1006.4
GR 20.01  1081.9   26.36  1096.7   26.23  1102.2   24.21  1105.5   24.02  1111.1
GR 21.94  1114.6   20.84  1145.7   19.84  1150.8   19.84  1250.8
X1105.25    41     .00   732.79  510.00  510.00  510.00
GR 41.90     .0   31.80    20.5   24.70    36.0   22.70    39.3   22.40    52.8
GR 22.20    57.2   14.10    75.3   15.80   217.3   13.40   221.0   12.40   279.6
GR 12.10   282.5   12.30   290.1   12.50   292.3   13.00   305.5   13.20   319.0
GR 13.10   336.9   12.40   358.2   11.90   390.1   10.00   395.9    9.00   423.8
GR  9.70   459.0   10.20   499.0   10.50   544.1   10.90   569.3   12.00   579.5
GR 15.30   585.1   15.40   588.5   16.50   592.6   16.40   603.9   19.90   609.7
GR 19.80   648.7   20.80   650.2   21.00   720.0   27.10   732.8   26.90   740.3
GR 23.30   744.9   23.20   748.8   21.20   752.8   20.70   759.2   20.10   760.7
GR 20.10   860.7
X1105.75    65     .00  1025.70  500.00  500.00  500.00
GR 23.16     .0   23.14    15.3   21.14    17.3   21.08    53.5   20.48    55.2
GR 20.46    81.5   21.10    83.2   21.07    94.0   20.53    96.8   19.83   186.1
GR 19.82   186.1   20.97   187.9   21.11   196.7   20.15   198.8   20.27   234.8
GR 14.34   244.3   14.39   264.7   16.07   271.0   16.53   298.6   17.80   302.2
GR 18.20   316.6   19.03   318.4   19.89   338.7   19.98   401.7   19.58   402.7
GR 19.84   419.9   15.78   432.2   15.77   470.4   16.40   471.4   16.35   472.2
GR 14.65   474.7   14.71   548.8   16.06   550.8   15.99   555.8   13.17   560.8
GR 12.20   562.4   12.90   568.0   13.29   569.2   14.09   571.8   14.41   606.0
GR 12.37   639.5   13.08   641.2   11.86   643.7   10.57   649.1   10.01   673.9
GR 10.20   708.8   11.30   752.2    9.80   790.2    8.91   826.9    9.20   852.2
GR 10.79   868.6   11.91   873.5   16.30   892.3   16.30   903.3   19.56   909.9
GR 19.51  1011.7   26.45  1025.7   26.67  1063.1   21.18  1073.2   21.18  1079.3
GR 20.10  1081.8   20.10  1089.1   21.20  1090.8   21.20  1120.9   26.94  1160.7
X1106.23    55     .00  1188.20  480.00  480.00  480.00
GR 20.81     .0   20.81   200.2   22.39   201.9   22.89   208.9   21.99   209.8
GR 21.84   279.8   21.43   280.8   21.46   309.4   21.00   311.4   21.28   369.2
GR 20.56   370.2   20.62   399.7   19.93   401.0   19.74   429.0   18.94   431.0
GR 18.05   490.5   17.11   493.8   16.69   509.2   15.47   514.9   15.52   522.2
GR 16.59   545.0   19.78   553.9   20.05   600.2   20.06   721.5   12.15   736.6
GR 11.70   741.2   10.81   764.9   11.66   790.9   12.17   795.7   12.58   813.4
GR 14.97   817.8   15.51   824.2   14.59   881.2   12.68   904.6   13.30   916.6
GR 12.80   925.1   11.95   938.1   11.23   941.1   10.98   958.5   11.98   960.8
GR 12.75   963.4   13.49   976.4   12.67   978.2   11.46   987.8   10.88  1009.0
GR 10.57  1038.9   10.68  1078.0   11.41  1103.1   12.65  1113.2   14.82  1119.0
GR 22.82  1136.8   22.59  1145.4   32.78  1163.0   32.79  1178.0   42.90  1188.2
X1106.75    37     .00  1342.30  520.00  520.00  520.00
GR 21.90     .0   22.41    15.3   22.47    22.4   22.79   279.6   20.85   479.0
GR 20.41   480.4   20.20   621.7   20.88   623.5   20.87   624.5   12.85   642.3
GR 10.81   647.3   11.61   682.3   11.21   722.2   12.11   777.4   12.30   836.8
GR 11.01   878.2   11.11   923.3   11.21   957.8   11.31   986.4   12.86   991.0
GR 13.12   991.6   13.35   995.1   14.59   998.0   15.35  1126.8   15.55  1165.6
GR 15.30  1190.9   16.83  1217.6   18.97  1222.5   20.21  1242.8   17.54  1248.0
GR 17.33  1254.0   20.57  1254.4   21.38  1259.9   21.39  1275.6   21.31  1287.4
GR 23.56  1293.6   32.48  1342.3
X1107.25    37     .00  1162.80  500.00  500.00  500.00
GR 22.69     .0   22.69   143.1   23.89   150.0   20.37   157.0   21.04   158.7
GR 20.20   314.6   15.06   333.1   12.84   355.3   11.21   437.9   10.11   485.8
GR 10.21   535.9    9.81   570.6    9.11   631.2    8.81   674.8   10.11   706.9
GR 10.89   739.9   11.11   755.8   12.86   762.5   15.11   764.9   15.07   842.0
GR 15.92   844.6   15.86   845.5   12.96   852.7   12.28   857.6   11.68   872.8
GR 11.01   908.0   11.11   943.5   11.21   973.8   10.10  1003.9   12.88  1008.1
GR 15.61  1014.5   15.85  1043.5   13.74  1048.0   13.10  1115.7   24.14  1134.6
GR 24.01  1142.8   49.40  1162.8
X1107.70    62     .00  1501.10  450.00  450.00  450.00
GR 28.90     .0   23.66    12.3   23.76    19.3   23.85    45.3   23.28   229.6
GR 24.34   233.3   20.80   246.4   20.78   371.3   18.79   402.8   13.10   413.2
GR 14.70   450.1   16.34   453.5   15.26   528.7   13.11   538.2   12.66   593.4
GR 12.47   599.2   12.17   608.7   11.77   637.0   11.68   672.1    9.87   712.1
GR  9.67   752.0   11.47   802.0   11.87   846.9   11.89   939.2   12.37   969.2
GR 12.37   999.3   12.27  1046.8   12.37  1097.4   11.07  1152.1   10.87  1212.1
GR 11.07  1257.1   10.87  1281.8   12.62  1286.9   13.33  1289.9   14.52  1310.0
GR 15.59  1311.5   16.01  1344.4   16.97  1352.1   17.20  1362.5   14.75  1369.0
GR 15.69  1415.7   20.27  1422.9   20.44  1477.0   19.80  1478.5   19.90  1479.0
GR 21.70  1483.0   21.53  1491.1   25.97  1501.1   25.14  1534.7   22.10  1541.9
GR 22.10  1546.0   21.40  1547.0   21.40  1547.8   22.10  1549.0   22.10  1554.1
GR 21.10  1555.1   21.10  1565.1   24.60  1567.9   24.60  1581.0   27.80  1633.4
GR 27.80  1643.8   42.40  1714.0
X1108.20    66     .00  1419.30  500.00  500.00  500.00
GR 27.50     .0   23.40     4.9   23.79    13.0   23.10    13.9   21.86   280.2
GR 22.02   326.3   21.04   412.2   17.98   417.1   17.93   436.3   15.32   445.8
GR 14.08   477.7   13.14   486.3   12.67   500.0   12.79   549.0   13.37   551.4
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GR 13.76   590.8   12.77   616.5   12.38   622.0   12.18   631.9   12.08   651.9
GR 11.88   661.9   12.08   667.1   12.28   686.6   11.88   712.0   10.38   737.1
GR 11.38   766.8   12.08   796.3   12.27   816.4   11.28   837.1   10.48   857.1
GR 11.28   886.9   12.73   891.5   13.53   892.8   14.12   905.4   14.83  1088.0
GR 12.88  1092.6   12.85  1135.2   14.89  1138.2   15.06  1261.3   16.71  1304.9
GR 15.65  1309.5   15.89  1338.5   13.12  1342.7   12.95  1353.4   20.54  1372.9
GR 20.42  1376.0   20.06  1376.8   20.41  1418.5   20.83  1419.3   20.82  1448.2
GR 21.20  1449.3   21.22  1478.9   21.78  1479.9   21.82  1508.4   22.62  1509.6
GR 22.55  1546.5   23.23  1547.4   23.32  1568.4   23.55  1569.3   23.76  1598.0
GR 24.20  1598.7   24.32  1601.9   23.87  1603.0   23.77  1604.4   25.74  1607.9
GR 26.37  1648.6
X1108.75    52     .00  1277.50   550.00   550.00   550.00
GR 39.50     .0   23.94    14.7   23.64    17.8   20.84    21.3   20.74    37.4
GR 13.66    50.3   12.80    53.6   10.98    55.8   10.99    67.6   13.10    69.7
GR 13.70    71.4   14.55    88.6   13.03   116.2   12.46   135.8   12.35   183.2
GR 12.19   305.4   12.57   394.2   12.78   491.7   13.03   497.6   14.79   512.7
GR 18.79   517.5   18.89   527.7   14.80   530.8   13.03   538.7   11.74   548.7
GR 11.13   594.3   11.23   650.2   11.14   698.0   11.24   728.1   11.44   762.8
GR 11.34   798.3   11.93   818.0   13.03   823.1   13.57   976.9   16.11   985.8
GR 16.18   997.9   21.02  1014.6   20.76  1058.4   21.07  1059.1   20.88  1062.1
GR 20.36  1062.8   20.27  1063.8   20.54  1064.9   20.76  1171.9   21.34  1172.7
GR 21.35  1175.7   20.80  1176.1   20.81  1176.6   21.19  1177.5   21.08  1177.5
GR 20.48  1178.2   20.48  1277.5
X1109.40    57     .00  1010.00   650.00   650.00   650.00
GR 35.40     .0   23.09    79.9   23.09   130.6   22.34   133.1   22.41   185.6
GR 23.11   186.1   23.34   200.0   21.65   204.4   21.33   213.3   13.51   231.1
GR 12.71   244.3   12.42   254.3   12.92   264.4   12.62   274.2   12.62   299.6
GR 12.21   319.9   11.52   339.6   12.82   359.6   13.22   369.3   13.51   389.1
GR 15.24   410.1   18.81   417.3   18.81   419.2   15.94   424.1   15.93   426.1
GR 16.33   427.5   16.36   474.5   17.00   475.8   17.08   479.9   21.66   492.4
GR 22.49   498.4   23.00   610.0   23.00   699.2   20.99   703.4   20.99   728.7
GR 23.10   732.2   23.10   752.3   22.70   755.3   22.70   760.3   22.50   761.8
GR 22.50   792.0   22.00   793.0   22.00   843.0   20.80   846.0   20.80   866.0
GR 21.50   868.0   21.50   872.0   19.40   874.0   19.40   914.0   19.70   915.0
GR 19.70   958.0   17.20   962.0   17.20   965.0   20.50   969.0   20.50   987.0
GR 25.00  1010.0   27.00  1040.0
X1109.90    44     .00   759.30   500.00   500.00   500.00
GR 32.40     .0   27.15     8.1   27.15    13.0   25.33    16.7   25.80    21.3
GR 21.95    36.0   13.50    60.7   12.81    66.0   13.11    85.6   11.11   111.1
GR 11.41   134.7   12.51   159.0   12.21   173.7   12.77   182.1   13.01   191.2
GR 13.58   195.5   15.18   226.9   16.58   233.2   20.08   238.5   19.80   242.5
GR 19.29   243.3   19.38   336.3   20.01   337.0   20.03   346.6   19.57   350.5
GR 19.61   384.1   20.08   385.0   20.06   390.4   21.04   394.2   21.74   500.6
GR 22.02   501.1   21.88   502.4   21.51   504.3   21.82   562.1   19.78   610.2
GR 18.24   612.5   17.96   614.3   18.47   617.4   19.52   618.7   19.50   673.9
GR 21.74   680.7   21.74   722.5   30.00   759.3   34.10   809.3
X1110.35    61     .00   776.00   450.00   450.00   450.00
GR 41.50     .0   30.20    21.0   28.15    22.1   27.97    28.2   26.72    40.9
GR 19.57    72.3   16.78   102.6   15.08   184.1   13.83   189.2   13.59   211.8
GR 13.10   216.7   13.00   230.7   12.80   258.0   13.40   284.1   13.30   307.9
GR 13.20   315.6   13.10   328.4   13.30   342.9   13.70   347.8   14.49   396.7
GR 15.25   399.6   14.80   409.4   13.78   412.9   14.08   438.7   13.86   446.7
GR 13.53   448.3   11.82   453.5   11.81   459.6   13.51   465.1   17.26   470.6
GR 17.16   487.7   20.64   495.2   20.60   498.0   20.27   498.8   20.43   544.6
GR 21.19   546.1   21.24   549.2   20.89   549.9   20.74   594.8   21.27   595.8
GR 21.32   598.7   20.61   599.9   20.60   636.4   20.05   637.6   19.96   640.1
GR 20.49   641.3   20.45   645.5   19.69   646.9   19.75   649.1   19.92   650.9
GR 19.88   686.9   21.14   688.7   21.18   689.7   19.81   692.2   19.77   693.9
GR 21.15   696.9   21.05   733.3   26.48   742.7   26.52   751.8   27.36   752.6
GR 40.70   776.0
X1110.90    44     .00   612.80   550.00   550.00   550.00
GR 29.31     .0   24.94    16.0   24.71    22.2   23.38    25.1   23.38    31.1
GR 24.66    37.9   23.96    72.1   18.57    82.9   17.02    96.7   17.67   104.3
GR 17.65   162.2   15.53   180.1   14.29   226.8   13.90   231.6   13.40   251.5
GR 13.40   278.6   13.60   303.6   13.70   334.5   13.80   361.5   13.90   386.7
GR 13.90   404.8   13.80   420.9   14.36   425.8   19.55   435.0   19.55   446.5
GR 18.51   447.7   18.82   517.5   24.05   525.2   23.92   529.6   22.24   530.9
GR 22.12   559.5   24.33   561.9   24.27   565.7   22.22   567.6   21.98   597.2
GR 24.31   601.1   25.09   607.0   27.60   612.8   28.12   622.0   27.60   623.9
GR 30.17   664.1   32.37   667.9   34.91   691.0   40.38   717.5
X1111.40    39     .00   628.70   500.00   500.00   500.00
GR 44.30     .0   29.78    20.2   27.10    29.5   26.19    40.4   24.57    48.0
GR 23.79    77.4   23.70    82.1   22.96    83.0   22.55   212.4   21.78   213.6
GR 21.94   238.2   20.34   241.1   20.59   290.4   16.96   313.1   17.03   330.7
GR 14.15   335.5   13.46   340.4   12.76   350.6   13.06   371.0   13.06   396.0
GR 13.26   426.0   13.46   450.6   13.96   496.8   13.95   513.5   13.97   528.4
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GR 13.56	536.7	13.76	544.8	14.10	549.4	14.62	552.7	18.61	561.5
GR 18.75	581.4	22.84	611.8	20.84	611.8	20.85	625.5	27.85	628.7
GR 27.91	649.0	29.05	650.8	35.20	688.5	45.80	713.8		
X1111.90	43	.00	777.30	500.00	500.00	500.00			
GR 42.20	.0	29.97	15.6	27.28	19.2	25.32	43.7	24.85	45.5
GR 24.74	76.2	24.83	79.7	24.37	80.6	24.34	148.3	23.45	152.3
GR 21.91	157.9	21.81	167.8	21.84	249.1	22.08	250.5	22.21	253.5
GR 20.91	256.9	20.90	289.5	21.33	291.6	21.25	296.6	20.36	299.6
GR 20.42	333.1	19.65	350.5	15.46	375.0	14.40	449.8	14.01	454.7
GR 14.03	482.8	13.91	511.7	14.01	539.7	14.11	566.8	14.11	590.6
GR 13.78	605.5	13.81	630.6	14.01	645.8	14.01	670.6	12.57	677.7
GR 14.38	683.1	15.33	699.7	17.17	710.3	30.73	731.7	30.66	739.8
GR 31.77	740.3	42.13	757.8	42.80	777.3				
X1112.35	40	.00	864.30	450.00	450.00	450.00			
GR 31.03	.0	26.01	45.2	24.04	53.0	24.13	75.1	24.11	76.1
GR 23.59	76.7	23.57	79.7	22.62	81.4	22.56	118.6	22.92	119.7
GR 22.96	140.0	20.66	144.1	21.91	163.1	21.64	167.9	20.54	169.7
GR 20.64	257.7	21.83	261.1	21.87	320.0	21.43	323.0	21.19	364.0
GR 18.23	403.3	18.14	528.5	16.03	548.1	14.49	554.7	14.09	559.7
GR 12.99	569.8	13.99	587.6	14.19	592.7	13.99	612.9	14.08	632.0
GR 14.29	641.8	14.29	652.0	14.47	656.2	14.88	683.2	14.55	765.6
GR 15.01	795.0	16.07	798.9	16.48	830.0	20.82	844.2	35.90	864.3
X1112.51	53	184.20	1052.20	160.00	160.00	160.00			
GR 31.12	.0	26.52	29.9	25.76	57.0	24.18	59.4	24.19	81.9
GR 23.68	83.5	23.52	88.0	22.40	89.7	22.17	130.1	22.53	131.3
GR 22.41	184.2	19.80	189.2	19.78	194.2	20.99	197.9	20.99	248.3
GR 21.77	251.8	21.98	299.3	20.41	344.4	22.53	393.9	20.39	399.2
GR 19.01	469.1	16.01	473.1	16.01	504.8	18.54	519.9	19.23	536.7
GR 15.29	546.8	14.50	555.8	13.68	560.5	14.24	565.7	14.31	571.7
GR 14.21	586.4	13.79	594.7	13.31	608.9	13.51	633.7	13.90	646.7
GR 14.11	669.8	14.21	685.6	14.50	690.8	15.41	790.4	16.88	798.3
GR 17.94	851.5	20.08	938.5	20.75	939.8	18.17	946.3	18.41	968.5
GR 20.24	973.1	19.99	977.1	18.97	978.6	18.88	985.6	19.92	991.1
GR 19.77	992.5	16.80	1000.1	36.30	1052.2				
X1112.96	51	.00	1150.70	450.00	450.00	450.00			
GR 31.26	.0	27.94	39.6	26.90	47.6	25.83	62.8	25.54	67.3
GR 24.36	72.2	24.40	100.5	23.94	101.7	23.91	104.9	23.06	106.4
GR 22.13	106.9	22.08	134.6	22.32	135.8	22.20	176.3	20.25	182.9
GR 19.96	209.2	21.34	214.7	21.32	237.6	25.14	245.5	25.32	264.5
GR 21.80	271.8	21.87	301.3	21.43	304.3	21.48	344.3	17.84	381.7
GR 18.73	445.8	18.23	534.1	14.70	541.7	14.60	596.0	17.82	601.0
GR 17.87	611.1	15.22	616.6	15.02	646.7	14.22	656.5	13.76	686.5
GR 13.62	712.7	13.31	753.5	12.61	778.6	13.32	788.7	15.02	795.2
GR 17.79	811.1	17.90	830.0	14.60	883.6	14.45	888.7	13.91	894.3
GR 14.60	899.5	15.56	906.5	16.92	910.6	23.02	922.0	23.55	950.6
GR 23.60	1150.7								
X1113.36	65	.00	1133.00	400.00	400.00	400.00			
GR 36.33	.0	34.87	12.7	33.62	15.6	32.84	29.2	31.73	31.7
GR 31.56	37.3	30.59	39.0	28.65	60.6	26.82	81.2	26.34	90.0
GR 26.54	91.3	25.18	92.5	25.06	119.2	25.27	119.7	25.34	123.3
GR 24.16	124.9	24.35	155.6	21.24	161.2	20.96	268.2	25.31	277.1
GR 25.31	296.1	21.21	304.4	21.41	340.8	19.87	355.3	17.54	371.7
GR 16.34	394.0	17.32	412.7	20.40	437.6	22.00	440.7	21.71	461.4
GR 15.89	472.7	15.44	476.0	14.99	480.0	14.90	532.4	15.44	535.7
GR 17.42	601.7	15.64	610.4	15.14	619.9	14.95	630.2	14.15	644.9
GR 14.35	670.2	14.95	684.9	15.14	705.1	14.45	720.1	14.65	750.1
GR 14.85	755.0	15.67	756.8	16.13	799.5	15.79	831.2	15.51	833.3
GR 14.80	839.1	15.00	851.6	15.55	856.1	16.04	872.9	21.16	887.7
GR 21.07	932.5	22.27	933.9	22.52	940.2	24.02	942.8	23.78	948.2
GR 24.37	1089.0	25.09	1093.5	24.89	1107.5	24.11	1109.9	39.30	1133.0
X1113.79	52	.00	850.70	430.00	430.00	430.00			
GR 31.50	.0	31.50	4.3	30.30	5.0	30.30	12.1	28.70	13.3
GR 28.70	24.3	28.66	27.0	28.25	27.5	28.00	28.0	28.27	28.2
GR 28.10	29.6	26.89	57.8	24.64	60.0	24.42	87.2	25.97	89.7
GR 25.93	98.0	21.78	103.9	21.61	117.4	23.42	120.8	23.49	147.7
GR 21.46	152.2	21.61	220.2	20.35	223.6	20.41	227.5	16.73	234.7
GR 17.29	354.1	18.95	357.3	18.96	357.8	15.97	363.3	15.30	371.7
GR 14.20	385.8	15.20	405.5	16.06	410.2	16.50	412.6	17.04	460.2
GR 16.48	554.7	16.03	573.5	15.58	580.0	16.09	589.7	16.59	601.7
GR 18.92	605.0	18.28	653.5	19.79	658.7	19.26	702.4	21.22	710.2
GR 21.16	725.5	22.20	726.0	24.08	800.4	24.38	807.8	25.68	816.0
GR 29.60	823.7	34.01	850.7						
X1114.29	33	91.40	572.50	500.00	500.00	500.00			
GR 40.60	.0	33.77	30.0	32.27	31.1	32.27	36.8	30.25	36.9
GR 30.25	49.9	28.08	82.5	27.94	91.4	23.96	97.2	23.87	117.8
GR 18.96	125.8	18.64	133.6	17.13	136.9	16.44	144.3	15.85	148.8

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GR 15.75   163.5   15.25   223.6   14.45   279.8   15.85   320.1   16.44   326.0
GR 16.75   393.7   20.71   402.6   20.81   435.7   21.30   436.6   21.34   445.6
GR 24.98   452.5   24.68   462.7   24.10   463.2   24.10   522.8   24.09   532.5
GR 24.60   534.5   24.90   554.5   35.20   572.5
X1114.79      29     .00   466.60   500.00   500.00   500.00
GR 43.20      .0   35.40    20.1   28.52    24.1   28.56    33.8   19.70    50.9
GR 18.77    65.6   17.90    67.1   16.51    73.9   15.25    79.0   13.76   104.2
GR 14.06   134.2   14.26   169.6   14.55   194.3   15.56   214.2   16.55   219.9
GR 19.74   226.1   20.21   250.0   23.27   255.3   23.33   285.9   23.25   318.2
GR 24.21   322.8   24.15   329.0   22.57   333.2   23.93   342.8   23.59   370.4
GR 23.24   372.5   23.18   420.8   24.08   422.6   24.08   466.6
X1115.39      36     .00   349.60   600.00   600.00   600.00
GR 35.70      .0   30.56    14.9   27.08    24.3   24.90    37.7   24.19    46.0
GR 24.19    53.9   23.67    56.8   23.47    57.6   20.37    62.4   18.30    74.6
GR 17.57    75.8   16.63    84.0   14.65    88.4   14.63   108.4   13.73   138.4
GR 13.94   164.6   15.24   184.3   16.03   194.3   16.58   204.7   17.71   251.5
GR 19.98   254.2   20.34   286.1   21.46   289.3   21.56   295.9   22.22   297.4
GR 22.11   305.4   26.04   312.2   25.87   316.1   26.09   317.6   26.07   347.0
GR 26.74   349.6   26.75   389.3   27.09   390.5   27.06   415.6   26.55   417.2
GR 26.55   457.4
X1116.04      31     .00   458.20   650.00   650.00   650.00
GR 45.40      .0   30.42    15.0   30.50    15.8   31.53    17.3   31.40    22.0
GR 20.94    36.5   18.91    41.1   16.86    44.8   14.37    49.4   13.87    64.5
GR 16.07    74.7   16.61    79.3   16.34   115.9   16.45   265.4   16.93   268.7
GR 21.29   280.8   21.10   290.6   23.95   296.2   23.99   334.7   25.01   336.6
GR 25.00   365.2   25.49   367.1   25.41   395.7   26.87   398.8   26.93   426.1
GR 27.71   428.2   27.76   457.2   28.40   458.2   28.53   462.3   27.44   463.7
GR 27.44   563.8
X1116.54      35     .00   320.30   500.00   500.00   500.00
GR 48.20      .0   33.50    30.1   38.26    32.6   38.37    37.9   38.18    41.9
GR 32.73    53.2   23.85    68.3   20.38    97.5   18.72   101.1   18.06   102.4
GR 16.89   107.2   13.80   112.4   14.70   142.4   14.40   167.4   15.20   182.4
GR 16.40   193.2   16.40   274.4   16.91   276.8   21.46   290.3   21.50   299.7
GR 24.04   312.0   28.28   320.3   28.10   321.3   27.59   322.6   27.56   372.9
GR 28.17   374.7   28.12   413.4   28.74   415.4   28.77   503.9   30.80   507.4
GR 30.79   510.9   30.13   512.0   30.13   533.3   31.35   535.1   31.35   538.2
X1117.09      22     .00   355.00   550.00   550.00   550.00
GR 37.60      .0   22.93    20.1   16.66    30.3   13.80    34.5   13.70    44.5
GR 14.20    74.5   15.80    99.4   16.39   114.4   16.43   124.1   16.50   129.8
GR 16.00   149.4   16.20   189.3   16.40   198.0   16.69   203.9   17.11   210.3
GR 20.22   219.5   20.31   226.8   24.92   240.3   24.98   250.8   25.92   262.4
GR 26.06   285.0   26.10   355.0
X1117.62      35     .00   360.90   530.00   530.00   530.00
GR 41.40      .0   35.77     9.9   35.77    14.7   20.86    37.7   18.96    42.9
GR 16.91    46.4   14.21    51.1   14.21    76.3   15.21    96.2   16.41   121.2
GR 16.61   136.6   15.71   151.0   16.21   176.6   16.60   196.3   16.97   201.8
GR 17.01   237.2   18.04   286.4   19.43   291.5   20.96   311.0   22.54   315.9
GR 22.54   321.8   25.75   349.7   26.16   357.2   27.78   359.9   27.88   360.9
GR 27.05   362.6   27.31   482.4   27.78   483.6   27.83   536.6   28.01   537.5
GR 28.10   582.5   29.05   584.3   29.12   586.6   28.78   588.5   28.78   638.5
X1118.37      21     .00   344.60   750.00   750.00   750.00
GR 40.78      .0   25.62    20.7   25.57    48.3   25.78    49.3   25.08    53.9
GR 24.26    54.6   23.72    93.0   20.98   102.3   22.25   108.2   21.08   123.3
GR 19.46   125.4   17.68   147.6   17.01   153.9   16.79   183.9   16.46   229.0
GR 15.68   277.1   16.11   303.9   17.62   308.1   26.97   323.8   26.97   326.8
GR 39.89   344.6
X1118.80      28   75.50   394.40   430.00   430.00   430.00
GR 42.38      .0   37.84    22.6   33.83    30.7   33.95    41.4   32.02    43.3
GR 32.12    56.6   29.62    60.1   29.69    75.5   28.67    76.5   28.88    82.5
GR 27.76    92.1   27.72   108.6   25.39   112.2   25.32   118.5   24.98   135.3
GR 22.35   144.0   22.04   154.6   18.57   159.7   17.57   219.2   17.23   234.0
GR 16.89   243.8   16.23   259.4   15.90   329.7   16.46   352.8   17.57   355.9
GR 26.66   370.7   26.55   373.7   55.89   394.4
X1119.23      26     .00   353.70   430.00   430.00   430.00
GR 37.33      .0   34.19     3.7   34.15    26.3   34.42    26.9   34.52    28.2
GR 31.38    41.9   26.89    48.9   26.94    72.8   27.22    73.5   27.28    73.9
GR 23.06    81.2   22.71    86.0   21.57    90.4   21.30   100.3   19.75   103.7
GR 17.47   146.8   17.10   154.0   14.90   183.9   14.88   209.5   15.90   244.0
GR 16.01   273.0   16.46   298.0   17.42   305.1   28.61   329.8   28.61   332.8
GR 49.00   353.7
X1119.77      34   116.40   543.90   540.00   540.00   540.00
GR 42.00      .0   42.00    40.3   39.05    48.3   39.15    58.0   35.43    66.5
GR 35.61    82.1   34.67    85.0   32.39    91.4   31.34    94.7   30.99   116.4
GR 28.89   120.8   29.10   145.9   25.75   151.4   21.21   164.3   21.10   176.3
GR 20.76   179.1   19.62   182.1   17.56   241.5   16.79   248.2   16.89   276.1
GR 17.00   311.2   17.11   336.0   16.91   341.2   16.78   366.2   17.00   386.1
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GR 17.56	393.4	20.79	408.7	27.41	445.8	26.88	512.1	31.05	536.2
GR 34.31	543.9	34.00	560.7	40.94	572.0	40.94	587.5		
X1120.19	27	.00	350.80	420.00	420.00	420.00			
GR 43.68	.0	30.23	20.3	19.82	36.8	18.21	44.4	16.90	49.2
GR 18.78	79.1	18.00	101.9	17.99	134.8	17.57	175.1	17.90	194.9
GR 18.22	205.2	19.56	206.5	19.51	234.4	21.11	253.1	21.27	260.2
GR 22.04	262.1	22.88	278.3	24.84	282.0	24.91	309.1	26.50	313.2
GR 26.58	333.2	27.36	334.7	27.24	337.0	35.42	350.8	35.48	356.8
GR 40.61	363.3	40.61	379.8						
X1120.70	57	60.40	549.70	510.00	510.00	510.00			
GR 38.72	.0	38.72	60.4	34.80	71.1	33.24	76.4	32.06	78.0
GR 32.13	84.4	30.58	86.3	30.33	96.7	28.51	98.9	28.49	137.4
GR 27.16	139.9	27.16	143.7	25.59	145.1	25.74	147.0	24.19	153.8
GR 22.18	157.8	20.63	171.1	18.25	174.5	18.00	175.7	18.00	186.7
GR 18.21	189.9	20.30	196.0	20.16	197.8	18.42	200.3	17.57	204.8
GR 18.10	214.9	18.20	240.1	18.01	263.0	18.45	268.0	18.97	269.1
GR 20.13	324.7	20.98	327.9	20.61	353.3	18.75	360.4	17.91	369.7
GR 18.07	386.3	17.23	411.1	18.77	416.1	19.61	419.7	20.62	454.1
GR 22.99	459.5	24.85	475.6	24.86	484.6	23.22	487.4	23.18	500.5
GR 23.80	502.4	23.73	529.9	26.47	536.1	26.48	539.4	36.81	549.7
GR 36.95	550.7	36.82	555.5	37.22	556.0	38.26	595.2	39.25	597.9
GR 39.14	606.4	38.60	609.7						
X1121.26	39	44.50	805.70	560.00	560.00	560.00			
GR 46.57	.0	36.39	20.0	32.81	44.5	29.45	49.3	29.36	130.5
GR 25.14	135.7	25.29	172.0	24.64	173.2	24.82	191.4	23.71	192.8
GR 23.88	210.8	22.29	214.2	22.04	217.6	20.69	222.1	19.62	254.2
GR 19.25	255.3	19.00	258.0	19.18	259.3	20.46	263.0	19.27	267.2
GR 19.15	276.2	18.77	286.1	17.23	291.7	16.79	321.3	16.01	356.0
GR 15.57	390.0	17.46	416.1	19.15	419.1	22.87	429.9	22.94	580.7
GR 23.43	584.1	23.29	688.7	23.91	692.1	24.01	746.6	25.31	750.2
GR 25.66	790.4	34.67	805.7	34.67	806.7	34.67	819.7		
X1121.77	36	.00	573.20	510.00	510.00	510.00			
GR 28.88	.0	28.88	100.0	25.84	104.7	25.85	106.2	27.89	111.9
GR 27.66	119.4	26.26	124.6	26.95	256.0	27.00	261.6	25.14	262.9
GR 25.15	269.5	25.81	270.6	25.67	286.9	22.43	293.1	22.36	299.2
GR 21.91	301.3	22.37	352.4	20.66	359.4	21.96	377.1	21.49	393.9
GR 19.36	402.5	18.35	407.4	18.57	427.5	18.78	432.4	19.01	461.5
GR 18.01	486.6	17.46	511.6	17.35	536.5	19.37	547.0	23.62	555.5
GR 24.22	562.5	32.10	573.2	31.72	600.7	33.14	602.5	33.09	611.3
GR 38.42	620.9								
X1122.14	42	104.20	581.50	370.00	370.00	370.00			
GR 32.59	.0	32.59	70.7	33.30	71.7	33.22	77.0	32.11	78.2
GR 32.46	96.9	32.27	104.2	30.24	108.6	30.34	115.4	29.38	116.5
GR 29.38	150.9	28.46	162.1	27.54	191.0	25.12	194.6	26.28	227.2
GR 25.66	229.4	25.38	230.8	27.82	236.2	28.07	272.1	29.11	273.1
GR 29.02	280.8	25.11	285.3	25.35	313.2	22.69	319.9	21.37	368.9
GR 19.97	371.2	19.28	376.3	19.00	395.9	18.46	405.9	17.90	437.0
GR 18.01	462.3	19.29	467.7	22.51	472.0	22.83	477.0	19.82	481.2
GR 19.31	508.8	19.28	516.0	18.76	542.1	18.01	557.9	19.26	560.5
GR 25.51	570.9	45.89	581.5						
X1122.49	53	175.90	882.70	350.00	350.00	350.00			
GR 33.16	.0	33.16	80.3	34.00	81.5	34.02	85.6	32.02	87.7
GR 31.88	147.1	30.75	147.9	30.86	175.9	28.64	179.2	28.73	205.1
GR 28.56	206.3	25.79	212.3	26.50	213.4	26.32	243.8	28.39	246.5
GR 28.19	275.4	29.65	277.3	29.79	308.3	30.02	308.8	30.02	310.3
GR 29.09	311.3	29.51	332.8	22.62	347.2	21.20	357.9	19.56	370.8
GR 19.22	373.7	18.98	392.7	19.56	411.1	19.57	435.7	18.65	470.8
GR 19.11	476.2	19.78	485.8	19.01	495.9	19.56	500.8	20.96	542.8
GR 20.78	563.0	23.18	568.3	23.56	580.1	26.98	585.7	27.44	652.7
GR 27.14	653.9	26.10	718.2	27.61	721.2	28.77	762.9	29.14	763.9
GR 29.04	768.1	28.77	768.5	26.35	832.1	24.12	837.1	24.08	840.1
GR 29.86	866.8	35.03	882.7	34.81	893.2				
X1122.99	55	.00	806.90	500.00	500.00	500.00			
GR 45.90	.0	38.73	10.0	37.37	22.7	35.08	26.4	36.29	29.2
GR 34.93	30.6	34.95	35.1	32.73	37.8	32.78	48.2	31.42	49.7
GR 31.66	67.4	30.33	68.8	29.74	92.9	29.37	114.3	27.44	116.9
GR 27.52	129.2	26.31	131.0	26.61	155.2	20.00	170.6	19.89	175.2
GR 19.78	200.0	19.78	225.0	19.89	240.1	19.78	255.0	20.13	260.3
GR 22.93	267.5	22.84	283.8	20.20	287.5	19.68	290.4	19.79	315.0
GR 20.23	319.4	21.73	321.6	21.90	325.7	20.69	327.9	20.24	336.9
GR 19.79	364.1	19.57	395.0	19.57	404.4	18.77	434.1	20.24	454.1
GR 26.06	471.0	26.06	472.0	25.79	472.5	26.56	545.8	26.74	546.5
GR 29.24	631.9	29.08	636.7	28.21	657.5	27.28	659.9	27.04	661.6
GR 28.61	663.8	28.72	670.0	29.54	766.0	29.18	766.7	29.18	806.9
X1123.47	36	.00	866.10	480.00	480.00	480.00			
GR 42.39	.0	35.93	26.5	23.25	46.4	23.69	74.7	20.99	82.5

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GR 20.30    83.5   19.60    85.8   19.77   103.7   20.29   105.8   21.33   106.7
GR 21.51   117.0   20.21   119.2   19.35   123.4   19.45   143.5   19.45   178.3
GR 19.87   213.9   18.81   223.6   19.78   268.5   19.78   313.6   19.88   348.3
GR 19.77   373.8   20.27   383.5   24.37   396.4   24.21   404.3   24.58   406.9
GR 25.31   440.2   25.44   443.7   26.80   446.3   27.89   501.6   28.25   503.3
GR 30.00   588.8   29.52   682.7   29.46   687.1   29.16   687.9   28.93   796.1
GR 28.93   866.1
X1124.01      41     .00   940.80  540.00  540.00  540.00
GR 53.68      .0   43.53    20.6   37.32    31.3   37.33    45.5   33.82    49.9
GR 33.88    79.6   30.00    85.9   29.71    95.5   28.86    97.1   28.84   118.6
GR 22.18   137.8   22.59   162.3   21.63   180.1   20.47   182.2   18.66   200.0
GR 18.68   234.5   19.44   277.2   18.87   327.7   18.67   370.3   18.91   405.5
GR 20.46   415.8   20.75   416.9   21.63   499.2   25.11   506.4   25.29   512.0
GR 26.20   514.1   26.19   540.3   30.22   547.9   30.31   598.2   30.61   599.3
GR 30.17   758.8   30.46   759.7   30.46   762.8   29.90   764.0   29.22   884.8
GR 27.72   887.3   27.72   888.2   29.45   890.9   29.90   902.2   37.79   920.8
GR 47.90   940.8
X1124.46      34     .00   659.00  450.00  450.00  450.00
GR 44.81      .0   24.82    30.0   22.11    46.3   20.34    52.4   18.91    57.0
GR 18.10    84.1   19.01   136.1   18.35   181.3   19.48   217.7   20.29   227.2
GR 21.66   228.7   22.77   274.6   25.16   281.6   25.18   287.4   26.87   293.9
GR 26.87   316.4   27.76   332.7   30.63   348.2   30.69   443.0   31.35   443.9
GR 31.31   445.6   30.85   446.5   31.02   537.0   30.67   538.0   30.67   547.0
GR 31.52   548.5   31.56   555.3   31.06   555.9   31.22   589.6   32.52   598.5
GR 34.43   602.8   34.09   605.8   36.07   622.9   46.20   659.0
X1124.96      35     .00   602.30  500.00  500.00  500.00
GR 45.21      .0   30.20    15.0   26.53    19.0   24.88    24.7   22.07    34.5
GR 20.56    39.2   19.46    48.3   18.25    68.7   18.46   102.5   19.26   152.5
GR 19.35   182.6   20.66   198.8   22.68   201.2   23.99   233.7   26.97   240.0
GR 26.99   243.4   29.05   246.7   29.05   295.6   31.80   301.2   31.85   352.4
GR 28.60   389.5   29.29   414.0   31.73   433.7   31.67   438.1   31.57   439.1
GR 31.65   499.2   32.84   501.4   32.73   505.5   33.77   506.7   35.57   558.8
GR 36.76   561.6   36.67   576.7   37.26   578.5   38.37   595.7   40.87   602.3
X1125.66      28   66.80  466.30  700.00  700.00  700.00
GR 34.27      .0   34.27    66.8   31.06    72.9   30.51    99.6   26.18   110.3
GR 24.27   147.0   23.59   150.5   24.88   156.2   25.02   213.4   21.20   220.2
GR 20.74   223.9   19.57   228.3   20.01   233.3   20.55   253.5   20.68   294.2
GR 20.55   319.4   21.11   339.3   20.35   359.2   21.46   369.4   21.01   394.4
GR 20.19   414.2   20.72   419.5   21.94   421.6   21.79   427.7   23.47   433.2
GR 23.44   440.1   31.50   451.2   36.49   466.3
X1126.42      31  159.80  598.70  760.00  760.00  760.00
GR 30.34      .0   30.34    150.0   35.37   156.9   35.41   159.8   27.71   173.4
GR 26.66   239.4   24.38   244.6   24.37   249.8   21.45   258.7   21.29   264.7
GR 21.07   289.8   21.78   315.4   21.68   351.8   21.79   362.3   22.53   365.7
GR 22.95   380.8   22.11   382.5   21.80   387.7   21.35   397.5   21.46   413.7
GR 22.13   419.1   22.92   423.8   24.12   453.6   24.25   457.9   27.67   470.2
GR 28.93   471.4   28.93   472.4   28.64   566.5   33.59   579.6   33.46   585.9
GR 36.46   598.7
X1126.74      29   40.20  360.60  322.00  322.00  322.00
GR 31.36      .0   31.16     2.5   34.35    12.4   34.75    40.2   33.28    42.5
GR 28.78    50.0   27.94    82.3   27.97    85.8   23.66    92.7   22.79   113.2
GR 22.48   122.5   22.18   162.5   21.98   202.5   22.39   242.5   22.48   282.5
GR 22.60   289.8   23.73   322.5   23.84   325.9   25.78   329.6   25.34   346.5
GR 30.92   357.0   31.03   360.6   32.03   360.6   32.19   362.5   32.06   402.5
GR 31.70   442.5   31.47   462.3   32.49   467.7   32.62   482.5
X1126.76      29   40.20  360.60   16.00   16.00   16.00
GR 31.36      .0   31.16     2.5   34.35    12.4   34.75    40.2   33.28    42.5
GR 28.78    50.0   27.94    82.3   27.97    85.8   23.66    92.7   22.79   113.2
GR 22.48   122.5   22.18   162.5   21.98   202.5   22.39   242.5   22.48   282.5
GR 22.60   289.8   23.73   322.5   23.84   325.9   25.78   329.6   25.34   346.5
GR 30.92   357.0   31.03   360.6   32.03   360.6   32.19   362.5   32.06   402.5
GR 31.70   442.5   31.47   462.3   32.49   467.7   32.62   482.5
X1126.78      28    7.80  327.80   17.00   17.00   17.00
GR 37.01      .0   36.82     7.8   33.85     7.8   33.85     9.0   32.35     9.0
GR 31.16    12.4   31.07    14.2   28.99    18.7   27.87    47.8   23.24    62.4
GR 22.60    87.8   22.28   127.8   22.18   167.8   22.28   207.8   22.58   247.8
GR 22.84   275.1   24.11   287.8   24.28   291.3   26.07   294.9   26.86   312.6
GR 30.84   320.8   30.85   322.3   33.13   327.0   33.83   327.0   33.83   327.8
GR 36.85   327.8   36.95   332.8   36.95   433.0
X1126.82      28    7.80  327.80   50.00   50.00   50.00
GR 37.01      .0   36.82     7.8   33.85     7.8   33.85     9.0   32.35     9.0
GR 31.16    12.4   31.07    14.2   28.99    18.7   27.87    47.8   23.24    62.4
GR 22.60    87.8   22.28   127.8   22.18   167.8   22.28   207.8   22.58   247.8
GR 22.84   275.1   24.11   287.8   24.28   291.3   26.07   294.9   26.86   312.6
GR 30.84   320.8   30.85   322.3   33.13   327.0   33.83   327.0   33.83   327.8
GR 36.85   327.8   36.95   332.8   36.95   433.0
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X1126.96	25	100.00	427.70	135.00	135.00	135.00			
GR 33.37	.0	33.27	100.0	30.27	108.1	30.31	114.6	28.71	117.3
GR 26.91	151.7	23.72	156.8	23.30	162.5	22.90	177.0	22.77	197.1
GR 22.58	252.5	22.98	304.9	23.01	357.1	23.45	375.0	24.66	393.7
GR 27.86	401.2	27.85	421.6	32.84	427.7	32.76	464.7	34.13	466.6
GR 34.16	477.4	35.97	483.9	35.80	489.5	36.93	489.8	57.32	522.9
X1127.46	38	125.10	453.10	500.00	500.00	500.00			
GR 33.08	.0	33.08	99.8	32.30	125.1	29.85	128.0	28.10	153.8
GR 27.68	165.5	27.04	169.1	25.41	171.7	25.59	174.7	24.30	176.4
GR 23.98	178.4	23.20	179.7	23.01	195.9	22.46	245.8	22.61	296.8
GR 21.91	349.7	22.31	389.8	23.20	405.4	25.19	410.6	30.53	423.2
GR 30.86	428.5	27.93	433.6	27.70	435.2	29.04	435.2	30.00	437.5
GR 30.05	449.4	31.99	453.1	32.18	493.8	34.73	496.6	34.74	500.0
GR 34.94	500.8	34.92	512.4	37.47	517.6	38.77	541.4	41.96	551.0
GR 41.90	554.8	52.38	578.5	54.40	588.5				
X1127.71	22	100.00	393.60	255.00	255.00	255.00			
GR 40.03	.0	38.64	100.0	40.84	100.0	38.64	101.4	30.36	101.9
GR 28.00	120.5	27.22	140.6	25.91	173.2	25.93	181.4	25.25	203.4
GR 23.21	214.3	22.72	229.4	21.52	275.7	21.22	302.4	21.31	327.2
GR 21.02	365.0	23.21	374.5	34.68	392.1	38.64	392.2	38.64	393.6
GR 40.84	393.6	40.03	494.6						
X1127.72	22	100.00	393.60	10.00	10.00	10.00			
GR 40.03	.0	38.64	100.0	40.84	100.0	38.64	101.4	30.36	101.9
GR 28.00	120.5	27.22	140.6	25.91	173.2	25.93	181.4	25.25	203.4
GR 23.21	214.3	22.72	229.4	21.52	275.7	21.22	302.4	21.31	327.2
GR 21.02	365.0	23.21	374.5	34.68	392.1	38.64	392.2	38.64	393.6
GR 40.84	393.6	40.03	494.6						
X1127.74	22	100.00	393.60	10.00	10.00	10.00			
GR 40.03	.0	37.84	100.0	40.03	100.0	37.84	101.4	30.36	101.9
GR 28.00	120.5	27.22	140.6	25.91	173.2	25.93	181.4	25.25	203.4
GR 23.21	214.3	22.72	229.4	21.52	275.7	21.22	302.4	21.31	327.2
GR 21.02	365.0	23.21	374.5	34.68	392.1	37.84	392.2	37.84	393.6
GR 40.03	393.6	40.03	494.6						
X1127.75	22	100.00	393.60	10.00	10.00	10.00			
GR 40.03	.0	37.84	100.0	40.03	100.0	37.84	101.4	30.36	101.9
GR 28.00	120.5	27.22	140.6	25.91	173.2	25.93	181.4	25.25	203.4
GR 23.21	214.3	22.72	229.4	21.52	275.7	21.22	302.4	21.31	327.2
GR 21.02	365.0	23.21	374.5	34.68	392.1	37.84	392.2	37.84	393.6
GR 40.03	393.6	40.03	494.6						
X1127.88	23	104.50	404.80	134.00	134.00	134.00			
GR 40.10	.0	40.60	100.2	40.37	104.5	36.95	104.6	36.95	106.6
GR 33.65	106.7	31.77	154.8	28.20	186.1	27.68	204.7	25.59	214.0
GR 23.36	254.7	23.16	264.0	22.67	279.9	21.71	304.7	21.46	329.9
GR 19.96	355.7	23.11	381.7	33.67	402.6	39.71	402.7	39.71	404.7
GR 42.91	404.8	43.22	409.0	41.89	509.1				
X1127.90	23	104.50	404.80	22.00	22.00	22.00			
GR 40.10	.0	40.60	100.2	40.37	104.5	36.95	104.6	36.95	106.6
GR 33.65	106.7	31.77	154.8	28.20	186.1	27.68	204.7	25.59	214.0
GR 23.36	254.7	23.16	264.0	22.67	279.9	21.71	304.7	21.46	329.9
GR 19.96	355.7	23.11	381.7	33.67	402.6	39.71	402.7	39.71	404.7
GR 42.91	404.8	43.22	409.0	41.89	509.1				
X1127.97	18	30.00	341.80	69.00	69.00	69.00			
GR 40.30	.0	40.30	30.0	34.27	30.0	34.27	45.0	33.17	46.0
GR 33.16	76.0	30.78	111.8	28.64	116.0	28.29	125.3	26.21	130.0
GR 23.36	197.9	22.87	209.9	22.06	240.2	19.56	284.7	21.16	320.2
GR 23.36	324.4	45.60	341.8	46.06	349.1				
X1128.37	18	200.50	500.70	400.00	400.00	400.00			
GR 33.31	.0	33.31	200.5	31.90	201.3	28.47	209.9	27.00	229.2
GR 24.84	243.4	25.15	250.1	23.86	280.5	23.25	319.9	22.66	330.0
GR 22.55	359.7	19.46	405.0	19.99	428.8	21.96	449.9	23.25	464.8
GR 30.83	470.2	37.83	480.5	52.85	500.7				
X1128.78	31	66.20	420.00	410.00	410.00	410.00			
GR 35.53	.0	35.53	40.0	34.59	66.2	30.43	74.3	28.25	106.9
GR 27.23	110.8	23.22	117.0	23.34	136.2	24.03	140.8	24.44	186.9
GR 23.18	190.9	22.68	201.1	22.71	226.8	22.90	266.7	21.91	311.7
GR 21.79	341.8	23.18	346.3	26.75	351.2	26.63	385.1	31.21	398.7
GR 33.58	420.0	34.41	444.3	34.14	462.3	33.90	464.1	33.16	471.1
GR 32.56	472.0	32.65	484.2	33.17	484.8	32.82	492.3	32.27	493.1
GR 32.27	563.2								
X1129.23	30	.00	330.10	450.00	450.00	450.00			
GR 58.79	.0	45.68	10.1	44.62	10.5	44.51	22.4	43.97	25.4
GR 39.34	26.0	38.45	35.5	36.93	37.9	36.08	43.5	23.02	67.3
GR 19.26	72.0	18.26	107.0	19.91	132.3	21.41	187.2	23.29	200.5
GR 26.05	237.0	26.58	237.7	33.91	330.1	33.43	383.8	33.94	384.7
GR 33.25	388.8	33.25	389.8	34.32	391.2	34.09	423.8	32.79	425.8
GR 32.84	461.9	31.41	466.5	31.22	510.2	30.82	513.1	29.87	514.9

X1129.83	30	45.60	313.60	600.00	600.00	600.00			
GR 51.17	.0	44.17	7.3	44.68	19.3	45.66	45.6	23.27	72.5
GR 22.01	77.4	22.11	107.0	21.68	142.4	22.79	187.5	22.97	218.0
GR 23.36	228.3	26.59	251.9	27.98	273.0	27.98	305.4	34.39	313.6
GR 34.17	383.8	35.14	384.9	35.02	407.3	35.66	408.3	35.56	428.4
GR 36.45	429.5	36.35	451.5	37.53	452.3	37.35	471.7	38.51	473.6
GR 38.81	513.6	39.70	515.7	39.84	577.0	40.30	577.6	40.30	638.0
X1130.33	35	77.50	312.60	500.00	500.00	500.00			
GR 34.86	.0	34.28	14.6	33.63	18.4	33.18	36.4	30.72	45.7
GR 32.37	61.7	35.12	66.6	35.54	77.5	28.52	88.2	27.63	94.0
GR 24.70	95.1	23.49	115.3	23.36	119.8	22.36	145.0	22.00	185.2
GR 22.29	225.3	22.98	255.5	23.50	260.2	25.40	287.7	26.69	291.9
GR 27.29	298.0	32.89	306.6	33.08	311.8	34.44	312.6	34.49	365.4
GR 36.07	367.0	35.89	397.2	36.27	398.0	36.30	426.4	37.47	427.7
GR 37.34	456.1	39.27	458.1	39.18	485.7	41.03	488.7	41.03	558.7
X1130.47	15	30.30	229.50	140.00	140.00	140.00			
GR 36.72	.0	36.74	28.0	36.76	30.3	35.71	30.3	35.71	31.3
GR 24.05	31.4	24.05	183.5	30.06	183.6	30.06	228.4	35.69	228.5
GR 35.69	229.5	36.77	229.5	36.98	231.4	38.25	306.4	38.30	336.4

건설교통부

▶ 금강(대청댐상류) - 횡단자료

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X1222.04      38    26.00   282.00     .00     .00     .00
GR 95.94      .0    95.94    26.0   93.39    30.0   93.39    31.0   85.37    41.6
GR 79.90    49.5    79.90    57.0   78.77    57.0   77.77    57.0   76.07    62.0
GR 75.57    69.0    75.37    85.0   75.47    95.0   75.27   107.0   74.47   123.0
GR 74.37   135.0    74.47   146.0   74.27   163.0   72.97   173.0   74.82   183.0
GR 76.57   184.0    78.07   186.0   78.77   194.0   78.96   197.0   78.77   202.0
GR 78.37   203.0    78.27   211.0   78.37   218.4   78.77   219.8   80.50   219.8
GR 81.75   222.3    81.75   229.3   83.74   247.3   83.75   254.2   81.50   263.8
GR 82.00   275.8    94.74   282.0   97.34   300.0
X1222.21      24    74.40   262.50  170.00  170.00  170.00
GR 89.54      .0    89.54    74.4   86.54    74.4   82.24    80.0   82.24    82.3
GR 81.64    82.3    82.04    90.0   82.04    91.8   82.64    91.8   82.64    93.2
GR 76.99    94.7    76.99   213.3   81.93   213.3   81.76   214.4   82.52   214.4
GR 82.52   215.9    80.34   215.9   80.74   240.0   81.75   253.9   83.54   254.2
GR 83.74   258.0    90.57   262.5   90.57   264.5  103.70   274.5
X1222.22      24    74.40   262.50  10.00   10.00   10.00
GR 89.54      .0    89.54    74.4   86.54    74.4   82.24    80.0   82.24    82.3
GR 81.64    82.3    82.04    90.0   82.04    91.8   82.64    91.8   82.64    93.2
GR 78.49    94.7    78.49   213.3   81.93   213.3   81.76   214.4   82.52   214.4
GR 82.52   215.9    80.34   215.9   80.74   240.0   81.75   253.9   83.54   254.2
GR 83.74   258.0    90.57   262.5   90.57   264.5  103.70   274.5
X1222.53      31    20.00   288.20  310.00  310.00  310.00
GR 94.77      .0    94.77    20.0   89.27    30.2   89.27    52.2   89.27    53.7
GR 85.35    59.8    82.82    76.5   82.82    81.5   81.90    81.5   80.70    81.5
GR 80.50    85.2    80.10   102.2   79.80   115.2   79.40   123.2   79.00   145.2
GR 78.70   160.2    78.00   164.2   77.90   171.2   77.80   173.2   77.60   177.2
GR 76.60   188.2    76.20   201.2   76.00   211.2   75.60   228.2   75.20   237.2
GR 77.70   246.2    79.20   251.2   81.90   257.0   83.57   257.5   85.19   258.3
GR100.35   288.2
X1222.91      30    24.80   305.00  385.00  385.00  385.00
GR 96.07      .0    96.07    24.8   95.37    24.8   95.37    25.0   90.87    31.0
GR 87.87    86.0    86.07    89.0   82.87    89.0   82.47   103.0   81.94   106.5
GR 80.54   110.0    80.14   125.0   79.84   140.0   78.54   152.0   78.64   160.0
GR 78.24   166.0    77.84   173.0   77.64   175.0   77.64   181.0   77.64   190.0
GR 76.44   200.0    76.24   211.0   76.04   220.0   75.64   225.0   75.24   244.0
GR 77.74   255.0    79.24   260.0   81.94   265.8   84.26   269.4  104.87   305.0
X1223.57      25    16.50   225.00  655.00  655.00  655.00
GR 96.65      .0    96.65    16.5   94.21    16.5   94.21    17.0   88.65    27.5
GR 88.65    35.0    88.65    36.0   86.35    36.0   85.47    44.5   81.95    53.0
GR 78.65    56.0    77.65    74.0   77.25    89.0   77.65   100.0   77.35   117.0
GR 77.55   123.0    77.75   129.0   77.15   144.0   77.45   156.0   77.75   170.0
GR 78.25   186.0    79.25   198.0   81.95   202.5   84.98   205.0   96.65   225.0
X1223.57      23    64.13   348.51    3.00    3.00    3.00
GR 91.36      .0    91.26    64.1   88.51    64.1   87.46    86.0   87.46    91.8
GR 87.46    92.9    84.84    93.2   84.84    96.1   87.46   104.3   87.36   120.5
GR 85.87   132.4    81.96   143.7   80.96   149.1   78.76   177.8   78.46   206.5
GR 78.76   235.2    80.96   263.8   81.96   268.8   91.91   285.8   91.91   291.4
GR 93.31   291.4    93.31   292.9   96.01   348.5
X1223.59      23    64.13   348.51  14.00   14.00   14.00
GR 91.36      .0    91.26    64.1   88.51    64.1   87.46    86.0   87.46    91.8
GR 87.46    92.9    84.84    93.2   84.84    96.1   87.46   104.3   87.36   120.5
GR 85.87   132.4    81.96   143.7   80.96   149.1   78.76   177.8   78.46   206.5
GR 78.76   235.2    80.96   263.8   81.96   268.8   91.91   285.8   91.91   291.4
GR 93.31   291.4    93.31   292.9   96.01   348.5
X1223.61      23    85.56   409.65  21.00   21.00   21.00
GR 93.61      .0    93.11    85.6   87.11    86.6   87.11    87.0   87.41    87.0
GR 87.41    95.2    87.41    96.1   85.57    99.1   83.07    99.1   83.14   101.1
GR 82.02   113.3    78.02   146.4   78.22   191.7   78.92   237.0   82.02   274.6
GR 84.52   282.3    84.50   285.9   88.50   290.5   91.70   308.5   93.03   321.7
GR 93.83   321.7    93.83   324.1   96.51   409.7
X1223.62      23    85.56   409.65  14.00   14.00   14.00
GR 93.61      .0    93.11    85.6   87.11    86.6   87.11    87.0   87.41    87.0
GR 87.41    95.2    87.41    96.1   85.57    99.1   83.07    99.1   83.14   101.1
GR 82.02   113.3    78.02   146.4   78.22   191.7   78.92   237.0   82.02   274.6
GR 84.52   282.3    84.50   285.9   88.50   290.5   91.70   308.5   93.03   321.7
GR 93.83   321.7    93.83   324.1   96.51   409.7
X1223.63      26    88.06   360.63  10.00   10.00   10.00
GR 96.15      .0    96.65    88.1   96.43    90.6   94.21    90.6   94.21    91.0
GR 92.65    91.0    92.65    92.7   89.54    97.3   88.77   104.8   87.87   104.8
GR 87.87   107.8    82.08   122.8   78.28   148.4   77.48   189.1   77.98   229.8
GR 80.28   270.5    82.08   287.7   87.62   289.8   87.62   297.7   90.21   308.2
GR 90.53   310.7    92.84   310.7   92.84   311.6   95.15   311.6   95.15   312.8
GR 95.65   360.6
X1223.66      26    88.06   360.63  26.00   26.00   26.00
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GR 96.15	.0	96.65	88.1	96.43	90.6	94.21	90.6	94.21	91.0
GR 92.65	91.0	92.65	92.7	89.54	97.3	88.77	104.8	87.87	104.8
GR 87.87	107.8	82.08	122.8	78.28	148.4	77.48	189.1	77.98	229.8
GR 80.28	270.5	82.08	287.7	87.62	289.8	87.62	297.7	90.21	308.2
GR 90.53	310.7	92.84	310.7	92.84	311.6	95.15	311.6	95.15	312.8
GR 95.65	360.6								
X1224.13	26	.00	284.50	467.00	467.00	467.00			
GR111.56	.0	104.56	10.0	90.66	15.0	90.66	16.0	89.56	16.5
GR 89.56	24.5	82.09	35.5	79.59	39.5	77.29	55.5	77.39	70.5
GR 77.49	78.5	77.59	85.5	77.79	93.5	77.89	98.5	78.19	123.5
GR 78.69	142.5	79.39	150.5	80.69	167.5	81.19	178.5	82.09	183.5
GR 84.68	192.5	84.68	213.5	96.56	234.5	97.37	265.5	96.43	270.5
GR 96.43	284.5								
X1224.58	31	.00	244.00	455.00	455.00	455.00			
GR101.89	.0	89.99	10.0	89.99	10.5	89.70	11.0	88.89	18.0
GR 88.89	20.0	87.18	24.0	86.79	28.0	82.10	38.0	79.70	43.0
GR 79.40	49.0	79.30	67.0	79.20	72.0	79.10	84.0	79.00	91.0
GR 78.77	101.9	78.70	105.0	78.40	109.0	78.70	125.0	79.20	134.0
GR 79.80	145.0	80.50	163.0	82.10	167.5	85.05	171.2	85.48	187.0
GR 85.48	189.5	87.90	204.0	95.39	226.5	99.54	244.0	99.54	269.0
GR 99.54	284.5								
X1224.96	31	.00	258.00	375.00	375.00	375.00			
GR112.92	.0	94.12	29.0	90.92	31.5	90.92	32.0	89.92	32.5
GR 89.82	40.0	89.05	44.0	82.11	56.0	80.01	61.0	79.11	74.0
GR 78.91	79.0	78.71	91.0	78.61	97.0	78.51	104.0	78.31	109.0
GR 78.01	111.0	78.21	126.0	78.91	134.0	79.51	146.0	79.81	154.0
GR 80.31	167.0	81.01	175.0	81.21	180.0	82.11	184.0	84.68	189.0
GR 86.97	212.5	86.97	215.5	87.35	219.5	101.63	257.5	101.40	258.0
GR101.40	283.0								
X1225.41	28	.00	208.70	460.00	460.00	460.00			
GR104.89	.0	88.99	5.0	88.99	6.0	87.89	6.5	87.89	13.0
GR 87.89	14.5	85.20	21.0	85.20	24.0	82.12	27.0	80.32	32.0
GR 78.62	43.0	78.72	58.0	78.92	64.0	78.92	72.0	79.12	76.0
GR 78.72	83.0	79.02	97.0	79.22	105.0	79.42	122.0	80.02	131.0
GR 80.62	152.0	81.32	162.0	82.12	166.8	82.16	173.0	86.14	180.8
GR 96.75	200.0	99.92	208.7	99.92	233.0				
X1225.58	26	82.61	334.21	164.00	164.00	164.00			
GR 96.08	.0	96.08	82.6	93.91	82.6	93.91	83.0	88.69	83.0
GR 86.62	94.8	86.60	100.6	86.60	101.5	86.30	101.5	82.64	107.8
GR 82.15	111.1	81.15	132.9	81.15	158.1	79.65	183.3	81.25	208.4
GR 80.95	233.6	78.95	258.7	80.25	283.9	82.15	299.8	83.29	309.0
GR 96.10	331.1	96.10	333.4	97.75	333.4	97.75	334.2	99.92	334.2
GR 99.92	402.6								
X1225.60	26	82.61	334.21	21.00	21.00	21.00			
GR 96.08	.0	96.08	82.6	93.91	82.6	93.91	83.0	88.69	83.0
GR 86.62	94.8	86.60	100.6	86.60	101.5	86.30	101.5	82.64	107.8
GR 82.15	111.1	81.15	132.9	81.15	158.1	79.65	183.3	81.25	208.4
GR 80.95	233.6	78.95	258.7	80.25	283.9	82.15	299.8	83.29	309.0
GR 96.10	331.1	96.10	333.4	97.75	333.4	97.75	334.2	99.92	334.2
GR 99.92	402.6								
X1225.77	18	77.71	345.83	172.00	172.00	172.00			
GR 89.61	.0	89.61	34.2	92.61	42.7	92.50	51.3	92.50	62.2
GR 92.71	73.8	92.71	77.7	82.95	99.1	82.55	104.9	81.35	104.9
GR 81.45	288.7	82.20	288.7	82.88	296.6	85.35	302.3	85.35	309.3
GR 86.55	314.0	93.91	329.5	101.21	345.8				
X1225.77	18	77.71	345.83	3.00	3.00	3.00			
GR 89.61	.0	89.61	34.2	92.61	42.7	92.50	51.3	92.50	62.2
GR 92.71	73.8	92.71	77.7	82.95	99.1	82.55	104.9	81.35	104.9
GR 81.45	288.7	82.20	288.7	82.88	296.6	85.35	302.3	85.35	309.3
GR 86.55	314.0	93.91	329.5	101.21	345.8				
X1225.83	35	100.00	380.00	55.00	55.00	55.00			
GR 89.61	.0	89.61	44.0	87.61	49.0	87.61	53.0	92.61	55.0
GR 92.50	66.0	92.50	80.0	92.71	95.0	92.71	100.0	89.95	107.2
GR 83.01	124.7	83.01	130.8	82.17	132.0	81.47	137.0	81.27	142.0
GR 81.17	153.0	81.07	169.0	80.97	175.0	80.97	189.0	80.87	197.0
GR 80.67	208.0	80.87	219.0	80.97	221.0	81.17	246.0	81.07	262.0
GR 81.27	275.0	81.47	301.0	82.17	306.1	84.55	308.0	84.55	313.5
GR 82.71	317.5	88.07	322.0	88.51	335.0	96.91	350.0	107.91	380.0
X1226.27	27	46.51	373.71	438.00	438.00	438.00			
GR 97.91	.0	97.92	43.8	97.92	46.5	95.28	46.5	95.19	56.5
GR 92.62	61.6	92.83	66.9	89.85	71.6	87.73	76.9	84.61	83.0
GR 84.84	107.1	83.35	137.2	84.35	167.3	82.32	169.6	80.92	172.0
GR 80.82	200.7	80.72	234.2	80.82	267.7	80.92	301.1	80.82	321.2
GR 80.32	324.2	84.09	334.6	86.09	342.9	86.13	347.9	87.09	355.0
GR 95.08	364.7	99.35	373.7						
X1226.28	27	46.51	373.71	14.00	14.00	14.00			

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GR 97.91      .0   97.92    43.8   97.92    46.5   95.28    46.5   95.19    56.5
GR 92.62    61.6   92.83    66.9   89.85    71.6   87.73    76.9   84.61    83.0
GR 84.84   107.1   83.35   137.2   84.35   167.3   82.32   169.6   80.92   172.0
GR 80.82   200.7   80.72   234.2   80.82   267.7   80.92   301.1   80.82   321.2
GR 80.32   324.2   84.09   334.6   86.09   342.9   86.13   347.9   87.09   355.0
GR 95.08   364.7   99.35   373.7
X1226.38      28     .00  336.50  103.00  103.00  103.00
GR101.98      .0   86.13    19.5   85.35    27.5   85.35    29.5   82.37    35.5
GR 83.05    92.7   82.41    93.5   81.51    97.5   79.91   112.5   80.61   117.5
GR 80.91   127.5   81.01   142.5   81.01   148.5   80.81   157.5   80.71   164.5
GR 80.91   181.5   80.81   199.5   80.71   203.5   81.21   212.5   81.11   228.5
GR 81.01   242.5   81.81   257.5   82.41   261.0   83.86   263.5   84.60   288.5
GR 86.87   300.5   97.93   317.0  113.97   336.5
X1226.95      48   61.50  661.00  565.00  565.00  565.00
GR111.38      .0  100.98    47.5  100.38    51.5   99.68    51.5   99.68    52.5
GR100.38    52.5  101.38    54.5  101.38    59.5  101.38    60.0  100.98    61.5
GR 91.12    80.0   90.75    97.9   87.57   125.0   86.58   126.5   86.58   131.5
GR 85.58   146.0   85.10   158.0   83.83   163.0   83.31   185.5   83.88   233.0
GR 83.75   253.5   82.73   256.0   82.03   261.0   81.93   273.0   82.03   280.0
GR 82.73   284.5   82.66   286.0   82.78   308.0   82.58   315.5   81.43   320.0
GR 81.13   335.0   80.73   361.0   80.63   391.0   80.93   409.0   81.23   444.0
GR 81.33   456.0   81.53   480.0   81.93   502.0   81.93   517.0   81.73   533.0
GR 81.53   552.0   81.63   561.0   81.83   574.0   81.93   580.0   82.53   583.0
GR 87.36   592.0   87.36   596.0  106.42   661.0
X1227.09      44     .00  627.50  142.00  142.00  142.00
GR100.75      .0   83.15    24.0   83.15    26.0   84.49    31.0   84.55   100.0
GR 84.55   101.5   83.37   106.0   83.90   171.9   82.47   187.0   81.57   190.0
GR 82.50   209.1   82.82   213.0   83.25   254.0   83.05   282.5   82.72   283.0
GR 82.12   287.0   82.22   294.0   81.62   301.0   81.92   313.0   82.02   320.0
GR 82.12   329.0   82.22   336.0   82.32   357.0   82.32   368.0   82.72   371.5
GR 83.17   377.2   82.95   407.5   83.17   480.6   82.17   480.6   81.89   493.5
GR 82.89   493.5   82.88   516.5   81.88   516.5   81.90   525.5   82.90   525.5
GR 82.91   531.5   81.91   531.5   82.05   541.9   83.07   541.9   85.47   562.5
GR 89.56   579.4   91.33   583.5   98.63   611.2  103.41   627.5
X1227.10      44     .00  627.50    8.00    8.00    8.00
GR100.75      .0   83.15    24.0   83.15    26.0   84.49    31.0   84.55   100.0
GR 84.55   101.5   83.37   106.0   83.90   171.9   82.47   187.0   81.57   190.0
GR 82.50   209.1   82.82   213.0   83.25   254.0   83.05   282.5   82.72   283.0
GR 82.12   287.0   82.22   294.0   81.62   301.0   81.92   313.0   82.02   320.0
GR 82.12   329.0   82.22   336.0   82.32   357.0   82.32   368.0   82.72   371.5
GR 83.17   377.2   82.95   407.5   83.17   480.6   82.17   480.6   81.89   493.5
GR 82.89   493.5   82.88   516.5   81.88   516.5   81.90   525.5   82.90   525.5
GR 82.91   531.5   81.91   531.5   82.05   541.9   83.07   541.9   85.47   562.5
GR 89.56   579.4   91.33   583.5   98.63   611.2  103.41   627.5
X1227.43      23     .00  290.00  325.00  325.00  325.00
GR 91.26      .0   91.06    51.5   86.29    58.5   86.29    64.0   82.73    74.0
GR 82.03    79.0   81.83   101.0   81.33   113.0   81.03   127.0   80.03   143.0
GR 80.13   157.0   80.23   170.0   80.13   174.0   80.13   178.0   80.03   185.0
GR 81.63   212.0   82.33   228.0   82.73   233.5   84.03   237.5   88.07   248.0
GR 88.34   249.5   90.32   269.5   90.52   290.0
X1227.61      24     .00  262.00  185.00  185.00  185.00
GR 93.00      .0   89.10    51.0   88.90    61.0   88.50    75.0   86.32    80.0
GR 86.32    81.0   83.44    91.0   82.85   103.5   81.85   106.0   81.55   129.0
GR 81.05   141.0   80.75   156.0   79.95   171.0   79.65   182.0   78.75   190.0
GR 79.35   195.0   80.15   199.0   79.95   211.0   81.05   222.0   82.85   227.5
GR 84.19   229.0   87.37   236.0   93.70   242.0  103.70   262.0
X1227.74      30   35.20  295.00  135.00  135.00  135.00
GR 94.20      .0   94.20    30.2   94.10    35.2   89.66    56.0   89.83    77.0
GR 87.05    83.0   87.05    88.0   84.13    94.0   82.93   100.5   82.23   103.5
GR 82.33   105.0   82.53   108.0   82.53   111.0   82.93   116.0   83.87   127.3
GR 82.93   138.3   81.83   147.0   81.53   168.0   80.83   190.0   80.33   197.0
GR 80.23   204.0   80.83   213.0   81.13   219.0   81.23   232.0   81.53   239.0
GR 82.03   252.0   82.23   257.0   82.93   265.1   86.53   270.0   95.63   295.0
X1228.34      28     .00  264.00  595.00  595.00  595.00
GR111.31      .0   98.61    11.9   89.31    23.5   87.39    28.2   86.65    33.0
GR 85.42    38.5   85.61    54.0   84.91    56.5   84.91    59.0   85.16    60.5
GR 85.16    61.5   83.00    66.5   81.70    69.0   81.40    83.0   80.90   100.0
GR 80.60   125.0   80.60   150.0   81.00   159.0   81.10   170.0   81.20   178.0
GR 81.30   189.0   81.30   194.0   81.70   199.0   83.00   214.0   85.18   218.0
GR 89.32   226.5   92.91   236.0  107.91   264.0
X1229.10      28     .00  264.00  760.00  760.00  760.00
GR100.20      .0   94.30    10.0   94.30    15.5   88.20    25.5   84.58    31.5
GR 83.56    38.5   82.48    43.5   81.78    65.5   81.88    92.5   81.68   118.5
GR 81.18   135.5   81.08   145.5   81.48   156.5   81.68   160.5   82.18   166.5
GR 82.38   198.5   83.18   209.5   83.58   215.0   86.79   219.0   86.79   219.5
GR 86.79   221.0   85.91   222.5   85.91   226.5   87.94   232.5   88.99   240.0
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GR 92.49   244.0  100.74   254.0  107.29   264.0
X1229.55      23     .00  280.50  450.00  450.00  450.00
GR101.82      .0   94.27    15.0   89.77    25.0   87.02    30.5   84.17    40.5
GR 83.67    51.0   83.27    56.0   83.87    67.0   82.17    85.0   82.07   109.0
GR 81.97   112.0   82.07   117.0   82.37   135.0   82.47   154.0   83.27   162.0
GR 83.67   166.5   86.97   192.0   90.37   215.0   95.54   222.5   95.72   230.0
GR 95.87   250.0   98.17   255.5  111.27   280.5
X1229.93      28     .00  215.00  375.00  375.00  375.00
GR 99.86      .0   92.31    15.0   87.81    28.0   84.81    35.0   83.71    38.5
GR 83.01    43.0   81.81    55.0   82.01    73.0   82.11    84.0   82.11    86.0
GR 82.11    94.0   82.11   101.0   82.21   109.0   82.31   122.0   83.01   134.0
GR 83.71   139.0   86.36   156.0   87.91   168.0   88.86   178.0   88.96   185.0
GR 93.81   202.5   95.76   207.5   95.76   208.0   96.08   213.0   96.08   213.5
GR 96.48   213.5   96.48   215.0   96.83   265.0
X1230.49      31     .00  398.00  560.00  560.00  560.00
GR123.92      .0  105.52    24.5   95.02    38.5   92.52    42.0   90.57    50.0
GR 89.97    83.0   87.42   118.0   83.99   125.0   84.79   174.0   83.79   177.5
GR 83.69   179.5   83.64   188.5   83.69   196.0   83.79   201.0   84.14   210.0
GR 84.09   235.5   83.79   245.5   82.99   250.5   82.59   266.5   82.89   277.5
GR 82.29   288.5   82.29   302.5   82.29   308.5   83.39   323.5   83.79   325.0
GR 85.42   345.0   90.12   368.5   92.97   379.5   97.27   387.5   98.62   398.0
GR 98.62   418.0
X1230.90      25     .00  369.00  410.00  410.00  410.00
GR 99.65      .0   98.23    38.0   98.25    56.5   98.25    59.0   96.35    64.0
GR 95.20    95.5   94.66    96.5   93.81   110.5   92.35   116.5   91.52   120.5
GR 88.66   127.5   86.35   169.5   84.67   241.5   84.27   244.0   83.87   257.0
GR 83.77   264.0   83.87   273.0   83.77   290.0   83.47   295.0   83.27   302.0
GR 83.37   313.0   83.97   330.0   94.67   335.5   99.95   349.0  109.95   369.0
X1231.37      18     .00  260.00  470.00  470.00  470.00
GR 98.43      .0   96.36    28.5   90.69    36.0   89.07    46.0   87.53    53.0
GR 87.53    60.0   87.11    67.5   86.16    69.2   84.66    70.5   84.66    76.0
GR 84.66    78.0   84.66    84.0   86.16    85.0   86.83    86.0   85.42    86.0
GR 85.42   241.4   86.83   241.4   97.83   260.0
X1231.60      26   18.50  267.50  240.00  240.00  240.00
GR104.19      .0  104.16    18.5   93.40    35.0   90.57    44.0   90.19    47.0
GR 90.19    50.0   90.19    58.0   87.32    60.5   87.70    75.5   86.61    78.0
GR 85.91    81.0   85.31   104.0   85.01   114.0   84.91   124.0   84.41   139.0
GR 84.21   145.0   84.51   152.0   84.71   157.0   84.81   176.0   84.81   201.0
GR 84.91   213.0   84.91   231.0   85.31   245.0   86.61   251.0   91.45   257.5
GR103.19   267.5
X1231.93      29     .00  297.00  320.00  320.00  320.00
GR 98.05      .0   93.05    19.5   91.09    24.0   90.05    30.0   90.05    30.7
GR 89.48    31.5   89.48    35.5   88.93    48.5   88.02    50.0   88.44    64.0
GR 86.68    72.5   85.38    76.0   84.48    92.0   84.18   108.0   84.28   124.0
GR 84.38   136.0   84.08   142.0   83.98   147.0   84.08   150.0   84.28   160.0
GR 84.38   169.0   84.48   173.0   84.68   186.0   84.88   210.0   85.88   231.0
GR 86.68   236.5   90.85   244.0   90.85   247.0  110.85   297.0
X1232.36      24     .00  291.00  435.00  435.00  435.00
GR 96.47      .0   94.47    20.2   92.87    35.5   91.07    37.5   91.07    40.0
GR 90.57    40.4   89.84    54.5   87.63    58.5   87.63    61.8   86.69    65.0
GR 85.39    70.0   84.99    74.0   84.39    93.0   83.79   113.0   83.79   136.0
GR 83.69   153.0   84.19   161.0   84.29   183.0   85.49   215.0   86.69   220.5
GR 86.87   224.5   91.17   235.5   91.17   241.5  111.17   291.0
X1232.90      27     .00  256.50  545.00  545.00  545.00
GR105.10      .0   99.40     9.0   99.20    13.0   94.53    19.5   94.53    38.5
GR 94.90    39.0   94.90    40.0   92.92    42.5   92.92    45.0   90.79    48.0
GR 91.27    52.0   86.70    61.0   85.60    64.0   84.80    80.0   84.70   101.0
GR 84.80   114.0   84.40   136.0   84.80   144.0   84.70   155.0   84.70   161.0
GR 84.80   171.0   85.60   187.0   86.70   190.0   90.85   199.0   92.90   203.5
GR 92.90   206.5  113.40   256.5
X1233.46      38     .00  398.00  560.00  560.00  560.00
GR106.78      .0   99.71    20.0   94.05    27.0   93.25    35.0   91.78    44.0
GR 91.63    62.5   92.01    63.5   92.01    66.4   88.12    73.0   88.12    75.9
GR 86.90    77.5   86.74    86.5   86.34    88.0   85.64    97.0   85.14   103.0
GR 85.04   122.0   84.94   135.0   84.94   139.0   84.84   144.0   84.64   163.0
GR 83.84   175.0   83.64   185.0   84.04   195.0   84.64   203.0   85.64   218.0
GR 86.74   222.5   89.65   240.0   92.91   247.3   92.91   250.8   93.47   261.0
GR 91.88   264.0   91.88   268.0   94.18   272.0   94.88   278.0   94.48   280.0
GR 96.08   285.5  103.28   347.6  107.68   398.0
X1234.13      36     .00  474.90  665.00  665.00  665.00
GR114.91      .0  107.81    10.0   97.51    22.0   93.41    26.5   90.91    26.5
GR 86.82    31.5   85.32    37.0   85.52    50.0   85.92    59.0   85.82    67.0
GR 86.02    79.0   86.12    97.0   86.02   102.0   86.12   119.0   86.22   135.0
GR 86.02   150.0   85.92   167.0   85.92   188.0   86.02   191.0   86.02   204.0
GR 86.12   216.0   86.22   229.0   86.32   253.0   86.82   255.5   87.08   258.5
GR 89.91   328.5   89.91   331.5   89.46   333.5   89.75   359.5   92.51   378.5
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GR 93.61   380.0   93.62   413.0   94.11   448.0   98.74   474.9   98.74   477.0
GR103.11   490.0
X1234.59      45     .00  584.00  455.00  455.00  455.00
GR 96.18       .0  96.18    80.0   95.46    81.0   95.46    82.0   96.44    83.0
GR 97.07    86.0   96.20   105.0   95.54   126.0   91.97   127.5   91.97   140.5
GR 91.82   143.0   91.82   176.5   89.56   179.0   89.56   215.0   91.62   217.5
GR 91.62   220.0   89.06   223.5   89.06   225.5   87.36   230.5   86.96   235.5
GR 86.16   240.0   85.76   260.0   85.66   281.0   85.76   299.0   85.76   314.0
GR 86.06   326.0   86.06   335.0   86.16   395.0   86.16   397.0   86.96   398.8
GR 89.99   420.3   89.99   424.3   93.26   433.0   93.26   435.0   93.26   436.5
GR 92.16   438.0   91.75   481.0   89.76   483.2   89.76   489.7   93.44   496.9
GR 95.56   507.7   95.26   507.7   95.53   553.7   96.93   554.0   97.43   584.0
X1235.06      46     .00  497.50  475.00  475.00  475.00
GR 97.90       .0  97.90    50.1   98.79    52.0   98.80    55.0   97.78    83.5
GR 96.24    99.0   95.68   108.0   94.75   109.5   94.75   122.5   93.12   123.5
GR 93.12   135.5   91.83   137.5   91.83   150.2   91.50   151.2   91.50   177.2
GR 91.45   177.5   91.45   185.5   93.24   188.0   93.24   189.0   91.26   193.5
GR 91.26   196.5   90.99   205.0   89.38   212.0   87.93   255.5   89.22   262.5
GR 89.17   286.5   87.95   298.5   87.55   303.0   87.25   308.0   86.85   328.0
GR 86.75   336.0   86.65   340.0   86.35   347.0   86.55   354.0   86.55   372.0
GR 86.85   388.0   87.15   398.0   87.95   403.5   90.01   409.0   89.89   418.0
GR 97.06   433.0   97.12   447.0   96.16   447.5   96.16   448.5   96.64   450.0
GR 96.64   497.5
X1235.41      25     .00  528.50  350.00  350.00  350.00
GR 97.34       .0  95.84   100.0   92.24   114.3   92.24   124.3   92.24   128.5
GR 92.24   168.5   94.04   173.5   94.04   176.0   91.95   181.7   89.23   204.5
GR 88.40   232.0   87.70   237.5   87.00   244.5   86.90   284.5   86.55   324.5
GR 87.50   364.5   88.40   397.0   88.44   404.5   90.23   412.8   90.43   415.8
GR 95.01   421.2   95.44   423.5   95.85   443.9   97.00   481.4   97.52   528.5
X1235.43      25     .00  528.50   25.00   25.00   25.00
GR 97.34       .0  95.84   100.0   92.24   114.3   92.24   124.3   92.24   128.5
GR 92.24   168.5   94.04   173.5   94.04   176.0   91.95   181.7   89.23   204.5
GR 88.40   232.0   87.70   237.5   87.00   244.5   86.90   284.5   86.55   324.5
GR 87.50   364.5   88.40   397.0   88.44   404.5   90.23   412.8   90.43   415.8
GR 95.01   421.2   95.44   423.5   95.85   443.9   97.00   481.4   97.52   528.5
X1235.46      25     .00  528.50   25.00   25.00   25.00
GR 97.34       .0  95.84   100.0   92.24   114.3   92.24   124.3   92.24   128.5
GR 92.24   168.5   94.04   173.5   94.04   176.0   91.95   181.7   89.23   204.5
GR 88.40   232.0   87.70   237.5   87.00   244.5   86.90   284.5   86.55   324.5
GR 87.50   364.5   88.40   397.0   88.44   404.5   90.23   412.8   90.43   415.8
GR 95.01   421.2   95.44   423.5   95.85   443.9   97.00   481.4   97.52   528.5
X1235.53      23     .00  424.50   70.00   70.00   70.00
GR105.33       .0 102.29    50.0  102.29    51.0   92.37    51.0   91.66    80.0
GR 91.66   112.0   90.02   116.5   89.75   137.5   88.65   145.0   87.75   177.0
GR 87.55   209.0   87.55   241.0   87.75   273.0   88.65   305.0   94.65   316.5
GR 95.00   324.5   95.00   325.0   95.00   331.5   96.01   343.0  103.06   344.0
GR103.06   345.0  105.38   345.0  105.38   424.5
X1235.57      28     .00  518.00   40.00   40.00   40.00
GR 99.84       .0  99.84    10.1   94.97    21.7   94.79    66.9   93.15   134.6
GR 92.02   147.3   91.56   188.6   90.03   197.4   90.48   213.2   88.79   236.5
GR 88.19   243.0   88.39   272.0   88.39   286.0   88.09   308.0   87.89   340.0
GR 87.99   359.0   87.79   366.0   87.89   368.0   88.09   373.0   88.39   379.0
GR 88.79   387.0   89.39   392.5   94.04   403.0   94.04   408.0   97.10   448.2
GR 95.10   468.0   96.04   498.0   97.54   518.0
X1235.60      22     .00  472.00   25.00   25.00   25.00
GR105.33       .0 105.33   100.0  103.05   100.0  103.05   101.0   91.58   104.0
GR 90.95   133.0   90.36   166.0   88.83   182.5   88.13   189.0   87.93   222.0
GR 87.73   255.0   87.83   288.0   88.03   321.0   88.33   354.0   88.83   357.0
GR 93.27   368.0   93.27   372.0   93.55   374.0  103.05   393.5  103.05   394.0
GR105.33   394.0  105.33   472.0
X1235.70      35     .00  452.50  109.00  109.00  109.00
GR108.16       .0 105.66    10.4  103.16    20.4  103.10    42.5  102.83    47.5
GR100.25    47.5  100.25    48.5   99.02    48.5   96.39    54.5   95.49    62.5
GR 90.90    78.0   90.78    84.5   88.88    91.4   87.48   108.0   87.18   138.0
GR 87.68   168.0   87.38   198.0   87.18   228.0   87.38   258.0   88.28   288.0
GR 88.88   293.0   89.58   296.5   91.38   302.9   92.38   318.0   92.38   332.5
GR 93.08   334.0   93.08   335.5   97.28   344.5   98.48   347.0   99.02   347.0
GR 99.02   348.0  101.58   348.0  101.58   352.0  101.18   387.5   99.68   452.5
X1235.71      35     .00  452.50   11.00   11.00   11.00
GR108.16       .0 105.66    10.4  103.16    20.4  103.10    42.5  102.83    47.5
GR100.25    47.5  100.25    48.5   99.02    48.5   96.39    54.5   95.49    62.5
GR 90.90    78.0   90.78    84.5   88.88    91.4   87.48   108.0   87.18   138.0
GR 87.68   168.0   87.38   198.0   87.18   228.0   87.38   258.0   88.28   288.0
GR 88.88   293.0   89.58   296.5   91.38   302.9   92.38   318.0   92.38   332.5
GR 93.08   334.0   93.08   335.5   97.28   344.5   98.48   347.0   99.02   347.0
GR 99.02   348.0  101.58   348.0  101.58   352.0  101.18   387.5   99.68   452.5
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X1236.05      48      .00   483.00   340.00   340.00   340.00
GR108.84       .0   109.84    18.0   109.94    18.0    109.89     21.5   110.95     23.5
GR110.96     25.5   110.95    27.0   101.75    31.0    101.75     42.0   101.05     44.0
GR 97.05     44.5    88.91    60.5    87.51    65.0     86.86     85.0    86.83     95.0
GR 87.21    130.0    87.41   150.0    88.61   170.0     88.31    198.0    87.71    220.0
GR 88.91    228.0    89.31   231.0    90.86   242.0     92.11    264.0    92.11    269.0
GR 92.75    278.3    95.85   308.0    96.90   311.0     96.90    324.0    97.06    325.1
GR 97.05    344.0    97.05   381.0    97.55   381.3     97.55    381.7    97.05    382.0
GR 97.05    382.5    97.86   383.0    97.86   385.0     97.09    386.5    97.09    419.4
GR 96.33    421.0    97.33   443.0    97.35   444.3     97.34    445.0    97.35    450.0
GR 98.35    453.0   105.35   463.0   108.35   483.0
X1236.51      48      .00   593.00   450.00   450.00   450.00
GR102.79       .0   102.76    18.0   102.86    18.0    102.86     18.5   102.04     20.0
GR102.04     22.5    97.31    29.0    97.31    62.0     96.21     62.0    93.61     97.5
GR 89.76    108.0    88.81   113.0    88.26   123.0     87.96    147.0    87.71    163.0
GR 87.86    170.0    87.96   186.0    88.26   201.0     88.16    216.0    88.36    232.0
GR 88.26    244.0    88.16   256.0    88.16   268.0     88.89    278.0    89.76    281.5
GR 90.06    310.5    95.26   327.0    95.26   344.0     94.36    346.5    94.50    350.5
GR 94.02    351.2    95.26   432.4    96.26   434.7     96.26    436.0    96.26    474.5
GR 97.07    475.1    97.10   494.2    97.52   495.2     97.52    510.0    99.91    515.0
GR 99.91    517.0    99.91   525.5    98.91   527.2     98.91    528.5   100.01    529.5
GR100.77    538.3   103.20   573.0   113.21   593.0
X1237.04      61      .00   664.00   535.00   535.00   535.00
GR126.50       .0   102.93    19.0   102.93    36.7    103.03     36.7   102.97     37.5
GR102.41     41.0    95.72    54.0    94.72    58.0     91.42     65.5    88.26     75.5
GR 87.80     81.0    87.00    95.0    86.90   110.0     87.00    125.0    87.10    139.0
GR 87.60    156.0    87.50   170.0    87.40   175.0     87.30    187.0    87.60    195.0
GR 87.70    210.0    88.40   217.0    89.10   220.5     91.20    240.5    90.62    250.0
GR 91.32    260.0    90.92   263.0    90.92   267.0     92.37    280.0    92.82    302.0
GR 93.82    335.6    94.17   339.6    94.02   339.6     94.02    379.1    94.77    380.6
GR 94.77    389.6    94.62   390.6    94.62   397.6     99.72    399.0    99.72    400.5
GR 99.72    405.5    99.97   406.5    99.97   408.0     99.67    409.0    99.67    435.0
GR 99.03    435.8    99.03   494.2    99.03   525.2     98.66    557.5    98.66    558.0
GR 98.63    587.7    98.63   606.0    98.65   607.0     98.65    637.0   100.93    640.0
GR100.93    646.0    99.95   647.0    99.15   647.0     99.15    648.2    99.95    648.2
GR114.93    664.0
X1237.46      36      .00   470.00   415.00   415.00   415.00
GR114.50       .0   103.64    10.5   103.61    28.0    103.71     28.8   103.71     29.5
GR102.26     31.0   102.26    37.0   100.29    44.0     99.32     52.1    93.19     62.2
GR 93.19     99.8    91.27   104.6    89.15   131.2     88.65    134.0    88.45    148.0
GR 88.55    152.0    88.25   160.0    88.35   164.0     88.25    169.0    88.45    184.0
GR 88.35    197.0    88.25   201.0    88.35   208.0     88.15    217.0    88.05    236.0
GR 87.95    256.0    88.65   274.0    89.15   276.0     89.66    286.5    93.52    297.4
GR 94.06    306.3    95.69   309.4    95.68   310.0     95.69    311.0    94.49    312.5
GR 94.59    470.0
X1237.87      55      .00   632.00   410.00   410.00   410.00
GR104.52       .0   103.95    18.0   104.05    18.0    104.25     18.5    94.20     41.0
GR 94.20     44.0    95.70    44.0    98.05    93.0     94.25    127.5    91.55    137.0
GR 91.55    145.0    94.15   148.0    94.15   155.0     91.85    159.5    91.85    165.5
GR 95.23    169.5    95.23   175.5    89.90   188.5     89.00    193.0    88.90    207.0
GR 88.60    213.0    88.40   226.0    88.50   237.0     88.60    256.0    89.20    263.0
GR 89.00    276.0    89.90   281.0    90.00   362.5     90.80    374.5    95.30    382.0
GR 95.49    390.8    96.72   445.8    96.87   453.5     97.06    467.5    96.43    468.5
GR 96.43    477.0    97.30   480.5    96.94   482.0     96.94    515.0    97.59    515.5
GR 97.59    539.5    97.86   540.0    97.86   561.0     99.32    562.5    99.32    570.0
GR 99.06    572.0    99.06   572.5   100.08   574.4    100.90    577.0   100.75    587.5
GR100.05    588.7   100.70   607.8   102.25   609.0    102.25    612.0   114.90    632.0
X1238.34      44      .00   443.00   470.00   470.00   470.00
GR107.40       .0   107.42    18.0   107.42    18.5    107.62     18.5   107.62     19.0
GR 96.02     36.5    96.02    66.0    94.82    68.0     94.82     98.5    92.17    105.0
GR 90.16    116.9    89.66   121.5    89.56   130.5     89.26    141.5    88.86    149.5
GR 88.66    165.5    88.76   174.5    88.76   178.5     88.56    182.5    88.66    184.5
GR 88.86    191.5    88.96   196.5    88.96   210.5     89.06    230.5    89.26    256.5
GR 89.36    267.5    90.16   269.6    90.66   272.0     90.36    288.1    91.16    325.5
GR 91.06    326.7    91.06   331.5    92.16   336.9     93.36    355.0    96.71    363.5
GR 96.71    382.5   101.16   391.5   101.16   394.8    100.16    394.8   100.16    396.0
GR103.60    407.0   104.60   411.0   108.10   413.0    113.10    443.0
X1238.78      38      .00   360.00   445.00   445.00   445.00
GR122.71       .0   110.41    16.0   109.37    35.0     95.76     38.0    96.36     60.5
GR 90.20     70.0    89.70    75.0    89.30    90.0     88.80     97.0    88.40    117.0
GR 87.80    143.0    88.10   154.0    88.10   163.0     88.30    175.0    88.40    181.0
GR 88.90    197.0    89.60   205.0    90.20   207.4     91.81    208.0    91.81    217.0
GR 91.04    220.0    90.54   221.0    90.04   229.0     91.04    229.8    91.81    243.5
GR 91.28    258.0    91.28   262.0    92.30   266.2     93.02    292.5    94.57    327.2
GR 95.18    340.2    98.42   352.5   102.61   360.0    102.61    364.5    95.05    381.5
GR 95.05    383.2    96.58   384.2    96.58   430.0
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X1239.17      32    18.90   451.50   390.00   390.00   390.00
GR106.54       .0   105.13    18.9    98.19     35.9    98.42     35.9    98.79     37.5
GR 98.19     37.5    98.42    99.5    95.60    107.0    94.50    107.5    92.84    140.6
GR 92.51    209.0    90.73   209.0    90.73    267.5    92.53    267.5    90.23    267.6
GR 89.83    270.5    89.73   341.5    89.73    350.5    89.93    352.5    90.23    353.5
GR 94.88    421.0    96.20   435.0    97.64    441.5   103.05    451.5   103.05    456.0
GR 95.70    472.0    95.70   472.5    96.74    473.0    96.74    474.1    96.20    475.2
GR 96.70    508.8    96.70   541.5
X1239.22       45      .00  510.00    50.00    50.00    50.00
GR109.51       .0   108.96    20.0    99.71     44.0    98.71     44.0    98.71     46.0
GR 99.71     46.0    97.81    78.5    92.66     90.4    92.66    100.4    97.68    111.5
GR 97.35    131.5    94.74   150.0    92.51    170.0    90.33    208.6    89.93    212.0
GR 89.83    235.0    89.83   258.0    89.73    267.0    89.63    284.0    89.43    304.0
GR 89.53    309.0    89.43   315.0    89.23    321.0    89.43    334.0    89.53    355.0
GR 89.43    370.0    89.73   392.0    89.83    415.0    90.03    438.0    90.33    441.0
GR 92.84    450.0    91.65   463.0    94.04    472.0    94.04    477.0    94.34    488.3
GR 96.11    498.3   102.01   510.0   102.01    514.5    95.07    531.0    95.07    532.0
GR 95.76    532.6    95.76   533.6    95.29    534.6    95.51    546.2    95.51    590.0
X1239.63       39      .00  370.00   415.00   415.00   415.00
GR117.50       .0   101.08    18.0    97.50     28.0    94.51     37.5    93.51     38.0
GR 93.51     42.0    92.30    54.5    94.06     57.0    92.21     62.5    90.43     65.7
GR 89.53     70.0    89.33    75.0    89.23     89.0    89.13    106.0    89.33    113.0
GR 89.53    134.0    89.63   153.0    89.53    175.0    89.63    184.0    89.53    198.0
GR 89.53    213.0    89.53   230.0    89.43    251.0    89.33    265.0    89.23    278.0
GR 89.13    295.0    89.13   308.0    90.43    310.5    92.44    312.8    93.49    330.0
GR 95.58    340.5    95.65   349.5    96.34    359.5   101.44    370.0   101.44    373.5
GR 96.23    388.2    96.23   391.2    96.86    394.0    96.86    450.0
X1240.07       45      .00  413.00   435.00   435.00   435.00
GR105.33       .0   100.83    18.5   100.83     22.0    98.53     25.5    99.68     34.5
GR 90.50     58.0    89.20    58.0    89.00     72.0    89.30     80.0    89.50     95.0
GR 89.40    100.0    88.70   105.0    88.80    111.0    88.80    126.0    88.90    141.0
GR 89.10    186.0    89.20   196.0    89.30    206.0    89.90    215.0    90.50    217.8
GR 91.90    227.7    91.56   228.5    91.20    241.4    92.50    251.2    92.50    257.2
GR 93.95    261.2    93.95   262.5    95.80    266.0    96.70    271.0    96.39    289.0
GR101.80    298.5   101.81   301.0   101.80    302.5    94.63    317.0    94.63    319.0
GR 95.70    320.0    95.70   349.5    97.56    351.5    97.56    353.0    96.80    354.0
GR 96.80    355.0    97.85   356.5    97.85    359.5    95.43    363.0    95.43    413.0
X1240.29       37      .00  457.50   225.00   225.00   225.00
GR103.38       .0   103.38    22.0   100.91     26.0   100.99    100.0    92.48    112.5
GR 92.48    114.5    90.65   121.0    89.93    123.5    88.93    140.5    87.63    151.5
GR 87.93    165.5    87.83   175.5    88.03    195.5    88.03    210.5    88.23    223.5
GR 88.13    230.5    88.43   240.5    89.13    262.5    89.63    275.5    89.93    281.5
GR 90.63    286.5    92.22   293.5    92.86    310.0    93.36    318.5    93.12    325.0
GR 97.79    336.5    97.24   350.5   102.64    360.5   102.64    364.5    95.27    378.5
GR 95.27    380.0    96.00   381.5    96.00    415.8    96.48    416.9    96.48    427.0
GR 96.66    427.7    96.66   457.5
X1240.82       44      .00  548.60   530.00   530.00   530.00
GR111.95       .0   111.95     1.0   101.94     10.0   102.16     30.0    96.55     42.5
GR 96.05     66.0    95.15    71.0    95.15     89.0    90.81     94.6    90.11     99.6
GR 89.36    123.6    89.31   133.6    89.51    142.6    90.61    153.6    90.61    161.6
GR 90.51    173.6    90.01   187.6    89.91    198.6    90.01    207.6    90.21    219.6
GR 90.41    228.6    90.81   230.0    91.21    233.6    91.31    248.6    91.41    273.6
GR 90.81    274.8    90.41   280.6    90.21    283.6    90.21    288.6    90.41    293.6
GR 90.81    298.1    92.73   302.1    92.81    358.1    96.27    370.0    96.38    396.6
GR102.91    412.1   102.92   413.6   102.91    415.1    95.91    429.6    95.91    431.6
GR 97.18    432.6    97.18   471.6    98.62    472.6    98.62    548.6
X1241.04       41      .00  608.77   220.00   220.00   220.00
GR111.79       .0   110.39    15.9   110.39     19.9   101.19     19.9   101.09     52.6
GR 95.45     67.7    98.48    70.6    98.47     85.3    98.74    118.0    98.18    137.7
GR 96.50    146.3    95.82   150.7    93.33    159.3    93.33    163.4    91.32    165.0
GR 90.72    183.4    90.62   216.1    90.42    248.7    90.62    281.4    90.52    314.1
GR 90.62    346.8    91.32   355.4    92.59    379.5    93.25    412.2    93.73    444.9
GR 95.34    456.9   100.81   465.0   100.59    471.1   101.59    472.3   101.59    473.9
GR101.59    476.9   101.69   484.2    98.39    490.3    98.39    491.5    97.34    492.9
GR 97.38    506.3    97.57   534.9    96.66    563.5    96.69    585.9   109.37    592.4
GR109.79    608.8
X1241.07       41      .00  608.77    20.00    20.00    20.00
GR111.79       .0   110.39    15.9   110.39     19.9   101.19     19.9   101.09     52.6
GR 95.45     67.7    98.48    70.6    98.47     85.3    98.74    118.0    98.18    137.7
GR 96.50    146.3    95.82   150.7    93.33    159.3    93.33    163.4    91.32    165.0
GR 90.72    183.4    90.62   216.1    90.42    248.7    90.62    281.4    90.52    314.1
GR 90.62    346.8    91.32   355.4    92.59    379.5    93.25    412.2    93.73    444.9
GR 95.34    456.9   100.81   465.0   100.59    471.1   101.59    472.3   101.59    473.9
GR101.59    476.9   101.69   484.2    98.39    490.3    98.39    491.5    97.34    492.9
GR 97.38    506.3    97.57   534.9    96.66    563.5    96.69    585.9   109.37    592.4
GR109.79    608.8
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X1241.22	52	.00	641.50	155.00	155.00	155.00			
GR 99.59	.0	100.26	21.0	100.26	22.5	99.19	39.5	99.19	41.5
GR 98.99	46.4	98.99	48.0	99.59	98.5	99.79	99.0	99.94	134.5
GR 98.16	137.5	98.16	157.5	94.33	165.5	93.55	169.5	93.55	179.5
GR 94.79	181.5	93.76	200.0	93.10	242.0	91.77	243.0	90.77	248.5
GR 90.17	263.5	89.97	291.5	89.67	304.5	89.07	321.5	88.67	326.5
GR 88.07	336.5	88.27	346.5	88.37	357.0	88.27	361.5	88.17	376.5
GR 87.87	386.5	88.67	396.5	91.17	406.0	91.77	407.0	92.84	413.0
GR 93.33	427.5	94.74	471.5	96.19	477.7	97.59	507.5	100.59	512.0
GR100.59	518.0	101.59	519.5	101.59	521.5	101.59	533.5	97.22	542.8
GR 97.49	576.1	97.98	578.9	97.65	603.8	97.24	605.5	97.24	606.5
GR 97.64	609.0	97.64	641.5						
X1241.76	31	.00	404.00	545.00	545.00	545.00			
GR 99.68	.0	99.68	20.0	98.68	26.5	98.68	39.0	103.98	46.5
GR103.98	49.0	98.68	61.5	96.68	68.5	96.13	78.0	96.13	81.0
GR 95.33	114.0	93.73	121.0	92.68	132.5	92.38	135.0	91.98	141.0
GR 91.88	161.0	91.18	170.0	91.08	185.0	90.98	204.0	90.98	223.0
GR 91.48	245.0	91.58	260.0	91.78	292.0	91.68	315.0	91.98	342.0
GR 92.08	347.0	92.38	350.0	96.23	361.0	98.23	366.0	108.73	381.0
GR115.83	404.0								
X1242.61	44	.00	515.50	845.00	845.00	845.00			
GR 99.24	.0	99.24	73.0	103.74	82.5	103.75	86.5	98.94	102.0
GR 96.64	119.0	95.84	137.0	96.29	143.0	95.49	152.5	95.49	156.0
GR 94.24	176.5	93.89	211.0	94.54	236.5	93.80	246.2	93.30	252.0
GR 93.00	265.0	92.60	285.0	92.00	300.0	91.90	325.0	91.90	346.0
GR 91.70	354.0	91.80	387.0	91.50	394.0	91.10	416.9	91.70	437.0
GR 92.10	450.0	92.60	458.0	92.80	463.0	93.80	466.3	96.14	473.0
GR 96.14	476.5	101.42	486.5	101.42	489.5	104.42	493.5	104.41	499.5
GR104.71	499.5	104.72	500.0	104.71	500.5	106.54	504.5	106.54	505.0
GR107.40	505.5	107.40	514.5	106.51	515.0	106.51	515.5		
X1243.35	55	.00	610.00	745.00	745.00	745.00			
GR 98.47	.0	98.47	96.0	98.52	97.0	98.52	99.0	99.52	99.5
GR 99.52	101.5	103.47	110.5	103.47	115.0	100.91	121.5	98.97	127.0
GR 95.92	143.0	95.67	165.0	94.82	253.8	92.42	257.0	91.92	269.0
GR 92.72	279.0	93.12	300.0	93.22	315.0	93.52	356.0	93.62	370.0
GR 94.12	381.0	94.52	385.0	94.22	390.0	94.12	395.0	93.52	400.0
GR 93.92	409.0	94.32	412.0	94.47	417.0	94.82	419.5	95.83	423.0
GR 95.83	425.3	94.82	427.0	94.42	430.0	94.22	432.0	94.32	437.0
GR 94.42	440.0	94.82	441.6	95.95	444.0	95.30	459.0	95.98	464.2
GR 95.98	465.2	95.20	466.0	95.20	468.1	97.05	472.0	97.05	473.6
GR 96.30	475.3	96.30	482.3	97.10	491.4	100.60	498.8	100.60	500.8
GR105.60	510.0	105.60	514.0	100.43	522.9	100.32	540.0	100.32	610.0
X1243.94	35	.00	518.80	585.00	585.00	585.00			
GR121.05	.0	112.05	19.0	107.00	29.0	102.20	36.0	101.40	44.5
GR 96.80	53.0	96.80	56.0	95.20	61.5	94.83	84.0	94.43	87.0
GR 94.43	96.0	94.03	124.0	93.93	143.0	93.53	167.0	93.73	188.0
GR 93.93	205.0	94.63	220.0	94.53	230.0	94.23	240.0	93.93	265.0
GR 94.13	271.0	94.53	277.5	94.83	279.5	96.22	290.3	97.40	419.5
GR 99.51	430.2	99.60	439.5	105.05	450.0	105.05	455.0	97.13	468.0
GR 97.13	469.5	98.05	470.0	98.05	511.0	98.08	511.8	98.08	518.8
X1244.36	48	.00	800.00	420.00	420.00	420.00			
GR115.89	.0	101.55	20.0	98.40	25.7	98.40	28.5	94.85	33.6
GR 91.75	37.0	92.15	43.0	92.35	50.0	92.75	68.0	93.15	94.0
GR 92.55	108.0	93.95	125.0	94.45	142.0	94.85	145.2	100.32	152.7
GR101.37	297.0	100.82	413.5	100.40	457.0	100.39	459.0	100.39	462.0
GR 99.97	463.0	99.69	484.3	100.20	485.3	100.20	486.3	96.95	495.5
GR 96.41	555.0	96.10	555.5	95.70	556.0	95.20	563.0	95.20	574.0
GR 95.70	585.0	96.10	588.0	96.63	590.5	96.62	602.0	96.17	602.8
GR 95.67	605.0	95.47	610.0	95.47	617.0	95.67	624.0	96.17	626.7
GR 96.43	646.9	98.29	656.8	98.02	664.1	101.23	670.6	105.62	680.0
GR105.62	684.5	100.49	691.7	100.62	800.0				
X1244.83	53	.00	1024.00	470.00	470.00	470.00			
GR131.71	.0	131.81	8.0	132.61	13.0	129.71	21.0	129.71	21.5
GR128.91	22.5	128.91	27.5	101.01	68.5	98.61	85.0	96.61	88.0
GR 97.01	98.5	98.91	103.0	96.11	107.0	95.41	109.0	95.51	119.0
GR 95.61	133.0	95.31	152.0	95.41	184.0	95.61	207.0	96.11	211.0
GR 95.41	221.0	94.41	224.0	93.61	234.0	94.11	239.0	95.41	241.5
GR 97.96	250.0	97.56	288.5	102.01	301.0	101.81	304.0	100.81	305.0
GR102.01	374.0	102.41	490.0	102.31	504.0	102.16	644.0	102.16	648.0
GR101.96	733.0	99.41	738.5	99.11	745.5	97.16	767.0	96.51	771.0
GR 96.11	773.0	95.41	775.0	95.61	779.0	95.71	782.0	96.21	794.0
GR 96.51	795.5	97.11	797.5	96.61	863.0	96.61	905.5	105.61	924.0
GR105.61	927.5	101.16	936.0	101.16	1024.0				
X1244.86	46	.00	825.76	30.00	30.00	30.00			
GR114.59	.0	114.99	9.5	111.74	27.7	111.74	32.0	102.09	32.0
GR 95.79	52.0	95.09	55.0	93.19	63.7	93.39	68.0	94.99	98.3

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GR 94.89   132.9   95.09   144.2   95.79   146.8   96.84   167.6   96.84   174.5
GR100.34   179.7  101.09   202.2  102.14   236.9  102.14   271.5  102.34   306.1
GR102.54   340.8  102.44   375.4  102.54   410.1  102.54   444.7  102.54   479.4
GR102.74   514.0  102.84   548.6  102.14   568.1   98.34   574.6   97.34   583.3
GR 97.34   617.9   97.09   628.3   96.64   630.0   95.54   652.5   95.24   681.1
GR 96.14   683.3   97.09   685.0   97.84   686.3   97.89   708.0  102.99   721.0
GR105.24   726.2  105.24   731.4  102.49   736.5  102.09   756.5  102.34   791.1
GR102.34   825.8
X1244.88      46     .00  825.76   20.00   20.00   20.00
GR114.59       .0  114.99     9.5  111.74    27.7  111.74    32.0  102.09    32.0
GR 95.79    52.0   95.09    55.0   93.19    63.7   93.39    68.0   94.99    98.3
GR 94.89   132.9   95.09   144.2   95.79   146.8   96.84   167.6   96.84   174.5
GR100.34   179.7  101.09   202.2  102.14   236.9  102.14   271.5  102.34   306.1
GR102.54   340.8  102.44   375.4  102.54   410.1  102.54   444.7  102.54   479.4
GR102.74   514.0  102.84   548.6  102.14   568.1   98.34   574.6   97.34   583.3
GR 97.34   617.9   97.09   628.3   96.64   630.0   95.54   652.5   95.24   681.1
GR 96.14   683.3   97.09   685.0   97.84   686.3   97.89   708.0  102.99   721.0
GR105.24   726.2  105.24   731.4  102.49   736.5  102.09   756.5  102.34   791.1
GR102.34   825.8
X1245.30      37     .00  704.00  425.00  425.00  425.00
GR106.21       .0  106.21    29.5  103.91    31.5  103.91    58.0  101.52    60.5
GR101.52    88.5  101.11    89.0  101.11    92.0   97.11    97.5   96.61   101.0
GR 95.81   112.0   95.71   128.0   95.41   147.0   95.31   164.0   95.81   167.0
GR 96.31   184.0   97.11   188.5   98.91   218.5   99.46   270.5   99.86   309.5
GR 99.31   374.5   99.01   452.0   98.01   516.0   96.81   542.5   96.31   546.0
GR 95.61   554.0   95.51   561.0   96.01   573.5   96.31   577.0   96.81   579.0
GR 98.26   585.5   98.76   590.0  105.76   603.0  105.76   604.0  105.41   610.0
GR101.86   615.0  102.06   704.0
X1245.84      29     .00  501.00  535.00  535.00  535.00
GR108.67       .0  108.67    20.0  102.07    31.0  100.97    37.0  101.72    38.0
GR101.83    42.5  101.82    43.5   99.72    48.0   97.27    80.0   96.77    88.0
GR 96.37   100.0   96.17   116.0   95.97   131.0   95.77   156.0   95.77   178.0
GR 96.07   188.0   96.17   203.0   96.47   237.0   96.67   256.0   96.77   274.0
GR 97.27   278.0   98.67   335.5  100.12   385.0  106.12   397.5  106.12   401.0
GR103.27   405.5  103.27   411.0  104.57   412.0  104.72   501.0
X1246.32      26     .00  321.00  485.00  485.00  485.00
GR109.16       .0  108.66    46.5  108.63    51.5  107.56    51.5  107.56    52.0
GR102.46    52.5  101.16    63.5   99.76    75.5   98.76    87.5   98.31    99.5
GR 97.21   111.5   96.31   123.5   96.31   135.5   96.01   147.5   96.01   159.5
GR 96.21   171.5   96.21   193.5   94.91   207.5   95.71   231.5   98.31   255.5
GR105.56   266.5  107.18   266.5  107.18   267.0  108.61   267.0  108.53   270.0
GR106.86   321.0
X1246.34      26     .00  321.00   10.00   10.00   10.00
GR109.16       .0  108.66    46.5  108.63    51.5  107.56    51.5  107.56    52.0
GR102.46    52.5  101.16    63.5   99.76    75.5   98.76    87.5   98.31    99.5
GR 97.21   111.5   96.31   123.5   96.31   135.5   96.01   147.5   96.01   159.5
GR 96.21   171.5   96.21   193.5   94.91   207.5   95.71   231.5   98.31   255.5
GR105.56   266.5  107.18   266.5  107.18   267.0  108.61   267.0  108.53   270.0
GR106.86   321.0
X1246.37      27     .00  297.50   30.00   30.00   30.00
GR109.30       .0  108.85    17.5  108.45    28.5  106.30    31.5  106.25    59.3
GR106.25    61.0  106.15    64.5  101.35    74.5  101.05    88.5  100.00   104.5
GR 98.35   112.5   97.85   117.5   97.55   122.5   97.45   147.5   97.15   152.5
GR 96.55   175.5   96.25   190.5   95.85   225.5   95.75   239.5   95.65   255.5
GR 97.05   262.5   98.35   264.0  104.15   268.0  104.40   270.0  107.55   273.5
GR108.75   277.5  117.05   297.5
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▶ 갑천 - 횡단자료

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X1   .000      34      .00   574.00      .00      .00      .00
GR 46.54       .0    26.54     20.0    27.25     31.6    25.89     40.9    24.08     42.6
GR 24.21      66.1   22.71     69.0    22.71     72.0    23.15     90.0    22.06     91.6
GR 20.85     159.5   20.45    165.6    19.95    170.6    19.65    173.6    19.85    183.6
GR 20.45     190.6   20.55    197.6    20.55    200.6    20.85    203.4    22.55    230.3
GR 24.42     300.6   25.85    304.6    25.85    308.1    24.09    314.1    23.85    421.6
GR 24.07     426.3   23.53    427.4    23.53    428.4    25.20    443.6    26.08    468.6
GR 30.35     477.6   30.77    553.3    34.27    574.0    33.75    581.0
X1   .160      32      .00   400.00   160.00   160.00   160.00
GR 34.99       .0    29.99     11.0    23.99     15.8    23.99     28.0    23.99     31.0
GR 23.28      38.0   21.68     40.5    20.95    127.7    20.65    133.0    19.75    139.0
GR 20.15     146.0   20.25    153.0    20.65    160.0    20.95    165.0    23.15    169.4
GR 23.25     176.6   21.35    179.1    21.55    199.8    22.41    202.0    23.74    232.2
GR 24.21     282.7   25.52    288.5    25.98    306.5    25.98    342.5    22.49    354.0
GR 22.74     375.7   33.25    400.0    30.35    409.0    30.35    411.5    29.13    414.0
GR 28.25     442.5   28.25    490.0
X1   .390      39      .00   400.00   230.00   230.00   230.00
GR 40.95       .0    24.95     34.5    24.90     43.2    24.90     45.7    24.90     47.7
GR 21.93      54.6   21.03     59.3    20.93     99.3    20.93    110.0    20.83    118.0
GR 20.73     129.0   20.73    137.0    20.63    148.0    20.53    157.0    20.53    166.0
GR 21.03     168.2   21.63    176.5    22.56    178.0    23.53    198.8    23.22    212.5
GR 22.03     217.3   22.03    227.9    23.43    231.8    23.13    253.5    21.94    256.0
GR 20.83     266.7   23.11    268.5    23.63    310.5    26.47    316.2    26.30    382.3
GR 26.70     382.8   26.70    385.8    33.53    400.0    33.53    403.5    30.36    409.5
GR 28.93     416.8   28.93    419.8    27.52    453.0    27.52    500.0
X1   .570      41      .00   405.00   180.00   180.00   180.00
GR 49.29       .0    29.51     29.5    27.51     34.5    25.49     42.8    24.79     51.7
GR 24.79      53.2   25.19     53.2    25.19     55.2    21.21     62.0    20.41     68.0
GR 20.31      76.0   20.21     84.0    19.91     93.0    20.01    104.0    20.21    113.0
GR 20.21     125.0   20.21    137.0    21.21    140.8    22.52    144.5    22.67    166.9
GR 23.89     171.0   23.90    184.5    23.20    187.7    23.52    201.9    23.28    272.4
GR 24.76     277.0   25.11    291.8    26.75    296.4    26.74    388.0    27.04    388.0
GR 27.04     390.5   33.40    405.0    33.40    408.5    30.84    414.1    27.76    423.4
GR 23.49     429.4   23.49    470.4    27.99    470.4    27.99    474.4    27.49    474.4
GR 27.49     485.0
X1   .770      35      .00   432.00   200.00   200.00   200.00
GR 34.33       .0    26.33     19.3    26.33     41.5    25.72     43.5    25.72     47.0
GR 21.25      54.5   20.25     60.0    20.35     71.0    20.55     80.0    20.85     93.0
GR 21.05     108.0   21.15    115.0    21.25    120.4    23.19    151.5    23.19    153.5
GR 22.12     155.5   22.32    180.0    23.37    184.0    23.95    210.5    22.82    285.8
GR 23.41     288.0   23.82    305.9    26.68    312.5    26.36    415.5    33.62    432.0
GR 33.62     435.5   30.81    441.0    30.81    445.5    27.42    451.0    26.71    457.0
GR 26.71     498.0   28.21    498.0    28.21    502.0    27.71    502.5    27.71    512.0
X1   .980      40  110.20   546.40   210.00   210.00   210.00
GR 44.55       .0    43.55     12.0    41.98     19.8    40.04     44.0    34.85     49.8
GR 31.25     108.2   31.25    110.2    28.08    117.4    28.20    142.8    22.83    152.5
GR 21.61     163.7   21.41    170.4    21.31    176.4    21.31    184.4    21.21    190.4
GR 21.31     205.4   21.31    217.4    21.51    235.4    21.61    240.6    23.09    293.9
GR 24.13     300.4   24.12    328.9    22.58    331.4    22.58    339.4    24.08    339.4
GR 23.29     449.9   25.71    456.4    26.15    506.2    26.01    528.6    33.66    546.4
GR 33.59     549.4   30.89    554.9    30.89    559.4    27.29    565.9    23.68    570.9
GR 23.68     611.9   28.18    611.9    28.18    615.9    27.68    615.9    27.68    626.4
X1 1.010      42   55.50   489.80    30.00    30.00    30.00
GR 35.84       .0    37.34     31.8    37.41     49.5    37.31     55.5    34.86     55.5
GR 34.86      56.5   33.17     60.0    31.51     66.5    31.11     67.5    28.38     68.8
GR 28.34      86.9   28.34     89.4    23.21     97.4    21.66    105.5    21.36    118.0
GR 21.06     126.0   20.96    132.0    20.76    147.5    20.76    155.5    20.96    164.0
GR 21.36     171.0   21.56    182.0    21.66    187.6    22.41    205.5    23.94    255.5
GR 23.94     305.5   24.07    355.5    23.11    390.5    25.14    405.5    26.14    455.5
GR 26.01     466.2   29.37    477.0    32.63    488.8    33.13    489.8    33.96    489.8
GR 33.86     490.0   33.39    503.0    28.19    503.0    23.95    509.0    23.95    550.3
GR 28.45     550.3   28.45    554.3
X1 1.021      42   55.50   489.80    11.00    11.00    11.00
GR 35.84       .0    37.34     31.8    37.41     49.5    37.31     55.5    34.86     55.5
GR 34.86      56.5   33.17     60.0    31.51     66.5    31.11     67.5    28.38     68.8
GR 28.34      86.9   28.34     89.4    23.21     97.4    21.66    105.5    21.36    118.0
GR 21.06     126.0   20.96    132.0    20.76    147.5    20.76    155.5    20.96    164.0
GR 21.36     171.0   21.56    182.0    21.66    187.6    22.41    205.5    23.94    255.5
GR 23.94     305.5   24.07    355.5    23.11    390.5    25.14    405.5    26.14    455.5
GR 26.01     466.2   29.37    477.0    32.63    488.8    33.13    489.8    33.96    489.8
GR 33.86     490.0   33.39    503.0    28.19    503.0    23.95    509.0    23.95    550.3
GR 28.45     550.3   28.45    554.3
X1 1.220      43   119.90   524.00   199.00   199.00   199.00
GR 28.40       .0    28.40     56.5    29.10     57.0    29.10     96.5    29.90     97.0
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GR 29.90   104.5   31.91   114.9   31.91   119.9   30.83   122.3   23.48   138.0
GR 23.48   140.0   23.48   141.0   21.80   145.0   20.60   150.0   20.40   159.0
GR 20.20   172.0   20.50   178.0   21.10   189.0   21.50   196.0   21.80   198.0
GR 22.93   203.0   23.54   236.5   24.14   240.0   24.30   254.0   23.12   257.0
GR 24.10   291.5   23.50   329.5   24.20   335.5   24.28   392.5   23.62   396.5
GR 23.50   423.8   24.50   429.0   27.00   433.5   26.60   511.0   33.40   524.0
GR 33.90   530.0   33.66   538.8   30.86   538.8   30.20   548.2   28.40   582.0
GR 28.30   597.3   29.80   597.3   29.80   650.0
X1 1.450      34  108.60   540.00  230.00  230.00  230.00
GR 30.12      .0   30.12    76.2   30.32    95.6   30.32    98.6   32.41   103.1
GR 32.41   108.6   23.55   128.0   23.55   133.0   21.84   137.5   19.64   144.0
GR 19.94   150.0   20.04   156.0   20.84   161.0   21.14   168.0   21.34   173.0
GR 21.44   185.0   21.84   187.8   24.56   192.2   24.17   199.2   23.10   205.0
GR 23.02   260.0   25.00   298.5   24.57   323.0   24.38   358.8   24.38   367.1
GR 27.15   374.0   26.94   378.0   26.92   522.2   34.38   540.0   34.00   553.0
GR 30.00   559.0   30.00   574.0   29.00   575.0   29.00   584.0
X1 1.710      35  156.00   594.00  260.00  260.00  260.00
GR 31.01      .0   31.01   149.5   31.59   151.5   31.59   156.0   27.79   162.1
GR 27.84   173.0   24.19   182.5   24.19   185.0   21.69   189.9   21.39   193.0
GR 20.69   199.0   20.39   206.0   20.39   213.0   20.19   219.0   20.99   223.0
GR 21.39   226.0   21.69   229.2   23.29   254.5   25.09   257.5   24.87   279.0
GR 22.91   283.5   23.49   369.7   24.89   379.8   23.79   384.5   24.79   405.0
GR 26.86   409.9   26.86   414.7   27.12   576.3   34.49   594.0   34.49   595.0
GR 34.11   608.0   30.11   614.0   30.11   629.0   29.11   630.0   29.11   639.0
X1 1.950      31   61.50   449.50  240.00  240.00  240.00
GR 34.13      .0   34.13    61.5   30.04    69.0   28.62   100.8   28.62   101.5
GR 24.41   109.2   23.69   118.9   22.31   119.4   21.81   130.0   21.81   139.0
GR 21.91   152.0   21.91   166.0   22.01   179.0   22.01   187.0   22.11   196.0
GR 22.11   201.0   22.31   204.0   24.21   278.5   26.87   315.5   26.87   321.0
GR 27.87   434.0   31.04   440.0   33.61   446.0   33.61   448.5   34.11   449.5
GR 34.11   450.0   33.73   463.0   29.73   469.0   29.73   484.0   28.73   485.0
GR 28.73   494.0
X1 2.205      41   79.20   504.00  255.00  255.00  255.00
GR 33.66      .0   33.66    29.2   33.56    34.9   33.66    34.9   34.80    38.5
GR 34.80    40.0   34.32    43.0   34.32    46.0   34.12    46.0   34.01    61.0
GR 34.27    79.2   28.35    87.0   27.66   145.9   27.06   146.9   26.98   167.8
GR 23.20   183.3   24.85   240.5   22.96   243.5   22.86   294.9   22.56   324.9
GR 22.36   329.5   22.26   333.5   22.26   338.5   22.16   347.5   22.16   359.5
GR 21.96   367.5   21.96   378.5   22.06   391.5   22.06   397.5   22.56   400.5
GR 25.72   407.4   26.80   416.5   26.80   422.9   26.73   467.8   27.93   471.0
GR 27.94   489.5   34.26   504.0   34.37   505.5   34.10   515.5   30.60   520.5
GR 30.60   560.5
X1 2.455      42   36.70   379.50  250.00  250.00  250.00
GR 32.05      .0   34.56     5.0   34.56     9.5   35.56     9.5   35.56     9.8
GR 34.56     9.8   34.56    12.8   34.36    12.8   34.34    36.7   28.35    36.7
GR 28.35    37.7   28.15    48.2   28.15    50.2   27.46    61.3   25.89    72.1
GR 25.42   150.1   23.99   152.9   23.33   171.5   23.03   177.5   23.03   183.5
GR 23.33   189.5   24.10   197.5   23.70   210.5   23.33   225.5   22.93   239.5
GR 22.93   254.5   22.83   269.5   23.03   284.5   23.03   299.5   23.33   306.5
GR 24.12   306.9   25.65   339.9   27.65   344.5   27.45   364.9   31.35   373.6
GR 33.45   377.5   33.45   378.5   34.05   379.5   34.05   381.5   33.33   397.0
GR 31.94   412.4   31.82   424.3
X1 2.528      27   86.00   416.00  73.00   73.00   73.00
GR 35.12      .0   35.12    47.2   34.82    47.2   34.87    75.9   35.04    80.5
GR 34.79    86.0   31.18    86.0   31.18    87.5   30.93    87.5   28.18    96.2
GR 25.77   141.0   25.57   196.0   23.73   221.0   23.33   245.5   23.23   251.0
GR 23.23   306.0   23.33   335.0   23.73   340.5   24.64   344.3   25.76   361.0
GR 27.83   394.2   31.06   414.4   31.16   416.0   34.81   416.0   34.76   420.0
GR 34.76   455.0   32.26   520.0
X1 2.542      27   86.00   416.00  14.00   14.00   14.00
GR 35.12      .0   35.12    47.2   34.82    47.2   34.87    75.9   35.04    80.5
GR 34.79    86.0   31.18    86.0   31.18    87.5   30.93    87.5   28.18    96.2
GR 25.77   141.0   25.57   196.0   23.73   221.0   23.33   245.5   23.23   251.0
GR 23.23   306.0   23.33   335.0   23.73   340.5   24.64   344.3   25.76   361.0
GR 27.83   394.2   31.06   414.4   31.16   416.0   34.81   416.0   34.76   420.0
GR 34.76   455.0   32.26   520.0
X1 2.640      34  100.00   429.40  98.00   98.00   98.00
GR 27.94      .0   27.94    82.0   34.24    95.5   34.24   100.0   28.65   110.5
GR 27.06   127.0   25.37   130.5   25.70   205.0   24.24   212.0   23.71   225.0
GR 23.61   230.0   23.51   234.0   23.41   242.0   23.41   258.0   23.41   272.0
GR 23.31   287.0   23.21   296.0   23.01   314.0   23.01   336.0   22.71   344.0
GR 23.71   349.1   24.59   351.2   25.34   370.5   27.33   374.0   28.30   417.5
GR 31.87   425.5   34.19   429.4   34.19   433.9   33.23   435.2   33.07   489.2
GR 32.87   489.2   33.04   500.9   32.04   500.9   32.04   550.0
X1 2.820      36   85.00   420.40  180.00  180.00  180.00
GR 29.04      .0   29.04    69.7   34.54    81.0   34.54    85.0   28.94    94.3
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GR 28.94   100.3   27.08   104.2   26.40   121.0   25.54   124.2   26.01   184.8
GR 23.80   188.8   23.40   194.0   23.30   206.0   23.10   230.0   23.00   247.0
GR 22.90   265.0   22.80   282.0   22.40   296.0   22.20   304.0   22.30   307.0
GR 23.80   312.8   25.90   315.9   25.57   374.5   27.80   377.8   27.80   380.5
GR 28.06   407.6   31.83   415.6   34.45   420.4   34.45   423.9   31.04   429.2
GR 30.54   451.6   30.34   451.6   30.34   463.6   30.54   463.6   30.54   463.8
GR 30.54   468.8
X1 2.985      31   70.00   419.50  165.00  165.00  165.00
GR 29.43      .0   29.43    56.0   34.13    66.0   34.13    70.0   29.13    79.2
GR 26.92   124.3   25.79   130.0   25.77   176.6   23.83   178.6   23.63   180.0
GR 23.63   187.0   23.43   212.0   23.13   239.0   22.93   262.0   22.43   279.0
GR 22.03   286.0   22.13   295.0   23.83   300.9   25.91   302.3   26.03   398.0
GR 28.11   405.3   28.29   407.7   31.78   415.0   34.49   419.5   34.49   423.0
GR 31.13   428.5   30.63   447.0   30.43   447.0   30.43   462.0   30.63   462.0
GR 30.63   462.4
X1 3.125      34   70.00   436.00  140.00  140.00  140.00
GR 29.25      .0   29.25    54.0   34.12    66.0   34.22    70.0   29.16    78.5
GR 28.56   107.2   28.04   143.0   27.01   148.3   25.85   193.0   23.85   196.5
GR 23.65   200.0   23.55   217.0   23.45   228.0   23.35   241.0   23.35   254.0
GR 23.15   264.0   23.15   277.0   22.95   288.0   22.85   296.0   22.65   300.0
GR 23.85   305.8   25.85   308.8   25.53   392.2   27.29   402.2   27.86   423.0
GR 31.86   430.8   34.89   436.0   34.75   441.0   31.42   446.8   30.82   463.0
GR 30.62   463.0   30.62   475.0   30.82   475.0   30.82   475.2
X1 3.335      33   70.00   455.60  210.00  210.00  210.00
GR 28.86      .0   28.86    50.5   29.58    52.1   29.58    55.6   34.08    66.0
GR 34.08    70.0   29.24    79.5   27.49   146.5   25.58   151.0   26.04   202.8
GR 26.04   206.3   23.86   210.0   23.56   222.0   23.46   241.0   23.56   256.0
GR 23.76   268.0   22.86   279.0   23.16   288.0   23.06   300.0   23.86   306.8
GR 24.50   315.1   26.70   319.4   26.61   415.9   27.25   419.0   28.52   444.0
GR 31.41   450.0   34.62   455.6   34.62   458.6   31.48   464.2   31.08   482.8
GR 30.93   482.8   30.93   502.8   31.13   502.8
X1 3.550      42   55.00   450.60  215.00  215.00  215.00
GR 29.33      .0   29.33    37.1   29.83    37.6   29.83    42.6   34.10    51.0
GR 34.10    55.0   28.39    66.0   28.49   110.9   26.68   113.8   26.86   154.9
GR 26.07   156.0   26.20   183.2   26.75   185.5   26.35   235.8   23.92   239.3
GR 23.72   244.0   23.72   249.0   23.52   273.0   23.52   287.0   23.72   298.0
GR 23.72   309.0   23.92   315.0   24.24   326.8   26.41   330.6   26.41   334.6
GR 25.03   340.8   25.72   384.9   27.74   419.4   29.16   422.2   29.16   422.7
GR 28.55   423.7   29.14   441.8   31.58   446.6   34.41   450.6   34.41   455.6
GR 32.30   459.5   32.10   484.0   31.30   488.2   31.15   488.2   31.15   503.2
GR 31.35   503.2   31.35   523.2
X1 3.755      33  100.00   447.60  205.00  205.00  205.00
GR 29.58      .0   29.58    90.0   33.22    96.0   33.22   100.0   28.36   110.0
GR 28.22   144.0   28.11   200.7   28.50   203.0   28.69   234.2   26.32   241.6
GR 29.92   253.7   26.92   261.7   24.20   263.7   24.10   267.0   23.80   281.0
GR 23.70   302.0   23.60   319.0   23.60   331.0   23.70   341.0   23.80   350.0
GR 23.70   355.0   24.20   361.2   24.72   401.7   28.56   410.2   29.77   438.0
GR 34.31   447.6   34.31   451.6   32.42   454.7   31.42   498.2   31.22   498.2
GR 31.22   509.2   31.42   509.2   31.42   529.2
X1 3.897      35   48.20   369.20  142.00  142.00  142.00
GR 28.02      .0   28.02    35.5   27.19    36.8   27.19    38.0   33.03    43.2
GR 33.03    47.7   34.83    47.7   34.73    48.2   32.03    48.2   32.03    50.0
GR 31.49    50.0   31.49    55.0   27.34    58.0   27.34    98.9   27.34   153.9
GR 25.62   208.9   25.62   263.9   24.37   278.7   23.87   282.0   23.77   289.0
GR 23.87   292.0   24.37   297.3   26.91   318.9   27.83   367.7   31.91   367.7
GR 31.91   369.2   35.45   369.2   35.45   369.7   34.34   369.7   34.34   377.7
GR 33.34   380.8   31.89   423.2   31.89   434.5   32.04   434.5   32.04   435.8
X1 3.933      35   48.20   369.20  36.00   36.00   36.00
GR 28.02      .0   28.02    35.5   27.19    36.8   27.19    38.0   33.03    43.2
GR 33.03    47.7   34.83    47.7   34.73    48.2   32.03    48.2   32.03    50.0
GR 31.49    50.0   31.49    55.0   27.34    58.0   27.34    98.9   27.34   153.9
GR 25.62   208.9   25.62   263.9   24.37   278.7   23.87   282.0   23.77   289.0
GR 23.87   292.0   24.37   297.3   26.91   318.9   27.83   367.7   31.91   367.7
GR 31.91   369.2   35.45   369.2   35.45   369.7   34.34   369.7   34.34   377.7
GR 33.34   380.8   31.89   423.2   31.89   434.5   32.04   434.5   32.04   435.8
X1 3.975      27   50.00   373.00  42.00   42.00   42.00
GR 29.15      .0   29.15    35.5   28.32    36.8   28.32    38.0   33.22    46.5
GR 33.22    50.0   30.75    54.5   30.75    58.5   27.70    61.5   27.68   108.0
GR 24.59   180.0   24.39   183.0   24.39   192.0   24.29   214.0   24.19   237.0
GR 23.79   261.0   23.89   282.0   23.39   294.0   23.59   308.0   24.59   313.1
GR 26.45   318.7   28.76   363.9   34.59   373.0   34.59   384.0   33.57   415.0
GR 32.02   418.7   32.02   430.7
X1 4.205      29   50.70   360.50  230.00  230.00  230.00
GR 29.07      .0   29.07    35.5   28.24    36.8   28.24    38.0   30.65    46.0
GR 33.19    50.0   33.14    50.7   28.11    59.8   27.98   142.3   25.22   177.4
GR 26.47   182.7   26.68   197.6   25.63   201.0   24.69   274.5   24.09   278.0
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GR	23.99	281.0	24.29	292.0	23.99	303.0	23.69	310.0	23.49	315.0
GR	24.69	320.4	28.38	326.7	29.03	351.3	34.45	360.5	34.27	367.1
GR	33.57	369.4	34.07	380.3	31.84	394.0	31.84	405.5		
X1	4.395	37	100.00	413.30	190.00	190.00	190.00			
GR	28.75	.0	28.75	82.0	27.86	84.4	27.86	85.9	32.63	93.5
GR	32.63	98.0	32.63	100.0	29.27	105.6	26.97	105.6	26.77	136.8
GR	26.39	159.5	26.39	163.5	28.10	166.8	26.53	178.9	26.43	209.1
GR	25.04	214.4	23.74	219.0	24.54	232.0	24.64	243.0	24.74	250.0
GR	25.04	265.0	25.62	275.0	25.70	289.0	25.04	296.0	24.54	303.0
GR	24.64	315.0	23.94	320.0	24.54	324.0	25.04	328.7	26.72	338.8
GR	26.96	373.2	31.65	381.1	31.65	387.1	31.56	392.9	30.23	395.0
GR	33.18	398.3	39.18	413.3						
X1	4.595	35	100.00	466.70	200.00	200.00	200.00			
GR	29.58	.0	29.58	86.5	29.12	87.1	29.12	88.1	31.80	91.0
GR	31.80	93.0	33.22	95.5	33.22	100.0	29.98	107.0	29.55	122.4
GR	28.19	130.5	28.19	163.3	27.31	169.7	27.09	183.7	25.10	186.7
GR	23.60	192.0	23.70	203.0	23.40	224.0	23.80	239.0	23.90	247.0
GR	24.10	256.0	24.20	262.0	24.40	269.0	24.50	272.0	25.10	277.0
GR	27.08	282.4	26.26	333.1	26.94	338.7	27.38	369.3	28.94	373.5
GR	29.42	431.6	31.61	435.5	31.61	442.5	34.66	446.7	40.66	466.7
X1	4.775	33	55.00	387.30	180.00	180.00	180.00			
GR	29.78	.0	29.78	40.7	30.65	41.2	30.65	41.7	29.45	41.7
GR	29.45	43.0	32.07	44.7	32.07	49.2	33.45	51.0	33.45	55.0
GR	30.68	60.0	29.79	97.8	28.76	110.7	26.55	119.1	26.55	125.6
GR	27.15	128.8	26.85	147.7	25.14	150.2	24.74	155.0	21.64	159.0
GR	21.64	182.0	21.64	197.0	21.34	206.0	23.04	215.0	23.14	225.0
GR	23.34	229.0	25.14	234.4	27.71	235.5	27.65	336.4	29.49	346.0
GR	30.17	382.5	31.90	387.3	31.90	393.3				
X1	4.955	30	101.00	435.60	180.00	180.00	180.00			
GR	30.19	.0	30.19	77.3	31.08	92.0	33.31	95.5	33.31	100.0
GR	33.31	101.0	30.26	106.0	30.13	150.0	28.81	156.2	28.81	162.7
GR	29.81	165.8	28.21	181.1	28.21	193.1	25.15	195.6	24.65	198.0
GR	23.50	203.0	23.50	207.0	24.55	211.0	24.55	217.0	24.45	222.0
GR	24.75	227.0	24.65	232.0	25.15	236.8	25.69	250.8	25.81	404.0
GR	26.41	404.0	31.20	411.5	31.14	421.6	31.31	430.5	34.30	435.6
X1	5.003	24	85.00	435.00	48.00	48.00	48.00			
GR	30.17	.0	30.17	70.5	30.57	70.9	30.57	71.4	29.57	71.4
GR	29.57	72.6	33.47	80.0	33.47	85.0	30.13	90.5	30.59	143.0
GR	29.47	145.5	29.13	172.0	28.07	190.7	25.20	195.5	24.00	196.0
GR	23.70	220.0	25.20	221.2	25.64	221.2	25.64	392.2	31.20	398.9
GR	31.14	409.7	31.39	417.9	34.47	421.9	47.47	435.0		
X1	5.005	24	85.00	435.00	2.00	2.00	2.00			
GR	30.17	.0	30.17	70.5	30.57	70.9	30.57	71.4	29.57	71.4
GR	29.57	72.6	33.47	80.0	33.47	85.0	30.13	90.5	30.59	143.0
GR	29.47	145.5	29.13	172.0	28.07	190.7	25.20	195.5	24.00	196.0
GR	23.70	220.0	25.20	221.2	25.64	221.2	25.64	392.2	31.20	398.9
GR	31.14	409.7	31.39	417.9	34.47	421.9	47.47	435.0		
X1	5.165	27	70.00	418.30	160.00	160.00	160.00			
GR	30.12	.0	30.12	56.4	30.68	56.9	30.68	57.4	29.48	58.4
GR	29.48	59.4	33.12	66.0	33.22	70.0	29.12	79.4	28.13	204.0
GR	25.23	210.0	24.53	214.0	24.43	232.0	24.43	243.0	24.63	251.0
GR	24.63	264.0	24.83	282.0	24.83	309.0	25.03	324.0	25.03	341.0
GR	25.13	359.0	25.23	365.5	25.88	376.4	30.81	391.8	30.79	399.0
GR	30.79	404.0	37.36	418.3						
X1	5.262	48	78.82	439.30	97.00	97.00	97.00			
GR	30.40	.0	30.40	63.3	30.63	63.9	30.63	64.4	30.13	65.6
GR	30.13	66.2	29.66	66.7	29.94	68.1	33.22	74.2	33.22	74.2
GR	33.22	78.8	29.57	88.6	28.34	211.2	26.19	215.6	25.27	218.6
GR	25.32	253.5	25.36	271.6	25.07	274.8	25.13	283.6	25.07	288.9
GR	25.13	293.6	25.13	301.2	24.90	306.5	24.98	309.8	24.98	315.2
GR	25.06	322.6	25.06	333.7	25.19	345.7	25.20	347.0	25.20	356.7
GR	25.21	359.4	25.30	373.8	25.32	375.7	25.44	379.1	25.96	387.8
GR	28.22	394.3	29.51	394.3	29.52	397.2	29.84	404.1	30.14	411.4
GR	30.36	413.6	31.28	416.9	31.43	418.4	32.15	419.8	32.51	423.5
GR	34.41	428.1	34.77	431.8	37.84	439.3				
X1	5.268	48	78.82	439.30	6.00	6.00	6.00			
GR	30.40	.0	30.40	63.3	30.63	63.9	30.63	64.4	30.13	65.6
GR	30.13	66.2	29.66	66.7	29.94	68.1	33.22	74.2	33.22	74.2
GR	33.22	78.8	29.57	88.6	28.34	211.2	26.19	215.6	25.27	218.6
GR	25.32	253.5	25.36	271.6	25.07	274.8	25.13	283.6	25.07	288.9
GR	25.13	293.6	25.13	301.2	24.90	306.5	24.98	309.8	24.98	315.2
GR	25.06	322.6	25.06	333.7	25.19	345.7	25.20	347.0	25.20	356.7
GR	25.21	359.4	25.30	373.8	25.32	375.7	25.44	379.1	25.96	387.8
GR	28.22	394.3	29.51	394.3	29.52	397.2	29.84	404.1	30.14	411.4
GR	30.36	413.6	31.28	416.9	31.43	418.4	32.15	419.8	32.51	423.5
GR	34.41	428.1	34.77	431.8	37.84	439.3				

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X1 5.342      32   85.00  454.00   74.00   74.00   74.00
GR 30.59      .0   30.59   71.3    29.79   71.8    29.79   73.3    33.29   80.0
GR 33.29    85.0   29.88   95.0    28.49  216.3    25.79  221.8    26.02  292.8
GR 25.52   297.0   25.62  312.0    25.52  321.0    25.62  329.0    25.62  342.0
GR 25.22   351.0   25.32  362.0    25.32  370.0    25.42  385.8    26.02  395.8
GR 26.48   395.8   28.68  395.8    28.68  399.3    29.69  416.5    29.69  419.5
GR 30.72   423.9   30.72  425.9    31.72  427.8    31.72  432.8    34.18  439.0
GR 34.18   444.0   38.18  454.0
X1 5.348      32   85.00  454.00    6.00    6.00    6.00
GR 30.59      .0   30.59   71.3    29.79   71.8    29.79   73.3    33.29   80.0
GR 33.29    85.0   29.88   95.0    28.49  216.3    25.79  221.8    26.02  292.8
GR 25.52   297.0   25.62  312.0    25.52  321.0    25.62  329.0    25.62  342.0
GR 25.22   351.0   25.32  362.0    25.32  370.0    25.42  385.8    26.02  395.8
GR 26.48   395.8   28.68  395.8    28.68  399.3    29.69  416.5    29.69  419.5
GR 30.72   423.9   30.72  425.9    31.72  427.8    31.72  432.8    34.18  439.0
GR 34.18   444.0   38.18  454.0
X1 5.402      53   92.50  462.00   54.00   54.00   54.00
GR 30.46      .0   30.46   73.3    30.48   77.6    30.08   78.1    30.09   79.8
GR 30.15    80.0   30.60   81.9    30.64   82.7    30.82   83.4    32.83   87.1
GR 33.38    88.8   33.38   92.5    29.90  101.0    28.62  220.8    26.08  226.4
GR 26.07   286.8   25.59  290.3    25.55  290.7    25.16  304.3    25.16  304.7
GR 25.00   313.1   24.96  319.4    24.96  320.5    24.87  332.6    24.61  341.0
GR 24.61   348.0   24.81  359.0    24.80  361.5    24.76  370.0    24.80  371.2
GR 25.04   379.3   25.36  386.9    25.44  390.6    25.61  394.5    26.07  402.8
GR 27.80   402.8   28.90  402.8    28.90  406.1    28.90  406.3    29.52  422.2
GR 29.54   425.0   30.09  429.1    30.10  430.9    30.51  432.4    30.61  432.7
GR 30.61   437.4   30.42  437.4    30.48  437.8    31.48  437.8    31.95  439.5
GR 33.94   444.6   35.22  450.4    39.77  462.0
X1 5.408      53   92.50  462.00    6.00    6.00    6.00
GR 30.46      .0   30.46   73.3    30.48   77.6    30.08   78.1    30.09   79.8
GR 30.15    80.0   30.60   81.9    30.64   82.7    30.82   83.4    32.83   87.1
GR 33.38    88.8   33.38   92.5    29.90  101.0    28.62  220.8    26.08  226.4
GR 26.07   286.8   25.59  290.3    25.55  290.7    25.16  304.3    25.16  304.7
GR 25.00   313.1   24.96  319.4    24.96  320.5    24.87  332.6    24.61  341.0
GR 24.61   348.0   24.81  359.0    24.80  361.5    24.76  370.0    24.80  371.2
GR 25.04   379.3   25.36  386.9    25.44  390.6    25.61  394.5    26.07  402.8
GR 27.80   402.8   28.90  402.8    28.90  406.1    28.90  406.3    29.52  422.2
GR 29.54   425.0   30.09  429.1    30.10  430.9    30.51  432.4    30.61  432.7
GR 30.61   437.4   30.42  437.4    30.48  437.8    31.48  437.8    31.95  439.5
GR 33.94   444.6   35.22  450.4    39.77  462.0
X1 5.462      32  100.00  470.00   54.00   54.00   54.00
GR 30.33      .0   30.33   79.2    30.40   86.5    30.40   88.5    30.09   89.4
GR 30.09    90.2   33.46   96.0    33.46  100.0    29.91  107.0    28.75  225.3
GR 26.36   231.0   26.11  280.8    25.61  284.0    24.71  297.0    24.31  311.0
GR 24.01   331.0   24.01  345.0    24.31  358.0    24.21  371.0    24.71  382.0
GR 25.31   391.0   25.61  400.0    26.11  409.8    29.11  409.8    29.11  413.1
GR 29.51   437.3   29.51  442.0    29.11  442.0    29.11  442.4    31.11  442.4
GR 31.46   444.4   41.36  470.0
X1 5.468      32  100.00  470.00    6.00    6.00    6.00
GR 30.33      .0   30.33   79.2    30.40   86.5    30.40   88.5    30.09   89.4
GR 30.09    90.2   33.46   96.0    33.46  100.0    29.91  107.0    28.75  225.3
GR 26.36   231.0   26.11  280.8    25.61  284.0    24.71  297.0    24.31  311.0
GR 24.01   331.0   24.01  345.0    24.31  358.0    24.21  371.0    24.71  382.0
GR 25.31   391.0   25.61  400.0    26.11  409.8    29.11  409.8    29.11  413.1
GR 29.51   437.3   29.51  442.0    29.11  442.0    29.11  442.4    31.11  442.4
GR 31.46   444.4   41.36  470.0
X1 5.547      44   90.15  455.15   79.00   79.00   79.00
GR 30.34      .0   30.34   71.4    30.38   77.5    30.52   78.0    30.99   79.8
GR 31.05    80.6   31.24   81.3    33.79   85.7    34.08   86.5    34.08   90.2
GR 29.86    98.5   28.82  218.1    26.86  222.5    26.08  226.6    25.95  258.6
GR 25.70   260.6   24.88  274.8    24.46  285.7    24.31  289.9    23.70  311.6
GR 23.70   318.6   24.04  334.1    24.07  335.4    24.22  347.2    24.32  352.2
GR 24.63   359.4   24.80  366.4    25.07  374.9    25.19  378.1    25.43  388.0
GR 25.51   389.7   25.88  396.1    26.15  402.4    28.93  402.4    28.93  405.5
GR 28.93   405.9   29.24  426.9    29.25  428.4    29.25  432.9    29.05  432.9
GR 29.05   433.3   30.05  433.3    30.51  434.8    39.17  455.1
X1 5.553      44   90.15  455.15    6.00    6.00    6.00
GR 30.34      .0   30.34   71.4    30.38   77.5    30.52   78.0    30.99   79.8
GR 31.05    80.6   31.24   81.3    33.79   85.7    34.08   86.5    34.08   90.2
GR 29.86    98.5   28.82  218.1    26.86  222.5    26.08  226.6    25.95  258.6
GR 25.70   260.6   24.88  274.8    24.46  285.7    24.31  289.9    23.70  311.6
GR 23.70   318.6   24.04  334.1    24.07  335.4    24.22  347.2    24.32  352.2
GR 24.63   359.4   24.80  366.4    25.07  374.9    25.19  378.1    25.43  388.0
GR 25.51   389.7   25.88  396.1    26.15  402.4    28.93  402.4    28.93  405.5
GR 28.93   405.9   29.24  426.9    29.25  428.4    29.25  432.9    29.05  432.9
GR 29.05   433.3   30.05  433.3    30.51  434.8    39.17  455.1
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X1 5.632      23   80.30  440.30   79.00   79.00   79.00
GR 30.36      .0   30.36   69.0    34.69    76.3   34.69   80.3   29.81   90.0
GR 28.88   210.8   26.19  216.7    25.79   222.3   25.79  237.3   24.49  264.3
GR 23.39   292.3   23.79  311.3    24.19   327.3   24.79  342.3   24.99  361.3
GR 25.29   377.3   25.89  387.3    26.19   394.9   28.75  394.9   28.75  398.3
GR 28.99   418.1   28.99  424.1    36.99   440.3
X1 5.638      23   80.30  440.30    6.00    6.00    6.00
GR 30.36      .0   30.36   69.0    34.69    76.3   34.69   80.3   29.81   90.0
GR 28.88   210.8   26.19  216.7    25.79   222.3   25.79  237.3   24.49  264.3
GR 23.39   292.3   23.79  311.3    24.19   327.3   24.79  342.3   24.99  361.3
GR 25.29   377.3   25.89  387.3    26.19   394.9   28.75  394.9   28.75  398.3
GR 28.99   418.1   28.99  424.1    36.99   440.3
X1 5.722      45   90.15  471.35   84.00   84.00   84.00
GR 30.38      .0   30.38   62.6    31.27    65.4   31.27   70.2   30.38   72.6
GR 30.38    75.3   30.97   77.5    33.40    82.0   34.44   85.7   34.54   90.2
GR 29.83   100.3   29.04  221.3    29.03   224.7   26.25  228.9   26.03  233.7
GR 26.00   243.1   25.97  246.6    25.81   251.4   25.32  269.2   25.29  270.0
GR 24.94   283.5   24.59  294.1    24.59   299.6   24.80  312.7   24.88  316.1
GR 25.05   323.3   25.18  329.9    25.24   331.6   25.37  337.6   25.55  342.9
GR 25.67   365.7   25.84  385.0    26.16   397.0   26.32  406.1   28.90  408.9
GR 28.90   411.2   28.92  413.5    29.40   440.8   29.51  449.0   32.15  462.8
GR 33.10   465.6   35.60  471.4    35.60   472.9   33.69  476.3   33.69  490.1
X1 5.728      45   90.15  471.35    6.00    6.00    6.00
GR 30.38      .0   30.38   62.6    31.27    65.4   31.27   70.2   30.38   72.6
GR 30.38    75.3   30.97   77.5    33.40    82.0   34.44   85.7   34.54   90.2
GR 29.83   100.3   29.04  221.3    29.03   224.7   26.25  228.9   26.03  233.7
GR 26.00   243.1   25.97  246.6    25.81   251.4   25.32  269.2   25.29  270.0
GR 24.94   283.5   24.59  294.1    24.59   299.6   24.80  312.7   24.88  316.1
GR 25.05   323.3   25.18  329.9    25.24   331.6   25.37  337.6   25.55  342.9
GR 25.67   365.7   25.84  385.0    26.16   397.0   26.32  406.1   28.90  408.9
GR 28.90   411.2   28.92  413.5    29.40   440.8   29.51  449.0   32.15  462.8
GR 33.10   465.6   35.60  471.4    35.60   472.9   33.69  476.3   33.69  490.1
X1 5.815      32  100.00  502.40   87.00   87.00   87.00
GR 30.40      .0   30.40   69.4    32.18    72.5   32.18   77.9   30.40   80.5
GR 30.40    83.5   34.03   91.0    34.40   100.0   29.86  110.5   29.18  235.1
GR 29.18   238.6   26.30  241.0    26.20   253.0   26.10  260.0   26.10  275.0
GR 26.00   287.0   25.80  296.0    25.80   307.0   25.90  318.0   26.10  327.0
GR 26.20   334.0   26.20  339.0    26.30   343.5   26.44  417.4   29.04  422.8
GR 29.04   425.8   30.38  491.5    31.27   495.1   34.22  502.4   34.22  505.4
GR 30.40   512.2   30.40  540.0
X1 5.975      30   85.00  446.40  160.00  160.00  160.00
GR 30.55      .0   30.55   70.1    31.25    70.6   31.25   71.6   30.45   71.8
GR 30.45    73.5   34.55   81.5    34.68    85.0   30.42   95.3   29.35  198.3
GR 26.65   201.6   26.45  214.5    26.15   218.0   26.05  227.0   26.35  235.0
GR 26.35   248.0   26.15  263.0    26.15   285.0   26.15  317.0   26.25  344.0
GR 26.25   359.0   26.45  365.8    29.04   371.6   30.41  438.0   31.27  440.6
GR 31.27   442.6   34.32  446.4    34.11   450.2   30.55  457.0   30.55  557.0
X1 6.145      32   52.60  423.00  170.00  170.00  170.00
GR 31.02      .0   31.02   37.0    31.33    37.5   31.33   38.5   30.55   39.0
GR 30.55    41.0   34.27   49.1    34.27    52.6   30.22   62.3   29.61  126.4
GR 29.61   129.9   26.87  134.7    26.57   154.6   26.47  204.6   26.47  239.6
GR 26.47   261.6   26.87  281.6    27.07   282.6   27.07  291.6   26.87  292.6
GR 26.47   293.6   26.47  295.6    26.87   296.7   29.52  302.6   31.81  410.8
GR 33.88   415.9   34.75  419.8    37.55   419.8   39.43  422.0   39.43  423.0
GR 39.28   423.0   38.67  432.6
X1 6.315      41  100.00  474.90  170.00  170.00  170.00
GR 30.64      .0   30.64   47.2    31.45    48.7   31.16   83.8   30.26   84.9
GR 30.26    86.7   30.78   88.0    34.52    96.5   34.52  100.0   30.06  110.0
GR 29.64   142.0   29.64  145.5    27.10   151.4   26.91  191.7   26.81  197.0
GR 26.71   205.0   26.71  227.0    26.61   239.0   26.21  254.0   26.11  272.0
GR 26.41   287.0   26.51  298.0    26.61   309.0   26.71  316.0   26.91  321.0
GR 29.50   325.8   31.34  462.0    33.74   467.7   33.74  472.2   34.32  474.9
GR 34.12   528.6   34.27  528.6    34.27   529.6   31.72  534.8   31.22  534.8
GR 31.22   535.4   31.72  535.4    31.92   536.5   31.92  539.5   30.82  542.9
GR 30.82   580.9
X1 6.512      45  101.20  475.60  197.00  197.00  197.00
GR 30.61      .0   30.61   81.3    31.34    81.8   31.34   82.8   30.49   83.9
GR 30.49    85.5   31.66   87.5    31.66    90.0   34.68   95.5   34.68  100.0
GR 34.68   101.2   30.38  110.9    31.10   132.3   29.83  137.0   29.83  140.5
GR 27.09   146.5   26.49  151.0    25.29   156.0   25.59  167.0   26.09  189.0
GR 26.39   214.0   26.59  241.0    26.69   272.0   26.69  289.0   26.59  302.0
GR 26.69   317.0   27.09  321.4    29.98   327.4   30.99  468.7   33.93  475.6
GR 33.93   476.6   33.93  479.6    33.93   483.2   33.78  483.2   33.93  528.6
GR 34.08   528.6   34.08  529.1    32.08   532.9   31.68  532.9   31.68  533.3
GR 32.08   533.3   32.68  536.2    32.68   541.7   31.18  542.8   31.18  590.0
X1 6.518      45  101.20  475.60    6.00    6.00    6.00
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GR 30.61      .0   30.61    81.3   31.34    81.8   31.34    82.8   30.49    83.9
GR 30.49    85.5   31.66    87.5   31.66    90.0   34.68    95.5   34.68   100.0
GR 34.68   101.2   30.38   110.9   31.10   132.3   29.83   137.0   29.83   140.5
GR 27.09   146.5   26.49   151.0   25.29   156.0   25.59   167.0   26.09   189.0
GR 26.39   214.0   26.59   241.0   26.69   272.0   26.69   289.0   26.59   302.0
GR 26.69   317.0   27.09   321.4   29.98   327.4   30.99   468.7   33.93   475.6
GR 33.93   476.6   33.93   479.6   33.93   483.2   33.78   483.2   33.93   528.6
GR 34.08   528.6   34.08   529.1   32.08   532.9   31.68   532.9   31.68   533.3
GR 32.08   533.3   32.68   536.2   32.68   541.7   31.18   542.8   31.18   590.0
X1 6.610      79   88.35  461.35   92.00    92.00   92.00
GR 30.60      .0   30.60    63.9   31.01    64.9   31.01    68.5   30.46    70.3
GR 30.46    71.0   30.83    71.4   30.83    72.2   30.87    72.3   30.96    73.2
GR 31.09    73.5   31.09    74.6   31.68    76.4   31.68    76.4   32.13    78.6
GR 34.50    83.1   34.60    83.4   34.60    87.3   34.60    87.8   34.60    88.3
GR 30.25    99.3   30.38   119.6   30.42   122.8   29.08   126.7   28.62   129.3
GR 28.60   129.6   26.98   134.6   26.77   136.3   26.58   138.3   25.95   142.5
GR 26.15   153.6   26.35   167.2   26.49   175.9   26.63   190.0   26.68   201.2
GR 26.74   224.6   26.78   228.5   26.93   245.3   26.92   259.8   26.90   266.1
GR 26.96   277.0   26.97   284.9   26.95   290.2   26.98   299.7   27.05   305.4
GR 27.30   305.4   27.87   308.8   29.81   313.4   30.98   455.3   33.88   461.4
GR 33.88   462.2   33.88   464.9   33.88   468.1   33.81   468.1   33.81   468.2
GR 33.43   470.2   33.36   470.2   33.56   477.8   33.64   508.7   33.72   508.7
GR 33.72   509.1   32.72   512.5   32.52   512.5   32.52   512.8   32.60   512.8
GR 32.60   512.9   32.79   512.9   32.85   513.4   33.00   515.5   32.91   517.4
GR 32.71   517.4   32.71   517.8   32.91   517.8   32.72   520.4   31.90   521.4
GR 31.84   522.1   31.84   526.1   31.69   529.5   31.69   563.5
X1 6.616      79   88.35  461.35    6.00     6.00    6.00
GR 30.60      .0   30.60    63.9   31.01    64.9   31.01    68.5   30.46    70.3
GR 30.46    71.0   30.83    71.4   30.83    72.2   30.87    72.3   30.96    73.2
GR 31.09    73.5   31.09    74.6   31.68    76.4   31.68    76.4   32.13    78.6
GR 34.50    83.1   34.60    83.4   34.60    87.3   34.60    87.8   34.60    88.3
GR 30.25    99.3   30.38   119.6   30.42   122.8   29.08   126.7   28.62   129.3
GR 28.60   129.6   26.98   134.6   26.77   136.3   26.58   138.3   25.95   142.5
GR 26.15   153.6   26.35   167.2   26.49   175.9   26.63   190.0   26.68   201.2
GR 26.74   224.6   26.78   228.5   26.93   245.3   26.92   259.8   26.90   266.1
GR 26.96   277.0   26.97   284.9   26.95   290.2   26.98   299.7   27.05   305.4
GR 27.30   305.4   27.87   308.8   29.81   313.4   30.98   455.3   33.88   461.4
GR 33.88   462.2   33.88   464.9   33.88   468.1   33.81   468.1   33.81   468.2
GR 33.43   470.2   33.36   470.2   33.56   477.8   33.64   508.7   33.72   508.7
GR 33.72   509.1   32.72   512.5   32.52   512.5   32.52   512.8   32.60   512.8
GR 32.60   512.9   32.79   512.9   32.85   513.4   33.00   515.5   32.91   517.4
GR 32.71   517.4   32.71   517.8   32.91   517.8   32.72   520.4   31.90   521.4
GR 31.84   522.1   31.84   526.1   31.69   529.5   31.69   563.5
X1 6.707      44   75.50  447.10   91.00    91.00   91.00
GR 30.60      .0   30.60    54.6   31.42    55.5   31.42    58.5   30.31    60.1
GR 30.31    61.7   31.70    62.8   31.70    65.3   34.51    71.0   34.51    75.0
GR 34.51    75.5   30.11    87.6   29.75   109.8   29.75   113.2   27.41   118.4
GR 26.71   124.0   26.61   129.0   26.81   154.0   27.01   177.0   26.91   212.0
GR 27.21   233.0   27.11   254.0   27.31   273.0   27.31   288.0   27.41   293.7
GR 27.91   293.7   29.64   299.4   30.97   441.9   33.83   447.1   33.83   453.1
GR 33.08   454.9   32.93   454.9   33.30   461.6   33.36   492.4   33.51   492.4
GR 33.51   492.9   33.14   496.4   32.74   496.4   32.74   496.8   33.14   496.8
GR 32.51   500.6   32.51   504.1   32.21   507.1   32.21   537.0
X1 6.713      44   75.50  447.10    6.00     6.00    6.00
GR 30.60      .0   30.60    54.6   31.42    55.5   31.42    58.5   30.31    60.1
GR 30.31    61.7   31.70    62.8   31.70    65.3   34.51    71.0   34.51    75.0
GR 34.51    75.5   30.11    87.6   29.75   109.8   29.75   113.2   27.41   118.4
GR 26.71   124.0   26.61   129.0   26.81   154.0   27.01   177.0   26.91   212.0
GR 27.21   233.0   27.11   254.0   27.31   273.0   27.31   288.0   27.41   293.7
GR 27.91   293.7   29.64   299.4   30.97   441.9   33.83   447.1   33.83   453.1
GR 33.08   454.9   32.93   454.9   33.30   461.6   33.36   492.4   33.51   492.4
GR 33.51   492.9   33.14   496.4   32.74   496.4   32.74   496.8   33.14   496.8
GR 32.51   500.6   32.51   504.1   32.21   507.1   32.21   537.0
X1 6.792      77   93.25  449.30   79.00    79.00   79.00
GR 30.80      .0   30.80    67.4   31.21    68.5   31.21    70.6   31.85    72.3
GR 31.86    72.4   31.11    72.4   30.64    74.1   30.64    74.2   31.20    76.2
GR 32.28    77.6   33.16    80.7   33.57    81.5   34.07    84.0   34.81    87.7
GR 34.81    92.6   34.81    93.3   30.04    99.8   29.87   119.5   29.84   122.8
GR 29.29   126.0   27.71   129.7   27.44   130.8   27.00   136.0   26.99   146.1
GR 26.93   159.4   26.91   169.0   26.98   176.5   26.98   184.0   27.00   193.0
GR 27.00   200.5   26.91   210.0   26.91   215.0   27.02   228.4   27.13   240.7
GR 27.10   259.5   27.25   271.4   27.22   280.6   27.22   283.3   27.36   294.1
GR 27.39   302.6   27.45   305.9   27.70   305.9   29.76   311.6   31.25   443.7
GR 33.58   448.3   34.06   449.3   34.06   450.5   34.06   453.9   33.96   454.6
GR 33.34   456.2   33.27   456.2   32.90   459.1   32.94   460.3   32.79   460.3
GR 32.85   462.1   32.94   489.2   33.02   489.2   33.02   489.6   32.84   492.7
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GR 32.92	492.7	32.92	492.7	32.72	492.7	32.72	493.1	32.92	493.1
GR 32.85	493.8	32.06	496.4	32.06	496.5	31.75	496.5	31.75	496.9
GR 32.06	496.9	32.26	499.4	32.26	499.5	32.10	502.2	32.10	502.8
GR 32.10	504.0	32.10	528.5						
X1 6.798	77	93.25	449.30	6.00	6.00	6.00			
GR 30.80	.0	30.80	67.4	31.21	68.5	31.21	70.6	31.85	72.3
GR 31.86	72.4	31.11	72.4	30.64	74.1	30.64	74.2	31.20	76.2
GR 32.28	77.6	33.16	80.7	33.57	81.5	34.07	84.0	34.81	87.7
GR 34.81	92.6	34.81	93.3	30.04	99.8	29.87	119.5	29.84	122.8
GR 29.29	126.0	27.71	129.7	27.44	130.8	27.00	136.0	26.99	146.1
GR 26.93	159.4	26.91	169.0	26.98	176.5	26.98	184.0	27.00	193.0
GR 27.00	200.5	26.91	210.0	26.91	215.0	27.02	228.4	27.13	240.7
GR 27.10	259.5	27.25	271.4	27.22	280.6	27.22	283.3	27.36	294.1
GR 27.39	302.6	27.45	305.9	27.70	305.9	29.76	311.6	31.25	443.7
GR 33.58	448.3	34.06	449.3	34.06	450.5	34.06	453.9	33.96	454.6
GR 33.34	456.2	33.27	456.2	32.90	459.1	32.94	460.3	32.79	460.3
GR 32.85	462.1	32.94	489.2	33.02	489.2	33.02	489.6	32.84	492.7
GR 32.92	492.7	32.92	492.7	32.72	492.7	32.72	493.1	32.92	493.1
GR 32.85	493.8	32.06	496.4	32.06	496.5	31.75	496.5	31.75	496.9
GR 32.06	496.9	32.26	499.4	32.26	499.5	32.10	502.2	32.10	502.8
GR 32.10	504.0	32.10	528.5						
X1 6.877	45	111.00	451.50	79.00	79.00	79.00			
GR 31.00	.0	31.00	84.0	32.40	86.2	30.90	86.2	30.90	88.2
GR 35.10	97.0	35.09	100.0	35.10	111.0	29.97	112.1	29.94	132.4
GR 29.94	135.8	27.50	142.2	27.30	148.0	27.30	167.0	27.20	192.0
GR 27.20	210.0	27.35	224.0	27.35	239.0	27.40	257.0	27.40	272.0
GR 27.20	291.0	27.20	301.0	27.30	307.0	27.30	312.0	27.50	318.0
GR 29.88	323.9	31.54	445.5	33.85	450.4	34.31	451.5	34.30	452.5
GR 34.30	455.5	32.69	460.0	32.69	461.0	32.39	461.0	32.54	489.0
GR 32.69	489.0	32.69	490.0	31.60	492.3	31.00	492.3	31.00	492.7
GR 31.60	492.7	32.00	494.8	32.00	497.8	32.00	498.8	32.00	520.0
X1 6.883	45	111.00	451.50	6.00	6.00	6.00			
GR 31.00	.0	31.00	84.0	32.40	86.2	30.90	86.2	30.90	88.2
GR 35.10	97.0	35.09	100.0	35.10	111.0	29.97	112.1	29.94	132.4
GR 29.94	135.8	27.50	142.2	27.30	148.0	27.30	167.0	27.20	192.0
GR 27.20	210.0	27.35	224.0	27.35	239.0	27.40	257.0	27.40	272.0
GR 27.20	291.0	27.20	301.0	27.30	307.0	27.30	312.0	27.50	318.0
GR 29.88	323.9	31.54	445.5	33.85	450.4	34.31	451.5	34.30	452.5
GR 34.30	455.5	32.69	460.0	32.69	461.0	32.39	461.0	32.54	489.0
GR 32.69	489.0	32.69	490.0	31.60	492.3	31.00	492.3	31.00	492.7
GR 31.60	492.7	32.00	494.8	32.00	497.8	32.00	498.8	32.00	520.0
X1 6.987	80	66.05	412.05	104.00	104.00	104.00			
GR 31.42	.0	31.45	7.2	30.80	7.2	30.80	12.2	31.45	12.2
GR 31.70	32.6	32.74	43.8	32.74	50.0	33.44	51.3	32.69	51.3
GR 32.69	52.5	32.98	53.2	35.09	57.6	35.13	57.7	35.13	59.5
GR 35.13	63.9	35.13	66.1	32.24	69.8	32.05	70.6	32.13	71.7
GR 31.26	75.4	30.40	76.6	30.10	102.5	30.08	104.1	30.08	106.8
GR 27.83	112.1	27.72	118.5	27.69	127.2	27.65	131.8	27.59	137.3
GR 27.59	139.3	27.57	151.1	27.50	166.7	27.50	182.1	27.57	194.0
GR 27.57	194.4	27.61	206.8	27.69	222.2	27.69	235.7	27.67	240.3
GR 27.56	250.4	27.53	252.7	27.50	261.7	27.58	270.9	27.69	274.2
GR 27.92	275.3	27.88	285.5	27.93	299.1	30.19	308.4	31.33	405.3
GR 33.96	410.8	34.15	411.2	34.51	412.0	34.51	413.1	34.51	414.9
GR 34.03	416.3	33.86	416.7	33.39	419.5	33.24	419.5	32.93	421.1
GR 32.91	422.2	32.76	422.2	32.34	446.2	32.42	446.2	32.42	446.7
GR 31.60	449.5	32.20	450.7	32.21	452.1	32.28	452.1	32.28	453.2
GR 32.10	454.0	32.08	454.7	31.89	455.6	31.58	455.6	31.58	456.0
GR 31.89	456.0	32.08	458.3	32.08	461.5	32.08	462.6	32.08	485.2
X1 6.993	80	66.05	412.05	6.00	6.00	6.00			
GR 31.42	.0	31.45	7.2	30.80	7.2	30.80	12.2	31.45	12.2
GR 31.70	32.6	32.74	43.8	32.74	50.0	33.44	51.3	32.69	51.3
GR 32.69	52.5	32.98	53.2	35.09	57.6	35.13	57.7	35.13	59.5
GR 35.13	63.9	35.13	66.1	32.24	69.8	32.05	70.6	32.13	71.7
GR 31.26	75.4	30.40	76.6	30.10	102.5	30.08	104.1	30.08	106.8
GR 27.83	112.1	27.72	118.5	27.69	127.2	27.65	131.8	27.59	137.3
GR 27.59	139.3	27.57	151.1	27.50	166.7	27.50	182.1	27.57	194.0
GR 27.57	194.4	27.61	206.8	27.69	222.2	27.69	235.7	27.67	240.3
GR 27.56	250.4	27.53	252.7	27.50	261.7	27.58	270.9	27.69	274.2
GR 27.92	275.3	27.88	285.5	27.93	299.1	30.19	308.4	31.33	405.3
GR 33.96	410.8	34.15	411.2	34.51	412.0	34.51	413.1	34.51	414.9
GR 34.03	416.3	33.86	416.7	33.39	419.5	33.24	419.5	32.93	421.1
GR 32.91	422.2	32.76	422.2	32.34	446.2	32.42	446.2	32.42	446.7
GR 31.60	449.5	32.20	450.7	32.21	452.1	32.28	452.1	32.28	453.2
GR 32.10	454.0	32.08	454.7	31.89	455.6	31.58	455.6	31.58	456.0
GR 31.89	456.0	32.08	458.3	32.08	461.5	32.08	462.6	32.08	485.2
X1 7.097	49	21.10	372.60	104.00	104.00	104.00			

건설교통부

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GR 31.83      .0   31.90    2.3   30.60    2.3   30.60    3.9   31.90    3.9
GR 32.41    10.4   34.47   14.0   34.47   17.0   35.17   18.4   35.17   20.4
GR 35.17    21.1   31.21   28.2   31.21   29.7   31.90   31.8   31.96   38.8
GR 30.83    41.1   30.22   74.5   30.22   77.8   28.17   82.0   28.09   98.4
GR 27.99   103.4   27.89  109.4   27.89  124.4   27.79  141.4   27.79  164.4
GR 27.99   187.4   27.99  203.4   27.89  212.4   27.79  222.4   27.89  236.4
GR 28.09   241.4   28.54  243.1   28.36  280.2   30.51  292.8   31.11  365.1
GR 34.29   371.7   34.71  372.6   34.71  375.6   33.53  377.5   33.53  380.5
GR 33.23   380.5   32.17  408.9   32.32  408.9   32.32  409.4   30.67  412.4
GR 31.87   413.7   31.87  417.2   32.17  418.0   32.17  450.4
X1 7.103      49   21.10  372.60   6.00   6.00    6.00
GR 31.83      .0   31.90    2.3   30.60    2.3   30.60    3.9   31.90    3.9
GR 32.41    10.4   34.47   14.0   34.47   17.0   35.17   18.4   35.17   20.4
GR 35.17    21.1   31.21   28.2   31.21   29.7   31.90   31.8   31.96   38.8
GR 30.83    41.1   30.22   74.5   30.22   77.8   28.17   82.0   28.09   98.4
GR 27.99   103.4   27.89  109.4   27.89  124.4   27.79  141.4   27.79  164.4
GR 27.99   187.4   27.99  203.4   27.89  212.4   27.79  222.4   27.89  236.4
GR 28.09   241.4   28.54  243.1   28.36  280.2   30.51  292.8   31.11  365.1
GR 34.29   371.7   34.71  372.6   34.71  375.6   33.53  377.5   33.53  380.5
GR 33.23   380.5   32.17  408.9   32.32  408.9   32.32  409.4   30.67  412.4
GR 31.87   413.7   31.87  417.2   32.17  418.0   32.17  450.4
X1 7.121      34  115.30  467.30  18.00  18.00   18.00
GR 37.79      .0   37.88  109.3   37.91  115.3   35.13  115.3   35.13  116.6
GR 31.98   123.3   31.98  125.8   30.92  132.0   30.47  152.8   30.08  174.9
GR 30.08   178.4   28.40  182.4   28.35  192.8   28.15  207.8   27.95  232.8
GR 27.80   272.8   27.85  312.8   28.15  346.8   28.47  352.8   29.29  392.8
GR 30.87   432.8   31.45  458.1   34.08  463.3   34.70  467.3   33.61  472.8
GR 33.55   473.3   33.25  473.3   33.14  502.0   34.34  502.0   34.19  509.1
GR 37.30   509.1   37.30  510.3   40.00  510.3   38.60  580.3
X1 7.138      34  115.30  467.30  17.00  17.00   17.00
GR 37.79      .0   37.88  109.3   37.91  115.3   35.13  115.3   35.13  116.6
GR 31.98   123.3   31.98  125.8   30.92  132.0   30.47  152.8   30.08  174.9
GR 30.08   178.4   28.40  182.4   28.35  192.8   28.15  207.8   27.95  232.8
GR 27.80   272.8   27.85  312.8   28.15  346.8   28.47  352.8   29.29  392.8
GR 30.87   432.8   31.45  458.1   34.08  463.3   34.70  467.3   33.61  472.8
GR 33.55   473.3   33.25  473.3   33.14  502.0   34.34  502.0   34.19  509.1
GR 37.30   509.1   37.30  510.3   40.00  510.3   38.60  580.3
X1 7.143      32  109.80  449.80   5.00   5.00    5.00
GR 36.88      .0   37.97  109.3   37.97  109.8   37.25  109.8   37.25  110.3
GR 32.85   110.3   32.35  110.6   32.37  116.3   31.09  118.0   30.75  134.3
GR 30.47   159.3   30.39  161.3   30.39  164.8   28.60  168.9   28.53  184.3
GR 28.29   194.1   27.99  209.3   27.79  234.3   27.89  259.3   27.99  284.3
GR 28.09   309.3   28.29  334.3   28.94  359.3   29.57  384.3   30.67  409.3
GR 31.46   434.3   31.51  444.8   34.72  449.8   34.72  453.8   33.52  457.9
GR 33.22   457.9   30.29  488.3
X1 7.152      32  109.80  449.80   9.00   9.00    9.00
GR 36.88      .0   37.97  109.3   37.97  109.8   37.25  109.8   37.25  110.3
GR 32.85   110.3   32.35  110.6   32.37  116.3   31.09  118.0   30.75  134.3
GR 30.47   159.3   30.39  161.3   30.39  164.8   28.60  168.9   28.53  184.3
GR 28.29   194.1   27.99  209.3   27.79  234.3   27.89  259.3   27.99  284.3
GR 28.09   309.3   28.29  334.3   28.94  359.3   29.57  384.3   30.67  409.3
GR 31.46   434.3   31.51  444.8   34.72  449.8   34.72  453.8   33.52  457.9
GR 33.22   457.9   30.29  488.3
X1 7.155      34  115.30  463.30   3.00   3.00    3.00
GR 37.76      .0   37.85  109.3   38.14  115.3   35.43  115.3   33.83  116.6
GR 31.95   123.3   31.95  125.8   30.89  132.0   30.44  152.8   30.05  174.9
GR 30.05   178.4   28.37  182.4   28.32  192.8   28.24  207.8   27.84  232.8
GR 27.84   272.8   27.94  312.8   28.24  346.8   28.44  352.8   29.26  392.8
GR 30.84   432.8   31.43  458.1   34.67  463.3   34.67  467.3   33.58  472.8
GR 33.52   473.3   33.22  473.3   33.11  502.0   34.31  502.0   34.16  509.1
GR 39.42   509.1   39.42  510.3   42.12  510.3   40.72  580.3
X1 7.172      34  115.30  463.30  17.00  17.00   17.00
GR 37.76      .0   37.85  109.3   38.14  115.3   35.43  115.3   33.83  116.6
GR 31.95   123.3   31.95  125.8   30.89  132.0   30.44  152.8   30.05  174.9
GR 30.05   178.4   28.37  182.4   28.32  192.8   28.24  207.8   27.84  232.8
GR 27.84   272.8   27.94  312.8   28.24  346.8   28.44  352.8   29.26  392.8
GR 30.84   432.8   31.43  458.1   34.67  463.3   34.67  467.3   33.58  472.8
GR 33.52   473.3   33.22  473.3   33.11  502.0   34.31  502.0   34.16  509.1
GR 39.42   509.1   39.42  510.3   42.12  510.3   40.72  580.3
X1 7.282      47  101.00  444.90  110.00 110.00  110.00
GR 32.01      .0   32.01   81.3   31.84   84.0   30.14   84.0   30.14   85.0
GR 31.84    85.0   32.37   86.0   32.41   93.1   35.33   96.5   35.33  100.0
GR 35.33   101.0   31.41  105.9   30.47  159.6   30.47  163.0   28.45  166.4
GR 28.25   171.0   28.25  178.0   28.15  186.0   27.85  198.0   27.85  207.0
GR 28.25   239.0   28.25  271.0   28.05  307.0   28.15  341.0   28.25  361.0
GR 28.45   366.5   29.16  371.7   30.67  375.4   31.41  438.9   34.33  442.8
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GR 35.13   444.9   35.16   446.4   35.16   447.9   34.33   453.2   34.03   453.2
GR 34.12   482.0   34.22   482.0   32.93   486.2   32.53   486.2   32.53   486.6
GR 32.93   486.6   33.33   490.2   33.33   493.7   31.03   499.0   30.83   500.3
GR 31.43   501.7   31.43   550.0
X1 7.288      47  101.00   444.90    6.00    6.00    6.00
GR 32.01      .0   32.01    81.3   31.84    84.0   30.14    84.0   30.14    85.0
GR 31.84    85.0   32.37    86.0   32.41    93.1   35.33    96.5   35.33   100.0
GR 35.33   101.0   31.41   105.9   30.47   159.6   30.47   163.0   28.45   166.4
GR 28.25   171.0   28.25   178.0   28.15   186.0   27.85   198.0   27.85   207.0
GR 28.25   239.0   28.25   271.0   28.05   307.0   28.15   341.0   28.25   361.0
GR 28.45   366.5   29.16   371.7   30.67   375.4   31.41   438.9   34.33   442.8
GR 35.13   444.9   35.16   446.4   35.16   447.9   34.33   453.2   34.03   453.2
GR 34.12   482.0   34.22   482.0   32.93   486.2   32.53   486.2   32.53   486.6
GR 32.93   486.6   33.33   490.2   33.33   493.7   31.03   499.0   30.83   500.3
GR 31.43   501.7   31.43   550.0
X1 7.392      62   84.92   427.90  104.00  104.00  104.00
GR 34.65      .0   34.65    68.4   34.57    70.6   33.74    70.6   33.74    71.5
GR 34.57    71.5   34.83    72.3   34.85    78.3   36.28    81.1   36.28    84.1
GR 36.28    84.9   35.05    84.9   33.60   100.7   33.52   100.7   33.37   102.4
GR 33.22   104.1   31.78   106.6   30.79   155.7   30.79   158.9   30.65   159.4
GR 29.07   162.1   28.66   163.5   28.18   166.4   28.15   179.1   28.11   186.7
GR 28.07   193.6   27.89   215.4   28.04   235.0   28.04   248.1   28.14   262.3
GR 27.94   272.7   27.89   283.1   28.08   298.7   28.08   314.4   27.98   332.0
GR 28.03   348.7   28.08   358.4   28.37   363.2   28.91   367.7   29.78   370.9
GR 30.88   370.9   31.96   422.2   33.76   424.7   34.21   425.9   34.60   427.9
GR 35.22   427.9   35.23   428.8   35.23   429.7   34.83   432.8   34.68   432.8
GR 34.72   449.8   34.77   449.8   34.14   452.3   33.94   452.3   33.94   452.5
GR 34.14   452.5   34.34   454.6   34.34   456.7   33.21   459.8   33.11   460.6
GR 33.41   461.4   33.41   489.9
X1 7.398      62   84.92   427.90    6.00    6.00    6.00
GR 34.65      .0   34.65    68.4   34.57    70.6   33.74    70.6   33.74    71.5
GR 34.57    71.5   34.83    72.3   34.85    78.3   36.28    81.1   36.28    84.1
GR 36.28    84.9   35.05    84.9   33.60   100.7   33.52   100.7   33.37   102.4
GR 33.22   104.1   31.78   106.6   30.79   155.7   30.79   158.9   30.65   159.4
GR 29.07   162.1   28.66   163.5   28.18   166.4   28.15   179.1   28.11   186.7
GR 28.07   193.6   27.89   215.4   28.04   235.0   28.04   248.1   28.14   262.3
GR 27.94   272.7   27.89   283.1   28.08   298.7   28.08   314.4   27.98   332.0
GR 28.03   348.7   28.08   358.4   28.37   363.2   28.91   367.7   29.78   370.9
GR 30.88   370.9   31.96   422.2   33.76   424.7   34.21   425.9   34.60   427.9
GR 35.22   427.9   35.23   428.8   35.23   429.7   34.83   432.8   34.68   432.8
GR 34.72   449.8   34.77   449.8   34.14   452.3   33.94   452.3   33.94   452.5
GR 34.14   452.5   34.34   454.6   34.34   456.7   33.21   459.8   33.11   460.6
GR 33.41   461.4   33.41   489.9
X1 7.505      26   69.50   411.60  107.00  107.00  107.00
GR 37.18      .0   37.18    69.5   34.78    69.5   34.67    97.0   34.52    97.0
GR 34.52   100.0   34.52   103.0   32.14   107.3   31.09   152.0   31.09   155.4
GR 28.92   159.3   28.12   162.0   28.02   191.0   27.92   232.0   28.22   268.0
GR 28.22   292.0   28.42   318.0   28.02   337.0   27.92   356.0   28.92   366.6
GR 31.09   366.6   32.49   406.2   34.10   408.6   34.10   411.6   35.30   411.6
GR 35.30   432.3
X1 7.563      23   68.10   404.50   58.00   58.00   58.00
GR 36.95      .0   36.95    68.1   35.15    68.1   34.71    97.5   34.51    97.5
GR 34.51   100.0   34.51   102.0   32.20   104.5   31.59   148.6   31.59   151.8
GR 32.59   151.8   32.59   152.1   29.32   152.1   29.32   361.9   32.40   361.9
GR 32.40   362.2   31.80   362.2   31.83   363.7   32.26   400.0   33.67   402.5
GR 33.67   404.5   34.87   404.5   34.87   425.0
X1 7.565      23   68.10   404.50    2.00    2.00    2.00
GR 36.95      .0   36.95    68.1   35.15    68.1   34.71    97.5   34.51    97.5
GR 34.51   100.0   34.51   102.0   32.20   104.5   31.59   148.6   31.59   151.8
GR 32.59   151.8   32.59   152.1   29.32   152.1   29.32   361.9   32.40   361.9
GR 32.40   362.2   31.80   362.2   31.83   363.7   32.26   400.0   33.67   402.5
GR 33.67   404.5   34.87   404.5   34.87   425.0
X1 7.715      32   70.30   394.50  150.00  150.00  150.00
GR 37.15      .0   37.15    70.3   35.75    70.3   35.16    96.0   34.86    96.0
GR 34.86   100.0   32.69   105.2   31.88   150.3   31.88   153.5   30.26   156.2
GR 28.76   160.0   28.56   178.0   29.36   207.0   29.16   241.0   28.86   278.0
GR 29.26   301.0   29.56   325.0   29.76   340.0   29.76   354.0   30.26   361.2
GR 31.51   363.7   31.95   386.1   34.84   393.2   35.03   393.8   35.03   394.5
GR 34.93   394.5   34.92   421.7   35.02   421.7   35.02   423.2   34.36   427.0
GR 34.11   427.0   34.11   480.0
X1 7.905      41   23.00   321.70  190.00  190.00  190.00
GR 36.26      .0   36.19    12.5   36.19    14.1   37.69    14.1   37.41    23.0
GR 36.39    24.0   36.25    28.7   36.25    29.7   36.05    29.7   36.05    30.7
GR 32.79    36.3   32.12    84.6   32.12    87.8   30.32    91.2   29.42    93.7
GR 29.32   115.7   29.02   145.7   29.42   177.7   29.42   199.7   29.32   217.7
GR 29.92   228.7   29.92   238.7   30.32   251.1   30.67   252.7   30.41   297.7
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GR 31.80   300.2   32.40   317.5   35.32   321.7   35.16   323.4   34.96   323.4
GR 35.45   351.3   35.55   351.3   35.55   352.8   34.75   355.3   34.55   355.3
GR 34.54   360.2   34.64   360.2   32.45   363.7   32.45   365.2   34.05   367.6
GR 34.05   418.7
X1 8.125      39   85.80   361.80  220.00  220.00  220.00
GR 34.92       .0  34.92    63.2   32.16    64.5   32.15    64.8   30.75    64.8
GR 30.75    66.4   32.15    66.4   32.47    69.4   30.72    70.8   30.72    72.0
GR 36.12    81.0   36.12    85.0   36.12    85.8   33.08    91.4   32.20   114.8
GR 32.20   118.0   30.33   122.2   29.73   128.0   28.83   164.0   28.63   193.0
GR 29.43   234.0   30.03   272.0   29.33   288.0   28.73   313.0   28.73   324.0
GR 30.33   328.4   31.85   331.7   35.02   352.9   35.34   358.1   35.68   361.8
GR 35.48   361.8   35.09   388.9   35.19   388.9   35.19   390.4   34.62   392.0
GR 34.62   397.5   34.72   399.0   33.82   401.4   33.82   435.0
X1 8.365      40  100.00   381.50  240.00  240.00  240.00
GR 33.08       .0  33.08    85.3   32.88    85.8   32.88    86.3   31.82    87.4
GR 31.82    88.6   36.04    96.0   36.04   100.0   33.44   105.5   33.24   121.0
GR 33.24   124.2   33.69   124.2   33.69   124.5   33.24   124.5   30.40   135.6
GR 30.00   177.0   29.70   184.0   29.80   231.0   29.90   264.0   30.10   297.0
GR 30.40   298.0   32.04   300.0   32.04   315.0   30.40   318.0   28.40   319.0
GR 28.00   330.0   28.40   343.0   30.40   343.7   32.61   343.7   33.16   372.8
GR 34.22   375.4   35.85   379.0   36.54   381.5   35.88   381.5   36.16   409.8
GR 37.04   414.1   37.38   426.6   34.14   433.6   34.14   439.6   38.14   460.0
X1 8.555      29  100.00   367.20  190.00  190.00  190.00
GR 34.04       .0  34.04    86.8   33.46    88.8   33.46    90.0   36.21    96.0
GR 36.21   100.0   33.91   105.0   33.38   126.8   33.38   130.0   31.10   133.3
GR 28.60   137.0   28.20   158.0   28.60   189.0   29.00   204.0   30.10   241.0
GR 30.30   292.0   29.60   313.0   29.40   331.0   31.10   336.2   33.18   338.3
GR 33.34   358.7   35.51   361.9   37.49   367.2   37.59   372.6   37.59   372.7
GR 37.49   372.7   37.27   400.6   37.71   425.2   37.71   450.0
X1 8.775      32   93.10   361.10  220.00  220.00  220.00
GR 36.37       .0  36.57    93.1   36.19    94.8   36.18   100.0   34.25   104.3
GR 33.37   131.8   33.37   135.0   31.13   138.1   28.13   143.0   28.43   173.0
GR 29.13   197.0   29.63   218.0   30.13   243.0   30.03   278.0   29.23   293.0
GR 29.33   310.0   29.63   321.0   31.13   327.1   33.10   329.6   33.95   350.6
GR 35.66   355.4   38.91   360.0   39.18   361.1   38.47   364.9   38.42   364.9
GR 38.61   392.2   38.71   392.2   38.71   393.2   37.58   394.9   37.58   395.9
GR 38.72   397.5   38.72   420.0
X1 8.985      35   57.40   330.80  210.00  210.00  210.00
GR 37.48       .0  37.48    57.4   36.48    61.7   36.08    61.7   36.08    62.1
GR 36.48    62.1   36.46    70.0   34.22    74.5   33.51    96.3   33.51    99.5
GR 31.14   102.5   28.64   106.0   28.44   141.0   29.64   168.0   30.14   191.0
GR 30.14   232.0   29.24   259.0   29.44   271.0   29.64   286.0   31.14   300.5
GR 33.26   304.0   33.68   317.6   37.00   324.5   39.19   328.7   39.71   330.8
GR 38.98   332.7   38.88   333.7   39.10   361.2   39.20   361.2   39.20   362.2
GR 38.40   364.0   38.40   365.0   39.92   368.4   39.52   369.4   39.52   430.0
X1 9.190      37   75.00   317.10  205.00  205.00  205.00
GR 35.41       .0  35.41    66.9   35.01    66.9   35.01    67.3   35.41    67.3
GR 35.41    67.8   36.69    71.0   36.69    75.0   34.40    79.8   33.47    96.2
GR 33.47    99.5   31.16   102.5   29.36   105.0   28.76   142.0   28.56   164.0
GR 29.16   182.0   29.76   204.0   30.46   229.0   30.36   248.0   29.26   264.0
GR 29.16   273.0   29.56   282.2   31.16   287.2   33.21   290.0   34.37   303.0
GR 36.88   307.7   39.62   312.7   40.06   317.1   39.80   319.1   39.70   319.1
GR 39.70   347.8   39.80   347.8   39.80   348.8   39.22   350.3   39.22   351.3
GR 40.82   354.8   40.82   375.0
X1 9.370      36   75.00   300.00  180.00  180.00  180.00
GR 35.66       .0  35.66    67.1   35.26    67.1   35.26    67.5   35.66    67.5
GR 35.66    68.0   36.90    71.0   36.90    75.0   34.04    81.1   33.55    93.1
GR 33.55    96.4   31.20    99.8   29.80   103.0   29.50   122.0   29.70   148.0
GR 30.50   167.0   30.40   184.0   29.90   209.0   29.30   233.0   28.60   246.0
GR 28.80   258.0   29.50   272.0   31.20   277.8   33.47   281.4   33.52   287.5
GR 36.79   293.3   40.27   300.0   40.49   302.3   40.27   304.4   40.18   332.0
GR 40.28   332.0   40.31   342.9   38.50   347.8   37.60   347.8   37.60   356.8
GR 39.30   376.1
X1 9.550      34  100.00   309.60  180.00  180.00  180.00
GR 35.65       .0  35.65    92.1   35.25    92.1   35.25    92.5   35.65    92.5
GR 36.65    93.0   37.45    96.0   37.45   100.0   34.15   106.5   33.71   118.6
GR 33.71   121.7   31.21   126.0   30.81   130.0   30.51   152.0   30.21   198.0
GR 29.51   223.0   29.21   251.0   28.61   270.0   29.31   281.0   29.71   291.0
GR 31.21   296.9   33.36   300.0   33.90   309.6   39.75   309.6   40.81   313.2
GR 40.81   314.2   41.01   314.7   41.68   341.6   41.83   341.6   41.83   341.8
GR 40.22   345.7   39.52   345.7   39.52   352.7   51.65   370.0
X1 9.720      33  100.00   374.20  170.00  170.00  170.00
GR 35.18       .0  35.18    90.4   34.78    90.4   34.78    90.8   35.18    90.8
GR 35.38    91.8   37.58    96.0   37.58   100.0   35.68   104.2   34.20   107.7
GR 33.86   130.5   33.86   133.7   31.22   137.8   30.52   139.0   30.12   150.0
GR 30.32   166.0   31.78   167.8   31.88   172.0   31.22   174.0   30.92   176.0
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GR 29.32   191.0   28.62   236.0   28.82   254.0   29.02   296.0   29.42   302.0
GR 31.22   306.9   33.53   310.8   33.72   353.9   35.06   358.1   35.14   362.9
GR 35.14   371.9   36.24   374.2   36.24   400.0
X1 9.905      35   85.00   322.50  185.00  185.00  185.00
GR 35.49      .0   35.49    75.7   35.09    75.7   35.09    76.1   35.49    76.1
GR 35.49    76.6   37.93    81.0   37.94    85.0   34.36    92.9   33.92   125.6
GR 33.92   129.1   31.99   132.7   31.23   169.8   30.93   175.0   30.93   183.0
GR 30.33   202.0   30.13   227.0   29.53   250.0   29.33   266.0   28.83   279.0
GR 28.93   291.0   29.23   301.0   31.23   306.1   33.54   310.4   33.83   322.5
GR 40.66   322.5   41.98   324.9   42.18   325.0   42.31   325.5   42.04   355.7
GR 38.10   363.9   34.30   363.9   34.30   364.5   35.80   364.5   42.13   375.5
X110.045      35  100.00  360.20  140.00  140.00  140.00
GR 35.32      .0   35.32    88.4   34.92    88.4   34.92    88.8   35.32    88.8
GR 35.43    89.8   38.02    96.0   38.02   100.0   35.75   107.5   34.73   112.8
GR 33.83   148.5   33.83   152.0   32.27   155.6   32.63   169.3   31.24   171.4
GR 30.94   177.0   30.94   198.0   30.54   217.0   30.44   232.0   30.34   258.0
GR 29.74   277.0   29.14   293.0   29.34   304.0   29.44   318.0   29.44   323.0
GR 31.24   328.0   33.72   332.8   34.30   348.7   37.57   354.3   40.86   360.2
GR 40.86   360.7   40.99   366.6   40.43   366.6   40.63   377.1   40.47   391.4
X110.090      26   65.10   321.00  45.00   45.00   45.00
GR 38.82      .0   38.82    29.6   38.62    29.6   39.01    60.0   39.00    65.1
GR 37.42    65.1   36.57    66.1   34.21    70.6   33.81    94.3   33.41    97.1
GR 31.25   103.3   30.85   129.1   30.65   161.1   30.75   193.1   30.85   225.1
GR 30.55   257.1   31.25   276.0   33.41   289.1   32.37   314.3   32.87   314.3
GR 35.82   320.0   37.43   320.0   37.43   321.0   38.99   321.0   39.02   326.5
GR 39.02   396.0
X110.120      26   65.10   321.00  30.00   30.00   30.00
GR 38.82      .0   38.82    29.6   38.62    29.6   39.01    60.0   39.00    65.1
GR 37.42    65.1   36.57    66.1   34.21    70.6   33.81    94.3   33.41    97.1
GR 31.25   103.3   30.85   129.1   30.65   161.1   30.75   193.1   30.85   225.1
GR 30.55   257.1   31.25   276.0   33.41   289.1   32.37   314.3   32.87   314.3
GR 35.82   320.0   37.43   320.0   37.43   321.0   38.99   321.0   39.02   326.5
GR 39.02   396.0
X110.225      33   62.00   298.80  105.00  105.00  105.00
GR 39.47      .0   39.47    15.0   39.47    43.0   38.67    43.0   38.13    62.0
GR 37.89    62.2   37.89    65.2   37.16    66.7   34.07    72.8   33.96    97.8
GR 33.96   100.0   33.96   101.0   32.17   104.5   31.27   139.9   31.17   143.0
GR 30.87   152.0   30.57   178.0   30.47   197.0   30.27   219.0   30.07   235.0
GR 29.77   248.0   29.77   257.0   31.27   262.0   33.61   265.7   33.61   269.2
GR 34.00   270.3   34.24   291.8   37.60   298.8   37.60   299.8   37.60   303.8
GR 36.23   314.8   36.24   321.9   36.24   370.0
X110.415      29   54.60   275.60  190.00  190.00  190.00
GR 37.48      .0   37.48    54.6   37.08    56.1   34.08    62.1   34.01    87.0
GR 34.01    90.0   34.01    90.8   32.18    94.3   32.34   104.5   31.28   107.0
GR 31.08   114.0   30.98   120.0   30.58   168.0   30.28   184.0   29.58   202.0
GR 29.58   216.0   29.78   224.0   29.78   230.0   31.28   236.8   33.76   240.6
GR 33.76   243.6   34.22   251.3   34.57   269.4   36.95   274.4   37.75   275.6
GR 37.75   280.6   38.15   281.1   38.15   281.6   37.75   282.1
X110.595      33   66.00   270.00  180.00  180.00  180.00
GR 38.77      .0   38.77    19.2   38.97    19.2   38.97    21.8   38.18    23.2
GR 37.80    25.8   38.03    26.4   38.26    66.0   37.49    68.0   34.44    74.0
GR 34.03    82.5   34.03    86.2   31.29    90.3   30.49    95.0   30.49   107.0
GR 30.39   129.0   30.29   148.0   29.49   167.0   28.99   184.0   28.29   197.0
GR 28.99   206.0   28.99   217.0   31.29   222.3   34.09   226.8   34.09   230.3
GR 34.38   236.3   34.66   261.5   37.72   267.7   39.05   270.0   39.08   275.0
GR 39.08   277.0   39.08   279.0   39.15   296.4
X110.765      41   59.00   271.10  170.00  170.00  170.00
GR 39.62      .0   39.62    15.5   39.68    16.5   39.68    17.5   39.16    18.9
GR 38.98    24.0   38.75    24.0   38.79    40.5   39.04    40.5   39.04    45.0
GR 38.94    45.0   39.38    50.0   38.94    51.0   39.29    54.0   39.29    59.0
GR 37.33    62.6   34.44    69.0   34.23    85.4   34.23    89.9   31.35    93.7
GR 31.05    94.7   30.05    94.7   29.55    95.7   29.25   102.0   28.85   129.0
GR 27.85   157.0   28.35   169.0   29.65   184.0   30.65   202.0   31.05   220.0
GR 31.35   224.5   34.07   229.9   34.07   233.4   34.30   234.0   34.71   264.4
GR 38.06   270.2   38.55   271.1   38.55   276.0   37.06   279.1   37.06   280.1
GR 37.06   400.0
X110.925      34   47.70   266.90  160.00  160.00  160.00
GR 53.52      .0   40.70    15.0   40.70    17.3   39.40    17.3   39.43    22.0
GR 39.18    22.0   39.27    38.1   39.52    38.1   39.52    40.0   39.62    40.6
GR 39.34    47.7   37.84    51.0   34.59    58.0   34.21    79.6   34.21    83.3
GR 31.36    87.7   30.16    88.2   30.16    88.7   29.16    88.7   29.66   140.7
GR 30.66   183.0   31.16   212.0   31.16   218.0   31.36   228.6   31.90   234.8
GR 34.21   238.8   34.21   242.3   34.96   245.6   35.09   258.8   37.93   264.6
GR 39.18   266.9   39.18   270.9   37.18   275.6   37.18   340.0
X111.105      32   51.90   335.00  180.00  180.00  180.00
GR 39.65      .0   39.65    47.4   39.85    47.4   39.85    50.0   39.85    51.9
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GR 39.35	51.9	38.41	53.5	35.31	59.6	35.05	114.8	35.05	118.3
GR 33.05	122.6	31.39	122.6	31.09	126.0	30.89	144.0	30.89	180.0
GR 31.09	232.0	31.09	258.0	31.19	283.0	31.39	288.0	32.57	294.0
GR 32.97	294.0	35.09	298.5	35.09	302.0	35.68	326.0	39.21	335.0
GR 39.43	367.2	37.35	372.0	37.35	378.0	35.15	382.3	35.15	383.3
GR 37.35	385.0	37.35	500.0						
X111.325	33	62.70	452.30	220.00	220.00	220.00			
GR 39.92	.0	39.77	37.5	39.77	42.0	40.02	42.0	39.72	58.2
GR 39.97	58.2	39.97	60.0	39.97	62.7	39.52	62.7	38.93	64.2
GR 35.79	70.5	35.20	138.8	35.20	142.3	33.21	146.7	31.40	146.7
GR 31.10	151.0	30.90	182.0	31.00	213.0	30.80	246.0	30.90	279.0
GR 31.10	306.0	31.40	312.1	32.44	317.4	34.78	327.8	35.28	327.8
GR 35.28	331.3	36.47	358.0	35.78	444.1	38.79	451.0	39.27	452.3
GR 39.27	456.3	35.54	465.0	35.54	560.0				
X111.415	33	25.40	424.70	90.00	90.00	90.00			
GR 39.81	.0	39.81	.5	39.81	4.5	39.56	4.5	39.76	20.9
GR 40.01	20.9	40.01	23.9	40.01	25.4	39.51	25.4	39.01	26.8
GR 35.86	33.1	35.21	105.3	35.21	109.3	33.11	113.3	31.44	113.3
GR 31.24	117.9	31.24	132.9	31.14	157.9	31.14	181.9	31.34	209.9
GR 31.34	224.9	31.04	247.9	31.04	256.9	31.14	264.9	31.04	273.9
GR 31.44	278.3	32.56	283.6	33.16	283.6	35.26	288.1	35.26	292.6
GR 35.46	292.6	36.16	327.7	35.96	424.7				
X111.545	30	27.50	465.00	130.00	130.00	130.00			
GR 39.90	.0	39.90	.5	39.90	4.5	39.65	4.5	39.75	23.0
GR 40.00	23.0	40.00	25.0	40.00	27.5	39.60	27.5	39.10	29.0
GR 36.05	35.5	35.25	115.0	35.25	119.0	33.20	123.2	31.50	123.2
GR 31.40	128.0	31.40	156.0	31.30	179.0	31.20	196.0	31.20	217.0
GR 31.30	233.0	31.30	244.0	31.30	253.0	31.30	264.0	31.40	269.0
GR 31.50	274.5	33.30	347.0	35.15	355.5	35.15	361.5	35.15	465.0
X111.655	32	25.60	514.30	110.00	110.00	110.00			
GR 40.11	.0	40.11	.5	40.11	4.5	39.86	4.5	40.21	21.2
GR 40.46	21.2	40.46	24.3	40.46	25.6	39.66	25.6	39.16	26.9
GR 36.16	33.3	35.26	112.8	35.26	116.8	33.21	121.0	31.60	121.0
GR 31.50	125.3	31.50	133.3	31.40	158.3	31.40	183.3	31.40	207.3
GR 31.40	225.3	31.40	242.3	31.50	251.3	31.50	259.3	31.50	265.3
GR 31.60	271.1	32.26	298.3	33.21	321.4	33.21	346.3	35.86	350.3
GR 35.41	416.3	35.41	514.3						
X111.710	44	32.30	520.40	55.00	55.00	55.00			
GR 40.21	.0	40.16	.4	40.16	3.9	39.91	3.9	40.86	29.2
GR 41.11	29.2	41.11	32.3	40.92	33.2	39.89	33.2	39.89	34.3
GR 36.24	34.3	35.91	46.0	35.81	58.9	35.66	72.3	35.01	95.1
GR 33.01	98.9	32.31	98.9	32.01	125.5	32.06	152.1	31.70	154.8
GR 31.30	159.2	31.30	178.8	31.40	185.0	31.50	200.9	31.70	204.0
GR 32.26	205.4	32.06	232.0	32.16	252.5	33.06	258.6	33.46	262.0
GR 35.21	265.7	35.21	269.7	35.81	285.2	36.21	311.9	36.26	338.5
GR 36.26	350.0	36.26	361.6	36.31	373.1	36.26	383.6	39.83	383.6
GR 39.83	384.4	40.77	384.4	40.56	427.0	40.06	520.4		
X111.741	44	32.30	384.40	31.00	31.00	31.00			
GR 40.21	.0	40.16	.4	40.16	3.9	39.91	3.9	40.86	29.2
GR 41.11	29.2	41.11	32.3	40.92	33.2	39.89	33.2	39.89	34.3
GR 36.24	34.3	35.91	46.0	35.81	58.9	35.66	72.3	35.01	95.1
GR 33.01	98.9	32.31	98.9	32.01	125.5	32.06	152.1	31.70	154.8
GR 31.30	159.2	31.30	178.8	31.40	185.0	31.50	200.9	31.70	204.0
GR 32.26	205.4	32.06	232.0	32.16	252.5	33.06	258.6	33.46	262.0
GR 35.21	265.7	35.21	269.7	35.81	285.2	36.21	311.9	36.26	338.5
GR 36.26	350.0	36.26	361.6	36.31	373.1	36.26	383.6	39.83	383.6
GR 39.83	384.4	40.77	384.4	40.56	427.0	40.06	520.4		
X111.785	33	28.40	353.50	44.00	44.00	44.00			
GR 40.36	.0	40.36	1.9	40.36	5.4	40.11	5.4	40.26	23.9
GR 40.51	23.9	40.71	25.9	40.51	28.4	37.71	28.4	36.26	32.4
GR 35.31	89.5	35.16	96.7	33.06	99.8	31.96	99.8	32.81	121.1
GR 31.90	129.9	31.80	133.9	31.70	140.9	31.70	157.9	31.60	181.9
GR 31.60	196.9	31.60	214.9	31.70	226.9	31.70	242.9	31.80	250.9
GR 31.80	265.9	31.90	271.4	33.11	285.4	35.21	289.1	35.21	292.6
GR 36.31	351.4	40.21	353.5	39.77	383.5				
X111.817	23	28.40	347.60	32.00	32.00	32.00			
GR 39.93	.0	39.93	5.0	39.93	7.5	39.68	7.5	39.83	23.9
GR 40.08	23.9	40.08	25.9	40.08	28.4	39.83	28.4	39.53	29.4
GR 36.23	36.3	35.38	86.4	35.53	93.5	31.10	99.6	31.10	278.0
GR 35.38	283.7	35.38	287.7	36.03	336.4	39.40	342.6	39.40	347.6
GR 39.90	347.6	40.18	355.7	40.18	416.7				
X111.820	23	28.40	347.60	3.00	3.00	3.00			
GR 39.93	.0	39.93	5.0	39.93	7.5	39.68	7.5	39.83	23.9
GR 40.08	23.9	40.08	25.9	40.08	28.4	39.83	28.4	39.53	29.4
GR 36.23	36.3	35.38	86.4	35.53	93.5	31.10	99.6	31.10	278.0
GR 35.38	283.7	35.38	287.7	36.03	336.4	39.40	342.6	39.40	347.6

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GR 39.90    347.6    40.18    355.7    40.18    416.7
X111.960       45   102.00   456.50   140.00   140.00   140.00
GR 40.06       .0    40.06     76.9    40.06     81.1    39.81     81.1    39.96     97.5
GR 40.21     97.5    40.21    100.0    40.21    102.0    36.21    110.1    35.41    154.0
GR 35.21    162.2    32.14    164.0    31.94    169.0    31.94    174.0    31.74    189.0
GR 31.64    208.0    32.04    234.0    32.04    258.0    31.94    283.0    31.84    301.0
GR 31.44    318.0    31.54    325.0    32.14    332.5    32.56    350.5    33.16    350.5
GR 35.16    352.2    35.16    356.7    35.96    425.3    39.26    431.9    39.26    432.2
GR 40.48    434.5    40.48    437.2    40.28    437.2    40.21    442.5    41.66    456.5
GR 41.66    459.5    40.21    471.7    40.11    474.4    39.96    474.4    39.91    500.5
GR 40.16    500.5    40.16    507.5    40.01    507.5    40.01    515.5    40.01    550.0
X112.060       35    86.70   428.00   100.00   100.00   100.00
GR 40.02       .0    40.02     61.3    40.02     66.0    39.77     66.0    39.97     82.2
GR 40.22     82.2    40.22     85.0    40.22     86.7    39.92     86.7    39.62     87.7
GR 36.22     94.7    35.42    136.9    35.17    145.1    32.16    146.5    31.86    165.5
GR 31.76    177.0    31.66    194.0    31.76    217.0    31.86    243.0    31.76    264.0
GR 31.66    279.0    31.76    294.0    31.96    303.0    32.06    315.5    32.16    330.8
GR 33.02    332.1    35.12    333.7    35.12    338.2    36.37    421.7    40.02    428.0
GR 40.02    466.8    40.17    466.8    40.17    469.8    47.27    489.5    47.47    570.0
X112.160       33    57.10   406.80   100.00   100.00   100.00
GR 40.01       .0    40.01     32.2    40.01     36.2    39.76     36.2    39.96     52.6
GR 40.21     52.6    40.21     55.0    40.21     57.1    36.21     64.9    35.41    104.3
GR 35.16    112.5    32.21    114.1    31.81    114.1    31.91    134.0    32.01    148.0
GR 31.81    173.0    31.81    189.0    31.81    209.0    31.91    225.0    31.91    239.0
GR 32.11    252.0    32.11    262.0    32.21    266.7    33.26    299.4    35.11    301.0
GR 35.11    305.5    36.61    398.5    40.06    405.3    40.06    405.6    40.23    406.0
GR 40.71    406.8    40.41    412.5    40.41    455.0
X112.200       33   101.80   431.80    40.00    40.00    40.00
GR 40.21       .0    40.21     68.1    40.21     93.0    40.94    100.0    40.70    101.8
GR 38.97    101.8    38.97    102.8    36.37    102.8    35.54    136.8    35.24    145.1
GR 35.24    149.5    32.22    151.1    31.97    151.1    31.92    159.0    31.92    168.0
GR 31.92    176.8    31.92    191.0    31.92    207.0    31.92    216.8    31.92    251.0
GR 32.02    296.0    32.22    316.8    33.19    336.2    35.14    337.9    35.14    342.4
GR 35.54    356.8    36.14    396.8    36.59    430.5    38.97    430.5    38.97    431.8
GR 40.69    431.8    40.73    438.5    40.53    540.5
X112.220       33   101.80   431.80    20.00    20.00    20.00
GR 40.21       .0    40.21     68.1    40.21     93.0    40.94    100.0    40.70    101.8
GR 38.97    101.8    38.97    102.8    36.37    102.8    35.54    136.8    35.24    145.1
GR 35.24    149.5    32.22    151.1    31.97    151.1    31.92    159.0    31.92    168.0
GR 31.92    176.8    31.92    191.0    31.92    207.0    31.92    216.8    31.92    251.0
GR 32.02    296.0    32.22    316.8    33.19    336.2    35.14    337.9    35.14    342.4
GR 35.54    356.8    36.14    396.8    36.59    430.5    38.97    430.5    38.97    431.8
GR 40.69    431.8    40.73    438.5    40.53    540.5
X112.260       31    72.10   404.10    40.00    40.00    40.00
GR 40.13       .0    40.13     46.0    40.33     67.8    40.58     67.8    40.58     70.0
GR 40.58     72.1    40.28     72.1    39.58     73.3    36.18     79.8    35.28    123.1
GR 35.28    127.5    32.23    129.0    32.13    129.0    31.83    134.0    31.53    149.0
GR 31.63    164.0    31.93    182.0    32.13    211.0    32.13    243.0    32.03    268.0
GR 31.93    291.0    31.83    305.0    31.83    310.0    32.23    315.1    35.13    316.8
GR 35.13    320.3    36.48    395.7    39.93    402.4    40.83    404.1    40.08    466.0
GR 40.08    520.0
X112.355       34    80.00   403.00    95.00    95.00    95.00
GR 40.01       .0    40.01     58.0    40.06     76.0    40.31     76.0    40.31     80.0
GR 39.81     80.4    39.81     82.1    36.21     89.0    35.31    131.2    35.31    135.6
GR 32.31    137.1    32.21    141.0    31.91    154.0    31.71    184.0    31.91    217.0
GR 31.91    241.0    32.21    269.0    32.21    281.0    32.11    305.0    31.81    312.0
GR 31.81    317.0    32.31    322.5    35.16    324.0    35.16    328.5    36.61    395.0
GR 40.72    403.0    40.61    407.0    40.46    407.0    40.46    431.2    40.61    431.2
GR 40.61    434.2    40.76    437.2    40.56    437.2    40.56    500.0
X112.460       35    50.00   365.50   105.00   105.00   105.00
GR 40.26       .0    40.26     24.6    40.11     29.0    39.86     29.0    40.11     45.3
GR 40.36     45.3    40.36     50.0    36.16     58.7    35.21    104.6    32.37    106.5
GR 31.87    110.0    31.87    119.0    32.07    133.0    32.07    148.0    32.17    169.0
GR 32.17    192.0    31.97    229.0    31.97    243.0    31.67    264.0    32.07    282.0
GR 32.37    291.5    35.11    293.0    35.11    297.5    36.56    357.2    39.86    364.0
GR 40.66    365.5    40.66    370.5    40.66    374.0    40.51    374.0    40.56    398.5
GR 40.71    398.5    40.71    401.5    40.91    404.5    40.71    404.5    40.71    470.0
X112.560       38    50.70   366.60   100.00   100.00   100.00
GR 40.26       .0    40.26     24.8    40.11     29.0    39.86     29.0    40.11     45.4
GR 40.36     45.4    40.36     50.0    40.36     50.7    36.16     59.0    35.11    104.5
GR 32.40    106.1    32.00    106.1    32.00    110.0    32.10    117.0    32.00    144.0
GR 32.20    167.0    32.20    181.0    32.30    200.0    32.10    219.0    32.00    241.0
GR 31.60    261.0    31.70    275.0    32.10    282.0    32.40    291.3    35.16    293.0
GR 35.16    297.5    36.56    358.3    40.56    366.6    40.81    371.7    40.91    371.7
GR 40.91    373.7    40.81    373.7    40.71    399.0    40.81    399.0    40.81    402.0
GR 41.01    405.0    40.81    405.0    40.81    470.0
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X112.660      34    51.90   369.60   100.00   100.00   100.00
GR 40.91       .0   40.91    24.0    40.71    26.6     40.46    26.6    40.56    46.1
GR 40.81     46.1   40.81    50.0    40.81    50.6     40.61    50.6    40.61    51.9
GR 36.16     60.3   35.11   105.1    32.46   106.8     32.16   106.8    32.16   112.0
GR 31.96    117.0   31.96   134.0    31.76   151.0     31.66   169.0    31.46   184.0
GR 31.46    207.0   31.76   222.0    31.76   248.0     31.96   267.0    32.16   282.0
GR 32.46    291.9   35.16   293.5    35.16   299.0     35.56   361.3    40.21   367.8
GR 41.31    369.6   41.31   373.6    41.11   373.6     41.01   473.6
X112.760      48    31.50   353.50   100.00   100.00   100.00
GR 41.64       .0   41.21     7.0    41.09    11.0     40.84    11.0    41.11    27.0
GR 41.36     27.0   41.67    29.0    41.36    29.5     41.46    29.5    41.46    31.5
GR 41.36     31.5   39.90    34.3    36.19    42.0     35.14    85.3    36.14    88.8
GR 33.51     91.0   32.61    96.0    32.51   102.0     32.51   121.0    32.11   138.0
GR 32.01    153.0   32.01   168.0    31.81   183.0     31.71   208.0    31.91   220.0
GR 32.01    236.0   32.11   253.0    32.31   260.0     32.51   269.0    33.51   274.3
GR 33.12    276.5   35.09   278.0    35.09   282.5     36.45   345.4    40.40   353.5
GR 41.02    353.5   40.92   356.5    40.77   356.5     40.72   363.4    41.32   363.4
GR 41.32    373.7   40.52   373.7    40.72   382.9     40.56   389.6    40.71   389.6
GR 40.71    392.6   40.21   393.5    40.21   429.0
X112.860      42    71.20   412.00   100.00   100.00   100.00
GR 41.93       .0   41.93    38.4    42.18    38.4     42.18    46.4    42.08    50.8
GR 41.83     50.8   42.01    67.0    42.26    67.0     42.26    70.0    42.26    71.2
GR 36.12     84.4   35.24   142.7    35.24   146.2     32.84   146.2    32.76   153.6
GR 31.26    157.0   31.06   164.0    31.06   177.0     30.96   201.0    30.86   218.0
GR 30.76    233.0   30.76   251.0    30.96   270.0     31.16   288.0    31.36   301.0
GR 31.36    319.0   31.56   330.0    32.76   333.8     35.24   335.5    35.24   340.0
GR 36.68    404.5   41.71   412.0    41.71   415.0     41.46   415.0    41.57   422.0
GR 42.07    422.0   42.07   422.3    40.27   422.3     41.57   441.5    41.45   448.3
GR 41.75    451.3   41.75   490.0
X112.916      28    74.50   423.20    56.00    56.00    56.00
GR 42.31       .0   42.31    38.3    42.81    38.3     42.81    42.3    42.68    46.5
GR 42.43     46.5   42.52    66.5    42.77    66.5     42.77    70.0    42.87    70.5
GR 42.87     74.5   36.57    74.5    35.51   152.4     35.51   155.9    35.72   156.6
GR 32.71    156.6   32.71   346.4    35.98   346.4     35.98   346.7    35.48   346.7
GR 36.90    413.9   42.57   423.2    42.49   428.3     42.40   464.2    42.65   464.2
GR 42.65    467.2   43.05   467.2    43.05   520.0
X112.920      28    74.50   423.20     4.00     4.00     4.00
GR 42.31       .0   42.31    38.3    42.81    38.3     42.81    42.3    42.68    46.5
GR 42.43     46.5   42.52    66.5    42.77    66.5     42.77    70.0    42.87    70.5
GR 42.87     74.5   36.57    74.5    35.51   152.4     35.51   155.9    35.72   156.6
GR 32.71    156.6   32.71   346.4    35.98   346.4     35.98   346.7    35.48   346.7
GR 36.90    413.9   42.57   423.2    42.49   428.3     42.40   464.2    42.65   464.2
GR 42.65    467.2   43.05   467.2    43.05   520.0
X112.940      43    70.00   431.00    20.00    20.00    20.00
GR 42.64       .0   43.24    36.8    43.13    41.1     42.88    41.1    43.29    67.5
GR 43.54     67.5   43.54    70.0    43.17    71.0     40.56    71.0    40.56    71.5
GR 38.34     72.6   38.04    74.6    36.90    91.0     36.76   111.0    36.76   131.0
GR 36.76    151.0   36.13   155.4    36.13   158.9     34.43   158.9    34.00   170.5
GR 33.90    171.0   33.90   191.0    33.70   211.0     33.60   231.0    33.50   251.0
GR 33.50    271.0   33.60   291.0    34.00   305.6     34.98   311.0    35.00   331.0
GR 34.62    350.0   36.32   351.0    36.32   353.5     36.80   371.0    37.13   391.0
GR 37.65    411.0   38.31   423.4    40.70   430.0     40.70   431.0    43.31   431.0
GR 43.38    431.4   43.38   433.3    42.18   533.3
X112.981      43    70.00   431.00    41.00    41.00    41.00
GR 42.64       .0   43.24    36.8    43.13    41.1     42.88    41.1    43.29    67.5
GR 43.54     67.5   43.54    70.0    43.17    71.0     40.56    71.0    40.56    71.5
GR 38.34     72.6   38.04    74.6    36.90    91.0     36.76   111.0    36.76   131.0
GR 36.76    151.0   36.13   155.4    36.13   158.9     34.43   158.9    34.00   170.5
GR 33.90    171.0   33.90   191.0    33.70   211.0     33.60   231.0    33.50   251.0
GR 33.50    271.0   33.60   291.0    34.00   305.6     34.98   311.0    35.00   331.0
GR 34.62    350.0   36.32   351.0    36.32   353.5     36.80   371.0    37.13   391.0
GR 37.65    411.0   38.31   423.4    40.70   430.0     40.70   431.0    43.31   431.0
GR 43.38    431.4   43.38   433.3    42.18   533.3
X113.035      34    56.00   390.10    54.00    54.00    54.00
GR 43.66       .0   43.37    24.1    43.06    26.3     43.06    29.8    42.81    29.8
GR 43.01     50.0   43.26    53.0    43.26    56.0     39.26    56.0    37.12    60.0
GR 36.64     81.6   34.10    81.6    34.00    85.0     34.00   104.0    33.90   117.0
GR 33.90    132.0   33.80   143.0    33.70   154.0     33.70   182.0    33.70   207.0
GR 33.70    232.0   33.70   256.0    33.80   282.0     33.90   287.0    34.10   293.5
GR 35.08    305.4   36.28   305.4    36.28   308.9     37.56   380.7    40.47   387.9
GR 42.97    387.9   43.40   390.1    43.13   393.3     43.13   433.0
X113.165      48    67.00   353.40   130.00   130.00   130.00
GR 42.13       .0   42.13    33.5    42.83    35.5     42.83    41.5    42.78    45.9
GR 42.53     45.9   42.62    62.0    42.87    62.0     42.87    65.0    42.87    67.0
GR 40.56     71.6   36.93    79.1    36.28   113.4     36.28   116.9    34.28   116.9
GR 34.24    166.2   34.14   170.0    34.04   179.0     33.84   192.0    33.84   201.0
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GR 33.64   214.0   33.64   223.0   33.84   234.0   33.94   246.0   34.24   249.6
GR 34.77   253.9   36.17   253.9   36.17   257.4   37.71   343.8   40.43   349.6
GR 41.84   353.4   41.84   356.4   41.59   356.4   41.46   363.3   41.96   363.3
GR 41.96   363.6   36.16   363.6   36.16   382.2   41.96   382.2   41.96   382.5
GR 41.40   382.5   41.40   389.5   41.60   389.5   41.60   393.5   42.80   397.5
GR 42.80   402.4   43.40   402.4   43.40   435.0
X113.265      46   60.70  322.80  100.00  100.00  100.00
GR 47.45      .0   42.45    10.0   42.45    35.0   42.41    39.4   42.16    39.4
GR 42.22    55.7   42.47    55.7   42.47    57.7   42.47    60.7   36.94    72.2
GR 36.43   113.2   36.43   116.7   34.27   120.3   33.97   122.7   33.97   136.7
GR 33.87   148.7   33.87   165.7   33.77   176.7   33.77   188.7   33.87   196.7
GR 33.87   204.7   33.97   209.7   34.07   217.7   34.27   221.1   36.40   225.0
GR 36.40   228.5   37.73   313.2   39.63   319.2   40.86   322.8   40.86   325.8
GR 40.61   325.8   40.70   332.8   41.20   332.8   41.20   333.1   38.50   333.1
GR 38.50   352.6   41.20   352.6   41.20   352.9   40.70   352.9   40.56   359.7
GR 40.81   359.7   40.81   363.7   42.05   367.4   42.23   373.1   43.43   373.1
GR 43.43   407.7
X113.355      47   72.50  315.00   90.00   90.00   90.00
GR 42.21      .0   42.21    46.5   42.12    51.0   41.87    51.0   42.02    67.5
GR 42.27    67.5   42.27    70.0   42.27    72.5   40.37    76.2   36.92    83.8
GR 36.43   130.5   36.43   134.0   34.30   137.7   34.00   141.0   34.00   156.0
GR 33.90   168.0   33.80   177.0   33.80   186.0   33.90   199.0   33.90   201.0
GR 33.90   210.0   33.90   219.0   34.00   224.0   34.30   229.6   36.43   233.7
GR 36.43   237.2   37.53   308.7   40.48   315.0   41.01   318.5   40.82   319.0
GR 40.82   322.0   40.57   322.0   40.64   329.2   41.14   329.2   41.14   329.5
GR 40.64   329.5   40.64   349.2   41.14   349.2   41.14   349.5   40.65   349.5
GR 40.46   356.7   40.71   356.7   40.71   360.7   42.52   366.3   42.52   370.6
GR 43.27   370.6   43.27   420.0
X113.460      36   61.50  283.50  105.00  105.00  105.00
GR 42.71      .0   41.58    39.0   41.59    55.5   41.84    55.5   41.84    59.5
GR 41.74    61.5   37.11    72.0   36.58   126.0   36.58   129.5   34.32   133.4
GR 33.92   136.5   33.92   143.5   33.82   155.5   33.82   168.5   33.72   182.5
GR 33.62   191.5   33.72   200.5   33.92   209.5   33.92   212.5   34.12   215.5
GR 34.12   222.5   34.32   225.7   34.72   225.7   36.63   229.7   36.63   233.2
GR 37.67   276.4   40.89   283.5   41.00   290.2   41.00   293.2   40.75   293.2
GR 40.64   321.5   40.89   321.5   40.89   322.5   42.54   329.4   43.15   334.5
GR 43.15   361.5
X113.555      42   65.50  280.80   95.00   95.00   95.00
GR 48.40      .0   41.40    20.0   41.40    40.0   42.00    40.0   42.00    44.3
GR 41.75    44.3   41.84    61.0   42.09    61.0   42.09    63.5   42.09    65.5
GR 40.57    69.2   37.18    77.0   36.74   131.0   36.74   134.5   34.37   138.2
GR 33.77   138.2   33.77   142.5   33.67   150.5   33.57   161.5   33.47   172.5
GR 33.47   186.5   33.57   200.5   33.67   206.5   33.87   213.5   34.17   221.5
GR 34.17   223.5   34.37   227.2   34.48   230.5   36.79   234.3   36.79   237.8
GR 37.88   272.9   40.77   279.1   41.18   280.8   41.28   284.9   41.28   286.9
GR 41.03   286.9   40.90   311.8   41.13   311.8   41.13   314.8   42.63   320.0
GR 43.07   324.8   43.07   363.5
X113.673      28   58.00  274.10  118.00  118.00  118.00
GR 46.37      .0   42.34    31.4   42.15    52.5   42.40    52.5   42.40    55.5
GR 42.40    58.0   40.99    61.4   37.35    69.1   36.95   117.5   36.95   121.0
GR 35.29   125.2   35.29   219.5   37.00   222.5   37.00   226.0   37.96   265.5
GR 41.12   271.7   41.53   273.7   41.76   274.1   41.76   277.1   41.51   277.1
GR 41.05   301.2   41.30   301.2   41.30   305.6   42.75   308.9   42.75   309.9
GR 41.71   312.7   41.71   314.7   41.71   355.5
X113.675      28   58.00  274.10    2.00    2.00    2.00
GR 46.37      .0   42.34    31.4   42.15    52.5   42.40    52.5   42.40    55.5
GR 42.40    58.0   40.99    61.4   37.35    69.1   36.95   117.5   36.95   121.0
GR 35.29   125.2   35.29   219.5   37.00   222.5   37.00   226.0   37.96   265.5
GR 41.12   271.7   41.53   273.7   41.76   274.1   41.76   277.1   41.51   277.1
GR 41.05   301.2   41.30   301.2   41.30   305.6   42.75   308.9   42.75   309.9
GR 41.71   312.7   41.71   314.7   41.71   355.5
X113.755      41   66.00  286.90   80.00   80.00   80.00
GR 48.20      .0   43.20    20.0   43.20    40.0   42.50    40.0   42.33    44.0
GR 42.08    44.0   42.35    60.5   42.60    60.5   42.73    64.0   42.60    66.0
GR 37.45    77.0   36.96   125.2   36.96   128.7   35.60   131.0   34.40   135.0
GR 34.40   141.0   34.40   150.0   34.30   162.0   34.10   171.0   34.10   183.0
GR 34.60   196.0   34.60   205.0   34.60   214.0   34.60   223.0   35.60   226.0
GR 37.07   228.5   37.07   232.0   37.91   278.4   40.89   284.6   41.68   286.9
GR 41.52   287.4   41.52   290.4   41.27   290.5   41.18   314.6   41.52   319.6
GR 42.11   321.8   42.11   322.8   41.43   323.8   41.43   327.8   41.73   327.8
GR 41.73   360.0
X113.850      41   40.50  275.30   95.00   95.00   95.00
GR 55.29      .0   48.29     5.0   48.29     7.0   44.29    10.0   44.29    12.5
GR 42.59    12.5   42.50    16.8   42.35    16.8   42.61    35.5   42.86    35.5
GR 42.86    38.5   42.86    40.5   41.22    44.2   38.27    50.5   38.07    57.1
GR 37.57    58.5   37.10   103.0   37.10   106.5   35.63   109.0   34.93   112.5
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GR 34.93   121.5   34.73   130.5   34.73   145.5   34.43   159.5   34.43   170.5
GR 34.63   181.5   34.63   191.5   34.63   198.5   35.63   203.2   37.19   205.9
GR 37.19   209.4   37.93   267.1   40.82   273.2   41.59   275.3   41.59   278.3
GR 41.34   278.3   41.18   305.5   41.38   305.5   41.38   309.9   43.20   312.9
GR 43.20   315.4
X113.955      44   73.50  322.40  105.00  105.00  105.00
GR 43.05      .0   43.05    46.0   42.55    46.0   42.45    50.4   42.20    50.4
GR 42.32    66.5   42.57    66.5   42.57    70.0   42.57    73.5   41.41    76.0
GR 37.80    83.3   38.37   145.5   38.37   149.0   35.65   151.9   35.25   153.0
GR 35.15   159.0   34.95   167.0   34.65   176.0   34.65   194.0   34.65   207.0
GR 34.65   219.0   34.65   226.0   34.65   234.0   34.65   240.0   35.65   245.4
GR 37.37   248.6   37.37   252.1   38.12   314.7   41.05   320.9   41.95   322.4
GR 41.95   325.4   42.15   325.4   41.27   349.6   41.52   349.6   41.52   354.1
GR 43.49   359.9   43.49   362.9   38.49   362.9   38.49   364.4   38.49   373.4
GR 41.69   373.4   41.69   375.9   41.44   375.9   41.44   383.9
X114.060      44   72.50  334.00  105.00  105.00  105.00
GR 42.44      .0   42.44    45.0   41.94    45.0   41.80    49.5   41.55    49.5
GR 41.76    66.0   42.01    66.0   42.01    70.0   42.01    72.5   41.20    74.9
GR 37.87    82.5   37.39   156.6   37.39   160.1   35.66   163.3   34.66   168.0
GR 34.66   173.0   34.46   186.0   34.26   194.0   34.16   207.0   34.46   216.0
GR 34.66   224.0   34.86   237.0   35.36   246.0   35.46   252.0   35.66   256.6
GR 37.41   260.0   37.41   263.5   38.46   325.6   41.37   331.9   41.86   334.0
GR 41.86   337.0   41.61   337.0   41.53   360.9   41.53   365.4   43.53   369.5
GR 43.53   372.5   38.53   372.5   38.53   374.0   38.53   385.0   38.53   386.0
GR 41.73   386.0   41.73   388.5   41.48   388.5   41.48   396.5
X114.150      40   74.00  344.00  90.00   90.00   90.00
GR 42.39      .0   42.39    47.0   41.89    47.0   41.77    51.4   41.52    51.4
GR 41.72    67.5   41.97    67.5   41.97    70.0   41.97    74.0   41.26    76.4
GR 38.00    83.4   37.49   168.7   37.49   170.2   35.67   175.6   35.37   178.0
GR 35.07   186.0   34.67   193.0   34.47   201.0   34.27   209.0   34.77   216.0
GR 35.17   224.0   35.47   230.8   35.67   240.8   35.72   270.2   37.55   274.0
GR 37.55   277.5   38.55   335.5   41.14   340.8   42.08   344.0   41.91   348.2
GR 41.67   374.5   41.92   374.5   41.92   377.5   41.92   382.0   42.65   383.2
GR 43.65   384.7   43.65   386.7   42.65   389.7   41.47   398.4   41.47   450.0
X114.250      35   73.00  349.10  100.00  100.00  100.00
GR 42.49      .0   42.49    46.1   41.99    46.1   41.85    50.8   41.60    50.8
GR 41.76    67.5   42.01    67.5   42.01    70.0   42.01    73.0   41.13    75.5
GR 38.07    82.4   37.60   170.0   37.60   173.5   35.85   176.8   35.71   183.2
GR 35.51   186.0   35.51   189.0   35.51   194.0   35.41   212.0   35.41   231.0
GR 35.51   249.0   35.51   263.0   35.51   271.0   35.71   274.3   37.68   278.1
GR 37.68   281.6   38.67   340.0   41.62   345.4   42.61   349.1   42.61   352.1
GR 42.36   352.1   42.60   382.7   42.75   392.5   42.50   392.5   40.41   428.0
X114.345      40   67.50  350.10   95.00   95.00   95.00
GR 42.53      .0   42.53    46.3   42.03    46.3   41.93    50.7   41.68    50.7
GR 42.86    67.5   42.11    67.5   42.11    70.0   42.11    72.5   41.19    74.3
GR 38.16    80.9   37.65   161.8   37.65   165.3   35.77   169.0   35.67   172.0
GR 35.57   177.0   35.57   184.0   35.57   190.0   35.47   197.0   35.47   204.0
GR 35.57   209.0   35.57   213.0   35.57   217.0   35.57   220.0   35.77   223.2
GR 35.98   271.4   37.81   274.9   37.81   278.4   38.93   340.8   41.56   346.0
GR 43.58   350.1   43.33   357.0   43.08   357.0   41.91   389.0   42.16   389.0
GR 42.25   397.8   44.56   402.8   44.56   405.8   41.81   412.8   41.81   460.0
X114.440      41   76.50  353.90   95.00   95.00   95.00
GR 42.51      .0   42.51    51.0   42.01    51.0   42.02    55.5   41.77    55.5
GR 41.99    72.0   42.24    72.0   42.24    75.0   42.24    76.5   41.23    79.0
GR 38.20    85.5   37.72   159.0   37.72   162.5   35.81   166.0   35.66   170.0
GR 35.66   178.0   35.61   184.0   35.61   193.0   35.61   203.0   35.61   210.0
GR 35.61   218.0   35.61   229.0   35.71   235.0   35.71   242.0   35.81   245.7
GR 36.35   272.1   37.98   275.0   37.98   278.5   39.03   346.3   41.65   351.7
GR 43.02   353.9   43.02   356.4   42.92   363.3   42.67   363.3   42.25   398.5
GR 42.50   398.5   42.50   407.5   44.63   410.8   44.63   412.3   41.74   418.5
GR 41.74   455.0
X114.540      38   71.50  355.00  100.00  100.00  100.00
GR 42.65      .0   42.65    42.0   42.15    42.0   42.06    46.0   41.81    46.0
GR 42.07    66.0   42.32    70.0   42.32    71.5   41.25    73.5   38.30    80.0
GR 37.86   147.5   37.86   151.0   36.41   154.3   36.14   154.3   35.94   158.0
GR 35.94   164.0   35.84   177.0   35.84   191.0   35.84   202.0   35.84   221.0
GR 35.94   235.0   35.94   242.0   36.14   245.7   37.11   269.5   37.98   271.1
GR 37.98   274.6   39.04   347.2   42.01   352.5   43.00   355.0   42.71   362.5
GR 42.46   362.5   42.59   395.5   42.84   395.5   42.84   402.5   45.38   408.8
GR 45.38   410.3   43.32   416.8   43.32   460.0
X114.635      37   93.50  383.50   95.00   95.00   95.00
GR 41.89      .0   41.89    42.0   41.87    53.4   41.62    53.4   42.21    88.0
GR 42.41    90.0   42.41    93.5   41.17    96.0   38.39   102.0   37.93   172.0
GR 37.93   175.5   36.40   179.3   36.16   194.6   35.96   199.0   35.86   207.0
GR 35.76   214.0   35.76   221.0   35.86   229.0   35.96   235.0   36.16   239.3
GR 36.76   256.7   36.27   264.8   36.41   298.0   38.03   301.6   38.03   305.1
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GR 39.04	375.5	41.67	381.0	42.91	383.5	42.85	391.0	42.60	391.0
GR 42.47	425.5	42.72	425.5	42.72	434.5	44.92	439.5	44.92	441.0
GR 43.48	447.0	43.48	490.0						
X114.720	40	71.00	365.10	85.00	85.00	85.00			
GR 42.97	.0	42.97	45.5	42.47	45.5	42.37	50.0	42.12	50.0
GR 42.28	66.5	42.53	66.5	42.70	70.0	42.53	71.0	41.42	73.9
GR 38.60	80.1	38.04	153.2	38.04	156.7	37.05	158.8	36.23	180.0
GR 35.93	183.0	35.93	194.0	35.83	202.0	35.83	209.0	35.93	216.0
GR 35.93	222.0	35.93	227.0	35.93	231.0	36.23	234.5	37.23	252.0
GR 36.95	288.5	38.17	291.7	38.17	295.2	39.19	358.5	41.80	363.7
GR 43.15	365.1	43.02	374.5	42.77	374.5	42.79	406.5	43.04	406.5
GR 43.04	415.5	45.06	422.0	45.06	423.5	43.03	430.0	43.03	470.0
X114.830	43	52.50	349.30	110.00	110.00	110.00			
GR 42.80	.0	42.80	26.3	42.30	26.3	42.23	30.8	41.98	30.8
GR 42.19	47.0	42.44	47.0	42.44	50.0	42.44	52.5	41.52	54.5
GR 38.70	60.5	38.12	130.0	38.12	133.5	36.95	135.5	36.15	139.0
GR 36.25	144.0	36.25	159.0	36.35	172.0	36.95	176.0	37.24	178.0
GR 37.14	204.0	37.24	228.0	37.29	248.0	36.95	250.0	36.75	251.0
GR 36.75	262.0	36.75	271.0	36.75	282.0	36.95	283.3	37.53	293.6
GR 38.41	295.1	38.41	298.6	39.28	341.0	41.97	346.5	43.33	349.3
GR 43.18	358.0	42.93	358.0	42.92	390.0	43.17	390.0	43.17	399.0
GR 45.66	405.5	45.66	408.0	43.04	414.2				
X114.943	31	73.00	379.00	113.00	113.00	113.00			
GR 43.06	.0	43.06	47.0	42.56	47.0	42.47	51.6	42.22	51.6
GR 42.39	68.0	42.64	68.0	42.64	70.0	42.64	72.0	42.84	72.5
GR 42.84	73.0	41.77	75.5	38.90	81.6	38.86	142.5	38.86	146.0
GR 36.86	146.0	36.86	335.0	38.89	340.5	39.38	369.5	41.97	374.5
GR 43.54	379.0	43.59	380.5	41.95	388.0	41.70	388.0	43.06	420.0
GR 43.31	420.0	43.50	428.9	45.41	433.5	45.41	435.5	43.44	444.2
GR 43.44	470.0								
X114.945	31	73.00	379.00	2.00	2.00	2.00			
GR 43.06	.0	43.06	47.0	42.56	47.0	42.47	51.6	42.22	51.6
GR 42.39	68.0	42.64	68.0	42.64	70.0	42.64	72.0	42.84	72.5
GR 42.84	73.0	41.77	75.5	38.90	81.6	38.86	142.5	38.86	146.0
GR 36.92	146.0	36.92	335.0	38.89	340.5	39.38	369.5	41.97	374.5
GR 43.54	379.0	43.59	380.5	41.95	388.0	41.70	388.0	43.06	420.0
GR 43.31	420.0	43.50	428.9	45.41	433.5	45.41	435.5	43.44	444.2
GR 43.44	470.0								
X115.045	27	33.50	180.00	100.00	100.00	100.00			
GR 43.22	.0	43.22	30.0	43.02	33.5	39.39	40.8	38.79	49.0
GR 37.78	50.6	36.78	53.0	36.48	56.0	36.38	71.0	35.88	93.0
GR 36.28	102.0	36.28	114.0	36.38	123.0	36.58	135.0	37.08	142.0
GR 37.78	147.1	38.79	149.0	38.79	152.5	39.36	171.4	42.03	177.1
GR 43.52	180.0	43.52	184.0	43.27	184.0	43.15	226.0	43.40	226.0
GR 43.40	229.0	43.87	237.5						
X115.140	40	80.00	236.50	95.00	95.00	95.00			
GR 43.71	.0	43.71	68.2	43.23	70.0	43.53	75.7	44.28	79.0
GR 44.28	80.0	42.60	85.6	39.75	91.5	39.00	103.0	37.80	105.0
GR 36.90	108.0	36.80	113.0	36.40	122.0	36.10	136.0	35.90	151.0
GR 35.90	163.0	36.40	172.0	36.80	188.0	37.00	199.0	37.80	201.1
GR 38.94	203.3	38.94	206.8	39.50	226.1	42.21	231.5	43.71	236.5
GR 43.71	240.5	43.46	240.5	43.61	250.8	44.21	250.8	44.21	251.1
GR 41.91	251.1	41.58	270.4	43.98	270.4	43.98	270.7	43.48	270.7
GR 43.30	282.0	43.55	282.0	43.55	285.5	44.08	304.3	44.08	334.0
X115.235	30	38.00	223.50	95.00	95.00	95.00			
GR 43.96	.0	43.76	27.2	44.88	34.0	44.88	38.0	43.81	42.4
GR 43.46	60.0	42.96	61.3	40.10	66.8	39.11	83.0	37.84	85.3
GR 36.74	89.0	36.44	94.0	36.14	109.0	36.04	123.0	36.54	141.0
GR 36.94	158.0	37.34	174.0	37.44	179.0	37.84	181.2	39.07	183.3
GR 39.07	186.8	39.59	213.8	42.26	219.3	43.85	223.5	43.85	227.5
GR 43.60	227.5	43.40	276.0	43.65	276.0	43.65	283.0	43.65	313.0
X115.325	30	5.50	195.80	90.00	90.00	90.00			
GR 43.63	.0	45.48	4.0	45.48	5.5	44.08	10.0	44.08	12.0
GR 43.83	12.0	43.83	19.5	43.83	21.0	42.93	22.5	39.99	28.3
GR 39.09	49.5	37.85	51.9	37.05	55.5	36.65	60.5	36.65	68.5
GR 36.05	80.5	36.15	97.5	36.25	106.5	36.95	120.5	36.95	137.5
GR 37.35	142.5	37.85	147.5	39.05	149.8	39.67	188.4	42.07	193.3
GR 42.15	195.8	43.84	195.8	43.84	196.8	43.64	196.8	42.43	296.5
X115.352	27	60.90	230.90	27.00	27.00	27.00			
GR 44.75	.0	44.55	60.1	44.31	60.9	42.76	60.9	42.76	61.3
GR 40.09	68.7	39.76	89.2	39.42	93.8	37.87	95.8	36.97	106.8
GR 36.87	117.5	37.37	132.1	37.17	145.9	36.27	155.1	36.67	165.8
GR 37.87	168.9	38.34	174.2	38.14	182.5	39.04	184.6	39.76	202.6
GR 39.85	220.7	42.05	224.6	42.15	230.1	42.15	230.9	43.65	230.9
GR 43.84	231.7	42.75	308.4						
X115.399	27	60.90	230.90	47.00	47.00	47.00			

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GR 44.75      .0   44.55   60.1   44.31   60.9   42.76   60.9   42.76   61.3
GR 40.09     68.7  39.76   89.2   39.42   93.8   37.87   95.8   36.97  106.8
GR 36.87    117.5  37.37  132.1   37.17  145.9   36.27  155.1   36.67  165.8
GR 37.87    168.9  38.34  174.2   38.14  182.5   39.04  184.6   39.76  202.6
GR 39.85    220.7  42.05  224.6   42.15  230.1   42.15  230.9   43.65  230.9
GR 43.84    231.7  42.75  308.4
X115.420       41    .00  197.00   21.00   21.00   21.00
GR 44.31      .0   42.76     .0   42.76     .6   40.03    6.7   39.38   36.5
GR 37.88     39.8  37.58   40.8   37.58   43.5   37.48   47.5   37.48   59.5
GR 37.48     73.5  37.28   84.5   37.18   93.5   37.18  100.5   37.38  108.5
GR 37.38    117.5  37.48  122.5   37.58  130.5   37.88  134.2   39.38  137.5
GR 39.38    141.0  40.34  187.7   44.23  197.0   44.17  207.2   44.17  210.7
GR 44.87    210.7  44.87  211.0   44.17  211.0   44.04  226.4   44.74  226.4
GR 44.74    226.7  44.14  226.7   44.00  233.9   44.30  233.9   44.30  236.9
GR 44.52    240.0  45.42  242.7   45.42  244.7   43.68  250.1   43.48  250.1
GR 43.48    258.6
X115.525       31   48.60  243.50  105.00  105.00  105.00
GR 44.44      .0   44.44   48.6   43.50   51.1   40.34   57.3   39.44   92.7
GR 39.44     96.2  37.90   98.9   37.60  102.6   37.60  108.6   37.40  119.6
GR 37.30    133.6  37.30  145.6   37.20  156.6   37.20  167.6   37.40  176.6
GR 37.50    181.6  37.50  188.6   37.90  192.4   38.52  195.6   38.52  199.1
GR 40.56    239.9  43.68  243.5   44.18  252.3   44.00  286.5   44.25  286.5
GR 44.25    289.5  45.30  293.7   45.30  295.7   43.89  300.4   43.64  300.4
GR 43.64    309.4
X115.620       29   21.50  222.00   95.00   95.00   95.00
GR 43.10      .0   44.65    3.0   44.60   21.5   43.54   24.3   40.54   30.5
GR 39.69     69.9  39.69   73.4   37.92   75.9   37.62   78.5   37.42   95.5
GR 37.42    119.5  37.22  131.5   37.32  144.5   37.42  159.5   37.52  163.5
GR 37.92    168.9  39.65  172.5   40.46  213.6   43.60  219.9   44.56  222.0
GR 44.70    230.5  44.45  230.5   44.41  256.5   44.66  256.5   44.66  264.5
GR 45.87    268.0  45.87  269.5   44.87  272.0   44.87  301.5
X115.720       31   20.50  220.50  100.00  100.00  100.00
GR 42.97      .0   44.93     .5   44.85   20.5   43.79   23.0   40.77   29.2
GR 39.73     69.5  39.73   73.0   38.96   76.5   38.76   78.5   38.66   83.5
GR 38.56     94.5  38.66  105.5   38.76  114.5   38.86  123.5   38.76  136.5
GR 38.66    148.5  38.76  157.5   38.76  162.5   38.96  165.9   39.14  168.5
GR 39.74    172.2  39.74  174.7   40.54  213.1   43.12  219.2   44.72  220.5
GR 44.81    230.1  44.59  256.4   45.02  261.6   45.06  270.5   44.26  270.5
GR 44.26    277.4
X115.820       35   20.60  222.80  100.00  100.00  100.00
GR 42.36      .0   44.75     .6   44.96   20.6   44.04   22.6   40.93   29.1
GR 39.80     69.7  39.80   73.2   38.27   76.2   38.02  111.7   37.72  114.6
GR 37.72    118.6  37.72  126.6   37.62  135.6   37.62  139.6   37.62  143.6
GR 37.72    147.6  37.72  152.6   38.02  156.5   38.83  170.6   39.76  172.7
GR 39.76    176.2  40.63  213.8   43.90  219.9   44.93  222.8   45.05  230.7
GR 44.80    230.7  45.04  253.8   45.29  253.8   45.29  261.8   45.89  264.8
GR 45.89    267.8  44.76  272.6   44.56  272.6   43.96  294.6   43.96  320.6
X115.925       31   20.30  224.00  105.00  105.00  105.00
GR 42.14      .0   44.88    2.3   45.14   13.3   45.14   20.3   44.17   22.8
GR 41.21     29.1  40.04   70.2   40.04   73.7   38.34   77.3   38.20  112.0
GR 39.19    115.5  38.14  126.1   37.84  128.3   37.74  137.3   37.74  146.3
GR 37.84    157.3  37.84  164.3   38.14  168.8   38.67  171.2   38.93  173.9
GR 38.93    177.4  40.85  215.5   44.07  221.5   45.34  224.0   45.34  232.2
GR 45.09    232.2  45.15  258.0   45.77  266.7   45.05  271.0   44.85  271.0
GR 44.85    351.0
X116.021       25   19.00  222.00   96.00   96.00   96.00
GR 42.16      .0   45.00     .7   45.36   19.0   43.67   22.0   41.42   26.7
GR 41.18     68.5  41.18   72.0   38.53   72.0   38.53  171.7   41.21  171.7
GR 41.21    175.2  41.40  214.6   44.43  220.0   45.44  222.0   45.60  223.0
GR 45.56    230.2  45.31  230.2   45.29  253.2   45.54  253.2   45.54  261.2
GR 46.17    265.9  45.32  271.8   45.12  271.8   45.12  276.8   45.12  299.0
X116.025       25   19.00  222.00    4.00    4.00    4.00
GR 42.16      .0   45.00     .7   45.36   19.0   43.67   22.0   41.42   26.7
GR 41.18     68.5  41.18   72.0   38.93   72.0   38.93  171.7   41.21  171.7
GR 41.21    175.2  41.40  214.6   44.43  220.0   45.44  222.0   45.60  223.0
GR 45.56    230.2  45.31  230.2   45.29  253.2   45.54  253.2   45.54  261.2
GR 46.17    265.9  45.32  271.8   45.12  271.8   45.12  276.8   45.12  299.0
X116.125       37   21.80  226.60  100.00  100.00  100.00
GR 41.46      .0   45.30    6.5   45.46   17.8   45.46   21.8   41.69   29.8
GR 41.32     29.8  41.32   73.6   40.52   73.6   40.11   75.1   39.11   78.8
GR 39.11     85.8  38.91   93.8   38.71  110.8   38.51  122.8   38.51  133.8
GR 38.71    140.8  38.91  145.8   39.11  150.8   39.41  155.8   40.11  159.9
GR 40.80    165.7  41.28  176.6   41.28  180.1   41.46  219.8   45.34  226.6
GR 45.67    227.5  45.80  228.5   45.55  228.5   45.76  236.1   45.53  259.1
GR 45.78    259.1  45.78  267.1   47.14  271.8   47.14  273.3   45.60  277.9
GR 45.40    277.9  45.40  283.4
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X116.225	34	21.90	227.10	100.00	100.00	100.00			
GR 42.23	.0	45.04	13.4	45.56	17.9	45.56	21.9	42.45	30.9
GR 41.45	74.7	41.45	78.2	40.55	78.2	40.15	79.4	39.95	82.4
GR 39.65	84.9	39.65	91.9	39.55	111.9	39.45	135.9	39.65	150.9
GR 39.75	162.9	40.15	166.8	40.50	176.2	41.56	179.1	41.56	182.6
GR 42.25	219.9	45.27	225.9	45.83	227.1	45.83	231.1	45.63	231.1
GR 45.64	263.7	45.89	263.7	45.89	266.7	47.04	270.7	47.04	272.2
GR 45.66	277.3	45.51	277.3	45.51	282.8	45.61	288.4		
X116.325	41	46.70	255.40	100.00	100.00	100.00			
GR 43.56	.0	45.44	38.2	45.83	42.7	45.83	46.7	42.52	55.7
GR 41.56	102.6	41.56	106.1	40.17	106.1	39.67	109.7	39.67	117.7
GR 39.47	133.7	39.47	147.7	39.57	162.7	39.47	177.7	39.57	186.7
GR 39.67	197.7	40.17	201.4	40.30	205.1	41.56	207.7	41.56	211.2
GR 42.54	246.7	45.52	253.1	46.50	255.4	46.50	256.4	46.50	258.4
GR 46.20	258.4	46.36	266.7	47.36	266.7	47.36	267.2	46.36	267.2
GR 45.58	285.8	47.08	285.8	47.08	286.3	46.28	286.3	46.03	293.6
GR 46.23	293.6	46.23	297.6	46.43	302.6	44.83	306.6	44.68	306.6
GR 44.68	356.7								
X116.435	33	60.00	267.30	110.00	110.00	110.00			
GR 44.04	.0	44.04	53.0	46.02	56.0	46.02	60.0	42.62	69.6
GR 41.69	118.2	41.69	121.7	40.20	121.7	40.00	124.0	39.80	131.0
GR 39.70	143.0	40.10	157.0	39.80	181.0	39.70	200.0	39.90	214.0
GR 40.20	219.3	41.72	222.5	41.72	226.0	42.96	258.8	45.95	265.1
GR 47.08	267.3	47.08	270.3	46.88	270.3	46.88	277.5	47.88	277.5
GR 47.88	278.0	42.88	278.0	42.12	296.3	47.67	296.3	47.67	296.8
GR 46.87	296.8	46.70	333.1	46.70	433.0				
X116.511	32	69.80	277.30	76.00	76.00	76.00			
GR 45.75	.0	46.05	15.6	46.99	58.8	47.16	67.8	47.76	68.8
GR 47.52	69.8	44.91	69.8	44.91	71.0	42.16	76.2	41.96	98.5
GR 41.96	128.5	41.96	130.8	40.24	132.6	40.04	135.8	39.94	141.8
GR 39.94	153.8	39.94	158.5	39.84	166.8	39.84	175.8	40.24	181.1
GR 40.73	188.5	40.65	218.5	40.31	227.0	41.95	230.1	42.27	248.5
GR 42.56	271.5	44.95	276.0	44.95	277.3	47.50	277.3	47.66	279.3
GR 47.46	280.8	47.26	343.8						
X116.558	32	69.80	277.30	47.00	47.00	47.00			
GR 45.75	.0	46.05	15.6	46.99	58.8	47.16	67.8	47.76	68.8
GR 47.52	69.8	44.91	69.8	44.91	71.0	42.16	76.2	41.96	98.5
GR 41.96	128.5	41.96	130.8	40.24	132.6	40.04	135.8	39.94	141.8
GR 39.94	153.8	39.94	158.5	39.84	166.8	39.84	175.8	40.24	181.1
GR 40.73	188.5	40.65	218.5	40.31	227.0	41.95	230.1	42.27	248.5
GR 42.56	271.5	44.95	276.0	44.95	277.3	47.50	277.3	47.66	279.3
GR 47.46	280.8	47.26	343.8						
X116.635	37	71.50	278.10	77.00	77.00	77.00			
GR 42.53	.0	42.53	44.0	44.93	60.7	46.29	65.0	46.29	70.0
GR 46.29	71.5	42.80	82.4	41.85	130.3	41.85	133.8	40.32	136.7
GR 39.62	140.0	39.52	144.0	39.32	149.0	39.32	153.0	39.62	156.0
GR 40.32	159.5	40.63	232.0	41.90	234.6	41.90	238.1	43.28	271.0
GR 45.07	274.7	46.76	278.1	46.76	281.1	46.56	281.1	46.63	289.1
GR 47.43	289.1	47.43	289.4	41.15	289.4	41.15	307.6	47.36	307.6
GR 47.36	308.0	46.66	308.0	46.43	316.2	46.63	316.2	46.63	318.7
GR 43.13	318.7	43.13	340.0						
X116.735	33	55.00	264.70	100.00	100.00	100.00			
GR 42.23	.0	42.23	42.5	44.50	47.0	44.50	48.0	46.50	48.0
GR 46.72	55.0	43.23	63.1	41.91	118.2	41.91	121.7	40.34	126.9
GR 39.44	131.0	39.44	135.0	39.64	139.0	40.34	143.8	40.77	221.8
GR 41.93	224.2	41.93	227.2	43.42	257.5	45.88	263.5	46.41	264.7
GR 46.29	268.6	46.09	268.6	45.93	276.5	46.63	276.5	46.63	276.9
GR 43.63	276.9	42.73	295.0	46.73	295.0	46.73	295.4	46.03	295.4
GR 45.96	303.4	43.33	329.5	43.33	355.0				
X116.835	35	100.00	309.30	100.00	100.00	100.00			
GR 42.49	.0	42.79	87.8	46.59	94.0	46.69	100.0	43.29	108.5
GR 42.05	169.5	42.05	173.0	40.38	176.1	39.98	181.0	39.88	192.0
GR 39.88	203.0	39.78	217.0	39.78	229.0	39.98	247.0	39.98	258.0
GR 40.08	267.0	40.38	270.2	42.14	273.1	42.14	276.6	42.89	304.8
GR 45.34	309.3	45.53	311.8	45.53	314.8	45.33	314.8	45.52	322.6
GR 46.22	322.6	46.22	323.0	45.52	323.0	45.17	340.9	46.07	340.9
GR 46.07	341.3	44.57	341.3	44.57	342.8	42.89	343.3	42.89	370.0
X116.935	27	80.00	301.80	100.00	100.00	100.00			
GR 43.72	.0	43.72	66.2	46.74	70.2	46.89	80.0	43.34	87.0
GR 42.19	160.4	42.19	163.9	41.31	166.7	40.47	199.8	40.17	203.0
GR 40.17	212.0	40.07	227.0	39.97	238.0	39.97	245.0	40.07	250.0
GR 40.17	253.0	40.17	257.0	40.47	261.8	42.29	265.3	42.29	268.3
GR 43.17	293.1	45.18	301.8	45.18	304.3	44.93	304.3	44.92	340.0
GR 45.12	340.0	45.12	342.7						
X117.035	24	100.00	381.60	100.00	100.00	100.00			
GR 42.49	.0	42.89	71.0	46.78	92.0	46.78	100.0	43.28	113.2

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GR 41.90   208.3   41.99   221.4   41.99   226.9   40.77   232.8   40.53   294.8
GR 39.93   298.0   39.53   307.0   39.43   314.0   38.83   323.0   39.13   331.0
GR 39.73   342.8   40.53   344.6   42.72   347.8   42.72   350.8   42.95   374.8
GR 45.93   381.6   45.93   386.6   41.98   395.5   41.98   455.5
X117.135      23   10.00  211.20  100.00  100.00  100.00
GR 43.21      .0   46.15     6.0   46.15    10.0   42.36    18.0   42.79    86.6
GR 42.21    87.7   41.59   130.6   43.19   143.3   40.69   143.8   39.69   146.0
GR 39.49   150.0   39.49   157.0   39.09   166.0   38.59   172.0   38.99   178.0
GR 40.69   183.6   43.10   188.0   42.95   197.3   44.18   199.2   44.18   205.2
GR 46.62   211.2   46.62   215.7   44.15   220.0
X117.240      23  100.00  299.60  105.00  105.00  105.00
GR 43.40      .0   43.40    89.5   46.55    96.0   46.55   100.0   44.41   105.8
GR 42.11   110.5   43.00   205.0   41.98   208.0   41.98   239.8   40.78   241.8
GR 39.88   246.0   39.58   257.0   39.38   263.0   39.08   271.0   39.18   277.0
GR 39.28   280.0   40.78   285.3   43.00   287.6   43.00   290.6   47.17   299.6
GR 47.17   305.1   43.25   309.9   43.25   350.0
X117.335      27  100.00  300.30   95.00   95.00   95.00
GR 43.80      .0   43.80    89.5   46.69    96.0   46.69   100.0   44.43   106.0
GR 42.37   110.2   43.10   184.3   42.43   187.6   42.58   232.0   40.79   240.5
GR 39.79   244.0   39.59   252.0   39.39   257.0   39.39   263.0   38.89   269.0
GR 39.09   273.0   39.19   277.0   40.75   282.5   42.59   284.7   42.59   288.7
GR 47.09   300.3   47.09   304.8   45.09   308.2   43.79   332.8   42.79   334.3
GR 42.79   370.0   42.79   371.0
X117.435      36  100.00  300.40  100.00  100.00  100.00
GR 43.53      .0   43.53    85.3   42.86    90.3   46.85    96.0   46.85   100.0
GR 43.99   105.8   42.81   109.4   43.05   165.6   42.43   166.6   42.10   215.5
GR 42.54   226.9   42.29   233.8   40.80   235.3   40.00   238.0   39.90   244.0
GR 39.80   253.0   40.00   259.0   40.10   265.0   39.30   269.0   40.80   274.8
GR 42.57   281.7   42.57   286.7   47.12   300.4   47.12   304.9   43.85   311.4
GR 43.85   313.4   43.35   314.4   43.35   330.2   43.85   331.2   43.85   362.0
GR 42.85   363.0   42.85   364.0   43.85   366.0   43.85   366.5   43.11   367.0
GR 43.11   400.0
X117.535      33  100.00  301.30  100.00  100.00  100.00
GR 44.20      .0   44.20    85.2   44.51    92.0   46.89    96.0   46.89   100.0
GR 44.66   105.8   43.12   109.5   43.35   161.5   41.90   175.2   41.71   210.7
GR 42.55   225.4   40.82   227.8   40.52   230.0   40.52   234.0   40.42   239.0
GR 40.32   243.0   40.32   250.0   40.12   254.0   40.82   259.3   41.41   260.8
GR 42.02   273.5   42.50   275.5   42.91   288.5   44.02   291.5   44.02   293.5
GR 47.24   301.3   47.24   305.8   44.89   311.7   44.09   337.7   43.29   338.7
GR 43.29   339.7   44.39   341.5   44.39   370.0
X117.635      23  100.00  302.00  100.00  100.00  100.00
GR 43.88      .0   43.88    90.0   47.10    96.0   47.10   100.0   44.70   106.0
GR 43.15   109.3   43.51   179.0   40.86   211.8   40.56   216.0   40.46   219.0
GR 40.46   222.0   40.56   229.0   40.86   232.4   41.71   257.7   43.73   289.0
GR 43.73   292.5   47.60   302.0   47.60   306.0   46.10   309.0   46.10   324.2
GR 45.70   325.7   45.70   345.0   45.70   390.0
X117.735      31  100.00  301.20  100.00  100.00  100.00
GR 44.07      .0   44.07    89.7   47.11    96.0   47.25   100.0   45.46   103.3
GR 44.83   109.5   43.07   113.4   43.64   179.9   43.15   181.3   43.08   187.2
GR 40.87   189.3   40.37   190.0   40.27   192.0   40.57   193.0   40.67   196.0
GR 40.67   202.0   40.67   207.0   40.87   211.5   41.70   221.7   42.76   225.2
GR 42.46   269.7   42.74   274.8   43.26   287.4   44.07   290.1   44.07   292.1
GR 47.92   301.2   47.83   302.3   47.96   330.5   48.06   330.5   48.46   351.3
GR 48.46   390.0
X117.825      18   85.00  315.00   90.00   90.00   90.00
GR 44.12      .0   44.12    66.0   44.58    66.0   44.58    75.2   47.43    81.0
GR 47.43    85.0   44.82    91.5   43.10    94.8   42.71   172.5   41.71   174.5
GR 40.67   178.0   40.57   181.0   41.17   184.8   43.33   262.1   41.54   274.8
GR 42.47   286.9   41.99   292.9   56.99   315.0
X117.925      32  100.00  320.00  100.00  100.00  100.00
GR 44.13      .0   44.13    89.6   47.49    95.8   47.49   100.0   45.81   104.2
GR 43.60   109.0   43.55   117.3   42.02   120.5   42.02   125.7   43.58   129.5
GR 43.41   156.5   43.24   167.7   41.77   171.2   41.47   173.2   41.37   179.0
GR 41.27   184.0   41.27   191.0   40.97   197.0   40.97   199.0   41.77   202.0
GR 42.38   205.0   42.55   216.1   43.94   218.9   43.84   234.7   43.13   239.1
GR 42.13   253.1   42.65   265.8   42.65   270.8   42.85   274.6   42.35   296.8
GR 43.03   300.0   57.99   320.0
X118.025      22  100.00  315.00  100.00  100.00  100.00
GR 44.47      .0   44.47    90.4   47.74    96.0   47.74   100.0   45.99   104.5
GR 43.59   108.1   44.12   154.1   43.14   155.8   43.32   172.4   43.22   192.5
GR 41.79   195.0   41.39   198.0   41.29   204.0   41.09   209.0   41.09   216.0
GR 41.19   221.0   41.29   227.0   41.39   232.0   41.79   236.8   43.56   238.8
GR 42.92   300.0   52.92   315.0
X118.130      29   85.00  321.00  105.00  105.00  105.00
GR 44.73      .0   44.73    74.9   47.81    80.6   47.81    85.0   45.92    89.3
GR 44.14    93.4   43.94   143.5   43.41   144.5   41.82   157.2   41.42   158.0
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GR 41.22   171.0   41.12   176.0   41.22   182.0   41.12   186.0   41.12   191.0
GR 40.82   201.0   40.42   206.0   41.82   208.4   43.48   209.6   43.89   212.2
GR 43.59   237.0   44.11   239.5   43.63   247.7   43.80   253.0   43.13   261.2
GR 44.63   263.7   44.09   282.5   44.96   286.1   68.11   321.0
X118.230      25  100.00  310.50  100.00  100.00  100.00
GR 44.87      .0   44.87    90.0   47.88    96.0   47.88   100.0   45.88   105.0
GR 43.93   109.0   43.71   152.8   42.99   153.5   42.80   164.9   41.88   167.5
GR 41.38   171.0   41.28   179.0   41.38   187.0   41.28   198.0   41.28   203.0
GR 41.28   205.0   40.98   207.0   40.88   213.0   41.88   216.1   42.66   218.0
GR 43.88   257.0   44.48   280.5   44.48   293.5   46.48   300.5   52.48   310.5
X118.330      37   85.00  306.00  100.00  100.00  100.00
GR 45.22      .0   45.22    72.0   47.91    78.0   47.91    85.0   46.06    89.5
GR 44.09    94.1   43.80   128.8   43.02   130.5   43.12   142.2   41.96   144.0
GR 41.66   145.0   41.76   150.0   41.95   160.0   41.76   180.0   40.86   183.0
GR 41.16   192.7   41.36   197.7   41.96   198.7   43.42   200.5   42.71   209.9
GR 44.51   213.6   44.01   230.4   43.61   230.4   43.61   232.4   44.11   233.9
GR 44.11   242.0   44.71   243.1   44.31   244.9   44.41   250.7   44.81   251.9
GR 44.81   272.3   46.40   274.2   46.40   274.7   46.25   275.4   46.25   281.0
GR 47.27   282.0   56.21   306.0
X118.430      27  100.00  296.40  100.00  100.00  100.00
GR 45.04      .0   45.04    90.1   47.97    96.0   47.97   100.0   46.15   104.5
GR 44.33   108.3   44.18   141.5   42.94   149.3   42.94   152.8   41.93   157.4
GR 40.47   177.5   43.57   188.2   43.23   201.1   42.34   202.6   41.94   207.0
GR 41.94   211.0   41.74   218.0   41.94   221.0   42.04   225.0   42.34   229.0
GR 43.30   233.2   44.20   242.4   44.23   260.3   45.17   266.6   45.15   279.4
GR 50.15   281.4   57.07   296.4
X118.530      36  100.00  330.00  100.00  100.00  100.00
GR 45.44      .0   45.44    90.5   48.06    95.7   48.06   100.0   46.27   104.2
GR 44.47   108.0   43.71   140.0   43.13   141.3   43.45   155.7   42.29   158.6
GR 42.20   173.1   42.61   181.0   43.56   185.2   44.32   195.0   44.47   203.0
GR 43.51   205.0   43.24   211.0   42.52   215.2   42.22   220.0   42.22   225.2
GR 41.92   230.2   41.92   235.0   41.72   241.0   42.52   246.1   43.25   247.7
GR 44.44   253.2   44.98   263.4   45.45   264.0   45.53   276.8   45.83   279.5
GR 46.13   286.0   48.70   290.8   48.47   299.5   48.60   312.3   50.44   318.1
GR 55.52   330.0
X118.630      26   70.00  270.00  100.00  100.00  100.00
GR 45.34      .0   45.34    60.6   48.20    66.0   48.20    70.0   46.23    75.0
GR 44.38    78.6   45.03   137.2   43.56   140.0   43.56   143.5   42.76   144.5
GR 42.50   161.6   43.76   166.5   42.20   175.0   43.30   180.0   43.70   193.5
GR 42.59   197.7   42.29   201.0   42.19   210.0   42.19   213.0   42.29   217.0
GR 42.29   220.0   42.59   224.6   44.30   226.4   44.46   232.6   45.20   251.2
GR 60.20   270.0
X118.720      28   95.40  285.40   90.00   90.00   90.00
GR 45.55      .0   45.55    42.7   45.14    42.7   45.14    85.4   48.30    90.9
GR 48.44    95.4   46.38   100.0   44.46   104.0   44.19   171.4   44.47   179.9
GR 43.58   189.6   43.25   201.3   42.55   204.4   42.70   211.8   43.04   214.9
GR 43.30   229.5   42.66   231.9   42.36   236.4   42.06   241.4   42.06   247.4
GR 42.26   252.4   42.26   256.4   42.66   259.7   43.30   260.9   43.01   269.0
GR 42.60   270.4   43.10   275.9   61.50   285.4
X118.825      28  100.00  320.00  105.00  105.00  105.00
GR 45.17      .0   45.17    88.5   49.17    96.0   49.17   100.0   47.22   104.6
GR 45.17   108.6   45.26   148.0   46.95   151.5   46.95   153.2   45.17   155.8
GR 44.67   162.2   44.67   165.7   45.40   170.4   44.57   203.8   43.62   212.4
GR 44.01   241.4   44.94   246.8   45.01   260.3   42.68   263.3   42.38   267.0
GR 42.08   274.0   42.08   283.0   42.28   292.0   42.28   295.0   42.68   299.5
GR 45.92   307.1   45.92   311.1   66.37   320.0
X118.925      35   61.50  310.00  100.00  100.00  100.00
GR 46.29      .0   46.29    37.4   43.89    42.2   43.89    43.2   46.91    48.5
GR 46.91    53.2   49.79    58.6   49.79    60.0   49.79    61.5   45.33    70.3
GR 45.33   110.5   47.11   114.1   47.11   115.6   44.79   120.8   44.79   124.3
GR 44.54   163.1   43.17   167.9   42.55   194.1   43.17   196.8   43.39   206.9
GR 45.29   214.4   44.79   233.6   43.44   237.7   43.51   253.6   42.69   254.9
GR 42.09   256.9   42.09   261.9   42.09   264.9   42.09   269.6   41.99   274.3
GR 42.69   279.3   47.71   287.9   47.71   291.9   48.29   295.7   77.09   310.0
X119.025      30   45.00  322.00  100.00  100.00  100.00
GR 46.04      .0   46.04    17.2   46.36    17.7   46.36    18.7   44.21    21.3
GR 44.21    23.3   48.26    31.0   48.67    38.2   50.31    45.0   46.97    54.6
GR 46.07    78.0   46.07    81.5   44.59   131.0   43.40   147.0   44.47   152.8
GR 44.55   184.7   44.81   210.7   44.41   216.0   44.41   244.0   44.41   268.0
GR 44.81   272.0   42.95   274.0   42.65   275.0   42.65   279.0   42.65   282.0
GR 42.95   285.8   48.73   298.1   48.73   300.1   50.49   302.1   64.49   322.0
X119.125      34  100.00  400.10  100.00  100.00  100.00
GR 45.76      .0   45.76    77.0   46.06    77.5   46.06    79.0   44.16    80.8
GR 44.16    82.5   47.89    86.5   48.96    93.6   50.76    97.5   50.76   100.0
GR 46.61   109.4   45.96   133.3   45.96   136.9   44.90   165.5   44.20   167.0
GR 44.94   200.8   45.12   274.7   43.16   281.2   42.66   286.2   42.56   291.0
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GR 42.76	295.0	42.86	304.2	43.16	305.0	44.42	307.9	43.85	314.7
GR 42.16	319.2	42.66	333.5	44.31	334.3	43.97	346.4	43.09	359.1
GR 46.46	365.4	47.56	369.4	49.28	373.7	70.96	400.1		
X119.230	40	72.80	402.80	105.00	105.00	105.00			
GR 46.07	.0	46.30	.9	45.80	1.4	45.80	25.5	46.90	26.8
GR 46.90	27.7	46.40	29.2	46.40	51.5	44.43	54.7	44.43	55.9
GR 48.73	60.0	48.73	65.5	50.93	70.8	50.93	72.8	46.63	84.6
GR 45.96	105.3	45.96	108.3	45.21	195.7	44.23	197.1	45.53	217.3
GR 45.26	227.7	43.45	231.3	42.25	231.3	42.45	234.8	42.85	240.8
GR 42.75	242.8	43.45	249.1	44.65	251.0	45.48	280.6	44.32	283.0
GR 44.32	290.0	44.91	296.3	44.80	323.1	43.52	327.1	43.52	337.1
GR 46.04	343.4	46.04	345.4	49.93	352.2	50.23	382.8	61.23	402.8
X119.335	30	72.80	385.80	105.00	105.00	105.00			
GR 46.03	.0	46.26	.9	45.76	1.4	45.76	25.5	46.86	26.8
GR 46.86	27.7	46.36	29.2	46.36	51.5	44.39	54.7	44.39	55.9
GR 48.69	60.0	48.69	65.5	50.89	70.8	50.89	72.8	46.59	83.6
GR 46.33	89.9	46.33	93.2	44.19	263.9	43.69	277.3	43.39	287.3
GR 43.09	291.3	43.09	292.8	43.39	294.8	43.69	296.5	46.39	305.6
GR 46.44	318.8	47.36	335.0	47.36	338.8	48.61	346.1	66.99	385.8
X119.435	32	75.00	388.00	100.00	100.00	100.00			
GR 45.61	.0	45.61	52.4	46.64	53.4	46.64	54.4	44.62	57.0
GR 44.62	59.2	49.15	66.7	49.15	69.7	50.52	75.0	45.79	88.3
GR 45.35	100.8	45.35	103.8	45.25	149.0	44.20	154.0	44.20	157.0
GR 45.10	157.5	45.03	166.0	43.96	167.2	43.56	169.0	43.46	174.0
GR 43.36	179.0	43.36	186.0	43.46	194.0	43.56	199.0	43.96	203.8
GR 44.15	218.3	44.94	220.4	45.52	327.1	46.87	337.3	48.37	341.2
GR 51.16	367.7	65.16	388.0						
X119.535	40	100.00	426.00	100.00	100.00	100.00			
GR 45.89	.0	45.89	76.4	46.77	77.1	46.77	79.6	44.69	81.6
GR 44.69	82.8	47.83	86.3	47.83	92.0	50.59	97.0	50.59	100.0
GR 45.63	111.9	45.20	126.0	45.20	129.0	45.15	134.7	44.24	137.4
GR 43.04	139.5	42.94	142.0	43.34	144.0	44.24	147.5	45.15	150.0
GR 45.98	262.6	44.63	264.6	43.43	267.6	43.63	270.0	44.33	273.0
GR 44.63	274.3	46.17	276.1	46.09	289.7	44.97	294.5	45.03	309.9
GR 46.54	314.1	45.39	317.0	44.65	339.5	46.55	356.7	48.08	359.8
GR 48.48	372.0	48.88	373.8	49.11	388.5	49.67	394.3	68.79	426.0
X119.630	40	100.00	420.00	95.00	95.00	95.00			
GR 45.96	.0	45.96	76.4	46.84	77.1	46.84	79.6	44.76	81.6
GR 44.76	82.8	47.90	86.3	47.90	92.0	50.66	97.0	50.66	100.0
GR 45.69	115.4	45.12	126.2	45.13	129.6	44.37	138.4	43.97	142.0
GR 43.87	150.0	43.87	154.0	43.97	160.0	44.37	163.6	45.71	166.3
GR 44.87	173.0	44.87	187.0	45.83	197.0	45.43	198.0	45.13	232.0
GR 45.13	271.0	45.33	304.0	45.83	310.4	45.85	311.0	45.43	320.0
GR 45.43	321.2	46.80	322.8	45.51	327.5	45.65	360.0	47.08	363.0
GR 47.15	376.3	48.06	379.0	49.16	400.6	51.16	410.0	53.16	420.0
X119.740	33	80.00	410.00	110.00	110.00	110.00			
GR 46.59	.0	46.59	58.3	47.20	58.8	47.20	59.3	45.37	61.8
GR 45.37	62.6	47.67	65.6	49.17	70.9	49.17	71.9	51.17	76.0
GR 51.17	80.0	47.13	90.0	46.60	108.2	46.60	112.2	45.60	114.2
GR 45.87	171.4	44.51	173.2	44.21	175.0	44.11	181.0	43.91	190.0
GR 43.21	198.0	44.51	200.8	45.17	214.0	45.32	260.0	45.93	261.5
GR 45.32	303.4	46.22	305.6	45.33	309.6	45.53	335.6	47.56	340.8
GR 47.74	369.3	48.77	389.3	60.67	410.0				
X119.815	36	100.00	400.00	75.00	75.00	75.00			
GR 46.98	.0	46.98	79.0	47.80	79.5	47.80	80.0	45.87	83.3
GR 45.87	85.3	48.59	89.8	48.59	94.1	50.66	97.0	51.23	100.0
GR 48.82	105.0	46.74	109.5	46.74	113.5	46.41	117.4	46.41	120.9
GR 45.81	122.4	45.53	167.6	44.82	169.7	44.56	186.0	44.26	190.0
GR 44.16	198.0	44.16	207.0	44.06	214.0	44.16	219.0	44.26	224.0
GR 44.26	230.0	44.56	234.5	44.72	281.4	45.45	284.4	46.16	323.0
GR 47.57	328.0	47.57	329.5	46.34	332.5	47.37	361.2	47.87	367.7
GR 47.87	400.0								
X119.925	36	100.00	401.00	110.00	110.00	110.00			
GR 46.87	.0	46.87	79.0	47.69	79.5	47.69	80.0	45.76	83.3
GR 45.76	85.3	48.48	89.8	48.48	94.1	50.55	97.0	50.55	100.0
GR 46.82	109.6	46.82	134.0	46.02	144.0	46.02	147.0	45.49	165.8
GR 44.61	183.0	44.31	190.0	44.31	193.0	44.41	195.0	44.51	197.0
GR 44.31	199.0	44.21	201.0	44.31	226.0	44.41	247.0	44.61	250.0
GR 45.13	279.2	45.86	284.6	46.27	315.4	48.08	322.2	48.16	324.0
GR 48.16	325.5	47.09	328.0	47.52	329.6	47.45	378.3	47.45	381.3
GR 47.85	401.0								
X120.020	32	90.00	395.00	95.00	95.00	95.00			
GR 45.62	.0	45.62	68.5	47.42	68.9	47.42	70.4	46.17	71.7
GR 45.67	74.2	48.00	76.4	48.00	81.4	50.17	86.4	50.17	90.0
GR 47.46	97.8	47.59	129.4	46.16	131.0	46.16	135.0	46.16	148.0
GR 46.07	158.4	44.66	187.8	44.46	192.0	44.46	202.0	44.36	221.0

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GR 44.36   233.0   44.46   246.0   44.46   253.0   44.46   260.0   44.66   264.3
GR 45.84   265.3   47.00   288.7   48.23   291.0   48.23   292.2   47.37   295.5
GR 47.57   375.5   55.57   395.0
X120.115      36   90.00   360.00  95.00   95.00   95.00
GR 45.71      .0   45.71    68.5   47.51    68.9   47.51    70.4   46.26    71.7
GR 45.76    74.2   48.09    76.4   48.09    81.4   50.26    86.4   50.26    90.0
GR 47.82    95.7   47.65   114.8   48.45   115.9   48.18   124.1   46.68   126.3
GR 45.80   153.5   46.44   154.2   45.98   200.2   44.76   202.2   44.46   203.0
GR 44.46   216.0   44.46   237.0   44.36   244.0   44.36   251.0   44.46   259.0
GR 44.56   262.0   44.76   263.4   46.28   265.4   46.32   271.7   47.26   277.2
GR 48.76   285.2   48.76   287.2   47.75   289.0   47.75   329.9   47.75   332.9
GR 69.46   360.0
X120.210      28   40.00   303.00  95.00   95.00   95.00
GR 46.77      .0   46.77    23.0   47.32    23.5   47.32    24.5   46.00    26.2
GR 46.00    28.7   48.51    31.0   48.51    34.0   50.12    37.5   50.12    40.0
GR 48.22    45.7   45.80   102.7   45.84   109.5   46.40   132.8   44.90   137.7
GR 44.70   142.0   44.60   148.0   44.60   156.0   44.50   161.0   44.60   165.0
GR 44.70   172.0   44.90   176.4   45.18   208.2   46.59   211.9   46.18   224.0
GR 46.18   227.5   50.13   283.5   62.13   303.0
X120.315      29   57.10   317.80  105.00  105.00  105.00
GR 48.08      .0   48.08    40.0   46.38    42.1   46.38    43.3   49.65    46.8
GR 49.65    50.8   50.48    53.1   50.48    57.1   49.51    59.3   49.38    97.8
GR 46.78   104.2   46.23   122.8   46.23   126.8   45.00   158.3   44.70   158.8
GR 44.80   170.8   44.70   191.8   44.70   195.8   44.70   206.8   44.70   214.8
GR 45.00   217.8   45.60   225.0   46.92   229.1   46.76   241.2   46.76   244.2
GR 46.91   245.5   48.17   259.5   49.78   283.5   54.78   317.8
X120.410      30   50.00   323.00  95.00   95.00   95.00
GR 47.80      .0   47.80    34.0   46.57    36.2   46.57    38.7   49.00    39.7
GR 49.00    44.4   50.32    47.5   50.32    50.0   47.74    58.0   48.09   102.0
GR 48.09   105.5   48.87   110.5   48.87   112.5   46.02   169.5   45.02   171.4
GR 44.72   175.0   44.72   181.0   44.72   187.0   44.72   193.0   44.72   206.0
GR 44.72   212.0   45.02   216.8   45.79   221.1   45.88   234.5   46.52   236.0
GR 46.72   242.4   46.72   245.9   47.89   248.5   48.35   278.5   67.17   323.0
X120.510      34     .00   336.00  100.00  100.00  100.00
GR 48.10      .0   48.10    30.0   48.40    31.1   46.90    33.0   46.90    35.0
GR 49.04    36.7   49.44    40.6   50.48    43.9   50.48    48.4   48.02    54.2
GR 48.02    97.9   48.79    99.5   48.90   126.0   46.39   131.8   46.36   137.0
GR 46.36   140.5   46.95   141.6   46.17   176.3   45.03   178.3   44.73   179.0
GR 44.53   183.0   44.43   200.0   44.33   207.0   44.33   218.0   44.44   227.0
GR 45.03   228.3   45.92   231.5   45.69   237.9   46.70   240.4   46.92   246.6
GR 46.92   250.6   48.36   252.5   48.98   290.5   67.80   336.0
X120.610      33   55.00   308.00  100.00  100.00  100.00
GR 48.47      .0   48.47    36.7   48.96    37.2   48.96    37.7   47.22    39.4
GR 47.22    41.4   49.04    42.9   49.04    46.4   51.89    51.5   51.89    55.0
GR 48.44    62.7   49.35   103.0   49.35   106.5   49.40   139.3   49.87   140.0
GR 45.89   154.2   45.59   165.8   48.07   169.1   48.07   174.0   46.37   177.7
GR 46.30   195.5   45.10   197.7   44.80   202.0   44.50   208.0   44.30   220.0
GR 44.50   228.0   44.70   234.0   45.10   238.4   45.89   244.1   46.54   283.2
GR 47.83   285.4   47.83   288.4   61.89   308.0
X120.690      36     .00   282.30  80.00   80.00   80.00
GR 52.03      .0   52.01     4.0   48.71    11.4   48.23    56.1   49.03    56.1
GR 49.03    78.3   49.63    78.3   49.63    81.3   47.15    86.3   46.92    92.8
GR 45.74    93.8   45.74   101.5   47.32   102.8   48.44   105.3   48.44   107.3
GR 47.54   108.3   47.87   124.4   47.87   125.6   46.39   132.5   46.39   136.0
GR 46.63   153.6   45.17   159.8   45.07   160.3   44.97   174.3   44.87   182.3
GR 44.87   190.3   44.87   197.3   44.77   202.3   44.87   219.3   45.17   220.7
GR 46.49   226.0   46.95   237.5   48.27   239.8   48.27   242.8   48.32   247.2
GR 63.83   282.3
X120.795      23     .00   256.00  105.00  105.00  105.00
GR 49.18      .0   49.18    47.4   49.74    50.0   49.32   102.7   49.68   103.8
GR 49.68   107.3   47.90   110.4   47.36   119.0   49.36   123.0   45.50   168.6
GR 45.10   173.0   45.10   181.0   45.00   195.0   44.80   202.0   45.00   207.0
GR 45.20   213.0   45.50   217.7   46.72   220.4   46.72   226.9   49.76   231.0
GR 49.76   234.5   50.26   236.5   60.26   256.0
X120.895      29   60.50   300.50  100.00  100.00  100.00
GR 48.60      .0   48.60    50.0   52.33    55.8   52.33    60.5   48.93    67.0
GR 48.67   100.9   48.38   107.8   47.08   148.7   45.95   151.5   44.65   156.5
GR 44.45   169.5   44.15   179.5   45.95   182.8   46.25   187.8   45.91   188.8
GR 45.61   190.5   45.51   210.5   45.61   220.5   45.91   223.5   46.61   226.9
GR 47.01   243.8   49.27   248.3   48.87   248.3   49.64   248.7   49.24   248.7
GR 49.35   252.8   49.27   258.0   50.59   279.2   61.59   300.5
X121.043      22  120.00   313.50  148.00  148.00  148.00
GR 49.38      .0   49.38    61.2   48.72    62.2   48.72    65.2   49.94    66.3
GR 49.94    70.3   48.76    72.5   48.76   108.0   52.68   115.4   52.68   120.0
GR 50.25   124.5   50.25   127.8   46.68   127.8   46.68   268.8   50.23   268.8
GR 51.18   305.6   51.42   313.5   51.42   317.5   51.32   323.8   49.48   341.2
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GR 49.78   353.8   49.78   363.8
X121.045      22  120.00  313.50    2.00    2.00    2.00
GR 49.38      .0   49.38    61.2   48.72    62.2   48.72    65.2   49.94    66.3
GR 49.94    70.3   48.76    72.5   48.76   108.0   52.68   115.4   52.68   120.0
GR 50.25   124.5   50.25   127.8   46.98   127.8   46.98   268.8   50.23   268.8
GR 51.18   305.6   51.42   313.5   51.42   317.5   51.32   323.8   49.48   341.2
GR 49.78   353.8   49.78   363.8
X121.095      32   51.70  242.80   50.00   50.00   50.00
GR 49.39      .0   48.69      .1   48.69     2.6   50.20     4.1   50.20     5.4
GR 48.72     7.9   48.72    39.5   50.03    40.0   50.03    43.4   52.69    46.5
GR 52.69    51.7   48.09    61.4   47.43   103.2   47.13   130.7   45.93   137.7
GR 46.13   145.7   47.23   164.7   47.33   167.3   47.33   176.7   47.13   179.7
GR 46.83   194.7   46.83   202.7   47.13   227.7   47.43   229.6   48.16   230.8
GR 48.52   237.7   51.16   242.8   51.28   244.9   51.28   248.9   51.05   250.2
GR 51.29   254.1   50.99   321.7
X121.200      32   90.00  281.80  105.00  105.00  105.00
GR 49.52      .0   49.52    49.2   48.83    49.6   48.83    52.6   50.48    54.0
GR 50.48    55.2   48.86    58.2   48.86    77.3   52.98    85.0   52.98    90.0
GR 50.92    93.7   47.95   101.0   48.34   125.3   47.45   138.1   47.05   142.0
GR 47.05   153.0   46.15   165.0   46.05   173.0   46.05   186.0   46.75   199.0
GR 46.85   213.0   46.95   221.0   46.95   227.0   47.15   231.0   47.45   236.0
GR 48.31   237.0   48.19   276.0   51.89   281.8   51.89   286.8   51.89   291.8
GR 51.09   291.8   51.09   340.0
X121.290      33   24.50  222.40   90.00   90.00   90.00
GR 49.51      .0   49.15     1.0   49.15     6.6   49.37     7.1   49.37     7.6
GR 48.68     8.5   48.68    10.5   49.66    11.7   49.66    12.9   53.32    19.5
GR 53.32    24.5   51.16    28.0   47.52    36.3   48.40    69.5   47.47    71.0
GR 47.17    71.5   47.17    86.5   45.97    93.5   45.07   103.5   44.97   107.5
GR 45.67   121.5   45.57   130.5   45.77   140.5   46.27   154.5   47.07   169.5
GR 47.47   170.6   48.61   176.3   48.52   216.9   50.57   220.2   51.99   222.4
GR 51.99   223.7   51.99   227.7   52.91   307.9
X121.390      29   24.50  233.70  100.00  100.00  100.00
GR 49.58      .0   49.22     1.0   49.22     6.6   49.44     7.1   49.44     7.6
GR 48.75     8.5   48.75    10.5   49.73    11.7   49.73    12.9   53.39    19.5
GR 53.39    24.5   51.18    28.5   49.38    32.5   48.14    38.3   48.00    94.5
GR 47.70    98.5   47.50   111.5   47.50   122.5   45.60   135.5   46.10   150.5
GR 46.30   159.5   47.60   167.5   48.00   172.5   48.20   174.5   48.83   227.9
GR 52.10   233.7   52.10   239.7   52.10   241.7   52.10   264.5
X121.513      15   65.00  337.70  123.00  123.00  123.00
GR 50.27      .0   50.27    49.3   48.95    50.6   48.95    54.1   50.25    54.1
GR 51.15    56.2   53.55    59.6   53.55    65.0   51.53    68.5   48.90    70.9
GR 48.90   326.2   51.24   326.7   51.71   332.2   51.91   337.7   51.91   367.7
X121.515      15   65.00  337.70    2.00    2.00    2.00
GR 50.27      .0   50.27    49.3   48.95    50.6   48.95    54.1   50.25    54.1
GR 51.15    56.2   53.55    59.6   53.55    65.0   51.53    68.5   48.90    70.9
GR 48.90   326.2   51.24   326.7   51.71   332.2   51.91   337.7   51.91   367.7
X121.525      44   62.00  332.50   10.00   10.00   10.00
GR 50.79      .0   50.79      .2   49.49      .2   49.49    10.0   50.79    10.0
GR 50.79    10.2   50.29    10.2   50.40    22.5   51.59    24.7   51.59    48.9
GR 53.14    51.6   53.77    57.8   53.77    62.0   51.57    66.3   51.09    86.9
GR 49.20    90.2   48.60    91.0   48.50   112.0   48.50   135.5   48.60   138.0
GR 48.70   158.0   48.80   175.9   49.20   175.9   49.60   175.9   49.60   180.9
GR 48.90   182.4   48.90   205.3   48.40   205.3   48.30   205.3   48.20   211.0
GR 48.10   236.0   48.10   248.0   48.10   278.9   48.40   291.9   48.47   301.3
GR 48.56   307.9   51.80   312.6   51.77   314.4   51.78   323.2   52.36   332.5
GR 53.76   332.5   53.79   334.8   54.99   334.8   54.87   337.6
X121.585      27  100.00  406.00   60.00   60.00   60.00
GR 50.20      .0   50.20    77.5   49.90    79.7   49.90    81.2   51.93    85.3
GR 53.93    96.0   53.93   100.0   51.60   105.4   51.02   160.7   49.25   163.2
GR 48.75   169.0   48.75   178.0   48.55   192.0   48.55   218.0   48.55   239.0
GR 48.65   254.0   48.65   282.0   48.85   301.0   48.95   330.0   48.95   355.0
GR 49.25   361.6   50.48   363.5   50.48   368.5   51.78   377.7   51.78   385.7
GR 51.90   386.0   61.93   406.0
X121.685      31   79.00  339.40  100.00  100.00  100.00
GR 53.26      .0   53.96    70.0   54.16    70.0   54.16    76.0   54.13    79.0
GR 51.98    88.6   51.98    90.6   51.68    90.6   51.60   129.3   51.02   130.3
GR 51.02   138.9   51.82   144.9   51.44   157.4   49.30   161.0   49.00   169.0
GR 48.90   200.0   48.90   219.0   48.90   231.3   47.30   235.0   47.30   249.0
GR 47.60   264.0   47.70   275.0   48.00   295.0   48.40   309.0   49.30   312.3
GR 50.22   314.1   50.35   334.8   52.79   339.4   52.78   342.7   51.92   345.0
GR 51.92   375.0
X121.729      24   91.99  255.58   44.00   44.00   44.00
GR 53.38      .0   56.07    88.5   55.99    92.0   53.01    92.0   53.01    93.0
GR 52.41    93.0   52.11    94.6   51.76    94.6   51.76    95.7   51.16    95.7
GR 49.37    99.0   48.87   125.1   47.87   157.7   47.37   190.3   48.77   223.0
GR 49.37   225.8   50.37   229.9   54.86   249.9   54.86   254.4   58.36   254.4
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GR 58.36   255.6   61.26   255.6   61.30   266.5   61.96   286.9
X121.762      24   91.99  255.58   33.00   33.00   33.00
GR 53.38      .0   56.07    88.5   55.99    92.0   53.01    92.0   53.01    93.0
GR 52.41    93.0   52.11    94.6   51.76    94.6   51.76    95.7   51.16    95.7
GR 49.37    99.0   48.87   125.1   47.87   157.7   47.37   190.3   48.77   223.0
GR 49.37   225.8   50.37   229.9   54.86   249.9   54.86   254.4   58.36   254.4
GR 58.36   255.6   61.26   255.6   61.30   266.5   61.96   286.9
X121.805      24   35.00  189.50   43.00   43.00   43.00
GR 50.97      .0   50.97    22.5   50.97    24.8   52.99    31.5   52.99    35.0
GR 49.39    41.5   48.89    44.0   48.69    52.0   48.19    67.0   47.99    84.0
GR 47.99    98.0   47.89   113.0   47.69   128.0   47.89   142.0   48.19   151.0
GR 48.19   157.0   48.59   159.0   49.39   162.9   49.98   170.2   57.57   177.5
GR 61.19   189.5   61.19   191.5   62.19   193.0   62.19   235.0
X121.848      27   58.50  213.90   43.00   43.00   43.00
GR 54.42      .0   54.42    58.5   53.12    58.5   53.12    59.5   52.72    59.5
GR 52.72    66.2   50.02    66.2   49.69    70.9   49.41    73.0   49.11    82.9
GR 48.91    94.9   48.41   106.9   47.91   118.9   47.61   130.9   47.61   142.9
GR 47.61   154.9   47.61   166.9   47.61   178.9   48.81   190.9   49.41   194.4
GR 50.05   197.0   53.05   201.5   53.12   201.5   53.12   202.4   54.42   202.4
GR 55.53   205.8   62.49   213.9
X121.853      27   58.50  213.90    5.00    5.00    5.00
GR 54.42      .0   54.42    58.5   53.12    58.5   53.12    59.5   52.72    59.5
GR 52.72    66.2   50.02    66.2   49.69    70.9   49.41    73.0   49.11    82.9
GR 48.91    94.9   48.41   106.9   47.91   118.9   47.61   130.9   47.61   142.9
GR 47.61   154.9   47.61   166.9   47.61   178.9   48.81   190.9   49.41   194.4
GR 50.05   197.0   53.05   201.5   53.12   201.5   53.12   202.4   54.42   202.4
GR 55.53   205.8   62.49   213.9
X121.891      26  103.30  258.80   38.00   38.00   38.00
GR 55.00      .0   55.00   100.0   55.11   103.3   53.62   103.3   53.62   104.1
GR 50.82   104.1   50.54   115.9   50.03   125.7   49.50   127.4   49.10   129.4
GR 49.20   142.9   49.20   156.4   48.50   169.9   48.50   183.4   48.00   196.9
GR 47.50   210.4   48.00   223.9   49.00   237.4   49.50   250.9   50.10   253.3
GR 52.84   258.0   53.13   258.0   53.13   258.8   55.03   258.8   55.03   260.0
GR 55.03   320.0
X121.897      26  103.30  258.80    6.00    6.00    6.00
GR 55.00      .0   55.00   100.0   55.11   103.3   53.62   103.3   53.62   104.1
GR 50.82   104.1   50.54   115.9   50.03   125.7   49.50   127.4   49.10   129.4
GR 49.20   142.9   49.20   156.4   48.50   169.9   48.50   183.4   48.00   196.9
GR 47.50   210.4   48.00   223.9   49.00   237.4   49.50   250.9   50.10   253.3
GR 52.84   258.0   53.13   258.0   53.13   258.8   55.03   258.8   55.03   260.0
GR 55.03   320.0
X121.900      28  101.50  266.50    3.00    3.00    3.00
GR 54.46      .0   54.46   100.0   54.21   101.5   52.87   101.5   52.87   102.3
GR 51.17   102.3   50.38   107.9   50.38   112.4   50.30   116.3   50.18   125.6
GR 49.57   126.6   49.27   129.3   49.17   142.3   49.17   155.3   48.57   168.3
GR 49.07   181.3   48.37   194.3   48.07   207.3   47.97   220.3   49.07   233.3
GR 49.57   246.3   50.38   252.3   50.80   265.5   52.87   265.5   52.87   266.3
GR 54.21   266.5   54.28   268.5   54.28   338.5
X122.095      24  100.00  267.30  195.00  195.00  195.00
GR 50.60      .0   50.60    86.3   54.82    96.0   54.82   100.0   50.74   110.0
GR 50.10   130.5   49.62   132.5   49.32   134.0   48.12   137.0   48.12   142.0
GR 48.82   156.0   48.72   175.0   48.32   209.0   47.62   219.0   47.62   227.0
GR 49.32   230.0   49.62   235.9   51.11   239.0   51.42   260.4   53.24   264.0
GR 54.37   267.3   54.37   267.6   54.73   275.3   54.73   315.3
X122.290      32  100.40  255.60  195.00  195.00  195.00
GR 52.03      .0   52.03    29.9   51.89    39.6   50.95    42.0   50.95    86.0
GR 55.21    95.5   55.21   100.0   55.21   100.4   52.76   105.4   51.31   108.7
GR 50.91   112.3   50.24   119.0   50.18   126.1   49.64   127.2   49.34   129.0
GR 49.34   151.0   49.24   175.0   49.04   196.0   49.04   198.0   49.14   201.0
GR 49.24   204.0   49.34   215.0   49.64   220.2   51.24   223.2   51.64   246.8
GR 53.47   250.6   55.58   255.6   55.58   255.9   55.54   288.8   55.56   304.8
GR 55.58   309.3   55.58   390.0
X122.480      31  100.00  275.00  190.00  190.00  190.00
GR 51.23      .0   51.23    81.7   53.28    87.2   53.78    90.2   55.45    93.5
GR 55.45   100.0   54.45   101.0   54.05   106.0   50.57   113.0   50.26   121.1
GR 49.65   122.4   49.25   123.0   49.15   141.0   49.05   156.0   48.85   175.0
GR 48.85   189.0   49.15   195.0   49.25   209.0   49.35   228.0   49.65   230.4
GR 51.29   233.7   51.58   265.8   53.50   269.5   55.82   275.0   55.82   277.0
GR 55.79   300.6   55.59   300.6   55.53   317.0   55.73   317.0   55.80   321.4
GR 55.80   390.0
X122.670      36  100.00  267.00  190.00  190.00  190.00
GR 52.80      .0   52.80    33.0   53.20    33.5   53.20    34.0   51.25    37.2
GR 51.25    65.1   51.50    65.1   51.50    81.0   52.96    83.3   53.29    89.2
GR 55.82    95.0   55.79   100.0   52.32   107.3   51.29   114.8   50.49   117.0
GR 50.38   135.0   49.68   136.2   49.38   137.0   49.48   145.0   49.28   157.0
GR 49.48   176.0   49.38   208.0   49.28   216.0   49.38   240.0   49.38   245.0
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GR 49.68   246.1   50.45   247.6   50.45   249.6   51.53   260.0   56.37   267.0
GR 56.37   268.2   56.17   268.3   56.38   268.5   56.17   280.5   56.41   280.5
GR 56.48   287.0
X122.842      25  121.00  284.50  172.00  172.00  172.00
GR 52.90      .0   52.90    67.4   52.71    69.2   52.71    70.2   53.45    71.5
GR 53.45    72.5   52.69    73.5   52.69   106.5   55.96   115.0   55.96   120.0
GR 55.96   121.0   52.60   127.7   50.85   149.4   50.80   157.2   48.75   157.2
GR 48.75   258.3   50.80   258.3   51.34   273.8   52.04   275.6   54.86   280.8
GR 56.58   284.5   56.49   295.5   56.69   295.5   56.69   302.6   56.69   372.6
X122.848      25  121.00  284.50    6.00    6.00    6.00
GR 52.90      .0   52.90    67.4   52.71    69.2   52.71    70.2   53.45    71.5
GR 53.45    72.5   52.69    73.5   52.69   106.5   55.96   115.0   55.96   120.0
GR 55.96   121.0   52.60   127.7   50.85   149.4   50.80   157.2   48.75   157.2
GR 48.75   258.3   50.80   258.3   51.34   273.8   52.04   275.6   54.86   280.8
GR 56.58   284.5   56.49   295.5   56.69   295.5   56.69   302.6   56.69   372.6
X122.885      38  101.00  257.90   37.00   37.00   37.00
GR 52.92      .0   52.92    63.6   52.71    64.8   52.71    66.0   53.23    66.6
GR 53.23    67.8   52.78    68.3   52.78    86.0   53.51    89.6   56.29    95.5
GR 56.29   100.0   56.29   101.0   52.37   110.0   52.37   117.0   50.34   121.5
GR 50.39   136.3   49.72   137.8   49.32   141.0   49.62   156.0   49.42   173.0
GR 49.32   185.0   49.42   191.0   49.32   216.0   49.42   224.0   49.42   230.0
GR 49.72   235.5   50.38   237.0   50.81   248.7   54.73   255.2   56.91   257.9
GR 56.57   264.3   56.57   269.3   56.54   274.4   56.77   289.5   56.38   291.2
GR 56.09   308.7   55.19   309.9   55.09   340.8
X123.080      36  100.00  253.80  195.00  195.00  195.00
GR 53.64      .0   53.64    83.3   53.03    83.7   53.03    85.7   53.91    86.5
GR 53.91    88.5   56.40    95.0   56.40   100.0   54.75   104.0   52.95   107.7
GR 52.95   111.2   51.18   114.0   50.62   124.6   50.62   125.6   49.76   127.1
GR 49.46   129.0   49.36   136.0   49.56   143.0   49.36   174.0   49.46   186.0
GR 49.46   193.0   49.46   201.0   49.46   218.0   49.76   219.8   49.89   225.0
GR 50.69   226.7   50.69   228.3   51.27   237.9   52.44   240.6   52.44   243.6
GR 56.75   253.8   56.75   258.3   52.40   265.9   52.40   266.9   53.10   268.5
GR 53.00   313.2
X123.280      35   70.00  209.90  200.00  200.00  200.00
GR 54.36      .0   54.36    15.9   53.13    17.4   53.13    19.6   53.94    20.5
GR 53.94    21.8   53.58    22.3   53.58    62.5   55.58    66.2   55.58    70.0
GR 53.79    74.0   50.96    79.6   50.90    82.4   49.89    84.5   49.59    87.0
GR 49.59    96.0   49.89   102.2   50.19   110.3   49.80   118.3   49.50   122.0
GR 49.50   131.0   49.40   144.0   49.40   156.0   49.50   167.0   49.80   171.7
GR 49.96   181.7   50.84   183.6   51.40   194.7   52.68   197.1   52.88   202.8
GR 55.87   209.9   55.87   210.6   55.87   214.9   56.06   242.5   56.06   312.5
X123.480      45   33.20  210.50  200.00  200.00  200.00
GR 61.02      .0   56.32     1.4   56.93     2.7   57.32    10.6   56.60    11.9
GR 56.60    13.2   53.18    20.1   53.18    21.3   54.32    22.5   55.05    26.5
GR 55.94    28.6   55.94    33.2   54.27    36.9   51.21    43.0   51.18    49.2
GR 51.18    50.7   50.13    52.8   49.93    53.2   49.83    74.2   50.03    90.2
GR 50.03    95.2   50.08   107.2   49.93   129.2   49.93   148.2   49.93   154.7
GR 50.13   156.9   51.44   159.5   51.44   161.1   51.44   168.8   54.63   175.2
GR 54.35   206.1   56.22   210.5   56.22   213.1   56.22   217.1   55.89   223.9
GR 54.34   227.6   54.34   230.1   53.94   231.0   53.94   277.4   54.14   278.8
GR 54.14   279.2   52.94   282.0   52.94   282.5   53.44   283.6   53.44   290.0
X123.670      35   43.00  238.70  190.00  190.00  190.00
GR 55.37      .0   55.60     4.1   52.67     6.1   53.40    25.9   55.68    29.6
GR 54.94    36.7   55.77    39.0   55.76    43.0   54.34    46.0   52.09    51.0
GR 51.41    75.2   51.17    75.8   50.87    79.0   50.87    86.0   50.87   103.0
GR 51.17   107.8   51.46   112.2   50.99   117.8   50.69   118.0   50.79   124.0
GR 50.69   143.0   50.69   164.0   50.69   186.0   50.99   186.3   51.60   187.4
GR 51.60   189.4   52.22   192.2   53.86   194.9   54.77   237.3   56.10   238.7
GR 55.95   243.3   54.07   248.1   54.07   275.6   54.97   277.0   54.97   327.0
X123.830      26  127.60  289.50  160.00  160.00  160.00
GR 55.03      .0   54.69    60.0   54.17    98.5   53.11    99.3   53.11   101.3
GR 54.75   110.0   55.49   123.6   55.49   127.6   51.47   137.2   51.49   139.4
GR 51.54   144.9   51.10   146.1   50.70   169.4   50.70   199.4   50.70   229.4
GR 51.10   232.3   51.61   233.8   51.62   242.9   54.82   250.1   54.82   259.4
GR 54.90   274.2   61.92   289.2   63.56   289.2   63.56   289.5   66.29   289.5
GR 66.79   347.6
X123.840      26  127.60  289.50   10.00   10.00   10.00
GR 55.03      .0   54.69    60.0   54.17    98.5   53.11    99.3   53.11   101.3
GR 54.75   110.0   55.49   123.6   55.49   127.6   51.47   137.2   51.49   139.4
GR 51.54   144.9   51.10   146.1   50.70   169.4   50.70   199.4   50.70   229.4
GR 51.10   232.3   51.61   233.8   51.62   242.9   54.82   250.1   54.82   259.4
GR 54.90   274.2   61.92   289.2   63.56   289.2   63.56   289.5   66.29   289.5
GR 66.79   347.6
X123.875      26  127.60  289.50   35.00   35.00   35.00
GR 55.33      .0   54.99    60.0   54.47    98.5   53.41    99.3   53.41   101.3
GR 55.05   110.0   55.79   123.6   55.79   127.6   51.77   137.2   51.79   139.4
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GR 51.84   144.9   51.24   146.1   50.94   169.4   51.04   199.4   50.94   229.4
GR 51.24   232.3   51.91   233.8   51.92   242.9   55.12   250.1   55.12   259.4
GR 55.20   274.2   62.22   289.2   63.54   289.2   63.54   289.5   66.12   289.5
GR 66.62   347.6
X123.885      26  127.60  289.50   10.00   10.00   10.00
GR 55.33      .0   54.99    60.0   54.47    98.5   53.41    99.3   53.41   101.3
GR 55.05   110.0   55.79   123.6   55.79   127.6   51.77   137.2   51.79   139.4
GR 51.84   144.9   51.24   146.1   50.94   169.4   51.04   199.4   50.94   229.4
GR 51.24   232.3   51.91   233.8   51.92   242.9   55.12   250.1   55.12   259.4
GR 55.20   274.2   62.22   289.2   63.54   289.2   63.54   289.5   66.12   289.5
GR 66.62   347.6
X124.075      35   55.10  176.00  190.00  190.00  190.00
GR 55.05      .0   54.52      .5   54.52    23.6   53.88    24.1   53.88    37.7
GR 53.18    38.2   53.18    40.1   53.88    40.6   53.88    45.6   56.59    51.1
GR 56.59    55.1   52.14    67.0   52.19    75.9   51.45    77.9   51.28    89.8
GR 50.98    90.1   50.88   102.1   50.98   114.1   51.08   125.1   50.98   137.1
GR 50.98   148.1   51.28   149.7   52.19   156.6   52.19   159.1   52.56   167.9
GR 55.55   173.3   55.55   175.3   56.07   176.0   56.07   180.0   54.95   183.4
GR 54.95   203.7   54.89   204.0   54.89   207.5   55.14   211.1   55.30   257.6
X124.265      41   91.50  216.30  190.00  190.00  190.00
GR 55.73      .0   55.73    21.4   55.73    40.4   55.73    54.6   54.59    55.1
GR 54.59    74.8   53.57    75.8   53.57    78.9   56.97    85.5   56.97    90.0
GR 56.97    91.5   55.62    93.5   54.10    97.4   53.59   105.6   51.92   109.0
GR 51.45   114.1   51.15   115.0   51.25   127.0   51.35   134.0   51.25   150.0
GR 51.35   164.0   51.35   184.0   51.15   186.0   51.05   194.0   51.45   195.8
GR 51.72   198.5   53.02   198.5   52.99   203.9   55.51   209.0   56.99   211.3
GR 56.99   214.8   57.66   216.3   57.72   218.8   56.07   224.3   56.07   225.8
GR 53.57   225.8   53.27   251.5   57.07   255.9   57.07   258.9   57.25   259.3
GR 57.25   276.7
X124.359      29   70.00  193.30   94.00   94.00   94.00
GR 55.90      .0   55.90    29.6   56.71    32.0   56.38    54.3   56.60    57.0
GR 56.98    70.0   54.31    84.3   52.78    84.3   52.78    89.5   52.73    89.5
GR 52.73   170.0   52.78   175.6   54.03   175.6   53.93   187.5   55.13   187.5
GR 55.13   188.5   56.74   191.3   58.13   193.3   58.13   194.0   58.13   197.0
GR 54.98   203.1   55.68   204.8   55.78   225.4   55.48   226.0   55.48   255.9
GR 56.38   257.5   56.38   265.0   56.97   265.5   56.97   283.2
X124.365      28   70.00  193.30    6.00    6.00    6.00
GR 55.90      .0   55.90    29.6   56.71    32.0   56.38    54.3   56.60    57.0
GR 56.98    70.0   54.31    84.3   52.78    84.3   52.78    89.5   52.78   170.0
GR 52.78   175.6   54.03   175.6   53.93   187.5   55.13   187.5   55.13   188.5
GR 56.74   191.3   58.13   193.3   58.13   194.0   58.13   197.0   54.98   203.1
GR 55.68   204.8   55.78   225.4   55.48   226.0   55.48   255.9   56.38   257.5
GR 56.38   265.0   56.97   265.5   56.97   283.2
X124.465      33  100.00  231.70  100.00  100.00  100.00
GR 56.19      .0   56.19    48.0   55.81    50.2   55.81    51.0   56.21    52.6
GR 56.21    53.8   55.53    54.8   55.53    87.9   58.94    96.0   58.94   100.0
GR 57.98   102.2   55.01   108.0   55.01   111.0   53.77   114.2   53.17   115.0
GR 53.07   143.0   52.97   156.0   52.87   174.0   52.77   182.0   52.97   193.0
GR 53.07   209.0   53.17   215.0   53.77   216.8   54.92   219.7   55.08   223.1
GR 57.85   228.6   57.83   230.8   58.80   231.7   58.80   234.7   55.94   240.6
GR 55.94   262.0   56.04   263.0   56.04   302.1
X124.665      38  100.00  267.30  200.00  200.00  200.00
GR 56.67      .0   56.67    53.0   55.65    54.3   55.65    55.8   57.03    56.5
GR 57.03    58.5   57.03    59.5   56.07    69.1   56.68    69.4   56.68    70.4
GR 55.84    72.2   55.84    88.8   59.21    95.5   59.22   100.0   58.04   102.7
GR 55.08   108.4   55.08   112.4   53.80   115.2   53.40   122.0   52.80   127.0
GR 52.50   144.0   52.20   156.0   52.30   174.0   52.40   186.0   52.40   190.0
GR 53.20   192.0   53.80   203.4   55.26   206.7   55.26   208.7   56.42   211.6
GR 56.65   211.7   56.65   212.4   56.40   213.0   56.40   248.4   57.12   249.2
GR 57.12   255.2   56.96   261.6   57.41   267.3
X124.865      31   89.50  205.30  200.00  200.00  200.00
GR 58.63      .0   58.72    12.2   57.44    13.2   57.44    32.5   57.19    32.7
GR 57.19    34.5   57.54    35.0   57.54    35.5   57.20    36.0   57.20    47.1
GR 56.29    47.6   56.29    76.2   55.59    77.1   55.59    78.9   59.59    86.5
GR 59.59    89.5   58.19    92.9   54.77   100.0   55.03   109.0   53.86   116.1
GR 53.26   116.5   52.26   120.5   52.16   143.5   52.26   154.5   52.26   177.5
GR 52.06   181.5   51.66   189.5   52.06   193.5   53.86   195.6   56.49   198.9
GR 59.15   205.3
X125.060      23   80.00  235.00  195.00  195.00  195.00
GR 56.11      .0   56.11    68.1   55.25    68.9   55.25    69.4   59.67    76.5
GR 59.67    80.0   58.37    82.6   54.73    90.7   53.89   116.8   52.69   118.0
GR 51.89   126.0   51.79   134.0   51.89   145.0   52.79   152.4   53.49   154.0
GR 53.59   163.0   53.29   175.0   53.29   193.0   53.29   203.0   53.89   205.0
GR 54.20   211.1   56.98   215.0   69.97   235.0
X125.255      34   90.00  220.30  195.00  195.00  195.00
GR 57.80      .0   57.49     1.4   57.49     3.2   57.90     3.6   57.90     4.8
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GR 57.28     5.8  57.28    12.5  56.84    13.0  56.84    30.7  56.44    32.0
GR 56.44    33.5  57.98    34.3  57.98    35.5  56.81    36.5  56.81    43.9
GR 56.81    44.9  56.81    73.7  57.58    75.3  57.58    80.3  59.84    84.5
GR 59.84    90.0  55.44    99.6  55.34   110.8  54.67   115.0  54.09   159.4
GR 53.79   160.0  53.49   173.0  53.59   184.0  53.49   190.0  53.09   199.0
GR 54.09   200.4  57.43   206.3  60.21   209.9  78.44   220.3
X125.445      35  71.00   284.00 190.00  190.00 190.00
GR 66.31      .0  57.28    14.2  57.28    15.7  58.48    16.0  58.48    16.5
GR 57.31    18.3  57.31    28.5  56.41    30.4  56.41    32.4  57.70    33.9
GR 57.70    34.9  57.02    58.7  57.02    60.4  60.11    66.0  60.11    71.0
GR 56.79    77.0  55.87    80.7  54.73   144.3  54.63   151.0  54.63   162.0
GR 54.53   178.0  54.53   185.0  54.53   190.0  53.83   191.0  54.73   194.3
GR 54.91   198.6  54.16   220.5  53.36   222.0  53.36   230.0  53.36   234.0
GR 54.16   236.8  58.01   244.2  60.05   252.8  63.39   265.7  69.97   284.0
X125.483      24  75.00   249.00  38.00   38.00  38.00
GR 67.40      .0  57.07    13.0  57.07    14.0  57.70    14.3  57.70    15.1
GR 57.04    16.0  57.04    52.0  57.35    54.3  57.35    55.0  55.95    58.2
GR 55.95    65.4  60.10    71.2  60.10    74.2  60.10    75.0  57.45    79.5
GR 57.45    79.8  57.10    81.5  55.45    81.5  55.45   213.1  58.64   213.1
GR 58.64   213.4  58.35   215.1  61.75   225.4  69.50   249.0
X125.485      24  75.00   249.00   2.00    2.00   2.00
GR 67.40      .0  57.07    13.0  57.07    14.0  57.70    14.3  57.70    15.1
GR 57.04    16.0  57.04    52.0  57.35    54.3  57.35    55.0  55.95    58.2
GR 55.95    65.4  60.10    71.2  60.10    74.2  60.10    75.0  57.45    79.5
GR 57.45    79.8  57.10    81.5  55.45    81.5  55.45   213.1  58.64   213.1
GR 58.64   213.4  58.35   215.1  61.75   225.4  69.50   249.0
X125.630      22  73.00   240.00 145.00  145.00 145.00
GR 70.01      .0  57.41    23.5  57.41    24.9  59.01    25.9  59.01    26.4
GR 57.79    28.0  57.79    63.6  60.53    68.5  60.58    73.0  56.29    83.0
GR 54.89    84.0  54.49    92.0  54.59   116.0  54.69   136.0  54.39   151.0
GR 54.39   167.0  54.39   174.0  54.69   183.0  56.29   185.0  58.08   189.0
GR 60.15   203.1  64.23   240.0
X125.850      19  60.00   191.00 220.00  220.00 220.00
GR 57.70      .0  57.70    46.0  57.70    50.0  61.18    55.7  61.18    60.0
GR 60.04    62.3  56.89    68.6  56.35    77.4  55.75    79.0  55.25    97.0
GR 55.15   107.0  55.05   120.0  54.45   132.0  54.35   140.0  53.65   154.0
GR 54.75   163.0  56.35   164.7  60.10   172.7  77.48   191.0
X126.050      35    .00   280.50 200.00  200.00 200.00
GR 59.72      .0  59.72    42.1  57.98    46.2  57.08    46.2  57.08    47.2
GR 57.98    47.2  61.68    53.3  61.68    59.5  61.68    59.9  57.35    67.7
GR 56.34    86.7  56.04    87.5  55.84    95.5  55.74   102.5  55.64   107.5
GR 54.64   113.5  55.34   122.4  54.64   128.5  55.14   132.5  55.64   143.5
GR 55.74   155.5  55.94   163.5  56.34   164.2  57.68   166.4  58.80   168.2
GR 58.80   169.2  58.80   170.2  57.92   171.5  57.52   171.5  57.52   171.9
GR 57.92   171.9  58.79   245.0  58.52   248.2  58.78   252.1  67.08   280.5
X126.092      17  47.80   277.80  42.00   42.00  42.00
GR 63.90      .0  63.10    38.3  61.20    41.3  61.20    42.3  61.90    43.3
GR 61.90    47.8  60.70    50.4  57.60    56.8  56.60    69.1  56.50    78.3
GR 56.50    80.7  55.70    80.7  55.70   160.2  57.50   160.2  57.90   166.8
GR 57.10   258.0  67.10   277.8
X126.098      17  47.80   277.80   6.00    6.00   6.00
GR 63.90      .0  63.10    38.3  61.20    41.3  61.20    42.3  61.90    43.3
GR 61.90    47.8  60.70    50.4  57.60    56.8  56.60    69.1  56.50    78.3
GR 56.50    80.7  55.70    80.7  55.70   160.2  57.50   160.2  57.90   166.8
GR 57.10   258.0  67.10   277.8
X126.120      23  78.70   236.30  22.00   22.00  22.00
GR 64.54      .0  64.95    72.3  65.42    78.7  63.01    78.7  63.01    79.5
GR 56.71    79.5  56.38    94.5  55.58   110.2  55.38   126.0  55.38   141.8
GR 55.38   157.5  55.88   173.3  56.38   181.2  57.98   183.4  57.98   189.0
GR 58.01   204.8  58.24   220.5  59.04   234.6  66.03   235.5  66.03   236.3
GR 66.91   236.3  66.86   239.0  67.06   318.5
X126.130      23  78.70   236.30  10.00   10.00  10.00
GR 64.54      .0  64.95    72.3  65.42    78.7  63.01    78.7  63.01    79.5
GR 56.71    79.5  56.38    94.5  55.58   110.2  55.38   126.0  55.38   141.8
GR 55.38   157.5  55.88   173.3  56.38   181.2  57.98   183.4  57.98   189.0
GR 58.01   204.8  58.24   220.5  59.04   234.6  66.03   235.5  66.03   236.3
GR 66.91   236.3  66.86   239.0  67.06   318.5
X126.170      27  50.50   225.50  40.00   40.00  40.00
GR 65.12      .0  65.16    16.5  64.98    19.3  64.98    24.3  62.83    25.8
GR 63.50    48.8  63.47    50.5  61.49    50.5  61.49    51.5  59.20    53.0
GR 56.44    75.5  56.04   100.5  55.64   125.5  55.94   150.5  56.44   163.1
GR 57.94   165.9  58.73   167.9  58.73   169.4  58.06   171.2  58.06   175.5
GR 58.35   200.5  58.96   223.9  61.52   224.5  61.52   225.5  63.44   225.5
GR 63.41   229.2  63.17   279.6
X126.180      27  50.50   225.50  10.00   10.00  10.00
GR 65.12      .0  65.16    16.5  64.98    19.3  64.98    24.3  62.83    25.8
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GR 63.50	48.8	63.47	50.5	61.49	50.5	61.49	51.5	59.20	53.0
GR 56.44	75.5	56.04	100.5	55.64	125.5	55.94	150.5	56.44	163.1
GR 57.94	165.9	58.73	167.9	58.73	169.4	58.06	171.2	58.06	175.5
GR 58.35	200.5	58.96	223.9	61.52	224.5	61.52	225.5	63.44	225.5
GR 63.41	229.2	63.17	279.6						
X126.245	26	35.80	270.00	65.00	65.00	65.00			
GR 68.00	.0	63.49	8.4	62.47	35.8	62.10	37.2	59.49	46.4
GR 58.44	49.4	57.64	49.4	57.64	50.3	58.44	50.3	58.46	53.1
GR 56.58	59.3	57.06	65.2	56.54	71.3	56.14	71.5	56.14	88.5
GR 56.14	93.3	56.04	123.5	55.84	163.5	55.79	168.3	56.49	168.3
GR 56.49	168.9	56.54	168.9	59.14	168.9	59.14	169.5	59.81	195.1
GR 61.18	270.0								
X126.301	16	.00	197.90	56.00	56.00	56.00			
GR 69.57	.0	62.69	14.6	62.22	31.2	60.37	36.7	57.16	36.7
GR 57.16	139.4	61.12	139.4	61.12	140.7	61.12	142.2	60.59	143.5
GR 59.98	160.7	59.98	164.2	59.86	164.2	59.86	191.9	60.06	195.3
GR 61.87	197.9								
X126.305	16	.00	197.90	4.00	4.00	4.00			
GR 69.57	.0	62.69	14.6	62.22	31.2	60.37	36.7	57.67	36.7
GR 57.67	139.4	61.12	139.4	61.12	140.7	61.12	142.2	60.59	143.5
GR 59.98	160.7	59.98	164.2	59.86	164.2	59.86	191.9	60.06	195.3
GR 61.87	197.9								
X126.455	24	.00	205.00	150.00	150.00	150.00			
GR 77.89	.0	63.71	22.0	62.24	25.6	58.30	30.1	56.00	32.0
GR 55.30	36.0	54.90	42.0	54.40	48.0	55.10	62.0	55.70	75.0
GR 56.10	91.0	57.80	92.0	58.30	93.8	58.98	99.6	60.39	126.0
GR 60.80	129.4	59.87	131.2	59.87	159.8	60.81	159.8	60.81	163.2
GR 60.85	166.9	61.21	169.1	64.88	177.8	79.29	205.0		
X126.660	32	.00	237.00	205.00	205.00	205.00			
GR 68.30	.0	60.53	20.7	58.35	21.6	56.65	23.0	55.95	26.0
GR 55.85	33.0	55.95	36.0	55.25	42.0	56.45	60.0	56.65	73.0
GR 57.15	90.0	58.35	93.0	59.29	95.0	59.50	122.5	59.83	131.1
GR 59.83	164.5	60.67	166.0	60.67	172.5	60.91	173.0	60.91	194.3
GR 61.18	194.7	61.18	195.2	61.02	195.6	61.02	196.2	60.79	196.7
GR 60.79	225.9	60.41	228.6	60.41	230.6	60.81	231.4	60.81	234.5
GR 62.23	237.0	62.22	242.0						
X126.865	20	.00	226.00	205.00	205.00	205.00			
GR 69.45	.0	60.59	30.2	58.40	31.8	57.20	32.0	57.20	46.0
GR 57.10	56.0	57.10	66.0	57.00	73.0	57.00	80.0	57.10	99.0
GR 57.20	112.0	58.40	113.1	59.48	121.0	61.55	126.0	61.55	127.3
GR 61.29	127.7	61.29	155.4	61.81	156.0	61.38	158.8	61.38	226.0
X127.065	22	.00	135.50	200.00	200.00	200.00			
GR 73.70	.0	63.14	16.5	60.30	22.0	60.74	37.6	59.06	41.5
GR 58.43	46.0	56.93	47.0	57.03	55.0	56.93	66.0	56.93	74.0
GR 56.93	81.0	56.93	90.0	57.03	111.0	57.03	117.0	58.43	117.8
GR 59.24	127.6	63.50	135.5	63.50	136.0	63.50	139.5	63.10	150.5
GR 64.56	179.0	65.91	180.4						
X127.270	18	.00	113.00	205.00	205.00	205.00			
GR 90.35	.0	58.47	15.4	57.17	16.0	55.97	20.0	56.37	25.0
GR 56.67	30.0	57.17	34.0	57.77	41.0	58.07	50.0	58.07	78.0
GR 58.47	79.4	60.27	91.4	60.42	106.3	62.45	110.0	64.15	113.0
GR 64.15	116.0	60.72	122.0	60.72	183.0				
X127.490	23	.00	165.50	220.00	220.00	220.00			
GR 67.55	.0	64.35	12.9	62.78	15.4	60.08	22.3	59.57	29.5
GR 59.57	30.0	58.51	30.5	57.81	32.5	58.01	39.5	58.11	55.5
GR 58.01	57.5	58.21	59.5	58.31	65.5	58.51	68.0	59.86	139.0
GR 61.78	152.1	61.99	160.5	65.15	165.5	65.15	168.5	63.02	172.8
GR 62.32	176.5	61.30	178.0	61.30	265.5				
X127.675	26	.00	149.00	185.00	185.00	185.00			
GR 70.40	.0	60.46	28.0	60.46	32.0	60.36	38.0	58.51	38.1
GR 58.31	42.0	58.21	49.0	58.51	53.0	59.40	54.0	59.40	74.0
GR 58.51	75.0	58.11	78.0	58.01	85.0	58.01	91.0	57.91	104.0
GR 58.51	108.5	59.70	120.5	59.70	124.5	65.73	149.0	65.74	151.0
GR 61.60	162.0	61.60	211.0	60.60	213.0	60.60	214.0	61.40	216.0
GR 61.40	266.0								
X127.706	27	20.20	163.00	31.00	31.00	31.00			
GR 70.39	.0	66.79	20.2	61.38	30.3	61.21	40.9	60.40	45.0
GR 60.19	53.9	60.19	54.4	58.29	54.4	58.29	122.2	60.19	122.2
GR 60.15	130.2	60.71	133.0	60.71	135.0	60.26	135.5	60.26	146.9
GR 66.08	163.0	66.08	165.0	61.52	174.0	61.52	188.0	61.80	188.8
GR 61.80	189.8	61.46	190.4	61.46	191.4	62.00	192.4	62.00	193.4
GR 61.42	195.0	61.42	263.0						
X127.713	27	20.20	163.00	7.00	7.00	7.00			
GR 70.39	.0	66.79	20.2	61.38	30.3	61.21	40.9	60.40	45.0
GR 60.19	53.9	60.19	54.4	58.29	54.4	58.29	122.2	60.19	122.2
GR 60.15	130.2	60.71	133.0	60.71	135.0	60.26	135.5	60.26	146.9

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GR 66.08   163.0   66.08   165.0   61.52   174.0   61.52   188.0   61.80   188.8
GR 61.80   189.8   61.46   190.4   61.46   191.4   62.00   192.4   62.00   193.4
GR 61.42   195.0   61.42   263.0
X127.885      39     .00  144.00  172.00  172.00  172.00
GR 70.96      .0   64.11    24.9   60.25    27.9   59.94    31.8   59.94    33.8
GR 59.94    34.3   59.14    35.0   58.54    36.0   58.44    46.0   58.54    54.0
GR 58.64    62.0   58.64    73.0   58.74    89.0   59.14    89.2   60.01    91.4
GR 60.01    95.2   61.26    97.3   61.26    98.3   61.06    98.8   61.06   111.7
GR 61.25   112.2   61.25   132.8   66.06   144.0   66.06   146.0   66.06   146.6
GR 61.60   155.5   61.60   156.2   62.18   156.9   62.18   157.4   61.58   158.5
GR 61.58   171.2   62.39   172.2   62.39   172.7   61.48   173.5   61.48   174.2
GR 64.34   179.6   64.34   205.4   65.62   208.4   65.62   239.4
X128.095      28     .00  231.80  210.00  210.00  210.00
GR 68.15      .0   61.34    15.4   59.95    22.6   59.15    24.3   58.55    25.0
GR 58.45    30.0   58.85    39.0   58.75    45.0   58.75    51.0   58.95    59.0
GR 59.15    60.1   59.67    85.5   61.09    92.3   61.09    96.3   60.28   100.2
GR 60.28   105.2   62.29   109.5   62.29   119.0   62.75   120.0   62.75   122.8
GR 61.52   125.4   61.52   143.2   62.35   144.2   62.35   145.2   61.50   146.2
GR 61.50   147.7   63.69   150.0   68.45   231.8
X128.295      35     .00  221.00  200.00  200.00  200.00
GR 74.24      .0   63.56    15.6   63.56    19.6   62.85    20.8   62.85    68.4
GR 63.27    68.6   63.27    69.6   62.76    71.0   60.78    75.1   60.08    78.8
GR 59.31    79.9   59.31    81.4   60.00    96.6   59.30   110.6   59.10   111.0
GR 59.00   118.0   58.90   126.0   59.10   131.0   59.20   141.0   59.30   143.3
GR 61.22   155.1   61.41   172.8   61.41   176.8   61.41   177.8   61.57   200.4
GR 62.57   202.6   62.57   202.9   61.48   204.4   61.48   206.2   64.69   209.4
GR 65.78   221.0   65.78   224.0   65.59   227.9   66.08   251.0   67.98   296.0
X128.495      48     .00  256.70  200.00  200.00  200.00
GR 64.65      .0   64.65    40.0   65.17    40.4   65.17    40.9   64.67    41.3
GR 64.67    41.8   65.05    42.2   65.05    42.8   64.75    43.1   64.75    52.1
GR 65.09    52.2   65.09    53.2   63.04    57.2   63.04    81.7   63.04   100.4
GR 63.04   100.9   62.79   101.7   62.79   104.7   63.56   109.4   63.56   112.2
GR 62.78   114.5   61.99   123.4   60.50   131.1   60.35   131.7   60.40   136.7
GR 60.30   155.7   60.40   161.7   60.30   173.7   60.40   177.7   60.30   184.7
GR 60.35   191.7   60.30   206.7   60.50   207.3   61.31   213.6   62.33   220.7
GR 62.45   227.6   62.45   231.6   62.72   237.7   63.62   239.9   63.62   240.9
GR 62.52   242.9   62.22   243.2   62.22   247.2   67.52   256.7   68.16   267.7
GR 68.34   270.9   70.35   273.4   72.75   316.7
X128.602      39     .00  276.70  107.00  107.00  107.00
GR 64.16      .0   64.16    50.0   64.43    50.4   64.43    51.1   64.09    51.6
GR 64.09    52.1   64.65    53.5   62.45    56.2   62.45   106.0   63.57   109.4
GR 63.57   112.4   62.35   118.7   62.05   118.7   62.05   119.0   60.87   119.0
GR 60.57   121.8   60.47   123.9   60.17   130.9   60.17   137.9   60.47   144.9
GR 60.37   151.9   60.27   158.9   60.27   165.9   60.57   172.9   60.77   179.9
GR 60.57   186.9   60.37   193.9   60.22   200.9   60.02   207.9   60.17   214.9
GR 60.57   219.9   62.02   219.9   62.02   220.2   62.32   220.2   62.27   220.9
GR 62.34   237.9   64.70   254.5   64.70   257.5   65.16   276.7
X128.609      39     .00  276.70    7.00    7.00    7.00
GR 64.16      .0   64.16    50.0   64.43    50.4   64.43    51.1   64.09    51.6
GR 64.09    52.1   64.65    53.5   62.45    56.2   62.45   106.0   63.57   109.4
GR 63.57   112.4   62.35   118.7   62.05   118.7   62.05   119.0   60.87   119.0
GR 60.57   121.8   60.47   123.9   60.17   130.9   60.17   137.9   60.47   144.9
GR 60.37   151.9   60.27   158.9   60.27   165.9   60.57   172.9   60.77   179.9
GR 60.57   186.9   60.37   193.9   60.22   200.9   60.02   207.9   60.17   214.9
GR 60.57   219.9   62.02   219.9   62.02   220.2   62.32   220.2   62.27   220.9
GR 62.34   237.9   64.70   254.5   64.70   257.5   65.16   276.7
X128.673      22     .00  202.00  64.00   64.00   64.00
GR 65.23      .0   64.91     6.8   64.91    22.4   64.36    22.8   64.36    23.8
GR 65.20    24.5   65.20    25.5   64.42    26.8   64.42    51.8   64.42    52.6
GR 64.98    55.6   62.34    60.4   60.59    63.8   60.59   175.8   63.47   175.8
GR 64.00   176.6   64.54   180.4   64.54   184.9   65.84   187.2   66.19   195.9
GR 69.88   202.0   69.88   212.0
X128.675      22     .00  212.00    2.00    2.00    2.00
GR 65.23      .0   64.91     6.8   64.91    22.4   64.36    22.8   64.36    23.8
GR 65.20    24.5   65.20    25.5   64.42    26.8   64.42    51.8   64.42    52.6
GR 64.98    55.6   62.34    60.4   60.59    63.8   60.59   175.8   63.47   175.8
GR 64.00   176.6   64.54   180.4   64.54   184.9   65.84   187.2   66.19   195.9
GR 69.88   202.0   69.88   212.0
X128.690      28   58.30  225.00   15.00   15.00   15.00
GR 66.29      .0   66.29    58.3   64.80    59.3   64.80    78.2   64.42    78.4
GR 64.42    79.1   65.25    79.4   65.25    80.4   64.22    81.8   64.22   106.5
GR 65.18   107.5   65.15   110.0   65.18   110.5   61.88   117.5   60.68   119.0
GR 61.18   123.0   60.98   141.0   61.08   156.0   61.18   170.0   61.18   190.0
GR 61.18   210.0   60.58   218.0   61.88   219.1   65.48   224.4   67.68   225.0
GR 67.68   225.6   67.66   240.4   84.58   275.0
X128.895      30   26.70  207.20  205.00  205.00  205.00
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GR 67.02      .0   67.02    26.7   64.67    30.5   64.67    59.7   65.08    59.9
GR 65.08     60.2  64.78    60.5   64.78    61.2   65.30    61.5   65.30    62.0
GR 64.86     62.4  64.86   106.0   65.46   107.0   65.46   110.0   64.46   111.5
GR 61.90    116.6  60.70   117.0   60.70   128.0   60.60   137.0   60.60   150.0
GR 60.50    163.0  60.30   186.0   60.30   194.0   61.90   194.0   63.50   194.0
GR 63.50    194.5  66.09   198.0   66.26   198.3   66.09   204.8   67.09   207.2
X129.090       34  45.30   162.30  195.00  195.00  195.00
GR 70.76      .0   71.06     8.3   69.30    10.8   69.30    39.1   69.85    40.0
GR 69.85     40.5  68.96    42.3   68.96    45.3   64.98    50.7   64.98    51.5
GR 65.62     52.0  65.62    52.5   65.16    53.0   65.16    66.3   65.16    67.3
GR 64.34     70.4  64.34    72.4   63.43    83.7   61.95    84.9   61.05    86.3
GR 60.45     90.3  59.85    97.3   59.35   107.3   59.05   113.3   58.95   116.3
GR 60.25    135.5  61.95   135.5   63.72   135.5   63.72   136.0   66.70   140.3
GR 66.66    140.7  66.70   146.8   71.56   150.3   80.46   162.3
X129.285       32    .00   199.30  195.00  195.00  195.00
GR 71.86      .0   68.93    20.9   67.17    29.3   66.18    35.0   65.29    37.9
GR 64.82     38.7  64.82    39.7   65.75    40.6   65.75    42.6   63.93    45.4
GR 61.96     52.6  61.56    57.6   61.46    66.6   61.06    78.6   60.96    89.6
GR 60.76    101.6  61.06   107.6   61.96   110.7   64.25   115.0   65.14   118.0
GR 64.95    131.3  64.56   131.4   64.56   132.9   64.75   133.7   65.05   176.4
GR 65.65    178.2  65.65   183.2   65.15   189.7   69.20   199.3   69.20   210.6
GR 70.39    212.8  70.39   221.3
X129.495       31    .00   129.00  210.00  210.00  210.00
GR 77.36      .0   66.16    18.5   65.16    19.0   65.16    20.0   65.56    20.4
GR 65.56     21.0  61.98    25.5   61.28    26.0   61.18    34.0   61.68    36.0
GR 61.78     52.0  61.78    70.0   61.78    86.0   61.98    89.4   63.81    93.6
GR 63.72    107.0  65.52   112.2   66.38   125.4   67.55   129.0   67.55   130.0
GR 64.56    136.7  64.86   165.0   64.86   171.0   65.26   178.0   65.86   180.0
GR 65.86    185.0  68.71   191.0   68.71   191.5   69.34   193.7   69.34   202.2
GR 68.88    207.9
X129.680       35    .00   161.00  185.00  185.00  185.00
GR 79.77      .0   70.07    15.0   65.17    17.5   65.17    18.5   65.77    19.0
GR 65.82     20.0  63.78    24.4   63.17    31.5   62.05    33.3   61.65    34.0
GR 61.25     38.0  61.45    41.0   61.55    47.0   61.65    50.0   61.85    54.0
GR 62.05     57.6  62.49    73.0   62.49    74.7   62.19    75.0   62.19    84.0
GR 62.05     85.1  62.85    94.1   64.06    96.6   65.65   142.4   65.65   145.6
GR 65.32    147.6  65.51   153.7   69.25   159.3   69.17   160.0   69.85   161.0
GR 69.85    169.0  69.40   172.3   69.17   175.1   66.67   179.5   66.67   199.5
X129.776       42    .00   158.80  96.00   96.00   96.00
GR 67.25      .0   67.25    15.2   67.25    18.7   64.92    21.8   64.92    24.1
GR 66.33     24.7  66.33    27.2   64.35    33.3   64.35    40.8   64.22    45.0
GR 64.22     50.0  64.14    52.0   63.83    52.0   63.83    53.0   62.93    53.0
GR 62.45     57.8  62.35    58.2   62.15    65.2   62.15    72.2   62.10    79.2
GR 62.15     86.2  62.10    93.2   62.20   100.2   61.95   107.2   61.95   114.2
GR 62.05    121.2  62.45   126.4   63.83   126.4   63.83   127.4   64.13   127.4
GR 64.15    129.6  64.21   137.5   64.75   153.0   67.52   158.5   69.02   158.8
GR 69.89    161.7  70.30   165.3   70.30   172.8   69.26   178.0   69.60   179.6
GR 70.04    181.4  72.84   181.7
X129.783       42    .00   158.80    7.00    7.00    7.00
GR 67.25      .0   67.25    15.2   67.25    18.7   64.92    21.8   64.92    24.1
GR 66.33     24.7  66.33    27.2   64.35    33.3   64.35    40.8   64.22    45.0
GR 64.22     50.0  64.14    52.0   63.83    52.0   63.83    53.0   62.93    53.0
GR 62.45     57.8  62.35    58.2   62.15    65.2   62.15    72.2   62.10    79.2
GR 62.15     86.2  62.10    93.2   62.20   100.2   61.95   107.2   61.95   114.2
GR 62.05    121.2  62.45   126.4   63.83   126.4   63.83   127.4   64.13   127.4
GR 64.15    129.6  64.21   137.5   64.75   153.0   67.52   158.5   69.02   158.8
GR 69.89    161.7  70.30   165.3   70.30   172.8   69.26   178.0   69.60   179.6
GR 70.04    181.4  72.84   181.7
X129.895       27  43.50   152.70  112.00  112.00  112.00
GR 67.57      .0   67.57    20.0   68.10    29.6   68.10    33.0   68.20    43.5
GR 65.33     47.7  65.33    50.2   66.04    51.2   65.87    58.3   64.77    59.8
GR 64.02     72.9  62.72    98.5   62.52    99.3   62.32   111.3   62.12   119.3
GR 62.12    123.3  62.22   125.3   62.22   128.3   62.72   133.9   63.94   147.6
GR 64.94    148.6  65.11   151.2   70.47   152.3   70.51   152.7   71.80   155.9
GR 71.80    164.4  70.57   168.5
X130.105       22  41.90   168.00  210.00  210.00  210.00
GR 69.64      .0   69.64    41.9   68.07    45.9   65.26    49.9   65.26    52.9
GR 68.13     57.5  68.13    60.0   66.31    63.5   65.63    92.6   62.73   114.3
GR 62.23    116.0  61.93   120.0   61.83   124.0   61.93   129.0   61.93   131.0
GR 62.33    140.0  62.73   141.1   63.94   149.2   65.25   166.0   72.17   168.0
GR 72.35    168.8  72.17   180.8
X130.290       32  62.50   250.00  185.00  185.00  185.00
GR 69.81      .0   69.81    20.7   70.10    30.7   70.14    44.2   69.91    47.3
GR 69.38     62.5  65.14    68.5   65.14    71.2   66.04    71.2   66.04    72.7
GR 68.40     76.5  68.40    80.0   66.57    83.6   64.28   100.5   64.07   116.3
GR 63.77    117.0  63.87   130.0   63.77   143.0   63.87   150.0   63.57   156.0
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GR 63.87   170.0   63.90   173.4   64.07   185.0   65.04   188.7   65.72   193.0
GR 67.14   195.5   67.34   206.3   68.34   207.3   68.10   216.5   68.10   221.5
GR 68.30   223.5   83.80   250.0
X130.340      29   44.20   179.40  50.00   50.00   50.00
GR 70.06      .0   70.10    42.7   70.15    44.2   69.10    44.2   69.10    45.4
GR 68.10    45.4   68.10    45.9   65.81    49.5   65.81    50.1   65.41    50.1
GR 64.15    57.2   64.12    61.8   63.88    72.2   63.82    87.2   63.72   102.2
GR 63.12   117.2   63.52   132.2   63.36   138.8   64.12   138.8   64.36   138.8
GR 64.36   139.3   67.52   144.1   67.54   144.2   69.08   144.2   69.08   145.4
GR 70.18   145.4   70.16   147.1   68.40   174.4   68.40   179.4
X130.350      29   44.20   145.40  10.00   10.00   10.00
GR 70.06      .0   70.10    42.7   70.15    44.2   69.10    44.2   69.10    45.4
GR 68.10    45.4   68.10    45.9   65.81    49.5   65.81    50.1   65.41    50.1
GR 64.15    57.2   64.12    61.8   63.88    72.2   63.82    87.2   63.72   102.2
GR 63.12   117.2   63.52   132.2   63.36   138.8   64.12   138.8   64.36   138.8
GR 64.36   139.3   67.52   144.1   67.54   144.2   69.08   144.2   69.08   145.4
GR 70.18   145.4   70.16   147.1   68.40   174.4   68.40   179.4
X130.388      13   10.20   171.40  38.00   38.00   38.00
GR 70.83      .0   70.74    10.2   68.26    34.8   67.37    37.5   67.37    38.9
GR 64.64    38.9   64.64   124.2   67.11   124.2   67.30   125.4   67.51   127.5
GR 68.03   166.3   68.88   166.9   68.88   171.4
X130.390      13   10.20   171.40   2.00    2.00    2.00
GR 70.83      .0   70.74    10.2   68.26    34.8   67.37    37.5   67.37    38.9
GR 64.64    38.9   64.64   124.2   67.11   124.2   67.30   125.4   67.51   127.5
GR 68.03   166.3   68.88   166.9   68.88   171.4
X130.480      24   53.00   196.00  90.00   90.00   90.00
GR 72.34      .0   72.34    30.0   70.94    53.0   68.19    70.7   68.09    72.2
GR 65.70    74.7   63.90    76.0   64.40    91.0   64.30    99.0   64.30   110.0
GR 64.30   117.0   64.40   126.0   64.40   144.0   65.70   146.6   68.13   150.8
GR 67.39   186.4   72.12   196.0   72.12   201.0   68.14   209.0   68.14   221.7
GR 68.72   222.1   69.22   224.7   69.42   230.7   79.32   251.0
X130.680      25   68.00   200.00  200.00  200.00  200.00
GR 73.22      .0   73.22    66.8   73.66    67.5   75.99    68.0   65.75    83.7
GR 65.35    87.0   65.05   115.0   64.95   122.5   64.75   130.0   64.65   139.0
GR 64.55   145.0   65.75   151.3   66.44   156.1   68.16   160.0   68.46   163.6
GR 67.16   165.6   67.16   166.6   67.99   168.2   67.10   190.0   72.02   200.0
GR 72.16   204.0   69.14   210.5   69.14   220.0   69.41   220.0   69.41   300.0
X130.880      24     .00   159.50  200.00  200.00  200.00
GR 73.27      .0   71.60     8.3   69.01    28.4   68.88    36.8   65.80    42.1
GR 64.40    46.5   64.30    51.5   64.30    59.5   64.20    66.5   64.10    78.5
GR 64.00    98.5   64.60   103.5   65.80   104.6   66.67   105.4   66.67   110.1
GR 69.06   115.3   69.06   118.3   68.16   120.0   69.48   149.5   72.27   159.5
GR 72.27   163.5   69.80   169.5   70.03   182.5   70.03   219.5
X131.070      33     .00   145.20  190.00  190.00  190.00
GR 89.59      .0   70.35    21.6   65.82    27.4   64.62    30.0   64.12    44.0
GR 64.22    51.0   64.62    56.0   64.52    62.0   65.02    73.0   65.82    75.9
GR 66.98    77.2   66.94    91.2   69.50    96.6   69.50    98.8   68.56   100.0
GR 68.56   113.2   69.93   114.8   69.93   115.8   69.91   121.1   70.12   125.6
GR 69.90   143.2   71.26   145.2   71.42   153.0   70.55   155.0   69.65   155.0
GR 69.65   155.9   70.55   155.9   72.43   159.9   72.43   173.3   74.09   176.0
GR 74.03   180.3   73.74   181.5   73.74   206.0
X131.290      38   79.00   201.50  220.00  220.00  220.00
GR 74.68      .0   71.94    17.1   68.24    21.5   68.24    62.5   70.44    65.5
GR 70.44    70.5   71.34    72.5   71.34    79.0   68.34    84.0   68.34    95.9
GR 68.64    96.4   68.64    97.9   67.72   102.2   67.25   111.2   67.46   118.9
GR 65.88   122.5   65.28   125.5   65.08   128.5   65.08   136.5   65.08   146.5
GR 65.08   154.5   65.88   155.3   67.54   156.5   67.67   179.0   66.44   182.9
GR 66.44   185.4   68.96   193.7   70.27   195.5   70.27   196.7   69.47   196.7
GR 69.45   197.9   70.27   197.9   72.64   201.5   72.64   202.0   72.44   202.0
GR 72.44   212.5   74.17   215.0   74.17   261.5
X131.465      25   80.50   185.00  175.00  175.00  175.00
GR 72.28      .0   70.21    40.7   70.17    75.0   70.52    80.5   69.85    80.5
GR 69.85    81.3   68.96    81.3   68.96    82.3   67.21    84.8   66.68    93.7
GR 65.91    98.3   65.71   106.7   65.71   119.7   65.71   132.7   65.91   145.7
GR 66.39   151.7   68.31   158.7   68.13   171.7   68.72   184.0   69.85   184.2
GR 69.85   185.0   70.52   185.0   70.57   189.5   70.93   205.5   72.07   243.6
X131.475      25   80.50   185.00  10.00   10.00   10.00
GR 72.28      .0   70.21    40.7   70.17    75.0   70.52    80.5   69.85    80.5
GR 69.85    81.3   68.96    81.3   68.96    82.3   67.21    84.8   66.68    93.7
GR 65.91    98.3   65.71   106.7   65.71   119.7   65.71   132.7   65.91   145.7
GR 66.39   151.7   68.31   158.7   68.13   171.7   68.72   184.0   69.85   184.2
GR 69.85   185.0   70.52   185.0   70.57   189.5   70.93   205.5   72.07   243.6
X131.675      31     .00   188.00  200.00  200.00  200.00
GR 80.02      .0   72.32    24.7   70.70    32.2   68.54    33.2   68.54    51.8
GR 69.00    51.9   68.89    53.4   65.95    58.8   65.55    60.0   65.15    65.0
GR 65.25    69.0   65.55    74.0   65.65    82.0   65.65    90.0   65.65   100.0
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GR 65.95   100.8   66.89   102.6   67.25   112.2   68.61   117.0   69.12   121.0
GR 69.12   149.0   70.44   150.1   70.44   151.0   69.44   151.0   69.44   152.4
GR 70.44   152.4   70.44   153.0   71.96   157.2   71.92   165.0   73.02   167.0
GR 79.22   188.0
X131.880      24     .00   124.40   205.00   205.00   205.00
GR 70.36      .0   68.95     5.8   66.07    12.6   65.67    14.4   65.67    20.4
GR 65.57    33.4   65.57    38.4   65.67    48.4   65.77    56.4   66.07    57.0
GR 66.75    65.4   67.03    69.4   68.23    69.9   69.46    74.1   70.44    74.1
GR 70.51    94.4   69.51    94.4   69.51    95.8   70.51    95.8   72.62   107.4
GR 72.69   111.8   73.36   121.1   75.14   124.4   76.75   151.0
X132.085      17     .00   125.00   205.00   205.00   205.00
GR 87.87      .0   71.46    35.2   68.61    42.3   66.46    47.5   66.06    53.0
GR 65.96    55.0   65.86    56.0   66.06    59.0   66.06    60.0   66.16    64.0
GR 66.46    65.0   68.16   102.8   67.70   113.0   73.57   125.0   73.57   128.0
GR 69.57   135.0   69.57   235.0
X132.285      23     .00   175.00   200.00   200.00   200.00
GR 87.69      .0   73.05    19.7   70.79    21.7   68.63    26.5   68.44    67.5
GR 66.99    70.5   66.59    72.0   66.49    76.0   66.59    86.0   66.49    93.0
GR 66.69   105.0   66.99   105.8   67.54   109.0   68.39   124.2   69.62   131.2
GR 69.71   167.4   73.49   175.0   73.49   176.0   73.49   179.0   70.59   183.5
GR 70.59   184.8   69.90   187.7   69.90   287.7
X132.485      34   111.00   310.70   200.00   200.00   200.00
GR 75.75      .0   75.71    30.5   75.09    31.5   75.09    62.5   74.27    67.2
GR 74.27    74.2   71.55    87.4   71.55    91.4   74.04    97.8   74.04   111.0
GR 71.08   115.0   71.08   132.6   69.34   136.0   70.24   174.6   69.62   183.4
GR 67.18   192.4   66.78   193.0   66.68   208.0   66.68   225.0   67.18   225.5
GR 69.04   238.5   69.26   248.0   70.15   250.7   72.35   254.0   72.35   255.0
GR 72.35   258.5   69.90   261.0   69.90   299.0   69.90   303.0   73.61   310.7
GR 69.95   322.4   69.95   341.4   70.85   342.8   70.85   345.0
X132.680      42   85.00   273.00   195.00   195.00   195.00
GR 75.10      .0   75.10    11.0   74.00    13.0   74.00    25.0   72.80    26.0
GR 72.80    54.0   71.22    57.0   71.22    74.0   74.89    81.0   74.89    85.0
GR 68.80    94.0   68.80    97.0   68.30    97.5   67.18   102.5   66.98   105.5
GR 66.78   111.0   67.18   115.5   67.88   116.5   67.88   148.5   67.18   149.5
GR 66.98   151.5   66.88   154.5   67.18   157.5   69.40   158.0   69.40   181.0
GR 67.18   181.5   66.78   183.0   66.78   203.0   67.18   203.5   67.68   204.0
GR 67.68   223.0   70.42   224.0   70.42   228.0   72.30   228.1   72.82   233.0
GR 72.82   236.5   70.93   245.5   69.93   245.5   69.93   247.5   70.93   247.5
GR 72.88   257.0   79.97   273.0
X132.698      27   85.00   278.50    18.00    18.00    18.00
GR 75.07      .0   75.07     3.0   74.20     4.3   73.37    36.1   72.77    38.4
GR 72.77    47.4   71.67    48.5   71.67    73.9   71.07    73.9   71.07    74.5
GR 71.67    74.5   74.74    80.0   74.74    85.0   73.48    87.6   71.08    91.3
GR 71.08    94.3   68.87    94.3   68.87   236.4   72.01   236.4   72.67   238.5
GR 72.67   242.0   70.93   250.9   69.93   250.9   69.93   252.9   70.93   252.9
GR 72.88   262.5   79.97   278.5
X132.700      27   85.00   278.50     2.00     2.00     2.00
GR 75.07      .0   75.07     3.0   74.20     4.3   73.37    36.1   72.77    38.4
GR 72.77    47.4   71.67    48.5   71.67    73.9   71.07    73.9   71.07    74.5
GR 71.67    74.5   74.74    80.0   74.74    85.0   73.48    87.6   71.08    91.3
GR 71.08    94.3   69.62    94.3   69.62   236.4   72.01   236.4   72.67   238.5
GR 72.67   242.0   70.93   250.9   69.93   250.9   69.93   252.9   70.93   252.9
GR 72.88   262.5   79.97   278.5
X132.885      36   84.70   216.10   185.00   185.00   185.00
GR 73.64      .0   73.64     3.0   71.87     5.6   71.87    10.1   71.62    11.1
GR 71.62    15.5   71.62    58.6   71.62    62.6   71.62    72.9   71.92    73.1
GR 71.92    73.2   71.32    73.2   71.32    73.8   71.92    73.8   75.10    84.7
GR 73.89    86.8   72.18    91.2   71.27    92.9   71.27    95.9   70.96   103.1
GR 70.37   104.1   70.84   115.9   70.33   132.1   69.43   137.1   69.03   141.1
GR 68.53   147.1   67.83   161.1   67.63   166.1   67.63   177.1   67.53   180.1
GR 67.63   186.1   68.33   191.1   70.33   193.5   73.47   201.1   73.47   205.1
GR 86.97   216.1
X133.075      45     .00   303.60   190.00   190.00   190.00
GR 72.46      .0   72.46    13.9   71.86    14.1   71.86    32.0   71.86    52.0
GR 72.36    52.0   72.36    52.3   71.86    52.3   71.86    52.8   72.36    52.8
GR 72.36    53.1   71.76    53.1   71.76    73.1   75.66    80.1   75.66    84.1
GR 74.23    86.4   72.35    90.9   71.60    92.6   71.60    95.6   71.21   104.5
GR 70.96   141.9   71.53   150.7   70.34   152.5   69.94   158.4   69.84   168.4
GR 69.84   173.4   69.74   175.4   69.54   185.4   69.84   195.4   69.94   203.4
GR 70.34   205.2   70.96   213.2   70.96   216.2   70.34   220.6   68.74   238.4
GR 68.84   242.4   69.14   245.4   70.34   246.7   70.76   252.7   72.80   256.9
GR 73.26   257.4   73.26   258.4   73.26   267.4   74.87   283.6   84.46   303.6
X133.270      43   88.70   219.10   195.00   195.00   195.00
GR 72.60      .0   72.60    30.0   72.80    30.0   72.80    30.3   72.30    30.3
GR 72.30    30.9   72.80    30.9   72.80    31.1   72.40    31.1   72.40    82.7
GR 75.61    82.7   75.60    88.7   73.34    91.9   73.34    95.4   72.61    97.0
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GR 71.73    98.5   71.73   101.5   71.10   131.0   70.38   163.0   69.98   165.0
GR 69.78   172.0   69.68   176.0   69.48   190.0   69.18   196.0   70.38   198.7
GR 71.13   199.0   71.39   211.0   71.39   213.8   72.19   215.2   74.43   219.1
GR 75.23   219.1   75.23   219.3   75.03   219.3   75.03   222.3   76.03   225.0
GR 71.11   239.7   71.11   242.5   71.30   243.0   71.70   244.0   71.17   244.5
GR 71.17   299.0   72.27   299.5   72.27   330.0
X133.311      30   52.70  187.40   41.00   41.00   41.00
GR 73.49      .0   75.80    44.4   75.95    52.7   75.29    52.7   75.29    53.4
GR 74.47    53.4   72.46    56.4   71.72    58.4   71.69    61.3   70.70    67.9
GR 71.00    82.8   70.88    97.7   70.52   112.6   70.88   127.5   70.41   134.6
GR 70.01   138.4   70.01   142.4   69.77   157.3   70.41   164.9   70.63   165.6
GR 71.94   172.2   71.05   176.9   71.45   176.9   71.45   179.9   72.49   181.4
GR 75.56   186.7   75.56   187.4   76.25   187.4   76.39   188.4   74.53   244.4
X133.319      30   52.70  187.40    8.00    8.00    8.00
GR 73.49      .0   75.80    44.4   75.95    52.7   75.29    52.7   75.29    53.4
GR 74.47    53.4   72.46    56.4   71.72    58.4   71.69    61.3   70.70    67.9
GR 71.00    82.8   70.88    97.7   70.52   112.6   70.88   127.5   70.41   134.6
GR 70.01   138.4   70.01   142.4   69.77   157.3   70.41   164.9   70.63   165.6
GR 71.94   172.2   71.05   176.9   71.45   176.9   71.45   179.9   72.49   181.4
GR 75.56   186.7   75.56   187.4   76.25   187.4   76.39   188.4   74.53   244.4
X133.510      36   66.40  230.00  191.00  191.00  191.00
GR 73.05      .0   73.05    52.5   72.02    56.0   72.02    58.0   74.90    63.4
GR 74.90    66.4   73.30    71.0   73.02    81.6   72.63    87.7   71.74    91.0
GR 71.73   103.3   70.54   123.3   70.24   125.0   70.24   140.0   70.54   141.5
GR 70.70   146.9   70.54   151.3   70.34   157.0   70.04   171.0   70.54   176.0
GR 71.45   193.0   72.33   195.3   72.33   216.5   71.25   216.5   71.25   221.5
GR 75.15   227.4   76.15   230.0   76.15   234.5   71.10   245.7   71.10   246.7
GR 72.05   247.5   72.05   248.5   71.58   249.0   71.58   255.0   72.00   255.5
GR 72.00   330.0
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▶ 유등천 - 횡단자료

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X1  .000      38   13.16  654.03     .00     .00     .00
GR 40.22      .0   40.22    13.2   38.61    18.2   36.33    26.0   36.02    59.6
GR 36.01    101.9  35.26   139.6   34.00   145.1   32.91   160.0   32.71   162.2
GR 32.41    162.6  32.41   169.1   32.41   173.8   32.21   176.7   32.71   178.5
GR 32.91    188.9  32.81   230.5   31.50   241.7   31.20   242.4   31.10   248.1
GR 31.10    256.5  31.50   256.8   32.71   270.9   33.51   310.1   35.00   313.8
GR 35.53    355.2  35.87   398.1   35.88   439.5   36.11   482.3   36.05   523.8
GR 36.00    565.7  35.64   608.5   35.86   641.4   38.24   651.2   39.11   654.0
GR 39.11    657.8  38.65   693.5   39.17   735.7
X1  .005      38   13.16  654.03    5.00    5.00    5.00
GR 40.22      .0   40.22    13.2   38.61    18.2   36.33    26.0   36.02    59.6
GR 36.01    101.9  35.26   139.6   34.00   145.1   32.91   160.0   32.71   162.2
GR 32.41    162.6  32.41   169.1   32.41   173.8   32.21   176.7   32.71   178.5
GR 32.91    188.9  32.81   230.5   31.50   241.7   31.20   242.4   31.10   248.1
GR 31.10    256.5  31.50   256.8   32.71   270.9   33.51   310.1   35.00   313.8
GR 35.53    355.2  35.87   398.1   35.88   439.5   36.11   482.3   36.05   523.8
GR 36.00    565.7  35.64   608.5   35.86   641.4   38.24   651.2   39.11   654.0
GR 39.11    657.8  38.65   693.5   39.17   735.7
X1  .070      37   31.50  520.00   65.00   65.00   65.00
GR 40.28      .0   40.42    31.5   38.21    45.6   36.25    62.7   36.21   106.4
GR 36.25    111.8  35.82   132.5   35.34   148.0   32.81   152.5   32.57   171.7
GR 31.93    176.2  31.63   178.0   31.33   180.0   31.13   185.0   31.93   188.0
GR 33.16    188.0  32.77   254.4   32.86   260.0   31.65   271.0   31.45   272.0
GR 31.35    274.0  31.35   277.0   31.45   280.0   31.65   280.8   33.16   295.6
GR 35.06    300.3  35.06   304.0   35.49   508.9   38.53   518.3   39.18   520.0
GR 39.27    524.0  36.24   529.0   36.24   557.6   38.92   572.3   39.03   578.2
GR 36.37    584.5  36.37   640.0
X1  .280      34   94.90  370.00  210.00  210.00  210.00
GR 40.17      .0   40.17    46.9   40.07    51.6   40.07    58.3   39.92    58.3
GR 39.85     90.2  40.00    90.2   40.00    90.5   40.10    90.9   40.10    92.6
GR 40.22     94.9  39.76    96.0   36.31   103.0   35.55   143.4   33.38   145.3
GR 33.38    147.8  33.38   149.0   32.81   149.0   32.71   149.0   32.61   155.0
GR 32.51    172.0  32.51   187.0   32.61   208.0   32.71   260.0   32.81   265.1
GR 33.50    267.9  33.60   289.1   35.26   294.1   35.26   296.3   36.08   361.4
GR 39.64    370.0  40.04   377.6   37.44   382.9   36.89   454.0
X1  .480      36   93.20  420.00  200.00  200.00  200.00
GR 40.09      .0   40.09    55.1   39.50    64.6   39.55    89.9   40.11    89.9
GR 40.11     92.9  40.36    92.9   40.36    93.2   39.70    95.2   36.37   101.8
GR 35.81    145.2  35.62   149.7   35.62   152.7   33.64   157.0   32.84   157.0
GR 33.21    181.4  33.34   208.0   32.94   209.0   32.84   230.0   32.74   231.0
GR 32.64    250.0  32.54   252.0   32.54   259.0   32.44   266.0   32.44   271.0
GR 32.54    291.0  32.74   297.0   32.84   297.3   35.31   302.0   35.31   305.8
GR 35.84    410.2  39.20   417.7   40.14   420.0   40.14   424.0   36.84   428.4
GR 36.93    515.7
X1  .675      39   79.80  432.80  195.00  195.00  195.00
GR 40.46      .0   40.46    15.0   40.66    15.0   42.62    22.4   42.49    34.9
GR 40.39     45.0  40.39    48.0   40.24    48.0   40.10    71.1   40.35    71.1
GR 40.35     72.9  40.42    73.2   40.42    75.0   40.46    79.8   39.68    81.6
GR 39.39     88.3  35.99   123.1   35.48   140.4   35.48   143.4   34.23   145.7
GR 33.70    204.5  33.44   218.7   33.34   224.4   33.29   230.4   33.24   239.4
GR 33.24    250.4  33.34   265.4   33.34   287.4   33.44   292.1   35.40   296.1
GR 35.40    300.0  35.96   424.4   38.86   430.4   39.91   432.8   40.11   438.3
GR 40.15    442.4  36.26   448.0   36.26   449.7   52.86   480.4
X1  .895      45  134.10  469.50  220.00  220.00  220.00
GR 40.84      .0   40.84    66.7   41.24    66.7   41.24    68.2   43.37    75.9
GR 43.37     77.9  41.06    83.5   40.85    92.2   40.60    92.2   40.74   124.5
GR 40.99    124.5  40.99   132.7   41.11   134.1   39.88   136.7   36.47   143.6
GR 35.99    231.6  35.60   235.3   35.60   240.3   35.52   242.2   35.52   245.7
GR 33.71    249.1  34.38   262.3   33.98   282.3   33.69   285.0   33.49   286.0
GR 33.49    333.0  33.69   334.0   33.90   336.0   33.90   374.0   33.69   375.0
GR 33.39    376.0  33.59   387.0   33.59   394.0   33.69   394.6   35.46   395.3
GR 35.46    399.1  35.94   462.4   38.88   468.2   39.60   469.5   39.60   470.0
GR 39.60    474.5  36.60   478.0   36.60   486.6   36.40   486.6   36.40   525.0
X1 1.055      39  146.40  449.50  160.00  160.00  160.00
GR 41.46      .0   41.46    78.0   43.38    83.9   43.38    85.9   41.29    91.1
GR 41.20     92.1  40.99    98.4   40.99   100.9   40.74   100.9   40.77   135.9
GR 41.02    135.9  41.21   144.6   41.14   146.4   39.86   149.8   36.59   156.4
GR 36.85    259.7  35.05   259.7   33.76   271.7   35.56   271.7   35.46   276.4
GR 35.46    285.4  33.95   288.5   34.09   349.3   33.99   356.0   33.99   367.0
GR 33.89    378.0  33.89   393.0   33.99   406.0   33.99   417.0   34.09   422.4
GR 35.42    425.3  35.42   429.2   35.84   441.0   38.95   447.5   39.90   449.5
GR 39.89    450.0  39.95   457.5   37.58   461.5   37.88   520.0
X1 1.245      54  125.30  450.00  190.00  190.00  190.00
GR 41.91      .0   41.91    56.9   43.50    63.9   43.50    68.4   41.34    73.5
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GR 41.19    82.7   40.94    82.7   40.95    98.0   41.20    98.0   41.20   100.5
GR 40.05   100.5   41.05   116.6   41.25   116.6   41.25   124.1   41.30   125.3
GR 39.84   129.2   38.10   133.1   38.04   139.1   36.37   142.4   36.00   203.4
GR 35.66   206.1   35.66   215.1   34.87   216.6   34.71   279.6   34.39   285.7
GR 34.19   292.0   34.19   303.0   34.09   311.0   34.09   326.0   34.19   341.0
GR 34.19   368.0   34.39   374.1   35.59   377.0   35.59   380.8   37.01   426.1
GR 35.81   426.1   35.81   427.8   37.01   427.8   37.17   436.0   36.68   437.0
GR 36.68   437.5   38.85   442.0   40.25   444.5   40.25   448.0   41.44   450.0
GR 41.44   451.0   40.63   452.3   40.37   458.0   39.92   463.1   39.94   479.9
GR 40.24   479.9   40.29   484.9   41.99   484.9   49.44   505.0
X1 1.445      51   88.10  410.00  200.00  200.00  200.00
GR 41.93      .0   41.93    23.2   43.68    29.1   43.68    32.1   41.32    38.0
GR 41.32    42.5   41.12    42.5   40.90    84.1   41.15    84.1   41.15    88.1
GR 40.37    88.6   40.37    89.6   40.04    91.9   38.29    95.4   38.22   107.4
GR 37.26   111.0   35.46   111.0   34.89   123.2   36.39   123.2   36.39   154.7
GR 36.02   157.1   36.02   166.1   35.15   168.2   35.42   219.1   35.35   224.7
GR 35.11   228.5   34.66   244.4   34.56   250.0   34.46   254.0   34.36   263.0
GR 34.36   270.0   34.46   278.0   34.56   294.0   34.66   299.0   34.89   315.0
GR 36.02   317.9   36.02   321.7   36.36   338.2   35.20   338.2   35.20   345.1
GR 36.26   345.1   37.56   367.3   37.81   374.5   37.81   377.5   38.31   379.5
GR 38.31   381.7   36.94   383.6   36.94   384.4   39.63   390.0   39.63   393.5
GR 55.63   410.0
X1 1.635      46   67.90  349.00  190.00  190.00  190.00
GR 43.06      .0   43.06    16.0   43.06    25.5   42.76    25.5   41.92    29.7
GR 42.42    29.7   42.42    29.9   36.49    29.9   36.49    47.4   42.48    47.4
GR 42.48    47.7   41.98    47.7   41.86    59.2   42.11    59.2   42.11    65.7
GR 41.99    67.9   40.22    71.6   38.06    76.3   37.86    87.8   36.89    90.5
GR 36.63   145.1   36.15   150.7   36.15   155.7   35.99   158.2   35.99   161.7
GR 35.44   163.8   35.25   215.9   35.24   219.7   34.68   220.6   34.38   222.5
GR 34.38   235.5   34.28   241.5   34.28   246.5   34.38   252.5   34.38   258.5
GR 34.68   259.2   36.00   312.5   36.00   316.0   37.54   335.2   37.95   345.4
GR 39.89   348.3   40.49   349.0   40.49   350.5   40.31   360.0   40.72   363.5
GR 40.71   382.2
X1 1.823      42   42.61  338.79  188.00  188.00  188.00
GR 42.64      .0   42.81    38.5   42.41    38.5   42.76    38.6   42.50    42.6
GR 40.74    42.6   40.74    43.5   38.80    43.5   38.80    44.8   38.10    44.8
GR 37.97    63.5   37.13    65.6   37.27    79.0   36.93   111.9   36.46   132.2
GR 36.49   137.3   36.21   144.8   36.21   147.7   36.21   151.1   34.99   153.7
GR 34.97   177.7   34.85   191.7   34.55   198.5   34.55   210.6   34.85   241.8
GR 35.75   274.7   34.95   285.5   34.81   294.3   36.41   298.0   36.41   301.1
GR 36.91   301.1   36.99   305.9   36.94   314.6   38.34   314.6   38.27   327.9
GR 38.84   337.9   40.74   337.9   40.74   338.8   42.50   338.8   42.81   339.7
GR 42.27   370.8   40.97   426.3
X1 1.870      42   42.61  338.79   47.00   47.00   47.00
GR 42.64      .0   42.81    38.5   42.41    38.5   42.76    38.6   42.50    42.6
GR 40.74    42.6   40.74    43.5   38.80    43.5   38.80    44.8   38.10    44.8
GR 37.97    63.5   37.13    65.6   37.27    79.0   36.93   111.9   36.46   132.2
GR 36.49   137.3   36.21   144.8   36.21   147.7   36.21   151.1   34.99   153.7
GR 34.97   177.7   34.85   191.7   34.55   198.5   34.55   210.6   34.85   241.8
GR 35.75   274.7   34.95   285.5   34.81   294.3   36.41   298.0   36.41   301.1
GR 36.91   301.1   36.99   305.9   36.94   314.6   38.34   314.6   38.27   327.9
GR 38.84   337.9   40.74   337.9   40.74   338.8   42.50   338.8   42.81   339.7
GR 42.27   370.8   40.97   426.3
X1 1.880      33   96.70  369.70   10.00   10.00   10.00
GR 42.45      .0   42.45    44.5   42.45    50.0   41.65    52.0   41.65    58.6
GR 40.55    58.6   40.40    87.1   40.80    96.4   40.80    96.7   38.45    96.7
GR 38.45   123.5   36.24   125.8   36.53   174.7   36.49   179.8   36.21   183.8
GR 36.21   187.8   34.76   190.8   34.66   198.0   34.56   215.0   34.56   245.0
GR 34.66   275.0   34.76   280.8   35.52   325.2   34.72   328.0   34.85   332.2
GR 36.20   335.0   36.45   365.7   37.65   368.6   37.65   369.7   40.95   369.7
GR 40.95   370.0   40.95   381.0   40.95   450.0
X1 2.090      38   61.60  338.80  210.00  210.00  210.00
GR 43.42      .0   41.50     3.0   41.50     6.0   41.20     6.1   41.41    13.1
GR 41.91    13.2   41.98    20.2   41.87    41.0   41.87    52.0   41.37    52.1
GR 41.17    58.1   41.45    58.2   41.45    61.2   41.94    61.3   41.94    61.6
GR 39.04    61.7   39.04    69.7   37.50    72.7   36.30   126.7   35.30   128.7
GR 35.24   130.7   35.14   135.7   35.14   143.7   35.04   152.7   35.04   166.7
GR 35.14   181.7   35.14   193.7   35.24   197.7   35.24   275.2   36.35   278.7
GR 36.89   316.7   39.30   322.7   39.30   323.7   39.91   338.7   41.91   338.8
GR 41.56   346.8   41.56   354.7   41.56   384.7
X1 2.300      38   47.50  328.80  210.00  210.00  210.00
GR 43.07      .0   43.64     5.3   43.64    10.3   41.68    15.0   41.68    20.0
GR 41.38    20.0   41.57    43.8   41.87    43.8   41.87    47.5   40.08    50.8
GR 37.22    55.7   36.64    90.8   36.64    94.3   36.40    98.6   35.30   101.1
GR 35.00   104.8   35.00   112.8   34.90   125.8   34.90   137.8   35.00   154.8
GR 35.10   177.8   35.30   179.1   36.10   202.0   35.19   204.0   35.19   213.3
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GR 36.01	245.4	36.57	248.2	36.76	303.2	39.03	308.5	39.38	314.7
GR 39.52	322.7	39.52	324.2	40.98	327.3	42.10	328.8	42.10	329.8
GR 42.10	337.8	42.33	342.1	42.33	394.8				
X1 2.303	30	86.50	369.50	3.00	3.00	3.00			
GR 43.07	.0	43.07	38.2	43.84	42.7	43.84	43.7	43.84	47.3
GR 41.81	52.2	41.81	57.2	41.51	57.2	41.60	80.3	41.90	80.3
GR 41.90	84.5	41.90	86.5	39.96	87.5	37.39	92.4	37.16	115.9
GR 36.66	134.1	34.86	134.1	34.86	284.2	36.66	284.2	36.97	338.8
GR 39.09	344.2	39.50	353.7	39.57	361.0	39.57	364.7	41.06	367.5
GR 42.31	369.5	42.31	370.0	42.31	378.0	42.61	382.0	42.61	430.0
X1 2.310	30	86.50	369.50	7.00	7.00	7.00			
GR 43.07	.0	43.07	38.2	43.84	42.7	43.84	43.7	43.84	47.3
GR 41.81	52.2	41.81	57.2	41.51	57.2	41.60	80.3	41.90	80.3
GR 41.90	84.5	41.90	86.5	39.96	87.5	37.39	92.4	37.16	115.9
GR 36.66	134.1	34.86	134.1	34.86	284.2	36.66	284.2	36.97	338.8
GR 39.09	344.2	39.50	353.7	39.57	361.0	39.57	364.7	41.06	367.5
GR 42.31	369.5	42.31	370.0	42.31	378.0	42.61	382.0	42.61	430.0
X1 2.480	35	74.00	348.40	170.00	170.00	170.00			
GR 44.31	.0	44.31	26.9	44.51	26.9	44.34	31.3	41.94	42.0
GR 41.94	46.2	41.64	46.2	41.67	69.0	41.97	69.0	41.97	72.3
GR 41.84	73.0	41.84	74.0	40.47	76.5	37.95	81.0	37.27	106.9
GR 35.58	110.6	35.38	121.0	35.28	137.0	35.28	156.0	35.38	161.0
GR 35.58	168.5	36.35	246.4	36.04	254.3	37.23	257.3	37.23	261.2
GR 37.85	329.5	39.56	332.5	39.56	334.7	39.80	343.1	41.47	346.9
GR 42.12	348.4	42.12	350.0	42.12	358.0	41.82	362.4	41.82	413.0
X1 2.640	45	47.90	330.80	160.00	160.00	160.00			
GR 42.94	.0	42.94	8.0	44.24	10.0	44.24	13.0	42.15	17.8
GR 42.15	22.8	41.85	22.8	41.79	44.8	42.09	44.8	42.09	46.9
GR 42.19	47.9	41.28	49.8	38.29	55.9	38.12	63.9	38.12	66.9
GR 36.26	70.9	36.06	71.8	36.16	81.8	36.16	106.8	36.06	110.8
GR 36.26	111.8	36.44	112.8	36.64	162.8	36.19	165.8	35.99	167.8
GR 35.99	170.8	35.99	173.8	36.19	177.8	36.67	178.8	36.67	183.8
GR 36.47	185.8	36.37	186.8	36.37	188.8	36.47	189.1	37.02	233.8
GR 38.42	237.8	38.42	240.8	40.17	301.3	39.88	310.1	39.94	325.3
GR 41.64	328.6	42.34	330.8	42.34	340.8	42.74	340.8	42.74	390.8
X1 2.777	29	97.10	261.20	137.00	137.00	137.00			
GR 42.97	.0	41.97	60.0	42.85	95.3	42.56	97.1	41.10	97.1
GR 41.10	98.3	40.81	98.3	38.26	103.5	38.10	116.0	38.10	119.0
GR 36.86	121.5	37.28	141.2	36.28	142.7	35.68	148.5	35.58	166.5
GR 35.28	181.2	35.48	187.5	36.28	197.4	37.19	217.7	38.15	221.2
GR 38.39	238.1	38.39	243.5	38.54	256.4	40.61	260.0	41.26	260.0
GR 41.21	261.2	42.67	261.2	42.97	269.5	40.62	360.0		
X1 2.803	29	97.10	261.20	26.00	26.00	26.00			
GR 42.97	.0	41.97	60.0	42.85	95.3	42.56	97.1	41.10	97.1
GR 41.10	98.3	40.81	98.3	38.26	103.5	38.10	116.0	38.10	119.0
GR 36.86	121.5	37.28	141.2	36.28	142.7	35.68	148.5	35.58	166.5
GR 35.28	181.2	35.48	187.5	36.28	197.4	37.19	217.7	38.15	221.2
GR 38.39	238.1	38.39	243.5	38.54	256.4	40.61	260.0	41.26	260.0
GR 41.21	261.2	42.67	261.2	42.97	269.5	40.62	360.0		
X1 2.820	37	85.00	248.30	17.00	17.00	17.00			
GR 43.60	.0	43.60	26.9	44.25	38.1	44.25	42.1	42.35	49.4
GR 42.35	54.4	42.15	54.4	42.53	77.0	42.73	77.0	42.73	80.0
GR 42.91	80.4	42.91	85.0	39.31	85.0	39.57	96.1	38.71	98.5
GR 38.34	113.6	38.34	116.6	37.61	118.2	36.30	141.7	36.00	143.0
GR 36.00	147.0	35.80	154.0	35.90	166.0	36.00	172.0	36.00	186.0
GR 36.30	197.3	36.63	199.2	38.36	202.4	38.36	205.6	38.78	227.9
GR 38.78	233.4	38.66	242.1	42.15	248.3	42.65	248.3	42.85	249.4
GR 42.85	250.0	42.58	303.1						
X1 3.015	35	106.50	320.70	195.00	195.00	195.00			
GR 44.43	.0	45.43	70.0	43.08	76.1	42.63	80.0	42.33	80.0
GR 42.54	102.5	42.74	102.5	42.74	105.5	42.68	106.2	42.98	106.2
GR 42.98	106.5	40.48	106.5	39.74	126.0	39.04	127.9	38.61	180.4
GR 38.61	183.4	37.67	185.0	36.33	239.7	35.83	242.2	36.03	247.2
GR 36.03	250.6	35.73	255.6	36.33	260.6	38.74	264.7	38.74	268.0
GR 39.57	306.0	42.23	317.7	44.38	320.7	44.38	322.8	44.18	322.8
GR 44.40	323.2	44.18	330.2	45.05	330.2	45.05	341.2	45.05	358.2
X1 3.215	39	42.50	286.30	200.00	200.00	200.00			
GR 42.21	.0	42.21	12.0	42.21	13.0	42.21	16.0	42.73	38.2
GR 42.93	38.2	42.93	41.2	43.03	42.2	43.03	42.5	41.03	42.5
GR 40.68	49.2	38.35	65.9	37.37	65.9	37.37	69.4	39.18	76.5
GR 38.98	136.5	38.98	139.5	37.21	143.4	37.21	150.2	36.40	164.8
GR 36.30	166.3	36.10	169.3	36.20	176.3	36.22	182.3	36.40	185.5
GR 36.70	188.1	37.69	190.3	37.66	216.3	39.10	219.2	39.10	222.3
GR 40.12	266.5	41.33	270.2	42.73	270.5	43.22	276.5	44.37	277.9
GR 44.37	279.3	44.37	285.3	45.47	286.3	46.47	346.3		
X1 3.242	39	57.90	288.00	27.00	27.00	27.00			

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GR 41.51      .0   41.51    30.0   42.01    30.0   43.40    57.8   43.40    57.9
GR 42.26     57.9  42.26    58.9   38.71    58.9   38.71    60.9   38.51    60.9
GR 38.51     65.4  40.31    69.4   40.21    82.4   39.61    84.3   39.37   112.6
GR 39.31    142.8  38.87   150.1   38.87   153.1   37.22   156.7   37.71   172.6
GR 36.46    177.3  36.16   179.1   36.26   183.6   36.46   187.8   36.84   202.3
GR 37.36    204.6  37.59   228.9   38.96   232.1   38.96   232.7   39.27   263.5
GR 39.71    276.4  39.71   282.9   42.42   287.0   43.82   287.0   43.82   288.0
GR 44.96    288.0  45.51   291.1   45.36   306.2   46.60   364.4
X1 3.268       39  57.90   288.00  26.00    26.00   26.00
GR 41.51      .0   41.51    30.0   42.01    30.0   43.40    57.8   43.40    57.9
GR 42.26     57.9  42.26    58.9   38.71    58.9   38.71    60.9   38.51    60.9
GR 38.51     65.4  40.31    69.4   40.21    82.4   39.61    84.3   39.37   112.6
GR 39.31    142.8  38.87   150.1   38.87   153.1   37.22   156.7   37.71   172.6
GR 36.46    177.3  36.16   179.1   36.26   183.6   36.46   187.8   36.84   202.3
GR 37.36    204.6  37.59   228.9   38.96   232.1   38.96   232.7   39.27   263.5
GR 39.71    276.4  39.71   282.9   42.42   287.0   43.82   287.0   43.82   288.0
GR 44.96    288.0  45.51   291.1   45.36   306.2   46.60   364.4
X1 3.415       32  46.40   254.20 147.00   147.00  147.00
GR 42.20      .0   42.20    20.0   44.10    20.0   44.10    29.0   44.10    31.5
GR 43.90     31.5  44.55    46.4   44.25    46.4   44.25    46.9   41.95    46.9
GR 41.95     50.2  40.27    53.4   39.26   115.2   37.52   119.2   37.42   124.6
GR 37.42    127.6  37.32   142.6   37.32   155.6   37.42   167.6   37.42   180.6
GR 37.52    191.7  38.22   193.0   39.42   195.7   39.42   198.9   39.91   244.1
GR 42.83    250.2  45.22   254.2   45.02   254.3   45.02   254.6   45.02   259.6
GR 46.43    274.9  47.05   305.3
X1 3.615       34  45.90   229.50 200.00   200.00  200.00
GR 42.59      .0   42.59    26.1   42.59    31.1   45.24    31.1   45.24    31.4
GR 44.74     31.4  44.82    45.5   45.26    45.5   45.26    45.9   42.86    46.3
GR 42.86     48.2  41.15    51.4   40.53    81.0   40.12    83.4   40.12    86.9
GR 38.75     90.1  37.70   117.5   37.50   123.5   37.50   132.5   37.10   138.5
GR 37.00    144.5  36.70   152.5   36.90   161.5   37.70   162.5   40.29   166.6
GR 40.29    169.9  40.62   218.8   43.81   225.4   45.79   229.5   45.79   230.1
GR 45.59    230.1  45.59   230.5   45.79   235.5   44.16   296.4
X1 3.805       31  19.60   190.40 190.00   190.00  190.00
GR 44.28      .0   44.28     5.0   44.68    19.1   45.10    19.6   42.72    19.6
GR 42.72     21.5  40.75    25.0   40.63    37.1   40.04    48.8   40.04    51.8
GR 39.11     53.7  38.36    79.1   37.82    81.2   37.52    85.1   37.62    91.1
GR 37.62    100.1  37.72   105.1   37.82   109.3   37.93   115.1   38.42   116.3
GR 38.52    128.7  40.08   132.0   40.08   135.3   40.52   180.1   43.46   186.7
GR 45.56    190.4  45.56   191.6   45.36   191.6   45.36   192.1   45.36   197.1
GR 43.01    249.9
X1 4.005       38  20.00   186.00 200.00   200.00  200.00
GR 42.50      .0   42.50     5.0   45.00     5.0   45.00     5.3   44.76     5.3
GR 45.06     18.8  45.06    19.6   45.35    19.6   45.35    20.0   43.02    20.0
GR 43.02     21.9  41.19    25.2   40.87    53.9   40.40    57.6   40.40    61.1
GR 39.14     63.7  38.28    85.4   38.08    86.6   37.98    90.6   37.98    97.6
GR 38.08    106.6  38.28   107.6   39.20   109.6   39.34   117.3   38.66   130.4
GR 37.86    132.6  38.46   132.6   38.46   138.6   38.66   138.7   40.41   142.5
GR 40.41    145.6  41.24   176.1   43.64   182.2   46.12   186.0   45.92   186.1
GR 46.13    186.6  45.92   191.6   48.29   268.3
X1 4.205       32  29.80   192.80 200.00   200.00  200.00
GR 43.49      .0   43.49    10.0   43.49    15.0   46.09    15.0   46.09    15.3
GR 45.49     15.3  45.64    28.9   45.66    29.4   46.06    29.4   46.06    29.8
GR 43.33     29.8  43.33    31.7   41.65    34.7   40.79    64.4   40.79    67.9
GR 39.87     69.9  38.95    89.4   38.55    92.3   38.35    99.3   38.35   106.3
GR 38.45    121.3  38.95   123.5   39.58   125.9   40.23   148.2   40.89   149.3
GR 40.89    152.4  41.42   182.6   44.51   189.3   46.58   192.8   46.38   193.3
GR 46.63    198.8  46.98   263.8
X1 4.400       33  56.70   228.80 195.00   195.00  195.00
GR 43.03      .0   43.03    40.0   43.33    42.0   46.13    42.0   46.13    42.3
GR 45.87     42.3  46.27    56.0   46.84    56.7   46.46    56.7   46.46    57.1
GR 43.73     57.1  43.73    59.1   42.34    61.4   41.72    84.6   41.72    88.1
GR 39.36     91.2  39.26   115.6   39.06   119.1   38.96   134.1   38.96   147.1
GR 39.06    152.1  39.26   158.3   40.55   165.4   41.81   167.3   41.81   170.4
GR 42.12    220.4  44.94   226.3   46.50   228.8   46.50   230.6   46.30   231.1
GR 46.24    237.1  43.30   240.1   43.30   281.1
X1 4.456       26  96.70   267.50  56.00    56.00   56.00
GR 43.43      .0   43.43    60.0   44.73    76.2   45.53    81.9   46.43    81.9
GR 46.43     82.2  46.23    82.2   46.34    96.3   46.94    96.3   46.94    96.7
GR 42.53     96.7  42.53   105.4   42.25   126.7   39.18   126.7   39.18   205.9
GR 42.35    205.9  42.35   209.2   42.66   258.4   45.25   264.0   46.83   267.5
GR 46.83    270.0  46.63   270.0   46.79   275.2   46.59   278.0   43.93   279.5
GR 43.93    340.0
X1 4.460       26  96.70   267.50   4.00     4.00    4.00
GR 43.43      .0   43.43    60.0   44.73    76.2   45.53    81.9   46.43    81.9
GR 46.43     82.2  46.23    82.2   46.34    96.3   46.94    96.3   46.94    96.7
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GR 42.53    96.7   42.53   105.4   42.25   126.7   39.18   126.7   39.18   205.9
GR 42.35   205.9   42.35   209.2   42.66   258.4   45.25   264.0   46.83   267.5
GR 46.83   270.0   46.63   270.0   46.79   275.2   46.59   278.0   43.93   279.5
GR 43.93   340.0
X1 4.482      26   25.40  194.90   22.00   22.00   22.00
GR 45.67      .0   45.67    24.4   46.93    25.4   45.87    25.4   45.87    26.4
GR 40.90    27.4   40.60    39.4   40.60    41.1   40.67    75.4   40.67   111.4
GR 40.61   127.4   40.53   129.1   40.23   130.4   40.23   133.4   40.53   134.1
GR 41.63   137.3   41.63   140.5   41.42   147.4   41.77   183.4   41.87   185.4
GR 41.87   193.4   45.92   194.4   45.92   194.9   46.98   194.9   46.62   210.5
GR 47.44   236.7
X1 4.518      26   25.40  194.90   36.00   36.00   36.00
GR 45.67      .0   45.67    24.4   46.93    25.4   45.87    25.4   45.87    26.4
GR 40.90    27.4   40.60    39.4   40.60    41.1   40.67    75.4   40.67   111.4
GR 40.61   127.4   40.53   129.1   40.23   130.4   40.23   133.4   40.53   134.1
GR 41.63   137.3   41.63   140.5   41.42   147.4   41.77   183.4   41.87   185.4
GR 41.87   193.4   45.92   194.4   45.92   194.9   46.98   194.9   46.62   210.5
GR 47.44   236.7
X1 4.600      32   83.20  252.70   82.00   82.00   82.00
GR 44.37      .0   44.37    50.0   46.90    61.4   46.90    64.4   46.83    81.4
GR 47.13    81.4   47.13    82.5   47.17    83.2   44.27    83.2   42.91    93.7
GR 43.31    93.7   43.31    94.0   42.61    94.0   42.68    96.0   42.38    96.0
GR 42.12   110.8   41.57   112.0   41.17   115.1   41.07   126.1   41.07   137.1
GR 41.27   151.1   41.37   172.1   41.37   187.1   41.57   188.6   42.50   190.1
GR 42.50   193.1   43.33   245.5   46.87   252.7   46.87   254.1   46.87   258.1
GR 44.35   263.3   44.27   304.1
X1 4.800      37  123.40  289.50  200.00  200.00  200.00
GR 44.69      .0   44.69    70.0   46.69   104.4   46.73   121.4   47.06   121.4
GR 47.06   123.3   47.08   123.4   46.38   123.4   46.38   128.9   46.18   128.9
GR 43.66   128.9   42.87   134.5   42.52   134.5   42.29   149.2   42.32   149.7
GR 41.81   151.3   41.61   157.1   41.61   171.1   41.61   182.1   41.81   190.1
GR 42.19   191.1   42.19   214.1   41.92   215.1   41.62   216.1   41.62   222.1
GR 41.62   227.7   41.92   227.7   42.59   228.5   42.59   231.7   43.30   235.6
GR 43.62   279.0   46.99   289.5   46.99   291.1   46.99   295.1   46.16   298.8
GR 46.18   308.1   46.18   326.1
X1 5.000      36   77.60  243.60  200.00  200.00  200.00
GR 47.99      .0   47.99    50.0   48.29    50.0   48.29    53.5   47.59    53.5
GR 47.59    56.5   47.29    56.5   47.30    74.8   47.60    74.8   47.60    76.7
GR 47.68    77.6   46.98    77.6   46.47    80.4   44.97    80.4   43.46    82.4
GR 43.05    99.2   42.55    99.2   42.55   102.7   41.85   104.0   42.01   134.1
GR 41.71   135.1   41.61   140.1   41.61   151.1   41.51   162.1   41.71   170.1
GR 41.81   181.1   42.01   181.9   43.05   182.8   43.05   186.3   43.90   231.7
GR 47.57   243.6   47.64   244.1   47.57   248.1   45.60   252.4   45.68   262.1
GR 45.68   289.1
X1 5.200      31   46.90  214.50  200.00  200.00  200.00
GR 48.10      .0   48.10    21.7   47.98    29.2   47.68    29.2   47.70    43.9
GR 48.13    43.9   48.13    46.9   46.99    50.5   46.09    50.5   44.01    50.5
GR 43.76    58.9   43.38    83.5   43.18    83.5   43.18    86.5   42.33    88.3
GR 42.09   106.6   41.99   109.0   41.89   121.0   41.79   131.0   41.99   138.0
GR 42.09   139.8   42.18   155.6   42.45   162.7   43.17   163.7   43.17   167.2
GR 44.29   203.3   48.09   214.5   48.09   215.0   46.33   221.7   46.51   231.3
GR 46.51   250.0
X1 5.395      36   36.60  213.00  195.00  195.00  195.00
GR 48.73      .0   48.73     5.0   48.73     9.0   48.43     9.0   48.27    32.8
GR 48.57    32.8   48.57    33.6   48.66    36.6   47.96    36.6   47.73    46.0
GR 46.73    46.0   44.37    46.0   44.08    65.1   43.82    88.1   43.62    88.1
GR 43.56    91.4   42.44    93.6   42.34    95.3   42.24   100.3   42.24   107.3
GR 42.34   115.3   42.44   115.8   43.27   136.0   43.27   141.0   42.45   143.0
GR 42.50   161.2   42.68   167.7   43.80   168.9   43.80   172.4   44.70   204.2
GR 48.62   213.0   48.62   214.3   48.62   218.3   46.61   223.0   46.75   234.1
GR 46.75   249.3
X1 5.562      29   78.20  278.20  167.00  167.00  167.00
GR 47.48      .0   48.08    40.0   49.41    78.2   47.67    78.2   47.67    79.0
GR 44.95    79.9   44.36   103.2   44.39   128.2   44.04   149.2   43.07   153.2
GR 43.02   156.3   42.82   162.5   42.62   178.2   42.62   184.5   42.92   199.5
GR 43.02   200.2   43.08   203.2   42.82   226.1   44.17   228.2   44.47   253.2
GR 44.86   270.3   47.27   277.2   47.27   277.4   47.72   277.4   47.72   278.2
GR 49.46   278.2   49.32   281.5   49.32   289.5   46.58   358.3
X1 5.588      29   78.20  278.20   26.00   26.00   26.00
GR 47.48      .0   48.08    40.0   49.41    78.2   47.67    78.2   47.67    79.0
GR 44.95    79.9   44.36   103.2   44.39   128.2   44.04   149.2   43.07   153.2
GR 43.02   156.3   42.82   162.5   42.62   178.2   42.62   184.5   42.92   199.5
GR 43.02   200.2   43.08   203.2   42.82   226.1   44.17   228.2   44.47   253.2
GR 44.86   270.3   47.27   277.2   47.27   277.4   47.72   277.4   47.72   278.2
GR 49.46   278.2   49.32   281.5   49.32   289.5   46.58   358.3
X1 5.790      41   75.20  268.60  202.00  202.00  202.00
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GR 46.97      .0   46.97    38.7   46.97    44.7   47.47    44.7   47.47    45.7
GR 48.27     45.7  48.27    51.7   50.27    51.7   50.27    52.0   50.12    52.0
GR 49.99     73.2  50.29    73.2   50.29    75.2   49.57    75.2   49.54    90.4
GR 48.54     90.4  47.38    90.4   44.62    93.6   44.15   130.0   44.15   133.5
GR 43.37    135.0  43.14   155.2   42.94   157.0   42.94   163.0   42.84   176.0
GR 42.84    181.0  42.94   186.0   42.94   191.0   43.14   191.5   44.38   193.4
GR 44.38    196.9  44.73   252.5   46.32   255.7   46.32   261.0   49.73   268.6
GR 49.73    270.0  49.79   278.0   48.93   281.8   48.73   282.2   48.91   291.2
GR 48.91    370.0
X1 5.990       34  28.70  239.40  200.00  200.00  200.00
GR 47.89      .0   47.89     1.5   47.89     7.5   50.64     7.5   50.64     7.7
GR 50.49     7.7  50.44    25.8   50.69    25.8   50.69    27.8   50.69    28.4
GR 50.89    28.4  50.89    28.7   46.29    28.7   44.73    94.8   43.32    97.6
GR 43.12    99.8  43.02   102.8   42.92   107.8   41.92   116.8   43.02   120.8
GR 43.12   129.8  43.32   135.4   43.80   153.7   44.87   155.3   44.87   158.8
GR 45.86   222.5  46.80   224.9   47.08   232.5   50.15   239.4   50.15   239.8
GR 50.11   244.8  49.35   253.4   49.19   264.6   49.19   314.8
X1 6.117       33  64.10  269.80  127.00  127.00  127.00
GR 48.91      .0   49.21    30.0   49.91    41.7   50.09    64.1   48.49    64.1
GR 48.49     65.1  45.02    65.1   45.82    69.1   45.66    84.8   45.07   105.8
GR 45.07    121.8  45.07   124.8   44.16   126.8   43.34   128.8   43.04   129.8
GR 43.14    149.8  43.04   168.8   43.34   169.8   43.35   176.2   43.72   184.2
GR 45.09    188.8  45.09   189.8   45.77   209.8   45.88   229.8   45.93   249.8
GR 46.01    262.6  48.13   267.6   48.13   268.6   49.03   268.6   50.63   269.8
GR 50.71    273.8  49.92   298.2   49.14   362.9
X1 6.143       33  64.10  269.80  26.00   26.00   26.00
GR 48.91      .0   49.21    30.0   49.91    41.7   50.09    64.1   48.49    64.1
GR 48.49     65.1  45.02    65.1   45.82    69.1   45.66    84.8   45.07   105.8
GR 45.07    121.8  45.07   124.8   44.16   126.8   43.34   128.8   43.04   129.8
GR 43.14    149.8  43.04   168.8   43.34   169.8   43.35   176.2   43.72   184.2
GR 45.09    188.8  45.09   189.8   45.77   209.8   45.88   229.8   45.93   249.8
GR 46.01    262.6  48.13   267.6   48.13   268.6   49.03   268.6   50.63   269.8
GR 50.71    273.8  49.92   298.2   49.14   362.9
X1 6.190       29  59.60  262.00  47.00   47.00   47.00
GR 50.63      .0   50.33    32.4   50.33    36.6   50.27    56.1   50.65    56.1
GR 50.65     58.2  50.65    59.3   50.92    59.3   50.92    59.6   46.24    59.6
GR 46.65     60.1  46.65    69.1   45.85    69.1   45.54   111.0   43.62   115.2
GR 43.52    123.0  43.52   131.0   43.42   144.0   43.42   158.0   43.52   167.0
GR 43.52    172.6  43.62   172.6   45.50   172.9   45.50   175.9   46.13   242.4
GR 47.07    256.0  50.73   262.0   50.73   265.0   50.70   275.5
X1 6.400       25  29.70  218.40  210.00  210.00  210.00
GR 48.29      .0   48.29     5.0   49.59    15.8   50.73    19.3   50.62    29.7
GR 50.02     31.4  46.48    36.3   45.81    77.8   45.81    80.8   43.85    85.1
GR 43.65     94.4  43.65   102.4   43.55   108.4   43.55   118.4   43.65   129.4
GR 43.65    137.4  43.85   144.6   45.84   153.5   45.84   156.5   46.09   205.2
GR 48.14    210.9  48.14   214.2   51.39   218.4   51.39   221.4   51.27   231.4
X1 6.590       24  13.40  195.40  190.00  190.00  190.00
GR 50.08      .0   50.08     5.0   51.52     8.4   51.52    13.4   51.32    15.0
GR 47.18     24.2  46.00    87.3   44.04    91.9   43.74   102.6   43.74   115.6
GR 43.84    128.6  43.84   137.6   43.84   148.6   43.84   157.6   44.04   160.1
GR 45.88    163.3  45.88   166.3   46.48   183.4   50.44   192.8   51.88   195.4
GR 51.88    196.6  51.78   202.3   51.68   211.4   49.68   213.6
X1 6.780       28  13.80  197.10  190.00  190.00  190.00
GR 50.00      .0   50.00     5.0   52.07     8.8   52.07    13.8   51.82    15.8
GR 49.23     22.2  49.01    31.7   46.96    36.8   46.40    94.2   44.80    98.6
GR 44.60    109.7  44.60   118.7   44.50   130.7   44.50   143.7   44.60   150.7
GR 44.60    165.7  44.80   169.2   46.38   173.0   46.38   175.3   47.13   185.6
GR 48.93    189.0  52.40   197.1   52.40   197.7   52.12   208.6   52.32   208.6
GR 52.32    217.6  55.24   217.6   56.86   220.7
X1 6.952       20  13.50  183.00  172.00  172.00  172.00
GR 51.61      .0   51.61     5.0   52.70    13.5   51.51    16.8   51.51    21.8
GR 48.67     26.3  47.31    80.6   47.31    83.6   44.97    83.6   44.97   159.3
GR 47.22    159.3  47.22   160.4   47.85   177.8   49.71   181.9   52.01   183.0
GR 51.96    190.3  52.80   191.9   52.80   197.6   52.88   216.0   52.88   246.0
X1 6.960       20  13.50  183.00    8.00    8.00    8.00
GR 51.61      .0   51.61     5.0   52.70    13.5   51.51    16.8   51.51    21.8
GR 48.67     26.3  47.31    80.6   47.31    83.6   44.97    83.6   44.97   159.3
GR 47.22    159.3  47.22   160.4   47.85   177.8   49.71   181.9   52.01   183.0
GR 51.96    190.3  52.80   191.9   52.80   197.6   52.88   216.0   52.88   246.0
X1 6.980       26  17.30  190.70  20.00   20.00   20.00
GR 45.56      .0   45.56     5.0   46.26     5.0   52.93     7.9   52.93    12.9
GR 53.04     17.3  49.05    23.1   47.45    79.3   47.45    82.3   46.72    83.4
GR 45.72     87.3  45.72    96.3   45.92   109.3   45.82   122.3   45.82   137.3
GR 45.42    156.3  45.42   157.4   46.72   157.4   47.42   158.7   48.69   178.0
GR 50.59    179.3  50.45   186.4   53.47   190.7   53.17   196.9   53.16   215.3
GR 53.17    227.3
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X1 6.995      26   22.00  190.00   15.00   15.00   15.00
GR 53.74      .0   54.52    22.0   52.66    22.0   52.66    23.0   48.99    23.7
GR 48.96    32.5   48.61    42.8   47.76    46.0   47.76    70.0   47.76    84.0
GR 46.75    86.3   45.45    89.3   45.26   102.0   45.26   134.0   45.45   156.5
GR 46.75   159.5   47.78   161.5   48.50   166.0   48.50   175.9   48.50   184.6
GR 48.56   187.8   52.66   188.8   52.66   190.0   54.52   190.0   54.50   191.8
GR 53.00   239.2
X1 7.025      26   22.00  190.00   30.00   30.00   30.00
GR 53.74      .0   54.52    22.0   52.66    22.0   52.66    23.0   48.99    23.7
GR 48.96    32.5   48.61    42.8   47.76    46.0   47.76    70.0   47.76    84.0
GR 46.75    86.3   45.45    89.3   45.26   102.0   45.26   134.0   45.45   156.5
GR 46.75   159.5   47.78   161.5   48.50   166.0   48.50   175.9   48.50   184.6
GR 48.56   187.8   52.66   188.8   52.66   190.0   54.52   190.0   54.50   191.8
GR 53.00   239.2
X1 7.195      29   14.00  217.20  170.00  170.00  170.00
GR 51.33      .0   51.33     5.0   53.64     9.0   53.64    14.0   53.24    16.6
GR 48.73    25.5   48.73    27.7   48.13    72.8   48.13    75.8   47.03    78.4
GR 46.76    90.4   46.46    99.2   46.46   106.2   45.76   117.2   44.96   133.2
GR 44.96   150.2   45.76   150.2   46.76   151.1   48.13   153.9   48.13   156.9
GR 48.86   202.7   48.86   208.2   49.02   210.4   52.93   217.2   52.93   218.8
GR 53.03   223.2   53.00   239.2   51.44   266.7   50.67   309.0
X1 7.385      29   19.00  208.00  190.00  190.00  190.00
GR 52.43      .0   52.43     5.9   54.41     8.9   54.41    13.9   54.27    19.0
GR 50.89    27.0   49.95    30.3   48.16    74.9   48.16    77.9   47.35    79.7
GR 46.78    88.9   46.68    95.5   46.68   106.5   46.58   117.5   46.58   129.5
GR 46.68   137.5   46.68   142.5   46.78   144.0   48.23   147.5   48.23   150.5
GR 48.75   195.3   50.09   198.0   50.09   201.0   53.63   208.0   54.13   208.0
GR 54.13   209.5   54.03   220.3   54.23   220.3   54.23   222.3
X1 7.562      31  102.20  277.20  177.00  177.00  177.00
GR 52.71      .0   52.71    50.0   54.41   100.0   54.58   102.2   52.55   102.2
GR 52.55   103.0   49.75   104.0   49.48   127.2   49.48   149.3   48.55   152.2
GR 48.51   154.6   46.88   157.4   46.58   158.0   46.58   163.0   46.38   169.0
GR 46.38   172.0   46.48   174.0   46.58   176.0   46.88   177.2   47.11   202.2
GR 47.53   223.8   48.39   225.5   48.39   227.2   49.24   252.2   49.87   276.2
GR 52.35   276.5   52.53   277.2   54.60   277.2   54.56   281.3   52.71   301.0
GR 52.31   370.0
X1 7.588      31  102.20  277.20   26.00   26.00   26.00
GR 52.71      .0   52.71    50.0   54.41   100.0   54.58   102.2   52.55   102.2
GR 52.55   103.0   49.75   104.0   49.48   127.2   49.48   149.3   48.55   152.2
GR 48.51   154.6   46.88   157.4   46.58   158.0   46.58   163.0   46.38   169.0
GR 46.38   172.0   46.48   174.0   46.58   176.0   46.88   177.2   47.11   202.2
GR 47.53   223.8   48.39   225.5   48.39   227.2   49.24   252.2   49.87   276.2
GR 52.35   276.5   52.53   277.2   54.60   277.2   54.56   281.3   52.71   301.0
GR 52.31   370.0
X1 7.790      35   23.60  206.10  202.00  202.00  202.00
GR 52.81      .0   52.81     2.6   52.41     4.6   54.41     4.6   54.41     7.6
GR 54.21     7.6   54.21    19.6   54.41    19.8   55.11    19.8   55.11    23.6
GR 51.44    31.9   51.44    35.9   50.36    43.9   49.32    66.4   49.32    69.4
GR 47.04    72.3   46.94    72.6   46.94    79.6   46.84    93.6   46.84   109.6
GR 46.84   120.6   46.74   130.6   47.04   135.9   49.39   139.3   49.39   142.3
GR 50.34   186.1   52.54   186.1   52.54   186.4   51.94   186.4   52.35   196.5
GR 53.03   200.2   55.20   206.1   54.95   216.1   55.15   216.1   55.15   220.1
X1 7.817      33   74.30  235.10   27.00   27.00   27.00
GR 56.03      .0   56.03    74.3   54.42    74.3   54.42    75.0   52.03    75.0
GR 51.60    87.3   51.11    90.8   50.72   100.0   51.00   101.3   51.00   102.3
GR 49.36   111.0   49.36   114.2   49.36   115.3   47.60   118.6   47.50   127.3
GR 47.40   140.3   47.40   153.3   47.40   166.3   47.30   179.3   47.60   181.8
GR 49.40   185.5   49.40   188.5   49.57   192.3   49.73   205.3   49.85   218.3
GR 49.95   225.6   50.45   232.6   50.53   232.6   51.47   234.4   54.42   234.4
GR 54.42   235.1   56.03   235.1   56.03   330.1
X1 7.823      33   74.30  235.10    6.00    6.00    6.00
GR 56.03      .0   56.03    74.3   54.42    74.3   54.42    75.0   52.03    75.0
GR 51.60    87.3   51.11    90.8   50.72   100.0   51.00   101.3   51.00   102.3
GR 49.36   111.0   49.36   114.2   49.36   115.3   47.60   118.6   47.50   127.3
GR 47.40   140.3   47.40   153.3   47.40   166.3   47.30   179.3   47.60   181.8
GR 49.40   185.5   49.40   188.5   49.57   192.3   49.73   205.3   49.85   218.3
GR 49.95   225.6   50.45   232.6   50.53   232.6   51.47   234.4   54.42   234.4
GR 54.42   235.1   56.03   235.1   56.03   330.1
X1 7.827      34   74.30  235.10    4.00    4.00    4.00
GR 56.11      .0   56.11    74.3   54.05    74.3   54.05    75.0   52.03    75.0
GR 51.60    87.3   51.11    90.8   51.00   100.0   51.00   101.3   51.00   102.3
GR 49.36   111.0   49.36   114.3   49.36   115.3   47.62   118.6   47.52   127.3
GR 47.42   140.3   47.42   153.3   47.42   166.3   47.32   179.3   47.62   181.8
GR 49.40   185.5   49.40   188.5   49.57   192.3   49.73   205.3   49.85   218.3
GR 49.95   225.6   50.45   225.6   50.53   232.6   51.47   232.6   51.37   234.4
GR 54.05   234.4   54.05   235.1   56.11   235.1   56.11   330.0
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X1 7.833      34   74.30  235.10    6.00    6.00    6.00
GR 56.11      .0   56.11    74.3   54.05    74.3   54.05    75.0   52.03    75.0
GR 51.60    87.3   51.11    90.8   51.00   100.0   51.00   101.3   51.00   102.3
GR 49.36   111.0   49.36   114.3   49.36   115.3   47.62   118.6   47.52   127.3
GR 47.42   140.3   47.42   153.3   47.42   166.3   47.32   179.3   47.62   181.8
GR 49.40   185.5   49.40   188.5   49.57   192.3   49.73   205.3   49.85   218.3
GR 49.95   225.6   50.45   225.6   50.53   232.6   51.47   232.6   51.37   234.4
GR 54.05   234.4   54.05   235.1   56.11   235.1   56.11   330.0
X1 7.980      24   10.50  175.80  147.00  147.00  147.00
GR 64.81      .0   56.61    10.5   51.56    11.0   51.95    17.0   51.61    25.0
GR 48.32    34.2   48.12    38.0   48.12    54.0   48.02    67.0   48.02    76.0
GR 48.12    88.0   48.12    96.0   48.32    98.5   49.85   101.6   49.85   104.6
GR 50.98   165.5   53.06   169.3   55.73   175.8   55.98   177.6   55.82   179.1
GR 55.62   179.1   55.48   188.2   55.68   188.2   55.68   218.2
X1 8.180      36   38.00  215.60  200.00  200.00  200.00
GR 65.67      .0   56.29    16.8   55.39    17.6   55.39    19.2   56.89    20.2
GR 56.89    21.2   55.53    26.7   55.32    28.1   55.00    29.6   55.49    36.7
GR 55.69    37.4   55.69    38.0   53.62    41.2   51.42    41.2   50.71    58.5
GR 48.43    62.9   48.33    64.7   48.23    69.7   48.13    76.7   48.13    83.7
GR 48.23    87.7   48.33    91.7   48.43    93.1   49.84   129.7   50.75   131.5
GR 50.75   134.5   52.12   205.7   53.71   209.0   56.41   215.6   56.55   217.5
GR 56.55   219.0   56.35   219.0   56.21   228.3   56.41   228.3   56.41   231.3
GR 56.41   331.7
X1 8.372      29   83.60  233.60  192.00  192.00  192.00
GR 62.09      .0   60.27    49.7   59.43    62.0   59.28    78.0   59.31    83.6
GR 56.91    83.6   56.91    84.8   56.01    84.8   53.38    91.8   52.18    91.8
GR 52.18    98.8   49.98    98.8   49.68   128.6   49.68   188.6   49.78   206.5
GR 49.98   215.2   52.08   219.8   52.08   222.8   51.94   227.9   53.88   232.4
GR 54.78   232.4   54.78   233.6   57.21   233.6   57.35   241.5   57.45   249.2
GR 56.65   249.2   56.65   277.6   56.85   277.6   55.95   341.5
X1 8.407      29   83.60  233.60   35.00   35.00   35.00
GR 62.09      .0   60.27    49.7   59.43    62.0   59.28    78.0   59.31    83.6
GR 56.91    83.6   56.91    84.8   56.01    84.8   53.38    91.8   52.18    91.8
GR 52.18    98.8   49.98    98.8   49.68   128.6   49.68   188.6   49.78   206.5
GR 49.98   215.2   52.08   219.8   52.08   222.8   51.94   227.9   53.88   232.4
GR 54.78   232.4   54.78   233.6   57.21   233.6   57.35   241.5   57.45   249.2
GR 56.65   249.2   56.65   277.6   56.85   277.6   55.95   341.5
X1 8.433      20   69.30  211.50   26.00   26.00   26.00
GR 61.48      .0   61.48    50.0   58.32    54.1   58.09    64.5   57.61    69.3
GR 57.01    70.8   53.39    75.3   53.32    84.3   49.62    84.3   49.62   194.0
GR 53.27   194.0   53.27   197.0   54.67   197.0   55.26   201.3   55.52   207.7
GR 57.02   211.5   57.02   213.5   56.78   221.0   56.98   221.0   56.98   273.5
X1 8.440      20   69.30  211.50    7.00    7.00    7.00
GR 61.48      .0   61.48    50.0   58.32    54.1   58.09    64.5   57.61    69.3
GR 57.01    70.8   53.39    75.3   53.32    84.3   49.62    84.3   49.62   194.0
GR 53.27   194.0   53.27   197.0   54.67   197.0   55.26   201.3   55.52   207.7
GR 57.02   211.5   57.02   213.5   56.78   221.0   56.98   221.0   56.98   273.5
X1 8.560      29   43.50  198.80  120.00  120.00  120.00
GR 51.73      .0   51.73    20.6   56.73    25.6   56.73    35.6   56.51    43.5
GR 55.42    45.3   53.59    48.7   53.39    73.1   53.39    76.1   52.35    78.3
GR 51.45    81.0   51.65    93.0   51.85   102.0   51.85   113.0   51.65   122.0
GR 51.45   138.0   52.35   143.6   53.34   145.8   53.34   148.8   54.13   185.5
GR 55.77   189.1   55.98   192.0   57.14   198.8   57.14   200.0   57.05   208.0
GR 57.45   208.0   57.45   212.0   55.33   212.0   55.33   245.0
X1 8.780      28   50.00  278.30  220.00  220.00  220.00
GR 55.27      .0   55.27    32.2   56.01    42.2   56.51    50.0   55.54    51.9
GR 53.76    55.6   52.76    85.1   52.76    88.1   52.38    90.6   52.08    94.0
GR 51.98   111.0   51.88   126.0   51.88   138.0   51.98   146.0   52.03   155.0
GR 52.38   159.7   53.30   161.6   53.30   164.6   54.03   218.7   55.68   223.0
GR 55.42   228.7   53.42   228.7   53.42   256.9   55.91   256.9   56.44   264.7
GR 56.93   278.3   57.73   278.3   57.73   303.0
X1 8.990      26   49.90  208.90  210.00  210.00  210.00
GR 54.63      .0   55.43    36.4   57.01    39.3   57.18    49.9   54.12    54.4
GR 53.54    93.1   53.54    96.1   52.23    98.6   53.06   136.1   52.05   165.2
GR 52.30   167.8   52.30   173.3   52.50   174.5   53.43   176.3   53.43   179.3
GR 54.00   198.3   53.75   198.3   53.75   199.5   54.00   199.5   54.39   203.0
GR 55.86   206.2   56.53   208.9   56.53   209.8   56.71   217.4   56.71   225.4
GR 56.71   279.8
X1 9.002      29   57.70  212.20   12.00   12.00   12.00
GR 54.75      .0   54.75    40.0   57.75    44.2   58.02    56.6   58.02    57.7
GR 56.64    57.7   56.64    58.5   55.94    58.5   54.05    61.5   53.71    79.7
GR 53.56    98.7   53.56   101.7   52.55   104.5   52.65   123.7   52.93   145.7
GR 52.55   167.7   52.25   170.2   52.25   177.2   52.55   180.9   53.55   182.5
GR 53.55   189.7   54.05   208.7   56.00   211.4   56.70   211.4   56.70   212.2
GR 58.05   212.2   57.77   231.6   55.76   235.6   55.76   257.2
X1 9.018      29   57.70  212.20   16.00   16.00   16.00
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GR 54.75      .0   54.75    40.0   57.75    44.2   58.02    56.6   58.02    57.7
GR 56.64     57.7  56.64    58.5   55.94    58.5   54.05    61.5   53.71    79.7
GR 53.56     98.7  53.56   101.7   52.55   104.5   52.65   123.7   52.93   145.7
GR 52.55    167.7  52.25   170.2   52.25   177.2   52.55   180.9   53.55   182.5
GR 53.55    189.7  54.05   208.7   56.00   211.4   56.70   211.4   56.70   212.2
GR 58.05    212.2  57.77   231.6   55.76   235.6   55.76   257.2
X1 9.190       25  62.40  224.40  172.00  172.00  172.00
GR 56.09      .0   56.09    47.0   56.09    48.4   57.67    58.4   57.67    62.4
GR 57.46     63.8  56.03    66.6   54.40    69.8   53.74   123.1   52.52   124.7
GR 53.76    132.7  52.58   162.6   52.48   166.0   52.48   170.0   52.38   178.0
GR 52.38    182.0  52.48   198.0   52.58   198.0   53.32   198.0   54.12   209.5
GR 56.87    209.5  56.87   210.0   56.96   223.4   57.76   224.4   57.76   265.0
X1 9.395       19  66.60  200.00  205.00  205.00  205.00
GR 57.29      .0   57.29    24.4   55.79    56.5   58.78    63.1   58.78    66.6
GR 55.89     73.9  54.46   113.6   53.15   118.0   52.75   122.0   52.65   131.0
GR 52.65    149.0  52.75   162.0   53.15   165.7   53.29   170.5   52.69   176.2
GR 52.95    186.1  57.89   200.0   57.89   252.2   60.68   255.2
X1 9.595       23  74.70  212.40  200.00  200.00  200.00
GR 56.22      .0   57.22    50.0   56.82    65.9   59.15    71.2   59.15    71.7
GR 59.15     74.7  56.20    83.4   55.33    96.8   54.26   111.3   53.30   114.9
GR 53.10    116.4  52.90   120.4   52.90   126.4   53.10   132.4   53.30   133.4
GR 54.35    153.4  55.24   157.2   55.47   205.1   56.45   208.9   58.42   212.4
GR 58.42    218.9  59.37   251.8   59.37   312.4
X1 9.795       21  33.10  171.60  200.00  200.00  200.00
GR 67.30      .0   63.59    19.0   60.92    22.6   61.52    33.1   60.33    34.4
GR 60.33     36.9  57.09    44.0   56.69    47.9   56.02    49.1   55.25    95.6
GR 53.43    111.8  53.23   114.6   52.93   116.6   52.93   118.6   53.23   121.6
GR 53.43    123.4  55.05   126.9   56.54   166.6   59.18   171.6   59.18   175.6
GR 59.18    271.6
X1 9.995       24  10.00  101.30  200.00  200.00  200.00
GR 67.12      .0   63.12    10.0   56.63    20.3   54.69    27.5   54.09    32.3
GR 53.99     34.3  53.79    38.3   53.79    43.2   53.99    49.3   54.19    54.3
GR 54.69     65.8  55.53    77.3   56.50    81.3   57.94    98.2   60.15   101.3
GR 60.09    104.3  59.39   105.3   59.39   105.8   60.26   107.3   60.68   129.0
GR 59.19    131.7  59.19   136.7   60.32   140.6   60.32   176.3
X110.195       19  10.00  109.90  200.00  200.00  200.00
GR 68.48      .0   63.48    10.0   60.66    15.3   57.21    21.8   56.21    32.4
GR 54.70     42.1  54.30    45.9   54.00    49.9   54.00    55.9   54.30    63.9
GR 54.70     63.9  56.48    87.6   58.01   103.3   61.01   109.9   61.01   112.9
GR 60.31    113.9  60.31   114.4   61.41   116.9   61.41   159.9
X110.400       27 109.20  256.40  205.00  205.00  205.00
GR 59.94      .0   59.99   103.0   61.07   106.2   61.07   109.2   59.75   111.9
GR 57.97    115.5  57.25   164.1   55.81   167.5   55.61   167.5   55.61   172.4
GR 55.51    180.4  55.51   187.4   55.61   192.4   55.61   201.4   55.81   204.8
GR 56.49    220.4  57.16   222.3   57.72   249.4   59.71   253.2   61.59   256.4
GR 61.59    261.4  59.62   264.3   59.62   266.3   60.29   267.8   60.44   305.6
GR 61.24    307.6  61.24   356.4
X110.585       26  37.50  198.30  185.00  185.00  185.00
GR 60.58      .0   60.50    32.1   61.86    34.0   61.86    37.5   60.85    39.9
GR 59.01     43.6  58.07   116.1   56.62   119.3   56.18   126.3   56.08   128.3
GR 56.08    136.3  55.98   144.3   55.98   149.3   56.08   156.3   56.08   160.3
GR 56.18    162.7  57.93   166.8   58.67   191.9   60.38   195.4   62.02   198.3
GR 62.02    202.8  61.72   203.3   61.72   203.8   62.32   204.3   62.43   235.0
GR 62.43    298.3
X110.722       33  44.90  179.00  137.00  137.00  137.00
GR 61.70      .0   61.70     3.0   61.30    15.5   62.95    44.1   63.30    44.9
GR 61.50     44.9  61.30    45.9   60.22    50.4   63.12    50.4   63.12    51.4
GR 60.87     51.4  60.87    52.4   59.47    52.4   58.72    81.6   58.06    98.6
GR 56.40    101.7  56.25   111.6   56.25   141.6   56.20   154.0   56.40   154.0
GR 57.96    156.3  58.87   171.5   60.87   171.5   60.87   172.5   63.05   172.5
GR 63.05    173.5  58.87   173.5   60.59   177.0   61.59   179.0   63.30   179.0
GR 62.79    187.3  61.98   223.0   63.16   225.6
X110.748       33  44.90  179.00   26.00   26.00   26.00
GR 61.70      .0   61.70     3.0   61.30    15.5   62.95    44.1   63.30    44.9
GR 61.50     44.9  61.30    45.9   60.22    50.4   63.12    50.4   63.12    51.4
GR 60.87     51.4  60.87    52.4   59.47    52.4   58.72    81.6   58.06    98.6
GR 56.40    101.7  56.25   111.6   56.25   141.6   56.20   154.0   56.40   154.0
GR 57.96    156.3  58.87   171.5   60.87   171.5   60.87   172.5   63.05   172.5
GR 63.05    173.5  58.87   173.5   60.59   177.0   61.59   179.0   63.30   179.0
GR 62.79    187.3  61.98   223.0   63.16   225.6
X110.785       28  75.40  200.50   37.00   37.00   37.00
GR 61.07      .0   61.47    49.3   61.97    70.4   64.52    71.7   64.52    74.2
GR 64.52     75.4  60.19    77.8   58.39    81.1   57.97   101.0   56.60   103.3
GR 56.50    108.8  56.50   120.8   56.40   134.8   56.40   143.8   56.45   161.8
GR 56.45    175.8  56.60   179.2   57.75   181.8   58.53   193.0   62.57   200.5
GR 62.57    202.0  62.37   202.0   62.37   202.8   62.22   215.1   62.42   215.1
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GR 62.42   218.1   61.53   218.1   61.53   302.8
X110.985      27   15.00   135.80  200.00  200.00  200.00
GR 74.02      .0   64.98   15.0    61.54   20.7    60.99   24.9    60.99   27.4
GR 61.23    31.0   58.59   34.2    57.79   34.2    56.88   54.5    56.78   59.3
GR 56.78    70.3   56.68   78.3    56.68   89.3    56.78   100.3   56.78   113.3
GR 56.78   119.0   56.88   119.0   58.46   119.0   58.98   126.5   60.63   131.1
GR 62.81   135.8   62.81   136.5   62.61   136.5   62.89   137.3   62.55   153.4
GR 62.32   196.8   70.32   206.8
X111.043      18    3.00   105.90  58.00   58.00   58.00
GR 69.60      .0   68.40   3.0     63.40   5.5     63.40   8.5     59.01   11.3
GR 59.01    15.0   59.01   15.3    56.76   15.3    56.76   95.7    58.94   95.7
GR 63.02   105.9   63.02   107.3   62.82   107.3   62.82   108.0   62.58   123.1
GR 62.96   154.9   67.02   178.3   70.22   178.3
X111.045      18    3.00   105.90  2.00    2.00    2.00
GR 69.60      .0   68.40   3.0     63.40   5.5     63.40   8.5     59.01   11.3
GR 59.01    15.0   59.01   15.3    56.90   15.3    56.90   95.7    58.94   95.7
GR 63.02   105.9   63.02   107.3   62.82   107.3   62.82   108.0   62.58   123.1
GR 62.96   154.9   67.02   178.3   70.22   178.3
X111.195      21    .00     81.30   150.00  150.00  150.00
GR 67.08      .0   60.38   6.0     58.36   10.8    57.96   14.0    55.76   16.0
GR 55.56    24.0   57.06   39.0    57.56   47.0    57.96   49.7    58.36   49.7
GR 60.01    53.0   60.34   72.7    64.18   81.3    64.18   83.3    63.98   83.3
GR 63.98    84.0   63.84   95.5    64.12   95.5    64.12   98.5    64.80   116.0
GR 69.23   150.0
X111.390      19    .00     96.00   195.00  195.00  195.00
GR 67.98      .0   61.62   9.4     59.74   12.9    59.74   16.9    58.39   20.0
GR 57.99    21.0   57.59   23.0    57.59   33.0    57.59   39.0    57.49   52.0
GR 57.49    56.5   58.39   57.5    60.04   60.1    60.39   86.6    64.75   96.0
GR 64.95   109.8   68.29   128.2   68.66   147.0   68.66   162.0
X111.515      23   13.30   123.10  125.00  125.00  125.00
GR 69.59      .0   66.26   5.9     64.70   13.3    63.15   16.7    63.15   18.7
GR 62.16    21.1   60.23   23.5    60.01   35.6    58.43   38.9    58.03   45.1
GR 58.03    56.1   58.13   70.1    58.13   84.1    58.23   96.1    58.23   106.3
GR 58.43   106.3   59.72   106.3   59.68   114.5   61.88   114.5   66.26   123.1
GR 66.26   133.1   68.26   143.1   68.26   153.1
X111.519      22   25.60   135.70  4.00    4.00    4.00
GR 65.75      .0   65.87   23.1    65.75   25.6    64.16   25.6    64.16   26.6
GR 63.34    27.9   58.60   27.9    58.60   50.4    58.60   110.4   58.60   123.4
GR 59.64   124.4   59.64   133.4   63.34   133.4   64.16   134.2   64.16   135.7
GR 65.75   135.7   65.87   138.2   65.87   140.7   65.87   150.7   67.87   160.7
GR 67.87   170.7   67.87   190.7
X111.522      22   25.60   135.70  3.00    3.00    3.00
GR 65.75      .0   65.87   23.1    65.75   25.6    64.16   25.6    64.16   26.6
GR 63.34    27.9   58.60   27.9    58.60   50.4    58.60   110.4   58.60   123.4
GR 59.64   124.4   59.64   133.4   63.34   133.4   64.16   134.2   64.16   135.7
GR 65.75   135.7   65.87   138.2   65.87   140.7   65.87   150.7   67.87   160.7
GR 67.87   170.7   67.87   190.7
X111.528      23   10.00   180.30  6.00    6.00    6.00
GR 66.89      .0   66.89   10.0    65.83   13.9    65.83   19.9    63.31   28.4
GR 61.17    28.4   61.17   38.2    63.32   38.2    63.42   50.0    63.42   52.1
GR 61.68    52.1   61.68   59.1    58.60   61.7    58.60   148.1   61.68   157.0
GR 61.68   157.7   63.37   157.7   64.75   161.2   66.01   174.6   68.44   180.3
GR 68.44   183.3   68.85   196.2   68.85   216.2
X111.530      23   10.00   180.30  2.00    2.00    2.00
GR 66.89      .0   66.89   10.0    65.83   13.9    65.83   19.9    63.31   28.4
GR 61.17    28.4   61.17   38.2    63.32   38.2    63.42   50.0    63.42   52.1
GR 61.68    52.1   61.68   59.1    58.60   61.7    58.60   148.1   61.68   157.0
GR 61.68   157.7   63.37   157.7   64.75   161.2   66.01   174.6   68.44   180.3
GR 68.44   183.3   68.85   196.2   68.85   216.2
X111.790      21   64.80   145.00  260.00  260.00  260.00
GR 70.52      .0   68.10   5.5     67.83   22.1    65.78   27.4    65.27   63.7
GR 65.27    64.8   61.83   69.8    61.83   71.1    61.13   71.1    59.63   71.1
GR 59.13    76.7   59.03   82.7    58.73   90.7    58.73   93.7    58.63   98.7
GR 58.63   103.7   57.63   124.7   59.03   135.7   61.13   137.7   69.50   145.0
GR 79.47   153.7
X111.960      22    5.00   125.30  170.00  170.00  170.00
GR 69.60      .0   66.97   5.0     63.60   11.4    65.22   13.4    61.15   24.0
GR 60.85    24.4   60.25   34.4    59.75   49.4    58.85   60.4    58.35   72.4
GR 58.85    76.4   60.55   82.4    60.55   84.9    61.15   86.4    64.25   96.1
GR 64.02    99.1   63.28   99.1    62.31   103.1   62.31   108.1   63.21   110.5
GR 64.10   117.5   68.00   125.3
X112.180      26   29.00   205.00  220.00  220.00  220.00
GR 77.33      .0   71.84   25.0    70.84   29.0    64.16   34.6    62.48   46.5
GR 61.84    48.4   61.84   49.7    62.44   50.7    62.53   61.6    63.69   61.7
GR 63.69    63.9   61.20   69.7    60.90   72.0    60.30   78.0    60.50   94.0
GR 60.60   105.0   61.80   111.0   61.00   117.0   61.20   118.8   61.46   159.7
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GR 64.86	164.5	64.86	165.9	64.86	168.4	63.74	170.1	63.74	191.9
GR 70.64	205.0								
X112.370	27	46.40	240.00	190.00	190.00	190.00			
GR 86.74	.0	86.20	23.1	73.89	45.4	73.89	46.4	63.69	65.1
GR 63.69	66.9	64.69	66.9	64.69	67.9	63.69	67.9	64.15	72.1
GR 63.08	73.1	63.08	90.9	64.77	94.7	64.77	97.4	61.30	101.4
GR 61.00	102.1	61.00	116.1	60.90	129.1	60.90	137.1	61.30	138.7
GR 61.87	189.7	60.15	195.8	60.15	197.9	64.03	201.9	64.03	235.5
GR 70.50	240.0	90.77	254.1						
X112.575	35	47.10	177.90	205.00	205.00	205.00			
GR 83.61	.0	83.07	23.1	70.99	45.1	70.99	47.1	65.73	55.7
GR 65.73	57.4	64.63	57.4	64.63	58.4	65.73	58.4	65.93	62.1
GR 64.90	64.1	64.90	72.2	65.30	72.7	65.30	73.2	64.50	74.1
GR 64.50	97.6	64.87	97.8	64.87	98.4	62.73	109.4	61.34	111.4
GR 60.34	112.1	60.54	115.1	60.74	117.1	60.94	129.1	61.34	132.3
GR 63.31	173.9	65.84	177.9	65.84	179.4	64.36	181.7	65.26	205.4
GR 67.06	214.2	67.86	227.6	67.86	232.1	67.93	232.9	72.91	259.3
X112.780	36	30.00	243.80	205.00	205.00	205.00			
GR 80.03	.0	79.49	23.1	75.66	30.0	67.27	45.1	67.27	46.4
GR 67.67	46.4	67.67	47.1	67.27	47.1	66.69	49.6	66.69	52.6
GR 63.46	58.9	63.46	67.1	65.20	67.6	65.20	94.2	65.44	94.7
GR 65.44	107.3	66.21	108.7	66.21	110.7	65.50	111.3	65.99	111.8
GR 65.99	112.3	66.49	112.8	65.58	143.5	65.58	144.5	66.69	144.9
GR 65.87	147.3	65.45	154.9	63.95	157.9	62.69	165.3	61.69	205.8
GR 61.29	208.1	60.69	218.1	61.69	219.6	63.71	225.7	75.84	243.8
GR 75.84	250.8								
X112.970	31	30.00	246.60	190.00	190.00	190.00			
GR 77.93	.0	77.39	23.1	73.62	30.0	66.74	42.6	66.74	43.9
GR 66.14	43.9	66.14	44.7	66.74	44.7	67.18	45.7	67.18	49.5
GR 66.15	50.8	66.15	57.4	65.90	57.9	65.90	105.0	65.79	105.5
GR 65.79	110.0	67.80	112.1	67.80	113.1	66.27	117.2	65.60	126.4
GR 62.25	133.3	62.05	137.1	61.85	147.1	61.85	156.1	62.05	160.1
GR 62.25	163.0	63.09	166.2	65.12	230.0	73.73	246.6	73.68	253.6
GR 76.68	258.6								
X113.180	21	78.00	173.40	210.00	210.00	210.00			
GR 70.70	.0	70.70	6.0	77.62	29.5	77.62	55.0	69.57	76.0
GR 69.58	78.0	64.82	86.0	63.75	129.5	63.55	132.0	62.95	137.0
GR 63.05	140.0	63.55	144.0	63.75	147.0	64.62	153.0	65.82	165.0
GR 69.58	173.4	70.25	191.4	70.25	199.4	70.35	210.0	74.50	218.5
GR 75.20	228.5								
X113.225	29	63.50	163.50	45.00	45.00	45.00			
GR 77.70	.0	71.70	12.0	67.20	15.0	67.20	15.4	67.90	15.4
GR 68.40	39.8	70.48	53.0	70.50	60.0	70.99	63.5	68.55	63.5
GR 68.55	64.7	69.80	64.7	64.57	69.9	64.08	88.5	63.83	106.0
GR 63.23	113.5	63.43	138.5	63.83	141.8	64.30	150.3	67.55	162.5
GR 68.55	162.5	68.55	163.5	70.99	163.5	70.99	167.7	70.29	172.8
GR 70.26	186.7	71.35	189.5	73.40	191.0	74.80	199.0		
X113.236	29	63.50	163.50	11.00	11.00	11.00			
GR 77.70	.0	71.70	12.0	67.20	15.0	67.20	15.4	67.90	15.4
GR 68.40	39.8	70.48	53.0	70.50	60.0	70.99	63.5	68.55	63.5
GR 68.55	64.7	69.80	64.7	64.57	69.9	64.08	88.5	63.83	106.0
GR 63.23	113.5	63.43	138.5	63.83	141.8	64.30	150.3	67.55	162.5
GR 68.55	162.5	68.55	163.5	70.99	163.5	70.99	167.7	70.29	172.8
GR 70.26	186.7	71.35	189.5	73.40	191.0	74.80	199.0		
X113.262	27	88.63	271.26	26.00	26.00	26.00			
GR 77.60	.0	77.40	76.6	77.40	82.5	76.10	82.5	76.10	83.5
GR 74.65	83.5	74.65	84.7	71.73	87.9	71.73	88.6	69.07	93.6
GR 68.71	115.5	67.19	121.1	64.34	127.6	63.80	158.6	63.50	159.3
GR 63.60	161.6	63.50	173.9	63.50	186.1	63.80	186.8	64.40	195.6
GR 65.07	212.3	67.19	214.3	67.48	233.7	68.01	254.9	70.39	271.3
GR 70.70	277.3	70.70	283.4						
X113.287	27	88.63	271.26	25.00	25.00	25.00			
GR 77.60	.0	77.40	76.6	77.40	82.5	76.10	82.5	76.10	83.5
GR 74.65	83.5	74.65	84.7	71.73	87.9	71.73	88.6	69.07	93.6
GR 68.71	115.5	67.19	121.1	64.34	127.6	63.80	158.6	63.50	159.3
GR 63.60	161.6	63.50	173.9	63.50	186.1	63.80	186.8	64.40	195.6
GR 65.07	212.3	67.19	214.3	67.48	233.7	68.01	254.9	70.39	271.3
GR 70.70	277.3	70.70	283.4						
X113.370	34	41.90	163.20	83.00	83.00	83.00			
GR 72.21	.0	68.04	4.2	67.04	4.2	67.04	5.7	68.04	5.7
GR 68.58	6.8	68.58	9.1	68.38	9.1	68.44	16.6	67.56	19.4
GR 67.56	21.4	68.48	23.8	68.66	40.9	68.66	41.9	64.20	51.6
GR 64.00	53.6	64.00	63.6	63.80	76.6	63.80	88.6	64.00	94.6
GR 64.00	96.6	64.20	97.7	64.84	102.5	65.04	115.6	67.15	119.5
GR 67.15	121.5	66.76	121.9	66.76	140.8	67.51	142.0	67.51	150.8
GR 68.94	153.3	70.69	163.2	70.97	187.2	70.97	207.2		

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X113.570      30   28.50  157.20  200.00  200.00  200.00
GR 70.37       .0  70.09    28.5  68.17    33.8  67.67    33.8  67.67    35.0
GR 68.17     35.0  68.17    35.7  68.17    40.4  68.23    40.7  68.23    41.2
GR 67.53     41.9  67.53    43.2  68.64    43.9  68.64    44.9  67.54    45.4
GR 67.54     89.2  68.06    89.7  68.06    90.7  66.97    93.7  66.97    97.2
GR 65.23     99.9  64.33   126.3  64.03   127.2  63.93   134.2  63.53   141.2
GR 63.13   150.2   64.33   150.7  64.83   152.2  71.43   157.2  74.43   165.2
X113.750      27   81.70  168.20  180.00  180.00  180.00
GR 68.87       .0  68.67    30.0  68.34    30.5  68.34    59.4  67.67    62.7
GR 67.67     64.7  69.01    66.6  69.40    81.7  67.80    86.1  66.63    94.7
GR 65.69     96.2  65.69    99.2  66.91   100.9  66.91   101.8  64.63   103.9
GR 64.13   108.9   64.13   113.7  64.23   118.7  64.23   126.7  64.63   131.7
GR 65.71   139.4   65.23   151.6  66.75   157.8  68.90   162.0  68.90   164.0
GR 71.24   168.2   73.70   175.7
X114.030      30   55.80  228.00  280.00  280.00  280.00
GR 70.67       .0  70.67    54.3  70.77    54.3  70.77    54.8  70.27    54.8
GR 70.27     55.3  70.77    55.3  70.77    55.8  70.37    56.5  70.37    57.0
GR 69.44     86.9  69.13    86.9  69.13    87.4  68.97    99.4  68.74   100.0
GR 68.30   104.4   67.60   104.4  67.60   106.4  67.77   118.9  67.77   120.9
GR 67.61   129.0   65.97   135.4  65.11   139.0  64.81   142.0  64.81   156.0
GR 65.11   159.5   66.30   162.0  66.75   165.5  68.58   198.9  81.75   228.0
X114.190      49     .00  228.40  160.00  160.00  160.00
GR 70.35       .0  70.35    30.0  70.10    30.5  70.10    38.8  69.48    39.9
GR 69.47     62.6  67.80    65.6  67.80    67.6  67.80    69.6  69.33    73.3
GR 69.33     74.8  67.35    76.7  67.35    78.9  67.95    78.9  67.95    80.9
GR 67.47     82.9  67.02    90.4  66.31    91.8  65.91    94.8  66.11   103.3
GR 66.21   114.3   66.21   120.6  66.31   121.6  67.47   123.9  67.61   141.5
GR 67.13   146.4   66.93   147.3  66.83   149.3  66.83   152.3  66.93   154.3
GR 67.13   157.4   69.16   162.8  69.16   180.3  69.88   182.0  69.88   184.0
GR 69.63   188.9   68.13   193.2  68.13   195.7  67.33   195.7  67.13   197.3
GR 67.03   203.3   67.03   207.3  67.13   209.3  67.33   210.8  68.03   218.8
GR 68.03   220.8   70.03   225.0  71.22   228.4  71.22   232.4
X114.241      24   72.70  224.60   51.00   51.00   51.00
GR 70.94       .0  70.94    43.0  71.22    43.4  71.22    45.4  70.15    46.5
GR 70.15     48.5  71.19    49.1  71.19    50.3  71.43    72.7  70.54    79.1
GR 70.54     83.6  70.34    95.3  70.75   100.0  69.69   104.4  67.88   104.4
GR 67.27   109.1   67.27   179.1  69.42   179.1  69.64   184.1  69.25   186.0
GR 70.10   186.5   70.10   187.0  69.51   187.5  69.51   224.6
X114.245      24   72.70  224.60    4.00    4.00    4.00
GR 70.94       .0  70.94    43.0  71.22    43.4  71.22    45.4  70.15    46.5
GR 70.15     48.5  71.19    49.1  71.19    50.3  71.43    72.7  70.54    79.1
GR 70.54     83.6  70.34    95.3  70.75   100.0  69.69   104.4  67.88   104.4
GR 67.27   109.1   67.27   179.1  69.42   179.1  69.64   184.1  69.25   186.0
GR 70.10   186.5   70.10   187.0  69.51   187.5  69.51   224.6
X114.390      15     .00  150.00  145.00  145.00  145.00
GR 69.99       .0  69.79    80.0  68.69    89.7  68.69    94.3  67.96    98.9
GR 67.56   100.9   66.96   110.0  66.76   117.0  66.56   125.0  66.36   130.0
GR 65.46   137.0   65.86   140.2  67.96   140.2  76.88   150.0  85.99   160.0
X114.555      16     .00  153.00  165.00  165.00  165.00
GR 70.48       .0  70.55    47.5  71.11    48.0  71.11    79.6  71.61    80.1
GR 71.61     80.6  68.32    89.1  68.00   104.7  67.85   107.7  67.70   110.6
GR 67.70   130.6   66.50   147.6  66.50   151.1  68.00   151.1  73.81   153.0
GR 84.81   156.6
X114.584      22   55.00  175.00   29.00   29.00   29.00
GR 74.68       .0  74.98    50.0  75.23    55.0  72.73    55.0  72.73    56.2
GR 73.83     56.2  71.92    78.5  70.10    85.5  68.54   115.5  68.24   131.0
GR 68.24   142.0   68.54   145.5  69.03   156.2  71.47   174.4  72.69   174.4
GR 72.69   175.0   75.16   175.0  74.98   179.1  77.43   195.2  77.63   195.2
GR 77.63   197.0   81.33   197.0
X114.595      22   55.00  175.00   11.00   11.00   11.00
GR 74.68       .0  74.98    50.0  75.23    55.0  72.73    55.0  72.73    56.2
GR 73.83     56.2  71.92    78.5  70.10    85.5  68.54   115.5  68.24   131.0
GR 68.24   142.0   68.54   145.5  69.03   156.2  71.47   174.4  72.69   174.4
GR 72.69   175.0   75.16   175.0  74.98   179.1  77.43   195.2  77.63   195.2
GR 77.63   197.0   81.33   197.0
X114.800      20   80.50  205.00  205.00  205.00  205.00
GR 73.82       .0  73.92    80.0  74.42    80.5  72.82    84.3  70.04    89.2
GR 69.79     91.8  69.39    92.5  69.39    95.5  69.79    96.8  69.37   166.4
GR 68.87   175.8   68.57   176.5  68.47   178.5  68.37   180.5  68.47   190.5
GR 68.87   192.2   70.24   194.6  70.24   195.8  75.42   205.0  81.90   216.5
X114.958      16   30.00  196.10  158.00  158.00  158.00
GR 79.18       .0  78.98    30.0  74.88    36.8  74.38    43.0  72.59    47.5
GR 70.39     47.5  69.95    53.6  70.62    53.6  70.62   186.0  73.51   186.0
GR 73.51   186.3   73.11   186.3  73.61   189.5  73.61   192.0  75.05   196.1
GR 76.65   217.0
X114.960      16   30.00  196.10    2.00    2.00    2.00
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GR 79.18      .0   78.98    30.0   74.88    36.8   74.38    43.0   72.59    47.5
GR 70.39     47.5  69.95    53.6   70.62    53.6   70.62   186.0   73.51   186.0
GR 73.51    186.3  73.11   186.3   73.61   189.5   73.61   192.0   75.05   196.1
GR 76.65    217.0
X115.000       20  30.00   166.80  40.00    40.00  40.00
GR 79.80      .0   79.80    30.0   76.07    36.3   74.57    36.6   73.97    46.8
GR 73.56     58.6  72.73    59.5   71.37    61.9   70.17    64.9   70.37    75.0
GR 70.47     89.0  70.67    98.0   70.87   138.0   71.07   145.0   71.37   145.2
GR 72.23    147.0  73.27   159.0   73.31   164.4   74.92   166.8   77.18   219.0
X115.200       22  10.00    83.10 200.00   200.00 200.00
GR 86.20      .0   77.98    10.0   74.45    14.3   71.45    19.3   69.45    21.0
GR 68.65     28.0  69.05    39.0   69.55    49.0   70.75    51.0   71.25    60.0
GR 71.45     60.6  72.25    62.3   73.00    70.0   72.60    71.0   72.60    73.5
GR 73.10     79.2  74.25    81.6   74.25    82.6   74.81    83.1   74.81   109.6
GR 75.82    112.8  77.77   139.5
X115.400       14  10.00   102.00 200.00   200.00 200.00
GR 91.81      .0   83.31    10.0   76.51    18.0   71.47    23.0   70.27    28.0
GR 70.77     31.0  71.07    33.0   71.47    41.0   72.34    43.0   72.24    61.9
GR 72.20     97.2  73.31   100.0   78.31   102.0   85.41   149.9
X115.600       25  26.90   142.00 200.00   200.00 200.00
GR 87.92      .0   80.17    19.9   78.17    24.9   78.17    26.9   77.12    28.9
GR 77.12     31.4  75.99    34.3   75.99    38.8   74.65    39.3   74.72    56.8
GR 73.59     60.5  73.59    64.5   71.82    68.5   71.32    69.5   71.42    74.5
GR 71.52     89.5  71.62    95.5   71.62    98.4   71.82   100.4   72.52   102.8
GR 72.52    114.0  75.32   120.5   74.79   133.7   80.00   142.0   85.32   150.5
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건설교통부

▶ 미호천 - 횡단자료

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X1   .000      31    35.40   307.70     .00     .00     .00
GR 21.10       .0    20.43     32.9   20.74    33.7   20.94    35.4   13.12    50.1
GR 13.81     128.7   13.35    223.7   12.32   231.3   11.72   236.2   11.52   246.6
GR 11.62     256.2   12.32    266.1   13.22   286.8   20.62   307.7   20.61   310.9
GR 20.61     402.6   21.28    404.1   21.28   411.1   20.65   412.9   20.56   414.5
GR 21.27     417.1   21.16    480.5   20.72   481.2   20.78   548.1   21.86   550.1
GR 21.84     551.1   21.44    551.7   21.51   552.4   22.12   553.1   22.11   556.7
GR 21.19     557.5
X1   .200      31     .00    238.00  200.00  200.00  200.00
GR 30.21       .0    20.74     16.3   13.07    26.4   12.80    56.8   12.54    75.2
GR 12.41     105.1   12.45    132.0   12.23   163.1   11.71   180.9   12.53   184.9
GR 12.85     186.4   13.18    193.6   12.74   208.5   12.59   213.0   11.68   218.2
GR 12.60     221.1   13.21    224.2   18.51   232.8   18.51   233.5   21.05   238.0
GR 21.05     239.0   20.27    239.1   20.27   302.4   21.00   303.7   20.99   311.0
GR 20.87     314.4   20.10    316.0   20.16   325.3   20.72   326.5   20.68   387.6
GR 22.03     389.8
X1   .235      12     .00    235.80   35.00   35.00   35.00
GR 30.67       .0    14.91     26.0   15.05    30.5   13.26    30.8   13.26   223.9
GR 18.63     230.6   18.65    231.6   21.18   235.8   20.16   322.5   20.83   323.6
GR 20.77     382.0   22.13    384.0
X1   .240      12     .00    235.80    5.00    5.00    5.00
GR 30.67       .0    14.91     26.0   15.05    30.5   13.26    30.8   13.26   223.9
GR 18.63     230.6   18.65    231.6   21.18   235.8   20.16   322.5   20.83   323.6
GR 20.77     382.0   22.13    384.0
X1   .390      23     .00    412.30  150.00  150.00  150.00
GR 35.28       .0    23.22     67.0   18.63    83.3   14.23    88.6   10.86    91.9
GR 11.21     107.0   11.96    127.1   12.31   142.2   12.96   166.9   13.26   191.6
GR 14.20     204.7   14.78    236.8   20.28   244.6   20.07   247.2   19.15   248.3
GR 18.61     302.2   19.42    303.2   19.46   313.4   20.27   316.3   20.20   344.3
GR 20.36     345.1   20.71    411.3   21.43   412.3
X1   .630      27     .00    422.80  240.00  240.00  240.00
GR 30.52       .0    17.14     14.2   15.53    21.9   14.21    23.3   11.18    28.1
GR 13.18      48.1   13.98     87.8   13.90   128.3   14.18   151.7   14.48   152.4
GR 15.18     191.1   14.86    208.8   19.23   216.3   19.37   284.5   20.50   287.1
GR 20.55     330.0   20.29    332.7   20.27   334.2   20.59   336.1   20.56   344.5
GR 21.33     346.0   21.28    380.8   22.76   383.0   22.76   420.9   23.62   422.8
GR 23.79     513.3   24.24    514.1
X1   .890      22   121.00    508.40  260.00  260.00  260.00
GR 20.15       .0    20.23     71.0   20.63    71.9   22.09   121.0   17.73   127.5
GR 17.06     130.5   14.15    133.6   13.65   144.4   13.67   193.8   13.76   231.1
GR 14.00     286.3   13.86    346.3   14.23   351.3   15.58   360.8   17.89   389.0
GR 20.26     396.9   21.20    484.8   22.71   492.3   22.96   495.6   22.96   505.2
GR 24.80     508.4   24.80    616.4
X1   .910      43   111.30    503.40   20.00   20.00   20.00
GR 21.84       .0    21.84     98.0   23.19   110.6   31.23   110.7   31.23   111.3
GR 27.53     111.4   27.53    112.6   24.07   112.7   24.07   114.2   22.57   114.3
GR 23.19     127.6   21.06    134.6   16.10   138.9   14.22   144.3   13.22   144.9
GR 13.22     170.3   13.83    194.7   13.82   219.7   13.72   244.7   13.91   270.0
GR 13.92     294.7   14.21    344.7   18.64   358.0   17.85   363.3   14.17   370.1
GR 14.48     382.5   17.34    388.2   17.68   393.4   19.41   400.7   20.02   408.2
GR 20.31     457.8   21.17    489.8   22.76   497.3   22.96   500.5   24.46   500.6
GR 24.46     502.0   27.41    502.1   27.41   503.3   31.11   503.4   31.11   505.1
GR 22.96     505.2   23.15    510.0   24.73   512.9
X1   .930      43   111.30    503.40   20.00   20.00   20.00
GR 21.84       .0    21.84     98.0   23.19   110.6   31.23   110.7   31.23   111.3
GR 27.53     111.4   27.53    112.6   24.07   112.7   24.07   114.2   22.57   114.3
GR 23.19     127.6   21.06    134.6   16.10   138.9   14.22   144.3   13.22   144.9
GR 13.22     170.3   13.83    194.7   13.82   219.7   13.72   244.7   13.91   270.0
GR 13.92     294.7   14.21    344.7   18.64   358.0   17.85   363.3   14.17   370.1
GR 14.48     382.5   17.34    388.2   17.68   393.4   19.41   400.7   20.02   408.2
GR 20.31     457.8   21.17    489.8   22.76   497.3   22.96   500.5   24.46   500.6
GR 24.46     502.0   27.41    502.1   27.41   503.3   31.11   503.4   31.11   505.1
GR 22.96     505.2   23.15    510.0   24.73   512.9
X1 1.130      39    86.70    343.50  200.00  200.00  200.00
GR 42.28       .0    34.21     22.5   25.62    49.1   25.52    51.6   24.91    57.3
GR 22.09      63.1   22.11     86.7   17.65   100.9   14.44   101.4   13.88   107.4
GR 14.08     142.4   13.98    202.4   14.18   247.4   14.38   259.9   15.28   288.4
GR 16.56     314.2   16.96    338.8   20.40   343.5   20.29   357.1   20.89   360.2
GR 20.86     387.0   21.21    387.8   21.20   405.6   21.62   406.4   21.64   426.2
GR 22.57     427.8   22.75    456.7   23.72   458.7   23.69   484.3   25.60   487.8
GR 25.55     492.1   24.44    492.4   24.47   493.1   25.47   493.8   25.47   504.0
GR 27.25     507.7   28.53    522.2   32.75   547.8   34.43   555.9
X1 1.330      25     .00    313.40  200.00  200.00  200.00
GR 40.21       .0    22.04     45.1   21.93    46.9   18.16    54.7   17.12    60.8
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GR 14.25	64.8	13.44	69.8	13.84	89.8	13.84	131.8	13.94	181.8
GR 14.23	196.6	15.22	218.6	16.69	260.5	20.28	265.2	20.32	265.8
GR 19.99	266.3	20.00	275.2	21.39	277.5	21.35	295.3	25.03	302.9
GR 25.31	305.2	24.67	305.8	26.87	313.4	27.27	319.5	30.28	356.4
X1 1.560	22	.00	328.90	230.00	230.00	230.00			
GR 45.33	.0	22.82	52.8	23.26	70.4	14.20	87.7	12.81	92.7
GR 13.00	117.7	13.50	152.7	14.24	167.8	14.70	171.8	15.21	246.6
GR 14.80	248.1	14.82	254.8	16.53	256.2	17.93	265.2	21.12	272.5
GR 21.16	277.8	23.29	284.3	23.49	286.6	25.08	289.4	25.07	291.7
GR 25.14	292.6	35.27	328.9						
X1 1.790	18	.00	332.50	230.00	230.00	230.00			
GR 40.28	.0	23.51	53.6	22.02	69.6	21.32	75.3	17.51	87.0
GR 14.22	90.5	12.22	95.5	13.22	115.5	13.92	134.8	14.03	165.5
GR 14.20	175.6	14.33	191.1	15.00	228.6	14.54	251.8	18.84	263.8
GR 22.70	274.4	21.57	276.5	45.78	332.5				
X1 2.010	22	.00	323.90	220.00	220.00	220.00			
GR 40.33	.0	32.51	20.0	30.13	35.4	27.89	38.3	25.15	58.9
GR 22.15	62.5	22.18	87.3	20.11	93.7	19.86	97.3	17.18	104.4
GR 16.26	116.0	14.42	119.0	12.43	129.1	12.02	150.7	11.53	185.6
GR 12.43	230.6	13.83	250.6	14.40	255.6	15.18	259.5	24.68	275.4
GR 25.04	277.1	50.38	323.9						
X1 2.150	25	.00	404.70	140.00	140.00	140.00			
GR 40.26	.0	33.15	37.4	30.65	52.3	29.36	54.0	28.86	57.7
GR 25.51	60.8	25.46	86.3	21.21	91.5	21.11	119.0	19.33	122.6
GR 19.72	137.4	14.15	152.9	12.96	158.8	11.36	193.8	11.76	235.3
GR 12.15	270.3	14.19	276.3	14.59	276.8	15.30	301.0	15.17	325.9
GR 17.76	328.7	19.52	332.5	21.42	335.9	22.57	346.7	40.37	404.7
X1 2.430	34	67.90	414.00	280.00	280.00	280.00			
GR 40.33	.0	26.68	31.8	26.33	33.4	26.59	35.1	26.50	61.3
GR 26.75	67.9	23.09	75.0	23.16	92.9	22.74	94.3	22.38	98.1
GR 22.90	100.8	23.12	130.5	20.13	135.0	20.20	158.1	18.92	161.9
GR 18.81	173.3	17.15	179.0	16.66	189.9	14.34	196.3	13.43	201.4
GR 13.10	221.4	12.60	256.4	13.10	291.4	12.41	321.4	12.50	334.4
GR 14.30	339.4	15.49	341.7	15.81	347.4	22.13	358.4	21.73	359.5
GR 21.71	384.1	21.47	386.0	23.04	387.1	40.56	414.0		
X1 2.630	17	.00	233.50	200.00	200.00	200.00			
GR 39.56	.0	21.58	18.0	19.95	19.6	18.47	21.1	17.46	31.9
GR 15.39	36.7	14.25	45.5	13.04	50.5	12.05	75.5	12.04	110.5
GR 13.05	130.5	13.25	154.0	14.25	159.1	15.62	160.8	15.91	197.5
GR 19.69	205.4	40.65	233.5						
X1 2.850	43	139.30	406.80	220.00	220.00	220.00			
GR 48.73	.0	22.23	92.0	21.82	108.4	20.29	110.2	20.26	136.3
GR 20.59	136.9	20.57	139.3	18.94	142.1	19.10	156.5	15.49	163.2
GR 14.22	207.0	13.78	217.1	13.48	246.6	12.98	256.9	13.77	277.8
GR 13.88	293.0	13.77	318.3	12.98	343.1	13.18	357.1	14.17	363.1
GR 16.08	370.6	16.18	382.5	19.82	392.1	19.34	393.1	19.31	404.1
GR 20.88	406.8	20.63	424.6	20.65	426.4	20.67	472.8	19.83	475.5
GR 19.29	489.4	18.29	558.1	18.82	559.3	18.84	562.9	18.42	563.5
GR 18.33	564.1	18.84	565.2	18.96	605.0	20.71	612.3	20.76	615.6
GR 22.23	618.5	22.69	638.1	39.56	657.9				
X1 3.010	39	137.60	419.40	160.00	160.00	160.00			
GR 35.49	.0	27.06	54.2	25.91	55.6	23.17	94.5	21.58	97.5
GR 21.61	137.6	20.07	139.7	20.05	148.1	20.09	151.7	18.62	175.0
GR 14.18	187.9	13.19	192.8	12.89	206.8	12.98	236.8	13.00	282.3
GR 12.75	326.8	13.69	351.8	14.27	356.7	16.00	359.2	16.71	373.7
GR 15.88	386.4	16.11	391.5	16.71	393.4	16.96	401.4	17.13	407.1
GR 16.45	408.5	16.50	411.0	20.13	419.4	20.07	420.2	19.24	421.3
GR 20.13	461.9	21.28	464.5	20.02	545.8	19.33	604.4	19.21	655.1
GR 19.21	691.6	21.08	693.8	21.90	698.3	40.37	732.4		
X1 3.200	39	83.20	423.40	190.00	190.00	190.00			
GR 45.37	.0	24.60	59.4	24.65	61.8	22.22	66.0	21.83	69.9
GR 20.80	71.0	20.75	82.2	20.37	83.2	19.69	92.5	15.43	103.0
GR 14.17	114.7	13.56	124.7	13.16	156.2	13.17	206.2	13.07	256.3
GR 12.97	286.2	14.28	296.2	14.66	297.4	14.81	340.9	15.32	351.5
GR 16.77	354.4	16.59	363.9	20.28	372.5	20.19	373.1	19.39	374.8
GR 21.06	423.4	20.68	509.1	20.27	510.6	20.19	577.5	19.89	579.3
GR 19.96	637.4	20.51	638.4	20.62	640.8	20.01	641.6	20.06	642.1
GR 20.06	643.7	20.09	669.2	24.31	675.7	40.36	712.0		
X1 3.390	45	108.20	381.20	190.00	190.00	190.00			
GR 31.76	.0	26.43	28.5	27.49	31.4	24.81	39.4	23.97	51.6
GR 23.97	61.0	21.89	64.3	21.93	79.7	21.20	81.0	21.16	108.2
GR 14.89	126.3	14.60	146.3	14.24	154.7	13.94	194.7	13.94	224.7
GR 13.74	264.8	13.24	304.7	13.46	324.7	14.43	329.7	14.76	331.4
GR 15.51	348.5	16.80	361.3	16.79	372.9	20.44	381.2	20.50	381.6
GR 20.01	382.3	19.86	400.3	20.69	402.3	21.31	435.2	21.20	520.5
GR 20.72	521.2	20.93	538.0	17.03	551.9	17.14	562.5	15.69	566.2

GR 15.83	580.1	16.82	581.9	20.35	607.5	19.94	642.0	21.07	645.6
GR 21.00	657.2	20.15	662.4	20.34	690.7	20.41	720.3	24.66	743.5
X1 3.620	49	150.40	494.70	230.00	230.00	230.00			
GR 21.52	.0	21.52	146.6	22.17	147.3	22.23	150.4	21.42	151.9
GR 21.34	152.9	21.61	154.5	21.52	216.1	21.94	216.6	21.75	220.7
GR 18.23	228.7	18.17	260.0	16.94	263.1	17.12	273.0	14.11	280.6
GR 13.71	290.5	13.43	310.7	13.41	350.7	13.10	380.5	12.93	410.8
GR 13.12	441.0	13.10	455.6	14.22	465.8	15.97	469.4	16.28	482.3
GR 20.17	489.4	20.27	492.4	21.40	494.7	21.35	592.7	20.87	593.6
GR 20.91	594.3	22.46	597.4	22.16	599.3	21.43	601.0	20.84	741.0
GR 20.96	790.5	20.37	794.2	28.51	811.6	28.45	817.3	25.46	824.1
GR 25.41	828.0	22.93	833.4	21.83	836.5	21.83	839.6	21.56	842.7
GR 21.16	843.2	21.16	873.3	20.67	874.4	20.66	910.9		
X1 3.770	43	150.20	495.50	150.00	150.00	150.00			
GR 21.17	.0	21.17	145.4	22.52	147.1	22.58	150.2	22.24	151.8
GR 21.63	151.9	21.63	152.7	22.31	152.8	22.31	154.1	21.87	154.7
GR 21.53	198.4	20.86	199.2	20.96	221.4	19.37	226.0	19.45	254.0
GR 14.29	268.0	13.19	273.1	13.49	298.0	13.78	333.1	14.09	362.5
GR 13.99	393.1	13.79	418.1	14.30	434.1	14.85	436.4	15.34	455.4
GR 17.32	460.1	17.51	470.1	20.06	478.7	22.08	495.5	21.80	496.9
GR 21.36	638.5	21.28	696.9	24.02	702.2	24.71	708.9	22.79	714.0
GR 28.86	728.9	28.89	734.2	25.51	741.4	25.35	745.4	22.37	752.6
GR 22.37	757.8	21.68	760.5	21.68	860.7				
X1 3.950	39	.00	463.50	180.00	180.00	180.00			
GR 32.65	.0	23.55	46.5	23.23	53.0	20.97	56.7	20.83	61.4
GR 19.40	64.0	19.34	84.3	14.31	94.7	13.61	99.4	13.65	109.4
GR 13.72	137.9	13.93	157.9	14.11	182.9	14.33	202.9	14.89	208.7
GR 14.98	232.8	14.71	239.9	14.33	249.3	13.83	253.7	13.63	263.7
GR 13.33	283.7	13.12	293.7	14.34	298.7	16.17	301.6	16.49	309.0
GR 22.24	318.5	21.74	326.8	20.27	332.4	21.63	356.7	21.65	387.4
GR 21.25	448.0	28.71	463.5	28.60	469.1	25.68	476.1	25.63	479.4
GR 22.43	488.3	22.17	495.9	21.05	496.8	21.05	593.2		
X1 4.150	35	.00	471.20	200.00	200.00	200.00			
GR 45.33	.0	21.11	50.8	19.79	73.2	14.27	83.6	12.87	88.6
GR 12.06	108.6	13.26	130.6	13.56	150.6	14.32	155.5	16.15	165.8
GR 16.16	177.9	16.77	182.8	16.59	264.3	15.05	274.8	15.05	292.7
GR 16.45	300.4	16.63	314.7	15.69	328.0	16.36	332.0	16.16	341.3
GR 18.99	345.6	19.35	348.1	22.49	354.5	22.42	357.5	19.54	368.2
GR 20.90	428.1	21.30	428.9	21.28	429.8	19.64	432.3	20.33	454.2
GR 28.97	471.2	28.87	474.8	25.58	481.5	23.71	502.5	23.64	583.8
X1 4.310	34	.00	548.70	160.00	160.00	160.00			
GR 30.43	.0	23.36	26.3	14.61	44.6	14.47	50.2	20.45	65.1
GR 20.63	75.6	14.78	84.3	14.32	88.5	13.70	98.7	13.50	128.7
GR 13.20	168.7	12.69	208.7	14.00	233.2	13.80	252.7	13.80	278.2
GR 14.20	288.2	15.61	303.7	16.19	320.9	16.54	324.4	16.88	365.7
GR 15.69	370.5	16.46	387.5	17.00	389.9	17.26	397.4	22.41	407.4
GR 22.23	410.1	20.19	414.6	20.66	448.8	20.65	468.5	21.16	469.4
GR 21.11	491.1	21.97	492.4	22.30	499.3	45.33	548.7		
X1 4.440	42	120.50	681.20	130.00	130.00	130.00			
GR 28.62	.0	22.53	67.2	21.14	71.2	21.14	92.5	25.46	108.4
GR 25.54	112.1	26.72	115.4	26.68	120.5	20.21	134.5	21.55	134.5
GR 21.29	189.0	16.18	198.6	16.00	206.8	21.90	219.3	21.73	315.5
GR 21.13	320.4	15.90	331.7	15.90	384.4	14.54	474.8	14.32	476.7
GR 14.02	481.6	13.93	494.6	13.73	519.6	13.33	560.2	13.83	585.1
GR 14.13	600.2	14.27	604.6	14.82	610.2	17.65	619.5	16.73	637.3
GR 17.51	666.6	18.00	674.8	20.03	681.2	22.35	686.5	22.17	689.0
GR 20.49	693.2	20.54	714.8	21.75	717.1	21.65	740.1	22.55	741.7
GR 22.60	754.7	40.53	793.0						
X1 4.610	42	100.20	762.00	170.00	170.00	170.00			
GR 20.56	.0	20.56	47.2	21.30	47.7	21.30	62.7	19.47	65.8
GR 19.47	70.8	20.59	73.0	21.50	78.6	23.88	85.3	24.13	88.7
GR 27.37	95.7	27.54	100.2	25.37	103.7	25.37	106.2	22.76	112.9
GR 22.75	114.9	21.37	117.3	21.32	234.6	21.62	235.6	20.62	274.9
GR 14.62	292.0	14.28	329.9	14.08	339.8	13.88	364.8	13.88	414.9
GR 13.77	449.8	13.98	474.9	14.25	484.6	18.09	493.4	17.46	505.0
GR 14.97	511.4	15.21	559.0	16.48	563.4	16.88	593.3	17.26	634.9
GR 15.95	642.2	16.47	704.3	18.02	708.6	18.66	712.4	22.23	721.4
GR 22.17	727.0	30.53	762.0						
X1 4.840	58	75.30	598.40	230.00	230.00	230.00			
GR 20.46	.0	20.46	34.7	20.96	35.7	20.96	37.7	21.33	38.7
GR 21.33	41.7	19.69	44.2	19.69	47.6	21.85	53.0	22.06	55.5
GR 24.11	60.9	24.47	63.8	27.46	70.6	27.46	75.3	22.59	88.0
GR 22.34	90.5	21.64	92.6	21.55	210.9	19.93	221.0	14.44	230.0
GR 13.25	233.0	13.75	245.0	13.85	259.8	13.86	275.0	14.31	296.9
GR 17.29	303.1	17.93	324.5	17.45	362.5	17.49	407.2	21.38	412.3
GR 20.80	432.6	19.40	443.2	16.64	446.0	15.68	456.9	15.43	459.9

GR 14.13	481.6	15.65	483.6	16.15	484.6	16.81	490.8	18.50	493.8
GR 18.73	498.1	17.53	501.0	16.16	525.4	15.63	540.8	15.23	543.8
GR 15.10	564.9	15.60	568.0	19.82	575.3	27.54	598.4	27.34	602.1
GR 24.46	610.4	24.27	613.0	21.21	620.5	21.20	638.5	20.10	639.8
GR 20.10	641.3	20.60	643.5	20.60	705.3				
X1 5.020	47	105.10	611.70	180.00	180.00	180.00			
GR 20.86	.0	20.86	63.7	21.46	64.7	21.46	69.7	20.03	72.2
GR 20.03	76.2	21.30	78.7	21.40	80.6	24.22	90.3	24.63	93.8
GR 27.58	100.2	27.59	105.1	21.81	121.2	21.77	217.1	14.36	232.5
GR 13.15	237.6	13.76	247.8	13.96	267.6	14.05	283.6	14.59	293.7
GR 15.19	298.2	16.92	351.1	15.73	411.0	17.44	418.2	19.46	420.8
GR 18.83	457.8	15.73	464.2	15.24	467.3	14.94	470.3	15.73	474.2
GR 18.46	476.5	17.90	526.8	15.89	528.5	14.81	531.3	14.52	550.5
GR 14.57	556.6	14.54	573.5	15.89	577.8	16.65	579.3	20.16	586.6
GR 22.78	598.9	27.30	611.7	27.23	616.2	24.61	624.3	24.28	627.3
GR 21.10	635.9	21.10	715.3						
X1 5.230	54	98.20	606.00	210.00	210.00	210.00			
GR 20.96	.0	20.96	60.2	21.54	60.7	21.57	65.7	20.12	68.0
GR 20.12	71.5	22.19	75.4	22.60	77.9	24.12	82.9	24.33	85.9
GR 27.59	93.8	27.63	98.2	21.66	114.3	21.65	253.8	20.93	259.4
GR 20.58	272.7	18.09	277.8	17.65	295.6	14.85	299.8	14.28	323.5
GR 13.98	335.7	13.60	352.3	14.05	371.0	14.30	384.3	15.01	391.2
GR 16.68	394.0	17.89	414.7	16.19	418.4	15.49	430.7	17.30	432.5
GR 17.06	449.2	16.30	453.1	16.50	471.9	18.43	479.1	18.40	484.8
GR 17.02	492.1	16.70	532.0	15.50	541.6	15.11	548.9	15.06	557.9
GR 15.56	560.0	17.33	562.8	17.64	572.3	21.08	580.7	21.89	586.5
GR 21.99	589.8	27.30	606.0	27.32	609.7	24.47	618.0	24.19	621.1
GR 21.88	627.6	21.63	633.4	18.33	638.5	18.62	718.5		
X1 5.440	50	71.40	577.60	210.00	210.00	210.00			
GR 21.22	.0	21.22	32.8	21.79	33.9	21.79	38.8	20.11	41.1
GR 20.11	44.6	22.19	48.5	22.60	51.1	24.12	56.1	24.34	59.0
GR 28.04	63.4	28.08	71.4	25.31	77.6	25.07	81.7	21.51	89.6
GR 21.49	134.3	21.73	135.2	21.78	171.4	18.84	177.4	16.31	190.4
GR 17.19	230.9	16.28	246.6	14.38	249.1	14.16	266.5	14.05	287.0
GR 13.91	316.0	14.35	329.2	15.85	338.0	15.75	371.6	15.60	378.5
GR 15.35	391.2	15.04	415.3	15.15	429.7	15.52	444.5	15.87	446.3
GR 15.93	466.5	17.59	474.7	17.40	501.7	20.51	507.0	20.21	550.8
GR 22.07	558.1	22.18	562.1	27.33	577.6	27.21	581.2	24.47	589.5
GR 24.29	592.8	22.35	597.5	22.59	600.3	21.80	602.3	21.80	701.6
X1 5.660	48	71.30	590.60	220.00	220.00	220.00			
GR 21.21	.0	21.21	33.3	21.71	33.7	21.71	38.8	20.11	41.2
GR 20.11	44.6	22.19	48.5	22.60	51.0	24.12	56.0	24.33	59.0
GR 27.97	66.9	27.90	71.3	22.43	86.7	22.35	91.5	21.62	93.3
GR 22.06	204.9	21.29	206.0	21.16	211.4	17.48	217.5	16.12	225.6
GR 14.67	229.9	13.97	234.7	14.16	241.7	14.16	261.7	14.06	269.7
GR 14.79	274.7	15.87	288.5	17.66	298.8	17.87	306.2	17.51	307.2
GR 17.36	310.5	18.53	313.6	18.38	319.2	17.83	323.9	15.15	329.1
GR 15.38	367.4	15.62	381.0	15.90	422.3	16.06	514.5	20.39	521.4
GR 20.53	570.1	21.66	571.4	27.62	590.6	27.50	595.3	21.56	613.2
GR 21.51	615.5	20.41	616.6	20.41	686.5				
X1 5.920	46	105.20	620.10	260.00	260.00	260.00			
GR 21.09	.0	21.09	69.9	21.65	71.1	21.61	74.2	19.94	77.0
GR 20.28	80.1	24.32	89.2	24.57	92.6	24.58	92.7	28.12	100.9
GR 28.09	105.2	22.58	120.2	22.25	124.1	21.40	126.2	21.24	201.4
GR 18.43	206.6	17.97	214.1	16.61	256.0	15.14	261.9	14.66	297.8
GR 14.36	307.7	14.26	327.7	14.46	347.6	14.46	362.7	14.36	378.7
GR 14.74	383.7	15.68	403.6	20.63	415.1	21.75	433.3	22.01	472.8
GR 21.79	515.6	21.28	516.5	21.11	574.1	20.28	575.0	20.48	601.5
GR 21.98	604.2	22.08	606.5	22.79	606.8	27.52	620.1	27.52	625.0
GR 21.15	641.5	21.15	654.3	27.60	697.7	27.60	707.7	21.30	730.8
GR 21.30	743.8								
X1 6.100	44	136.20	642.50	180.00	180.00	180.00			
GR 21.31	.0	21.31	99.8	21.79	101.0	21.77	104.1	20.31	106.7
GR 20.39	109.8	21.90	112.0	21.99	114.7	24.76	121.0	24.77	123.7
GR 28.25	132.0	28.19	136.2	21.50	156.0	21.46	184.6	18.88	189.8
GR 18.49	200.6	16.89	203.0	17.03	214.9	16.07	217.1	14.96	240.2
GR 15.68	316.9	14.74	374.2	14.34	379.2	14.34	389.2	13.99	396.6
GR 14.00	411.8	14.75	416.7	16.43	420.8	16.90	428.2	21.96	436.5
GR 22.08	437.5	21.86	437.9	21.85	470.7	21.12	586.6	20.76	587.4
GR 20.65	621.8	21.84	624.5	22.77	629.9	27.79	642.5	27.68	647.9
GR 22.23	661.3	22.26	668.8	20.17	669.5	20.17	766.5		
X1 6.280	54	130.10	643.90	180.00	180.00	180.00			
GR 21.19	.0	21.19	49.6	21.84	51.3	21.84	69.8	22.46	93.9
GR 22.18	99.4	20.53	102.6	20.56	104.4	25.16	112.9	25.22	117.1
GR 27.74	121.9	27.99	130.1	22.50	143.8	22.44	148.2	21.21	150.2
GR 21.62	160.0	22.68	162.7	22.39	172.3	19.25	177.8	19.42	184.4

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GR 17.00   190.4   16.95   216.9   15.63   226.8   15.04   283.1   14.86   285.0
GR 14.56   299.7   14.42   313.5   14.28   320.2   14.78   335.1   15.10   342.0
GR 16.97   352.0   17.08   361.2   16.24   366.3   16.56   374.8   15.01   410.5
GR 15.86   413.9   15.71   430.4   15.19   432.8   15.23   449.1   15.91   451.4
GR 16.02   461.7   15.58   464.3   15.76   467.1   18.24   478.7   21.89   485.7
GR 21.22   602.0   22.16   603.2   22.68   630.6   27.19   643.9   26.99   651.4
GR 22.30   663.1   22.17   667.6   21.66   668.1   21.66   765.4
X1 6.480      45  130.30  649.10  200.00  200.00  200.00
GR 21.46      .0   21.46    99.0   20.74   101.5   20.57   103.0   21.92   108.2
GR 28.17   125.9   28.11   130.3   19.30   158.8   19.04   167.9   16.87   173.4
GR 16.71   183.2   15.03   187.6   14.73   197.6   14.34   204.2   14.96   216.3
GR 15.09   240.0   16.21   260.1   16.41   280.8   15.28   290.7   15.68   313.7
GR 16.72   317.7   18.62   341.1   18.06   373.6   15.27   387.2   14.96   391.6
GR 15.13   401.1   15.13   408.1   15.43   423.7   18.06   432.5   17.53   462.7
GR 16.30   470.6   16.57   482.7   18.23   502.6   21.45   508.7   21.85   525.0
GR 22.18   526.1   22.02   564.5   22.68   565.5   22.92   634.9   27.90   649.1
GR 27.89   652.7   22.50   668.7   22.31   673.4   21.84   674.3   21.84   770.5
X1 6.680      54  125.20  644.20  200.00  200.00  200.00
GR 21.44      .0   21.44    97.2   20.77   101.0   20.75   102.0   27.95   115.1
GR 28.24   125.2   18.72   152.0   18.47   162.4   16.26   168.3   16.28   172.5
GR 17.41   177.3   17.36   180.4   15.88   191.3   15.23   193.5   15.10   197.3
GR 14.35   205.4   14.57   219.4   15.09   223.5   15.70   225.1   15.98   244.4
GR 15.14   247.1   14.66   250.2   14.64   271.2   14.94   283.0   15.18   303.6
GR 15.70   338.4   16.07   377.4   17.80   384.2   18.33   410.8   19.74   412.9
GR 19.51   417.7   16.76   421.2   15.31   430.4   14.46   435.5   14.00   440.5
GR 15.27   483.0   16.16   485.1   18.21   488.2   18.64   514.4   17.98   523.7
GR 22.67   531.2   22.89   630.0   28.09   644.2   28.05   648.2   22.10   664.2
GR 22.02   669.4   21.40   670.0   21.40   671.0   21.75   671.6   21.65   699.0
GR 22.25   699.2   22.25   703.3   21.85   704.3   21.85   795.5
X1 6.900      39  140.30  660.90  220.00  220.00  220.00
GR 22.06      .0   22.06    92.0   21.14    94.7   21.16    96.7   22.11    98.0
GR 22.51   123.7   28.35   133.5   28.23   140.3   21.55   159.1   21.13   164.8
GR 18.17   172.0   18.02   179.3   16.66   181.8   16.74   191.7   17.46   193.2
GR 16.88   211.0   17.17   239.6   15.42   243.5   15.21   248.5   15.11   283.4
GR 15.22   318.5   15.11   368.5   15.11   403.5   15.01   434.5   15.01   474.4
GR 15.12   495.5   15.43   505.2   15.97   510.4   18.23   517.1   17.04   537.6
GR 22.83   547.2   23.02   645.9   24.31   650.5   28.29   660.9   28.33   664.9
GR 23.35   677.4   23.30   680.8   23.07   682.1   23.07   780.5
X1 7.130      42  135.20  697.60  230.00  230.00  230.00
GR 22.42      .0   22.42   100.5   22.85   101.3   22.63   112.7   21.53   114.4
GR 21.56   116.1   22.23   118.8   23.58   121.3   23.57   124.0   28.63   135.2
GR 21.77   156.4   21.81   183.1   17.98   188.7   18.29   194.1   22.18   200.9
GR 22.13   266.0   18.92   271.1   18.70   280.9   16.82   298.5   16.81   370.2
GR 15.77   408.9   15.39   412.5   15.30   422.5   15.29   441.5   15.20   481.5
GR 15.20   516.5   15.00   526.5   14.89   546.5   15.10   556.5   15.30   558.5
GR 15.73   561.0   17.42   566.9   20.90   571.9   20.88   572.0   20.58   577.8
GR 22.07   580.8   22.87   685.1   28.14   697.6   28.13   704.0   23.90   713.6
GR 23.67   716.5   23.67   815.5
X1 7.390      48  125.00  728.90  260.00  260.00  260.00
GR 22.20      .0   22.20   100.0   21.51   102.1   21.49   103.7   28.53   120.6
GR 28.69   125.0   22.15   141.3   22.22   153.1   19.69   156.5   19.61   161.5
GR 21.44   165.6   21.50   182.2   21.81   183.6   21.69   221.1   22.38   223.3
GR 22.62   295.4   20.47   299.5   19.56   315.4   18.54   323.3   16.18   329.6
GR 16.18   414.6   16.68   420.5   17.17   478.0   16.97   496.1   16.35   528.5
GR 15.92   534.6   15.34   536.3   14.54   538.3   14.34   543.3   14.94   553.3
GR 15.03   574.8   15.03   584.8   15.35   590.1   15.43   594.9   15.55   637.6
GR 18.39   641.8   19.26   658.4   18.08   661.2   18.16   664.3   21.97   669.6
GR 22.02   713.9   24.34   723.3   28.08   728.9   28.07   729.9   28.26   738.0
GR 23.86   748.7   23.51   751.4   23.51   845.4
X1 7.620      30  126.40  739.10  230.00  230.00  230.00
GR 22.83      .0   22.83    99.9   24.72   112.2   28.51   119.6   28.55   126.4
GR 22.57   139.7   22.47   182.7   22.62   183.5   22.50   421.5   22.95   422.2
GR 22.87   423.2   21.18   426.1   18.38   457.8   18.18   503.4   16.56   507.2
GR 14.75   517.2   13.96   547.2   14.45   574.7   14.75   609.7   14.65   639.7
GR 16.53   649.5   17.19   650.8   18.75   694.9   23.07   702.1   23.75   727.6
GR 28.58   739.1   28.40   744.4   23.74   756.0   23.66   758.7   23.66   856.7
X1 7.860      36  100.30  725.00  240.00  240.00  240.00
GR 22.51      .0   22.51    37.2   22.91    38.0   22.91    53.0   23.39    54.3
GR 23.39    83.1   25.60    88.1   25.68    91.3   28.70    95.9   28.72   100.3
GR 24.25   109.1   24.20   111.8   23.25   113.4   22.88   182.8   23.19   183.4
GR 23.29   187.8   22.99   188.9   22.81   361.7   23.04   362.4   23.16   412.0
GR 16.54   418.0   14.94   423.1   13.74   447.6   14.34   502.6   15.34   562.6
GR 13.34   612.6   14.24   647.6   15.34   652.6   16.54   654.6   17.44   656.0
GR 17.51   670.8   16.67   694.5   20.67   702.1   21.33   709.5   29.49   725.0
GR 40.28   745.5
X1 8.060      36   72.30  699.40  200.00  200.00  200.00
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GR 23.37      .0   23.37    47.0   23.80    49.0   23.90    52.1   28.54    61.3
GR 28.14     72.3  24.59    78.1   24.14    85.2   23.03    87.3   23.13   175.8
GR 23.54    176.9  23.32   452.0   24.38   454.5   24.35   455.6   23.67   457.2
GR 23.02    499.8  23.26   523.7   20.02   527.8   19.48   535.3   16.73   541.3
GR 15.54    543.3  14.74   548.3   15.54   578.3   15.94   608.3   15.84   629.3
GR 15.94    644.3  16.73   649.2   17.21   650.4   17.31   668.7   22.31   681.2
GR 22.40    685.1  27.52   694.8   29.65   699.4   29.71   701.8   31.48   704.8
GR 45.36    745.3
X1 8.240       37 100.20  824.40  180.00  180.00  180.00
GR 22.30      .0   22.30    58.7   23.10    59.6   23.96    84.6   28.59    95.7
GR 28.69    100.2  25.41   106.5   25.42   109.0   23.15   116.2   23.05   259.5
GR 23.86    260.2  23.39   359.3   23.74   477.5   24.53   479.3   24.70   480.8
GR 23.89    482.0  24.11   528.1   21.54   537.3   21.28   560.3   20.00   576.7
GR 18.20    651.4  16.58   662.9   16.28   672.7   15.99   691.2   15.79   716.2
GR 15.59    741.2  15.79   760.2   16.48   768.2   19.23   775.9   21.23   792.1
GR 21.52    809.0  27.39   821.1   28.88   824.4   28.85   835.7   28.86   860.2
GR 18.12    860.3  18.12   910.2
X1 8.380       40 100.40  835.40  140.00  140.00  140.00
GR 22.60      .0   22.60    67.1   23.75    68.8   23.76    73.8   28.39    89.3
GR 28.57    100.4  24.16   114.4   24.06   120.6   22.92   122.0   22.98   200.4
GR 23.63    201.5  23.68   209.9   23.14   210.6   23.26   259.2   23.85   260.7
GR 23.53    305.7  24.10   306.4   23.85   386.9   23.74   506.3   23.22   508.3
GR 22.89    547.7  21.02   551.6   18.98   607.5   18.83   687.8   17.36   718.4
GR 16.63    720.5  16.33   723.5   16.23   728.0   15.93   748.0   16.23   768.0
GR 15.73    783.0  16.59   787.0   20.98   794.9   21.37   819.9   27.39   831.6
GR 27.46    832.1  28.85   835.4   28.74   840.0   25.08   847.6   24.99   947.4
X1 8.560       42 100.20  934.20  180.00  180.00  180.00
GR 22.60      .0   22.60    63.2   23.33    64.7   23.75    79.8   28.34    90.9
GR 28.57    100.2  24.12   112.4   24.09   117.3   22.92   118.9   22.95   194.9
GR 23.49    195.9  23.67   387.7   23.11   459.7   20.71   475.7   18.97   479.2
GR 19.03    562.6  17.68   652.8   16.65   668.5   16.44   673.5   16.54   683.5
GR 16.44    713.5  16.35   728.5   15.84   743.5   16.14   763.5   16.04   777.5
GR 16.56    787.0  21.41   791.4   21.50   792.8   21.41   797.8   16.49   804.1
GR 15.89    806.6  16.42   812.5   16.66   815.5   17.09   836.6   18.33   840.3
GR 18.91    905.3  21.00   911.3   21.14   915.2   29.01   934.2   29.06   942.4
GR 25.12    950.4  24.97  1050.5
X1 8.760       38  45.00  640.50  200.00  200.00  200.00
GR 23.71      .0   23.71    24.6   28.01    35.6   28.57    45.0   24.11    57.2
GR 24.15     62.1  22.94    63.8   22.87   135.8   23.52   137.5   23.25   310.5
GR 23.09    321.4  19.41   330.7   19.65   340.1   18.40   362.2   19.35   386.0
GR 18.46    399.6  16.79   407.8   17.48   428.2   16.56   435.8   16.05   437.8
GR 16.25    443.8  16.56   456.8   17.05   459.8   17.06   474.8   16.62   477.3
GR 16.22    480.3  16.24   490.3   16.12   502.3   16.62   507.2   18.10   510.6
GR 16.72    539.0  17.03   591.5   21.52   600.8   22.24   633.1   25.89   640.5
GR 25.41    654.4  22.97   659.5   22.98   799.5
X1 8.890       39 100.30  647.70  130.00  130.00  130.00
GR 22.31      .0   22.31    47.1   23.99    49.2   23.99    78.8   26.20    84.1
GR 27.61     91.7  28.48    94.5   28.57   100.3   24.09   114.5   23.99   121.0
GR 22.90    122.9  23.02   194.9   23.29   196.2   23.13   352.4   21.91   371.7
GR 18.44    389.7  17.63   415.0   16.62   418.1   16.12   423.1   15.83   426.1
GR 16.51    433.2  17.49   450.6   17.67   484.0   16.77   492.8   16.46   495.8
GR 16.36    503.8  16.79   513.7   17.70   521.2   18.01   562.5   17.13   591.8
GR 21.28    600.3  21.72   630.1   24.95   635.0   25.46   647.7   23.12   654.8
GR 23.19    686.9  22.87   687.4   22.75   715.5   22.71   810.6
X1 9.040       12 100.00  590.00  150.00  150.00  150.00
GR 22.50      .0   22.50    78.0   29.56    94.0   29.56   100.0   23.20   113.0
GR 23.20    350.0  17.33   365.0   17.33   570.0   26.46   590.0   26.46   598.0
GR 23.30    605.0  23.30   700.0
X1 9.045       12 100.00  590.00    5.00    5.00    5.00
GR 22.50      .0   22.50    78.0   29.56    94.0   29.56   100.0   23.20   113.0
GR 23.20    350.0  17.33   365.0   17.33   570.0   26.46   590.0   26.46   598.0
GR 23.30    605.0  23.30   700.0
X1 9.085       46  78.60  517.90   40.00   40.00   40.00
GR 29.40      .0   29.89    54.3   29.89    78.6   28.65    78.7   28.65    79.7
GR 23.45     80.0  23.37    88.1   22.53    88.5   18.76    99.0   18.82   115.5
GR 17.28    118.2  17.35   138.2   17.49   158.1   17.64   178.0   17.93   197.9
GR 17.78    217.9  17.39   237.9   17.04   257.8   17.75   277.7   18.13   285.1
GR 18.10    291.0  17.57   297.8   17.20   317.6   17.14   338.3   16.95   357.7
GR 16.94    377.4  18.57   397.7   16.84   402.9   16.44   408.0   16.65   417.8
GR 15.65    427.9  16.35   437.7   14.85   447.9   16.12   457.7   15.55   468.0
GR 16.87    476.1  17.90   478.2   18.18   487.7   22.86   497.5   22.39   511.6
GR 23.82    516.6  28.00   516.7   28.00   517.7   30.02   517.9   29.55   522.9
GR 29.79    619.1
X1 9.095       46  78.60  517.90   10.00   10.00   10.00
GR 29.40      .0   29.89    54.3   29.89    78.6   28.65    78.7   28.65    79.7
GR 23.45     80.0  23.37    88.1   22.53    88.5   18.76    99.0   18.82   115.5
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GR 17.28   118.2   17.35   138.2   17.49   158.1   17.64   178.0   17.93   197.9
GR 17.78   217.9   17.39   237.9   17.04   257.8   17.75   277.7   18.13   285.1
GR 18.10   291.0   17.57   297.8   17.20   317.6   17.14   338.3   16.95   357.7
GR 16.94   377.4   18.57   397.7   16.84   402.9   16.44   408.0   16.65   417.8
GR 15.65   427.9   16.35   437.7   14.85   447.9   16.12   457.7   15.55   468.0
GR 16.87   476.1   17.90   478.2   18.18   487.7   22.86   497.5   22.39   511.6
GR 23.82   516.6   28.00   516.7   28.00   517.7   30.02   517.9   29.55   522.9
GR 29.79   619.1
X1 9.115      37  114.30  552.30   20.00   20.00   20.00
GR 29.71      .0   29.62    53.0   29.79    88.0   30.12   114.3   27.89   114.4
GR 27.89   115.4   23.40   115.5   22.97   134.3   22.91   153.9   22.95   174.0
GR 22.65   193.9   22.63   213.8   23.11   233.8   23.48   253.7   23.27   273.6
GR 22.88   293.3   20.78   313.2   18.28   323.6   17.68   333.0   17.35   353.4
GR 17.29   373.1   17.09   392.0   17.04   412.3   17.07   424.6   16.49   433.9
GR 16.56   453.0   17.01   472.2   18.19   477.7   17.50   492.9   20.17   512.5
GR 22.84   532.4   23.29   551.0   28.65   551.0   28.65   552.2   30.16   552.3
GR 29.73   555.3   29.68   634.6
X1 9.125      37  114.30  552.30   10.00   10.00   10.00
GR 29.71      .0   29.62    53.0   29.79    88.0   30.12   114.3   27.89   114.4
GR 27.89   115.4   23.40   115.5   22.97   134.3   22.91   153.9   22.95   174.0
GR 22.65   193.9   22.63   213.8   23.11   233.8   23.48   253.7   23.27   273.6
GR 22.88   293.3   20.78   313.2   18.28   323.6   17.68   333.0   17.35   353.4
GR 17.29   373.1   17.09   392.0   17.04   412.3   17.07   424.6   16.49   433.9
GR 16.56   453.0   17.01   472.2   18.19   477.7   17.50   492.9   20.17   512.5
GR 22.84   532.4   23.29   551.0   28.65   551.0   28.65   552.2   30.16   552.3
GR 29.73   555.3   29.68   634.6
X1 9.290      35  116.70  588.50  165.00  165.00  165.00
GR 22.52      .0   22.52    79.9   23.79    97.4   23.87   100.1   28.47   109.3
GR 28.58   116.7   25.47   125.9   25.45   133.0   23.42   137.3   23.34   239.1
GR 23.64   241.0   23.62   278.1   23.28   279.7   22.86   321.9   18.33   327.8
GR 17.21   333.9   17.01   336.8   17.01   343.8   16.91   353.8   17.20   356.8
GR 17.52   376.7   17.46   435.1   17.48   435.1   17.78   448.3   19.44   511.5
GR 20.41   515.7   23.22   526.0   23.10   571.9   24.35   578.4   28.87   588.5
GR 28.90   590.6   28.94   594.2   24.73   602.8   24.45   614.3   24.45   644.4
X1 9.490      45  130.60  598.80  200.00  200.00  200.00
GR 22.71      .0   22.71   100.1   23.27   100.7   23.30   104.8   21.90   108.0
GR 22.04   108.8   23.61   111.2   23.69   114.5   28.66   125.2   28.63   130.6
GR 25.46   140.6   25.83   148.4   23.21   153.0   23.13   274.8   23.41   275.7
GR 23.34   277.6   22.58   278.9   22.60   297.4   22.27   298.8   22.25   308.5
GR 17.69   314.9   17.50   320.3   17.40   336.3   17.50   356.3   17.40   366.2
GR 16.79   386.3   16.90   396.4   17.73   399.3   18.19   413.8   18.84   477.5
GR 20.64   480.1   21.77   529.1   21.05   530.0   21.08   530.8   22.66   533.2
GR 23.50   586.6   28.98   598.8   28.95   600.0   28.94   604.2   25.53   610.6
GR 25.39   613.4   23.49   616.9   23.57   628.3   22.73   629.5   22.73   689.1
X1 9.680      38  123.70  588.10  190.00  190.00  190.00
GR 22.46      .0   22.46   100.1   23.12   101.2   23.11   102.1   28.84   117.8
GR 28.88   123.7   24.16   128.9   24.31   135.2   23.27   139.4   22.77   141.5
GR 22.88   224.2   22.03   225.3   21.98   264.6   17.55   269.3   16.57   272.1
GR 15.90   292.5   17.65   295.8   17.67   326.8   17.74   335.2   17.19   346.0
GR 18.99   402.8   18.78   428.1   18.34   429.3   18.03   431.3   17.63   443.3
GR 17.93   458.3   18.37   460.3   20.76   465.4   20.75   484.1   21.49   490.7
GR 23.46   494.4   23.46   573.6   28.95   588.1   28.94   593.3   24.08   605.9
GR 24.09   623.8   23.35   624.9   23.35   724.0
X1 9.830      43   23.30  455.60  150.00  150.00  150.00
GR 28.70      .0   28.83    16.5   29.03    23.3   27.49    23.4   27.49    24.2
GR 22.97    24.8   22.96    31.9   21.75    41.1   22.74    50.1   23.00    59.7
GR 22.71    77.3   21.85    95.5   21.48    98.2   19.20   103.1   19.03   112.9
GR 19.03   203.0   18.60   211.7   18.11   220.9   17.91   230.9   18.11   238.9
GR 18.01   250.2   18.50   252.2   19.28   256.9   20.56   275.6   20.44   292.8
GR 20.75   311.7   21.43   330.7   22.21   347.2   23.06   365.5   23.00   383.4
GR 23.33   401.3   23.37   419.5   23.45   428.0   23.40   437.8   23.42   446.5
GR 23.47   454.5   27.24   454.6   27.24   455.4   29.02   455.6   28.97   457.8
GR 28.74   472.1   24.56   485.2   24.56   585.2
X1 9.850      43   23.30  455.60   20.00   20.00   20.00
GR 28.70      .0   28.83    16.5   29.03    23.3   27.49    23.4   27.49    24.2
GR 22.97    24.8   22.96    31.9   21.75    41.1   22.74    50.1   23.00    59.7
GR 22.71    77.3   21.85    95.5   21.48    98.2   19.20   103.1   19.03   112.9
GR 19.03   203.0   18.60   211.7   18.11   220.9   17.91   230.9   18.11   238.9
GR 18.01   250.2   18.50   252.2   19.28   256.9   20.56   275.6   20.44   292.8
GR 20.75   311.7   21.43   330.7   22.21   347.2   23.06   365.5   23.00   383.4
GR 23.33   401.3   23.37   419.5   23.45   428.0   23.40   437.8   23.42   446.5
GR 23.47   454.5   27.24   454.6   27.24   455.4   29.02   455.6   28.97   457.8
GR 28.74   472.1   24.56   485.2   24.56   585.2
X1 9.900      42   92.10  535.50   50.00   50.00   50.00
GR 22.46      .0   22.46    45.8   21.99    46.8   21.99    47.8   23.46    50.9
GR 23.46    53.1   28.77    66.5   28.98    88.6   28.53    92.1   23.27    92.3
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GR 23.32	95.0	22.65	96.0	22.67	159.6	19.43	165.1	18.54	171.6
GR 17.82	176.7	17.21	186.6	16.52	206.6	16.41	226.6	16.72	251.6
GR 17.92	261.6	17.62	281.6	17.72	291.6	17.72	301.6	18.51	307.7
GR 20.37	309.2	21.17	326.4	21.29	334.1	20.42	344.2	20.51	360.7
GR 21.68	362.6	22.63	369.9	23.34	517.6	23.05	519.4	23.12	520.2
GR 28.92	535.5	28.79	541.6	26.49	546.9	26.26	577.5	26.26	587.6
GR 25.57	589.0	25.57	636.4						
X110.080	47	97.80	581.00	180.00	180.00	180.00			
GR 22.44	.0	22.44	72.9	23.16	73.9	23.16	76.9	28.10	89.9
GR 28.17	97.8	28.02	99.2	23.56	111.3	23.46	114.2	22.76	115.5
GR 22.59	172.1	19.34	179.1	18.96	187.0	18.52	188.4	17.80	191.3
GR 17.70	196.4	16.30	211.4	17.80	231.4	18.20	247.4	18.49	252.7
GR 18.88	258.2	19.79	305.2	20.75	307.2	21.07	309.0	19.45	310.6
GR 19.52	312.6	21.39	316.0	21.45	330.4	20.76	334.7	20.94	359.0
GR 20.22	363.5	20.26	391.5	22.72	396.0	23.34	505.8	23.15	508.1
GR 23.23	563.4	23.13	565.3	23.14	566.3	23.59	566.8	28.83	581.0
GR 28.65	587.0	23.71	597.5	23.77	599.6	22.98	605.6	22.98	607.1
GR 25.35	609.1	25.35	681.5						
X110.240	53	74.50	630.50	160.00	160.00	160.00			
GR 22.57	.0	22.57	45.0	23.06	46.0	23.06	48.7	28.29	67.2
GR 28.49	74.5	24.19	87.5	24.01	90.9	23.52	93.7	23.15	123.4
GR 18.92	135.0	18.72	151.3	18.96	158.7	21.93	169.0	22.33	196.0
GR 20.75	198.8	21.71	210.9	21.90	219.6	18.39	223.6	18.08	226.6
GR 17.58	234.6	17.48	244.6	17.88	264.6	17.68	284.6	17.58	314.6
GR 17.78	337.6	18.38	342.5	18.82	358.0	21.12	361.4	21.52	384.6
GR 19.35	387.8	19.00	391.4	20.57	399.2	20.69	408.4	20.09	410.0
GR 20.06	419.7	21.94	424.1	22.08	439.0	22.96	440.2	23.30	479.3
GR 23.41	613.4	23.01	614.1	22.95	614.7	23.51	615.2	23.58	617.6
GR 28.88	630.5	28.68	637.8	27.45	640.6	27.37	643.3	25.14	647.6
GR 25.13	677.6	23.88	678.6	23.88	710.6				
X110.480	33	.00	622.50	240.00	240.00	240.00			
GR 38.37	.0	24.73	97.6	25.15	99.4	24.09	100.8	24.06	221.1
GR 21.14	227.0	21.89	245.4	20.33	254.7	21.91	281.9	18.56	286.0
GR 18.20	291.0	17.90	306.0	18.10	331.1	17.79	360.9	18.00	385.8
GR 18.10	401.0	18.50	417.5	21.76	420.5	21.81	425.7	19.83	430.1
GR 19.81	432.6	21.14	435.2	21.86	456.2	22.78	461.4	24.03	612.5
GR 29.00	622.5	28.91	628.4	27.95	630.5	27.68	633.9	24.86	639.0
GR 24.31	677.0	23.79	677.6	23.79	722.8				
X110.690	41	.00	497.00	210.00	210.00	210.00			
GR 45.37	.0	24.56	54.7	24.42	65.9	24.75	66.4	23.72	67.8
GR 23.88	118.5	23.30	119.7	23.34	156.2	21.61	160.8	21.56	192.9
GR 22.48	193.9	22.36	195.1	18.45	200.0	17.97	207.7	17.77	217.7
GR 17.87	233.0	18.17	248.9	18.46	254.2	19.28	257.0	19.18	267.5
GR 20.85	270.3	21.21	278.2	20.34	279.9	19.71	319.8	19.00	321.8
GR 18.46	351.1	18.23	355.4	18.11	359.4	18.43	363.4	19.05	370.5
GR 18.58	390.8	23.40	400.9	23.55	478.7	22.65	480.2	22.63	481.0
GR 23.22	481.9	23.43	484.2	29.08	497.0	28.87	502.7	23.94	515.9
GR 23.94	615.6								
X110.890	38	.00	434.60	200.00	200.00	200.00			
GR 35.78	.0	29.03	14.0	29.04	26.9	27.04	27.0	27.13	29.5
GR 24.57	33.7	24.56	46.3	21.91	50.6	21.89	51.5	23.05	53.1
GR 23.00	53.7	22.36	54.6	22.36	81.5	22.76	82.6	22.83	121.1
GR 21.71	134.8	18.45	152.6	17.82	157.8	17.91	167.6	18.02	182.6
GR 18.13	198.6	18.42	205.2	18.26	235.5	19.24	271.0	19.71	272.7
GR 20.92	280.5	20.05	328.1	18.91	330.4	18.56	356.5	19.66	376.9
GR 22.51	381.5	22.55	385.8	23.89	390.0	23.87	422.0	29.08	434.6
GR 28.98	440.2	24.25	453.7	24.25	554.7				
X111.120	41	.00	461.80	230.00	230.00	230.00			
GR 34.78	.0	27.13	20.6	25.57	20.8	25.05	22.2	24.98	26.1
GR 22.35	30.2	22.29	31.6	22.94	34.4	22.91	67.2	23.64	69.5
GR 23.64	99.1	23.91	100.0	23.87	114.2	23.71	115.0	23.87	166.9
GR 23.87	209.9	22.43	212.6	22.00	215.9	18.86	221.2	18.36	231.3
GR 18.08	241.6	18.19	266.3	18.13	286.2	18.27	311.6	18.37	324.3
GR 18.49	334.6	18.79	339.6	19.61	349.7	20.26	368.1	20.06	394.8
GR 20.58	397.4	20.46	399.4	19.67	401.0	20.95	418.0	24.41	425.7
GR 24.33	450.8	29.15	461.8	29.06	467.8	27.56	474.4	23.81	482.4
GR 23.81	582.6								
X111.310	43	.00	516.10	190.00	190.00	190.00			
GR 37.91	.0	23.52	20.0	23.52	99.0	24.41	101.0	24.30	130.8
GR 24.55	131.5	24.50	172.9	23.80	175.7	23.73	210.4	23.98	212.0
GR 23.99	214.7	23.66	215.1	23.62	274.8	24.22	275.9	24.22	276.7
GR 22.79	280.5	21.53	287.7	19.22	291.1	18.73	292.3	18.41	297.2
GR 18.31	305.3	17.91	314.2	18.01	354.2	17.91	374.3	18.71	384.3
GR 18.91	386.9	19.14	421.3	20.64	434.7	19.77	438.6	20.00	442.0
GR 21.75	446.6	22.43	464.4	21.23	481.6	24.24	488.3	24.05	501.1
GR 24.36	501.8	24.36	504.5	29.24	516.1	29.21	521.8	24.76	532.5

GR 24.74	535.6	24.25	536.7	24.25	636.8				
X111.520	41	411.80	655.20	210.00	210.00	210.00			
GR 30.00	.0	25.00	23.0	24.15	306.0	24.15	326.0	24.04	327.2
GR 24.04	357.0	24.41	357.7	24.47	360.1	24.05	360.6	24.18	409.2
GR 24.65	410.1	24.69	411.8	18.76	420.3	18.23	425.4	18.13	445.3
GR 18.22	461.2	18.24	471.2	18.74	477.2	19.43	478.4	19.40	494.6
GR 18.81	500.8	18.80	510.8	19.76	528.1	19.70	574.1	18.94	577.5
GR 19.25	590.4	22.26	594.9	21.88	604.0	20.57	606.2	20.92	613.3
GR 23.82	619.8	23.69	638.6	24.25	639.4	24.37	642.4	29.53	655.2
GR 29.49	660.5	24.72	671.3	24.77	689.0	23.87	690.3	24.05	692.9
GR 24.05	824.0								
X111.710	34	.00	677.00	190.00	190.00	190.00			
GR 34.57	.0	26.15	20.0	26.08	64.3	24.85	66.5	24.92	83.9
GR 23.48	88.6	23.48	364.9	24.15	365.4	24.15	366.6	21.96	406.8
GR 20.07	413.2	19.05	432.0	18.86	472.8	18.67	474.6	18.23	480.2
GR 18.25	500.3	18.33	510.3	18.57	524.3	18.53	549.6	18.45	569.4
GR 18.32	584.6	18.33	594.4	18.25	604.3	18.75	609.3	20.38	611.2
GR 21.18	630.1	23.75	635.9	23.66	656.7	24.49	657.8	24.76	664.3
GR 29.40	677.0	29.29	682.2	24.46	694.5	24.46	794.5		
X111.900	37	.00	645.70	190.00	190.00	190.00			
GR 43.57	.0	28.96	20.1	26.99	23.1	26.82	25.8	25.64	28.1
GR 25.67	45.7	24.74	47.8	24.97	206.6	25.65	207.4	25.64	210.8
GR 26.48	212.3	26.05	213.0	26.17	323.8	23.67	327.5	23.69	331.1
GR 22.31	333.4	20.76	419.8	19.01	426.4	19.31	493.0	18.91	511.2
GR 18.44	516.2	17.63	526.2	17.01	541.2	16.93	561.1	17.13	571.2
GR 18.93	574.3	20.12	629.6	25.11	630.5	25.15	637.0	28.95	645.7
GR 29.17	653.8	27.68	656.7	27.30	661.8	24.80	666.7	24.80	696.8
GR 19.63	696.9	19.63	724.0						
X112.140	32	.00	498.80	240.00	240.00	240.00			
GR 35.23	.0	27.41	20.0	27.11	22.8	27.08	80.5	25.30	83.5
GR 25.15	95.7	24.40	96.5	24.50	131.9	25.03	132.8	24.27	133.6
GR 24.25	170.3	21.04	176.0	21.24	203.1	22.09	226.0	21.18	251.2
GR 19.80	309.7	18.82	326.7	18.55	331.7	17.55	346.6	18.04	366.7
GR 18.35	382.7	18.85	397.9	20.25	406.8	20.45	421.8	23.75	430.5
GR 23.84	480.8	24.57	482.0	24.68	486.3	29.47	498.8	29.41	504.4
GR 24.02	518.1	24.02	599.1						
X112.340	34	.00	525.90	200.00	200.00	200.00			
GR 35.25	.0	24.48	60.0	22.86	102.3	21.80	128.4	22.60	147.0
GR 23.14	168.9	18.85	174.7	17.89	180.1	16.99	200.1	16.39	235.0
GR 16.99	268.0	18.19	293.0	18.17	318.0	18.88	323.1	19.67	329.0
GR 20.49	344.4	19.82	346.8	19.80	350.3	22.34	354.5	22.40	357.5
GR 22.03	358.3	21.90	403.8	21.54	407.8	21.78	437.1	20.99	438.5
GR 21.17	440.4	23.66	446.7	23.53	506.3	24.37	507.9	24.61	513.6
GR 29.75	525.9	29.79	531.3	24.73	542.7	24.73	642.7		
X112.560	41	.00	674.60	220.00	220.00	220.00			
GR 44.13	.0	25.75	40.5	24.49	58.9	24.53	81.7	22.43	88.6
GR 18.91	97.4	16.36	100.7	16.86	105.6	16.76	120.7	17.26	133.7
GR 17.86	152.7	18.26	170.9	18.76	177.7	19.06	182.7	19.58	218.2
GR 20.16	245.6	21.31	250.4	21.20	257.8	20.51	261.7	21.38	288.6
GR 20.50	313.9	19.88	314.8	19.78	316.3	20.62	318.3	20.81	322.2
GR 24.44	329.5	24.53	330.5	24.03	332.3	23.89	339.8	24.64	342.7
GR 24.11	442.2	24.28	482.6	23.57	653.4	25.22	657.6	25.22	660.8
GR 29.92	674.6	29.83	679.8	24.78	692.2	24.74	695.9	23.97	697.2
GR 23.97	797.2								
X112.850	48	120.80	807.50	290.00	290.00	290.00			
GR 35.36	.0	24.15	50.0	24.15	100.1	25.07	101.5	25.38	106.0
GR 30.32	116.3	30.37	120.8	21.59	138.6	21.45	156.4	18.80	160.8
GR 17.67	163.9	17.47	168.8	17.46	183.8	17.77	198.8	18.17	223.8
GR 18.56	238.8	18.48	258.8	18.46	272.8	18.76	277.9	19.01	279.5
GR 19.06	292.1	21.25	294.7	21.54	300.9	22.86	306.1	23.04	319.1
GR 21.17	323.6	21.17	325.7	22.25	327.8	22.43	330.6	25.33	335.7
GR 24.93	604.1	24.44	605.0	24.44	648.8	24.73	649.3	24.71	650.0
GR 24.31	650.5	24.04	695.7	24.35	697.2	23.76	698.3	23.61	788.3
GR 24.67	789.6	24.56	794.4	29.93	807.5	29.88	812.9	24.55	825.0
GR 24.09	831.4	23.46	832.7	23.46	932.8				
X113.110	55	131.60	815.50	260.00	260.00	260.00			
GR 24.95	.0	24.95	51.2	23.97	67.4	23.97	88.0	22.49	88.1
GR 22.49	97.1	23.99	97.2	23.96	114.4	27.11	120.3	27.25	122.9
GR 30.48	127.1	30.45	131.6	23.38	147.0	23.88	152.7	23.91	201.2
GR 22.19	204.0	22.29	207.8	20.41	212.8	19.74	219.6	19.04	220.9
GR 18.56	225.9	18.70	233.9	19.01	240.2	19.14	250.0	19.25	259.1
GR 19.02	274.3	18.33	288.6	18.43	298.0	19.02	307.5	19.32	309.4
GR 19.48	318.7	21.55	323.6	22.15	349.5	21.75	351.8	21.70	353.2
GR 21.81	362.6	21.97	368.5	22.13	373.2	20.84	410.6	20.95	419.9
GR 19.71	423.0	19.82	431.2	20.76	434.1	21.45	587.7	25.01	595.4
GR 24.57	698.6	23.90	705.1	23.96	797.8	24.67	798.9	24.99	805.3

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GR 30.04   815.5   29.94   823.9   24.77   835.5   23.94   842.6   23.94   943.2
X113.320      57  101.50  773.60  210.00  210.00  210.00
GR 25.30      .0   25.30    72.6   25.74    73.2   25.65    75.2   25.34    75.8
GR 25.52    87.9   30.38    98.0   30.38   101.5   30.13   102.7   24.72   113.8
GR 24.74   137.3   23.59   139.5   23.55   181.0   24.06   182.0   24.27   245.5
GR 22.75   247.9   22.44   253.4   19.16   260.6   19.19   265.3   20.58   279.2
GR 19.99   298.2   19.29   303.5   18.99   347.1   18.90   353.0   18.87   365.4
GR 18.27   390.4   18.44   408.5   18.96   421.5   19.15   424.1   19.19   430.1
GR 20.43   433.3   20.48   437.9   19.68   440.3   19.79   442.1   21.37   446.3
GR 21.28   482.7   20.97   485.2   21.07   490.0   18.91   494.8   18.79   505.1
GR 20.30   512.8   20.62   534.7   19.99   545.8   20.94   559.7   21.01   584.3
GR 20.60   627.9   21.56   630.1   21.65   632.7   24.43   638.3   24.54   756.6
GR 25.10   762.2   29.98   773.6   29.83   778.8   24.47   791.1   24.45   793.1
GR 23.98   794.6   23.98   894.1
X113.520      46   94.00  759.20  200.00  200.00  200.00
GR 25.85      .0   25.85    80.1   30.44    89.7   30.69    94.0   25.53   104.9
GR 25.48   135.9   25.35   137.2   25.32   185.9   20.70   193.3   20.91   235.7
GR 20.13   247.5   20.64   248.7   20.52   285.4   20.29   353.1   19.82   390.7
GR 22.04   395.6   22.35   405.9   19.62   414.7   19.13   452.4   19.01   459.5
GR 18.63   464.4   18.63   479.7   18.43   489.6   17.63   499.6   17.95   509.9
GR 18.93   513.2   20.51   515.7   20.26   539.2   21.16   544.8   22.96   547.6
GR 22.94   548.6   22.64   549.2   22.55   609.2   23.72   611.5   23.63   616.9
GR 24.56   620.6   25.07   745.9   26.82   751.0   26.90   754.2   30.09   759.2
GR 29.86   764.7   25.30   774.7   25.65   786.0   24.02   786.4   23.42   788.4
GR 23.42   889.3
X113.540      46   94.00  759.20   20.00   20.00   20.00
GR 25.85      .0   25.85    80.1   30.44    89.7   30.69    94.0   25.53   104.9
GR 25.48   135.9   25.35   137.2   25.32   185.9   20.70   193.3   20.91   235.7
GR 20.13   247.5   20.64   248.7   20.52   285.4   20.29   353.1   19.82   390.7
GR 22.04   395.6   22.35   405.9   19.62   414.7   19.13   452.4   19.01   459.5
GR 18.63   464.4   18.63   479.7   18.43   489.6   17.63   499.6   17.95   509.9
GR 18.93   513.2   20.51   515.7   20.26   539.2   21.16   544.8   22.96   547.6
GR 22.94   548.6   22.64   549.2   22.55   609.2   23.72   611.5   23.63   616.9
GR 24.56   620.6   25.07   745.9   26.82   751.0   26.90   754.2   30.09   759.2
GR 29.86   764.7   25.30   774.7   25.65   786.0   24.02   786.4   23.42   788.4
GR 23.42   889.3
X113.770      49   80.90  763.90  230.00  230.00  230.00
GR 27.22      .0   27.22    70.0   30.26    75.5   30.42    80.9   25.15    93.2
GR 25.11   134.5   26.19   137.0   24.54   139.0   24.59   179.7   22.65   182.7
GR 22.48   185.9   21.54   187.4   21.44   192.7   25.29   198.2   25.35   205.4
GR 25.42   225.2   24.07   230.5   21.22   235.9   21.27   291.3   22.42   304.9
GR 22.33   312.9   20.78   318.1   21.08   345.1   20.48   418.3   20.10   427.4
GR 19.37   433.0   17.53   447.7   19.21   465.7   19.61   476.7   20.14   480.1
GR 20.55   516.0   21.03   568.4   22.84   571.7   22.83   572.8   21.98   574.4
GR 21.90   594.1   22.94   595.9   22.76   600.2   25.03   606.1   25.06   607.4
GR 24.98   747.6   25.59   748.8   25.53   753.1   30.15   763.9   29.92   769.2
GR 24.53   779.4   24.30   781.9   23.86   783.0   23.86   884.0
X113.790      49   80.90  763.90   20.00   20.00   20.00
GR 27.22      .0   27.22    70.0   30.26    75.5   30.42    80.9   25.15    93.2
GR 25.11   134.5   26.19   137.0   24.54   139.0   24.59   179.7   22.65   182.7
GR 22.48   185.9   21.54   187.4   21.44   192.7   25.29   198.2   25.35   205.4
GR 25.42   225.2   24.07   230.5   21.22   235.9   21.27   291.3   22.42   304.9
GR 22.33   312.9   20.78   318.1   21.08   345.1   20.48   418.3   20.10   427.4
GR 19.37   433.0   17.53   447.7   19.21   465.7   19.61   476.7   20.14   480.1
GR 20.55   516.0   21.03   568.4   22.84   571.7   22.83   572.8   21.98   574.4
GR 21.90   594.1   22.94   595.9   22.76   600.2   25.03   606.1   25.06   607.4
GR 24.98   747.6   25.59   748.8   25.53   753.1   30.15   763.9   29.92   769.2
GR 24.53   779.4   24.30   781.9   23.86   783.0   23.86   884.0
X114.010      54   37.00  803.20  220.00  220.00  220.00
GR 45.37      .0   29.42    37.0   28.06    42.4   27.69    43.6   27.72    67.8
GR 26.71    70.2   26.71    84.8   27.49    85.9   27.47   119.6   26.79   123.4
GR 25.56   125.4   25.53   179.2   24.49   221.6   22.15   224.9   21.59   249.1
GR 20.46   251.1   20.55   284.6   20.18   359.8   19.80   370.1   19.69   375.1
GR 20.22   379.0   20.64   380.4   20.95   387.4   20.99   395.5   20.20   405.1
GR 19.87   415.1   19.53   426.1   18.80   449.2   19.33   468.6   20.15   472.4
GR 23.35   477.1   23.39   478.0   22.58   478.9   22.52   518.5   23.51   520.1
GR 23.61   524.4   25.55   527.8   25.27   615.9   25.79   617.1   25.71   618.6
GR 24.75   620.6   24.76   676.0   24.32   680.3   24.33   733.7   24.04   736.2
GR 23.95   738.1   25.72   742.1   26.24   782.0   25.57   784.5   25.52   793.0
GR 30.25   803.2   30.19   808.8   24.16   823.5   24.16   923.9
X114.030      54   37.00  803.20   20.00   20.00   20.00
GR 45.37      .0   29.42    37.0   28.06    42.4   27.69    43.6   27.72    67.8
GR 26.71    70.2   26.71    84.8   27.49    85.9   27.47   119.6   26.79   123.4
GR 25.56   125.4   25.53   179.2   24.49   221.6   22.15   224.9   21.59   249.1
GR 20.46   251.1   20.55   284.6   20.18   359.8   19.80   370.1   19.69   375.1
GR 20.22   379.0   20.64   380.4   20.95   387.4   20.99   395.5   20.20   405.1
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GR 19.87   415.1   19.53   426.1   18.80   449.2   19.33   468.6   20.15   472.4
GR 23.35   477.1   23.39   478.0   22.58   478.9   22.52   518.5   23.51   520.1
GR 23.61   524.4   25.55   527.8   25.27   615.9   25.79   617.1   25.71   618.6
GR 24.75   620.6   24.76   676.0   24.32   680.3   24.33   733.7   24.04   736.2
GR 23.95   738.1   25.72   742.1   26.24   782.0   25.57   784.5   25.52   793.0
GR 30.25   803.2   30.19   808.8   24.16   823.5   24.16   923.9
X114.160      55   38.80  884.60  130.00  130.00  130.00
GR 39.98      .0   39.50    22.2   37.56    38.8   28.42    56.0   28.31    65.3
GR 27.89    83.2   27.22   110.3   25.56   140.0   25.04   206.6   22.21   212.0
GR 22.13   232.6   21.97   238.9   20.12   241.1   19.89   266.5   19.17   286.3
GR 19.38   321.4   19.46   371.5   19.11   391.4   19.57   421.3   19.72   431.6
GR 18.70   446.6   19.00   461.5   19.25   466.9   20.00   471.5   21.31   472.8
GR 21.41   476.8   24.39   482.7   24.58   490.2   25.85   494.8   26.48   642.9
GR 25.21   644.9   25.17   682.4   24.58   765.9   25.35   768.3   25.25   772.2
GR 24.75   776.5   24.73   802.9   25.07   803.7   24.98   805.4   23.82   807.0
GR 23.75   808.5   24.53   811.8   24.55   843.2   24.05   845.1   24.04   846.1
GR 24.32   847.3   24.29   868.5   24.93   869.3   24.85   872.1   30.15   884.6
GR 30.13   890.5   25.52   900.6   24.94   905.6   24.22   906.9   24.22  1007.0
X114.360      47   52.20  798.50  200.00  200.00  200.00
GR 37.54      .0   35.49    27.9   33.98    31.3   33.93    52.2   31.73    56.1
GR 28.49    56.2   28.01    60.8   26.67    63.1   26.89    94.9   21.54   106.7
GR 21.86   109.8   20.17   111.1   19.25   118.2   19.35   143.9   19.62   165.6
GR 19.88   186.3   20.16   203.2   20.71   211.3   21.23   223.4   21.25   235.5
GR 22.29   243.0   22.32   246.7   21.77   250.6   21.84   297.3   19.62   301.0
GR 19.87   303.5   20.19   306.3   21.75   310.7   21.98   386.9   20.21   397.1
GR 20.29   402.2   21.45   403.9   20.80   449.2   21.33   575.5   26.13   583.5
GR 26.01   588.1   24.95   729.5   24.50   730.5   24.45   781.6   24.93   785.4
GR 25.99   787.8   25.98   790.5   30.34   798.5   30.30   803.8   25.86   812.9
GR 25.59   816.9   24.50   820.7
X114.550      51   28.10  767.10  190.00  190.00  190.00
GR 39.68      .0   39.04    16.1   36.65    20.1   35.52    20.3   35.59    28.1
GR 33.88    30.8   33.82    38.7   30.02    45.6   26.87    46.9   26.18    68.2
GR 22.03    76.3   21.99    79.0   20.01    81.2   18.48    90.1   19.16   102.4
GR 19.19   110.8   19.38   119.8   19.73   131.5   20.12   139.3   20.29   141.8
GR 21.80   224.9   22.64   229.9   22.88   235.8   22.30   236.9   22.54   289.6
GR 21.86   318.3   21.84   377.9   20.59   383.0   20.77   392.0   21.67   399.5
GR 21.72   420.0   21.08   426.9   21.22   451.0   20.34   453.3   20.64   478.7
GR 22.32   483.0   22.20   589.4   21.56   590.8   21.22   594.4   23.77   597.8
GR 23.60   609.6   25.36   613.1   25.22   617.2   25.41   750.8   25.68   755.9
GR 30.41   767.1   30.29   772.3   25.07   785.1   25.00   790.2   24.72   791.6
GR 24.72   891.6
X114.740      42     .00  763.50  190.00  190.00  190.00
GR 39.27      .0   26.80    23.5   25.36    36.1   23.80    40.2   23.21    49.6
GR 23.83    52.6   22.38    55.7   22.81    71.8   21.65    77.1   19.72    79.7
GR 19.86    81.9   21.11    84.4   21.44   106.5   20.00   107.8   19.07   109.2
GR 19.10   115.4   19.06   128.7   19.51   130.8   19.68   137.7   19.87   141.4
GR 20.08   154.0   21.06   241.9   22.52   299.7   22.13   412.8   20.51   415.7
GR 21.14   451.7   20.83   533.0   21.51   537.0   20.99   555.1   22.42   595.4
GR 26.02   602.1   25.97   607.0   25.63   608.2   25.52   747.0   25.37   749.2
GR 25.55   751.2   30.52   763.5   30.43   768.4   25.48   779.2   25.53   782.3
GR 25.20   784.5   25.20   884.2
X114.930      59    8.10  869.80  190.00  190.00  190.00
GR 38.35      .0   38.36     8.1   37.33    13.1   32.28    20.8   29.54    24.0
GR 29.70    28.0   29.51    29.0   25.56    35.3   25.41    75.7   25.21    77.0
GR 25.23   112.0   24.52   116.2   24.57   131.9   23.85   134.1   24.33   135.1
GR 24.70   186.4   23.46   199.2   22.41   201.6   22.37   214.0   23.33   218.3
GR 20.07   223.3   20.07   225.3   23.20   239.8   21.70   265.7   20.20   268.1
GR 20.10   272.9   19.90   283.1   19.92   295.0   19.67   297.5   19.71   304.2
GR 20.11   314.8   20.22   316.4   20.14   369.4   20.11   372.2   19.76   377.8
GR 19.65   386.4   19.55   406.5   19.94   411.6   22.55   414.2   21.22   419.9
GR 25.46   425.3   25.41   428.0   25.09   429.9   25.06   493.8   25.53   495.1
GR 25.97   602.5   26.35   712.4   26.10   799.9   24.60   830.0   24.26   846.7
GR 26.87   851.3   28.22   865.0   31.07   869.8   30.97   875.0   29.70   877.4
GR 29.48   880.0   26.22   884.8   26.19   887.8   25.21   890.1
X115.110      48    9.20  832.40  180.00  180.00  180.00
GR 38.62      .0   38.65     9.2   35.91    19.1   28.12    33.1   28.33    37.2
GR 28.07    38.0   27.90    96.4   27.69   127.1   27.32   128.5   27.16   130.9
GR 26.33   140.0   26.35   160.8   24.66   163.5   25.63   184.2   25.77   218.6
GR 24.24   220.8   24.36   245.6   24.93   246.4   24.90   247.8   21.79   258.1
GR 22.53   261.9   22.35   290.3   21.54   325.8   20.34   355.5   19.93   376.4
GR 19.88   389.1   20.00   407.2   20.20   421.6   20.03   443.7   20.17   448.3
GR 20.34   456.5   22.89   460.5   23.43   470.9   22.06   473.4   21.97   476.3
GR 25.64   482.4   25.51   598.6   26.20   599.6   27.05   703.0   26.75   704.4
GR 26.00   815.9   25.40   817.1   25.31   818.5   31.52   832.4   31.41   837.7
GR 26.12   848.2   25.47   853.0   25.47   952.9
X115.270      47     .00  745.00  160.00  160.00  160.00
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GR 36.11      .0   27.27    28.2   27.02    42.8   26.70    43.8   26.64    95.9
GR 27.11     97.4  27.08   124.1   26.02   126.6   26.12   171.0   26.65   171.8
GR 24.59    175.5  24.55   216.9   25.24   218.1   25.20   220.0   21.10   228.3
GR 22.14    246.1  21.85   278.2   20.87   362.0   20.33   363.9   19.98   379.8
GR 19.78    392.2  20.06   402.1   20.19   416.5   20.14   425.3   20.33   433.6
GR 20.58    435.8  20.59   461.3   21.83   465.8   21.50   479.7   20.41   520.4
GR 22.19    526.7  22.92   537.2   25.32   543.8   25.19   555.2   26.15   632.1
GR 26.37    634.1  26.36   637.1   26.20   638.9   25.89   729.8   25.54   731.0
GR 25.51    732.0  31.65   745.0   31.47   750.3   24.91   763.9   24.89   765.0
GR 25.08    766.2  25.08   846.3
X115.550       38  98.00  517.60  280.00  280.00  280.00
GR 40.57      .0  30.75    57.1   31.02    98.0   26.54   105.7   21.92   108.9
GR 21.74    111.5  20.32   116.0   19.24   122.6   19.40   125.3   19.66   133.6
GR 20.01    144.1  20.33   152.1   20.42   164.5   21.43   170.7   21.13   305.3
GR 20.65    309.1  20.42   311.9   20.37   316.1   20.49   321.9   20.44   328.0
GR 20.58    334.7  22.14   336.7   21.95   363.3   22.90   365.9   23.78   393.4
GR 25.03    397.6  26.47   486.6   27.73   490.0   27.71   496.2   28.94   499.2
GR 28.93    505.7  28.05   507.3   28.19   510.7   31.64   517.6   31.59   523.4
GR 26.47    537.1  25.35   545.4   25.35   643.2
X115.730       38    .00  458.50  180.00  180.00  180.00
GR 40.30      .0  37.14    20.3   30.48    42.6   30.07    48.2   29.74    76.6
GR 25.53     84.6  25.82   128.8   25.80   130.0   20.49   135.0   19.70   141.5
GR 19.54    146.2  20.01   148.7   20.06   161.2   20.22   167.0   20.45   170.8
GR 21.30    173.7  21.72   300.9   20.85   303.8   20.35   306.7   20.36   309.8
GR 20.82    314.9  21.14   348.6   22.41   353.5   22.28   364.0   22.86   367.1
GR 23.49    412.1  24.96   415.3   25.23   423.9   28.24   430.5   28.34   439.3
GR 26.99    443.9  27.23   449.9   32.16   458.5   31.92   468.6   31.05   471.0
GR 30.97    491.7  32.00   499.3   31.51   552.5
X115.815       51 145.50  505.70   85.00   85.00   85.00
GR 30.61      .0  32.36   120.2   32.60   145.5   30.42   145.5   30.42   146.5
GR 29.41    146.5  26.38   152.0   24.21   202.3   23.21   205.1   22.61   211.3
GR 20.44    214.2  19.48   217.5   19.69   219.8   19.92   223.2   20.05   227.6
GR 20.39    231.1  20.40   235.1   20.75   243.6   20.70   260.4   20.50   262.3
GR 20.19    264.9  20.11   266.7   20.22   269.6   20.46   272.8   21.08   284.3
GR 21.21    286.7  20.82   289.4   20.79   296.0   20.99   325.4   20.67   330.7
GR 21.29    333.8  21.88   355.5   21.21   385.6   20.72   400.8   20.55   404.3
GR 20.43    407.5  20.66   415.0   21.98   421.3   22.80   445.3   23.29   473.5
GR 24.46    476.7  26.01   485.6   26.27   494.7   25.71   498.4   26.18   504.5
GR 30.38    504.6  30.38   505.6   32.60   505.7   32.78   517.6   31.99   557.7
GR 30.60    640.1
X115.845       51 145.50  505.70   30.00   30.00   30.00
GR 30.61      .0  32.36   120.2   32.60   145.5   30.42   145.5   30.42   146.5
GR 29.41    146.5  26.38   152.0   24.21   202.3   23.21   205.1   22.61   211.3
GR 20.44    214.2  19.48   217.5   19.69   219.8   19.92   223.2   20.05   227.6
GR 20.39    231.1  20.40   235.1   20.75   243.6   20.70   260.4   20.50   262.3
GR 20.19    264.9  20.11   266.7   20.22   269.6   20.46   272.8   21.08   284.3
GR 21.21    286.7  20.82   289.4   20.79   296.0   20.99   325.4   20.67   330.7
GR 21.29    333.8  21.88   355.5   21.21   385.6   20.72   400.8   20.55   404.3
GR 20.43    407.5  20.66   415.0   21.98   421.3   22.80   445.3   23.29   473.5
GR 24.46    476.7  26.01   485.6   26.27   494.7   25.71   498.4   26.18   504.5
GR 30.38    504.6  30.38   505.6   32.60   505.7   32.78   517.6   31.99   557.7
GR 30.60    640.1
X115.940       40  82.40  445.30   95.00   95.00   95.00
GR 31.22      .0  31.23    80.0   31.72    81.2   31.92    82.4   26.31    94.7
GR 26.08     96.8  25.69    97.7   24.76   132.0   24.52   132.7   24.54   137.8
GR 20.50    143.2  19.50   146.3   19.50   161.3   19.30   181.3   19.30   225.8
GR 19.90    245.8  20.20   255.8   20.51   258.8   21.02   260.6   21.58   293.9
GR 22.57    295.9  22.29   299.2   20.93   304.0   20.32   314.1   20.42   332.1
GR 20.32    362.1  20.22   382.1   21.00   385.1   25.84   393.6   25.85   397.7
GR 24.77    401.1  24.75   409.3   25.32   417.2   25.58   424.8   26.61   425.4
GR 27.12    435.8  31.96   445.3   31.43   450.0   28.39   456.9   25.80   605.8
X115.945       49 110.10  465.40    5.00    5.00    5.00
GR 30.80      .0  31.41    69.2   31.66   110.1   31.79   113.0   30.15   113.0
GR 30.15    114.1  30.40   114.1   26.00   123.4   25.93   126.5   25.52   140.2
GR 25.10    153.9  24.50   162.8   23.09   165.7   23.16   167.1   22.73   176.7
GR 21.86    178.9  21.60   181.0   21.75   194.3   21.53   207.8   21.50   221.0
GR 21.20    235.2  21.20   248.7   21.30   262.2   21.85   275.7   21.97   289.3
GR 22.01    302.7  22.05   316.3   21.95   329.8   21.43   332.7   21.19   343.5
GR 21.19    357.0  21.19   370.5   21.09   384.0   21.09   397.5   21.30   411.0
GR 26.32    425.2  24.77   428.8   24.71   436.8   25.10   438.8   25.24   451.0
GR 26.27    451.6  26.31   452.3   27.18   464.3   30.17   464.3   30.17   465.4
GR 31.85    465.4  31.50   470.3   31.20   520.5   31.19   570.3
X115.953       49 110.10  465.40    8.00    8.00    8.00
GR 30.80      .0  31.41    69.2   31.66   110.1   31.79   113.0   30.15   113.0
GR 30.15    114.1  30.40   114.1   26.00   123.4   25.93   126.5   25.52   140.2
GR 25.10    153.9  24.50   162.8   23.09   165.7   23.16   167.1   22.73   176.7
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GR 21.86	178.9	21.60	181.0	21.75	194.3	21.53	207.8	21.50	221.0
GR 21.20	235.2	21.20	248.7	21.30	262.2	21.85	275.7	21.97	289.3
GR 22.01	302.7	22.05	316.3	21.95	329.8	21.43	332.7	21.19	343.5
GR 21.19	357.0	21.19	370.5	21.09	384.0	21.09	397.5	21.30	411.0
GR 26.32	425.2	24.77	428.8	24.71	436.8	25.10	438.8	25.24	451.0
GR 26.27	451.6	26.31	452.3	27.18	464.3	30.17	464.3	30.17	465.4
GR 31.85	465.4	31.50	470.3	31.20	520.5	31.19	570.3		
X115.956	41	82.40	440.50	3.00	3.00	3.00			
GR 32.10	.0	32.00	48.7	31.63	82.4	31.85	85.4	30.12	85.4
GR 30.12	86.2	30.31	86.4	26.29	95.5	26.09	99.1	24.81	126.2
GR 24.49	134.3	21.88	147.3	22.07	153.4	21.69	180.6	21.82	196.2
GR 21.31	208.2	21.11	232.2	21.84	235.2	22.09	256.7	22.74	262.0
GR 22.65	263.4	21.77	271.6	21.33	289.5	21.23	303.0	19.53	316.5
GR 20.03	343.5	20.33	370.5	21.73	382.8	24.42	386.4	25.91	397.6
GR 25.11	400.7	25.10	418.5	26.10	419.1	26.85	424.8	27.42	437.6
GR 30.07	437.6	30.07	438.4	31.84	438.4	31.79	440.5	31.68	486.7
GR 32.10	540.5								
X115.964	41	82.40	440.50	8.00	8.00	8.00			
GR 32.10	.0	32.00	48.7	31.63	82.4	31.85	85.4	30.12	85.4
GR 30.12	86.2	30.31	86.4	26.29	95.5	26.09	99.1	24.81	126.2
GR 24.49	134.3	21.88	147.3	22.07	153.4	21.69	180.6	21.82	196.2
GR 21.31	208.2	21.11	232.2	21.84	235.2	22.09	256.7	22.74	262.0
GR 22.65	263.4	21.77	271.6	21.33	289.5	21.23	303.0	19.53	316.5
GR 20.03	343.5	20.33	370.5	21.73	382.8	24.42	386.4	25.91	397.6
GR 25.11	400.7	25.10	418.5	26.10	419.1	26.85	424.8	27.42	437.6
GR 30.07	437.6	30.07	438.4	31.84	438.4	31.79	440.5	31.68	486.7
GR 32.10	540.5								
X116.150	41	65.20	504.20	186.00	186.00	186.00			
GR 23.10	.0	23.10	30.1	27.93	30.2	29.65	33.1	29.66	56.5
GR 31.70	61.9	31.88	65.2	26.34	76.0	25.84	92.0	24.07	92.3
GR 23.86	100.9	21.78	104.1	21.74	124.0	22.22	127.7	22.62	136.2
GR 21.58	138.7	21.66	162.9	22.10	169.6	21.87	205.6	21.53	218.9
GR 21.03	228.7	20.93	248.7	19.43	282.2	21.63	284.2	23.66	290.9
GR 23.46	312.2	22.28	318.9	23.55	384.0	25.05	387.6	25.38	458.2
GR 25.62	459.6	26.08	487.2	27.52	492.8	31.99	504.2	31.85	513.4
GR 27.27	526.7	26.26	526.8	26.26	527.8	27.26	527.9	27.23	531.2
GR 25.66	533.7								
X116.360	37	68.00	655.60	210.00	210.00	210.00			
GR 27.26	.0	27.27	50.0	30.07	55.3	30.03	59.6	31.56	63.9
GR 31.77	68.0	27.19	79.7	26.62	123.1	25.11	126.3	25.15	133.1
GR 23.05	141.1	23.08	152.7	22.75	155.5	22.77	215.2	24.70	222.2
GR 23.88	234.6	22.78	242.2	21.65	263.9	21.04	266.9	21.14	283.9
GR 21.14	308.9	21.14	333.9	21.44	358.9	21.67	368.8	22.13	375.1
GR 21.71	416.4	21.50	500.5	22.67	502.4	22.95	528.1	24.33	535.3
GR 24.89	591.2	26.05	593.7	26.29	640.1	31.95	655.6	31.79	667.1
GR 25.83	690.4	25.83	790.3						
X116.500	33	56.80	385.10	140.00	140.00	140.00			
GR 27.06	.0	27.06	40.5	31.97	54.0	31.87	56.8	27.66	67.6
GR 27.15	112.3	24.67	121.0	24.36	126.1	23.56	130.7	23.94	172.1
GR 23.37	174.7	23.48	198.1	22.91	201.4	22.06	288.4	21.79	295.0
GR 21.38	310.3	21.18	331.3	21.08	348.8	21.82	353.8	24.47	358.1
GR 24.63	366.6	25.65	368.9	26.22	385.1	26.36	525.1	26.38	528.7
GR 22.78	538.1	22.66	548.9	21.70	666.2	22.65	851.1	25.65	854.1
GR 26.98	875.7	32.01	896.6	32.09	909.6				
X116.680	29	.00	398.50	180.00	180.00	180.00			
GR 45.36	.0	34.26	53.0	31.67	55.0	31.98	59.6	26.55	72.2
GR 26.82	123.1	27.22	123.9	27.14	124.9	23.59	132.2	23.52	138.3
GR 24.38	141.3	24.36	152.1	24.29	157.8	22.62	167.4	22.55	178.8
GR 22.87	179.6	22.38	274.0	21.73	300.6	21.43	305.8	21.33	316.3
GR 21.23	336.3	20.53	351.3	21.77	354.3	27.02	362.9	26.89	388.5
GR 31.65	398.5	30.90	438.8	31.46	449.4	31.46	549.4		
X116.850	30	.00	357.30	170.00	170.00	170.00			
GR 45.30	.0	29.13	34.8	26.12	46.2	26.44	80.6	24.26	85.5
GR 23.96	93.6	22.00	97.4	22.26	115.3	21.83	126.8	21.49	136.7
GR 21.49	146.7	21.59	171.7	21.49	206.2	21.80	211.2	22.16	231.9
GR 21.98	261.4	24.55	268.8	25.04	294.3	26.01	299.8	26.27	342.3
GR 27.84	344.9	27.87	347.2	31.89	357.3	31.86	364.0	27.41	375.3
GR 27.22	378.6	26.02	383.0	26.08	393.7	25.43	395.0	25.42	445.0
X116.970	30	64.90	370.80	120.00	120.00	120.00			
GR 32.64	.0	32.64	40.0	33.15	42.1	32.81	64.9	26.90	78.1
GR 26.03	95.3	25.07	97.5	25.02	98.7	21.96	104.5	20.35	107.5
GR 20.85	122.5	21.45	145.0	21.75	155.0	22.01	160.2	22.34	176.4
GR 21.95	207.8	23.88	209.6	23.42	244.8	24.03	248.8	23.57	287.3
GR 25.69	291.1	26.29	354.9	28.01	359.5	28.07	361.4	32.03	370.8
GR 31.85	378.5	26.21	391.0	26.24	405.3	25.58	407.9	25.57	457.9
X117.180	34	103.50	430.50	210.00	210.00	210.00			

GR 26.50	.0	26.94	89.2	31.52	98.8	31.52	103.5	24.90	117.0
GR 25.03	120.6	21.98	125.7	20.69	130.7	20.59	133.7	21.39	142.2
GR 21.89	150.2	22.06	155.9	21.96	223.1	24.75	225.8	23.75	333.7
GR 22.75	337.0	21.71	355.0	23.22	356.9	25.34	375.2	26.22	415.5
GR 29.38	423.8	29.50	426.6	31.76	430.5	31.53	439.2	26.40	449.4
GR 26.60	496.6	27.28	497.4	27.28	498.8	23.64	507.6	23.62	511.8
GR 26.41	518.9	26.50	521.4	24.71	523.4	24.71	593.4		
X117.380	41	112.80	436.50	200.00	200.00	200.00			
GR 27.20	.0	27.20	45.0	26.89	45.6	26.90	95.6	27.14	96.3
GR 27.19	98.9	31.72	108.4	31.77	112.8	27.69	121.5	27.62	145.3
GR 28.71	146.9	28.61	147.8	24.91	155.2	24.81	158.4	21.90	164.4
GR 21.29	169.4	21.39	172.4	21.79	177.4	21.79	197.4	21.59	208.9
GR 21.49	218.9	21.96	223.9	22.92	246.7	23.86	296.4	23.40	380.1
GR 25.32	383.4	25.49	409.6	26.37	411.3	26.49	422.6	32.06	436.5
GR 32.05	441.7	26.42	455.3	26.37	460.3	25.86	461.1	25.38	483.0
GR 24.86	484.1	24.50	495.7	27.22	501.0	27.15	502.1	24.90	504.8
GR 24.90	604.8								
X117.570	29	.00	369.80	190.00	190.00	190.00			
GR 48.60	.0	29.05	27.3	29.05	28.3	31.47	33.1	31.59	38.3
GR 27.88	46.8	27.33	79.3	26.09	111.4	25.46	113.8	22.30	117.6
GR 21.31	132.6	21.31	157.6	21.71	177.6	21.81	197.6	22.11	207.6
GR 22.90	278.2	23.65	288.1	25.70	291.8	25.44	351.1	25.93	351.9
GR 25.93	353.7	31.99	369.8	31.76	373.9	26.05	388.0	25.87	412.6
GR 24.48	414.9	23.87	423.9	26.27	426.7	26.27	474.3		
X117.760	28	71.90	412.40	190.00	190.00	190.00			
GR 24.46	.0	24.46	30.1	26.96	30.3	30.00	34.7	29.93	61.0
GR 32.23	66.7	32.20	71.9	26.76	87.2	26.13	171.2	23.35	176.9
GR 23.31	225.4	22.45	241.2	21.85	253.3	20.95	272.3	21.35	290.3
GR 21.75	306.3	22.48	317.3	25.54	319.2	25.49	392.5	25.88	393.3
GR 31.76	412.4	31.80	416.7	25.95	431.9	26.15	449.1	24.46	451.4
GR 24.50	460.1	25.92	463.4	25.91	513.4				
X117.980	36	105.50	450.50	220.00	220.00	220.00			
GR 27.18	.0	27.18	88.2	30.40	95.3	30.34	98.2	32.12	101.4
GR 32.15	105.5	27.05	120.0	25.55	223.1	23.97	227.8	24.11	230.6
GR 23.23	232.3	23.11	239.6	24.32	241.3	24.23	246.6	24.82	249.8
GR 24.85	262.5	23.57	269.1	23.12	315.7	22.44	329.7	22.00	340.5
GR 21.90	369.5	21.30	389.5	22.41	392.5	26.55	398.2	25.76	399.2
GR 25.72	432.8	26.31	433.6	26.31	435.9	32.17	450.5	32.25	455.0
GR 26.28	470.3	26.27	481.0	24.42	484.7	24.42	491.0	26.76	495.0
GR 26.76	550.5								
X118.170	37	68.10	414.50	190.00	190.00	190.00			
GR 27.53	.0	27.54	50.0	32.01	63.6	32.27	68.1	29.86	74.5
GR 29.72	76.8	27.71	81.8	27.72	83.0	27.02	83.9	26.94	90.9
GR 26.45	91.6	26.22	175.3	26.79	176.0	26.70	176.9	23.90	184.6
GR 23.70	189.1	23.23	190.4	23.33	222.6	22.43	292.6	21.72	303.9
GR 21.02	328.9	21.12	332.9	22.46	335.9	26.73	342.4	26.95	345.1
GR 26.22	346.1	26.24	397.9	26.73	398.4	26.92	400.7	32.10	414.5
GR 32.02	419.2	26.81	433.1	26.78	440.3	24.41	444.4	24.38	450.7
GR 26.76	455.3	26.78	505.3						
X118.370	39	65.40	412.80	200.00	200.00	200.00			
GR 27.95	.0	27.95	49.9	31.14	55.2	31.13	57.4	32.28	60.4
GR 32.43	65.4	30.29	70.9	30.01	73.6	26.81	82.2	27.01	171.7
GR 27.52	172.6	27.48	174.0	22.65	181.2	22.25	184.1	22.35	205.6
GR 22.25	241.6	22.15	267.6	22.25	277.6	22.73	280.6	24.59	285.2
GR 24.61	302.1	26.92	307.4	27.22	310.5	26.34	311.8	26.73	395.1
GR 27.24	396.1	27.43	399.0	32.21	412.8	32.39	417.0	27.57	429.8
GR 27.29	437.4	25.02	439.9	24.67	446.2	27.07	450.6	27.06	476.0
GR 27.50	477.3	27.50	494.3	26.70	495.8	26.70	532.8		
X118.570	32	68.90	413.70	200.00	200.00	200.00			
GR 27.42	.0	27.43	49.9	30.09	56.5	30.19	59.3	32.44	63.6
GR 32.28	68.9	26.69	84.7	26.69	170.5	27.62	171.6	27.75	175.5
GR 22.50	182.7	21.47	188.0	21.27	199.0	21.77	214.0	22.07	234.0
GR 22.47	238.9	23.88	272.7	23.33	290.3	26.96	304.0	27.06	307.2
GR 25.83	309.1	26.70	397.4	29.46	405.4	29.59	408.2	32.47	413.7
GR 32.45	418.0	27.64	431.4	27.53	435.8	24.63	440.2	24.66	445.0
GR 26.97	449.0	26.97	548.9						
X118.770	31	55.30	400.50	200.00	200.00	200.00			
GR 27.63	.0	27.64	36.4	30.71	43.9	31.01	48.1	32.76	51.5
GR 32.79	55.3	29.13	62.1	29.14	64.6	27.23	69.9	26.37	164.4
GR 26.98	166.4	27.05	167.8	22.57	176.1	22.45	178.8	21.15	189.1
GR 21.95	209.1	22.05	236.1	22.35	261.1	22.56	276.1	27.10	284.4
GR 27.19	286.6	26.26	288.0	26.20	336.4	26.85	338.1	26.88	384.8
GR 32.47	400.5	32.45	404.6	28.37	414.5	27.61	453.6	27.23	461.5
GR 27.22	521.0								
X118.960	33	54.30	400.70	190.00	190.00	190.00			
GR 27.87	.0	27.88	34.0	27.62	37.2	33.06	50.1	33.17	54.3

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GR 27.35    70.6   27.24   158.1   27.40   159.0   27.35   160.1   23.70   165.4
GR 24.22   187.4   24.19   191.6   23.50   194.2   23.29   238.0   22.58   247.7
GR 22.18   255.9   21.88   273.9   21.68   288.9   22.62   293.9   27.82   301.8
GR 27.75   304.4   26.94   305.2   26.96   384.2   29.84   392.5   30.18   395.7
GR 32.60   400.7   32.47   405.4   28.22   417.7   28.00   422.3   25.19   425.8
GR 25.07   431.5   27.06   434.8   27.05   534.8
X119.160      36   74.10   420.00  200.00  200.00  200.00
GR 27.30      .0   27.30    52.5   27.65    53.0   27.65    53.9   27.15    54.0
GR 27.15    54.6   27.66    54.7   27.61    55.8   33.05    64.7   33.02    74.1
GR 27.46    89.2   27.51   185.0   27.88   185.4   27.86   186.8   23.69   193.5
GR 23.10   207.6   23.32   215.7   22.86   251.9   22.52   257.1   22.32   262.8
GR 22.22   280.8   22.12   305.8   22.02   325.8   22.61   330.8   27.33   336.6
GR 27.06   405.5   30.94   413.6   30.92   416.5   32.68   420.0   32.53   423.4
GR 28.19   436.0   28.10   440.9   25.13   445.1   25.32   451.1   27.46   454.6
GR 27.46   554.6
X119.360      29   84.90   430.50  200.00  200.00  200.00
GR 28.30      .0   28.43    68.0   32.88    80.9   32.93    84.9   28.31   100.2
GR 27.73   174.9   23.38   183.8   23.25   195.4   22.84   199.3   22.85   233.7
GR 22.60   237.1   22.16   243.8   22.06   258.8   21.76   268.8   22.57   273.8
GR 23.90   276.6   24.97   311.5   23.39   320.1   23.70   338.0   27.32   345.9
GR 27.35   417.0   32.73   430.5   32.53   435.6   28.07   447.7   27.87   453.7
GR 25.33   456.1   25.25   461.0   27.46   464.5   27.46   564.5
X119.507      34   87.82   460.98  147.00  147.00  147.00
GR 35.30      .0   35.58    48.8   35.83    81.7   36.09    87.8   32.60    87.9
GR 32.60    89.7   29.23    89.7   29.01    96.4   30.73   101.3   30.88   103.8
GR 32.89   107.5   32.31   117.7   30.21   122.6   28.22   166.2   26.41   191.5
GR 24.19   203.1   24.30   208.5   23.30   217.4   21.70   231.2   22.60   252.9
GR 22.70   267.6   23.30   276.3   24.62   281.5   24.12   296.2   24.96   339.5
GR 27.53   382.8   27.71   425.9   32.33   447.1   32.69   459.2   32.83   459.3
GR 32.83   461.0   36.09   461.0   35.92   467.7   35.42   549.7
X119.553      34   87.82   460.98   46.00   46.00   46.00
GR 35.30      .0   35.58    48.8   35.83    81.7   36.09    87.8   32.60    87.9
GR 32.60    89.7   29.23    89.7   29.01    96.4   30.73   101.3   30.88   103.8
GR 32.89   107.5   32.31   117.7   30.21   122.6   28.22   166.2   26.41   191.5
GR 24.19   203.1   24.30   208.5   23.30   217.4   21.70   231.2   22.60   252.9
GR 22.70   267.6   23.30   276.3   24.62   281.5   24.12   296.2   24.96   339.5
GR 27.53   382.8   27.71   425.9   32.33   447.1   32.69   459.2   32.83   459.3
GR 32.83   461.0   36.09   461.0   35.92   467.7   35.42   549.7
X119.580      32   85.90   430.50   27.00   27.00   27.00
GR 25.80      .0   25.80    57.0   29.38    64.1   29.31    69.4   33.00    79.3
GR 33.26    85.9   29.80    93.2   29.73    96.3   28.55   101.9   27.94   149.7
GR 28.57   151.5   28.49   152.6   26.51   156.8   23.34   160.0   22.64   166.6
GR 22.34   181.6   22.74   201.6   23.33   206.6   25.68   208.1   24.91   229.1
GR 23.45   233.1   23.34   287.6   27.29   340.9   28.11   414.5   33.26   430.5
GR 33.07   434.4   28.92   447.0   28.76   452.7   25.71   457.1   25.62   460.7
GR 27.66   465.0   27.66   565.0
X119.585      35   32.65   379.84    5.00    5.00    5.00
GR 34.93      .0   34.92    25.0   34.97    32.6   32.50    32.7   32.50    33.3
GR 31.90    34.0   28.68    45.3   28.40    53.5   27.89    76.5   27.62    96.6
GR 27.68    99.1   23.34   111.5   22.74   121.5   22.34   132.2   22.34   142.7
GR 22.74   151.0   22.94   155.4   23.41   157.1   25.47   159.2   24.98   163.9
GR 25.29   185.7   23.42   206.5   23.22   228.3   23.66   250.3   26.09   271.4
GR 27.60   293.5   27.91   314.9   28.13   336.5   28.66   357.1   31.88   378.9
GR 32.48   379.2   32.48   379.8   34.94   379.8   34.93   383.4   34.82   439.1
X119.615      35   32.65   379.84   30.00   30.00   30.00
GR 34.93      .0   34.92    25.0   34.97    32.6   32.50    32.7   32.50    33.3
GR 31.90    34.0   28.68    45.3   28.40    53.5   27.89    76.5   27.62    96.6
GR 27.68    99.1   23.34   111.5   22.74   121.5   22.34   132.2   22.34   142.7
GR 22.74   151.0   22.94   155.4   23.41   157.1   25.47   159.2   24.98   163.9
GR 25.29   185.7   23.42   206.5   23.22   228.3   23.66   250.3   26.09   271.4
GR 27.60   293.5   27.91   314.9   28.13   336.5   28.66   357.1   31.88   378.9
GR 32.48   379.2   32.48   379.8   34.94   379.8   34.93   383.4   34.82   439.1
X119.790      36  105.00   450.50  175.00  175.00  175.00
GR 25.80      .0   25.80    72.3   28.12    77.2   28.16    84.0   28.67    85.0
GR 28.60    88.3   33.62   100.2   33.49   105.0   28.54   118.3   28.39   128.7
GR 27.49   131.0   27.33   146.5   27.98   148.0   27.98   150.6   23.42   156.1
GR 23.01   159.1   23.11   164.1   23.01   177.1   22.81   192.1   23.01   197.1
GR 23.43   207.1   24.03   210.1   25.04   294.6   24.33   336.5   28.14   350.1
GR 28.20   352.2   27.78   353.5   28.15   434.8   33.69   450.5   33.46   454.9
GR 28.64   469.2   27.95   481.3   26.22   484.0   26.22   489.0   28.60   491.0
GR 28.60   555.5
X120.010      28   92.40   435.50  220.00  220.00  220.00
GR 27.80      .0   27.80    61.0   26.90    63.0   26.90    67.0   28.27    69.0
GR 28.34    75.4   33.81    87.1   33.88    92.4   27.29   110.1   27.34   160.9
GR 23.69   165.5   23.28   170.5   23.18   176.5   23.48   196.5   23.38   221.5
GR 23.71   226.5   25.13   298.3   24.75   321.4   27.35   326.1   28.01   421.5
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GR 33.71	435.5	33.58	445.5	32.18	449.1	31.45	470.4	28.93	471.8
GR 28.80	472.7	25.20	472.9	25.20	556.0				
X120.230	38	109.80	455.00	220.00	220.00	220.00			
GR 28.12	.0	28.13	79.9	26.63	81.9	26.62	83.5	28.12	85.6
GR 28.31	91.1	33.64	105.0	33.62	109.8	27.94	126.5	28.15	186.5
GR 23.65	191.8	23.37	202.9	23.33	215.9	23.64	219.8	24.07	222.9
GR 25.97	225.3	26.20	240.9	25.89	248.0	23.95	251.6	23.95	278.1
GR 23.77	284.6	23.50	289.0	23.56	296.8	23.76	301.4	23.98	304.8
GR 23.99	309.6	23.75	311.9	23.50	313.5	23.20	318.8	23.09	327.8
GR 23.42	337.2	23.78	338.3	26.73	341.1	28.24	441.9	33.66	455.0
GR 33.62	460.2	28.86	472.2	28.86	515.0				
X120.430	44	121.60	465.00	200.00	200.00	200.00			
GR 28.04	.0	28.05	97.7	27.75	99.0	27.75	100.1	29.28	101.0
GR 29.31	104.8	33.57	116.9	33.56	121.6	28.11	137.1	27.66	215.5
GR 25.31	219.8	25.17	224.0	25.57	226.2	25.61	236.8	24.33	239.2
GR 24.27	295.2	24.07	301.5	23.90	305.7	23.92	319.0	24.11	325.3
GR 24.36	328.1	24.32	333.9	23.94	344.6	23.80	353.3	23.81	360.2
GR 23.90	363.4	24.01	364.5	24.15	371.8	23.90	375.8	23.42	383.2
GR 23.52	395.0	23.87	399.2	28.61	407.3	28.71	409.0	27.81	410.3
GR 28.58	455.1	33.77	465.0	33.76	470.8	33.21	472.6	33.11	475.9
GR 29.51	485.6	29.35	488.9	28.87	489.8	28.86	589.8		
X120.650	45	126.50	480.00	220.00	220.00	220.00			
GR 28.71	.0	28.72	98.3	28.86	106.0	28.97	109.9	33.85	121.5
GR 33.84	126.5	29.14	138.6	28.75	145.9	27.49	147.6	27.44	148.5
GR 28.22	149.4	27.52	234.4	25.04	239.9	24.94	241.3	26.09	242.8
GR 26.38	257.4	24.32	261.7	24.32	267.7	24.28	276.4	24.07	296.9
GR 23.94	299.8	23.77	307.3	24.03	309.5	24.27	310.1	24.30	345.7
GR 24.64	348.0	24.63	351.3	24.04	364.1	23.63	376.5	23.62	386.6
GR 23.53	400.3	24.06	406.0	26.35	408.5	26.36	410.1	25.91	411.2
GR 26.05	424.6	28.42	431.7	28.45	434.1	28.11	434.7	28.92	467.2
GR 34.06	480.0	33.78	485.1	29.43	495.9	29.24	499.7	28.90	570.5
X120.760	39	97.90	457.50	110.00	110.00	110.00			
GR 30.80	.0	34.04	43.9	35.17	94.4	35.43	97.9	33.13	97.9
GR 33.13	98.9	28.64	113.1	28.55	127.7	27.36	157.5	27.09	187.8
GR 27.34	217.9	28.04	226.0	28.17	227.4	26.00	232.2	24.49	238.2
GR 23.92	248.0	23.72	263.0	23.92	278.0	23.72	293.0	23.92	308.0
GR 23.32	321.8	23.44	333.0	24.23	336.8	24.91	338.3	24.83	340.2
GR 24.19	345.0	23.35	350.1	23.90	356.5	24.21	367.5	26.08	397.8
GR 27.17	415.7	29.56	428.0	30.11	449.5	33.01	456.5	33.01	457.5
GR 35.37	457.5	35.43	460.0	33.66	521.0	32.03	556.7		
X120.780	39	97.90	457.50	20.00	20.00	20.00			
GR 30.80	.0	34.04	43.9	35.17	94.4	35.43	97.9	33.13	97.9
GR 33.13	98.9	28.64	113.1	28.55	127.7	27.36	157.5	27.09	187.8
GR 27.34	217.9	28.04	226.0	28.17	227.4	26.00	232.2	24.49	238.2
GR 23.92	248.0	23.72	263.0	23.92	278.0	23.72	293.0	23.92	308.0
GR 23.32	321.8	23.44	333.0	24.23	336.8	24.91	338.3	24.83	340.2
GR 24.19	345.0	23.35	350.1	23.90	356.5	24.21	367.5	26.08	397.8
GR 27.17	415.7	29.56	428.0	30.11	449.5	33.01	456.5	33.01	457.5
GR 35.37	457.5	35.43	460.0	33.66	521.0	32.03	556.7		
X120.840	54	117.00	501.00	60.00	60.00	60.00			
GR 28.53	.0	28.53	79.1	30.54	81.1	30.71	84.3	30.79	86.2
GR 30.79	86.9	29.89	87.1	29.89	88.3	30.89	88.3	29.31	91.3
GR 29.27	96.0	34.50	109.8	34.42	117.0	29.44	128.0	29.02	135.4
GR 27.61	138.5	27.11	217.8	28.29	220.9	28.40	223.2	25.95	228.9
GR 26.11	239.0	24.45	241.1	24.29	241.9	24.38	249.2	24.28	263.5
GR 24.47	265.6	24.76	272.2	24.78	313.7	24.16	334.5	24.05	339.0
GR 23.35	346.2	23.56	352.1	24.16	357.0	24.84	360.2	24.90	371.2
GR 24.48	372.5	24.13	389.2	24.00	393.6	24.20	395.6	24.99	407.4
GR 24.36	410.0	26.52	456.3	29.13	460.7	29.17	489.1	34.95	501.0
GR 34.69	541.4	34.70	560.8	27.82	572.3	26.31	572.5	26.31	574.0
GR 27.81	574.1	27.81	575.0	26.50	575.5	26.50	621.0		
X121.070	47	72.30	521.00	230.00	230.00	230.00			
GR 27.80	.0	27.80	52.5	30.34	54.6	30.61	56.0	34.60	64.2
GR 34.53	72.3	29.64	80.8	29.49	85.3	27.14	91.2	27.18	125.2
GR 25.26	127.5	24.92	142.3	24.68	147.7	24.58	152.7	24.58	176.7
GR 24.68	181.7	24.78	186.7	25.25	187.1	25.33	188.9	26.23	189.8
GR 26.46	224.6	26.84	277.9	24.63	282.2	23.62	287.2	23.82	312.2
GR 24.32	336.2	24.64	341.1	24.76	344.5	25.03	360.2	24.52	362.2
GR 24.23	364.0	24.22	369.5	24.29	382.3	23.75	386.4	24.50	389.6
GR 25.18	393.0	26.27	440.3	27.53	472.1	28.66	473.3	28.69	508.3
GR 34.45	521.0	34.83	555.4	34.85	575.2	27.80	588.5	27.80	591.5
GR 26.60	593.5	26.60	641.5						
X121.280	44	58.20	400.30	210.00	210.00	210.00			
GR 29.32	.0	29.33	36.4	30.71	39.9	30.68	41.8	32.93	44.8
GR 33.19	49.8	34.61	52.5	34.57	58.2	29.96	67.7	29.05	74.0
GR 29.28	88.1	28.34	107.0	27.04	112.1	27.25	120.5	25.74	127.1

GR 25.83 145.2 24.67 146.6 24.27 151.7 24.37 166.7 24.57 186.7
GR 24.47 196.7 24.17 216.7 24.27 236.7 24.37 256.7 24.75 261.6
GR 24.91 271.7 25.04 278.4 24.66 285.5 24.43 288.4 24.52 297.8
GR 24.67 300.8 24.84 307.0 24.66 311.2 26.14 314.9 27.26 340.8
GR 28.70 343.3 28.50 386.4 34.52 400.3 34.82 429.0 34.84 449.4
GR 28.40 460.5 28.40 467.8 27.60 468.8 27.60 525.3
X121.450 39 76.50 412.50 170.00 170.00 170.00
GR 30.40 .0 30.56 56.2 30.89 64.9 34.74 70.8 34.71 76.5
GR 31.48 83.3 31.34 86.5 30.01 88.8 29.45 151.6 25.28 157.8
GR 25.24 163.7 26.65 166.8 26.19 178.9 26.54 181.9 26.65 186.3
GR 25.67 190.5 25.50 197.8 25.87 217.1 26.38 218.9 26.76 224.0
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GR 24.27 276.1 23.97 291.1 23.37 321.1 24.57 326.1 27.24 327.9
GR 28.91 333.2 28.19 333.7 28.27 398.9 29.92 401.0 34.57 412.5
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GR 30.58 .0 34.83 9.3 34.72 14.9 30.26 25.9 29.24 87.9
GR 26.72 94.1 26.92 105.1 27.92 107.8 27.92 114.0 26.64 117.9
GR 26.06 132.8 25.33 135.1 25.32 187.4 24.65 222.9 24.24 232.9
GR 23.84 257.9 23.14 276.4 24.77 279.4 26.99 280.8 28.48 287.6
GR 28.44 333.2 34.27 348.7 34.53 352.8 35.10 355.0 34.99 374.5
GR 28.40 385.6 28.40 392.2 28.10 393.2 28.10 474.2
X121.880 37 41.10 375.40 220.00 220.00 220.00
GR 33.28 .0 33.28 30.0 34.76 33.0 34.87 41.1 32.95 46.3
GR 32.79 49.1 30.25 53.9 29.40 115.4 28.37 119.7 28.30 123.3
GR 27.22 125.1 27.10 129.7 28.16 131.1 28.34 163.3 24.74 168.6
GR 24.24 173.8 24.34 187.3 24.34 207.3 24.04 227.3 24.76 242.3
GR 24.98 280.2 24.41 286.1 26.40 293.8 28.97 305.1 29.05 306.7
GR 28.16 308.2 28.67 358.5 29.28 360.1 29.37 362.5 34.44 375.4
GR 34.60 379.5 35.04 381.5 35.07 401.0 29.00 411.9 29.00 418.9
GR 28.60 419.9 28.60 485.4
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GR 33.46 .0 33.47 32.0 35.26 35.1 35.10 42.1 30.50 53.2
GR 29.51 102.0 28.23 105.7 28.29 131.5 28.66 132.5 28.74 136.0
GR 24.87 140.9 23.27 144.8 23.37 154.8 24.17 176.8 24.93 181.8
GR 25.31 190.9 25.16 200.4 24.93 210.0 24.41 217.9 24.58 226.9
GR 24.89 236.3 25.02 240.0 24.90 251.3 25.73 252.6 26.34 267.8
GR 29.11 271.8 29.16 274.3 28.76 274.9 28.79 359.6 29.40 359.9
GR 29.46 362.4 33.97 371.2 34.69 375.0 34.76 379.0 35.34 380.5
GR 35.13 400.8 29.59 411.7 28.09 411.8 28.09 413.3 29.59 413.3
GR 29.58 413.8 29.13 415.3 28.90 416.0 28.90 501.0
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GR 33.27 .0 33.27 51.5 35.10 66.3 35.22 73.3 30.43 85.5
GR 30.34 103.8 29.03 106.8 28.97 128.9 26.28 130.0 26.28 145.0
GR 24.78 148.1 24.79 158.0 25.96 160.0 26.72 174.8 24.94 177.4
GR 24.70 178.7 23.90 183.6 24.00 217.6 24.00 242.6 24.30 262.6
GR 24.80 267.6 26.18 269.3 26.59 288.5 29.40 298.7 29.50 300.4
GR 29.06 301.1 29.16 389.0 30.16 391.3 30.11 394.5 34.71 407.0
GR 34.53 411.5 34.87 413.7 34.85 433.7 29.50 443.9 28.00 443.9
GR 28.00 445.4 29.50 445.5 29.50 446.0 29.05 447.6 29.05 522.0
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GR 34.42 84.3 35.27 86.2 35.34 91.5 29.55 104.6 29.88 123.3
GR 27.42 129.0 25.72 171.2 26.19 180.7 24.98 183.7 24.66 222.0
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GR 28.10 .0 28.10 50.0 28.90 51.0 28.90 56.9 30.40 58.3
GR 30.35 69.2 35.55 79.8 35.69 85.4 29.71 99.4 29.81 121.5
GR 26.40 129.2 26.69 168.5 24.98 174.9 25.39 189.1 25.05 261.0
GR 24.83 262.4 24.68 288.8 24.32 293.9 24.22 306.4 23.92 318.4
GR 24.63 321.4 26.29 323.1 26.81 326.4 29.13 333.7 29.32 404.4
GR 33.78 412.3 34.23 416.7 34.67 427.5 34.35 446.8 35.39 447.2
GR 41.69 458.3 41.90 527.5
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GR 30.70 .0 30.70 20.0 29.50 21.5 29.50 28.9 30.71 30.6
GR 30.95 38.8 35.58 49.6 35.68 55.0 30.09 69.2 29.75 89.8
GR 26.49 95.6 26.37 116.0 27.01 122.3 26.91 124.8 25.54 127.6
GR 25.74 132.7 25.00 136.6 24.77 151.5 24.49 158.8 24.39 178.8
GR 24.39 198.8 24.79 204.8 25.64 237.7 26.26 257.4 26.80 314.8
GR 28.87 317.6 30.50 332.1 30.64 354.3 31.07 355.3 31.00 362.7
GR 29.79 364.1 29.69 394.7 34.91 404.0 35.21 425.0 31.59 430.5
GR 31.65 436.1 30.04 438.8 30.03 439.5 30.64 441.9 30.64 472.0
X123.020 31 69.60 419.20 190.00 190.00 190.00
GR 30.97 .0 30.97 50.0 31.43 51.7 31.51 54.9 36.16 64.1

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GR 36.16     69.6   30.38     82.0   29.91    103.0   27.22    107.1   26.76    126.7
GR 28.39    130.5   28.47    134.7   25.26    138.5   25.02    139.3   24.56    142.3
GR 24.56    157.3   24.76    192.3   24.76    203.3   24.26    205.3   24.46    208.3
GR 25.02    213.3   26.02    234.5   27.66    237.3   26.94    289.6   30.58    357.7
GR 32.35    364.9   32.25    370.7   34.42    415.2   35.29    419.2   35.45    438.6
GR 35.12    468.6
X123.220       45   95.80   440.00  200.00   200.00  200.00
GR 30.41       .0   30.41     50.3   31.27     52.4   31.56     81.5   35.82     90.3
GR 36.03     95.8   30.67    108.7   30.04    130.8   28.18    135.7   27.53    148.5
GR 26.79    152.2   26.90    161.5   26.07    164.1   26.98    185.7   25.15    189.1
GR 24.89    190.4   24.49    194.2   24.55    203.6   24.89    211.7   24.58    219.3
GR 24.53    231.3   24.95    237.5   25.16    240.6   25.43    255.8   26.56    273.0
GR 24.96    276.9   24.66    279.2   24.46    286.5   24.73    301.2   24.96    307.8
GR 25.02    319.9   26.58    324.2   28.30    349.8   28.91    385.7   32.20    391.8
GR 32.32    398.7   30.38    402.2   30.33    428.6   35.51    440.0   35.80    460.9
GR 30.80    468.7   27.60    468.7   27.60    488.5   30.90    501.5   30.90    516.5
X123.420       46   82.90   420.00  200.00   200.00  200.00
GR 29.90       .0   31.03     52.4   31.10     53.1   31.22     67.1   35.38     77.3
GR 35.46     82.9   30.09     97.5   30.36    119.3   28.25    123.5   27.89    168.4
GR 26.97    173.1   26.27    185.2   27.92    188.5   27.34    206.9   25.84    211.7
GR 25.16    226.0   25.15    226.7   24.96    227.8   24.66    232.0   24.76    237.0
GR 24.86    242.0   24.96    247.0   25.48    258.0   28.28    262.0   27.41    309.7
GR 25.64    315.0   25.14    335.9   24.91    344.6   24.43    345.2   24.27    349.3
GR 24.62    358.9   25.03    367.3   25.11    370.0   26.37    376.4   26.36    383.6
GR 27.55    391.8   32.28    402.7   32.86    415.0   34.98    420.0   35.00    432.2
GR 35.69    434.2   35.47    443.4   34.69    445.2   34.26    473.7   32.32    477.5
GR 32.31    507.5
X123.600       38   88.40   425.00  180.00   180.00  180.00
GR 30.60       .0   31.78     70.5   31.78     73.4   35.68     83.0   35.72     88.4
GR 31.56     99.5   31.79    129.4   28.78    134.4   28.28    179.6   26.38    186.8
GR 27.15    209.5   26.24    214.9   25.91    247.1   25.51    248.7   25.38    266.3
GR 25.91    268.5   26.57    286.4   27.82    290.0   27.97    314.5   27.41    319.5
GR 24.78    328.2   24.75    333.6   26.39    336.9   26.65    375.9   26.26    376.9
GR 26.00    380.3   25.99    399.8   26.25    401.0   33.89    418.5   35.05    425.0
GR 35.16    449.7   35.68    450.0   35.87    460.0   31.36    460.1   31.36    461.5
GR 33.40    461.6   32.80    487.0   32.70    535.0
X123.810       32   97.40   539.50  210.00   210.00  210.00
GR 31.76       .0   31.76     80.1   31.77     82.6   35.76     92.3   35.78     97.4
GR 31.04    108.7   31.20    132.7   28.77    137.5   27.73    149.6   27.33    189.1
GR 27.64    191.6   28.11    251.1   28.31    259.7   27.88    269.8   26.81    273.2
GR 27.13    307.8   27.20    348.7   26.13    374.4   25.85    379.4   25.35    394.4
GR 24.35    414.4   24.95    429.4   26.15    432.3   32.68    443.3   31.20    445.6
GR 31.20    447.6   32.59    447.7   36.32    456.5   35.78    467.1   36.70    467.6
GR 35.88    516.0   60.83    539.5
X124.010       42   67.50   520.00  200.00   200.00  200.00
GR 31.60       .0   31.60     31.5   35.47     45.7   35.40     50.3   35.94     61.2
GR 36.05     67.5   31.57     78.8   31.47     94.0   28.78     99.0   28.31    115.4
GR 28.13    143.9   27.94    150.5   28.36    153.6   29.12    246.6   27.24    251.9
GR 27.50    287.8   26.21    324.5   25.91    330.0   25.81    345.0   25.11    375.0
GR 24.31    400.0   24.41    405.0   26.28    407.0   27.35    408.2   27.53    422.4
GR 29.42    448.3   28.91    448.9   29.02    503.2   36.82    520.0   36.65    524.2
GR 34.49    528.7   34.24    532.2   30.33    541.8   30.29    543.5   31.68    546.6
GR 31.37    554.4   36.11    566.8   35.88    583.2   30.17    595.1   30.31    597.0
GR 30.51    598.2   30.51    670.5
X124.150       39   97.90   527.00  140.00   140.00  140.00
GR 30.60       .0   30.60     49.5   30.96     50.2   30.96     70.2   31.61     71.8
GR 31.60     80.3   36.20     90.8   36.16     96.7   36.15     97.9   31.47    108.9
GR 31.25    125.8   28.15    130.7   27.94    141.9   28.81    150.0   28.93    231.4
GR 27.57    239.9   27.06    256.6   28.59    298.1   26.21    303.8   25.81    308.6
GR 25.71    323.6   25.81    338.6   26.01    368.6   25.71    393.6   25.51    413.6
GR 25.81    423.6   26.24    426.6   28.30    429.0   28.28    462.5   29.57    463.7
GR 29.52    466.1   29.21    466.6   29.35    511.2   37.18    527.0   36.98    530.4
GR 34.91    535.0   34.70    538.8   30.73    548.4   30.72    648.5
X124.350       35   93.50   500.50  200.00   200.00  200.00
GR 31.95       .0   31.95     74.7   31.91     77.7   36.34     87.6   36.23     93.5
GR 30.91    106.5   30.84    123.9   27.89    129.4   28.23    159.1   28.53    182.0
GR 27.46    189.5   28.34    254.0   26.27    257.3   25.36    262.2   25.26    272.7
GR 25.16    282.7   25.56    297.7   25.96    307.7   26.27    312.7   28.36    362.8
GR 26.54    429.2   28.50    432.3   28.59    448.0   29.21    449.3   29.16    483.7
GR 36.58    500.5   36.44    504.6   34.37    508.9   33.94    512.3   31.90    515.4
GR 31.96    518.9   30.63    520.3   30.44    521.7   31.36    523.9   31.36    623.8
X124.530       32  107.80   524.90  180.00   180.00  180.00
GR 32.44       .0   32.44     87.0   32.40     90.3   36.23     98.9   36.14    107.8
GR 31.57    117.3   31.56    141.0   28.59    146.5   28.53    152.6   27.40    159.9
GR 27.19    172.9   27.93    174.6   29.20    264.7   26.15    268.5   25.75    273.7
GR 25.95    303.7   25.85    333.7   25.95    346.2   26.24    350.2   26.62    385.0
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GR 28.59   389.0   27.05   427.9   28.54   447.2   28.55   460.9   29.40   462.6
GR 29.44   508.1   37.10   524.9   37.03   528.3   34.24   534.5   34.30   538.0
GR 31.24   543.5   31.24   643.5
X124.710      36   68.20   500.20  180.00  180.00  180.00
GR 31.29      .0   30.53    49.2   31.03    50.8   31.29    52.8   36.47    62.5
GR 36.45    68.2   31.18    81.9   30.55   108.2   28.91   111.8   27.72   127.1
GR 26.79   128.7   26.74   130.0   28.48   132.6   28.39   247.1   26.59   250.2
GR 27.56   285.7   26.26   333.6   25.85   338.4   25.55   346.9   25.95   376.9
GR 25.85   391.9   26.26   394.9   28.01   397.4   29.06   435.3   29.61   439.1
GR 29.59   478.3   31.45   482.3   31.87   486.9   36.92   500.2   36.54   506.3
GR 33.51   511.6   33.61   514.8   30.64   521.2   30.55   522.8   30.88   524.2
GR 30.87   624.2
X124.920      42   59.70   501.00  210.00  210.00  210.00
GR 30.46      .0   30.46    40.0   30.96    40.5   31.08    42.9   36.77    52.9
GR 36.73    59.7   31.67    71.6   31.22   102.9   29.27   106.0   29.40   118.0
GR 27.60   120.7   27.51   121.5   28.96   123.9   29.01   244.2   28.13   270.0
GR 27.00   273.0   27.39   292.0   26.35   350.5   25.92   359.0   25.62   378.1
GR 25.82   398.1   26.33   403.1   28.15   408.3   28.60   422.1   27.00   423.6
GR 26.95   429.6   30.40   434.3   30.43   472.2   31.47   473.9   32.00   487.9
GR 37.10   501.0   37.02   505.0   36.17   506.2   36.11   509.6   34.29   511.9
GR 33.91   516.0   31.55   521.0   31.16   524.8   29.53   527.4   29.52   528.8
GR 31.23   533.2   31.22   633.2
X125.120      44   67.70   521.50  200.00  200.00  200.00
GR 30.90      .0   31.80    50.0   36.68    62.1   36.72    67.7   31.65    79.5
GR 31.68   114.4   28.82   119.2   28.76   120.2   29.85   121.5   29.64   184.1
GR 28.85   184.9   28.85   270.3   30.07   272.3   30.11   273.8   26.41   279.3
GR 25.50   283.0   26.05   288.2   26.42   295.7   27.15   315.6   26.16   359.1
GR 25.85   372.1   26.02   374.3   26.04   388.9   25.75   390.8   25.75   393.9
GR 26.19   400.0   26.50   407.2   28.61   412.4   29.26   445.3   29.87   457.4
GR 30.81   459.3   30.85   493.3   31.63   494.4   31.79   508.5   36.96   521.5
GR 36.98   527.5   34.12   534.0   33.80   536.8   31.05   542.2   30.89   546.2
GR 29.73   548.6   29.80   550.5   31.07   553.4   31.07   653.3
X125.320      39   68.50   530.50  200.00  200.00  200.00
GR 30.80      .0   30.81    49.7   32.07    51.4   31.93    53.6   37.28    62.7
GR 37.21    68.5   32.08    80.5   32.18   122.5   29.69   127.1   30.03   182.9
GR 28.72   185.2   28.82   269.1   30.54   271.7   30.57   273.4   26.45   278.2
GR 25.76   282.0   25.91   295.2   26.20   312.4   26.53   319.1   26.67   321.2
GR 26.68   350.5   26.97   361.3   26.61   376.5   26.42   376.8   26.17   380.9
GR 26.00   384.2   26.42   387.9   26.99   431.9   26.62   453.1   28.45   509.3
GR 28.92   510.4   28.16   517.7   32.36   518.3   37.50   530.5   37.36   537.0
GR 34.44   542.1   34.14   545.1   29.95   545.3   30.20   610.5
X125.520      54  103.00   565.00  200.00  200.00  200.00
GR 30.50      .0   30.50    68.0   29.90    71.0   29.90    74.5   31.46    76.4
GR 31.67    83.5   36.08    90.1   36.52   100.6   36.68   103.0   31.85   113.3
GR 31.95   127.8   32.43   128.8   32.48   129.2   31.35   131.2   30.86   178.2
GR 30.47   178.8   30.52   199.9   30.90   200.6   30.76   239.3   30.14   242.2
GR 30.06   257.2   28.92   271.4   29.05   301.5   29.89   303.9   29.34   305.5
GR 29.49   311.3   26.85   315.2   26.50   317.2   26.20   326.2   26.00   351.2
GR 26.00   366.2   26.10   376.2   25.80   391.2   26.53   398.2   28.23   410.4
GR 29.80   431.9   28.69   463.5   29.68   471.6   29.14   502.3   28.74   520.0
GR 30.69   522.6   30.73   530.2   32.03   531.4   32.73   553.0   38.00   565.0
GR 37.83   570.1   34.76   577.3   34.60   580.2   32.43   583.7   32.46   585.8
GR 30.75   587.9   30.59   589.8   31.57   592.4   31.56   692.5
X125.690      43   77.30   555.00  170.00  170.00  170.00
GR 38.95      .0   39.68    57.9   39.79    77.3   32.74    92.0   32.85    99.9
GR 31.92   101.4   31.90   157.0   32.24   157.7   32.19   160.1   31.55   161.1
GR 31.03   249.4   29.93   287.2   27.65   292.1   27.09   314.3   26.44   316.2
GR 25.64   321.0   25.74   326.0   26.04   338.5   26.52   343.5   26.66   356.0
GR 27.51   358.6   27.11   368.1   26.40   371.2   26.38   390.0   29.06   397.9
GR 29.07   463.5   27.89   469.5   27.94   475.7   29.35   479.7   28.89   511.5
GR 30.17   518.0   30.74   534.1   37.75   555.0   37.70   559.9   35.26   564.4
GR 34.86   574.5   30.46   583.8   30.42   592.6   30.42   592.7   32.14   593.7
GR 30.59   619.0   30.80   626.8   31.60   653.2
X125.695      34  104.50   584.70    5.00    5.00    5.00
GR 38.95      .0   39.80    86.5   39.80    99.8   39.89   104.5   37.71   104.5
GR 37.71   105.8   35.50   107.1   32.89   114.2   32.86   121.6   32.13   123.8
GR 32.00   144.5   31.94   179.3   32.13   180.5   32.17   182.7   31.64   183.9
GR 31.42   194.6   32.27   245.3   30.42   277.1   29.33   295.2   27.44   318.3
GR 26.45   338.2   25.35   344.7   26.05   365.5   26.49   368.5   26.66   394.7
GR 27.01   444.8   27.99   494.9   29.64   544.9   31.24   560.9   37.77   583.4
GR 37.77   584.7   39.98   584.7   39.85   590.0   38.92   725.3
X125.725      34  104.50   584.70   30.00   30.00   30.00
GR 38.95      .0   39.80    86.5   39.80    99.8   39.89   104.5   37.71   104.5
GR 37.71   105.8   35.50   107.1   32.89   114.2   32.86   121.6   32.13   123.8
GR 32.00   144.5   31.94   179.3   32.13   180.5   32.17   182.7   31.64   183.9
GR 31.42   194.6   32.27   245.3   30.42   277.1   29.33   295.2   27.44   318.3
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GR 26.45   338.2   25.35   344.7   26.05   365.5   26.49   368.5   26.66   394.7
GR 27.01   444.8   27.99   494.9   29.64   544.9   31.24   560.9   37.77   583.4
GR 37.77   584.7   39.98   584.7   39.85   590.0   38.92   725.3
X125.930      40   68.70  560.50  205.00  205.00  205.00
GR 30.80      .0   30.80    37.0   29.80    39.0   29.80    42.0   31.40    44.0
GR 31.57    51.2   37.50    62.5   37.48    68.7   32.73    79.1   32.72   138.6
GR 31.74   140.3   31.72   187.5   29.44   195.0   28.81   202.3   26.86   210.7
GR 27.44   241.5   29.66   246.3   29.86   383.5   26.95   388.5   26.45   391.5
GR 26.05   400.3   26.25   406.3   26.95   409.3   29.72   412.5   29.42   423.9
GR 28.61   428.3   27.16   430.4   26.46   465.3   26.70   470.5   26.59   486.1
GR 27.15   504.1   27.65   534.7   37.92   560.5   37.85   566.0   31.70   583.7
GR 31.60   585.8   30.19   588.1   30.14   594.9   31.95   600.6   31.94   701.0
X126.150      41   94.40  596.00  220.00  220.00  220.00
GR 31.10      .0   31.10    58.5   29.70    60.5   29.70    64.5   31.90    67.1
GR 32.07    78.1   37.46    89.0   37.55    94.4   32.84   106.8   31.86   222.8
GR 30.10   227.3   29.27   239.8   27.30   247.7   27.27   290.0   27.27   290.1
GR 29.38   294.5   29.24   323.6   30.13   328.5   31.07   439.6   29.35   482.9
GR 27.45   485.5   27.14   487.8   26.43   492.8   26.33   517.8   26.43   549.8
GR 27.15   554.8   29.86   557.9   32.04   565.8   32.82   582.2   38.23   596.0
GR 37.93   601.5   35.06   607.7   34.91   611.0   32.56   617.6   32.35   621.2
GR 30.14   625.0   30.24   630.7   32.42   634.3   32.37   635.9   31.82   636.2
GR 31.81   736.2
X126.360      41   72.90  570.50  210.00  210.00  210.00
GR 30.60      .0   30.60    36.4   29.88    38.7   29.88    43.7   31.69    45.7
GR 31.65    47.7   32.49    48.8   32.52    49.0   32.55    56.8   37.96    66.8
GR 38.07    72.9   33.46    86.2   33.08   129.6   32.70   130.6   32.72   187.3
GR 33.26   188.5   33.13   189.6   30.33   197.6   30.62   216.2   27.75   219.6
GR 27.58   259.3   29.27   262.5   30.26   309.5   30.29   455.9   27.05   460.5
GR 25.94   465.5   26.44   478.5   26.34   493.5   25.54   513.5   27.05   515.9
GR 32.00   527.1   32.59   556.3   38.22   570.5   38.12   575.4   34.89   583.2
GR 34.61   586.7   31.40   597.0   30.41   598.6   30.46   605.7   31.74   608.9
GR 31.73   761.0
X126.570      53   74.60  570.00  210.00  210.00  210.00
GR 30.60      .0   30.60    42.0   29.93    44.5   29.93    48.0   31.93    50.0
GR 32.23    59.5   37.91    69.2   37.85    74.6   32.79    87.5   33.13   117.8
GR 32.47   119.3   32.31   201.9   33.81   205.0   33.79   209.2   32.20   213.9
GR 29.16   220.2   29.10   238.4   27.77   250.2   27.88   273.6   27.51   280.3
GR 27.01   284.3   26.31   303.8   26.61   308.8   27.51   314.8   30.23   318.6
GR 30.32   354.4   28.14   374.1   27.38   375.5   27.04   378.0   26.94   385.7
GR 27.40   391.2   27.93   392.7   29.91   411.2   29.74   426.9   27.13   428.9
GR 26.71   444.2   26.81   453.9   27.13   466.1   27.25   470.6   28.77   477.4
GR 29.26   495.6   29.98   520.1   32.11   528.3   32.46   553.9   38.51   570.0
GR 38.29   574.2   35.27   581.2   34.88   585.2   31.66   595.6   30.51   597.7
GR 30.41   602.0   31.78   605.2   31.77   760.2
X126.615      31   66.80  560.00   45.00   45.00   45.00
GR 30.60      .0   30.60    32.0   30.06    34.5   30.06    38.2   32.07    40.2
GR 32.04    50.1   33.89    53.1   33.89    54.8   37.98    61.0   37.89    66.8
GR 33.35    75.9   33.16    82.9   32.57    84.2   32.51   182.7   33.33   184.5
GR 33.42   189.5   32.60   193.7   28.37   193.9   28.37   510.4   32.19   510.9
GR 32.46   544.5   38.52   560.0   38.39   564.5   35.44   571.3   35.22   574.2
GR 32.40   581.3   31.96   585.6   30.56   588.1   30.59   592.6   31.87   596.4
GR 31.86   730.5
X126.620      33   66.80  560.00    5.00    5.00    5.00
GR 30.60      .0   30.60    32.0   30.06    34.5   30.06    38.2   32.07    40.2
GR 32.04    50.1   33.89    53.1   33.89    54.8   37.98    61.0   37.89    66.8
GR 33.35    75.9   33.16    82.9   32.57    84.2   32.51   182.7   33.33   184.5
GR 33.42   189.5   32.60   193.7   30.85   193.9   30.55   193.9   30.55   510.4
GR 30.85   510.4   32.19   510.9   32.46   544.5   38.52   560.0   38.39   564.5
GR 35.44   571.3   35.22   574.2   32.40   581.3   31.96   585.6   30.56   588.1
GR 30.59   592.6   31.87   596.4   31.86   730.5
X126.800      35   53.60  545.50  180.00  180.00  180.00
GR 31.90      .0   31.90    37.5   30.20    39.0   30.20    40.0   32.50    41.0
GR 32.50    43.5   37.90    47.8   37.89    53.6   34.56    62.8   33.47    69.6
GR 32.75   121.3   31.61   123.2   31.59   150.6   32.67   152.7   32.67   169.5
GR 30.85   172.6   30.05   180.1   29.85   245.1   29.55   300.1   29.45   370.1
GR 29.50   427.5   29.65   487.1   30.88   502.0   32.97   506.8   32.77   526.9
GR 38.82   545.5   38.70   548.7   35.56   556.6   35.37   559.1   31.96   566.6
GR 31.85   569.9   30.83   571.9   30.75   577.6   32.09   581.8   32.08   716.0
X127.010      42   87.20  570.50  210.00  210.00  210.00
GR 32.40      .0   32.40    64.4   32.50    66.0   38.20    81.4   38.15    87.2
GR 31.82   105.1   32.12   136.9   32.53   139.6   33.14   194.3   33.19   198.6
GR 31.48   201.4   30.93   207.8   30.32   215.7   30.42   225.7   30.92   230.7
GR 31.22   232.7   31.22   240.7   30.92   242.7   30.40   258.7   30.10   294.2
GR 29.30   349.2   29.30   414.2   29.40   479.2   30.90   484.2   31.61   484.8
GR 31.78   490.9   32.79   492.9   32.81   494.6   32.56   495.2   32.55   550.2
GR 32.76   550.8   32.65   554.3   38.79   570.5   38.65   575.7   34.33   583.9
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GR 34.33	587.1	33.16	589.3	32.73	593.8	31.03	596.6	30.91	600.7
GR 32.12	603.9	32.12	731.0						
X127.230	45	85.10	616.00	220.00	220.00	220.00			
GR 33.10	.0	33.10	58.0	30.50	60.5	30.50	62.5	38.31	75.9
GR 38.42	85.1	32.79	100.6	32.92	154.9	32.19	155.6	32.28	195.6
GR 33.04	199.5	33.01	204.6	32.18	208.3	32.07	218.6	32.84	219.9
GR 32.67	233.2	33.27	234.0	33.25	238.6	31.39	244.1	30.79	248.0
GR 29.88	258.0	29.88	298.0	29.28	333.0	28.18	368.0	29.78	423.0
GR 30.28	451.0	30.48	480.0	30.81	495.4	31.78	503.1	32.58	506.6
GR 32.55	594.8	33.10	596.1	32.96	600.9	39.08	616.0	38.98	620.9
GR 35.82	627.6	35.66	630.4	32.57	637.1	32.18	641.2	31.01	643.3
GR 30.93	647.6	32.81	650.9	32.80	658.1	32.10	659.5	32.10	766.5
X127.520	37	92.90	700.50	290.00	290.00	290.00			
GR 33.80	.0	33.80	47.0	35.30	50.0	35.30	60.3	38.80	78.3
GR 38.92	92.9	33.66	118.9	33.41	195.2	32.97	196.9	32.56	226.5
GR 32.55	227.4	32.32	262.9	31.75	264.9	31.84	291.6	32.10	292.7
GR 32.20	338.1	30.98	341.3	29.57	347.4	29.47	388.4	29.37	433.4
GR 29.47	483.5	29.97	533.4	30.27	563.4	30.98	569.9	32.05	573.6
GR 32.22	589.0	32.12	679.9	33.18	681.1	33.25	684.6	39.34	700.5
GR 39.38	705.3	32.55	722.8	32.55	728.6	31.41	730.6	31.41	732.1
GR 32.16	734.6	32.16	755.8						
X127.760	35	80.30	560.00	240.00	240.00	240.00			
GR 32.80	.0	32.80	31.7	30.90	31.8	30.90	43.8	35.50	43.9
GR 35.73	65.0	35.84	68.5	39.32	74.8	39.16	80.3	33.51	92.9
GR 32.83	96.9	30.48	97.4	30.43	237.7	30.31	245.3	32.77	251.8
GR 33.09	257.4	32.17	258.8	32.57	304.3	30.97	306.0	29.45	311.0
GR 29.35	356.0	29.15	416.0	28.95	480.0	29.45	515.0	30.95	519.8
GR 33.30	522.4	33.18	545.3	38.74	560.0	38.14	571.9	32.77	584.5
GR 32.89	589.2	31.80	591.0	31.62	592.7	32.50	594.9	32.49	695.2
X127.890	38	86.80	580.50	130.00	130.00	130.00			
GR 32.30	.0	32.30	42.0	30.50	44.4	30.50	57.0	32.97	59.4
GR 33.23	66.2	36.97	76.6	37.15	79.2	39.06	82.2	38.74	86.8
GR 32.66	103.4	33.64	238.6	33.27	312.1	31.63	315.5	31.12	339.5
GR 30.93	348.0	30.23	353.0	29.93	378.0	29.63	408.0	29.13	453.0
GR 28.43	498.0	29.43	528.0	29.93	548.0	30.94	553.9	32.94	556.1
GR 32.86	564.2	39.30	580.5	38.64	591.7	32.70	603.0	32.78	608.1
GR 31.70	609.0	31.65	611.2	32.56	613.5	32.56	640.5	33.20	641.0
GR 33.20	648.0	32.20	649.0	32.20	680.5				
X128.210	36	102.20	600.00	320.00	320.00	320.00			
GR 32.20	.0	32.20	51.0	30.60	53.5	30.60	68.5	34.01	72.0
GR 34.56	85.0	35.89	88.0	36.16	90.7	39.08	97.4	39.07	102.2
GR 32.45	120.1	32.51	157.1	32.82	158.1	32.81	174.7	33.33	175.7
GR 33.35	195.6	33.78	196.5	33.86	224.0	33.81	266.5	30.85	270.4
GR 29.75	280.2	29.35	315.7	29.65	375.7	29.55	435.7	28.95	485.7
GR 30.35	525.7	30.45	540.7	30.97	545.7	31.68	546.6	31.70	555.0
GR 33.68	557.5	33.50	585.8	39.03	600.0	38.99	611.2	33.08	621.8
GR 33.08	705.5								
X128.410	58	82.00	618.50	200.00	200.00	200.00			
GR 32.50	.0	32.50	35.0	30.70	37.9	30.70	50.9	34.73	53.9
GR 35.30	66.7	36.22	68.2	37.16	74.9	39.54	78.8	39.41	82.0
GR 35.93	87.3	36.05	90.3	33.24	97.4	33.10	161.7	32.69	180.3
GR 31.59	183.0	31.70	187.2	30.93	188.7	30.13	191.1	29.83	206.1
GR 29.93	221.1	30.43	256.1	30.43	281.1	30.13	296.1	28.53	321.1
GR 29.03	356.1	29.63	381.1	29.93	401.1	30.95	406.1	32.22	409.2
GR 32.30	425.2	32.94	427.6	32.83	476.0	33.86	478.2	33.73	482.3
GR 33.32	483.4	33.26	499.1	32.64	501.5	32.69	538.9	30.92	543.6
GR 29.62	548.5	29.42	555.5	29.12	562.5	28.92	571.0	30.97	576.0
GR 33.92	581.6	33.98	604.2	38.40	616.0	38.96	618.5	39.03	628.4
GR 36.31	632.6	34.18	637.9	34.12	640.6	32.65	640.7	32.65	642.1
GR 33.37	642.5	33.13	644.0	33.12	736.0				
X128.630	40	89.60	665.10	220.00	220.00	220.00			
GR 33.40	.0	33.40	38.5	32.20	45.5	32.20	57.0	35.02	63.0
GR 35.42	74.8	39.63	85.5	39.42	89.6	33.30	105.1	33.27	196.9
GR 30.84	201.2	29.54	204.2	29.64	219.2	29.84	244.2	29.94	292.2
GR 29.94	319.2	30.24	343.7	30.85	348.5	31.63	352.4	31.67	379.8
GR 30.77	381.7	29.76	383.7	29.26	406.7	30.06	437.7	30.26	483.2
GR 30.79	498.3	31.57	499.8	32.50	519.4	30.86	523.8	29.74	528.8
GR 29.94	548.8	29.94	573.8	30.04	588.3	30.75	592.5	32.64	594.6
GR 32.53	638.7	37.68	660.5	38.46	665.1	38.40	711.0	38.40	731.1
X128.840	41	97.00	600.50	210.00	210.00	210.00			
GR 33.50	.0	33.50	47.0	32.27	54.0	32.27	64.4	33.28	66.4
GR 33.50	75.4	37.47	87.7	37.60	90.3	39.12	92.7	39.26	97.0
GR 37.13	100.3	37.03	102.2	33.49	110.0	33.54	232.4	30.82	236.0
GR 29.49	239.2	29.29	254.2	29.19	281.2	28.89	309.2	28.79	324.2
GR 30.80	329.2	32.56	332.3	32.64	347.7	33.46	350.7	33.42	453.8
GR 33.88	454.6	33.77	457.6	32.81	459.0	32.73	466.0	30.81	469.0

GR 30.31	474.1	30.31	501.1	28.91	524.6	29.51	559.6	30.83	564.6
GR 32.44	566.8	32.45	587.4	37.83	600.5	38.24	612.2	32.67	620.3
GR 32.67	681.0								
X129.000	43	86.10	590.50	160.00	160.00	160.00			
GR 33.70	.0	33.70	40.0	32.30	47.5	32.30	59.0	36.68	66.1
GR 36.80	74.4	39.90	81.6	39.97	86.1	35.19	95.2	34.97	99.3
GR 34.15	100.7	33.98	195.1	33.74	196.4	33.66	238.9	31.29	242.6
GR 30.91	244.8	28.87	250.6	28.37	290.6	28.57	315.6	28.97	330.6
GR 30.88	334.6	32.81	338.7	33.02	422.3	33.59	423.3	33.33	428.5
GR 31.89	431.0	31.83	434.8	30.82	437.8	29.76	456.2	29.86	465.8
GR 29.26	490.3	29.56	515.3	30.56	519.3	31.39	520.0	31.70	528.9
GR 32.89	531.5	32.63	577.3	38.43	590.5	38.69	600.5	33.34	607.8
GR 33.43	624.8	33.96	625.6	33.95	671.0				
X129.180	43	101.20	600.00	180.00	180.00	180.00			
GR 33.70	.0	33.70	59.5	32.30	64.0	32.20	75.5	36.59	81.9
GR 36.65	90.6	39.35	96.4	39.33	101.2	36.59	105.8	36.48	108.4
GR 34.07	112.9	34.20	223.3	33.04	224.8	33.20	243.7	30.74	246.7
GR 28.99	248.7	28.29	261.2	28.89	296.2	29.69	322.0	30.09	346.2
GR 30.29	381.2	30.39	406.2	30.70	411.2	31.60	416.8	31.75	439.5
GR 30.71	442.1	29.91	447.1	29.67	474.1	30.67	479.1	31.99	482.0
GR 32.15	496.1	32.87	497.4	32.96	544.4	33.92	546.7	33.93	559.8
GR 33.24	561.2	33.16	584.0	34.27	585.5	34.43	587.8	38.64	600.0
GR 38.81	610.3	33.49	617.3	33.48	686.5				
X129.370	38	82.40	580.50	190.00	190.00	190.00			
GR 33.60	.0	33.60	40.0	32.10	45.0	32.10	53.3	35.84	60.3
GR 35.71	71.6	39.25	78.0	39.67	82.4	38.10	84.4	37.98	86.8
GR 33.90	95.0	33.94	148.5	30.53	153.5	28.72	158.0	28.32	203.0
GR 28.72	248.0	29.52	278.0	30.54	280.0	31.58	283.3	31.25	294.7
GR 30.57	299.0	29.87	341.6	31.61	344.6	31.59	349.3	34.37	359.1
GR 34.37	452.5	33.06	454.8	33.18	531.2	33.64	532.7	33.54	559.2
GR 34.79	561.9	34.82	569.5	38.75	580.5	38.72	589.6	34.78	596.3
GR 34.73	599.0	33.85	601.0	33.85	701.0				
X129.670	43	101.30	601.90	300.00	300.00	300.00			
GR 33.70	.0	33.70	20.0	34.80	22.0	34.80	38.0	32.10	41.0
GR 32.10	50.0	33.91	50.7	34.23	51.1	34.01	52.7	32.03	57.9
GR 32.05	66.4	35.16	72.4	36.00	88.7	38.85	96.3	39.22	101.3
GR 32.59	119.8	32.72	141.9	30.77	144.4	29.77	164.4	28.87	199.4
GR 28.97	234.4	28.67	264.4	29.00	299.4	30.83	302.6	34.22	312.1
GR 34.09	343.7	33.48	344.6	33.52	434.7	35.02	437.6	35.15	446.2
GR 33.61	447.8	33.58	552.9	34.03	554.2	35.00	592.8	38.44	600.0
GR 39.08	601.9	38.84	612.2	36.19	616.4	36.00	618.2	35.13	619.2
GR 35.10	621.0	34.06	622.1	34.05	722.1				
X129.870	38	109.80	602.00	200.00	200.00	200.00			
GR 33.70	.0	33.73	61.2	31.78	65.6	31.61	78.3	33.71	79.2
GR 33.92	83.1	37.80	92.7	38.08	102.5	38.97	104.5	39.17	109.8
GR 33.10	124.9	33.08	170.0	30.93	174.9	30.84	178.4	33.76	182.3
GR 33.79	208.5	32.90	210.0	32.84	219.1	31.34	221.4	30.80	223.6
GR 29.50	232.0	29.30	252.0	29.00	302.0	29.30	342.0	29.30	392.0
GR 29.50	422.0	30.82	425.0	34.26	429.5	33.90	484.6	33.85	485.5
GR 33.75	548.4	34.43	549.7	34.42	590.1	38.70	600.2	39.19	602.0
GR 39.02	611.7	34.39	619.1	34.38	719.2				
X130.090	51	62.60	557.50	220.00	220.00	220.00			
GR 33.90	.0	33.91	30.4	34.31	31.3	34.43	32.5	34.44	34.4
GR 34.49	35.4	33.05	37.5	32.97	39.4	34.89	42.2	34.90	45.5
GR 36.29	48.1	36.44	50.7	39.44	57.5	39.36	62.6	34.33	74.0
GR 34.36	133.0	31.47	139.1	30.89	145.0	30.00	155.5	29.98	185.1
GR 29.98	217.6	30.08	242.6	30.91	252.5	31.60	254.0	31.65	265.9
GR 30.90	267.7	30.63	272.3	30.80	292.5	30.90	299.4	31.13	307.7
GR 30.90	313.8	30.31	320.8	30.61	343.8	30.11	368.8	29.91	418.8
GR 29.91	458.8	30.81	469.3	34.44	474.6	34.35	476.2	33.85	477.1
GR 33.95	493.9	34.31	494.7	34.23	497.6	34.84	499.6	34.92	547.0
GR 39.30	557.5	39.04	566.8	36.52	571.3	36.31	574.4	34.87	577.6
GR 34.86	677.6								
X130.330	42	95.60	610.50	240.00	240.00	240.00			
GR 34.06	.0	34.06	69.8	33.02	71.5	33.03	72.9	34.86	75.6
GR 35.01	78.2	35.94	79.6	36.29	83.7	39.19	90.3	39.25	95.6
GR 34.46	108.1	34.39	160.3	30.99	167.9	31.31	184.0	30.75	186.5
GR 30.35	201.5	30.45	246.5	30.35	286.5	30.75	293.0	30.95	297.0
GR 31.05	308.0	30.77	310.0	30.35	315.0	30.35	325.0	30.77	328.2
GR 31.41	328.9	31.52	412.3	30.77	413.7	29.98	418.7	30.08	433.7
GR 30.38	440.2	30.28	460.2	30.08	490.2	30.18	530.2	30.18	550.2
GR 30.69	555.1	34.44	562.0	34.34	579.6	39.28	588.8	39.66	599.7
GR 42.94	610.5	41.95	777.5						
X130.370	33	123.73	637.30	40.00	40.00	40.00			
GR 41.90	.0	43.57	118.9	43.25	123.7	40.15	123.8	40.15	125.2
GR 39.37	125.3	38.40	131.4	34.51	159.2	34.51	231.0	30.91	244.1

GR 31.50	424.4	30.66	425.8	30.17	428.8	30.37	442.2	30.37	453.7
GR 30.27	470.8	30.17	481.9	30.17	507.4	30.27	517.1	30.27	541.1
GR 30.07	545.6	30.27	577.2	30.66	580.8	34.90	596.0	35.00	609.3
GR 38.70	619.8	38.70	629.4	39.25	635.9	39.95	636.0	39.95	637.2
GR 43.00	637.3	42.94	637.4	42.24	754.9				
X130.410	33	123.73	637.30	40.00	40.00	40.00			
GR 41.90	.0	43.57	118.9	43.25	123.7	40.15	123.8	40.15	125.2
GR 39.37	125.3	38.40	131.4	34.51	159.2	34.51	231.0	30.91	244.1
GR 31.50	424.4	30.66	425.8	30.17	428.8	30.37	442.2	30.37	453.7
GR 30.27	470.8	30.17	481.9	30.17	507.4	30.27	517.1	30.27	541.1
GR 30.07	545.6	30.27	577.2	30.66	580.8	34.90	596.0	35.00	609.3
GR 38.70	619.8	38.70	629.4	39.25	635.9	39.95	636.0	39.95	637.2
GR 43.00	637.3	42.94	637.4	42.24	754.9				
X130.550	39	122.70	612.50	140.00	140.00	140.00			
GR 34.40	.0	34.40	31.0	35.80	38.5	35.80	46.5	42.40	68.6
GR 42.95	122.7	37.90	132.1	37.99	137.5	35.45	141.6	34.65	148.8
GR 34.62	198.1	31.60	204.1	30.59	212.2	31.23	242.5	30.76	283.2
GR 30.45	291.4	30.55	316.4	30.35	351.4	30.05	376.4	30.76	381.4
GR 32.28	382.6	32.23	426.4	31.55	453.2	30.75	458.3	30.55	468.3
GR 30.35	483.0	30.25	508.0	30.25	538.0	30.35	558.0	30.75	563.0
GR 32.72	569.4	32.70	585.8	35.59	591.8	36.32	605.3	38.09	610.0
GR 39.40	612.5	39.21	622.6	35.00	636.8	35.00	736.5		
X130.730	44	64.70	552.50	180.00	180.00	180.00			
GR 34.38	.0	34.39	41.0	33.37	41.9	33.42	43.6	34.98	45.2
GR 35.54	49.4	39.55	56.3	39.62	64.7	35.79	74.6	35.74	115.7
GR 34.92	117.7	34.76	122.8	30.82	130.1	30.52	135.1	30.43	167.2
GR 30.83	172.2	30.65	200.9	30.61	228.3	29.83	229.1	29.12	232.4
GR 28.52	254.4	28.72	274.4	29.52	281.4	29.82	286.4	30.25	331.8
GR 32.55	336.4	32.59	343.4	31.68	347.5	30.98	403.2	30.25	405.3
GR 30.13	413.6	32.31	418.5	32.35	420.1	30.63	421.1	30.73	472.7
GR 32.69	478.5	32.83	534.4	38.67	550.4	39.65	552.5	39.74	562.1
GR 36.58	573.7	36.69	578.2	34.29	590.9	34.29	690.9		
X130.910	55	78.40	557.40	180.00	180.00	180.00			
GR 34.57	.0	34.57	53.0	33.37	54.9	33.38	57.1	35.55	59.6
GR 35.63	61.2	36.57	62.4	36.81	66.0	39.77	72.6	39.87	78.4
GR 35.65	88.8	35.94	134.6	31.52	143.7	31.57	200.8	33.35	203.6
GR 33.30	205.7	31.80	208.2	31.77	238.6	31.46	253.3	30.79	256.1
GR 30.29	259.0	30.19	264.0	30.09	279.0	30.79	282.0	31.12	284.0
GR 31.22	289.0	31.22	319.0	30.83	334.0	30.42	339.0	30.12	349.0
GR 30.52	366.0	30.42	381.0	29.82	388.0	30.83	390.9	32.43	395.9
GR 32.13	429.6	30.28	435.2	30.11	441.8	31.49	443.1	31.58	470.0
GR 33.33	473.9	33.24	539.2	33.68	540.1	33.81	541.4	38.71	555.0
GR 39.66	557.4	39.97	567.4	35.65	573.6	35.72	580.1	32.90	585.8
GR 32.93	592.2	35.38	596.7	35.28	599.7	34.55	601.4	34.55	701.5
X131.120	45	74.90	550.50	210.00	210.00	210.00			
GR 35.01	.0	34.51	50.0	33.51	52.0	33.51	54.2	39.00	62.6
GR 39.19	67.8	39.93	69.6	40.12	74.9	35.28	86.3	35.98	128.4
GR 35.09	129.5	35.39	142.8	31.97	148.9	31.19	168.8	30.39	170.0
GR 31.04	210.3	30.67	245.7	29.97	250.7	29.68	254.0	30.68	257.0
GR 31.19	259.1	31.93	340.5	30.70	341.9	30.20	346.9	30.30	359.4
GR 30.30	379.4	30.40	419.4	30.00	429.4	30.70	434.4	33.55	437.6
GR 33.35	481.2	33.21	485.6	33.17	506.4	34.18	508.0	35.06	541.2
GR 39.67	550.5	39.92	561.0	35.20	568.1	35.22	574.1	32.75	579.3
GR 32.81	585.0	35.57	589.4	35.50	593.2	34.63	594.0	34.62	694.0
X131.290	36	85.70	554.40	170.00	170.00	170.00			
GR 34.62	.0	34.62	59.7	34.16	60.5	34.13	63.9	36.04	66.1
GR 36.33	68.0	37.91	69.9	38.09	76.4	40.25	80.8	40.41	85.7
GR 35.95	95.8	35.85	148.9	30.39	158.4	32.05	195.9	31.85	348.6
GR 30.86	366.3	30.35	376.3	30.05	406.3	29.35	421.8	30.88	424.8
GR 31.61	425.7	32.43	461.4	33.90	464.5	35.01	481.1	35.19	543.1
GR 39.03	552.5	40.01	554.4	40.22	565.1	35.50	572.2	35.45	579.2
GR 33.09	583.7	33.15	590.2	35.96	594.6	35.80	599.1	34.93	600.2
GR 34.93	700.2								
X131.450	41	115.30	580.10	160.00	160.00	160.00			
GR 43.30	.0	43.69	70.0	36.82	87.3	38.07	102.1	38.39	105.5
GR 40.33	110.5	40.54	115.3	35.88	126.4	34.93	183.6	35.77	184.9
GR 35.81	186.8	31.47	193.6	31.73	229.4	30.85	231.0	30.87	258.1
GR 32.11	266.6	32.56	308.8	31.82	341.4	31.39	383.2	30.80	391.8
GR 30.50	402.0	30.40	427.0	30.10	442.0	29.50	448.5	30.81	450.5
GR 31.78	452.7	33.17	471.9	34.89	474.7	34.80	486.7	35.23	487.7
GR 34.93	568.7	41.05	580.1	40.72	590.7	35.18	599.1	35.37	609.5
GR 33.44	612.8	33.25	619.0	35.46	622.8	35.57	624.7	35.02	625.2
GR 35.02	725.3								
X131.650	40	56.70	515.50	200.00	200.00	200.00			
GR 34.50	.0	34.50	34.0	33.70	35.0	33.70	37.0	37.60	44.0
GR 37.60	47.0	40.56	51.2	40.66	56.7	35.94	67.9	35.63	74.6

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GR 34.74    85.2   35.63    86.6   35.57    89.5   32.72    96.6   31.27   179.4
GR 30.85   212.8   30.82   238.1   30.49   250.1   30.55   265.9   30.98   273.5
GR 31.15   275.7   30.97   311.8   31.99   317.3   32.22   329.7   31.54   331.5
GR 32.27   376.2   34.57   384.2   34.63   400.6   35.96   401.8   35.35   502.7
GR 40.92   515.5   40.70   525.0   35.98   532.2   35.60   545.5   33.71   548.9
GR 33.53   554.7   35.82   558.5   35.66   560.7   35.00   561.8   35.00   661.8
X131.660      40   48.26  570.19   10.00    10.00   10.00
GR 43.53      .0   44.00    48.3   43.97    56.8   41.15    56.8   41.15    58.0
GR 40.31    58.0   40.30    58.8   38.52    65.2   38.51    68.9   40.60    72.9
GR 40.52    79.7   35.62    94.1   35.45   103.3   35.26   126.5   32.57   131.3
GR 31.80   150.2   32.01   196.9   31.03   243.8   30.93   264.9   30.52   268.4
GR 30.46   270.5   30.94   274.0   31.01   290.7   31.65   336.7   32.36   383.5
GR 34.97   429.8   35.64   476.6   36.35   523.6   41.08   533.0   41.11   538.9
GR 38.08   542.8   36.96   543.6   37.08   550.9   36.33   564.7   39.37   568.9
GR 41.43   568.9   41.43   570.1   44.38   570.2   44.05   577.5   43.53   624.9
X131.700      40   48.26  570.19   40.00    40.00   40.00
GR 43.53      .0   44.00    48.3   43.97    56.8   41.15    56.8   41.15    58.0
GR 40.31    58.0   40.30    58.8   38.52    65.2   38.51    68.9   40.60    72.9
GR 40.52    79.7   35.62    94.1   35.45   103.3   35.26   126.5   32.57   131.3
GR 31.80   150.2   32.01   196.9   31.03   243.8   30.93   264.9   30.52   268.4
GR 30.46   270.5   30.94   274.0   31.01   290.7   31.65   336.7   32.36   383.5
GR 34.97   429.8   35.64   476.6   36.35   523.6   41.08   533.0   41.11   538.9
GR 38.08   542.8   36.96   543.6   37.08   550.9   36.33   564.7   39.37   568.9
GR 41.43   568.9   41.43   570.1   44.38   570.2   44.05   577.5   43.53   624.9
X131.830      43   79.10  530.50  130.00   130.00  130.00
GR 34.80      .0   34.80    34.5   33.70    36.0   33.70    37.0   34.90    38.0
GR 34.90    53.5   33.90    54.5   35.46    57.7   35.47    61.1   37.89    63.5
GR 38.01    68.3   40.70    73.5   40.74    79.1   35.03    97.8   33.59    99.7
GR 32.30   103.5   32.44   166.6   31.24   169.0   31.95   194.0   31.13   200.9
GR 30.61   206.2   30.71   216.2   30.81   231.2   30.81   247.7   31.11   252.7
GR 32.41   253.9   32.37   268.3   32.90   317.9   33.11   393.9   35.48   399.2
GR 36.37   521.4   40.95   530.5   39.31   538.2   38.27   539.4   38.69   546.8
GR 35.91   551.8   35.69   566.8   33.90   570.1   34.03   575.7   36.16   580.2
GR 36.28   581.5   35.49   582.0   35.48   731.0
X132.060      30  108.10  555.50  230.00   230.00  230.00
GR 35.05    , .0   35.05    52.2   35.76    53.3   35.88    54.2   34.77    54.8
GR 35.14    57.5   37.76    61.0   38.95    89.3   39.09    95.3   40.14    98.9
GR 40.21   108.1   37.69   112.8   33.31   131.2   31.75   195.2   31.14   197.2
GR 30.78   199.6   30.56   206.7   31.04   211.7   31.12   218.9   31.56   226.5
GR 32.27   334.8   33.45   402.8   37.00   415.4   36.94   444.0   36.55   445.3
GR 35.97   544.2   41.47   555.5   41.24   564.8   36.69   573.0   36.80   673.0
X132.140      41  119.20  583.30   80.00    80.00   80.00
GR 39.65      .0   41.44   115.4   41.46   119.2   39.17   119.3   39.17   120.1
GR 39.08   120.3   38.30   122.4   35.90   126.4   34.63   137.2   33.99   159.1
GR 33.61   177.3   33.43   195.3   31.91   217.4   31.19   232.3   30.95   235.4
GR 30.65   248.2   30.25   253.2   30.55   266.2   30.55   275.2   30.99   285.6
GR 31.07   293.2   30.84   311.6   31.21   333.2   31.19   351.7   31.20   369.2
GR 31.09   391.6   31.27   409.2   30.92   427.5   30.95   449.6   30.80   467.3
GR 31.52   485.3   34.08   507.2   34.61   525.3   35.50   543.3   37.09   565.2
GR 36.65   577.8   39.75   582.4   39.75   583.2   41.55   583.3   41.49   585.5
GR 40.83   668.9
X132.160      41  119.20  583.30   20.00    20.00   20.00
GR 39.65      .0   41.44   115.4   41.46   119.2   39.17   119.3   39.17   120.1
GR 39.08   120.3   38.30   122.4   35.90   126.4   34.63   137.2   33.99   159.1
GR 33.61   177.3   33.43   195.3   31.91   217.4   31.19   232.3   30.95   235.4
GR 30.65   248.2   30.25   253.2   30.55   266.2   30.55   275.2   30.99   285.6
GR 31.07   293.2   30.84   311.6   31.21   333.2   31.19   351.7   31.20   369.2
GR 31.09   391.6   31.27   409.2   30.92   427.5   30.95   449.6   30.80   467.3
GR 31.52   485.3   34.08   507.2   34.61   525.3   35.50   543.3   37.09   565.2
GR 36.65   577.8   39.75   582.4   39.75   583.2   41.55   583.3   41.49   585.5
GR 40.83   668.9
X132.220      33   64.70  530.50   60.00    60.00   60.00
GR 34.60      .0   34.60    38.5   33.30    40.5   33.30    42.0   41.49    53.3
GR 41.61    64.7   38.12    71.2   37.18    83.7   35.03    87.0   35.19   156.1
GR 33.08   161.1   33.11   199.1   32.41   203.5   32.23   228.7   31.13   231.2
GR 30.99   235.0   30.71   245.1   30.92   248.4   31.09   278.3   31.23   283.9
GR 31.39   286.9   32.44   408.8   31.97   463.7   33.74   478.0   34.19   494.5
GR 35.49   498.6   36.55   518.1   41.27   530.5   41.30   535.8   38.00   542.9
GR 37.77   545.3   36.04   550.0   36.04   650.5
X132.420      58  103.60  630.50  200.00   200.00  200.00
GR 35.00      .0   35.00    50.5   42.22    63.3   41.97    73.8   41.49    75.5
GR 41.08   103.6   35.49   113.9   35.55   157.4   36.47   159.0   36.50   159.5
GR 34.66   162.0   34.73   164.1   36.91   167.3   36.93   169.0   35.33   172.3
GR 35.33   189.8   36.03   191.3   36.11   193.2   35.43   194.7   32.83   194.8
GR 32.74   209.6   35.98   216.2   35.87   221.4   34.99   222.6   34.82   248.9
GR 36.02   251.3   36.07   259.7   34.88   262.1   34.81   294.8   35.06   295.7
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GR 35.13   299.2   34.89   300.5   34.94   332.2   35.79   333.2   35.60   335.5
GR 33.28   339.8   33.87   391.4   32.30   439.3   31.71   441.0   31.83   445.9
GR 31.37   447.6   31.17   457.7   31.17   477.7   31.27   500.2   31.17   515.2
GR 31.07   540.2   30.97   570.2   31.69   575.2   32.19   580.5   32.68   602.4
GR 33.24   605.0   33.45   609.8   41.43   630.5   41.24   636.4   38.22   642.1
GR 37.92   645.3   36.07   650.1   36.07   751.1
X132.610      43   81.80   580.10  190.00  190.00  190.00
GR 36.06      .0   36.06    61.1   36.36    61.7   36.37    64.9   36.63    69.3
GR 40.42    76.0   40.38    81.8   35.37    91.2   35.28   111.7   34.91   114.5
GR 34.93   116.3   35.47   118.3   35.47   168.5   36.26   170.6   36.25   178.6
GR 36.53   180.6   36.41   213.1   36.23   215.6   36.23   218.7   33.62   222.4
GR 33.52   272.9   34.56   274.3   34.56   275.5   32.21   280.1   32.10   292.2
GR 32.90   295.6   33.03   359.7   33.15   417.6   32.03   420.5   32.21   452.8
GR 31.65   489.8   30.84   504.4   30.54   521.4   30.64   538.4   31.64   541.4
GR 33.11   543.4   33.37   547.6   41.32   580.1   41.23   587.4   37.71   603.0
GR 37.70   627.6   35.70   628.6   35.70   680.1
X132.740      34  101.80  573.20  130.00  130.00  130.00
GR 36.32      .0   36.32    80.0   36.99    81.1   36.99    83.9   36.40    85.3
GR 36.40    87.4   35.12    87.6   35.12    88.2   36.12    88.2   40.46    96.2
GR 40.44   101.8   35.94   109.7   35.68   233.7   36.59   234.7   36.52   238.3
GR 34.08   241.9   34.14   307.6   32.10   313.2   32.24   323.9   33.29   326.1
GR 33.55   395.7   32.90   428.3   32.39   431.5   31.68   516.6   31.01   534.2
GR 30.93   541.5   31.67   544.6   41.39   573.2   41.28   578.7   38.26   584.2
GR 37.82   591.9   37.80   616.7   35.70   617.7   35.70   673.2
X132.910      50   84.50  595.50  170.00  170.00  170.00
GR 35.70      .0   35.70    60.5   36.51    62.0   37.39    63.0   37.18    66.6
GR 40.64    75.5   40.72    84.5   36.69    95.6   36.69   108.6   35.96   109.8
GR 35.92   200.9   37.63   204.0   37.28   222.8   35.44   225.9   35.42   245.1
GR 36.46   248.2   36.47   270.8   35.40   274.5   35.45   354.0   33.62   356.9
GR 33.70   402.1   34.96   404.6   34.97   406.1   33.01   409.7   34.03   415.2
GR 33.42   434.0   32.53   438.8   31.82   478.7   31.55   492.8   31.44   515.9
GR 31.66   525.4   31.82   527.8   31.95   534.9   31.94   543.0   31.74   543.9
GR 31.36   545.0   30.72   555.8   31.71   561.3   32.85   564.7   33.42   574.0
GR 37.78   584.8   37.86   587.7   41.51   595.5   41.36   600.7   38.40   607.2
GR 38.11   610.0   35.83   615.7   35.83   653.0   36.00   654.5   36.00   695.5
X133.080      52   75.60  866.60  170.00  170.00  170.00
GR 39.00      .0   39.00    35.0   38.50    44.5   40.32    48.0   40.30    75.6
GR 34.80    88.1   32.70   298.6   34.10   320.6   34.10   335.6   32.20   338.1
GR 32.20   348.1   34.30   351.8   34.30   358.8   37.30   360.8   37.30   365.8
GR 36.60   367.8   36.60   463.8   36.90   464.8   36.90   486.8   35.70   490.8
GR 35.70   569.8   35.10   572.8   34.91   620.4   34.16   642.3   32.60   670.9
GR 33.12   678.3   32.92   689.6   31.86   690.8   30.15   695.7   30.35   720.7
GR 31.15   737.2   31.86   752.2   33.35   789.5   33.69   844.8   38.08   858.2
GR 38.53   861.3   41.68   866.6   41.57   871.9   37.04   882.9   36.95   888.5
GR 34.98   891.8   34.86   893.3   37.27   897.8   37.17   902.2   36.64   902.6
GR 36.63   936.6   37.30   937.6   37.30   941.6   35.30   943.1   35.30   946.1
GR 36.30   947.6   36.30   976.6
X133.270      34   89.00  551.00  190.00  190.00  190.00
GR 37.78      .0   37.78    60.0   34.78    64.0   34.78    67.0   37.79    71.0
GR 38.15    74.7   41.76    82.2   41.94    89.0   39.72    97.4   39.57   102.7
GR 37.24   108.0   36.35   271.6   33.84   278.6   32.90   342.5   31.74   344.5
GR 31.03   349.5   31.43   354.5   31.53   364.0   30.93   379.0   31.33   394.0
GR 31.73   403.8   32.95   433.6   33.95   483.6   33.92   523.1   33.30   529.3
GR 38.61   545.5   41.67   551.0   41.54   556.0   38.47   562.1   37.67   568.7
GR 35.16   572.3   35.12   574.3   36.50   578.7   36.49   678.5
X133.420      46   64.50  517.00  150.00  150.00  150.00
GR 37.40      .0   37.40    38.0   35.57    40.0   35.58    43.0   41.80    54.5
GR 41.81    64.5   38.20    73.4   38.21   182.8   33.20   191.0   33.20   200.0
GR 35.20   202.0   33.60   205.0   32.13   227.9   32.96   231.3   32.82   284.0
GR 31.82   286.5   30.92   297.5   31.42   300.0   31.82   302.5   32.34   314.5
GR 33.85   323.4   34.23   347.0   33.42   352.1   31.85   354.1   30.83   358.1
GR 30.95   364.4   31.33   369.2   31.87   377.7   32.20   404.3   34.02   406.7
GR 34.87   415.1   34.47   483.1   35.39   485.8   35.81   503.3   41.72   517.0
GR 41.75   522.2   38.57   528.1   38.32   531.0   37.77   532.0   37.23   536.2
GR 35.60   539.8   35.48   541.0   37.31   544.7   37.36   548.0   36.50   549.6
GR 36.49   649.5
X133.630      51  137.50  590.00  210.00  210.00  210.00
GR 37.60      .0   37.60    66.5   37.84    67.0   37.86    80.3   37.38    84.2
GR 37.43    85.2   37.84    86.3   37.75    95.6   37.56   102.9   35.78   106.4
GR 35.67   109.8   37.65   112.0   38.52   124.9   38.54   127.1   42.13   134.1
GR 42.13   137.5   38.47   148.1   33.70   157.5   33.70   292.5   34.41   295.5
GR 36.23   299.0   35.92   308.1   33.67   315.1   33.53   331.5   32.69   334.9
GR 33.33   375.8   34.12   396.3   33.21   400.8   33.51   412.3   31.80   445.9
GR 31.09   455.9   30.49   475.9   30.79   492.9   31.83   497.9   32.02   501.2
GR 33.49   503.3   33.48   518.2   36.71   526.6   37.04   543.5   37.40   544.2
GR 37.80   581.5   42.00   590.0   41.92   595.0   38.52   601.9   37.26   610.0
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GR 35.92	612.3	35.94	614.2	37.47	617.2	37.41	622.5	36.90	623.3
GR 36.89	723.5								
X133.840	51	115.10	570.50	210.00	210.00	210.00			
GR 35.21	.0	35.21	70.0	37.71	72.5	37.71	75.0	35.21	78.0
GR 35.22	80.9	38.05	84.7	38.42	99.5	39.21	102.2	39.33	104.8
GR 42.76	111.9	42.65	115.1	38.73	125.1	38.56	139.1	33.79	148.5
GR 33.39	153.5	31.89	154.0	31.89	163.0	34.39	167.8	34.99	262.7
GR 34.31	302.3	34.02	315.2	32.95	319.1	31.93	320.4	31.26	323.5
GR 31.21	329.2	31.82	349.8	31.62	362.7	31.29	372.8	31.34	395.4
GR 31.90	399.4	34.06	401.9	32.72	435.5	32.01	438.8	32.20	481.0
GR 33.85	483.9	34.00	493.1	36.89	496.5	38.36	560.3	40.32	563.5
GR 40.49	567.2	42.16	570.5	42.12	575.3	38.58	583.0	38.07	595.8
GR 37.30	596.7	37.40	609.0	37.70	610.5	37.70	617.5	37.40	619.0
GR 37.40	680.5								
X134.030	47	130.30	606.50	190.00	190.00	190.00			
GR 37.20	.0	37.20	100.0	37.50	100.5	37.50	103.0	36.00	105.5
GR 36.01	108.6	39.58	115.0	39.72	120.4	42.48	126.2	42.62	130.3
GR 38.03	142.3	37.87	143.5	35.08	150.1	35.00	168.5	34.41	201.8
GR 35.12	203.4	35.08	206.8	33.17	211.5	33.17	220.5	35.37	225.6
GR 34.99	261.3	33.70	272.2	32.11	274.2	31.61	277.2	31.91	279.2
GR 31.91	294.6	31.91	304.6	31.91	314.6	32.11	319.6	33.43	377.6
GR 32.19	414.6	32.02	416.5	33.50	424.8	34.81	431.3	34.57	471.9
GR 33.63	473.7	33.77	485.7	35.44	488.6	35.44	511.5	37.39	515.9
GR 38.02	598.8	42.40	606.5	42.44	611.6	38.48	618.6	38.11	629.8
GR 37.33	630.9	37.30	731.0						
X134.240	41	129.50	705.50	210.00	210.00	210.00			
GR 36.90	.0	36.90	100.0	37.90	101.0	37.90	102.0	35.90	105.0
GR 35.91	108.8	37.82	111.4	38.08	114.4	38.96	115.7	39.02	118.3
GR 42.29	125.5	42.48	129.5	38.20	141.7	38.10	152.1	35.59	157.4
GR 35.36	167.1	34.14	221.2	33.42	244.9	32.74	247.7	32.06	252.7
GR 31.66	272.7	31.16	297.7	31.16	322.7	31.46	326.7	32.67	328.7
GR 33.53	330.5	33.97	363.1	33.25	364.6	34.34	509.9	34.40	552.2
GR 34.12	577.3	34.08	595.1	38.26	600.7	38.03	694.1	42.47	705.5
GR 42.43	710.9	38.97	718.9	38.67	724.9	38.45	731.8	37.86	734.0
GR 37.86	834.0								
X134.390	47	131.00	880.50	150.00	150.00	150.00			
GR 36.92	.0	36.92	100.0	37.92	101.0	37.92	102.0	35.92	105.0
GR 35.93	109.2	38.41	113.3	38.75	115.8	39.10	116.8	39.29	119.6
GR 42.49	126.6	42.78	131.0	38.34	142.9	38.09	150.4	36.67	154.5
GR 36.20	157.0	36.45	167.8	34.54	172.5	33.82	199.4	33.77	206.2
GR 34.22	264.6	32.96	266.8	32.45	271.8	32.15	296.8	31.25	321.8
GR 31.55	336.8	32.85	339.9	34.43	340.2	35.18	379.0	34.50	384.5
GR 35.23	623.3	36.68	628.2	37.10	652.6	34.37	656.6	33.77	663.0
GR 34.26	676.1	35.05	678.6	36.25	779.3	38.18	819.1	39.09	823.7
GR 39.17	870.1	42.78	880.5	42.67	886.8	39.10	896.4	39.02	908.9
GR 38.51	910.9	38.50	1011.0						
X134.570	53	111.80	710.00	180.00	180.00	180.00			
GR 37.01	.0	37.01	83.0	38.21	83.5	38.21	84.5	36.21	86.5
GR 36.22	89.9	38.54	93.3	38.82	96.3	39.21	97.1	39.36	100.4
GR 42.59	107.2	42.73	111.8	38.20	124.7	38.11	133.7	36.83	137.8
GR 37.26	173.8	33.88	185.8	33.56	195.7	32.92	197.1	32.66	224.0
GR 32.42	229.4	32.42	239.4	32.62	244.4	34.26	259.9	33.90	292.1
GR 32.64	294.0	32.54	303.3	32.44	317.3	32.34	332.3	31.74	342.3
GR 32.64	347.3	33.86	352.3	34.34	375.9	33.86	379.3	34.57	424.7
GR 34.88	427.8	34.88	435.9	34.48	439.6	34.65	468.4	35.88	471.1
GR 36.06	475.1	37.28	476.8	37.55	542.5	38.07	543.5	38.03	553.9
GR 37.67	554.6	38.30	604.5	38.61	689.0	42.35	710.0	42.15	723.8
GR 39.62	739.8	39.08	743.3	39.07	820.0				
X134.750	49	78.80	570.50	180.00	180.00	180.00			
GR 37.39	.0	37.39	49.0	37.89	49.5	37.89	51.0	36.39	53.0
GR 36.39	56.8	39.21	62.3	39.67	67.7	42.74	74.4	42.77	78.8
GR 38.09	89.8	37.50	157.8	34.33	165.0	33.73	177.7	32.81	178.3
GR 32.30	179.9	32.31	189.8	32.74	194.8	33.21	203.6	33.67	246.8
GR 32.79	271.9	31.98	283.1	32.28	292.5	32.34	312.4	32.82	321.8
GR 33.25	325.4	34.02	329.7	34.06	376.3	35.36	379.7	35.67	406.6
GR 34.36	415.0	38.47	420.9	38.45	424.4	37.40	425.8	37.56	459.1
GR 37.28	466.1	34.26	481.3	34.59	534.6	37.81	542.2	38.03	555.9
GR 39.26	559.9	40.39	561.8	40.55	565.8	42.16	570.5	42.16	573.7
GR 39.92	578.1	39.91	605.5	38.40	605.8	38.40	690.5		
X134.940	60	109.90	591.00	190.00	190.00	190.00			
GR 37.50	.0	37.50	80.0	38.00	80.5	38.00	82.0	36.52	83.8
GR 36.52	88.3	38.16	90.8	38.57	95.1	39.38	96.3	39.57	98.8
GR 42.94	106.0	43.21	109.9	40.64	114.1	40.91	117.3	37.70	124.6
GR 37.76	126.6	37.94	127.5	38.28	231.5	35.67	242.9	33.47	251.0
GR 33.92	267.9	32.97	269.1	33.35	282.2	32.82	307.5	31.94	327.9
GR 32.04	342.2	32.84	345.2	34.21	347.2	34.87	373.5	34.19	380.6

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GR 34.24   389.8   33.13   394.3   33.17   409.3   33.99   419.1   33.99   441.3
GR 32.87   443.6   32.44   449.9   32.65   461.4   32.30   468.7   32.84   473.4
GR 35.13   480.9   35.17   482.6   33.38   486.7   33.81   495.9   34.97   499.0
GR 34.67   509.0   38.59   514.5   38.61   516.5   37.71   517.8   37.70   542.0
GR 37.48   543.3   37.44   579.8   42.77   591.0   42.53   595.0   39.03   601.0
GR 38.92   605.0   36.59   608.8   36.54   614.1   38.38   618.5   38.38   761.5
X135.130      55  129.00  600.50  190.00  190.00  190.00
GR 37.99      .0   37.99   100.0   36.34   102.4   36.71   107.1   39.45   112.0
GR 39.93   118.1   43.00   125.4   43.25   129.0   39.32   139.2   39.18   141.5
GR 38.34   142.9   38.30   235.1   35.69   242.1   35.00   248.9   33.93   251.5
GR 34.41   261.3   34.16   282.1   33.24   285.6   33.28   288.0   33.52   292.5
GR 33.34   305.3   32.86   343.0   34.67   349.0   34.54   377.7   33.63   382.9
GR 32.87   383.7   32.60   386.5   32.72   402.7   32.68   414.6   32.57   426.5
GR 32.77   433.6   32.83   437.9   33.50   440.2   33.68   447.7   34.68   451.5
GR 34.77   465.6   33.59   474.5   31.83   491.6   31.78   510.1   32.55   512.8
GR 32.83   524.7   35.32   528.7   35.11   562.3   37.45   566.2   37.31   588.6
GR 42.53   600.5   42.55   604.1   38.83   611.4   38.76   614.1   36.68   617.1
GR 36.69   622.5   38.63   625.3   38.70   626.9   38.35   627.2   38.35   727.0
X135.330      48   97.20  560.50  200.00  200.00  200.00
GR 37.80      .0   37.80    67.5   38.38    68.0   38.38    69.0   36.88    71.0
GR 36.89    75.9   39.12    79.1   39.42    82.5   39.89    83.6   39.96    86.5
GR 43.31    93.4   43.26    97.2   39.44   107.7   39.31   109.7   38.86   110.4
GR 37.72   181.1   35.01   187.7   34.30   212.7   33.08   216.1   32.57   219.3
GR 32.79   224.1   33.05   232.8   33.12   236.1   33.28   260.3   32.97   284.7
GR 32.65   291.9   32.39   299.1   32.96   303.3   34.20   304.1   34.60   361.2
GR 33.03   364.6   32.68   434.5   33.34   440.3   33.02   453.0   32.92   471.9
GR 33.81   489.4   34.85   492.5   35.08   519.6   37.89   523.6   38.08   549.3
GR 43.18   560.5   43.04   564.5   38.90   571.8   38.55   575.3   37.48   577.2
GR 37.49   578.0   38.66   581.1   38.66   731.0
X135.530      46  105.20  555.50  200.00  200.00  200.00
GR 38.09      .0   38.09    79.0   37.09    80.0   37.09    84.0   39.10    87.6
GR 39.57    91.8   40.03    92.5   40.20    94.5   43.46   101.7   43.52   105.2
GR 39.23   116.2   38.44   153.7   37.89   155.2   37.98   179.7   38.27   181.8
GR 34.65   186.3   33.89   192.3   32.94   193.8   32.57   196.1   32.33   201.7
GR 32.70   219.0   32.80   237.8   32.93   242.3   34.84   245.5   34.84   327.2
GR 34.89   363.2   34.10   370.4   34.47   423.2   33.21   428.6   33.11   462.1
GR 34.86   473.7   34.80   485.7   33.29   489.9   33.11   497.7   36.13   503.8
GR 36.25   508.8   38.79   513.0   38.80   547.3   43.39   555.5   43.36   559.5
GR 39.94   565.4   39.92   568.0   37.77   571.6   37.68   573.2   38.79   576.6
GR 38.79   726.5
X135.740      47  110.00  570.00  210.00  210.00  210.00
GR 37.80      .0   37.80    82.5   38.50    83.0   37.08    85.0   37.09    88.8
GR 39.24    92.4   39.43    95.3   40.32    96.9   40.48    99.6   43.66   106.8
GR 43.62   110.0   39.01   122.6   37.90   169.7   37.10   185.2   35.49   189.1
GR 34.69   196.1   35.05   277.8   33.03   293.6   32.82   296.5   32.84   299.9
GR 33.01   301.9   33.18   303.1   33.28   310.4   33.20   313.7   32.59   324.2
GR 33.05   335.4   33.19   356.4   34.41   367.6   34.38   439.7   37.37   447.7
GR 37.41   463.8   38.35   468.2   38.33   495.8   38.85   496.4   38.85   510.7
GR 39.26   511.9   39.35   529.0   38.82   529.7   38.81   558.5   43.23   570.0
GR 43.25   574.1   41.06   578.1   41.05   580.4   37.76   585.1   37.75   587.0
GR 39.04   589.9   39.04   690.0
X135.880      49  128.70  650.00  140.00  140.00  140.00
GR 38.00      .0   38.00   101.0   38.70   101.5   38.70   103.0   37.34   104.0
GR 37.35   108.8   39.85   112.3   40.40   117.2   43.81   125.5   43.97   128.7
GR 38.79   142.4   38.42   181.7   38.97   183.6   39.02   184.8   35.99   189.8
GR 35.97   200.1   36.42   201.2   36.41   202.0   34.32   205.2   35.44   262.3
GR 34.74   265.2   35.34   318.3   34.49   333.8   33.27   335.2   32.88   336.1
GR 33.07   350.6   33.18   362.7   32.52   367.0   32.52   370.4   33.04   372.8
GR 33.24   380.8   33.49   391.1   33.99   396.1   34.67   429.5   37.86   441.2
GR 36.32   444.3   36.60   455.3   38.64   458.5   38.75   461.0   38.45   461.7
GR 38.36   637.3   40.91   642.7   41.48   646.2   43.28   650.0   43.17   654.1
GR 38.05   664.7   37.92   666.7   38.95   669.3   38.94   770.0
X136.120      51  125.60  550.50  240.00  240.00  240.00
GR 38.10      .0   38.10    97.0   38.60    97.5   38.60    99.5   37.60   100.5
GR 37.60   104.6   39.93   107.9   40.08   110.5   41.01   112.9   41.22   115.2
GR 43.90   121.2   44.03   125.6   43.25   127.5   42.62   128.2   42.30   130.6
GR 39.88   136.1   39.81   137.6   39.09   138.9   39.34   166.8   36.09   172.4
GR 36.64   225.7   37.74   228.1   37.72   229.7   34.94   236.6   35.28   243.1
GR 35.43   259.0   33.94   267.4   33.45   274.4   33.20   278.0   32.98   288.8
GR 33.46   293.9   33.73   302.3   35.28   307.6   35.07   392.1   33.53   422.3
GR 34.48   435.3   38.07   456.9   40.20   460.1   40.33   466.4   40.36   467.3
GR 39.86   541.4   43.79   550.5   43.97   555.7   40.02   562.0   40.05   564.5
GR 37.63   568.5   37.77   575.4   39.53   578.0   39.70   581.5   38.78   582.7
GR 38.78   682.5
X136.300      63  125.80  550.50  180.00  180.00  180.00
GR 38.10      .0   38.10    96.0   38.56    97.5   38.56    99.5   37.76   101.5
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GR 37.77	104.4	40.00	106.9	40.68	113.9	42.18	116.7	42.15	116.8
GR 42.14	119.6	44.29	122.6	43.99	125.8	39.47	136.7	39.26	144.5
GR 39.45	144.9	39.35	153.3	38.06	156.2	37.44	158.5	37.77	169.0
GR 38.05	169.5	38.26	174.9	38.52	195.6	36.37	200.4	36.02	215.8
GR 35.43	218.0	35.36	238.4	34.53	251.3	33.54	252.8	33.12	253.9
GR 33.18	256.4	33.49	259.2	35.29	267.6	35.58	282.8	35.22	295.3
GR 33.68	298.5	33.31	301.2	33.38	303.9	33.18	319.6	33.29	330.6
GR 33.69	335.8	34.31	350.7	34.18	373.7	33.72	380.3	33.53	387.8
GR 33.58	394.2	33.70	397.2	34.11	398.8	36.91	448.2	36.07	452.6
GR 36.62	478.9	39.70	482.6	40.62	543.8	43.54	550.5	43.37	556.3
GR 40.02	563.2	39.80	565.7	37.83	568.8	37.77	575.9	39.37	578.8
GR 39.28	580.2	38.93	580.5	38.92	680.5				
X136.490	38	30.30	457.50	190.00	190.00	190.00			
GR 38.40	.0	38.91	1.5	38.91	3.5	38.21	5.5	38.22	9.1
GR 40.61	12.9	41.02	18.8	44.48	26.6	44.49	30.3	39.82	43.3
GR 39.05	72.1	38.44	73.4	37.99	101.0	35.29	105.0	35.78	111.5
GR 35.73	141.6	33.81	144.0	33.39	146.2	33.29	161.9	33.53	173.3
GR 33.82	180.1	35.13	211.4	35.66	269.0	35.29	373.3	37.53	379.7
GR 37.74	390.7	39.29	394.7	39.24	444.7	43.80	457.5	43.80	461.6
GR 40.01	470.6	39.84	472.1	38.01	475.0	38.09	481.9	39.61	484.5
GR 39.68	486.0	39.14	486.5	39.13	586.5				
X136.680	44	123.50	551.00	190.00	190.00	190.00			
GR 39.05	.0	39.05	99.6	38.05	100.6	38.05	103.6	39.48	105.5
GR 39.54	107.3	41.49	111.0	41.73	113.1	44.05	118.7	44.37	123.5
GR 39.53	136.0	39.37	137.4	39.00	138.7	39.29	156.8	39.70	158.2
GR 38.58	200.8	34.91	205.2	35.15	246.4	35.15	248.5	33.65	250.4
GR 33.15	253.4	33.05	263.4	32.85	268.4	33.15	273.4	33.65	280.4
GR 34.05	283.4	34.78	432.7	35.67	458.2	37.29	462.2	37.09	473.3
GR 39.26	478.9	39.20	537.4	40.05	538.3	40.38	541.7	44.22	551.0
GR 44.12	555.1	40.47	562.7	40.06	565.8	38.15	569.0	37.89	575.3
GR 39.82	579.0	39.81	580.2	39.41	580.9	39.40	681.0		
X136.880	39	120.60	550.00	200.00	200.00	200.00			
GR 39.00	.0	39.00	94.0	38.18	95.0	38.18	97.9	41.87	105.9
GR 42.04	108.8	44.48	114.7	44.51	120.6	39.77	131.9	39.48	170.0
GR 40.00	171.0	39.87	193.3	39.00	195.5	38.57	197.9	36.01	203.5
GR 36.72	257.6	35.00	268.3	35.47	280.5	33.70	301.8	33.39	307.2
GR 33.39	332.2	33.29	352.2	33.71	357.2	35.39	359.1	35.72	395.6
GR 35.52	428.6	35.35	441.7	36.04	443.9	36.03	469.5	39.36	477.3
GR 39.36	537.4	40.24	538.2	40.40	540.5	44.38	550.0	44.22	554.1
GR 38.09	569.0	38.01	575.3	40.32	577.9	40.31	678.0		
X137.080	53	114.80	540.00	200.00	200.00	200.00			
GR 39.70	.0	39.70	91.0	38.00	93.0	38.00	95.0	42.08	102.9
GR 42.31	104.6	44.29	109.9	44.34	114.8	39.57	127.2	39.34	158.2
GR 39.57	158.7	39.73	186.3	37.56	192.6	37.58	196.0	36.36	198.4
GR 35.70	209.9	37.27	215.7	36.61	246.3	35.30	255.1	34.80	277.3
GR 33.49	313.7	34.40	316.0	36.15	318.0	35.74	336.9	34.34	339.0
GR 33.79	341.5	33.09	351.8	33.19	364.8	33.69	370.8	33.69	377.8
GR 33.49	384.8	33.81	389.8	35.37	392.9	36.45	411.5	35.55	427.7
GR 36.49	445.0	37.31	482.8	39.68	486.0	39.82	487.6	39.29	488.4
GR 39.12	525.8	40.23	527.1	40.30	529.4	44.73	540.0	44.62	544.1
GR 42.98	546.3	42.90	548.6	40.21	554.3	39.51	556.7	38.15	558.9
GR 38.17	562.4	39.80	567.2	39.79	667.0				
X137.290	57	72.60	500.00	210.00	210.00	210.00			
GR 39.43	.0	39.43	52.6	38.81	53.3	38.81	55.5	40.93	59.5
GR 41.24	62.0	44.35	69.0	44.47	72.6	39.79	81.6	39.06	82.6
GR 39.08	83.8	40.48	86.1	40.60	86.8	39.69	87.9	39.72	136.4
GR 40.89	138.1	40.75	142.3	36.72	152.2	36.85	185.1	37.83	190.2
GR 34.87	194.8	34.82	200.6	36.51	203.1	36.42	220.0	36.12	225.0
GR 36.65	235.2	34.92	283.2	34.26	294.0	33.04	297.7	32.14	307.7
GR 33.24	320.7	34.25	325.7	34.81	334.0	35.17	349.6	34.36	357.0
GR 35.38	368.5	35.21	382.6	34.80	385.5	32.60	395.5	33.44	400.5
GR 34.84	403.5	35.59	405.1	36.57	417.2	38.97	423.3	38.90	438.3
GR 35.28	444.4	35.27	446.3	39.60	454.7	39.74	457.8	39.41	458.7
GR 39.32	488.2	44.94	500.0	44.84	505.3	38.32	517.2	38.38	519.3
GR 40.30	523.7	40.30	623.0						
X137.490	44	75.10	514.50	200.00	200.00	200.00			
GR 41.90	.0	41.90	70.0	42.09	70.8	42.10	75.1	41.26	76.6
GR 41.53	107.2	39.71	110.3	39.82	145.7	42.36	150.7	42.33	152.4
GR 37.23	161.8	37.63	176.1	36.55	179.6	35.94	184.6	36.24	194.6
GR 36.44	229.6	36.34	269.6	36.04	294.6	35.94	329.6	36.04	353.6
GR 35.74	363.6	36.56	368.5	37.68	369.9	37.55	381.5	37.17	383.0
GR 37.11	399.3	40.08	403.2	40.10	406.0	39.51	406.6	39.57	485.2
GR 37.94	489.8	37.67	493.6	38.38	494.4	38.58	498.3	39.96	501.1
GR 40.02	502.6	45.22	514.5	45.16	519.2	40.97	527.1	41.06	530.3
GR 39.48	533.4	39.43	534.9	40.09	539.2	40.08	644.5		
X137.710	49	.00	367.50	220.00	220.00	220.00			

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GR 56.36      .0   43.31    45.9   42.99    48.9   38.93    56.8   38.62    69.5
GR 37.53    74.6   36.65    75.8   35.91    79.1   35.81    94.1   34.71   109.1
GR 35.71   127.1   36.11   142.1   36.11   157.1   36.62   162.1   36.77   166.2
GR 37.03   179.9   36.62   181.7   35.37   187.4   35.27   197.4   35.57   207.4
GR 36.57   212.4   37.88   214.4   38.69   221.0   37.49   222.9   37.45   254.4
GR 41.02   260.8   40.92   263.8   40.15   266.0   40.03   308.8   40.65   310.2
GR 40.74   312.2   37.73   320.0   37.84   323.4   40.55   328.2   40.52   329.4
GR 39.72   330.3   39.59   354.1   45.81   367.5   45.56   372.3   41.35   380.0
GR 41.35   382.8   39.64   386.2   39.69   388.2   40.52   391.1   40.52   415.5
GR 41.40   416.5   41.40   424.5   40.40   425.5   40.40   467.5
X137.930      52     .00  457.50  220.00  220.00  220.00
GR 56.50      .0   43.76    47.0   39.35    55.8   39.32    93.5   39.73    94.5
GR 40.10    95.2   37.55   101.1   37.93   112.5   37.19   115.5   37.26   118.5
GR 38.00   121.0   38.07   125.7   36.47   127.2   36.17   133.9   35.69   143.9
GR 35.57   158.9   35.97   173.9   36.32   183.9   36.27   208.9   35.97   223.9
GR 35.69   238.9   36.52   244.9   37.18   246.9   37.47   280.3   36.55   282.9
GR 35.79   286.1   35.69   292.6   35.79   305.6   35.69   318.6   36.49   321.5
GR 41.49   329.2   41.43   331.1   40.26   332.6   40.26   425.0   37.98   433.0
GR 37.90   436.8   37.44   439.3   37.67   442.1   38.61   443.5   38.60   447.2
GR 45.71   457.5   45.62   462.9   41.09   470.8   41.06   474.3   39.68   476.4
GR 39.63   478.2   40.44   481.7   40.43   502.0   39.30   504.0   39.30   506.0
GR 40.70   508.5   40.70   557.5
X138.140      63   73.70  530.50  210.00  210.00  210.00
GR 40.70      .0   40.40    55.5   39.47    56.9   38.75    57.0   38.75    59.5
GR 39.47    59.6   41.96    63.9   42.25    66.8   44.94    72.0   44.98    73.7
GR 40.53    83.2   40.52    89.8   39.30    93.2   39.20   156.4   38.32   167.2
GR 38.50   173.4   36.80   176.7   35.90   180.5   36.30   190.0   36.70   193.2
GR 37.38   194.7   37.07   220.1   36.78   222.1   36.07   223.6   35.94   231.7
GR 36.35   243.8   36.40   260.0   36.55   281.3   36.74   300.2   38.09   310.5
GR 37.90   345.4   36.91   353.4   36.59   360.9   36.45   364.3   36.91   366.0
GR 37.64   367.3   37.87   404.0   39.14   406.4   40.16   409.4   42.12   413.2
GR 42.06   430.8   39.89   434.1   39.78   492.9   40.25   493.5   40.19   498.7
GR 38.26   501.3   38.44   505.7   39.50   507.4   40.40   518.9   44.10   524.2
GR 44.49   528.0   45.95   530.5   45.77   535.7   41.91   543.4   41.48   546.3
GR 40.17   548.8   40.18   551.1   41.03   554.6   41.03   581.0   41.70   582.0
GR 41.70   589.0   41.00   590.5   41.00   640.5
X138.340      56  107.70  590.00  200.00  200.00  200.00
GR 42.10      .0   42.10    72.0   40.20    75.0   39.45    90.4   38.75    90.5
GR 38.75    93.2   39.45    93.3   42.24    97.4   42.31   100.3   44.88   105.3
GR 44.96   107.7   40.41   118.3   40.70   124.1   39.15   128.6   39.14   186.4
GR 38.98   190.2   38.00   221.7   37.25   224.2   37.44   236.2   36.94   240.6
GR 36.91   261.6   37.56   264.3   37.35   270.8   36.96   272.8   37.13   318.9
GR 36.65   322.8   35.65   325.8   35.35   331.3   36.35   344.3   36.15   357.3
GR 36.66   365.1   38.30   368.2   38.15   411.1   36.86   413.4   35.71   418.4
GR 35.51   428.4   35.41   440.4   35.41   450.4   36.71   455.6   37.59   456.4
GR 38.36   471.5   42.75   478.7   42.72   481.8   40.34   485.3   40.35   558.8
GR 39.94   560.6   40.00   566.0   38.62   568.9   38.65   571.3   38.95   572.9
GR 39.30   577.2   45.41   590.0   45.42   596.1   41.67   604.9   41.25   606.2
GR 41.25   760.0
X138.510      54   68.20  516.50  170.00  170.00  170.00
GR 42.00      .0   42.00    20.0   40.59    21.0   40.59    46.0   40.59    46.5
GR 39.59    48.4   38.79    48.5   38.79    51.0   39.60    51.1   41.85    55.4
GR 41.91    59.6   44.89    65.5   44.96    68.2   40.49    77.9   40.34    82.6
GR 39.10    85.8   39.11   125.6   39.28   126.5   39.13   128.4   38.03   130.2
GR 38.08   152.7   39.92   155.3   40.00   156.6   37.50   159.0   37.50   161.5
GR 39.50   162.5   39.50   177.5   37.80   179.5   36.60   353.5   35.70   356.5
GR 35.50   363.5   35.70   371.5   36.10   379.5   36.60   383.5   37.20   385.5
GR 37.57   395.8   37.57   428.8   38.67   429.8   38.67   442.7   44.09   451.5
GR 44.27   462.3   40.68   466.7   40.65   507.3   44.36   516.5   44.30   520.9
GR 41.07   527.1   41.07   581.5   42.70   583.5   42.70   587.5   40.70   587.6
GR 40.70   593.5   42.70   593.6   46.70   601.5   46.80   626.5
X138.710      48  121.50  463.00  200.00  200.00  200.00
GR 40.74      .0   40.75    99.8   38.95   103.7   39.30   105.3   41.16   108.1
GR 41.03   109.2   41.92   110.9   42.04   113.1   45.04   118.7   45.15   121.5
GR 41.01   132.0   40.91   141.0   39.37   143.2   39.08   180.1   40.35   182.0
GR 40.44   183.1   37.52   187.5   37.43   188.9   38.17   190.2   38.47   213.2
GR 37.21   216.7   36.91   235.5   38.72   243.5   38.84   269.9   37.42   308.7
GR 36.90   310.1   37.16   329.6   36.78   337.9   36.38   342.8   36.58   357.8
GR 36.78   366.3   37.96   380.3   37.86   381.3   38.16   388.3   37.86   396.3
GR 36.57   398.3   35.94   400.8   35.73   409.0   36.59   414.5   37.37   415.8
GR 38.26   440.2   39.09   442.9   39.86   452.6   44.37   463.0   44.68   470.5
GR 44.51   474.4   41.10   482.0   41.19   537.5
X138.900      38    2.60  420.30  190.00  190.00  190.00
GR 45.20      .0   45.20     2.6   40.66    15.5   40.62    48.1   38.89    52.7
GR 38.76    56.4   37.55    63.7   37.93   125.2   38.74   129.4   38.77   163.5
GR 38.73   208.6   38.34   233.1   37.02   235.4   36.87   237.5   36.70   246.7
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GR 36.81   253.8   36.86   259.9   37.08   262.4   37.20   280.6   36.72   289.8
GR 36.47   295.3   36.24   309.0   36.71   326.8   36.93   344.7   38.05   351.1
GR 37.20   354.3   38.39   370.5   39.25   372.5   39.58   385.7   44.58   397.4
GR 44.72   404.1   43.57   409.6   43.57   413.6   47.71   420.3   47.60   447.4
GR 44.60   456.4   46.30   486.4   46.30   497.4
X139.075      28   46.46   338.07  175.00  175.00  175.00
GR 47.49      .0   47.80    41.0   47.79    46.5   44.54    46.5   44.54    47.7
GR 44.13    48.4   41.25    53.6   41.14    62.6   38.65    68.5   38.36    92.0
GR 37.91   143.7   37.96   195.1   37.03   213.6   37.72   215.7   37.50   217.2
GR 37.72   218.1   37.91   219.3   37.95   246.0   38.51   278.8   39.69   280.5
GR 39.76   294.4   40.49   320.3   44.86   336.7   44.86   338.0   48.16   338.1
GR 48.13   342.9   47.92   389.9   46.80   488.6
X139.105      28   46.46   338.07  30.00   30.00   30.00
GR 47.49      .0   47.80    41.0   47.79    46.5   44.54    46.5   44.54    47.7
GR 44.13    48.4   41.25    53.6   41.14    62.6   38.65    68.5   38.36    92.0
GR 37.91   143.7   37.96   195.1   37.03   213.6   37.72   215.7   37.50   217.2
GR 37.72   218.1   37.91   219.3   37.95   246.0   38.51   278.8   39.69   280.5
GR 39.76   294.4   40.49   320.3   44.86   336.7   44.86   338.0   48.16   338.1
GR 48.13   342.9   47.92   389.9   46.80   488.6
X139.110      28  119.50  370.00    5.00    5.00    5.00
GR 41.50      .0   41.50    67.0   41.90    68.0   41.90    85.0   44.30   100.0
GR 44.60   119.5   41.31   128.4   40.88   133.8   41.01   141.0   38.12   147.1
GR 37.76   178.5   37.34   180.7   37.16   187.7   37.58   239.4   37.71   295.6
GR 37.48   297.9   37.20   299.3   37.49   300.4   37.65   301.8   37.76   339.7
GR 38.82   341.8   39.11   357.3   45.17   370.0   44.92   374.5   41.52   381.3
GR 41.62   424.3   42.03   425.2   42.06   441.2
X139.330      31  108.70  340.00  220.00  220.00  220.00
GR 44.70      .0   44.92   108.7   41.45   115.6   41.02   128.5   38.37   133.0
GR 37.57   142.0   37.38   147.2   36.98   149.7   36.88   157.7   36.98   167.7
GR 37.41   172.7   37.60   177.4   38.39   180.3   39.19   197.2   37.34   199.4
GR 37.58   222.6   36.46   238.7   37.81   286.1   37.57   312.2   38.98   315.0
GR 39.16   328.5   45.00   340.0   44.84   346.7   41.58   354.1   40.55   387.5
GR 41.21   388.1   41.50   394.1   39.80   394.2   39.80   399.0   42.50   399.1
GR 42.50   450.0
X139.475      28  108.50  328.40  145.00  145.00  145.00
GR 45.10      .0   46.30    51.5   47.04   104.1   46.88   108.5   44.81   108.5
GR 44.81   109.3   43.42   109.7   42.78   114.9   37.30   128.2   37.00   138.1
GR 36.50   148.1   37.00   158.1   37.00   168.1   37.30   175.4   37.46   188.0
GR 37.64   208.2   37.82   228.1   37.67   248.5   37.48   268.1   38.99   287.0
GR 40.28   288.2   41.10   308.3   41.79   320.5   44.78   327.6   44.78   328.4
GR 46.90   328.4   46.86   330.0   45.81   422.5
X139.485      28  108.50  328.40   10.00   10.00   10.00
GR 45.10      .0   46.30    51.5   47.04   104.1   46.88   108.5   44.81   108.5
GR 44.81   109.3   43.42   109.7   42.78   114.9   37.30   128.2   37.00   138.1
GR 36.50   148.1   37.00   158.1   37.00   168.1   37.30   175.4   37.46   188.0
GR 37.64   208.2   37.82   228.1   37.67   248.5   37.48   268.1   38.99   287.0
GR 40.28   288.2   41.10   308.3   41.79   320.5   44.78   327.6   44.78   328.4
GR 46.90   328.4   46.86   330.0   45.81   422.5
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▶ 논산천 - 횡단자료

X1	.000	58	.00	639.50	.00	.00	.00			
GR	6.46	.0	5.96	9.0	5.76	48.0	5.96	48.5	6.16	52.5
GR	6.01	53.0	5.81	79.5	4.86	80.0	5.56	86.5	5.01	121.5
GR	4.71	130.5	4.62	132.0	4.76	145.0	4.46	151.0	2.86	151.5
GR	1.21	155.0	.16	158.0	-1.74	165.5	-2.44	177.0	-3.14	183.0
GR	-3.44	196.0	-3.84	212.5	-3.24	225.5	-.14	234.0	.66	235.0
GR	1.21	238.0	4.11	246.5	4.11	247.0	3.81	247.5	3.81	553.5
GR	3.76	553.5	3.76	557.0	3.56	557.5	3.56	595.0	2.81	597.0
GR	2.81	598.5	4.66	601.5	4.71	616.5	8.46	632.5	10.74	639.5
GR	10.74	640.5	10.68	650.0	7.76	661.0	7.66	663.0	5.66	666.0
GR	5.66	679.0	5.16	683.0	5.16	685.5	3.66	687.5	3.66	717.5
GR	5.16	720.5	5.16	726.5	4.16	727.5	4.16	732.5	5.16	737.5
GR	5.16	740.5	3.16	743.5	3.16	755.0				
X1	.165	61	.00	455.10	165.00	165.00	165.00			
GR	13.31	.0	8.61	.0	8.31	9.5	8.31	12.1	6.31	12.6
GR	6.31	17.8	5.31	17.8	5.51	23.8	6.81	24.1	6.91	25.1
GR	7.21	25.1	7.21	25.5	7.31	25.5	7.41	29.9	7.31	32.5
GR	5.51	35.5	6.01	36.8	5.26	43.7	5.26	53.7	4.66	69.3
GR	4.06	69.7	4.01	78.8	4.01	79.4	3.56	79.4	3.56	79.7
GR	1.23	79.7	-2.44	79.7	-2.44	132.3	1.23	132.3	3.56	132.3
GR	3.56	132.6	4.01	132.6	4.01	133.2	3.51	133.2	3.51	133.6
GR	2.61	133.6	3.01	148.1	3.86	154.6	3.86	155.9	3.46	156.8
GR	3.46	209.1	3.86	209.6	3.86	210.4	1.36	214.3	1.36	226.9
GR	3.91	230.8	3.91	231.2	3.11	231.7	3.11	239.5	3.61	240.8
GR	3.61	394.0	3.91	394.3	3.91	395.3	3.06	395.8	3.06	397.9
GR	4.86	401.4	4.86	414.8	7.91	438.2	10.31	452.1	10.67	455.1
GR	10.52	504.5								
X1	.170	61	.00	455.10	5.00	5.00	5.00			
GR	13.31	.0	8.61	.0	8.31	9.5	8.31	12.1	6.31	12.6
GR	6.31	17.8	5.31	17.8	5.51	23.8	6.81	24.1	6.91	25.1
GR	7.21	25.1	7.21	25.5	7.31	25.5	7.41	29.9	7.31	32.5
GR	5.51	35.5	6.01	36.8	5.26	43.7	5.26	53.7	4.66	69.3
GR	4.06	69.7	4.01	78.8	4.01	79.4	3.56	79.4	3.56	79.7
GR	1.23	79.7	-2.44	79.7	-2.44	132.3	1.23	132.3	3.56	132.3
GR	3.56	132.6	4.01	132.6	4.01	133.2	3.51	133.2	3.51	133.6
GR	2.61	133.6	3.01	148.1	3.86	154.6	3.86	155.9	3.46	156.8
GR	3.46	209.1	3.86	209.6	3.86	210.4	1.36	214.3	1.36	226.9
GR	3.91	230.8	3.91	231.2	3.11	231.7	3.11	239.5	3.61	240.8
GR	3.61	394.0	3.91	394.3	3.91	395.3	3.06	395.8	3.06	397.9
GR	4.86	401.4	4.86	414.8	7.91	438.2	10.31	452.1	10.67	455.1
GR	10.52	504.5								
X1	.220	63	.00	434.00	50.00	50.00	50.00			
GR	4.24	.0	4.24	20.0	4.24	23.5	-2.86	23.5	-2.86	32.5
GR	5.19	32.5	5.29	40.0	6.69	40.0	6.69	41.0	6.69	42.0
GR	7.19	42.0	7.19	42.5	7.14	49.5	7.14	50.0	6.04	51.5
GR	6.04	69.5	4.89	71.0	4.89	74.5	1.24	74.5	-2.11	74.5
GR	-1.36	81.5	-.71	89.5	-1.06	99.5	-2.71	108.5	-2.21	117.5
GR	-1.71	127.5	-1.76	134.5	-1.06	139.5	-2.86	149.5	-4.16	155.5
GR	-3.56	158.5	-1.86	164.0	-.31	170.0	.49	171.0	1.24	173.0
GR	1.79	174.0	1.89	175.0	3.59	177.0	3.59	229.5	2.29	232.0
GR	1.79	238.0	2.04	265.5	3.94	268.5	3.94	269.5	3.19	270.5
GR	3.19	411.0	4.14	413.5	4.34	421.0	8.89	430.5	10.52	434.0
GR	10.52	437.7	7.14	442.0	7.14	444.5	5.29	449.5	5.29	452.0
GR	4.29	453.5	4.09	456.5	3.59	456.5	3.59	457.1	4.09	457.1
GR	4.09	457.5	2.99	459.0	2.99	524.5				
X1	.420	63	60.50	494.00	200.00	200.00	200.00			
GR	1.53	.0	1.53	30.0	6.03	30.0	6.03	34.5	9.03	34.5
GR	9.03	44.5	9.03	46.0	8.88	47.5	9.83	52.5	10.18	60.5
GR	8.58	63.7	6.88	63.7	6.88	65.3	2.88	71.8	2.88	74.0
GR	3.88	74.0	3.88	75.5	3.78	76.0	3.78	142.5	3.98	143.0
GR	3.98	145.5	1.28	150.5	1.08	151.5	1.08	153.5	1.38	159.0
GR	2.53	161.0	2.33	163.0	1.28	163.5	-.62	171.0	-1.82	189.0
GR	.58	199.5	.88	203.0	.48	206.0	-1.47	230.0	-2.12	250.0
GR	-2.07	267.0	-1.02	279.0	1.38	286.5	1.68	287.0	3.88	290.5
GR	3.58	291.5	3.58	398.0	3.13	398.5	3.13	468.0	2.83	469.0
GR	2.83	470.0	4.38	473.0	4.63	481.0	9.03	490.0	9.03	493.0
GR	10.27	494.0	10.27	494.3	10.27	498.0	5.28	508.5	5.18	511.0
GR	3.98	513.5	3.98	515.0	3.38	516.0	3.38	516.5	4.18	517.0
GR	4.18	517.5	2.78	518.5	2.78	640.5				
X1	.620	50	77.50	410.00	200.00	200.00	200.00			
GR	4.28	.0	4.73	1.5	4.73	5.0	4.43	5.5	4.43	55.5
GR	8.58	70.0	9.88	70.0	10.03	76.0	10.03	77.5	8.63	77.5
GR	4.03	89.0	4.03	141.0	4.48	141.5	4.48	144.5	2.73	149.0
GR	2.73	152.5	1.29	156.0	.63	161.0	.13	164.0	-.57	170.0

GR	-2.27	183.5	-2.17	198.5	-2.47	212.0	-1.77	223.0	-.07	225.5
GR	.83	230.5	1.29	231.5	1.93	234.0	4.03	238.5	4.03	239.0
GR	3.73	239.0	3.73	324.0	3.33	324.5	3.33	387.5	3.13	388.0
GR	3.13	389.5	4.43	392.0	4.53	398.5	8.68	407.0	10.27	410.0
GR	10.27	410.3	10.27	414.3	5.48	425.0	4.58	430.5	3.58	432.5
GR	3.58	433.5	3.88	434.0	3.88	434.5	3.18	435.5	3.18	522.0
X1	.820	60	104.00	416.50	200.00	200.00	200.00			
GR	4.16	.0	4.16	21.5	5.56	22.5	5.56	25.5	4.96	28.0
GR	4.16	28.0	1.46	35.0	1.46	43.5	3.26	48.0	4.76	48.0
GR	5.41	49.5	5.41	52.0	4.66	53.0	4.66	80.0	5.16	80.0
GR	5.16	83.5	5.16	89.5	5.16	90.0	5.56	90.0	9.91	99.5
GR	9.91	104.0	8.56	107.2	3.81	118.0	3.81	175.5	4.41	176.5
GR	4.41	180.0	3.11	183.0	1.31	189.5	.41	194.5	-.29	200.5
GR	-.39	211.5	-1.59	225.5	-1.49	244.0	-.94	256.5	.11	263.0
GR	.41	268.0	1.31	269.0	2.26	271.0	2.26	273.5	4.11	278.0
GR	4.11	283.0	3.61	284.0	3.61	368.0	3.61	368.5	3.61	402.5
GR	3.91	403.0	3.91	404.0	8.56	414.0	10.04	416.5	10.04	417.0
GR	10.04	421.5	8.66	424.0	8.46	426.5	8.16	426.5	7.61	443.0
GR	8.06	455.5	8.56	467.5	8.61	473.0	7.06	488.0	3.06	543.0
X1	.828	67	111.00	423.30	8.00	8.00	8.00			
GR	8.61	.0	8.61	97.0	10.01	107.0	10.01	111.0	9.11	116.0
GR	8.21	116.0	8.21	116.3	7.81	116.3	4.26	124.0	4.16	129.2
GR	3.76	142.4	3.71	155.6	3.71	168.8	3.61	182.0	4.01	184.5
GR	4.01	185.5	3.46	190.0	2.61	192.0	2.01	195.2	1.31	197.0
GR	.91	200.0	.71	203.0	.06	208.4	-.49	216.0	-.79	221.6
GR	-1.34	234.8	-1.64	240.5	-1.39	248.0	-.99	261.2	-1.39	265.5
GR	.21	274.4	.41	276.0	1.31	279.0	2.41	279.5	2.41	283.0
GR	3.51	286.0	3.71	287.6	3.61	289.0	3.61	291.5	2.61	294.0
GR	2.91	300.8	2.91	314.0	3.36	327.2	3.21	340.4	3.21	353.6
GR	3.01	366.8	3.31	380.0	3.76	393.2	3.86	406.4	3.91	410.5
GR	7.96	419.2	8.21	419.3	8.21	419.6	9.11	419.6	9.99	423.3
GR	9.99	427.6	8.61	430.5	8.11	438.0	8.11	456.0	7.91	459.0
GR	8.61	461.0	8.61	462.0	8.61	465.0	9.16	472.5	9.11	480.0
GR	8.66	480.5	8.66	512.5						
X1	.837	67	111.00	423.30	9.00	9.00	9.00			
GR	8.61	.0	8.61	97.0	10.01	107.0	10.01	111.0	9.11	116.0
GR	8.21	116.0	8.21	116.3	7.81	116.3	4.26	124.0	4.16	129.2
GR	3.76	142.4	3.71	155.6	3.71	168.8	3.61	182.0	4.01	184.5
GR	4.01	185.5	3.46	190.0	2.61	192.0	2.01	195.2	1.31	197.0
GR	.91	200.0	.71	203.0	.06	208.4	-.49	216.0	-.79	221.6
GR	-1.34	234.8	-1.64	240.5	-1.39	248.0	-.99	261.2	-1.39	265.5
GR	.21	274.4	.41	276.0	1.31	279.0	2.41	279.5	2.41	283.0
GR	3.51	286.0	3.71	287.6	3.61	289.0	3.61	291.5	2.61	294.0
GR	2.91	300.8	2.91	314.0	3.36	327.2	3.21	340.4	3.21	353.6
GR	3.01	366.8	3.31	380.0	3.76	393.2	3.86	406.4	3.91	410.5
GR	7.96	419.2	8.21	419.3	8.21	419.6	9.11	419.6	9.99	423.3
GR	9.99	427.6	8.61	430.5	8.11	438.0	8.11	456.0	7.91	459.0
GR	8.61	461.0	8.61	462.0	8.61	465.0	9.16	472.5	9.11	480.0
GR	8.66	480.5	8.66	512.5						
X1	.840	56	98.50	398.50	3.00	3.00	3.00			
GR	10.66	.0	10.81	83.0	10.71	91.0	11.44	98.5	9.34	98.5
GR	9.34	99.5	8.46	99.5	8.46	100.3	4.41	106.0	4.16	128.5
GR	3.61	158.5	3.96	170.5	2.16	175.0	1.96	176.5	1.31	178.5
GR	.96	188.5	.01	190.5	-.74	204.0	-1.59	218.5	-1.54	234.5
GR	-1.49	240.0	-3.29	248.5	-1.89	254.0	.71	259.0	1.31	261.0
GR	2.21	263.0	2.26	266.0	3.71	269.0	4.01	270.5	4.01	274.5
GR	3.11	276.0	3.46	278.5	3.61	308.5	3.36	338.5	3.66	361.0
GR	2.91	362.0	2.91	363.0	3.51	364.5	3.61	368.5	4.31	381.5
GR	4.26	387.5	4.41	391.0	8.01	396.8	8.01	397.5	9.34	397.5
GR	9.34	398.5	11.44	398.5	10.97	402.5	10.77	410.5	8.56	425.5
GR	8.66	438.0	9.16	439.0	9.16	442.0	9.06	458.0	9.06	465.5
GR	8.61	500.5								
X1	.854	56	98.50	398.50	14.00	14.00	14.00			
GR	10.66	.0	10.81	83.0	10.71	91.0	11.44	98.5	9.34	98.5
GR	9.34	99.5	8.46	99.5	8.46	100.3	4.41	106.0	4.16	128.5
GR	3.61	158.5	3.96	170.5	2.16	175.0	1.96	176.5	1.31	178.5
GR	.96	188.5	.01	190.5	-.74	204.0	-1.59	218.5	-1.54	234.5
GR	-1.49	240.0	-3.29	248.5	-1.89	254.0	.71	259.0	1.31	261.0
GR	2.21	263.0	2.26	266.0	3.71	269.0	4.01	270.5	4.01	274.5
GR	3.11	276.0	3.46	278.5	3.61	308.5	3.36	338.5	3.66	361.0
GR	2.91	362.0	2.91	363.0	3.51	364.5	3.61	368.5	4.31	381.5
GR	4.26	387.5	4.41	391.0	8.01	396.8	8.01	397.5	9.34	397.5
GR	9.34	398.5	11.44	398.5	10.97	402.5	10.77	410.5	8.56	425.5
GR	8.66	438.0	9.16	439.0	9.16	442.0	9.06	458.0	9.06	465.5
GR	8.61	500.5								
X1	1.035	54	116.00	415.60	181.00	181.00	181.00			

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GR  4.14     .0    4.14   65.0    4.79   65.5    4.59   70.5    1.79   80.5
GR  1.79    85.5   6.44   93.5    6.44  103.0   10.49  112.0   10.49  116.0
GR  8.74   119.4   4.84  128.0    4.84  129.5    4.14  130.0    4.14  197.0
GR  4.34   197.5   4.34  201.0    2.44  205.5    2.44  207.5    1.34  212.5
GR   .79   217.5    .29  222.0    -.01  237.0    -.41  252.0   -1.26  273.5
GR -1.86   290.0   -.61  298.5    -.11  303.5    1.34  306.0    2.09  307.0
GR  2.39   309.5   4.04  314.0    4.04  319.0    3.44  320.5    3.44  402.0
GR  8.55   412.5  10.37  415.6   10.37  415.9   10.37  420.2    5.49  430.0
GR  5.49   433.0   4.59  434.0    4.19  434.0    4.19  434.5    4.59  434.5
GR  4.74   455.5   5.29  466.0    5.29  473.5    5.09  473.5    4.89  480.5
GR  5.09   480.5   4.89  502.0    3.39  502.0    3.39  546.0
X1 1.220      65 150.00 444.40  185.00 185.00  185.00
GR  4.07     .0   4.07   67.5    4.37   68.0    4.37   68.9    3.77   68.9
GR  3.77    69.5   4.37   69.5    4.37   70.0    4.07   70.5    4.07  101.0
GR  4.77   102.5   4.77  105.0    1.62  113.0    1.62  117.5    5.72  128.0
GR  5.72   137.5  10.32  146.0   10.32  150.0    9.27  151.5    9.32  155.0
GR  4.07   165.5   4.07  216.5    3.57  217.5    3.57  235.5    4.27  236.0
GR  4.27   239.5   2.67  243.5    2.67  246.5    1.36  248.5     .67  253.5
GR  -.03   255.5   -.43  261.0   -1.03  273.5   -1.18  280.5   -1.23  292.5
GR -1.63   301.5  -1.68  308.0   -1.48  316.0   -2.08  328.0   -1.33  333.5
GR  2.07   335.0   2.57  337.5    2.87  339.5    4.02  342.5    4.02  346.5
GR  3.27   347.5   3.27  395.0    2.72  396.0    2.72  397.0    3.32  398.0
GR  3.32   430.5   8.62  441.0   10.26  444.4   10.26  448.4    8.27  454.0
GR  8.27   455.5   5.62  459.5    3.92  465.5    3.82  468.5    3.82  472.0
GR  3.42   475.0   2.42  476.0    2.42  477.5    3.52  479.0    3.52  568.0
X1 1.420      56 143.50 433.00  200.00 200.00  200.00
GR  4.07     .0   4.07   95.0    4.82   96.5    4.82  100.0    1.37  108.5
GR  1.37   111.5   5.62  122.5    5.62  130.0   10.37  139.0   10.37  143.0
GR 10.37   143.5   8.50  146.7    4.02  157.0    4.02  216.0    4.47  217.0
GR  4.47   217.5   4.07  218.5    4.07  222.0    1.37  229.5    -.38  234.5
GR -1.13   237.5  -1.78  250.0   -1.58  260.5   -1.08  275.5     .82  296.0
GR  1.22   308.0   1.37  311.0    1.72  315.0    2.47  316.5    2.47  320.0
GR  4.32   323.5   4.32  327.0    3.47  327.5    3.47  360.5    4.02  362.0
GR  3.97   367.0   3.47  368.0    1.97  371.5    1.87  375.0    1.07  376.0
GR  1.07   383.0   1.87  384.0    1.87  387.0    3.52  390.5    3.97  392.5
GR  3.97   399.0   3.52  401.0    3.52  418.0    8.67  429.5   10.32  433.0
GR 10.32   436.5   5.17  447.5    4.62  453.5    2.62  458.5    1.92  468.0
GR  2.12   558.0
X1 1.620      74 118.00 407.00  200.00 200.00  200.00
GR  4.03     .0   1.08   20.0    1.08   28.0    4.03   43.9    4.03   44.5
GR  3.63    47.6   3.23   47.6    3.23   48.3    3.63   48.3    3.63   49.3
GR  3.13    50.3   3.13   71.0    4.18   73.0    4.18   76.0    3.43   77.5
GR  1.73    80.5   1.73   85.5    3.53   89.5    4.03   90.5    4.48   99.5
GR  7.23   102.5   7.23  104.0    8.28  107.5    8.28  110.5   10.48  114.0
GR 10.48   118.0   8.73  123.0    4.48  135.0    4.48  188.0    4.33  189.0
GR  4.33   192.0   2.53  195.8    2.53  198.3    1.38  201.0     .48  206.0
GR   .48   210.0    .18  228.5   -1.32  244.0   -1.27  264.0    -.92  271.0
GR  -.87   278.5    .28  283.0    1.38  286.0    2.13  287.5    2.43  291.0
GR  4.08   294.0   4.08  297.0    3.58  298.0    3.58  329.5    3.33  330.5
GR  3.33   381.5   2.93  383.0    2.93  383.8    3.33  384.8    3.33  392.5
GR  8.68   403.0  10.41  407.0   10.41  410.5    9.28  412.0    9.28  413.5
GR  8.63   414.5   8.63  417.0    5.68  421.5    5.68  425.0    4.88  425.5
GR  5.38   445.5   3.48  448.5    3.48  467.5    4.28  468.5    4.28  469.0
GR  2.48   472.0   2.48  475.0    4.18  476.5    4.18  507.0
X1 1.820      61 150.00 437.80  200.00 200.00  200.00
GR  3.22     .0   3.22   97.0    4.37   98.5    4.37  102.0    3.57  103.5
GR  1.82   106.5   1.82  109.5    3.67  112.0    4.47  113.5    4.47  116.5
GR  3.37   118.5   3.37  126.0    4.07  127.0    4.07  130.0    5.62  133.5
GR  5.82   135.5  10.57  146.0   10.57  150.0    8.78  153.7    3.62  165.0
GR  3.62   211.5   4.32  212.5    4.32  215.5    2.82  219.5    2.52  222.5
GR  1.40   224.0   -.08  225.0   -2.18  232.0   -1.93  240.0    -.63  248.0
GR -1.08   268.5   -.23  291.0     .37  302.0     .62  305.0    1.40  306.5
GR  2.12   308.0   3.12  309.0    3.32  311.5    4.32  315.5    4.32  319.0
GR  3.42   320.5   3.42  412.5    2.97  413.5    2.97  414.0    3.22  415.0
GR  3.22   422.5   8.97  434.5   10.37  437.8   10.37  441.3    6.92  449.0
GR  6.92   452.2   5.47  454.0    5.27  456.0    4.52  459.5    4.52  469.5
GR  3.82   469.5   3.82  474.0    1.82  477.0    1.82  479.0    3.12  481.0
GR  3.12   578.0
X1 2.020      74 150.00 434.90  200.00 200.00  200.00
GR  3.51     .0   3.51   55.5    4.71   57.5    4.71   61.0    3.96   62.5
GR  2.01    65.5   2.01   69.0    3.61   71.0    4.71   73.5    4.31   86.5
GR  5.26    92.0   5.26   94.0    5.26   98.5    5.06  101.0    5.06  116.5
GR  3.66   120.0   3.66  122.5    4.16  123.5    4.16  128.5    5.51  132.0
GR  5.61   134.5  10.56  146.0   10.56  150.0    8.76  153.4    3.91  164.0
GR  3.91   196.5   4.31  197.0    4.31  201.5    2.71  204.5    2.41  207.5
GR  1.41   210.5   -.19  212.5   -1.04  217.0   -1.64  233.5   -1.14  250.5
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GR	-.24	269.0	-.19	276.0	.81	280.0	1.41	281.5	2.16	283.0
GR	2.46	286.0	4.06	290.5	4.06	293.5	3.51	294.5	3.51	387.0
GR	2.81	388.0	2.81	389.5	3.36	390.5	3.36	420.5	8.91	432.0
GR	10.50	434.9	10.50	438.9	8.26	443.5	8.26	445.0	5.91	449.0
GR	5.71	451.5	2.61	458.0	2.61	466.0	3.46	467.5	3.46	470.5
GR	1.76	473.0	1.76	475.5	3.41	478.0	3.41	479.0	2.91	479.5
GR	2.91	484.0	3.96	488.0	3.96	490.0	3.26	490.5	3.26	492.0
GR	3.96	493.0	3.96	495.0	3.36	497.0	3.36	580.0		
X1	2.240	60	113.50	393.50	220.00	220.00	220.00			
GR	5.04	.0	5.34	23.0	4.74	23.0	4.74	28.0	4.74	38.5
GR	4.99	40.5	5.19	54.0	5.19	58.0	5.24	64.5	5.24	73.0
GR	5.64	74.0	5.64	78.0	5.74	87.0	5.79	91.0	5.79	95.0
GR	5.99	95.0	5.99	99.0	10.34	109.8	10.34	113.5	8.64	117.4
GR	3.79	128.0	3.79	140.5	3.94	141.0	3.94	145.0	1.44	153.0
GR	-.31	156.0	-1.86	161.5	-1.66	177.0	-1.31	193.0	-.11	211.5
GR	-.26	225.5	.19	228.0	1.44	231.0	2.04	232.5	2.74	235.5
GR	4.24	239.0	4.24	243.0	3.49	244.0	3.49	308.5	3.29	309.0
GR	3.29	342.0	3.29	342.5	3.29	344.0	3.69	345.0	3.69	379.5
GR	8.99	390.1	10.50	393.5	10.50	397.5	8.99	401.0	8.99	402.5
GR	6.04	408.0	5.84	410.0	3.54	416.0	3.54	423.5	4.29	424.0
GR	4.29	428.0	2.69	430.5	2.69	432.5	3.69	433.5	3.69	541.5
X1	2.450	56	135.00	413.10	210.00	210.00	210.00			
GR	4.99	.0	4.99	75.0	5.94	97.5	5.94	106.0	5.74	111.0
GR	5.74	116.0	5.74	120.0	10.39	131.0	10.39	135.0	8.69	138.7
GR	3.34	150.0	3.34	182.5	3.94	183.5	3.94	188.5	3.19	190.5
GR	2.99	195.0	1.46	198.5	1.04	201.5	1.24	208.5	-.36	211.5
GR	-.71	225.0	-.96	243.5	-1.36	267.0	-1.36	276.5	.44	279.5
GR	1.46	281.5	2.29	283.0	2.49	285.5	3.59	288.0	4.64	291.0
GR	4.64	294.0	3.59	295.0	3.59	362.5	2.89	363.5	2.89	364.0
GR	3.64	366.0	3.64	398.0	4.24	398.7	4.24	400.3	8.84	409.8
GR	10.49	413.1	10.49	413.4	10.49	416.9	6.19	426.5	6.19	429.0
GR	5.89	429.5	5.79	431.0	3.84	435.0	2.74	436.5	2.74	446.0
GR	4.64	447.5	4.64	452.5	3.54	454.0	3.54	456.0	4.34	457.0
GR	4.34	535.0								
X1	2.660	54	100.00	379.10	210.00	210.00	210.00			
GR	3.90	.0	3.90	3.0	3.65	3.5	3.65	75.0	4.40	76.5
GR	4.40	80.5	6.15	84.0	6.15	87.0	9.00	91.5	9.00	93.5
GR	10.40	96.5	10.40	100.0	8.80	103.5	3.30	115.0	3.30	162.5
GR	3.10	163.0	3.10	198.7	3.95	199.2	3.95	202.7	2.85	205.0
GR	2.85	208.5	1.48	210.0	1.20	210.0	.80	215.0	.45	220.0
GR	.05	238.0	-.30	248.5	-.55	264.0	-.85	272.0	-1.20	284.0
GR	-1.40	290.0	-1.40	298.0	-.25	300.0	1.48	302.0	2.05	303.5
GR	2.45	306.0	4.05	309.5	4.05	313.5	3.65	314.5	3.65	365.0
GR	8.95	376.0	10.63	379.1	10.63	379.6	10.63	383.1	5.80	393.5
GR	5.20	397.5	4.30	400.5	3.45	446.0	3.75	447.5	3.70	451.5
GR	2.80	454.5	2.80	456.5	3.30	457.5	3.30	504.0		
X1	2.860	66	130.00	409.70	200.00	200.00	200.00			
GR	3.08	.0	3.08	84.5	4.30	86.0	4.30	90.0	3.55	91.5
GR	1.90	95.5	1.90	98.5	3.50	101.0	3.50	108.0	6.00	112.0
GR	6.00	115.0	10.30	122.5	10.30	130.0	8.87	133.4	3.95	143.5
GR	3.35	145.5	3.35	190.5	3.15	191.0	3.15	243.0	3.75	243.5
GR	3.75	246.8	2.90	248.5	2.90	251.5	1.50	253.5	.15	254.5
GR	-.20	262.0	-.40	281.0	-.40	296.0	-.55	315.0	-.70	327.0
GR	-.70	336.0	.40	340.0	1.50	343.0	2.50	345.5	2.90	350.0
GR	2.45	362.5	1.05	368.5	1.40	385.0	2.45	392.5	2.45	394.0
GR	3.25	394.0	3.25	395.2	8.55	406.7	9.99	409.7	9.99	410.1
GR	9.99	413.6	8.40	417.5	8.40	419.0	6.05	423.0	5.75	426.0
GR	3.85	429.5	3.55	432.0	1.55	432.0	1.55	454.5	3.25	457.5
GR	2.85	462.5	4.25	464.0	4.25	466.0	2.45	469.0	1.85	515.0
GR	3.85	518.0	3.85	522.5	4.30	523.0	4.30	527.0	3.80	528.0
GR	3.80	595.0								
X1	3.070	53	133.00	415.20	210.00	210.00	210.00			
GR	3.33	.0	3.33	85.5	4.38	87.0	4.38	90.5	3.48	92.0
GR	1.78	94.5	1.78	98.0	3.58	100.5	3.88	101.5	3.88	111.5
GR	5.83	115.0	5.93	118.0	8.83	123.0	8.83	125.0	10.38	129.0
GR	10.38	133.0	8.73	136.2	3.78	147.2	3.78	148.7	3.38	149.0
GR	3.38	207.5	3.88	208.0	3.88	213.0	3.03	214.5	2.83	217.5
GR	1.53	220.5	.83	221.5	.33	226.5	-.12	229.0	-.97	246.0
GR	-.50	267.0	-.37	282.5	-.17	290.0	-.02	301.0	.23	306.0
GR	1.53	308.0	2.23	309.0	2.83	309.6	5.33	313.0	3.98	315.5
GR	3.98	319.3	3.58	320.3	3.58	401.0	9.01	412.5	10.54	415.2
GR	10.54	415.5	10.53	419.0	5.98	428.5	5.98	432.0	4.53	434.0
GR	4.53	436.5	3.13	438.5	3.13	518.0				
X1	3.260	60	131.00	412.50	190.00	190.00	190.00			
GR	3.80	.0	3.85	81.5	4.00	85.9	4.00	89.0	3.55	90.5
GR	1.75	93.0	1.75	97.0	3.60	99.5	3.70	101.5	3.70	107.5

GR	3.70	108.5	5.90	114.0	6.00	116.0	7.00	117.5	7.10	118.5
GR	8.60	121.0	8.70	123.5	10.35	127.0	10.35	131.0	8.80	134.3
GR	3.85	144.5	3.85	145.5	3.40	146.5	3.40	193.5	3.70	194.0
GR	3.70	199.0	2.80	201.0	2.80	204.0	1.54	206.0	-.10	210.0
GR	-.65	215.5	-.45	228.0	-.35	241.0	-.30	258.0	-.45	275.0
GR	-.40	286.0	-.10	292.0	1.54	293.5	2.30	295.0	2.50	297.5
GR	3.55	299.0	3.95	299.0	3.95	304.0	3.55	305.0	3.55	362.0
GR	3.70	362.5	3.70	367.0	3.70	394.5	3.70	397.8	8.77	409.0
GR	10.31	412.5	10.31	416.5	7.80	419.5	7.80	422.0	3.30	435.0
GR	3.30	463.0	3.80	464.0	3.80	469.0	4.35	480.0	4.35	565.0
X1	3.450	58	123.50	403.80	190.00	190.00	190.00			
GR	3.65	.0	3.65	78.5	4.30	79.5	4.30	83.0	3.45	85.0
GR	1.70	87.0	1.70	91.0	3.60	92.7	3.60	100.5	6.10	106.5
GR	6.30	109.0	9.10	114.0	9.20	116.5	10.40	119.0	10.40	123.0
GR	10.40	123.5	8.85	126.5	4.00	136.5	3.80	138.5	3.35	139.5
GR	3.35	209.0	3.90	210.0	3.90	213.5	2.90	216.0	2.90	219.0
GR	1.55	220.5	.70	221.5	-.50	231.0	-.70	243.0	-.75	256.5
GR	-.65	268.0	-.45	285.0	-.25	295.0	.50	301.0	.70	306.0
GR	1.55	308.5	2.45	310.0	2.65	313.0	3.45	314.0	4.25	316.0
GR	4.25	319.0	3.75	319.5	3.75	354.5	4.07	355.0	4.07	388.5
GR	4.27	388.8	4.27	390.5	9.10	401.0	10.50	403.8	10.50	404.3
GR	10.50	408.1	7.00	416.5	7.00	420.7	4.90	425.0	5.20	426.0
GR	5.15	433.5	5.15	494.0	5.10	510.5				
X1	3.660	51	133.00	413.50	210.00	210.00	210.00			
GR	3.40	.0	3.40	84.0	4.35	85.0	4.35	89.0	3.45	91.5
GR	1.75	93.0	1.75	98.0	3.20	100.0	4.20	100.0	5.65	112.5
GR	5.65	116.5	6.35	116.5	6.35	120.5	10.35	127.5	10.35	133.0
GR	9.00	135.7	3.27	148.0	3.27	250.0	3.70	251.0	3.70	254.0
GR	2.90	257.0	2.70	261.0	1.60	263.5	1.00	268.5	.50	271.5
GR	.55	279.5	-.05	288.0	-.70	301.0	-.35	328.0	1.25	338.0
GR	1.60	345.0	1.70	349.0	2.60	351.0	2.90	354.0	3.75	356.0
GR	3.75	358.5	4.25	360.0	4.25	400.0	8.83	410.0	10.55	413.5
GR	10.55	417.0	5.85	428.0	5.20	429.5	5.20	442.5	5.20	446.0
GR	5.50	446.5	5.25	448.0	3.55	451.0	3.55	454.0	4.10	454.5
GR	4.10	507.0								
X1	3.830	60	121.30	402.90	170.00	170.00	170.00			
GR	3.27	.0	3.27	76.0	3.87	77.5	3.87	80.5	3.42	81.5
GR	1.72	84.5	1.72	89.0	3.17	90.2	3.82	91.5	3.82	99.0
GR	6.02	104.5	6.22	107.0	8.82	112.0	8.92	114.0	10.47	117.5
GR	10.47	121.0	10.47	121.3	9.02	124.1	3.57	135.5	3.57	173.5
GR	2.92	174.5	2.92	175.5	3.42	176.5	3.42	249.0	3.97	249.5
GR	3.97	252.5	3.47	253.5	2.77	255.1	1.62	263.5	.67	268.5
GR	.27	270.5	.17	281.0	-.53	307.0	-.63	324.0	-.93	342.0
GR	-.33	346.5	1.62	348.5	2.67	350.0	2.77	351.5	3.92	355.0
GR	4.27	358.0	4.27	358.5	4.17	359.5	4.17	390.0	8.89	399.3
GR	10.49	402.9	10.49	406.0	6.62	414.5	6.07	415.0	5.72	416.5
GR	5.72	419.5	5.22	420.5	5.02	425.5	4.82	426.0	4.82	429.5
GR	4.92	431.5	3.42	433.0	3.42	436.0	4.42	437.5	4.42	514.0
X1	4.040	61	112.00	392.60	210.00	210.00	210.00			
GR	3.25	.0	3.25	62.5	4.30	65.5	4.25	71.0	3.05	72.5
GR	2.00	75.0	2.00	80.0	3.50	82.5	4.10	84.0	5.00	84.0
GR	5.00	94.0	7.15	97.0	7.25	99.5	9.25	103.0	9.35	105.0
GR	10.55	108.0	10.55	112.0	8.75	115.8	3.55	126.5	3.55	223.5
GR	3.95	224.0	3.95	226.5	3.55	228.0	2.70	229.8	2.70	232.3
GR	1.65	233.5	1.20	234.5	.70	239.5	.25	249.0	.65	276.0
GR	-.15	299.0	-.10	321.0	1.65	324.0	2.40	324.5	2.70	328.0
GR	4.10	331.5	4.10	334.5	3.70	335.5	3.70	377.0	4.10	377.5
GR	4.10	379.0	8.91	389.7	10.64	392.6	10.64	393.0	10.64	397.0
GR	6.35	406.0	6.35	409.0	5.25	410.5	5.40	411.0	5.40	417.5
GR	4.95	429.0	4.95	440.0	5.05	444.0	4.35	444.0	4.35	447.0
GR	5.15	448.5	5.15	451.5	3.65	453.5	3.65	457.0	4.75	458.5
GR	4.75	516.0								
X1	4.225	66	122.00	401.10	185.00	185.00	185.00			
GR	3.63	.0	3.63	29.0	3.88	30.0	3.88	32.0	2.73	36.5
GR	2.73	38.0	4.03	39.0	4.03	41.0	6.43	46.5	6.43	50.5
GR	6.38	72.5	6.23	81.5	6.63	102.0	6.78	106.0	10.47	113.0
GR	10.23	121.5	10.63	122.0	3.78	134.5	3.98	149.0	4.18	196.5
GR	2.28	249.5	1.68	250.5	.08	254.5	-3.02	262.0	.13	282.0
GR	-.37	294.0	-.92	305.0	-.17	312.0	-.12	317.0	1.68	320.0
GR	2.48	321.0	2.68	322.5	3.83	325.5	3.83	329.0	3.48	330.0
GR	3.48	358.0	3.68	358.2	4.13	387.0	9.11	398.2	10.59	401.1
GR	10.59	401.5	10.59	404.5	6.73	413.0	5.48	418.5	5.48	423.0
GR	4.58	423.0	4.58	423.4	4.98	423.4	4.98	423.9	5.28	423.9
GR	5.28	424.4	5.28	426.9	5.33	440.0	5.23	447.0	5.23	456.5
GR	5.33	459.5	5.33	470.5	5.33	477.5	5.63	482.5	5.63	484.0
GR	5.63	496.0	5.63	499.0	4.93	499.0	4.93	499.8	5.33	499.8

GR	5.33	519.8							
X1	4.257	47	110.08	389.63	32.00	32.00	32.00		
GR	13.37	.0	11.01	48.4	11.01	50.7	8.02	50.7	8.02	52.5
GR	7.67	55.7	4.32	63.5	4.32	67.1	3.32	68.5	2.22	70.3
GR	2.22	74.0	4.67	75.8	5.07	78.6	5.22	94.6	10.37	103.2
GR	10.37	109.6	10.37	110.1	8.72	113.7	4.12	123.8	4.22	140.3
GR	4.07	185.4	3.27	216.1	1.69	231.1	.62	235.7	-1.63	242.1
GR	-2.63	249.4	-2.43	261.3	-.08	269.5	1.69	274.1	2.07	276.8
GR	2.12	299.2	1.97	322.5	2.92	368.2	3.62	375.9	9.12	386.9
GR	10.61	389.6	10.61	394.2	5.52	404.7	2.74	413.8	2.57	459.5
GR	3.14	505.2	5.74	548.6	6.54	548.6	6.54	550.4	9.44	550.4
GR	9.44	552.7	13.01	584.2						
X1	4.273	47	110.08	389.63	16.00	16.00	16.00		
GR	13.37	.0	11.01	48.4	11.01	50.7	8.02	50.7	8.02	52.5
GR	7.67	55.7	4.32	63.5	4.32	67.1	3.32	68.5	2.22	70.3
GR	2.22	74.0	4.67	75.8	5.07	78.6	5.22	94.6	10.37	103.2
GR	10.37	109.6	10.37	110.1	8.72	113.7	4.12	123.8	4.22	140.3
GR	4.07	185.4	3.27	216.1	1.69	231.1	.62	235.7	-1.63	242.1
GR	-2.63	249.4	-2.43	261.3	-.08	269.5	1.69	274.1	2.07	276.8
GR	2.12	299.2	1.97	322.5	2.92	368.2	3.62	375.9	9.12	386.9
GR	10.61	389.6	10.61	394.2	5.52	404.7	2.74	413.8	2.57	459.5
GR	3.14	505.2	5.74	548.6	6.54	548.6	6.54	550.4	9.44	550.4
GR	9.44	552.7	13.01	584.2						
X1	4.435	67	110.00	389.90	162.00	162.00	162.00		
GR	3.55	.0	3.55	60.5	4.35	62.0	4.35	66.0	2.10	73.0
GR	2.10	74.0	4.15	81.0	4.15	86.0	6.90	92.5	6.90	95.5
GR	8.50	98.5	8.70	100.5	10.55	103.5	10.55	110.0	9.02	113.6
GR	3.38	125.5	3.38	193.5	4.15	194.5	4.15	198.0	3.45	200.5
GR	2.72	202.0	2.72	204.5	1.70	206.5	1.10	208.5	-.50	210.5
GR	-.45	222.0	-.15	231.0	.85	254.0	.90	274.0	1.20	291.5
GR	1.70	296.5	2.55	299.0	3.05	302.0	4.10	306.5	3.90	321.5
GR	3.55	326.0	2.70	339.5	2.05	363.5	3.85	363.5	3.85	363.8
GR	3.75	363.8	3.55	375.0	8.25	386.2	9.15	386.2	10.54	389.9
GR	10.54	394.4	8.80	398.5	9.40	398.5	9.40	398.8	2.80	398.8
GR	1.60	410.7	9.20	410.7	9.20	411.0	4.80	411.0	4.80	414.3
GR	5.50	414.3	5.50	425.8	-.70	425.8	-.70	442.0	4.90	442.0
GR	4.90	442.3	4.80	442.3	5.00	482.0	5.20	482.5	5.20	487.5
GR	5.60	488.0	5.60	493.5						
X1	4.625	59	102.00	380.70	190.00	190.00	190.00		
GR	7.08	.0	7.08	46.0	4.38	50.0	4.38	56.0	1.43	62.5
GR	1.43	65.5	4.43	70.5	4.18	81.5	6.63	85.5	7.18	89.0
GR	8.78	92.0	9.08	95.5	10.43	98.0	10.43	102.0	9.01	105.3
GR	4.11	116.0	4.11	153.0	3.73	153.5	3.73	187.5	4.05	188.0
GR	4.20	192.0	2.88	196.0	2.78	198.0	1.73	200.5	1.03	202.5
GR	.23	205.5	1.13	207.0	.33	214.5	.43	238.0	.53	252.0
GR	.63	263.5	1.23	277.5	1.43	285.5	1.73	288.0	2.23	289.0
GR	2.53	291.0	3.33	293.5	3.88	295.5	3.88	299.0	3.48	299.5
GR	3.48	301.5	3.48	359.0	3.48	366.0	3.88	366.5	4.08	368.0
GR	9.20	378.5	10.62	380.7	10.62	381.5	10.62	385.0	6.53	393.5
GR	6.43	399.5	3.93	403.5	3.93	405.5	4.53	406.5	4.53	410.0
GR	2.63	413.0	2.63	414.0	3.83	417.0	3.83	502.0		
X1	4.845	55	140.00	422.00	220.00	220.00	220.00		
GR	5.02	.0	5.02	92.0	2.92	98.5	2.92	102.5	4.87	108.5
GR	4.72	118.5	9.35	132.5	9.35	133.5	10.57	136.0	10.57	140.0
GR	9.07	143.4	4.22	153.5	4.22	180.0	4.17	180.5	4.17	264.5
GR	4.72	266.0	4.52	269.5	2.87	273.5	2.87	276.5	1.77	277.5
GR	1.12	278.5	.72	281.5	.47	291.0	.47	300.0	.57	310.5
GR	.37	330.0	.12	340.0	-.28	348.0	1.77	351.0	2.37	352.5
GR	2.37	355.0	3.47	356.5	4.17	358.0	4.17	360.5	3.57	361.0
GR	3.57	363.0	3.57	404.5	3.57	407.5	8.87	418.5	10.61	422.0
GR	10.61	426.0	6.72	435.0	6.42	438.0	4.92	440.5	4.92	444.5
GR	4.62	444.5	4.67	450.0	4.67	455.0	4.57	461.5	2.97	466.5
GR	2.97	469.0	4.52	473.5	4.52	475.0	3.72	477.5	3.72	555.0
X1	5.040	63	140.00	420.70	195.00	195.00	195.00		
GR	2.79	.0	2.79	82.8	3.94	84.3	3.94	84.6	3.54	84.6
GR	3.54	85.0	3.94	85.0	4.34	85.5	4.34	89.0	.94	96.5
GR	.94	98.5	3.39	101.5	3.79	117.5	7.59	124.3	7.79	127.8
GR	9.74	132.0	9.74	134.0	10.64	135.8	10.64	140.0	9.08	143.1
GR	4.29	152.5	3.74	154.5	3.74	197.0	3.44	197.5	3.44	260.0
GR	3.59	261.0	3.59	287.0	4.29	287.5	4.29	291.2	2.89	294.5
GR	2.89	296.5	1.79	302.5	.94	307.5	.79	321.5	.44	331.5
GR	.14	342.0	-.16	350.0	-.46	360.0	1.79	365.0	2.34	367.0
GR	2.34	369.5	3.59	371.5	4.24	373.5	4.24	376.5	4.39	377.0
GR	4.39	378.0	4.39	398.5	4.39	408.5	9.07	418.3	10.75	420.7
GR	10.75	421.0	10.75	425.0	6.49	435.0	6.49	438.0	5.64	441.0
GR	5.04	441.8	5.04	442.3	5.54	443.0	5.54	447.5	3.44	450.5

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GR  3.44   453.0    4.04   455.5    4.04   550.0
X1 5.235      50  115.00  398.50  195.00  195.00  195.00
GR  3.70      .0    3.70    59.0    3.55    59.5    3.55    70.0    4.25    85.0
GR  4.95    97.5    9.95   106.0    9.95   109.5   10.60   111.0   10.60   115.0
GR  9.22   118.3    3.85   130.0    3.85   153.5    3.60   154.0    3.60   227.0
GR  3.65   227.5    3.65   266.5    4.55   268.0    4.55   271.0    3.40   272.5
GR  2.95   274.0    2.95   281.0    1.80   283.5    1.05   284.5     .25   287.0
GR   .15   297.0     .40   336.0     .45   346.0     .65   349.0    1.80   352.0
GR  2.50   354.0    3.00   356.5    3.95   360.0    3.95   363.0    4.15   363.5
GR  4.15   382.5    9.00   392.3    9.00   395.3   10.58   398.5   10.58   401.5
GR  6.70   409.0    6.50   413.0    8.10   416.5    8.10   418.0    5.25   419.0
GR  5.25   422.5    3.05   426.2    3.05   428.2    4.45   430.2    4.45   525.0
X1 5.425      71   90.00  370.20  190.00  190.00  190.00
GR  1.78      .0    1.78     6.5    3.93    10.5    3.93    12.5    3.38    13.5
GR  3.38    66.0    9.78    80.0    9.78    84.0   10.63    86.5   10.63    90.0
GR  9.08    93.3    4.53   103.5    4.48   108.0    3.98   109.0    3.98   130.0
GR  3.78   130.5    3.78   200.5    4.38   201.5    4.38   205.5    3.33   208.5
GR  2.58   210.0    2.58   215.0    1.81   218.0     .63   219.0     .23   221.0
GR  -.27   244.0    -.47   263.0     .53   269.5    1.81   270.5    2.38   285.0
GR  2.48   285.0    2.68   289.0    4.13   292.0    4.13   295.8    3.43   297.5
GR  3.43   298.5    3.73   300.0    3.58   313.0    3.48   320.0    4.48   323.0
GR  4.48   323.5    3.98   324.0    3.98   355.5    9.21   367.0   10.51   370.2
GR 10.51   373.7    9.58   376.3    9.48   378.0    7.53   381.5    7.53   384.5
GR  5.98   387.5    5.98   390.5    5.68   390.5    5.68   394.5    5.98   395.0
GR  5.98   398.0    5.83   411.5    6.13   411.5    6.13   414.0    6.13   418.0
GR  6.48   421.0    6.48   436.0    7.03   437.5    7.23   437.5    7.18   441.0
GR  7.93   441.0    7.93   452.5    7.93   460.5    8.78   466.0    9.78   467.0
GR  9.78   471.0
X1 5.640      65  130.00  408.80  215.00  215.00  215.00
GR  3.47      .0    3.47    81.0    4.52    82.0    4.42    85.5    1.42    92.0
GR  1.42    98.0    4.77   104.5    4.77   109.5    6.92   114.0    6.92   117.0
GR  9.02   121.0    9.22   123.0   10.62   126.0   10.62   130.0    4.62   142.5
GR  4.62   167.0    4.07   168.0    4.07   177.0    3.57   178.0    3.57   198.5
GR  4.12   199.5    4.12   202.0    3.37   204.0    2.57   205.5    2.57   207.5
GR  1.82   208.5    1.17   208.5     .32   216.0    -.28   230.0    -.38   240.5
GR  -.13   253.5     .87   256.5    1.82   256.5    2.52   257.5    1.62   263.0
GR  1.62   272.5    2.62   280.0    4.32   285.0    4.32   289.7    3.77   290.7
GR  3.77   304.5    3.57   305.0    3.57   307.0    3.57   349.5    3.57   359.0
GR  3.07   360.5    3.17   362.5    2.37   363.5    2.37   365.5    3.52   367.0
GR  3.52   384.5    3.87   385.5    3.87   395.0    9.22   405.5   10.76   408.8
GR 10.76   409.3   10.76   413.1    9.32   416.5    9.12   419.0    6.77   424.0
GR  6.47   427.5    4.47   431.5    4.47   503.5    1.67   506.5    1.67   513.5
X1 5.845      63   95.50  376.30  205.00  205.00  205.00
GR  3.90      .0    3.90    29.0    1.65    32.0    1.70    52.2    5.20    52.2
GR  5.20    55.7    5.20    66.7    5.20    70.2   10.20    70.2   10.20    70.6
GR   .90    70.6    1.80    80.2   10.20    80.2   10.20    80.5    8.65    80.5
GR  8.65    82.0   10.35    87.0   10.65    94.5   10.50    95.0   10.50    95.5
GR  4.60   108.5    4.45   117.5    1.83   117.5    1.45   117.5     .60   130.0
GR   .60   145.0     .35   155.0     .95   179.5    1.15   184.5    1.83   186.0
GR  2.80   188.0    2.70   216.5    4.10   219.5    4.10   223.0    3.65   225.5
GR  2.80   231.5    2.65   248.0    3.85   251.5    3.85   252.5    3.60   253.0
GR  3.60   269.0    3.60   273.5    3.60   334.5    2.95   337.0    2.95   338.5
GR  3.80   340.5    3.80   361.0   10.93   376.3   10.93   380.1    6.90   389.0
GR  6.60   391.5    3.50   398.5    3.50   402.5    3.80   403.0    3.80   412.0
GR  3.30   412.5    3.30   415.0    1.80   418.0    1.80   428.0    4.40   435.0
GR  4.40   438.5    4.20   439.0    4.20   490.0
X1 6.055      53  100.50  386.50  210.00  210.00  210.00
GR  3.95      .0    3.90     .5    3.90    53.0    4.15    53.2    4.15    53.5
GR  3.85    54.5    5.05    56.5    5.05    59.5    1.15    67.0    1.15    71.0
GR  5.10    76.0    5.10    83.5    8.45    88.5    8.45    93.0   10.05    96.3
GR 10.05   100.5    4.30   115.0    4.30   135.0    3.50   136.0    3.50   224.5
GR  4.55   225.5    4.55   229.5    3.25   233.5    3.25   237.5    1.85   241.0
GR  1.15   241.0     .35   244.0     .15   251.0     .05   280.5     .25   290.5
GR   .55   296.0    1.85   298.0    3.90   300.5    3.65   302.5    3.60   303.0
GR  3.60   324.0    3.65   324.5    3.65   370.5    8.50   379.0    9.40   385.5
GR 10.19   386.5   10.19   387.0   10.19   391.0    7.00   398.5    6.70   401.5
GR  3.55   408.5    3.55   412.0    3.85   412.5    3.85   415.0    2.25   417.5
GR  2.25   418.5    3.65   420.0    3.65   490.5
X1 6.260      72  129.00  414.30  205.00  205.00  205.00
GR  4.27      .0    4.27    60.5    4.47    61.0    4.47    61.5    4.12    62.0
GR  4.12    62.5    4.67    63.0    4.67    65.2    4.27    65.7    4.27    83.5
GR  4.42    83.8    4.42    84.0    4.17    85.0    4.17    85.5    5.37    87.5
GR  5.37    90.0    2.17    97.5    2.17   101.5    4.57   104.5    4.57   109.5
GR  7.82   113.5    7.82   119.0   10.07   124.5   10.07   129.0    8.12   133.0
GR  7.92   135.0    5.52   142.0    4.32   143.0    4.32   192.5    3.74   193.5
GR  3.74   235.5    4.27   236.0    4.27   237.5    3.87   238.5    3.87   274.5
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GR	3.92	275.0	3.92	318.5	4.97	320.0	4.97	322.5	1.86	330.5
GR	1.37	335.5	1.67	341.0	1.72	351.0	.87	358.0	.37	363.0
GR	-.13	368.0	-.23	378.0	1.86	381.0	4.47	384.5	4.47	386.5
GR	3.67	387.5	3.67	399.0	4.47	399.8	10.18	414.3	10.18	415.3
GR	10.18	419.3	7.02	427.0	6.72	430.0	3.72	436.0	3.72	439.0
GR	4.27	439.5	4.27	444.0	2.67	446.0	2.67	447.5	3.97	450.5
GR	3.97	450.6	3.17	450.6	3.27	452.6	3.97	453.6	3.97	456.6
GR	3.47	458.1	3.47	529.0						
X1	6.470	55	120.00	405.80	210.00	210.00	210.00			
GR	4.20	.0	4.20	74.0	4.52	74.5	4.52	75.0	4.17	75.5
GR	4.17	76.0	5.07	77.0	5.07	81.0	2.17	88.0	2.17	92.0
GR	4.67	94.0	4.67	100.5	7.32	103.5	7.32	110.0	10.27	115.5
GR	10.27	120.0	5.47	133.5	4.47	135.0	4.47	170.5	3.72	171.5
GR	3.72	220.0	4.02	220.5	4.02	245.5	4.32	246.5	4.32	249.5
GR	1.87	254.0	.77	255.5	-.53	265.0	.07	279.0	.67	292.5
GR	1.27	295.5	1.87	295.5	3.12	298.0	3.92	299.0	3.92	303.0
GR	3.37	303.5	3.37	364.5	3.97	365.0	3.97	367.5	4.02	368.0
GR	4.02	391.0	4.62	391.7	10.07	405.8	10.07	406.6	10.07	410.6
GR	7.22	417.5	6.82	420.0	4.32	425.0	4.32	428.0	4.47	429.0
GR	4.47	433.5	2.87	436.0	2.87	437.0	4.17	439.0	4.17	548.0
X1	6.670	54	105.00	391.10	200.00	200.00	200.00			
GR	4.25	.0	4.25	42.0	4.65	43.5	4.65	45.0	1.70	52.5
GR	1.70	56.5	2.50	61.0	2.90	75.0	4.75	81.0	8.50	94.0
GR	10.50	100.5	10.50	105.0	6.65	118.0	4.15	120.0	4.15	160.5
GR	3.95	161.5	3.90	194.0	4.85	195.0	4.85	196.5	1.90	201.0
GR	.85	202.0	-.35	205.0	-.25	215.0	.05	220.0	.45	232.5
GR	1.15	235.5	1.90	236.5	3.00	239.0	3.90	242.5	3.75	246.0
GR	2.90	249.0	3.75	252.0	3.90	256.5	3.75	257.0	3.75	284.0
GR	4.25	284.5	4.25	287.0	3.60	287.5	3.60	343.5	4.50	345.0
GR	4.50	377.0	5.40	377.7	10.12	391.1	10.12	395.9	7.30	402.5
GR	6.90	405.0	4.60	410.0	4.60	412.5	5.00	413.0	5.00	417.5
GR	3.20	420.2	3.20	421.2	1.80	423.2	1.80	505.0		
X1	6.890	58	120.00	404.00	220.00	220.00	220.00			
GR	4.23	.0	4.23	44.0	1.33	48.0	1.33	65.0	4.18	68.0
GR	4.18	98.0	6.93	103.5	6.93	107.0	10.08	110.0	10.08	115.0
GR	10.53	116.0	10.53	120.0	6.38	128.5	6.58	130.0	9.43	138.0
GR	9.43	143.0	3.93	155.0	3.93	196.5	4.58	197.0	4.58	199.5
GR	4.53	200.0	4.53	255.0	4.13	255.5	4.13	290.5	4.68	291.0
GR	4.68	293.0	3.58	296.5	1.93	300.5	1.13	300.5	.63	303.5
GR	.48	312.5	.28	316.0	.03	329.0	.03	339.5	.93	341.5
GR	1.93	342.5	3.13	345.0	3.13	347.5	4.13	347.5	4.73	349.5
GR	4.73	350.0	4.63	350.5	4.63	356.0	4.63	387.7	4.63	390.0
GR	5.43	390.2	10.35	404.0	10.35	408.5	7.28	415.5	6.98	418.5
GR	5.03	422.5	5.03	425.5	5.43	426.0	5.43	430.0	7.23	432.0
GR	7.23	434.0	6.03	436.0	6.03	520.0				
X1	7.075	40	115.00	400.80	185.00	185.00	185.00			
GR	4.13	.0	4.13	47.5	2.93	49.0	2.93	52.5	1.43	54.0
GR	1.43	62.0	4.03	67.5	3.93	94.5	7.28	101.5	7.28	104.0
GR	10.93	111.0	10.93	115.0	4.53	132.5	4.53	138.5	4.13	141.5
GR	3.83	207.0	3.63	226.5	4.68	234.5	5.03	275.0	4.53	315.0
GR	2.18	319.5	1.97	327.0	1.23	330.0	1.03	340.5	.93	352.5
GR	.83	365.5	.63	370.5	.53	374.0	1.97	376.5	4.43	381.0
GR	4.43	386.5	10.02	400.8	10.02	401.1	10.02	405.9	7.23	413.0
GR	7.03	416.8	3.93	422.5	3.93	423.5	4.43	424.5	4.43	510.0
X1	7.285	57	102.30	388.30	210.00	210.00	210.00			
GR	2.47	.0	2.47	7.0	5.37	19.0	6.37	26.1	6.07	26.1
GR	6.07	26.5	6.37	26.5	9.32	33.0	9.62	46.0	9.62	73.0
GR	10.02	91.8	9.32	92.3	9.32	95.3	10.67	98.0	10.67	102.0
GR	10.67	102.3	4.72	116.5	4.72	147.5	4.02	148.0	4.02	158.0
GR	2.47	161.0	2.17	163.0	1.99	164.0	.87	165.0	-.13	166.0
GR	-.08	178.0	.27	181.0	.92	184.0	.87	189.0	.77	191.0
GR	.57	201.0	.97	206.0	1.99	207.0	4.42	211.5	4.17	249.0
GR	4.62	250.0	4.62	284.5	4.32	285.0	4.32	328.0	4.17	328.5
GR	4.17	361.5	4.22	362.0	4.92	372.5	4.92	373.2	7.92	382.3
GR	8.12	384.5	10.03	388.3	10.03	388.5	10.03	392.8	7.07	400.5
GR	6.77	403.0	4.62	408.0	4.62	409.5	3.62	410.5	3.62	411.5
GR	4.22	413.0	4.22	522.0						
X1	7.505	62	110.80	404.50	220.00	220.00	220.00			
GR	4.21	.0	4.21	59.0	3.81	61.5	3.81	63.0	5.31	67.1
GR	5.31	72.1	5.01	72.1	5.01	72.5	5.31	72.5	11.11	82.5
GR	11.11	83.0	11.01	83.0	11.81	101.5	11.91	101.5	12.41	104.5
GR	12.31	104.5	12.31	110.0	12.31	110.3	12.21	110.8	10.41	114.0
GR	10.41	115.5	7.26	122.5	7.26	125.0	4.36	134.0	4.36	146.5
GR	3.61	147.0	3.61	180.5	3.31	181.5	3.31	190.0	3.81	191.0
GR	2.86	200.0	2.01	202.5	1.41	204.5	.96	213.0	.41	221.8
GR	-.69	232.0	-.39	237.0	2.01	238.0	3.91	241.0	4.41	242.5

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GR  3.96   247.5    4.16   267.0    4.26   267.5    4.26   278.5    4.76   279.5
GR  4.76   345.0    4.96   345.5    4.96   389.5    5.16   389.5    5.16   391.0
GR 10.67   404.5   10.67   408.5    9.01   411.5    8.71   413.5    7.31   416.0
GR  7.01   419.0    4.81   423.5    4.51   425.5    3.91   426.5    3.91   427.0
GR  4.31   428.5    4.31   522.0
X1 7.705      60  122.50  407.10  200.00  200.00  200.00
GR  6.76      .0    4.96    25.5    4.81    49.0    5.21    50.5    5.31    60.0
GR  7.96    65.5    8.16    75.5    7.36    77.2    7.36    82.2    7.06    82.2
GR  7.06    82.5    7.36    82.5    6.06    86.5    6.06    87.0    7.76    87.0
GR 10.39    94.3   10.39    95.3   10.29    95.3   11.16   111.4   11.16   120.0
GR 11.16   120.5   11.21   120.5   11.16   122.5    5.71   135.5    4.71   136.5
GR  3.66   165.5    4.31   168.0    3.96   209.0    3.11   212.5    3.11   213.5
GR  4.16   215.5    3.86   220.5    2.06   224.0     .71   225.0    1.26   228.0
GR  1.31   245.5     .86   261.0     .61   265.5    1.01   270.5    2.06   271.5
GR  2.91   272.5    4.41   276.0    4.31   277.0    4.31   295.5    4.16   297.0
GR  4.16   392.0    4.96   393.0   10.50   407.1   10.50   407.4   10.50   410.9
GR  7.71   418.0    7.21   421.5    5.36   425.5    5.16   432.0    4.86   481.5
GR  4.46   481.5    4.46   486.5    4.86   486.5    5.41   498.5    5.41   502.5
X1 7.724      43  366.25  649.48   19.00   19.00   19.00
GR  6.51      .0   13.59   197.5   10.94   197.5   10.94   198.6    6.36   198.6
GR  6.66   241.8    7.99   286.1    9.99   330.4   10.97   353.5   10.99   364.4
GR 10.99   364.8   11.04   364.8   11.04   366.3    7.28   374.7    4.14   382.6
GR  3.49   419.0    2.99   468.3    2.99   471.2    2.09   473.7    1.14   478.6
GR   .99   489.9    1.09   504.7    1.14   509.1    2.09   512.1    3.09   517.5
GR  3.39   520.0    4.54   566.8    5.14   616.0    5.04   635.2    5.14   637.7
GR 10.63   649.5   10.63   650.0   10.63   654.2    9.03   654.2    8.99   659.3
GR  8.29   660.8    8.29   662.3    9.29   663.3    9.74   664.1   13.60   664.1
GR 13.60   665.2   16.60   665.2   15.86   768.2
X1 7.746      43  366.25  649.48   22.00   22.00   22.00
GR  6.51      .0   13.59   197.5   10.94   197.5   10.94   198.6    6.36   198.6
GR  6.66   241.8    7.99   286.1    9.99   330.4   10.97   353.5   10.99   364.4
GR 10.99   364.8   11.04   364.8   11.04   366.3    7.28   374.7    4.14   382.6
GR  3.49   419.0    2.99   468.3    2.99   471.2    2.09   473.7    1.14   478.6
GR   .99   489.9    1.09   504.7    1.14   509.1    2.09   512.1    3.09   517.5
GR  3.39   520.0    4.54   566.8    5.14   616.0    5.04   635.2    5.14   637.7
GR 10.63   649.5   10.63   650.0   10.63   654.2    9.03   654.2    8.99   659.3
GR  8.29   660.8    8.29   662.3    9.29   663.3    9.74   664.1   13.60   664.1
GR 13.60   665.2   16.60   665.2   15.86   768.2
X1 7.895      73  101.50  384.20  149.00  149.00  149.00
GR  5.38      .0    5.38     8.5    5.33    10.0    5.33    20.0    5.33    21.0
GR  5.33    31.0    5.33    32.0    5.33    42.0    5.28    43.0    5.28    57.0
GR  5.28    59.5    5.08    59.5    5.08    64.5    5.58    76.6    7.78    76.6
GR  7.78    77.0    7.38    77.0    7.38    78.5    7.18    78.5    7.33    86.8
GR  8.33    86.8   10.64    91.6   11.04    91.6   11.04    93.1   10.94    93.1
GR 10.93   100.9   11.08   100.9   11.08   101.0   11.08   101.5    6.73   109.0
GR  4.83   115.0    3.88   199.4    3.68   199.4    3.68   199.7    3.88   199.7
GR  4.13   200.5    4.13   202.8    4.03   202.8    4.03   203.5    2.13   205.5
GR   .98   210.5    1.13   222.5    1.03   234.0     .38   239.5     .38   246.0
GR  1.08   249.0    2.13   250.0    2.48   250.0    3.93   253.5    4.13   261.0
GR  3.93   261.5    3.93   280.5    4.23   281.0    4.23   288.0    5.13   289.5
GR  5.13   370.0    5.43   371.5    7.48   376.5    7.58   379.0   10.46   384.2
GR 10.46   389.5    7.83   396.0    7.63   399.0    7.23   399.5    7.23   402.5
GR  5.38   405.5    5.08   424.0    4.28   425.0    4.28   426.0    5.08   426.5
GR  5.08   427.0    5.38   427.5    5.38   519.0
X1 8.095      73   83.70  356.40  200.00  200.00  200.00
GR  5.73      .0    5.73     4.0    5.93     4.0    5.93     8.0    5.93    16.5
GR  5.73    17.5    5.73    19.5    5.98    22.0    5.98    29.5    6.03    38.5
GR  6.03    42.5    6.03    44.5    7.53    49.0    7.53    51.0    7.33    51.0
GR  7.43    59.5    8.33    59.5   10.62    64.0   11.12    64.0   11.12    65.5
GR 10.92    65.5   10.92    73.0   10.58    83.0   10.78    83.4   10.78    83.7
GR  5.18    83.7    4.03   171.8    3.83   171.8    3.83   172.1    4.03   172.1
GR  4.21   173.0    4.21   175.2    4.11   175.2    4.11   175.9    2.58   177.0
GR  2.18   177.0    1.48   177.0    1.03   190.5     .83   203.5    1.48   206.5
GR  1.48   210.5    1.03   212.5     .83   214.5    1.13   217.5    2.18   218.5
GR  3.33   223.0    4.18   224.5    4.33   231.0    4.33   262.5    4.53   263.0
GR  4.53   295.0    5.13   295.5    5.13   341.0    6.03   342.0    6.03   345.5
GR 10.84   356.4   10.84   356.9   10.70   361.9   10.18   363.5   10.38   363.5
GR 10.38   363.8    8.38   364.3    8.23   375.0    7.53   376.6    7.23   381.1
GR  6.23   383.0    6.03   389.5    5.03   392.5    5.23   395.0    5.53   395.3
GR  5.53   399.0    5.03   399.7    5.03   473.0
X1 8.270      45  100.00  372.00  175.00  175.00  175.00
GR  8.71      .0   11.22   100.0   10.12   100.0   10.12   101.2    8.12   101.2
GR  8.12   102.2    5.32   106.8    3.02   106.8    3.02   107.2    3.32   107.2
GR  4.42   107.7    4.27   114.5    4.27   129.5    4.27   144.5    4.05   175.0
GR  3.74   198.3    3.54   198.3    3.54   198.6    3.74   198.6    3.87   199.3
GR  3.87   201.6    3.77   201.6    3.77   202.3    2.22   204.0    1.62   204.0
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GR  1.52   205.5    1.37   215.0    1.27   223.3    1.42   230.8    2.22   233.8
GR  2.40   236.0    2.30   245.9    3.92   250.4    4.32   266.5    4.72   298.0
GR  4.67   327.5    4.62   342.5    4.72   357.5    5.02   364.2    7.10   371.2
GR  9.98   371.2    9.98   372.0   11.08   372.0   10.08   422.5   10.38   476.0
X1 8.300      45  100.00  372.00   30.00   30.00   30.00
GR  8.71      .0   11.22   100.0   10.12   100.0   10.12   101.2    8.12   101.2
GR  8.12   102.2    5.32   106.8    3.02   106.8    3.02   107.2    3.32   107.2
GR  4.42   107.7    4.27   114.5    4.27   129.5    4.27   144.5    4.05   175.0
GR  3.74   198.3    3.54   198.3    3.54   198.6    3.74   198.6    3.87   199.3
GR  3.87   201.6    3.77   201.6    3.77   202.3    2.22   204.0    1.62   204.0
GR  1.52   205.5    1.37   215.0    1.27   223.3    1.42   230.8    2.22   233.8
GR  2.40   236.0    2.30   245.9    3.92   250.4    4.32   266.5    4.72   298.0
GR  4.67   327.5    4.62   342.5    4.72   357.5    5.02   364.2    7.10   371.2
GR  9.98   371.2    9.98   372.0   11.08   372.0   10.08   422.5   10.38   476.0
X1 8.465      69   98.10  380.50  165.00  165.00  165.00
GR  5.51      .0    5.46     6.0    5.26     6.0    5.26    13.0    5.46    13.0
GR  5.46    22.0    5.51    22.5    5.51    29.0    5.46    33.0    5.46    47.5
GR  5.46    52.5    5.41    55.0    5.41    60.0    5.66    67.0    8.46    71.5
GR  8.46    73.5    8.26    73.5    8.36    82.0   11.07    86.9   11.07    87.4
GR 10.97    87.4   10.91    95.6   11.01    95.6   11.01    97.0   11.01    97.1
GR 10.96    98.1    5.51   112.5    4.46   205.3    4.46   207.6    4.36   207.6
GR  4.36   208.3    2.26   210.5    1.91   210.5    1.16   215.0     .91   217.0
GR   .91   233.0    1.51   235.0    1.51   238.0    1.21   240.0    1.21   243.0
GR  1.91   246.0    2.26   247.0    2.71   248.0    3.71   251.0    4.41   252.0
GR  4.31   263.0    4.31   263.5    4.31   278.5    4.56   279.0    4.56   319.0
GR  5.31   320.0    5.31   365.0    5.91   365.5    5.91   368.5    7.21   372.5
GR  7.51   373.5   10.94   380.5   10.94   381.0   10.90   390.5    5.50   400.5
GR  5.50   404.0    4.46   405.5    4.46   406.0    5.06   406.5    5.06   410.0
GR  5.71   411.5    5.71   415.0    5.11   416.0    5.11   497.0
X1 8.660      72   93.50  376.90  195.00  195.00  195.00
GR  5.84      .0    5.84    10.0    5.84    12.0    5.84    23.5    6.09    23.5
GR  6.19    35.0    5.44    42.0    6.04    64.5    6.14    66.0    6.14    68.0
GR  6.04    68.0    6.04    76.0    9.04    76.0   11.21    81.8   11.21    82.3
GR 11.01    82.3   10.99    90.6   11.09    90.6   11.09    92.0   11.09    92.1
GR 11.04    92.1   11.04    93.5    8.54    98.5    6.29   105.5    6.09   108.0
GR  5.49   110.5    4.39   199.3    4.19   199.3    4.19   199.6    4.39   199.6
GR  4.54   200.3    4.54   202.2    4.44   202.2    4.44   202.9    2.29   206.0
GR  1.64   209.0     .84   209.5    1.34   226.0    1.64   229.0    1.64   232.0
GR   .89   234.0     .84   239.5    1.49   242.5    1.79   243.5    2.29   243.5
GR  3.34   247.0    4.64   247.5    4.84   255.5    4.54   255.8    4.54   256.3
GR  4.84   256.6    4.89   330.0    5.24   336.5    5.44   359.8    5.24   360.0
GR  5.24   360.6    5.59   361.5    5.59   364.0    7.44   368.5    7.54   370.0
GR 11.04   376.9   10.92   385.5    5.64   398.0    5.44   401.0    3.94   403.0
GR  3.94   404.0    5.04   405.0    5.04   407.0    5.49   407.5    5.49   411.0
GR  4.99   411.5    4.99   502.0
X1 8.855      67  123.40  407.30  195.00  195.00  195.00
GR  5.47      .0    5.47    30.0    5.72    32.0    6.12    63.0    6.02    69.0
GR  6.02    74.0    6.02    87.5    6.12   100.5    5.22   100.5    5.22   101.0
GR  6.47   103.2    6.47   107.2    8.57   107.2   11.24   112.9   11.24   113.4
GR 11.04   113.4   11.02   121.6   11.12   121.6   11.12   123.0   11.12   123.4
GR  5.67   137.9    5.67   142.4    4.42   231.8    4.12   231.8    4.12   232.0
GR  4.42   232.0    4.62   232.7    4.62   235.0    4.52   235.0    4.52   235.7
GR  2.32   237.5    2.12   237.5    1.62   237.5     .87   238.0     .82   261.5
GR  1.92   263.5    1.62   272.0    2.32   273.0    4.77   277.0    5.37   281.5
GR  4.87   284.5    4.42   284.5    4.42   285.0    4.92   285.5    4.97   316.0
GR  5.32   391.0    5.12   391.0    5.12   391.5    6.02   393.0    6.12   396.0
GR  7.42   399.2    7.42   401.5   10.97   407.3   10.97   407.7   10.87   417.0
GR  7.82   423.0    7.62   424.0    5.52   428.5    5.32   432.5    3.72   435.0
GR  3.72   435.5    5.02   437.5    5.02   442.5    5.62   443.5    5.62   447.5
GR  5.02   448.5    5.02   518.0
X1 9.070      60  112.50  410.80  215.00  215.00  215.00
GR  5.98      .0    5.58     1.5    5.58    78.5    5.38    79.5    5.38    80.5
GR  6.03    81.0    6.03    82.5    6.83    84.0    6.83    86.0    6.63    86.0
GR  6.83    94.0    8.53    94.0   11.25    99.9   11.25   100.4   11.05   100.4
GR 11.03   108.5   11.13   108.5   11.13   110.0   10.98   112.5    7.98   118.5
GR  6.13   125.5    6.13   128.0    5.68   129.5    5.63   220.5    5.63   222.8
GR  5.53   222.8    5.53   223.5    2.33   225.0    1.83   225.0    1.63   228.0
GR   .53   228.5     .63   254.5    1.43   259.5    1.93   268.0    2.33   273.0
GR  4.98   277.5    4.98   291.5    4.58   292.5    4.98   301.0    5.23   301.5
GR  5.23   366.5    5.53   367.0    5.53   396.0    6.13   397.0    6.43   400.5
GR  7.68   403.0    7.68   405.5   11.16   410.8   11.16   411.1   10.96   420.0
GR  5.93   431.0    5.73   434.5    4.13   437.5    4.13   438.5    5.13   439.5
GR  5.13   444.5    5.68   447.0    5.68   451.0    5.38   451.5    5.38   510.0
X1 9.245      77  105.50  452.00  175.00  175.00  175.00
GR  6.34      .0    6.16    39.5    5.86    39.5    5.86    71.0    5.61    72.5
GR  5.61    74.0    7.06    76.0    7.06    78.0    6.96    78.0    6.96    86.0
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GR 8.76	86.0	11.36	91.7	11.36	92.7	11.21	92.7	11.21	101.0
GR 11.31	101.0	11.31	102.5	11.47	103.0	11.31	105.5	5.86	117.0
GR 5.86	142.5	5.21	143.5	5.21	175.0	4.86	176.0	4.86	208.5
GR 2.36	211.5	1.06	212.5	.86	214.5	.66	226.0	.76	240.5
GR 1.46	245.5	2.36	247.5	3.51	248.5	5.86	258.5	5.86	310.0
GR 6.16	310.5	6.16	313.0	5.31	315.5	5.31	320.5	3.21	326.5
GR 3.21	330.5	2.36	333.0	2.01	338.0	2.11	346.5	2.06	351.5
GR 1.91	358.5	2.11	361.5	2.36	361.5	2.91	362.0	4.31	366.5
GR 4.06	372.2	4.86	375.0	4.86	376.5	4.69	377.0	4.69	395.5
GR 5.71	396.7	5.71	411.0	5.88	411.5	5.88	436.7	6.56	437.2
GR 7.16	443.0	11.11	452.0	11.08	452.5	10.75	460.0	10.76	467.0
GR 10.56	470.0	10.36	472.0	6.41	477.5	5.41	481.5	4.61	482.5
GR 4.61	483.5	5.51	485.0	5.51	491.0	6.01	493.0	6.01	498.0
GR 5.41	499.0	5.41	578.0						
X1 9.465	52	109.00	336.10	220.00	220.00	220.00			
GR 4.64	.0	4.64	61.0	5.24	63.5	5.99	77.0	5.99	79.0
GR 8.19	83.3	8.19	84.8	7.99	84.8	7.99	92.8	8.59	92.8
GR 11.19	97.4	11.19	98.4	11.04	98.4	11.19	106.5	11.29	106.5
GR 11.29	108.0	11.24	109.0	7.24	118.5	7.14	121.0	6.59	122.0
GR 6.59	124.7	5.44	126.5	5.44	174.5	4.34	177.0	4.34	182.0
GR 2.39	185.5	2.09	188.5	1.59	193.5	2.14	213.0	1.74	229.0
GR 1.79	236.0	1.19	243.0	1.89	246.0	2.39	246.5	3.49	247.0
GR 3.84	253.5	4.34	260.0	5.49	274.7	5.34	291.0	5.34	320.5
GR 5.84	321.5	5.84	323.0	10.72	336.1	10.72	342.8	7.89	347.5
GR 7.69	350.0	5.49	356.0	5.44	377.0	10.74	393.5	10.74	399.0
GR 5.89	418.0	5.89	449.0						
X1 9.670	61	114.00	341.90	205.00	205.00	205.00			
GR 5.17	.0	5.17	80.0	5.12	92.5	5.52	92.5	5.52	92.7
GR 4.02	92.7	4.02	94.2	5.52	94.2	5.52	97.2	7.97	101.0
GR 7.97	103.5	11.72	110.6	11.72	113.6	11.67	114.0	6.77	126.0
GR 6.77	129.0	5.94	130.5	5.94	133.0	5.12	134.0	5.12	201.5
GR 3.32	225.0	2.45	226.0	1.52	228.0	1.22	230.0	.92	239.0
GR .72	250.0	1.22	253.0	2.45	254.0	4.07	255.5	4.07	257.0
GR 2.72	259.5	2.47	269.5	5.07	274.0	5.07	275.0	5.02	275.5
GR 5.02	325.0	10.67	341.9	10.67	342.5	10.67	346.2	8.09	354.0
GR 7.99	356.5	5.77	360.5	5.67	368.0	3.87	372.5	3.67	374.5
GR 3.17	375.0	3.17	381.0	5.67	382.0	5.97	383.5	5.72	386.0
GR 5.72	391.0	5.02	391.5	5.02	423.0	5.77	424.0	5.77	424.5
GR 5.27	425.0	5.27	426.5	6.07	427.0	6.07	428.0	5.77	428.5
GR 5.77	489.0								
X1 9.875	70	101.00	327.60	205.00	205.00	205.00			
GR 6.35	.0	6.35	5.0	6.30	5.0	6.30	29.5	6.30	32.5
GR 6.50	32.5	6.50	42.0	6.50	50.0	6.50	51.5	6.55	76.0
GR 6.55	80.0	6.55	80.5	6.55	87.0	7.75	87.0	9.50	90.5
GR 9.50	93.5	11.50	98.0	11.50	101.0	10.90	102.0	10.70	104.0
GR 5.80	116.0	5.00	158.0	2.90	165.5	3.30	181.0	2.50	182.0
GR 1.40	183.0	1.10	196.0	1.00	211.0	1.10	216.0	2.50	218.5
GR 3.60	220.5	4.00	230.5	2.40	232.0	2.50	244.5	6.05	250.0
GR 6.05	317.5	10.85	327.6	10.85	328.0	10.85	333.0	6.75	344.0
GR 6.45	344.0	6.45	344.5	6.75	344.5	7.05	345.3	6.65	362.5
GR 6.65	363.5	7.35	366.0	7.35	371.0	7.05	371.0	7.05	371.7
GR 7.35	371.7	7.35	376.7	7.05	383.7	5.45	388.7	5.45	392.7
GR 6.45	395.0	6.45	399.0	5.85	402.5	5.85	404.0	6.55	406.5
GR 6.55	411.5	4.15	419.0	2.65	420.0	2.65	425.0	3.65	426.0
GR 3.65	430.0	6.05	437.0	6.05	440.5	5.05	442.0	5.05	471.0
X110.062	55	150.50	376.00	187.00	187.00	187.00			
GR 5.75	.0	5.75	127.5	4.75	128.0	4.75	130.0	5.80	130.5
GR 5.80	133.5	8.50	137.5	8.50	140.5	11.75	146.0	11.75	150.0
GR 11.75	150.5	6.85	163.0	6.00	216.0	5.60	216.0	5.60	216.4
GR 4.60	216.4	4.45	225.9	3.15	235.5	2.55	245.1	2.20	254.7
GR 1.65	259.5	2.05	264.3	1.75	268.5	2.10	273.9	1.85	279.5
GR 2.55	279.5	3.25	280.0	4.15	283.5	3.55	293.1	4.80	302.6
GR 5.50	302.6	5.50	303.0	5.90	303.0	6.40	313.0	6.95	345.5
GR 7.25	368.5	11.32	376.0	11.32	376.8	11.32	381.3	10.40	382.5
GR 10.40	383.5	8.15	388.0	7.95	392.0	6.25	395.0	6.25	397.5
GR 5.15	399.0	5.15	399.5	5.95	400.8	5.95	408.0	6.25	408.5
GR 6.25	409.0	6.05	409.0	6.05	409.5	6.45	410.5	6.45	520.0
X110.068	55	150.50	376.00	6.00	6.00	6.00			
GR 5.75	.0	5.75	127.5	4.75	128.0	4.75	130.0	5.80	130.5
GR 5.80	133.5	8.50	137.5	8.50	140.5	11.75	146.0	11.75	150.0
GR 11.75	150.5	6.85	163.0	6.00	216.0	5.60	216.0	5.60	216.4
GR 4.60	216.4	4.45	225.9	3.15	235.5	2.55	245.1	2.20	254.7
GR 1.65	259.5	2.05	264.3	1.75	268.5	2.10	273.9	1.85	279.5
GR 2.55	279.5	3.25	280.0	4.15	283.5	3.55	293.1	4.80	302.6
GR 5.50	302.6	5.50	303.0	5.90	303.0	6.40	313.0	6.95	345.5
GR 7.25	368.5	11.32	376.0	11.32	376.8	11.32	381.3	10.40	382.5

GR 10.40	383.5	8.15	388.0	7.95	392.0	6.25	395.0	6.25	397.5
GR 5.15	399.0	5.15	399.5	5.95	400.8	5.95	408.0	6.25	408.5
GR 6.25	409.0	6.05	409.0	6.05	409.5	6.45	410.5	6.45	520.0
X110.085	48	146.00	370.60	17.00	17.00	17.00			
GR 5.97	.0	5.97	122.5	4.87	123.5	4.87	125.0	5.97	126.0
GR 5.97	129.0	8.52	132.5	8.52	135.5	11.87	141.6	11.87	145.6
GR 11.87	146.0	7.37	155.3	7.37	158.8	6.12	160.5	5.92	211.5
GR 2.62	222.5	1.77	224.5	2.47	230.5	2.37	245.0	2.02	254.0
GR 2.02	264.0	1.87	274.5	2.62	275.5	3.17	281.0	2.37	281.0
GR 1.47	286.0	2.47	290.0	6.67	300.0	6.67	301.0	6.52	301.5
GR 6.52	317.5	6.52	356.5	6.52	361.0	8.12	363.0	8.12	366.0
GR 11.35	370.6	11.35	371.6	11.95	376.6	9.57	380.0	9.37	381.5
GR 9.27	385.0	7.47	388.0	7.47	389.5	6.47	391.0	6.47	392.0
GR 7.47	393.0	7.97	396.0	7.97	506.0				
X110.275	47	119.30	345.90	190.00	190.00	190.00			
GR 6.32	.0	6.37	93.5	6.42	94.0	6.42	96.5	5.17	97.5
GR 5.17	99.0	6.57	100.0	6.57	103.0	8.27	107.0	8.27	109.5
GR 11.72	116.0	11.72	119.0	11.72	119.3	6.92	131.5	6.22	134.5
GR 6.22	192.0	6.42	192.5	6.42	194.0	3.12	198.5	2.47	217.0
GR 2.47	219.5	2.87	221.0	3.12	230.0	2.67	232.5	1.87	232.5
GR .97	235.5	.67	239.0	.57	249.0	1.37	255.0	2.67	257.0
GR 3.47	260.0	3.32	266.5	4.22	267.0	3.92	275.5	5.57	278.5
GR 5.57	281.0	5.52	282.0	5.52	329.0	6.02	330.0	6.42	333.5
GR 7.52	336.5	11.28	345.9	11.28	351.4	11.66	366.0	12.17	368.0
GR 11.22	448.0	11.02	453.0						
X110.475	55	108.50	334.60	200.00	200.00	200.00			
GR 5.78	.0	6.53	62.0	6.83	91.5	8.43	95.2	8.43	98.2
GR 12.03	105.5	12.03	108.5	6.83	122.5	6.83	124.0	6.33	124.5
GR 6.33	184.5	7.03	186.0	7.03	187.5	4.98	191.5	4.73	207.0
GR 4.18	211.5	3.58	215.0	2.78	227.0	1.98	230.0	2.38	239.0
GR 2.38	247.5	1.53	252.0	1.78	257.0	2.78	257.0	3.98	258.5
GR 4.23	272.0	5.63	280.0	5.63	319.0	6.18	319.5	6.18	321.5
GR 7.73	325.5	11.48	334.6	11.18	345.3	11.96	347.0	11.43	365.5
GR 10.43	368.0	10.43	369.0	11.33	370.0	12.08	377.0	11.73	408.0
GR 9.08	413.0	9.08	414.0	7.58	415.5	7.58	417.5	6.08	417.8
GR 6.08	419.0	6.98	419.0	6.98	419.2	6.68	419.2	6.28	419.7
GR 6.28	420.2	6.98	421.2	6.98	423.5	6.68	424.0	6.68	483.5
X110.583	63	150.00	375.40	108.00	108.00	108.00			
GR 6.58	.0	6.58	66.5	6.43	67.0	6.43	128.5	5.93	129.2
GR 5.93	130.0	6.68	130.5	6.68	133.5	8.83	138.5	8.83	142.0
GR 11.93	147.0	11.93	150.0	7.18	162.0	5.93	201.5	5.03	239.5
GR 3.78	262.5	2.88	262.5	2.13	262.5	2.53	263.0	2.68	264.5
GR 2.68	265.5	2.68	266.5	2.68	267.5	2.68	268.5	2.68	269.5
GR 2.68	270.5	2.48	271.8	2.48	272.7	2.48	273.6	2.53	274.5
GR 2.53	275.5	2.53	276.5	2.53	277.5	2.53	278.5	2.53	279.5
GR 2.53	280.5	2.53	281.5	2.53	282.5	2.53	283.5	2.53	284.5
GR 2.53	285.5	2.53	286.0	2.53	287.0	2.13	287.5	2.88	287.5
GR 3.58	287.5	3.98	296.0	5.58	338.5	6.73	362.5	7.98	366.5
GR 11.37	375.4	11.37	379.4	11.28	380.9	8.88	385.5	8.88	389.0
GR 6.23	394.5	6.23	395.5	5.83	396.0	5.83	398.0	6.78	399.0
GR 6.78	399.6	6.38	400.0	6.38	540.0				
X110.587	63	150.00	375.40	4.00	4.00	4.00			
GR 6.58	.0	6.58	66.5	6.43	67.0	6.43	128.5	5.93	129.2
GR 5.93	130.0	6.68	130.5	6.68	133.5	8.83	138.5	8.83	142.0
GR 11.93	147.0	11.93	150.0	7.18	162.0	5.93	201.5	5.03	239.5
GR 3.78	262.5	2.88	262.5	2.13	262.5	2.53	263.0	2.68	264.5
GR 2.68	265.5	2.68	266.5	2.68	267.5	2.68	268.5	2.68	269.5
GR 2.68	270.5	2.48	271.8	2.48	272.7	2.48	273.6	2.53	274.5
GR 2.53	275.5	2.53	276.5	2.53	277.5	2.53	278.5	2.53	279.5
GR 2.53	280.5	2.53	281.5	2.53	282.5	2.53	283.5	2.53	284.5
GR 2.53	285.5	2.53	286.0	2.53	287.0	2.13	287.5	2.88	287.5
GR 3.58	287.5	3.98	296.0	5.58	338.5	6.73	362.5	7.98	366.5
GR 11.37	375.4	11.37	379.4	11.28	380.9	8.88	385.5	8.88	389.0
GR 6.23	394.5	6.23	395.5	5.83	396.0	5.83	398.0	6.78	399.0
GR 6.78	399.6	6.38	400.0	6.38	540.0				
X110.665	50	102.00	328.50	78.00	78.00	78.00			
GR 7.48	.0	7.48	12.0	7.38	12.0	7.13	38.5	7.23	39.0
GR 7.23	45.5	7.23	49.5	6.58	52.5	6.58	71.5	6.88	71.5
GR 6.93	78.0	6.58	78.0	6.58	85.5	6.58	87.0	7.88	87.0
GR 8.13	88.5	8.13	91.5	12.03	99.0	12.03	102.0	7.78	111.0
GR 7.58	113.0	6.38	114.5	6.38	191.5	3.23	197.5	3.08	210.5
GR 2.48	212.5	2.28	215.5	2.53	224.5	2.68	234.5	3.08	237.5
GR 3.28	238.0	4.23	240.0	4.53	242.5	2.73	244.5	3.03	252.0
GR 3.33	259.0	5.83	265.0	5.83	312.5	6.63	313.0	6.63	315.5
GR 7.98	319.8	11.62	328.5	11.62	332.5	11.39	334.0	8.43	340.5
GR 8.43	344.5	6.83	347.5	6.83	349.5	8.03	351.0	8.03	472.0

X110.875	44	110.50	336.00	210.00	210.00	210.00			
GR 6.35	.0	6.35	30.0	6.90	90.5	8.00	96.0	8.00	99.0
GR 10.70	103.2	10.80	106.2	11.70	107.0	11.70	110.5	6.05	123.5
GR 6.05	187.0	6.10	187.5	6.10	189.5	4.00	194.0	3.90	212.0
GR 3.15	215.5	2.45	217.0	2.45	220.5	2.60	228.5	2.45	235.5
GR 2.70	239.0	3.15	239.0	3.60	239.5	3.00	244.5	3.00	255.0
GR 6.05	260.5	6.05	261.5	5.65	262.5	5.65	295.5	6.70	296.5
GR 6.70	321.0	7.20	322.0	7.20	323.2	8.20	327.0	11.45	336.0
GR 11.45	340.5	8.30	348.0	8.30	350.5	6.50	353.0	6.50	354.5
GR 6.10	355.0	6.10	355.5	6.60	356.5	6.60	460.5		
X111.085	52	117.00	341.50	210.00	210.00	210.00			
GR 6.51	.0	6.51	70.5	7.06	73.0	7.51	79.0	7.51	83.0
GR 7.61	93.5	7.61	97.5	7.51	102.5	8.71	104.0	8.71	107.0
GR 12.11	113.0	12.11	114.0	12.11	117.0	6.81	130.5	5.61	132.5
GR 5.61	173.5	4.41	176.5	4.41	179.0	3.41	182.0	4.11	208.5
GR 3.21	210.0	2.91	210.5	2.31	215.0	2.16	222.5	1.21	237.0
GR 2.31	240.5	3.21	240.5	4.61	243.0	5.21	250.5	5.21	251.2
GR 5.01	251.6	5.01	263.0	5.41	264.0	5.41	281.0	5.96	282.0
GR 5.96	298.5	6.51	299.5	6.51	327.0	7.01	327.5	7.01	328.0
GR 6.71	328.2	6.71	328.5	7.76	329.5	7.76	332.0	11.64	341.5
GR 11.64	347.9	8.31	354.0	8.31	357.5	6.61	360.0	6.61	363.0
GR 6.81	363.5	6.81	440.0						
X111.202	54	113.50	329.50	117.00	117.00	117.00			
GR 12.55	.0	12.59	103.5	12.59	113.5	10.46	113.5	10.46	114.2
GR 9.47	114.2	8.10	119.0	6.90	119.0	6.90	124.0	6.20	127.0
GR 6.05	138.5	5.15	140.5	5.10	154.0	4.03	167.5	3.30	181.0
GR 3.25	187.5	3.00	188.5	3.25	190.0	3.00	194.5	3.25	200.5
GR 2.75	204.0	2.80	208.0	2.35	214.5	2.85	221.5	2.60	222.5
GR 3.25	225.0	4.25	226.5	5.05	235.0	4.95	246.5	5.80	248.5
GR 5.65	260.0	6.30	262.0	6.10	273.5	6.60	275.5	6.55	289.0
GR 7.15	289.8	7.15	290.1	6.95	291.1	6.95	302.5	6.95	316.0
GR 6.95	317.5	7.15	317.8	7.15	318.2	6.85	318.5	6.85	319.0
GR 7.15	319.3	7.15	319.8	6.75	320.3	6.90	323.0	10.10	328.8
GR 10.46	328.8	10.46	329.5	12.59	329.5	12.48	424.0		
X111.208	54	113.50	329.50	6.00	6.00	6.00			
GR 12.55	.0	12.59	103.5	12.59	113.5	10.46	113.5	10.46	114.2
GR 9.47	114.2	8.10	119.0	6.90	119.0	6.90	124.0	6.20	127.0
GR 6.05	138.5	5.15	140.5	5.10	154.0	4.03	167.5	3.30	181.0
GR 3.25	187.5	3.00	188.5	3.25	190.0	3.00	194.5	3.25	200.5
GR 2.75	204.0	2.80	208.0	2.35	214.5	2.85	221.5	2.60	222.5
GR 3.25	225.0	4.25	226.5	5.05	235.0	4.95	246.5	5.80	248.5
GR 5.65	260.0	6.30	262.0	6.10	273.5	6.60	275.5	6.55	289.0
GR 7.15	289.8	7.15	290.1	6.95	291.1	6.95	302.5	6.95	316.0
GR 6.95	317.5	7.15	317.8	7.15	318.2	6.85	318.5	6.85	319.0
GR 7.15	319.3	7.15	319.8	6.75	320.3	6.90	323.0	10.10	328.8
GR 10.46	328.8	10.46	329.5	12.59	329.5	12.48	424.0		
X111.217	53	111.50	327.50	9.00	9.00	9.00			
GR 12.38	.0	12.81	107.0	12.81	111.5	11.28	111.5	11.28	112.3
GR 8.88	112.3	7.00	118.5	7.00	123.0	6.65	125.0	6.20	138.5
GR 5.35	152.0	4.55	165.5	3.45	179.5	3.32	180.5	2.72	189.0
GR 3.32	192.0	3.90	192.5	3.32	196.6	2.20	201.5	2.95	206.0
GR 2.45	214.0	2.95	219.5	2.45	224.0	2.70	227.0	3.32	227.0
GR 4.20	227.5	5.35	233.0	4.85	245.0	6.00	246.5	5.40	259.5
GR 5.65	260.0	6.60	261.5	6.00	262.5	6.20	272.0	6.80	273.5
GR 6.30	275.5	6.60	286.0	7.30	287.0	6.95	290.0	6.95	300.5
GR 6.95	314.0	6.95	316.0	7.25	316.3	7.25	316.8	6.95	317.1
GR 6.95	317.7	7.45	318.0	7.30	321.5	10.60	326.7	10.98	326.7
GR 10.98	327.5	12.81	327.5	12.57	414.5				
X111.223	53	111.50	327.50	6.00	6.00	6.00			
GR 12.38	.0	12.81	107.0	12.81	111.5	11.28	111.5	11.28	112.3
GR 8.88	112.3	7.00	118.5	7.00	123.0	6.65	125.0	6.20	138.5
GR 5.35	152.0	4.55	165.5	3.45	179.5	3.32	180.5	2.72	189.0
GR 3.32	192.0	3.90	192.5	3.32	196.6	2.20	201.5	2.95	206.0
GR 2.45	214.0	2.95	219.5	2.45	224.0	2.70	227.0	3.32	227.0
GR 4.20	227.5	5.35	233.0	4.85	245.0	6.00	246.5	5.40	259.5
GR 5.65	260.0	6.60	261.5	6.00	262.5	6.20	272.0	6.80	273.5
GR 6.30	275.5	6.60	286.0	7.30	287.0	6.95	290.0	6.95	300.5
GR 6.95	314.0	6.95	316.0	7.25	316.3	7.25	316.8	6.95	317.1
GR 6.95	317.7	7.45	318.0	7.30	321.5	10.60	326.7	10.98	326.7
GR 10.98	327.5	12.81	327.5	12.57	414.5				
X111.280	53	101.50	329.20	57.00	57.00	57.00			
GR 11.32	.0	11.32	2.0	11.12	2.0	11.62	34.0	11.82	34.0
GR 11.82	34.5	10.02	45.0	8.57	56.5	8.97	72.0	8.57	73.0
GR 8.07	73.0	8.02	86.5	8.02	88.0	11.21	94.5	11.21	97.5
GR 11.82	98.5	11.82	101.5	5.47	120.5	5.07	163.5	4.32	166.0
GR 4.72	200.5	3.67	203.5	3.42	207.5	2.87	210.5	2.77	216.5

GR	3.17	221.5	3.42	227.5	3.47	229.0	4.72	232.0	4.72	234.5
GR	4.77	235.0	4.77	250.0	5.57	251.0	5.57	272.5	6.72	274.0
GR	6.72	315.0	7.52	316.0	7.52	316.5	7.02	317.0	7.02	318.0
GR	10.22	322.5	10.22	326.5	11.22	326.8	11.91	329.2	11.97	332.2
GR	9.72	336.5	9.42	339.0	8.32	340.0	8.12	345.0	6.82	347.5
GR	6.82	349.0	7.42	350.0	7.42	457.5				
X111.374		36	106.70	333.56	94.00	94.00	94.00			
GR	11.06	.0	12.56	68.3	12.16	88.4	11.86	101.9	11.96	106.7
GR	10.15	106.7	10.15	107.9	8.77	107.9	5.96	115.8	5.66	131.7
GR	5.29	161.0	4.56	190.3	3.56	206.2	3.26	206.7	3.11	213.4
GR	2.96	221.1	2.66	233.6	3.56	236.0	4.26	236.5	4.76	249.0
GR	5.31	276.4	5.66	278.3	6.16	307.6	6.66	318.7	6.16	319.1
GR	6.16	319.6	6.66	320.1	7.06	326.8	8.91	331.6	8.91	332.3
GR	10.32	332.3	10.32	333.6	12.13	333.6	12.09	336.6	11.16	384.0
GR	11.06	398.4								
X111.386		36	106.70	333.56	12.00	12.00	12.00			
GR	11.06	.0	12.56	68.3	12.16	88.4	11.86	101.9	11.96	106.7
GR	10.15	106.7	10.15	107.9	8.77	107.9	5.96	115.8	5.66	131.7
GR	5.29	161.0	4.56	190.3	3.56	206.2	3.26	206.7	3.11	213.4
GR	2.96	221.1	2.66	233.6	3.56	236.0	4.26	236.5	4.76	249.0
GR	5.31	276.4	5.66	278.3	6.16	307.6	6.66	318.7	6.16	319.1
GR	6.16	319.6	6.66	320.1	7.06	326.8	8.91	331.6	8.91	332.3
GR	10.32	332.3	10.32	333.6	12.13	333.6	12.09	336.6	11.16	384.0
GR	11.06	398.4								
X111.418		34	89.40	315.92	32.00	32.00	32.00			
GR	11.31	.0	13.86	86.2	13.93	89.4	11.52	89.4	11.52	90.7
GR	10.61	90.7	6.66	99.5	5.51	121.8	4.71	154.1	4.76	165.1
GR	3.81	169.5	4.31	186.5	4.31	189.7	3.71	190.9	3.41	191.7
GR	3.36	199.4	3.46	203.5	3.11	211.6	3.71	214.0	4.76	217.2
GR	4.96	218.8	5.31	251.2	6.21	283.6	6.66	300.1	7.26	305.4
GR	6.66	306.2	7.11	308.6	10.61	313.9	10.61	315.4	11.61	315.4
GR	11.61	315.9	14.00	315.9	14.28	318.3	11.81	398.4		
X111.442		34	89.40	315.92	24.00	24.00	24.00			
GR	11.31	.0	13.86	86.2	13.93	89.4	11.52	89.4	11.52	90.7
GR	10.61	90.7	6.66	99.5	5.51	121.8	4.71	154.1	4.76	165.1
GR	3.81	169.5	4.31	186.5	4.31	189.7	3.71	190.9	3.41	191.7
GR	3.36	199.4	3.46	203.5	3.11	211.6	3.71	214.0	4.76	217.2
GR	4.96	218.8	5.31	251.2	6.21	283.6	6.66	300.1	7.26	305.4
GR	6.66	306.2	7.11	308.6	10.61	313.9	10.61	315.4	11.61	315.4
GR	11.61	315.9	14.00	315.9	14.28	318.3	11.81	398.4		
X111.480		57	130.00	355.30	38.00	38.00	38.00			
GR	5.87	.0	5.87	101.0	6.92	101.5	6.92	102.5	6.92	111.5
GR	6.92	113.5	8.42	114.5	11.07	119.5	11.07	121.5	12.02	123.2
GR	12.07	125.2	12.07	129.2	12.02	129.3	12.02	130.0	8.87	137.0
GR	8.67	139.0	6.42	143.8	6.42	145.8	5.92	147.5	5.92	191.0
GR	4.77	194.5	4.47	225.5	3.82	227.0	3.42	227.5	3.12	230.0
GR	3.32	240.5	3.27	246.0	3.22	252.0	3.82	255.0	4.62	257.5
GR	5.45	304.0	6.82	306.5	6.82	307.5	6.32	308.5	6.32	340.0
GR	6.12	341.0	6.12	341.5	7.72	345.5	7.72	347.0	12.04	355.3
GR	12.04	355.5	12.04	359.5	12.37	360.0	12.37	371.0	12.37	372.5
GR	11.97	372.5	11.97	384.5	11.97	392.5	11.87	397.5	12.17	397.5
GR	12.17	400.0	11.07	402.0	11.37	411.0	10.87	413.0	10.87	435.0
GR	7.37	435.0	7.37	480.0						
X111.680		59	120.50	345.60	200.00	200.00	200.00			
GR	6.52	.0	6.52	84.5	6.92	85.5	6.92	88.2	5.87	90.0
GR	4.42	91.0	4.42	93.0	6.17	94.5	6.37	105.5	11.97	115.0
GR	11.92	115.5	11.92	120.0	11.92	120.5	7.47	129.0	7.47	130.5
GR	6.52	131.5	6.52	181.5	6.97	182.0	6.97	184.0	6.67	186.5
GR	4.97	226.0	3.92	227.5	3.62	228.0	3.52	231.0	3.42	234.0
GR	3.62	248.0	3.92	248.0	4.37	248.5	4.74	258.5	4.67	270.0
GR	3.92	272.0	3.42	273.0	3.22	275.0	3.22	285.0	3.92	285.0
GR	4.52	292.5	5.22	294.5	5.22	306.0	6.67	309.0	6.67	335.0
GR	7.37	335.0	7.37	336.7	12.00	345.6	12.00	346.0	12.00	350.3
GR	8.27	356.5	8.17	358.5	7.17	358.5	7.17	360.5	8.17	360.5
GR	9.02	366.0	8.32	369.0	9.07	421.5	9.17	435.5	9.17	439.5
GR	9.97	439.5	9.97	442.5	10.22	444.5	10.22	454.5		
X111.865		69	151.70	376.40	185.00	185.00	185.00			
GR	5.96	.0	5.96	59.5	6.66	59.5	7.96	61.5	7.76	91.0
GR	7.41	91.5	7.41	132.5	8.01	132.5	8.11	135.0	8.11	140.0
GR	9.21	140.0	12.26	145.0	12.26	150.0	12.26	151.0	12.26	151.7
GR	6.76	160.5	6.76	162.5	6.11	163.5	6.11	202.5	5.71	209.5
GR	4.86	219.5	5.56	239.5	4.11	252.0	3.71	253.0	3.41	255.0
GR	3.66	260.5	4.11	262.0	5.01	264.5	5.11	267.5	4.11	271.5
GR	3.71	272.5	3.61	274.0	3.46	279.5	3.61	285.0	3.81	288.0
GR	4.11	288.0	4.81	288.5	4.96	299.5	5.26	300.0	5.26	319.0
GR	5.61	320.0	5.61	338.0	7.81	343.0	7.81	346.5	7.91	347.0

GR	7.91	370.0	7.91	371.0	11.98	376.4	11.98	376.6	11.98	381.4
GR	8.76	388.5	8.66	390.5	9.66	390.5	9.66	392.2	8.66	392.2
GR	8.66	394.2	8.76	394.2	8.76	396.2	8.76	404.0	8.76	405.5
GR	8.76	405.8	9.16	405.8	9.16	408.8	9.56	440.5	9.66	440.5
GR	9.56	453.5	9.66	465.0	9.76	465.0	9.76	480.0		
X112.080		63	112.00	351.50	215.00	215.00	215.00			
GR	6.92	.0	6.92	18.0	7.02	18.0	7.02	26.0	7.02	36.0
GR	7.07	41.0	7.07	42.0	7.12	73.5	6.92	74.0	6.92	93.5
GR	8.12	95.0	8.32	100.0	12.22	107.0	12.22	112.0	8.97	117.5
GR	7.02	124.0	7.02	128.0	6.22	129.5	6.02	140.0	6.02	150.0
GR	6.52	150.5	6.52	152.0	5.12	155.0	5.22	173.5	4.32	176.0
GR	4.02	176.5	3.82	179.0	3.92	182.0	4.12	187.5	4.32	188.0
GR	4.87	189.0	5.27	201.5	5.02	226.0	5.12	246.0	4.32	247.5
GR	3.72	250.5	3.72	261.0	3.92	267.0	4.32	270.0	4.27	288.5
GR	4.97	288.5	4.97	290.0	4.67	290.5	4.67	292.5	5.52	302.0
GR	6.52	304.5	6.52	306.5	6.67	336.5	8.82	343.5	12.40	351.5
GR	12.40	354.5	8.47	361.2	8.67	361.2	8.67	361.5	8.47	361.5
GR	8.27	394.0	8.27	395.0	6.97	396.0	6.97	396.5	7.47	397.0
GR	7.47	397.5	7.17	398.0	7.17	462.0				
X112.275		57	103.90	350.40	195.00	195.00	195.00			
GR	7.41	.0	7.41	10.0	7.46	74.5	7.51	81.0	8.26	83.0
GR	8.26	90.0	10.46	93.0	10.56	96.5	12.36	99.5	12.36	103.5
GR	12.36	103.9	12.06	103.9	8.91	109.5	8.71	113.5	7.56	115.0
GR	7.56	121.0	5.11	126.0	4.66	148.0	5.31	170.0	4.51	171.5
GR	4.31	171.5	4.11	174.5	4.06	183.0	4.31	189.5	4.51	189.5
GR	5.36	190.0	5.66	195.5	4.66	204.5	5.06	207.0	5.11	219.0
GR	4.86	222.0	4.51	222.0	4.16	222.0	4.46	223.0	4.36	225.5
GR	4.51	227.5	6.46	230.5	6.46	233.0	5.51	233.7	5.51	323.5
GR	6.51	324.5	6.51	336.0	6.76	336.5	6.76	339.0	9.16	344.0
GR	9.16	345.0	12.34	350.4	12.34	350.9	12.34	355.4	7.56	363.0
GR	7.36	366.5	5.26	369.5	5.26	374.5	7.56	377.5	7.56	379.0
GR	7.16	379.7	7.16	478.5						
X112.475		50	104.50	349.00	200.00	200.00	200.00			
GR	7.75	.0	7.75	13.0	7.75	20.0	7.75	24.0	7.70	70.5
GR	7.95	80.5	8.15	91.5	12.60	99.5	12.55	100.0	12.55	104.0
GR	12.55	104.5	8.15	112.5	7.85	119.5	5.65	124.5	5.55	160.5
GR	5.60	172.0	4.75	175.5	4.00	177.0	5.45	181.0	5.70	200.5
GR	5.20	206.5	4.65	207.5	4.25	212.5	4.30	224.0	4.15	237.5
GR	4.65	240.5	6.75	243.5	6.75	244.5	4.75	248.5	4.35	252.0
GR	5.65	254.0	5.65	255.0	5.65	309.5	7.25	312.5	7.25	338.5
GR	7.95	338.5	7.95	342.5	12.06	349.0	12.06	349.7	12.13	351.7
GR	12.23	354.9	8.90	360.5	8.90	362.3	8.10	363.3	7.80	366.8
GR	5.20	371.8	5.20	377.3	7.75	379.0	7.75	380.2	7.35	494.0
X112.695		53	130.50	379.40	220.00	220.00	220.00			
GR	7.53	.0	7.58	32.0	7.58	60.0	7.58	93.5	7.33	106.0
GR	6.78	107.0	6.78	108.5	7.83	110.5	7.83	116.5	12.73	125.3
GR	12.78	126.0	12.78	130.0	12.73	130.5	9.98	134.5	8.48	139.0
GR	7.98	148.5	5.73	155.0	5.68	197.0	4.98	214.0	4.58	216.0
GR	4.98	218.5	5.43	222.0	5.33	224.0	4.98	227.5	4.28	228.5
GR	4.23	235.5	4.58	240.0	4.98	243.0	5.13	247.5	4.93	250.5
GR	5.63	252.0	5.53	272.5	5.43	291.0	4.68	292.0	4.38	297.0
GR	4.38	302.0	3.38	303.0	4.68	305.0	6.23	307.5	6.23	347.0
GR	5.98	348.0	5.98	366.0	7.88	369.0	8.38	371.5	12.49	379.4
GR	12.49	379.9	12.49	384.3	9.48	389.5	5.38	401.5	8.63	406.5
GR	8.63	407.5	7.83	409.0	7.83	530.0				
X112.885		67	104.40	360.20	190.00	190.00	190.00			
GR	8.51	.0	8.51	81.5	7.26	82.5	7.26	83.5	8.41	85.0
GR	8.41	90.0	11.31	95.0	11.51	97.0	13.01	99.5	13.01	100.0
GR	13.01	104.0	13.01	104.4	9.51	110.5	9.41	114.0	8.01	116.0
GR	8.01	131.0	6.11	135.0	6.11	153.5	5.91	154.0	5.91	181.5
GR	6.61	182.0	6.61	183.5	5.41	185.5	6.31	225.5	5.21	229.0
GR	5.01	229.3	4.61	231.0	4.76	240.0	5.06	247.0	4.81	251.5
GR	5.01	254.2	5.21	254.5	5.66	255.5	5.66	262.0	6.36	263.0
GR	6.36	264.0	5.86	265.5	5.66	295.0	6.16	296.5	6.16	297.0
GR	5.96	297.3	5.96	297.5	7.11	299.5	7.11	300.5	6.61	301.0
GR	6.61	301.5	6.91	303.0	6.81	318.0	7.61	320.0	7.61	321.5
GR	6.71	322.3	6.71	337.5	7.71	339.0	8.16	351.0	8.86	352.0
GR	9.16	354.0	12.32	360.2	12.32	360.5	12.32	364.5	8.66	372.0
GR	7.86	374.5	5.26	378.0	5.26	382.0	8.31	386.0	8.31	386.7
GR	8.11	387.0	8.11	504.0						
X113.095		67	124.00	380.80	210.00	210.00	210.00			
GR	7.84	.0	7.84	103.5	6.79	104.5	6.79	105.0	7.99	105.5
GR	9.19	108.0	9.19	113.0	13.39	119.5	13.39	120.0	13.39	124.0
GR	9.74	130.5	9.74	132.0	8.84	133.5	8.74	157.0	6.94	160.5
GR	6.94	174.5	8.34	176.5	8.34	178.5	6.49	182.0	6.49	221.0
GR	6.94	222.0	6.09	234.5	5.54	235.5	5.34	235.5	5.24	238.5

GR	5.34	244.0	5.54	255.5	5.64	256.5	6.44	257.0	6.49	257.5
GR	6.59	264.5	5.89	266.0	5.94	288.0	6.94	291.5	6.94	292.5
GR	5.94	293.5	6.54	300.5	6.84	301.5	5.54	306.5	5.54	309.0
GR	6.69	313.5	6.69	316.5	6.09	317.5	6.09	318.0	6.89	322.5
GR	6.89	359.0	7.04	359.5	7.04	360.0	6.64	360.3	6.64	361.3
GR	6.94	361.8	7.14	365.5	8.54	369.0	9.24	372.5	11.59	376.5
GR	11.59	380.3	12.89	380.8	12.89	381.0	12.89	385.4	8.89	393.0
GR	8.09	396.0	5.59	399.5	5.59	404.0	8.59	409.0	8.59	409.5
GR	8.39	409.5	8.39	500.0						
X113.280		76	130.30	386.10	185.00	185.00	185.00			
GR	8.62	.0	8.62	42.0	8.72	42.0	8.72	52.0	8.72	62.5
GR	8.72	65.0	8.87	71.5	8.97	76.0	7.37	76.0	7.37	110.0
GR	9.27	113.0	9.27	115.5	9.87	117.5	9.87	120.5	13.32	125.0
GR	13.32	126.0	13.32	130.0	13.32	130.3	9.72	136.0	9.72	138.0
GR	8.82	141.0	8.67	152.0	6.82	157.5	6.92	208.5	6.12	210.5
GR	6.07	216.5	5.77	219.5	5.57	223.5	6.07	225.5	6.39	227.0
GR	6.39	227.5	6.07	228.5	5.62	232.5	6.07	235.0	6.22	237.0
GR	6.07	238.5	5.82	250.0	5.85	260.0	5.87	266.0	6.07	269.0
GR	6.52	303.0	7.12	304.0	7.02	361.0	7.72	362.0	7.72	363.0
GR	6.92	364.0	6.92	366.0	7.42	367.0	7.02	372.0	9.27	376.5
GR	9.27	378.5	10.22	380.5	10.22	381.5	12.94	386.1	12.94	386.6
GR	12.94	390.3	9.02	397.5	8.62	401.5	7.02	405.0	6.12	405.0
GR	6.12	408.0	6.62	408.0	6.62	408.6	8.97	412.0	8.97	413.0
GR	8.67	413.5	8.67	438.0	9.27	438.5	9.27	440.3	9.67	441.0
GR	9.82	446.0	9.77	454.5	9.77	470.5	9.77	475.0	9.17	475.5
GR	9.17	480.5								
X113.465		34	143.00	401.00	185.00	185.00	185.00			
GR	8.67	.0	8.67	70.5	7.04	72.0	7.04	127.0	13.32	139.4
GR	13.32	143.0	13.17	143.4	13.02	145.5	10.54	148.5	9.22	151.0
GR	8.87	167.5	6.92	170.5	6.92	218.0	6.28	218.3	6.28	317.0
GR	6.92	317.5	6.75	353.5	6.90	386.0	9.32	391.3	9.32	393.3
GR	10.17	395.2	10.17	397.0	12.94	401.0	12.94	401.5	12.94	404.2
GR	8.72	413.0	8.42	416.0	7.22	419.0	7.22	423.5	8.82	427.0
GR	9.32	428.5	9.32	431.5	8.32	433.0	8.32	461.0		
X113.470		34	143.00	401.00	5.00	5.00	5.00			
GR	8.67	.0	8.67	70.5	7.04	72.0	7.04	127.0	13.32	139.4
GR	13.32	143.0	13.17	143.4	13.02	145.5	10.54	148.5	9.22	151.0
GR	8.87	167.5	6.92	170.5	6.92	218.0	6.28	218.3	6.28	317.0
GR	6.92	317.5	6.75	353.5	6.90	386.0	9.32	391.3	9.32	393.3
GR	10.17	395.2	10.17	397.0	12.94	401.0	12.94	401.5	12.94	404.2
GR	8.72	413.0	8.42	416.0	7.22	419.0	7.22	423.5	8.82	427.0
GR	9.32	428.5	9.32	431.5	8.32	433.0	8.32	461.0		
X113.490		44	168.30	425.50	20.00	20.00	20.00			
GR	9.22	.0	9.22	32.0	9.22	102.0	7.37	104.0	7.37	151.5
GR	13.82	164.0	13.82	168.0	13.82	168.3	10.82	173.0	10.62	174.5
GR	9.17	178.5	9.07	191.0	7.22	193.5	7.15	241.5	6.92	242.0
GR	6.32	243.0	6.22	247.0	6.32	272.0	6.32	303.0	6.27	325.0
GR	6.22	338.0	6.12	341.0	6.92	341.5	7.07	342.0	7.17	410.5
GR	9.67	415.5	10.07	417.7	10.47	419.5	10.67	420.7	13.32	425.5
GR	13.32	426.0	13.32	429.7	9.07	437.5	8.77	440.5	6.77	443.8
GR	6.77	447.8	9.67	453.5	9.67	456.5	8.67	458.0	9.12	508.0
GR	9.72	508.6	9.72	548.0	9.52	549.0	9.52	594.0		
X113.680		52	127.00	382.80	190.00	190.00	190.00			
GR	9.94	.0	9.94	50.0	9.94	61.0	9.94	63.0	9.74	63.0
GR	9.44	64.0	9.44	111.5	12.99	117.5	12.99	118.5	12.84	127.0
GR	11.29	130.0	9.74	134.8	9.64	146.0	7.49	150.0	7.49	181.0
GR	7.54	181.1	7.54	181.6	6.97	182.5	6.52	183.0	6.32	187.5
GR	6.44	217.0	6.39	237.0	6.37	258.0	6.32	275.5	6.52	278.2
GR	6.97	278.5	7.61	279.7	7.61	280.2	7.69	353.5	9.29	356.5
GR	10.19	375.5	10.74	378.5	13.33	382.8	13.33	383.2	13.33	387.8
GR	9.19	394.5	8.89	397.3	7.29	401.3	7.29	403.6	9.59	409.0
GR	9.59	410.0	8.79	411.8	8.79	422.5	9.29	423.8	9.29	425.1
GR	8.89	425.5	8.89	426.1	9.39	426.7	9.39	431.7	8.79	432.2
GR	8.79	472.2	8.79	557.0						
X113.806		65	128.50	393.80	126.00	126.00	126.00			
GR	9.71	.0	9.71	80.0	9.91	81.5	9.91	86.5	9.91	90.0
GR	9.91	102.0	10.16	117.0	13.26	122.6	13.26	123.6	13.26	127.6
GR	13.26	128.0	13.26	128.5	10.51	132.5	9.65	151.5	9.12	151.5
GR	9.12	152.1	8.31	152.1	7.61	152.8	7.11	161.0	7.01	164.0
GR	6.91	170.5	6.71	174.5	6.81	180.0	6.71	181.0	6.76	189.5
GR	6.66	199.0	6.66	208.5	6.66	218.0	6.81	228.0	6.46	235.0
GR	7.16	242.0	7.06	249.0	6.31	256.0	6.46	263.0	6.61	270.0
GR	6.71	277.0	6.71	284.0	6.71	291.0	6.36	298.0	6.36	305.0
GR	6.26	312.0	6.81	319.0	7.01	322.5	7.21	324.0	8.21	324.0
GR	9.12	325.4	9.12	326.0	9.65	326.0	10.31	385.0	10.61	387.0
GR	13.66	393.8	13.66	397.5	10.26	405.0	10.26	406.0	10.56	417.5

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GR 10.56   428.5   10.51   429.5   10.71   429.5   10.71   429.7    8.91   429.7
GR  8.91   430.3    9.21   430.6    9.21   431.1    8.91   431.4    8.91   508.0
X113.814      65  128.50  393.80    8.00    8.00    8.00
GR  9.71      .0    9.71    80.0    9.91    81.5    9.91    86.5    9.91    90.0
GR  9.91   102.0   10.16   117.0   13.26   122.6   13.26   123.6   13.26   127.6
GR 13.26   128.0   13.26   128.5   10.51   132.5    9.65   151.5    9.12   151.5
GR  9.12   152.1    8.31   152.1    7.61   152.8    7.11   161.0    7.01   164.0
GR  6.91   170.5    6.71   174.5    6.81   180.0    6.71   181.0    6.76   189.5
GR  6.66   199.0    6.66   208.5    6.66   218.0    6.81   228.0    6.46   235.0
GR  7.16   242.0    7.06   249.0    6.31   256.0    6.46   263.0    6.61   270.0
GR  6.71   277.0    6.71   284.0    6.71   291.0    6.36   298.0    6.36   305.0
GR  6.26   312.0    6.81   319.0    7.01   322.5    7.21   324.0    8.21   324.0
GR  9.12   325.4    9.12   326.0    9.65   326.0   10.31   385.0   10.61   387.0
GR 13.66   393.8   13.66   397.5   10.26   405.0   10.26   406.0   10.56   417.5
GR 10.56   428.5   10.51   429.5   10.71   429.5   10.71   429.7    8.91   429.7
GR  8.91   430.3    9.21   430.6    9.21   431.1    8.91   431.4    8.91   508.0
X113.855      40  121.00  379.00   41.00   41.00   41.00
GR 10.19      .0   10.19    48.0   10.14    54.5   10.14    58.5   10.14    64.0
GR 10.14    67.0   10.24    74.5   10.24    89.0   10.49    89.0   10.49    95.0
GR 10.49   103.0   10.39   109.5   10.39   110.5   13.59   114.6   13.59   115.6
GR 13.59   119.6   13.54   120.5   13.54   121.0   11.19   125.0    8.22   130.6
GR  7.22   130.6    7.22   362.2    8.22   362.2    9.82   362.5    9.82   362.9
GR 10.14   366.5   10.32   374.0   13.04   379.0   13.16   381.1   12.94   390.5
GR 10.54   394.7   10.49   421.0   10.49   423.5   10.29   432.5   10.29   441.0
GR 10.49   441.5   10.64   463.5   10.44   465.5   10.44   476.5   10.14   484.5
X113.860      40  121.00  379.00    5.00    5.00    5.00
GR 10.19      .0   10.19    48.0   10.14    54.5   10.14    58.5   10.14    64.0
GR 10.14    67.0   10.24    74.5   10.24    89.0   10.49    89.0   10.49    95.0
GR 10.49   103.0   10.39   109.5   10.39   110.5   13.59   114.6   13.59   115.6
GR 13.59   119.6   13.54   120.5   13.54   121.0   11.19   125.0    8.22   130.6
GR  7.32   130.6    7.32   362.2    8.22   362.2    9.82   362.5    9.82   362.9
GR 10.14   366.5   10.32   374.0   13.04   379.0   13.16   381.1   12.94   390.5
GR 10.54   394.7   10.49   421.0   10.49   423.5   10.29   432.5   10.29   441.0
GR 10.49   441.5   10.64   463.5   10.44   465.5   10.44   476.5   10.14   484.5
X113.875      48  115.00  373.40   15.00   15.00   15.00
GR  9.84      .0    9.99    65.0   10.39    83.0   10.39    84.5   10.39    91.0
GR 10.59   103.0   10.59   104.0   13.69   109.5   13.69   110.5   13.69   114.5
GR 13.69   115.0    9.19   125.0    8.94   132.5    8.69   158.0    8.69   161.0
GR  8.27   162.0    7.32   164.0    5.94   178.5    6.74   192.5    7.24   222.0
GR  6.69   246.5    7.04   288.5    7.64   320.0    6.84   348.5    7.82   357.0
GR  8.27   357.5    9.09   358.5    9.09   359.0   10.09   361.5   10.54   370.5
GR 13.03   373.4   13.03   374.4   13.11   377.8   13.02   381.5   12.32   383.5
GR 12.32   387.5   10.54   390.5   10.59   397.0   10.79   410.5   10.29   412.5
GR 10.29   413.5   10.84   415.5   10.84   439.0   11.14   439.5   10.69   457.0
GR 10.39   458.0   10.34   482.0   10.34   495.0
X114.095      50  190.50  458.00  220.00  220.00  220.00
GR  9.68      .0    9.68    55.0    9.68   104.5   10.28   107.5   10.28   112.5
GR  9.63   114.0    9.63   114.5   10.03   115.5   10.03   120.0    9.88   120.5
GR  9.88   141.0    9.73   141.5    9.73   170.5    8.98   172.0    8.98   172.5
GR  9.93   173.5    9.93   177.5   13.98   185.5   13.98   189.7   14.08   190.0
GR 14.08   190.5   11.53   195.0   10.38   200.5    9.18   229.7    9.18   230.7
GR  8.33   232.0    7.83   233.0    7.58   251.0    7.38   270.0    7.48   285.0
GR  7.78   293.5    8.33   309.0    8.48   317.5    8.73   344.5    8.33   354.0
GR  7.48   374.5    7.58   392.5    7.73   418.0    8.03   421.7    8.33   422.0
GR  9.18   423.0    9.18   424.0   10.48   448.5   10.48   450.5   13.87   458.0
GR 13.82   462.1   10.93   468.0   10.93   470.0   10.83   470.5   10.83   596.0
X114.285      45  155.50  422.80  190.00  190.00  190.00
GR 10.41      .0   10.41    79.0   10.16    79.5   10.16   126.0   10.31   126.5
GR 10.31   136.0    9.56   136.7    9.56   137.2   10.21   138.0   10.21   143.0
GR 14.31   150.0   14.36   155.0   14.36   155.5   12.06   159.0   10.81   162.3
GR 10.81   164.8    8.51   169.5    8.51   197.0    8.46   197.5    8.26   238.5
GR  8.66   239.5    8.66   241.0    8.36   242.0    7.96   242.5    7.76   248.5
GR  7.66   269.0    7.51   285.5    7.31   308.0    7.31   315.0    7.56   328.5
GR  8.36   337.0    8.81   340.0    8.81   342.0    8.21   343.5    8.21   365.0
GR  8.36   390.5   10.26   395.0   11.26   415.0   12.01   418.0   14.18   422.8
GR 14.18   427.0   12.06   431.8   12.06   434.3    9.36   437.5    9.36   545.0
X114.465      61  108.50  384.10  180.00  180.00  180.00
GR 11.09      .0   11.09    42.5   10.89    44.0   10.89    84.0    9.69    87.0
GR  9.69    89.0   11.93    93.2   11.93    98.2   14.79   104.0   14.79   108.0
GR 14.79   108.5   11.79   114.0   11.79   117.0    9.89   125.5   10.09   128.0
GR  9.14   129.5    9.14   178.0    8.84   178.5    8.84   209.5    9.29   210.5
GR  9.29   211.5    8.69   213.0    8.69   244.5    8.94   245.5    8.94   246.5
GR  8.39   247.0    8.44   253.5    7.89   263.5    7.94   267.5    7.74   272.0
GR  8.44   280.0    8.59   281.0    8.69   283.5    8.44   284.0    6.99   284.5
GR  5.69   286.0    4.89   288.0    5.89   299.0    6.34   304.0    7.79   314.0
GR  8.44   318.0    8.49   323.5    9.14   325.5    9.14   327.0    8.64   328.0
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GR  9.29   349.0    8.79   367.5    9.89   370.5   10.09   374.5   12.24   379.0
GR 14.90   384.1   14.90   384.4   14.90   388.4   10.54   396.5   10.34   397.5
GR  9.64   398.5    9.64   399.0   10.14   399.5   10.14   400.5    9.54   401.0
GR  9.54   516.0
X114.645      53  155.40  422.10  180.00  180.00  180.00
GR 11.87      .0   11.87    50.0   11.39    50.5   11.39   128.0    9.97   131.0
GR  9.97   133.5   11.67   137.0   11.67   142.5   12.67   143.5   13.37   147.2
GR 15.32   150.7   15.32   155.0   15.32   155.4   12.47   160.0   12.47   161.0
GR  9.97   169.0    9.97   218.0    9.54   218.5    9.54   253.0    8.92   258.5
GR  8.67   282.5    8.52   284.0    8.12   286.0    8.52   287.5    8.87   297.5
GR  8.57   311.8    8.52   319.5    8.12   324.5    7.92   329.5    7.92   345.0
GR  8.02   355.0    8.52   360.0    9.42   366.5    8.87   392.0    8.37   397.0
GR  8.92   401.5   10.02   404.0   10.07   409.0   11.37   410.8   11.92   415.0
GR 12.62   416.3   12.72   417.8   15.09   422.1   15.09   422.4   15.09   426.5
GR 10.62   434.5   10.42   456.3    9.82   456.8    9.82   457.3   10.52   457.5
GR 10.52   458.0    9.92   458.5    9.92   520.0
X114.845      73  134.30  400.40  200.00  200.00  200.00
GR 12.38      .0   12.38    54.0   11.88    54.5   11.88   105.0   12.38   105.5
GR 12.38   107.0   10.68   110.0   10.68   113.5   12.48   118.0   12.48   124.0
GR 14.48   126.0   15.28   129.0   15.78   129.5   15.78   134.0   15.78   134.3
GR 14.86   136.3   14.76   139.3   13.03   141.4   12.93   143.1   12.10   144.5
GR 12.10   148.5   10.08   152.0   10.08   206.5    9.70   207.5    9.70   261.0
GR  9.88   261.5    9.88   262.5    9.08   264.5    8.58   268.5    8.98   275.0
GR  8.78   283.0    7.98   286.0    9.08   288.0    9.18   290.0    9.33   297.0
GR  9.08   300.0    7.93   303.0    8.23   313.0    9.08   318.0    9.18   319.0
GR  9.18   321.0    9.08   327.0    8.73   328.0    8.28   331.0    8.88   342.5
GR  9.08   343.0    9.88   344.0    9.88   346.5    9.43   347.0    9.08   349.0
GR  8.54   365.5    8.38   372.5    8.38   379.0    9.08   382.0    9.58   382.0
GR 10.18   384.0   10.53   389.0   11.53   390.4   12.03   393.4   12.83   395.5
GR 15.17   400.4   15.17   400.8   15.17   404.8   11.08   414.0   10.98   420.0
GR  9.18   422.5    9.18   425.3   10.93   425.3   10.93   430.8   10.63   433.5
GR 10.63   437.5   10.43   438.5   10.43   514.0
X115.045      69  154.00  420.30  200.00  200.00  200.00
GR 12.40      .0   12.40    49.0   12.17    49.5   12.17   129.5   11.27   131.5
GR 11.27   133.5   12.57   135.5   12.57   142.5   13.07   143.2   13.07   144.2
GR 16.42   149.5   16.42   150.0   16.42   154.0   13.77   158.5   13.72   159.5
GR 12.52   162.0   11.77   169.0   10.72   171.0   10.72   193.0   11.07   194.0
GR 11.07   235.5   11.57   236.0   11.57   237.0    9.77   239.5    9.77   277.5
GR 10.47   278.5   10.47   279.5    9.52   281.0    9.02   284.0    9.52   289.0
GR  9.92   300.5    9.92   309.0    9.52   310.0    8.92   311.0    9.52   313.5
GR 10.22   316.0    9.62   330.0    9.52   331.0    8.52   332.0    8.72   334.0
GR  8.52   340.0    9.52   344.0    9.67   345.5    9.67   348.5    9.52   351.0
GR  8.92   355.0    8.22   357.0    8.32   361.5    9.52   365.5   10.32   368.5
GR  9.52   370.5    9.42   372.0    9.52   379.0    9.22   384.0    9.07   400.0
GR  9.17   402.0    9.52   405.0    9.77   406.0   10.07   408.5   11.32   411.0
GR 15.88   420.3   15.88   420.8   15.73   424.8   11.57   434.8   11.27   436.8
GR 10.07   439.3   10.07   439.8   10.67   442.0   10.67   538.0
X115.245      66  120.50  386.70  200.00  200.00  200.00
GR 13.28      .0   13.28     9.0   12.83     9.5   12.83    60.0   12.58    60.5
GR 12.58   103.0   11.93   104.5   11.93   105.0   12.58   106.0   12.58   108.5
GR 15.33   113.8   16.83   116.0   16.83   120.0   16.83   120.5   14.28   124.5
GR 14.18   125.5   13.18   128.0   13.08   131.0   12.43   133.0   12.43   134.5
GR 12.43   193.7   12.43   205.0   10.33   208.5   10.33   239.5   10.50   240.0
GR 10.50   241.0   10.18   241.5    9.68   242.0    9.78   243.5   10.18   244.5
GR 10.95   260.0   11.03   267.0   10.18   271.5    9.08   274.0    9.03   281.0
GR  9.13   285.0   10.18   286.5   10.63   290.0   10.33   314.5   10.18   317.0
GR  9.68   320.0    9.83   341.0    9.68   365.5   10.18   368.5   10.58   369.5
GR 11.38   372.0   11.48   373.7   13.33   376.5   14.33   382.5   16.45   386.7
GR 16.45   387.0   16.45   391.0   12.43   399.0   11.73   405.0   10.73   406.2
GR 11.68   413.2   11.68   413.5   11.68   419.5   12.03   450.0   12.03   452.0
GR 11.23   458.0   11.23   459.5   11.93   461.5   11.93   463.0   12.13   464.5
GR 12.13   516.0
X115.445      60  150.00  416.40  200.00  200.00  200.00
GR 13.56      .0   13.56    49.0   13.66    50.0   13.66   108.5   13.56   112.0
GR 14.01   134.8   13.11   135.7   13.11   136.7   13.96   138.0   13.96   139.5
GR 17.41   146.3   17.41   150.0   14.81   154.3   14.61   155.3   13.66   157.5
GR 13.06   164.0   10.81   167.5   10.81   219.5   10.25   220.5    8.37   230.0
GR  8.21   236.0    9.31   255.0    8.71   281.0    9.31   303.0   10.11   306.0
GR 10.11   309.0    9.57   323.7    9.65   327.7   10.25   329.7   10.57   329.9
GR 10.57   330.6   10.37   331.0   10.37   400.5   10.27   401.0   10.27   402.0
GR 10.97   403.5   10.97   405.5   13.81   409.7   14.66   412.3   16.77   416.4
GR 16.77   416.8   16.77   420.8   13.56   428.5   13.56   430.5   12.86   431.5
GR 12.86   432.5   12.06   433.5   12.06   434.5   10.76   435.5   10.76   436.5
GR 12.46   437.5   12.46   440.5   11.96   441.0   11.96   442.5   12.76   443.5
GR 12.76   447.5   11.91   449.0   11.91   463.5   11.81   466.0   11.81   542.0
X115.645      54  108.50  383.00  200.00  200.00  200.00
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GR 14.03     .0   13.78    83.5   13.78    86.5   12.83    88.0   12.83    88.5
GR 13.38    89.5  13.38    93.0   17.78   101.0   17.83   101.5   17.83   106.5
GR 17.78   108.0  17.78   108.5   12.18   118.0   11.23   127.0   10.28   128.0
GR  8.38   130.0   8.03   136.0    7.78   143.0    8.13   151.0    8.38   161.0
GR  8.53   174.0   8.08   182.5    9.18   185.0   10.28   185.5   10.98   186.5
GR 10.98   187.5  10.18   188.7   10.18   211.5   10.98   212.5   10.98   249.7
GR 12.48   252.0  12.48   254.5   11.68   256.0   11.68   257.0   11.73   312.0
GR 11.73   330.5  13.61   333.5   13.88   373.0   14.68   373.5   14.68   377.0
GR 15.28   378.0  15.58   379.5   17.29   383.0   17.29   387.0   13.83   394.0
GR 13.53   397.8  12.43   399.0   12.43   400.0   11.43   401.0   11.43   402.5
GR 12.53   404.5  12.53   451.7   13.23   452.7   13.23   514.0
X115.835      63 142.50  435.60  190.00  190.00  190.00
GR 13.66     .0   13.66    49.0   13.26    49.5   13.26   122.0   12.86   123.0
GR 12.86   123.5  13.61   124.5   13.61   127.5   16.26   135.0   18.06   137.7
GR 18.06   142.0  18.06   142.5   13.81   150.5   13.36   154.2   10.36   159.5
GR  9.91   160.5   8.56   164.5    6.71   170.5    6.21   175.0    7.56   187.0
GR  7.86   197.0   9.06   199.5   10.36   200.0   11.36   200.0   11.56   201.5
GR 11.56   202.5  10.56   205.0   10.56   206.0   10.81   207.3   10.71   214.5
GR 10.64   215.0  10.64   228.8   11.11   229.8   11.11   247.0   11.54   247.5
GR 11.54   279.5  11.61   280.5   11.61   309.8   12.91   311.0   12.61   314.3
GR 12.26   314.8  12.26   389.5   13.91   392.2   13.91   393.2   13.41   393.2
GR 13.41   412.0  13.91   412.5   13.91   422.0   14.26   422.0   14.26   428.0
GR 14.86   429.0  15.16   431.5   17.81   435.6   17.81   435.9   17.81   440.2
GR 16.86   444.0  16.56   445.5   14.51   447.2   14.21   449.0   12.81   451.0
GR 12.81   451.5  13.61   453.0   13.61   562.0
X116.035      65 110.00  433.00  200.00  200.00  200.00
GR 14.75     .0   14.75    18.0   14.55    18.5   14.55    42.2   15.20    43.5
GR 15.20    46.5  13.60    48.0   13.60    96.2   15.10    97.5   15.10   100.0
GR 16.55   102.0  16.55   103.0   18.50   106.0   18.50   110.0   18.60   110.0
GR 16.60   113.0  16.20   121.0   13.95   126.7   13.95   129.2   13.50   130.5
GR 10.50   136.5  10.40   139.0    9.10   144.0    8.55   150.0    8.10   153.0
GR  8.80   164.0   9.30   174.0    9.60   179.0    9.80   184.5   10.40   187.5
GR 11.40   188.5  11.25   192.5   11.25   194.0   11.50   196.7   11.50   225.5
GR 11.95   226.5  11.95   294.0   11.55   295.0   11.55   295.5   14.05   298.5
GR 14.05   299.5  12.35   303.0   12.35   354.0   12.20   354.5   12.20   355.0
GR 12.50   355.5  12.50   356.5   14.20   360.0   14.20   360.8   14.10   416.0
GR 14.10   422.0  15.60   424.0   15.60   426.0   18.81   433.0   18.81   437.0
GR 14.60   444.5  14.60   464.5   16.40   464.5   16.30   482.5   16.00   482.5
GR 16.00   508.5  16.10   508.5   16.10   512.5   16.30   513.0   16.30   538.0
X116.320      56 113.20  565.00  285.00  285.00  285.00
GR 19.29     .0   19.29     5.0   15.15    15.0   15.25    27.5   15.00    28.0
GR 15.00    56.0  11.50    63.5   10.60    71.5   10.47    77.0   10.35    82.0
GR 10.30    87.5  10.47    95.5   12.75   108.5   17.35   108.5   17.35   109.5
GR 18.55   109.5  18.65   112.5   18.65   113.2   14.75   123.0   12.85   133.0
GR 12.40   175.5  10.45   180.5    8.85   182.5    8.95   192.5    9.25   198.5
GR  7.90   211.5   6.85   220.5   10.45   221.5   11.40   225.0   12.35   242.0
GR 12.40   284.0  12.85   289.5   12.85   302.0   13.45   304.0   13.45   381.5
GR 14.15   382.5  14.15   528.0   14.85   530.5   14.85   532.5   17.20   539.2
GR 17.15   558.0  17.85   558.5   17.85   562.5   19.25   565.0   18.79   566.0
GR 18.79   570.8  18.39   572.8   17.55   574.5   17.55   598.0   17.55   602.0
GR 18.15   603.0  17.85   616.0   17.35   617.0   17.35   618.5   17.15   620.5
GR 17.15   708.5
X116.585      26 101.00  243.70  265.00  265.00  265.00
GR 16.14     .0   16.14    41.5   17.14    51.5   17.14    54.5   15.49    64.0
GR 15.49    83.5  17.89    83.5   19.31    93.5   19.44   100.0   19.44   101.0
GR 15.74   108.1  14.44   111.6   13.04   156.2   13.34   156.2   13.34   156.5
GR 11.53   156.5  11.53   210.0   13.64   210.0   13.64   210.4   14.39   234.6
GR 18.57   243.7  19.34   261.0   19.34   261.1   19.34   268.4   16.72   268.4
GR 16.72   318.4
X116.590      26 101.00  243.70    5.00    5.00    5.00
GR 16.14     .0   16.14    41.5   17.14    51.5   17.14    54.5   15.49    64.0
GR 15.49    83.5  17.89    83.5   19.31    93.5   19.44   100.0   19.44   101.0
GR 15.74   108.1  14.44   111.6   13.04   156.2   13.34   156.2   13.34   156.5
GR 12.64   156.5  12.64   210.0   13.64   210.0   13.64   210.4   14.39   234.6
GR 18.57   243.7  19.34   261.0   19.34   261.1   19.34   268.4   16.72   268.4
GR 16.72   318.4
X116.670      37 111.30  228.70  80.00   80.00   80.00
GR 19.78     .0   19.78    10.0   19.88    35.0   19.88    42.0   19.88    47.0
GR 19.88    54.5  19.88    56.0   21.68    70.5   21.48    92.5   20.88    97.7
GR 20.68    97.7  20.68   105.5   20.68   108.0   19.78   111.3   13.88   114.5
GR 13.96   152.0  11.66   154.0   11.23   168.0   11.43   178.0   11.66   191.0
GR 12.96   194.0  14.08   212.5   14.08   213.7   14.48   218.5   21.11   228.7
GR 21.11   229.0  21.03   239.0   21.63   239.6   21.63   240.6   20.93   260.0
GR 20.73   264.0  20.53   264.2   20.53   265.2   20.83   265.4   22.03   288.5
GR 22.03   292.5  29.33   305.5
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▶ 노성천 - 횡단자료

X1	.000	47	220.50	422.00	.00	.00	.00		
GR	5.51	109.5	10.71	219.0	10.71	220.5	7.71	227.0	7.71	229.5
GR	6.31	232.5	6.31	235.0	5.96	235.8	5.96	256.0	6.06	256.5
GR	5.91	264.5	2.41	277.5	1.81	280.5	2.21	290.5	2.01	302.5
GR	1.21	310.5	2.41	313.5	3.31	316.5	4.31	317.5	4.31	320.5
GR	3.71	321.5	3.66	329.0	5.16	332.0	5.16	333.2	4.96	336.2
GR	4.96	348.0	4.66	349.5	4.66	364.0	5.33	365.5	5.33	379.0
GR	5.89	380.0	5.89	405.0	6.89	405.5	6.98	411.5	11.08	422.0
GR	11.08	422.3	10.73	439.3	5.41	450.5	5.41	452.0	4.41	453.5
GR	4.41	458.5	5.31	459.5	5.31	465.5	5.91	466.0	5.91	471.0
GR	5.11	472.5	5.11	544.0						
X1	.130	60	110.00	292.80	130.00	130.00	130.00			
GR	5.30	.0	8.91	9.5	8.91	12.0	10.96	18.0	10.96	23.0
GR	5.66	47.0	5.51	61.0	2.51	70.5	2.51	76.0	5.36	81.5
GR	5.36	90.5	10.81	105.0	10.81	110.0	6.66	122.5	6.66	124.5
GR	5.91	125.5	5.91	149.5	2.51	155.0	1.51	156.0	2.11	167.0
GR	1.71	181.5	2.51	184.5	4.01	187.5	4.01	190.0	5.36	192.5
GR	5.26	195.0	4.96	208.5	5.46	209.5	5.46	211.5	5.21	274.0
GR	5.21	274.5	6.11	276.2	6.46	281.0	10.64	292.8	10.64	296.6
GR	7.16	307.0	7.16	307.5	7.51	308.0	7.51	309.0	7.41	317.7
GR	4.91	320.7	4.91	321.7	6.61	321.7	6.61	324.2	6.71	326.2
GR	6.71	331.2	6.81	335.5	6.66	343.0	6.96	344.0	6.96	350.0
GR	6.96	357.0	5.76	357.0	5.86	360.0	5.76	364.0	4.76	365.0
GR	4.76	366.0	6.06	367.0	6.06	367.5	5.56	368.0	5.56	418.0
X1	.335	38	110.00	291.30	205.00	205.00	205.00			
GR	5.56	.0	5.56	28.0	4.61	29.0	4.61	87.5	4.21	89.0
GR	4.21	90.5	10.76	105.1	10.76	108.7	11.01	109.0	11.01	110.0
GR	6.74	122.0	5.81	132.5	2.51	137.5	1.81	139.5	2.01	150.5
GR	2.46	161.5	2.51	166.5	3.71	169.5	3.71	170.5	4.76	172.5
GR	3.96	184.0	5.74	195.0	5.86	210.8	5.56	211.8	5.56	274.0
GR	6.61	275.0	6.61	279.5	7.11	280.0	7.41	282.0	10.99	291.3
GR	10.98	295.1	7.31	305.0	7.31	313.7	7.31	328.7	7.36	338.5
GR	7.46	345.5	5.26	355.5	5.26	445.0				
X1	.525	45	130.00	309.20	190.00	190.00	190.00			
GR	5.63	.0	5.63	75.5	4.83	76.0	4.83	104.5	4.08	106.0
GR	4.08	107.0	6.03	109.5	6.13	111.5	9.83	120.5	9.83	122.5
GR	10.98	125.0	10.98	130.0	8.43	136.5	7.58	142.5	6.58	143.5
GR	5.88	165.0	4.63	167.5	3.80	172.5	2.78	173.5	2.53	175.0
GR	2.03	180.0	1.98	200.0	2.23	208.5	2.53	211.5	4.88	215.5
GR	4.88	216.2	4.23	218.5	4.23	221.5	4.83	224.0	4.83	228.0
GR	4.33	230.5	5.83	234.5	5.93	294.5	6.93	296.0	6.93	298.0
GR	10.96	309.2	10.96	310.2	10.69	317.5	6.38	357.5	7.23	366.0
GR	5.73	367.5	5.73	369.0	7.63	371.0	9.68	378.5	18.08	452.0
X1	.550	46	270.43	451.63	25.00	25.00	25.00			
GR	14.62	.0	16.67	224.5	16.67	233.0	13.45	233.0	13.45	234.5
GR	11.35	234.5	7.10	245.3	8.45	258.1	10.40	263.0	10.00	270.4
GR	6.20	280.8	5.80	283.2	4.50	330.0	4.50	333.5	2.55	336.9
GR	2.65	341.8	2.30	350.7	1.85	359.1	2.55	362.5	4.50	368.9
GR	5.00	379.2	5.90	428.5	5.65	435.9	11.12	451.6	11.12	455.8
GR	7.00	467.9	7.05	477.7	5.65	480.2	5.65	483.1	5.15	483.6
GR	5.15	484.6	7.30	491.0	7.10	500.9	7.40	501.9	5.40	503.3
GR	5.40	505.3	7.40	508.3	7.40	510.8	10.70	516.1	10.70	519.1
GR	13.05	523.7	13.35	526.9	16.59	526.9	16.59	528.4	19.71	528.4
GR	18.82	590.4								
X1	.580	46	270.43	451.63	30.00	30.00	30.00			
GR	14.62	.0	16.67	224.5	16.67	233.0	13.45	233.0	13.45	234.5
GR	11.35	234.5	7.10	245.3	8.45	258.1	10.40	263.0	10.00	270.4
GR	6.20	280.8	5.80	283.2	4.50	330.0	4.50	333.5	2.55	336.9
GR	2.65	341.8	2.30	350.7	1.85	359.1	2.55	362.5	4.50	368.9
GR	5.00	379.2	5.90	428.5	5.65	435.9	11.12	451.6	11.12	455.8
GR	7.00	467.9	7.05	477.7	5.65	480.2	5.65	483.1	5.15	483.6
GR	5.15	484.6	7.30	491.0	7.10	500.9	7.40	501.9	5.40	503.3
GR	5.40	505.3	7.40	508.3	7.40	510.8	10.70	516.1	10.70	519.1
GR	13.05	523.7	13.35	526.9	16.59	526.9	16.59	528.4	19.71	528.4
GR	18.82	590.4								
X1	.725	66	121.00	296.40	145.00	145.00	145.00			
GR	5.60	.0	5.60	43.0	5.95	44.0	5.95	53.7	5.55	53.7
GR	5.55	54.5	5.95	54.5	5.95	55.5	5.44	56.0	5.44	91.0
GR	5.85	91.8	5.85	95.0	4.55	98.0	4.55	99.5	5.90	101.5
GR	5.90	103.5	10.55	116.0	10.55	120.0	10.55	121.0	6.55	133.5
GR	6.55	136.0	5.90	137.0	5.90	138.0	5.90	181.0	5.90	181.5
GR	6.15	189.5	5.05	192.5	5.10	204.5	3.00	209.0	2.60	212.8
GR	1.90	215.0	2.25	224.5	2.10	236.0	2.60	239.0	2.90	241.0
GR	3.55	242.0	3.55	243.5	3.45	245.0	3.45	246.5	5.60	250.5

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GR  5.35   258.0    6.05   258.5    5.80   278.5    6.20   279.2    6.20   282.2
GR  9.30   290.5    9.50   292.7   10.93   296.4   10.93   296.7   10.93   300.7
GR  6.40   312.5    6.70   315.0    6.70   324.0    6.70   337.0    6.70   338.0
GR  5.70   339.0    5.70   341.0    7.30   343.0    7.05   353.0    6.75   354.5
GR  6.55   359.0    6.55   371.0    6.45   376.0    6.45   381.0    5.20   381.5
GR  5.20   462.0
X1   .925     54  108.50   283.60   200.00   200.00   200.00
GR  5.54     .0    5.54    78.0     5.99    79.0     5.99    82.5    4.64    85.5
GR  4.64    87.5    6.14    89.8     6.14    91.8    11.04   104.0   11.04   108.0
GR 11.04   108.5    7.79   118.0     6.79   119.0     6.69   120.5    6.39   121.0
GR  6.39   123.0    6.29   186.5     5.99   195.2     4.34   203.0    2.79   208.0
GR  2.69   209.5    2.59   214.5     2.29   225.0     2.19   233.0    2.69   236.0
GR  4.59   238.5    4.24   245.8     4.29   253.0     5.64   256.0    5.89   268.0
GR  6.39   268.5    6.59   272.0     7.94   275.0    11.17   283.6   11.17   288.1
GR  6.64   299.5    6.54   301.0     6.44   305.0     5.94   305.0    5.94   305.4
GR  6.44   305.4    6.74   306.5     6.74   307.0     6.54   307.3    6.74   334.0
GR  7.04   334.2    7.04   335.2     5.04   338.2     5.04   348.0    6.34   351.0
GR  6.34   358.5    6.44   358.5     6.44   367.5     6.24   377.5
X1 1.032     57   87.00   263.60   107.00   107.00   107.00
GR  5.53     .0    5.53    57.0     6.18    58.5     6.18    62.0    4.58    64.5
GR  4.58    66.5    5.98    68.0     5.98    69.5    11.08    83.0   11.08    87.0
GR  7.73    97.5    6.73    98.5     6.73   101.5     6.33   102.3    6.33   156.5
GR  6.33   158.0    6.48   159.5     6.48   160.5     5.93   163.5    6.06   171.5
GR  5.60   171.5    5.60   172.3     2.86   172.3     2.71   173.7    2.58   179.5
GR  1.73   182.5    1.43   185.5     2.43   187.5     1.63   189.5    1.43   193.5
GR  2.43   195.5    1.73   197.5     2.13   203.5     2.43   211.5    2.71   219.5
GR  3.08   224.8    3.78   225.4     3.98   227.5     4.18   234.7    5.60   234.7
GR  5.60   235.5    6.06   235.5     6.03   242.8     6.13   247.8   11.29   263.6
GR 11.29   266.8    6.43   280.0     6.43   284.0     6.73   284.0    6.73   291.0
GR  6.73   294.5    7.03   318.0     7.83   318.0     7.83   333.0    7.83   335.0
GR  6.93   335.0    6.93   402.0
X1 1.038     57   87.00   263.60     6.00     6.00     6.00
GR  5.53     .0    5.53    57.0     6.18    58.5     6.18    62.0    4.58    64.5
GR  4.58    66.5    5.98    68.0     5.98    69.5    11.08    83.0   11.08    87.0
GR  7.73    97.5    6.73    98.5     6.73   101.5     6.33   102.3    6.33   156.5
GR  6.33   158.0    6.48   159.5     6.48   160.5     5.93   163.5    6.06   171.5
GR  5.60   171.5    5.60   172.3     2.86   172.3     2.71   173.7    2.58   179.5
GR  1.73   182.5    1.43   185.5     2.43   187.5     1.63   189.5    1.43   193.5
GR  2.43   195.5    1.73   197.5     2.13   203.5     2.43   211.5    2.71   219.5
GR  3.08   224.8    3.78   225.4     3.98   227.5     4.18   234.7    5.60   234.7
GR  5.60   235.5    6.06   235.5     6.03   242.8     6.13   247.8   11.29   263.6
GR 11.29   266.8    6.43   280.0     6.43   284.0     6.73   284.0    6.73   291.0
GR  6.73   294.5    7.03   318.0     7.83   318.0     7.83   333.0    7.83   335.0
GR  6.93   335.0    6.93   402.0
X1 1.115     61   130.30   306.40    77.00    77.00    77.00
GR  5.48     .0    5.48    100.3     5.98    101.3     5.98   105.0    5.33   106.5
GR  4.68   107.5    4.68    109.0     5.23    110.0     6.01   111.3    6.01   113.3
GR 10.98   126.3   10.98    130.0    10.98    130.3     8.43   138.5    7.43   139.5
GR  7.43   142.5    6.83    145.0     6.68    148.2     6.68   179.5    6.68   181.5
GR  6.18   182.0    6.28    201.0     2.73    206.5     1.73   209.5    2.13   216.5
GR  2.33   224.0    2.73    227.0     4.28    229.5     4.28   232.5    3.98   234.5
GR  3.98   235.0    4.68    236.0     4.68    238.0     3.78   241.0    3.78   243.5
GR  3.98   252.0    5.98    256.0     5.98    257.0     5.68   257.5    5.73   290.0
GR  6.53   290.9    6.63    292.9     7.81    297.0     7.91   298.0   11.21   306.4
GR 11.21   309.8    6.78    321.2     6.78    325.2     6.38   325.2    6.38   325.7
GR  7.28   325.7    7.28    326.3     7.28    329.3     7.28   342.3    7.28   345.8
GR  7.08   345.8    7.08    353.8     7.08    357.3     7.08   361.3    6.68   361.3
GR  6.38   401.3
X1 1.325     47   150.00   325.30   210.00   210.00   210.00
GR  5.87     .0    5.87    119.5     6.24    120.8     6.24   124.0    5.62   126.2
GR  4.77   127.0    4.77    128.5     5.52    129.5     5.97   131.0    5.97   133.0
GR 11.07   145.5   11.07    150.0     6.67    162.5     6.67   165.5    6.47   165.8
GR  6.47   199.5    6.87    200.0     6.87    201.2     6.37   202.3    6.37   227.5
GR  6.72   233.5    3.92    237.0     3.37    241.0     3.37   243.0    4.72   249.0
GR  4.72   250.0    2.75    255.0     2.02    259.0     2.32   264.0    2.12   271.5
GR  2.75   274.5    2.77    276.0     3.87    277.5     6.22   295.0    6.72   310.5
GR  6.97   314.0   11.27    325.3    11.27    325.8    11.27   329.1    6.62   340.3
GR  6.57   343.5    5.37    343.5     5.37    345.5     6.57   345.5    6.57   347.5
GR  5.57   349.5    5.57    476.0
X1 1.545     47   148.80   323.60   220.00   220.00   220.00
GR  5.93     .0    5.93    119.0     6.28    120.0     6.28   123.0    5.46   125.5
GR  4.98   126.5    4.98    127.5     5.58    129.0     5.98   131.0   11.23   144.0
GR 11.23   148.0   11.23    148.8     7.67    157.5     7.67   159.5    6.38   161.5
GR  7.03   213.0    4.03    217.5     4.33    238.2     5.43   253.5    5.43   255.0
GR  4.37   266.8    2.78    269.0     2.48    272.0     1.78   277.0    2.48   279.5
GR  2.78   282.5    3.83    284.8     3.83    285.8     5.13   288.0    5.33   291.5
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GR  6.33   293.0    6.33   309.3    7.33   310.5    7.33   312.5    8.93   315.0
GR  9.13   318.5   11.36   323.6   11.36   324.4   11.36   328.9    6.88   338.2
GR  6.88   342.0    5.68   342.0    5.68   344.0    6.88   344.0    6.88   345.0
GR  5.38   348.0    5.38   460.0
X1 1.750      58  165.50  340.70  205.00  205.00  205.00
GR  6.14      .0    6.14    94.5    6.64    96.0    6.64   107.0    6.04   107.0
GR  6.04   108.0    6.64   108.0    6.64   110.0    6.24   111.0    6.24   139.5
GR  6.79   140.3    6.79   144.0    6.09   146.0    5.04   147.5    5.04   149.0
GR  5.74   150.0   11.34   161.0   11.34   165.0   11.34   165.5    7.44   174.5
GR  7.44   178.0    6.64   179.0    6.54   204.0    6.34   204.5    6.14   231.5
GR  4.94   262.0    5.74   265.0    5.74   265.5    2.84   269.0    1.84   270.0
GR  2.84   275.5    3.64   276.0    3.64   279.5    2.84   280.0    2.44   284.0
GR  2.04   286.0    1.84   288.0    2.84   291.0    3.99   292.5    5.84   297.3
GR  5.54   301.0    5.84   305.6    6.34   307.5    6.34   326.0    7.44   327.5
GR  7.44   330.0   11.76   340.7   11.76   343.7    8.79   349.0    8.79   354.0
GR  6.84   358.0    6.84   359.0    5.64   359.0    5.64   361.0    6.84   361.0
GR  6.84   362.0    5.34   364.5    5.34   489.0
X1 1.970      43  130.00  304.50  220.00  220.00  220.00
GR  6.18      .0    6.18   103.5    6.63   104.3    6.63   108.0    5.18   111.0
GR  5.18   112.0    6.08   113.0    6.38   115.5   11.93   126.0   11.93   130.0
GR  7.83   139.6    7.83   145.6    6.73   148.8    5.73   157.0    5.58   186.0
GR  6.08   194.7    5.98   200.0    2.98   206.5    2.58   209.5    2.63   218.0
GR  2.58   226.5    2.98   229.5    3.83   235.0    6.38   241.5    6.73   260.0
GR  6.36   260.5    6.36   291.5    7.36   292.5    7.46   295.0   11.81   304.5
GR 11.81   308.8    8.03   315.0    8.03   317.0    6.93   318.5    6.93   320.0
GR  5.73   320.0    5.73   322.0    6.93   322.0    6.93   322.1    6.53   322.1
GR  6.53   322.6    6.23   323.1    6.23   424.0
X1 2.175      46  116.50  289.10  205.00  205.00  205.00
GR  6.29      .0    6.29    89.5    6.59    90.3    6.59    94.0    5.09    97.0
GR  5.09    98.0    5.79    99.5   11.54   112.0   11.54   116.0   11.54   116.5
GR  7.54   125.6    6.44   137.0    3.04   143.0    2.44   145.0    2.54   151.0
GR  2.74   158.0    3.04   161.0    3.44   169.5    4.74   172.5    5.54   181.0
GR  5.14   190.0    6.59   208.0    6.84   229.5    6.59   230.0    6.59   259.5
GR  6.19   261.0    6.19   271.5    6.44   272.0    6.44   277.5    7.24   277.5
GR  7.44   279.5   11.39   289.1   11.39   289.9   11.39   293.9    7.94   301.5
GR  7.94   303.0    8.04   304.5    7.49   306.0    6.29   306.0    6.29   308.0
GR  7.49   308.0    7.49   308.2    6.89   308.2    6.89   314.2    6.69   314.4
GR  6.69   421.0
X1 2.380      49  142.00  315.20  205.00  205.00  205.00
GR  6.45      .0    6.45   120.0    6.10   121.5    5.30   122.9    5.30   123.2
GR  6.10   124.5    6.65   125.5    6.75   128.0   11.50   139.0   11.50   142.0
GR 10.00   144.7   10.00   146.7    7.43   151.7    7.33   153.3    6.73   154.0
GR  6.73   171.8    6.90   172.0    6.70   178.0    5.75   181.0    5.90   191.5
GR  3.15   197.5    2.80   199.0    3.00   207.0    2.65   221.5    3.15   224.5
GR  5.20   227.5    5.00   229.5    6.45   234.0    6.45   235.5    7.40   237.0
GR  7.40   238.0    7.00   238.5    7.00   253.0    7.10   253.5    7.03   263.0
GR  6.55   263.5    6.55   306.0   11.32   315.2   11.45   316.5   11.45   320.0
GR  8.20   325.0    8.20   328.5    7.00   331.0    5.80   331.0    5.80   333.0
GR  7.00   333.0    7.00   334.0    6.50   334.5    6.50   450.0
X1 2.585      40  120.00  293.00  205.00  205.00  205.00
GR  6.75      .0    6.75    98.8    5.52   101.5    5.52   101.8    7.32   105.0
GR  7.72   109.0   11.42   116.0   11.42   120.0    6.92   130.8    6.92   164.5
GR  7.67   165.5    7.72   173.0    3.19   185.0    1.77   187.0    1.27   192.0
GR  2.07   199.5    3.19   202.5    4.37   204.0    5.12   209.5    6.32   211.0
GR  5.97   218.0    5.52   220.0    5.52   221.0    7.02   225.0    7.02   232.0
GR  6.82   232.5    6.82   283.0    8.02   284.5    8.22   286.0   11.46   293.0
GR 11.46   293.2   11.46   297.2    7.12   307.0    6.97   311.7    5.47   311.7
GR  5.47   314.7    6.97   314.7    6.97   315.2    6.47   315.7    6.47   430.0
X1 2.785      36  130.00  300.90  200.00  200.00  200.00
GR  6.39      .0    6.39   110.0    5.89   111.0    5.89   112.0    6.62   113.5
GR  6.92   116.5   11.29   125.0   11.29   130.0    7.32   139.5    7.32   176.3
GR  7.84   176.8    7.73   197.0    3.24   207.0    1.95   210.0    1.95   220.0
GR  1.95   228.5    3.24   232.5    5.69   236.0    7.04   244.5    6.74   245.0
GR  6.74   265.5    6.91   266.0    6.91   292.2    8.52   294.3    8.92   295.8
GR 11.39   300.9   11.39   301.4   11.39   306.4    7.14   316.0    7.09   321.2
GR  5.59   321.2    5.59   324.2    7.09   324.2    7.09   324.7    6.79   325.0
GR  6.79   424.0
X1 2.985      49  142.00  313.80  200.00  200.00  200.00
GR  6.80      .0    6.80    91.5    7.38    93.0    7.38    94.0    6.88    94.0
GR  6.88    95.0    7.38    95.0    7.38    97.0    6.66    98.0    6.66   120.8
GR  5.93   122.3    5.93   123.3    6.58   124.5    6.88   127.5   11.53   137.5
GR 11.53   142.0    7.41   152.0    7.41   190.0    7.78   190.5    7.78   216.0
GR  6.46   221.3    6.13   234.5    3.33   238.5    2.63   239.5    2.93   248.0
GR  2.83   253.0    3.33   258.0    6.80   262.0    7.33   265.7    6.70   266.2
GR  6.70   274.8    7.73   276.0    7.73   276.5    7.28   277.3    7.28   305.5
GR  8.28   306.5   11.79   313.8   11.79   314.3   11.79   318.3    7.23   328.0
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GR  7.18   333.6    7.38   333.6    7.38   333.8    5.88   333.8    5.88   336.8
GR  7.38   336.8    7.38   337.8    6.88   338.3    6.88   432.0
X1 3.185      47  130.30  302.00  200.00  200.00  200.00
GR  7.21      .0    7.21    40.0    7.93    41.5    7.89    44.5    7.39    45.5
GR  7.39    46.5    7.89    46.5    7.89    48.5    7.13    49.5    7.13   110.0
GR  6.49   111.4    6.49   113.4    6.89   113.9    6.89   114.9   11.66   125.5
GR 11.66   130.0   11.66   130.3    8.46   138.3    8.46   140.3    7.55   141.6
GR  7.55   170.0    7.91   170.2    7.91   171.7    7.26   173.7    7.26   207.2
GR  7.26   207.5    3.90   207.5    3.90   258.1    7.56   258.1    7.56   261.1
GR  7.56   274.5    7.51   291.5    8.01   292.2    8.01   294.0    8.61   294.8
GR  8.91   296.8   11.79   302.0   11.79   302.5   11.79   307.1    7.56   315.5
GR  7.46   320.2    6.86   320.2    6.86   323.2    7.46   323.2    7.46   323.7
GR  7.06   324.0    7.06   410.0
X1 3.190      51  130.30  302.00    5.00    5.00    5.00
GR  7.21      .0    7.21    40.0    7.93    41.5    7.89    44.5    7.39    45.5
GR  7.39    46.5    7.89    46.5    7.89    48.5    7.13    49.5    7.13   110.0
GR  6.49   111.4    6.49   113.4    6.89   113.9    6.89   114.9   11.66   125.5
GR 11.66   130.0   11.66   130.3    8.46   138.3    8.46   140.3    7.55   141.6
GR  7.55   170.0    7.91   170.2    7.91   171.7    7.26   173.7    7.26   207.2
GR  7.26   207.5    6.86   207.5    6.86   207.8    5.56   207.8    5.56   257.8
GR  6.86   257.8    6.86   258.1    7.56   258.1    7.56   261.1    7.56   274.5
GR  7.51   291.5    8.01   292.2    8.01   294.0    8.61   294.8    8.91   296.8
GR 11.79   302.0   11.79   302.5   11.79   307.1    7.56   315.5    7.46   320.2
GR  6.86   320.2    6.86   323.2    7.46   323.2    7.46   323.7    7.06   324.0
GR  7.06   410.0
X1 3.395      40  187.50  359.00  205.00  205.00  205.00
GR  7.47      .0    7.47   166.5    8.42   167.8    8.37   172.4    7.57   172.4
GR  7.57   173.2    8.37   173.2    8.37   175.7   12.12   182.0   12.12   187.0
GR 12.12   187.5    9.27   193.7    7.77   195.7    7.77   247.0    8.22   247.5
GR  8.22   249.5    7.77   250.3    7.55   276.5    5.92   279.5    6.27   287.0
GR  5.75   300.5    5.45   305.5    4.97   320.0    5.02   332.0    4.55   337.0
GR  5.75   342.0    7.82   346.0    8.22   351.0    9.67   354.1   11.93   359.0
GR 11.93   359.5   11.93   364.5    7.47   373.5    7.47   378.5    5.97   378.5
GR  5.97   381.5    7.47   381.5    7.47   382.0    7.17   382.3    7.17   500.0
X1 3.605      53  105.00  277.00  210.00  210.00  210.00
GR  7.66      .0    7.66    47.5    7.31    54.0    6.61    54.0    6.61    56.5
GR  7.31    56.5    7.56    61.0    7.56    84.0    8.91    85.9    8.91    89.9
GR  8.41    91.0    7.71    91.0    7.71    92.0    8.41    92.0    8.41    94.0
GR 12.21   101.0   12.21   105.0    8.14   114.0    7.91   130.0    6.96   131.2
GR  9.96   133.2    7.34   133.7    7.48   162.0    5.78   165.5    5.68   166.5
GR  5.78   168.0    6.01   175.5    5.78   188.5    5.58   191.0    5.41   204.5
GR  5.71   212.0    5.41   227.0    5.21   231.0    4.98   235.0    5.78   238.7
GR  7.91   242.5    7.91   243.0    7.81   243.3    7.81   264.3    8.41   265.0
GR  8.56   269.5    9.77   272.0   12.17   277.0   12.17   277.5   12.17   281.7
GR  7.56   291.5    7.36   294.0    5.96   295.5    5.96   297.5    8.11   300.0
GR  8.11   302.8    7.51   303.5    7.51   475.0
X1 3.815      39  178.50  348.70  210.00  210.00  210.00
GR  7.89      .0    7.89   157.0    9.02   158.9    9.02   161.9    8.52   163.9
GR  7.82   163.9    7.82   164.7    8.52   164.7    8.52   166.2   12.02   174.0
GR 12.02   178.0   12.02   178.5    8.47   188.5    8.02   193.0    5.87   195.8
GR  5.57   198.0    5.77   202.0    5.67   204.0    5.87   210.5    5.97   219.0
GR  5.87   229.5    5.67   250.5    5.62   257.0    5.47   264.0    5.87   268.0
GR  7.24   269.3    8.52   273.0    8.52   274.0    8.17   275.5    8.17   339.5
GR 12.14   348.7   12.14   349.1   12.14   352.7   11.24   354.5   11.24   356.0
GR 11.82   358.3   11.77   364.1   11.27   369.3   10.87   492.0
X1 4.020      40  165.50  340.40  205.00  205.00  205.00
GR  7.81      .0    7.81   143.5    8.83   144.9    8.83   148.6    8.66   149.7
GR  7.66   149.7    7.66   150.7    8.66   150.7    9.08   154.1   12.08   160.0
GR 12.08   165.0   12.08   165.5    8.53   172.7    7.95   180.8    5.98   183.5
GR  5.68   185.0    5.78   204.5    5.63   223.0    5.98   227.5    6.08   233.0
GR  5.98   240.5    5.68   248.0    5.98   253.0    9.33   257.7    9.33   260.2
GR  8.53   262.5    8.53   295.5    8.51   296.0    8.51   333.0    9.31   333.0
GR 12.47   340.4   12.33   344.4    7.98   354.0    7.88   356.5    6.88   357.5
GR  6.88   359.5    8.68   362.8    8.68   365.3    7.78   366.3    7.78   519.0
X1 4.205      48  138.60  309.70  185.00  185.00  185.00
GR  8.01      .0    8.01   115.5    8.94   116.7    9.01   121.7    8.01   121.7
GR  8.01   122.7    9.01   122.7    9.01   124.0    9.84   126.0    9.84   129.5
GR 12.44   134.0   12.44   138.0   12.44   138.6    8.29   148.0    8.29   158.0
GR  8.74   159.0    8.74   160.5    7.89   162.2    7.89   164.7    6.04   167.0
GR  5.24   168.0    5.74   173.0    6.04   178.5    6.14   189.5    6.04   211.5
GR  5.99   216.5    5.94   224.0    5.54   230.5    6.04   233.5    6.59   239.0
GR  6.64   258.0    8.64   261.0    8.64   262.0    8.34   262.3    8.79   301.0
GR  9.39   302.5    9.39   303.5   12.69   309.7   12.69   310.2   12.69   313.7
GR  8.49   322.5    8.49   324.5    7.29   326.5    7.29   327.5    8.94   331.0
GR  8.94   334.0    8.34   335.0    8.34   370.0
X1 4.400      41  158.40  343.00  195.00  195.00  195.00
```

GR	8.44	.0	8.44	138.2	8.99	140.0	8.99	143.5	8.99	144.0
GR	9.19	145.0	9.19	147.0	12.49	153.0	12.49	158.0	12.49	158.4
GR	8.69	167.5	8.69	196.2	8.85	196.7	8.49	212.0	8.79	213.0
GR	8.79	215.0	8.09	215.8	7.89	220.3	6.14	222.5	5.14	227.0
GR	5.69	234.0	5.94	253.0	6.89	290.5	6.39	311.0	7.04	312.7
GR	7.24	315.7	9.14	322.0	9.14	324.0	8.89	324.8	8.94	334.0
GR	12.82	343.0	12.82	343.3	12.82	346.6	9.19	354.5	9.19	357.7
GR	7.89	360.2	7.89	361.2	9.14	363.5	9.14	365.5	8.39	368.5
GR	8.39	476.0								
X1	4.527	67	140.50	332.30	127.00	127.00	127.00			
GR	8.30	.0	8.30	42.0	9.61	43.0	9.46	47.0	8.86	47.0
GR	8.86	47.5	9.46	47.5	9.46	49.0	8.38	51.0	8.38	127.2
GR	7.96	127.5	7.96	128.5	12.41	136.5	12.41	140.0	12.41	140.5
GR	10.07	146.3	10.07	150.3	9.47	151.3	9.47	155.3	9.01	155.8
GR	9.01	181.7	9.06	182.2	9.06	208.0	8.62	218.5	8.22	218.5
GR	6.16	225.5	5.21	228.5	5.61	232.5	5.31	234.5	5.86	239.5
GR	5.71	246.5	5.46	253.5	5.31	260.5	5.61	267.5	5.06	274.5
GR	5.41	281.5	6.06	288.5	6.16	289.5	8.22	295.5	8.62	295.5
GR	9.56	324.8	12.56	332.3	12.56	336.0	9.11	343.2	8.96	349.2
GR	7.86	349.2	7.86	350.4	8.96	350.4	8.96	350.9	8.66	351.2
GR	8.66	367.0	8.61	367.5	8.61	371.0	9.41	372.4	9.41	373.5
GR	8.91	373.5	8.91	374.1	9.41	374.1	9.11	374.6	9.21	378.5
GR	9.21	408.0	9.21	409.5	9.41	409.5	9.41	414.5	9.11	415.5
GR	9.11	421.5	9.21	465.0						
X1	4.533	67	140.50	332.30	6.00	6.00	6.00			
GR	8.30	.0	8.30	42.0	9.61	43.0	9.46	47.0	8.86	47.0
GR	8.86	47.5	9.46	47.5	9.46	49.0	8.38	51.0	8.38	127.2
GR	7.96	127.5	7.96	128.5	12.41	136.5	12.41	140.0	12.41	140.5
GR	10.07	146.3	10.07	150.3	9.47	151.3	9.47	155.3	9.01	155.8
GR	9.01	181.7	9.06	182.2	9.06	208.0	8.62	218.5	8.22	218.5
GR	6.16	225.5	5.21	228.5	5.61	232.5	5.31	234.5	5.86	239.5
GR	5.71	246.5	5.46	253.5	5.31	260.5	5.61	267.5	5.06	274.5
GR	5.41	281.5	6.06	288.5	6.16	289.5	8.22	295.5	8.62	295.5
GR	9.56	324.8	12.56	332.3	12.56	336.0	9.11	343.2	8.96	349.2
GR	7.86	349.2	7.86	350.4	8.96	350.4	8.96	350.9	8.66	351.2
GR	8.66	367.0	8.61	367.5	8.61	371.0	9.41	372.4	9.41	373.5
GR	8.91	373.5	8.91	374.1	9.41	374.1	9.11	374.6	9.21	378.5
GR	9.21	408.0	9.21	409.5	9.41	409.5	9.41	414.5	9.11	415.5
GR	9.11	421.5	9.21	465.0						
X1	4.580	60	180.50	378.50	47.00	47.00	47.00			
GR	8.38	.0	8.38	138.5	9.58	139.5	9.38	144.4	8.78	144.4
GR	8.78	145.0	9.38	145.0	9.38	146.5	8.43	148.5	8.43	167.0
GR	8.03	167.1	8.03	168.1	12.33	176.0	12.63	180.0	12.63	180.5
GR	12.13	181.5	12.13	184.5	9.03	193.5	9.03	220.0	9.08	220.5
GR	8.93	263.0	6.98	279.7	6.23	285.2	6.69	292.9	6.18	318.5
GR	5.78	323.5	5.33	339.5	5.13	344.0	6.18	350.5	8.58	355.0
GR	8.58	357.5	8.90	358.5	8.86	366.7	9.23	370.3	10.18	372.7
GR	12.93	378.5	12.93	378.7	12.93	382.3	12.48	383.5	12.28	387.0
GR	12.18	388.7	9.93	393.5	9.93	395.0	9.13	396.5	8.03	396.5
GR	8.03	397.7	9.13	397.7	8.83	399.0	8.69	404.3	8.49	407.3
GR	8.49	424.0	8.83	425.0	8.83	427.0	9.38	430.5	9.38	434.0
GR	9.38	447.0	9.68	480.0	9.68	490.0	9.48	490.5	9.48	510.0
X1	4.750	52	160.50	386.00	170.00	170.00	170.00			
GR	8.70	.0	8.70	139.5	8.70	141.5	9.60	143.2	9.60	147.2
GR	9.00	147.2	9.00	147.7	9.60	147.7	12.65	156.0	12.65	160.0
GR	12.65	160.5	9.25	167.4	9.25	185.7	9.55	186.2	9.55	192.7
GR	9.15	193.2	9.00	208.0	8.68	209.0	8.48	215.5	7.45	227.0
GR	6.40	230.0	6.40	232.5	7.70	235.0	8.05	282.5	8.45	285.0
GR	8.45	290.0	6.60	291.5	6.27	300.5	5.85	305.5	5.95	317.0
GR	5.90	329.0	6.27	334.0	6.30	351.7	7.60	353.2	7.04	357.0
GR	9.00	361.2	9.45	377.0	11.20	380.0	11.65	385.5	12.90	386.0
GR	12.90	386.3	12.90	392.2	11.60	395.1	12.67	414.5	11.80	429.5
GR	9.10	434.5	8.90	444.5	8.90	449.5	8.60	463.5	8.80	463.5
GR	8.80	486.5	8.80	491.5						
X1	4.915	44	.00	205.40	165.00	165.00	165.00			
GR	8.99	.0	8.99	37.0	9.69	38.0	9.69	39.0	6.29	46.0
GR	6.29	49.0	9.06	54.0	9.06	60.0	8.69	60.5	8.69	101.0
GR	9.59	103.0	9.49	112.0	9.09	112.0	7.84	112.7	6.84	116.8
GR	6.49	119.0	6.79	122.5	7.09	123.0	7.09	124.0	6.74	124.3
GR	6.39	126.0	6.99	128.8	6.99	129.3	6.34	130.7	5.69	133.0
GR	5.84	140.0	5.74	147.0	6.34	150.0	6.44	154.0	6.54	161.0
GR	6.64	168.0	7.24	171.0	9.05	175.0	9.45	175.0	13.55	205.4
GR	13.55	217.2	8.99	225.0	8.99	251.0	9.14	251.5	9.14	256.5
GR	9.34	258.8	9.59	275.0	8.79	276.0	8.79	362.0		
X1	4.925	44	.00	205.40	10.00	10.00	10.00			
GR	8.99	.0	8.99	37.0	9.69	38.0	9.69	39.0	6.29	46.0

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GR  6.29    49.0    9.06    54.0    9.06    60.0    8.69    60.5    8.69   101.0
GR  9.59   103.0    9.49   112.0    9.09   112.0    7.84   112.7    6.84   116.8
GR  6.49   119.0    6.79   122.5    7.09   123.0    7.09   124.0    6.74   124.3
GR  6.39   126.0    6.99   128.8    6.99   129.3    6.34   130.7    5.69   133.0
GR  5.84   140.0    5.74   147.0    6.34   150.0    6.44   154.0    6.54   161.0
GR  6.64   168.0    7.24   171.0    9.05   175.0    9.45   175.0   13.55   205.4
GR 13.55   217.2    8.99   225.0    8.99   251.0    9.14   251.5    9.14   256.5
GR  9.34   258.8    9.59   275.0    8.79   276.0    8.79   362.0
X1 4.980      50  121.00  264.70   55.00   55.00   55.00
GR  8.88      .0    8.88    56.0    9.88    58.0    9.88    62.0    9.09    64.5
GR  7.95    67.0    7.65    69.5    7.05    70.0    7.05    87.5   10.48    96.5
GR 10.45   111.0   12.75   116.0   12.75   120.0   12.75   121.0    9.10   128.5
GR  9.10   149.0    9.30   149.5    8.95   160.0    8.10   162.7    7.35   182.0
GR  6.35   182.5    5.95   187.5    6.20   194.5    6.15   200.0    6.35   205.0
GR  6.85   216.0    6.75   232.0    7.45   238.5    7.18   241.7    9.35   247.0
GR  9.20   254.7   12.35   261.5   13.73   264.7   13.73   270.7   11.75   274.5
GR 11.75   279.5    9.40   283.5    9.40   283.7    9.90   284.2    9.90   285.2
GR  9.00   286.2    9.00   297.5    9.40   298.0    9.35   307.0    9.35   337.5
GR  9.35   338.5    9.65   338.8    9.65   339.8    9.15   340.3    9.15   435.0
X1 5.130      32  104.00  226.00  150.00  150.00  150.00
GR  9.00      .0    9.00    26.0    8.90    26.5    8.90    60.5    8.85    61.0
GR  8.85    89.5    8.25    91.0    8.25    92.0   12.80   100.0   12.81   104.0
GR  9.05   112.5    9.05   130.0    7.35   131.0    7.25   159.0    6.43   172.0
GR  6.23   177.0    6.03   184.0    6.13   190.0    6.43   194.5    7.33   195.5
GR  7.55   214.0   11.73   222.0   13.82   226.0   13.82   230.0    9.45   242.5
GR  9.45   244.0    9.95   245.0    9.95   245.5    9.45   246.0    9.45   288.0
GR  9.50   289.0    9.50   329.0
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건설교통부

▶ 강경천 - 횡단자료

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X1   .000      54   64.50  295.50     .00     .00     .00
GR  4.86      .0   4.86     7.5    4.66     8.0    4.66    12.5    4.66    16.5
GR  3.36    19.5   2.16    19.5    2.16    28.5    8.96    28.5    8.96    31.5
GR  8.96    37.0   8.96    41.0   10.18    56.5   10.26    64.5    8.76    70.0
GR  6.06    70.0   6.06    73.5    7.71    73.5    7.71    73.7    4.03    86.0
GR  4.03   164.0   4.16   164.5    4.16   168.0     .96   175.0     .76   176.0
GR   .56   180.0    .56   185.5    1.16   186.0    1.16   186.5     .96   187.0
GR  -.49   192.0   -.99   200.5   -1.09   207.5    -.54   217.5     .96   220.5
GR  1.46   221.0   1.26   231.5    4.46   238.5    5.16   240.0    5.16   242.5
GR  4.41   243.0   4.41   285.0    4.71   286.0    8.51   295.5   10.01   295.5
GR 10.03   296.5  10.03   297.0   10.03   311.5    9.93   313.5    8.44   314.0
GR  4.46   339.0   4.46   347.0    4.16   357.5    4.16   404.5
X1   .200      58   98.50  250.80   200.00   200.00   200.00
GR  5.22      .0   5.22    11.0    5.22    22.0    5.22    29.0    5.22    46.5
GR  5.22    58.0   5.22    66.0    4.64    66.0    5.49    79.5    5.49    80.5
GR  5.49    86.0   9.24    93.0    9.84    93.0   10.14    95.0   10.14    98.0
GR 10.14    98.5   9.94    98.5    8.44   101.0    4.02   109.5    4.02   139.0
GR  4.34   139.5   4.34   142.5    1.04   148.0     .74   149.0     .64   153.0
GR   .48   158.5   1.04   160.0    1.48   160.5    1.48   161.5    1.04   162.0
GR   .48   164.5   -.24   169.0    -.54   178.0    -.44   188.0    -.21   193.0
GR   .04   197.0   1.04   200.0    3.99   205.9    3.99   209.4    3.59   209.9
GR  3.59   237.6   8.76   248.5   10.01   250.8   10.01   251.0   10.01   254.8
GR  5.14   264.5   4.94   268.0    5.24   269.0    5.24   269.5    5.24   286.5
GR  5.24   287.5   7.24   289.6    7.24   292.6    7.74   294.1    7.74   307.0
GR  5.94   310.5   5.04   310.5    5.04   353.0
X1   .270      53   88.00  242.00    70.00    70.00    70.00
GR  7.69      .0   9.59    36.0    8.89    50.5    9.02    74.5   10.14    83.0
GR 10.24    88.0   9.13    92.5    8.19    92.5    8.19    92.8    7.54    92.8
GR  4.14    99.5   4.14   105.5    4.14   118.5    4.14   119.3    4.59   119.8
GR  4.59   132.0   4.59   133.5    1.09   140.5     .79   141.5     .69   145.5
GR   .29   152.0    .49   159.0    1.09   162.0   -2.41   167.0   -1.11   172.0
GR  -.51   178.0    .89   185.0     .79   187.0    1.09   190.0    3.99   195.8
GR  4.39   196.3   4.39   198.0    4.39   201.5    3.59   202.5    3.59   202.7
GR  4.09   203.2   4.09   211.0    3.91   224.0    3.64   229.0    7.54   236.7
GR  8.11   236.7   8.11   237.0    9.08   237.0   10.08   242.0   10.01   246.7
GR  8.67   258.0   8.36   279.0    8.66   279.5    8.61   286.7   10.59   294.8
GR 10.79   310.5  11.29   311.0   11.29   314.0
X1   .280      53   88.00  242.00   10.00   10.00   10.00
GR  7.69      .0   9.59    36.0    8.89    50.5    9.02    74.5   10.14    83.0
GR 10.24    88.0   9.13    92.5    8.19    92.5    8.19    92.8    7.54    92.8
GR  4.14    99.5   4.14   105.5    4.14   118.5    4.14   119.3    4.59   119.8
GR  4.59   132.0   4.59   133.5    1.09   140.5     .79   141.5     .69   145.5
GR   .29   152.0    .49   159.0    1.09   162.0   -2.41   167.0   -1.11   172.0
GR  -.51   178.0    .89   185.0     .79   187.0    1.09   190.0    3.99   195.8
GR  4.39   196.3   4.39   198.0    4.39   201.5    3.59   202.5    3.59   202.7
GR  4.09   203.2   4.09   211.0    3.91   224.0    3.64   229.0    7.54   236.7
GR  8.11   236.7   8.11   237.0    9.08   237.0   10.08   242.0   10.01   246.7
GR  8.67   258.0   8.36   279.0    8.66   279.5    8.61   286.7   10.59   294.8
GR 10.79   310.5  11.29   311.0   11.29   314.0
X1   .283      42  140.50  290.50    3.00    3.00    3.00
GR  5.20      .0   9.65    87.5   10.95   131.5   10.95   137.5   11.15   140.5
GR  9.37   140.5   9.37   141.5    8.17   141.5    8.17   142.3    4.85   147.2
GR  4.65   165.5   4.65   182.0    4.70   182.5    4.70   185.0    2.05   190.5
GR  1.55   191.0   1.15   193.5     .35   196.5    1.25   204.5   -2.75   215.5
GR  -.05   224.0    .35   237.5     .95   240.5    1.15   240.5    4.00   246.5
GR  4.20   247.0   4.20   250.5    3.20   251.5    3.20   251.7    3.50   252.2
GR  3.80   265.5   4.00   282.9    8.05   289.0    8.05   289.5    9.35   289.5
GR  9.35   290.5  11.12   290.5   10.79   294.0   10.73   299.0   10.55   322.0
GR 10.90   348.0  11.00   351.5
X1   .297      42  140.50  290.50   14.00   14.00   14.00
GR  5.20      .0   9.65    87.5   10.95   131.5   10.95   137.5   11.15   140.5
GR  9.37   140.5   9.37   141.5    8.17   141.5    8.17   142.3    4.85   147.2
GR  4.65   165.5   4.65   182.0    4.70   182.5    4.70   185.0    2.05   190.5
GR  1.55   191.0   1.15   193.5     .35   196.5    1.25   204.5   -2.75   215.5
GR  -.05   224.0    .35   237.5     .95   240.5    1.15   240.5    4.00   246.5
GR  4.20   247.0   4.20   250.5    3.20   251.5    3.20   251.7    3.50   252.2
GR  3.80   265.5   4.00   282.9    8.05   289.0    8.05   289.5    9.35   289.5
GR  9.35   290.5  11.12   290.5   10.79   294.0   10.73   299.0   10.55   322.0
GR 10.90   348.0  11.00   351.5
X1   .415      44  103.00  256.30  118.00  118.00  118.00
GR  4.50      .0   4.50    54.0    4.50    58.0    5.15    85.9    5.45    85.9
GR  5.45    90.4   6.45    90.4    6.45    91.4   10.35    99.1   10.35   102.5
GR 10.25   103.0   8.94   105.5    4.40   114.5    4.40   147.1    4.50   147.8
GR  4.50   150.8   4.05   151.5    1.60   155.5    1.18   160.0    -.23   173.5
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GR	-.19	179.5	-.21	192.0	.16	200.5	.20	202.5	.23	204.5
GR	.83	207.5	1.18	208.0	4.12	213.3	4.42	213.8	4.42	215.3
GR	4.15	215.8	4.15	245.0	8.90	254.6	10.04	256.3	10.04	256.5
GR	10.04	260.7	5.10	270.0	4.90	275.0	3.90	276.3	3.90	277.3
GR	4.10	277.5	4.10	277.8	3.90	278.0	3.90	382.5		
X1	.610	46	102.90	253.30	195.00	195.00	195.00			
GR	4.90	.0	4.90	13.4	4.40	14.9	4.23	32.0	2.73	32.0
GR	2.73	37.0	4.23	37.0	4.26	43.3	4.35	43.5	4.35	76.0
GR	5.30	84.4	5.30	89.0	5.30	90.5	6.80	90.5	6.80	91.5
GR	10.40	98.7	10.40	102.5	10.40	102.9	10.10	102.9	8.77	105.5
GR	4.10	115.0	4.10	146.1	4.40	146.6	4.40	150.1	1.20	155.5
GR	.85	157.5	.35	170.5	-.15	182.0	.15	188.5	1.15	202.5
GR	1.20	204.0	4.30	210.8	4.60	211.3	4.60	214.3	4.20	214.8
GR	4.20	242.0	8.85	251.4	10.09	253.3	10.09	253.8	10.09	257.8
GR	5.95	268.0	5.95	270.0	5.45	270.5	5.45	275.5	5.05	276.0
GR	5.05	372.5								
X1	.815	55	79.80	231.40	205.00	205.00	205.00			
GR	3.85	.0	4.00	14.8	5.50	14.8	5.50	15.3	4.00	15.3
GR	4.00	15.5	3.70	15.5	3.70	21.0	3.60	21.5	3.60	58.5
GR	4.60	58.5	4.60	58.8	5.35	62.5	5.35	66.5	5.35	67.7
GR	5.85	67.7	5.85	68.0	10.25	75.8	10.25	79.5	10.25	79.8
GR	8.28	83.1	4.10	92.0	4.10	121.5	4.39	122.0	4.39	125.5
GR	1.22	132.3	.45	134.3	.05	143.5	-.15	155.5	-.05	169.0
GR	.65	180.5	1.22	182.0	4.18	188.7	4.45	189.3	4.45	192.8
GR	4.02	193.3	4.02	218.5	4.32	219.0	4.32	220.0	8.95	229.5
GR	10.17	231.4	10.17	231.7	10.17	235.7	5.20	245.3	5.20	247.3
GR	4.10	249.8	4.10	262.8	4.30	262.8	4.30	263.8	3.50	264.8
GR	3.50	265.3	3.80	265.3	3.80	265.8	3.30	266.3	3.30	339.5
X1	1.035	57	119.70	270.50	220.00	220.00	220.00			
GR	3.69	.0	3.69	56.0	4.69	56.0	4.69	59.5	4.79	60.0
GR	4.79	67.5	4.89	68.5	4.89	69.5	4.89	78.5	4.89	80.5
GR	4.34	89.5	3.54	90.5	3.54	92.0	4.99	95.0	5.54	108.3
GR	7.04	108.3	7.04	109.5	8.39	111.7	8.39	113.8	9.09	113.8
GR	10.24	116.0	10.24	119.7	9.84	119.7	9.84	120.0	8.54	122.0
GR	3.79	131.0	3.79	159.7	4.04	160.2	4.04	164.7	1.24	171.5
GR	.69	173.5	-.84	188.0	-.04	200.5	-.31	208.5	-.26	210.0
GR	.69	218.5	1.24	221.0	3.84	227.5	4.04	227.5	4.04	231.0
GR	3.98	231.5	3.98	255.0	5.34	257.5	5.34	261.5	9.14	269.0
GR	10.06	270.5	10.06	270.8	10.06	274.3	5.39	283.0	5.19	291.0
GR	4.89	291.0	4.69	292.5	4.69	293.5	4.99	294.0	4.99	294.5
GR	4.49	295.0	4.49	375.0						
X1	1.097	40	101.00	241.00	62.00	62.00	62.00			
GR	6.27	.0	10.48	96.0	10.63	101.0	8.63	101.0	8.63	102.0
GR	7.43	102.0	4.63	105.6	4.13	121.0	3.88	141.0	3.68	144.0
GR	4.18	144.0	4.18	144.3	1.78	144.3	1.78	148.0	1.27	149.5
GR	.10	154.5	.23	158.0	-.42	161.0	-.62	165.0	.08	177.0
GR	-.40	181.0	.38	189.0	1.27	195.0	1.45	197.0	4.05	197.0
GR	4.05	197.4	3.85	197.4	3.93	201.0	4.08	214.5	3.68	215.0
GR	3.68	215.5	4.18	216.0	3.98	221.0	4.18	234.5	7.38	240.0
GR	8.62	240.0	8.62	241.0	10.60	241.0	10.38	246.0	6.33	351.5
X1	1.112	40	101.00	241.00	15.00	15.00	15.00			
GR	6.27	.0	10.48	96.0	10.63	101.0	8.63	101.0	8.63	102.0
GR	7.43	102.0	4.63	105.6	4.13	121.0	3.88	141.0	3.68	144.0
GR	4.18	144.0	4.18	144.3	1.78	144.3	1.78	148.0	1.27	149.5
GR	.10	154.5	.23	158.0	-.42	161.0	-.62	165.0	.08	177.0
GR	-.40	181.0	.38	189.0	1.27	195.0	1.45	197.0	4.05	197.0
GR	4.05	197.4	3.85	197.4	3.93	201.0	4.08	214.5	3.68	215.0
GR	3.68	215.5	4.18	216.0	3.98	221.0	4.18	234.5	7.38	240.0
GR	8.62	240.0	8.62	241.0	10.60	241.0	10.38	246.0	6.33	351.5
X1	1.113	46	97.50	247.50	1.00	1.00	1.00			
GR	6.17	.0	10.42	94.5	10.62	97.5	9.26	97.5	8.27	97.5
GR	8.27	97.8	8.12	97.8	8.12	100.5	4.07	108.0	4.02	109.5
GR	4.08	121.5	3.97	133.5	3.37	145.5	4.22	157.5	1.27	157.5
GR	.07	157.5	.07	163.5	.07	169.5	.07	175.5	.07	181.5
GR	.07	187.5	1.27	187.5	4.07	187.5	4.07	187.9	3.87	187.9
GR	4.03	199.5	3.85	211.5	3.85	214.0	4.15	214.5	4.15	215.0
GR	3.75	215.5	3.75	216.5	4.15	217.0	4.15	217.5	3.85	218.0
GR	3.84	223.5	4.30	235.5	4.60	237.5	7.67	243.0	7.67	247.2
GR	8.35	247.2	8.35	247.5	9.30	247.5	10.48	247.5	10.36	250.7
GR	6.32	357.5								
X1	1.119	46	97.50	247.50	6.00	6.00	6.00			
GR	6.17	.0	10.42	94.5	10.62	97.5	9.26	97.5	8.27	97.5
GR	8.27	97.8	8.12	97.8	8.12	100.5	4.07	108.0	4.02	109.5
GR	4.08	121.5	3.97	133.5	3.37	145.5	4.22	157.5	1.27	157.5
GR	.07	157.5	.07	163.5	.07	169.5	.07	175.5	.07	181.5
GR	.07	187.5	1.27	187.5	4.07	187.5	4.07	187.9	3.87	187.9

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GR  4.03   199.5    3.85   211.5    3.85   214.0    4.15   214.5    4.15   215.0
GR  3.75   215.5    3.75   216.5    4.15   217.0    4.15   217.5    3.85   218.0
GR  3.84   223.5    4.30   235.5    4.60   237.5    7.67   243.0    7.67   247.2
GR  8.35   247.2    8.35   247.5    9.30   247.5   10.48   247.5   10.36   250.7
GR  6.32   357.5
X1 1.123      46   97.50  247.50    4.00    4.00    4.00
GR  6.17      .0   10.42    94.5   10.62    97.5    9.26    97.5    8.27    97.5
GR  8.27    97.8    8.12    97.8    8.12   100.5    4.07   108.0    4.02   109.5
GR  4.08   121.5    3.97   133.5    3.37   145.5    4.22   157.5    1.27   157.5
GR   .07   157.5     .07   163.5     .07   169.5     .07   175.5     .07   181.5
GR   .07   187.5    1.27   187.5    4.07   187.5    4.07   187.9    3.87   187.9
GR  4.03   199.5    3.85   211.5    3.85   214.0    4.15   214.5    4.15   215.0
GR  3.75   215.5    3.75   216.5    4.15   217.0    4.15   217.5    3.85   218.0
GR  3.84   223.5    4.30   235.5    4.60   237.5    7.67   243.0    7.67   247.2
GR  8.35   247.2    8.35   247.5    9.30   247.5   10.48   247.5   10.36   250.7
GR  6.32   357.5
X1 1.235      57  120.50  271.80  112.00  112.00  112.00
GR  7.16      .0    7.16    86.0    7.16    87.5    5.11    91.2    5.11    92.2
GR  5.86    92.7    5.86    93.5    5.26    94.5    4.06    95.2    4.06    96.0
GR  4.96    96.0    5.46   103.6    5.46   107.6    5.46   108.6    6.26   108.6
GR 10.11   116.5   10.26   116.5   10.26   120.0   10.26   120.5   10.01   120.5
GR  8.88   122.6    3.81   132.5    3.81   161.0    4.09   161.5    4.09   164.0
GR  3.29   165.2    1.29   169.5     .56   171.0    -.04   192.5     .21   201.0
GR   .76   218.0    1.29   221.4    2.99   225.9    3.86   227.4    3.86   230.4
GR  3.69   230.7    3.69   258.8    4.19   260.0    4.19   261.2    8.69   269.5
GR  9.92   271.8    9.92   272.0    9.92   275.7    6.86   281.8    6.86   283.8
GR  5.16   284.3    5.16   286.3    5.16   288.8    5.16   293.4    4.46   294.0
GR  4.46   295.0    4.96   295.5    4.96   296.0    4.56   296.5    4.56   354.0
GR  4.61   354.5    4.61   420.0
X1 1.350      37   96.50  236.50  115.00  115.00  115.00
GR  9.93      .0    9.96    92.0    9.96    96.5    8.63    96.5    8.63    97.3
GR  6.41    97.9    5.41   100.1    5.41   101.9    5.41   105.4    4.43   107.0
GR  4.18   117.5    4.09   128.0    4.01   134.0    1.31   138.0     .96   138.5
GR  -.49   139.5    1.01   149.0    -.94   155.5     .51   159.5     .51   170.0
GR   .86   176.0     .71   182.5    1.31   190.5    1.61   194.2    2.31   195.5
GR  3.71   198.2    3.71   201.2    3.91   209.5    4.36   223.0    4.86   228.9
GR  4.86   234.3    5.16   235.5    8.08   235.7    8.08   236.5    9.92   236.5
GR  9.92   243.9    9.11   357.3
X1 1.360      37   96.50  236.50   10.00   10.00   10.00
GR  9.93      .0    9.96    92.0    9.96    96.5    8.63    96.5    8.63    97.3
GR  6.41    97.9    5.41   100.1    5.41   101.9    5.41   105.4    4.43   107.0
GR  4.18   117.5    4.09   128.0    4.01   134.0    1.31   138.0     .96   138.5
GR  -.49   139.5    1.01   149.0    -.94   155.5     .51   159.5     .51   170.0
GR   .86   176.0     .71   182.5    1.31   190.5    1.61   194.2    2.31   195.5
GR  3.71   198.2    3.71   201.2    3.91   209.5    4.36   223.0    4.86   228.9
GR  4.86   234.3    5.16   235.5    8.08   235.7    8.08   236.5    9.92   236.5
GR  9.92   243.9    9.11   357.3
X1 1.370      44  113.00  253.00   10.00   10.00   10.00
GR  9.66      .0    9.98   105.5    9.98   113.0    8.32   113.0    8.32   113.8
GR  5.31   114.3    5.26   118.4    5.26   121.8    4.46   123.5    3.86   134.0
GR  3.81   144.0    4.01   149.5    4.01   153.3    2.26   154.0    1.32   155.5
GR  1.11   158.0    -.09   159.0     .91   164.5     .96   171.0     .91   175.0
GR  1.15   185.5    1.18   191.0    1.32   197.3    1.71   199.0    2.34   204.1
GR  3.48   206.0    3.81   212.5    3.76   220.5    3.76   221.5    3.16   222.0
GR  3.16   223.0    3.66   223.5    3.66   224.5    3.36   225.0    3.81   226.0
GR  4.16   239.5    4.61   246.2    4.61   250.7    5.16   252.0    8.08   252.2
GR  8.08   253.0    9.87   253.0    9.87   259.3    9.56   358.7
X1 1.380      44  113.00  253.00   10.00   10.00   10.00
GR  9.66      .0    9.98   105.5    9.98   113.0    8.32   113.0    8.32   113.8
GR  5.31   114.3    5.26   118.4    5.26   121.8    4.46   123.5    3.86   134.0
GR  3.81   144.0    4.01   149.5    4.01   153.3    2.26   154.0    1.32   155.5
GR  1.11   158.0    -.09   159.0     .91   164.5     .96   171.0     .91   175.0
GR  1.15   185.5    1.18   191.0    1.32   197.3    1.71   199.0    2.34   204.1
GR  3.48   206.0    3.81   212.5    3.76   220.5    3.76   221.5    3.16   222.0
GR  3.16   223.0    3.66   223.5    3.66   224.5    3.36   225.0    3.81   226.0
GR  4.16   239.5    4.61   246.2    4.61   250.7    5.16   252.0    8.08   252.2
GR  8.08   253.0    9.87   253.0    9.87   259.3    9.56   358.7
X1 1.415      43  154.50  311.00   35.00   35.00   35.00
GR  9.15      .0   10.47    70.5   11.44   110.0   12.20   149.0   12.31   154.5
GR  9.95   154.5    9.95   155.5    9.40   155.5    9.35   157.5    6.90   162.3
GR  6.90   164.0    5.00   167.5    4.53   184.5    3.90   201.9    3.63   202.9
GR  1.35   207.4     .97   210.0    1.10   214.5     .65   228.0    1.10   244.5
GR   .95   253.0    1.21   261.8    1.35   262.4    3.58   267.0    3.98   267.5
GR  3.98   270.0    3.60   270.5    3.60   274.5    3.60   296.8    7.05   304.5
GR  8.78   309.0    9.91   311.0    9.57   318.7    9.37   318.7    6.70   323.5
GR  5.35   334.5    2.75   337.3    2.75   338.3    4.45   342.3    5.15   364.5
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GR  4.28   394.5    3.68   397.5    3.68   434.0
X1 1.435      43  154.50  311.00   20.00   20.00   20.00
GR  9.15      .0   10.47    70.5   11.44   110.0   12.20   149.0   12.31   154.5
GR  9.95   154.5    9.95   155.5    9.40   155.5    9.35   157.5    6.90   162.3
GR  6.90   164.0    5.00   167.5    4.53   184.5    3.90   201.9    3.63   202.9
GR  1.35   207.4     .97   210.0    1.10   214.5     .65   228.0    1.10   244.5
GR   .95   253.0    1.21   261.8    1.35   262.4    3.58   267.0    3.98   267.5
GR  3.98   270.0    3.60   270.5    3.60   274.5    3.60   296.8    7.05   304.5
GR  8.78   309.0    9.91   311.0    9.57   318.7    9.37   318.7    6.70   323.5
GR  5.35   334.5    2.75   337.3    2.75   338.3    4.45   342.3    5.15   364.5
GR  4.28   394.5    3.68   397.5    3.68   434.0
X1 1.440      35  141.00  296.80    5.00    5.00    5.00
GR  9.45      .0    9.73    43.0   10.03    43.0   10.03    44.0    7.38   119.0
GR  8.43   132.5    9.98   135.5    9.98   140.5    9.98   141.0    8.82   143.5
GR  3.85   155.5    3.85   189.5    3.98   189.8    3.98   191.8    3.53   193.0
GR  1.37   197.5    1.04   198.5    1.04   203.5     .83   214.0    1.04   246.5
GR  1.24   251.2    1.37   252.0    3.65   256.7    3.95   257.2    3.95   259.7
GR  3.63   260.2    3.63   285.0    8.85   294.8    9.90   296.8    9.90   297.3
GR  9.90   307.8    6.63   313.0    6.63   321.5    3.63   326.3    3.63   410.5
X1 1.650      45   98.30  250.50  210.00  210.00  210.00
GR  2.61      .0    3.76     3.0    3.91    20.5    3.31    21.0    3.31    62.0
GR  3.81    63.0    4.36    83.2   10.01    94.8   10.01    98.0   10.01    98.3
GR  8.71   100.5    8.11   101.5    8.01   104.5    3.44   113.7    3.44   139.6
GR  4.11   140.6    4.11   143.1    3.26   144.9    1.40   148.5     .91   150.2
GR   .81   155.2     .91   164.5     .91   197.4    1.01   201.4    1.40   202.4
GR  3.28   206.4    4.28   207.4    4.48   209.9    3.64   210.4    3.64   238.5
GR  8.73   248.5   10.09   250.5   10.09   250.7   10.09   254.3    8.66   256.0
GR  5.91   266.5    5.11   278.0    5.11   283.0    4.91   285.0    3.91   286.5
GR  3.71   289.5    3.41   290.5    3.41   293.5    3.71   294.5    3.71   388.0
X1 1.840      52  140.50  293.60  190.00  190.00  190.00
GR  2.80      .0    2.80   105.0    3.70   106.0    4.00   111.0    2.50   113.0
GR  2.50   116.5    4.70   121.5    4.70   126.5    9.90   136.5    9.90   140.0
GR  9.90   140.5    8.77   142.8    3.82   153.0    3.82   182.4    3.97   182.7
GR  3.97   185.7    3.45   186.5    1.43   190.5    1.10   192.0    1.07   197.0
GR  1.00   209.0     .97   241.0    1.07   245.5    1.43   246.0    3.40   250.0
GR  3.80   250.5    3.80   252.5    3.48   253.0    3.48   280.7    8.70   291.2
GR  9.99   293.6    9.99   293.8    9.99   297.4    3.00   310.5    3.00   315.0
GR  3.40   315.5    3.40   316.0    3.10   316.5    1.00   319.5    1.00   333.0
GR  3.10   336.0    4.10   336.5    4.10   337.2    3.40   337.5    3.40   368.7
GR  4.65   370.5    4.15   370.5    4.15   371.3    4.65   371.3    4.65   378.1
GR  3.85   379.0    3.85   420.0
X1 2.035      49  120.50  272.80  195.00  195.00  195.00
GR  3.68      .0    3.68    59.0    4.28    60.0    4.28    66.0    2.68    69.5
GR  2.68    72.0    3.73    75.0    3.73    84.0    4.53    84.5    4.53    89.0
GR  2.98    91.0    2.98    95.5    4.58    99.0    4.58   106.0   10.18   116.5
GR 10.18   120.0   10.18   120.5    8.93   122.5    4.68   130.8    4.58   134.5
GR  3.68   136.9    3.68   163.7    3.88   164.0    3.88   167.0    3.44   167.6
GR  1.48   172.0    1.23   173.0    1.03   178.0    1.23   189.5    1.03   219.5
GR  1.23   224.1    1.48   224.5    3.28   228.6    3.88   229.6    3.88   232.1
GR  3.68   232.6    3.68   260.5    8.88   270.5   10.07   272.8   10.01   276.3
GR  3.53   287.5    3.83   296.0    1.63   299.5    1.63   305.0    3.73   308.5
GR  4.13   309.0    4.13   309.7    3.83   310.0    3.83   380.0
X1 2.240      39  100.30  257.50  205.00  205.00  205.00
GR  3.51      .0    3.51    63.5    4.16    64.5    4.16    69.0    2.46    72.0
GR  2.46    76.0    4.21    79.0    4.21    85.0   10.11    97.0   10.11   100.0
GR 10.11   100.3    8.81   102.6    3.61   113.5    3.61   141.2    3.96   141.5
GR  3.96   145.0    3.46   145.5    1.52   149.5     .92   151.5     .92   154.5
GR  1.11   174.5    1.22   200.0    1.52   204.5    3.36   210.0    3.86   215.0
GR  4.31   243.5   10.03   257.5   10.03   260.9    3.41   271.0    3.41   277.5
GR  3.71   278.0    3.71   278.5    1.41   281.5    1.41   287.0    3.81   290.0
GR  4.41   291.5    4.41   292.0    3.91   292.5    3.91   350.0
X1 2.293      66  150.50  306.00   53.00   53.00   53.00
GR  3.61      .0    3.61    49.0    4.36    51.0    4.46    59.5    2.78    64.0
GR  2.78    66.0    3.93    71.0    3.93   113.5    4.36   114.0    4.36   118.0
GR  2.41   122.5    2.41   126.5    4.46   129.5    4.46   134.5   10.11   146.5
GR 10.11   150.0   10.11   150.5    9.36   151.5    9.36   152.2    9.06   152.2
GR  9.06   152.5    3.49   163.3    3.49   165.0    3.49   178.5    3.49   188.0
GR  3.86   188.0    3.96   192.0    3.78   194.5    3.46   195.1    1.56   199.5
GR  1.01   200.6     .95   205.5     .76   212.5     .96   219.0     .71   226.5
GR  1.11   232.5     .86   240.0    1.21   246.0    1.36   252.6    1.56   253.1
GR  3.55   257.4    3.86   259.5    3.86   262.2    3.66   262.5    3.66   273.0
GR  3.66   286.5    3.66   287.0    5.23   290.5    5.23   293.5    6.96   299.3
GR  7.96   299.3    7.96   300.0    9.91   300.0    9.91   301.2    8.01   301.2
GR 10.21   306.0   10.21   309.5    3.36   322.5    3.36   332.5    3.26   333.0
GR  1.46   336.0    1.46   343.5    3.06   345.0    3.06   359.0    2.66   359.4
GR  2.66   440.0
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X1	2.308	66	150.50	306.00	15.00	15.00	15.00		
GR	3.61	.0	3.61	49.0	4.36	51.0	4.46	59.5	2.78	64.0
GR	2.78	66.0	3.93	71.0	3.93	113.5	4.36	114.0	4.36	118.0
GR	2.41	122.5	2.41	126.5	4.46	129.5	4.46	134.5	10.11	146.5
GR	10.11	150.0	10.11	150.5	9.36	151.5	9.36	152.2	9.06	152.2
GR	9.06	152.5	3.49	163.3	3.49	165.0	3.49	178.5	3.49	188.0
GR	3.86	188.0	3.96	192.0	3.78	194.5	3.46	195.1	1.56	199.5
GR	1.01	200.6	.95	205.5	.76	212.5	.96	219.0	.71	226.5
GR	1.11	232.5	.86	240.0	1.21	246.0	1.36	252.6	1.56	253.1
GR	3.55	257.4	3.86	259.5	3.86	262.2	3.66	262.5	3.66	273.0
GR	3.66	286.5	3.66	287.0	5.23	290.5	5.23	293.5	6.96	299.3
GR	7.96	299.3	7.96	300.0	9.91	300.0	9.91	301.2	8.01	301.2
GR	10.21	306.0	10.21	309.5	3.36	322.5	3.36	332.5	3.26	333.0
GR	1.46	336.0	1.46	343.5	3.06	345.0	3.06	359.0	2.66	359.4
GR	2.66	440.0								
X1	2.455	59	130.50	282.90	147.00	147.00	147.00			
GR	4.01	.0	4.01	97.0	4.48	98.0	4.48	101.7	2.23	104.5
GR	2.23	108.5	4.78	112.0	4.78	116.0	9.93	126.2	9.93	130.0
GR	9.93	130.5	8.75	132.5	3.63	143.0	3.63	171.0	3.73	171.2
GR	3.73	174.7	3.53	175.2	1.58	179.5	1.08	180.7	1.18	184.5
GR	1.03	196.5	1.28	228.5	1.58	233.4	3.53	237.6	3.98	238.5
GR	3.98	241.0	3.60	241.0	3.60	269.0	3.10	269.4	3.10	270.7
GR	8.73	280.0	10.02	282.9	10.02	286.2	7.73	291.0	7.53	294.0
GR	4.08	299.8	4.08	320.0	4.58	321.0	4.58	321.5	4.38	322.5
GR	2.98	325.5	2.98	329.5	4.18	332.5	4.13	333.5	4.13	334.5
GR	3.98	335.0	3.98	354.0	4.38	355.7	3.88	355.7	3.88	356.2
GR	4.38	356.2	4.38	358.7	3.88	360.0	1.48	365.0	1.48	376.0
GR	3.88	381.0	3.88	388.0	2.98	389.5	2.98	430.0		
X1	2.650	64	105.50	257.30	195.00	195.00	195.00			
GR	3.93	.0	3.93	39.5	4.78	40.5	4.78	42.0	4.13	44.0
GR	4.13	45.5	4.68	46.5	4.68	48.0	4.18	49.5	4.18	72.0
GR	4.63	73.3	4.63	77.5	2.13	80.0	2.13	83.5	4.68	87.5
GR	4.68	91.5	9.93	101.5	9.93	105.0	9.93	105.5	8.88	107.3
GR	3.73	118.0	3.73	147.4	4.06	147.7	4.06	150.7	3.73	151.2
GR	1.62	155.5	1.38	156.0	1.51	161.0	1.16	175.0	1.18	187.0
GR	1.21	203.0	1.62	208.0	3.33	212.2	2.83	213.2	2.83	215.2
GR	3.38	216.2	3.38	238.8	4.03	240.2	4.03	245.0	8.70	254.5
GR	10.16	257.3	10.16	260.5	4.43	273.5	5.13	273.5	5.13	275.5
GR	4.38	276.5	4.38	294.0	4.08	294.5	4.08	295.0	4.23	295.5
GR	1.98	298.5	1.98	308.5	4.23	311.5	4.33	312.0	4.33	316.5
GR	3.33	318.0	3.33	338.5	4.23	340.0	4.43	340.0	4.43	340.8
GR	4.23	340.8	4.23	341.6	3.33	342.5	3.33	405.0		
X1	2.840	51	151.20	300.80	190.00	190.00	190.00			
GR	3.92	.0	3.92	43.0	5.12	44.5	5.12	46.0	2.87	51.0
GR	.97	116.2	5.17	116.2	4.92	119.0	4.92	127.0	5.82	139.0
GR	10.07	147.0	10.07	150.0	9.97	151.2	6.37	151.2	5.24	153.2
GR	.64	153.2	1.32	163.5	1.82	184.0	1.65	199.5	1.27	204.5
GR	1.22	219.0	1.37	250.5	1.65	253.5	3.50	257.5	3.90	258.5
GR	3.90	261.0	3.52	261.5	3.52	287.5	8.77	298.2	10.21	300.8
GR	10.21	304.5	3.37	318.0	3.37	320.5	3.07	322.0	3.07	331.5
GR	4.77	333.0	2.37	336.0	2.37	346.0	4.77	349.0	4.32	354.5
GR	4.32	362.0	3.52	362.0	3.52	362.8	4.32	362.8	4.32	363.7
GR	3.22	364.5	3.22	370.5	3.92	376.0	3.92	381.5	3.22	381.8
GR	3.22	440.0								
X1	3.030	49	105.50	256.30	190.00	190.00	190.00			
GR	4.30	.0	4.30	61.3	4.85	61.8	4.85	66.0	2.05	71.5
GR	2.05	75.5	4.20	80.0	4.20	88.5	10.30	101.5	10.30	105.0
GR	10.30	105.5	8.97	107.3	7.95	109.5	7.95	113.0	4.00	120.5
GR	4.00	146.0	4.25	146.5	4.25	150.0	3.85	150.8	1.69	155.5
GR	1.40	160.5	1.40	180.5	1.45	188.5	1.50	203.5	1.69	208.5
GR	3.75	213.0	3.35	213.5	3.35	215.0	3.90	215.5	3.90	244.0
GR	8.82	254.0	10.38	256.3	10.38	260.0	4.40	273.0	4.40	288.0
GR	4.70	288.2	4.70	290.5	3.70	292.0	1.60	295.5	1.60	305.0
GR	3.60	308.0	4.40	308.5	4.40	315.8	3.80	315.8	3.80	316.6
GR	4.40	316.6	4.40	317.3	3.40	318.5	3.40	375.0		
X1	3.235	60	95.50	247.70	205.00	205.00	205.00			
GR	5.14	.0	5.14	3.5	4.24	5.0	4.24	50.0	5.09	51.5
GR	5.09	55.5	2.29	60.0	2.29	68.0	4.49	72.3	4.49	81.3
GR	5.69	82.5	10.14	91.5	10.14	95.0	10.14	95.5	8.79	97.9
GR	3.99	108.0	3.99	109.0	3.49	109.5	3.49	137.0	3.69	137.5
GR	3.69	140.5	3.01	142.3	1.72	145.5	1.19	146.6	1.14	150.5
GR	1.54	157.0	1.49	181.0	1.34	196.5	1.72	199.5	3.44	203.0
GR	3.84	204.0	3.84	207.5	3.44	208.5	3.44	232.5	3.74	232.8
GR	3.74	234.8	8.94	245.5	10.28	247.7	10.28	248.2	10.28	251.8
GR	5.64	259.0	5.64	262.0	5.14	264.5	5.14	277.5	4.64	278.0
GR	4.64	281.0	3.64	282.5	1.64	285.5	1.64	295.5	3.64	298.5

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GR  4.24   299.0    4.24   308.5    4.14   309.0    4.14   314.0    3.54   314.0
GR  3.54   314.8    4.14   314.8    4.14   315.0    5.14   316.2    5.14   350.0
X1 3.410      53  140.00  292.00  175.00  175.00  175.00
GR  3.99      .0    3.99    67.0    3.09    70.0    3.09    71.5    4.64    77.0
GR  4.94    91.5    5.94    92.0    7.99   103.0    8.34   116.5    9.94   137.0
GR  9.94   140.0    9.63   142.5    8.53   142.5    7.63   142.5    7.63   142.8
GR  7.23   142.8    3.89   150.5    3.74   157.5    3.64   172.0    3.39   186.5
GR  1.74   190.5    1.39   191.7    1.29   196.5    1.59   201.5    1.29   211.0
GR  1.34   216.5    1.39   223.5    1.64   231.5    1.54   240.0    1.74   243.7
GR  2.54   246.0    3.54   248.0    3.84   248.5    4.14   251.5    3.44   252.0
GR  3.44   261.0    3.44   276.0    3.44   280.0    7.19   287.7    7.19   290.2
GR  7.69   290.2    7.69   290.5    8.57   290.5    9.63   290.5    9.95   292.0
GR  9.95   295.0   10.32   299.5    8.39   303.0    7.99   305.0    4.59   309.5
GR  4.59   311.5    3.79   312.7    3.79   425.0
X1 3.420      53  140.00  292.00   10.00   10.00   10.00
GR  3.99      .0    3.99    67.0    3.09    70.0    3.09    71.5    4.64    77.0
GR  4.94    91.5    5.94    92.0    7.99   103.0    8.34   116.5    9.94   137.0
GR  9.94   140.0    9.63   142.5    8.53   142.5    7.63   142.5    7.63   142.8
GR  7.23   142.8    3.89   150.5    3.74   157.5    3.64   172.0    3.39   186.5
GR  1.74   190.5    1.39   191.7    1.29   196.5    1.59   201.5    1.29   211.0
GR  1.34   216.5    1.39   223.5    1.64   231.5    1.54   240.0    1.74   243.7
GR  2.54   246.0    3.54   248.0    3.84   248.5    4.14   251.5    3.44   252.0
GR  3.44   261.0    3.44   276.0    3.44   280.0    7.19   287.7    7.19   290.2
GR  7.69   290.2    7.69   290.5    8.57   290.5    9.63   290.5    9.95   292.0
GR  9.95   295.0   10.32   299.5    8.39   303.0    7.99   305.0    4.59   309.5
GR  4.59   311.5    3.79   312.7    3.79   425.0
X1 3.435      46  145.50  299.10   15.00   15.00   15.00
GR  4.03      .0    4.03   103.0    4.53   105.0    4.53   109.0    2.18   113.0
GR  2.18   119.0    4.73   125.5    4.73   130.5    9.38   140.5    9.38   145.0
GR  9.38   145.5    8.58   146.9    3.93   155.5    3.73   189.0    3.73   192.5
GR  3.43   193.0    1.80   197.0    1.53   205.0    1.43   227.0    1.23   247.0
GR  1.80   250.0    3.58   253.5    3.98   254.5    3.98   258.5    3.68   259.0
GR  3.68   286.5    8.88   297.0   10.34   299.1   10.34   299.5   10.34   303.1
GR  8.13   306.0    8.13   310.0    7.23   312.8    4.73   315.8    5.13   320.0
GR  5.13   321.0    5.13   323.5    5.13   325.0    4.43   335.0    3.93   338.0
GR  3.93   358.0    4.18   358.5    4.48   360.0    4.48   375.0    4.38   375.5
GR  4.38   455.0
X1 3.470      47  105.25  254.54   35.00   35.00   35.00
GR  6.55      .0    8.25    74.6    8.85   102.7    8.97   105.3    6.98   105.3
GR  6.98   106.1    5.78   106.5    3.95   111.5    3.50   118.7    3.50   139.6
GR  3.50   145.5    3.80   145.9    3.80   149.3    3.50   150.0    1.77   153.1
GR  1.55   157.3    1.35   160.6    1.65   169.8    1.65   181.6    1.10   193.7
GR  1.40   196.7    1.77   198.8    2.75   202.5    2.75   203.8    1.75   206.3
GR  1.75   207.2    3.80   211.3    4.30   212.2    4.30   216.0    3.70   216.4
GR  3.70   223.5    3.70   244.1    4.45   244.5    4.45   245.7    4.05   246.1
GR  4.10   247.4    6.42   253.4    7.18   253.7    7.18   254.5    9.31   254.5
GR  9.25   256.4    9.02   272.0    8.75   306.1    6.15   326.7    6.05   330.9
GR  4.55   331.7    4.55   348.5
X1 3.480      47  105.25  254.54   10.00   10.00   10.00
GR  6.55      .0    8.25    74.6    8.85   102.7    8.97   105.3    6.98   105.3
GR  6.98   106.1    5.78   106.5    3.95   111.5    3.50   118.7    3.50   139.6
GR  3.50   145.5    3.80   145.9    3.80   149.3    3.50   150.0    1.77   153.1
GR  1.55   157.3    1.35   160.6    1.65   169.8    1.65   181.6    1.10   193.7
GR  1.40   196.7    1.77   198.8    2.75   202.5    2.75   203.8    1.75   206.3
GR  1.75   207.2    3.80   211.3    4.30   212.2    4.30   216.0    3.70   216.4
GR  3.70   223.5    3.70   244.1    4.45   244.5    4.45   245.7    4.05   246.1
GR  4.10   247.4    6.42   253.4    7.18   253.7    7.18   254.5    9.31   254.5
GR  9.25   256.4    9.02   272.0    8.75   306.1    6.15   326.7    6.05   330.9
GR  4.55   331.7    4.55   348.5
X1 3.645      48  100.50  265.70  165.00  165.00  165.00
GR  4.13      .0    4.13    32.0    2.73    34.5    2.73    36.0    4.68    39.7
GR  4.68    44.2    4.08    45.2    4.08    49.3    4.78    50.0    4.78    54.5
GR  2.33    61.5    2.33    65.0    4.63    70.0    4.63    85.5   10.48    96.5
GR 10.48   100.0   10.48   100.5    9.13   102.8    7.93   105.0    7.83   108.5
GR  3.88   116.5    3.88   145.0    4.03   145.0    4.03   148.5    3.48   149.3
GR  1.83   153.0    1.63   153.5    1.63   158.0    1.63   173.0    1.73   194.5
GR  1.83   197.5    1.98   203.0    1.83   209.6    3.53   213.2    4.03   213.7
GR  4.03   217.2    3.58   217.7    3.58   251.5    3.78   251.5    3.78   253.0
GR  9.38   263.5   10.15   265.7   10.15   266.2   10.15   271.5    4.23   282.0
GR  4.23   292.5    4.63   293.5    4.63   360.0
X1 3.810      42  110.40  316.00  165.00  165.00  165.00
GR  4.17      .0    4.17    61.5    4.67    62.5    4.67    64.5    3.92    70.5
GR  3.92    78.5    4.57    81.5    4.57    93.5   10.22   107.0   10.22   110.0
GR 10.22   110.4    9.02   112.8    4.42   123.0    4.42   125.0    3.92   125.5
GR  3.92   163.0    4.07   163.2    4.07   166.7    3.77   167.5    2.32   171.0
GR  1.87   181.5    1.49   186.5    1.72   198.5    1.87   202.5    2.12   212.5
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GR  2.12   213.0    1.87   224.0    1.62   243.0    1.59   251.0    1.49   263.0
GR  1.87   265.0    3.67   269.0    4.22   269.6    4.22   272.6    3.72   273.1
GR  3.72   301.5    8.89   313.5   10.09   316.0   10.09   316.1   10.09   321.8
GR  4.17   334.0    4.17   420.0
X1 3.985      46   29.00   252.00  175.00  175.00  175.00
GR  7.72      .0    7.72     7.0    9.87     9.0    9.87    29.0    9.12    30.5
GR  8.62    45.5    7.42    47.5    7.02    57.0    7.02    67.0    7.02    67.5
GR  5.02    70.0    5.02    70.5    5.22    71.5    5.22   143.0    3.92   144.0
GR  3.92   167.5    4.17   168.0    4.17   169.5    2.12   173.5    1.90   174.5
GR  1.52   183.0    1.82   196.5    1.82   209.0    1.90   214.0    2.27   216.5
GR  4.17   220.5    4.17   223.0    3.92   223.0    3.92   239.5    9.07   250.0
GR 10.17   252.0   10.17   252.3   10.17   258.5    6.57   265.0    6.57   266.5
GR  5.42   267.5    5.42   294.0    4.72   295.5    4.72   314.5    5.22   315.5
GR  4.92   315.5    4.92   315.8    5.22   315.8    5.61   316.0    5.61   320.0
GR  5.87   349.0
X1 4.082      54   80.90   194.50  97.00   97.00   97.00
GR  6.58      .0    6.58    50.0    6.93    61.5    9.43    61.5    9.23    73.0
GR  9.58    77.0    9.58    80.0    9.59    80.9    8.70    80.9    8.70    81.2
GR  7.70    81.2    7.30    84.0    4.03    89.5    3.98    92.5    4.08   104.0
GR  4.08   112.0    2.73   115.5    2.13   116.5    1.95   119.0    1.88   127.0
GR  1.63   132.5    1.78   138.5    1.38   143.5    1.68   150.0    1.95   159.5
GR  3.03   161.5    4.08   163.5    4.08   166.0    4.18   166.3    4.18   173.0
GR  4.18   181.0    4.63   182.5    5.38   184.5    8.70   191.8    8.70   192.1
GR  9.59   192.1   10.11   194.5   10.11   200.5    9.78   204.3    8.58   206.5
GR  7.78   207.0    7.78   208.0    7.78   211.0    7.23   232.5    7.53   232.5
GR  7.53   233.0    7.53   244.0    8.08   246.5    8.08   247.5    8.08   251.0
GR  7.78   272.0    7.38   273.0    7.38   275.0    7.38   305.0
X1 4.088      54   80.90   194.50  6.00    6.00    6.00
GR  6.58      .0    6.58    50.0    6.93    61.5    9.43    61.5    9.23    73.0
GR  9.58    77.0    9.58    80.0    9.59    80.9    8.70    80.9    8.70    81.2
GR  7.70    81.2    7.30    84.0    4.03    89.5    3.98    92.5    4.08   104.0
GR  4.08   112.0    2.73   115.5    2.13   116.5    1.95   119.0    1.88   127.0
GR  1.63   132.5    1.78   138.5    1.38   143.5    1.68   150.0    1.95   159.5
GR  3.03   161.5    4.08   163.5    4.08   166.0    4.18   166.3    4.18   173.0
GR  4.18   181.0    4.63   182.5    5.38   184.5    8.70   191.8    8.70   192.1
GR  9.59   192.1   10.11   194.5   10.11   200.5    9.78   204.3    8.58   206.5
GR  7.78   207.0    7.78   208.0    7.78   211.0    7.23   232.5    7.53   232.5
GR  7.53   233.0    7.53   244.0    8.08   246.5    8.08   247.5    8.08   251.0
GR  7.78   272.0    7.38   273.0    7.38   275.0    7.38   305.0
X1 4.220      49  103.00   220.80  132.00  132.00  132.00
GR 12.04      .0   12.04    49.5   12.24    50.5   12.24    60.5   11.94    62.5
GR 11.94    67.5   11.94    81.5   11.94    86.5   10.94    87.5   10.94    89.5
GR 10.94    98.5   10.94   100.0   10.94   103.0   10.64   105.0   10.54   106.0
GR  9.44   106.5    4.44   115.0    4.44   120.5    3.84   121.5    3.84   133.0
GR  4.09   134.0    4.09   136.0    2.19   140.0    1.99   141.0    1.79   146.0
GR  1.69   159.5    1.79   173.0    1.99   176.0    2.04   183.0    4.09   187.0
GR  4.09   189.0    3.89   189.5    3.89   206.0    4.19   206.5    4.19   209.0
GR  8.84   218.3   10.14   220.8   10.14   221.3   10.14   227.1    9.14   229.0
GR  8.99   235.0    8.34   259.5    8.34   274.5    8.24   276.0    4.24   284.0
GR  1.24   289.0    1.24   297.0    4.44   302.0    4.44   309.5
X1 4.430      40  105.30   248.50  210.00  210.00  210.00
GR  6.41      .0    6.41    55.0    4.86    60.0    4.86    61.0    5.11    62.5
GR  5.11    89.5    4.71    90.0    4.71    90.5   10.41   102.0   10.41   105.0
GR 10.41   105.3    9.06   107.7    3.86   118.0    3.86   150.0    4.11   150.2
GR  4.11   151.7    2.06   156.0    1.66   161.0    1.66   176.5    1.86   196.0
GR  2.06   199.0    4.01   202.5    4.01   203.5    3.71   204.0    3.71   234.0
GR  4.21   235.0    4.21   237.0    8.81   246.5   10.11   248.5   10.11   249.0
GR 10.11   254.5    9.55   257.0    4.91   264.0    4.81   271.5    1.81   276.5
GR  1.81   284.5    5.01   289.0    5.01   296.5    4.01   298.0    4.01   370.0
X1 4.630      46  120.50   263.00  200.00  200.00  200.00
GR  7.55      .0    7.55    29.0    5.70    31.5    5.70    35.0    5.50    36.5
GR  5.50    39.5    4.60    40.5    4.60    49.5    5.25    50.0    5.25   104.5
GR  3.50   105.0    3.50   105.5   10.00   117.0   10.00   120.0   10.00   120.5
GR  8.80   122.9    4.40   132.0    4.30   165.5    2.09   170.0    1.75   175.0
GR  1.70   185.0    1.90   198.0    2.09   209.5    2.35   210.5    2.35   211.0
GR  2.09   211.5    2.05   212.0    2.09   213.0    4.20   217.5    4.20   219.5
GR  3.85   220.0    3.85   250.0    4.15   250.5    4.15   251.5    8.70   260.5
GR 10.16   263.0   10.16   263.7   10.16   269.0    4.80   279.0    4.45   286.0
GR  2.35   290.0    2.35   293.5    5.45   303.5    5.45   309.5    4.25   311.0
GR  4.25   360.0
X1 4.810      40  110.50   252.00  180.00  180.00  180.00
GR  5.06      .0    5.06    56.5    4.46    57.5    4.46    96.5   10.36   106.5
GR 10.36   110.0   10.36   110.5    9.06   112.4    3.96   122.8    3.96   154.0
GR  4.46   154.5    4.46   155.5    2.16   159.5    2.11   160.5    1.91   165.5
GR  1.41   179.5    1.81   200.5    2.11   202.5    4.61   207.0    4.61   210.0
GR  4.21   210.5    4.21   234.5    3.81   235.0    3.81   236.0    8.81   244.5
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GR  9.11   244.5    9.16   245.0    9.16   251.0    9.81   252.0    9.81   262.0
GR  9.06   264.5    9.06   264.8    5.36   264.8    4.61   275.5    2.51   280.0
GR  2.51   288.0    5.16   292.5    5.16   300.0    4.36   301.5    4.36   360.0
X1 4.839      50  122.00  262.00   29.00   29.00   29.00
GR  5.54      .0    5.54    32.0    5.14    33.0    5.14    55.5    4.59    56.5
GR  4.59   105.0   11.84   115.5   11.84   120.0   12.00   122.0   10.43   122.0
GR 10.43   123.1    8.51   123.1    3.64   133.0    3.64   146.0    3.64   165.0
GR  4.44   165.5    4.44   166.5    3.14   169.0    2.19   171.0    2.13   172.5
GR  2.04   184.0    2.04   192.0    1.94   202.0    2.13   212.5    3.44   215.0
GR  4.44   217.5    4.44   220.0    4.14   220.5    4.14   238.0    4.14   245.0
GR  6.39   249.0    6.49   257.5    7.94   260.0    7.94   260.9   10.41   260.9
GR 10.41   262.0   11.96   262.0   11.93   264.1   11.29   282.0   11.49   282.0
GR 11.49   282.3    4.49   282.3    4.49   284.8    2.49   288.8    2.49   296.8
GR  5.79   301.8    5.79   307.3    5.39   326.3    4.99   327.0    4.99   380.0
X1 4.851      50  122.00  262.00   12.00   12.00   12.00
GR  5.54      .0    5.54    32.0    5.14    33.0    5.14    55.5    4.59    56.5
GR  4.59   105.0   11.84   115.5   11.84   120.0   12.00   122.0   10.43   122.0
GR 10.43   123.1    8.51   123.1    3.64   133.0    3.64   146.0    3.64   165.0
GR  4.44   165.5    4.44   166.5    3.14   169.0    2.19   171.0    2.13   172.5
GR  2.04   184.0    2.04   192.0    1.94   202.0    2.13   212.5    3.44   215.0
GR  4.44   217.5    4.44   220.0    4.14   220.5    4.14   238.0    4.14   245.0
GR  6.39   249.0    6.49   257.5    7.94   260.0    7.94   260.9   10.41   260.9
GR 10.41   262.0   11.96   262.0   11.93   264.1   11.29   282.0   11.49   282.0
GR 11.49   282.3    4.49   282.3    4.49   284.8    2.49   288.8    2.49   296.8
GR  5.79   301.8    5.79   307.3    5.39   326.3    4.99   327.0    4.99   380.0
X1 4.860      49   87.80  228.30    9.00    9.00    9.00
GR  6.42      .0    6.32     8.0    5.42     9.5    5.42    22.5    4.57    23.5
GR  4.57    71.0   11.37    82.5   11.37    87.5   11.57    87.5   11.57    87.8
GR  9.07    87.8    9.07    89.3    4.82    96.5    4.79   134.0    4.30   134.0
GR  4.30   134.7    3.37   134.7    2.57   136.5    2.17   142.0    2.15   146.5
GR  1.97   150.0    1.77   158.0    1.37   166.0    1.72   172.0    1.92   174.0
GR  2.15   178.0    2.22   179.0    3.02   181.3    4.30   181.3    4.30   182.0
GR  4.79   182.0    4.97   219.0    8.72   227.0    9.02   228.3   11.22   228.3
GR 11.22   228.6   11.02   228.6   11.11   229.0   10.17   248.0   10.57   248.0
GR 10.57   248.3    4.57   248.3    4.37   249.3    2.37   253.3    2.37   261.3
GR  5.67   266.3    5.67   273.8    4.47   275.0    4.47   347.5
X1 5.030      48   78.30  214.00  170.00  170.00  170.00
GR  8.68      .0    8.68     5.0    8.68    29.5    8.18    30.0    7.88    44.5
GR  7.88    49.5    7.68    51.5    7.33    52.5    7.33    53.5    7.33    60.0
GR  7.03    67.7    7.03    71.2    9.03    71.7   10.58    74.0   10.58    74.5
GR 10.43    74.8   10.43    78.3    9.28    79.9    7.68    83.0    7.48    86.7
GR  4.13    92.0    4.13    94.5    3.93    95.0    3.93   118.5    4.13   118.7
GR  4.13   120.7    2.17   124.5    2.18   129.5    1.98   144.0    1.98   165.5
GR  2.17   167.5    4.28   171.5    4.28   173.0    3.83   173.5    3.83   201.5
GR  4.13   201.8    4.13   202.4    9.08   212.0   10.52   214.0   10.52   217.5
GR  4.93   228.5    4.73   234.5    1.93   238.5    1.93   247.5    5.73   253.0
GR  5.73   263.0    4.73   268.0    4.73   324.5
X1 5.225      45  101.30  239.30  195.00  195.00  195.00
GR  6.09      .0    6.44    32.0    6.44    40.0    6.44    42.0    5.44    42.0
GR  5.44    88.3   10.59    98.0   10.59   101.0   10.59   101.3    8.78   104.4
GR  4.59   112.5    4.59   114.0    4.09   115.0    4.09   143.0    4.24   143.2
GR  4.24   145.2    2.19   148.5    1.74   154.0    1.89   159.0    1.99   166.0
GR  2.09   177.5    2.19   186.5    2.34   191.5    4.39   195.0    4.39   197.0
GR  4.19   197.5    4.19   227.0    9.24   237.0   10.64   239.3   10.64   239.5
GR 10.64   242.8    6.19   250.0    6.09   252.7    6.09   259.7    5.94   261.5
GR  2.54   264.0    2.54   267.0    5.84   270.0    5.39   276.5    4.39   277.5
GR  4.59   282.5    4.99   285.5    5.19   299.5    4.69   304.5    4.69   361.0
X1 5.382      45   60.00  186.50  157.00  157.00  157.00
GR  9.45      .0    9.35    23.5    9.35    27.5    9.30    28.5    9.30    43.5
GR 10.10    57.0   10.10    60.0    9.97    60.0    9.05    60.0    9.05    60.3
GR  8.25    60.3    5.20    69.0    4.60    71.5    4.40    83.0    4.60    94.5
GR  4.70    98.5    2.21   103.0    2.05   106.0    1.70   110.5    2.10   117.5
GR  1.75   122.0    2.00   129.0    2.25   140.5    2.21   142.0    4.35   146.0
GR  4.50   152.0    4.50   163.5    4.55   175.0    4.75   180.5    7.60   186.2
GR  9.08   186.2    9.08   186.5   10.00   186.5    9.99   189.0   10.15   197.5
GR  9.95   199.0    4.90   207.0    4.90   211.5    5.20   212.0    2.40   216.0
GR  2.40   219.5    5.50   223.3    5.50   227.1    4.50   227.8    4.50   310.0
X1 5.388      45   60.00  186.50    6.00    6.00    6.00
GR  9.45      .0    9.35    23.5    9.35    27.5    9.30    28.5    9.30    43.5
GR 10.10    57.0   10.10    60.0    9.97    60.0    9.05    60.0    9.05    60.3
GR  8.25    60.3    5.20    69.0    4.60    71.5    4.40    83.0    4.60    94.5
GR  4.70    98.5    2.21   103.0    2.05   106.0    1.70   110.5    2.10   117.5
GR  1.75   122.0    2.00   129.0    2.25   140.5    2.21   142.0    4.35   146.0
GR  4.50   152.0    4.50   163.5    4.55   175.0    4.75   180.5    7.60   186.2
GR  9.08   186.2    9.08   186.5   10.00   186.5    9.99   189.0   10.15   197.5
GR  9.95   199.0    4.90   207.0    4.90   211.5    5.20   212.0    2.40   216.0
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GR	2.40	219.5	5.50	223.3	5.50	227.1	4.50	227.8	4.50	310.0
X1	5.425	42	70.80	206.00	37.00	37.00	37.00			
GR	8.47	.0	8.47	28.0	8.57	30.0	8.57	35.0	8.57	39.0
GR	8.57	42.0	8.47	42.0	8.47	58.5	8.62	62.0	10.17	65.0
GR	10.17	70.0	10.17	70.8	8.97	72.3	4.77	80.0	4.77	108.5
GR	4.87	108.5	4.87	110.5	2.52	114.5	2.22	117.0	1.62	121.0
GR	1.77	131.0	2.12	141.5	2.22	146.0	2.57	156.0	4.72	160.0
GR	4.72	160.7	4.52	161.0	4.52	194.0	9.22	203.5	10.54	206.0
GR	10.54	206.3	10.54	209.1	4.77	220.0	4.77	223.5	5.07	224.0
GR	5.07	225.0	2.67	227.8	2.67	231.2	5.87	235.2	5.87	238.7
GR	4.97	239.2	4.97	330.0						
X1	5.600	43	130.70	270.20	175.00	175.00	175.00			
GR	5.78	.0	5.78	22.0	5.38	23.0	5.38	55.0	4.93	55.5
GR	4.93	56.0	5.43	56.5	5.43	114.5	10.33	125.0	10.33	127.5
GR	10.13	130.0	10.13	130.7	7.83	133.0	4.76	140.0	4.76	171.0
GR	4.98	171.0	4.98	173.0	3.18	177.0	2.58	182.5	2.24	183.5
GR	2.13	186.5	2.08	201.5	1.73	218.5	2.24	221.5	4.83	226.5
GR	4.83	228.5	4.58	229.0	4.58	255.5	4.98	255.9	4.98	256.8
GR	8.78	263.5	8.78	267.0	10.67	270.2	10.67	271.0	10.67	273.5
GR	5.23	284.5	5.23	290.0	2.73	293.5	2.73	296.5	5.73	300.3
GR	5.63	303.8	4.63	304.8	4.63	380.0				
X1	5.815	46	130.40	270.50	215.00	215.00	215.00			
GR	5.94	.0	5.94	22.5	5.64	23.5	5.64	62.0	5.89	63.0
GR	5.89	118.0	7.69	120.0	7.69	121.5	9.34	123.5	9.64	126.0
GR	10.44	127.0	10.44	130.0	10.44	130.4	9.24	132.1	4.84	140.5
GR	4.84	175.2	5.04	175.8	5.04	177.3	3.19	180.8	3.14	184.0
GR	3.44	184.5	3.44	185.3	2.84	186.0	2.27	192.0	2.14	196.0
GR	1.79	210.0	1.94	220.5	2.27	223.5	4.79	229.0	4.79	229.7
GR	4.69	230.0	4.69	258.7	5.09	259.1	5.09	259.7	9.29	267.7
GR	10.58	270.5	10.58	273.5	5.29	285.0	5.29	289.5	2.29	294.5
GR	2.29	295.5	5.29	300.5	5.29	302.5	5.19	305.5	4.19	306.5
GR	4.19	405.0								
X1	6.015	46	130.00	269.30	200.00	200.00	200.00			
GR	8.99	.0	8.99	51.5	10.19	55.0	10.19	60.0	8.24	63.0
GR	8.24	100.0	7.84	101.0	7.84	113.5	7.59	114.5	7.59	120.5
GR	8.84	122.0	9.14	125.0	10.54	127.0	10.54	130.0	9.29	132.3
GR	5.59	139.5	5.59	141.5	4.69	142.0	4.69	176.4	4.99	176.7
GR	4.99	179.2	2.84	183.5	2.30	187.5	1.74	191.5	1.84	203.5
GR	1.74	219.0	2.30	222.0	2.89	224.0	2.89	225.5	4.89	230.0
GR	4.89	232.0	4.64	232.5	4.64	256.5	4.79	257.0	4.79	258.2
GR	8.74	266.0	10.61	269.3	10.61	272.0	6.54	280.0	6.44	283.0
GR	5.64	284.0	5.64	284.5	6.44	285.5	6.44	289.0	5.44	290.0
GR	5.44	340.0								
X1	6.205	41	130.00	270.00	190.00	190.00	190.00			
GR	6.53	.0	6.53	44.0	5.73	45.5	5.73	64.0	6.88	69.0
GR	6.88	99.0	5.58	102.5	5.58	117.5	10.43	127.0	10.43	130.0
GR	9.08	132.6	4.73	141.0	4.73	175.7	5.18	176.0	5.18	178.5
GR	3.43	182.0	2.73	187.5	2.33	188.5	2.03	191.5	1.98	204.0
GR	2.13	216.0	2.33	219.0	3.23	222.0	3.38	225.5	5.23	229.0
GR	5.23	231.5	4.88	232.0	4.88	253.5	8.78	261.5	8.78	265.7
GR	9.38	267.0	10.61	270.0	10.61	272.5	5.43	283.0	5.33	286.5
GR	4.83	287.0	4.83	287.5	5.63	288.5	5.63	294.5	4.63	295.5
GR	4.63	385.0								
X1	6.261	48	46.00	190.00	57.00	57.00	57.00			
GR	6.61	.0	6.61	5.0	6.26	6.5	6.26	25.7	6.66	26.5
GR	7.16	36.0	10.46	43.0	10.46	46.0	8.81	48.9	5.71	55.5
GR	5.16	101.3	2.91	105.8	2.91	107.3	3.36	108.0	2.51	111.0
GR	2.31	112.5	2.51	114.8	2.81	115.0	2.51	115.3	2.11	117.8
GR	2.11	122.0	1.91	124.5	2.01	129.0	1.51	131.5	1.91	136.0
GR	1.71	139.0	2.06	143.0	2.51	146.5	4.11	150.0	5.16	150.0
GR	5.16	161.0	4.91	161.5	4.91	178.0	9.26	186.8	10.72	190.0
GR	10.72	192.7	5.46	204.0	5.36	208.0	4.66	208.5	4.66	209.5
GR	5.46	210.0	5.46	213.5	4.16	219.0	4.16	221.0	5.16	222.5
GR	5.16	226.0	4.86	226.5	4.86	286.0				
X1	6.268	48	46.00	190.00	6.00	6.00	6.00			
GR	6.61	.0	6.61	5.0	6.26	6.5	6.26	25.7	6.66	26.5
GR	7.16	36.0	10.46	43.0	10.46	46.0	8.81	48.9	5.71	55.5
GR	5.16	101.3	2.91	105.8	2.91	107.3	3.36	108.0	2.51	111.0
GR	2.31	112.5	2.51	114.8	2.81	115.0	2.51	115.3	2.11	117.8
GR	2.11	122.0	1.91	124.5	2.01	129.0	1.51	131.5	1.91	136.0
GR	1.71	139.0	2.06	143.0	2.51	146.5	4.11	150.0	5.16	150.0
GR	5.16	161.0	4.91	161.5	4.91	178.0	9.26	186.8	10.72	190.0
GR	10.72	192.7	5.46	204.0	5.36	208.0	4.66	208.5	4.66	209.5
GR	5.46	210.0	5.46	213.5	4.16	219.0	4.16	221.0	5.16	222.5
GR	5.16	226.0	4.86	226.5	4.86	286.0				
X1	6.385	56	83.40	238.50	117.00	117.00	117.00			

GR	9.42	.0	9.42	1.0	8.87	2.0	8.62	21.5	7.12	24.0
GR	7.22	30.0	7.02	32.0	6.47	37.5	5.42	39.5	5.42	40.0
GR	5.72	40.5	5.72	41.0	5.32	41.5	5.32	67.2	5.62	67.7
GR	5.62	68.2	5.22	68.5	5.22	69.0	10.62	80.0	10.62	83.0
GR	10.62	83.4	9.27	85.5	5.02	93.5	5.02	142.5	5.12	143.0
GR	5.12	145.5	3.52	149.0	3.12	158.0	2.40	159.0	2.32	162.0
GR	2.12	172.5	2.02	190.5	2.40	193.5	3.42	194.0	3.42	195.5
GR	5.22	199.5	5.22	202.0	4.92	202.5	4.92	227.0	9.32	235.5
GR	10.60	238.5	10.60	241.0	8.27	245.8	8.27	250.0	5.77	253.5
GR	5.57	257.5	4.97	258.0	4.97	258.5	5.87	259.5	5.87	263.5
GR	4.57	265.5	4.57	270.5	5.27	271.0	5.27	273.0	4.77	273.5
GR	4.77	408.0								
X1	6.565	31	110.40	216.20	180.00	180.00	180.00			
GR	5.40	.0	5.40	24.0	5.35	24.5	5.35	41.5	5.25	42.0
GR	5.25	96.5	10.30	107.0	10.30	110.0	10.30	110.4	9.10	112.6
GR	5.15	121.0	5.15	140.0	5.30	140.3	5.30	142.3	3.55	146.0
GR	3.00	159.0	2.45	159.5	2.20	161.5	1.70	170.0	2.45	173.0
GR	3.20	180.5	5.55	185.0	5.55	185.5	5.10	186.0	5.10	204.0
GR	9.40	213.0	10.56	216.2	10.45	233.5	9.55	236.7	5.10	249.5
GR	5.10	310.0								
X1	6.765	38	120.50	221.50	200.00	200.00	200.00			
GR	5.61	.0	5.61	85.5	5.16	89.5	5.16	91.5	5.66	94.0
GR	5.66	105.0	9.51	112.0	9.56	115.0	10.46	117.0	10.46	120.0
GR	10.46	120.5	9.21	122.8	5.31	130.5	5.31	131.0	5.06	131.5
GR	5.06	152.0	5.41	152.0	5.41	152.8	4.91	153.5	3.66	156.0
GR	3.51	168.0	2.51	169.5	1.96	171.5	2.01	177.0	2.51	180.0
GR	3.46	187.0	4.46	189.0	5.26	190.5	5.26	191.5	5.01	192.0
GR	5.01	211.0	9.51	219.5	10.55	221.5	10.55	225.0	7.91	230.0
GR	6.91	230.5	7.91	237.5	8.41	318.0				
X1	6.937	38	51.20	152.00	172.00	172.00	172.00			
GR	8.21	.0	8.01	15.5	8.11	35.0	8.11	42.5	10.61	47.5
GR	10.61	51.0	10.61	51.2	9.31	53.7	5.91	60.0	5.86	83.0
GR	5.69	89.0	5.34	89.0	3.46	90.8	3.41	93.5	2.61	94.0
GR	2.76	94.0	2.26	99.0	1.91	102.0	1.81	104.0	2.11	107.0
GR	2.36	109.0	2.61	109.5	3.11	110.0	3.56	114.0	3.71	117.0
GR	5.34	119.0	5.69	119.0	5.61	120.0	5.76	129.5	6.61	138.5
GR	6.81	144.0	9.61	149.8	10.56	152.0	10.56	156.0	7.91	161.0
GR	6.91	161.5	7.91	168.5	8.41	249.0				
X1	6.942	38	51.20	152.00	5.00	5.00	5.00			
GR	8.21	.0	8.01	15.5	8.11	35.0	8.11	42.5	10.61	47.5
GR	10.61	51.0	10.61	51.2	9.31	53.7	5.91	60.0	5.86	83.0
GR	5.69	89.0	5.34	89.0	3.46	90.8	3.41	93.5	2.61	94.0
GR	2.76	94.0	2.26	99.0	1.91	102.0	1.81	104.0	2.11	107.0
GR	2.36	109.0	2.61	109.5	3.11	110.0	3.56	114.0	3.71	117.0
GR	5.34	119.0	5.69	119.0	5.61	120.0	5.76	129.5	6.61	138.5
GR	6.81	144.0	9.61	149.8	10.56	152.0	10.56	156.0	7.91	161.0
GR	6.91	161.5	7.91	168.5	8.41	249.0				
X1	6.965	54	90.50	190.50	23.00	23.00	23.00			
GR	14.07	.0	14.17	10.5	13.97	14.0	8.27	28.0	8.27	34.5
GR	7.87	38.0	7.87	47.0	7.52	56.0	7.07	56.9	7.07	60.5
GR	6.57	67.0	5.42	68.0	5.42	74.5	9.42	80.9	9.42	85.1
GR	10.17	87.0	10.17	90.0	10.17	90.5	9.12	92.5	8.77	97.0
GR	8.17	98.3	5.42	104.0	5.42	105.0	5.17	105.0	5.17	122.0
GR	5.42	122.0	5.42	124.0	5.27	124.5	3.52	128.0	3.52	135.5
GR	2.72	136.5	2.22	138.0	2.12	142.5	2.72	144.5	3.97	146.5
GR	3.67	155.0	5.37	157.5	5.37	160.0	5.17	160.3	5.17	176.5
GR	8.07	182.7	8.07	186.2	9.67	189.0	10.52	190.5	10.49	191.0
GR	10.49	194.5	5.97	203.0	5.97	203.5	5.37	203.5	5.37	204.1
GR	5.97	204.1	5.97	205.0	5.27	205.5	5.27	325.0		
X1	7.170	42	80.20	191.00	205.00	205.00	205.00			
GR	11.28	.0	11.38	11.5	11.58	18.5	12.03	27.0	12.23	36.0
GR	12.13	39.5	9.63	47.0	9.13	55.5	5.88	59.0	5.88	67.0
GR	11.03	76.7	11.03	80.0	11.03	80.2	9.33	82.7	5.33	90.8
GR	5.33	126.5	5.43	126.5	5.43	127.5	4.23	129.5	3.78	141.5
GR	2.98	143.5	2.28	145.5	2.53	149.0	2.98	153.0	3.83	156.0
GR	3.83	159.0	5.58	164.5	5.58	167.0	5.23	167.5	5.23	180.0
GR	9.43	189.0	10.64	191.0	10.61	191.5	10.61	195.0	6.18	202.0
GR	6.18	202.5	5.58	202.5	5.58	203.1	6.18	203.1	6.18	204.0
GR	5.43	204.5	5.43	315.0						
X1	7.360	52	120.00	211.00	190.00	190.00	190.00			
GR	5.72	.0	5.72	35.0	5.67	35.5	5.67	55.5	5.72	56.0
GR	5.72	83.5	6.02	84.0	6.02	87.5	4.12	91.2	4.12	100.0
GR	6.52	104.5	6.52	109.0	10.22	116.0	10.22	120.0	8.82	122.5
GR	5.07	129.9	5.07	148.5	4.87	148.5	5.42	150.0	3.17	155.0
GR	2.67	157.0	2.77	158.0	3.17	159.0	3.37	159.5	3.37	160.0
GR	3.17	160.5	2.57	165.5	2.67	167.0	2.67	172.5	3.17	175.5

GR	5.72	179.5	5.72	181.0	5.32	181.5	5.32	200.5	9.12	208.5
GR	10.33	211.0	10.33	214.0	6.27	224.0	6.27	226.0	5.67	226.0
GR	5.67	226.6	6.27	226.6	5.37	228.0	5.37	237.5	5.97	239.5
GR	5.97	241.0	5.47	241.0	5.47	242.5	5.97	242.5	5.97	244.5
GR	5.37	246.5	5.37	330.0						
X1	7.565	44	120.00	211.00	205.00	205.00	205.00			
GR	6.04	.0	6.04	38.5	5.79	39.0	5.79	78.0	5.79	81.5
GR	6.64	82.8	6.64	87.0	4.24	91.5	4.24	100.5	6.74	105.0
GR	6.74	107.5	9.94	112.5	10.04	116.5	10.04	120.0	8.69	122.9
GR	5.19	131.5	5.19	149.0	5.34	149.5	5.34	150.5	4.79	151.5
GR	3.24	155.5	1.94	158.0	3.24	159.5	3.44	160.5	3.44	161.5
GR	3.24	162.5	2.64	166.0	2.69	170.5	3.24	173.5	5.49	180.0
GR	5.49	180.5	5.19	181.0	5.19	200.0	8.99	208.3	10.23	211.0
GR	10.23	214.0	6.49	221.0	6.49	223.5	5.89	223.5	5.89	224.1
GR	6.49	224.1	6.49	225.0	5.49	226.3	5.49	327.0		

건설교통부

1.4 개수전 빈도별 홍수위 산정결과

건설교통부

■ 홍수위 산정결과 (개수전)

▶ 금강(대청댐하류) 홍수위산정결과(개수전)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: KumKang Reach: Down-Stream

Rivers = 1
Hydraulic Reaches = 1
River Stations = 322
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		12,760	-7.48	4.62	-3.45	1.59
0.000	80yr		13,750	-7.48	4.62	-3.27	1.72
0.000	100yr		14,320	-7.48	4.62	-3.17	1.79
0.000	150yr		15,230	-7.48	4.62	-3.04	1.90
0.000	200yr		15,850	-7.48	4.62	-2.94	1.98
0.350	50yr	350	12,760	-14.68	4.62		0.79
0.350	80yr	350	13,750	-14.68	4.62		0.85
0.350	100yr	350	14,320	-14.68	4.62		0.88
0.350	150yr	350	15,230	-14.68	4.62		0.94
0.350	200yr	350	15,850	-14.68	4.62		0.98
0.720	50yr	720	12,760	-10.08	4.62	-3.53	0.87
0.720	80yr	720	13,750	-10.08	4.62	-3.42	0.94
0.720	100yr	720	14,320	-10.08	4.62	-3.37	0.98
0.720	150yr	720	15,230	-10.08	4.62	-3.26	1.04
0.720	200yr	720	15,850	-10.08	4.62	-3.17	1.08
1.140	50yr	1,140	12,700	-7.77	4.62	-2.94	1.09
1.140	80yr	1,140	13,670	-7.77	4.63	-2.79	1.18
1.140	100yr	1,140	14,230	-7.77	4.63	-2.70	1.22
1.140	150yr	1,140	15,140	-7.77	4.63	-2.57	1.30
1.140	200yr	1,140	15,760	-7.77	4.63	-2.49	1.36
1.480	50yr	1,480	12,700	-11.06	4.63	-3.76	1.20
1.480	80yr	1,480	13,670	-11.06	4.63	-3.61	1.30
1.480	100yr	1,480	14,230	-11.06	4.63	-3.55	1.35
1.480	150yr	1,480	15,140	-11.06	4.63	-3.42	1.43
1.480	200yr	1,480	15,760	-11.06	4.63	-3.34	1.49
2.020	50yr	2,020	12,700	-9.56	4.65	-2.92	1.14
2.020	80yr	2,020	13,670	-9.56	4.66	-2.79	1.22
2.020	100yr	2,020	14,230	-9.56	4.67	-2.72	1.27
2.020	150yr	2,020	15,140	-9.56	4.67	-2.60	1.35
2.020	200yr	2,020	15,760	-9.56	4.68	-2.52	1.41
2.450	50yr	2,450	12,700	-7.16	4.67	-1.76	1.13
2.450	80yr	2,450	13,670	-7.16	4.70	-1.64	1.21
2.450	100yr	2,450	14,230	-7.16	4.70	-1.58	1.26
2.450	150yr	2,450	15,140	-7.16	4.71	-1.48	1.34
2.450	200yr	2,450	15,760	-7.16	4.72	-1.41	1.39
2.920	50yr	2,920	12,700	-6.76	4.69	-1.77	1.12
2.920	80yr	2,920	13,670	-6.76	4.74	-1.63	1.20
2.920	100yr	2,920	14,230	-6.76	4.73	-1.56	1.25
2.920	150yr	2,920	15,140	-6.76	4.75	-1.40	1.33
2.920	200yr	2,920	15,760	-6.76	4.76	-1.24	1.38
3.330	50yr	3,330	12,700	-7.25	4.72	-1.87	1.14
3.330	80yr	3,330	13,670	-7.25	4.76	-1.71	1.22
3.330	100yr	3,330	14,230	-7.25	4.76	-1.63	1.27
3.330	150yr	3,330	15,140	-7.25	4.78	-1.46	1.35
3.330	200yr	3,330	15,760	-7.25	4.80	-1.37	1.40

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
3.780	50yr	3.780	12.700	-9.05	4.73	-0.65	1.50
3.780	80yr	3.780	13.670	-9.05	4.77	-0.42	1.60
3.780	100yr	3.780	14.230	-9.05	4.78	-0.22	1.66
3.780	150yr	3.780	15.140	-9.05	4.79	-0.02	1.77
3.780	200yr	3.780	15.760	-9.05	4.80	0.13	1.84
4.240	50yr	4.240	12.700	-11.04	4.78	-2.95	1.48
4.240	80yr	4.240	13.670	-11.04	4.84	-2.59	1.58
4.240	100yr	4.240	14.230	-11.04	4.85	-2.38	1.64
4.240	150yr	4.240	15.140	-11.04	4.87	-2.00	1.74
4.240	200yr	4.240	15.760	-11.04	4.89	-1.46	1.81
4.567	50yr	4.567	12.700	-12.24	4.84	-2.72	1.39
4.567	80yr	4.567	13.670	-12.24	4.90	-2.43	1.48
4.567	100yr	4.567	14.230	-12.24	4.91	-2.26	1.54
4.567	150yr	4.567	15.140	-12.24	4.94	-2.00	1.63
4.567	200yr	4.567	15.760	-12.24	4.96	-1.82	1.69
4.580		Bridge					
4.593	50yr	4.593	12.700	-12.24	4.86	-2.73	1.39
4.593	80yr	4.593	13.670	-12.24	4.92	-2.43	1.48
4.593	100yr	4.593	14.230	-12.24	4.94	-2.26	1.54
4.593	150yr	4.593	15.140	-12.24	4.96	-2.00	1.63
4.593	200yr	4.593	15.760	-12.24	4.99	-1.82	1.69
4.860	50yr	4.860	12.700	-9.74	4.88	-0.83	1.39
4.860	80yr	4.860	13.670	-9.74	4.95	-0.53	1.49
4.860	100yr	4.860	14.230	-9.74	4.96	-0.41	1.54
4.860	150yr	4.860	15.140	-9.74	4.99	-0.21	1.63
4.860	200yr	4.860	15.760	-9.74	5.02	-0.14	1.69
5.390	50yr	5.390	12.700	-8.34	4.95	-2.15	1.19
5.390	80yr	5.390	13.670	-8.34	5.02	-1.95	1.27
5.390	100yr	5.390	14.230	-8.34	5.04	-1.84	1.32
5.390	150yr	5.390	15.140	-8.34	5.08	-1.67	1.40
5.390	200yr	5.390	15.760	-8.34	5.12	-1.57	1.45
6.110	50yr	6.110	12.700	-6.13	4.98	-1.61	1.31
6.110	80yr	6.110	13.670	-6.13	5.06	-1.48	1.40
6.110	100yr	6.110	14.230	-6.13	5.08	-1.40	1.45
6.110	150yr	6.110	15.140	-6.13	5.13	-1.29	1.54
6.110	200yr	6.110	15.760	-6.13	5.16	-1.21	1.59
6.750	50yr	6.750	12.700	-8.73	5.03	-1.22	1.24
6.750	80yr	6.750	13.670	-8.73	5.11	-1.12	1.32
6.750	100yr	6.750	14.230	-8.73	5.14	-0.95	1.37
6.750	150yr	6.750	15.140	-8.73	5.19	-0.75	1.45
6.750	200yr	6.750	15.760	-8.73	5.24	-0.62	1.49
7.210	50yr	7.210	12.700	-8.22	5.07	-1.11	1.12
7.210	80yr	7.210	13.670	-8.22	5.16	-0.92	1.19
7.210	100yr	7.210	14.230	-8.22	5.20	-0.81	1.24
7.210	150yr	7.210	15.140	-8.22	5.25	-0.66	1.31
7.210	200yr	7.210	15.760	-8.22	5.32	-0.56	1.35
7.740	50yr	7.740	12.700	-7.42	5.11	-1.02	1.16
7.740	80yr	7.740	13.670	-7.42	5.20	-0.89	1.23
7.740	100yr	7.740	14.230	-7.42	5.24	-0.82	1.27
7.740	150yr	7.740	15.140	-7.42	5.30	-0.74	1.34
7.740	200yr	7.740	15.760	-7.42	5.37	-0.66	1.38
8.160	50yr	8.160	12.700	-11.52	5.14	-0.69	1.21
8.160	80yr	8.160	13.670	-11.52	5.23	-0.57	1.28
8.160	100yr	8.160	14.230	-11.52	5.27	-0.48	1.33

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
8.160	150yr	8.160	15.140	-11.52	5.33	-0.37	1.40
8.160	200yr	8.160	15.760	-11.52	5.40	-0.29	1.45
8.670	50yr	8.670	12.700	-5.01	5.16	0.11	1.43
8.670	80yr	8.670	13.670	-5.01	5.26	0.24	1.52
8.670	100yr	8.670	14.230	-5.01	5.29	0.31	1.58
8.670	150yr	8.670	15.140	-5.01	5.36	0.41	1.66
8.670	200yr	8.670	15.760	-5.01	5.43	0.48	1.71
9.170	50yr	9.170	12.700	-6.71	5.20	-0.35	1.43
9.170	80yr	9.170	13.670	-6.71	5.30	-0.19	1.52
9.170	100yr	9.170	14.230	-6.71	5.34	-0.11	1.58
9.170	150yr	9.170	15.140	-6.71	5.42	-0.02	1.66
9.170	200yr	9.170	15.760	-6.71	5.49	0.06	1.71
9.640	50yr	9.640	12.700	-6.70	5.24	-0.37	1.46
9.640	80yr	9.640	13.670	-6.70	5.35	-0.22	1.55
9.640	100yr	9.640	14.230	-6.70	5.38	-0.18	1.60
9.640	150yr	9.640	15.140	-6.70	5.48	-0.06	1.68
9.640	200yr	9.640	15.760	-6.70	5.55	0.02	1.74
10.130	50yr	10.130	12.700	-4.20	5.28	0.17	1.58
10.130	80yr	10.130	13.670	-4.20	5.39	0.29	1.68
10.130	100yr	10.130	14.230	-4.20	5.42	0.36	1.74
10.130	150yr	10.130	15.140	-4.20	5.53	0.47	1.82
10.130	200yr	10.130	15.760	-4.20	5.60	0.55	1.88
10.600	50yr	10.600	12.700	-4.50	5.32	-0.23	1.70
10.600	80yr	10.600	13.670	-4.50	5.43	-0.02	1.80
10.600	100yr	10.600	14.230	-4.50	5.47	0.05	1.87
10.600	150yr	10.600	15.140	-4.50	5.57	0.24	1.96
10.600	200yr	10.600	15.760	-4.50	5.65	0.36	2.02
11.060	50yr	11.060	12.700	-7.69	5.36	-0.30	1.84
11.060	80yr	11.060	13.670	-7.69	5.48	-0.09	1.95
11.060	100yr	11.060	14.230	-7.69	5.51	0.03	2.02
11.060	150yr	11.060	15.140	-7.69	5.62	0.15	2.12
11.060	200yr	11.060	15.760	-7.69	5.70	0.24	2.19
11.520	50yr	11.520	12.700	-24.99	5.49	-12.82	1.23
11.520	80yr	11.520	13.670	-24.99	5.63	-12.47	1.31
11.520	100yr	11.520	14.230	-24.99	5.67	-12.28	1.36
11.520	150yr	11.520	15.140	-24.99	5.80	-11.98	1.43
11.520	200yr	11.520	15.760	-24.99	5.89	-11.76	1.48
12.250	50yr	12.250	12.700	-6.28	5.49	-0.24	1.59
12.250	80yr	12.250	13.670	-6.28	5.63	-0.11	1.68
12.250	100yr	12.250	14.230	-6.28	5.68	-0.02	1.74
12.250	150yr	12.250	15.140	-6.28	5.80	0.10	1.82
12.250	200yr	12.250	15.760	-6.28	5.90	0.18	1.87
12.850	50yr	12.850	12.700	-10.98	5.56	0.57	1.63
12.850	80yr	12.850	13.670	-10.98	5.70	0.77	1.72
12.850	100yr	12.850	14.230	-10.98	5.76	0.78	1.77
12.850	150yr	12.850	15.140	-10.98	5.89	0.98	1.85
12.850	200yr	12.850	15.760	-10.98	5.98	1.02	1.90
13.450	50yr	13.450	12.700	-5.88	5.68	-0.01	1.25
13.450	80yr	13.450	13.670	-5.88	5.84	0.11	1.31
13.450	100yr	13.450	14.230	-5.88	5.90	0.18	1.36
13.450	150yr	13.450	15.140	-5.88	6.04	0.28	1.42
13.450	200yr	13.450	15.760	-5.88	6.14	0.35	1.45
13.970	50yr	13.970	12.640	-4.97	5.71	0.24	1.39
13.970	80yr	13.970	13.600	-4.97	5.87	0.36	1.46
13.970	100yr	13.970	14.160	-4.97	5.93	0.43	1.51

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
13.970	150yr	13.970	15.060	-4.97	6.07	0.54	1.57
13.970	200yr	13.970	15.670	-4.97	6.18	0.61	1.61
14.490	50yr	14.490	12.640	-5.87	5.75	0.14	1.44
14.490	80yr	14.490	13.600	-5.87	5.91	0.29	1.51
14.490	100yr	14.490	14.160	-5.87	5.97	0.36	1.56
14.490	150yr	14.490	15.060	-5.87	6.12	0.47	1.63
14.490	200yr	14.490	15.670	-5.87	6.22	0.54	1.67
15.020	50yr	15.020	12.640	-6.66	5.78	0.21	1.67
15.020	80yr	15.020	13.600	-6.66	5.94	0.38	1.76
15.020	100yr	15.020	14.160	-6.66	6.01	0.47	1.81
15.020	150yr	15.020	15.060	-6.66	6.16	0.61	1.89
15.020	200yr	15.020	15.670	-6.66	6.26	0.71	1.95
15.460	50yr	15.460	12.640	-7.76	5.81	0.88	1.88
15.460	80yr	15.460	13.600	-7.76	5.98	1.04	1.98
15.460	100yr	15.460	14.160	-7.76	6.04	1.10	2.05
15.460	150yr	15.460	15.060	-7.76	6.19	1.25	2.14
15.460	200yr	15.460	15.670	-7.76	6.30	1.29	2.19
15.960	50yr	15.960	12.640	-7.86	5.89	1.03	1.94
15.960	80yr	15.960	13.600	-7.86	6.06	1.27	2.03
15.960	100yr	15.960	14.160	-7.86	6.13	1.37	2.10
15.960	150yr	15.960	15.060	-7.86	6.29	1.56	2.18
15.960	200yr	15.960	15.670	-7.86	6.40	1.66	2.24
16.420	50yr	16.420	12.640	-8.05	5.98	0.32	1.86
16.420	80yr	16.420	13.600	-8.05	6.16	0.77	1.95
16.420	100yr	16.420	14.160	-8.05	6.24	0.92	2.01
16.420	150yr	16.420	15.060	-8.05	6.40	1.09	2.09
16.420	200yr	16.420	15.670	-8.05	6.51	1.28	2.14
16.910	50yr	16.910	12.640	-12.95	6.08	-1.11	1.90
16.910	80yr	16.910	13.600	-12.95	6.25	-0.91	1.99
16.910	100yr	16.910	14.160	-12.95	6.33	-0.76	2.05
16.910	150yr	16.910	15.060	-12.95	6.50	-0.58	2.13
16.910	200yr	16.910	15.670	-12.95	6.62	-0.39	2.18
17.373	50yr	17.373	12.640	-10.84	6.18	-0.83	1.77
17.373	80yr	17.373	13.600	-10.84	6.36	-0.60	1.85
17.373	100yr	17.373	14.160	-10.84	6.45	-0.47	1.90
17.373	150yr	17.373	15.060	-10.84	6.62	-0.32	1.97
17.373	200yr	17.373	15.670	-10.84	6.74	-0.19	2.01
17.380		Bridge					
17.386	50yr	17.386	12.640	-10.84	6.20	-0.84	1.77
17.386	80yr	17.386	13.600	-10.84	6.39	-0.60	1.84
17.386	100yr	17.386	14.160	-10.84	6.47	-0.48	1.89
17.386	150yr	17.386	15.060	-10.84	6.65	-0.33	1.96
17.386	200yr	17.386	15.670	-10.84	6.77	-0.20	2.00
17.850	50yr	17.850	12.640	-7.54	6.29	0.90	1.67
17.850	80yr	17.850	13.600	-7.54	6.48	1.07	1.75
17.850	100yr	17.850	14.160	-7.54	6.57	1.13	1.80
17.850	150yr	17.850	15.060	-7.54	6.75	1.25	1.86
17.850	200yr	17.850	15.670	-7.54	6.88	1.39	1.90
18.190	50yr	18.190	12.640	-5.34	6.34	0.72	1.66
18.190	80yr	18.190	13.600	-5.34	6.53	0.86	1.74
18.190	100yr	18.190	14.160	-5.34	6.62	0.95	1.79
18.190	150yr	18.190	15.060	-5.34	6.80	1.07	1.86
18.190	200yr	18.190	15.670	-5.34	6.93	1.15	1.90
18.710	50yr	18.710	12.640	-4.93	6.40	0.99	1.63

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
18.710	80yr	18,710	13,600	-4.93	6.60	1.14	1.71
18.710	100yr	18,710	14,160	-4.93	6.69	1.23	1.75
18.710	150yr	18,710	15,060	-4.93	6.89	1.38	1.81
18.710	200yr	18,710	15,670	-4.93	7.02	1.47	1.85
19.180	50yr	19,180	12,640	-6.03	6.46	0.50	1.59
19.180	80yr	19,180	13,600	-6.03	6.66	0.66	1.67
19.180	100yr	19,180	14,160	-6.03	6.76	0.76	1.71
19.180	150yr	19,180	15,060	-6.03	6.97	0.91	1.77
19.180	200yr	19,180	15,670	-6.03	7.10	1.01	1.81
19.620	50yr	19,620	12,640	-5.72	6.51	0.80	1.70
19.620	80yr	19,620	13,600	-5.72	6.72	0.97	1.77
19.620	100yr	19,620	14,160	-5.72	6.82	1.06	1.82
19.620	150yr	19,620	15,060	-5.72	7.03	1.21	1.87
19.620	200yr	19,620	15,670	-5.72	7.16	1.31	1.92
20.130	50yr	20,130	12,640	-5.92	6.58	0.91	1.77
20.130	80yr	20,130	13,600	-5.92	6.79	1.09	1.85
20.130	100yr	20,130	14,160	-5.92	6.89	1.20	1.90
20.130	150yr	20,130	15,060	-5.92	7.11	1.38	1.95
20.130	200yr	20,130	15,670	-5.92	7.23	1.51	2.00
20.580	50yr	20,580	12,640	-8.81	6.65	0.41	1.92
20.580	80yr	20,580	13,600	-8.81	6.85	0.69	2.00
20.580	100yr	20,580	14,160	-8.81	6.96	0.83	2.05
20.580	150yr	20,580	15,060	-8.81	7.18	1.04	2.11
20.580	200yr	20,580	15,670	-8.81	7.30	1.18	2.16
21.000	50yr	21,000	12,620	-13.40	6.71	-1.69	2.19
21.000	80yr	21,000	13,570	-13.40	6.92	-1.29	2.27
21.000	100yr	21,000	14,130	-13.40	7.03	-1.06	2.32
21.000	150yr	21,000	15,030	-13.40	7.25	-0.71	2.38
21.000	200yr	21,000	15,640	-13.40	7.37	-0.52	2.44
21.400	50yr	21,400	12,620	-20.01	6.89	-1.62	1.75
21.400	80yr	21,400	13,570	-20.01	7.11	-1.35	1.82
21.400	100yr	21,400	14,130	-20.01	7.23	-1.22	1.86
21.400	150yr	21,400	15,030	-20.01	7.46	-0.98	1.92
21.400	200yr	21,400	15,640	-20.01	7.58	-0.84	1.96
21.660	50yr	21,660	12,620	-5.50	6.93	0.54	1.76
21.660	80yr	21,660	13,570	-5.50	7.15	0.73	1.83
21.660	100yr	21,660	14,130	-5.50	7.27	0.87	1.88
21.660	150yr	21,660	15,030	-5.50	7.50	1.06	1.93
21.660	200yr	21,660	15,640	-5.50	7.62	1.18	1.98
22.110	50yr	22,110	12,620	-4.70	7.01	0.54	1.68
22.110	80yr	22,110	13,570	-4.70	7.23	0.70	1.76
22.110	100yr	22,110	14,130	-4.70	7.35	0.80	1.81
22.110	150yr	22,110	15,030	-4.70	7.58	0.95	1.87
22.110	200yr	22,110	15,640	-4.70	7.71	1.04	1.91
22.550	50yr	22,550	12,620	-6.60	7.07	0.95	1.75
22.550	80yr	22,550	13,570	-6.60	7.29	1.14	1.82
22.550	100yr	22,550	14,130	-6.60	7.41	1.28	1.87
22.550	150yr	22,550	15,030	-6.60	7.64	1.46	1.93
22.550	200yr	22,550	15,640	-6.60	7.77	1.56	1.97
23.250	50yr	23,250	12,620	-15.09	7.16	0.49	1.76
23.250	80yr	23,250	13,570	-15.09	7.40	0.78	1.83
23.250	100yr	23,250	14,130	-15.09	7.52	0.87	1.88
23.250	150yr	23,250	15,030	-15.09	7.75	1.14	1.93
23.250	200yr	23,250	15,640	-15.09	7.88	1.15	1.98
23.550	50yr	23,550	12,620	-7.88	7.25	0.28	1.47

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
23.550	80yr	23.550	13.570	-7.88	7.49	0.59	1.54
23.550	100yr	23.550	14.130	-7.88	7.62	0.88	1.57
23.550	150yr	23.550	15.030	-7.88	7.86	1.09	1.63
23.550	200yr	23.550	15.640	-7.88	7.99	1.18	1.67
24.050	50yr	24.050	12.620	-4.18	7.30	0.80	1.45
24.050	80yr	24.050	13.570	-4.18	7.54	0.96	1.51
24.050	100yr	24.050	14.130	-4.18	7.67	1.04	1.55
24.050	150yr	24.050	15.030	-4.18	7.91	1.18	1.60
24.050	200yr	24.050	15.640	-4.18	8.05	1.28	1.64
24.680	50yr	24.680	12.520	-7.88	7.36	0.70	1.41
24.680	80yr	24.680	13.460	-7.88	7.60	1.00	1.46
24.680	100yr	24.680	14.000	-7.88	7.74	1.28	1.49
24.680	150yr	24.680	14.910	-7.88	7.98	1.52	1.54
24.680	200yr	24.680	15.500	-7.88	8.12	1.65	1.57
25.330	50yr	25.330	12.520	-5.46	7.42	1.64	1.54
25.330	80yr	25.330	13.460	-5.46	7.67	1.83	1.60
25.330	100yr	25.330	14.000	-5.46	7.80	1.92	1.63
25.330	150yr	25.330	14.910	-5.46	8.04	2.74	1.68
25.330	200yr	25.330	15.500	-5.46	8.18	2.92	1.72
25.810	50yr	25.810	12.520	-6.47	7.48	1.98	1.50
25.810	80yr	25.810	13.460	-6.47	7.73	2.17	1.56
25.810	100yr	25.810	14.000	-6.47	7.87	2.64	1.59
25.810	150yr	25.810	14.910	-6.47	8.10	2.82	1.64
25.810	200yr	25.810	15.500	-6.47	8.24	2.89	1.67
26.140	50yr	26.140	12.520	-5.15	7.53	2.07	1.45
26.140	80yr	26.140	13.460	-5.15	7.78	2.24	1.50
26.140	100yr	26.140	14.000	-5.15	7.92	2.36	1.53
26.140	150yr	26.140	14.910	-5.15	8.15	2.91	1.58
26.140	200yr	26.140	15.500	-5.15	8.29	2.96	1.61
26.600	50yr	26.600	12.520	-5.66	7.58	1.75	1.50
26.600	80yr	26.600	13.460	-5.66	7.83	1.92	1.56
26.600	100yr	26.600	14.000	-5.66	7.97	2.01	1.59
26.600	150yr	26.600	14.910	-5.66	8.21	2.15	1.64
26.600	200yr	26.600	15.500	-5.66	8.35	2.23	1.68
26.990	50yr	26.990	12.520	-5.36	7.61	1.19	1.60
26.990	80yr	26.990	13.460	-5.36	7.87	1.38	1.66
26.990	100yr	26.990	14.000	-5.36	8.01	1.49	1.70
26.990	150yr	26.990	14.910	-5.36	8.24	1.65	1.75
26.990	200yr	26.990	15.500	-5.36	8.39	1.74	1.79
27.400	50yr	27.400	12.520	-21.35	7.65	-6.87	1.69
27.400	80yr	27.400	13.460	-21.35	7.91	-6.35	1.76
27.400	100yr	27.400	14.000	-21.35	8.05	-6.09	1.81
27.400	150yr	27.400	14.910	-21.35	8.28	-5.70	1.87
27.400	200yr	27.400	15.500	-21.35	8.43	-5.45	1.92
27.890	50yr	27.890	12.520	-10.85	7.68	0.50	2.03
27.890	80yr	27.890	13.460	-10.85	7.94	0.79	2.11
27.890	100yr	27.890	14.000	-10.85	8.08	0.94	2.15
27.890	150yr	27.890	14.910	-10.85	8.31	1.19	2.22
27.890	200yr	27.890	15.500	-10.85	8.46	1.36	2.27
28.290	50yr	28.290	12.520	-6.24	7.80	1.13	1.82
28.290	80yr	28.290	13.460	-6.24	8.06	1.36	1.88
28.290	100yr	28.290	14.000	-6.24	8.21	1.49	1.92
28.290	150yr	28.290	14.910	-6.24	8.44	1.75	1.98
28.290	200yr	28.290	15.500	-6.24	8.59	1.88	2.02
28.630	50yr	28.630	12.520	-4.64	7.90	1.78	1.50

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
28.630	80yr	28.630	13.460	-4.64	8.18	2.36	1.55
28.630	100yr	28.630	14.000	-4.64	8.33	2.75	1.58
28.630	150yr	28.630	14.910	-4.64	8.57	2.95	1.62
28.630	200yr	28.630	15.500	-4.64	8.72	3.04	1.65
29.030	50yr	29.030	12.520	-7.34	7.96	1.11	1.47
29.030	80yr	29.030	13.460	-7.34	8.23	1.35	1.52
29.030	100yr	29.030	14.000	-7.34	8.38	1.48	1.55
29.030	150yr	29.030	14.910	-7.34	8.62	1.69	1.59
29.030	200yr	29.030	15.500	-7.34	8.78	1.83	1.62
29.570	50yr	29.570	12.520	-9.53	8.01	0.65	1.61
29.570	80yr	29.570	13.460	-9.53	8.28	0.90	1.66
29.570	100yr	29.570	14.000	-9.53	8.43	1.04	1.69
29.570	150yr	29.570	14.910	-9.53	8.68	1.33	1.75
29.570	200yr	29.570	15.500	-9.53	8.83	1.50	1.78
30.160	50yr	30.160	12.520	-6.43	8.11	2.12	1.36
30.160	80yr	30.160	13.460	-6.43	8.39	2.25	1.41
30.160	100yr	30.160	14.000	-6.43	8.54	2.36	1.43
30.160	150yr	30.160	14.910	-6.43	8.79	3.28	1.48
30.160	200yr	30.160	15.500	-6.43	8.94	3.40	1.50
30.830	50yr	30.830	12.520	-2.92	8.17	2.00	1.34
30.830	80yr	30.830	13.460	-2.92	8.45	2.15	1.38
30.830	100yr	30.830	14.000	-2.92	8.60	2.24	1.41
30.830	150yr	30.830	14.910	-2.92	8.85	2.36	1.46
30.830	200yr	30.830	15.500	-2.92	9.01	2.44	1.48
31.400	50yr	31.400	12.520	-7.22	8.17	1.16	1.83
31.400	80yr	31.400	13.460	-7.22	8.45	1.46	1.89
31.400	100yr	31.400	14.000	-7.22	8.61	1.62	1.93
31.400	150yr	31.400	14.910	-7.22	8.85	2.09	1.98
31.400	200yr	31.400	15.500	-7.22	9.01	2.36	2.02
32.120	50yr	32.120	12.520	-13.72	8.29	-0.37	2.05
32.120	80yr	32.120	13.460	-13.72	8.57	0.03	2.10
32.120	100yr	32.120	14.000	-13.72	8.72	0.26	2.13
32.120	150yr	32.120	14.910	-13.72	8.97	0.68	2.19
32.120	200yr	32.120	15.500	-13.72	9.12	0.92	2.22
32.590	50yr	32.590	12.520	-12.21	8.44	-0.44	1.78
32.590	80yr	32.590	13.460	-12.21	8.73	-0.06	1.83
32.590	100yr	32.590	14.000	-12.21	8.88	0.15	1.86
32.590	150yr	32.590	14.910	-12.21	9.13	0.50	1.91
32.590	200yr	32.590	15.500	-12.21	9.29	0.72	1.95
32.913	50yr	32.913	12.520	-13.90	8.50	-1.83	1.81
32.913	80yr	32.913	13.460	-13.90	8.78	-1.44	1.87
32.913	100yr	32.913	14.000	-13.90	8.93	-1.23	1.90
32.913	150yr	32.913	14.910	-13.90	9.18	-0.87	1.95
32.913	200yr	32.913	15.500	-13.90	9.34	-0.64	1.99
32.920		Bridge					
32.927	50yr	32.927	12.520	-13.90	8.51	-1.83	1.81
32.927	80yr	32.927	13.460	-13.90	8.79	-1.45	1.86
32.927	100yr	32.927	14.000	-13.90	8.95	-1.23	1.89
32.927	150yr	32.927	14.910	-13.90	9.19	-0.88	1.95
32.927	200yr	32.927	15.500	-13.90	9.35	-0.65	1.98
33.060	50yr	33.060	12.520	-11.71	8.54	-2.76	1.71
33.060	80yr	33.060	13.460	-11.71	8.83	-2.40	1.76
33.060	100yr	33.060	14.000	-11.71	8.98	-2.18	1.80
33.060	150yr	33.060	14.910	-11.71	9.23	-1.82	1.85
33.060	200yr	33.060	15.500	-11.71	9.39	-1.58	1.88

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
33.270	50yr	33,270	12,520	-14.31	8.57	-0.04	1.77
33.270	80yr	33,270	13,460	-14.31	8.86	0.30	1.83
33.270	100yr	33,270	14,000	-14.31	9.01	0.45	1.86
33.270	150yr	33,270	14,910	-14.31	9.25	0.73	1.92
33.270	200yr	33,270	15,500	-14.31	9.41	0.96	1.96
33.830	50yr	33,830	12,520	-5.50	8.69	1.87	1.52
33.830	80yr	33,830	13,460	-5.50	8.98	2.10	1.56
33.830	100yr	33,830	14,000	-5.50	9.14	2.22	1.59
33.830	150yr	33,830	14,910	-5.50	9.39	2.47	1.63
33.830	200yr	33,830	15,500	-5.50	9.55	2.58	1.66
34.490	50yr	34,490	11,880	-3.30	8.77	4.02	1.60
34.490	80yr	34,490	12,750	-3.30	9.06	4.19	1.65
34.490	100yr	34,490	13,250	-3.30	9.21	4.28	1.68
34.490	150yr	34,490	14,130	-3.30	9.46	4.38	1.73
34.490	200yr	34,490	14,740	-3.30	9.62	4.46	1.77
34.920	50yr	34,920	11,880	-5.20	8.82	1.68	1.64
34.920	80yr	34,920	12,750	-5.20	9.12	1.96	1.69
34.920	100yr	34,920	13,250	-5.20	9.27	2.10	1.73
34.920	150yr	34,920	14,130	-5.20	9.52	2.33	1.78
34.920	200yr	34,920	14,740	-5.20	9.68	2.52	1.82
35.370	50yr	35,370	11,880	-6.89	8.90	0.93	1.45
35.370	80yr	35,370	12,750	-6.89	9.19	1.95	1.50
35.370	100yr	35,370	13,250	-6.89	9.35	2.05	1.53
35.370	150yr	35,370	14,130	-6.89	9.60	2.30	1.58
35.370	200yr	35,370	14,740	-6.89	9.77	2.41	1.62
36.000	50yr	36,000	11,880	-6.29	8.96	1.68	1.63
36.000	80yr	36,000	12,750	-6.29	9.25	1.92	1.68
36.000	100yr	36,000	13,250	-6.29	9.40	2.09	1.71
36.000	150yr	36,000	14,130	-6.29	9.66	2.30	1.77
36.000	200yr	36,000	14,740	-6.29	9.82	2.48	1.81
36.560	50yr	36,560	11,880	-3.28	9.01	2.98	1.70
36.560	80yr	36,560	12,750	-3.28	9.31	3.24	1.76
36.560	100yr	36,560	13,250	-3.28	9.46	3.50	1.79
36.560	150yr	36,560	14,130	-3.28	9.72	3.94	1.85
36.560	200yr	36,560	14,740	-3.28	9.88	4.39	1.89
37.010	50yr	37,010	11,880	-3.08	9.07	3.41	1.83
37.010	80yr	37,010	12,750	-3.08	9.36	3.65	1.88
37.010	100yr	37,010	13,250	-3.08	9.52	3.69	1.91
37.010	150yr	37,010	14,130	-3.08	9.78	4.80	1.96
37.010	200yr	37,010	14,740	-3.08	9.95	4.96	2.00
37.710	50yr	37,710	11,880	-3.08	9.19	3.27	1.85
37.710	80yr	37,710	12,750	-3.08	9.49	3.52	1.90
37.710	100yr	37,710	13,250	-3.08	9.64	3.66	1.93
37.710	150yr	37,710	14,130	-3.08	9.90	4.82	1.99
37.710	200yr	37,710	14,740	-3.08	10.07	5.07	2.03
38.220	50yr	38,220	11,880	-4.07	9.18	2.97	2.64
38.220	80yr	38,220	12,750	-4.07	9.47	3.24	2.73
38.220	100yr	38,220	13,250	-4.07	9.62	3.40	2.78
38.220	150yr	38,220	14,130	-4.07	9.87	3.70	2.88
38.220	200yr	38,220	14,740	-4.07	10.04	3.89	2.94
38.620	50yr	38,620	11,770	-8.17	9.30	2.21	2.72
38.620	80yr	38,620	12,630	-8.17	9.58	2.48	2.82
38.620	100yr	38,620	13,130	-8.17	9.73	2.65	2.88
38.620	150yr	38,620	14,000	-8.17	9.98	2.94	2.98
38.620	200yr	38,620	14,640	-8.17	10.15	3.14	3.06

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
39.050	50yr	39.050	11.770	-5.76	9.49	3.11	2.44
39.050	80yr	39.050	12.630	-5.76	9.78	3.37	2.53
39.050	100yr	39.050	13.130	-5.76	9.94	3.52	2.59
39.050	150yr	39.050	14.000	-5.76	10.21	3.74	2.68
39.050	200yr	39.050	14.640	-5.76	10.38	3.91	2.75
39.520	50yr	39.520	11.770	-6.26	9.74	2.10	1.66
39.520	80yr	39.520	12.630	-6.26	10.05	3.07	1.72
39.520	100yr	39.520	13.130	-6.26	10.22	3.17	1.76
39.520	150yr	39.520	14.000	-6.26	10.50	3.34	1.82
39.520	200yr	39.520	14.640	-6.26	10.69	3.44	1.87
40.000	50yr	40.000	11.770	-9.06	9.81	0.45	1.48
40.000	80yr	40.000	12.630	-9.06	10.13	0.70	1.54
40.000	100yr	40.000	13.130	-9.06	10.30	0.84	1.57
40.000	150yr	40.000	14.000	-9.06	10.58	1.11	1.62
40.000	200yr	40.000	14.640	-9.06	10.78	1.26	1.66
40.470	50yr	40.470	11.770	-7.45	9.83	1.34	1.77
40.470	80yr	40.470	12.630	-7.45	10.14	1.60	1.84
40.470	100yr	40.470	13.130	-7.45	10.31	1.74	1.88
40.470	150yr	40.470	14.000	-7.45	10.59	2.01	1.94
40.470	200yr	40.470	14.640	-7.45	10.78	2.19	1.99
40.890	50yr	40.890	11.770	-2.55	9.84	4.15	2.15
40.890	80yr	40.890	12.630	-2.55	10.15	4.37	2.23
40.890	100yr	40.890	13.130	-2.55	10.32	4.47	2.27
40.890	150yr	40.890	14.000	-2.55	10.60	4.67	2.34
40.890	200yr	40.890	14.640	-2.55	10.79	4.81	2.40
41.490	50yr	41.490	11.770	-9.64	9.93	4.63	2.43
41.490	80yr	41.490	12.630	-9.64	10.24	4.74	2.51
41.490	100yr	41.490	13.130	-9.64	10.41	4.86	2.55
41.490	150yr	41.490	14.000	-9.64	10.69	5.11	2.64
41.490	200yr	41.490	14.640	-9.64	10.88	5.28	2.70
41.990	50yr	41.990	11.770	-6.34	10.13	3.35	2.03
41.990	80yr	41.990	12.630	-6.34	10.45	3.61	2.10
41.990	100yr	41.990	13.130	-6.34	10.62	3.69	2.14
41.990	150yr	41.990	14.000	-6.34	10.91	3.95	2.21
41.990	200yr	41.990	14.640	-6.34	11.11	4.10	2.26
42.540	50yr	42.540	11.770	-4.94	10.18	3.39	2.45
42.540	80yr	42.540	12.630	-4.94	10.49	3.69	2.52
42.540	100yr	42.540	13.130	-4.94	10.67	3.87	2.57
42.540	150yr	42.540	14.000	-4.94	10.96	4.15	2.64
42.540	200yr	42.540	14.640	-4.94	11.16	4.37	2.70
43.290	50yr	43.290	11.770	-2.63	10.46	3.42	1.98
43.290	80yr	43.290	12.630	-2.63	10.78	3.66	2.03
43.290	100yr	43.290	13.130	-2.63	10.96	3.79	2.07
43.290	150yr	43.290	14.000	-2.63	11.26	4.00	2.12
43.290	200yr	43.290	14.640	-2.63	11.47	4.19	2.17
43.850	50yr	43.850	11.770	-2.03	10.61	3.82	1.56
43.850	80yr	43.850	12.630	-2.03	10.94	4.46	1.61
43.850	100yr	43.850	13.130	-2.03	11.12	4.58	1.65
43.850	150yr	43.850	14.000	-2.03	11.43	4.70	1.70
43.850	200yr	43.850	14.640	-2.03	11.64	4.82	1.74
44.450	50yr	44.450	11.770	-4.42	10.69	3.18	1.42
44.450	80yr	44.450	12.630	-4.42	11.02	3.38	1.47
44.450	100yr	44.450	13.130	-4.42	11.20	3.49	1.50
44.450	150yr	44.450	14.000	-4.42	11.51	3.70	1.54
44.450	200yr	44.450	14.640	-4.42	11.72	3.80	1.58

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
45.060	50yr	45.060	11.770	-4.02	10.72	3.11	1.65
45.060	80yr	45.060	12.630	-4.02	11.05	3.34	1.70
45.060	100yr	45.060	13.130	-4.02	11.24	3.47	1.73
45.060	150yr	45.060	14.000	-4.02	11.54	3.73	1.78
45.060	200yr	45.060	14.640	-4.02	11.76	3.86	1.81
45.650	50yr	45.650	11.770	-7.42	10.82	0.89	1.36
45.650	80yr	45.650	12.630	-7.42	11.15	1.13	1.41
45.650	100yr	45.650	13.130	-7.42	11.34	1.26	1.44
45.650	150yr	45.650	14.000	-7.42	11.65	1.46	1.49
45.650	200yr	45.650	14.640	-7.42	11.87	1.63	1.52
46.200	50yr	46.200	11.770	-2.91	10.88	2.81	1.16
46.200	80yr	46.200	12.630	-2.91	11.22	3.11	1.20
46.200	100yr	46.200	13.130	-2.91	11.40	3.25	1.22
46.200	150yr	46.200	14.000	-2.91	11.72	3.44	1.26
46.200	200yr	46.200	14.640	-2.91	11.94	3.59	1.28
46.670	50yr	46.670	11.770	-1.71	10.90	3.62	1.25
46.670	80yr	46.670	12.630	-1.71	11.24	3.80	1.29
46.670	100yr	46.670	13.130	-1.71	11.43	3.87	1.31
46.670	150yr	46.670	14.000	-1.71	11.74	4.59	1.34
46.670	200yr	46.670	14.640	-1.71	11.96	4.70	1.37
47.270	50yr	47.270	11.770	-1.90	10.93	4.12	1.32
47.270	80yr	47.270	12.630	-1.90	11.27	4.35	1.35
47.270	100yr	47.270	13.130	-1.90	11.46	4.46	1.37
47.270	150yr	47.270	14.000	-1.90	11.77	4.62	1.41
47.270	200yr	47.270	14.640	-1.90	11.99	4.73	1.44
47.800	50yr	47.800	11.770	-3.29	10.97	3.20	1.55
47.800	80yr	47.800	12.630	-3.29	11.31	3.64	1.59
47.800	100yr	47.800	13.130	-3.29	11.49	3.83	1.61
47.800	150yr	47.800	14.000	-3.29	11.80	4.13	1.66
47.800	200yr	47.800	14.640	-3.29	12.02	4.32	1.69
48.100	50yr	48.100	11.770	-4.38	11.00	1.88	1.58
48.100	80yr	48.100	12.630	-4.38	11.34	2.12	1.62
48.100	100yr	48.100	13.130	-4.38	11.52	2.25	1.65
48.100	150yr	48.100	14.000	-4.38	11.83	2.49	1.70
48.100	200yr	48.100	14.640	-4.38	12.04	2.66	1.74
48.500	50yr	48.500	11.770	-5.31	11.03	1.92	1.67
48.500	80yr	48.500	12.630	-5.31	11.37	2.25	1.71
48.500	100yr	48.500	13.130	-5.31	11.56	2.44	1.74
48.500	150yr	48.500	14.000	-5.31	11.85	2.90	1.79
48.500	200yr	48.500	14.640	-5.31	12.07	3.10	1.83
48.970	50yr	48.970	11.770	-6.52	11.07	3.90	1.92
48.970	80yr	48.970	12.630	-6.52	11.41	4.39	1.95
48.970	100yr	48.970	13.130	-6.52	11.60	4.72	1.97
48.970	150yr	48.970	14.000	-6.52	11.89	5.04	2.01
48.970	200yr	48.970	14.640	-6.52	12.11	5.22	2.04
49.400	50yr	49.400	11.770	-5.08	11.24	2.45	1.30
49.400	80yr	49.400	12.630	-5.08	11.58	2.67	1.33
49.400	100yr	49.400	13.130	-5.08	11.77	2.79	1.35
49.400	150yr	49.400	14.000	-5.08	12.06	3.02	1.39
49.400	200yr	49.400	14.640	-5.08	12.28	3.17	1.41
49.820	50yr	49.820	11.590	-2.55	11.27	3.66	1.35
49.820	80yr	49.820	12.430	-2.55	11.61	3.90	1.38
49.820	100yr	49.820	12.930	-2.55	11.80	3.97	1.40
49.820	150yr	49.820	13.780	-2.55	12.10	4.76	1.43
49.820	200yr	49.820	14.460	-2.55	12.32	4.89	1.46

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
50.300	50yr	50,300	11,590	-3.68	11.31	2.61	1.40
50.300	80yr	50,300	12,430	-3.68	11.65	2.86	1.43
50.300	100yr	50,300	12,930	-3.68	11.83	3.01	1.45
50.300	150yr	50,300	13,780	-3.68	12.13	3.24	1.48
50.300	200yr	50,300	14,460	-3.68	12.35	3.42	1.51
50.800	50yr	50,800	11,590	-4.54	11.39	0.90	1.12
50.800	80yr	50,800	12,430	-4.54	11.73	1.09	1.15
50.800	100yr	50,800	12,930	-4.54	11.91	1.20	1.17
50.800	150yr	50,800	13,780	-4.54	12.21	1.38	1.20
50.800	200yr	50,800	14,460	-4.54	12.43	1.53	1.22
51.220	50yr	51,220	11,590	-1.09	11.41	4.09	1.29
51.220	80yr	51,220	12,430	-1.09	11.74	4.24	1.31
51.220	100yr	51,220	12,930	-1.09	11.93	4.33	1.33
51.220	150yr	51,220	13,780	-1.09	12.23	4.48	1.36
51.220	200yr	51,220	14,460	-1.09	12.45	4.59	1.39
51.540	50yr	51,540	11,590	-1.44	11.41	4.19	1.67
51.540	80yr	51,540	12,430	-1.44	11.74	4.44	1.70
51.540	100yr	51,540	12,930	-1.44	11.93	4.57	1.72
51.540	150yr	51,540	13,780	-1.44	12.23	4.76	1.76
51.540	200yr	51,540	14,460	-1.44	12.45	4.94	1.79
52.090	50yr	52,090	11,590	-15.11	11.48	1.52	1.86
52.090	80yr	52,090	12,430	-15.11	11.81	1.98	1.91
52.090	100yr	52,090	12,930	-15.11	11.99	2.43	1.94
52.090	150yr	52,090	13,780	-15.11	12.28	2.96	2.00
52.090	200yr	52,090	14,460	-15.11	12.50	3.35	2.05
52.156	50yr	52,156	11,580	-6.07	11.48	4.48	1.92
52.156	80yr	52,156	12,420	-6.07	11.81	4.81	1.98
52.156	100yr	52,156	12,920	-6.07	11.99	4.98	2.01
52.156	150yr	52,156	13,770	-6.07	12.28	5.25	2.07
52.156	200yr	52,156	14,450	-6.07	12.50	5.60	2.11
52.160		Bridge					
52.170	50yr	52,170	11,580	-6.07	11.51	4.48	1.92
52.170	80yr	52,170	12,420	-6.07	11.83	4.80	1.97
52.170	100yr	52,170	12,920	-6.07	12.02	4.97	2.00
52.170	150yr	52,170	13,770	-6.07	12.31	5.25	2.06
52.170	200yr	52,170	14,450	-6.07	12.53	5.60	2.11
52.180		Bridge					
52.192	50yr	52,192	11,580	-6.07	11.53	4.48	1.91
52.192	80yr	52,192	12,420	-6.07	11.86	4.81	1.96
52.192	100yr	52,192	12,920	-6.07	12.05	4.99	2.00
52.192	150yr	52,192	13,770	-6.07	12.34	5.24	2.05
52.192	200yr	52,192	14,450	-6.07	12.56	5.60	2.10
52.540	50yr	52,540	11,580	-3.72	11.61	4.47	1.80
52.540	80yr	52,540	12,420	-3.72	11.94	4.69	1.84
52.540	100yr	52,540	12,920	-3.72	12.13	4.85	1.87
52.540	150yr	52,540	13,770	-3.72	12.43	5.12	1.92
52.540	200yr	52,540	14,450	-3.72	12.64	5.33	1.96
52.910	50yr	52,910	11,580	-4.37	11.64	3.49	2.00
52.910	80yr	52,910	12,420	-4.37	11.97	3.74	2.07
52.910	100yr	52,910	12,920	-4.37	12.16	3.88	2.10
52.910	150yr	52,910	13,770	-4.37	12.45	4.11	2.17
52.910	200yr	52,910	14,450	-4.37	12.67	4.29	2.22
53.350	50yr	53,350	11,580	-3.28	11.73	3.23	1.85

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
53.350	80yr	53.350	12.420	-3.28	12.06	3.44	1.92
53.350	100yr	53.350	12.920	-3.28	12.25	3.55	1.96
53.350	150yr	53.350	13.770	-3.28	12.55	3.78	2.03
53.350	200yr	53.350	14.450	-3.28	12.76	3.94	2.09
53.760	50yr	53.760	11.580	-3.25	11.81	2.83	1.71
53.760	80yr	53.760	12.420	-3.25	12.14	3.05	1.77
53.760	100yr	53.760	12.920	-3.25	12.33	3.18	1.81
53.760	150yr	53.760	13.770	-3.25	12.63	3.39	1.87
53.760	200yr	53.760	14.450	-3.25	12.85	3.56	1.92
54.270	50yr	54.270	11.580	-3.49	11.78	5.07	2.46
54.270	80yr	54.270	12.420	-3.49	12.11	5.36	2.53
54.270	100yr	54.270	12.920	-3.49	12.29	5.52	2.58
54.270	150yr	54.270	13.770	-3.49	12.59	5.79	2.65
54.270	200yr	54.270	14.450	-3.49	12.81	6.09	2.72
54.730	50yr	54.730	11.580	-2.45	11.88	5.93	2.65
54.730	80yr	54.730	12.420	-2.45	12.21	6.20	2.72
54.730	100yr	54.730	12.920	-2.45	12.39	6.34	2.77
54.730	150yr	54.730	13.770	-2.45	12.69	6.64	2.84
54.730	200yr	54.730	14.450	-2.45	12.91	7.13	2.91
55.320	50yr	55.320	11.580	-3.81	12.21	5.07	1.77
55.320	80yr	55.320	12.420	-3.81	12.55	5.29	1.82
55.320	100yr	55.320	12.920	-3.81	12.75	5.42	1.86
55.320	150yr	55.320	13.770	-3.81	13.06	5.65	1.91
55.320	200yr	55.320	14.450	-3.81	13.29	5.85	1.96
55.940	50yr	55.940	11.580	0.29	12.30	6.46	1.86
55.940	80yr	55.940	12.420	0.29	12.64	6.71	1.90
55.940	100yr	55.940	12.920	0.29	12.83	6.84	1.92
55.940	150yr	55.940	13.770	0.29	13.14	7.04	1.96
55.940	200yr	55.940	14.450	0.29	13.38	7.25	2.00
56.413	50yr	56.413	11.580	-3.91	12.32	5.97	2.40
56.413	80yr	56.413	12.420	-3.91	12.66	6.22	2.45
56.413	100yr	56.413	12.920	-3.91	12.85	6.35	2.48
56.413	150yr	56.413	13.770	-3.91	13.16	6.59	2.53
56.413	200yr	56.413	14.450	-3.91	13.39	6.78	2.58
56.420		Bridge					
56.427	50yr	56.427	11.580	-3.91	12.35	5.97	2.39
56.427	80yr	56.427	12.420	-3.91	12.69	6.21	2.44
56.427	100yr	56.427	12.920	-3.91	12.88	6.35	2.47
56.427	150yr	56.427	13.770	-3.91	13.19	6.59	2.53
56.427	200yr	56.427	14.450	-3.91	13.42	6.78	2.57
56.510	50yr	56.510	11.580	-2.81	12.36	6.40	2.51
56.510	80yr	56.510	12.420	-2.81	12.70	6.66	2.56
56.510	100yr	56.510	12.920	-2.81	12.90	6.83	2.58
56.510	150yr	56.510	13.770	-2.81	13.19	7.06	2.64
56.510	200yr	56.510	14.450	-2.81	13.42	7.19	2.68
56.970	50yr	56.970	11.580	-0.72	12.52	6.14	2.50
56.970	80yr	56.970	12.420	-0.72	12.85	6.36	2.56
56.970	100yr	56.970	12.920	-0.72	13.04	6.51	2.60
56.970	150yr	56.970	13.770	-0.72	13.33	6.75	2.68
56.970	200yr	56.970	14.450	-0.72	13.56	6.95	2.74
57.330	50yr	57.330	11.580	-3.01	12.71	6.72	2.13
57.330	80yr	57.330	12.420	-3.01	13.05	6.91	2.18
57.330	100yr	57.330	12.920	-3.01	13.24	7.02	2.21
57.330	150yr	57.330	13.770	-3.01	13.54	7.21	2.27
57.330	200yr	57.330	14.450	-3.01	13.78	7.33	2.32

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
57.810	50yr	57,810	11,170	-0.51	12.90	5.76	1.66
57.810	80yr	57,810	11,970	-0.51	13.24	5.99	1.71
57.810	100yr	57,810	12,450	-0.51	13.43	6.47	1.74
57.810	150yr	57,810	13,280	-0.51	13.74	6.64	1.79
57.810	200yr	57,810	14,040	-0.51	13.98	6.80	1.84
58.080	50yr	58,080	11,170	-3.11	12.92	4.45	1.72
58.080	80yr	58,080	11,970	-3.11	13.26	4.66	1.77
58.080	100yr	58,080	12,450	-3.11	13.46	4.78	1.81
58.080	150yr	58,080	13,280	-3.11	13.76	5.01	1.87
58.080	200yr	58,080	14,040	-3.11	14.00	5.21	1.93
58.570	50yr	58,570	11,170	-1.11	12.95	6.77	2.02
58.570	80yr	58,570	11,970	-1.11	13.29	6.94	2.08
58.570	100yr	58,570	12,450	-1.11	13.48	7.04	2.11
58.570	150yr	58,570	13,280	-1.11	13.78	7.26	2.17
58.570	200yr	58,570	14,040	-1.11	14.03	7.42	2.23
59.060	50yr	59,060	11,170	-1.81	13.12	5.99	1.53
59.060	80yr	59,060	11,970	-1.81	13.46	6.20	1.57
59.060	100yr	59,060	12,450	-1.81	13.66	6.31	1.60
59.060	150yr	59,060	13,280	-1.81	13.97	6.50	1.65
59.060	200yr	59,060	14,040	-1.81	14.22	6.69	1.69
59.520	50yr	59,520	11,170	-0.30	13.16	5.56	1.60
59.520	80yr	59,520	11,970	-0.30	13.50	5.80	1.64
59.520	100yr	59,520	12,450	-0.30	13.70	5.92	1.67
59.520	150yr	59,520	13,280	-0.30	14.01	6.11	1.72
59.520	200yr	59,520	14,040	-0.30	14.26	6.27	1.77
59.990	50yr	59,990	11,170	-0.92	13.19	6.48	2.02
59.990	80yr	59,990	11,970	-0.92	13.53	6.72	2.07
59.990	100yr	59,990	12,450	-0.92	13.72	6.86	2.10
59.990	150yr	59,990	13,280	-0.92	14.03	7.10	2.15
59.990	200yr	59,990	14,040	-0.92	14.27	7.30	2.21
60.510	50yr	60,510	11,170	0.21	13.29	6.11	1.97
60.510	80yr	60,510	11,970	0.21	13.63	6.30	2.04
60.510	100yr	60,510	12,450	0.21	13.82	6.41	2.08
60.510	150yr	60,510	13,280	0.21	14.13	6.61	2.15
60.510	200yr	60,510	14,040	0.21	14.37	6.80	2.22
60.950	50yr	60,950	11,170	1.00	13.39	7.08	1.78
60.950	80yr	60,950	11,970	1.00	13.73	7.26	1.84
60.950	100yr	60,950	12,450	1.00	13.93	7.36	1.87
60.950	150yr	60,950	13,280	1.00	14.24	7.53	1.92
60.950	200yr	60,950	14,040	1.00	14.48	7.68	1.98
61.430	50yr	61,430	11,170	0.03	13.48	6.33	1.70
61.430	80yr	61,430	11,970	0.03	13.81	6.51	1.76
61.430	100yr	61,430	12,450	0.03	14.02	6.62	1.79
61.430	150yr	61,430	13,280	0.03	14.33	6.81	1.84
61.430	200yr	61,430	14,040	0.03	14.56	6.95	1.90
61.870	50yr	61,870	11,170	-1.09	13.51	6.21	1.89
61.870	80yr	61,870	11,970	-1.09	13.84	6.41	1.95
61.870	100yr	61,870	12,450	-1.09	14.05	6.53	1.98
61.870	150yr	61,870	13,280	-1.09	14.36	6.73	2.04
61.870	200yr	61,870	14,040	-1.09	14.60	6.90	2.10
61.884	50yr	61,884	11,170	-1.09	13.49	7.02	2.08
61.884	80yr	61,884	11,970	-1.09	13.82	7.23	2.13
61.884	100yr	61,884	12,450	-1.09	14.02	7.35	2.17
61.884	150yr	61,884	13,280	-1.09	14.33	7.55	2.23
61.884	200yr	61,884	14,040	-1.09	14.57	7.73	2.29

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
61.900		Bridge					
61.916	50yr	61.916	11.170	-1.09	13.50	7.03	2.07
61.916	80yr	61.916	11.970	-1.09	13.84	7.23	2.13
61.916	100yr	61.916	12.450	-1.09	14.04	7.35	2.16
61.916	150yr	61.916	13.280	-1.09	14.35	7.55	2.22
61.916	200yr	61.916	14.040	-1.09	14.59	7.72	2.29
62.320	50yr	62.320	11.170	0.80	13.53	7.39	2.44
62.320	80yr	62.320	11.970	0.80	13.86	7.69	2.52
62.320	100yr	62.320	12.450	0.80	14.07	7.83	2.56
62.320	150yr	62.320	13.280	0.80	14.37	8.04	2.64
62.320	200yr	62.320	14.040	0.80	14.61	8.22	2.73
62.790	50yr	62.790	11.170	-0.87	13.59	6.36	2.74
62.790	80yr	62.790	11.970	-0.87	13.91	6.61	2.84
62.790	100yr	62.790	12.450	-0.87	14.12	6.77	2.90
62.790	150yr	62.790	13.280	-0.87	14.42	7.03	3.01
62.790	200yr	62.790	14.040	-0.87	14.65	7.26	3.11
63.390	50yr	63.390	11.170	-3.04	13.83	6.09	2.40
63.390	80yr	63.390	11.970	-3.04	14.16	6.32	2.49
63.390	100yr	63.390	12.450	-3.04	14.37	6.45	2.54
63.390	150yr	63.390	13.280	-3.04	14.69	6.68	2.63
63.390	200yr	63.390	14.040	-3.04	14.94	6.88	2.71
64.040	50yr	64.040	11.170	-1.35	14.04	6.43	2.03
64.040	80yr	64.040	11.970	-1.35	14.37	6.65	2.11
64.040	100yr	64.040	12.450	-1.35	14.59	6.77	2.15
64.040	150yr	64.040	13.280	-1.35	14.92	6.97	2.22
64.040	200yr	64.040	14.040	-1.35	15.18	7.12	2.29
64.510	50yr	64.510	11.170	1.34	14.12	7.82	2.00
64.510	80yr	64.510	11.970	1.34	14.46	8.18	2.06
64.510	100yr	64.510	12.450	1.34	14.68	8.32	2.09
64.510	150yr	64.510	13.280	1.34	15.01	8.56	2.14
64.510	200yr	64.510	14.040	1.34	15.28	8.72	2.20
65.040	50yr	65.040	11.170	0.08	14.20	7.55	2.17
65.040	80yr	65.040	11.970	0.08	14.54	7.80	2.24
65.040	100yr	65.040	12.450	0.08	14.76	7.92	2.27
65.040	150yr	65.040	13.280	0.08	15.09	8.10	2.33
65.040	200yr	65.040	14.040	0.08	15.35	8.28	2.40
65.470	50yr	65.470	11.170	0.01	14.23	7.20	2.57
65.470	80yr	65.470	11.970	0.01	14.56	7.43	2.66
65.470	100yr	65.470	12.450	0.01	14.78	7.57	2.71
65.470	150yr	65.470	13.280	0.01	15.11	7.80	2.80
65.470	200yr	65.470	14.040	0.01	15.36	8.01	2.88
66.110	50yr	66.110	11.170	-0.70	14.30	7.17	3.00
66.110	80yr	66.110	11.970	-0.70	14.64	7.44	3.12
66.110	100yr	66.110	12.450	-0.70	14.85	7.60	3.19
66.110	150yr	66.110	13.280	-0.70	15.18	7.87	3.30
66.110	200yr	66.110	14.040	-0.70	15.43	8.11	3.42
66.470	50yr	66.470	11.170	-0.72	14.48	6.75	2.73
66.470	80yr	66.470	11.970	-0.72	14.82	7.00	2.84
66.470	100yr	66.470	12.450	-0.72	15.04	7.15	2.90
66.470	150yr	66.470	13.280	-0.72	15.38	7.40	3.01
66.470	200yr	66.470	14.040	-0.72	15.64	7.62	3.12
66.920	50yr	66.920	11.170	0.50	14.61	7.87	2.62
66.920	80yr	66.920	11.970	0.50	14.97	8.11	2.71
66.920	100yr	66.920	12.450	0.50	15.20	8.25	2.75

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
66.920	150yr	66.920	13.280	0.50	15.56	8.49	2.83
66.920	200yr	66.920	14.040	0.50	15.83	8.70	2.91
67.400	50yr	67.400	11.170	0.32	14.82	6.91	2.22
67.400	80yr	67.400	11.970	0.32	15.19	7.13	2.30
67.400	100yr	67.400	12.450	0.32	15.42	7.26	2.34
67.400	150yr	67.400	13.280	0.32	15.78	7.45	2.41
67.400	200yr	67.400	14.040	0.32	16.07	7.64	2.49
67.910	50yr	67.910	11.170	-1.25	14.98	7.43	1.86
67.910	80yr	67.910	11.970	-1.25	15.35	7.81	1.92
67.910	100yr	67.910	12.450	-1.25	15.59	7.96	1.95
67.910	150yr	67.910	13.280	-1.25	15.96	8.23	2.00
67.910	200yr	67.910	14.040	-1.25	16.26	8.44	2.06
68.370	50yr	68.370	11.170	-3.22	15.07	5.95	1.61
68.370	80yr	68.370	11.970	-3.22	15.45	6.20	1.66
68.370	100yr	68.370	12.450	-3.22	15.69	6.29	1.69
68.370	150yr	68.370	13.280	-3.22	16.06	6.53	1.75
68.370	200yr	68.370	14.040	-3.22	16.36	6.71	1.80
68.970	50yr	68.970	11.170	-1.48	15.17	5.33	1.34
68.970	80yr	68.970	11.970	-1.48	15.55	5.54	1.38
68.970	100yr	68.970	12.450	-1.48	15.79	5.66	1.40
68.970	150yr	68.970	13.280	-1.48	16.17	5.86	1.44
68.970	200yr	68.970	14.040	-1.48	16.47	6.05	1.48
69.500	50yr	69.500	11.170	-1.42	15.17	6.72	1.68
69.500	80yr	69.500	11.970	-1.42	15.56	6.94	1.73
69.500	100yr	69.500	12.450	-1.42	15.79	7.07	1.76
69.500	150yr	69.500	13.280	-1.42	16.17	7.30	1.81
69.500	200yr	69.500	14.040	-1.42	16.47	7.53	1.85
70.100	50yr	70.100	11.170	-0.32	15.24	6.62	1.60
70.100	80yr	70.100	11.970	-0.32	15.62	6.85	1.66
70.100	100yr	70.100	12.450	-0.32	15.86	6.95	1.69
70.100	150yr	70.100	13.280	-0.32	16.24	7.19	1.74
70.100	200yr	70.100	14.040	-0.32	16.54	7.47	1.80
70.610	50yr	70.610	11.170	-1.92	15.25	7.29	1.95
70.610	80yr	70.610	11.970	-1.92	15.63	7.48	2.01
70.610	100yr	70.610	12.450	-1.92	15.87	7.62	2.04
70.610	150yr	70.610	13.280	-1.92	16.24	7.78	2.10
70.610	200yr	70.610	14.040	-1.92	16.55	8.00	2.15
71.110	50yr	71.110	11.170	-1.02	15.31	6.57	2.00
71.110	80yr	71.110	11.970	-1.02	15.69	6.81	2.06
71.110	100yr	71.110	12.450	-1.02	15.93	6.95	2.10
71.110	150yr	71.110	13.280	-1.02	16.30	7.18	2.16
71.110	200yr	71.110	14.040	-1.02	16.61	7.41	2.23
71.560	50yr	71.560	11.040	-0.48	15.38	7.69	1.93
71.560	80yr	71.560	11.830	-0.48	15.76	7.90	1.99
71.560	100yr	71.560	12.300	-0.48	16.00	8.01	2.02
71.560	150yr	71.560	13.130	-0.48	16.38	8.22	2.08
71.560	200yr	71.560	13.900	-0.48	16.68	8.40	2.14
72.060	50yr	72.060	11.040	0.81	15.49	7.63	1.65
72.060	80yr	72.060	11.830	0.81	15.88	7.80	1.70
72.060	100yr	72.060	12.300	0.81	16.12	7.91	1.73
72.060	150yr	72.060	13.130	0.81	16.50	8.09	1.79
72.060	200yr	72.060	13.900	0.81	16.81	8.25	1.84
72.570	50yr	72.570	11.040	-1.12	15.50	6.96	2.05
72.570	80yr	72.570	11.830	-1.12	15.88	7.22	2.11
72.570	100yr	72.570	12.300	-1.12	16.12	7.36	2.14

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
72.570	150yr	72.570	13.130	-1.12	16.50	7.60	2.19
72.570	200yr	72.570	13.900	-1.12	16.81	7.83	2.25
73.010	50yr	73.010	11.040	-1.73	15.56	7.18	2.18
73.010	80yr	73.010	11.830	-1.73	15.94	7.50	2.24
73.010	100yr	73.010	12.300	-1.73	16.18	7.63	2.27
73.010	150yr	73.010	13.130	-1.73	16.56	7.88	2.33
73.010	200yr	73.010	13.900	-1.73	16.87	8.07	2.39
73.540	50yr	73.540	11.040	1.52	15.68	8.72	2.15
73.540	80yr	73.540	11.830	1.52	16.06	8.94	2.20
73.540	100yr	73.540	12.300	1.52	16.30	9.06	2.22
73.540	150yr	73.540	13.130	1.52	16.68	9.28	2.28
73.540	200yr	73.540	13.900	1.52	16.99	9.48	2.33
74.180	50yr	74.180	11.040	1.19	15.79	8.38	2.34
74.180	80yr	74.180	11.830	1.19	16.18	8.63	2.39
74.180	100yr	74.180	12.300	1.19	16.41	8.78	2.41
74.180	150yr	74.180	13.130	1.19	16.80	9.04	2.46
74.180	200yr	74.180	13.900	1.19	17.11	9.26	2.51
74.640	50yr	74.640	11.040	-1.30	15.89	8.25	2.55
74.640	80yr	74.640	11.830	-1.30	16.27	8.65	2.61
74.640	100yr	74.640	12.300	-1.30	16.50	8.83	2.65
74.640	150yr	74.640	13.130	-1.30	16.87	9.11	2.71
74.640	200yr	74.640	13.900	-1.30	17.19	9.35	2.77
75.120	50yr	75.120	11.040	-0.97	16.04	8.02	2.46
75.120	80yr	75.120	11.830	-0.97	16.42	8.27	2.53
75.120	100yr	75.120	12.300	-0.97	16.64	8.48	2.57
75.120	150yr	75.120	13.130	-0.97	17.02	8.96	2.64
75.120	200yr	75.120	13.900	-0.97	17.33	9.22	2.71
75.630	50yr	75.630	11.040	1.16	16.13	8.48	2.65
75.630	80yr	75.630	11.830	1.16	16.51	8.79	2.72
75.630	100yr	75.630	12.300	1.16	16.73	9.10	2.77
75.630	150yr	75.630	13.130	1.16	17.11	9.70	2.85
75.630	200yr	75.630	13.900	1.16	17.42	9.92	2.92
76.270	50yr	76.270	11.040	0.30	16.26	8.17	2.82
76.270	80yr	76.270	11.830	0.30	16.63	8.45	2.92
76.270	100yr	76.270	12.300	0.30	16.85	8.61	2.98
76.270	150yr	76.270	13.130	0.30	17.22	8.86	3.09
76.270	200yr	76.270	13.900	0.30	17.53	9.11	3.18
76.720	50yr	76.720	11.040	0.31	16.32	9.28	3.08
76.720	80yr	76.720	11.830	0.31	16.69	9.55	3.19
76.720	100yr	76.720	12.300	0.31	16.91	9.71	3.25
76.720	150yr	76.720	13.130	0.31	17.29	9.98	3.36
76.720	200yr	76.720	13.900	0.31	17.60	10.23	3.46
77.320	50yr	77.320	11.040	2.21	16.67	8.78	2.42
77.320	80yr	77.320	11.830	2.21	17.06	9.04	2.50
77.320	100yr	77.320	12.300	2.21	17.29	9.19	2.54
77.320	150yr	77.320	13.130	2.21	17.68	9.46	2.62
77.320	200yr	77.320	13.900	2.21	18.02	9.69	2.70
77.910	50yr	77.910	11.040	-0.40	16.82	8.45	2.19
77.910	80yr	77.910	11.830	-0.40	17.21	8.72	2.27
77.910	100yr	77.910	12.300	-0.40	17.45	8.87	2.31
77.910	150yr	77.910	13.130	-0.40	17.85	9.13	2.39
77.910	200yr	77.910	13.900	-0.40	18.19	9.37	2.46
78.320	50yr	78.320	11.040	1.33	16.84	9.08	2.45
78.320	80yr	78.320	11.830	1.33	17.23	9.33	2.54
78.320	100yr	78.320	12.300	1.33	17.47	9.48	2.58

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
78.320	150yr	78,320	13,130	1.33	17.87	9.74	2.67
78.320	200yr	78,320	13,900	1.33	18.20	9.99	2.75
78.920	50yr	78,920	11,040	1.06	16.98	9.77	2.38
78.920	80yr	78,920	11,830	1.06	17.38	10.03	2.44
78.920	100yr	78,920	12,300	1.06	17.62	10.16	2.47
78.920	150yr	78,920	13,130	1.06	18.03	10.40	2.53
78.920	200yr	78,920	13,900	1.06	18.38	10.63	2.59
79.490	50yr	79,490	11,040	0.89	17.21	8.54	1.81
79.490	80yr	79,490	11,830	0.89	17.62	9.32	1.86
79.490	100yr	79,490	12,300	0.89	17.86	9.62	1.89
79.490	150yr	79,490	13,130	0.89	18.27	9.90	1.93
79.490	200yr	79,490	13,900	0.89	18.63	10.08	1.98
80.190	50yr	80,190	11,040	0.46	17.27	8.94	2.05
80.190	80yr	80,190	11,830	0.46	17.67	9.18	2.11
80.190	100yr	80,190	12,300	0.46	17.91	9.31	2.15
80.190	150yr	80,190	13,130	0.46	18.33	9.51	2.21
80.190	200yr	80,190	13,900	0.46	18.68	9.72	2.27
80.465	50yr	80,465	10,590	0.19	17.23	10.95	2.62
80.465	80yr	80,465	11,360	0.19	17.63	11.27	2.67
80.465	100yr	80,465	11,800	0.19	17.88	11.42	2.69
80.465	150yr	80,465	12,620	0.19	18.29	11.68	2.74
80.465	200yr	80,465	13,420	0.19	18.64	11.94	2.80
80.480		Bridge					
80.495	50yr	80,495	10,590	0.19	17.29	10.94	2.60
80.495	80yr	80,495	11,360	0.19	17.70	11.26	2.65
80.495	100yr	80,495	11,800	0.19	17.94	11.41	2.67
80.495	150yr	80,495	12,620	0.19	18.36	11.67	2.72
80.495	200yr	80,495	13,420	0.19	18.71	11.94	2.78
80.640	50yr	80,640	10,590	0.48	17.47	9.65	2.05
80.640	80yr	80,640	11,360	0.48	17.88	9.88	2.11
80.640	100yr	80,640	11,800	0.48	18.12	10.04	2.13
80.640	150yr	80,640	12,620	0.48	18.54	10.32	2.19
80.640	200yr	80,640	13,420	0.48	18.90	10.55	2.24
81.120	50yr	81,120	10,590	1.79	17.53	10.01	2.20
81.120	80yr	81,120	11,360	1.79	17.94	10.28	2.26
81.120	100yr	81,120	11,800	1.79	18.18	10.42	2.29
81.120	150yr	81,120	12,620	1.79	18.59	10.64	2.35
81.120	200yr	81,120	13,420	1.79	18.95	10.85	2.42
81.610	50yr	81,610	10,590	1.87	17.59	9.67	2.37
81.610	80yr	81,610	11,360	1.87	17.99	9.95	2.44
81.610	100yr	81,610	11,800	1.87	18.23	10.10	2.48
81.610	150yr	81,610	12,620	1.87	18.65	10.36	2.55
81.610	200yr	81,610	13,420	1.87	19.00	10.59	2.63
81.980	50yr	81,980	10,590	2.26	17.64	10.31	2.50
81.980	80yr	81,980	11,360	2.26	18.05	10.57	2.58
81.980	100yr	81,980	11,800	2.26	18.29	10.71	2.62
81.980	150yr	81,980	12,620	2.26	18.70	10.98	2.70
81.980	200yr	81,980	13,420	2.26	19.06	11.23	2.78
82.600	50yr	82,600	10,590	0.61	17.70	10.44	3.05
82.600	80yr	82,600	11,360	0.61	18.12	10.77	3.11
82.600	100yr	82,600	11,800	0.61	18.36	10.96	3.14
82.600	150yr	82,600	12,620	0.61	18.77	11.30	3.21
82.600	200yr	82,600	13,420	0.61	19.13	11.62	3.28
82.980	50yr	82,980	10,590	3.77	17.94	10.89	2.69

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
82.980	80yr	82,980	11,360	3.77	18.35	11.13	2.77
82.980	100yr	82,980	11,800	3.77	18.59	11.26	2.82
82.980	150yr	82,980	12,620	3.77	19.00	11.50	2.90
82.980	200yr	82,980	13,420	3.77	19.35	11.74	2.99
83.410	50yr	83,410	10,590	0.92	18.21	8.71	1.86
83.410	80yr	83,410	11,360	0.92	18.64	8.94	1.92
83.410	100yr	83,410	11,800	0.92	18.89	9.07	1.95
83.410	150yr	83,410	12,620	0.92	19.31	9.31	2.01
83.410	200yr	83,410	13,420	0.92	19.68	9.55	2.08
83.830	50yr	83,830	10,590	2.22	18.22	9.63	2.15
83.830	80yr	83,830	11,360	2.22	18.65	9.89	2.21
83.830	100yr	83,830	11,800	2.22	18.90	10.03	2.24
83.830	150yr	83,830	12,620	2.22	19.33	10.31	2.30
83.830	200yr	83,830	13,420	2.22	19.70	10.60	2.36
84.300	50yr	84,300	10,590	4.34	18.33	11.14	2.01
84.300	80yr	84,300	11,360	4.34	18.77	11.32	2.05
84.300	100yr	84,300	11,800	4.34	19.01	11.46	2.08
84.300	150yr	84,300	12,620	4.34	19.45	11.67	2.13
84.300	200yr	84,300	13,420	4.34	19.83	11.85	2.18
84.687	50yr	84,687	10,590	3.73	18.44	11.22	1.76
84.687	80yr	84,687	11,360	3.73	18.88	11.42	1.81
84.687	100yr	84,687	11,800	3.73	19.13	11.52	1.83
84.687	150yr	84,687	12,620	3.73	19.56	11.73	1.88
84.687	200yr	84,687	13,420	3.73	19.94	11.93	1.93
84.700		Bridge					
84.713	50yr	84,713	10,590	3.73	18.46	11.22	1.76
84.713	80yr	84,713	11,360	3.73	18.89	11.41	1.80
84.713	100yr	84,713	11,800	3.73	19.14	11.53	1.83
84.713	150yr	84,713	12,620	3.73	19.57	11.73	1.88
84.713	200yr	84,713	13,420	3.73	19.96	11.93	1.92
84.790	50yr	84,790	10,590	3.66	18.49	10.52	1.57
84.790	80yr	84,790	11,360	3.66	18.93	10.75	1.60
84.790	100yr	84,790	11,800	3.66	19.18	10.87	1.62
84.790	150yr	84,790	12,620	3.66	19.61	11.08	1.67
84.790	200yr	84,790	13,420	3.66	20.00	11.26	1.71
85.065	50yr	85,065	10,420	4.10	18.46	11.90	2.10
85.065	80yr	85,065	11,170	4.10	18.89	12.23	2.15
85.065	100yr	85,065	11,600	4.10	19.14	12.38	2.18
85.065	150yr	85,065	12,430	4.10	19.57	12.58	2.25
85.065	200yr	85,065	13,240	4.10	19.95	12.76	2.31
85.070		Bridge					
85.075	50yr	85,075	10,420	4.10	18.48	11.88	2.09
85.075	80yr	85,075	11,170	4.10	18.92	12.24	2.15
85.075	100yr	85,075	11,600	4.10	19.17	12.38	2.18
85.075	150yr	85,075	12,430	4.10	19.59	12.58	2.24
85.075	200yr	85,075	13,240	4.10	19.98	12.75	2.30
85.220	50yr	85,220	10,420	5.07	18.47	13.03	2.32
85.220	80yr	85,220	11,170	5.07	18.91	13.18	2.37
85.220	100yr	85,220	11,600	5.07	19.16	13.27	2.40
85.220	150yr	85,220	12,430	5.07	19.58	13.45	2.46
85.220	200yr	85,220	13,240	5.07	19.97	13.65	2.52
85.730	50yr	85,730	10,420	4.94	18.60	12.37	2.21
85.730	80yr	85,730	11,170	4.94	19.04	12.58	2.26
85.730	100yr	85,730	11,600	4.94	19.28	12.69	2.29

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
85.730	150yr	85.730	12.430	4.94	19.71	12.87	2.36
85.730	200yr	85.730	13.240	4.94	20.10	13.05	2.42
86.240	50yr	86.240	10.420	5.19	18.69	11.95	2.21
86.240	80yr	86.240	11.170	5.19	19.13	12.35	2.27
86.240	100yr	86.240	11.600	5.19	19.37	12.58	2.30
86.240	150yr	86.240	12.430	5.19	19.80	12.84	2.37
86.240	200yr	86.240	13.240	5.19	20.19	13.03	2.44
86.488	50yr	86.488	10.420	3.16	18.74	10.72	2.20
86.488	80yr	86.488	11.170	3.16	19.17	10.96	2.27
86.488	100yr	86.488	11.600	3.16	19.42	11.12	2.30
86.488	150yr	86.488	12.430	3.16	19.84	11.37	2.37
86.488	200yr	86.488	13.240	3.16	20.23	11.61	2.44
86.500		Bridge					
86.512	50yr	86.512	10.420	3.16	18.76	10.73	2.20
86.512	80yr	86.512	11.170	3.16	19.19	10.97	2.26
86.512	100yr	86.512	11.600	3.16	19.44	11.11	2.30
86.512	150yr	86.512	12.430	3.16	19.87	11.36	2.37
86.512	200yr	86.512	13.240	3.16	20.25	11.61	2.44
86.780	50yr	86.780	10.420	6.99	18.77	12.20	2.48
86.780	80yr	86.780	11.170	6.99	19.20	12.42	2.55
86.780	100yr	86.780	11.600	6.99	19.44	12.56	2.59
86.780	150yr	86.780	12.430	6.99	19.86	12.78	2.67
86.780	200yr	86.780	13.240	6.99	20.25	12.98	2.75
87.280	50yr	87.280	10.420	5.29	18.89	12.86	2.44
87.280	80yr	87.280	11.170	5.29	19.33	13.03	2.50
87.280	100yr	87.280	11.600	5.29	19.57	13.14	2.53
87.280	150yr	87.280	12.430	5.29	20.00	13.37	2.59
87.280	200yr	87.280	13.240	5.29	20.40	13.57	2.65
87.680	50yr	87.680	10.420	7.82	19.09	12.78	1.96
87.680	80yr	87.680	11.170	7.82	19.54	12.97	1.99
87.680	100yr	87.680	11.600	7.82	19.79	13.07	2.00
87.680	150yr	87.680	12.430	7.82	20.23	13.26	2.03
87.680	200yr	87.680	13.240	7.82	20.63	13.46	2.07
88.019	50yr	88.019	10.420	7.55	19.12	12.44	2.20
88.019	80yr	88.019	11.170	7.55	19.56	12.63	2.25
88.019	100yr	88.019	11.600	7.55	19.81	12.73	2.27
88.019	150yr	88.019	12.430	7.55	20.24	12.94	2.32
88.019	200yr	88.019	13.240	7.55	20.65	13.13	2.37
88.030		Bridge					
88.040	50yr	88.040	10.420	7.55	19.14	12.44	2.20
88.040	80yr	88.040	11.170	7.55	19.59	12.63	2.24
88.040	100yr	88.040	11.600	7.55	19.84	12.73	2.26
88.040	150yr	88.040	12.430	7.55	20.27	12.93	2.31
88.040	200yr	88.040	13.240	7.55	20.68	13.13	2.36
88.250	50yr	88.250	10.420	7.11	19.10	12.67	2.75
88.250	80yr	88.250	11.170	7.11	19.53	12.90	2.82
88.250	100yr	88.250	11.600	7.11	19.78	13.03	2.86
88.250	150yr	88.250	12.430	7.11	20.21	13.27	2.93
88.250	200yr	88.250	13.240	7.11	20.60	13.50	3.01
88.800	50yr	88.800	10.420	5.86	19.25	12.13	2.69
88.800	80yr	88.800	11.170	5.86	19.68	12.37	2.77
88.800	100yr	88.800	11.600	5.86	19.93	12.50	2.82
88.800	150yr	88.800	12.430	5.86	20.35	13.05	2.91
88.800	200yr	88.800	13.240	5.86	20.75	13.32	3.00

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
89.280	50yr	89,280	10,420	5.90	19.40	12.69	2.58
89.280	80yr	89,280	11,170	5.90	19.84	12.91	2.65
89.280	100yr	89,280	11,600	5.90	20.08	13.03	2.69
89.280	150yr	89,280	12,430	5.90	20.50	13.26	2.78
89.280	200yr	89,280	13,240	5.90	20.90	13.48	2.86
89.750	50yr	89,750	10,420	5.69	19.48	12.18	2.74
89.750	80yr	89,750	11,170	5.69	19.92	12.46	2.81
89.750	100yr	89,750	11,600	5.69	20.16	12.60	2.86
89.750	150yr	89,750	12,430	5.69	20.58	12.86	2.94
89.750	200yr	89,750	13,240	5.69	20.99	13.11	3.02
90.230	50yr	90,230	10,420	5.48	19.57	12.57	2.84
90.230	80yr	90,230	11,170	5.48	20.01	12.83	2.92
90.230	100yr	90,230	11,600	5.48	20.25	12.99	2.97
90.230	150yr	90,230	12,430	5.48	20.68	13.25	3.06
90.230	200yr	90,230	13,240	5.48	21.08	13.49	3.15
90.730	50yr	90,730	10,420	5.47	19.72	12.33	2.74
90.730	80yr	90,730	11,170	5.47	20.17	12.59	2.82
90.730	100yr	90,730	11,600	5.47	20.41	12.68	2.87
90.730	150yr	90,730	12,430	5.47	20.84	13.12	2.96
90.730	200yr	90,730	13,240	5.47	21.25	13.39	3.05
91.190	50yr	91,190	10,420	6.18	19.82	13.68	2.85
91.190	80yr	91,190	11,170	6.18	20.27	13.92	2.92
91.190	100yr	91,190	11,600	6.18	20.53	14.03	2.95
91.190	150yr	91,190	12,430	6.18	20.96	14.30	3.01
91.190	200yr	91,190	13,240	6.18	21.38	14.54	3.07
91.720	50yr	91,720	10,420	6.46	20.00	13.00	2.76
91.720	80yr	91,720	11,170	6.46	20.46	13.29	2.82
91.720	100yr	91,720	11,600	6.46	20.73	13.44	2.85
91.720	150yr	91,720	12,430	6.46	21.16	13.71	2.93
91.720	200yr	91,720	13,240	6.46	21.57	13.99	3.00
92.160	50yr	92,160	10,420	5.01	20.11	12.30	2.82
92.160	80yr	92,160	11,170	5.01	20.58	12.63	2.88
92.160	100yr	92,160	11,600	5.01	20.84	12.83	2.92
92.160	150yr	92,160	12,430	5.01	21.27	13.26	3.01
92.160	200yr	92,160	13,240	5.01	21.68	13.58	3.08
92.610	50yr	92,610	10,420	6.00	20.21	13.71	3.09
92.610	80yr	92,610	11,170	6.00	20.67	14.00	3.14
92.610	100yr	92,610	11,600	6.00	20.93	14.16	3.17
92.610	150yr	92,610	12,430	6.00	21.37	14.46	3.25
92.610	200yr	92,610	13,240	6.00	21.78	14.75	3.33
93.060	50yr	93,060	10,420	6.35	20.38	13.87	3.02
93.060	80yr	93,060	11,170	6.35	20.84	14.21	3.11
93.060	100yr	93,060	11,600	6.35	21.09	14.41	3.15
93.060	150yr	93,060	12,430	6.35	21.52	14.67	3.25
93.060	200yr	93,060	13,240	6.35	21.92	14.94	3.34
93.499	50yr	93,499	10,360	6.72	20.55	14.44	3.01
93.499	80yr	93,499	11,110	6.72	21.00	15.28	3.05
93.499	100yr	93,499	11,530	6.72	21.26	16.00	3.07
93.499	150yr	93,499	12,360	6.72	21.71	16.28	3.13
93.499	200yr	93,499	13,180	6.72	22.13	16.51	3.19
93.510		Bridge					
93.520	50yr	93,520	10,360	6.72	20.63	14.43	2.98
93.520	80yr	93,520	11,110	6.72	21.08	15.27	3.02
93.520	100yr	93,520	11,530	6.72	21.34	16.01	3.04

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
93.520	150yr	93.520	12.360	6.72	21.80	16.27	3.10
93.520	200yr	93.520	13.180	6.72	22.22	16.51	3.16
93.590	50yr	93.590	10.360	5.01	20.73	13.51	2.69
93.590	80yr	93.590	11.110	5.01	21.19	13.79	2.75
93.590	100yr	93.590	11.530	5.01	21.45	13.93	2.77
93.590	150yr	93.590	12.360	5.01	21.91	14.21	2.84
93.590	200yr	93.590	13.180	5.01	22.33	14.49	2.90
94.100	50yr	94.100	10.360	3.74	20.77	13.46	3.32
94.100	80yr	94.100	11.110	3.74	21.21	13.78	3.41
94.100	100yr	94.100	11.530	3.74	21.47	13.96	3.46
94.100	150yr	94.100	12.360	3.74	21.91	14.31	3.56
94.100	200yr	94.100	13.180	3.74	22.33	14.60	3.65
94.790	50yr	94.790	10.360	5.46	21.20	12.96	2.52
94.790	80yr	94.790	11.110	5.46	21.65	13.20	2.60
94.790	100yr	94.790	11.530	5.46	21.91	13.33	2.65
94.790	150yr	94.790	12.360	5.46	22.39	13.58	2.73
94.790	200yr	94.790	13.180	5.46	22.81	13.83	2.82
95.190	50yr	95.190	10.360	4.77	21.26	13.86	2.65
95.190	80yr	95.190	11.110	4.77	21.72	14.16	2.71
95.190	100yr	95.190	11.530	4.77	21.99	14.37	2.73
95.190	150yr	95.190	12.360	4.77	22.46	14.71	2.80
95.190	200yr	95.190	13.180	4.77	22.90	15.04	2.86
95.200		Bridge					
95.210	50yr	95.210	10.360	4.77	21.30	13.85	2.64
95.210	80yr	95.210	11.110	4.77	21.76	14.16	2.70
95.210	100yr	95.210	11.530	4.77	22.02	14.36	2.73
95.210	150yr	95.210	12.360	4.77	22.49	14.70	2.79
95.210	200yr	95.210	13.180	4.77	22.93	15.03	2.85
95.390	50yr	95.390	10.360	5.28	21.35	13.12	2.65
95.390	80yr	95.390	11.110	5.28	21.80	13.42	2.73
95.390	100yr	95.390	11.530	5.28	22.06	13.57	2.77
95.390	150yr	95.390	12.360	5.28	22.53	13.86	2.84
95.390	200yr	95.390	13.180	5.28	22.97	14.14	2.92
95.990	50yr	95.990	10.360	4.47	21.51	13.64	2.55
95.990	80yr	95.990	11.110	4.47	21.98	13.91	2.62
95.990	100yr	95.990	11.530	4.47	22.24	14.05	2.65
95.990	150yr	95.990	12.360	4.47	22.71	14.32	2.71
95.990	200yr	95.990	13.180	4.47	23.15	14.59	2.78
96.340	50yr	96.340	10.360	5.00	21.64	13.46	2.36
96.340	80yr	96.340	11.110	5.00	22.10	13.71	2.43
96.340	100yr	96.340	11.530	5.00	22.36	13.84	2.46
96.340	150yr	96.340	12.360	5.00	22.84	14.11	2.53
96.340	200yr	96.340	13.180	5.00	23.28	14.38	2.59
96.870	50yr	96.870	10.360	5.00	21.68	13.65	2.73
96.870	80yr	96.870	11.110	5.00	22.14	13.94	2.81
96.870	100yr	96.870	11.530	5.00	22.40	14.18	2.85
96.870	150yr	96.870	12.360	5.00	22.87	14.53	2.94
96.870	200yr	96.870	13.180	5.00	23.31	14.82	3.02
97.390	50yr	97.390	10.360	4.66	21.80	13.70	2.72
97.390	80yr	97.390	11.110	4.66	22.25	13.96	2.81
97.390	100yr	97.390	11.530	4.66	22.51	14.10	2.85
97.390	150yr	97.390	12.360	4.66	22.99	14.38	2.95
97.390	200yr	97.390	13.180	4.66	23.42	14.64	3.04
97.810	50yr	97.810	10.360	6.19	22.01	13.94	2.23

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
97.810	80yr	97,810	11,110	6.19	22.48	14.16	2.29
97.810	100yr	97,810	11,530	6.19	22.74	14.29	2.32
97.810	150yr	97,810	12,360	6.19	23.23	14.55	2.39
97.810	200yr	97,810	13,180	6.19	23.68	14.77	2.45
98.360	50yr	98,360	10,360	6.05	22.15	14.18	1.99
98.360	80yr	98,360	11,110	6.05	22.63	14.42	2.02
98.360	100yr	98,360	11,530	6.05	22.90	14.56	2.04
98.360	150yr	98,360	12,360	6.05	23.39	14.82	2.07
98.360	200yr	98,360	13,180	6.05	23.85	15.08	2.11
98.930	50yr	98,930	10,290	4.62	22.20	13.35	2.27
98.930	80yr	98,930	11,030	4.62	22.66	13.61	2.35
98.930	100yr	98,930	11,460	4.62	22.93	13.75	2.39
98.930	150yr	98,930	12,280	4.62	23.42	14.01	2.46
98.930	200yr	98,930	13,110	4.62	23.87	14.31	2.54
99.730	50yr	99,730	10,290	7.02	22.44	12.94	1.52
99.730	80yr	99,730	11,030	7.02	22.92	13.22	1.56
99.730	100yr	99,730	11,460	7.02	23.19	13.39	1.58
99.730	150yr	99,730	12,280	7.02	23.69	13.64	1.61
99.730	200yr	99,730	13,110	7.02	24.16	13.85	1.65
100.280	50yr	100,280	10,210	5.46	22.48	13.24	1.61
100.280	80yr	100,280	10,950	5.46	22.96	13.50	1.64
100.280	100yr	100,280	11,360	5.46	23.23	13.64	1.66
100.280	150yr	100,280	12,180	5.46	23.73	13.91	1.69
100.280	200yr	100,280	13,010	5.46	24.20	14.14	1.73
100.710	50yr	100,710	10,210	6.13	22.51	13.93	1.73
100.710	80yr	100,710	10,950	6.13	22.99	14.16	1.77
100.710	100yr	100,710	11,360	6.13	23.26	14.28	1.78
100.710	150yr	100,710	12,180	6.13	23.76	14.50	1.82
100.710	200yr	100,710	13,010	6.13	24.22	14.73	1.86
101.140	50yr	101,140	10,210	7.41	22.61	13.74	1.44
101.140	80yr	101,140	10,950	7.41	23.09	13.93	1.47
101.140	100yr	101,140	11,360	7.41	23.36	14.03	1.48
101.140	150yr	101,140	12,180	7.41	23.86	14.22	1.51
101.140	200yr	101,140	13,010	7.41	24.32	14.43	1.55
101.620	50yr	101,620	10,210	7.34	22.64	13.75	1.48
101.620	80yr	101,620	10,950	7.34	23.12	13.95	1.51
101.620	100yr	101,620	11,360	7.34	23.39	14.06	1.52
101.620	150yr	101,620	12,180	7.34	23.89	14.27	1.55
101.620	200yr	101,620	13,010	7.34	24.35	14.51	1.59
101.858	50yr	101,858	10,210	8.55	22.62	14.87	1.88
101.858	80yr	101,858	10,950	8.55	23.10	15.07	1.91
101.858	100yr	101,858	11,360	8.55	23.37	15.18	1.92
101.858	150yr	101,858	12,180	8.55	23.87	15.40	1.96
101.858	200yr	101,858	13,010	8.55	24.33	15.61	2.00
101.870		Bridge					
101.882	50yr	101,882	10,210	8.55	22.65	14.87	1.87
101.882	80yr	101,882	10,950	8.55	23.12	15.08	1.90
101.882	100yr	101,882	11,360	8.55	23.39	15.19	1.92
101.882	150yr	101,882	12,180	8.55	23.90	15.40	1.95
101.882	200yr	101,882	13,010	8.55	24.36	15.62	1.99
102.030	50yr	102,030	10,210	10.01	22.68	15.93	1.88
102.030	80yr	102,030	10,950	10.01	23.15	16.12	1.91
102.030	100yr	102,030	11,360	10.01	23.42	16.22	1.92
102.030	150yr	102,030	12,180	10.01	23.92	16.41	1.95
102.030	200yr	102,030	13,010	10.01	24.38	16.62	1.98

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
102.610	50yr	102.610	10.210	8.73	22.82	14.94	1.48
102.610	80yr	102.610	10.950	8.73	23.29	15.11	1.51
102.610	100yr	102.610	11.360	8.73	23.56	15.20	1.53
102.610	150yr	102.610	12.180	8.73	24.06	15.39	1.56
102.610	200yr	102.610	13.010	8.73	24.52	15.57	1.60
103.160	50yr	103.160	10.210	9.91	22.84	15.71	1.71
103.160	80yr	103.160	10.950	9.91	23.31	15.89	1.74
103.160	100yr	103.160	11.360	9.91	23.58	15.99	1.76
103.160	150yr	103.160	12.180	9.91	24.08	16.16	1.79
103.160	200yr	103.160	13.010	9.91	24.54	16.33	1.83
103.720	50yr	103.720	10.210	10.21	22.94	15.04	1.44
103.720	80yr	103.720	10.950	10.21	23.41	15.22	1.47
103.720	100yr	103.720	11.360	10.21	23.68	15.32	1.48
103.720	150yr	103.720	12.180	10.21	24.18	15.50	1.51
103.720	200yr	103.720	13.010	10.21	24.64	15.67	1.55
104.230	50yr	104.230	10.210	9.35	22.97	15.78	1.64
104.230	80yr	104.230	10.950	9.35	23.44	15.96	1.67
104.230	100yr	104.230	11.360	9.35	23.70	16.06	1.68
104.230	150yr	104.230	12.180	9.35	24.20	16.26	1.71
104.230	200yr	104.230	13.010	9.35	24.66	16.44	1.74
104.740	50yr	104.740	10.210	9.61	23.04	15.46	1.61
104.740	80yr	104.740	10.950	9.61	23.50	15.64	1.62
104.740	100yr	104.740	11.360	9.61	23.77	15.74	1.63
104.740	150yr	104.740	12.180	9.61	24.27	15.93	1.64
104.740	200yr	104.740	13.010	9.61	24.73	16.15	1.66
105.250	50yr	105.250	10.210	9.00	23.09	15.82	1.70
105.250	80yr	105.250	10.950	9.00	23.56	15.98	1.73
105.250	100yr	105.250	11.360	9.00	23.82	16.07	1.75
105.250	150yr	105.250	12.180	9.00	24.32	16.24	1.78
105.250	200yr	105.250	13.010	9.00	24.77	16.45	1.82
105.750	50yr	105.750	10.210	8.91	23.16	15.96	1.62
105.750	80yr	105.750	10.950	8.91	23.62	16.17	1.65
105.750	100yr	105.750	11.360	8.91	23.89	16.30	1.66
105.750	150yr	105.750	12.180	8.91	24.38	16.51	1.69
105.750	200yr	105.750	13.010	8.91	24.84	16.68	1.73
106.230	50yr	106.230	10.210	10.57	23.21	16.51	1.84
106.230	80yr	106.230	10.950	10.57	23.67	16.71	1.86
106.230	100yr	106.230	11.360	10.57	23.93	16.81	1.87
106.230	150yr	106.230	12.180	10.57	24.42	17.05	1.90
106.230	200yr	106.230	13.010	10.57	24.87	17.25	1.93
106.750	50yr	106.750	10.210	10.81	23.34	16.11	1.46
106.750	80yr	106.750	10.950	10.81	23.80	16.26	1.47
106.750	100yr	106.750	11.360	10.81	24.07	16.35	1.48
106.750	150yr	106.750	12.180	10.81	24.56	16.52	1.50
106.750	200yr	106.750	13.010	10.81	25.01	16.69	1.52
107.250	50yr	107.250	10.210	8.81	23.43	13.92	1.04
107.250	80yr	107.250	10.950	8.81	23.89	14.06	1.06
107.250	100yr	107.250	11.360	8.81	24.15	14.14	1.07
107.250	150yr	107.250	12.180	8.81	24.64	14.29	1.10
107.250	200yr	107.250	13.010	8.81	25.09	14.42	1.13
107.700	50yr	107.700	10.210	9.67	23.46	14.29	0.90
107.700	80yr	107.700	10.950	9.67	23.92	14.42	0.92
107.700	100yr	107.700	11.360	9.67	24.19	14.48	0.93
107.700	150yr	107.700	12.180	9.67	24.67	14.62	0.95
107.700	200yr	107.700	13.010	9.67	25.12	14.75	0.97

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
108.200	50yr	108.200	10.210	10.38	23.48	15.78	1.06
108.200	80yr	108.200	10.950	10.38	23.94	15.90	1.08
108.200	100yr	108.200	11.360	10.38	24.20	15.97	1.09
108.200	150yr	108.200	12.180	10.38	24.69	16.09	1.11
108.200	200yr	108.200	13.010	10.38	25.14	16.21	1.14
108.750	50yr	108.750	10.210	10.98	23.50	14.69	0.96
108.750	80yr	108.750	10.950	10.98	23.96	14.80	0.99
108.750	100yr	108.750	11.360	10.98	24.22	14.86	1.00
108.750	150yr	108.750	12.180	10.98	24.71	14.98	1.03
108.750	200yr	108.750	13.010	10.98	25.16	15.10	1.06
109.400	50yr	109.400	7.180	11.52	23.42	18.20	2.12
109.400	80yr	109.400	7.710	11.52	23.89	18.44	2.04
109.400	100yr	109.400	7.940	11.52	24.16	18.53	1.99
109.400	150yr	109.400	8.830	11.52	24.64	18.89	2.01
109.400	200yr	109.400	9.520	11.52	25.10	19.11	2.00
109.900	50yr	109.900	7.180	11.11	23.64	18.35	2.01
109.900	80yr	109.900	7.710	11.11	24.07	18.63	1.99
109.900	100yr	109.900	7.940	11.11	24.32	18.74	1.96
109.900	150yr	109.900	8.830	11.11	24.79	20.12	2.01
109.900	200yr	109.900	9.520	11.11	25.22	20.35	2.03
110.350	50yr	110.350	7.180	11.81	23.83	17.52	1.52
110.350	80yr	110.350	7.710	11.81	24.25	17.68	1.54
110.350	100yr	110.350	7.940	11.81	24.48	17.75	1.53
110.350	150yr	110.350	8.830	11.81	24.94	18.02	1.61
110.350	200yr	110.350	9.520	11.81	25.37	18.21	1.64
110.900	50yr	110.900	7.180	13.40	23.87	18.44	1.94
110.900	80yr	110.900	7.710	13.40	24.28	18.82	1.96
110.900	100yr	110.900	7.940	13.40	24.51	18.89	1.96
110.900	150yr	110.900	8.830	13.40	24.97	19.14	2.04
110.900	200yr	110.900	9.520	13.40	25.40	19.33	2.08
111.400	50yr	111.400	7.180	12.76	23.96	18.27	2.20
111.400	80yr	111.400	7.710	12.76	24.37	18.52	2.21
111.400	100yr	111.400	7.940	12.76	24.60	18.67	2.19
111.400	150yr	111.400	8.830	12.76	25.07	19.07	2.27
111.400	200yr	111.400	9.520	12.76	25.48	19.30	2.30
111.900	50yr	111.900	7.180	12.57	24.16	17.89	1.81
111.900	80yr	111.900	7.710	12.57	24.56	18.06	1.85
111.900	100yr	111.900	7.940	12.57	24.78	18.14	1.86
111.900	150yr	111.900	8.830	12.57	25.25	18.42	1.95
111.900	200yr	111.900	9.520	12.57	25.66	18.63	2.01
112.350	50yr	112.350	7.180	12.99	24.25	18.85	1.71
112.350	80yr	112.350	7.710	12.99	24.66	19.00	1.73
112.350	100yr	112.350	7.940	12.99	24.87	19.06	1.73
112.350	150yr	112.350	8.830	12.99	25.35	19.32	1.81
112.350	200yr	112.350	9.520	12.99	25.76	19.50	1.86
112.510	50yr	112.510	7.180	13.31	24.33	18.73	1.46
112.510	80yr	112.510	7.710	13.31	24.73	18.92	1.47
112.510	100yr	112.510	7.940	13.31	24.95	19.00	1.47
112.510	150yr	112.510	8.830	13.31	25.43	19.30	1.54
112.510	200yr	112.510	9.520	13.31	25.85	19.51	1.57
112.960	50yr	112.960	7.180	12.61	24.39	18.45	1.46
112.960	80yr	112.960	7.710	12.61	24.79	18.69	1.48
112.960	100yr	112.960	7.940	12.61	25.00	18.76	1.49
112.960	150yr	112.960	8.830	12.61	25.47	18.97	1.56
112.960	200yr	112.960	9.520	12.61	25.89	19.12	1.60

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
113.360	50yr	113.360	7.180	14.15	24.43	18.52	1.52
113.360	80yr	113.360	7.710	14.15	24.83	18.67	1.54
113.360	100yr	113.360	7.940	14.15	25.05	18.73	1.54
113.360	150yr	113.360	8.830	14.15	25.52	18.96	1.62
113.360	200yr	113.360	9.520	14.15	25.94	19.12	1.66
113.790	50yr	113.790	7.180	14.20	24.47	19.93	1.84
113.790	80yr	113.790	7.710	14.20	24.87	20.07	1.86
113.790	100yr	113.790	7.940	14.20	25.08	20.14	1.86
113.790	150yr	113.790	8.830	14.20	25.55	20.37	1.93
113.790	200yr	113.790	9.520	14.20	25.97	20.55	1.97
114.290	50yr	114.290	7.180	14.45	24.49	19.97	2.75
114.290	80yr	114.290	7.710	14.45	24.88	20.17	2.77
114.290	100yr	114.290	7.940	14.45	25.08	20.24	2.77
114.290	150yr	114.290	8.830	14.45	25.54	20.63	2.86
114.290	200yr	114.290	9.520	14.45	25.94	21.00	2.91
114.790	50yr	114.790	7.180	13.76	24.68	20.83	3.47
114.790	80yr	114.790	7.710	13.76	25.07	21.08	3.45
114.790	100yr	114.790	7.940	13.76	25.26	21.18	3.44
114.790	150yr	114.790	8.830	13.76	25.71	21.60	3.53
114.790	200yr	114.790	9.520	13.76	26.09	21.90	3.57
115.390	50yr	115.390	7.180	13.73	25.16	21.06	3.45
115.390	80yr	115.390	7.710	13.73	25.50	21.32	3.55
115.390	100yr	115.390	7.940	13.73	25.66	21.42	3.58
115.390	150yr	115.390	8.830	13.73	26.12	21.81	3.76
115.390	200yr	115.390	9.520	13.73	26.48	22.13	3.86
116.040	50yr	116.040	7.180	13.87	25.70	20.83	2.94
116.040	80yr	116.040	7.710	13.87	26.06	21.09	3.00
116.040	100yr	116.040	7.940	13.87	26.22	21.21	3.01
116.040	150yr	116.040	8.830	13.87	26.75	21.58	3.12
116.040	200yr	116.040	9.520	13.87	27.14	21.84	3.19
116.540	50yr	116.540	7.180	13.80	25.85	21.18	3.41
116.540	80yr	116.540	7.710	13.80	26.19	21.52	3.52
116.540	100yr	116.540	7.940	13.80	26.35	21.64	3.56
116.540	150yr	116.540	8.830	13.80	26.85	22.07	3.74
116.540	200yr	116.540	9.520	13.80	27.24	22.39	3.87
117.090	50yr	117.090	7.180	13.70	26.22	20.97	3.27
117.090	80yr	117.090	7.710	13.70	26.58	21.23	3.33
117.090	100yr	117.090	7.940	13.70	26.74	21.34	3.35
117.090	150yr	117.090	8.830	13.70	27.28	21.75	3.45
117.090	200yr	117.090	9.520	13.70	27.70	22.05	3.53
117.620	50yr	117.620	7.180	14.21	26.68	20.74	2.48
117.620	80yr	117.620	7.710	14.21	27.04	20.97	2.56
117.620	100yr	117.620	7.940	14.21	27.20	21.06	2.59
117.620	150yr	117.620	8.830	14.21	27.74	21.39	2.72
117.620	200yr	117.620	9.520	14.21	28.15	21.62	2.81
118.370	50yr	118.370	7.180	15.68	26.80	22.20	3.21
118.370	80yr	118.370	7.710	15.68	27.16	22.43	3.29
118.370	100yr	118.370	7.940	15.68	27.32	22.53	3.32
118.370	150yr	118.370	8.830	15.68	27.86	22.92	3.45
118.370	200yr	118.370	9.520	15.68	28.27	23.22	3.54
118.800	50yr	118.800	7.180	15.90	27.01	22.01	3.24
118.800	80yr	118.800	7.710	15.90	27.36	22.32	3.34
118.800	100yr	118.800	7.940	15.90	27.52	22.44	3.38
118.800	150yr	118.800	8.830	15.90	28.07	22.83	3.53
118.800	200yr	118.800	9.520	15.90	28.47	23.12	3.63

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
119.230	50yr	119.230	7.180	14.88	27.29	21.51	2.93
119.230	80yr	119.230	7.710	14.88	27.65	21.77	3.03
119.230	100yr	119.230	7.940	14.88	27.81	21.87	3.06
119.230	150yr	119.230	8.830	14.88	28.37	22.26	3.21
119.230	200yr	119.230	9.520	14.88	28.79	22.55	3.32
119.770	50yr	119.770	7.180	16.78	27.56	22.26	2.76
119.770	80yr	119.770	7.710	16.78	27.93	22.48	2.82
119.770	100yr	119.770	7.940	16.78	28.10	22.57	2.83
119.770	150yr	119.770	8.830	16.78	28.67	22.93	2.93
119.770	200yr	119.770	9.520	16.78	29.12	23.19	2.98
120.190	50yr	120.190	7.180	16.90	27.68	23.23	3.09
120.190	80yr	120.190	7.710	16.90	28.04	23.45	3.16
120.190	100yr	120.190	7.940	16.90	28.20	23.55	3.19
120.190	150yr	120.190	8.830	16.90	28.77	23.90	3.31
120.190	200yr	120.190	9.520	16.90	29.22	24.16	3.38
120.700	50yr	120.700	7.180	17.23	28.03	22.99	2.56
120.700	80yr	120.700	7.710	17.23	28.40	23.19	2.63
120.700	100yr	120.700	7.940	17.23	28.58	23.27	2.65
120.700	150yr	120.700	8.830	17.23	29.16	23.58	2.75
120.700	200yr	120.700	9.520	17.23	29.62	23.82	2.81
121.260	50yr	121.260	7.150	15.57	28.19	22.80	2.63
121.260	80yr	121.260	7.670	15.57	28.56	23.15	2.70
121.260	100yr	121.260	7.900	15.57	28.75	23.26	2.72
121.260	150yr	121.260	8.790	15.57	29.32	23.63	2.83
121.260	200yr	121.260	9.480	15.57	29.80	23.95	2.87
121.770	50yr	121.770	7.150	17.35	28.38	24.09	2.69
121.770	80yr	121.770	7.670	17.35	28.75	24.30	2.71
121.770	100yr	121.770	7.900	17.35	28.97	24.39	2.69
121.770	150yr	121.770	8.790	17.35	29.57	24.70	2.68
121.770	200yr	121.770	9.480	17.35	30.09	24.97	2.65
122.140	50yr	122.140	7.150	17.90	28.56	24.06	2.85
122.140	80yr	122.140	7.670	17.90	28.91	24.25	2.89
122.140	100yr	122.140	7.900	17.90	29.14	24.36	2.87
122.140	150yr	122.140	8.790	17.90	29.71	24.68	2.93
122.140	200yr	122.140	9.480	17.90	30.20	24.97	2.94
122.490	50yr	122.490	7.150	18.65	28.77	24.62	2.91
122.490	80yr	122.490	7.670	18.65	29.11	24.83	2.91
122.490	100yr	122.490	7.900	18.65	29.34	24.93	2.87
122.490	150yr	122.490	8.790	18.65	29.93	25.29	2.86
122.490	200yr	122.490	9.480	18.65	30.42	25.57	2.84
122.990	50yr	122.990	7.150	18.77	29.17	24.01	2.26
122.990	80yr	122.990	7.670	18.77	29.50	24.19	2.31
122.990	100yr	122.990	7.900	18.77	29.72	24.28	2.31
122.990	150yr	122.990	8.790	18.77	30.29	24.58	2.37
122.990	200yr	122.990	9.480	18.77	30.74	24.82	2.41
123.470	50yr	123.470	7.150	18.81	29.35	23.62	1.99
123.470	80yr	123.470	7.670	18.81	29.68	23.81	2.04
123.470	100yr	123.470	7.900	18.81	29.89	23.88	2.05
123.470	150yr	123.470	8.790	18.81	30.46	24.16	2.13
123.470	200yr	123.470	9.480	18.81	30.90	24.40	2.18
124.010	50yr	124.010	7.150	18.66	29.47	23.32	1.92
124.010	80yr	124.010	7.670	18.66	29.80	23.48	1.98
124.010	100yr	124.010	7.900	18.66	30.00	23.55	1.99
124.010	150yr	124.010	8.790	18.66	30.58	23.81	2.07
124.010	200yr	124.010	9.480	18.66	31.02	24.03	2.12

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
124.460	50yr	124.460	7.150	18.10	29.42	24.19	2.80
124.460	80yr	124.460	7.670	18.10	29.75	24.43	2.88
124.460	100yr	124.460	7.900	18.10	29.95	24.53	2.90
124.460	150yr	124.460	8.790	18.10	30.52	24.89	3.02
124.460	200yr	124.460	9.480	18.10	30.99	25.18	3.06
124.960	50yr	124.960	7.150	18.25	29.51	24.89	3.44
124.960	80yr	124.960	7.670	18.25	29.83	25.13	3.53
124.960	100yr	124.960	7.900	18.25	30.03	25.24	3.55
124.960	150yr	124.960	8.790	18.25	30.59	25.64	3.69
124.960	200yr	124.960	9.480	18.25	31.12	25.94	3.74
125.660	50yr	125.660	5.370	19.57	30.19	25.06	2.00
125.660	80yr	125.660	5.750	19.57	30.54	25.24	2.04
125.660	100yr	125.660	5.920	19.57	30.74	25.31	2.05
125.660	150yr	125.660	6.710	19.57	31.34	25.62	2.16
125.660	200yr	125.660	7.330	19.57	31.86	25.85	2.22
126.420	50yr	126.420	5.370	21.07	30.34	26.12	2.44
126.420	80yr	126.420	5.750	21.07	30.68	26.32	2.46
126.420	100yr	126.420	5.920	21.07	30.88	26.41	2.44
126.420	150yr	126.420	6.710	21.07	31.49	26.85	2.51
126.420	200yr	126.420	7.330	21.07	32.01	27.26	2.54
126.742	50yr	126.742	5.370	21.98	30.45	26.33	2.57
126.742	80yr	126.742	5.750	21.98	30.78	26.49	2.62
126.742	100yr	126.742	5.920	21.98	30.98	26.57	2.63
126.742	150yr	126.742	6.710	21.98	31.57	26.89	2.75
126.742	200yr	126.742	7.330	21.98	32.07	27.15	2.82
126.750		Bridge					
126.758	50yr	126.758	5.370	21.98	30.57	26.32	2.53
126.758	80yr	126.758	5.750	21.98	30.91	26.49	2.58
126.758	100yr	126.758	5.920	21.98	31.10	26.56	2.59
126.758	150yr	126.758	6.710	21.98	31.70	26.88	2.70
126.758	200yr	126.758	7.330	21.98	32.21	27.14	2.78
126.775	50yr	126.775	5.370	22.18	30.57	26.37	2.58
126.775	80yr	126.775	5.750	22.18	30.90	26.56	2.63
126.775	100yr	126.775	5.920	22.18	31.09	26.65	2.64
126.775	150yr	126.775	6.710	22.18	31.70	27.01	2.76
126.775	200yr	126.775	7.330	22.18	32.20	27.26	2.83
126.800		Bridge					
126.825	50yr	126.825	5.370	22.18	30.62	26.37	2.56
126.825	80yr	126.825	5.750	22.18	30.96	26.56	2.61
126.825	100yr	126.825	5.920	22.18	31.15	26.65	2.62
126.825	150yr	126.825	6.710	22.18	31.76	26.99	2.74
126.825	200yr	126.825	7.330	22.18	32.27	27.26	2.81
126.960	50yr	126.960	5.370	22.58	30.66	26.71	2.62
126.960	80yr	126.960	5.750	22.58	31.00	26.88	2.67
126.960	100yr	126.960	5.920	22.58	31.19	26.96	2.67
126.960	150yr	126.960	6.710	22.58	31.81	27.34	2.78
126.960	200yr	126.960	7.330	22.58	32.31	27.58	2.85
127.460	50yr	127.460	5.370	21.91	30.90	26.34	2.49
127.460	80yr	127.460	5.750	21.91	31.23	26.51	2.54
127.460	100yr	127.460	5.920	21.91	31.42	26.59	2.55
127.460	150yr	127.460	6.710	21.91	32.03	26.94	2.66
127.460	200yr	127.460	7.330	21.91	32.53	27.21	2.73
127.715	50yr	127.715	5.370	21.02	30.96	26.70	2.68

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
127.715	80yr	127.715	5.750	21.02	31.29	26.90	2.74
127.715	100yr	127.715	5.920	21.02	31.47	26.99	2.76
127.715	150yr	127.715	6.710	21.02	32.08	27.41	2.89
127.715	200yr	127.715	7.330	21.02	32.57	27.71	2.98
127.720		Bridge					
127.725	50yr	127.725	5.370	21.02	30.99	26.69	2.67
127.725	80yr	127.725	5.750	21.02	31.32	26.90	2.73
127.725	100yr	127.725	5.920	21.02	31.50	26.98	2.74
127.725	150yr	127.725	6.710	21.02	32.11	27.40	2.88
127.725	200yr	127.725	7.330	21.02	32.61	27.71	2.96
127.735	50yr	127.735	5.370	21.02	31.00	26.68	2.67
127.735	80yr	127.735	5.750	21.02	31.33	26.89	2.73
127.735	100yr	127.735	5.920	21.02	31.51	26.98	2.74
127.735	150yr	127.735	6.710	21.02	32.12	27.39	2.88
127.735	200yr	127.735	7.330	21.02	32.61	27.70	2.96
127.740		Bridge					
127.745	50yr	127.745	5.370	21.02	31.03	26.68	2.65
127.745	80yr	127.745	5.750	21.02	31.36	26.89	2.71
127.745	100yr	127.745	5.920	21.02	31.54	26.98	2.73
127.745	150yr	127.745	6.710	21.02	32.16	27.39	2.86
127.745	200yr	127.745	7.330	21.02	32.65	27.70	2.95
127.879	50yr	127.879	5.370	19.96	30.96	27.16	3.32
127.879	80yr	127.879	5.750	19.96	31.28	27.36	3.40
127.879	100yr	127.879	5.920	19.96	31.46	27.45	3.41
127.879	150yr	127.879	6.710	19.96	32.06	28.00	3.56
127.879	200yr	127.879	7.330	19.96	32.55	28.36	3.65
127.890		Bridge					
127.901	50yr	127.901	5.370	19.96	31.04	27.15	3.28
127.901	80yr	127.901	5.750	19.96	31.37	27.35	3.35
127.901	100yr	127.901	5.920	19.96	31.55	27.45	3.37
127.901	150yr	127.901	6.710	19.96	32.16	28.00	3.51
127.901	200yr	127.901	7.330	19.96	32.66	28.35	3.59
127.970	50yr	127.970	5.370	19.56	31.15	26.80	3.08
127.970	80yr	127.970	5.750	19.56	31.47	27.00	3.16
127.970	100yr	127.970	5.920	19.56	31.65	27.09	3.18
127.970	150yr	127.970	6.710	19.56	32.27	27.50	3.34
127.970	200yr	127.970	7.330	19.56	32.77	27.78	3.44
128.370	50yr	128.370	5.370	19.46	31.48	26.26	2.43
128.370	80yr	128.370	5.750	19.46	31.82	26.45	2.49
128.370	100yr	128.370	5.920	19.46	32.00	26.53	2.52
128.370	150yr	128.370	6.710	19.46	32.65	26.88	2.65
128.370	200yr	128.370	7.330	19.46	33.15	27.18	2.75
128.780	50yr	128.780	5.370	21.79	31.64	26.89	2.27
128.780	80yr	128.780	5.750	21.79	31.98	27.05	2.32
128.780	100yr	128.780	5.920	21.79	32.16	27.10	2.33
128.780	150yr	128.780	6.710	21.79	32.82	27.44	2.43
128.780	200yr	128.780	7.330	21.79	33.34	27.67	2.49
129.230	50yr	129.230	5.370	18.26	31.71	25.66	2.62
129.230	80yr	129.230	5.750	18.26	32.05	25.91	2.69
129.230	100yr	129.230	5.920	18.26	32.22	26.02	2.72
129.230	150yr	129.230	6.710	18.26	32.88	26.45	2.85
129.230	200yr	129.230	7.330	18.26	33.39	26.82	2.94
129.830	50yr	129.830	5.370	21.68	31.88	27.21	2.78

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
129.830	80yr	129.830	5.750	21.68	32.22	27.43	2.85
129.830	100yr	129.830	5.920	21.68	32.40	27.53	2.88
129.830	150yr	129.830	6.710	21.68	33.06	28.17	3.02
129.830	200yr	129.830	7.330	21.68	33.56	28.46	3.12
130.330	50yr	130.330	5.370	22.00	32.06	27.24	2.87
130.330	80yr	130.330	5.750	22.00	32.39	27.44	2.95
130.330	100yr	130.330	5.920	22.00	32.57	27.53	2.98
130.330	150yr	130.330	6.710	22.00	33.22	27.93	3.14
130.330	200yr	130.330	7.330	22.00	33.73	28.24	3.25
130.470	50yr	130.470	5.370	24.05	31.78	29.06	4.28
130.470	80yr	130.470	5.750	24.05	32.11	29.29	4.36
130.470	100yr	130.470	5.920	24.05	32.29	29.40	4.37
130.470	150yr	130.470	6.710	24.05	32.93	30.30	4.53
130.470	200yr	130.470	7.330	24.05	33.42	30.62	4.65

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▶ 금강(대청댐상류) 홍수위산정결과(개수전)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: KumKang Reach: Up-Stream

Rivers = 1
Hydraulic Reaches = 1
River Stations = 96
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
222.040	50yr		5,400	72.97	87.83	80.48	2.25
222.040	80yr		5,820	72.97	88.21	80.74	2.34
222.040	100yr		6,100	72.97	88.47	80.90	2.39
222.040	150yr		6,450	72.97	88.78	81.10	2.45
222.040	200yr		6,760	72.97	89.05	81.24	2.51
222.210	50yr	170	5,400	76.99	87.79		3.19
222.210	80yr	170	5,820	76.99	88.16		3.31
222.210	100yr	170	6,100	76.99	88.42		3.37
222.210	150yr	170	6,450	76.99	88.72		3.46
222.210	200yr	170	6,760	76.99	88.98		3.53
222.215		Inline Weir					
222.220	50yr	180	5,400	78.49	87.83	83.99	3.55
222.220	80yr	180	5,820	78.49	88.21	84.20	3.66
222.220	100yr	180	6,100	78.49	88.47	84.35	3.72
222.220	150yr	180	6,450	78.49	88.78	84.55	3.80
222.220	200yr	180	6,760	78.49	89.05	84.70	3.87
222.530	50yr	490	5,400	75.20	88.31		2.83
222.530	80yr	490	5,820	75.20	88.70		2.92
222.530	100yr	490	6,100	75.20	88.97		2.97
222.530	150yr	490	6,450	75.20	89.31		3.04
222.530	200yr	490	6,760	75.20	89.59		3.09
222.915	50yr	875	5,400	75.24	88.49		2.96
222.915	80yr	875	5,820	75.24	88.89		3.05
222.915	100yr	875	6,100	75.24	89.16		3.10
222.915	150yr	875	6,450	75.24	89.52		3.15
222.915	200yr	875	6,760	75.24	89.80		3.20
223.570	50yr	1,530	5,400	77.15	88.83		3.11
223.570	80yr	1,530	5,820	77.15	89.24		3.21
223.570	100yr	1,530	6,100	77.15	89.52		3.27
223.570	150yr	1,530	6,450	77.15	89.88		3.34
223.570	200yr	1,530	6,760	77.15	90.16		3.41
223.573	50yr	1,533	5,400	78.46	88.59	85.24	4.05
223.573	80yr	1,533	5,820	78.46	89.02	85.53	4.08
223.573	100yr	1,533	6,100	78.46	89.31	85.72	4.10
223.573	150yr	1,533	6,450	78.46	89.68	85.96	4.11
223.573	200yr	1,533	6,760	78.46	89.97	86.18	4.14
223.580		Bridge					
223.587	50yr	1,547	5,400	78.46	88.82	85.23	3.91
223.587	80yr	1,547	5,820	78.46	89.24	85.52	3.95
223.587	100yr	1,547	6,100	78.46	89.52	85.72	3.97
223.587	150yr	1,547	6,450	78.46	89.89	85.96	3.99
223.587	200yr	1,547	6,760	78.46	90.18	86.17	4.03
223.608	50yr	1,568	5,400	78.02	89.20		2.98
223.608	80yr	1,568	5,820	78.02	89.61		3.07
223.608	100yr	1,568	6,100	78.02	89.88		3.12

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
223.608	150yr	1,568	6,450	78.02	90.24		3.18
223.608	200yr	1,568	6,760	78.02	90.52		3.23
223.615		Bridge					
223.622	50yr	1,582	5,400	78.02	89.24	84.06	2.97
223.622	80yr	1,582	5,820	78.02	89.65	84.31	3.05
223.622	100yr	1,582	6,100	78.02	89.93	84.46	3.10
223.622	150yr	1,582	6,450	78.02	90.29	84.67	3.16
223.622	200yr	1,582	6,760	78.02	90.57	84.83	3.22
223.632	50yr	1,592	5,400	77.48	89.24		2.98
223.632	80yr	1,592	5,820	77.48	89.66		3.07
223.632	100yr	1,592	6,100	77.48	89.93		3.12
223.632	150yr	1,592	6,450	77.48	90.29		3.18
223.632	200yr	1,592	6,760	77.48	90.57		3.24
223.645		Bridge					
223.658	50yr	1,618	5,400	77.48	89.30	83.63	2.97
223.658	80yr	1,618	5,820	77.48	89.72	83.88	3.05
223.658	100yr	1,618	6,100	77.48	90.00	84.06	3.10
223.658	150yr	1,618	6,450	77.48	90.36	84.25	3.16
223.658	200yr	1,618	6,760	77.48	90.65	84.41	3.21
224.125	50yr	2,085	5,400	77.29	89.56		2.95
224.125	80yr	2,085	5,820	77.29	89.99		3.03
224.125	100yr	2,085	6,100	77.29	90.28		3.08
224.125	150yr	2,085	6,450	77.29	90.63		3.14
224.125	200yr	2,085	6,760	77.29	90.92		3.20
224.580	50yr	2,540	5,400	78.40	89.77		3.42
224.580	80yr	2,540	5,820	78.40	90.20		3.50
224.580	100yr	2,540	6,100	78.40	90.48		3.55
224.580	150yr	2,540	6,450	78.40	90.83		3.60
224.580	200yr	2,540	6,760	78.40	91.12		3.65
224.955	50yr	2,915	5,400	78.01	90.10		3.37
224.955	80yr	2,915	5,820	78.01	90.52		3.46
224.955	100yr	2,915	6,100	78.01	90.80		3.51
224.955	150yr	2,915	6,450	78.01	91.15		3.57
224.955	200yr	2,915	6,760	78.01	91.44		3.63
225.415	50yr	3,375	5,400	78.62	90.51		3.11
225.415	80yr	3,375	5,820	78.62	90.93		3.21
225.415	100yr	3,375	6,100	78.62	91.21		3.27
225.415	150yr	3,375	6,450	78.62	91.56		3.35
225.415	200yr	3,375	6,760	78.62	91.84		3.41
225.579	50yr	3,539	5,400	78.95	90.79		2.49
225.579	80yr	3,539	5,820	78.95	91.22		2.56
225.579	100yr	3,539	6,100	78.95	91.52		2.60
225.579	150yr	3,539	6,450	78.95	91.87		2.65
225.579	200yr	3,539	6,760	78.95	92.17		2.70
225.590		Bridge					
225.600	50yr	3,560	5,400	78.95	90.82	84.96	2.48
225.600	80yr	3,560	5,820	78.95	91.26	85.18	2.55
225.600	100yr	3,560	6,100	78.95	91.56	85.32	2.59
225.600	150yr	3,560	6,450	78.95	91.91	85.49	2.64
225.600	200yr	3,560	6,760	78.95	92.21	85.64	2.69
225.772	50yr	3,732	5,400	81.35	90.86	85.74	2.65
225.772	80yr	3,732	5,820	81.35	91.29	85.95	2.71
225.772	100yr	3,732	6,100	81.35	91.59	86.10	2.75
225.772	150yr	3,732	6,450	81.35	91.95	86.26	2.80

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
225.772	200yr	3,732	6,760	81.35	92.25	86.41	2.84
225.774		Inline Weir					
225.775	50yr	3,735	5,400	81.35	90.99	85.75	2.61
225.775	80yr	3,735	5,820	81.35	91.43	85.96	2.67
225.775	100yr	3,735	6,100	81.35	91.73	86.09	2.71
225.775	150yr	3,735	6,450	81.35	92.09	86.26	2.76
225.775	200yr	3,735	6,760	81.35	92.39	86.41	2.80
225.830	50yr	3,790	5,400	80.67	91.01	85.67	2.69
225.830	80yr	3,790	5,820	80.67	91.45	85.89	2.76
225.830	100yr	3,790	6,100	80.67	91.75	86.03	2.80
225.830	150yr	3,790	6,450	80.67	92.11	86.20	2.85
225.830	200yr	3,790	6,760	80.67	92.40	86.35	2.89
226.268	50yr	4,228	5,400	80.32	91.33		2.15
226.268	80yr	4,228	5,820	80.32	91.77		2.21
226.268	100yr	4,228	6,100	80.32	92.07		2.24
226.268	150yr	4,228	6,450	80.32	92.44		2.28
226.268	200yr	4,228	6,760	80.32	92.73		2.32
226.275		Bridge					
226.282	50yr	4,242	5,400	80.32	91.35	85.65	2.15
226.282	80yr	4,242	5,820	80.32	91.79	85.84	2.20
226.282	100yr	4,242	6,100	80.32	92.10	85.97	2.23
226.282	150yr	4,242	6,450	80.32	92.46	86.13	2.27
226.282	200yr	4,242	6,760	80.32	92.77	86.26	2.31
226.385	50yr	4,345	5,400	79.91	91.40		2.04
226.385	80yr	4,345	5,820	79.91	91.84		2.09
226.385	100yr	4,345	6,100	79.91	92.15		2.12
226.385	150yr	4,345	6,450	79.91	92.52		2.16
226.385	200yr	4,345	6,760	79.91	92.82		2.20
226.950	50yr	4,910	5,400	80.63	91.62	84.57	1.40
226.950	80yr	4,910	5,820	80.63	92.07	84.71	1.44
226.950	100yr	4,910	6,100	80.63	92.38	84.80	1.47
226.950	150yr	4,910	6,450	80.63	92.75	84.92	1.49
226.950	200yr	4,910	6,760	80.63	93.05	85.01	1.52
227.092	50yr	5,052	5,400	81.57	91.62	85.43	1.52
227.092	80yr	5,052	5,820	81.57	92.07	85.57	1.56
227.092	100yr	5,052	6,100	81.57	92.38	85.66	1.58
227.092	150yr	5,052	6,450	81.57	92.75	85.77	1.60
227.092	200yr	5,052	6,760	81.57	93.06	85.86	1.63
227.097		Inline Weir					
227.100	50yr	5,060	5,400	81.57	91.66	85.43	1.51
227.100	80yr	5,060	5,820	81.57	92.11	85.57	1.55
227.100	100yr	5,060	6,100	81.57	92.42	85.66	1.57
227.100	150yr	5,060	6,450	81.57	92.79	85.77	1.60
227.100	200yr	5,060	6,760	81.57	93.10	85.87	1.62
227.425	50yr	5,385	5,400	80.03	91.56	85.95	2.75
227.425	80yr	5,385	5,820	80.03	92.00	86.21	2.81
227.425	100yr	5,385	6,100	80.03	92.31	86.38	2.84
227.425	150yr	5,385	6,450	80.03	92.67	86.59	2.88
227.425	200yr	5,385	6,760	80.03	92.97	86.76	2.92
227.610	50yr	5,570	5,400	78.75	91.60	86.34	3.13
227.610	80yr	5,570	5,810	78.75	92.04	86.61	3.19
227.610	100yr	5,570	6,100	78.75	92.34	86.79	3.22
227.610	150yr	5,570	6,450	78.75	92.70	87.01	3.26
227.610	200yr	5,570	6,750	78.75	93.01	87.19	3.29

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
227.745	50yr	5,705	5,400	80.23	91.79	86.51	2.83
227.745	80yr	5,705	5,810	80.23	92.23	86.75	2.88
227.745	100yr	5,705	6,100	80.23	92.53	86.91	2.92
227.745	150yr	5,705	6,450	80.23	92.89	87.14	2.97
227.745	200yr	5,705	6,750	80.23	93.20	87.30	3.00
228.340	50yr	6,300	5,400	80.60	92.13		2.73
228.340	80yr	6,300	5,810	80.60	92.57		2.80
228.340	100yr	6,300	6,100	80.60	92.86		2.86
228.340	150yr	6,300	6,450	80.60	93.21		2.92
228.340	200yr	6,300	6,750	80.60	93.51		2.96
229.100	50yr	7,060	5,400	81.08	92.50		2.55
229.100	80yr	7,060	5,810	81.08	92.94		2.62
229.100	100yr	7,060	6,100	81.08	93.24		2.67
229.100	150yr	7,060	6,450	81.08	93.60		2.73
229.100	200yr	7,060	6,750	81.08	93.90		2.77
229.550	50yr	7,510	5,400	81.97	92.59		3.33
229.550	80yr	7,510	5,810	81.97	93.02		3.40
229.550	100yr	7,510	6,100	81.97	93.32		3.45
229.550	150yr	7,510	6,450	81.97	93.67		3.50
229.550	200yr	7,510	6,750	81.97	93.97		3.55
229.925	50yr	7,885	5,400	81.81	92.84		3.67
229.925	80yr	7,885	5,810	81.81	93.26		3.75
229.925	100yr	7,885	6,100	81.81	93.55		3.80
229.925	150yr	7,885	6,450	81.81	93.90		3.86
229.925	200yr	7,885	6,750	81.81	94.19		3.91
230.485	50yr	8,445	5,400	82.29	93.65	87.60	1.99
230.485	80yr	8,445	5,810	82.29	94.09	87.80	2.02
230.485	100yr	8,445	6,100	82.29	94.39	87.94	2.05
230.485	150yr	8,445	6,450	82.29	94.75	88.11	2.08
230.485	200yr	8,445	6,750	82.29	95.06	88.25	2.11
230.895	50yr	8,855	5,400	83.27	93.64		3.04
230.895	80yr	8,855	5,810	83.27	94.07		3.10
230.895	100yr	8,855	6,100	83.27	94.37		3.14
230.895	150yr	8,855	6,450	83.27	94.72		3.18
230.895	200yr	8,855	6,750	83.27	95.01		3.22
231.365	50yr	9,325	5,400	84.66	93.96		3.14
231.365	80yr	9,325	5,810	84.66	94.39		3.20
231.365	100yr	9,325	6,100	84.66	94.68		3.25
231.365	150yr	9,325	6,450	84.66	95.03		3.30
231.365	200yr	9,325	6,750	84.66	95.32		3.34
231.605	50yr	9,565	5,400	84.21	94.20		2.94
231.605	80yr	9,565	5,810	84.21	94.62		3.00
231.605	100yr	9,565	6,100	84.21	94.91		3.05
231.605	150yr	9,565	6,450	84.21	95.26		3.10
231.605	200yr	9,565	6,750	84.21	95.55		3.15
231.925	50yr	9,885	5,400	83.98	94.43		2.76
231.925	80yr	9,885	5,810	83.98	94.86		2.82
231.925	100yr	9,885	6,100	83.98	95.16		2.86
231.925	150yr	9,885	6,450	83.98	95.50		2.91
231.925	200yr	9,885	6,750	83.98	95.79		2.95
232.360	50yr	10,320	5,400	83.69	94.67		2.86
232.360	80yr	10,320	5,810	83.69	95.10		2.92
232.360	100yr	10,320	6,100	83.69	95.39		2.96
232.360	150yr	10,320	6,450	83.69	95.73		3.01
232.360	200yr	10,320	6,750	83.69	96.02		3.05

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
232.905	50yr	10,865	5,400	84.40	94.91		3.69
232.905	80yr	10,865	5,810	84.40	95.33		3.76
232.905	100yr	10,865	6,100	84.40	95.61		3.81
232.905	150yr	10,865	6,450	84.40	95.95		3.87
232.905	200yr	10,865	6,750	84.40	96.23		3.92
233.465	50yr	11,425	5,400	83.64	95.69		2.69
233.465	80yr	11,425	5,810	83.64	96.11		2.74
233.465	100yr	11,425	6,100	83.64	96.40		2.78
233.465	150yr	11,425	6,450	83.64	96.75		2.82
233.465	200yr	11,425	6,750	83.64	97.04		2.86
234.130	50yr	12,090	5,400	85.32	96.13	89.91	1.74
234.130	80yr	12,090	5,810	85.32	96.56	90.07	1.79
234.130	100yr	12,090	6,100	85.32	96.85	90.18	1.82
234.130	150yr	12,090	6,450	85.32	97.20	90.30	1.86
234.130	200yr	12,090	6,750	85.32	97.50	90.41	1.89
234.585	50yr	12,545	5,400	85.66	96.19	90.66	2.11
234.585	80yr	12,545	5,810	85.66	96.62	90.85	2.15
234.585	100yr	12,545	6,100	85.66	96.91	90.98	2.18
234.585	150yr	12,545	6,450	85.66	97.26	91.14	2.22
234.585	200yr	12,545	6,750	85.66	97.55	91.27	2.25
235.060	50yr	13,020	5,400	86.35	96.33	92.14	2.50
235.060	80yr	13,020	5,810	86.35	96.75	92.29	2.54
235.060	100yr	13,020	6,100	86.35	97.04	92.41	2.56
235.060	150yr	13,020	6,450	86.35	97.39	92.57	2.59
235.060	200yr	13,020	6,750	86.35	97.68	92.68	2.61
235.410	50yr	13,370	5,400	86.55	96.56	91.63	2.31
235.410	80yr	13,370	5,810	86.55	96.99	91.82	2.33
235.410	100yr	13,370	6,100	86.55	97.28	91.95	2.34
235.410	150yr	13,370	6,450	86.55	97.64	92.15	2.35
235.410	200yr	13,370	6,750	86.55	97.93	92.48	2.36
235.420		Bridge					
235.435	50yr	13,395	5,400	86.55	96.63	91.62	2.28
235.435	80yr	13,395	5,810	86.55	97.06	91.81	2.31
235.435	100yr	13,395	6,100	86.55	97.36	91.95	2.32
235.435	150yr	13,395	6,450	86.55	97.72	92.34	2.32
235.435	200yr	13,395	6,750	86.55	98.00	92.48	2.33
235.450		Bridge					
235.460	50yr	13,420	5,400	86.55	96.69	91.60	2.26
235.460	80yr	13,420	5,810	86.55	97.13	91.82	2.28
235.460	100yr	13,420	6,100	86.55	97.43	91.93	2.29
235.460	150yr	13,420	6,450	86.55	97.78	92.15	2.30
235.460	200yr	13,420	6,750	86.55	98.06	92.49	2.31
235.530	50yr	13,490	5,400	87.55	96.66		2.67
235.530	80yr	13,490	5,810	87.55	97.09		2.70
235.530	100yr	13,490	6,100	87.55	97.39		2.72
235.530	150yr	13,490	6,450	87.55	97.74		2.76
235.530	200yr	13,490	6,750	87.55	98.01		2.79
235.570	50yr	13,530	5,400	87.79	96.71	92.85	2.59
235.570	80yr	13,530	5,810	87.79	97.14	93.03	2.60
235.570	100yr	13,530	6,100	87.79	97.45	93.17	2.61
235.570	150yr	13,530	6,450	87.79	97.80	93.33	2.63
235.570	200yr	13,530	6,750	87.79	98.07	93.49	2.65
235.595	50yr	13,555	5,400	87.73	96.73		2.57
235.595	80yr	13,555	5,810	87.73	97.16		2.62
235.595	100yr	13,555	6,100	87.73	97.45		2.65

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
235.595	150yr	13,555	6,450	87.73	97.80		2.69
235.595	200yr	13,555	6,750	87.73	98.07		2.73
235.704	50yr	13,664	5,360	87.18	96.84	91.70	2.37
235.704	80yr	13,664	5,770	87.18	97.26	91.91	2.42
235.704	100yr	13,664	6,060	87.18	97.56	92.05	2.45
235.704	150yr	13,664	6,390	87.18	97.91	92.25	2.48
235.704	200yr	13,664	6,700	87.18	98.18	92.45	2.52
235.710		Bridge					
235.715	50yr	13,675	5,360	87.18	96.88	91.70	2.36
235.715	80yr	13,675	5,770	87.18	97.30	91.91	2.41
235.715	100yr	13,675	6,060	87.18	97.60	92.05	2.44
235.715	150yr	13,675	6,390	87.18	97.95	92.25	2.47
235.715	200yr	13,675	6,700	87.18	98.22	92.44	2.51
236.055	50yr	14,015	5,360	86.83	96.99	92.38	2.68
236.055	80yr	14,015	5,770	86.83	97.41	92.59	2.73
236.055	100yr	14,015	6,060	86.83	97.70	92.73	2.76
236.055	150yr	14,015	6,390	86.83	98.04	92.89	2.79
236.055	200yr	14,015	6,700	86.83	98.31	93.04	2.83
236.505	50yr	14,465	5,360	87.71	97.30	92.59	2.52
236.505	80yr	14,465	5,770	87.71	97.74	92.79	2.54
236.505	100yr	14,465	6,060	87.71	98.02	92.94	2.56
236.505	150yr	14,465	6,390	87.71	98.36	93.09	2.57
236.505	200yr	14,465	6,700	87.71	98.63	93.25	2.60
237.040	50yr	15,000	5,360	86.90	97.63	92.49	2.25
237.040	80yr	15,000	5,770	86.90	98.06	92.76	2.29
237.040	100yr	15,000	6,060	86.90	98.34	92.93	2.32
237.040	150yr	15,000	6,390	86.90	98.66	93.09	2.35
237.040	200yr	15,000	6,700	86.90	98.92	93.25	2.39
237.455	50yr	15,415	5,360	87.95	97.80	93.32	2.33
237.455	80yr	15,415	5,770	87.95	98.23	93.52	2.36
237.455	100yr	15,415	6,060	87.95	98.50	93.65	2.38
237.455	150yr	15,415	6,390	87.95	98.82	93.82	2.40
237.455	200yr	15,415	6,700	87.95	99.09	93.97	2.44
237.865	50yr	15,825	5,360	88.40	98.04	93.73	2.39
237.865	80yr	15,825	5,770	88.40	98.46	93.95	2.38
237.865	100yr	15,825	6,060	88.40	98.73	94.11	2.39
237.865	150yr	15,825	6,390	88.40	99.04	94.28	2.39
237.865	200yr	15,825	6,700	88.40	99.30	94.42	2.41
238.335	50yr	16,295	5,360	88.56	98.35		2.24
238.335	80yr	16,295	5,770	88.56	98.73		2.28
238.335	100yr	16,295	6,060	88.56	98.99		2.31
238.335	150yr	16,295	6,390	88.56	99.28		2.35
238.335	200yr	16,295	6,700	88.56	99.53		2.38
238.780	50yr	16,740	5,360	87.80	98.54	93.74	2.35
238.780	80yr	16,740	5,770	87.80	98.92	93.95	2.40
238.780	100yr	16,740	6,060	87.80	99.17	94.09	2.44
238.780	150yr	16,740	6,390	87.80	99.45	94.25	2.49
238.780	200yr	16,740	6,700	87.80	99.70	94.39	2.53
239.170	50yr	17,130	5,360	89.73	98.76	94.69	2.28
239.170	80yr	17,130	5,770	89.73	99.14	94.85	2.31
239.170	100yr	17,130	6,060	89.73	99.39	94.97	2.32
239.170	150yr	17,130	6,390	89.73	99.68	95.09	2.35
239.170	200yr	17,130	6,700	89.73	99.94	95.21	2.37
239.220	50yr	17,180	5,360	89.23	98.89	93.34	1.82
239.220	80yr	17,180	5,770	89.23	99.26	93.49	1.87

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
239.220	100yr	17,180	6,060	89.23	99.51	93.62	1.90
239.220	150yr	17,180	6,390	89.23	99.79	93.74	1.94
239.220	200yr	17,180	6,700	89.23	100.05	93.85	1.97
239.635	50yr	17,595	5,360	89.13	98.99	93.13	1.93
239.635	80yr	17,595	5,770	89.13	99.36	93.33	1.98
239.635	100yr	17,595	6,060	89.13	99.61	93.47	2.02
239.635	150yr	17,595	6,390	89.13	99.89	93.63	2.07
239.635	200yr	17,595	6,700	89.13	100.15	93.75	2.11
240.070	50yr	18,030	5,360	88.70	99.04	93.80	2.57
240.070	80yr	18,030	5,770	88.70	99.41	94.02	2.65
240.070	100yr	18,030	6,060	88.70	99.66	94.16	2.70
240.070	150yr	18,030	6,390	88.70	99.93	94.32	2.75
240.070	200yr	18,030	6,700	88.70	100.18	94.47	2.80
240.295	50yr	18,255	5,360	87.63	99.18	93.41	2.46
240.295	80yr	18,255	5,770	87.63	99.54	93.63	2.54
240.295	100yr	18,255	6,060	87.63	99.79	93.76	2.60
240.295	150yr	18,255	6,390	87.63	100.07	93.92	2.66
240.295	200yr	18,255	6,700	87.63	100.32	94.06	2.72
240.825	50yr	18,785	5,360	89.31	99.48	94.36	2.03
240.825	80yr	18,785	5,770	89.31	99.86	94.52	2.08
240.825	100yr	18,785	6,060	89.31	100.12	94.64	2.11
240.825	150yr	18,785	6,390	89.31	100.40	94.76	2.15
240.825	200yr	18,785	6,700	89.31	100.66	94.87	2.18
241.045	50yr	19,005	5,360	90.42	99.61	94.40	1.79
241.045	80yr	19,005	5,770	90.42	99.99	94.56	1.82
241.045	100yr	19,005	6,060	90.42	100.25	94.66	1.84
241.045	150yr	19,005	6,390	90.42	100.54	94.78	1.86
241.045	200yr	19,005	6,700	90.42	100.80	94.89	1.88
241.055		Bridge					
241.065	50yr	19,025	5,360	90.42	99.65	94.40	1.78
241.065	80yr	19,025	5,770	90.42	100.03	94.55	1.81
241.065	100yr	19,025	6,060	90.42	100.29	94.66	1.83
241.065	150yr	19,025	6,390	90.42	100.58	94.78	1.85
241.065	200yr	19,025	6,700	90.42	100.85	94.89	1.87
241.220	50yr	19,180	5,360	87.87	99.68	94.34	1.94
241.220	80yr	19,180	5,770	87.87	100.06	94.55	1.97
241.220	100yr	19,180	6,060	87.87	100.32	94.69	1.99
241.220	150yr	19,180	6,390	87.87	100.61	94.83	2.01
241.220	200yr	19,180	6,700	87.87	100.88	94.94	2.02
241.765	50yr	19,725	5,360	91.10	99.87	95.84	2.18
241.765	80yr	19,725	5,770	91.10	100.25	96.01	2.21
241.765	100yr	19,725	6,060	91.10	100.51	96.14	2.24
241.765	150yr	19,725	6,390	91.10	100.79	96.28	2.27
241.765	200yr	19,725	6,700	91.10	101.04	96.40	2.30
242.610	50yr	20,570	5,360	90.98	100.23	95.47	2.32
242.610	80yr	20,570	5,770	90.98	100.60	95.69	2.38
242.610	100yr	20,570	6,060	90.98	100.84	95.85	2.42
242.610	150yr	20,570	6,390	90.98	101.12	96.03	2.47
242.610	200yr	20,570	6,700	90.98	101.37	96.17	2.51
243.355	50yr	21,315	5,360	91.92	100.60	97.36	2.43
243.355	80yr	21,315	5,770	91.92	100.96	97.51	2.47
243.355	100yr	21,315	6,060	91.92	101.20	97.61	2.49
243.355	150yr	21,315	6,390	91.92	101.48	97.72	2.52
243.355	200yr	21,315	6,700	91.92	101.73	97.82	2.54
243.940	50yr	21,900	5,360	93.53	101.00	97.99	2.45

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
243.940	80yr	21,900	5,770	93.53	101.35	98.13	2.48
243.940	100yr	21,900	6,060	93.53	101.58	98.23	2.50
243.940	150yr	21,900	6,390	93.53	101.85	98.34	2.53
243.940	200yr	21,900	6,700	93.53	102.09	98.44	2.55
244.360	50yr	22,320	4,090	91.75	101.47	97.75	1.92
244.360	80yr	22,320	4,380	91.75	101.79	97.89	1.87
244.360	100yr	22,320	4,670	91.75	102.02	98.04	1.88
244.360	150yr	22,320	4,880	91.75	102.28	98.11	1.84
244.360	200yr	22,320	5,140	91.75	102.52	98.23	1.83
244.830	50yr	22,790	4,090	93.61	101.81	98.71	1.94
244.830	80yr	22,790	4,380	93.61	102.13	98.82	1.92
244.830	100yr	22,790	4,670	93.61	102.40	98.93	1.88
244.830	150yr	22,790	4,880	93.61	102.62	99.01	1.83
244.830	200yr	22,790	5,140	93.61	102.83	99.11	1.81
244.860	50yr	22,820	4,090	93.19	101.74	98.85	2.53
244.860	80yr	22,820	4,380	93.19	102.06	98.98	2.54
244.860	100yr	22,820	4,670	93.19	102.33	99.12	2.55
244.860	150yr	22,820	4,880	93.19	102.54	99.21	2.53
244.860	200yr	22,820	5,140	93.19	102.76	99.33	2.48
244.870		Bridge					
244.880	50yr	22,840	4,090	93.19	101.84	98.85	2.47
244.880	80yr	22,840	4,380	93.19	102.16	98.99	2.48
244.880	100yr	22,840	4,670	93.19	102.44	99.12	2.48
244.880	150yr	22,840	4,880	93.19	102.66	99.22	2.43
244.880	200yr	22,840	5,140	93.19	102.89	99.33	2.38
245.305	50yr	23,265	4,090	95.31	102.31	100.03	1.93
245.305	80yr	23,265	4,380	95.31	102.63	100.12	1.92
245.305	100yr	23,265	4,670	95.31	102.90	100.21	1.92
245.305	150yr	23,265	4,880	95.31	103.14	100.27	1.90
245.305	200yr	23,265	5,140	95.31	103.34	100.34	1.93
245.840	50yr	23,800	4,090	95.77	102.63	99.64	2.21
245.840	80yr	23,800	4,380	95.77	102.91	99.77	2.25
245.840	100yr	23,800	4,670	95.77	103.16	99.90	2.29
245.840	150yr	23,800	4,880	95.77	103.38	99.99	2.30
245.840	200yr	23,800	5,140	95.77	103.57	100.09	2.35
246.325	50yr	24,285	3,940	94.91	102.83		3.36
246.325	80yr	24,285	4,220	94.91	103.09		3.44
246.325	100yr	24,285	4,520	94.91	103.32		3.55
246.325	150yr	24,285	4,710	94.91	103.52		3.58
246.325	200yr	24,285	4,970	94.91	103.69		3.67
246.330		Bridge					
246.335	50yr	24,295	3,940	94.91	102.95	100.30	3.29
246.335	80yr	24,295	4,220	94.91	103.21	100.48	3.37
246.335	100yr	24,295	4,520	94.91	103.45	100.66	3.47
246.335	150yr	24,295	4,710	94.91	103.65	100.78	3.50
246.335	200yr	24,295	4,970	94.91	103.83	100.93	3.59
246.365	50yr	24,325	3,940	95.65	102.88		3.73
246.365	80yr	24,325	4,220	95.65	103.14		3.82
246.365	100yr	24,325	4,520	95.65	103.37		3.92
246.365	150yr	24,325	4,710	95.65	103.57		3.95
246.365	200yr	24,325	4,970	95.65	103.75		4.05

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▶갑천 홍수위산정결과(개수전)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: Gab Chun Reach: Gab Chun

Rivers = 1
Hydraulic Reaches = 1
River Stations = 380
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		2,960	19.65	30.60	24.60	0.89
0.000	80yr		3,260	19.65	30.60	24.73	0.98
0.000	100yr		3,410	19.65	30.60	24.79	1.02
0.000	150yr		3,670	19.65	30.60	24.90	1.10
0.000	200yr		3,860	19.65	30.60	24.96	1.16
0.160	50yr	160	2,960	19.75	30.60	24.42	1.03
0.160	80yr	160	3,260	19.75	30.60	24.57	1.14
0.160	100yr	160	3,410	19.75	30.60	24.65	1.19
0.160	150yr	160	3,670	19.75	30.60	24.77	1.28
0.160	200yr	160	3,860	19.75	30.60	24.85	1.35
0.390	50yr	390	2,960	20.53	30.60	24.33	1.09
0.390	80yr	390	3,260	20.53	30.60	24.50	1.20
0.390	100yr	390	3,410	20.53	30.61	24.58	1.26
0.390	150yr	390	3,670	20.53	30.61	24.70	1.35
0.390	200yr	390	3,860	20.53	30.61	24.80	1.42
0.570	50yr	570	2,960	19.91	30.61	24.84	1.20
0.570	80yr	570	3,260	19.91	30.61	25.05	1.32
0.570	100yr	570	3,410	19.91	30.61	25.15	1.38
0.570	150yr	570	3,670	19.91	30.61	25.29	1.49
0.570	200yr	570	3,860	19.91	30.62	25.39	1.57
0.770	50yr	770	2,960	20.25	30.63	24.85	1.08
0.770	80yr	770	3,260	20.25	30.64	25.01	1.19
0.770	100yr	770	3,410	20.25	30.65	25.09	1.24
0.770	150yr	770	3,670	20.25	30.66	25.22	1.34
0.770	200yr	770	3,860	20.25	30.67	25.31	1.41
0.980	50yr	980	2,960	21.21	30.66	24.95	1.03
0.980	80yr	980	3,260	21.21	30.67	25.09	1.14
0.980	100yr	980	3,410	21.21	30.68	25.16	1.19
0.980	150yr	980	3,670	21.21	30.70	25.26	1.27
0.980	200yr	980	3,860	21.21	30.71	25.37	1.34
1.010	50yr	1,010	2,960	20.76	30.66	25.00	1.05
1.010	80yr	1,010	3,260	20.76	30.68	25.14	1.16
1.010	100yr	1,010	3,410	20.76	30.69	25.22	1.21
1.010	150yr	1,010	3,670	20.76	30.70	25.35	1.30
1.010	200yr	1,010	3,860	20.76	30.71	25.43	1.36
1.015		Bridge					
1.021	50yr	1,021	2,960	20.76	30.69	24.99	1.05
1.021	80yr	1,021	3,260	20.76	30.68	25.13	1.16
1.021	100yr	1,021	3,410	20.76	30.70	25.21	1.20
1.021	150yr	1,021	3,670	20.76	30.71	25.34	1.30
1.021	200yr	1,021	3,860	20.76	30.72	25.43	1.36
1.220	50yr	1,220	2,960	20.20	30.69	25.38	1.15
1.220	80yr	1,220	3,260	20.20	30.69	25.53	1.27
1.220	100yr	1,220	3,410	20.20	30.71	25.60	1.32
1.220	150yr	1,220	3,670	20.20	30.71	25.71	1.42
1.220	200yr	1,220	3,860	20.20	30.72	25.80	1.49

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
1.450	50yr	1,450	2,960	19.64	30.70	25.71	1.21
1.450	80yr	1,450	3,260	19.64	30.70	25.87	1.33
1.450	100yr	1,450	3,410	19.64	30.72	25.95	1.39
1.450	150yr	1,450	3,670	19.64	30.73	26.09	1.49
1.450	200yr	1,450	3,860	19.64	30.75	26.19	1.56
1.710	50yr	1,710	2,960	20.19	30.72	25.69	1.21
1.710	80yr	1,710	3,260	20.19	30.73	25.86	1.33
1.710	100yr	1,710	3,410	20.19	30.75	25.94	1.39
1.710	150yr	1,710	3,670	20.19	30.77	26.09	1.49
1.710	200yr	1,710	3,860	20.19	30.78	26.19	1.56
1.950	50yr	1,950	2,960	21.81	30.73	25.83	1.45
1.950	80yr	1,950	3,260	21.81	30.74	26.03	1.59
1.950	100yr	1,950	3,410	21.81	30.77	26.14	1.66
1.950	150yr	1,950	3,670	21.81	30.78	26.29	1.78
1.950	200yr	1,950	3,860	21.81	30.80	26.41	1.86
2.205	50yr	2,205	2,960	21.96	30.80	25.54	1.22
2.205	80yr	2,205	3,260	21.96	30.82	25.71	1.34
2.205	100yr	2,205	3,410	21.96	30.85	25.80	1.40
2.205	150yr	2,205	3,670	21.96	30.88	25.95	1.50
2.205	200yr	2,205	3,860	21.96	30.91	26.06	1.57
2.455	50yr	2,455	2,960	22.83	30.81	26.49	1.49
2.455	80yr	2,455	3,260	22.83	30.83	26.64	1.63
2.455	100yr	2,455	3,410	22.83	30.86	26.71	1.70
2.455	150yr	2,455	3,670	22.83	30.89	26.84	1.82
2.455	200yr	2,455	3,860	22.83	30.92	26.94	1.91
2.528	50yr	2,528	2,960	23.23	30.80	26.89	1.65
2.528	80yr	2,528	3,260	23.23	30.83	27.06	1.81
2.528	100yr	2,528	3,410	23.23	30.86	27.15	1.88
2.528	150yr	2,528	3,670	23.23	30.89	27.29	2.02
2.528	200yr	2,528	3,860	23.23	30.92	27.39	2.11
2.535		Bridge					
2.542	50yr	2,542	2,960	23.23	30.82	26.89	1.65
2.542	80yr	2,542	3,260	23.23	30.85	27.07	1.80
2.542	100yr	2,542	3,410	23.23	30.88	27.15	1.88
2.542	150yr	2,542	3,670	23.23	30.90	27.29	2.01
2.542	200yr	2,542	3,860	23.23	30.94	27.39	2.10
2.640	50yr	2,640	2,960	22.71	30.83	26.69	1.63
2.640	80yr	2,640	3,260	22.71	30.86	26.86	1.78
2.640	100yr	2,640	3,410	22.71	30.90	26.94	1.86
2.640	150yr	2,640	3,670	22.71	30.93	27.07	1.99
2.640	200yr	2,640	3,860	22.71	30.97	27.17	2.07
2.820	50yr	2,820	2,960	22.20	30.86	26.80	1.60
2.820	80yr	2,820	3,260	22.20	30.90	26.96	1.75
2.820	100yr	2,820	3,410	22.20	30.95	27.04	1.82
2.820	150yr	2,820	3,670	22.20	30.98	27.17	1.94
2.820	200yr	2,820	3,860	22.20	31.03	27.26	2.03
2.985	50yr	2,985	2,960	22.03	30.90	26.92	1.57
2.985	80yr	2,985	3,260	22.03	30.94	27.08	1.71
2.985	100yr	2,985	3,410	22.03	31.00	27.16	1.77
2.985	150yr	2,985	3,670	22.03	31.03	27.29	1.90
2.985	200yr	2,985	3,860	22.03	31.08	27.38	1.98
3.125	50yr	3,125	2,960	22.65	30.92	27.20	1.64
3.125	80yr	3,125	3,260	22.65	30.97	27.37	1.79
3.125	100yr	3,125	3,410	22.65	31.03	27.46	1.85
3.125	150yr	3,125	3,670	22.65	31.07	27.59	1.97

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
3.125	200yr	3,125	3,860	22.65	31.12	27.71	2.06
3.335	50yr	3,335	2,960	22.86	30.96	27.53	1.62
3.335	80yr	3,335	3,260	22.86	31.03	27.71	1.76
3.335	100yr	3,335	3,410	22.86	31.09	27.79	1.82
3.335	150yr	3,335	3,670	22.86	31.14	27.93	1.94
3.335	200yr	3,335	3,860	22.86	31.20	28.03	2.02
3.550	50yr	3,550	2,960	23.52	31.01	27.64	1.59
3.550	80yr	3,550	3,260	23.52	31.09	27.78	1.72
3.550	100yr	3,550	3,410	23.52	31.15	27.84	1.78
3.550	150yr	3,550	3,670	23.52	31.22	27.96	1.89
3.550	200yr	3,550	3,860	23.52	31.28	28.04	1.97
3.755	50yr	3,755	2,900	23.60	31.03	27.52	1.93
3.755	80yr	3,755	3,190	23.60	31.11	27.77	2.08
3.755	100yr	3,755	3,330	23.60	31.17	27.85	2.15
3.755	150yr	3,755	3,590	23.60	31.24	28.57	2.28
3.755	200yr	3,755	3,770	23.60	31.30	28.69	2.36
3.897	50yr	3,897	2,900	23.77	31.06	28.52	2.02
3.897	80yr	3,897	3,190	23.77	31.15	28.66	2.19
3.897	100yr	3,897	3,330	23.77	31.21	28.72	2.25
3.897	150yr	3,897	3,590	23.77	31.29	28.83	2.39
3.897	200yr	3,897	3,770	23.77	31.36	28.89	2.47
3.915		Bridge					
3.933	50yr	3,933	2,900	23.77	31.08	28.52	2.02
3.933	80yr	3,933	3,190	23.77	31.16	28.65	2.18
3.933	100yr	3,933	3,330	23.77	31.25	28.72	2.23
3.933	150yr	3,933	3,590	23.77	31.33	28.83	2.37
3.933	200yr	3,933	3,770	23.77	31.40	28.90	2.45
3.975	50yr	3,975	2,900	23.39	31.15	27.47	1.73
3.975	80yr	3,975	3,190	23.39	31.25	27.80	1.87
3.975	100yr	3,975	3,330	23.39	31.33	27.90	1.92
3.975	150yr	3,975	3,590	23.39	31.43	28.02	2.04
3.975	200yr	3,975	3,770	23.39	31.50	28.11	2.11
4.205	50yr	4,205	2,900	23.49	31.17	28.48	2.06
4.205	80yr	4,205	3,190	23.49	31.28	28.65	2.22
4.205	100yr	4,205	3,330	23.49	31.36	28.72	2.28
4.205	150yr	4,205	3,590	23.49	31.46	28.87	2.41
4.205	200yr	4,205	3,770	23.49	31.53	28.96	2.49
4.395	50yr	4,395	2,900	23.74	31.26	28.16	1.98
4.395	80yr	4,395	3,190	23.74	31.37	28.31	2.14
4.395	100yr	4,395	3,330	23.74	31.46	28.38	2.19
4.395	150yr	4,395	3,590	23.74	31.57	28.51	2.32
4.395	200yr	4,395	3,770	23.74	31.65	28.60	2.40
4.595	50yr	4,595	2,900	23.40	31.35	28.39	1.95
4.595	80yr	4,595	3,190	23.40	31.47	28.55	2.09
4.595	100yr	4,595	3,330	23.40	31.57	28.62	2.14
4.595	150yr	4,595	3,590	23.40	31.68	28.75	2.25
4.595	200yr	4,595	3,770	23.40	31.77	28.86	2.32
4.775	50yr	4,775	2,900	21.34	31.42	28.10	1.96
4.775	80yr	4,775	3,190	21.34	31.56	28.27	2.09
4.775	100yr	4,775	3,330	21.34	31.65	28.36	2.14
4.775	150yr	4,775	3,590	21.34	31.78	28.51	2.25
4.775	200yr	4,775	3,770	21.34	31.86	28.61	2.32
4.955	50yr	4,955	2,900	23.50	31.50	28.18	1.98
4.955	80yr	4,955	3,190	23.50	31.64	28.38	2.11
4.955	100yr	4,955	3,330	23.50	31.73	28.46	2.16

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
4.955	150yr	4.955	3.590	23.50	31.86	28.61	2.26
4.955	200yr	4.955	3.770	23.50	31.95	28.71	2.33
5.003	50yr	5.003	2.900	23.70	31.51	28.20	2.03
5.003	80yr	5.003	3.190	23.70	31.65	28.40	2.16
5.003	100yr	5.003	3.330	23.70	31.74	28.49	2.21
5.003	150yr	5.003	3.590	23.70	31.87	28.65	2.32
5.003	200yr	5.003	3.770	23.70	31.96	28.77	2.39
5.004		Inline Weir					
5.005	50yr	5.005	2.900	23.70	31.58	28.19	2.00
5.005	80yr	5.005	3.190	23.70	31.74	28.38	2.12
5.005	100yr	5.005	3.330	23.70	31.83	28.47	2.17
5.005	150yr	5.005	3.590	23.70	31.96	28.65	2.27
5.005	200yr	5.005	3.770	23.70	32.06	28.76	2.34
5.165	50yr	5.165	2.900	24.43	31.68	27.97	1.79
5.165	80yr	5.165	3.190	24.43	31.84	28.28	1.91
5.165	100yr	5.165	3.330	24.43	31.94	28.47	1.95
5.165	150yr	5.165	3.590	24.43	32.08	28.74	2.05
5.165	200yr	5.165	3.770	24.43	32.18	28.91	2.11
5.262	50yr	5.262	2.900	24.90	31.70	28.27	1.88
5.262	80yr	5.262	3.190	24.90	31.87	28.60	1.99
5.262	100yr	5.262	3.330	24.90	31.96	28.75	2.04
5.262	150yr	5.262	3.590	24.90	32.11	28.98	2.13
5.262	200yr	5.262	3.770	24.90	32.21	29.12	2.20
5.265		Bridge					
5.268	50yr	5.268	2.900	24.90	31.71	28.25	1.87
5.268	80yr	5.268	3.190	24.90	31.88	28.60	1.98
5.268	100yr	5.268	3.330	24.90	31.98	28.75	2.03
5.268	150yr	5.268	3.590	24.90	32.13	28.98	2.12
5.268	200yr	5.268	3.770	24.90	32.23	29.12	2.19
5.342	50yr	5.342	2.900	25.22	31.73	28.86	1.98
5.342	80yr	5.342	3.190	25.22	31.90	29.12	2.09
5.342	100yr	5.342	3.330	25.22	32.00	29.24	2.14
5.342	150yr	5.342	3.590	25.22	32.14	29.43	2.23
5.342	200yr	5.342	3.770	25.22	32.25	29.56	2.30
5.345		Bridge					
5.348	50yr	5.348	2.900	25.22	31.75	28.86	1.97
5.348	80yr	5.348	3.190	25.22	31.92	29.12	2.08
5.348	100yr	5.348	3.330	25.22	32.02	29.24	2.13
5.348	150yr	5.348	3.590	25.22	32.16	29.42	2.22
5.348	200yr	5.348	3.770	25.22	32.27	29.56	2.29
5.402	50yr	5.402	2.900	24.62	31.78	28.41	1.89
5.402	80yr	5.402	3.190	24.62	31.96	28.62	2.00
5.402	100yr	5.402	3.330	24.62	32.06	28.82	2.05
5.402	150yr	5.402	3.590	24.62	32.20	29.13	2.14
5.402	200yr	5.402	3.770	24.62	32.31	29.29	2.20
5.405		Bridge					
5.408	50yr	5.408	2.900	24.62	31.79	28.41	1.89
5.408	80yr	5.408	3.190	24.62	31.97	28.62	2.00
5.408	100yr	5.408	3.330	24.62	32.08	28.82	2.04
5.408	150yr	5.408	3.590	24.62	32.22	29.13	2.13
5.408	200yr	5.408	3.770	24.62	32.33	29.29	2.19
5.462	50yr	5.462	2.900	24.01	31.82	28.08	1.80
5.462	80yr	5.462	3.190	24.01	32.01	28.26	1.91

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
5.462	100yr	5.462	3.330	24.01	32.11	28.37	1.95
5.462	150yr	5.462	3.590	24.01	32.26	28.54	2.04
5.462	200yr	5.462	3.770	24.01	32.36	28.63	2.10
5.465		Bridge					
5.468	50yr	5.468	2.900	24.01	31.83	28.08	1.80
5.468	80yr	5.468	3.190	24.01	32.02	28.26	1.90
5.468	100yr	5.468	3.330	24.01	32.12	28.36	1.94
5.468	150yr	5.468	3.590	24.01	32.27	28.53	2.04
5.468	200yr	5.468	3.770	24.01	32.38	28.63	2.09
5.547	50yr	5.547	2.900	23.70	31.86	27.89	1.74
5.547	80yr	5.547	3.190	23.70	32.05	28.07	1.85
5.547	100yr	5.547	3.330	23.70	32.15	28.18	1.89
5.547	150yr	5.547	3.590	23.70	32.30	28.35	1.98
5.547	200yr	5.547	3.770	23.70	32.41	28.45	2.03
5.550		Bridge					
5.553	50yr	5.553	2.900	23.70	31.88	27.88	1.74
5.553	80yr	5.553	3.190	23.70	32.05	28.08	1.84
5.553	100yr	5.553	3.330	23.70	32.16	28.16	1.88
5.553	150yr	5.553	3.590	23.70	32.31	28.33	1.97
5.553	200yr	5.553	3.770	23.70	32.42	28.44	2.03
5.632	50yr	5.632	2.900	23.39	31.90	27.75	1.70
5.632	80yr	5.632	3.190	23.39	32.08	27.95	1.80
5.632	100yr	5.632	3.330	23.39	32.18	28.04	1.84
5.632	150yr	5.632	3.590	23.39	32.34	28.21	1.93
5.632	200yr	5.632	3.770	23.39	32.45	28.32	1.99
5.635		Bridge					
5.638	50yr	5.638	2.900	23.39	31.92	27.75	1.69
5.638	80yr	5.638	3.190	23.39	32.09	27.94	1.80
5.638	100yr	5.638	3.330	23.39	32.20	28.03	1.84
5.638	150yr	5.638	3.590	23.39	32.35	28.20	1.92
5.638	200yr	5.638	3.770	23.39	32.45	28.31	1.98
5.722	50yr	5.722	2.900	24.59	31.92	28.47	1.80
5.722	80yr	5.722	3.190	24.59	32.10	28.65	1.90
5.722	100yr	5.722	3.330	24.59	32.21	28.76	1.94
5.722	150yr	5.722	3.590	24.59	32.36	29.12	2.02
5.722	200yr	5.722	3.770	24.59	32.46	29.49	2.08
5.725		Bridge					
5.728	50yr	5.728	2.900	24.59	31.94	28.47	1.79
5.728	80yr	5.728	3.190	24.59	32.12	28.65	1.89
5.728	100yr	5.728	3.330	24.59	32.23	28.75	1.93
5.728	150yr	5.728	3.590	24.59	32.37	29.10	2.02
5.728	200yr	5.728	3.770	24.59	32.47	29.49	2.08
5.815	50yr	5.815	2.900	25.80	31.95	29.51	1.90
5.815	80yr	5.815	3.190	25.80	32.13	29.80	1.99
5.815	100yr	5.815	3.330	25.80	32.24	29.87	2.03
5.815	150yr	5.815	3.590	25.80	32.39	30.00	2.11
5.815	200yr	5.815	3.770	25.80	32.49	30.08	2.17
5.975	50yr	5.975	2.900	26.05	31.99	29.59	2.14
5.975	80yr	5.975	3.190	26.05	32.17	29.89	2.25
5.975	100yr	5.975	3.330	26.05	32.27	30.01	2.28
5.975	150yr	5.975	3.590	26.05	32.42	30.22	2.38
5.975	200yr	5.975	3.770	26.05	32.52	30.33	2.44
6.145	50yr	6.145	2.900	26.47	32.06	30.04	2.36

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
6.145	80yr	6.145	3.190	26.47	32.25	30.26	2.46
6.145	100yr	6.145	3.330	26.47	32.35	30.34	2.50
6.145	150yr	6.145	3.590	26.47	32.50	30.48	2.59
6.145	200yr	6.145	3.770	26.47	32.60	30.58	2.65
6.315	50yr	6.315	2.900	26.11	32.22	29.95	2.19
6.315	80yr	6.315	3.190	26.11	32.41	30.17	2.29
6.315	100yr	6.315	3.330	26.11	32.52	30.26	2.32
6.315	150yr	6.315	3.590	26.11	32.67	30.42	2.41
6.315	200yr	6.315	3.770	26.11	32.78	30.52	2.47
6.512	50yr	6.512	2.900	25.29	32.37	29.40	2.04
6.512	80yr	6.512	3.190	25.29	32.57	29.59	2.14
6.512	100yr	6.512	3.330	25.29	32.67	29.68	2.17
6.512	150yr	6.512	3.590	25.29	32.83	29.87	2.26
6.512	200yr	6.512	3.770	25.29	32.95	30.06	2.31
6.515		Bridge					
6.518	50yr	6.518	2.900	25.29	32.38	29.39	2.04
6.518	80yr	6.518	3.190	25.29	32.58	29.59	2.13
6.518	100yr	6.518	3.330	25.29	32.69	29.68	2.17
6.518	150yr	6.518	3.590	25.29	32.85	29.87	2.25
6.518	200yr	6.518	3.770	25.29	32.96	30.07	2.30
6.610	50yr	6.610	2.900	25.95	32.42	29.71	2.07
6.610	80yr	6.610	3.190	25.95	32.63	30.04	2.16
6.610	100yr	6.610	3.330	25.95	32.73	30.34	2.20
6.610	150yr	6.610	3.590	25.95	32.89	30.53	2.28
6.610	200yr	6.610	3.770	25.95	33.00	30.65	2.34
6.613		Bridge					
6.616	50yr	6.616	2.900	25.95	32.45	29.71	2.05
6.616	80yr	6.616	3.190	25.95	32.66	30.04	2.14
6.616	100yr	6.616	3.330	25.95	32.76	30.34	2.18
6.616	150yr	6.616	3.590	25.95	32.93	30.53	2.26
6.616	200yr	6.616	3.770	25.95	33.04	30.65	2.32
6.707	50yr	6.707	2.900	26.61	32.49	30.27	2.09
6.707	80yr	6.707	3.190	26.61	32.70	30.47	2.18
6.707	100yr	6.707	3.330	26.61	32.81	30.56	2.21
6.707	150yr	6.707	3.590	26.61	32.98	30.72	2.29
6.707	200yr	6.707	3.770	26.61	33.09	30.82	2.34
6.710		Bridge					
6.713	50yr	6.713	2.900	26.61	32.51	30.28	2.08
6.713	80yr	6.713	3.190	26.61	32.72	30.47	2.17
6.713	100yr	6.713	3.330	26.61	32.83	30.56	2.20
6.713	150yr	6.713	3.590	26.61	33.00	30.72	2.28
6.713	200yr	6.713	3.770	26.61	33.12	30.82	2.33
6.792	50yr	6.792	2.900	26.91	32.54	30.29	2.16
6.792	80yr	6.792	3.190	26.91	32.75	30.49	2.25
6.792	100yr	6.792	3.330	26.91	32.86	30.58	2.29
6.792	150yr	6.792	3.590	26.91	33.03	30.74	2.37
6.792	200yr	6.792	3.770	26.91	33.15	30.85	2.42
6.795		Bridge					
6.798	50yr	6.798	2.900	26.91	32.57	30.29	2.14
6.798	80yr	6.798	3.190	26.91	32.79	30.49	2.23
6.798	100yr	6.798	3.330	26.91	32.90	30.58	2.27
6.798	150yr	6.798	3.590	26.91	33.07	30.74	2.35
6.798	200yr	6.798	3.770	26.91	33.19	30.85	2.40

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
6.877	50yr	6,877	2,900	27.20	32.60	30.45	2.27
6.877	80yr	6,877	3,190	27.20	32.82	30.65	2.37
6.877	100yr	6,877	3,330	27.20	32.93	30.74	2.41
6.877	150yr	6,877	3,590	27.20	33.10	30.89	2.49
6.877	200yr	6,877	3,770	27.20	33.22	31.00	2.54
6.880		Bridge					
6.883	50yr	6,883	2,900	27.20	32.63	30.45	2.26
6.883	80yr	6,883	3,190	27.20	32.85	30.65	2.35
6.883	100yr	6,883	3,330	27.20	32.96	30.74	2.39
6.883	150yr	6,883	3,590	27.20	33.13	30.90	2.47
6.883	200yr	6,883	3,770	27.20	33.25	31.00	2.52
6.987	50yr	6,987	2,900	27.50	32.69	30.67	2.29
6.987	80yr	6,987	3,190	27.50	32.91	30.86	2.38
6.987	100yr	6,987	3,330	27.50	33.01	30.95	2.42
6.987	150yr	6,987	3,590	27.50	33.19	31.10	2.50
6.987	200yr	6,987	3,770	27.50	33.31	31.21	2.55
6.990		Bridge					
6.993	50yr	6,993	2,900	27.50	32.73	30.67	2.26
6.993	80yr	6,993	3,190	27.50	32.95	30.86	2.35
6.993	100yr	6,993	3,330	27.50	33.05	30.95	2.39
6.993	150yr	6,993	3,590	27.50	33.23	31.10	2.47
6.993	200yr	6,993	3,770	27.50	33.36	31.21	2.52
7.097	50yr	7,097	2,900	27.79	32.79	30.97	2.32
7.097	80yr	7,097	3,190	27.79	33.01	31.12	2.41
7.097	100yr	7,097	3,330	27.79	33.10	31.20	2.45
7.097	150yr	7,097	3,590	27.79	33.29	31.32	2.53
7.097	200yr	7,097	3,770	27.79	33.41	31.40	2.57
7.100		Bridge					
7.103	50yr	7,103	2,900	27.79	32.81	30.97	2.31
7.103	80yr	7,103	3,190	27.79	33.04	31.12	2.39
7.103	100yr	7,103	3,330	27.79	33.13	31.19	2.43
7.103	150yr	7,103	3,590	27.79	33.32	31.31	2.51
7.103	200yr	7,103	3,770	27.79	33.44	31.39	2.55
7.121	50yr	7,121	2,900	27.80	32.84	30.89	2.27
7.121	80yr	7,121	3,190	27.80	33.06	31.04	2.36
7.121	100yr	7,121	3,330	27.80	33.16	31.12	2.40
7.121	150yr	7,121	3,590	27.80	33.34	31.25	2.48
7.121	200yr	7,121	3,770	27.80	33.47	31.34	2.53
7.130		Bridge					
7.138	50yr	7,138	2,900	27.80	32.87	30.89	2.25
7.138	80yr	7,138	3,190	27.80	33.10	31.05	2.34
7.138	100yr	7,138	3,330	27.80	33.20	31.12	2.38
7.138	150yr	7,138	3,590	27.80	33.38	31.25	2.46
7.138	200yr	7,138	3,770	27.80	33.51	31.34	2.51
7.143	50yr	7,143	2,900	27.79	32.86	31.00	2.35
7.143	80yr	7,143	3,190	27.79	33.09	31.15	2.43
7.143	100yr	7,143	3,330	27.79	33.18	31.22	2.47
7.143	150yr	7,143	3,590	27.79	33.37	31.36	2.55
7.143	200yr	7,143	3,770	27.79	33.49	31.46	2.60
7.150		Bridge					
7.152	50yr	7,152	2,900	27.79	32.89	31.00	2.33
7.152	80yr	7,152	3,190	27.79	33.12	31.16	2.41
7.152	100yr	7,152	3,330	27.79	33.22	31.22	2.45

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
7.152	150yr	7,152	3,590	27.79	33.40	31.36	2.53
7.152	200yr	7,152	3,770	27.79	33.53	31.46	2.58
7.155	50yr	7,155	2,900	27.84	32.93	30.89	2.22
7.155	80yr	7,155	3,190	27.84	33.15	31.05	2.31
7.155	100yr	7,155	3,330	27.84	33.25	31.12	2.35
7.155	150yr	7,155	3,590	27.84	33.44	31.25	2.42
7.155	200yr	7,155	3,770	27.84	33.57	31.34	2.47
7.160		Bridge					
7.172	50yr	7,172	2,900	27.84	32.96	30.90	2.20
7.172	80yr	7,172	3,190	27.84	33.19	31.05	2.29
7.172	100yr	7,172	3,330	27.84	33.29	31.12	2.33
7.172	150yr	7,172	3,590	27.84	33.47	31.26	2.40
7.172	200yr	7,172	3,770	27.84	33.60	31.34	2.45
7.282	50yr	7,282	2,900	27.85	33.00	31.05	2.29
7.282	80yr	7,282	3,190	27.85	33.23	31.28	2.38
7.282	100yr	7,282	3,330	27.85	33.33	31.36	2.42
7.282	150yr	7,282	3,590	27.85	33.52	31.49	2.49
7.282	200yr	7,282	3,770	27.85	33.65	31.57	2.54
7.285		Bridge					
7.288	50yr	7,288	2,900	27.85	33.02	31.05	2.28
7.288	80yr	7,288	3,190	27.85	33.25	31.28	2.36
7.288	100yr	7,288	3,330	27.85	33.35	31.36	2.41
7.288	150yr	7,288	3,590	27.85	33.54	31.47	2.48
7.288	200yr	7,288	3,770	27.85	33.67	31.56	2.53
7.392	50yr	7,392	2,900	27.89	33.08	30.78	2.34
7.392	80yr	7,392	3,190	27.89	33.31	31.04	2.44
7.392	100yr	7,392	3,330	27.89	33.41	31.15	2.48
7.392	150yr	7,392	3,590	27.89	33.60	31.35	2.56
7.392	200yr	7,392	3,770	27.89	33.72	31.48	2.61
7.395		Bridge					
7.398	50yr	7,398	2,900	27.89	33.10	30.78	2.33
7.398	80yr	7,398	3,190	27.89	33.32	31.04	2.43
7.398	100yr	7,398	3,330	27.89	33.43	31.15	2.47
7.398	150yr	7,398	3,590	27.89	33.62	31.35	2.55
7.398	200yr	7,398	3,770	27.89	33.74	31.48	2.60
7.505	50yr	7,505	2,900	27.92	33.15	30.83	2.45
7.505	80yr	7,505	3,190	27.92	33.37	31.00	2.55
7.505	100yr	7,505	3,330	27.92	33.48	31.12	2.60
7.505	150yr	7,505	3,590	27.92	33.67	31.33	2.68
7.505	200yr	7,505	3,770	27.92	33.78	31.46	2.74
7.563	50yr	7,563	2,900	29.32	33.04	32.21	3.32
7.563	80yr	7,563	3,190	29.32	33.26	32.35	3.39
7.563	100yr	7,563	3,330	29.32	33.36	32.42	3.43
7.563	150yr	7,563	3,590	29.32	33.55	32.54	3.49
7.563	200yr	7,563	3,770	29.32	33.66	32.63	3.56
7.564		Inline Weir					
7.565	50yr	7,565	2,900	29.32	33.58	32.21	2.80
7.565	80yr	7,565	3,190	29.32	33.76	32.35	2.93
7.565	100yr	7,565	3,330	29.32	33.84	32.42	2.99
7.565	150yr	7,565	3,590	29.32	34.00	32.54	3.09
7.565	200yr	7,565	3,770	29.32	34.10	32.62	3.16
7.715	50yr	7,715	2,900	28.56	33.76	32.03	2.71
7.715	80yr	7,715	3,190	28.56	33.94	32.22	2.84

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
7.715	100yr	7,715	3,330	28.56	34.02	32.32	2.90
7.715	150yr	7,715	3,590	28.56	34.18	32.48	3.01
7.715	200yr	7,715	3,770	28.56	34.29	32.58	3.08
7.905	50yr	7,905	2,900	29.02	33.92	32.51	2.89
7.905	80yr	7,905	3,190	29.02	34.11	32.70	3.02
7.905	100yr	7,905	3,330	29.02	34.20	32.77	3.08
7.905	150yr	7,905	3,590	29.02	34.36	32.92	3.18
7.905	200yr	7,905	3,770	29.02	34.47	32.98	3.25
8.125	50yr	8,125	2,900	28.63	34.20	31.96	2.61
8.125	80yr	8,125	3,190	28.63	34.40	32.13	2.75
8.125	100yr	8,125	3,330	28.63	34.49	32.23	2.81
8.125	150yr	8,125	3,590	28.63	34.66	32.40	2.92
8.125	200yr	8,125	3,770	28.63	34.77	32.52	3.00
8.365	50yr	8,365	2,900	28.00	34.37	32.62	2.85
8.365	80yr	8,365	3,190	28.00	34.57	32.83	2.97
8.365	100yr	8,365	3,330	28.00	34.67	32.93	3.03
8.365	150yr	8,365	3,590	28.00	34.84	33.09	3.13
8.365	200yr	8,365	3,770	28.00	34.96	33.21	3.19
8.555	50yr	8,555	2,900	28.20	34.60	32.18	2.59
8.555	80yr	8,555	3,190	28.20	34.82	32.34	2.72
8.555	100yr	8,555	3,330	28.20	34.91	32.43	2.78
8.555	150yr	8,555	3,590	28.20	35.09	32.58	2.88
8.555	200yr	8,555	3,770	28.20	35.21	32.69	2.96
8.775	50yr	8,775	2,900	28.13	34.75	32.27	2.67
8.775	80yr	8,775	3,190	28.13	34.96	32.46	2.80
8.775	100yr	8,775	3,330	28.13	35.07	32.55	2.86
8.775	150yr	8,775	3,590	28.13	35.25	32.71	2.96
8.775	200yr	8,775	3,770	28.13	35.37	32.82	3.03
8.985	50yr	8,985	2,900	28.44	34.93	32.34	2.56
8.985	80yr	8,985	3,190	28.44	35.15	32.52	2.68
8.985	100yr	8,985	3,330	28.44	35.25	32.61	2.74
8.985	150yr	8,985	3,590	28.44	35.44	32.77	2.84
8.985	200yr	8,985	3,770	28.44	35.57	32.85	2.91
9.190	50yr	9,190	2,900	28.56	35.04	32.38	2.67
9.190	80yr	9,190	3,190	28.56	35.26	32.57	2.80
9.190	100yr	9,190	3,330	28.56	35.37	32.66	2.87
9.190	150yr	9,190	3,590	28.56	35.56	32.83	2.98
9.190	200yr	9,190	3,770	28.56	35.69	32.96	3.05
9.370	50yr	9,370	2,900	28.60	35.13	32.70	2.85
9.370	80yr	9,370	3,190	28.60	35.36	32.91	2.99
9.370	100yr	9,370	3,330	28.60	35.47	33.01	3.05
9.370	150yr	9,370	3,590	28.60	35.66	33.17	3.17
9.370	200yr	9,370	3,770	28.60	35.79	33.28	3.25
9.550	50yr	9,550	2,900	28.61	35.24	32.97	2.98
9.550	80yr	9,550	3,190	28.61	35.47	33.17	3.12
9.550	100yr	9,550	3,330	28.61	35.58	33.26	3.19
9.550	150yr	9,550	3,590	28.61	35.78	33.44	3.31
9.550	200yr	9,550	3,770	28.61	35.91	33.58	3.39
9.720	50yr	9,720	2,900	28.62	35.52	32.55	2.45
9.720	80yr	9,720	3,190	28.62	35.78	32.75	2.54
9.720	100yr	9,720	3,330	28.62	35.90	32.86	2.59
9.720	150yr	9,720	3,590	28.62	36.12	33.04	2.67
9.720	200yr	9,720	3,770	28.62	36.26	33.14	2.72
9.905	50yr	9,905	2,900	28.83	35.58	33.30	2.83
9.905	80yr	9,905	3,190	28.83	35.83	33.49	2.95
9.905	100yr	9,905	3,330	28.83	35.95	33.61	3.00

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
9.905	150yr	9.905	3.590	28.83	36.16	33.83	3.09
9.905	200yr	9.905	3.770	28.83	36.31	34.00	3.16
10.045	50yr	10.045	2.900	29.14	35.70	33.46	2.82
10.045	80yr	10.045	3.190	29.14	35.96	33.65	2.93
10.045	100yr	10.045	3.330	29.14	36.08	33.77	2.98
10.045	150yr	10.045	3.590	29.14	36.29	34.04	3.06
10.045	200yr	10.045	3.770	29.14	36.44	34.20	3.12
10.090	50yr	10.090	2.900	30.55	35.76	33.82	2.75
10.090	80yr	10.090	3.190	30.55	36.02	34.04	2.85
10.090	100yr	10.090	3.330	30.55	36.14	34.14	2.90
10.090	150yr	10.090	3.590	30.55	36.36	34.28	2.98
10.090	200yr	10.090	3.770	30.55	36.51	34.37	3.04
10.105		Bridge					
10.120	50yr	10.120	2.900	30.55	35.83	33.82	2.71
10.120	80yr	10.120	3.190	30.55	36.09	34.04	2.81
10.120	100yr	10.120	3.330	30.55	36.21	34.14	2.85
10.120	150yr	10.120	3.590	30.55	36.43	34.28	2.94
10.120	200yr	10.120	3.770	30.55	36.58	34.37	2.99
10.225	50yr	10.225	2.900	29.77	35.84	34.20	3.10
10.225	80yr	10.225	3.190	29.77	36.10	34.39	3.22
10.225	100yr	10.225	3.330	29.77	36.22	34.47	3.27
10.225	150yr	10.225	3.590	29.77	36.43	34.61	3.36
10.225	200yr	10.225	3.770	29.77	36.57	34.72	3.43
10.415	50yr	10.415	2.900	29.58	36.03	34.24	3.15
10.415	80yr	10.415	3.190	29.58	36.29	34.49	3.27
10.415	100yr	10.415	3.330	29.58	36.41	34.59	3.33
10.415	150yr	10.415	3.590	29.58	36.61	34.75	3.44
10.415	200yr	10.415	3.770	29.58	36.76	34.86	3.50
10.595	50yr	10.595	2.900	28.29	36.26	33.43	2.96
10.595	80yr	10.595	3.190	28.29	36.51	33.66	3.10
10.595	100yr	10.595	3.330	28.29	36.63	33.76	3.16
10.595	150yr	10.595	3.590	28.29	36.84	34.03	3.28
10.595	200yr	10.595	3.770	28.29	36.98	34.29	3.36
10.765	50yr	10.765	2.900	27.85	36.47	33.00	2.66
10.765	80yr	10.765	3.190	27.85	36.74	33.24	2.78
10.765	100yr	10.765	3.330	27.85	36.86	33.36	2.85
10.765	150yr	10.765	3.590	27.85	37.07	33.58	2.96
10.765	200yr	10.765	3.770	27.85	37.22	33.70	3.03
10.925	50yr	10.925	2.900	29.16	36.55	33.62	2.74
10.925	80yr	10.925	3.190	29.16	36.82	33.85	2.86
10.925	100yr	10.925	3.330	29.16	36.94	33.96	2.92
10.925	150yr	10.925	3.590	29.16	37.15	34.23	3.03
10.925	200yr	10.925	3.770	29.16	37.31	34.44	3.10
11.105	50yr	11.105	2.900	30.89	36.73	34.14	2.57
11.105	80yr	11.105	3.190	30.89	37.02	34.34	2.64
11.105	100yr	11.105	3.330	30.89	37.15	34.43	2.68
11.105	150yr	11.105	3.590	30.89	37.38	34.60	2.75
11.105	200yr	11.105	3.770	30.89	37.54	34.73	2.79
11.325	50yr	11.325	2.900	30.80	36.93	34.08	2.41
11.325	80yr	11.325	3.190	30.80	37.22	34.28	2.47
11.325	100yr	11.325	3.330	30.80	37.35	34.37	2.50
11.325	150yr	11.325	3.590	30.80	37.59	34.55	2.56
11.325	200yr	11.325	3.770	30.80	37.76	34.67	2.60
11.415	50yr	11.415	2.900	31.04	36.99	34.31	2.47
11.415	80yr	11.415	3.190	31.04	37.27	34.52	2.53

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
11.415	100yr	11,415	3,330	31.04	37.41	34.61	2.56
11.415	150yr	11,415	3,590	31.04	37.64	34.79	2.61
11.415	200yr	11,415	3,770	31.04	37.81	34.89	2.65
11.545	50yr	11,545	2,900	31.20	37.16	34.23	2.13
11.545	80yr	11,545	3,190	31.20	37.44	34.40	2.20
11.545	100yr	11,545	3,330	31.20	37.57	34.50	2.23
11.545	150yr	11,545	3,590	31.20	37.81	34.63	2.29
11.545	200yr	11,545	3,770	31.20	37.97	34.73	2.33
11.655	50yr	11,655	1,540	31.40	37.38	33.50	1.09
11.655	80yr	11,655	1,650	31.40	37.67	33.58	1.09
11.655	100yr	11,655	1,690	31.40	37.81	33.61	1.08
11.655	150yr	11,655	1,780	31.40	38.06	33.67	1.09
11.655	200yr	11,655	1,910	31.40	38.23	33.76	1.13
11.710	50yr	11,710	1,540	31.30	37.37	34.02	1.32
11.710	80yr	11,710	1,650	31.30	37.66	34.11	1.30
11.710	100yr	11,710	1,690	31.30	37.81	34.15	1.28
11.710	150yr	11,710	1,780	31.30	38.06	34.23	1.27
11.710	200yr	11,710	1,910	31.30	38.23	34.34	1.30
11.725		Bridge					
11.741	50yr	11,741	1,540	31.30	37.39	34.02	1.31
11.741	80yr	11,741	1,650	31.30	37.69	34.12	1.29
11.741	100yr	11,741	1,690	31.30	37.83	34.15	1.27
11.741	150yr	11,741	1,780	31.30	38.08	34.23	1.26
11.741	200yr	11,741	1,910	31.30	38.25	34.34	1.30
11.785	50yr	11,785	1,540	31.60	37.41	33.77	1.22
11.785	80yr	11,785	1,650	31.60	37.71	33.86	1.21
11.785	100yr	11,785	1,690	31.60	37.85	33.89	1.20
11.785	150yr	11,785	1,780	31.60	38.10	33.97	1.19
11.785	200yr	11,785	1,910	31.60	38.27	34.07	1.24
11.817	50yr	11,817	1,540	31.10	37.43	33.05	1.13
11.817	80yr	11,817	1,650	31.10	37.72	33.14	1.13
11.817	100yr	11,817	1,690	31.10	37.87	33.17	1.12
11.817	150yr	11,817	1,780	31.10	38.12	33.24	1.13
11.817	200yr	11,817	1,910	31.10	38.29	33.35	1.17
11.818		Inline Weir					
11.820	50yr	11,820	1,540	31.10	37.45	33.05	1.12
11.820	80yr	11,820	1,650	31.10	37.75	33.14	1.13
11.820	100yr	11,820	1,690	31.10	37.89	33.17	1.12
11.820	150yr	11,820	1,780	31.10	38.14	33.25	1.12
11.820	200yr	11,820	1,910	31.10	38.32	33.35	1.16
11.960	50yr	11,960	1,540	31.44	37.47	33.80	1.20
11.960	80yr	11,960	1,650	31.44	37.77	33.89	1.19
11.960	100yr	11,960	1,690	31.44	37.91	33.92	1.18
11.960	150yr	11,960	1,780	31.44	38.16	33.99	1.18
11.960	200yr	11,960	1,910	31.44	38.34	34.09	1.22
12.060	50yr	12,060	1,540	31.66	37.49	33.75	1.18
12.060	80yr	12,060	1,650	31.66	37.79	33.84	1.17
12.060	100yr	12,060	1,690	31.66	37.93	33.87	1.16
12.060	150yr	12,060	1,780	31.66	38.18	33.94	1.16
12.060	200yr	12,060	1,910	31.66	38.36	34.04	1.20
12.160	50yr	12,160	1,540	31.81	37.51	33.96	1.21
12.160	80yr	12,160	1,650	31.81	37.81	34.05	1.20
12.160	100yr	12,160	1,690	31.81	37.95	34.08	1.19
12.160	150yr	12,160	1,780	31.81	38.20	34.16	1.18
12.160	200yr	12,160	1,910	31.81	38.37	34.26	1.22

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
12.200	50yr	12,200	1,540	31.92	37.52	33.95	1.23
12.200	80yr	12,200	1,650	31.92	37.81	34.04	1.22
12.200	100yr	12,200	1,690	31.92	37.96	34.07	1.21
12.200	150yr	12,200	1,780	31.92	38.20	34.14	1.20
12.200	200yr	12,200	1,910	31.92	38.38	34.24	1.24
12.210		Bridge					
12.220	50yr	12,220	1,540	31.92	37.53	33.95	1.22
12.220	80yr	12,220	1,650	31.92	37.83	34.04	1.22
12.220	100yr	12,220	1,690	31.92	37.97	34.07	1.20
12.220	150yr	12,220	1,780	31.92	38.22	34.14	1.20
12.220	200yr	12,220	1,910	31.92	38.39	34.24	1.24
12.260	50yr	12,260	1,540	31.53	37.54	33.84	1.20
12.260	80yr	12,260	1,650	31.53	37.84	33.93	1.20
12.260	100yr	12,260	1,690	31.53	37.98	33.96	1.19
12.260	150yr	12,260	1,780	31.53	38.23	34.03	1.18
12.260	200yr	12,260	1,910	31.53	38.41	34.13	1.22
12.355	50yr	12,355	1,540	31.71	37.55	33.88	1.23
12.355	80yr	12,355	1,650	31.71	37.85	33.97	1.22
12.355	100yr	12,355	1,690	31.71	37.99	34.00	1.21
12.355	150yr	12,355	1,780	31.71	38.23	34.07	1.21
12.355	200yr	12,355	1,910	31.71	38.42	34.17	1.25
12.460	50yr	12,460	1,540	31.67	37.57	33.93	1.24
12.460	80yr	12,460	1,650	31.67	37.86	34.02	1.24
12.460	100yr	12,460	1,690	31.67	38.00	34.05	1.23
12.460	150yr	12,460	1,780	31.67	38.24	34.12	1.23
12.460	200yr	12,460	1,910	31.67	38.43	34.23	1.27
12.560	50yr	12,560	1,540	31.60	37.58	33.95	1.24
12.560	80yr	12,560	1,650	31.60	37.87	34.04	1.24
12.560	100yr	12,560	1,690	31.60	38.01	34.08	1.23
12.560	150yr	12,560	1,780	31.60	38.25	34.15	1.23
12.560	200yr	12,560	1,910	31.60	38.44	34.25	1.27
12.660	50yr	12,660	1,540	31.46	37.60	33.71	1.16
12.660	80yr	12,660	1,650	31.46	37.89	33.80	1.16
12.660	100yr	12,660	1,690	31.46	38.03	33.83	1.15
12.660	150yr	12,660	1,780	31.46	38.27	33.90	1.16
12.660	200yr	12,660	1,910	31.46	38.46	34.00	1.20
12.760	50yr	12,760	1,540	31.71	37.61	34.06	1.24
12.760	80yr	12,760	1,650	31.71	37.90	34.15	1.24
12.760	100yr	12,760	1,690	31.71	38.04	34.18	1.23
12.760	150yr	12,760	1,780	31.71	38.29	34.25	1.22
12.760	200yr	12,760	1,910	31.71	38.47	34.36	1.26
12.860	50yr	12,860	1,540	30.76	37.64	33.04	1.05
12.860	80yr	12,860	1,650	30.76	37.93	33.13	1.06
12.860	100yr	12,860	1,690	30.76	38.07	33.16	1.05
12.860	150yr	12,860	1,780	30.76	38.31	33.23	1.05
12.860	200yr	12,860	1,910	30.76	38.50	33.33	1.09
12.916	50yr	12,916	1,540	32.71	37.63	34.59	1.32
12.916	80yr	12,916	1,650	32.71	37.92	34.68	1.31
12.916	100yr	12,916	1,690	32.71	38.06	34.71	1.29
12.916	150yr	12,916	1,780	32.71	38.30	34.78	1.28
12.916	200yr	12,916	1,910	32.71	38.49	34.88	1.31
12.918		Inline Weir					
12.920	50yr	12,920	1,540	32.71	37.68	34.59	1.30
12.920	80yr	12,920	1,650	32.71	37.96	34.68	1.29

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
12.920	100yr	12,920	1,690	32.71	38.10	34.71	1.27
12.920	150yr	12,920	1,780	32.71	38.34	34.78	1.26
12.920	200yr	12,920	1,910	32.71	38.53	34.88	1.30
12.940	50yr	12,940	1,540	33.50	37.62	35.85	1.92
12.940	80yr	12,940	1,650	33.50	37.91	35.93	1.84
12.940	100yr	12,940	1,690	33.50	38.06	35.98	1.78
12.940	150yr	12,940	1,780	33.50	38.30	36.04	1.72
12.940	200yr	12,940	1,910	33.50	38.50	36.14	1.73
12.960		Bridge					
12.981	50yr	12,981	1,540	33.50	37.69	35.85	1.87
12.981	80yr	12,981	1,650	33.50	37.98	35.94	1.79
12.981	100yr	12,981	1,690	33.50	38.12	35.96	1.74
12.981	150yr	12,981	1,780	33.50	38.36	36.04	1.69
12.981	200yr	12,981	1,910	33.50	38.55	36.15	1.70
13.035	50yr	13,035	1,540	33.70	37.78	35.52	1.59
13.035	80yr	13,035	1,650	33.70	38.05	35.60	1.56
13.035	100yr	13,035	1,690	33.70	38.18	35.62	1.54
13.035	150yr	13,035	1,780	33.70	38.40	35.69	1.52
13.035	200yr	13,035	1,910	33.70	38.59	35.78	1.55
13.165	50yr	13,165	1,540	33.64	37.76	36.52	2.44
13.165	80yr	13,165	1,650	33.64	38.03	36.67	2.34
13.165	100yr	13,165	1,690	33.64	38.16	36.72	2.29
13.165	150yr	13,165	1,780	33.64	38.37	36.83	2.23
13.165	200yr	13,165	1,910	33.64	38.56	36.95	2.25
13.265	50yr	13,265	1,540	33.77	37.88	37.04	2.81
13.265	80yr	13,265	1,650	33.77	38.11	37.14	2.72
13.265	100yr	13,265	1,690	33.77	38.23	37.18	2.66
13.265	150yr	13,265	1,780	33.77	38.43	37.26	2.60
13.265	200yr	13,265	1,910	33.77	38.61	37.38	2.62
13.355	50yr	13,355	1,540	33.80	38.10	37.21	2.73
13.355	80yr	13,355	1,650	33.80	38.29	37.31	2.71
13.355	100yr	13,355	1,690	33.80	38.38	37.35	2.68
13.355	150yr	13,355	1,780	33.80	38.56	37.43	2.65
13.355	200yr	13,355	1,910	33.80	38.73	37.54	2.69
13.460	50yr	13,460	1,540	33.62	38.32	37.22	2.67
13.460	80yr	13,460	1,650	33.62	38.46	37.32	2.72
13.460	100yr	13,460	1,690	33.62	38.55	37.36	2.70
13.460	150yr	13,460	1,780	33.62	38.70	37.44	2.70
13.460	200yr	13,460	1,910	33.62	38.86	37.56	2.76
13.555	50yr	13,555	1,540	33.47	38.49	37.14	2.56
13.555	80yr	13,555	1,650	33.47	38.63	37.26	2.62
13.555	100yr	13,555	1,690	33.47	38.71	37.30	2.62
13.555	150yr	13,555	1,780	33.47	38.84	37.39	2.65
13.555	200yr	13,555	1,910	33.47	38.99	37.51	2.72
13.673	50yr	13,673	1,540	35.29	38.56	38.11	3.43
13.673	80yr	13,673	1,650	35.29	38.69	38.20	3.46
13.673	100yr	13,673	1,690	35.29	38.76	38.23	3.44
13.673	150yr	13,673	1,780	35.29	38.90	38.30	3.44
13.673	200yr	13,673	1,910	35.29	39.04	38.40	3.49
13.674		Inline Weir					
13.675	50yr	13,675	1,540	35.29	38.75	38.11	3.16
13.675	80yr	13,675	1,650	35.29	38.88	38.20	3.21
13.675	100yr	13,675	1,690	35.29	38.95	38.23	3.20
13.675	150yr	13,675	1,780	35.29	39.07	38.30	3.22
13.675	200yr	13,675	1,910	35.29	39.22	38.40	3.28

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
13.755	50yr	13,755	1,540	34.10	39.13	37.70	2.38
13.755	80yr	13,755	1,650	34.10	39.26	37.81	2.45
13.755	100yr	13,755	1,690	34.10	39.32	37.84	2.46
13.755	150yr	13,755	1,780	34.10	39.43	37.92	2.50
13.755	200yr	13,755	1,910	34.10	39.58	38.03	2.58
13.850	50yr	13,850	1,540	34.43	39.24	37.94	2.36
13.850	80yr	13,850	1,650	34.43	39.38	38.03	2.42
13.850	100yr	13,850	1,690	34.43	39.43	38.05	2.44
13.850	150yr	13,850	1,780	34.43	39.55	38.12	2.47
13.850	200yr	13,850	1,910	34.43	39.70	38.24	2.54
13.955	50yr	13,955	1,540	34.65	39.37	38.20	2.40
13.955	80yr	13,955	1,650	34.65	39.50	38.32	2.45
13.955	100yr	13,955	1,690	34.65	39.55	38.35	2.47
13.955	150yr	13,955	1,780	34.65	39.67	38.43	2.50
13.955	200yr	13,955	1,910	34.65	39.82	38.51	2.55
14.060	50yr	14,060	1,540	34.16	39.57	38.07	2.08
14.060	80yr	14,060	1,650	34.16	39.70	38.15	2.13
14.060	100yr	14,060	1,690	34.16	39.75	38.18	2.15
14.060	150yr	14,060	1,780	34.16	39.86	38.26	2.19
14.060	200yr	14,060	1,910	34.16	40.02	38.36	2.24
14.150	50yr	14,150	1,540	34.27	39.65	38.34	2.14
14.150	80yr	14,150	1,650	34.27	39.78	38.43	2.19
14.150	100yr	14,150	1,690	34.27	39.83	38.46	2.21
14.150	150yr	14,150	1,780	34.27	39.94	38.52	2.24
14.150	200yr	14,150	1,910	34.27	40.09	38.61	2.29
14.250	50yr	14,250	1,540	35.41	39.74	38.49	2.16
14.250	80yr	14,250	1,650	35.41	39.87	38.58	2.21
14.250	100yr	14,250	1,690	35.41	39.92	38.61	2.22
14.250	150yr	14,250	1,780	35.41	40.03	38.68	2.25
14.250	200yr	14,250	1,910	35.41	40.18	38.77	2.30
14.345	50yr	14,345	1,540	35.47	39.84	38.58	2.16
14.345	80yr	14,345	1,650	35.47	39.97	38.67	2.21
14.345	100yr	14,345	1,690	35.47	40.02	38.70	2.23
14.345	150yr	14,345	1,780	35.47	40.13	38.77	2.26
14.345	200yr	14,345	1,910	35.47	40.28	38.86	2.31
14.440	50yr	14,440	1,540	35.61	39.95	38.62	2.12
14.440	80yr	14,440	1,650	35.61	40.08	38.71	2.17
14.440	100yr	14,440	1,690	35.61	40.13	38.74	2.18
14.440	150yr	14,440	1,780	35.61	40.23	38.81	2.22
14.440	200yr	14,440	1,910	35.61	40.38	38.91	2.27
14.540	50yr	14,540	1,540	35.84	40.06	38.74	2.07
14.540	80yr	14,540	1,650	35.84	40.19	38.83	2.12
14.540	100yr	14,540	1,690	35.84	40.23	38.86	2.14
14.540	150yr	14,540	1,780	35.84	40.34	38.93	2.17
14.540	200yr	14,540	1,910	35.84	40.48	39.01	2.23
14.635	50yr	14,635	1,540	35.76	40.17	38.81	2.00
14.635	80yr	14,635	1,650	35.76	40.29	38.89	2.05
14.635	100yr	14,635	1,690	35.76	40.34	38.92	2.07
14.635	150yr	14,635	1,780	35.76	40.44	38.99	2.10
14.635	200yr	14,635	1,910	35.76	40.59	39.08	2.15
14.720	50yr	14,720	1,540	35.83	40.22	38.93	2.26
14.720	80yr	14,720	1,650	35.83	40.34	39.03	2.32
14.720	100yr	14,720	1,690	35.83	40.38	39.06	2.35
14.720	150yr	14,720	1,780	35.83	40.48	39.13	2.39
14.720	200yr	14,720	1,910	35.83	40.62	39.23	2.45

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
14.830	50yr	14,830	1,540	36.15	40.27	39.27	2.81
14.830	80yr	14,830	1,650	36.15	40.38	39.35	2.89
14.830	100yr	14,830	1,690	36.15	40.43	39.39	2.92
14.830	150yr	14,830	1,780	36.15	40.52	39.46	2.98
14.830	200yr	14,830	1,910	36.15	40.66	39.56	3.06
14.943	50yr	14,943	1,540	36.86	40.45	39.30	2.87
14.943	80yr	14,943	1,650	36.86	40.56	39.40	2.96
14.943	100yr	14,943	1,690	36.86	40.61	39.44	2.99
14.943	150yr	14,943	1,780	36.86	40.70	39.51	3.06
14.943	200yr	14,943	1,910	36.86	40.84	39.62	3.16
14.944		Inline Weir					
14.945	50yr	14,945	1,540	36.92	41.06	39.36	2.42
14.945	80yr	14,945	1,650	36.92	41.19	39.45	2.51
14.945	100yr	14,945	1,690	36.92	41.23	39.48	2.55
14.945	150yr	14,945	1,780	36.92	41.33	39.56	2.61
14.945	200yr	14,945	1,910	36.92	41.46	39.67	2.71
15.045	50yr	15,045	1,390	35.88	41.13	39.33	2.60
15.045	80yr	15,045	1,490	35.88	41.25	39.45	2.70
15.045	100yr	15,045	1,530	35.88	41.29	39.49	2.74
15.045	150yr	15,045	1,610	35.88	41.39	39.58	2.82
15.045	200yr	15,045	1,730	35.88	41.53	39.70	2.93
15.140	50yr	15,140	1,390	35.90	41.24	39.33	2.53
15.140	80yr	15,140	1,490	35.90	41.37	39.48	2.62
15.140	100yr	15,140	1,530	35.90	41.42	39.53	2.66
15.140	150yr	15,140	1,610	35.90	41.52	39.62	2.73
15.140	200yr	15,140	1,730	35.90	41.66	39.75	2.84
15.235	50yr	15,235	1,390	36.04	41.36	39.58	2.47
15.235	80yr	15,235	1,490	36.04	41.49	39.71	2.56
15.235	100yr	15,235	1,530	36.04	41.54	39.74	2.59
15.235	150yr	15,235	1,610	36.04	41.65	39.83	2.65
15.235	200yr	15,235	1,730	36.04	41.80	39.96	2.74
15.325	50yr	15,325	1,390	36.05	41.48	39.65	2.29
15.325	80yr	15,325	1,490	36.05	41.62	39.76	2.37
15.325	100yr	15,325	1,530	36.05	41.67	39.80	2.40
15.325	150yr	15,325	1,610	36.05	41.79	39.88	2.45
15.325	200yr	15,325	1,730	36.05	41.95	40.00	2.53
15.352	50yr	15,352	1,390	36.27	41.41	40.28	2.87
15.352	80yr	15,352	1,490	36.27	41.55	40.38	2.94
15.352	100yr	15,352	1,530	36.27	41.60	40.42	2.98
15.352	150yr	15,352	1,610	36.27	41.71	40.50	3.03
15.352	200yr	15,352	1,730	36.27	41.86	40.61	3.11
15.375		Bridge					
15.399	50yr	15,399	1,390	36.27	41.58	40.28	2.71
15.399	80yr	15,399	1,490	36.27	41.73	40.38	2.78
15.399	100yr	15,399	1,530	36.27	41.78	40.41	2.82
15.399	150yr	15,399	1,610	36.27	41.89	40.49	2.87
15.399	200yr	15,399	1,730	36.27	42.05	40.60	2.95
15.420	50yr	15,420	1,390	37.18	41.71	40.31	2.38
15.420	80yr	15,420	1,490	37.18	41.86	40.41	2.43
15.420	100yr	15,420	1,530	37.18	41.91	40.44	2.45
15.420	150yr	15,420	1,610	37.18	42.03	40.51	2.49
15.420	200yr	15,420	1,730	37.18	42.20	40.61	2.55
15.525	50yr	15,525	1,390	37.20	41.84	40.20	2.23
15.525	80yr	15,525	1,490	37.20	42.00	40.31	2.29
15.525	100yr	15,525	1,530	37.20	42.05	40.35	2.31

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
15.525	150yr	15.525	1,610	37.20	42.17	40.42	2.35
15.525	200yr	15.525	1,730	37.20	42.35	40.52	2.41
15.620	50yr	15.620	1,390	37.22	41.92	40.47	2.33
15.620	80yr	15.620	1,490	37.22	42.07	40.57	2.38
15.620	100yr	15.620	1,530	37.22	42.12	40.60	2.41
15.620	150yr	15.620	1,610	37.22	42.25	40.67	2.44
15.620	200yr	15.620	1,730	37.22	42.42	40.77	2.50
15.720	50yr	15.720	1,390	38.56	41.96	41.22	2.95
15.720	80yr	15.720	1,490	38.56	42.11	41.31	2.98
15.720	100yr	15.720	1,530	38.56	42.16	41.34	3.01
15.720	150yr	15.720	1,610	38.56	42.28	41.41	3.03
15.720	200yr	15.720	1,730	38.56	42.45	41.50	3.06
15.820	50yr	15.820	1,390	37.62	42.30	40.83	2.30
15.820	80yr	15.820	1,490	37.62	42.44	40.92	2.36
15.820	100yr	15.820	1,530	37.62	42.49	40.96	2.39
15.820	150yr	15.820	1,610	37.62	42.60	41.03	2.43
15.820	200yr	15.820	1,730	37.62	42.77	41.13	2.49
15.925	50yr	15.925	1,390	37.74	42.42	40.84	2.25
15.925	80yr	15.925	1,490	37.74	42.56	40.94	2.31
15.925	100yr	15.925	1,530	37.74	42.61	40.98	2.33
15.925	150yr	15.925	1,610	37.74	42.72	41.06	2.38
15.925	200yr	15.925	1,730	37.74	42.89	41.17	2.44
16.021	50yr	16.021	1,390	38.53	42.45	41.61	2.81
16.021	80yr	16.021	1,490	38.53	42.59	41.67	2.86
16.021	100yr	16.021	1,530	38.53	42.64	41.70	2.88
16.021	150yr	16.021	1,610	38.53	42.75	41.77	2.91
16.021	200yr	16.021	1,730	38.53	42.91	41.87	2.96
16.023		Inline Weir					
16.025	50yr	16.025	1,390	38.93	42.95	41.82	2.52
16.025	80yr	16.025	1,490	38.93	43.05	41.90	2.61
16.025	100yr	16.025	1,530	38.93	43.09	41.93	2.64
16.025	150yr	16.025	1,610	38.93	43.18	42.00	2.70
16.025	200yr	16.025	1,730	38.93	43.30	42.09	2.79
16.125	50yr	16.125	1,390	38.51	43.09	41.96	2.50
16.125	80yr	16.125	1,490	38.51	43.20	42.04	2.58
16.125	100yr	16.125	1,530	38.51	43.25	42.08	2.61
16.125	150yr	16.125	1,610	38.51	43.34	42.14	2.67
16.125	200yr	16.125	1,730	38.51	43.46	42.24	2.75
16.225	50yr	16.225	1,390	39.45	43.18	42.51	3.00
16.225	80yr	16.225	1,490	39.45	43.29	42.59	3.08
16.225	100yr	16.225	1,530	39.45	43.34	42.63	3.11
16.225	150yr	16.225	1,610	39.45	43.42	42.69	3.16
16.225	200yr	16.225	1,730	39.45	43.55	42.79	3.24
16.325	50yr	16.325	1,390	39.47	43.51	42.49	2.62
16.325	80yr	16.325	1,490	39.47	43.62	42.57	2.70
16.325	100yr	16.325	1,530	39.47	43.67	42.60	2.73
16.325	150yr	16.325	1,610	39.47	43.76	42.67	2.78
16.325	200yr	16.325	1,730	39.47	43.88	42.76	2.86
16.435	50yr	16.435	1,390	39.70	43.69	42.71	2.69
16.435	80yr	16.435	1,490	39.70	43.80	42.79	2.77
16.435	100yr	16.435	1,530	39.70	43.84	42.83	2.80
16.435	150yr	16.435	1,610	39.70	43.93	42.90	2.85
16.435	200yr	16.435	1,730	39.70	44.06	43.00	2.93
16.511	50yr	16.511	1,390	39.84	43.83	42.93	2.69
16.511	80yr	16.511	1,490	39.84	43.94	43.01	2.76

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
16.511	100yr	16.511	1.530	39.84	43.99	43.04	2.79
16.511	150yr	16.511	1.610	39.84	44.08	43.09	2.84
16.511	200yr	16.511	1.730	39.84	44.21	43.19	2.92
16.535		Bridge					
16.558	50yr	16.558	1.390	39.84	44.01	42.91	2.51
16.558	80yr	16.558	1.490	39.84	44.13	43.00	2.58
16.558	100yr	16.558	1.530	39.84	44.18	43.03	2.60
16.558	150yr	16.558	1.610	39.84	44.27	43.10	2.66
16.558	200yr	16.558	1.730	39.84	44.41	43.19	2.73
16.635	50yr	16.635	1.390	39.32	44.12	43.02	2.58
16.635	80yr	16.635	1.490	39.32	44.23	43.12	2.65
16.635	100yr	16.635	1.530	39.32	44.28	43.15	2.68
16.635	150yr	16.635	1.610	39.32	44.37	43.23	2.74
16.635	200yr	16.635	1.730	39.32	44.51	43.33	2.81
16.735	50yr	16.735	1.390	39.44	44.29	43.15	2.51
16.735	80yr	16.735	1.490	39.44	44.41	43.25	2.58
16.735	100yr	16.735	1.530	39.44	44.45	43.28	2.61
16.735	150yr	16.735	1.610	39.44	44.55	43.35	2.66
16.735	200yr	16.735	1.730	39.44	44.68	43.44	2.74
16.835	50yr	16.835	1.390	39.78	44.49	42.90	2.18
16.835	80yr	16.835	1.490	39.78	44.61	43.00	2.25
16.835	100yr	16.835	1.530	39.78	44.66	43.05	2.28
16.835	150yr	16.835	1.610	39.78	44.76	43.13	2.33
16.835	200yr	16.835	1.730	39.78	44.90	43.24	2.40
16.935	50yr	16.935	1.390	39.97	44.58	43.25	2.25
16.935	80yr	16.935	1.490	39.97	44.71	43.35	2.31
16.935	100yr	16.935	1.530	39.97	44.76	43.38	2.33
16.935	150yr	16.935	1.610	39.97	44.85	43.45	2.38
16.935	200yr	16.935	1.730	39.97	44.99	43.54	2.44
17.035	50yr	17.035	1.390	38.83	44.77	42.73	1.71
17.035	80yr	17.035	1.490	38.83	44.90	42.84	1.77
17.035	100yr	17.035	1.530	38.83	44.95	42.87	1.79
17.035	150yr	17.035	1.610	38.83	45.06	42.95	1.83
17.035	200yr	17.035	1.730	38.83	45.20	43.04	1.89
17.135	50yr	17.135	1.250	38.59	44.77	43.38	2.21
17.135	80yr	17.135	1.330	38.59	44.91	43.45	2.25
17.135	100yr	17.135	1.370	38.59	44.95	43.48	2.28
17.135	150yr	17.135	1.440	38.59	45.05	43.55	2.32
17.135	200yr	17.135	1.550	38.59	45.20	43.64	2.39
17.240	50yr	17.240	1.250	39.08	44.90	43.41	2.14
17.240	80yr	17.240	1.330	39.08	45.02	43.49	2.19
17.240	100yr	17.240	1.370	39.08	45.07	43.52	2.22
17.240	150yr	17.240	1.440	39.08	45.17	43.58	2.26
17.240	200yr	17.240	1.550	39.08	45.32	43.68	2.33
17.335	50yr	17.335	1.250	38.89	44.98	43.55	2.18
17.335	80yr	17.335	1.330	38.89	45.11	43.62	2.23
17.335	100yr	17.335	1.370	38.89	45.16	43.66	2.26
17.335	150yr	17.335	1.440	38.89	45.26	43.72	2.30
17.335	200yr	17.335	1.550	38.89	45.41	43.82	2.37
17.435	50yr	17.435	1.250	39.30	45.08	43.66	2.19
17.435	80yr	17.435	1.330	39.30	45.20	43.74	2.24
17.435	100yr	17.435	1.370	39.30	45.26	43.77	2.27
17.435	150yr	17.435	1.440	39.30	45.36	43.84	2.31
17.435	200yr	17.435	1.550	39.30	45.50	43.93	2.38
17.535	50yr	17.535	1.250	40.12	45.17	43.82	2.23

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
17.535	80yr	17.535	1.330	40.12	45.30	43.90	2.28
17.535	100yr	17.535	1.370	40.12	45.35	43.93	2.30
17.535	150yr	17.535	1.440	40.12	45.45	44.00	2.35
17.535	200yr	17.535	1.550	40.12	45.60	44.10	2.41
17.635	50yr	17.635	1.250	40.46	45.27	44.12	2.37
17.635	80yr	17.635	1.330	40.46	45.39	44.19	2.42
17.635	100yr	17.635	1.370	40.46	45.45	44.23	2.44
17.635	150yr	17.635	1.440	40.46	45.54	44.29	2.48
17.635	200yr	17.635	1.550	40.46	45.69	44.38	2.55
17.735	50yr	17.735	1.250	40.27	45.38	44.32	2.50
17.735	80yr	17.735	1.330	40.27	45.50	44.39	2.54
17.735	100yr	17.735	1.370	40.27	45.56	44.43	2.57
17.735	150yr	17.735	1.440	40.27	45.65	44.50	2.61
17.735	200yr	17.735	1.550	40.27	45.80	44.59	2.67
17.825	50yr	17.825	1.250	40.57	45.62	44.02	1.93
17.825	80yr	17.825	1.330	40.57	45.74	44.08	1.98
17.825	100yr	17.825	1.370	40.57	45.80	44.12	2.00
17.825	150yr	17.825	1.440	40.57	45.90	44.17	2.04
17.825	200yr	17.825	1.550	40.57	46.05	44.26	2.10
17.925	50yr	17.925	1.250	40.97	45.67	44.33	2.17
17.925	80yr	17.925	1.330	40.97	45.79	44.40	2.22
17.925	100yr	17.925	1.370	40.97	45.85	44.43	2.24
17.925	150yr	17.925	1.440	40.97	45.95	44.49	2.28
17.925	200yr	17.925	1.550	40.97	46.10	44.58	2.34
18.025	50yr	18.025	1.250	41.09	45.77	44.58	2.27
18.025	80yr	18.025	1.330	41.09	45.89	44.64	2.32
18.025	100yr	18.025	1.370	41.09	45.94	44.68	2.34
18.025	150yr	18.025	1.440	41.09	46.04	44.74	2.38
18.025	200yr	18.025	1.550	41.09	46.19	44.83	2.44
18.130	50yr	18.130	1.250	40.42	45.88	44.72	2.32
18.130	80yr	18.130	1.330	40.42	46.00	44.80	2.37
18.130	100yr	18.130	1.370	40.42	46.06	44.83	2.39
18.130	150yr	18.130	1.440	40.42	46.15	44.89	2.43
18.130	200yr	18.130	1.550	40.42	46.30	44.98	2.49
18.230	50yr	18.230	1.250	40.88	46.02	44.71	2.24
18.230	80yr	18.230	1.330	40.88	46.13	44.78	2.29
18.230	100yr	18.230	1.370	40.88	46.19	44.82	2.31
18.230	150yr	18.230	1.440	40.88	46.28	44.87	2.36
18.230	200yr	18.230	1.550	40.88	46.43	44.97	2.42
18.330	50yr	18.330	1.250	40.86	46.11	44.95	2.42
18.330	80yr	18.330	1.330	40.86	46.22	45.02	2.47
18.330	100yr	18.330	1.370	40.86	46.28	45.06	2.50
18.330	150yr	18.330	1.440	40.86	46.37	45.12	2.54
18.330	200yr	18.330	1.550	40.86	46.52	45.21	2.61
18.430	50yr	18.430	1.250	40.47	46.24	44.90	2.41
18.430	80yr	18.430	1.330	40.47	46.35	44.99	2.47
18.430	100yr	18.430	1.370	40.47	46.41	45.05	2.50
18.430	150yr	18.430	1.440	40.47	46.51	45.12	2.55
18.430	200yr	18.430	1.550	40.47	46.65	45.25	2.63
18.530	50yr	18.530	1.250	41.72	46.37	45.14	2.48
18.530	80yr	18.530	1.330	41.72	46.48	45.22	2.54
18.530	100yr	18.530	1.370	41.72	46.55	45.25	2.56
18.530	150yr	18.530	1.440	41.72	46.64	45.32	2.61
18.530	200yr	18.530	1.550	41.72	46.78	45.46	2.68
18.630	50yr	18.630	1.250	42.19	46.51	45.50	2.60
18.630	80yr	18.630	1.330	42.19	46.62	45.57	2.66

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
18.630	100yr	18,630	1,370	42.19	46.68	45.61	2.68
18.630	150yr	18,630	1,440	42.19	46.77	45.67	2.73
18.630	200yr	18,630	1,550	42.19	46.91	45.77	2.81
18.720	50yr	18,720	1,250	42.06	46.72	45.28	2.26
18.720	80yr	18,720	1,330	42.06	46.83	45.35	2.32
18.720	100yr	18,720	1,370	42.06	46.89	45.39	2.34
18.720	150yr	18,720	1,440	42.06	46.98	45.45	2.39
18.720	200yr	18,720	1,550	42.06	47.12	45.55	2.47
18.825	50yr	18,825	1,250	42.08	46.82	45.87	2.48
18.825	80yr	18,825	1,330	42.08	46.93	45.94	2.52
18.825	100yr	18,825	1,370	42.08	46.99	45.98	2.53
18.825	150yr	18,825	1,440	42.08	47.09	46.04	2.57
18.825	200yr	18,825	1,550	42.08	47.23	46.12	2.63
18.925	50yr	18,925	1,250	41.99	47.06	45.61	2.00
18.925	80yr	18,925	1,330	41.99	47.17	45.68	2.04
18.925	100yr	18,925	1,370	41.99	47.23	45.71	2.06
18.925	150yr	18,925	1,440	41.99	47.33	45.77	2.10
18.925	200yr	18,925	1,550	41.99	47.47	45.86	2.16
19.025	50yr	19,025	1,250	42.65	47.14	46.06	2.20
19.025	80yr	19,025	1,330	42.65	47.25	46.14	2.23
19.025	100yr	19,025	1,370	42.65	47.31	46.17	2.25
19.025	150yr	19,025	1,440	42.65	47.41	46.23	2.28
19.025	200yr	19,025	1,550	42.65	47.55	46.33	2.32
19.125	50yr	19,125	1,250	42.16	47.34	45.79	1.75
19.125	80yr	19,125	1,330	42.16	47.45	45.86	1.79
19.125	100yr	19,125	1,370	42.16	47.51	45.89	1.81
19.125	150yr	19,125	1,440	42.16	47.61	45.95	1.84
19.125	200yr	19,125	1,550	42.16	47.75	46.04	1.89
19.230	50yr	19,230	1,250	42.25	47.40	46.34	2.03
19.230	80yr	19,230	1,330	42.25	47.51	46.40	2.06
19.230	100yr	19,230	1,370	42.25	47.57	46.43	2.07
19.230	150yr	19,230	1,440	42.25	47.66	46.48	2.10
19.230	200yr	19,230	1,550	42.25	47.81	46.54	2.14
19.335	50yr	19,335	1,250	43.09	47.52	46.56	2.19
19.335	80yr	19,335	1,330	43.09	47.63	46.62	2.22
19.335	100yr	19,335	1,370	43.09	47.68	46.65	2.23
19.335	150yr	19,335	1,440	43.09	47.77	46.71	2.26
19.335	200yr	19,335	1,550	43.09	47.91	46.79	2.30
19.435	50yr	19,435	1,250	43.36	47.71	46.29	1.80
19.435	80yr	19,435	1,330	43.36	47.82	46.35	1.84
19.435	100yr	19,435	1,370	43.36	47.87	46.38	1.86
19.435	150yr	19,435	1,440	43.36	47.96	46.43	1.89
19.435	200yr	19,435	1,550	43.36	48.09	46.51	1.95
19.535	50yr	19,535	1,250	42.94	47.77	46.70	2.07
19.535	80yr	19,535	1,330	42.94	47.87	46.76	2.11
19.535	100yr	19,535	1,370	42.94	47.93	46.78	2.12
19.535	150yr	19,535	1,440	42.94	48.01	46.82	2.16
19.535	200yr	19,535	1,550	42.94	48.15	46.90	2.21
19.630	50yr	19,630	1,250	43.87	47.92	46.55	1.79
19.630	80yr	19,630	1,330	43.87	48.03	46.61	1.83
19.630	100yr	19,630	1,370	43.87	48.08	46.63	1.85
19.630	150yr	19,630	1,440	43.87	48.17	46.67	1.88
19.630	200yr	19,630	1,550	43.87	48.31	46.75	1.93
19.740	50yr	19,740	1,250	43.21	48.01	46.78	1.92
19.740	80yr	19,740	1,330	43.21	48.11	46.85	1.95
19.740	100yr	19,740	1,370	43.21	48.17	46.88	1.97

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
19.740	150yr	19.740	1.440	43.21	48.26	46.94	1.99
19.740	200yr	19.740	1.550	43.21	48.39	47.02	2.03
19.815	50yr	19.815	1.250	44.06	48.11	46.62	1.78
19.815	80yr	19.815	1.330	44.06	48.21	46.69	1.82
19.815	100yr	19.815	1.370	44.06	48.26	46.72	1.83
19.815	150yr	19.815	1.440	44.06	48.35	46.78	1.86
19.815	200yr	19.815	1.550	44.06	48.49	46.88	1.91
19.925	50yr	19.925	1.250	44.21	48.21	46.86	1.90
19.925	80yr	19.925	1.330	44.21	48.31	46.93	1.94
19.925	100yr	19.925	1.370	44.21	48.36	46.97	1.95
19.925	150yr	19.925	1.440	44.21	48.45	47.02	1.98
19.925	200yr	19.925	1.550	44.21	48.58	47.11	2.02
20.020	50yr	20.020	1.250	44.36	48.30	47.05	2.13
20.020	80yr	20.020	1.330	44.36	48.41	47.14	2.16
20.020	100yr	20.020	1.370	44.36	48.46	47.17	2.17
20.020	150yr	20.020	1.440	44.36	48.54	47.24	2.21
20.020	200yr	20.020	1.550	44.36	48.67	47.65	2.25
20.115	50yr	20.115	1.250	44.36	48.40	47.40	2.57
20.115	80yr	20.115	1.330	44.36	48.50	47.47	2.61
20.115	100yr	20.115	1.370	44.36	48.55	47.49	2.62
20.115	150yr	20.115	1.440	44.36	48.62	47.56	2.67
20.115	200yr	20.115	1.550	44.36	48.75	47.92	2.72
20.210	50yr	20.210	1.250	44.50	48.64	47.46	2.30
20.210	80yr	20.210	1.330	44.50	48.74	47.54	2.35
20.210	100yr	20.210	1.370	44.50	48.79	47.58	2.38
20.210	150yr	20.210	1.440	44.50	48.86	47.65	2.43
20.210	200yr	20.210	1.550	44.50	48.98	47.76	2.50
20.315	50yr	20.315	1.250	44.70	48.74	47.53	2.61
20.315	80yr	20.315	1.330	44.70	48.84	47.61	2.69
20.315	100yr	20.315	1.370	44.70	48.88	47.66	2.72
20.315	150yr	20.315	1.440	44.70	48.95	47.73	2.80
20.315	200yr	20.315	1.550	44.70	49.07	47.84	2.89
20.410	50yr	20.410	1.250	44.72	48.90	48.34	2.86
20.410	80yr	20.410	1.330	44.72	49.00	48.42	2.89
20.410	100yr	20.410	1.370	44.72	49.05	48.46	2.90
20.410	150yr	20.410	1.440	44.72	49.13	48.51	2.94
20.410	200yr	20.410	1.550	44.72	49.25	48.60	2.99
20.510	50yr	20.510	1.250	44.33	49.28	47.84	2.30
20.510	80yr	20.510	1.330	44.33	49.37	48.11	2.35
20.510	100yr	20.510	1.370	44.33	49.42	48.16	2.37
20.510	150yr	20.510	1.440	44.33	49.49	48.23	2.42
20.510	200yr	20.510	1.550	44.33	49.61	48.32	2.48
20.610	50yr	20.610	1.250	44.30	49.44	47.81	2.34
20.610	80yr	20.610	1.330	44.30	49.52	47.90	2.40
20.610	100yr	20.610	1.370	44.30	49.57	47.96	2.42
20.610	150yr	20.610	1.440	44.30	49.64	48.05	2.47
20.610	200yr	20.610	1.550	44.30	49.76	48.18	2.54
20.690	50yr	20.690	1.250	44.77	49.61	47.91	1.99
20.690	80yr	20.690	1.330	44.77	49.71	48.00	2.04
20.690	100yr	20.690	1.370	44.77	49.76	48.03	2.06
20.690	150yr	20.690	1.440	44.77	49.84	48.08	2.11
20.690	200yr	20.690	1.550	44.77	49.96	48.26	2.17
20.795	50yr	20.795	1.230	44.80	49.59	48.55	3.11
20.795	80yr	20.795	1.310	44.80	49.70	48.67	3.13
20.795	100yr	20.795	1.350	44.80	49.75	48 72	3.15
20.795	150yr	20.795	1.420	44.80	49.82	48.82	3.19

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
20.795	200yr	20.795	1.530	44.80	49.94	48.97	3.25
20.895	50yr	20.895	1.230	44.15	50.06	48.21	2.06
20.895	80yr	20.895	1.310	44.15	50.17	48.32	2.11
20.895	100yr	20.895	1.350	44.15	50.22	48.37	2.14
20.895	150yr	20.895	1.420	44.15	50.30	48.46	2.20
20.895	200yr	20.895	1.530	44.15	50.42	48.59	2.27
21.043	50yr	21.043	1.230	46.68	50.14	48.66	2.52
21.043	80yr	21.043	1.310	46.68	50.25	48.74	2.60
21.043	100yr	21.043	1.350	46.68	50.30	48.78	2.65
21.043	150yr	21.043	1.420	46.68	50.38	48.85	2.72
21.043	200yr	21.043	1.530	46.68	50.50	48.96	2.83
21.044		Inline Weir					
21.045	50yr	21.045	1.230	46.98	50.20	48.95	2.71
21.045	80yr	21.045	1.310	46.98	50.31	49.04	2.79
21.045	100yr	21.045	1.350	46.98	50.36	49.08	2.82
21.045	150yr	21.045	1.420	46.98	50.45	49.15	2.90
21.045	200yr	21.045	1.530	46.98	50.57	49.26	3.00
21.095	50yr	21.095	1.230	45.93	50.41	48.91	2.14
21.095	80yr	21.095	1.310	45.93	50.54	48.98	2.19
21.095	100yr	21.095	1.350	45.93	50.60	49.02	2.21
21.095	150yr	21.095	1.420	45.93	50.69	49.08	2.26
21.095	200yr	21.095	1.530	45.93	50.83	49.18	2.34
21.200	50yr	21.200	1.230	46.05	50.51	49.02	2.16
21.200	80yr	21.200	1.310	46.05	50.63	49.09	2.21
21.200	100yr	21.200	1.350	46.05	50.69	49.13	2.24
21.200	150yr	21.200	1.420	46.05	50.78	49.19	2.29
21.200	200yr	21.200	1.530	46.05	50.93	49.29	2.36
21.290	50yr	21.290	1.230	44.97	50.64	48.74	1.86
21.290	80yr	21.290	1.310	44.97	50.77	48.81	1.91
21.290	100yr	21.290	1.350	44.97	50.83	48.85	1.94
21.290	150yr	21.290	1.420	44.97	50.92	48.91	1.99
21.290	200yr	21.290	1.530	44.97	51.07	49.00	2.06
21.390	50yr	21.390	1.230	45.60	50.68	49.33	2.12
21.390	80yr	21.390	1.310	45.60	50.81	49.40	2.16
21.390	100yr	21.390	1.350	45.60	50.87	49.43	2.18
21.390	150yr	21.390	1.420	45.60	50.97	49.49	2.22
21.390	200yr	21.390	1.530	45.60	51.12	49.58	2.29
21.513	50yr	21.513	1.230	48.90	50.80	50.23	2.53
21.513	80yr	21.513	1.310	48.90	50.92	50.28	2.53
21.513	100yr	21.513	1.350	48.90	50.98	50.31	2.53
21.513	150yr	21.513	1.420	48.90	51.08	50.36	2.54
21.513	200yr	21.513	1.530	48.90	51.23	50.43	2.55
21.514		Inline Weir					
21.515	50yr	21.515	1.230	48.90	51.44	50.23	1.89
21.515	80yr	21.515	1.310	48.90	51.51	50.28	1.95
21.515	100yr	21.515	1.350	48.90	51.55	50.31	1.99
21.515	150yr	21.515	1.420	48.90	51.61	50.36	2.04
21.515	200yr	21.515	1.530	48.90	51.70	50.43	2.12
21.525	50yr	21.525	1.230	48.10	51.45	49.94	1.86
21.525	80yr	21.525	1.310	48.10	51.52	50.01	1.93
21.525	100yr	21.525	1.350	48.10	51.56	50.04	1.96
21.525	150yr	21.525	1.420	48.10	51.62	50.09	2.02
21.525	200yr	21.525	1.530	48.10	51.72	50.17	2.11
21.585	50yr	21.585	1.230	48.55	51.47	50.30	2.17

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
21.585	80yr	21,585	1,310	48.55	51.54	50.37	2.24
21.585	100yr	21,585	1,350	48.55	51.58	50.41	2.27
21.585	150yr	21,585	1,420	48.55	51.65	50.48	2.31
21.585	200yr	21,585	1,530	48.55	51.74	50.57	2.39
21.685	50yr	21,685	1,230	47.30	51.58	50.23	2.32
21.685	80yr	21,685	1,310	47.30	51.66	50.35	2.40
21.685	100yr	21,685	1,350	47.30	51.69	50.38	2.45
21.685	150yr	21,685	1,420	47.30	51.76	50.45	2.51
21.685	200yr	21,685	1,530	47.30	51.86	50.57	2.62
21.729	50yr	21,729	1,230	47.37	51.54	50.40	2.87
21.729	80yr	21,729	1,310	47.37	51.61	50.48	2.99
21.729	100yr	21,729	1,350	47.37	51.64	50.52	3.04
21.729	150yr	21,729	1,420	47.37	51.71	50.61	3.14
21.729	200yr	21,729	1,530	47.37	51.79	50.73	3.30
21.745		Bridge					
21.762	50yr	21,762	1,230	47.37	51.70	50.39	2.73
21.762	80yr	21,762	1,310	47.37	51.78	50.48	2.83
21.762	100yr	21,762	1,350	47.37	51.82	50.53	2.89
21.762	150yr	21,762	1,420	47.37	51.89	50.60	2.97
21.762	200yr	21,762	1,530	47.37	51.99	50.72	3.10
21.805	50yr	21,805	1,230	47.69	51.78	50.32	2.65
21.805	80yr	21,805	1,310	47.69	51.87	50.41	2.75
21.805	100yr	21,805	1,350	47.69	51.92	50.45	2.80
21.805	150yr	21,805	1,420	47.69	51.99	50.53	2.88
21.805	200yr	21,805	1,530	47.69	52.10	50.65	3.01
21.848	50yr	21,848	1,230	47.61	51.85	50.34	2.62
21.848	80yr	21,848	1,310	47.61	51.93	50.43	2.72
21.848	100yr	21,848	1,350	47.61	51.98	50.48	2.77
21.848	150yr	21,848	1,420	47.61	52.06	50.55	2.85
21.848	200yr	21,848	1,530	47.61	52.17	50.67	2.98
21.850		Bridge					
21.853	50yr	21,853	1,230	47.61	51.89	50.35	2.58
21.853	80yr	21,853	1,310	47.61	51.98	50.44	2.69
21.853	100yr	21,853	1,350	47.61	52.03	50.48	2.73
21.853	150yr	21,853	1,420	47.61	52.11	50.56	2.81
21.853	200yr	21,853	1,530	47.61	52.23	50.67	2.93
21.891	50yr	21,891	1,230	47.50	51.93	50.79	2.70
21.891	80yr	21,891	1,310	47.50	52.01	50.88	2.80
21.891	100yr	21,891	1,350	47.50	52.06	50.91	2.84
21.891	150yr	21,891	1,420	47.50	52.14	50.98	2.91
21.891	200yr	21,891	1,530	47.50	52.27	51.09	3.02
21.895		Bridge					
21.897	50yr	21,897	1,230	47.50	52.12	50.79	2.54
21.897	80yr	21,897	1,310	47.50	52.22	50.87	2.62
21.897	100yr	21,897	1,350	47.50	52.28	50.92	2.65
21.897	150yr	21,897	1,420	47.50	52.38	50.98	2.71
21.897	200yr	21,897	1,530	47.50	52.53	51.09	2.80
21.900	50yr	21,900	1,230	47.97	52.11	51.00	2.60
21.900	80yr	21,900	1,310	47.97	52.22	51.08	2.66
21.900	100yr	21,900	1,350	47.97	52.28	51.12	2.69
21.900	150yr	21,900	1,420	47.97	52.38	51.18	2.74
21.900	200yr	21,900	1,530	47.97	52.53	51.29	2.82
22.095	50yr	22,095	1,230	47.62	52.40	50.93	2.54
22.095	80yr	22,095	1,310	47.62	52.51	51.03	2.61

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
22.095	100yr	22,095	1,350	47.62	52.57	51.09	2.64
22.095	150yr	22,095	1,420	47.62	52.67	51.23	2.70
22.095	200yr	22,095	1,530	47.62	52.82	51.38	2.78
22.290	50yr	22,290	1,230	49.04	52.61	51.84	3.18
22.290	80yr	22,290	1,310	49.04	52.72	51.93	3.26
22.290	100yr	22,290	1,350	49.04	52.77	51.97	3.29
22.290	150yr	22,290	1,420	49.04	52.87	52.05	3.35
22.290	200yr	22,290	1,530	49.04	53.02	52.16	3.44
22.480	50yr	22,480	1,230	48.85	53.16	51.57	2.29
22.480	80yr	22,480	1,310	48.85	53.28	51.65	2.35
22.480	100yr	22,480	1,350	48.85	53.34	51.69	2.38
22.480	150yr	22,480	1,420	48.85	53.44	51.76	2.44
22.480	200yr	22,480	1,530	48.85	53.61	51.86	2.51
22.670	50yr	22,670	1,230	49.28	53.34	51.62	2.25
22.670	80yr	22,670	1,310	49.28	53.47	51.71	2.31
22.670	100yr	22,670	1,350	49.28	53.53	51.75	2.34
22.670	150yr	22,670	1,420	49.28	53.64	51.82	2.39
22.670	200yr	22,670	1,530	49.28	53.80	51.93	2.47
22.842	50yr	22,842	1,230	48.75	53.52	51.34	2.10
22.842	80yr	22,842	1,310	48.75	53.65	51.43	2.16
22.842	100yr	22,842	1,350	48.75	53.71	51.48	2.19
22.842	150yr	22,842	1,420	48.75	53.82	51.56	2.25
22.842	200yr	22,842	1,530	48.75	53.98	51.69	2.33
22.845		Bridge					
22.848	50yr	22,848	1,230	48.75	53.55	51.33	2.08
22.848	80yr	22,848	1,310	48.75	53.68	51.43	2.14
22.848	100yr	22,848	1,350	48.75	53.74	51.48	2.18
22.848	150yr	22,848	1,420	48.75	53.85	51.56	2.23
22.848	200yr	22,848	1,530	48.75	54.02	51.68	2.31
22.885	50yr	22,885	1,230	49.32	53.53	51.77	2.37
22.885	80yr	22,885	1,310	49.32	53.66	51.86	2.44
22.885	100yr	22,885	1,350	49.32	53.72	51.91	2.47
22.885	150yr	22,885	1,420	49.32	53.83	51.98	2.53
22.885	200yr	22,885	1,530	49.32	54.00	52.11	2.61
23.080	50yr	23,080	1,230	49.36	53.71	51.91	2.42
23.080	80yr	23,080	1,310	49.36	53.84	52.01	2.49
23.080	100yr	23,080	1,350	49.36	53.91	52.05	2.52
23.080	150yr	23,080	1,420	49.36	54.02	52.13	2.58
23.080	200yr	23,080	1,530	49.36	54.18	52.26	2.66
23.280	50yr	23,280	1,230	49.40	53.90	52.11	2.52
23.280	80yr	23,280	1,310	49.40	54.03	52.20	2.59
23.280	100yr	23,280	1,350	49.40	54.10	52.25	2.63
23.280	150yr	23,280	1,420	49.40	54.21	52.33	2.69
23.280	200yr	23,280	1,530	49.40	54.38	52.47	2.78
23.480	50yr	23,480	1,230	49.83	54.16	52.30	2.38
23.480	80yr	23,480	1,310	49.83	54.29	52.39	2.44
23.480	100yr	23,480	1,350	49.83	54.36	52.44	2.47
23.480	150yr	23,480	1,420	49.83	54.50	52.52	2.51
23.480	200yr	23,480	1,530	49.83	54.70	52.64	2.55
23.670	50yr	23,670	1,230	50.69	54.37	52.99	2.51
23.670	80yr	23,670	1,310	50.69	54.52	53.07	2.54
23.670	100yr	23,670	1,350	50.69	54.59	53.11	2.55
23.670	150yr	23,670	1,420	50.69	54.75	53.19	2.54
23.670	200yr	23,670	1,530	50.69	54.97	53.30	2.55
23.830	50yr	23,830	1,230	50.70	54.55	53.29	3.03

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
23.830	80yr	23,830	1,310	50.70	54.69	53.39	3.10
23.830	100yr	23,830	1,350	50.70	54.75	53.44	3.13
23.830	150yr	23,830	1,420	50.70	54.93	53.52	3.12
23.830	200yr	23,830	1,530	50.70	55.12	53.65	3.17
23.835		Bridge					
23.840	50yr	23,840	1,230	50.70	54.68	53.29	2.91
23.840	80yr	23,840	1,310	50.70	54.83	53.39	2.98
23.840	100yr	23,840	1,350	50.70	54.90	53.44	3.00
23.840	150yr	23,840	1,420	50.70	55.08	53.52	2.98
23.840	200yr	23,840	1,530	50.70	55.28	53.65	3.02
23.875	50yr	23,875	1,230	50.94	54.70	53.55	3.13
23.875	80yr	23,875	1,310	50.94	54.85	53.65	3.20
23.875	100yr	23,875	1,350	50.94	54.92	53.70	3.23
23.875	150yr	23,875	1,420	50.94	55.11	53.79	3.22
23.875	200yr	23,875	1,530	50.94	55.30	53.92	3.26
23.880		Bridge					
23.885	50yr	23,885	1,230	50.94	54.88	53.55	2.97
23.885	80yr	23,885	1,310	50.94	55.03	53.65	3.03
23.885	100yr	23,885	1,350	50.94	55.11	53.70	3.06
23.885	150yr	23,885	1,420	50.94	55.29	53.79	3.05
23.885	200yr	23,885	1,530	50.94	55.51	53.92	3.06
24.075	50yr	24,075	1,230	50.88	55.20	53.82	3.02
24.075	80yr	24,075	1,310	50.88	55.35	53.92	3.09
24.075	100yr	24,075	1,350	50.88	55.43	53.97	3.12
24.075	150yr	24,075	1,420	50.88	55.62	54.06	3.11
24.075	200yr	24,075	1,530	50.88	55.82	54.21	3.19
24.265	50yr	24,265	1,230	51.05	55.56	54.01	2.88
24.265	80yr	24,265	1,310	51.05	55.71	54.12	2.95
24.265	100yr	24,265	1,350	51.05	55.78	54.17	2.98
24.265	150yr	24,265	1,420	51.05	55.96	54.26	3.00
24.265	200yr	24,265	1,530	51.05	56.16	54.40	3.08
24.359	50yr	24,359	1,230	52.73	55.34	55.34	4.78
24.359	80yr	24,359	1,310	52.73	55.46	55.43	4.84
24.359	100yr	24,359	1,350	52.73	55.54	55.49	4.83
24.359	150yr	24,359	1,420	52.73	55.75	55.57	4.69
24.359	200yr	24,359	1,530	52.73	55.96	55.71	4.68
24.362		Inline Weir					
24.365	50yr	24,365	1,230	52.78	57.08	55.37	2.70
24.365	80yr	24,365	1,310	52.78	57.20	55.47	2.78
24.365	100yr	24,365	1,350	52.78	57.26	55.52	2.83
24.365	150yr	24,365	1,420	52.78	57.37	55.61	2.90
24.365	200yr	24,365	1,530	52.78	57.52	55.75	3.01
24.465	50yr	24,465	1,230	52.77	57.23	55.46	2.60
24.465	80yr	24,465	1,310	52.77	57.36	55.56	2.68
24.465	100yr	24,465	1,350	52.77	57.42	55.61	2.72
24.465	150yr	24,465	1,420	52.77	57.53	55.69	2.78
24.465	200yr	24,465	1,530	52.77	57.69	55.82	2.88
24.665	50yr	24,665	1,230	52.20	57.49	55.42	2.50
24.665	80yr	24,665	1,310	52.20	57.62	55.53	2.57
24.665	100yr	24,665	1,350	52.20	57.69	55.58	2.61
24.665	150yr	24,665	1,420	52.20	57.80	55.68	2.67
24.665	200yr	24,665	1,530	52.20	57.97	55.82	2.76
24.865	50yr	24,865	1,230	51.66	57.69	55.20	2.45
24.865	80yr	24,865	1,310	51.66	57.83	55.31	2.54

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
24.865	100yr	24.865	1.350	51.66	57.90	55.37	2.58
24.865	150yr	24.865	1.420	51.66	58.01	55.46	2.65
24.865	200yr	24.865	1.530	51.66	58.18	55.60	2.76
25.060	50yr	25.060	1.230	51.79	57.92	55.43	2.10
25.060	80yr	25.060	1.310	51.79	58.07	55.53	2.16
25.060	100yr	25.060	1.350	51.79	58.14	55.57	2.19
25.060	150yr	25.060	1.420	51.79	58.27	55.64	2.25
25.060	200yr	25.060	1.530	51.79	58.46	55.76	2.33
25.255	50yr	25.255	1.230	53.09	57.94	56.61	3.08
25.255	80yr	25.255	1.310	53.09	58.09	56.72	3.15
25.255	100yr	25.255	1.350	53.09	58.16	56.77	3.18
25.255	150yr	25.255	1.420	53.09	58.28	56.86	3.24
25.255	200yr	25.255	1.530	53.09	58.47	57.00	3.33
25.445	50yr	25.445	1.230	53.36	58.46	56.59	2.03
25.445	80yr	25.445	1.310	53.36	58.62	56.66	2.06
25.445	100yr	25.445	1.350	53.36	58.70	56.70	2.08
25.445	150yr	25.445	1.420	53.36	58.84	56.77	2.11
25.445	200yr	25.445	1.530	53.36	59.04	56.87	2.16
25.483	50yr	25.483	1.230	55.45	58.28	57.52	3.28
25.483	80yr	25.483	1.310	55.45	58.44	57.61	3.30
25.483	100yr	25.483	1.350	55.45	58.52	57.66	3.31
25.483	150yr	25.483	1.420	55.45	58.65	57.73	3.33
25.483	200yr	25.483	1.530	55.45	58.86	57.85	3.37
25.484		Inline Weir					
25.485	50yr	25.485	1.230	55.45	59.23	57.52	2.43
25.485	80yr	25.485	1.310	55.45	59.34	57.61	2.51
25.485	100yr	25.485	1.350	55.45	59.40	57.66	2.55
25.485	150yr	25.485	1.420	55.45	59.49	57.73	2.61
25.485	200yr	25.485	1.530	55.45	59.63	57.85	2.71
25.630	50yr	25.630	1.230	54.39	59.39	57.03	2.38
25.630	80yr	25.630	1.310	54.39	59.50	57.14	2.46
25.630	100yr	25.630	1.350	54.39	59.56	57.19	2.51
25.630	150yr	25.630	1.420	54.39	59.65	57.28	2.58
25.630	200yr	25.630	1.530	54.39	59.80	57.41	2.69
25.850	50yr	25.850	1.230	53.65	59.54	57.57	2.71
25.850	80yr	25.850	1.310	53.65	59.66	57.68	2.81
25.850	100yr	25.850	1.350	53.65	59.72	57.73	2.85
25.850	150yr	25.850	1.420	53.65	59.82	57.83	2.93
25.850	200yr	25.850	1.530	53.65	59.97	57.97	3.05
26.050	50yr	26.050	1.230	54.64	59.86	58.51	2.48
26.050	80yr	26.050	1.310	54.64	60.00	58.58	2.53
26.050	100yr	26.050	1.350	54.64	60.07	58.62	2.56
26.050	150yr	26.050	1.420	54.64	60.18	58.69	2.60
26.050	200yr	26.050	1.530	54.64	60.36	58.81	2.66
26.092	50yr	26.092	1.230	55.70	59.98	58.38	2.20
26.092	80yr	26.092	1.310	55.70	60.12	58.46	2.24
26.092	100yr	26.092	1.350	55.70	60.19	58.50	2.27
26.092	150yr	26.092	1.420	55.70	60.31	58.56	2.31
26.092	200yr	26.092	1.530	55.70	60.49	58.67	2.37
26.095		Bridge					
26.098	50yr	26.098	1.230	55.70	60.02	58.38	2.17
26.098	80yr	26.098	1.310	55.70	60.16	58.46	2.22
26.098	100yr	26.098	1.350	55.70	60.23	58.50	2.25
26.098	150yr	26.098	1.420	55.70	60.35	58.57	2.29
26.098	200yr	26.098	1.530	55.70	60.53	58.67	2.35

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
26.120	50yr	26,120	1,230	55.38	60.02	58.36	2.31
26.120	80yr	26,120	1,310	55.38	60.16	58.45	2.37
26.120	100yr	26,120	1,350	55.38	60.23	58.50	2.39
26.120	150yr	26,120	1,420	55.38	60.34	58.58	2.44
26.120	200yr	26,120	1,530	55.38	60.52	58.69	2.51
26.125		Bridge					
26.130	50yr	26,130	1,230	55.38	60.08	58.36	2.27
26.130	80yr	26,130	1,310	55.38	60.22	58.45	2.32
26.130	100yr	26,130	1,350	55.38	60.29	58.49	2.35
26.130	150yr	26,130	1,420	55.38	60.41	58.57	2.39
26.130	200yr	26,130	1,530	55.38	60.59	58.69	2.46
26.170	50yr	26,170	1,230	55.64	60.12	58.75	2.36
26.170	80yr	26,170	1,310	55.64	60.26	58.85	2.40
26.170	100yr	26,170	1,350	55.64	60.33	58.90	2.42
26.170	150yr	26,170	1,420	55.64	60.45	58.99	2.46
26.170	200yr	26,170	1,530	55.64	60.63	59.06	2.51
26.175		Bridge					
26.180	50yr	26,180	1,230	55.64	60.16	58.75	2.32
26.180	80yr	26,180	1,310	55.64	60.31	58.85	2.36
26.180	100yr	26,180	1,350	55.64	60.38	58.89	2.39
26.180	150yr	26,180	1,420	55.64	60.49	58.98	2.42
26.180	200yr	26,180	1,530	55.64	60.68	59.06	2.47
26.245	50yr	26,245	1,230	55.79	60.23	58.46	2.44
26.245	80yr	26,245	1,310	55.79	60.37	58.55	2.47
26.245	100yr	26,245	1,350	55.79	60.44	58.60	2.49
26.245	150yr	26,245	1,420	55.79	60.56	58.68	2.51
26.245	200yr	26,245	1,530	55.79	60.75	58.80	2.54
26.301	50yr	26,301	1,230	57.16	59.96	59.60	4.23
26.301	80yr	26,301	1,310	57.16	60.12	59.91	4.18
26.301	100yr	26,301	1,350	57.16	60.20	59.98	4.17
26.301	150yr	26,301	1,420	57.16	60.35	60.07	4.11
26.301	200yr	26,301	1,530	57.16	60.55	60.20	4.07
26.303		Inline Weir					
26.305	50yr	26,305	1,230	57.67	61.55	60.26	2.54
26.305	80yr	26,305	1,310	57.67	61.65	60.36	2.62
26.305	100yr	26,305	1,350	57.67	61.70	60.41	2.66
26.305	150yr	26,305	1,420	57.67	61.78	60.49	2.72
26.305	200yr	26,305	1,530	57.67	61.91	60.60	2.82
26.455	50yr	26,455	1,230	54.40	61.82	58.87	2.20
26.455	80yr	26,455	1,310	54.40	61.93	59.05	2.28
26.455	100yr	26,455	1,350	54.40	61.98	59.14	2.32
26.455	150yr	26,455	1,420	54.40	62.07	59.29	2.39
26.455	200yr	26,455	1,530	54.40	62.20	59.52	2.49
26.660	50yr	26,660	1,230	55.25	62.08	59.93	1.80
26.660	80yr	26,660	1,310	55.25	62.20	60.02	1.85
26.660	100yr	26,660	1,350	55.25	62.26	60.05	1.87
26.660	150yr	26,660	1,420	55.25	62.35	60.13	1.91
26.660	200yr	26,660	1,530	55.25	62.50	60.24	1.97
26.865	50yr	26,865	1,230	57.00	62.22	59.96	2.26
26.865	80yr	26,865	1,310	57.00	62.34	60.08	2.31
26.865	100yr	26,865	1,350	57.00	62.40	60.14	2.33
26.865	150yr	26,865	1,420	57.00	62.49	60.24	2.37
26.865	200yr	26,865	1,530	57.00	62.63	60.39	2.44

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
27.065	50yr	27.065	1.230	56.93	62.41	60.06	2.49
27.065	80yr	27.065	1.310	56.93	62.53	60.17	2.58
27.065	100yr	27.065	1.350	56.93	62.58	60.23	2.63
27.065	150yr	27.065	1.420	56.93	62.67	60.36	2.71
27.065	200yr	27.065	1.530	56.93	62.81	60.61	2.83
27.270	50yr	27.270	1.230	55.97	62.54	60.88	3.09
27.270	80yr	27.270	1.310	55.97	62.66	60.99	3.20
27.270	100yr	27.270	1.350	55.97	62.71	61.07	3.25
27.270	150yr	27.270	1.420	55.97	62.80	61.16	3.35
27.270	200yr	27.270	1.530	55.97	62.95	61.32	3.50
27.490	50yr	27.490	1.230	57.81	63.05	61.13	2.29
27.490	80yr	27.490	1.310	57.81	63.20	61.22	2.34
27.490	100yr	27.490	1.350	57.81	63.27	61.27	2.37
27.490	150yr	27.490	1.420	57.81	63.39	61.34	2.41
27.490	200yr	27.490	1.530	57.81	63.57	61.48	2.49
27.675	50yr	27.675	1.230	57.91	63.17	61.40	2.72
27.675	80yr	27.675	1.310	57.91	63.31	61.50	2.79
27.675	100yr	27.675	1.350	57.91	63.38	61.56	2.82
27.675	150yr	27.675	1.420	57.91	63.50	61.65	2.89
27.675	200yr	27.675	1.530	57.91	63.68	61.79	2.98
27.706	50yr	27.706	1.230	58.29	63.27	61.47	2.53
27.706	80yr	27.706	1.310	58.29	63.42	61.58	2.59
27.706	100yr	27.706	1.350	58.29	63.49	61.63	2.62
27.706	150yr	27.706	1.420	58.29	63.62	61.71	2.67
27.706	200yr	27.706	1.530	58.29	63.79	61.84	2.76
27.710		Bridge					
27.713	50yr	27.713	1.230	58.29	63.32	61.48	2.50
27.713	80yr	27.713	1.310	58.29	63.47	61.57	2.56
27.713	100yr	27.713	1.350	58.29	63.54	61.62	2.59
27.713	150yr	27.713	1.420	58.29	63.66	61.70	2.64
27.713	200yr	27.713	1.530	58.29	63.84	61.83	2.73
27.885	50yr	27.885	1.230	58.44	63.45	62.08	3.03
27.885	80yr	27.885	1.310	58.44	63.60	62.18	3.11
27.885	100yr	27.885	1.350	58.44	63.67	62.23	3.14
27.885	150yr	27.885	1.420	58.44	63.79	62.32	3.20
27.885	200yr	27.885	1.530	58.44	63.97	62.45	3.30
28.095	50yr	28.095	1.230	58.45	63.94	62.24	2.46
28.095	80yr	28.095	1.310	58.45	64.10	62.36	2.51
28.095	100yr	28.095	1.350	58.45	64.17	62.41	2.53
28.095	150yr	28.095	1.420	58.45	64.31	62.50	2.56
28.095	200yr	28.095	1.530	58.45	64.51	62.62	2.62
28.295	50yr	28.295	1.230	58.90	64.26	62.35	2.02
28.295	80yr	28.295	1.310	58.90	64.43	62.43	2.04
28.295	100yr	28.295	1.350	58.90	64.50	62.47	2.06
28.295	150yr	28.295	1.420	58.90	64.64	62.57	2.08
28.295	200yr	28.295	1.530	58.90	64.84	62.78	2.12
28.495	50yr	28.495	1.230	60.30	64.45	63.27	2.31
28.495	80yr	28.495	1.310	60.30	64.60	63.35	2.33
28.495	100yr	28.495	1.350	60.30	64.70	63.38	2.31
28.495	150yr	28.495	1.420	60.30	64.84	63.45	2.30
28.495	200yr	28.495	1.530	60.30	65.03	63.54	2.30
28.602	50yr	28.602	1.230	60.02	64.68	62.94	1.86
28.602	80yr	28.602	1.310	60.02	64.83	63.02	1.87
28.602	100yr	28.602	1.350	60.02	64.94	63.06	1.85
28.602	150yr	28.602	1.420	60.02	65.07	63.12	1.86
28.602	200yr	28.602	1.530	60.02	65.24	63.25	1.89

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
28.605		Bridge					
28.609	50yr	28.609	1.230	60.02	64.71	62.95	1.84
28.609	80yr	28.609	1.310	60.02	64.86	63.02	1.85
28.609	100yr	28.609	1.350	60.02	64.97	63.06	1.84
28.609	150yr	28.609	1.420	60.02	65.09	63.12	1.85
28.609	200yr	28.609	1.530	60.02	65.26	63.24	1.88
28.673	50yr	28.673	1.230	60.59	64.68	62.87	2.54
28.673	80yr	28.673	1.310	60.59	64.82	62.97	2.58
28.673	100yr	28.673	1.350	60.59	64.93	63.02	2.57
28.673	150yr	28.673	1.420	60.59	65.05	63.10	2.60
28.673	200yr	28.673	1.530	60.59	65.21	63.23	2.66
28.674		Inline Weir					
28.675	50yr	28.675	1.230	60.59	64.90	62.88	2.37
28.675	80yr	28.675	1.310	60.59	65.03	62.97	2.42
28.675	100yr	28.675	1.350	60.59	65.12	63.02	2.42
28.675	150yr	28.675	1.420	60.59	65.23	63.10	2.45
28.675	200yr	28.675	1.530	60.59	65.39	63.23	2.51
28.690	50yr	28.690	1.230	60.58	64.80	63.55	3.03
28.690	80yr	28.690	1.310	60.58	64.93	63.65	3.07
28.690	100yr	28.690	1.350	60.58	65.02	63.71	3.06
28.690	150yr	28.690	1.420	60.58	65.13	63.79	3.09
28.690	200yr	28.690	1.530	60.58	65.29	63.92	3.16
28.895	50yr	28.895	1.230	60.30	65.39	63.48	2.81
28.895	80yr	28.895	1.310	60.30	65.51	63.61	2.86
28.895	100yr	28.895	1.350	60.30	65.58	63.67	2.88
28.895	150yr	28.895	1.420	60.30	65.67	63.78	2.93
28.895	200yr	28.895	1.530	60.30	65.82	63.94	3.00
29.090	50yr	29.090	1.230	58.95	65.67	63.75	3.60
29.090	80yr	29.090	1.310	58.95	65.78	63.98	3.73
29.090	100yr	29.090	1.350	58.95	65.83	64.08	3.79
29.090	150yr	29.090	1.420	58.95	65.91	64.28	3.91
29.090	200yr	29.090	1.530	58.95	66.03	64.51	4.09
29.285	50yr	29.285	1.230	60.76	66.41	65.17	2.67
29.285	80yr	29.285	1.310	60.76	66.56	65.28	2.70
29.285	100yr	29.285	1.350	60.76	66.63	65.33	2.73
29.285	150yr	29.285	1.420	60.76	66.75	65.40	2.76
29.285	200yr	29.285	1.530	60.76	66.94	65.53	2.80
29.495	50yr	29.495	1.230	61.18	66.71	64.93	2.97
29.495	80yr	29.495	1.310	61.18	66.84	65.06	3.06
29.495	100yr	29.495	1.350	61.18	66.90	65.11	3.10
29.495	150yr	29.495	1.420	61.18	67.02	65.21	3.17
29.495	200yr	29.495	1.530	61.18	67.19	65.36	3.28
29.680	50yr	29.680	1.230	61.25	67.11	65.48	2.51
29.680	80yr	29.680	1.310	61.25	67.26	65.60	2.56
29.680	100yr	29.680	1.350	61.25	67.33	65.66	2.59
29.680	150yr	29.680	1.420	61.25	67.45	65.75	2.63
29.680	200yr	29.680	1.530	61.25	67.65	65.86	2.70
29.776	50yr	29.776	1.230	61.95	67.29	65.20	2.25
29.776	80yr	29.776	1.310	61.95	67.44	65.30	2.29
29.776	100yr	29.776	1.350	61.95	67.51	65.34	2.32
29.776	150yr	29.776	1.420	61.95	67.64	65.42	2.36
29.776	200yr	29.776	1.530	61.95	67.84	65.56	2.42
29.780		Bridge					

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
29.783	50yr	29,783	1,230	61.95	67.33	65.20	2.22
29.783	80yr	29,783	1,310	61.95	67.48	65.30	2.27
29.783	100yr	29,783	1,350	61.95	67.55	65.34	2.29
29.783	150yr	29,783	1,420	61.95	67.68	65.43	2.33
29.783	200yr	29,783	1,530	61.95	67.88	65.54	2.39
29.895	50yr	29,895	1,230	62.12	67.32	65.82	3.06
29.895	80yr	29,895	1,310	62.12	67.46	65.99	3.14
29.895	100yr	29,895	1,350	62.12	67.52	66.04	3.18
29.895	150yr	29,895	1,420	62.12	67.64	66.14	3.25
29.895	200yr	29,895	1,530	62.12	67.82	66.27	3.35
30.105	50yr	30,105	1,230	61.83	67.70	66.58	3.20
30.105	80yr	30,105	1,310	61.83	67.84	66.68	3.27
30.105	100yr	30,105	1,350	61.83	67.91	66.73	3.30
30.105	150yr	30,105	1,420	61.83	68.03	66.82	3.35
30.105	200yr	30,105	1,530	61.83	68.22	66.95	3.43
30.290	50yr	30,290	1,140	63.57	68.27	66.42	2.34
30.290	80yr	30,290	1,210	63.57	68.44	66.51	2.35
30.290	100yr	30,290	1,250	63.57	68.51	66.56	2.38
30.290	150yr	30,290	1,310	63.57	68.64	66.65	2.40
30.290	200yr	30,290	1,410	63.57	68.85	66.77	2.43
30.340	50yr	30,340	1,140	63.12	68.27	66.30	2.71
30.340	80yr	30,340	1,210	63.12	68.42	66.41	2.78
30.340	100yr	30,340	1,250	63.12	68.49	66.46	2.83
30.340	150yr	30,340	1,310	63.12	68.61	66.55	2.88
30.340	200yr	30,340	1,410	63.12	68.80	66.69	2.98
30.345		Bridge					
30.350	50yr	30,350	1,140	63.12	68.37	66.30	2.65
30.350	80yr	30,350	1,210	63.12	68.53	66.40	2.71
30.350	100yr	30,350	1,250	63.12	68.61	66.46	2.75
30.350	150yr	30,350	1,310	63.12	68.70	66.54	2.83
30.350	200yr	30,350	1,410	63.12	68.89	66.68	2.93
30.388	50yr	30,388	1,140	64.64	68.28	67.27	3.39
30.388	80yr	30,388	1,210	64.64	68.46	67.41	3.36
30.388	100yr	30,388	1,250	64.64	68.54	67.49	3.37
30.388	150yr	30,388	1,310	64.64	68.64	67.70	3.41
30.388	200yr	30,388	1,410	64.64	68.85	67.97	3.41
30.389		Inline Weir					
30.390	50yr	30,390	1,140	64.64	68.86	67.27	2.76
30.390	80yr	30,390	1,210	64.64	68.96	67.39	2.83
30.390	100yr	30,390	1,250	64.64	69.01	67.48	2.87
30.390	150yr	30,390	1,310	64.64	69.10	67.70	2.92
30.390	200yr	30,390	1,410	64.64	69.24	67.97	3.00
30.480	50yr	30,480	1,140	63.90	69.00	67.28	2.85
30.480	80yr	30,480	1,210	63.90	69.11	67.48	2.93
30.480	100yr	30,480	1,250	63.90	69.17	67.61	2.98
30.480	150yr	30,480	1,310	63.90	69.25	67.78	3.04
30.480	200yr	30,480	1,410	63.90	69.40	68.03	3.14
30.680	50yr	30,680	1,140	64.55	69.35	68.12	2.98
30.680	80yr	30,680	1,210	64.55	69.46	68.21	3.06
30.680	100yr	30,680	1,250	64.55	69.52	68.27	3.11
30.680	150yr	30,680	1,310	64.55	69.62	68.36	3.17
30.680	200yr	30,680	1,410	64.55	69.76	68.50	3.28
30.880	50yr	30,880	1,140	64.00	69.79	67.52	2.66
30.880	80yr	30,880	1,210	64.00	69.92	67.66	2.72
30.880	100yr	30,880	1,250	64.00	69.99	67.71	2.75

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
30.880	150yr	30.880	1.310	64.00	70.08	67.82	2.81
30.880	200yr	30.880	1.410	64.00	70.24	67.98	2.89
31.070	50yr	31.070	1.140	64.12	70.03	68.33	3.18
31.070	80yr	31.070	1.210	64.12	70.17	68.62	3.23
31.070	100yr	31.070	1.250	64.12	70.25	68.68	3.26
31.070	150yr	31.070	1.310	64.12	70.34	68.79	3.32
31.070	200yr	31.070	1.410	64.12	70.50	68.95	3.40
31.290	50yr	31.290	1.140	65.08	70.59	69.11	2.75
31.290	80yr	31.290	1.210	65.08	70.74	69.20	2.80
31.290	100yr	31.290	1.250	65.08	70.81	69.25	2.84
31.290	150yr	31.290	1.310	65.08	70.91	69.33	2.90
31.290	200yr	31.290	1.410	65.08	71.07	69.46	2.99
31.465	50yr	31.465	1.050	65.71	70.93	68.92	2.37
31.465	80yr	31.465	1.110	65.71	71.08	69.02	2.39
31.465	100yr	31.465	1.150	65.71	71.16	69.07	2.42
31.465	150yr	31.465	1.200	65.71	71.27	69.14	2.45
31.465	200yr	31.465	1.300	65.71	71.45	69.27	2.52
31.470		Bridge					
31.475	50yr	31.475	1.050	65.71	71.10	68.92	2.25
31.475	80yr	31.475	1.110	65.71	71.22	69.00	2.30
31.475	100yr	31.475	1.150	65.71	71.29	69.06	2.33
31.475	150yr	31.475	1.200	65.71	71.39	69.12	2.36
31.475	200yr	31.475	1.300	65.71	71.55	69.25	2.45
31.675	50yr	31.675	1.050	65.15	71.29	69.41	2.27
31.675	80yr	31.675	1.110	65.15	71.41	69.47	2.32
31.675	100yr	31.675	1.150	65.15	71.48	69.52	2.36
31.675	150yr	31.675	1.200	65.15	71.58	69.60	2.40
31.675	200yr	31.675	1.300	65.15	71.74	69.70	2.50
31.880	50yr	31.880	1.050	65.57	71.48	69.07	2.65
31.880	80yr	31.880	1.110	65.57	71.60	69.20	2.72
31.880	100yr	31.880	1.150	65.57	71.67	69.28	2.77
31.880	150yr	31.880	1.200	65.57	71.77	69.38	2.82
31.880	200yr	31.880	1.300	65.57	71.93	69.58	2.94
32.085	50yr	32.085	1.050	65.86	71.73	69.94	2.96
32.085	80yr	32.085	1.110	65.86	71.85	70.02	3.04
32.085	100yr	32.085	1.150	65.86	71.92	70.09	3.10
32.085	150yr	32.085	1.200	65.86	72.02	70.18	3.16
32.085	200yr	32.085	1.300	65.86	72.19	70.34	3.29
32.285	50yr	32.285	1.050	66.49	72.23	70.03	1.81
32.285	80yr	32.285	1.110	66.49	72.37	70.10	1.84
32.285	100yr	32.285	1.150	66.49	72.46	70.14	1.87
32.285	150yr	32.285	1.200	66.49	72.58	70.19	1.90
32.285	200yr	32.285	1.300	66.49	72.79	70.30	1.95
32.485	50yr	32.485	1.050	66.68	72.38	70.56	1.79
32.485	80yr	32.485	1.110	66.68	72.53	70.62	1.80
32.485	100yr	32.485	1.150	66.68	72.62	70.66	1.81
32.485	150yr	32.485	1.200	66.68	72.73	70.71	1.83
32.485	200yr	32.485	1.300	66.68	72.95	70.81	1.86
32.680	50yr	32.680	1.050	66.78	72.54	69.69	1.61
32.680	80yr	32.680	1.110	66.78	72.68	69.76	1.65
32.680	100yr	32.680	1.150	66.78	72.77	69.79	1.67
32.680	150yr	32.680	1.200	66.78	72.89	69.86	1.69
32.680	200yr	32.680	1.300	66.78	73.11	69.98	1.74
32.698	50yr	32.698	1.050	68.87	72.51	70.63	1.94
32.698	80yr	32.698	1.110	68.87	72.65	70.70	1.96

서울교통본

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
32.698	100yr	32,698	1,150	68.87	72.75	70.74	1.98
32.698	150yr	32,698	1,200	68.87	72.86	70.80	2.00
32.698	200yr	32,698	1,300	68.87	73.08	70.90	2.03
32.699		Inline Weir					
32.700	50yr	32,700	1,050	69.62	72.73	71.39	2.23
32.700	80yr	32,700	1,110	69.62	72.81	71.46	2.28
32.700	100yr	32,700	1,150	69.62	72.88	71.50	2.31
32.700	150yr	32,700	1,200	69.62	72.96	71.56	2.34
32.700	200yr	32,700	1,300	69.62	73.14	71.66	2.39
32.885	50yr	32,885	1,050	67.53	72.94	71.46	2.73
32.885	80yr	32,885	1,110	67.53	73.03	71.54	2.81
32.885	100yr	32,885	1,150	67.53	73.09	71.60	2.86
32.885	150yr	32,885	1,200	67.53	73.17	71.66	2.93
32.885	200yr	32,885	1,300	67.53	73.33	71.80	3.03
33.075	50yr	33,075	1,050	68.74	73.40	72.00	2.11
33.075	80yr	33,075	1,110	68.74	73.51	72.08	2.15
33.075	100yr	33,075	1,150	68.74	73.57	72.10	2.17
33.075	150yr	33,075	1,200	68.74	73.67	72.15	2.20
33.075	200yr	33,075	1,300	68.74	73.86	72.26	2.24
33.270	50yr	33,270	1,050	69.18	73.60	72.69	3.04
33.270	80yr	33,270	1,110	69.18	73.70	72.77	3.10
33.270	100yr	33,270	1,150	69.18	73.76	72.82	3.14
33.270	150yr	33,270	1,200	69.18	73.84	72.89	3.19
33.270	200yr	33,270	1,300	69.18	74.01	73.00	3.27
33.311	50yr	33,311	1,050	69.77	73.80	72.67	2.72
33.311	80yr	33,311	1,110	69.77	73.89	72.74	2.79
33.311	100yr	33,311	1,150	69.77	73.96	72.79	2.83
33.311	150yr	33,311	1,200	69.77	74.05	72.85	2.87
33.311	200yr	33,311	1,300	69.77	74.22	72.97	2.96
33.315		Bridge					
33.319	50yr	33,319	1,050	69.77	73.87	72.65	2.66
33.319	80yr	33,319	1,110	69.77	73.96	72.73	2.73
33.319	100yr	33,319	1,150	69.77	74.03	72.78	2.77
33.319	150yr	33,319	1,200	69.77	74.12	72.84	2.81
33.319	200yr	33,319	1,300	69.77	74.29	72.95	2.89
33.510	50yr	33,510	630	70.04	74.36	72.39	1.34
33.510	80yr	33,510	670	70.04	74.47	72.44	1.38
33.510	100yr	33,510	690	70.04	74.55	72.46	1.38
33.510	150yr	33,510	730	70.04	74.65	72.53	1.42
33.510	200yr	33,510	780	70.04	74.84	72.58	1.43

건설교통부

▶유등천 홍수위산정결과(개수전)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: YouDeung Reach: YouDeung

Rivers = 1
Hydraulic Reaches = 1
River Stations = 154
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		1,550	31.10	38.14	34.72	1.11
0.000	80yr		1,650	31.10	38.14	34.82	1.18
0.000	100yr		1,700	31.10	38.14	34.85	1.22
0.000	150yr		1,790	31.10	38.14	34.93	1.29
0.000	200yr		1,920	31.10	38.14	35.09	1.38
0.003		Bridge					
0.005	50yr	5	1,550	31.10	38.15	34.72	1.11
0.005	80yr	5	1,650	31.10	38.15	34.82	1.18
0.005	100yr	5	1,700	31.10	38.15	34.85	1.22
0.005	150yr	5	1,790	31.10	38.15	34.93	1.28
0.005	200yr	5	1,920	31.10	38.15	35.09	1.37
0.070	50yr	70	1,550	31.13	38.16	34.81	1.18
0.070	80yr	70	1,650	31.13	38.16	34.92	1.26
0.070	100yr	70	1,700	31.13	38.16	35.32	1.29
0.070	150yr	70	1,790	31.13	38.16	35.39	1.36
0.070	200yr	70	1,920	31.13	38.16	35.46	1.46
0.280	50yr	280	1,550	32.51	38.18	35.06	1.45
0.280	80yr	280	1,650	32.51	38.19	35.15	1.54
0.280	100yr	280	1,700	32.51	38.19	35.19	1.58
0.280	150yr	280	1,790	32.51	38.19	35.32	1.67
0.280	200yr	280	1,920	32.51	38.20	35.49	1.78
0.480	50yr	480	1,550	32.44	38.26	35.14	1.28
0.480	80yr	480	1,650	32.44	38.27	35.23	1.36
0.480	100yr	480	1,700	32.44	38.28	35.32	1.40
0.480	150yr	480	1,790	32.44	38.29	35.66	1.47
0.480	200yr	480	1,920	32.44	38.31	35.82	1.56
0.675	50yr	675	1,550	33.24	38.30	36.03	1.37
0.675	80yr	675	1,650	33.24	38.32	36.10	1.45
0.675	100yr	675	1,700	33.24	38.33	36.13	1.48
0.675	150yr	675	1,790	33.24	38.35	36.17	1.56
0.675	200yr	675	1,920	33.24	38.38	36.25	1.65
0.895	50yr	895	1,550	33.39	38.37	36.18	1.41
0.895	80yr	895	1,650	33.39	38.39	36.27	1.49
0.895	100yr	895	1,700	33.39	38.41	36.32	1.52
0.895	150yr	895	1,790	33.39	38.43	36.39	1.59
0.895	200yr	895	1,920	33.39	38.47	36.49	1.69
1.055	50yr	1,055	1,550	33.76	38.40	36.25	1.67
1.055	80yr	1,055	1,650	33.76	38.44	36.32	1.76
1.055	100yr	1,055	1,700	33.76	38.45	36.37	1.80
1.055	150yr	1,055	1,790	33.76	38.48	36.42	1.88
1.055	200yr	1,055	1,920	33.76	38.52	36.82	1.99
1.245	50yr	1,245	1,550	34.09	38.51	36.59	1.59
1.245	80yr	1,245	1,650	34.09	38.55	36.66	1.67
1.245	100yr	1,245	1,700	34.09	38.57	36.69	1.71
1.245	150yr	1,245	1,790	34.09	38.61	36.75	1.78
1.245	200yr	1,245	1,920	34.09	38.67	36.84	1.88

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
1.445	50yr	1,445	1,550	34.36	38.59	36.95	1.86
1.445	80yr	1,445	1,650	34.36	38.64	37.02	1.95
1.445	100yr	1,445	1,700	34.36	38.67	37.05	1.99
1.445	150yr	1,445	1,790	34.36	38.71	37.12	2.06
1.445	200yr	1,445	1,920	34.36	38.78	37.20	2.16
1.635	50yr	1,635	1,550	34.28	38.72	37.27	2.02
1.635	80yr	1,635	1,650	34.28	38.78	37.34	2.11
1.635	100yr	1,635	1,700	34.28	38.81	37.38	2.15
1.635	150yr	1,635	1,790	34.28	38.86	37.44	2.22
1.635	200yr	1,635	1,920	34.28	38.94	37.52	2.32
1.823	50yr	1,823	1,550	34.55	38.91	37.33	1.90
1.823	80yr	1,823	1,650	34.55	38.98	37.39	1.97
1.823	100yr	1,823	1,700	34.55	39.01	37.43	2.01
1.823	150yr	1,823	1,790	34.55	39.07	37.49	2.07
1.823	200yr	1,823	1,920	34.55	39.17	37.57	2.15
1.860		Bridge					
1.870	50yr	1,870	1,550	34.55	38.98	37.33	1.85
1.870	80yr	1,870	1,650	34.55	39.05	37.39	1.92
1.870	100yr	1,870	1,700	34.55	39.09	37.43	1.95
1.870	150yr	1,870	1,790	34.55	39.16	37.48	2.01
1.870	200yr	1,870	1,920	34.55	39.25	37.57	2.09
1.880	50yr	1,880	1,550	34.56	39.00	37.04	1.75
1.880	80yr	1,880	1,650	34.56	39.08	37.11	1.82
1.880	100yr	1,880	1,700	34.56	39.12	37.14	1.85
1.880	150yr	1,880	1,790	34.56	39.19	37.20	1.91
1.880	200yr	1,880	1,920	34.56	39.28	37.28	1.99
2.090	50yr	2,090	1,550	35.04	39.11	37.39	1.90
2.090	80yr	2,090	1,650	35.04	39.19	37.47	1.97
2.090	100yr	2,090	1,700	35.04	39.23	37.50	2.00
2.090	150yr	2,090	1,790	35.04	39.30	37.56	2.06
2.090	200yr	2,090	1,920	35.04	39.41	37.65	2.15
2.300	50yr	2,300	1,550	34.90	39.26	37.45	1.82
2.300	80yr	2,300	1,650	34.90	39.34	37.52	1.89
2.300	100yr	2,300	1,700	34.90	39.39	37.55	1.92
2.300	150yr	2,300	1,790	34.90	39.47	37.61	1.98
2.300	200yr	2,300	1,920	34.90	39.58	37.70	2.05
2.303	50yr	2,303	1,550	34.86	39.28	37.22	1.73
2.303	80yr	2,303	1,650	34.86	39.37	37.32	1.79
2.303	100yr	2,303	1,700	34.86	39.41	37.36	1.82
2.303	150yr	2,303	1,790	34.86	39.49	37.43	1.88
2.303	200yr	2,303	1,920	34.86	39.61	37.51	1.95
2.305		Bridge					
2.310	50yr	2,310	1,550	34.86	39.30	37.22	1.71
2.310	80yr	2,310	1,650	34.86	39.39	37.32	1.78
2.310	100yr	2,310	1,700	34.86	39.44	37.36	1.81
2.310	150yr	2,310	1,790	34.86	39.52	37.43	1.86
2.310	200yr	2,310	1,920	34.86	39.64	37.51	1.93
2.480	50yr	2,480	1,550	35.28	39.36	38.04	2.15
2.480	80yr	2,480	1,650	35.28	39.45	38.11	2.22
2.480	100yr	2,480	1,700	35.28	39.49	38.15	2.25
2.480	150yr	2,480	1,790	35.28	39.58	38.21	2.30
2.480	200yr	2,480	1,920	35.28	39.70	38.29	2.37
2.640	50yr	2,640	1,550	35.99	39.45	38.58	2.87
2.640	80yr	2,640	1,650	35.99	39.54	38.67	2.94

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
2.640	100yr	2.640	1.700	35.99	39.59	38.71	2.98
2.640	150yr	2.640	1.790	35.99	39.67	38.79	3.03
2.640	200yr	2.640	1.920	35.99	39.80	38.90	3.10
2.777	50yr	2.777	1.060	35.28	39.84	38.63	2.37
2.777	80yr	2.777	1.130	35.28	39.94	38.71	2.44
2.777	100yr	2.777	1.160	35.28	39.99	38.73	2.46
2.777	150yr	2.777	1.220	35.28	40.08	38.80	2.51
2.777	200yr	2.777	1.310	35.28	40.21	38.89	2.58
2.790		Bridge					
2.803	50yr	2.803	1.060	35.28	39.90	38.64	2.31
2.803	80yr	2.803	1.130	35.28	40.01	38.70	2.38
2.803	100yr	2.803	1.160	35.28	40.06	38.73	2.40
2.803	150yr	2.803	1.220	35.28	40.15	38.80	2.45
2.803	200yr	2.803	1.310	35.28	40.28	38.89	2.53
2.820	50yr	2.820	1.060	35.80	39.85	39.02	2.79
2.820	80yr	2.820	1.130	35.80	39.95	39.10	2.85
2.820	100yr	2.820	1.160	35.80	40.00	39.13	2.86
2.820	150yr	2.820	1.220	35.80	40.09	39.20	2.90
2.820	200yr	2.820	1.310	35.80	40.22	39.29	2.97
3.015	50yr	3.015	1.060	35.73	40.38	39.47	2.41
3.015	80yr	3.015	1.130	35.73	40.48	39.56	2.45
3.015	100yr	3.015	1.160	35.73	40.53	39.59	2.47
3.015	150yr	3.015	1.220	35.73	40.62	39.65	2.50
3.015	200yr	3.015	1.310	35.73	40.75	39.73	2.54
3.215	50yr	3.215	1.060	36.10	40.79	39.69	2.07
3.215	80yr	3.215	1.130	36.10	40.89	39.76	2.11
3.215	100yr	3.215	1.160	36.10	40.94	39.79	2.13
3.215	150yr	3.215	1.220	36.10	41.03	39.85	2.16
3.215	200yr	3.215	1.310	36.10	41.15	39.93	2.21
3.242	50yr	3.242	1.060	36.16	40.82	39.87	2.14
3.242	80yr	3.242	1.130	36.16	40.92	39.92	2.18
3.242	100yr	3.242	1.160	36.16	40.97	39.96	2.19
3.242	150yr	3.242	1.220	36.16	41.05	40.01	2.22
3.242	200yr	3.242	1.310	36.16	41.18	40.08	2.27
3.255		Bridge					
3.268	50yr	3.268	1.060	36.16	40.90	39.87	2.06
3.268	80yr	3.268	1.130	36.16	41.00	39.92	2.10
3.268	100yr	3.268	1.160	36.16	41.05	39.96	2.12
3.268	150yr	3.268	1.220	36.16	41.13	40.01	2.15
3.268	200yr	3.268	1.310	36.16	41.26	40.08	2.20
3.415	50yr	3.415	1.060	37.32	41.08	40.24	2.40
3.415	80yr	3.415	1.130	37.32	41.18	40.31	2.46
3.415	100yr	3.415	1.160	37.32	41.22	40.34	2.48
3.415	150yr	3.415	1.220	37.32	41.30	40.39	2.52
3.415	200yr	3.415	1.310	37.32	41.42	40.46	2.58
3.615	50yr	3.615	1.060	36.70	41.45	40.71	2.82
3.615	80yr	3.615	1.130	36.70	41.54	40.79	2.88
3.615	100yr	3.615	1.160	36.70	41.58	40.82	2.91
3.615	150yr	3.615	1.220	36.70	41.65	40.91	2.97
3.615	200yr	3.615	1.310	36.70	41.76	41.01	3.05
3.805	50yr	3.805	1.060	37.52	41.94	40.95	2.54
3.805	80yr	3.805	1.130	37.52	42.03	41.02	2.61
3.805	100yr	3.805	1.160	37.52	42.07	41.06	2.64
3.805	150yr	3.805	1.220	37.52	42.15	41.12	2.70
3.805	200yr	3.805	1.310	37.52	42.26	41.21	2.79

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
4.005	50yr	4,005	1,060	37.86	42.29	41.38	2.67
4.005	80yr	4,005	1,130	37.86	42.39	41.46	2.74
4.005	100yr	4,005	1,160	37.86	42.43	41.49	2.77
4.005	150yr	4,005	1,220	37.86	42.51	41.55	2.83
4.005	200yr	4,005	1,310	37.86	42.63	41.64	2.91
4.205	50yr	4,205	1,060	38.35	42.68	41.80	2.72
4.205	80yr	4,205	1,130	38.35	42.78	41.87	2.79
4.205	100yr	4,205	1,160	38.35	42.83	41.90	2.82
4.205	150yr	4,205	1,220	38.35	42.91	41.97	2.88
4.205	200yr	4,205	1,310	38.35	43.03	42.06	2.96
4.400	50yr	4,400	1,060	38.96	43.10	42.29	2.70
4.400	80yr	4,400	1,130	38.96	43.21	42.37	2.76
4.400	100yr	4,400	1,160	38.96	43.25	42.39	2.78
4.400	150yr	4,400	1,220	38.96	43.33	42.45	2.83
4.400	200yr	4,400	1,310	38.96	43.46	42.54	2.91
4.456	50yr	4,456	1,060	39.18	43.22	41.81	2.78
4.456	80yr	4,456	1,130	39.18	43.32	41.93	2.84
4.456	100yr	4,456	1,160	39.18	43.36	42.55	2.86
4.456	150yr	4,456	1,220	39.18	43.45	42.64	2.91
4.456	200yr	4,456	1,310	39.18	43.57	42.73	2.98
4.458		Inline Weir					
4.460	50yr	4,460	1,060	39.18	44.18	41.80	1.96
4.460	80yr	4,460	1,130	39.18	44.27	41.93	2.04
4.460	100yr	4,460	1,160	39.18	44.32	42.55	2.06
4.460	150yr	4,460	1,220	39.18	44.40	42.64	2.12
4.460	200yr	4,460	1,310	39.18	44.51	42.73	2.21
4.482	50yr	4,482	1,060	40.23	44.19	42.59	1.98
4.482	80yr	4,482	1,130	40.23	44.29	42.65	2.05
4.482	100yr	4,482	1,160	40.23	44.33	42.68	2.08
4.482	150yr	4,482	1,220	40.23	44.41	42.74	2.14
4.482	200yr	4,482	1,310	40.23	44.53	42.83	2.22
4.500		Bridge					
4.518	50yr	4,518	1,060	40.23	44.25	42.59	1.95
4.518	80yr	4,518	1,130	40.23	44.35	42.65	2.02
4.518	100yr	4,518	1,160	40.23	44.39	42.68	2.04
4.518	150yr	4,518	1,220	40.23	44.48	42.74	2.10
4.518	200yr	4,518	1,310	40.23	44.60	42.83	2.18
4.600	50yr	4,600	1,060	41.07	44.16	43.69	3.14
4.600	80yr	4,600	1,130	41.07	44.26	43.76	3.19
4.600	100yr	4,600	1,160	41.07	44.30	43.79	3.22
4.600	150yr	4,600	1,220	41.07	44.38	43.86	3.26
4.600	200yr	4,600	1,310	41.07	44.50	43.95	3.33
4.800	50yr	4,800	1,060	41.61	44.85	44.17	2.93
4.800	80yr	4,800	1,130	41.61	44.94	44.25	3.01
4.800	100yr	4,800	1,160	41.61	44.98	44.28	3.04
4.800	150yr	4,800	1,220	41.61	45.05	44.34	3.11
4.800	200yr	4,800	1,310	41.61	45.15	44.43	3.21
5.000	50yr	5,000	1,060	41.51	45.39	44.23	2.43
5.000	80yr	5,000	1,130	41.51	45.49	44.31	2.50
5.000	100yr	5,000	1,160	41.51	45.53	44.34	2.53
5.000	150yr	5,000	1,220	41.51	45.61	44.40	2.59
5.000	200yr	5,000	1,310	41.51	45.73	44.49	2.67
5.200	50yr	5,200	1,060	41.79	45.68	44.56	2.44
5.200	80yr	5,200	1,130	41.79	45.79	44.63	2.51

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
5.200	100yr	5,200	1,160	41.79	45.83	44.67	2.54
5.200	150yr	5,200	1,220	41.79	45.92	44.73	2.59
5.200	200yr	5,200	1,310	41.79	46.04	44.82	2.67
5.395	50yr	5,395	1,060	42.24	45.99	45.03	2.56
5.395	80yr	5,395	1,130	42.24	46.09	45.10	2.62
5.395	100yr	5,395	1,160	42.24	46.14	45.13	2.65
5.395	150yr	5,395	1,220	42.24	46.22	45.19	2.70
5.395	200yr	5,395	1,310	42.24	46.35	45.28	2.77
5.562	50yr	5,562	1,060	42.62	46.35	45.26	2.16
5.562	80yr	5,562	1,130	42.62	46.46	45.32	2.21
5.562	100yr	5,562	1,160	42.62	46.51	45.35	2.23
5.562	150yr	5,562	1,220	42.62	46.60	45.40	2.27
5.562	200yr	5,562	1,310	42.62	46.73	45.48	2.32
5.575		Bridge					
5.588	50yr	5,588	1,060	42.62	46.42	45.26	2.11
5.588	80yr	5,588	1,130	42.62	46.53	45.32	2.15
5.588	100yr	5,588	1,160	42.62	46.58	45.35	2.17
5.588	150yr	5,588	1,220	42.62	46.67	45.40	2.21
5.588	200yr	5,588	1,310	42.62	46.80	45.48	2.27
5.790	50yr	5,790	1,060	42.84	46.65	45.60	2.42
5.790	80yr	5,790	1,130	42.84	46.76	45.67	2.48
5.790	100yr	5,790	1,160	42.84	46.80	45.70	2.50
5.790	150yr	5,790	1,220	42.84	46.89	45.76	2.55
5.790	200yr	5,790	1,310	42.84	47.02	45.85	2.62
5.990	50yr	5,990	1,060	41.92	47.02	46.14	2.37
5.990	80yr	5,990	1,130	41.92	47.12	46.22	2.41
5.990	100yr	5,990	1,160	41.92	47.16	46.24	2.43
5.990	150yr	5,990	1,220	41.92	47.25	46.32	2.46
5.990	200yr	5,990	1,310	41.92	47.38	46.39	2.51
6.117	50yr	6,117	1,060	43.04	47.27	46.29	2.21
6.117	80yr	6,117	1,130	43.04	47.37	46.35	2.26
6.117	100yr	6,117	1,160	43.04	47.41	46.38	2.29
6.117	150yr	6,117	1,220	43.04	47.50	46.42	2.33
6.117	200yr	6,117	1,310	43.04	47.62	46.50	2.39
6.130		Bridge					
6.143	50yr	6,143	1,060	43.04	47.37	46.29	2.12
6.143	80yr	6,143	1,130	43.04	47.48	46.35	2.17
6.143	100yr	6,143	1,160	43.04	47.52	46.38	2.19
6.143	150yr	6,143	1,220	43.04	47.61	46.42	2.23
6.143	200yr	6,143	1,310	43.04	47.73	46.50	2.29
6.190	50yr	6,190	1,060	43.42	47.40	46.55	2.42
6.190	80yr	6,190	1,130	43.42	47.50	46.62	2.46
6.190	100yr	6,190	1,160	43.42	47.55	46.66	2.48
6.190	150yr	6,190	1,220	43.42	47.63	46.73	2.52
6.190	200yr	6,190	1,310	43.42	47.76	46.80	2.58
6.400	50yr	6,400	1,060	43.55	47.78	46.68	2.31
6.400	80yr	6,400	1,130	43.55	47.88	46.75	2.38
6.400	100yr	6,400	1,160	43.55	47.92	46.78	2.40
6.400	150yr	6,400	1,220	43.55	48.00	46.85	2.46
6.400	200yr	6,400	1,310	43.55	48.12	46.93	2.53
6.590	50yr	6,590	1,060	43.74	48.05	46.83	2.38
6.590	80yr	6,590	1,130	43.74	48.15	46.94	2.44
6.590	100yr	6,590	1,160	43.74	48.19	46.97	2.47
6.590	150yr	6,590	1,220	43.74	48.27	47.06	2.53
6.590	200yr	6,590	1,310	43.74	48.39	47.16	2.61

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
6.780	50yr	6.780	1.060	44.50	48.31	47.36	2.63
6.780	80yr	6.780	1.130	44.50	48.41	47.43	2.70
6.780	100yr	6.780	1.160	44.50	48.46	47.46	2.73
6.780	150yr	6.780	1.220	44.50	48.54	47.53	2.78
6.780	200yr	6.780	1.310	44.50	48.66	47.62	2.87
6.952	50yr	6.952	1.060	44.97	48.63	47.93	3.14
6.952	80yr	6.952	1.130	44.97	48.73	48.04	3.20
6.952	100yr	6.952	1.160	44.97	48.77	48.08	3.23
6.952	150yr	6.952	1.220	44.97	48.86	48.17	3.28
6.952	200yr	6.952	1.310	44.97	48.97	48.29	3.36
6.956		Inline Weir					
6.960	50yr	6.960	1.060	44.97	48.82	47.92	2.89
6.960	80yr	6.960	1.130	44.97	48.93	48.03	2.95
6.960	100yr	6.960	1.160	44.97	48.97	48.08	2.98
6.960	150yr	6.960	1.220	44.97	49.06	48.17	3.03
6.960	200yr	6.960	1.310	44.97	49.18	48.29	3.10
6.980	50yr	6.980	1.060	45.42	48.61	48.61	4.22
6.980	80yr	6.980	1.130	45.42	48.71	48.71	4.26
6.980	100yr	6.980	1.160	45.42	48.75	48.75	4.29
6.980	150yr	6.980	1.220	45.42	48.82	48.82	4.33
6.980	200yr	6.980	1.310	45.42	48.93	48.93	4.40
6.995	50yr	6.995	930	45.26	49.35	48.11	2.34
6.995	80yr	6.995	990	45.26	49.46	48.20	2.39
6.995	100yr	6.995	1.020	45.26	49.50	48.24	2.42
6.995	150yr	6.995	1.070	45.26	49.58	48.30	2.46
6.995	200yr	6.995	1.150	45.26	49.71	48.46	2.52
7.010		Bridge					
7.025	50yr	7.025	930	45.26	49.45	48.11	2.25
7.025	80yr	7.025	990	45.26	49.55	48.20	2.30
7.025	100yr	7.025	1.020	45.26	49.59	48.24	2.33
7.025	150yr	7.025	1.070	45.26	49.68	48.30	2.37
7.025	200yr	7.025	1.150	45.26	49.81	48.47	2.43
7.195	50yr	7.195	930	44.96	49.72	48.77	2.20
7.195	80yr	7.195	990	44.96	49.82	48.84	2.24
7.195	100yr	7.195	1.020	44.96	49.87	48.89	2.26
7.195	150yr	7.195	1.070	44.96	49.95	48.94	2.29
7.195	200yr	7.195	1.150	44.96	50.08	49.01	2.34
7.385	50yr	7.385	930	46.58	50.02	49.30	2.66
7.385	80yr	7.385	990	46.58	50.12	49.38	2.70
7.385	100yr	7.385	1.020	46.58	50.16	49.41	2.73
7.385	150yr	7.385	1.070	46.58	50.23	49.47	2.77
7.385	200yr	7.385	1.150	46.58	50.35	49.57	2.82
7.562	50yr	7.562	930	46.38	50.48	49.79	2.55
7.562	80yr	7.562	990	46.38	50.58	49.86	2.60
7.562	100yr	7.562	1.020	46.38	50.62	49.89	2.63
7.562	150yr	7.562	1.070	46.38	50.69	49.94	2.67
7.562	200yr	7.562	1.150	46.38	50.80	50.01	2.74
7.575		Bridge					
7.588	50yr	7.588	930	46.38	50.61	49.79	2.40
7.588	80yr	7.588	990	46.38	50.70	49.86	2.45
7.588	100yr	7.588	1.020	46.38	50.75	49.89	2.48
7.588	150yr	7.588	1.070	46.38	50.82	49.94	2.53
7.588	200yr	7.588	1.150	46.38	50.93	50.01	2.60

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
7.790	50yr	7,790	930	46.74	50.97	49.86	2.55
7.790	80yr	7,790	990	46.74	51.06	49.99	2.62
7.790	100yr	7,790	1,020	46.74	51.10	50.05	2.66
7.790	150yr	7,790	1,070	46.74	51.17	50.15	2.72
7.790	200yr	7,790	1,150	46.74	51.28	50.28	2.80
7.817	50yr	7,817	930	47.30	50.95	50.27	3.00
7.817	80yr	7,817	990	47.30	51.04	50.35	3.07
7.817	100yr	7,817	1,020	47.30	51.08	50.39	3.11
7.817	150yr	7,817	1,070	47.30	51.15	50.46	3.17
7.817	200yr	7,817	1,150	47.30	51.26	50.56	3.26
7.820		Bridge					
7.823	50yr	7,823	930	47.30	51.47	50.27	2.42
7.823	80yr	7,823	990	47.30	51.59	50.35	2.47
7.823	100yr	7,823	1,020	47.30	51.64	50.39	2.49
7.823	150yr	7,823	1,070	47.30	51.73	50.45	2.53
7.823	200yr	7,823	1,150	47.30	51.87	50.56	2.59
7.827	50yr	7,827	930	47.32	51.48	50.27	2.45
7.827	80yr	7,827	990	47.32	51.59	50.33	2.50
7.827	100yr	7,827	1,020	47.32	51.64	50.37	2.52
7.827	150yr	7,827	1,070	47.32	51.73	50.47	2.56
7.827	200yr	7,827	1,150	47.32	51.87	50.57	2.62
7.830		Bridge					
7.833	50yr	7,833	930	47.32	51.59	50.27	2.35
7.833	80yr	7,833	990	47.32	51.71	50.33	2.39
7.833	100yr	7,833	1,020	47.32	51.76	50.37	2.42
7.833	150yr	7,833	1,070	47.32	51.86	50.47	2.45
7.833	200yr	7,833	1,150	47.32	52.00	50.57	2.50
7.980	50yr	7,980	930	48.02	51.83	50.90	2.58
7.980	80yr	7,980	990	48.02	51.95	50.98	2.61
7.980	100yr	7,980	1,020	48.02	52.01	51.03	2.63
7.980	150yr	7,980	1,070	48.02	52.10	51.08	2.66
7.980	200yr	7,980	1,150	48.02	52.25	51.17	2.71
8.180	50yr	8,180	930	48.13	52.34	51.55	2.67
8.180	80yr	8,180	990	48.13	52.45	51.64	2.70
8.180	100yr	8,180	1,020	48.13	52.49	51.68	2.72
8.180	150yr	8,180	1,070	48.13	52.57	51.76	2.76
8.180	200yr	8,180	1,150	48.13	52.70	51.87	2.81
8.372	50yr	8,372	930	49.68	52.83	51.60	2.45
8.372	80yr	8,372	990	49.68	52.92	51.67	2.52
8.372	100yr	8,372	1,020	49.68	52.97	51.71	2.56
8.372	150yr	8,372	1,070	49.68	53.04	51.78	2.62
8.372	200yr	8,372	1,150	49.68	53.16	51.88	2.71
8.390		Bridge					
8.407	50yr	8,407	930	49.68	52.94	51.60	2.36
8.407	80yr	8,407	990	49.68	53.04	51.67	2.42
8.407	100yr	8,407	1,020	49.68	53.09	51.71	2.46
8.407	150yr	8,407	1,070	49.68	53.16	51.78	2.51
8.407	200yr	8,407	1,150	49.68	53.28	51.88	2.60
8.433	50yr	8,433	930	49.62	52.94	51.56	2.55
8.433	80yr	8,433	990	49.62	53.04	51.64	2.64
8.433	100yr	8,433	1,020	49.62	53.09	51.68	2.68
8.433	150yr	8,433	1,070	49.62	53.16	51.75	2.76
8.433	200yr	8,433	1,150	49.62	53.27	51.85	2.87
8.437		Inline Weir					

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
8.440	50yr	8.440	930	49.62	55.26	51.56	1.44
8.440	80yr	8.440	990	49.62	55.37	51.64	1.50
8.440	100yr	8.440	1,020	49.62	55.42	51.68	1.53
8.440	150yr	8.440	1,070	49.62	55.50	51.75	1.58
8.440	200yr	8.440	1,150	49.62	55.63	51.85	1.65
8.560	50yr	8.560	930	51.45	55.15	54.35	2.72
8.560	80yr	8.560	990	51.45	55.25	54.42	2.78
8.560	100yr	8.560	1,020	51.45	55.31	54.46	2.80
8.560	150yr	8.560	1,070	51.45	55.39	54.51	2.85
8.560	200yr	8.560	1,150	51.45	55.52	54.61	2.91
8.780	50yr	8.780	930	51.88	55.70	54.32	1.96
8.780	80yr	8.780	990	51.88	55.81	54.39	2.01
8.780	100yr	8.780	1,020	51.88	55.86	54.42	2.03
8.780	150yr	8.780	1,070	51.88	55.95	54.47	2.07
8.780	200yr	8.780	1,150	51.88	56.09	54.55	2.12
8.990	50yr	8.990	930	52.05	55.92	54.71	2.22
8.990	80yr	8.990	990	52.05	56.03	54.78	2.28
8.990	100yr	8.990	1,020	52.05	56.08	54.82	2.30
8.990	150yr	8.990	1,070	52.05	56.17	54.87	2.34
8.990	200yr	8.990	1,150	52.05	56.30	54.96	2.41
9.002	50yr	9.002	930	52.25	55.93	54.75	2.24
9.002	80yr	9.002	990	52.25	56.04	54.81	2.29
9.002	100yr	9.002	1,020	52.25	56.09	54.85	2.32
9.002	150yr	9.002	1,070	52.25	56.18	54.90	2.36
9.002	200yr	9.002	1,150	52.25	56.31	54.99	2.43
9.010		Bridge					
9.018	50yr	9.018	930	52.25	55.99	54.74	2.20
9.018	80yr	9.018	990	52.25	56.10	54.81	2.25
9.018	100yr	9.018	1,020	52.25	56.15	54.85	2.28
9.018	150yr	9.018	1,070	52.25	56.24	54.90	2.32
9.018	200yr	9.018	1,150	52.25	56.37	54.99	2.39
9.190	50yr	9.190	930	52.38	56.22	55.02	2.32
9.190	80yr	9.190	990	52.38	56.33	55.09	2.38
9.190	100yr	9.190	1,020	52.38	56.38	55.13	2.40
9.190	150yr	9.190	1,070	52.38	56.47	55.18	2.45
9.190	200yr	9.190	1,150	52.38	56.60	55.27	2.52
9.395	50yr	9.395	930	52.65	56.51	55.46	2.76
9.395	80yr	9.395	990	52.65	56.62	55.56	2.83
9.395	100yr	9.395	1,020	52.65	56.67	55.61	2.86
9.395	150yr	9.395	1,070	52.65	56.75	55.69	2.92
9.395	200yr	9.395	1,150	52.65	56.89	55.81	3.00
9.595	50yr	9.595	930	52.90	56.99	56.46	3.22
9.595	80yr	9.595	990	52.90	57.09	56.55	3.28
9.595	100yr	9.595	1,020	52.90	57.14	56.59	3.30
9.595	150yr	9.595	1,070	52.90	57.23	56.64	3.35
9.595	200yr	9.595	1,150	52.90	57.35	56.75	3.42
9.795	50yr	9.795	930	52.93	57.75	57.09	3.06
9.795	80yr	9.795	990	52.93	57.84	57.17	3.14
9.795	100yr	9.795	1,020	52.93	57.89	57.20	3.18
9.795	150yr	9.795	1,070	52.93	57.96	57.27	3.24
9.795	200yr	9.795	1,150	52.93	58.08	57.37	3.33
9.995	50yr	9.995	930	53.79	58.26	57.57	3.85
9.995	80yr	9.995	990	53.79	58.34	57.70	3.99
9.995	100yr	9.995	1,020	53.79	58.38	57.77	4.05
9.995	150yr	9.995	1,070	53.79	58.45	57.86	4.16

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
9.995	200yr	9.995	1.150	53.79	58.55	58.00	4.34
10.195	50yr	10.195	930	54.00	59.10	58.02	3.26
10.195	80yr	10.195	990	54.00	59.23	58.13	3.34
10.195	100yr	10.195	1.020	54.00	59.29	58.18	3.38
10.195	150yr	10.195	1.070	54.00	59.39	58.27	3.44
10.195	200yr	10.195	1.150	54.00	59.55	58.40	3.54
10.400	50yr	10.400	930	55.51	59.78	58.50	2.29
10.400	80yr	10.400	990	55.51	59.92	58.57	2.32
10.400	100yr	10.400	1.020	55.51	59.99	58.61	2.34
10.400	150yr	10.400	1.070	55.51	60.11	58.67	2.37
10.400	200yr	10.400	1.150	55.51	60.29	58.76	2.40
10.585	50yr	10.585	930	55.98	60.06	59.30	2.66
10.585	80yr	10.585	990	55.98	60.19	59.37	2.67
10.585	100yr	10.585	1.020	55.98	60.26	59.40	2.68
10.585	150yr	10.585	1.070	55.98	60.36	59.45	2.70
10.585	200yr	10.585	1.150	55.98	60.53	59.54	2.72
10.722	50yr	10.722	900	56.20	60.38	59.35	2.68
10.722	80yr	10.722	950	56.20	60.50	59.43	2.71
10.722	100yr	10.722	980	56.20	60.55	59.48	2.74
10.722	150yr	10.722	1.030	56.20	60.65	59.54	2.79
10.722	200yr	10.722	1.110	56.20	60.80	59.65	2.86
10.735		Bridge					
10.748	50yr	10.748	900	56.20	60.51	59.35	2.55
10.748	80yr	10.748	950	56.20	60.63	59.43	2.59
10.748	100yr	10.748	980	56.20	60.69	59.48	2.62
10.748	150yr	10.748	1.030	56.20	60.78	59.54	2.67
10.748	200yr	10.748	1.110	56.20	60.94	59.65	2.74
10.785	50yr	10.785	900	56.40	60.67	58.84	2.12
10.785	80yr	10.785	950	56.40	60.79	58.91	2.17
10.785	100yr	10.785	980	56.40	60.84	58.95	2.21
10.785	150yr	10.785	1.030	56.40	60.94	59.02	2.26
10.785	200yr	10.785	1.110	56.40	61.10	59.13	2.34
10.985	50yr	10.985	900	56.68	60.83	59.18	2.52
10.985	80yr	10.985	950	56.68	60.94	59.26	2.58
10.985	100yr	10.985	980	56.68	61.00	59.30	2.61
10.985	150yr	10.985	1.030	56.68	61.10	59.38	2.67
10.985	200yr	10.985	1.110	56.68	61.26	59.50	2.76
11.043	50yr	11.043	900	56.76	60.89	59.13	2.61
11.043	80yr	11.043	950	56.76	61.00	59.22	2.67
11.043	100yr	11.043	980	56.76	61.07	59.27	2.71
11.043	150yr	11.043	1.030	56.76	61.17	59.35	2.78
11.043	200yr	11.043	1.110	56.76	61.33	59.48	2.88
11.044		Inline Weir					
11.045	50yr	11.045	900	56.90	61.47	59.27	2.33
11.045	80yr	11.045	950	56.90	61.57	59.36	2.39
11.045	100yr	11.045	980	56.90	61.63	59.41	2.44
11.045	150yr	11.045	1.030	56.90	61.73	59.49	2.50
11.045	200yr	11.045	1.110	56.90	61.89	59.62	2.60
11.195	50yr	11.195	900	55.56	61.34	60.67	4.04
11.195	80yr	11.195	950	55.56	61.43	60.77	4.14
11.195	100yr	11.195	980	55.56	61.49	60.82	4.20
11.195	150yr	11.195	1.030	55.56	61.57	60.93	4.31
11.195	200yr	11.195	1.110	55.56	61.71	61.07	4.45
11.390	50yr	11.390	900	57.49	62.24	61.26	3.39

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
11.390	80yr	11,390	950	57.49	62.37	61.35	3.45
11.390	100yr	11,390	980	57.49	62.44	61.40	3.49
11.390	150yr	11,390	1,030	57.49	62.55	61.49	3.54
11.390	200yr	11,390	1,110	57.49	62.73	61.62	3.63
11.515	50yr	11,515	900	58.03	62.78	60.74	2.32
11.515	80yr	11,515	950	58.03	62.91	60.81	2.38
11.515	100yr	11,515	980	58.03	62.99	60.86	2.41
11.515	150yr	11,515	1,030	58.03	63.11	60.94	2.45
11.515	200yr	11,515	1,110	58.03	63.31	61.06	2.53
11.519	50yr	11,519	900	58.60	62.85	60.64	2.05
11.519	80yr	11,519	950	58.60	62.98	60.71	2.10
11.519	100yr	11,519	980	58.60	63.06	60.76	2.13
11.519	150yr	11,519	1,030	58.60	63.19	60.83	2.17
11.519	200yr	11,519	1,110	58.60	63.39	60.94	2.24
11.520		Bridge					
11.522	50yr	11,522	900	58.60	62.87	60.64	2.04
11.522	80yr	11,522	950	58.60	63.00	60.71	2.09
11.522	100yr	11,522	980	58.60	63.08	60.76	2.12
11.522	150yr	11,522	1,030	58.60	63.21	60.83	2.16
11.522	200yr	11,522	1,110	58.60	63.41	60.94	2.23
11.528	50yr	11,528	900	58.60	62.86	60.79	2.12
11.528	80yr	11,528	950	58.60	62.99	60.87	2.16
11.528	100yr	11,528	980	58.60	63.07	60.92	2.18
11.528	150yr	11,528	1,030	58.60	63.20	60.99	2.22
11.528	200yr	11,528	1,110	58.60	63.41	61.15	2.27
11.529		Inline Weir					
11.530	50yr	11,530	900	58.60	63.28	60.79	1.90
11.530	80yr	11,530	950	58.60	63.37	60.87	1.96
11.530	100yr	11,530	980	58.60	63.43	60.92	1.99
11.530	150yr	11,530	1,030	58.60	63.52	60.99	2.05
11.530	200yr	11,530	1,110	58.60	63.67	61.15	2.12
11.790	50yr	11,790	900	57.63	63.36	61.25	2.79
11.790	80yr	11,790	950	57.63	63.46	61.35	2.88
11.790	100yr	11,790	980	57.63	63.53	61.41	2.93
11.790	150yr	11,790	1,030	57.63	63.62	61.50	3.02
11.790	200yr	11,790	1,110	57.63	63.76	61.66	3.16
11.960	50yr	11,960	900	58.35	63.56	62.49	3.29
11.960	80yr	11,960	950	58.35	63.67	62.57	3.35
11.960	100yr	11,960	980	58.35	63.75	62.63	3.37
11.960	150yr	11,960	1,030	58.35	63.85	62.73	3.42
11.960	200yr	11,960	1,110	58.35	64.02	62.89	3.50
12.180	50yr	12,180	900	60.30	64.35	63.15	2.40
12.180	80yr	12,180	950	60.30	64.47	63.22	2.41
12.180	100yr	12,180	980	60.30	64.55	63.26	2.42
12.180	150yr	12,180	1,030	60.30	64.66	63.33	2.43
12.180	200yr	12,180	1,110	60.30	64.84	63.44	2.46
12.370	50yr	12,370	900	60.15	64.75	63.37	2.16
12.370	80yr	12,370	950	60.15	64.86	63.43	2.18
12.370	100yr	12,370	980	60.15	64.92	63.47	2.19
12.370	150yr	12,370	1,030	60.15	65.02	63.53	2.22
12.370	200yr	12,370	1,110	60.15	65.19	63.64	2.25
12.575	50yr	12,575	900	60.34	64.96	64.71	3.93
12.575	80yr	12,575	950	60.34	65.05	64.79	3.98
12.575	100yr	12,575	980	60.34	65.10	64.86	4.01
12.575	150yr	12,575	1,030	60.34	65.17	64.96	4.07

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
12.575	200yr	12,575	1,110	60.34	65.30	65.07	4.15
12.780	50yr	12,780	900	60.69	66.24	64.72	2.42
12.780	80yr	12,780	950	60.69	66.34	64.81	2.45
12.780	100yr	12,780	980	60.69	66.39	64.86	2.47
12.780	150yr	12,780	1,030	60.69	66.49	64.93	2.49
12.780	200yr	12,780	1,110	60.69	66.62	65.31	2.54
12.970	50yr	12,970	900	61.85	66.69	65.41	2.29
12.970	80yr	12,970	950	61.85	66.78	65.47	2.32
12.970	100yr	12,970	980	61.85	66.83	65.52	2.34
12.970	150yr	12,970	1,030	61.85	66.92	65.58	2.37
12.970	200yr	12,970	1,110	61.85	67.05	65.70	2.42
13.180	50yr	13,180	900	62.95	66.93	66.57	4.10
13.180	80yr	13,180	950	62.95	66.99	66.67	4.22
13.180	100yr	13,180	980	62.95	67.03	66.72	4.30
13.180	150yr	13,180	1,030	62.95	67.08	66.79	4.43
13.180	200yr	13,180	1,110	62.95	67.15	66.93	4.64
13.225	50yr	13,225	900	63.23	67.56	66.13	2.75
13.225	80yr	13,225	950	63.23	67.67	66.21	2.82
13.225	100yr	13,225	980	63.23	67.73	66.26	2.86
13.225	150yr	13,225	1,030	63.23	67.82	66.34	2.93
13.225	200yr	13,225	1,110	63.23	67.98	66.46	3.03
13.230		Bridge					
13.236	50yr	13,236	900	63.23	67.63	66.13	2.71
13.236	80yr	13,236	950	63.23	67.73	66.21	2.77
13.236	100yr	13,236	980	63.23	67.80	66.26	2.81
13.236	150yr	13,236	1,030	63.23	67.90	66.34	2.87
13.236	200yr	13,236	1,110	63.23	68.06	66.46	2.97
13.262	50yr	13,262	900	63.50	67.67	66.27	2.71
13.262	80yr	13,262	950	63.50	67.79	66.35	2.74
13.262	100yr	13,262	980	63.50	67.87	66.40	2.75
13.262	150yr	13,262	1,030	63.50	67.98	66.48	2.77
13.262	200yr	13,262	1,110	63.50	68.16	66.60	2.80
13.275		Bridge					
13.287	50yr	13,287	900	63.50	67.81	66.27	2.58
13.287	80yr	13,287	950	63.50	67.93	66.35	2.60
13.287	100yr	13,287	980	63.50	68.01	66.40	2.61
13.287	150yr	13,287	1,030	63.50	68.12	66.48	2.64
13.287	200yr	13,287	1,110	63.50	68.30	66.60	2.67
13.370	50yr	13,370	900	63.80	67.90	66.99	3.12
13.370	80yr	13,370	950	63.80	68.02	67.07	3.15
13.370	100yr	13,370	980	63.80	68.09	67.13	3.16
13.370	150yr	13,370	1,030	63.80	68.20	67.20	3.21
13.370	200yr	13,370	1,110	63.80	68.36	67.33	3.27
13.570	50yr	13,570	900	63.13	68.56	67.77	3.14
13.570	80yr	13,570	950	63.13	68.66	67.84	3.20
13.570	100yr	13,570	980	63.13	68.72	67.88	3.23
13.570	150yr	13,570	1,030	63.13	68.82	67.95	3.29
13.570	200yr	13,570	1,110	63.13	68.96	68.05	3.37
13.750	50yr	13,750	900	64.13	69.08	67.83	3.20
13.750	80yr	13,750	950	64.13	69.17	67.93	3.28
13.750	100yr	13,750	980	64.13	69.23	68.00	3.33
13.750	150yr	13,750	1,030	64.13	69.33	68.09	3.40
13.750	200yr	13,750	1,110	64.13	69.47	68.24	3.51
14.030	50yr	14,030	900	64.81	69.94	68.95	2.84

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
14.030	80yr	14,030	950	64.81	70.06	69.07	2.87
14.030	100yr	14,030	980	64.81	70.12	69.12	2.89
14.030	150yr	14,030	1,030	64.81	70.23	69.18	2.93
14.030	200yr	14,030	1,110	64.81	70.40	69.30	2.98
14.190	50yr	14,190	800	65.91	70.46	68.99	2.16
14.190	80yr	14,190	850	65.91	70.57	69.07	2.21
14.190	100yr	14,190	880	65.91	70.63	69.21	2.24
14.190	150yr	14,190	920	65.91	70.74	69.26	2.26
14.190	200yr	14,190	1,000	65.91	70.90	69.42	2.33
14.241	50yr	14,241	800	67.27	70.33	69.61	3.41
14.241	80yr	14,241	850	67.27	70.43	69.71	3.50
14.241	100yr	14,241	880	67.27	70.49	69.76	3.54
14.241	150yr	14,241	920	67.27	70.60	69.83	3.54
14.241	200yr	14,241	1,000	67.27	70.75	69.97	3.63
14.243		Inline Weir					
14.245	50yr	14,245	800	67.27	70.63	69.61	3.05
14.245	80yr	14,245	850	67.27	70.73	69.71	3.11
14.245	100yr	14,245	880	67.27	70.80	69.76	3.14
14.245	150yr	14,245	920	67.27	70.88	69.83	3.18
14.245	200yr	14,245	1,000	67.27	71.04	69.97	3.27
14.390	50yr	14,390	800	65.46	71.15	70.19	2.79
14.390	80yr	14,390	850	65.46	71.26	70.27	2.85
14.390	100yr	14,390	880	65.46	71.32	70.32	2.89
14.390	150yr	14,390	920	65.46	71.40	70.37	2.94
14.390	200yr	14,390	1,000	65.46	71.55	70.49	3.05
14.555	50yr	14,555	800	66.50	71.58	70.15	2.90
14.555	80yr	14,555	850	66.50	71.68	70.26	2.97
14.555	100yr	14,555	880	66.50	71.75	70.32	3.01
14.555	150yr	14,555	920	66.50	71.83	70.39	3.06
14.555	200yr	14,555	1,000	66.50	71.98	70.55	3.17
14.584	50yr	14,584	800	68.24	71.50	71.12	3.70
14.584	80yr	14,584	850	68.24	71.61	71.21	3.76
14.584	100yr	14,584	880	68.24	71.67	71.26	3.80
14.584	150yr	14,584	920	68.24	71.74	71.33	3.85
14.584	200yr	14,584	1,000	68.24	71.89	71.46	3.95
14.590		Bridge					
14.595	50yr	14,595	800	68.24	71.79	71.11	3.28
14.595	80yr	14,595	850	68.24	71.90	71.20	3.35
14.595	100yr	14,595	880	68.24	71.96	71.26	3.39
14.595	150yr	14,595	920	68.24	72.04	71.33	3.44
14.595	200yr	14,595	1,000	68.24	72.20	71.46	3.53
14.800	50yr	14,800	800	68.37	72.57	71.17	2.28
14.800	80yr	14,800	850	68.37	72.68	71.24	2.34
14.800	100yr	14,800	880	68.37	72.75	71.28	2.37
14.800	150yr	14,800	920	68.37	72.84	71.34	2.41
14.800	200yr	14,800	1,000	68.37	73.02	71.45	2.48
14.958	50yr	14,958	800	69.95	72.83	72.09	2.58
14.958	80yr	14,958	850	69.95	72.95	72.16	2.61
14.958	100yr	14,958	880	69.95	73.02	72.20	2.63
14.958	150yr	14,958	920	69.95	73.11	72.25	2.65
14.958	200yr	14,958	1,000	69.95	73.28	72.34	2.69
14.959		Inline Weir					
14.960	50yr	14,960	800	69.95	73.65	72.10	1.88
14.960	80yr	14,960	850	69.95	73.73	72.16	1.94

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
14.960	100yr	14.960	880	69.95	73.78	72.20	1.98
14.960	150yr	14.960	920	69.95	73.84	72.25	2.03
14.960	200yr	14.960	1.000	69.95	73.96	72.34	2.12
15.000	50yr	15.000	800	70.17	73.50	72.77	3.14
15.000	80yr	15.000	850	70.17	73.57	72.86	3.24
15.000	100yr	15.000	880	70.17	73.61	72.91	3.30
15.000	150yr	15.000	920	70.17	73.66	72.99	3.38
15.000	200yr	15.000	1.000	70.17	73.77	73.10	3.53
15.200	50yr	15.200	800	68.65	74.11	73.19	3.64
15.200	80yr	15.200	850	68.65	74.19	73.30	3.77
15.200	100yr	15.200	880	68.65	74.25	73.35	3.84
15.200	150yr	15.200	920	68.65	74.32	73.43	3.93
15.200	200yr	15.200	1.000	68.65	74.46	73.61	4.11
15.400	50yr	15.400	800	70.27	74.91	74.16	3.43
15.400	80yr	15.400	850	70.27	75.04	74.25	3.49
15.400	100yr	15.400	880	70.27	75.12	74.31	3.51
15.400	150yr	15.400	920	70.27	75.22	74.38	3.56
15.400	200yr	15.400	1.000	70.27	75.40	74.51	3.66
15.600	50yr	15.600	800	71.32	75.73	75.00	3.26
15.600	80yr	15.600	850	71.32	75.84	75.11	3.31
15.600	100yr	15.600	880	71.32	75.91	75.18	3.34
15.600	150yr	15.600	920	71.32	76.03	75.26	3.35
15.600	200yr	15.600	1.000	71.32	76.21	75.39	3.41

▶미호천 홍수위산정결과(개수전)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: MiHo Reach: MiHo

Rivers = 1
Hydraulic Reaches = 1
River Stations = 259
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		6,070	11.52	25.42	17.19	1.60
0.000	80yr		6,580	11.52	25.42	17.40	1.73
0.000	100yr		6,820	11.52	25.42	17.50	1.79
0.000	150yr		7,260	11.52	25.42	17.67	1.91
0.000	200yr		7,570	11.52	25.42	17.81	1.99
0.200	50yr	200	6,070	11.68	25.40		1.92
0.200	80yr	200	6,580	11.68	25.39		2.08
0.200	100yr	200	6,820	11.68	25.39		2.16
0.200	150yr	200	7,260	11.68	25.39		2.30
0.200	200yr	200	7,570	11.68	25.39		2.39
0.235	50yr	235	6,070	13.26	25.38		2.05
0.235	80yr	235	6,580	13.26	25.38		2.23
0.235	100yr	235	6,820	13.26	25.38		2.31
0.235	150yr	235	7,260	13.26	25.37		2.46
0.235	200yr	235	7,570	13.26	25.36		2.57
0.238		Inline Weir					
0.240	50yr	240	6,070	13.26	25.44	17.85	2.04
0.240	80yr	240	6,580	13.26	25.43	18.10	2.21
0.240	100yr	240	6,820	13.26	25.44	18.21	2.29
0.240	150yr	240	7,260	13.26	25.45	18.42	2.44
0.240	200yr	240	7,570	13.26	25.45	18.56	2.54
0.390	50yr	390	6,070	10.86	25.45		2.02
0.390	80yr	390	6,580	10.86	25.45		2.19
0.390	100yr	390	6,820	10.86	25.46		2.27
0.390	150yr	390	7,260	10.86	25.46		2.41
0.390	200yr	390	7,570	10.86	25.47		2.52
0.630	50yr	630	6,070	11.18	25.54		1.78
0.630	80yr	630	6,580	11.18	25.56		1.93
0.630	100yr	630	6,820	11.18	25.57		2.00
0.630	150yr	630	7,260	11.18	25.60		2.12
0.630	200yr	630	7,570	11.18	25.62		2.20
0.890	50yr	890	6,070	13.65	25.59	18.04	1.71
0.890	80yr	890	6,580	13.65	25.61	18.25	1.85
0.890	100yr	890	6,820	13.65	25.63	18.35	1.91
0.890	150yr	890	7,260	13.65	25.66	18.53	2.03
0.890	200yr	890	7,570	13.65	25.69	18.65	2.11
0.910	50yr	910	6,070	13.22	25.59	18.08	1.72
0.910	80yr	910	6,580	13.22	25.61	18.31	1.86
0.910	100yr	910	6,820	13.22	25.63	18.42	1.92
0.910	150yr	910	7,260	13.22	25.66	18.61	2.04
0.910	200yr	910	7,570	13.22	25.69	18.73	2.12
0.920		Bridge					
0.930	50yr	930	6,070	13.22	25.60	18.08	1.71
0.930	80yr	930	6,580	13.22	25.63	18.31	1.85
0.930	100yr	930	6,820	13.22	25.65	18.42	1.92

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.930	150yr	930	7.260	13.22	25.68	18.60	2.03
0.930	200yr	930	7.570	13.22	25.71	18.73	2.11
1.130	50yr	1,130	6.070	13.88	25.60	18.69	2.02
1.130	80yr	1,130	6.580	13.88	25.62	18.92	2.18
1.130	100yr	1,130	6.820	13.88	25.64	19.02	2.25
1.130	150yr	1,130	7.260	13.88	25.67	19.21	2.39
1.130	200yr	1,130	7.570	13.88	25.70	19.34	2.48
1.330	50yr	1,330	6.070	13.44	25.56	18.99	2.40
1.330	80yr	1,330	6.580	13.44	25.58	19.24	2.60
1.330	100yr	1,330	6.820	13.44	25.59	19.35	2.68
1.330	150yr	1,330	7.260	13.44	25.62	19.55	2.85
1.330	200yr	1,330	7.570	13.44	25.64	19.69	2.97
1.560	50yr	1,560	6.070	12.81	25.57		2.67
1.560	80yr	1,560	6.580	12.81	25.58		2.89
1.560	100yr	1,560	6.820	12.81	25.60		2.99
1.560	150yr	1,560	7.260	12.81	25.63		3.18
1.560	200yr	1,560	7.570	12.81	25.65		3.30
1.790	50yr	1,790	6.070	12.22	25.62		2.72
1.790	80yr	1,790	6.580	12.22	25.65		2.94
1.790	100yr	1,790	6.820	12.22	25.67		3.04
1.790	150yr	1,790	7.260	12.22	25.71		3.22
1.790	200yr	1,790	7.570	12.22	25.74		3.35
2.010	50yr	2,010	6.070	11.53	25.70		2.64
2.010	80yr	2,010	6.580	11.53	25.74		2.85
2.010	100yr	2,010	6.820	11.53	25.77		2.95
2.010	150yr	2,010	7.260	11.53	25.82		3.12
2.010	200yr	2,010	7.570	11.53	25.86		3.25
2.150	50yr	2,150	6.070	11.36	25.85		2.19
2.150	80yr	2,150	6.580	11.36	25.92		2.35
2.150	100yr	2,150	6.820	11.36	25.97		2.43
2.150	150yr	2,150	7.260	11.36	26.04		2.56
2.150	200yr	2,150	7.570	11.36	26.10		2.66
2.430	50yr	2,430	6.070	12.41	25.91	18.49	2.18
2.430	80yr	2,430	6.580	12.41	25.99	18.81	2.34
2.430	100yr	2,430	6.820	12.41	26.03	19.03	2.42
2.430	150yr	2,430	7.260	12.41	26.12	19.24	2.55
2.430	200yr	2,430	7.570	12.41	26.18	19.41	2.64
2.630	50yr	2,630	6.070	12.04	25.86		2.71
2.630	80yr	2,630	6.580	12.04	25.93		2.92
2.630	100yr	2,630	6.820	12.04	25.97		3.02
2.630	150yr	2,630	7.260	12.04	26.04		3.19
2.630	200yr	2,630	7.570	12.04	26.10		3.31
2.850	50yr	2,850	6.070	12.98	26.13		1.79
2.850	80yr	2,850	6.580	12.98	26.25		1.92
2.850	100yr	2,850	6.820	12.98	26.31		1.98
2.850	150yr	2,850	7.260	12.98	26.43		2.08
2.850	200yr	2,850	7.570	12.98	26.51		2.15
3.010	50yr	3,010	6.070	12.75	26.19	18.06	1.56
3.010	80yr	3,010	6.580	12.75	26.32	18.29	1.67
3.010	100yr	3,010	6.820	12.75	26.39	18.40	1.72
3.010	150yr	3,010	7.260	12.75	26.51	18.58	1.80
3.010	200yr	3,010	7.570	12.75	26.60	18.72	1.86
3.200	50yr	3,200	6.070	12.97	26.22	17.59	1.41
3.200	80yr	3,200	6.580	12.97	26.35	17.80	1.50
3.200	100yr	3,200	6.820	12.97	26.42	17.90	1.54
3.200	150yr	3,200	7.260	12.97	26.55	18.07	1.62

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
3.200	200yr	3.200	7.570	12.97	26.65	18.19	1.67
3.390	50yr	3.390	6.070	13.24	26.22	18.18	1.61
3.390	80yr	3.390	6.580	13.24	26.35	18.40	1.72
3.390	100yr	3.390	6.820	13.24	26.42	18.50	1.77
3.390	150yr	3.390	7.260	13.24	26.54	18.68	1.85
3.390	200yr	3.390	7.570	13.24	26.64	18.80	1.91
3.620	50yr	3.620	6.040	12.93	26.24	18.01	1.54
3.620	80yr	3.620	6.550	12.93	26.38	18.41	1.64
3.620	100yr	3.620	6.790	12.93	26.45	18.52	1.68
3.620	150yr	3.620	7.230	12.93	26.58	18.70	1.77
3.620	200yr	3.620	7.530	12.93	26.67	18.82	1.82
3.770	50yr	3.770	6.040	13.19	26.25	18.64	1.61
3.770	80yr	3.770	6.550	13.19	26.38	18.88	1.72
3.770	100yr	3.770	6.790	13.19	26.45	19.00	1.76
3.770	150yr	3.770	7.230	13.19	26.58	19.23	1.85
3.770	200yr	3.770	7.530	13.19	26.68	19.51	1.90
3.950	50yr	3.950	6.040	13.12	26.25	18.41	1.65
3.950	80yr	3.950	6.550	13.12	26.39	18.65	1.77
3.950	100yr	3.950	6.790	13.12	26.46	18.75	1.82
3.950	150yr	3.950	7.230	13.12	26.59	18.96	1.91
3.950	200yr	3.950	7.530	13.12	26.69	19.09	1.96
4.150	50yr	4.150	6.040	12.06	26.29	19.10	1.59
4.150	80yr	4.150	6.550	12.06	26.42	19.29	1.70
4.150	100yr	4.150	6.790	12.06	26.50	19.37	1.75
4.150	150yr	4.150	7.230	12.06	26.63	19.58	1.83
4.150	200yr	4.150	7.530	12.06	26.73	19.78	1.89
4.310	50yr	4.310	6.040	12.69	26.35		1.26
4.310	80yr	4.310	6.550	12.69	26.50		1.35
4.310	100yr	4.310	6.790	12.69	26.58		1.38
4.310	150yr	4.310	7.230	12.69	26.72		1.45
4.310	200yr	4.310	7.530	12.69	26.82		1.50
4.440	50yr	4.440	6.040	13.33	26.37	18.24	1.17
4.440	80yr	4.440	6.550	13.33	26.52	18.41	1.25
4.440	100yr	4.440	6.790	13.33	26.60	18.49	1.28
4.440	150yr	4.440	7.230	13.33	26.74	18.63	1.34
4.440	200yr	4.440	7.530	13.33	26.85	18.73	1.38
4.610	50yr	4.610	6.040	13.77	26.38	18.07	1.16
4.610	80yr	4.610	6.550	13.77	26.53	18.24	1.24
4.610	100yr	4.610	6.790	13.77	26.61	18.31	1.28
4.610	150yr	4.610	7.230	13.77	26.76	18.45	1.34
4.610	200yr	4.610	7.530	13.77	26.86	18.55	1.38
4.840	50yr	4.840	6.040	13.25	26.37	19.45	1.44
4.840	80yr	4.840	6.550	13.25	26.52	19.64	1.53
4.840	100yr	4.840	6.790	13.25	26.60	19.73	1.58
4.840	150yr	4.840	7.230	13.25	26.74	19.89	1.65
4.840	200yr	4.840	7.530	13.25	26.85	20.00	1.70
5.020	50yr	5.020	6.040	13.15	26.39	19.23	1.41
5.020	80yr	5.020	6.550	13.15	26.54	19.44	1.51
5.020	100yr	5.020	6.790	13.15	26.62	19.52	1.55
5.020	150yr	5.020	7.230	13.15	26.77	19.67	1.62
5.020	200yr	5.020	7.530	13.15	26.87	19.76	1.67
5.230	50yr	5.230	6.040	13.60	26.41	19.50	1.50
5.230	80yr	5.230	6.550	13.60	26.56	19.69	1.59
5.230	100yr	5.230	6.790	13.60	26.64	19.78	1.64
5.230	150yr	5.230	7.230	13.60	26.78	19.94	1.71
5.230	200yr	5.230	7.530	13.60	26.89	20.05	1.76

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
5.440	50yr	5,440	6.040	13.91	26.45	18.93	1.39
5.440	80yr	5,440	6.550	13.91	26.60	19.10	1.48
5.440	100yr	5,440	6.790	13.91	26.69	19.20	1.52
5.440	150yr	5,440	7.230	13.91	26.83	19.35	1.59
5.440	200yr	5,440	7.530	13.91	26.94	19.44	1.64
5.660	50yr	5,660	6.040	13.97	26.46	19.22	1.43
5.660	80yr	5,660	6.550	13.97	26.62	19.42	1.52
5.660	100yr	5,660	6.790	13.97	26.71	19.50	1.56
5.660	150yr	5,660	7.230	13.97	26.85	19.66	1.64
5.660	200yr	5,660	7.530	13.97	26.96	19.77	1.68
5.920	50yr	5,920	5,920	14.26	26.48	19.87	1.58
5.920	80yr	5,920	6,420	14.26	26.64	20.12	1.68
5.920	100yr	5,920	6,650	14.26	26.73	20.24	1.72
5.920	150yr	5,920	7,080	14.26	26.88	20.58	1.79
5.920	200yr	5,920	7,380	14.26	26.99	20.75	1.84
6.100	50yr	6,100	5,920	13.99	26.52	19.41	1.51
6.100	80yr	6,100	6,420	13.99	26.68	19.63	1.61
6.100	100yr	6,100	6,650	13.99	26.77	19.73	1.65
6.100	150yr	6,100	7,080	13.99	26.92	19.91	1.72
6.100	200yr	6,100	7,380	13.99	27.03	20.04	1.77
6.280	50yr	6,280	5,920	14.28	26.55	19.18	1.42
6.280	80yr	6,280	6,420	14.28	26.72	19.39	1.50
6.280	100yr	6,280	6,650	14.28	26.81	19.49	1.54
6.280	150yr	6,280	7,080	14.28	26.96	19.65	1.61
6.280	200yr	6,280	7,380	14.28	27.08	19.75	1.66
6.480	50yr	6,480	5,920	14.34	26.57	19.61	1.43
6.480	80yr	6,480	6,420	14.34	26.74	19.78	1.52
6.480	100yr	6,480	6,650	14.34	26.83	19.86	1.56
6.480	150yr	6,480	7,080	14.34	26.99	20.00	1.63
6.480	200yr	6,480	7,380	14.34	27.10	20.10	1.67
6.680	50yr	6,680	5,920	14.00	26.61	19.00	1.33
6.680	80yr	6,680	6,420	14.00	26.78	19.16	1.41
6.680	100yr	6,680	6,650	14.00	26.87	19.24	1.45
6.680	150yr	6,680	7,080	14.00	27.03	19.38	1.52
6.680	200yr	6,680	7,380	14.00	27.15	19.48	1.56
6.900	50yr	6,900	5,920	15.01	26.63	18.68	1.30
6.900	80yr	6,900	6,420	15.01	26.81	18.84	1.38
6.900	100yr	6,900	6,650	15.01	26.90	18.91	1.41
6.900	150yr	6,900	7,080	15.01	27.06	19.05	1.48
6.900	200yr	6,900	7,380	15.01	27.18	19.15	1.52
7.130	50yr	7,130	5,920	14.89	26.64	19.48	1.38
7.130	80yr	7,130	6,420	14.89	26.82	19.67	1.46
7.130	100yr	7,130	6,650	14.89	26.91	19.75	1.50
7.130	150yr	7,130	7,080	14.89	27.08	19.91	1.56
7.130	200yr	7,130	7,380	14.89	27.20	20.02	1.60
7.390	50yr	7,390	5,920	14.34	26.69	19.42	1.24
7.390	80yr	7,390	6,420	14.34	26.87	19.61	1.32
7.390	100yr	7,390	6,650	14.34	26.96	19.70	1.35
7.390	150yr	7,390	7,080	14.34	27.13	19.85	1.41
7.390	200yr	7,390	7,380	14.34	27.25	19.95	1.45
7.620	50yr	7,620	5,920	13.96	26.69	20.04	1.45
7.620	80yr	7,620	6,420	13.96	26.87	20.26	1.53
7.620	100yr	7,620	6,650	13.96	26.97	20.36	1.56
7.620	150yr	7,620	7,080	13.96	27.14	20.55	1.62
7.620	200yr	7,620	7,380	13.96	27.26	20.67	1.66

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
7.860	50yr	7,860	5,920	13.34	26.74	18.39	1.28
7.860	80yr	7,860	6,420	13.34	26.93	18.59	1.35
7.860	100yr	7,860	6,650	13.34	27.03	18.68	1.39
7.860	150yr	7,860	7,080	13.34	27.20	18.84	1.44
7.860	200yr	7,860	7,380	13.34	27.32	18.96	1.48
8.060	50yr	8,060	5,920	14.74	26.71	21.79	1.90
8.060	80yr	8,060	6,420	14.74	26.89	22.10	1.98
8.060	100yr	8,060	6,650	14.74	26.99	22.25	2.02
8.060	150yr	8,060	7,080	14.74	27.16	22.50	2.08
8.060	200yr	8,060	7,380	14.74	27.28	22.56	2.12
8.240	50yr	8,240	5,920	15.59	26.82	21.90	1.56
8.240	80yr	8,240	6,420	15.59	27.02	22.11	1.63
8.240	100yr	8,240	6,650	15.59	27.11	22.18	1.66
8.240	150yr	8,240	7,080	15.59	27.29	22.36	1.71
8.240	200yr	8,240	7,380	15.59	27.42	22.45	1.75
8.380	50yr	8,380	5,920	15.73	26.85	22.21	1.59
8.380	80yr	8,380	6,420	15.73	27.05	22.42	1.66
8.380	100yr	8,380	6,650	15.73	27.14	22.50	1.69
8.380	150yr	8,380	7,080	15.73	27.32	22.82	1.74
8.380	200yr	8,380	7,380	15.73	27.45	23.35	1.77
8.560	50yr	8,560	5,920	15.84	26.93	20.49	1.25
8.560	80yr	8,560	6,420	15.84	27.13	20.64	1.31
8.560	100yr	8,560	6,650	15.84	27.23	20.71	1.34
8.560	150yr	8,560	7,080	15.84	27.41	20.84	1.40
8.560	200yr	8,560	7,380	15.84	27.54	20.93	1.43
8.760	50yr	8,760	5,540	16.05	26.93	21.00	1.47
8.760	80yr	8,760	6,010	16.05	27.13	21.21	1.55
8.760	100yr	8,760	6,230	16.05	27.23	21.30	1.58
8.760	150yr	8,760	6,630	16.05	27.41	21.46	1.64
8.760	200yr	8,760	6,910	16.05	27.54	21.57	1.67
8.890	50yr	8,890	5,540	15.83	26.94	21.70	1.67
8.890	80yr	8,890	6,010	15.83	27.14	21.92	1.76
8.890	100yr	8,890	6,230	15.83	27.23	22.02	1.79
8.890	150yr	8,890	6,630	15.83	27.41	22.20	1.86
8.890	200yr	8,890	6,910	15.83	27.54	22.31	1.90
9.040	50yr	9,040	5,540	17.33	26.95	21.46	1.80
9.040	80yr	9,040	6,010	17.33	27.15	21.69	1.89
9.040	100yr	9,040	6,230	17.33	27.25	21.79	1.93
9.040	150yr	9,040	6,630	17.33	27.43	21.97	2.00
9.040	200yr	9,040	6,910	17.33	27.56	22.10	2.05
9.043		Inline Weir					
9.045	50yr	9,045	5,540	17.33	27.01	21.46	1.78
9.045	80yr	9,045	6,010	17.33	27.22	21.69	1.87
9.045	100yr	9,045	6,230	17.33	27.32	21.79	1.91
9.045	150yr	9,045	6,630	17.33	27.50	21.97	1.98
9.045	200yr	9,045	6,910	17.33	27.63	22.10	2.03
9.085	50yr	9,085	5,540	14.85	27.09	19.99	1.36
9.085	80yr	9,085	6,010	14.85	27.30	20.16	1.45
9.085	100yr	9,085	6,230	14.85	27.41	20.23	1.48
9.085	150yr	9,085	6,630	14.85	27.59	20.35	1.55
9.085	200yr	9,085	6,910	14.85	27.72	20.44	1.59
9.090		Bridge					
9.095	50yr	9,095	5,540	14.85	27.11	19.99	1.36
9.095	80yr	9,095	6,010	14.85	27.32	20.16	1.44
9.095	100yr	9,095	6,230	14.85	27.43	20.23	1.48

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
9.095	150yr	9.095	6.630	14.85	27.62	20.35	1.54
9.095	200yr	9.095	6.910	14.85	27.75	20.44	1.59
9.115	50yr	9.115	5.540	16.49	27.05	21.84	1.90
9.115	80yr	9.115	6.010	16.49	27.26	22.07	2.00
9.115	100yr	9.115	6.230	16.49	27.36	22.17	2.04
9.115	150yr	9.115	6.630	16.49	27.54	22.31	2.12
9.115	200yr	9.115	6.910	16.49	27.68	22.51	2.17
9.120		Bridge					
9.125	50yr	9.125	5.540	16.49	27.09	21.84	1.89
9.125	80yr	9.125	6.010	16.49	27.31	22.07	1.99
9.125	100yr	9.125	6.230	16.49	27.41	22.17	2.03
9.125	150yr	9.125	6.630	16.49	27.60	22.31	2.10
9.125	200yr	9.125	6.910	16.49	27.73	22.51	2.15
9.290	50yr	9.290	5.540	16.91	27.12	22.33	2.00
9.290	80yr	9.290	6.010	16.91	27.34	22.55	2.10
9.290	100yr	9.290	6.230	16.91	27.44	23.61	2.14
9.290	150yr	9.290	6.630	16.91	27.63	23.75	2.21
9.290	200yr	9.290	6.910	16.91	27.77	23.84	2.25
9.490	50yr	9.490	5.540	16.79	27.19	22.79	1.97
9.490	80yr	9.490	6.010	16.79	27.41	23.49	2.06
9.490	100yr	9.490	6.230	16.79	27.52	23.55	2.10
9.490	150yr	9.490	6.630	16.79	27.71	23.65	2.17
9.490	200yr	9.490	6.910	16.79	27.84	23.73	2.22
9.680	50yr	9.680	5.540	15.90	27.26	22.33	1.84
9.680	80yr	9.680	6.010	15.90	27.49	22.52	1.93
9.680	100yr	9.680	6.230	15.90	27.60	22.66	1.97
9.680	150yr	9.680	6.630	15.90	27.80	23.06	2.04
9.680	200yr	9.680	6.910	15.90	27.93	23.13	2.08
9.830	50yr	9.830	5.540	17.91	27.28	23.51	2.04
9.830	80yr	9.830	6.010	17.91	27.51	23.66	2.13
9.830	100yr	9.830	6.230	17.91	27.61	23.72	2.17
9.830	150yr	9.830	6.630	17.91	27.81	23.85	2.25
9.830	200yr	9.830	6.910	17.91	27.94	23.93	2.30
9.840		Bridge					
9.850	50yr	9.850	5.540	17.91	27.31	23.51	2.03
9.850	80yr	9.850	6.010	17.91	27.56	23.66	2.11
9.850	100yr	9.850	6.230	17.91	27.68	23.72	2.15
9.850	150yr	9.850	6.630	17.91	27.89	23.85	2.22
9.850	200yr	9.850	6.910	17.91	28.04	23.93	2.27
9.900	50yr	9.900	5.540	16.41	27.35	23.23	1.93
9.900	80yr	9.900	6.010	16.41	27.60	23.42	2.02
9.900	100yr	9.900	6.230	16.41	27.72	23.49	2.06
9.900	150yr	9.900	6.630	16.41	27.93	23.61	2.12
9.900	200yr	9.900	6.910	16.41	28.08	23.68	2.17
10.080	50yr	10.080	5.540	16.30	27.40	23.69	1.94
10.080	80yr	10.080	6.010	16.30	27.65	23.83	2.02
10.080	100yr	10.080	6.230	16.30	27.77	23.90	2.06
10.080	150yr	10.080	6.630	16.30	27.98	24.00	2.12
10.080	200yr	10.080	6.910	16.30	28.14	24.08	2.16
10.240	50yr	10.240	5.540	17.48	27.50	22.67	1.61
10.240	80yr	10.240	6.010	17.48	27.76	22.82	1.68
10.240	100yr	10.240	6.230	17.48	27.88	22.90	1.71
10.240	150yr	10.240	6.630	17.48	28.10	23.55	1.76
10.240	200yr	10.240	6.910	17.48	28.26	23.64	1.79

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
10.480	50yr	10,480	5,540	17.79	27.53	23.58	1.84
10.480	80yr	10,480	6,010	17.79	27.79	23.81	1.90
10.480	100yr	10,480	6,230	17.79	27.91	24.19	1.93
10.480	150yr	10,480	6,630	17.79	28.13	24.31	1.98
10.480	200yr	10,480	6,910	17.79	28.29	24.38	2.02
10.690	50yr	10,690	5,540	17.77	27.57	23.66	2.02
10.690	80yr	10,690	6,010	17.77	27.82	23.92	2.10
10.690	100yr	10,690	6,230	17.77	27.94	23.99	2.14
10.690	150yr	10,690	6,630	17.77	28.16	24.11	2.20
10.690	200yr	10,690	6,910	17.77	28.32	24.19	2.25
10.890	50yr	10,890	5,540	17.82	27.63	23.05	2.00
10.890	80yr	10,890	6,010	17.82	27.89	23.22	2.09
10.890	100yr	10,890	6,230	17.82	28.01	23.28	2.13
10.890	150yr	10,890	6,630	17.82	28.23	23.44	2.20
10.890	200yr	10,890	6,910	17.82	28.38	23.50	2.25
11.120	50yr	11,120	5,540	18.08	27.69	23.40	2.06
11.120	80yr	11,120	6,010	18.08	27.95	24.07	2.15
11.120	100yr	11,120	6,230	18.08	28.07	24.12	2.18
11.120	150yr	11,120	6,630	18.08	28.29	24.28	2.25
11.120	200yr	11,120	6,910	18.08	28.44	24.39	2.29
11.310	50yr	11,310	5,540	17.91	27.77	24.18	1.96
11.310	80yr	11,310	6,010	17.91	28.04	24.42	2.03
11.310	100yr	11,310	6,230	17.91	28.16	24.48	2.06
11.310	150yr	11,310	6,630	17.91	28.38	24.66	2.12
11.310	200yr	11,310	6,910	17.91	28.54	24.73	2.15
11.520	50yr	11,520	5,540	18.13	27.82	23.65	2.23
11.520	80yr	11,520	6,010	18.13	28.09	23.94	2.30
11.520	100yr	11,520	6,230	18.13	28.22	24.25	2.33
11.520	150yr	11,520	6,630	18.13	28.44	24.92	2.38
11.520	200yr	11,520	6,910	18.13	28.60	25.05	2.41
11.710	50yr	11,710	5,540	18.23	27.96	23.71	1.60
11.710	80yr	11,710	6,010	18.23	28.23	23.85	1.67
11.710	100yr	11,710	6,230	18.23	28.35	23.92	1.70
11.710	150yr	11,710	6,630	18.23	28.58	24.02	1.75
11.710	200yr	11,710	6,910	18.23	28.74	24.09	1.78
11.900	50yr	11,900	5,540	16.93	27.98	22.85	1.77
11.900	80yr	11,900	6,010	16.93	28.25	23.03	1.83
11.900	100yr	11,900	6,230	16.93	28.38	23.11	1.86
11.900	150yr	11,900	6,630	16.93	28.60	23.25	1.91
11.900	200yr	11,900	6,910	16.93	28.76	23.35	1.94
12.140	50yr	12,140	5,540	17.55	28.01	23.85	2.08
12.140	80yr	12,140	6,010	17.55	28.28	24.08	2.15
12.140	100yr	12,140	6,230	17.55	28.40	24.21	2.18
12.140	150yr	12,140	6,630	17.55	28.63	24.51	2.24
12.140	200yr	12,140	6,910	17.55	28.78	24.62	2.28
12.340	50yr	12,340	5,540	16.39	28.15	22.73	1.63
12.340	80yr	12,340	6,010	16.39	28.43	22.95	1.70
12.340	100yr	12,340	6,230	16.39	28.55	23.05	1.73
12.340	150yr	12,340	6,630	16.39	28.78	23.19	1.79
12.340	200yr	12,340	6,910	16.39	28.94	23.32	1.83
12.560	50yr	12,560	5,540	16.36	28.21	23.17	1.51
12.560	80yr	12,560	6,010	16.36	28.49	23.38	1.56
12.560	100yr	12,560	6,230	16.36	28.62	23.49	1.59
12.560	150yr	12,560	6,630	16.36	28.85	24.46	1.63
12.560	200yr	12,560	6,910	16.36	29.01	24.59	1.65
12.850	50yr	12,850	5,540	17.46	28.27	24.28	1.61

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
12.850	80yr	12,850	6,010	17.46	28.54	24.50	1.65
12.850	100yr	12,850	6,230	17.46	28.67	24.59	1.67
12.850	150yr	12,850	6,630	17.46	28.90	24.78	1.71
12.850	200yr	12,850	6,910	17.46	29.07	25.27	1.73
13.110	50yr	13,110	5,540	18.33	28.36	23.38	1.34
13.110	80yr	13,110	6,010	18.33	28.63	23.52	1.39
13.110	100yr	13,110	6,230	18.33	28.76	23.56	1.41
13.110	150yr	13,110	6,630	18.33	29.00	24.04	1.45
13.110	200yr	13,110	6,910	18.33	29.16	24.08	1.48
13.320	50yr	13,320	5,540	18.27	28.39	22.77	1.27
13.320	80yr	13,320	6,010	18.27	28.67	22.91	1.33
13.320	100yr	13,320	6,230	18.27	28.80	22.99	1.35
13.320	150yr	13,320	6,630	18.27	29.03	23.12	1.39
13.320	200yr	13,320	6,910	18.27	29.20	23.20	1.42
13.520	50yr	13,520	5,540	17.63	28.41	23.07	1.34
13.520	80yr	13,520	6,010	17.63	28.69	23.21	1.39
13.520	100yr	13,520	6,230	17.63	28.82	23.29	1.42
13.520	150yr	13,520	6,630	17.63	29.05	23.41	1.46
13.520	200yr	13,520	6,910	17.63	29.22	23.48	1.48
13.530		Bridge					
13.540	50yr	13,540	5,540	17.63	28.43	23.07	1.34
13.540	80yr	13,540	6,010	17.63	28.70	23.21	1.39
13.540	100yr	13,540	6,230	17.63	28.84	23.28	1.41
13.540	150yr	13,540	6,630	17.63	29.07	23.40	1.45
13.540	200yr	13,540	6,910	17.63	29.24	23.48	1.48
13.770	50yr	13,770	5,540	17.53	28.46	23.57	1.41
13.770	80yr	13,770	6,010	17.53	28.73	23.73	1.46
13.770	100yr	13,770	6,230	17.53	28.86	23.80	1.49
13.770	150yr	13,770	6,630	17.53	29.10	23.93	1.52
13.770	200yr	13,770	6,910	17.53	29.26	24.01	1.55
13.780		Bridge					
13.790	50yr	13,790	5,540	17.53	28.47	23.57	1.41
13.790	80yr	13,790	6,010	17.53	28.75	23.73	1.46
13.790	100yr	13,790	6,230	17.53	28.88	23.80	1.48
13.790	150yr	13,790	6,630	17.53	29.11	23.93	1.52
13.790	200yr	13,790	6,910	17.53	29.28	24.01	1.54
14.010	50yr	14,010	5,540	18.80	28.50	23.92	1.50
14.010	80yr	14,010	6,010	18.80	28.78	24.08	1.54
14.010	100yr	14,010	6,230	18.80	28.91	24.39	1.56
14.010	150yr	14,010	6,630	18.80	29.15	24.57	1.59
14.010	200yr	14,010	6,910	18.80	29.31	24.81	1.61
14.020		Bridge					
14.030	50yr	14,030	5,540	18.80	28.51	23.92	1.50
14.030	80yr	14,030	6,010	18.80	28.79	24.08	1.54
14.030	100yr	14,030	6,230	18.80	28.92	24.39	1.56
14.030	150yr	14,030	6,630	18.80	29.16	24.57	1.58
14.030	200yr	14,030	6,910	18.80	29.32	24.81	1.60
14.160	50yr	14,160	5,540	18.70	28.56	23.28	1.39
14.160	80yr	14,160	6,010	18.70	28.84	23.48	1.42
14.160	100yr	14,160	6,230	18.70	28.97	23.57	1.44
14.160	150yr	14,160	6,630	18.70	29.21	23.74	1.46
14.160	200yr	14,160	6,910	18.70	29.37	23.86	1.48
14.360	50yr	14,360	5,540	19.25	28.61	23.40	1.25
14.360	80yr	14,360	6,010	19.25	28.89	23.53	1.30

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
14.360	100yr	14.360	6.230	19.25	29.02	23.60	1.32
14.360	150yr	14.360	6.630	19.25	29.25	23.71	1.35
14.360	200yr	14.360	6.910	19.25	29.42	23.79	1.37
14.550	50yr	14.550	5.540	18.48	28.63	23.70	1.26
14.550	80yr	14.550	6.010	18.48	28.91	23.82	1.31
14.550	100yr	14.550	6.230	18.48	29.04	23.88	1.33
14.550	150yr	14.550	6.630	18.48	29.28	24.00	1.37
14.550	200yr	14.550	6.910	18.48	29.44	24.07	1.39
14.740	50yr	14.740	5.540	19.06	28.66	23.48	1.20
14.740	80yr	14.740	6.010	19.06	28.94	23.61	1.25
14.740	100yr	14.740	6.230	19.06	29.07	23.67	1.27
14.740	150yr	14.740	6.630	19.06	29.31	23.77	1.30
14.740	200yr	14.740	6.910	19.06	29.47	23.84	1.32
14.930	50yr	14.930	5.540	19.55	28.66	25.19	1.51
14.930	80yr	14.930	6.010	19.55	28.94	25.44	1.54
14.930	100yr	14.930	6.230	19.55	29.07	25.56	1.56
14.930	150yr	14.930	6.630	19.55	29.31	25.72	1.58
14.930	200yr	14.930	6.910	19.55	29.48	25.81	1.59
15.110	50yr	15.110	5.540	19.88	28.68	25.53	1.81
15.110	80yr	15.110	6.010	19.88	28.96	25.81	1.83
15.110	100yr	15.110	6.230	19.88	29.09	25.89	1.84
15.110	150yr	15.110	6.630	19.88	29.33	26.02	1.86
15.110	200yr	15.110	6.910	19.88	29.50	26.16	1.87
15.270	50yr	15.270	5.540	19.78	28.76	24.26	1.70
15.270	80yr	15.270	6.010	19.78	29.03	24.45	1.76
15.270	100yr	15.270	6.230	19.78	29.16	24.65	1.79
15.270	150yr	15.270	6.630	19.78	29.39	24.79	1.83
15.270	200yr	15.270	6.910	19.78	29.55	24.89	1.86
15.550	50yr	15.550	5.540	19.24	28.77	24.63	2.25
15.550	80yr	15.550	6.010	19.24	29.03	24.81	2.34
15.550	100yr	15.550	6.230	19.24	29.16	24.91	2.38
15.550	150yr	15.550	6.630	19.24	29.38	25.07	2.44
15.550	200yr	15.550	6.910	19.24	29.54	25.21	2.49
15.730	50yr	15.730	5.540	19.54	28.81	24.94	2.43
15.730	80yr	15.730	6.010	19.54	29.08	25.14	2.52
15.730	100yr	15.730	6.230	19.54	29.20	25.21	2.56
15.730	150yr	15.730	6.630	19.54	29.43	25.37	2.64
15.730	200yr	15.730	6.910	19.54	29.58	25.52	2.69
15.815	50yr	15.815	5.510	19.48	28.86	24.87	2.37
15.815	80yr	15.815	5.970	19.48	29.13	25.07	2.46
15.815	100yr	15.815	6.190	19.48	29.25	25.15	2.51
15.815	150yr	15.815	6.590	19.48	29.48	25.31	2.59
15.815	200yr	15.815	6.880	19.48	29.63	25.44	2.64
15.830		Bridge					
15.845	50yr	15.845	5.510	19.48	28.92	24.87	2.35
15.845	80yr	15.845	5.970	19.48	29.19	25.07	2.44
15.845	100yr	15.845	6.190	19.48	29.32	25.15	2.49
15.845	150yr	15.845	6.590	19.48	29.54	25.32	2.56
15.845	200yr	15.845	6.880	19.48	29.70	25.45	2.62
15.940	50yr	15.940	5.510	19.30	29.00	23.90	2.17
15.940	80yr	15.940	5.970	19.30	29.27	24.09	2.27
15.940	100yr	15.940	6.190	19.30	29.40	24.20	2.31
15.940	150yr	15.940	6.590	19.30	29.63	24.34	2.39
15.940	200yr	15.940	6.880	19.30	29.79	24.49	2.44
15.945	50yr	15.945	5.510	21.09	28.94	25.37	2.53

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
15.945	80yr	15.945	5.970	21.09	29.21	25.57	2.63
15.945	100yr	15.945	6.190	21.09	29.33	25.67	2.68
15.945	150yr	15.945	6.590	21.09	29.56	25.84	2.76
15.945	200yr	15.945	6.880	21.09	29.72	25.96	2.81
15.950		Bridge					
15.953	50yr	15.953	5.510	21.09	29.02	25.36	2.50
15.953	80yr	15.953	5.970	21.09	29.29	25.57	2.60
15.953	100yr	15.953	6.190	21.09	29.42	25.67	2.64
15.953	150yr	15.953	6.590	21.09	29.65	25.84	2.72
15.953	200yr	15.953	6.880	21.09	29.82	25.96	2.77
15.956	50yr	15.956	5.510	19.53	29.03	25.07	2.44
15.956	80yr	15.956	5.970	19.53	29.31	25.33	2.53
15.956	100yr	15.956	6.190	19.53	29.44	25.42	2.58
15.956	150yr	15.956	6.590	19.53	29.68	25.59	2.65
15.956	200yr	15.956	6.880	19.53	29.84	25.71	2.71
15.960		Bridge					
15.964	50yr	15.964	5.510	19.53	29.09	25.08	2.42
15.964	80yr	15.964	5.970	19.53	29.37	25.33	2.51
15.964	100yr	15.964	6.190	19.53	29.50	25.42	2.55
15.964	150yr	15.964	6.590	19.53	29.74	25.59	2.63
15.964	200yr	15.964	6.880	19.53	29.91	25.71	2.68
16.150	50yr	16.150	5.510	19.43	29.23	25.53	2.14
16.150	80yr	16.150	5.970	19.43	29.52	25.69	2.21
16.150	100yr	16.150	6.190	19.43	29.66	25.78	2.25
16.150	150yr	16.150	6.590	19.43	29.90	25.95	2.31
16.150	200yr	16.150	6.880	19.43	30.07	26.06	2.35
16.360	50yr	16.360	5.510	21.04	29.41	24.86	1.56
16.360	80yr	16.360	5.970	21.04	29.71	25.00	1.61
16.360	100yr	16.360	6.190	21.04	29.84	25.07	1.64
16.360	150yr	16.360	6.590	21.04	30.10	25.20	1.68
16.360	200yr	16.360	6.880	21.04	30.27	25.27	1.71
16.500	50yr	16.500	5.510	21.08	29.31	26.65	2.63
16.500	80yr	16.500	5.970	21.08	29.60	26.87	2.68
16.500	100yr	16.500	6.190	21.08	29.74	26.96	2.71
16.500	150yr	16.500	6.590	21.08	29.99	27.14	2.75
16.500	200yr	16.500	6.880	21.08	30.16	27.32	2.78
16.680	50yr	16.680	4.430	20.53	29.45	25.83	2.38
16.680	80yr	16.680	4.810	20.53	29.73	26.02	2.46
16.680	100yr	16.680	4.990	20.53	29.87	26.11	2.50
16.680	150yr	16.680	5.320	20.53	30.11	26.26	2.56
16.680	200yr	16.680	5.550	20.53	30.28	26.35	2.60
16.850	50yr	16.850	4.430	21.49	29.52	25.92	2.41
16.850	80yr	16.850	4.810	21.49	29.81	26.43	2.50
16.850	100yr	16.850	4.990	21.49	29.94	26.52	2.53
16.850	150yr	16.850	5.320	21.49	30.18	26.64	2.60
16.850	200yr	16.850	5.550	21.49	30.35	26.74	2.64
16.970	50yr	16.970	4.430	20.35	29.54	26.58	2.68
16.970	80yr	16.970	4.810	20.35	29.82	26.75	2.77
16.970	100yr	16.970	4.990	20.35	29.95	26.85	2.81
16.970	150yr	16.970	5.320	20.35	30.19	27.00	2.88
16.970	200yr	16.970	5.550	20.35	30.36	27.08	2.93
17.180	50yr	17.180	4.430	20.59	29.74	26.32	2.33
17.180	80yr	17.180	4.810	20.59	30.04	26.48	2.41
17.180	100yr	17.180	4.990	20.59	30.17	26.56	2.45
17.180	150yr	17.180	5.320	20.59	30.41	26.69	2.51

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
17.180	200yr	17,180	5,550	20.59	30.59	26.78	2.55
17.380	50yr	17,380	4,430	21.29	29.82	26.37	2.43
17.380	80yr	17,380	4,810	21.29	30.11	26.58	2.52
17.380	100yr	17,380	4,990	21.29	30.24	26.66	2.55
17.380	150yr	17,380	5,320	21.29	30.49	26.80	2.62
17.380	200yr	17,380	5,550	21.29	30.66	26.90	2.66
17.570	50yr	17,570	4,430	21.31	29.93	26.33	2.37
17.570	80yr	17,570	4,810	21.31	30.22	26.54	2.45
17.570	100yr	17,570	4,990	21.31	30.35	26.62	2.49
17.570	150yr	17,570	5,320	21.31	30.60	26.81	2.55
17.570	200yr	17,570	5,550	21.31	30.77	26.92	2.59
17.760	50yr	17,760	4,430	20.95	30.00	27.06	2.47
17.760	80yr	17,760	4,810	20.95	30.30	27.22	2.55
17.760	100yr	17,760	4,990	20.95	30.43	27.28	2.58
17.760	150yr	17,760	5,320	20.95	30.68	27.43	2.64
17.760	200yr	17,760	5,550	20.95	30.85	27.51	2.68
17.980	50yr	17,980	4,430	21.30	30.14	27.15	2.42
17.980	80yr	17,980	4,810	21.30	30.43	27.31	2.49
17.980	100yr	17,980	4,990	21.30	30.57	27.38	2.53
17.980	150yr	17,980	5,320	21.30	30.81	27.51	2.58
17.980	200yr	17,980	5,550	21.30	30.98	27.60	2.62
18.170	50yr	18,170	4,430	21.02	30.24	27.21	2.40
18.170	80yr	18,170	4,810	21.02	30.53	27.37	2.47
18.170	100yr	18,170	4,990	21.02	30.67	27.44	2.51
18.170	150yr	18,170	5,320	21.02	30.91	27.57	2.57
18.170	200yr	18,170	5,550	21.02	31.09	27.66	2.60
18.370	50yr	18,370	4,430	22.15	30.31	27.84	2.65
18.370	80yr	18,370	4,810	22.15	30.60	28.00	2.72
18.370	100yr	18,370	4,990	22.15	30.74	28.07	2.75
18.370	150yr	18,370	5,320	22.15	30.99	28.20	2.80
18.370	200yr	18,370	5,550	22.15	31.16	28.28	2.84
18.570	50yr	18,570	4,430	21.27	30.48	27.78	2.54
18.570	80yr	18,570	4,810	21.27	30.77	27.94	2.61
18.570	100yr	18,570	4,990	21.27	30.90	28.00	2.65
18.570	150yr	18,570	5,320	21.27	31.14	28.13	2.70
18.570	200yr	18,570	5,550	21.27	31.31	28.22	2.74
18.770	50yr	18,770	4,430	21.15	30.61	27.83	2.50
18.770	80yr	18,770	4,810	21.15	30.90	27.98	2.57
18.770	100yr	18,770	4,990	21.15	31.03	28.05	2.61
18.770	150yr	18,770	5,320	21.15	31.27	28.19	2.66
18.770	200yr	18,770	5,550	21.15	31.44	28.28	2.70
18.960	50yr	18,960	4,430	21.68	30.71	28.11	2.59
18.960	80yr	18,960	4,810	21.68	31.00	28.26	2.66
18.960	100yr	18,960	4,990	21.68	31.13	28.33	2.69
18.960	150yr	18,960	5,320	21.68	31.37	28.46	2.75
18.960	200yr	18,960	5,550	21.68	31.54	28.55	2.79
19.160	50yr	19,160	4,430	22.02	30.87	27.94	2.44
19.160	80yr	19,160	4,810	22.02	31.16	28.10	2.52
19.160	100yr	19,160	4,990	22.02	31.29	28.17	2.55
19.160	150yr	19,160	5,320	22.02	31.53	28.30	2.61
19.160	200yr	19,160	5,550	22.02	31.69	28.39	2.65
19.360	50yr	19,360	4,430	21.76	30.97	27.96	2.47
19.360	80yr	19,360	4,810	21.76	31.26	28.23	2.55
19.360	100yr	19,360	4,990	21.76	31.39	28.33	2.58
19.360	150yr	19,360	5,320	21.76	31.63	28.47	2.64
19.360	200yr	19,360	5,550	21.76	31.80	28.56	2.68

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
19.507	50yr	19.507	4.430	21.70	31.03	28.22	2.67
19.507	80yr	19.507	4.810	21.70	31.32	28.41	2.74
19.507	100yr	19.507	4.990	21.70	31.45	28.50	2.77
19.507	150yr	19.507	5.320	21.70	31.69	28.65	2.83
19.507	200yr	19.507	5.550	21.70	31.85	28.76	2.87
19.530		Bridge					
19.553	50yr	19.553	4.430	21.70	31.13	28.22	2.62
19.553	80yr	19.553	4.810	21.70	31.42	28.41	2.68
19.553	100yr	19.553	4.990	21.70	31.56	28.50	2.72
19.553	150yr	19.553	5.320	21.70	31.80	28.65	2.77
19.553	200yr	19.553	5.550	21.70	31.97	28.76	2.81
19.580	50yr	19.580	4.430	22.34	31.18	28.28	2.50
19.580	80yr	19.580	4.810	22.34	31.47	28.50	2.58
19.580	100yr	19.580	4.990	22.34	31.61	28.59	2.61
19.580	150yr	19.580	5.320	22.34	31.85	28.71	2.67
19.580	200yr	19.580	5.550	22.34	32.01	28.80	2.71
19.585	50yr	19.585	4.430	22.34	31.18	28.33	2.54
19.585	80yr	19.585	4.810	22.34	31.47	28.54	2.61
19.585	100yr	19.585	4.990	22.34	31.60	28.62	2.64
19.585	150yr	19.585	5.320	22.34	31.85	28.76	2.70
19.585	200yr	19.585	5.550	22.34	32.01	28.85	2.73
19.600		Bridge					
19.615	50yr	19.615	4.430	22.34	31.28	28.33	2.49
19.615	80yr	19.615	4.810	22.34	31.57	28.54	2.56
19.615	100yr	19.615	4.990	22.34	31.71	28.62	2.59
19.615	150yr	19.615	5.320	22.34	31.95	28.76	2.65
19.615	200yr	19.615	5.550	22.34	32.12	28.85	2.69
19.790	50yr	19.790	4.430	22.81	31.39	28.34	2.41
19.790	80yr	19.790	4.810	22.81	31.69	28.52	2.48
19.790	100yr	19.790	4.990	22.81	31.82	28.60	2.51
19.790	150yr	19.790	5.320	22.81	32.06	28.72	2.57
19.790	200yr	19.790	5.550	22.81	32.23	28.81	2.61
20.010	50yr	20.010	4.430	23.18	31.50	28.51	2.43
20.010	80yr	20.010	4.810	23.18	31.80	28.67	2.50
20.010	100yr	20.010	4.990	23.18	31.93	28.74	2.54
20.010	150yr	20.010	5.320	23.18	32.17	28.87	2.60
20.010	200yr	20.010	5.550	23.18	32.34	28.96	2.64
20.230	50yr	20.230	4.430	23.09	31.62	28.67	2.43
20.230	80yr	20.230	4.810	23.09	31.91	28.82	2.51
20.230	100yr	20.230	4.990	23.09	32.04	28.90	2.54
20.230	150yr	20.230	5.320	23.09	32.29	29.03	2.60
20.230	200yr	20.230	5.550	23.09	32.45	29.11	2.64
20.430	50yr	20.430	4.430	23.42	31.75	28.47	2.31
20.430	80yr	20.430	4.810	23.42	32.04	28.64	2.38
20.430	100yr	20.430	4.990	23.42	32.18	28.72	2.42
20.430	150yr	20.430	5.320	23.42	32.42	28.85	2.48
20.430	200yr	20.430	5.550	23.42	32.59	28.94	2.52
20.650	50yr	20.650	4.430	23.53	31.85	28.58	2.29
20.650	80yr	20.650	4.810	23.53	32.14	28.76	2.36
20.650	100yr	20.650	4.990	23.53	32.28	28.84	2.39
20.650	150yr	20.650	5.320	23.53	32.52	28.98	2.45
20.650	200yr	20.650	5.550	23.53	32.69	29.07	2.49
20.760	50yr	20.760	4.430	23.32	31.92	28.37	2.21
20.760	80yr	20.760	4.810	23.32	32.21	28.58	2.28

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
20.760	100yr	20,760	4,990	23.32	32.35	28.66	2.31
20.760	150yr	20,760	5,320	23.32	32.59	28.80	2.37
20.760	200yr	20,760	5,550	23.32	32.76	28.89	2.41
20.770		Bridge					
20.780	50yr	20,780	4,430	23.32	31.94	28.37	2.20
20.780	80yr	20,780	4,810	23.32	32.24	28.58	2.27
20.780	100yr	20,780	4,990	23.32	32.38	28.66	2.30
20.780	150yr	20,780	5,320	23.32	32.62	28.80	2.36
20.780	200yr	20,780	5,550	23.32	32.79	28.89	2.40
20.840	50yr	20,840	4,430	23.35	32.01	28.18	1.99
20.840	80yr	20,840	4,810	23.35	32.31	28.33	2.06
20.840	100yr	20,840	4,990	23.35	32.45	28.40	2.09
20.840	150yr	20,840	5,320	23.35	32.70	28.53	2.14
20.840	200yr	20,840	5,550	23.35	32.87	28.62	2.18
21.070	50yr	21,070	4,430	23.62	32.14	27.94	1.65
21.070	80yr	21,070	4,810	23.62	32.45	28.07	1.70
21.070	100yr	21,070	4,990	23.62	32.59	28.14	1.73
21.070	150yr	21,070	5,320	23.62	32.84	28.26	1.77
21.070	200yr	21,070	5,550	23.62	33.01	28.33	1.80
21.280	50yr	21,280	4,340	24.17	32.12	28.32	2.22
21.280	80yr	21,280	4,700	24.17	32.42	28.71	2.29
21.280	100yr	21,280	4,880	24.17	32.56	28.81	2.33
21.280	150yr	21,280	5,200	24.17	32.81	28.95	2.38
21.280	200yr	21,280	5,420	24.17	32.98	29.06	2.42
21.450	50yr	21,450	4,340	23.37	32.14	29.18	2.58
21.450	80yr	21,450	4,700	23.37	32.44	29.34	2.64
21.450	100yr	21,450	4,880	23.37	32.58	29.44	2.67
21.450	150yr	21,450	5,200	23.37	32.83	29.71	2.73
21.450	200yr	21,450	5,420	23.37	33.00	29.87	2.76
21.660	50yr	21,660	4,340	23.14	32.30	29.10	2.49
21.660	80yr	21,660	4,700	23.14	32.59	29.29	2.55
21.660	100yr	21,660	4,880	23.14	32.73	29.40	2.59
21.660	150yr	21,660	5,200	23.14	32.98	29.59	2.65
21.660	200yr	21,660	5,420	23.14	33.14	29.71	2.68
21.880	50yr	21,880	4,340	24.04	32.41	29.56	2.60
21.880	80yr	21,880	4,700	24.04	32.70	29.79	2.67
21.880	100yr	21,880	4,880	24.04	32.84	29.90	2.70
21.880	150yr	21,880	5,200	24.04	33.08	30.08	2.76
21.880	200yr	21,880	5,420	24.04	33.25	30.20	2.79
22.080	50yr	22,080	4,340	23.27	32.53	29.78	2.61
22.080	80yr	22,080	4,700	23.27	32.82	29.97	2.68
22.080	100yr	22,080	4,880	23.27	32.96	30.06	2.71
22.080	150yr	22,080	5,200	23.27	33.21	30.23	2.77
22.080	200yr	22,080	5,420	23.27	33.37	30.33	2.81
22.280	50yr	22,280	4,340	23.90	32.70	29.57	2.44
22.280	80yr	22,280	4,700	23.90	32.99	29.74	2.51
22.280	100yr	22,280	4,880	23.90	33.13	29.82	2.55
22.280	150yr	22,280	5,200	23.90	33.37	29.96	2.61
22.280	200yr	22,280	5,420	23.90	33.53	30.05	2.65
22.460	50yr	22,460	4,340	23.65	32.82	29.54	2.30
22.460	80yr	22,460	4,700	23.65	33.11	29.72	2.37
22.460	100yr	22,460	4,880	23.65	33.25	29.82	2.41
22.460	150yr	22,460	5,200	23.65	33.50	29.94	2.47
22.460	200yr	22,460	5,420	23.65	33.66	30.03	2.50
22.640	50yr	22,640	4,340	23.92	32.91	28.97	2.25

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
22.640	80yr	22,640	4,700	23.92	33.20	29.44	2.33
22.640	100yr	22,640	4,880	23.92	33.34	29.54	2.36
22.640	150yr	22,640	5,200	23.92	33.58	29.72	2.43
22.640	200yr	22,640	5,420	23.92	33.75	29.83	2.47
22.830	50yr	22,830	4,340	24.39	33.00	29.04	2.21
22.830	80yr	22,830	4,700	24.39	33.29	29.22	2.28
22.830	100yr	22,830	4,880	24.39	33.43	29.30	2.31
22.830	150yr	22,830	5,200	24.39	33.67	29.49	2.37
22.830	200yr	22,830	5,420	24.39	33.84	29.64	2.41
23.020	50yr	23,020	4,340	24.26	33.03	29.77	2.58
23.020	80yr	23,020	4,700	24.26	33.32	29.99	2.65
23.020	100yr	23,020	4,880	24.26	33.45	30.10	2.69
23.020	150yr	23,020	5,200	24.26	33.70	30.30	2.74
23.020	200yr	23,020	5,420	24.26	33.86	30.42	2.78
23.220	50yr	23,220	4,340	24.46	33.22	29.31	2.21
23.220	80yr	23,220	4,700	24.46	33.52	29.48	2.28
23.220	100yr	23,220	4,880	24.46	33.65	29.56	2.31
23.220	150yr	23,220	5,200	24.46	33.90	29.72	2.37
23.220	200yr	23,220	5,420	24.46	34.07	29.81	2.41
23.420	50yr	23,420	4,340	24.27	33.30	29.54	2.22
23.420	80yr	23,420	4,700	24.27	33.59	29.71	2.30
23.420	100yr	23,420	4,880	24.27	33.73	29.78	2.33
23.420	150yr	23,420	5,200	24.27	33.98	29.93	2.39
23.420	200yr	23,420	5,420	24.27	34.14	30.02	2.43
23.600	50yr	23,600	4,340	24.75	33.36	29.78	2.31
23.600	80yr	23,600	4,700	24.75	33.65	29.94	2.39
23.600	100yr	23,600	4,880	24.75	33.79	30.02	2.42
23.600	150yr	23,600	5,200	24.75	34.04	30.16	2.48
23.600	200yr	23,600	5,420	24.75	34.20	30.25	2.52
23.810	50yr	23,810	4,340	24.35	33.49	29.78	2.12
23.810	80yr	23,810	4,700	24.35	33.78	29.94	2.19
23.810	100yr	23,810	4,880	24.35	33.92	30.02	2.22
23.810	150yr	23,810	5,200	24.35	34.18	30.15	2.27
23.810	200yr	23,810	5,420	24.35	34.34	30.23	2.31
24.010	50yr	24,010	4,340	24.31	33.63	29.90	1.73
24.010	80yr	24,010	4,700	24.31	33.93	30.03	1.78
24.010	100yr	24,010	4,880	24.31	34.08	30.09	1.81
24.010	150yr	24,010	5,200	24.31	34.33	30.19	1.85
24.010	200yr	24,010	5,420	24.31	34.51	30.26	1.88
24.150	50yr	24,150	4,340	25.51	33.66	29.98	1.82
24.150	80yr	24,150	4,700	25.51	33.96	30.11	1.88
24.150	100yr	24,150	4,880	25.51	34.10	30.17	1.90
24.150	150yr	24,150	5,200	25.51	34.36	30.28	1.95
24.150	200yr	24,150	5,420	25.51	34.53	30.36	1.97
24.350	50yr	24,350	4,340	25.16	33.71	30.02	1.90
24.350	80yr	24,350	4,700	25.16	34.00	30.15	1.96
24.350	100yr	24,350	4,880	25.16	34.15	30.22	1.98
24.350	150yr	24,350	5,200	25.16	34.40	30.34	2.03
24.350	200yr	24,350	5,420	25.16	34.57	30.42	2.06
24.530	50yr	24,530	4,340	25.75	33.76	30.11	1.88
24.530	80yr	24,530	4,700	25.75	34.06	30.24	1.94
24.530	100yr	24,530	4,880	25.75	34.20	30.31	1.97
24.530	150yr	24,530	5,200	25.75	34.46	30.42	2.01
24.530	200yr	24,530	5,420	25.75	34.63	30.50	2.04
24.710	50yr	24,710	4,340	25.55	33.82	30.19	1.85
24.710	80yr	24,710	4,700	25.55	34.12	30.33	1.90

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
24.710	100yr	24,710	4,880	25.55	34.26	30.39	1.93
24.710	150yr	24,710	5,200	25.55	34.52	30.51	1.97
24.710	200yr	24,710	5,420	25.55	34.69	30.59	2.00
24.920	50yr	24,920	4,340	25.62	33.88	30.53	1.94
24.920	80yr	24,920	4,700	25.62	34.18	30.68	1.98
24.920	100yr	24,920	4,880	25.62	34.32	30.74	2.01
24.920	150yr	24,920	5,200	25.62	34.57	30.85	2.05
24.920	200yr	24,920	5,420	25.62	34.75	30.93	2.07
25.120	50yr	25,120	4,340	25.50	33.95	30.62	1.94
25.120	80yr	25,120	4,700	25.50	34.25	30.85	1.98
25.120	100yr	25,120	4,880	25.50	34.39	30.92	2.01
25.120	150yr	25,120	5,200	25.50	34.64	31.05	2.04
25.120	200yr	25,120	5,420	25.50	34.82	31.12	2.07
25.320	50yr	25,320	4,340	25.76	34.06	30.07	1.69
25.320	80yr	25,320	4,700	25.76	34.35	30.20	1.74
25.320	100yr	25,320	4,880	25.76	34.50	30.26	1.77
25.320	150yr	25,320	5,200	25.76	34.75	30.37	1.81
25.320	200yr	25,320	5,420	25.76	34.92	30.45	1.83
25.520	50yr	25,520	4,340	25.80	34.07	31.28	2.06
25.520	80yr	25,520	4,700	25.80	34.37	31.44	2.10
25.520	100yr	25,520	4,880	25.80	34.51	31.49	2.12
25.520	150yr	25,520	5,200	25.80	34.76	31.59	2.16
25.520	200yr	25,520	5,420	25.80	34.93	31.67	2.18
25.690	50yr	25,690	4,340	25.64	34.15	31.47	2.12
25.690	80yr	25,690	4,700	25.64	34.44	31.64	2.16
25.690	100yr	25,690	4,880	25.64	34.58	31.70	2.18
25.690	150yr	25,690	5,200	25.64	34.83	31.86	2.20
25.690	200yr	25,690	5,420	25.64	35.00	31.97	2.22
25.695	50yr	25,695	4,340	25.35	34.19	30.55	1.94
25.695	80yr	25,695	4,700	25.35	34.48	30.72	1.98
25.695	100yr	25,695	4,880	25.35	34.62	30.81	2.00
25.695	150yr	25,695	5,200	25.35	34.87	30.96	2.03
25.695	200yr	25,695	5,420	25.35	35.04	31.03	2.05
25.710		Bridge					
25.725	50yr	25,725	4,340	25.35	34.23	30.55	1.92
25.725	80yr	25,725	4,700	25.35	34.53	30.72	1.96
25.725	100yr	25,725	4,880	25.35	34.67	30.81	1.98
25.725	150yr	25,725	5,200	25.35	34.92	30.96	2.02
25.725	200yr	25,725	5,420	25.35	35.09	31.03	2.04
25.930	50yr	25,930	4,340	26.05	34.32	30.84	1.85
25.930	80yr	25,930	4,700	26.05	34.61	30.98	1.89
25.930	100yr	25,930	4,880	26.05	34.75	31.03	1.91
25.930	150yr	25,930	5,200	26.05	35.00	31.17	1.94
25.930	200yr	25,930	5,420	26.05	35.17	31.25	1.97
26.150	50yr	26,150	4,340	26.33	34.39	31.55	2.06
26.150	80yr	26,150	4,700	26.33	34.67	31.70	2.09
26.150	100yr	26,150	4,880	26.33	34.81	31.76	2.11
26.150	150yr	26,150	5,200	26.33	35.06	31.91	2.14
26.150	200yr	26,150	5,420	26.33	35.23	32.03	2.15
26.360	50yr	26,360	4,340	25.54	34.48	31.73	2.16
26.360	80yr	26,360	4,700	25.54	34.77	31.87	2.19
26.360	100yr	26,360	4,880	25.54	34.90	31.95	2.20
26.360	150yr	26,360	5,200	25.54	35.15	32.08	2.23
26.360	200yr	26,360	5,420	25.54	35.31	32.16	2.25
26.570	50yr	26,570	4,340	26.31	34.64	31.21	1.94

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
26.570	80yr	26.570	4.700	26.31	34.91	31.36	1.98
26.570	100yr	26.570	4.880	26.31	35.05	31.43	2.00
26.570	150yr	26.570	5.200	26.31	35.29	31.56	2.04
26.570	200yr	26.570	5.420	26.31	35.45	31.66	2.06
26.615	50yr	26.615	4.340	28.37	34.67	31.04	1.87
26.615	80yr	26.615	4.700	28.37	34.94	31.18	1.92
26.615	100yr	26.615	4.880	28.37	35.08	31.25	1.94
26.615	150yr	26.615	5.200	28.37	35.32	31.38	1.98
26.615	200yr	26.615	5.420	28.37	35.48	31.47	2.00
26.618		Inline Weir					
26.620	50yr	26.620	4.340	30.55	34.67	33.24	2.66
26.620	80yr	26.620	4.700	30.55	34.95	33.37	2.67
26.620	100yr	26.620	4.880	30.55	35.08	33.43	2.67
26.620	150yr	26.620	5.200	30.55	35.32	33.52	2.68
26.620	200yr	26.620	5.420	30.55	35.48	33.59	2.68
26.800	50yr	26.800	4.340	29.45	34.95	32.30	2.12
26.800	80yr	26.800	4.700	29.45	35.21	32.44	2.16
26.800	100yr	26.800	4.880	29.45	35.34	32.51	2.18
26.800	150yr	26.800	5.200	29.45	35.57	32.63	2.22
26.800	200yr	26.800	5.420	29.45	35.72	32.74	2.24
27.010	50yr	27.010	4.340	29.30	35.06	32.88	2.25
27.010	80yr	27.010	4.700	29.30	35.31	33.03	2.30
27.010	100yr	27.010	4.880	29.30	35.43	33.09	2.32
27.010	150yr	27.010	5.200	29.30	35.66	33.20	2.36
27.010	200yr	27.010	5.420	29.30	35.81	33.27	2.38
27.230	50yr	27.230	4.340	28.18	35.23	33.05	2.08
27.230	80yr	27.230	4.700	28.18	35.48	33.16	2.12
27.230	100yr	27.230	4.880	28.18	35.61	33.21	2.14
27.230	150yr	27.230	5.200	28.18	35.83	33.32	2.17
27.230	200yr	27.230	5.420	28.18	35.98	33.37	2.19
27.520	50yr	27.520	3.670	29.37	35.46	32.78	1.58
27.520	80yr	27.520	3.990	29.37	35.71	32.90	1.61
27.520	100yr	27.520	4.140	29.37	35.83	32.95	1.63
27.520	150yr	27.520	4.410	29.37	36.05	33.03	1.65
27.520	200yr	27.520	4.610	29.37	36.20	33.10	1.67
27.760	50yr	27.760	3.670	28.95	35.53	31.92	1.55
27.760	80yr	27.760	3.990	28.95	35.78	32.05	1.61
27.760	100yr	27.760	4.140	28.95	35.90	32.11	1.63
27.760	150yr	27.760	4.410	28.95	36.11	32.24	1.67
27.760	200yr	27.760	4.610	28.95	36.26	32.33	1.70
27.890	50yr	27.890	3.670	28.43	35.53	32.53	1.90
27.890	80yr	27.890	3.990	28.43	35.77	32.82	1.95
27.890	100yr	27.890	4.140	28.43	35.90	32.97	1.97
27.890	150yr	27.890	4.410	28.43	36.11	33.18	2.00
27.890	200yr	27.890	4.610	28.43	36.26	33.40	2.02
28.210	50yr	28.210	3.670	28.95	35.69	32.24	1.69
28.210	80yr	28.210	3.990	28.95	35.94	32.41	1.75
28.210	100yr	28.210	4.140	28.95	36.06	32.56	1.77
28.210	150yr	28.210	4.410	28.95	36.27	32.67	1.80
28.210	200yr	28.210	4.610	28.95	36.42	32.77	1.83
28.410	50yr	28.410	3.670	28.53	35.77	32.53	1.63
28.410	80yr	28.410	3.990	28.53	36.02	32.87	1.67
28.410	100yr	28.410	4.140	28.53	36.14	32.98	1.69
28.410	150yr	28.410	4.410	28.53	36.35	33.14	1.72
28.410	200yr	28.410	4.610	28.53	36.50	33.28	1.75

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
28.630	50yr	28,630	3,670	29.26	35.87	32.26	1.38
28.630	80yr	28,630	3,990	29.26	36.11	32.39	1.43
28.630	100yr	28,630	4,140	29.26	36.23	32.45	1.45
28.630	150yr	28,630	4,410	29.26	36.45	32.61	1.48
28.630	200yr	28,630	4,610	29.26	36.60	32.68	1.51
28.840	50yr	28,840	3,670	28.79	35.87	32.98	1.85
28.840	80yr	28,840	3,990	28.79	36.12	33.12	1.90
28.840	100yr	28,840	4,140	28.79	36.24	33.18	1.92
28.840	150yr	28,840	4,410	28.79	36.45	33.83	1.95
28.840	200yr	28,840	4,610	28.79	36.60	33.88	1.97
29.000	50yr	29,000	3,670	28.37	35.95	33.19	1.84
29.000	80yr	29,000	3,990	28.37	36.19	33.32	1.89
29.000	100yr	29,000	4,140	28.37	36.31	33.40	1.91
29.000	150yr	29,000	4,410	28.37	36.52	33.50	1.94
29.000	200yr	29,000	4,610	28.37	36.66	33.61	1.96
29.180	50yr	29,180	3,670	28.29	36.03	32.99	1.79
29.180	80yr	29,180	3,990	28.29	36.27	33.23	1.85
29.180	100yr	29,180	4,140	28.29	36.39	33.30	1.87
29.180	150yr	29,180	4,410	28.29	36.60	33.40	1.90
29.180	200yr	29,180	4,610	28.29	36.74	33.48	1.93
29.370	50yr	29,370	3,670	28.32	36.11	32.69	1.86
29.370	80yr	29,370	3,990	28.32	36.35	33.22	1.91
29.370	100yr	29,370	4,140	28.32	36.46	33.29	1.93
29.370	150yr	29,370	4,410	28.32	36.67	33.42	1.97
29.370	200yr	29,370	4,610	28.32	36.81	33.52	1.99
29.670	50yr	29,670	3,670	28.67	36.24	33.06	1.88
29.670	80yr	29,670	3,990	28.67	36.48	33.88	1.93
29.670	100yr	29,670	4,140	28.67	36.59	33.93	1.95
29.670	150yr	29,670	4,410	28.67	36.80	34.04	1.99
29.670	200yr	29,670	4,610	28.67	36.94	34.15	2.02
29.870	50yr	29,870	3,670	29.00	36.36	32.53	1.70
29.870	80yr	29,870	3,990	29.00	36.59	32.70	1.76
29.870	100yr	29,870	4,140	29.00	36.71	32.80	1.78
29.870	150yr	29,870	4,410	29.00	36.91	33.02	1.82
29.870	200yr	29,870	4,610	29.00	37.05	33.27	1.86
30.090	50yr	30,090	3,670	29.91	36.44	32.64	1.57
30.090	80yr	30,090	3,990	29.91	36.68	32.77	1.63
30.090	100yr	30,090	4,140	29.91	36.79	32.83	1.65
30.090	150yr	30,090	4,410	29.91	37.00	32.93	1.70
30.090	200yr	30,090	4,610	29.91	37.14	33.02	1.73
30.330	50yr	30,330	3,670	29.98	36.52	32.71	1.47
30.330	80yr	30,330	3,990	29.98	36.76	32.83	1.53
30.330	100yr	30,330	4,140	29.98	36.87	32.88	1.55
30.330	150yr	30,330	4,410	29.98	37.07	32.97	1.60
30.330	200yr	30,330	4,610	29.98	37.21	33.04	1.63
30.370	50yr	30,370	3,670	30.07	36.51	33.03	1.65
30.370	80yr	30,370	3,990	30.07	36.74	33.16	1.71
30.370	100yr	30,370	4,140	30.07	36.86	33.22	1.73
30.370	150yr	30,370	4,410	30.07	37.06	33.33	1.78
30.370	200yr	30,370	4,610	30.07	37.20	33.40	1.81
30.390		Bridge					
30.410	50yr	30,410	3,670	30.07	36.53	33.03	1.64
30.410	80yr	30,410	3,990	30.07	36.77	33.16	1.70
30.410	100yr	30,410	4,140	30.07	36.89	33.22	1.72
30.410	150yr	30,410	4,410	30.07	37.09	33.33	1.77
30.410	200yr	30,410	4,610	30.07	37.23	33.40	1.80

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
30.550	50yr	30,550	3,670	30.05	36.58	33.07	1.60
30.550	80yr	30,550	3,990	30.05	36.82	33.19	1.66
30.550	100yr	30,550	4,140	30.05	36.93	33.24	1.68
30.550	150yr	30,550	4,410	30.05	37.14	33.34	1.72
30.550	200yr	30,550	4,610	30.05	37.28	33.41	1.76
30.730	50yr	30,730	3,670	28.52	36.64	32.80	1.49
30.730	80yr	30,730	3,990	28.52	36.88	32.93	1.55
30.730	100yr	30,730	4,140	28.52	37.00	32.98	1.57
30.730	150yr	30,730	4,410	28.52	37.20	33.08	1.62
30.730	200yr	30,730	4,610	28.52	37.34	33.15	1.65
30.910	50yr	30,910	3,670	29.82	36.66	33.66	1.76
30.910	80yr	30,910	3,990	29.82	36.90	33.78	1.82
30.910	100yr	30,910	4,140	29.82	37.01	33.83	1.84
30.910	150yr	30,910	4,410	29.82	37.22	33.93	1.88
30.910	200yr	30,910	4,610	29.82	37.36	34.00	1.91
31.120	50yr	31,120	3,670	29.68	36.73	33.57	1.76
31.120	80yr	31,120	3,990	29.68	36.97	33.70	1.82
31.120	100yr	31,120	4,140	29.68	37.09	33.76	1.84
31.120	150yr	31,120	4,410	29.68	37.29	33.86	1.88
31.120	200yr	31,120	4,610	29.68	37.43	33.94	1.92
31.290	50yr	31,290	3,670	29.35	36.77	33.92	1.99
31.290	80yr	31,290	3,990	29.35	37.01	34.07	2.04
31.290	100yr	31,290	4,140	29.35	37.13	34.13	2.07
31.290	150yr	31,290	4,410	29.35	37.33	34.25	2.11
31.290	200yr	31,290	4,610	29.35	37.47	34.33	2.13
31.450	50yr	31,450	3,670	29.50	36.85	34.07	2.06
31.450	80yr	31,450	3,990	29.50	37.09	34.21	2.11
31.450	100yr	31,450	4,140	29.50	37.20	34.28	2.13
31.450	150yr	31,450	4,410	29.50	37.40	34.40	2.17
31.450	200yr	31,450	4,610	29.50	37.54	34.48	2.20
31.650	50yr	31,650	3,670	30.49	36.97	34.05	2.04
31.650	80yr	31,650	3,990	30.49	37.20	34.20	2.10
31.650	100yr	31,650	4,140	30.49	37.31	34.26	2.12
31.650	150yr	31,650	4,410	30.49	37.51	34.38	2.16
31.650	200yr	31,650	4,610	30.49	37.65	34.47	2.19
31.660	50yr	31,660	3,670	30.46	36.96	34.34	2.16
31.660	80yr	31,660	3,990	30.46	37.19	34.50	2.21
31.660	100yr	31,660	4,140	30.46	37.30	34.57	2.23
31.660	150yr	31,660	4,410	30.46	37.50	34.69	2.26
31.660	200yr	31,660	4,610	30.46	37.64	34.78	2.29
31.680		Bridge					
31.700	50yr	31,700	3,670	30.46	37.02	34.34	2.12
31.700	80yr	31,700	3,990	30.46	37.26	34.50	2.17
31.700	100yr	31,700	4,140	30.46	37.37	34.57	2.19
31.700	150yr	31,700	4,410	30.46	37.57	34.69	2.23
31.700	200yr	31,700	4,610	30.46	37.71	34.78	2.25
31.830	50yr	31,830	3,670	30.61	37.09	34.73	2.29
31.830	80yr	31,830	3,990	30.61	37.32	34.86	2.34
31.830	100yr	31,830	4,140	30.61	37.43	34.93	2.36
31.830	150yr	31,830	4,410	30.61	37.63	35.04	2.40
31.830	200yr	31,830	4,610	30.61	37.77	35.13	2.43
32.060	50yr	32,060	3,670	30.56	37.26	34.85	2.38
32.060	80yr	32,060	3,990	30.56	37.49	35.00	2.43
32.060	100yr	32,060	4,140	30.56	37.60	35.07	2.45
32.060	150yr	32,060	4,410	30.56	37.79	35.19	2.49

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
32.060	200yr	32,060	4,610	30.56	37.92	35.28	2.52
32.140	50yr	32,140	3,670	30.25	37.47	33.70	1.59
32.140	80yr	32,140	3,990	30.25	37.70	33.85	1.66
32.140	100yr	32,140	4,140	30.25	37.81	33.92	1.68
32.140	150yr	32,140	4,410	30.25	38.00	34.04	1.73
32.140	200yr	32,140	4,610	30.25	38.14	34.13	1.77
32.150		Bridge					
32.160	50yr	32,160	3,670	30.25	37.51	33.70	1.58
32.160	80yr	32,160	3,990	30.25	37.74	33.85	1.64
32.160	100yr	32,160	4,140	30.25	37.85	33.92	1.67
32.160	150yr	32,160	4,410	30.25	38.04	34.04	1.72
32.160	200yr	32,160	4,610	30.25	38.18	34.13	1.75
32.220	50yr	32,220	3,670	30.71	37.50	34.44	1.82
32.220	80yr	32,220	3,990	30.71	37.73	34.56	1.88
32.220	100yr	32,220	4,140	30.71	37.84	34.62	1.91
32.220	150yr	32,220	4,410	30.71	38.03	34.73	1.95
32.220	200yr	32,220	4,610	30.71	38.17	34.82	1.99
32.420	50yr	32,420	3,670	30.97	37.58	34.73	1.78
32.420	80yr	32,420	3,990	30.97	37.82	35.10	1.83
32.420	100yr	32,420	4,140	30.97	37.93	35.16	1.85
32.420	150yr	32,420	4,410	30.97	38.12	35.25	1.89
32.420	200yr	32,420	4,610	30.97	38.26	35.36	1.91
32.610	50yr	32,610	3,670	30.54	37.66	34.87	1.87
32.610	80yr	32,610	3,990	30.54	37.89	35.00	1.93
32.610	100yr	32,610	4,140	30.54	38.00	35.07	1.95
32.610	150yr	32,610	4,410	30.54	38.19	35.18	1.99
32.610	200yr	32,610	4,610	30.54	38.33	35.27	2.02
32.740	50yr	32,740	3,670	30.93	37.69	35.32	2.09
32.740	80yr	32,740	3,990	30.93	37.92	35.44	2.14
32.740	100yr	32,740	4,140	30.93	38.03	35.46	2.17
32.740	150yr	32,740	4,410	30.93	38.22	35.66	2.21
32.740	200yr	32,740	4,610	30.93	38.36	35.96	2.24
32.910	50yr	32,910	3,670	30.72	37.79	36.00	2.23
32.910	80yr	32,910	3,990	30.72	38.02	36.13	2.26
32.910	100yr	32,910	4,140	30.72	38.13	36.17	2.28
32.910	150yr	32,910	4,410	30.72	38.32	36.28	2.31
32.910	200yr	32,910	4,610	30.72	38.45	36.34	2.33
33.080	50yr	33,080	3,670	30.15	37.95	35.88	2.15
33.080	80yr	33,080	3,990	30.15	38.17	35.99	2.20
33.080	100yr	33,080	4,140	30.15	38.27	36.06	2.22
33.080	150yr	33,080	4,410	30.15	38.45	36.16	2.25
33.080	200yr	33,080	4,610	30.15	38.59	36.23	2.28
33.270	50yr	33,270	3,450	30.93	38.08	35.54	2.19
33.270	80yr	33,270	3,760	30.93	38.30	35.69	2.25
33.270	100yr	33,270	3,900	30.93	38.40	35.76	2.28
33.270	150yr	33,270	4,160	30.93	38.58	35.89	2.32
33.270	200yr	33,270	4,350	30.93	38.71	35.98	2.35
33.420	50yr	33,420	3,450	30.83	38.17	35.60	2.24
33.420	80yr	33,420	3,760	30.83	38.40	35.75	2.29
33.420	100yr	33,420	3,900	30.83	38.50	35.82	2.32
33.420	150yr	33,420	4,160	30.83	38.68	35.92	2.36
33.420	200yr	33,420	4,350	30.83	38.81	36.01	2.39
33.630	50yr	33,630	3,450	30.49	38.37	35.22	1.74
33.630	80yr	33,630	3,760	30.49	38.62	35.35	1.80
33.630	100yr	33,630	3,900	30.49	38.72	35.40	1.83

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
33.630	150yr	33,630	4,160	30.49	38.89	35.51	1.88
33.630	200yr	33,630	4,350	30.49	39.02	35.58	1.92
33.840	50yr	33,840	3,450	31.21	38.43	35.44	1.86
33.840	80yr	33,840	3,760	31.21	38.68	35.57	1.91
33.840	100yr	33,840	3,900	31.21	38.78	35.63	1.94
33.840	150yr	33,840	4,160	31.21	38.96	35.73	1.99
33.840	200yr	33,840	4,350	31.21	39.09	35.80	2.03
34.030	50yr	34,030	3,450	31.61	38.51	35.87	1.92
34.030	80yr	34,030	3,760	31.61	38.76	36.00	1.96
34.030	100yr	34,030	3,900	31.61	38.86	36.05	1.99
34.030	150yr	34,030	4,160	31.61	39.04	36.15	2.04
34.030	200yr	34,030	4,350	31.61	39.17	36.22	2.07
34.240	50yr	34,240	3,450	31.16	38.67	35.43	1.51
34.240	80yr	34,240	3,760	31.16	38.92	35.54	1.55
34.240	100yr	34,240	3,900	31.16	39.02	35.60	1.57
34.240	150yr	34,240	4,160	31.16	39.20	35.70	1.61
34.240	200yr	34,240	4,350	31.16	39.34	35.77	1.63
34.390	50yr	34,390	3,450	31.25	38.73	35.95	1.34
34.390	80yr	34,390	3,760	31.25	38.99	36.05	1.37
34.390	100yr	34,390	3,900	31.25	39.09	36.09	1.39
34.390	150yr	34,390	4,160	31.25	39.27	36.18	1.42
34.390	200yr	34,390	4,350	31.25	39.41	36.25	1.45
34.570	50yr	34,570	3,300	31.74	38.74	35.95	1.88
34.570	80yr	34,570	3,580	31.74	38.99	36.10	1.89
34.570	100yr	34,570	3,720	31.74	39.09	36.16	1.90
34.570	150yr	34,570	3,970	31.74	39.27	36.27	1.93
34.570	200yr	34,570	4,140	31.74	39.41	36.35	1.94
34.750	50yr	34,750	3,300	31.98	38.85	35.99	1.83
34.750	80yr	34,750	3,580	31.98	39.09	36.11	1.86
34.750	100yr	34,750	3,720	31.98	39.19	36.18	1.89
34.750	150yr	34,750	3,970	31.98	39.36	36.28	1.94
34.750	200yr	34,750	4,140	31.98	39.49	36.36	1.96
34.940	50yr	34,940	3,300	31.94	38.93	35.98	1.99
34.940	80yr	34,940	3,580	31.94	39.16	36.12	2.02
34.940	100yr	34,940	3,720	31.94	39.26	36.19	2.05
34.940	150yr	34,940	3,970	31.94	39.44	36.31	2.09
34.940	200yr	34,940	4,140	31.94	39.56	36.40	2.12
35.130	50yr	35,130	3,300	31.78	39.07	35.82	1.76
35.130	80yr	35,130	3,580	31.78	39.30	35.96	1.81
35.130	100yr	35,130	3,720	31.78	39.40	36.02	1.84
35.130	150yr	35,130	3,970	31.78	39.57	36.13	1.88
35.130	200yr	35,130	4,140	31.78	39.70	36.20	1.91
35.330	50yr	35,330	3,300	32.39	39.16	35.70	1.66
35.330	80yr	35,330	3,580	32.39	39.39	35.82	1.72
35.330	100yr	35,330	3,720	32.39	39.48	35.88	1.75
35.330	150yr	35,330	3,970	32.39	39.66	35.99	1.80
35.330	200yr	35,330	4,140	32.39	39.79	36.06	1.83
35.530	50yr	35,530	3,300	32.33	39.20	36.33	1.92
35.530	80yr	35,530	3,580	32.33	39.43	36.45	1.97
35.530	100yr	35,530	3,720	32.33	39.53	36.51	2.00
35.530	150yr	35,530	3,970	32.33	39.71	36.62	2.05
35.530	200yr	35,530	4,140	32.33	39.83	36.69	2.08
35.740	50yr	35,740	3,300	32.59	39.28	36.77	2.24
35.740	80yr	35,740	3,580	32.59	39.51	36.91	2.28
35.740	100yr	35,740	3,720	32.59	39.61	36.98	2.31
35.740	150yr	35,740	3,970	32.59	39.79	37.10	2.35

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
35.740	200yr	35,740	4,140	32.59	39.91	37.19	2.37
35.880	50yr	35,880	3,300	32.52	39.42	37.12	2.20
35.880	80yr	35,880	3,580	32.52	39.65	37.26	2.22
35.880	100yr	35,880	3,720	32.52	39.74	37.33	2.24
35.880	150yr	35,880	3,970	32.52	39.92	37.46	2.27
35.880	200yr	35,880	4,140	32.52	40.04	37.54	2.29
36.120	50yr	36,120	3,300	32.98	39.58	37.51	2.58
36.120	80yr	36,120	3,580	32.98	39.78	37.66	2.66
36.120	100yr	36,120	3,720	32.98	39.88	37.73	2.70
36.120	150yr	36,120	3,970	32.98	40.05	37.84	2.76
36.120	200yr	36,120	4,140	32.98	40.17	37.92	2.80
36.300	50yr	36,300	3,300	33.12	39.80	37.28	2.24
36.300	80yr	36,300	3,580	33.12	40.02	37.42	2.31
36.300	100yr	36,300	3,720	33.12	40.12	37.49	2.34
36.300	150yr	36,300	3,970	33.12	40.31	37.62	2.39
36.300	200yr	36,300	4,140	33.12	40.44	37.71	2.42
36.490	50yr	36,490	3,300	33.29	39.93	37.58	2.26
36.490	80yr	36,490	3,580	33.29	40.15	37.73	2.31
36.490	100yr	36,490	3,720	33.29	40.26	37.80	2.33
36.490	150yr	36,490	3,970	33.29	40.45	37.91	2.37
36.490	200yr	36,490	4,140	33.29	40.58	37.99	2.40
36.680	50yr	36,680	3,300	32.85	40.11	37.02	2.04
36.680	80yr	36,680	3,580	32.85	40.33	37.19	2.10
36.680	100yr	36,680	3,720	32.85	40.43	37.27	2.13
36.680	150yr	36,680	3,970	32.85	40.62	37.39	2.17
36.680	200yr	36,680	4,140	32.85	40.75	37.47	2.20
36.880	50yr	36,880	3,300	33.29	40.20	37.73	2.29
36.880	80yr	36,880	3,580	33.29	40.42	37.87	2.34
36.880	100yr	36,880	3,720	33.29	40.52	37.94	2.36
36.880	150yr	36,880	3,970	33.29	40.71	38.06	2.40
36.880	200yr	36,880	4,140	33.29	40.84	38.14	2.43
37.080	50yr	37,080	3,300	33.09	40.39	37.81	2.13
37.080	80yr	37,080	3,580	33.09	40.60	37.94	2.19
37.080	100yr	37,080	3,720	33.09	40.70	38.01	2.22
37.080	150yr	37,080	3,970	33.09	40.89	38.12	2.27
37.080	200yr	37,080	4,140	33.09	41.01	38.20	2.30
37.290	50yr	37,290	3,300	32.14	40.53	37.77	2.07
37.290	80yr	37,290	3,580	32.14	40.74	37.90	2.13
37.290	100yr	37,290	3,720	32.14	40.85	37.97	2.16
37.290	150yr	37,290	3,970	32.14	41.03	38.09	2.21
37.290	200yr	37,290	4,140	32.14	41.15	38.17	2.24
37.490	50yr	37,490	3,300	35.74	40.58	39.11	2.86
37.490	80yr	37,490	3,580	35.74	40.79	39.26	2.90
37.490	100yr	37,490	3,720	35.74	40.89	39.34	2.92
37.490	150yr	37,490	3,970	35.74	41.07	39.71	2.95
37.490	200yr	37,490	4,140	35.74	41.19	39.82	2.98
37.710	50yr	37,710	3,300	34.71	40.87	39.55	3.37
37.710	80yr	37,710	3,580	34.71	41.05	39.77	3.47
37.710	100yr	37,710	3,720	34.71	41.14	39.86	3.51
37.710	150yr	37,710	3,970	34.71	41.29	40.04	3.58
37.710	200yr	37,710	4,140	34.71	41.40	40.24	3.63
37.930	50yr	37,930	3,300	35.57	41.48	39.21	2.30
37.930	80yr	37,930	3,580	35.57	41.68	39.47	2.37
37.930	100yr	37,930	3,720	35.57	41.77	39.54	2.40
37.930	150yr	37,930	3,970	35.57	41.94	39.66	2.45
37.930	200yr	37,930	4,140	35.57	42.05	39.74	2.49

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
38.140	50yr	38.140	3.300	35.90	41.66	39.94	2.26
38.140	80yr	38.140	3.580	35.90	41.86	40.06	2.32
38.140	100yr	38.140	3.720	35.90	41.96	40.12	2.35
38.140	150yr	38.140	3.970	35.90	42.13	40.22	2.39
38.140	200yr	38.140	4.140	35.90	42.24	40.28	2.42
38.340	50yr	38.340	3.300	35.35	41.87	39.59	1.94
38.340	80yr	38.340	3.580	35.35	42.07	39.70	1.99
38.340	100yr	38.340	3.720	35.35	42.17	39.76	2.02
38.340	150yr	38.340	3.970	35.35	42.35	39.87	2.06
38.340	200yr	38.340	4.140	35.35	42.46	39.93	2.10
38.510	50yr	38.510	3.300	35.50	41.96	39.66	2.02
38.510	80yr	38.510	3.580	35.50	42.16	39.78	2.09
38.510	100yr	38.510	3.720	35.50	42.25	39.83	2.12
38.510	150yr	38.510	3.970	35.50	42.43	39.93	2.17
38.510	200yr	38.510	4.140	35.50	42.54	40.00	2.21
38.710	50yr	38.710	3.300	35.73	42.01	40.14	2.55
38.710	80yr	38.710	3.580	35.73	42.21	40.27	2.63
38.710	100yr	38.710	3.720	35.73	42.30	40.34	2.68
38.710	150yr	38.710	3.970	35.73	42.47	40.45	2.75
38.710	200yr	38.710	4.140	35.73	42.57	40.52	2.80
38.900	50yr	38.900	3.300	36.24	42.26	39.97	2.12
38.900	80yr	38.900	3.580	36.24	42.46	40.08	2.19
38.900	100yr	38.900	3.720	36.24	42.56	40.14	2.23
38.900	150yr	38.900	3.970	36.24	42.73	40.25	2.28
38.900	200yr	38.900	4.140	36.24	42.85	40.32	2.32
39.075	50yr	39.075	2.930	37.03	42.27	40.75	2.89
39.075	80yr	39.075	3.190	37.03	42.46	40.88	2.99
39.075	100yr	39.075	3.310	37.03	42.55	40.94	3.03
39.075	150yr	39.075	3.530	37.03	42.72	41.06	3.10
39.075	200yr	39.075	3.690	37.03	42.83	41.16	3.15
39.090		Bridge					
39.105	50yr	39.105	2.930	37.03	42.35	40.75	2.82
39.105	80yr	39.105	3.190	37.03	42.55	40.88	2.92
39.105	100yr	39.105	3.310	37.03	42.64	40.93	2.96
39.105	150yr	39.105	3.530	37.03	42.81	41.06	3.03
39.105	200yr	39.105	3.690	37.03	42.92	41.16	3.08
39.110	50yr	39.110	2.930	37.16	42.35	40.41	2.88
39.110	80yr	39.110	3.190	37.16	42.54	40.56	3.00
39.110	100yr	39.110	3.310	37.16	42.63	40.64	3.05
39.110	150yr	39.110	3.530	37.16	42.79	40.77	3.13
39.110	200yr	39.110	3.690	37.16	42.90	40.87	3.20
39.330	50yr	39.330	2.930	36.46	42.56	40.43	2.89
39.330	80yr	39.330	3.190	36.46	42.75	40.60	3.02
39.330	100yr	39.330	3.310	36.46	42.85	40.67	3.07
39.330	150yr	39.330	3.530	36.46	43.02	40.80	3.17
39.330	200yr	39.330	3.690	36.46	43.13	40.90	3.24
39.475	50yr	39.475	2.930	36.50	42.64	40.77	3.21
39.475	80yr	39.475	3.190	36.50	42.84	40.97	3.35
39.475	100yr	39.475	3.310	36.50	42.93	41.06	3.41
39.475	150yr	39.475	3.530	36.50	43.10	41.22	3.50
39.475	200yr	39.475	3.690	36.50	43.21	41.32	3.58
39.480		Bridge					
39.485	50yr	39.485	2.930	36.50	42.87	40.77	3.05
39.485	80yr	39.485	3.190	36.50	43.09	40.97	3.17

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
39.485	100yr	39.485	3.310	36.50	43.20	41.06	3.22
39.485	150yr	39.485	3.530	36.50	43.38	41.22	3.31
39.485	200yr	39.485	3.690	36.50	43.51	41.32	3.37

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▶논산천 홍수위산정결과(개수전)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: NonSan Reach: NonSan

Rivers = 1
Hydraulic Reaches = 1
River Stations = 130
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		2,630	-3.84	9.09	2.25	0.74
0.000	80yr		2,850	-3.84	9.09	2.52	0.80
0.000	100yr		2,960	-3.84	9.09	2.66	0.83
0.000	150yr		3,210	-3.84	9.09	3.00	0.90
0.000	200yr		3,380	-3.84	9.09	3.19	0.95
0.165	50yr	165	2,630	-2.44	9.08	4.31	1.05
0.165	80yr	165	2,850	-2.44	9.08	4.43	1.13
0.165	100yr	165	2,960	-2.44	9.08	4.49	1.18
0.165	150yr	165	3,210	-2.44	9.08	4.59	1.28
0.165	200yr	165	3,380	-2.44	9.07	4.66	1.35
0.167		Inline Weir					
0.170	50yr	170	2,630	-2.44	9.11	4.31	1.04
0.170	80yr	170	2,850	-2.44	9.10	4.43	1.13
0.170	100yr	170	2,960	-2.44	9.11	4.49	1.17
0.170	150yr	170	3,210	-2.44	9.10	4.58	1.27
0.170	200yr	170	3,380	-2.44	9.10	4.66	1.34
0.220	50yr	220	2,630	-4.16	9.12	2.30	0.89
0.220	80yr	220	2,850	-4.16	9.13	2.48	0.97
0.220	100yr	220	2,960	-4.16	9.13	3.30	1.01
0.220	150yr	220	3,210	-4.16	9.13	2.71	1.09
0.220	200yr	220	3,380	-4.16	9.14	2.78	1.15
0.420	50yr	420	2,630	-2.12	9.14	2.62	0.90
0.420	80yr	420	2,850	-2.12	9.14	3.63	0.97
0.420	100yr	420	2,960	-2.12	9.14	3.29	1.01
0.420	150yr	420	3,210	-2.12	9.15	3.88	1.09
0.420	200yr	420	3,380	-2.12	9.15	3.96	1.15
0.620	50yr	620	2,150	-2.47	9.14	4.04	1.01
0.620	80yr	620	2,390	-2.47	9.14	4.21	1.12
0.620	100yr	620	2,500	-2.47	9.14	4.26	1.17
0.620	150yr	620	2,710	-2.47	9.15	4.38	1.27
0.620	200yr	620	2,860	-2.47	9.15	4.45	1.34
0.820	50yr	820	2,150	-1.59	9.15	4.18	1.08
0.820	80yr	820	2,390	-1.59	9.15	4.32	1.20
0.820	100yr	820	2,500	-1.59	9.15	4.37	1.26
0.820	150yr	820	2,710	-1.59	9.16	4.49	1.36
0.820	200yr	820	2,860	-1.59	9.17	4.57	1.43
0.828	50yr	828	2,150	-1.64	9.15	3.98	1.06
0.828	80yr	828	2,390	-1.64	9.16	4.13	1.17
0.828	100yr	828	2,500	-1.64	9.16	4.20	1.23
0.828	150yr	828	2,710	-1.64	9.17	4.32	1.33
0.828	200yr	828	2,860	-1.64	9.18	4.40	1.40
0.835		Bridge					
0.837	50yr	837	2,150	-1.64	9.17	3.98	1.05
0.837	80yr	837	2,390	-1.64	9.18	4.13	1.17
0.837	100yr	837	2,500	-1.64	9.19	4.20	1.22

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.837	150yr	837	2,710	-1.64	9.20	4.32	1.32
0.837	200yr	837	2,860	-1.64	9.21	4.39	1.39
0.840	50yr	840	2,150	-3.29	9.17	3.11	1.08
0.840	80yr	840	2,390	-3.29	9.17	4.15	1.20
0.840	100yr	840	2,500	-3.29	9.18	4.23	1.26
0.840	150yr	840	2,710	-3.29	9.19	4.37	1.36
0.840	200yr	840	2,860	-3.29	9.20	4.49	1.43
0.845		Bridge					
0.854	50yr	854	2,150	-3.29	9.18	3.11	1.08
0.854	80yr	854	2,390	-3.29	9.18	4.15	1.20
0.854	100yr	854	2,500	-3.29	9.19	4.23	1.25
0.854	150yr	854	2,710	-3.29	9.20	4.37	1.36
0.854	200yr	854	2,860	-3.29	9.22	4.49	1.43
1.035	50yr	1,035	2,150	-1.86	9.19	3.75	1.10
1.035	80yr	1,035	2,390	-1.86	9.20	4.07	1.22
1.035	100yr	1,035	2,500	-1.86	9.21	4.26	1.27
1.035	150yr	1,035	2,710	-1.86	9.22	4.37	1.38
1.035	200yr	1,035	2,860	-1.86	9.23	4.46	1.45
1.220	50yr	1,220	2,150	-2.08	9.20	3.65	1.10
1.220	80yr	1,220	2,390	-2.08	9.21	3.83	1.22
1.220	100yr	1,220	2,500	-2.08	9.22	4.04	1.27
1.220	150yr	1,220	2,710	-2.08	9.24	4.21	1.37
1.220	200yr	1,220	2,860	-2.08	9.26	4.29	1.45
1.420	50yr	1,420	2,150	-1.78	9.21	3.95	1.13
1.420	80yr	1,420	2,390	-1.78	9.23	4.22	1.26
1.420	100yr	1,420	2,500	-1.78	9.24	4.29	1.31
1.420	150yr	1,420	2,710	-1.78	9.26	4.41	1.42
1.420	200yr	1,420	2,860	-1.78	9.28	4.50	1.49
1.620	50yr	1,620	2,150	-1.32	9.22	3.99	1.17
1.620	80yr	1,620	2,390	-1.32	9.24	4.16	1.30
1.620	100yr	1,620	2,500	-1.32	9.25	4.24	1.35
1.620	150yr	1,620	2,710	-1.32	9.28	4.57	1.46
1.620	200yr	1,620	2,860	-1.32	9.30	4.64	1.54
1.820	50yr	1,820	2,150	-2.18	9.24	3.98	1.13
1.820	80yr	1,820	2,390	-2.18	9.27	4.12	1.25
1.820	100yr	1,820	2,500	-2.18	9.28	4.21	1.30
1.820	150yr	1,820	2,710	-2.18	9.31	4.33	1.41
1.820	200yr	1,820	2,860	-2.18	9.33	4.42	1.48
2.020	50yr	2,020	2,150	-1.64	9.26	4.21	1.16
2.020	80yr	2,020	2,390	-1.64	9.28	4.36	1.29
2.020	100yr	2,020	2,500	-1.64	9.30	4.43	1.34
2.020	150yr	2,020	2,710	-1.64	9.33	4.55	1.45
2.020	200yr	2,020	2,860	-1.64	9.36	4.63	1.52
2.240	50yr	2,240	2,150	-1.86	9.27	4.04	1.15
2.240	80yr	2,240	2,390	-1.86	9.30	4.19	1.28
2.240	100yr	2,240	2,500	-1.86	9.32	4.26	1.33
2.240	150yr	2,240	2,710	-1.86	9.36	4.38	1.44
2.240	200yr	2,240	2,860	-1.86	9.39	4.47	1.51
2.450	50yr	2,450	2,150	-1.36	9.29	4.08	1.16
2.450	80yr	2,450	2,390	-1.36	9.32	4.22	1.28
2.450	100yr	2,450	2,500	-1.36	9.34	4.29	1.34
2.450	150yr	2,450	2,710	-1.36	9.38	4.42	1.44
2.450	200yr	2,450	2,860	-1.36	9.42	4.51	1.52
2.660	50yr	2,660	2,150	-1.40	9.31	3.93	1.13
2.660	80yr	2,660	2,390	-1.40	9.35	4.09	1.25

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
2.660	100yr	2,660	2,500	-1.40	9.37	4.16	1.30
2.660	150yr	2,660	2,710	-1.40	9.41	4.28	1.40
2.660	200yr	2,660	2,860	-1.40	9.45	4.37	1.47
2.860	50yr	2,860	2,150	-0.70	9.32	3.64	1.08
2.860	80yr	2,860	2,390	-0.70	9.37	3.79	1.19
2.860	100yr	2,860	2,500	-0.70	9.39	3.85	1.25
2.860	150yr	2,860	2,710	-0.70	9.44	3.97	1.34
2.860	200yr	2,860	2,860	-0.70	9.48	4.07	1.41
3.070	50yr	3,070	2,150	-0.97	9.34	4.10	1.14
3.070	80yr	3,070	2,390	-0.97	9.38	4.24	1.26
3.070	100yr	3,070	2,500	-0.97	9.41	4.31	1.31
3.070	150yr	3,070	2,710	-0.97	9.46	4.43	1.41
3.070	200yr	3,070	2,860	-0.97	9.50	4.52	1.48
3.260	50yr	3,260	2,150	-0.65	9.35	4.11	1.14
3.260	80yr	3,260	2,390	-0.65	9.40	4.25	1.26
3.260	100yr	3,260	2,500	-0.65	9.42	4.32	1.31
3.260	150yr	3,260	2,710	-0.65	9.48	4.44	1.41
3.260	200yr	3,260	2,860	-0.65	9.52	4.52	1.48
3.450	50yr	3,450	2,150	-0.75	9.36	4.13	1.15
3.450	80yr	3,450	2,390	-0.75	9.41	4.32	1.27
3.450	100yr	3,450	2,500	-0.75	9.44	4.37	1.32
3.450	150yr	3,450	2,710	-0.75	9.49	4.49	1.42
3.450	200yr	3,450	2,860	-0.75	9.54	4.57	1.49
3.660	50yr	3,660	2,150	-0.70	9.37	4.29	1.17
3.660	80yr	3,660	2,390	-0.70	9.43	4.45	1.29
3.660	100yr	3,660	2,500	-0.70	9.46	4.52	1.35
3.660	150yr	3,660	2,710	-0.70	9.51	4.64	1.45
3.660	200yr	3,660	2,860	-0.70	9.56	4.72	1.52
3.830	50yr	3,830	2,150	-0.93	9.39	4.16	1.15
3.830	80yr	3,830	2,390	-0.93	9.45	4.35	1.26
3.830	100yr	3,830	2,500	-0.93	9.48	4.41	1.32
3.830	150yr	3,830	2,710	-0.93	9.54	4.53	1.41
3.830	200yr	3,830	2,860	-0.93	9.59	4.62	1.48
4.040	50yr	4,040	2,150	-0.15	9.40	4.34	1.17
4.040	80yr	4,040	2,390	-0.15	9.47	4.49	1.29
4.040	100yr	4,040	2,500	-0.15	9.50	4.54	1.34
4.040	150yr	4,040	2,710	-0.15	9.56	4.66	1.44
4.040	200yr	4,040	2,860	-0.15	9.61	4.75	1.51
4.225	50yr	4,225	2,150	-3.02	9.42	4.40	1.18
4.225	80yr	4,225	2,390	-3.02	9.48	4.54	1.30
4.225	100yr	4,225	2,500	-3.02	9.52	4.59	1.35
4.225	150yr	4,225	2,710	-3.02	9.58	4.70	1.45
4.225	200yr	4,225	2,860	-3.02	9.64	4.79	1.52
4.257	50yr	4,257	2,150	-2.63	9.42	4.30	1.16
4.257	80yr	4,257	2,390	-2.63	9.49	4.45	1.28
4.257	100yr	4,257	2,500	-2.63	9.53	4.50	1.33
4.257	150yr	4,257	2,710	-2.63	9.59	4.61	1.43
4.257	200yr	4,257	2,860	-2.63	9.65	4.70	1.50
4.265		Bridge					
4.273	50yr	4,273	2,150	-2.63	9.43	4.29	1.16
4.273	80yr	4,273	2,390	-2.63	9.50	4.44	1.28
4.273	100yr	4,273	2,500	-2.63	9.54	4.51	1.33
4.273	150yr	4,273	2,710	-2.63	9.60	4.61	1.43
4.273	200yr	4,273	2,860	-2.63	9.66	4.69	1.49
4.435	50yr	4,435	2,000	-0.50	9.45	4.13	1.07

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
4.435	80yr	4,435	2,180	-0.50	9.53	4.25	1.15
4.435	100yr	4,435	2,280	-0.50	9.57	4.31	1.20
4.435	150yr	4,435	2,450	-0.50	9.64	4.42	1.27
4.435	200yr	4,435	2,570	-0.50	9.70	4.49	1.33
4.625	50yr	4,625	2,000	0.23	9.46	4.48	1.12
4.625	80yr	4,625	2,180	0.23	9.54	4.60	1.21
4.625	100yr	4,625	2,280	0.23	9.58	4.65	1.26
4.625	150yr	4,625	2,450	0.23	9.66	4.75	1.33
4.625	200yr	4,625	2,570	0.23	9.72	4.82	1.39
4.845	50yr	4,845	2,000	-0.28	9.48	4.77	1.16
4.845	80yr	4,845	2,180	-0.28	9.56	4.88	1.24
4.845	100yr	4,845	2,280	-0.28	9.60	4.94	1.29
4.845	150yr	4,845	2,450	-0.28	9.68	5.04	1.37
4.845	200yr	4,845	2,570	-0.28	9.74	5.10	1.43
5.040	50yr	5,040	2,000	-0.46	9.49	4.72	1.14
5.040	80yr	5,040	2,180	-0.46	9.58	4.82	1.23
5.040	100yr	5,040	2,280	-0.46	9.62	4.88	1.28
5.040	150yr	5,040	2,450	-0.46	9.70	4.98	1.36
5.040	200yr	5,040	2,570	-0.46	9.76	5.05	1.41
5.235	50yr	5,235	2,000	0.15	9.51	4.61	1.13
5.235	80yr	5,235	2,180	0.15	9.60	4.73	1.22
5.235	100yr	5,235	2,280	0.15	9.64	4.79	1.26
5.235	150yr	5,235	2,450	0.15	9.72	4.89	1.34
5.235	200yr	5,235	2,570	0.15	9.79	4.96	1.39
5.425	50yr	5,425	2,000	-0.47	9.53	4.72	1.15
5.425	80yr	5,425	2,180	-0.47	9.61	4.83	1.24
5.425	100yr	5,425	2,280	-0.47	9.66	4.89	1.28
5.425	150yr	5,425	2,450	-0.47	9.74	4.99	1.36
5.425	200yr	5,425	2,570	-0.47	9.81	5.06	1.41
5.640	50yr	5,640	2,000	-0.38	9.54	4.72	1.15
5.640	80yr	5,640	2,180	-0.38	9.63	4.83	1.23
5.640	100yr	5,640	2,280	-0.38	9.68	4.89	1.28
5.640	150yr	5,640	2,450	-0.38	9.77	4.99	1.36
5.640	200yr	5,640	2,570	-0.38	9.83	5.06	1.41
5.845	50yr	5,845	2,000	0.35	9.56	4.53	1.11
5.845	80yr	5,845	2,180	0.35	9.66	4.66	1.20
5.845	100yr	5,845	2,280	0.35	9.70	4.72	1.24
5.845	150yr	5,845	2,450	0.35	9.79	4.82	1.32
5.845	200yr	5,845	2,570	0.35	9.86	4.89	1.37
6.055	50yr	6,055	2,000	0.05	9.58	4.70	1.12
6.055	80yr	6,055	2,180	0.05	9.68	4.80	1.20
6.055	100yr	6,055	2,280	0.05	9.72	4.86	1.25
6.055	150yr	6,055	2,450	0.05	9.82	4.96	1.32
6.055	200yr	6,055	2,570	0.05	9.89	5.03	1.37
6.260	50yr	6,260	2,000	-0.23	9.59	5.18	1.20
6.260	80yr	6,260	2,180	-0.23	9.69	5.29	1.29
6.260	100yr	6,260	2,280	-0.23	9.74	5.35	1.34
6.260	150yr	6,260	2,450	-0.23	9.83	5.45	1.41
6.260	200yr	6,260	2,570	-0.23	9.91	5.52	1.47
6.470	50yr	6,470	2,000	-0.53	9.62	5.05	1.17
6.470	80yr	6,470	2,180	-0.53	9.72	5.15	1.26
6.470	100yr	6,470	2,280	-0.53	9.77	5.21	1.30
6.470	150yr	6,470	2,450	-0.53	9.87	5.31	1.38
6.470	200yr	6,470	2,570	-0.53	9.94	5.38	1.43
6.670	50yr	6,670	2,000	-0.35	9.64	5.22	1.21
6.670	80yr	6,670	2,180	-0.35	9.74	5.33	1.29

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
6.670	100yr	6,670	2,280	-0.35	9.79	5.39	1.34
6.670	150yr	6,670	2,450	-0.35	9.89	5.48	1.42
6.670	200yr	6,670	2,570	-0.35	9.96	5.55	1.47
6.890	50yr	6,890	2,000	0.03	9.66	5.50	1.31
6.890	80yr	6,890	2,180	0.03	9.76	5.61	1.40
6.890	100yr	6,890	2,280	0.03	9.81	5.68	1.45
6.890	150yr	6,890	2,450	0.03	9.91	5.78	1.53
6.890	200yr	6,890	2,570	0.03	9.99	5.85	1.59
7.075	50yr	7,075	2,000	0.53	9.69	5.45	1.23
7.075	80yr	7,075	2,180	0.53	9.80	5.54	1.32
7.075	100yr	7,075	2,280	0.53	9.85	5.60	1.37
7.075	150yr	7,075	2,450	0.53	9.96	5.70	1.45
7.075	200yr	7,075	2,570	0.53	10.03	5.77	1.50
7.285	50yr	7,285	2,000	-0.13	9.71	5.51	1.24
7.285	80yr	7,285	2,180	-0.13	9.82	5.62	1.33
7.285	100yr	7,285	2,280	-0.13	9.88	5.68	1.37
7.285	150yr	7,285	2,450	-0.13	9.98	5.78	1.45
7.285	200yr	7,285	2,570	-0.13	10.07	5.85	1.50
7.505	50yr	7,505	2,000	-0.69	9.74	5.62	1.25
7.505	80yr	7,505	2,180	-0.69	9.85	5.72	1.33
7.505	100yr	7,505	2,280	-0.69	9.91	5.78	1.38
7.505	150yr	7,505	2,450	-0.69	10.01	5.87	1.46
7.505	200yr	7,505	2,570	-0.69	10.10	5.94	1.51
7.705	50yr	7,705	2,000	0.61	9.76	5.40	1.22
7.705	80yr	7,705	2,180	0.61	9.88	5.49	1.30
7.705	100yr	7,705	2,280	0.61	9.94	5.55	1.35
7.705	150yr	7,705	2,450	0.61	10.05	5.66	1.42
7.705	200yr	7,705	2,570	0.61	10.13	5.72	1.47
7.724	50yr	7,724	2,000	0.99	9.76	5.42	1.22
7.724	80yr	7,724	2,180	0.99	9.88	5.53	1.31
7.724	100yr	7,724	2,280	0.99	9.94	5.59	1.35
7.724	150yr	7,724	2,450	0.99	10.05	5.69	1.43
7.724	200yr	7,724	2,570	0.99	10.13	5.76	1.48
7.735		Bridge					
7.746	50yr	7,746	2,000	0.99	9.77	5.42	1.22
7.746	80yr	7,746	2,180	0.99	9.88	5.53	1.30
7.746	100yr	7,746	2,280	0.99	9.95	5.59	1.35
7.746	150yr	7,746	2,450	0.99	10.06	5.69	1.42
7.746	200yr	7,746	2,570	0.99	10.14	5.76	1.47
7.895	50yr	7,895	2,000	0.38	9.78	5.77	1.29
7.895	80yr	7,895	2,180	0.38	9.90	5.89	1.37
7.895	100yr	7,895	2,280	0.38	9.96	5.94	1.42
7.895	150yr	7,895	2,450	0.38	10.07	6.04	1.50
7.895	200yr	7,895	2,570	0.38	10.16	6.11	1.55
8.095	50yr	8,095	2,000	0.83	9.80	5.87	1.32
8.095	80yr	8,095	2,180	0.83	9.92	5.97	1.41
8.095	100yr	8,095	2,280	0.83	9.99	6.05	1.46
8.095	150yr	8,095	2,450	0.83	10.10	6.15	1.53
8.095	200yr	8,095	2,570	0.83	10.19	6.22	1.59
8.270	50yr	8,270	2,000	1.27	9.83	5.73	1.27
8.270	80yr	8,270	2,180	1.27	9.95	5.84	1.36
8.270	100yr	8,270	2,280	1.27	10.02	5.90	1.41
8.270	150yr	8,270	2,450	1.27	10.13	6.00	1.48
8.270	200yr	8,270	2,570	1.27	10.22	6.07	1.53
8.285		Bridge					

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
8.300	50yr	8,300	2,000	1.27	9.83	5.73	1.27
8.300	80yr	8,300	2,180	1.27	9.96	5.84	1.36
8.300	100yr	8,300	2,280	1.27	10.03	5.90	1.40
8.300	150yr	8,300	2,450	1.27	10.15	6.00	1.48
8.300	200yr	8,300	2,570	1.27	10.25	6.07	1.53
8.465	50yr	8,465	2,000	0.91	9.85	6.16	1.37
8.465	80yr	8,465	2,180	0.91	9.98	6.27	1.46
8.465	100yr	8,465	2,280	0.91	10.04	6.33	1.51
8.465	150yr	8,465	2,450	0.91	10.17	6.42	1.58
8.465	200yr	8,465	2,570	0.91	10.27	6.49	1.63
8.660	50yr	8,660	2,000	0.84	9.88	6.21	1.37
8.660	80yr	8,660	2,180	0.84	10.01	6.32	1.45
8.660	100yr	8,660	2,280	0.84	10.08	6.38	1.50
8.660	150yr	8,660	2,450	0.84	10.21	6.48	1.58
8.660	200yr	8,660	2,570	0.84	10.31	6.55	1.62
8.855	50yr	8,855	2,000	0.82	9.91	6.34	1.39
8.855	80yr	8,855	2,180	0.82	10.04	6.45	1.48
8.855	100yr	8,855	2,280	0.82	10.11	6.50	1.52
8.855	150yr	8,855	2,450	0.82	10.24	6.60	1.60
8.855	200yr	8,855	2,570	0.82	10.34	6.67	1.65
9.070	50yr	9,070	2,000	0.53	9.95	6.38	1.33
9.070	80yr	9,070	2,180	0.53	10.09	6.49	1.41
9.070	100yr	9,070	2,280	0.53	10.16	6.55	1.46
9.070	150yr	9,070	2,450	0.53	10.30	6.64	1.53
9.070	200yr	9,070	2,570	0.53	10.40	6.71	1.57
9.245	50yr	9,245	2,000	0.66	10.00	6.05	1.10
9.245	80yr	9,245	2,180	0.66	10.15	6.13	1.17
9.245	100yr	9,245	2,280	0.66	10.22	6.19	1.21
9.245	150yr	9,245	2,450	0.66	10.36	6.27	1.26
9.245	200yr	9,245	2,570	0.66	10.47	6.34	1.30
9.465	50yr	9,465	1,410	1.19	10.02	5.81	1.15
9.465	80yr	9,465	1,550	1.19	10.17	5.94	1.23
9.465	100yr	9,465	1,620	1.19	10.24	6.00	1.27
9.465	150yr	9,465	1,730	1.19	10.39	6.07	1.32
9.465	200yr	9,465	1,820	1.19	10.49	6.14	1.37
9.670	50yr	9,670	1,410	0.72	10.04	5.95	1.17
9.670	80yr	9,670	1,550	0.72	10.19	6.06	1.26
9.670	100yr	9,670	1,620	0.72	10.26	6.11	1.29
9.670	150yr	9,670	1,730	0.72	10.41	6.20	1.35
9.670	200yr	9,670	1,820	0.72	10.52	6.26	1.39
9.875	50yr	9,875	1,410	1.00	10.06	5.53	1.17
9.875	80yr	9,875	1,550	1.00	10.21	5.74	1.25
9.875	100yr	9,875	1,620	1.00	10.29	5.83	1.29
9.875	150yr	9,875	1,730	1.00	10.43	6.21	1.34
9.875	200yr	9,875	1,820	1.00	10.54	6.31	1.39
10.062	50yr	10,062	1,410	1.65	10.07	6.42	1.36
10.062	80yr	10,062	1,550	1.65	10.22	6.76	1.45
10.062	100yr	10,062	1,620	1.65	10.30	6.87	1.49
10.062	150yr	10,062	1,730	1.65	10.44	6.99	1.55
10.062	200yr	10,062	1,820	1.65	10.55	7.09	1.59
10.065		Bridge					
10.068	50yr	10,068	1,410	1.65	10.07	6.42	1.36
10.068	80yr	10,068	1,550	1.65	10.23	6.76	1.45
10.068	100yr	10,068	1,620	1.65	10.31	6.87	1.49
10.068	150yr	10,068	1,730	1.65	10.45	6.99	1.55

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
10.068	200yr	10.068	1.820	1.65	10.56	7.09	1.59
10.085	50yr	10.085	1.410	1.47	10.09	5.62	1.27
10.085	80yr	10.085	1.550	1.47	10.24	6.24	1.35
10.085	100yr	10.085	1.620	1.47	10.32	6.49	1.39
10.085	150yr	10.085	1.730	1.47	10.47	6.69	1.44
10.085	200yr	10.085	1.820	1.47	10.58	6.74	1.49
10.275	50yr	10.275	1.410	0.57	10.12	5.88	1.22
10.275	80yr	10.275	1.550	0.57	10.28	6.11	1.30
10.275	100yr	10.275	1.620	0.57	10.36	6.38	1.34
10.275	150yr	10.275	1.730	0.57	10.51	6.48	1.39
10.275	200yr	10.275	1.820	0.57	10.62	6.55	1.44
10.475	50yr	10.475	1.410	1.53	10.14	6.64	1.32
10.475	80yr	10.475	1.550	1.53	10.30	6.77	1.41
10.475	100yr	10.475	1.620	1.53	10.38	6.81	1.45
10.475	150yr	10.475	1.730	1.53	10.53	6.90	1.50
10.475	200yr	10.475	1.820	1.53	10.64	6.98	1.54
10.583	50yr	10.583	1.410	2.13	10.15	6.71	1.34
10.583	80yr	10.583	1.550	2.13	10.32	6.85	1.43
10.583	100yr	10.583	1.620	2.13	10.40	6.92	1.47
10.583	150yr	10.583	1.730	2.13	10.55	7.00	1.52
10.583	200yr	10.583	1.820	2.13	10.66	7.08	1.57
10.585		Culvert					
10.587	50yr	10.587	1.410	2.13	10.18	6.71	1.34
10.587	80yr	10.587	1.550	2.13	10.34	6.85	1.42
10.587	100yr	10.587	1.620	2.13	10.43	6.92	1.46
10.587	150yr	10.587	1.730	2.13	10.58	7.00	1.51
10.587	200yr	10.587	1.820	2.13	10.69	7.08	1.56
10.665	50yr	10.665	1.410	2.28	10.20	6.82	1.33
10.665	80yr	10.665	1.550	2.28	10.36	6.92	1.42
10.665	100yr	10.665	1.620	2.28	10.44	6.98	1.46
10.665	150yr	10.665	1.730	2.28	10.60	7.07	1.51
10.665	200yr	10.665	1.820	2.28	10.71	7.13	1.55
10.875	50yr	10.875	1.410	2.45	10.23	6.83	1.34
10.875	80yr	10.875	1.550	2.45	10.40	6.95	1.42
10.875	100yr	10.875	1.620	2.45	10.48	7.00	1.46
10.875	150yr	10.875	1.730	2.45	10.64	7.09	1.51
10.875	200yr	10.875	1.820	2.45	10.75	7.16	1.56
11.085	50yr	11.085	1.410	1.21	10.27	6.48	1.27
11.085	80yr	11.085	1.550	1.21	10.44	6.63	1.35
11.085	100yr	11.085	1.620	1.21	10.53	6.70	1.39
11.085	150yr	11.085	1.730	1.21	10.68	6.78	1.44
11.085	200yr	11.085	1.820	1.21	10.80	6.85	1.48
11.202	50yr	11.202	1.410	2.35	10.28	6.62	1.32
11.202	80yr	11.202	1.550	2.35	10.45	6.76	1.40
11.202	100yr	11.202	1.620	2.35	10.54	6.91	1.44
11.202	150yr	11.202	1.730	2.35	10.70	7.05	1.49
11.202	200yr	11.202	1.820	2.35	10.82	7.13	1.53
11.205		Bridge					
11.208	50yr	11.208	1.410	2.35	10.30	6.62	1.31
11.208	80yr	11.208	1.550	2.35	10.47	6.76	1.40
11.208	100yr	11.208	1.620	2.35	10.56	6.92	1.43
11.208	150yr	11.208	1.730	2.35	10.72	7.05	1.49
11.208	200yr	11.208	1.820	2.35	10.85	7.13	1.53
11.217	50yr	11.217	1.410	2.20	10.30	6.71	1.34

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
11.217	80yr	11.217	1.550	2.20	10.47	6.94	1.42
11.217	100yr	11.217	1.620	2.20	10.56	7.01	1.46
11.217	150yr	11.217	1.730	2.20	10.72	7.11	1.51
11.217	200yr	11.217	1.820	2.20	10.84	7.18	1.55
11.220		Bridge					
11.223	50yr	11.223	1.410	2.20	10.31	6.71	1.33
11.223	80yr	11.223	1.550	2.20	10.49	6.94	1.41
11.223	100yr	11.223	1.620	2.20	10.58	7.01	1.45
11.223	150yr	11.223	1.730	2.20	10.74	7.11	1.50
11.223	200yr	11.223	1.820	2.20	10.87	7.18	1.54
11.280	50yr	11.280	1.410	2.77	10.32	6.86	1.32
11.280	80yr	11.280	1.550	2.77	10.50	6.97	1.40
11.280	100yr	11.280	1.620	2.77	10.59	7.03	1.44
11.280	150yr	11.280	1.730	2.77	10.75	7.12	1.49
11.280	200yr	11.280	1.820	2.77	10.88	7.19	1.53
11.374	50yr	11.374	1.400	2.66	10.35	6.63	1.20
11.374	80yr	11.374	1.530	2.66	10.54	6.74	1.27
11.374	100yr	11.374	1.600	2.66	10.62	6.80	1.31
11.374	150yr	11.374	1.700	2.66	10.79	6.87	1.35
11.374	200yr	11.374	1.780	2.66	10.92	6.93	1.38
11.380		Bridge					
11.386	50yr	11.386	1.400	2.66	10.37	6.63	1.20
11.386	80yr	11.386	1.530	2.66	10.55	6.74	1.27
11.386	100yr	11.386	1.600	2.66	10.64	6.80	1.30
11.386	150yr	11.386	1.700	2.66	10.81	6.87	1.34
11.386	200yr	11.386	1.780	2.66	10.95	6.93	1.37
11.418	50yr	11.418	1.400	3.11	10.36	6.78	1.26
11.418	80yr	11.418	1.530	3.11	10.55	6.89	1.32
11.418	100yr	11.418	1.600	3.11	10.64	6.94	1.36
11.418	150yr	11.418	1.700	3.11	10.81	7.02	1.40
11.418	200yr	11.418	1.780	3.11	10.95	7.08	1.43
11.430		Bridge					
11.442	50yr	11.442	1.400	3.11	10.38	6.78	1.25
11.442	80yr	11.442	1.530	3.11	10.56	6.89	1.32
11.442	100yr	11.442	1.600	3.11	10.65	6.94	1.36
11.442	150yr	11.442	1.700	3.11	10.83	7.02	1.40
11.442	200yr	11.442	1.780	3.11	10.96	7.08	1.43
11.480	50yr	11.480	1.400	3.12	10.38	6.89	1.30
11.480	80yr	11.480	1.530	3.12	10.56	6.99	1.37
11.480	100yr	11.480	1.600	3.12	10.66	7.04	1.41
11.480	150yr	11.480	1.700	3.12	10.83	7.12	1.45
11.480	200yr	11.480	1.780	3.12	10.96	7.18	1.48
11.680	50yr	11.680	1.400	3.22	10.41	7.16	1.36
11.680	80yr	11.680	1.530	3.22	10.59	7.27	1.42
11.680	100yr	11.680	1.600	3.22	10.69	7.32	1.46
11.680	150yr	11.680	1.700	3.22	10.86	7.40	1.50
11.680	200yr	11.680	1.780	3.22	10.99	7.46	1.53
11.865	50yr	11.865	1.400	3.41	10.44	7.04	1.35
11.865	80yr	11.865	1.530	3.41	10.63	7.16	1.42
11.865	100yr	11.865	1.600	3.41	10.72	7.22	1.46
11.865	150yr	11.865	1.700	3.41	10.89	7.29	1.50
11.865	200yr	11.865	1.780	3.41	11.03	7.37	1.53
12.080	50yr	12.080	1.400	3.72	10.49	6.84	1.21
12.080	80yr	12.080	1.530	3.72	10.68	6.95	1.27

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
12.080	100yr	12.080	1.600	3.72	10.78	7.00	1.30
12.080	150yr	12.080	1.700	3.72	10.95	7.09	1.34
12.080	200yr	12.080	1.780	3.72	11.09	7.15	1.37
12.275	50yr	12.275	1.400	4.06	10.52	6.90	1.18
12.275	80yr	12.275	1.530	4.06	10.71	7.00	1.24
12.275	100yr	12.275	1.600	4.06	10.81	7.06	1.28
12.275	150yr	12.275	1.700	4.06	10.98	7.13	1.31
12.275	200yr	12.275	1.780	4.06	11.12	7.18	1.34
12.475	50yr	12.475	1.400	4.00	10.54	7.10	1.25
12.475	80yr	12.475	1.530	4.00	10.74	7.28	1.31
12.475	100yr	12.475	1.600	4.00	10.83	7.34	1.34
12.475	150yr	12.475	1.700	4.00	11.01	7.42	1.38
12.475	200yr	12.475	1.780	4.00	11.15	7.48	1.41
12.695	50yr	12.695	1.400	3.38	10.58	7.16	1.23
12.695	80yr	12.695	1.530	3.38	10.77	7.26	1.29
12.695	100yr	12.695	1.600	3.38	10.87	7.31	1.32
12.695	150yr	12.695	1.700	3.38	11.05	7.38	1.35
12.695	200yr	12.695	1.780	3.38	11.18	7.44	1.38
12.885	50yr	12.885	1.400	4.61	10.60	7.63	1.33
12.885	80yr	12.885	1.530	4.61	10.80	7.73	1.39
12.885	100yr	12.885	1.600	4.61	10.89	7.79	1.43
12.885	150yr	12.885	1.700	4.61	11.07	7.86	1.46
12.885	200yr	12.885	1.780	4.61	11.21	7.96	1.48
13.095	50yr	13.095	1.400	5.24	10.63	8.11	1.50
13.095	80yr	13.095	1.530	5.24	10.83	8.21	1.56
13.095	100yr	13.095	1.600	5.24	10.93	8.27	1.59
13.095	150yr	13.095	1.700	5.24	11.10	8.36	1.62
13.095	200yr	13.095	1.780	5.24	11.24	8.41	1.64
13.280	50yr	13.280	1.400	5.57	10.68	8.21	1.49
13.280	80yr	13.280	1.530	5.57	10.88	8.31	1.55
13.280	100yr	13.280	1.600	5.57	10.98	8.36	1.58
13.280	150yr	13.280	1.700	5.57	11.16	8.43	1.61
13.280	200yr	13.280	1.780	5.57	11.29	8.49	1.63
13.465	50yr	13.465	1.400	6.28	10.74	8.22	1.47
13.465	80yr	13.465	1.530	6.28	10.94	8.31	1.53
13.465	100yr	13.465	1.600	6.28	11.04	8.36	1.56
13.465	150yr	13.465	1.700	6.28	11.21	8.44	1.59
13.465	200yr	13.465	1.780	6.28	11.34	8.50	1.61
13.468		Inline Weir					
13.470	50yr	13.470	1.400	6.28	10.78	8.22	1.46
13.470	80yr	13.470	1.530	6.28	10.98	8.31	1.51
13.470	100yr	13.470	1.600	6.28	11.08	8.36	1.54
13.470	150yr	13.470	1.700	6.28	11.26	8.44	1.57
13.470	200yr	13.470	1.780	6.28	11.39	8.49	1.60
13.490	50yr	13.490	1.400	6.12	10.78	8.37	1.52
13.490	80yr	13.490	1.530	6.12	10.98	8.47	1.58
13.490	100yr	13.490	1.600	6.12	11.08	8.52	1.61
13.490	150yr	13.490	1.700	6.12	11.25	8.59	1.64
13.490	200yr	13.490	1.780	6.12	11.39	8.65	1.66
13.680	50yr	13.680	1.400	6.32	10.82	8.71	1.70
13.680	80yr	13.680	1.530	6.32	11.02	8.82	1.75
13.680	100yr	13.680	1.600	6.32	11.13	8.87	1.78
13.680	150yr	13.680	1.700	6.32	11.30	8.95	1.80
13.680	200yr	13.680	1.780	6.32	11.43	9.01	1.82
13.806	50yr	13.806	1.400	6.26	10.87	8.60	1.78

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
13.806	80yr	13.806	1.530	6.26	11.07	8.72	1.83
13.806	100yr	13.806	1.600	6.26	11.17	8.78	1.85
13.806	150yr	13.806	1.700	6.26	11.34	8.87	1.87
13.806	200yr	13.806	1.780	6.26	11.48	8.94	1.89
13.810		Bridge					
13.814	50yr	13.814	1.400	6.26	10.93	8.60	1.74
13.814	80yr	13.814	1.530	6.26	11.13	8.72	1.79
13.814	100yr	13.814	1.600	6.26	11.23	8.78	1.82
13.814	150yr	13.814	1.700	6.26	11.40	8.87	1.84
13.814	200yr	13.814	1.780	6.26	11.53	8.94	1.86
13.855	50yr	13.855	1.400	7.22	10.98	8.77	1.57
13.855	80yr	13.855	1.530	7.22	11.18	8.87	1.63
13.855	100yr	13.855	1.600	7.22	11.28	8.92	1.66
13.855	150yr	13.855	1.700	7.22	11.45	8.99	1.69
13.855	200yr	13.855	1.780	7.22	11.58	9.04	1.71
13.858		Inline Weir					
13.860	50yr	13.860	1.400	7.32	11.05	8.87	1.59
13.860	80yr	13.860	1.530	7.32	11.24	8.97	1.64
13.860	100yr	13.860	1.600	7.32	11.35	9.02	1.67
13.860	150yr	13.860	1.700	7.32	11.52	9.09	1.70
13.860	200yr	13.860	1.780	7.32	11.65	9.13	1.72
13.875	50yr	13.875	1.400	5.94	11.05	8.77	1.57
13.875	80yr	13.875	1.530	5.94	11.25	8.91	1.63
13.875	100yr	13.875	1.600	5.94	11.36	8.97	1.65
13.875	150yr	13.875	1.700	5.94	11.52	9.04	1.69
13.875	200yr	13.875	1.780	5.94	11.65	9.10	1.71
14.095	50yr	14.095	1.400	7.38	11.10	9.69	2.02
14.095	80yr	14.095	1.530	7.38	11.30	9.80	2.06
14.095	100yr	14.095	1.600	7.38	11.41	9.86	2.08
14.095	150yr	14.095	1.700	7.38	11.57	9.94	2.09
14.095	200yr	14.095	1.780	7.38	11.70	10.00	2.11
14.285	50yr	14.285	1.400	7.31	11.27	9.62	1.89
14.285	80yr	14.285	1.530	7.31	11.46	9.72	1.93
14.285	100yr	14.285	1.600	7.31	11.56	9.78	1.96
14.285	150yr	14.285	1.700	7.31	11.72	9.84	1.98
14.285	200yr	14.285	1.780	7.31	11.84	9.90	2.00
14.465	50yr	14.465	1.400	4.89	11.38	9.96	1.94
14.465	80yr	14.465	1.530	4.89	11.57	10.06	1.99
14.465	100yr	14.465	1.600	4.89	11.67	10.11	2.01
14.465	150yr	14.465	1.700	4.89	11.82	10.19	2.03
14.465	200yr	14.465	1.780	4.89	11.94	10.23	2.05
14.645	50yr	14.645	1.400	7.92	11.48	10.58	2.40
14.645	80yr	14.645	1.530	7.92	11.66	10.67	2.44
14.645	100yr	14.645	1.600	7.92	11.76	10.72	2.45
14.645	150yr	14.645	1.700	7.92	11.91	10.79	2.46
14.645	200yr	14.645	1.780	7.92	12.02	10.84	2.47
14.845	50yr	14.845	1.400	7.93	11.75	10.85	2.43
14.845	80yr	14.845	1.530	7.93	11.91	10.94	2.48
14.845	100yr	14.845	1.600	7.93	12.00	10.99	2.51
14.845	150yr	14.845	1.700	7.93	12.13	11.06	2.54
14.845	200yr	14.845	1.780	7.93	12.24	11.11	2.55
15.045	50yr	15.045	1.400	8.22	12.03	11.42	2.76
15.045	80yr	15.045	1.530	8.22	12.18	11.51	2.81
15.045	100yr	15.045	1.600	8.22	12.26	11.56	2.83
15.045	150yr	15.045	1.700	8.22	12.38	11.63	2.85

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
15.045	200yr	15.045	1.780	8.22	12.48	11.69	2.87
15.245	50yr	15.245	1.400	9.03	12.34	12.08	3.82
15.245	80yr	15.245	1.530	9.03	12.58	12.21	3.66
15.245	100yr	15.245	1.600	9.03	12.64	12.38	3.69
15.245	150yr	15.245	1.700	9.03	12.73	12.57	3.74
15.245	200yr	15.245	1.780	9.03	12.81	12.62	3.76
15.445	50yr	15.445	1.400	8.21	13.20	11.44	1.77
15.445	80yr	15.445	1.530	8.21	13.37	11.53	1.84
15.445	100yr	15.445	1.600	8.21	13.44	11.57	1.88
15.445	150yr	15.445	1.700	8.21	13.54	11.65	1.94
15.445	200yr	15.445	1.780	8.21	13.61	11.70	1.99
15.645	50yr	15.645	1.400	7.78	13.25	12.09	2.36
15.645	80yr	15.645	1.530	7.78	13.42	12.19	2.43
15.645	100yr	15.645	1.600	7.78	13.49	12.26	2.48
15.645	150yr	15.645	1.700	7.78	13.59	12.33	2.55
15.645	200yr	15.645	1.780	7.78	13.67	12.38	2.61
15.835	50yr	15.835	1.400	6.21	13.49	12.50	2.38
15.835	80yr	15.835	1.530	6.21	13.65	12.57	2.43
15.835	100yr	15.835	1.600	6.21	13.72	12.65	2.46
15.835	150yr	15.835	1.700	6.21	13.83	12.72	2.51
15.835	200yr	15.835	1.780	6.21	13.93	12.77	2.53
16.035	50yr	16.035	1.400	8.10	13.75	12.91	2.60
16.035	80yr	16.035	1.530	8.10	13.90	13.01	2.67
16.035	100yr	16.035	1.600	8.10	13.97	13.06	2.71
16.035	150yr	16.035	1.700	8.10	14.07	13.13	2.77
16.035	200yr	16.035	1.780	8.10	14.21	13.19	2.73
16.320	50yr	16.320	1.400	6.85	14.36	13.52	2.31
16.320	80yr	16.320	1.530	6.85	14.50	13.64	2.31
16.320	100yr	16.320	1.600	6.85	14.58	13.64	2.31
16.320	150yr	16.320	1.700	6.85	14.68	13.76	2.32
16.320	200yr	16.320	1.780	6.85	14.84	13.81	2.23
16.585	50yr	16.585	1.400	11.53	15.21	15.21	4.77
16.585	80yr	16.585	1.530	11.53	15.35	15.35	4.90
16.585	100yr	16.585	1.600	11.53	15.43	15.43	4.97
16.585	150yr	16.585	1.700	11.53	15.54	15.54	5.06
16.585	200yr	16.585	1.780	11.53	15.62	15.62	5.14
16.587		Inline Weir					
16.590	50yr	16.590	1.400	12.64	15.99	15.68	4.17
16.590	80yr	16.590	1.530	12.64	16.16	15.82	4.29
16.590	100yr	16.590	1.600	12.64	16.24	15.90	4.35
16.590	150yr	16.590	1.700	12.64	16.36	16.00	4.43
16.590	200yr	16.590	1.780	12.64	16.45	16.09	4.50
16.670	50yr	16.670	1.400	11.23	16.36	15.57	3.87
16.670	80yr	16.670	1.530	11.23	16.49	15.73	4.06
16.670	100yr	16.670	1.600	11.23	16.56	15.81	4.17
16.670	150yr	16.670	1.700	11.23	16.66	15.93	4.31
16.670	200yr	16.670	1.780	11.23	16.73	16.02	4.42

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▶노성천 홍수위산정결과(개수전)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: NoSung Reach: NoSung

Rivers = 1
Hydraulic Reaches = 1
River Stations = 41
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		1560	1.21	10.22	6.48	1.49
0.000	80yr		1720	1.21	10.22	6.65	1.64
0.000	100yr		1800	1.21	10.22	6.70	1.72
0.000	150yr		1950	1.21	10.22	6.84	1.86
0.000	200yr		2050	1.21	10.22	6.93	1.96
0.130	50yr	130	1560	1.51	10.22	6.85	1.71
0.130	80yr	130	1720	1.51	10.23	6.98	1.88
0.130	100yr	130	1800	1.51	10.23	7.06	1.97
0.130	150yr	130	1950	1.51	10.23	7.19	2.13
0.130	200yr	130	2050	1.51	10.23	7.27	2.24
0.335	50yr	335	1560	1.81	10.28	6.94	1.73
0.335	80yr	335	1720	1.81	10.29	7.09	1.90
0.335	100yr	335	1800	1.81	10.30	7.15	1.99
0.335	150yr	335	1950	1.81	10.31	7.29	2.15
0.335	200yr	335	2050	1.81	10.32	7.37	2.25
0.525	50yr	525	1560	1.98	10.33	6.91	1.73
0.525	80yr	525	1720	1.98	10.36	7.07	1.90
0.525	100yr	525	1800	1.98	10.37	7.14	1.98
0.525	150yr	525	1950	1.98	10.40	7.27	2.13
0.525	200yr	525	2050	1.98	10.42	7.35	2.24
0.550	50yr	550	1560	1.85	10.35	6.85	1.67
0.550	80yr	550	1720	1.85	10.38	6.99	1.83
0.550	100yr	550	1800	1.85	10.39	7.07	1.91
0.550	150yr	550	1950	1.85	10.42	7.20	2.06
0.550	200yr	550	2050	1.85	10.45	7.28	2.15
0.565		Bridge					
0.580	50yr	580	1560	1.85	10.37	6.85	1.66
0.580	80yr	580	1720	1.85	10.40	7.00	1.82
0.580	100yr	580	1800	1.85	10.42	7.07	1.90
0.580	150yr	580	1950	1.85	10.46	7.20	2.04
0.580	200yr	580	2050	1.85	10.49	7.28	2.14
0.725	50yr	725	1560	1.90	10.39	7.11	1.80
0.725	80yr	725	1720	1.90	10.43	7.26	1.96
0.725	100yr	725	1800	1.90	10.45	7.34	2.05
0.725	150yr	725	1950	1.90	10.49	7.47	2.20
0.725	200yr	725	2050	1.90	10.52	7.56	2.30
0.925	50yr	925	1560	2.19	10.45	7.37	1.86
0.925	80yr	925	1720	2.19	10.50	7.51	2.03
0.925	100yr	925	1800	2.19	10.52	7.58	2.11
0.925	150yr	925	1950	2.19	10.57	7.71	2.26
0.925	200yr	925	2050	2.19	10.61	7.80	2.36
1.032	50yr	1032	1560	1.43	10.51	6.93	1.71
1.032	80yr	1032	1720	1.43	10.57	7.08	1.87
1.032	100yr	1032	1800	1.43	10.60	7.16	1.94
1.032	150yr	1032	1950	1.43	10.66	7.29	2.08
1.032	200yr	1032	2050	1.43	10.71	7.38	2.17

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
1.035		Bridge					
1.038	50yr	1038	1560	1.43	10.52	6.93	1.71
1.038	80yr	1038	1720	1.43	10.58	7.08	1.86
1.038	100yr	1038	1800	1.43	10.62	7.16	1.94
1.038	150yr	1038	1950	1.43	10.68	7.29	2.07
1.038	200yr	1038	2050	1.43	10.73	7.38	2.16
1.115	50yr	1115	1560	1.73	10.52	7.46	1.86
1.115	80yr	1115	1720	1.73	10.59	7.61	2.02
1.115	100yr	1115	1800	1.73	10.62	7.68	2.10
1.115	150yr	1115	1950	1.73	10.69	7.82	2.25
1.115	200yr	1115	2050	1.73	10.74	7.90	2.34
1.325	50yr	1325	1560	2.02	10.59	7.57	1.88
1.325	80yr	1325	1720	2.02	10.67	7.72	2.04
1.325	100yr	1325	1800	2.02	10.71	7.80	2.11
1.325	150yr	1325	1950	2.02	10.79	7.93	2.25
1.325	200yr	1325	2050	2.02	10.84	8.02	2.34
1.545	50yr	1545	1560	1.78	10.67	7.59	1.86
1.545	80yr	1545	1720	1.78	10.76	7.74	2.01
1.545	100yr	1545	1800	1.78	10.81	7.81	2.09
1.545	150yr	1545	1950	1.78	10.90	7.95	2.22
1.545	200yr	1545	2050	1.78	10.96	8.04	2.30
1.750	50yr	1750	1560	1.84	10.74	7.71	1.87
1.750	80yr	1750	1720	1.84	10.84	7.86	2.02
1.750	100yr	1750	1800	1.84	10.89	7.93	2.10
1.750	150yr	1750	1950	1.84	10.99	8.06	2.23
1.750	200yr	1750	2050	1.84	11.06	8.15	2.31
1.970	50yr	1970	1560	2.58	10.82	7.65	1.84
1.970	80yr	1970	1720	2.58	10.93	7.81	1.99
1.970	100yr	1970	1800	2.58	10.99	7.91	2.05
1.970	150yr	1970	1950	2.58	11.10	8.04	2.18
1.970	200yr	1970	2050	2.58	11.18	8.12	2.26
2.175	50yr	2175	1560	2.44	10.88	7.79	1.86
2.175	80yr	2175	1720	2.44	11.00	7.94	2.00
2.175	100yr	2175	1800	2.44	11.07	8.02	2.07
2.175	150yr	2175	1950	2.44	11.19	8.15	2.19
2.175	200yr	2175	2050	2.44	11.27	8.24	2.26
2.380	50yr	2380	1560	2.65	10.95	8.00	1.89
2.380	80yr	2380	1720	2.65	11.08	8.13	2.03
2.380	100yr	2380	1800	2.65	11.15	8.21	2.09
2.380	150yr	2380	1950	2.65	11.27	8.34	2.21
2.380	200yr	2380	2050	2.65	11.36	8.43	2.29
2.585	50yr	2585	1560	1.27	11.02	8.23	1.96
2.585	80yr	2585	1720	1.27	11.15	8.39	2.10
2.585	100yr	2585	1800	1.27	11.22	8.45	2.17
2.585	150yr	2585	1950	1.27	11.36	8.58	2.28
2.585	200yr	2585	2050	1.27	11.45	8.67	2.35
2.785	50yr	2785	1560	1.95	11.10	8.32	1.97
2.785	80yr	2785	1720	1.95	11.24	8.47	2.11
2.785	100yr	2785	1800	1.95	11.32	8.54	2.17
2.785	150yr	2785	1950	1.95	11.46	8.68	2.29
2.785	200yr	2785	2050	1.95	11.55	8.75	2.36
2.985	50yr	2985	1560	2.63	11.16	8.77	2.13
2.985	80yr	2985	1720	2.63	11.32	8.92	2.27
2.985	100yr	2985	1800	2.63	11.39	8.99	2.34
2.985	150yr	2985	1950	2.63	11.54	9.12	2.45

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
2.985	200yr	2985	2050	2.63	11.64	9.21	2.52
3.185	50yr	3185	1560	3.90	11.30	8.50	1.96
3.185	80yr	3185	1720	3.90	11.46	8.64	2.09
3.185	100yr	3185	1800	3.90	11.55	8.72	2.14
3.185	150yr	3185	1950	3.90	11.70	8.85	2.25
3.185	200yr	3185	2050	3.90	11.81	8.94	2.32
3.188		Inline Weir					
3.190	50yr	3190	1560	5.56	11.34	9.04	2.17
3.190	80yr	3190	1720	5.56	11.50	9.19	2.30
3.190	100yr	3190	1800	5.56	11.59	9.26	2.36
3.190	150yr	3190	1950	5.56	11.75	9.39	2.47
3.190	200yr	3190	2050	5.56	11.86	9.48	2.54
3.395	50yr	3395	1560	4.55	11.47	8.96	2.08
3.395	80yr	3395	1720	4.55	11.65	9.11	2.21
3.395	100yr	3395	1800	4.55	11.73	9.17	2.26
3.395	150yr	3395	1950	4.55	11.90	9.31	2.37
3.395	200yr	3395	2050	4.55	12.02	9.39	2.43
3.605	50yr	3605	1560	4.98	11.58	8.87	2.00
3.605	80yr	3605	1720	4.98	11.77	9.02	2.11
3.605	100yr	3605	1800	4.98	11.86	9.09	2.17
3.605	150yr	3605	1950	4.98	12.04	9.22	2.27
3.605	200yr	3605	2050	4.98	12.16	9.31	2.33
3.815	50yr	3815	1560	5.47	11.66	9.20	2.12
3.815	80yr	3815	1720	5.47	11.85	9.35	2.24
3.815	100yr	3815	1800	5.47	11.95	9.43	2.30
3.815	150yr	3815	1950	5.47	12.13	9.56	2.39
3.815	200yr	3815	2050	5.47	12.25	9.65	2.46
4.020	50yr	4020	1560	5.63	11.76	9.42	2.12
4.020	80yr	4020	1720	5.63	11.97	9.56	2.24
4.020	100yr	4020	1800	5.63	12.06	9.63	2.29
4.020	150yr	4020	1950	5.63	12.25	9.76	2.38
4.020	200yr	4020	2050	5.63	12.37	9.84	2.44
4.205	50yr	4205	1560	5.24	11.87	9.24	2.03
4.205	80yr	4205	1720	5.24	12.08	9.39	2.14
4.205	100yr	4205	1800	5.24	12.18	9.46	2.20
4.205	150yr	4205	1950	5.24	12.37	9.59	2.29
4.205	200yr	4205	2050	5.24	12.50	9.68	2.35
4.400	50yr	4400	1560	5.14	11.98	9.36	1.94
4.400	80yr	4400	1720	5.14	12.19	9.51	2.04
4.400	100yr	4400	1800	5.14	12.30	9.57	2.08
4.400	150yr	4400	1950	5.14	12.49	9.70	2.17
4.400	200yr	4400	2050	5.14	12.62	9.78	2.22
4.527	50yr	4527	1560	5.06	12.03	9.63	1.98
4.527	80yr	4527	1720	5.06	12.25	9.76	2.07
4.527	100yr	4527	1800	5.06	12.36	9.83	2.11
4.527	150yr	4527	1950	5.06	12.55	9.95	2.19
4.527	200yr	4527	2050	5.06	12.68	10.04	2.24
4.530		Bridge					
4.533	50yr	4533	1560	5.06	12.05	9.63	1.97
4.533	80yr	4533	1720	5.06	12.27	9.76	2.06
4.533	100yr	4533	1800	5.06	12.38	9.83	2.10
4.533	150yr	4533	1950	5.06	12.57	9.95	2.18
4.533	200yr	4533	2050	5.06	12.70	10.03	2.23
4.580	50yr	4580	1560	5.13	12.08	9.68	1.95

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
4.580	80yr	4580	1720	5.13	12.30	9.82	2.04
4.580	100yr	4580	1800	5.13	12.41	9.89	2.08
4.580	150yr	4580	1950	5.13	12.60	10.00	2.16
4.580	200yr	4580	2050	5.13	12.74	10.08	2.21
4.750	50yr	4750	1560	5.85	12.20	9.49	1.63
4.750	80yr	4750	1720	5.85	12.43	9.64	1.71
4.750	100yr	4750	1800	5.85	12.55	9.69	1.74
4.750	150yr	4750	1950	5.85	12.75	9.80	1.81
4.750	200yr	4750	2050	5.85	12.89	9.87	1.85
4.915	50yr	4915	880	5.69	12.30	9.20	1.33
4.915	80yr	4915	960	5.69	12.54	9.31	1.37
4.915	100yr	4915	990	5.69	12.65	9.34	1.38
4.915	150yr	4915	1060	5.69	12.87	9.43	1.41
4.915	200yr	4915	1100	5.69	13.01	9.50	1.42
4.920		Bridge					
4.925	50yr	4925	880	5.69	12.31	9.20	1.33
4.925	80yr	4925	960	5.69	12.55	9.31	1.37
4.925	100yr	4925	990	5.69	12.67	9.35	1.37
4.925	150yr	4925	1060	5.69	12.88	9.43	1.41
4.925	200yr	4925	1100	5.69	13.02	9.49	1.42
4.980	50yr	4980	880	5.95	12.31	9.37	1.45
4.980	80yr	4980	960	5.95	12.55	9.47	1.50
4.980	100yr	4980	990	5.95	12.66	9.51	1.51
4.980	150yr	4980	1060	5.95	12.87	9.60	1.54
4.980	200yr	4980	1100	5.95	13.02	9.65	1.56
5.130	50yr	5130	880	6.03	12.33	9.29	1.63
5.130	80yr	5130	960	6.03	12.56	9.40	1.69
5.130	100yr	5130	990	6.03	12.68	9.45	1.70
5.130	150yr	5130	1060	6.03	12.89	9.55	1.74
5.130	200yr	5130	1100	6.03	13.03	9.61	1.76

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▶강경천 홍수위산정결과(개수전)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: KangKyung Reach: KangKyung

Rivers = 1
Hydraulic Reaches = 1
River Stations = 87
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		990	-1.09	9.14	3.18	0.75
0.000	80yr		1,070	-1.09	9.14	3.35	0.81
0.000	100yr		1,100	-1.09	9.14	3.41	0.83
0.000	150yr		1,170	-1.09	9.14	3.55	0.89
0.000	200yr		1,220	-1.09	9.14	3.59	0.92
0.200	50yr	200	990	-0.54	9.13	3.73	1.05
0.200	80yr	200	1,070	-0.54	9.13	3.91	1.13
0.200	100yr	200	1,100	-0.54	9.13	4.12	1.17
0.200	150yr	200	1,170	-0.54	9.13	4.23	1.24
0.200	200yr	200	1,220	-0.54	9.13	4.29	1.29
0.270	50yr	270	990	-2.41	9.13	3.44	1.08
0.270	80yr	270	1,070	-2.41	9.13	3.62	1.17
0.270	100yr	270	1,100	-2.41	9.13	3.63	1.20
0.270	150yr	270	1,170	-2.41	9.13	4.33	1.28
0.270	200yr	270	1,220	-2.41	9.13	4.44	1.33
0.275		Bridge					
0.280	50yr	280	990	-2.41	9.15	3.44	1.08
0.280	80yr	280	1,070	-2.41	9.15	3.62	1.17
0.280	100yr	280	1,100	-2.41	9.15	3.63	1.20
0.280	150yr	280	1,170	-2.41	9.15	4.33	1.27
0.280	200yr	280	1,220	-2.41	9.16	4.44	1.33
0.283	50yr	283	990	-2.75	9.15	3.38	1.07
0.283	80yr	283	1,070	-2.75	9.15	3.91	1.15
0.283	100yr	283	1,100	-2.75	9.15	3.99	1.19
0.283	150yr	283	1,170	-2.75	9.16	4.10	1.26
0.283	200yr	283	1,220	-2.75	9.16	4.19	1.31
0.290		Bridge					
0.297	50yr	297	990	-2.75	9.16	3.38	1.07
0.297	80yr	297	1,070	-2.75	9.16	3.92	1.15
0.297	100yr	297	1,100	-2.75	9.16	3.99	1.18
0.297	150yr	297	1,170	-2.75	9.16	4.10	1.26
0.297	200yr	297	1,220	-2.75	9.17	4.19	1.31
0.415	50yr	415	990	-0.23	9.17	3.52	1.09
0.415	80yr	415	1,070	-0.23	9.17	3.69	1.17
0.415	100yr	415	1,100	-0.23	9.17	3.76	1.20
0.415	150yr	415	1,170	-0.23	9.18	3.89	1.28
0.415	200yr	415	1,220	-0.23	9.18	4.61	1.33
0.610	50yr	610	990	-0.15	9.18	3.88	1.12
0.610	80yr	610	1,070	-0.15	9.18	4.54	1.21
0.610	100yr	610	1,100	-0.15	9.19	4.58	1.24
0.610	150yr	610	1,170	-0.15	9.19	4.68	1.32
0.610	200yr	610	1,220	-0.15	9.20	4.72	1.38
0.815	50yr	815	990	-0.15	9.20	3.55	1.08
0.815	80yr	815	1,070	-0.15	9.21	4.29	1.16
0.815	100yr	815	1,100	-0.15	9.21	4.34	1.19

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.815	150yr	815	1,170	-0.15	9.22	4.46	1.27
0.815	200yr	815	1,220	-0.15	9.23	4.53	1.32
1.035	50yr	1,035	990	-0.84	9.21	3.39	1.05
1.035	80yr	1,035	1,070	-0.84	9.23	3.54	1.13
1.035	100yr	1,035	1,100	-0.84	9.24	4.18	1.16
1.035	150yr	1,035	1,170	-0.84	9.25	4.27	1.24
1.035	200yr	1,035	1,220	-0.84	9.26	4.33	1.29
1.097	50yr	1,097	990	-0.62	9.21	3.55	1.11
1.097	80yr	1,097	1,070	-0.62	9.23	4.39	1.19
1.097	100yr	1,097	1,100	-0.62	9.24	4.43	1.23
1.097	150yr	1,097	1,170	-0.62	9.25	4.53	1.30
1.097	200yr	1,097	1,220	-0.62	9.26	4.59	1.36
1.105		Bridge					
1.112	50yr	1,112	990	-0.62	9.23	3.55	1.10
1.112	80yr	1,112	1,070	-0.62	9.25	4.39	1.19
1.112	100yr	1,112	1,100	-0.62	9.26	4.43	1.22
1.112	150yr	1,112	1,170	-0.62	9.27	4.53	1.30
1.112	200yr	1,112	1,220	-0.62	9.28	4.59	1.35
1.113	50yr	1,113	990	0.07	9.23	4.85	1.16
1.113	80yr	1,113	1,070	0.07	9.25	4.95	1.25
1.113	100yr	1,113	1,100	0.07	9.25	4.99	1.29
1.113	150yr	1,113	1,170	0.07	9.27	5.07	1.36
1.113	200yr	1,113	1,220	0.07	9.28	5.12	1.42
1.115		Bridge					
1.119	50yr	1,119	990	0.07	9.25	4.85	1.16
1.119	80yr	1,119	1,070	0.07	9.27	4.95	1.25
1.119	100yr	1,119	1,100	0.07	9.28	4.99	1.28
1.119	150yr	1,119	1,170	0.07	9.30	5.07	1.36
1.119	200yr	1,119	1,220	0.07	9.31	5.12	1.41
1.120		Bridge					
1.123	50yr	1,123	990	0.07	9.25	4.86	1.16
1.123	80yr	1,123	1,070	0.07	9.28	4.95	1.25
1.123	100yr	1,123	1,100	0.07	9.28	4.99	1.28
1.123	150yr	1,123	1,170	0.07	9.30	5.07	1.36
1.123	200yr	1,123	1,220	0.07	9.32	5.12	1.41
1.235	50yr	1,235	990	-0.04	9.27	4.10	1.04
1.235	80yr	1,235	1,070	-0.04	9.30	4.22	1.12
1.235	100yr	1,235	1,100	-0.04	9.31	4.25	1.15
1.235	150yr	1,235	1,170	-0.04	9.33	4.33	1.22
1.235	200yr	1,235	1,220	-0.04	9.35	4.39	1.27
1.350	50yr	1,350	990	-0.94	9.28	3.76	1.09
1.350	80yr	1,350	1,070	-0.94	9.31	4.27	1.17
1.350	100yr	1,350	1,100	-0.94	9.32	4.33	1.21
1.350	150yr	1,350	1,170	-0.94	9.34	4.45	1.28
1.350	200yr	1,350	1,220	-0.94	9.36	4.52	1.33
1.355		Bridge					
1.360	50yr	1,360	990	-0.94	9.30	3.76	1.09
1.360	80yr	1,360	1,070	-0.94	9.33	4.27	1.17
1.360	100yr	1,360	1,100	-0.94	9.34	4.33	1.20
1.360	150yr	1,360	1,170	-0.94	9.37	4.45	1.27
1.360	200yr	1,360	1,220	-0.94	9.39	4.52	1.32
1.370	50yr	1,370	990	-0.09	9.30	4.66	1.14
1.370	80yr	1,370	1,070	-0.09	9.33	4.76	1.22

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
1.370	100yr	1,370	1,100	-0.09	9.34	4.79	1.26
1.370	150yr	1,370	1,170	-0.09	9.36	4.88	1.33
1.370	200yr	1,370	1,220	-0.09	9.38	4.93	1.38
1.375		Bridge					
1.380	50yr	1,380	990	-0.09	9.32	4.66	1.13
1.380	80yr	1,380	1,070	-0.09	9.36	4.76	1.22
1.380	100yr	1,380	1,100	-0.09	9.37	4.79	1.25
1.380	150yr	1,380	1,170	-0.09	9.40	4.88	1.32
1.380	200yr	1,380	1,220	-0.09	9.42	4.93	1.38
1.415	50yr	1,415	990	0.65	9.33	4.26	1.07
1.415	80yr	1,415	1,070	0.65	9.37	4.40	1.15
1.415	100yr	1,415	1,100	0.65	9.38	4.45	1.18
1.415	150yr	1,415	1,170	0.65	9.41	4.56	1.25
1.415	200yr	1,415	1,220	0.65	9.44	4.64	1.30
1.425		Bridge					
1.435	50yr	1,435	990	0.65	9.33	4.26	1.07
1.435	80yr	1,435	1,070	0.65	9.37	4.40	1.15
1.435	100yr	1,435	1,100	0.65	9.39	4.45	1.18
1.435	150yr	1,435	1,170	0.65	9.42	4.56	1.25
1.435	200yr	1,435	1,220	0.65	9.44	4.64	1.30
1.440	50yr	1,440	990	0.83	9.34	4.32	1.04
1.440	80yr	1,440	1,070	0.83	9.38	4.42	1.12
1.440	100yr	1,440	1,100	0.83	9.39	4.45	1.15
1.440	150yr	1,440	1,170	0.83	9.43	4.53	1.21
1.440	200yr	1,440	1,220	0.83	9.45	4.58	1.26
1.650	50yr	1,650	990	0.81	9.35	4.21	1.05
1.650	80yr	1,650	1,070	0.81	9.39	4.31	1.13
1.650	100yr	1,650	1,100	0.81	9.41	4.35	1.16
1.650	150yr	1,650	1,170	0.81	9.44	4.44	1.22
1.650	200yr	1,650	1,220	0.81	9.47	4.50	1.27
1.840	50yr	1,840	990	0.97	9.36	4.28	1.04
1.840	80yr	1,840	1,070	0.97	9.41	4.37	1.12
1.840	100yr	1,840	1,100	0.97	9.42	4.41	1.15
1.840	150yr	1,840	1,170	0.97	9.46	4.49	1.21
1.840	200yr	1,840	1,220	0.97	9.49	4.55	1.26
2.035	50yr	2,035	990	1.03	9.38	4.39	1.06
2.035	80yr	2,035	1,070	1.03	9.42	4.49	1.14
2.035	100yr	2,035	1,100	1.03	9.44	4.53	1.17
2.035	150yr	2,035	1,170	1.03	9.48	4.62	1.24
2.035	200yr	2,035	1,220	1.03	9.51	4.69	1.28
2.240	50yr	2,240	990	0.92	9.39	4.39	1.04
2.240	80yr	2,240	1,070	0.92	9.44	4.49	1.12
2.240	100yr	2,240	1,100	0.92	9.45	4.52	1.14
2.240	150yr	2,240	1,170	0.92	9.50	4.61	1.21
2.240	200yr	2,240	1,220	0.92	9.53	4.67	1.25
2.293	50yr	2,293	990	0.71	9.39	4.27	1.04
2.293	80yr	2,293	1,070	0.71	9.44	4.37	1.12
2.293	100yr	2,293	1,100	0.71	9.46	4.40	1.14
2.293	150yr	2,293	1,170	0.71	9.50	4.50	1.21
2.293	200yr	2,293	1,220	0.71	9.54	4.56	1.25
2.300		Bridge					
2.308	50yr	2,308	990	0.71	9.43	4.27	1.04
2.308	80yr	2,308	1,070	0.71	9.48	4.37	1.11
2.308	100yr	2,308	1,100	0.71	9.50	4.40	1.14

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
2.308	150yr	2.308	1.170	0.71	9.55	4.50	1.20
2.308	200yr	2.308	1.220	0.71	9.58	4.56	1.25
2.455	50yr	2.455	990	1.03	9.44	4.34	1.04
2.455	80yr	2.455	1.070	1.03	9.49	4.44	1.12
2.455	100yr	2.455	1.100	1.03	9.51	4.48	1.14
2.455	150yr	2.455	1.170	1.03	9.56	4.56	1.21
2.455	200yr	2.455	1.220	1.03	9.59	4.62	1.25
2.650	50yr	2.650	990	1.16	9.45	4.40	1.06
2.650	80yr	2.650	1.070	1.16	9.50	4.50	1.13
2.650	100yr	2.650	1.100	1.16	9.52	4.54	1.16
2.650	150yr	2.650	1.170	1.16	9.57	4.62	1.22
2.650	200yr	2.650	1.220	1.16	9.61	4.68	1.27
2.840	50yr	2.840	990	0.64	9.47	3.66	0.94
2.840	80yr	2.840	1.070	0.64	9.53	3.75	1.00
2.840	100yr	2.840	1.100	0.64	9.55	3.79	1.03
2.840	150yr	2.840	1.170	0.64	9.61	3.88	1.09
2.840	200yr	2.840	1.220	0.64	9.64	3.95	1.13
3.030	50yr	3.030	990	1.40	9.47	4.66	1.11
3.030	80yr	3.030	1.070	1.40	9.53	4.76	1.19
3.030	100yr	3.030	1.100	1.40	9.55	4.80	1.22
3.030	150yr	3.030	1.170	1.40	9.60	4.89	1.29
3.030	200yr	3.030	1.220	1.40	9.64	4.94	1.33
3.235	50yr	3.235	990	1.14	9.49	4.41	1.05
3.235	80yr	3.235	1.070	1.14	9.55	4.51	1.12
3.235	100yr	3.235	1.100	1.14	9.57	4.54	1.15
3.235	150yr	3.235	1.170	1.14	9.63	4.62	1.21
3.235	200yr	3.235	1.220	1.14	9.67	4.68	1.26
3.410	50yr	3.410	990	1.29	9.51	4.46	1.03
3.410	80yr	3.410	1.070	1.29	9.57	4.56	1.11
3.410	100yr	3.410	1.100	1.29	9.59	4.59	1.13
3.410	150yr	3.410	1.170	1.29	9.65	4.67	1.19
3.410	200yr	3.410	1.220	1.29	9.69	4.73	1.24
3.415		Bridge					
3.420	50yr	3.420	990	1.29	9.52	4.46	1.03
3.420	80yr	3.420	1.070	1.29	9.58	4.56	1.10
3.420	100yr	3.420	1.100	1.29	9.61	4.59	1.13
3.420	150yr	3.420	1.170	1.29	9.67	4.67	1.19
3.420	200yr	3.420	1.220	1.29	9.71	4.73	1.23
3.435	50yr	3.435	990	1.23	9.52	4.57	1.04
3.435	80yr	3.435	1.070	1.23	9.58	4.66	1.12
3.435	100yr	3.435	1.100	1.23	9.61	4.70	1.14
3.435	150yr	3.435	1.170	1.23	9.67	4.78	1.21
3.435	200yr	3.435	1.220	1.23	9.71	4.83	1.25
3.470	50yr	3.470	990	1.10	9.53	4.58	1.02
3.470	80yr	3.470	1.070	1.10	9.59	4.67	1.10
3.470	100yr	3.470	1.100	1.10	9.61	4.70	1.12
3.470	150yr	3.470	1.170	1.10	9.67	4.78	1.18
3.470	200yr	3.470	1.220	1.10	9.72	4.84	1.23
3.475		Bridge					
3.480	50yr	3.480	990	1.10	9.57	4.58	1.02
3.480	80yr	3.480	1.070	1.10	9.64	4.67	1.09
3.480	100yr	3.480	1.100	1.10	9.66	4.71	1.11
3.480	150yr	3.480	1.170	1.10	9.73	4.79	1.17
3.480	200yr	3.480	1.220	1.10	9.78	4.84	1.21

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
3.645	50yr	3,645	990	1.63	9.58	4.60	1.00
3.645	80yr	3,645	1,070	1.63	9.65	4.69	1.07
3.645	100yr	3,645	1,100	1.63	9.68	4.72	1.10
3.645	150yr	3,645	1,170	1.63	9.75	4.80	1.15
3.645	200yr	3,645	1,220	1.63	9.80	4.86	1.19
3.810	50yr	3,810	990	1.49	9.61	4.18	0.76
3.810	80yr	3,810	1,070	1.49	9.69	4.27	0.81
3.810	100yr	3,810	1,100	1.49	9.72	4.29	0.83
3.810	150yr	3,810	1,170	1.49	9.79	4.36	0.88
3.810	200yr	3,810	1,220	1.49	9.84	4.41	0.91
3.985	50yr	3,985	830	1.52	9.60	4.88	1.14
3.985	80yr	3,985	910	1.52	9.67	5.00	1.24
3.985	100yr	3,985	950	1.52	9.69	5.06	1.29
3.985	150yr	3,985	1,020	1.52	9.76	5.18	1.37
3.985	200yr	3,985	1,070	1.52	9.81	5.31	1.43
4.082	50yr	4,082	830	1.38	9.60	4.94	1.23
4.082	80yr	4,082	910	1.38	9.67	5.07	1.33
4.082	100yr	4,082	950	1.38	9.69	5.13	1.38
4.082	150yr	4,082	1,020	1.38	9.76	5.24	1.47
4.082	200yr	4,082	1,070	1.38	9.81	5.31	1.53
4.085		Bridge					
4.088	50yr	4,088	830	1.38	9.62	4.94	1.22
4.088	80yr	4,088	910	1.38	9.69	5.07	1.33
4.088	100yr	4,088	950	1.38	9.72	5.13	1.38
4.088	150yr	4,088	1,020	1.38	9.79	5.24	1.46
4.088	200yr	4,088	1,070	1.38	9.84	5.31	1.52
4.220	50yr	4,220	830	1.69	9.63	4.92	1.22
4.220	80yr	4,220	910	1.69	9.71	5.05	1.32
4.220	100yr	4,220	950	1.69	9.74	5.11	1.37
4.220	150yr	4,220	1,020	1.69	9.81	5.22	1.45
4.220	200yr	4,220	1,070	1.69	9.86	5.29	1.51
4.430	50yr	4,430	830	1.66	9.67	4.72	0.97
4.430	80yr	4,430	910	1.66	9.76	4.83	1.05
4.430	100yr	4,430	950	1.66	9.79	4.88	1.09
4.430	150yr	4,430	1,020	1.66	9.87	4.97	1.15
4.430	200yr	4,430	1,070	1.66	9.93	5.04	1.20
4.630	50yr	4,630	830	1.70	9.69	4.94	1.00
4.630	80yr	4,630	910	1.70	9.77	5.05	1.08
4.630	100yr	4,630	950	1.70	9.81	5.10	1.12
4.630	150yr	4,630	1,020	1.70	9.89	5.19	1.19
4.630	200yr	4,630	1,070	1.70	9.95	5.25	1.24
4.810	50yr	4,810	830	1.41	9.70	4.90	1.03
4.810	80yr	4,810	910	1.41	9.78	5.01	1.11
4.810	100yr	4,810	950	1.41	9.82	5.06	1.15
4.810	150yr	4,810	1,020	1.41	9.90	5.16	1.22
4.810	200yr	4,810	1,070	1.41	9.96	5.22	1.26
4.839	50yr	4,839	830	1.94	9.70	4.93	1.01
4.839	80yr	4,839	910	1.94	9.79	5.04	1.09
4.839	100yr	4,839	950	1.94	9.83	5.10	1.13
4.839	150yr	4,839	1,020	1.94	9.91	5.19	1.20
4.839	200yr	4,839	1,070	1.94	9.97	5.26	1.25
4.845		Bridge					
4.851	50yr	4,851	830	1.94	9.71	4.93	1.01
4.851	80yr	4,851	910	1.94	9.79	5.04	1.09
4.851	100yr	4,851	950	1.94	9.83	5.10	1.13

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
4.851	150yr	4,851	1,020	1.94	9.92	5.19	1.20
4.851	200yr	4,851	1,070	1.94	9.97	5.26	1.25
4.860	50yr	4,860	830	1.37	9.70	5.42	1.07
4.860	80yr	4,860	910	1.37	9.79	5.53	1.16
4.860	100yr	4,860	950	1.37	9.82	5.58	1.20
4.860	150yr	4,860	1,020	1.37	9.91	5.67	1.27
4.860	200yr	4,860	1,070	1.37	9.97	5.73	1.32
5.030	50yr	5,030	830	1.98	9.72	4.92	1.05
5.030	80yr	5,030	910	1.98	9.81	5.04	1.13
5.030	100yr	5,030	950	1.98	9.84	5.09	1.18
5.030	150yr	5,030	1,020	1.98	9.93	5.19	1.25
5.030	200yr	5,030	1,070	1.98	9.99	5.25	1.30
5.225	50yr	5,225	830	1.74	9.74	5.06	1.05
5.225	80yr	5,225	910	1.74	9.83	5.16	1.13
5.225	100yr	5,225	950	1.74	9.86	5.22	1.18
5.225	150yr	5,225	1,020	1.74	9.95	5.31	1.24
5.225	200yr	5,225	1,070	1.74	10.01	5.38	1.29
5.382	50yr	5,382	830	1.70	9.75	5.33	1.13
5.382	80yr	5,382	910	1.70	9.84	5.44	1.22
5.382	100yr	5,382	950	1.70	9.87	5.49	1.26
5.382	150yr	5,382	1,020	1.70	9.96	5.59	1.33
5.382	200yr	5,382	1,070	1.70	10.02	5.66	1.39
5.385		Bridge					
5.388	50yr	5,388	830	1.70	9.76	5.32	1.12
5.388	80yr	5,388	910	1.70	9.85	5.44	1.21
5.388	100yr	5,388	950	1.70	9.89	5.49	1.26
5.388	150yr	5,388	1,020	1.70	9.98	5.59	1.33
5.388	200yr	5,388	1,070	1.70	10.05	5.66	1.38
5.425	50yr	5,425	830	1.62	9.76	5.38	1.11
5.425	80yr	5,425	910	1.62	9.86	5.49	1.19
5.425	100yr	5,425	950	1.62	9.90	5.55	1.24
5.425	150yr	5,425	1,020	1.62	9.99	5.63	1.31
5.425	200yr	5,425	1,070	1.62	10.05	5.70	1.36
5.600	50yr	5,600	830	1.73	9.78	5.37	1.08
5.600	80yr	5,600	910	1.73	9.88	5.48	1.17
5.600	100yr	5,600	950	1.73	9.92	5.54	1.21
5.600	150yr	5,600	1,020	1.73	10.01	5.64	1.28
5.600	200yr	5,600	1,070	1.73	10.08	5.70	1.32
5.815	50yr	5,815	830	1.79	9.80	5.49	1.09
5.815	80yr	5,815	910	1.79	9.90	5.59	1.17
5.815	100yr	5,815	950	1.79	9.94	5.64	1.22
5.815	150yr	5,815	1,020	1.79	10.04	5.73	1.28
5.815	200yr	5,815	1,070	1.79	10.10	5.79	1.33
6.015	50yr	6,015	830	1.74	9.82	5.39	1.08
6.015	80yr	6,015	910	1.74	9.92	5.49	1.16
6.015	100yr	6,015	950	1.74	9.96	5.54	1.20
6.015	150yr	6,015	1,020	1.74	10.06	5.65	1.27
6.015	200yr	6,015	1,070	1.74	10.13	5.71	1.32
6.205	50yr	6,205	830	1.98	9.83	5.61	1.14
6.205	80yr	6,205	910	1.98	9.94	5.71	1.22
6.205	100yr	6,205	950	1.98	9.98	5.77	1.27
6.205	150yr	6,205	1,020	1.98	10.08	5.87	1.34
6.205	200yr	6,205	1,070	1.98	10.15	5.94	1.38
6.261	50yr	6,262	830	1.51	9.84	5.81	1.12
6.261	80yr	6,262	910	1.51	9.95	5.91	1.20

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
6.261	100yr	6,262	950	1.51	9.99	5.97	1.25
6.261	150yr	6,262	1,020	1.51	10.09	6.03	1.31
6.261	200yr	6,262	1,070	1.51	10.16	6.11	1.36
6.265		Bridge					
6.268	50yr	6,268	830	1.51	9.85	5.81	1.12
6.268	80yr	6,268	910	1.51	9.95	5.91	1.20
6.268	100yr	6,268	950	1.51	10.00	5.97	1.24
6.268	150yr	6,268	1,020	1.51	10.10	6.03	1.31
6.268	200yr	6,268	1,070	1.51	10.17	6.11	1.36
6.385	50yr	6,385	830	2.02	9.87	5.65	1.01
6.385	80yr	6,385	910	2.02	9.98	5.75	1.09
6.385	100yr	6,385	950	2.02	10.02	5.80	1.13
6.385	150yr	6,385	1,020	2.02	10.13	5.88	1.19
6.385	200yr	6,385	1,070	2.02	10.20	5.94	1.23
6.565	50yr	6,565	440	1.70	9.90	5.46	0.82
6.565	80yr	6,565	470	1.70	10.02	5.53	0.86
6.565	100yr	6,565	490	1.70	10.06	5.58	0.89
6.565	150yr	6,565	520	1.70	10.18	5.64	0.92
6.565	200yr	6,565	540	1.70	10.25	5.67	0.95
6.765	50yr	6,765	440	1.96	9.91	5.63	0.87
6.765	80yr	6,765	470	1.96	10.03	5.69	0.91
6.765	100yr	6,765	490	1.96	10.07	5.74	0.94
6.765	150yr	6,765	520	1.96	10.19	5.80	0.98
6.765	200yr	6,765	540	1.96	10.27	5.84	1.00
6.937	50yr	6,937	440	1.81	9.91	6.18	0.98
6.937	80yr	6,937	470	1.81	10.03	6.25	1.02
6.937	100yr	6,937	490	1.81	10.08	6.30	1.06
6.937	150yr	6,937	520	1.81	10.20	6.37	1.09
6.937	200yr	6,937	540	1.81	10.27	6.42	1.12
6.940		Bridge					
6.942	50yr	6,942	440	1.81	9.92	6.18	0.98
6.942	80yr	6,942	470	1.81	10.04	6.25	1.02
6.942	100yr	6,942	490	1.81	10.08	6.30	1.05
6.942	150yr	6,942	520	1.81	10.20	6.37	1.09
6.942	200yr	6,942	540	1.81	10.28	6.42	1.12
6.965	50yr	6,965	440	2.12	9.92	5.96	0.97
6.965	80yr	6,965	470	2.12	10.04	6.03	1.01
6.965	100yr	6,965	490	2.12	10.09	6.07	1.04
6.965	150yr	6,965	520	2.12	10.20	6.14	1.08
6.965	200yr	6,965	540	2.12	10.28	6.19	1.10
7.170	50yr	7,170	440	2.28	9.95	5.99	0.85
7.170	80yr	7,170	470	2.28	10.07	6.06	0.88
7.170	100yr	7,170	490	2.28	10.12	6.10	0.91
7.170	150yr	7,170	520	2.28	10.23	6.16	0.95
7.170	200yr	7,170	540	2.28	10.31	6.20	0.97
7.360	50yr	7,360	440	2.57	9.95	5.99	1.01
7.360	80yr	7,360	470	2.57	10.07	6.07	1.05
7.360	100yr	7,360	490	2.57	10.12	6.12	1.08
7.360	150yr	7,360	520	2.57	10.24	6.19	1.12
7.360	200yr	7,360	540	2.57	10.32	6.24	1.15
7.565	50yr	7,565	440	1.94	9.97	6.05	1.02
7.565	80yr	7,565	470	1.94	10.09	6.12	1.06
7.565	100yr	7,565	490	1.94	10.14	6.17	1.10
7.565	150yr	7,565	520	1.94	10.26	6.24	1.14
7.565	200yr	7,565	540	1.94	10.34	6.29	1.16

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1.5 개수후 빈도별 홍수위 산정결과

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■ 홍수위 산정결과 (개수후)

▶ 금강(대청댐하류) 홍수위산정결과(개수후)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: KumKang Reach: Down-Stream

Rivers = 1
Hydraulic Reaches = 1
River Stations = 322
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		12,760	-7.48	4.62	-3.45	1.59
0.000	80yr		13,750	-7.48	4.62	-3.27	1.72
0.000	100yr		14,320	-7.48	4.62	-3.17	1.79
0.000	150yr		15,230	-7.48	4.62	-3.04	1.90
0.000	200yr		15,850	-7.48	4.62	-2.94	1.98
0.350	50yr	350	12,760	-14.68	4.62		0.79
0.350	80yr	350	13,750	-14.68	4.62		0.85
0.350	100yr	350	14,320	-14.68	4.62		0.88
0.350	150yr	350	15,230	-14.68	4.62		0.94
0.350	200yr	350	15,850	-14.68	4.62		0.98
0.720	50yr	720	12,760	-10.08	4.62	-3.53	0.87
0.720	80yr	720	13,750	-10.08	4.62	-3.42	0.94
0.720	100yr	720	14,320	-10.08	4.62	-3.37	0.98
0.720	150yr	720	15,230	-10.08	4.62	-3.26	1.04
0.720	200yr	720	15,850	-10.08	4.62	-3.17	1.08
1.140	50yr	1,140	12,700	-7.77	4.62	-2.94	1.09
1.140	80yr	1,140	13,670	-7.77	4.63	-2.79	1.18
1.140	100yr	1,140	14,230	-7.77	4.63	-2.70	1.22
1.140	150yr	1,140	15,140	-7.77	4.63	-2.57	1.30
1.140	200yr	1,140	15,760	-7.77	4.63	-2.49	1.36
1.480	50yr	1,480	12,700	-11.06	4.63	-3.76	1.20
1.480	80yr	1,480	13,670	-11.06	4.63	-3.61	1.30
1.480	100yr	1,480	14,230	-11.06	4.63	-3.55	1.35
1.480	150yr	1,480	15,140	-11.06	4.63	-3.42	1.43
1.480	200yr	1,480	15,760	-11.06	4.63	-3.34	1.49
2.020	50yr	2,020	12,700	-9.56	4.65	-2.92	1.14
2.020	80yr	2,020	13,670	-9.56	4.66	-2.79	1.22
2.020	100yr	2,020	14,230	-9.56	4.67	-2.72	1.27
2.020	150yr	2,020	15,140	-9.56	4.67	-2.60	1.35
2.020	200yr	2,020	15,760	-9.56	4.68	-2.52	1.41
2.450	50yr	2,450	12,700	-7.16	4.67	-1.76	1.14
2.450	80yr	2,450	13,670	-7.16	4.69	-1.64	1.22
2.450	100yr	2,450	14,230	-7.16	4.70	-1.58	1.27
2.450	150yr	2,450	15,140	-7.16	4.71	-1.48	1.35
2.450	200yr	2,450	15,760	-7.16	4.72	-1.41	1.40
2.920	50yr	2,920	12,700	-6.76	4.69	-1.77	1.12
2.920	80yr	2,920	13,670	-6.76	4.72	-1.63	1.20
2.920	100yr	2,920	14,230	-6.76	4.73	-1.56	1.25
2.920	150yr	2,920	15,140	-6.76	4.74	-1.40	1.33
2.920	200yr	2,920	15,760	-6.76	4.75	-1.24	1.38
3.330	50yr	3,330	12,700	-7.25	4.72	-1.87	1.14
3.330	80yr	3,330	13,670	-7.25	4.75	-1.71	1.22
3.330	100yr	3,330	14,230	-7.25	4.76	-1.63	1.27
3.330	150yr	3,330	15,140	-7.25	4.78	-1.46	1.35
3.330	200yr	3,330	15,760	-7.25	4.79	-1.37	1.40

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
3.780	50yr	3.780	12.700	-9.05	4.73	-0.65	1.50
3.780	80yr	3.780	13.670	-9.05	4.76	-0.42	1.60
3.780	100yr	3.780	14.230	-9.05	4.77	-0.22	1.67
3.780	150yr	3.780	15.140	-9.05	4.79	-0.02	1.77
3.780	200yr	3.780	15.760	-9.05	4.80	0.13	1.84
4.240	50yr	4.240	12.700	-11.04	4.78	-2.95	1.48
4.240	80yr	4.240	13.670	-11.04	4.83	-2.59	1.58
4.240	100yr	4.240	14.230	-11.04	4.84	-2.38	1.64
4.240	150yr	4.240	15.140	-11.04	4.87	-2.00	1.74
4.240	200yr	4.240	15.760	-11.04	4.88	-1.46	1.81
4.567	50yr	4.567	12.700	-12.24	4.84	-2.72	1.39
4.567	80yr	4.567	13.670	-12.24	4.89	-2.43	1.49
4.567	100yr	4.567	14.230	-12.24	4.91	-2.26	1.54
4.567	150yr	4.567	15.140	-12.24	4.94	-2.00	1.63
4.567	200yr	4.567	15.760	-12.24	4.96	-1.82	1.69
4.580		Bridge					
4.593	50yr	4.593	12.700	-12.24	4.86	-2.73	1.39
4.593	80yr	4.593	13.670	-12.24	4.91	-2.43	1.48
4.593	100yr	4.593	14.230	-12.24	4.93	-2.26	1.54
4.593	150yr	4.593	15.140	-12.24	4.97	-2.00	1.63
4.593	200yr	4.593	15.760	-12.24	4.99	-1.82	1.69
4.860	50yr	4.860	12.700	-9.74	4.88	-0.83	1.39
4.860	80yr	4.860	13.670	-9.74	4.93	-0.53	1.49
4.860	100yr	4.860	14.230	-9.74	4.96	-0.41	1.54
4.860	150yr	4.860	15.140	-9.74	5.00	-0.21	1.63
4.860	200yr	4.860	15.760	-9.74	5.02	-0.14	1.69
5.390	50yr	5.390	12.700	-8.34	4.95	-2.15	1.19
5.390	80yr	5.390	13.670	-8.34	5.01	-1.95	1.28
5.390	100yr	5.390	14.230	-8.34	5.04	-1.84	1.32
5.390	150yr	5.390	15.140	-8.34	5.09	-1.67	1.40
5.390	200yr	5.390	15.760	-8.34	5.12	-1.57	1.45
6.110	50yr	6.110	12.700	-6.13	4.98	-1.61	1.31
6.110	80yr	6.110	13.670	-6.13	5.04	-1.48	1.40
6.110	100yr	6.110	14.230	-6.13	5.08	-1.40	1.45
6.110	150yr	6.110	15.140	-6.13	5.13	-1.29	1.54
6.110	200yr	6.110	15.760	-6.13	5.16	-1.21	1.59
6.750	50yr	6.750	12.700	-8.73	5.03	-1.22	1.24
6.750	80yr	6.750	13.670	-8.73	5.10	-1.12	1.32
6.750	100yr	6.750	14.230	-8.73	5.13	-0.95	1.37
6.750	150yr	6.750	15.140	-8.73	5.19	-0.75	1.44
6.750	200yr	6.750	15.760	-8.73	5.24	-0.62	1.49
7.210	50yr	7.210	12.700	-8.22	5.07	-1.11	1.12
7.210	80yr	7.210	13.670	-8.22	5.15	-0.92	1.20
7.210	100yr	7.210	14.230	-8.22	5.19	-0.81	1.24
7.210	150yr	7.210	15.140	-8.22	5.26	-0.66	1.31
7.210	200yr	7.210	15.760	-8.22	5.31	-0.56	1.35
7.740	50yr	7.740	12.700	-7.42	5.11	-1.02	1.16
7.740	80yr	7.740	13.670	-7.42	5.19	-0.89	1.23
7.740	100yr	7.740	14.230	-7.42	5.23	-0.82	1.27
7.740	150yr	7.740	15.140	-7.42	5.31	-0.74	1.34
7.740	200yr	7.740	15.760	-7.42	5.36	-0.66	1.39
8.160	50yr	8.160	12.700	-11.52	5.14	-0.69	1.21
8.160	80yr	8.160	13.670	-11.52	5.22	-0.57	1.28
8.160	100yr	8.160	14.230	-11.52	5.27	-0.48	1.33
8.160	150yr	8.160	15.140	-11.52	5.34	-0.37	1.40

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
8.160	200yr	8.160	15.760	-11.52	5.40	-0.29	1.45
8.670	50yr	8.670	12.700	-5.01	5.16	0.11	1.43
8.670	80yr	8.670	13.670	-5.01	5.25	0.24	1.52
8.670	100yr	8.670	14.230	-5.01	5.29	0.31	1.58
8.670	150yr	8.670	15.140	-5.01	5.36	0.41	1.66
8.670	200yr	8.670	15.760	-5.01	5.42	0.48	1.72
9.170	50yr	9.170	12.700	-6.71	5.20	-0.35	1.43
9.170	80yr	9.170	13.670	-6.71	5.29	-0.19	1.52
9.170	100yr	9.170	14.230	-6.71	5.33	-0.11	1.58
9.170	150yr	9.170	15.140	-6.71	5.42	-0.02	1.66
9.170	200yr	9.170	15.760	-6.71	5.49	0.06	1.72
9.640	50yr	9.640	12.700	-6.70	5.24	-0.37	1.46
9.640	80yr	9.640	13.670	-6.70	5.34	-0.22	1.55
9.640	100yr	9.640	14.230	-6.70	5.38	-0.18	1.60
9.640	150yr	9.640	15.140	-6.70	5.48	-0.06	1.68
9.640	200yr	9.640	15.760	-6.70	5.55	0.02	1.74
10.130	50yr	10.130	12.700	-4.20	5.28	0.17	1.58
10.130	80yr	10.130	13.670	-4.20	5.38	0.29	1.68
10.130	100yr	10.130	14.230	-4.20	5.42	0.36	1.74
10.130	150yr	10.130	15.140	-4.20	5.53	0.47	1.82
10.130	200yr	10.130	15.760	-4.20	5.60	0.55	1.88
10.600	50yr	10.600	12.700	-4.50	5.32	-0.23	1.70
10.600	80yr	10.600	13.670	-4.50	5.42	-0.02	1.81
10.600	100yr	10.600	14.230	-4.50	5.47	0.05	1.87
10.600	150yr	10.600	15.140	-4.50	5.58	0.24	1.96
10.600	200yr	10.600	15.760	-4.50	5.65	0.36	2.02
11.060	50yr	11.060	12.700	-7.69	5.36	-0.30	1.84
11.060	80yr	11.060	13.670	-7.69	5.47	-0.09	1.95
11.060	100yr	11.060	14.230	-7.69	5.51	0.03	2.02
11.060	150yr	11.060	15.140	-7.69	5.63	0.15	2.12
11.060	200yr	11.060	15.760	-7.69	5.70	0.24	2.19
11.520	50yr	11.520	12.700	-24.99	5.49	-12.82	1.23
11.520	80yr	11.520	13.670	-24.99	5.62	-12.47	1.31
11.520	100yr	11.520	14.230	-24.99	5.67	-12.28	1.36
11.520	150yr	11.520	15.140	-24.99	5.80	-11.98	1.43
11.520	200yr	11.520	15.760	-24.99	5.88	-11.76	1.48
12.250	50yr	12.250	12.700	-6.28	5.49	-0.24	1.59
12.250	80yr	12.250	13.670	-6.28	5.62	-0.11	1.68
12.250	100yr	12.250	14.230	-6.28	5.67	-0.02	1.74
12.250	150yr	12.250	15.140	-6.28	5.81	0.10	1.82
12.250	200yr	12.250	15.760	-6.28	5.89	0.18	1.87
12.850	50yr	12.850	12.700	-10.98	5.56	0.57	1.63
12.850	80yr	12.850	13.670	-10.98	5.69	0.77	1.72
12.850	100yr	12.850	14.230	-10.98	5.75	0.78	1.77
12.850	150yr	12.850	15.140	-10.98	5.89	0.98	1.85
12.850	200yr	12.850	15.760	-10.98	5.98	1.02	1.90
13.450	50yr	13.450	12.700	-5.88	5.68	-0.01	1.25
13.450	80yr	13.450	13.670	-5.88	5.83	0.11	1.32
13.450	100yr	13.450	14.230	-5.88	5.89	0.18	1.36
13.450	150yr	13.450	15.140	-5.88	6.04	0.28	1.42
13.450	200yr	13.450	15.760	-5.88	6.14	0.35	1.45
13.970	50yr	13.970	12.640	-4.97	5.71	0.24	1.39
13.970	80yr	13.970	13.600	-4.97	5.86	0.36	1.46
13.970	100yr	13.970	14.160	-4.97	5.93	0.43	1.51
13.970	150yr	13.970	15.060	-4.97	6.08	0.54	1.57
13.970	200yr	13.970	15.670	-4.97	6.17	0.61	1.61

건설교통넷

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
14.490	50yr	14.490	12.640	-5.87	5.75	0.14	1.44
14.490	80yr	14.490	13.600	-5.87	5.90	0.29	1.52
14.490	100yr	14.490	14.160	-5.87	5.97	0.36	1.56
14.490	150yr	14.490	15.060	-5.87	6.12	0.47	1.63
14.490	200yr	14.490	15.670	-5.87	6.22	0.54	1.67
15.020	50yr	15.020	12.640	-6.66	5.78	0.21	1.67
15.020	80yr	15.020	13.600	-6.66	5.93	0.38	1.76
15.020	100yr	15.020	14.160	-6.66	6.01	0.47	1.81
15.020	150yr	15.020	15.060	-6.66	6.16	0.61	1.89
15.020	200yr	15.020	15.670	-6.66	6.26	0.71	1.95
15.460	50yr	15.460	12.640	-7.76	5.81	0.88	1.88
15.460	80yr	15.460	13.600	-7.76	5.97	1.04	1.99
15.460	100yr	15.460	14.160	-7.76	6.04	1.10	2.05
15.460	150yr	15.460	15.060	-7.76	6.20	1.25	2.14
15.460	200yr	15.460	15.670	-7.76	6.30	1.29	2.19
15.960	50yr	15.960	12.640	-7.86	5.89	1.03	1.94
15.960	80yr	15.960	13.600	-7.86	6.05	1.27	2.04
15.960	100yr	15.960	14.160	-7.86	6.13	1.37	2.10
15.960	150yr	15.960	15.060	-7.86	6.29	1.56	2.18
15.960	200yr	15.960	15.670	-7.86	6.39	1.66	2.24
16.420	50yr	16.420	12.640	-8.05	5.98	0.32	1.86
16.420	80yr	16.420	13.600	-8.05	6.15	0.77	1.96
16.420	100yr	16.420	14.160	-8.05	6.23	0.92	2.01
16.420	150yr	16.420	15.060	-8.05	6.40	1.09	2.09
16.420	200yr	16.420	15.670	-8.05	6.51	1.28	2.14
16.910	50yr	16.910	12.640	-12.95	6.08	-1.11	1.90
16.910	80yr	16.910	13.600	-12.95	6.25	-0.91	1.99
16.910	100yr	16.910	14.160	-12.95	6.33	-0.76	2.05
16.910	150yr	16.910	15.060	-12.95	6.50	-0.58	2.12
16.910	200yr	16.910	15.670	-12.95	6.62	-0.39	2.18
17.373	50yr	17.373	12.640	-10.84	6.18	-0.83	1.77
17.373	80yr	17.373	13.600	-10.84	6.35	-0.60	1.85
17.373	100yr	17.373	14.160	-10.84	6.45	-0.47	1.90
17.373	150yr	17.373	15.060	-10.84	6.62	-0.32	1.97
17.373	200yr	17.373	15.670	-10.84	6.74	-0.19	2.01
17.380		Bridge					
17.386	50yr	17.386	12.640	-10.84	6.20	-0.84	1.77
17.386	80yr	17.386	13.600	-10.84	6.38	-0.60	1.85
17.386	100yr	17.386	14.160	-10.84	6.47	-0.48	1.89
17.386	150yr	17.386	15.060	-10.84	6.65	-0.33	1.96
17.386	200yr	17.386	15.670	-10.84	6.77	-0.20	2.00
17.850	50yr	17.850	12.640	-7.54	6.29	0.90	1.67
17.850	80yr	17.850	13.600	-7.54	6.47	1.07	1.75
17.850	100yr	17.850	14.160	-7.54	6.57	1.13	1.80
17.850	150yr	17.850	15.060	-7.54	6.75	1.25	1.86
17.850	200yr	17.850	15.670	-7.54	6.87	1.39	1.91
18.190	50yr	18.190	12.640	-5.34	6.34	0.72	1.66
18.190	80yr	18.190	13.600	-5.34	6.52	0.86	1.74
18.190	100yr	18.190	14.160	-5.34	6.62	0.95	1.79
18.190	150yr	18.190	15.060	-5.34	6.81	1.07	1.86
18.190	200yr	18.190	15.670	-5.34	6.93	1.15	1.90
18.710	50yr	18.710	12.640	-4.93	6.38	0.99	1.78
18.710	80yr	18.710	13.600	-4.93	6.57	1.14	1.87
18.710	100yr	18.710	14.160	-4.93	6.67	1.23	1.92
18.710	150yr	18.710	15.060	-4.93	6.86	1.38	2.00

건설교통부

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
18.710	200yr	18.710	15.670	-4.93	6.98	1.47	2.05
19.180	50yr	19.180	12.640	-6.03	6.47	0.50	1.63
19.180	80yr	19.180	13.600	-6.03	6.67	0.66	1.71
19.180	100yr	19.180	14.160	-6.03	6.77	0.76	1.75
19.180	150yr	19.180	15.060	-6.03	6.97	0.91	1.82
19.180	200yr	19.180	15.670	-6.03	7.09	1.01	1.86
19.620	50yr	19.620	12.640	-5.72	6.53	0.80	1.70
19.620	80yr	19.620	13.600	-5.72	6.72	0.97	1.78
19.620	100yr	19.620	14.160	-5.72	6.83	1.06	1.82
19.620	150yr	19.620	15.060	-5.72	7.03	1.21	1.88
19.620	200yr	19.620	15.670	-5.72	7.15	1.31	1.93
20.130	50yr	20.130	12.640	-5.92	6.59	0.91	1.79
20.130	80yr	20.130	13.600	-5.92	6.79	1.09	1.87
20.130	100yr	20.130	14.160	-5.92	6.90	1.20	1.91
20.130	150yr	20.130	15.060	-5.92	7.10	1.38	1.98
20.130	200yr	20.130	15.670	-5.92	7.23	1.51	2.02
20.580	50yr	20.580	12.640	-8.81	6.65	0.41	1.93
20.580	80yr	20.580	13.600	-8.81	6.86	0.69	2.01
20.580	100yr	20.580	14.160	-8.81	6.97	0.83	2.06
20.580	150yr	20.580	15.060	-8.81	7.17	1.04	2.13
20.580	200yr	20.580	15.670	-8.81	7.30	1.18	2.17
21.000	50yr	21.000	12.620	-13.40	6.72	-1.69	2.20
21.000	80yr	21.000	13.570	-13.40	6.93	-1.29	2.28
21.000	100yr	21.000	14.130	-13.40	7.04	-1.06	2.33
21.000	150yr	21.000	15.030	-13.40	7.24	-0.71	2.40
21.000	200yr	21.000	15.640	-13.40	7.37	-0.52	2.45
21.400	50yr	21.400	12.620	-20.01	6.90	-1.62	1.76
21.400	80yr	21.400	13.570	-20.01	7.12	-1.35	1.83
21.400	100yr	21.400	14.130	-20.01	7.24	-1.22	1.87
21.400	150yr	21.400	15.030	-20.01	7.44	-0.98	1.94
21.400	200yr	21.400	15.640	-20.01	7.58	-0.84	1.98
21.660	50yr	21.660	12.620	-5.50	6.94	0.54	1.77
21.660	80yr	21.660	13.570	-5.50	7.16	0.73	1.85
21.660	100yr	21.660	14.130	-5.50	7.28	0.87	1.89
21.660	150yr	21.660	15.030	-5.50	7.49	1.06	1.95
21.660	200yr	21.660	15.640	-5.50	7.63	1.18	1.99
22.110	50yr	22.110	12.620	-4.70	7.02	0.54	1.69
22.110	80yr	22.110	13.570	-4.70	7.24	0.70	1.77
22.110	100yr	22.110	14.130	-4.70	7.36	0.80	1.81
22.110	150yr	22.110	15.030	-4.70	7.57	0.95	1.88
22.110	200yr	22.110	15.640	-4.70	7.71	1.04	1.92
22.550	50yr	22.550	12.620	-6.60	7.08	0.95	1.74
22.550	80yr	22.550	13.570	-6.60	7.30	1.14	1.82
22.550	100yr	22.550	14.130	-6.60	7.42	1.28	1.86
22.550	150yr	22.550	15.030	-6.60	7.64	1.46	1.93
22.550	200yr	22.550	15.640	-6.60	7.78	1.56	1.97
23.250	50yr	23.250	12.620	-15.09	7.17	0.49	1.76
23.250	80yr	23.250	13.570	-15.09	7.40	0.78	1.83
23.250	100yr	23.250	14.130	-15.09	7.53	0.87	1.87
23.250	150yr	23.250	15.030	-15.09	7.74	1.14	1.94
23.250	200yr	23.250	15.640	-15.09	7.89	1.15	1.98
23.550	50yr	23.550	12.620	-7.88	7.26	0.28	1.47
23.550	80yr	23.550	13.570	-7.88	7.49	0.59	1.53
23.550	100yr	23.550	14.130	-7.88	7.63	0.88	1.57
23.550	150yr	23.550	15.030	-7.88	7.85	1.09	1.63
23.550	200yr	23.550	15.640	-7.88	8.00	1.18	1.66

건설교통부

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
24.050	50yr	24,050	12.620	-4.18	7.31	0.80	1.45
24.050	80yr	24,050	13.570	-4.18	7.54	0.96	1.51
24.050	100yr	24,050	14.130	-4.18	7.68	1.04	1.54
24.050	150yr	24,050	15.030	-4.18	7.90	1.18	1.60
24.050	200yr	24,050	15.640	-4.18	8.05	1.28	1.64
24.680	50yr	24,680	12.520	-7.88	7.37	0.70	1.41
24.680	80yr	24,680	13.460	-7.88	7.61	1.00	1.46
24.680	100yr	24,680	14.000	-7.88	7.75	1.28	1.49
24.680	150yr	24,680	14.910	-7.88	7.97	1.52	1.54
24.680	200yr	24,680	15.500	-7.88	8.12	1.65	1.57
25.330	50yr	25,330	12.520	-5.46	7.43	1.64	1.54
25.330	80yr	25,330	13.460	-5.46	7.67	1.83	1.60
25.330	100yr	25,330	14.000	-5.46	7.81	1.92	1.63
25.330	150yr	25,330	14.910	-5.46	8.04	2.74	1.68
25.330	200yr	25,330	15.500	-5.46	8.18	2.92	1.72
25.810	50yr	25,810	12.520	-6.47	7.49	1.98	1.50
25.810	80yr	25,810	13.460	-6.47	7.73	2.17	1.56
25.810	100yr	25,810	14.000	-6.47	7.88	2.64	1.59
25.810	150yr	25,810	14.910	-6.47	8.11	2.82	1.63
25.810	200yr	25,810	15.500	-6.47	8.24	2.89	1.67
26.140	50yr	26,140	12.520	-5.15	7.53	2.07	1.44
26.140	80yr	26,140	13.460	-5.15	7.78	2.24	1.50
26.140	100yr	26,140	14.000	-5.15	7.93	2.36	1.53
26.140	150yr	26,140	14.910	-5.15	8.16	2.91	1.57
26.140	200yr	26,140	15.500	-5.15	8.30	2.96	1.61
26.600	50yr	26,600	12.520	-5.66	7.58	1.75	1.50
26.600	80yr	26,600	13.460	-5.66	7.84	1.92	1.56
26.600	100yr	26,600	14.000	-5.66	7.98	2.01	1.59
26.600	150yr	26,600	14.910	-5.66	8.21	2.15	1.64
26.600	200yr	26,600	15.500	-5.66	8.35	2.23	1.67
26.990	50yr	26,990	12.520	-5.36	7.62	1.19	1.60
26.990	80yr	26,990	13.460	-5.36	7.87	1.38	1.66
26.990	100yr	26,990	14.000	-5.36	8.02	1.49	1.69
26.990	150yr	26,990	14.910	-5.36	8.25	1.65	1.75
26.990	200yr	26,990	15.500	-5.36	8.39	1.74	1.79
27.400	50yr	27,400	12.520	-21.35	7.66	-6.87	1.69
27.400	80yr	27,400	13.460	-21.35	7.91	-6.35	1.76
27.400	100yr	27,400	14.000	-21.35	8.06	-6.09	1.80
27.400	150yr	27,400	14.910	-21.35	8.28	-5.70	1.87
27.400	200yr	27,400	15.500	-21.35	8.43	-5.45	1.92
27.890	50yr	27,890	12.520	-10.85	7.69	0.50	2.03
27.890	80yr	27,890	13.460	-10.85	7.94	0.79	2.11
27.890	100yr	27,890	14.000	-10.85	8.09	0.94	2.15
27.890	150yr	27,890	14.910	-10.85	8.31	1.19	2.22
27.890	200yr	27,890	15.500	-10.85	8.46	1.36	2.27
28.290	50yr	28,290	12.520	-6.24	7.80	1.13	1.82
28.290	80yr	28,290	13.460	-6.24	8.06	1.36	1.88
28.290	100yr	28,290	14.000	-6.24	8.21	1.49	1.92
28.290	150yr	28,290	14.910	-6.24	8.44	1.75	1.98
28.290	200yr	28,290	15.500	-6.24	8.59	1.88	2.02
28.630	50yr	28,630	12.520	-4.64	7.91	1.78	1.50
28.630	80yr	28,630	13.460	-4.64	8.18	2.36	1.55
28.630	100yr	28,630	14.000	-4.64	8.34	2.75	1.57
28.630	150yr	28,630	14.910	-4.64	8.57	2.95	1.62
28.630	200yr	28,630	15.500	-4.64	8.73	3.04	1.65

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
29.030	50yr	29,030	12.520	-7.34	7.96	1.11	1.47
29.030	80yr	29,030	13.460	-7.34	8.23	1.35	1.52
29.030	100yr	29,030	14.000	-7.34	8.39	1.48	1.54
29.030	150yr	29,030	14.910	-7.34	8.62	1.69	1.59
29.030	200yr	29,030	15.500	-7.34	8.78	1.83	1.62
29.570	50yr	29,570	12.520	-9.53	8.01	0.65	1.60
29.570	80yr	29,570	13.460	-9.53	8.29	0.90	1.66
29.570	100yr	29,570	14.000	-9.53	8.44	1.04	1.69
29.570	150yr	29,570	14.910	-9.53	8.68	1.33	1.75
29.570	200yr	29,570	15.500	-9.53	8.83	1.50	1.78
30.160	50yr	30,160	12.520	-6.43	8.11	2.12	1.36
30.160	80yr	30,160	13.460	-6.43	8.39	2.25	1.40
30.160	100yr	30,160	14.000	-6.43	8.55	2.36	1.43
30.160	150yr	30,160	14.910	-6.43	8.79	3.28	1.48
30.160	200yr	30,160	15.500	-6.43	8.94	3.40	1.50
30.830	50yr	30,830	12.520	-2.92	8.17	2.00	1.34
30.830	80yr	30,830	13.460	-2.92	8.45	2.15	1.38
30.830	100yr	30,830	14.000	-2.92	8.61	2.24	1.41
30.830	150yr	30,830	14.910	-2.92	8.85	2.36	1.46
30.830	200yr	30,830	15.500	-2.92	9.01	2.44	1.48
31.400	50yr	31,400	12.520	-7.22	8.18	1.17	1.76
31.400	80yr	31,400	13.460	-7.22	8.46	2.15	1.82
31.400	100yr	31,400	14.000	-7.22	8.62	2.26	1.85
31.400	150yr	31,400	14.910	-7.22	8.86	2.48	1.91
31.400	200yr	31,400	15.500	-7.22	9.01	2.60	1.95
32.120	50yr	32,120	12.520	-13.72	8.29	-0.37	1.85
32.120	80yr	32,120	13.460	-13.72	8.57	0.07	1.91
32.120	100yr	32,120	14.000	-13.72	8.72	0.30	1.94
32.120	150yr	32,120	14.910	-13.72	8.97	0.69	2.00
32.120	200yr	32,120	15.500	-13.72	9.12	2.60	2.03
32.590	50yr	32,590	12.520	-12.21	8.39	-0.44	1.71
32.590	80yr	32,590	13.460	-12.21	8.67	1.78	1.76
32.590	100yr	32,590	14.000	-12.21	8.83	1.91	1.79
32.590	150yr	32,590	14.910	-12.21	9.08	2.19	1.85
32.590	200yr	32,590	15.500	-12.21	9.23	2.31	1.88
32.913	50yr	32,913	12.520	-13.90	8.44	-1.83	1.71
32.913	80yr	32,913	13.460	-13.90	8.72	-1.44	1.77
32.913	100yr	32,913	14.000	-13.90	8.88	-1.22	1.80
32.913	150yr	32,913	14.910	-13.90	9.12	-0.87	1.85
32.913	200yr	32,913	15.500	-13.90	9.28	-0.62	1.89
32.920		Bridge					
32.927	50yr	32,927	12.520	-13.90	8.46	-1.83	1.70
32.927	80yr	32,927	13.460	-13.90	8.74	-1.45	1.76
32.927	100yr	32,927	14.000	-13.90	8.89	-1.23	1.79
32.927	150yr	32,927	14.910	-13.90	9.14	-0.88	1.85
32.927	200yr	32,927	15.500	-13.90	9.30	-0.62	1.88
33.060	50yr	33,060	12.520	-11.71	8.48	-2.76	1.60
33.060	80yr	33,060	13.460	-11.71	8.77	-2.40	1.65
33.060	100yr	33,060	14.000	-11.71	8.92	-2.18	1.69
33.060	150yr	33,060	14.910	-11.71	9.17	-1.79	1.74
33.060	200yr	33,060	15.500	-11.71	9.33	-1.57	1.77
33.270	50yr	33,270	12.520	-14.31	8.50	-0.04	1.74
33.270	80yr	33,270	13.460	-14.31	8.78	0.30	1.80
33.270	100yr	33,270	14.000	-14.31	8.94	0.42	1.83
33.270	150yr	33,270	14.910	-14.31	9.18	0.74	1.89
33.270	200yr	33,270	15.500	-14.31	9.35	0.94	1.93

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
33.830	50yr	33,830	12.520	-5.50	8.61	1.87	1.54
33.830	80yr	33,830	13.460	-5.50	8.90	2.10	1.58
33.830	100yr	33,830	14.000	-5.50	9.05	2.22	1.61
33.830	150yr	33,830	14.910	-5.50	9.31	2.47	1.65
33.830	200yr	33,830	15.500	-5.50	9.47	2.58	1.68
34.490	50yr	34,490	11.880	-3.30	8.70	4.02	1.62
34.490	80yr	34,490	12.750	-3.30	8.97	4.19	1.67
34.490	100yr	34,490	13.250	-3.30	9.13	4.28	1.70
34.490	150yr	34,490	14.130	-3.30	9.38	4.38	1.75
34.490	200yr	34,490	14.740	-3.30	9.55	4.46	1.79
34.920	50yr	34,920	11.880	-5.20	8.76	1.68	1.66
34.920	80yr	34,920	12.750	-5.20	9.03	1.96	1.71
34.920	100yr	34,920	13.250	-5.20	9.19	2.10	1.74
34.920	150yr	34,920	14.130	-5.20	9.44	2.33	1.80
34.920	200yr	34,920	14.740	-5.20	9.61	2.52	1.84
35.370	50yr	35,370	11.880	-6.89	8.84	0.93	1.46
35.370	80yr	35,370	12.750	-6.89	9.11	1.95	1.51
35.370	100yr	35,370	13.250	-6.89	9.27	2.05	1.54
35.370	150yr	35,370	14.130	-6.89	9.53	2.30	1.60
35.370	200yr	35,370	14.740	-6.89	9.70	2.41	1.63
36.000	50yr	36,000	11.880	-6.29	8.90	1.68	1.64
36.000	80yr	36,000	12.750	-6.29	9.17	1.92	1.70
36.000	100yr	36,000	13.250	-6.29	9.33	2.09	1.73
36.000	150yr	36,000	14.130	-6.29	9.59	2.30	1.78
36.000	200yr	36,000	14.740	-6.29	9.75	2.48	1.82
36.560	50yr	36,560	11.880	-3.28	8.95	2.98	1.72
36.560	80yr	36,560	12.750	-3.28	9.23	3.24	1.77
36.560	100yr	36,560	13.250	-3.28	9.39	3.50	1.81
36.560	150yr	36,560	14.130	-3.28	9.65	3.94	1.86
36.560	200yr	36,560	14.740	-3.28	9.82	4.39	1.90
37.010	50yr	37,010	11.880	-3.08	9.01	3.41	1.84
37.010	80yr	37,010	12.750	-3.08	9.29	3.65	1.90
37.010	100yr	37,010	13.250	-3.08	9.45	3.69	1.93
37.010	150yr	37,010	14.130	-3.08	9.71	4.80	1.98
37.010	200yr	37,010	14.740	-3.08	9.88	4.96	2.02
37.710	50yr	37,710	11.880	-3.08	9.14	3.27	1.86
37.710	80yr	37,710	12.750	-3.08	9.42	3.52	1.92
37.710	100yr	37,710	13.250	-3.08	9.58	3.66	1.95
37.710	150yr	37,710	14.130	-3.08	9.84	4.82	2.01
37.710	200yr	37,710	14.740	-3.08	10.01	5.07	2.05
38.220	50yr	38,220	11.880	-4.07	9.13	2.97	2.66
38.220	80yr	38,220	12.750	-4.07	9.40	3.24	2.75
38.220	100yr	38,220	13.250	-4.07	9.56	3.40	2.80
38.220	150yr	38,220	14.130	-4.07	9.81	3.70	2.90
38.220	200yr	38,220	14.740	-4.07	9.98	3.89	2.96
38.620	50yr	38,620	11.770	-8.17	9.25	2.21	2.73
38.620	80yr	38,620	12.630	-8.17	9.52	2.48	2.84
38.620	100yr	38,620	13.130	-8.17	9.67	2.65	2.90
38.620	150yr	38,620	14.000	-8.17	9.93	2.94	3.00
38.620	200yr	38,620	14.640	-8.17	10.09	3.14	3.08
39.050	50yr	39,050	11.770	-5.76	9.44	3.11	2.45
39.050	80yr	39,050	12.630	-5.76	9.73	3.37	2.55
39.050	100yr	39,050	13.130	-5.76	9.89	3.52	2.60
39.050	150yr	39,050	14.000	-5.76	10.15	3.74	2.69
39.050	200yr	39,050	14.640	-5.76	10.33	3.91	2.76

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
39.520	50yr	39.520	11.770	-6.26	9.70	2.10	1.67
39.520	80yr	39.520	12.630	-6.26	10.00	3.07	1.73
39.520	100yr	39.520	13.130	-6.26	10.17	3.17	1.77
39.520	150yr	39.520	14.000	-6.26	10.45	3.34	1.83
39.520	200yr	39.520	14.640	-6.26	10.64	3.44	1.88
40.000	50yr	40.000	11.770	-9.06	9.77	0.45	1.49
40.000	80yr	40.000	12.630	-9.06	10.08	0.70	1.55
40.000	100yr	40.000	13.130	-9.06	10.25	0.84	1.58
40.000	150yr	40.000	14.000	-9.06	10.54	1.11	1.63
40.000	200yr	40.000	14.640	-9.06	10.73	1.26	1.67
40.470	50yr	40.470	11.770	-7.45	9.78	1.34	1.78
40.470	80yr	40.470	12.630	-7.45	10.09	1.60	1.85
40.470	100yr	40.470	13.130	-7.45	10.26	1.74	1.89
40.470	150yr	40.470	14.000	-7.45	10.54	2.01	1.95
40.470	200yr	40.470	14.640	-7.45	10.74	2.19	2.00
40.890	50yr	40.890	11.770	-2.55	9.80	4.15	2.17
40.890	80yr	40.890	12.630	-2.55	10.10	4.37	2.24
40.890	100yr	40.890	13.130	-2.55	10.27	4.47	2.28
40.890	150yr	40.890	14.000	-2.55	10.55	4.67	2.35
40.890	200yr	40.890	14.640	-2.55	10.75	4.81	2.41
41.490	50yr	41.490	11.770	-9.64	9.89	4.63	2.44
41.490	80yr	41.490	12.630	-9.64	10.19	4.74	2.52
41.490	100yr	41.490	13.130	-9.64	10.36	4.86	2.57
41.490	150yr	41.490	14.000	-9.64	10.64	5.11	2.65
41.490	200yr	41.490	14.640	-9.64	10.84	5.28	2.71
41.990	50yr	41.990	11.770	-6.34	10.09	3.35	2.04
41.990	80yr	41.990	12.630	-6.34	10.40	3.61	2.11
41.990	100yr	41.990	13.130	-6.34	10.58	3.69	2.15
41.990	150yr	41.990	14.000	-6.34	10.87	3.95	2.22
41.990	200yr	41.990	14.640	-6.34	11.07	4.10	2.27
42.540	50yr	42.540	11.770	-4.94	10.14	3.39	2.46
42.540	80yr	42.540	12.630	-4.94	10.45	3.69	2.54
42.540	100yr	42.540	13.130	-4.94	10.62	3.87	2.58
42.540	150yr	42.540	14.000	-4.94	10.92	4.15	2.66
42.540	200yr	42.540	14.640	-4.94	11.12	4.37	2.71
43.290	50yr	43.290	11.770	-2.63	10.43	3.42	1.98
43.290	80yr	43.290	12.630	-2.63	10.74	3.66	2.04
43.290	100yr	43.290	13.130	-2.63	10.92	3.79	2.07
43.290	150yr	43.290	14.000	-2.63	11.23	4.00	2.13
43.290	200yr	43.290	14.640	-2.63	11.43	4.19	2.17
43.850	50yr	43.850	11.770	-2.03	10.58	3.82	1.57
43.850	80yr	43.850	12.630	-2.03	10.90	4.46	1.62
43.850	100yr	43.850	13.130	-2.03	11.09	4.58	1.65
43.850	150yr	43.850	14.000	-2.03	11.39	4.70	1.70
43.850	200yr	43.850	14.640	-2.03	11.61	4.82	1.74
44.450	50yr	44.450	11.770	-4.42	10.66	3.18	1.43
44.450	80yr	44.450	12.630	-4.42	10.98	3.38	1.48
44.450	100yr	44.450	13.130	-4.42	11.17	3.49	1.50
44.450	150yr	44.450	14.000	-4.42	11.48	3.70	1.55
44.450	200yr	44.450	14.640	-4.42	11.69	3.80	1.58
45.060	50yr	45.060	11.770	-4.02	10.69	3.11	1.65
45.060	80yr	45.060	12.630	-4.02	11.02	3.34	1.70
45.060	100yr	45.060	13.130	-4.02	11.20	3.47	1.73
45.060	150yr	45.060	14.000	-4.02	11.51	3.73	1.78
45.060	200yr	45.060	14.640	-4.02	11.73	3.86	1.82
45.650	50yr	45.650	11.770	-7.42	10.79	0.89	1.37

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
45.650	80yr	45.650	12.630	-7.42	11.12	1.13	1.42
45.650	100yr	45.650	13.130	-7.42	11.30	1.26	1.45
45.650	150yr	45.650	14.000	-7.42	11.62	1.46	1.49
45.650	200yr	45.650	14.640	-7.42	11.83	1.63	1.53
46.200	50yr	46.200	11.770	-2.91	10.85	2.81	1.17
46.200	80yr	46.200	12.630	-2.91	11.18	3.11	1.20
46.200	100yr	46.200	13.130	-2.91	11.37	3.25	1.22
46.200	150yr	46.200	14.000	-2.91	11.69	3.44	1.26
46.200	200yr	46.200	14.640	-2.91	11.91	3.59	1.29
46.670	50yr	46.670	11.770	-1.71	10.87	3.62	1.26
46.670	80yr	46.670	12.630	-1.71	11.21	3.80	1.29
46.670	100yr	46.670	13.130	-1.71	11.39	3.87	1.31
46.670	150yr	46.670	14.000	-1.71	11.71	4.59	1.35
46.670	200yr	46.670	14.640	-1.71	11.93	4.70	1.38
47.270	50yr	47.270	11.770	-1.90	10.91	4.12	1.32
47.270	80yr	47.270	12.630	-1.90	11.24	4.35	1.36
47.270	100yr	47.270	13.130	-1.90	11.43	4.46	1.38
47.270	150yr	47.270	14.000	-1.90	11.74	4.62	1.42
47.270	200yr	47.270	14.640	-1.90	11.96	4.73	1.44
47.800	50yr	47.800	11.770	-3.29	10.94	3.20	1.55
47.800	80yr	47.800	12.630	-3.29	11.27	3.64	1.59
47.800	100yr	47.800	13.130	-3.29	11.46	3.83	1.62
47.800	150yr	47.800	14.000	-3.29	11.77	4.13	1.66
47.800	200yr	47.800	14.640	-3.29	11.99	4.32	1.69
48.100	50yr	48.100	11.770	-4.38	10.97	1.88	1.58
48.100	80yr	48.100	12.630	-4.38	11.31	2.12	1.63
48.100	100yr	48.100	13.130	-4.38	11.49	2.25	1.66
48.100	150yr	48.100	14.000	-4.38	11.79	2.49	1.71
48.100	200yr	48.100	14.640	-4.38	12.01	2.66	1.74
48.500	50yr	48.500	11.770	-5.31	11.01	1.92	1.67
48.500	80yr	48.500	12.630	-5.31	11.34	2.25	1.72
48.500	100yr	48.500	13.130	-5.31	11.53	2.44	1.75
48.500	150yr	48.500	14.000	-5.31	11.82	2.90	1.80
48.500	200yr	48.500	14.640	-5.31	12.04	3.10	1.84
48.970	50yr	48.970	11.770	-6.52	11.05	3.90	1.93
48.970	80yr	48.970	12.630	-6.52	11.38	4.39	1.96
48.970	100yr	48.970	13.130	-6.52	11.57	4.72	1.98
48.970	150yr	48.970	14.000	-6.52	11.86	5.04	2.02
48.970	200yr	48.970	14.640	-6.52	12.08	5.22	2.04
49.400	50yr	49.400	11.770	-5.08	11.22	2.45	1.31
49.400	80yr	49.400	12.630	-5.08	11.55	2.67	1.34
49.400	100yr	49.400	13.130	-5.08	11.74	2.79	1.36
49.400	150yr	49.400	14.000	-5.08	12.04	3.02	1.39
49.400	200yr	49.400	14.640	-5.08	12.26	3.17	1.42
49.820	50yr	49.820	11.590	-2.55	11.25	3.66	1.36
49.820	80yr	49.820	12.430	-2.55	11.58	3.90	1.39
49.820	100yr	49.820	12.930	-2.55	11.77	3.97	1.40
49.820	150yr	49.820	13.780	-2.55	12.07	4.76	1.44
49.820	200yr	49.820	14.460	-2.55	12.29	4.89	1.47
50.300	50yr	50.300	11.590	-3.68	11.29	2.61	1.40
50.300	80yr	50.300	12.430	-3.68	11.62	2.86	1.44
50.300	100yr	50.300	12.930	-3.68	11.81	3.01	1.45
50.300	150yr	50.300	13.780	-3.68	12.10	3.24	1.49
50.300	200yr	50.300	14.460	-3.68	12.32	3.42	1.52
50.800	50yr	50.800	11.590	-4.54	11.37	0.90	1.12
50.800	80yr	50.800	12.430	-4.54	11.70	1.09	1.15

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
50.800	100yr	50.800	12.930	-4.54	11.89	1.20	1.17
50.800	150yr	50.800	13.780	-4.54	12.19	1.38	1.20
50.800	200yr	50.800	14.460	-4.54	12.41	1.53	1.22
51.220	50yr	51.220	11.590	-1.09	11.39	4.09	1.29
51.220	80yr	51.220	12.430	-1.09	11.71	4.24	1.32
51.220	100yr	51.220	12.930	-1.09	11.90	4.33	1.34
51.220	150yr	51.220	13.780	-1.09	12.20	4.48	1.37
51.220	200yr	51.220	14.460	-1.09	12.42	4.59	1.39
51.540	50yr	51.540	11.590	-1.44	11.39	4.19	1.68
51.540	80yr	51.540	12.430	-1.44	11.72	4.44	1.71
51.540	100yr	51.540	12.930	-1.44	11.91	4.57	1.73
51.540	150yr	51.540	13.780	-1.44	12.20	4.76	1.77
51.540	200yr	51.540	14.460	-1.44	12.42	4.94	1.80
52.090	50yr	52.090	11.590	-15.11	11.46	1.52	1.87
52.090	80yr	52.090	12.430	-15.11	11.78	1.98	1.92
52.090	100yr	52.090	12.930	-15.11	11.97	2.43	1.95
52.090	150yr	52.090	13.780	-15.11	12.26	2.96	2.01
52.090	200yr	52.090	14.460	-15.11	12.48	3.35	2.05
52.156	50yr	52.156	11.580	-6.07	11.46	4.48	1.93
52.156	80yr	52.156	12.420	-6.07	11.78	4.81	1.98
52.156	100yr	52.156	12.920	-6.07	11.97	4.98	2.02
52.156	150yr	52.156	13.770	-6.07	12.26	5.25	2.07
52.156	200yr	52.156	14.450	-6.07	12.48	5.60	2.12
52.160		Bridge					
52.170	50yr	52.170	11.580	-6.07	11.49	4.48	1.92
52.170	80yr	52.170	12.420	-6.07	11.81	4.80	1.98
52.170	100yr	52.170	12.920	-6.07	12.00	4.97	2.01
52.170	150yr	52.170	13.770	-6.07	12.29	5.25	2.07
52.170	200yr	52.170	14.450	-6.07	12.51	5.60	2.11
52.180		Bridge					
52.192	50yr	52.192	11.580	-6.07	11.51	4.48	1.92
52.192	80yr	52.192	12.420	-6.07	11.83	4.81	1.97
52.192	100yr	52.192	12.920	-6.07	12.02	4.99	2.00
52.192	150yr	52.192	13.770	-6.07	12.32	5.24	2.06
52.192	200yr	52.192	14.450	-6.07	12.53	5.60	2.10
52.540	50yr	52.540	11.580	-3.72	11.59	4.47	1.80
52.540	80yr	52.540	12.420	-3.72	11.92	4.69	1.85
52.540	100yr	52.540	12.920	-3.72	12.11	4.85	1.88
52.540	150yr	52.540	13.770	-3.72	12.40	5.12	1.93
52.540	200yr	52.540	14.450	-3.72	12.62	5.33	1.97
52.910	50yr	52.910	11.580	-4.37	11.62	3.49	2.01
52.910	80yr	52.910	12.420	-4.37	11.94	3.74	2.07
52.910	100yr	52.910	12.920	-4.37	12.13	3.88	2.11
52.910	150yr	52.910	13.770	-4.37	12.43	4.11	2.18
52.910	200yr	52.910	14.450	-4.37	12.64	4.29	2.23
53.350	50yr	53.350	11.580	-3.28	11.72	3.23	1.85
53.350	80yr	53.350	12.420	-3.28	12.04	3.44	1.92
53.350	100yr	53.350	12.920	-3.28	12.23	3.55	1.96
53.350	150yr	53.350	13.770	-3.28	12.53	3.78	2.03
53.350	200yr	53.350	14.450	-3.28	12.74	3.94	2.09
53.760	50yr	53.760	11.580	-3.25	11.79	2.83	1.71
53.760	80yr	53.760	12.420	-3.25	12.12	3.05	1.78
53.760	100yr	53.760	12.920	-3.25	12.31	3.18	1.81
53.760	150yr	53.760	13.770	-3.25	12.61	3.39	1.88
53.760	200yr	53.760	14.450	-3.25	12.83	3.56	1.93

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
54.270	50yr	54,270	11,580	-3.49	11.76	5.07	2.46
54.270	80yr	54,270	12,420	-3.49	12.08	5.36	2.54
54.270	100yr	54,270	12,920	-3.49	12.27	5.52	2.58
54.270	150yr	54,270	13,770	-3.49	12.57	5.79	2.66
54.270	200yr	54,270	14,450	-3.49	12.78	6.09	2.72
54.730	50yr	54,730	11,580	-2.45	11.86	5.93	2.66
54.730	80yr	54,730	12,420	-2.45	12.18	6.20	2.73
54.730	100yr	54,730	12,920	-2.45	12.37	6.34	2.77
54.730	150yr	54,730	13,770	-2.45	12.67	6.64	2.85
54.730	200yr	54,730	14,450	-2.45	12.89	7.13	2.91
55.320	50yr	55,320	11,580	-3.81	12.20	5.07	1.77
55.320	80yr	55,320	12,420	-3.81	12.53	5.29	1.83
55.320	100yr	55,320	12,920	-3.81	12.73	5.42	1.86
55.320	150yr	55,320	13,770	-3.81	13.04	5.65	1.91
55.320	200yr	55,320	14,450	-3.81	13.27	5.85	1.96
55.940	50yr	55,940	11,580	0.29	12.28	6.46	1.86
55.940	80yr	55,940	12,420	0.29	12.62	6.71	1.90
55.940	100yr	55,940	12,920	0.29	12.81	6.84	1.93
55.940	150yr	55,940	13,770	0.29	13.13	7.04	1.97
55.940	200yr	55,940	14,450	0.29	13.36	7.25	2.00
56.413	50yr	56,413	11,580	-3.91	12.31	5.97	2.40
56.413	80yr	56,413	12,420	-3.91	12.64	6.22	2.45
56.413	100yr	56,413	12,920	-3.91	12.83	6.35	2.49
56.413	150yr	56,413	13,770	-3.91	13.14	6.59	2.54
56.413	200yr	56,413	14,450	-3.91	13.37	6.78	2.59
56.420		Bridge					
56.427	50yr	56,427	11,580	-3.91	12.33	5.97	2.39
56.427	80yr	56,427	12,420	-3.91	12.67	6.21	2.44
56.427	100yr	56,427	12,920	-3.91	12.87	6.35	2.47
56.427	150yr	56,427	13,770	-3.91	13.17	6.59	2.53
56.427	200yr	56,427	14,450	-3.91	13.40	6.78	2.58
56.510	50yr	56,510	11,580	-2.81	12.35	6.40	2.52
56.510	80yr	56,510	12,420	-2.81	12.69	6.66	2.56
56.510	100yr	56,510	12,920	-2.81	12.88	6.83	2.59
56.510	150yr	56,510	13,770	-2.81	13.17	7.06	2.65
56.510	200yr	56,510	14,450	-2.81	13.41	7.19	2.69
56.970	50yr	56,970	11,580	-0.72	12.51	6.14	2.50
56.970	80yr	56,970	12,420	-0.72	12.84	6.36	2.57
56.970	100yr	56,970	12,920	-0.72	13.03	6.51	2.61
56.970	150yr	56,970	13,770	-0.72	13.32	6.75	2.68
56.970	200yr	56,970	14,450	-0.72	13.55	6.95	2.74
57.330	50yr	57,330	11,580	-3.01	12.70	6.72	2.13
57.330	80yr	57,330	12,420	-3.01	13.03	6.91	2.19
57.330	100yr	57,330	12,920	-3.01	13.23	7.02	2.22
57.330	150yr	57,330	13,770	-3.01	13.52	7.21	2.28
57.330	200yr	57,330	14,450	-3.01	13.76	7.33	2.32
57.810	50yr	57,810	11,170	-0.51	12.89	5.76	1.66
57.810	80yr	57,810	11,970	-0.51	13.22	5.99	1.71
57.810	100yr	57,810	12,450	-0.51	13.42	6.47	1.74
57.810	150yr	57,810	13,280	-0.51	13.72	6.64	1.79
57.810	200yr	57,810	14,040	-0.51	13.96	6.80	1.84
58.080	50yr	58,080	11,170	-3.11	12.91	4.45	1.72
58.080	80yr	58,080	11,970	-3.11	13.25	4.66	1.78
58.080	100yr	58,080	12,450	-3.11	13.44	4.78	1.81
58.080	150yr	58,080	13,280	-3.11	13.75	5.01	1.87

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
58.080	200yr	58.080	14.040	-3.11	13.98	5.21	1.94
58.570	50yr	58.570	11.170	-1.11	12.94	6.77	2.03
58.570	80yr	58.570	11.970	-1.11	13.27	6.94	2.08
58.570	100yr	58.570	12.450	-1.11	13.47	7.04	2.11
58.570	150yr	58.570	13.280	-1.11	13.77	7.26	2.17
58.570	200yr	58.570	14.040	-1.11	14.01	7.42	2.23
59.060	50yr	59.060	11.170	-1.81	13.11	5.99	1.53
59.060	80yr	59.060	11.970	-1.81	13.44	6.20	1.58
59.060	100yr	59.060	12.450	-1.81	13.64	6.31	1.60
59.060	150yr	59.060	13.280	-1.81	13.95	6.50	1.65
59.060	200yr	59.060	14.040	-1.81	14.20	6.69	1.70
59.520	50yr	59.520	11.170	-0.30	13.15	5.56	1.60
59.520	80yr	59.520	11.970	-0.30	13.49	5.80	1.65
59.520	100yr	59.520	12.450	-0.30	13.69	5.92	1.67
59.520	150yr	59.520	13.280	-0.30	14.00	6.11	1.72
59.520	200yr	59.520	14.040	-0.30	14.25	6.27	1.77
59.990	50yr	59.990	11.170	-0.92	13.18	6.48	2.03
59.990	80yr	59.990	11.970	-0.92	13.51	6.72	2.07
59.990	100yr	59.990	12.450	-0.92	13.71	6.86	2.10
59.990	150yr	59.990	13.280	-0.92	14.02	7.10	2.16
59.990	200yr	59.990	14.040	-0.92	14.26	7.30	2.21
60.510	50yr	60.510	11.170	0.21	13.28	6.11	1.98
60.510	80yr	60.510	11.970	0.21	13.61	6.30	2.04
60.510	100yr	60.510	12.450	0.21	13.81	6.41	2.08
60.510	150yr	60.510	13.280	0.21	14.11	6.61	2.15
60.510	200yr	60.510	14.040	0.21	14.36	6.80	2.22
60.950	50yr	60.950	11.170	1.00	13.39	7.08	1.78
60.950	80yr	60.950	11.970	1.00	13.71	7.26	1.84
60.950	100yr	60.950	12.450	1.00	13.92	7.36	1.87
60.950	150yr	60.950	13.280	1.00	14.23	7.53	1.93
60.950	200yr	60.950	14.040	1.00	14.47	7.68	1.98
61.430	50yr	61.430	11.170	0.03	13.47	6.33	1.70
61.430	80yr	61.430	11.970	0.03	13.80	6.51	1.76
61.430	100yr	61.430	12.450	0.03	14.01	6.62	1.79
61.430	150yr	61.430	13.280	0.03	14.31	6.81	1.85
61.430	200yr	61.430	14.040	0.03	14.55	6.95	1.91
61.870	50yr	61.870	11.170	-1.09	13.50	6.21	1.89
61.870	80yr	61.870	11.970	-1.09	13.83	6.41	1.95
61.870	100yr	61.870	12.450	-1.09	14.04	6.53	1.98
61.870	150yr	61.870	13.280	-1.09	14.35	6.73	2.04
61.870	200yr	61.870	14.040	-1.09	14.59	6.90	2.10
61.884	50yr	61.884	11.170	-1.09	13.48	7.02	2.08
61.884	80yr	61.884	11.970	-1.09	13.81	7.23	2.14
61.884	100yr	61.884	12.450	-1.09	14.01	7.35	2.17
61.884	150yr	61.884	13.280	-1.09	14.32	7.55	2.23
61.884	200yr	61.884	14.040	-1.09	14.56	7.73	2.30
61.900		Bridge					
61.916	50yr	61.916	11.170	-1.09	13.50	7.03	2.07
61.916	80yr	61.916	11.970	-1.09	13.82	7.23	2.13
61.916	100yr	61.916	12.450	-1.09	14.03	7.35	2.16
61.916	150yr	61.916	13.280	-1.09	14.34	7.55	2.23
61.916	200yr	61.916	14.040	-1.09	14.58	7.72	2.29
62.320	50yr	62.320	11.170	0.80	13.52	7.39	2.44
62.320	80yr	62.320	11.970	0.80	13.85	7.69	2.52
62.320	100yr	62.320	12.450	0.80	14.06	7.83	2.56

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
62.320	150yr	62,320	13,280	0.80	14.36	8.04	2.65
62.320	200yr	62,320	14,040	0.80	14.60	8.22	2.73
62.790	50yr	62,790	11,170	-0.87	13.58	6.36	2.74
62.790	80yr	62,790	11,970	-0.87	13.90	6.61	2.85
62.790	100yr	62,790	12,450	-0.87	14.11	6.77	2.90
62.790	150yr	62,790	13,280	-0.87	14.41	7.03	3.01
62.790	200yr	62,790	14,040	-0.87	14.64	7.26	3.11
63.390	50yr	63,390	11,170	-3.04	13.82	6.09	2.41
63.390	80yr	63,390	11,970	-3.04	14.15	6.32	2.49
63.390	100yr	63,390	12,450	-3.04	14.36	6.45	2.54
63.390	150yr	63,390	13,280	-3.04	14.68	6.68	2.63
63.390	200yr	63,390	14,040	-3.04	14.93	6.88	2.72
64.040	50yr	64,040	11,170	-1.35	14.03	6.43	2.03
64.040	80yr	64,040	11,970	-1.35	14.36	6.65	2.11
64.040	100yr	64,040	12,450	-1.35	14.58	6.77	2.15
64.040	150yr	64,040	13,280	-1.35	14.91	6.97	2.22
64.040	200yr	64,040	14,040	-1.35	15.17	7.12	2.29
64.510	50yr	64,510	11,170	1.34	14.12	7.82	2.01
64.510	80yr	64,510	11,970	1.34	14.45	8.18	2.06
64.510	100yr	64,510	12,450	1.34	14.67	8.32	2.09
64.510	150yr	64,510	13,280	1.34	15.00	8.56	2.14
64.510	200yr	64,510	14,040	1.34	15.27	8.72	2.20
65.040	50yr	65,040	11,170	0.08	14.20	7.55	2.17
65.040	80yr	65,040	11,970	0.08	14.53	7.80	2.24
65.040	100yr	65,040	12,450	0.08	14.75	7.92	2.27
65.040	150yr	65,040	13,280	0.08	15.08	8.10	2.34
65.040	200yr	65,040	14,040	0.08	15.35	8.28	2.40
65.470	50yr	65,470	11,170	0.01	14.22	7.20	2.57
65.470	80yr	65,470	11,970	0.01	14.55	7.43	2.66
65.470	100yr	65,470	12,450	0.01	14.77	7.57	2.71
65.470	150yr	65,470	13,280	0.01	15.10	7.80	2.80
65.470	200yr	65,470	14,040	0.01	15.36	8.01	2.89
66.110	50yr	66,110	11,170	-0.70	14.30	7.17	3.00
66.110	80yr	66,110	11,970	-0.70	14.63	7.44	3.12
66.110	100yr	66,110	12,450	-0.70	14.85	7.60	3.19
66.110	150yr	66,110	13,280	-0.70	15.17	7.87	3.31
66.110	200yr	66,110	14,040	-0.70	15.42	8.11	3.42
66.470	50yr	66,470	11,170	-0.72	14.47	6.75	2.73
66.470	80yr	66,470	11,970	-0.72	14.82	7.00	2.84
66.470	100yr	66,470	12,450	-0.72	15.03	7.15	2.90
66.470	150yr	66,470	13,280	-0.72	15.37	7.40	3.01
66.470	200yr	66,470	14,040	-0.72	15.63	7.62	3.12
66.920	50yr	66,920	11,170	0.50	14.61	7.87	2.62
66.920	80yr	66,920	11,970	0.50	14.97	8.11	2.71
66.920	100yr	66,920	12,450	0.50	15.19	8.25	2.75
66.920	150yr	66,920	13,280	0.50	15.55	8.49	2.83
66.920	200yr	66,920	14,040	0.50	15.83	8.70	2.92
67.400	50yr	67,400	11,170	0.32	14.81	6.91	2.22
67.400	80yr	67,400	11,970	0.32	15.18	7.13	2.30
67.400	100yr	67,400	12,450	0.32	15.41	7.26	2.34
67.400	150yr	67,400	13,280	0.32	15.78	7.45	2.41
67.400	200yr	67,400	14,040	0.32	16.06	7.64	2.49
67.910	50yr	67,910	11,170	-1.25	14.97	7.43	1.86
67.910	80yr	67,910	11,970	-1.25	15.35	7.81	1.92
67.910	100yr	67,910	12,450	-1.25	15.58	7.96	1.95
67.910	150yr	67,910	13,280	-1.25	15.95	8.23	2.00

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
67.910	200yr	67.910	14.040	-1.25	16.25	8.44	2.06
68.370	50yr	68.370	11.170	-3.22	15.07	5.95	1.61
68.370	80yr	68.370	11.970	-3.22	15.45	6.20	1.66
68.370	100yr	68.370	12.450	-3.22	15.68	6.29	1.69
68.370	150yr	68.370	13.280	-3.22	16.06	6.53	1.75
68.370	200yr	68.370	14.040	-3.22	16.36	6.71	1.80
68.970	50yr	68.970	11.170	-1.48	15.16	5.33	1.34
68.970	80yr	68.970	11.970	-1.48	15.54	5.54	1.38
68.970	100yr	68.970	12.450	-1.48	15.78	5.66	1.40
68.970	150yr	68.970	13.280	-1.48	16.16	5.86	1.44
68.970	200yr	68.970	14.040	-1.48	16.46	6.05	1.48
69.500	50yr	69.500	11.170	-1.42	15.17	6.72	1.68
69.500	80yr	69.500	11.970	-1.42	15.55	6.94	1.73
69.500	100yr	69.500	12.450	-1.42	15.78	7.07	1.76
69.500	150yr	69.500	13.280	-1.42	16.16	7.30	1.81
69.500	200yr	69.500	14.040	-1.42	16.46	7.53	1.86
70.100	50yr	70.100	11.170	-0.32	15.24	6.62	1.60
70.100	80yr	70.100	11.970	-0.32	15.62	6.85	1.66
70.100	100yr	70.100	12.450	-0.32	15.85	6.95	1.69
70.100	150yr	70.100	13.280	-0.32	16.23	7.19	1.74
70.100	200yr	70.100	14.040	-0.32	16.54	7.47	1.80
70.610	50yr	70.610	11.170	-1.92	15.25	7.29	1.95
70.610	80yr	70.610	11.970	-1.92	15.63	7.48	2.01
70.610	100yr	70.610	12.450	-1.92	15.86	7.62	2.04
70.610	150yr	70.610	13.280	-1.92	16.24	7.78	2.10
70.610	200yr	70.610	14.040	-1.92	16.54	8.00	2.16
71.110	50yr	71.110	11.170	-1.02	15.31	6.57	2.00
71.110	80yr	71.110	11.970	-1.02	15.69	6.81	2.06
71.110	100yr	71.110	12.450	-1.02	15.92	6.95	2.10
71.110	150yr	71.110	13.280	-1.02	16.30	7.18	2.16
71.110	200yr	71.110	14.040	-1.02	16.60	7.41	2.23
71.560	50yr	71.560	11.040	-0.48	15.38	7.69	1.93
71.560	80yr	71.560	11.830	-0.48	15.76	7.90	1.99
71.560	100yr	71.560	12.300	-0.48	15.99	8.01	2.02
71.560	150yr	71.560	13.130	-0.48	16.37	8.22	2.08
71.560	200yr	71.560	13.900	-0.48	16.68	8.40	2.14
72.060	50yr	72.060	11.040	0.81	15.49	7.63	1.65
72.060	80yr	72.060	11.830	0.81	15.87	7.80	1.70
72.060	100yr	72.060	12.300	0.81	16.11	7.91	1.73
72.060	150yr	72.060	13.130	0.81	16.49	8.09	1.79
72.060	200yr	72.060	13.900	0.81	16.80	8.25	1.84
72.570	50yr	72.570	11.040	-1.12	15.49	6.96	2.06
72.570	80yr	72.570	11.830	-1.12	15.88	7.22	2.11
72.570	100yr	72.570	12.300	-1.12	16.12	7.36	2.14
72.570	150yr	72.570	13.130	-1.12	16.50	7.60	2.19
72.570	200yr	72.570	13.900	-1.12	16.81	7.83	2.25
73.010	50yr	73.010	11.040	-1.73	15.55	7.18	2.18
73.010	80yr	73.010	11.830	-1.73	15.94	7.50	2.24
73.010	100yr	73.010	12.300	-1.73	16.17	7.63	2.27
73.010	150yr	73.010	13.130	-1.73	16.56	7.88	2.33
73.010	200yr	73.010	13.900	-1.73	16.86	8.07	2.39
73.540	50yr	73.540	11.040	1.52	15.67	8.72	2.15
73.540	80yr	73.540	11.830	1.52	16.05	8.94	2.20
73.540	100yr	73.540	12.300	1.52	16.29	9.06	2.23
73.540	150yr	73.540	13.130	1.52	16.67	9.28	2.28
73.540	200yr	73.540	13.900	1.52	16.99	9.48	2.33

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
74.180	50yr	74,180	11,040	1.19	15.79	8.38	2.34
74.180	80yr	74,180	11,830	1.19	16.17	8.63	2.39
74.180	100yr	74,180	12,300	1.19	16.41	8.78	2.41
74.180	150yr	74,180	13,130	1.19	16.79	9.04	2.46
74.180	200yr	74,180	13,900	1.19	17.11	9.26	2.52
74.640	50yr	74,640	11,040	-1.30	15.88	8.25	2.55
74.640	80yr	74,640	11,830	-1.30	16.27	8.65	2.61
74.640	100yr	74,640	12,300	-1.30	16.49	8.83	2.65
74.640	150yr	74,640	13,130	-1.30	16.87	9.11	2.71
74.640	200yr	74,640	13,900	-1.30	17.18	9.35	2.77
75.120	50yr	75,120	11,040	-0.97	16.04	8.02	2.46
75.120	80yr	75,120	11,830	-0.97	16.42	8.27	2.53
75.120	100yr	75,120	12,300	-0.97	16.64	8.48	2.57
75.120	150yr	75,120	13,130	-0.97	17.02	8.96	2.64
75.120	200yr	75,120	13,900	-0.97	17.33	9.22	2.71
75.630	50yr	75,630	11,040	1.16	16.13	8.48	2.65
75.630	80yr	75,630	11,830	1.16	16.51	8.79	2.72
75.630	100yr	75,630	12,300	1.16	16.73	9.10	2.77
75.630	150yr	75,630	13,130	1.16	17.11	9.70	2.85
75.630	200yr	75,630	13,900	1.16	17.42	9.92	2.92
76.270	50yr	76,270	11,040	0.30	16.25	8.17	2.82
76.270	80yr	76,270	11,830	0.30	16.62	8.45	2.92
76.270	100yr	76,270	12,300	0.30	16.84	8.61	2.98
76.270	150yr	76,270	13,130	0.30	17.22	8.86	3.09
76.270	200yr	76,270	13,900	0.30	17.53	9.11	3.19
76.720	50yr	76,720	11,040	0.31	16.32	9.28	3.08
76.720	80yr	76,720	11,830	0.31	16.69	9.55	3.19
76.720	100yr	76,720	12,300	0.31	16.91	9.71	3.25
76.720	150yr	76,720	13,130	0.31	17.28	9.98	3.36
76.720	200yr	76,720	13,900	0.31	17.60	10.23	3.46
77.320	50yr	77,320	11,040	2.21	16.66	8.78	2.42
77.320	80yr	77,320	11,830	2.21	17.05	9.04	2.50
77.320	100yr	77,320	12,300	2.21	17.29	9.19	2.54
77.320	150yr	77,320	13,130	2.21	17.68	9.46	2.62
77.320	200yr	77,320	13,900	2.21	18.01	9.69	2.70
77.910	50yr	77,910	11,040	-0.40	16.81	8.45	2.19
77.910	80yr	77,910	11,830	-0.40	17.21	8.72	2.27
77.910	100yr	77,910	12,300	-0.40	17.44	8.87	2.31
77.910	150yr	77,910	13,130	-0.40	17.84	9.13	2.39
77.910	200yr	77,910	13,900	-0.40	18.18	9.37	2.46
78.320	50yr	78,320	11,040	1.33	16.84	9.08	2.45
78.320	80yr	78,320	11,830	1.33	17.23	9.33	2.54
78.320	100yr	78,320	12,300	1.33	17.47	9.48	2.58
78.320	150yr	78,320	13,130	1.33	17.86	9.74	2.67
78.320	200yr	78,320	13,900	1.33	18.20	9.99	2.75
78.920	50yr	78,920	11,040	1.06	16.98	9.77	2.38
78.920	80yr	78,920	11,830	1.06	17.38	10.03	2.44
78.920	100yr	78,920	12,300	1.06	17.62	10.16	2.48
78.920	150yr	78,920	13,130	1.06	18.03	10.40	2.53
78.920	200yr	78,920	13,900	1.06	18.37	10.63	2.59
79.490	50yr	79,490	11,040	0.89	17.20	8.54	1.81
79.490	80yr	79,490	11,830	0.89	17.61	9.32	1.86
79.490	100yr	79,490	12,300	0.89	17.86	9.62	1.89
79.490	150yr	79,490	13,130	0.89	18.27	9.90	1.93
79.490	200yr	79,490	13,900	0.89	18.62	10.08	1.98

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
80.190	50yr	80,190	11.040	0.46	17.26	8.94	2.05
80.190	80yr	80,190	11.830	0.46	17.67	9.18	2.11
80.190	100yr	80,190	12.300	0.46	17.91	9.31	2.15
80.190	150yr	80,190	13.130	0.46	18.32	9.51	2.21
80.190	200yr	80,190	13.900	0.46	18.67	9.72	2.27
80.465	50yr	80,465	10.590	0.19	17.22	10.95	2.62
80.465	80yr	80,465	11.360	0.19	17.63	11.27	2.67
80.465	100yr	80,465	11.800	0.19	17.87	11.42	2.69
80.465	150yr	80,465	12.620	0.19	18.28	11.68	2.74
80.465	200yr	80,465	13.420	0.19	18.63	11.94	2.80
80.480		Bridge					
80.495	50yr	80,495	10.590	0.19	17.29	10.94	2.60
80.495	80yr	80,495	11.360	0.19	17.70	11.26	2.65
80.495	100yr	80,495	11.800	0.19	17.94	11.41	2.67
80.495	150yr	80,495	12.620	0.19	18.35	11.67	2.72
80.495	200yr	80,495	13.420	0.19	18.71	11.94	2.78
80.640	50yr	80,640	10.590	0.48	17.46	9.65	2.05
80.640	80yr	80,640	11.360	0.48	17.87	9.88	2.11
80.640	100yr	80,640	11.800	0.48	18.12	10.04	2.13
80.640	150yr	80,640	12.620	0.48	18.53	10.32	2.19
80.640	200yr	80,640	13.420	0.48	18.89	10.55	2.24
81.120	50yr	81,120	10.590	1.79	17.52	10.01	2.20
81.120	80yr	81,120	11.360	1.79	17.93	10.28	2.26
81.120	100yr	81,120	11.800	1.79	18.17	10.42	2.29
81.120	150yr	81,120	12.620	1.79	18.59	10.64	2.35
81.120	200yr	81,120	13.420	1.79	18.95	10.85	2.42
81.610	50yr	81,610	10.590	1.87	17.58	9.67	2.37
81.610	80yr	81,610	11.360	1.87	17.99	9.95	2.44
81.610	100yr	81,610	11.800	1.87	18.23	10.10	2.48
81.610	150yr	81,610	12.620	1.87	18.64	10.36	2.56
81.610	200yr	81,610	13.420	1.87	19.00	10.59	2.63
81.980	50yr	81,980	10.590	2.26	17.64	10.31	2.51
81.980	80yr	81,980	11.360	2.26	18.05	10.57	2.58
81.980	100yr	81,980	11.800	2.26	18.29	10.71	2.62
81.980	150yr	81,980	12.620	2.26	18.70	10.98	2.70
81.980	200yr	81,980	13.420	2.26	19.06	11.23	2.78
82.600	50yr	82,600	10.590	0.61	17.70	10.44	3.05
82.600	80yr	82,600	11.360	0.61	18.12	10.77	3.11
82.600	100yr	82,600	11.800	0.61	18.36	10.96	3.14
82.600	150yr	82,600	12.620	0.61	18.77	11.30	3.21
82.600	200yr	82,600	13.420	0.61	19.12	11.62	3.28
82.980	50yr	82,980	10.590	3.77	17.94	10.89	2.69
82.980	80yr	82,980	11.360	3.77	18.35	11.13	2.77
82.980	100yr	82,980	11.800	3.77	18.59	11.26	2.82
82.980	150yr	82,980	12.620	3.77	18.99	11.50	2.90
82.980	200yr	82,980	13.420	3.77	19.35	11.74	2.99
83.410	50yr	83,410	10.590	0.92	18.21	8.71	1.86
83.410	80yr	83,410	11.360	0.92	18.64	8.94	1.92
83.410	100yr	83,410	11.800	0.92	18.89	9.07	1.95
83.410	150yr	83,410	12.620	0.92	19.31	9.31	2.02
83.410	200yr	83,410	13.420	0.92	19.68	9.55	2.08
83.830	50yr	83,830	10.590	2.22	18.22	9.63	2.15
83.830	80yr	83,830	11.360	2.22	18.65	9.89	2.21
83.830	100yr	83,830	11.800	2.22	18.90	10.03	2.24
83.830	150yr	83,830	12.620	2.22	19.32	10.31	2.30
83.830	200yr	83,830	13.420	2.22	19.70	10.60	2.36

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
84.300	50yr	84.300	10.590	4.34	18.33	11.14	2.01
84.300	80yr	84.300	11.360	4.34	18.77	11.32	2.05
84.300	100yr	84.300	11.800	4.34	19.01	11.46	2.08
84.300	150yr	84.300	12.620	4.34	19.44	11.67	2.13
84.300	200yr	84.300	13.420	4.34	19.83	11.85	2.18
84.687	50yr	84.687	10.590	3.73	18.44	11.22	1.76
84.687	80yr	84.687	11.360	3.73	18.88	11.42	1.81
84.687	100yr	84.687	11.800	3.73	19.13	11.52	1.83
84.687	150yr	84.687	12.620	3.73	19.55	11.73	1.88
84.687	200yr	84.687	13.420	3.73	19.94	11.93	1.93
84.700		Bridge					
84.713	50yr	84.713	10.590	3.73	18.46	11.22	1.76
84.713	80yr	84.713	11.360	3.73	18.89	11.41	1.80
84.713	100yr	84.713	11.800	3.73	19.14	11.53	1.83
84.713	150yr	84.713	12.620	3.73	19.57	11.73	1.88
84.713	200yr	84.713	13.420	3.73	19.96	11.93	1.92
84.790	50yr	84.790	10.590	3.66	18.49	10.52	1.57
84.790	80yr	84.790	11.360	3.66	18.93	10.75	1.60
84.790	100yr	84.790	11.800	3.66	19.18	10.87	1.63
84.790	150yr	84.790	12.620	3.66	19.61	11.08	1.67
84.790	200yr	84.790	13.420	3.66	20.00	11.26	1.71
85.065	50yr	85.065	10.420	4.10	18.46	11.90	2.10
85.065	80yr	85.065	11.170	4.10	18.89	12.23	2.15
85.065	100yr	85.065	11.600	4.10	19.14	12.38	2.18
85.065	150yr	85.065	12.430	4.10	19.56	12.58	2.25
85.065	200yr	85.065	13.240	4.10	19.95	12.76	2.31
85.070		Bridge					
85.075	50yr	85.075	10.420	4.10	18.48	11.88	2.09
85.075	80yr	85.075	11.170	4.10	18.92	12.24	2.15
85.075	100yr	85.075	11.600	4.10	19.16	12.38	2.18
85.075	150yr	85.075	12.430	4.10	19.59	12.58	2.24
85.075	200yr	85.075	13.240	4.10	19.98	12.75	2.30
85.220	50yr	85.220	10.420	5.07	18.47	13.03	2.32
85.220	80yr	85.220	11.170	5.07	18.91	13.18	2.37
85.220	100yr	85.220	11.600	5.07	19.15	13.27	2.40
85.220	150yr	85.220	12.430	5.07	19.58	13.45	2.46
85.220	200yr	85.220	13.240	5.07	19.97	13.65	2.52
85.730	50yr	85.730	10.420	4.94	18.60	12.37	2.21
85.730	80yr	85.730	11.170	4.94	19.04	12.58	2.26
85.730	100yr	85.730	11.600	4.94	19.28	12.69	2.29
85.730	150yr	85.730	12.430	4.94	19.71	12.87	2.36
85.730	200yr	85.730	13.240	4.94	20.09	13.05	2.42
86.240	50yr	86.240	10.420	5.19	18.69	11.95	2.22
86.240	80yr	86.240	11.170	5.19	19.13	12.35	2.27
86.240	100yr	86.240	11.600	5.19	19.37	12.58	2.30
86.240	150yr	86.240	12.430	5.19	19.80	12.84	2.37
86.240	200yr	86.240	13.240	5.19	20.18	13.03	2.44
86.488	50yr	86.488	10.420	3.16	18.74	10.72	2.20
86.488	80yr	86.488	11.170	3.16	19.17	10.96	2.27
86.488	100yr	86.488	11.600	3.16	19.41	11.12	2.30
86.488	150yr	86.488	12.430	3.16	19.84	11.37	2.37
86.488	200yr	86.488	13.240	3.16	20.23	11.61	2.44
86.500		Bridge					

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
86.512	50yr	86,512	10,420	3.16	18.76	10.73	2.20
86.512	80yr	86,512	11,170	3.16	19.19	10.97	2.26
86.512	100yr	86,512	11,600	3.16	19.44	11.11	2.30
86.512	150yr	86,512	12,430	3.16	19.87	11.36	2.37
86.512	200yr	86,512	13,240	3.16	20.25	11.61	2.44
86.780	50yr	86,780	10,420	6.99	18.77	12.20	2.48
86.780	80yr	86,780	11,170	6.99	19.20	12.42	2.55
86.780	100yr	86,780	11,600	6.99	19.44	12.56	2.59
86.780	150yr	86,780	12,430	6.99	19.86	12.78	2.67
86.780	200yr	86,780	13,240	6.99	20.25	12.98	2.75
87.280	50yr	87,280	10,420	5.29	18.88	12.86	2.44
87.280	80yr	87,280	11,170	5.29	19.32	13.03	2.50
87.280	100yr	87,280	11,600	5.29	19.57	13.14	2.53
87.280	150yr	87,280	12,430	5.29	20.00	13.37	2.59
87.280	200yr	87,280	13,240	5.29	20.40	13.57	2.65
87.680	50yr	87,680	10,420	7.82	19.08	12.78	1.97
87.680	80yr	87,680	11,170	7.82	19.53	12.97	2.00
87.680	100yr	87,680	11,600	7.82	19.78	13.07	2.02
87.680	150yr	87,680	12,430	7.82	20.22	13.26	2.05
87.680	200yr	87,680	13,240	7.82	20.62	13.46	2.09
88.019	50yr	88,019	10,420	7.55	19.11	12.44	2.21
88.019	80yr	88,019	11,170	7.55	19.55	12.63	2.26
88.019	100yr	88,019	11,600	7.55	19.80	12.73	2.29
88.019	150yr	88,019	12,430	7.55	20.23	12.94	2.34
88.019	200yr	88,019	13,240	7.55	20.63	13.13	2.40
88.030		Bridge					
88.040	50yr	88,040	10,420	7.55	19.14	12.44	2.21
88.040	80yr	88,040	11,170	7.55	19.58	12.63	2.25
88.040	100yr	88,040	11,600	7.55	19.83	12.73	2.28
88.040	150yr	88,040	12,430	7.55	20.26	12.93	2.34
88.040	200yr	88,040	13,240	7.55	20.66	13.13	2.39
88.250	50yr	88,250	10,420	7.11	19.09	12.67	2.76
88.250	80yr	88,250	11,170	7.11	19.52	12.90	2.83
88.250	100yr	88,250	11,600	7.11	19.77	13.03	2.87
88.250	150yr	88,250	12,430	7.11	20.19	13.27	2.96
88.250	200yr	88,250	13,240	7.11	20.59	13.50	3.04
88.800	50yr	88,800	10,420	5.86	19.24	12.13	2.69
88.800	80yr	88,800	11,170	5.86	19.67	12.37	2.78
88.800	100yr	88,800	11,600	5.86	19.92	12.50	2.82
88.800	150yr	88,800	12,430	5.86	20.35	13.05	2.91
88.800	200yr	88,800	13,240	5.86	20.74	13.32	3.00
89.280	50yr	89,280	10,420	5.90	19.38	12.69	2.58
89.280	80yr	89,280	11,170	5.90	19.83	12.91	2.66
89.280	100yr	89,280	11,600	5.90	20.07	13.03	2.70
89.280	150yr	89,280	12,430	5.90	20.50	13.26	2.78
89.280	200yr	89,280	13,240	5.90	20.89	13.48	2.86
89.750	50yr	89,750	10,420	5.69	19.47	12.18	2.74
89.750	80yr	89,750	11,170	5.69	19.91	12.46	2.82
89.750	100yr	89,750	11,600	5.69	20.15	12.60	2.86
89.750	150yr	89,750	12,430	5.69	20.58	12.86	2.94
89.750	200yr	89,750	13,240	5.69	20.97	13.11	3.02
90.230	50yr	90,230	10,420	5.48	19.56	12.57	2.84
90.230	80yr	90,230	11,170	5.48	20.00	12.83	2.92
90.230	100yr	90,230	11,600	5.48	20.25	12.99	2.97
90.230	150yr	90,230	12,430	5.48	20.68	13.25	3.06
90.230	200yr	90,230	13,240	5.48	21.07	13.49	3.16

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
90.730	50yr	90,730	10,420	5.47	19.71	12.33	2.75
90.730	80yr	90,730	11,170	5.47	20.16	12.59	2.83
90.730	100yr	90,730	11,600	5.47	20.40	12.68	2.87
90.730	150yr	90,730	12,430	5.47	20.84	13.12	2.96
90.730	200yr	90,730	13,240	5.47	21.24	13.39	3.05
91.190	50yr	91,190	10,420	6.18	19.81	13.68	2.86
91.190	80yr	91,190	11,170	6.18	20.26	13.92	2.92
91.190	100yr	91,190	11,600	6.18	20.52	14.03	2.95
91.190	150yr	91,190	12,430	6.18	20.96	14.30	3.01
91.190	200yr	91,190	13,240	6.18	21.37	14.54	3.07
91.720	50yr	91,720	10,420	6.46	19.99	13.00	2.77
91.720	80yr	91,720	11,170	6.46	20.45	13.29	2.83
91.720	100yr	91,720	11,600	6.46	20.72	13.44	2.86
91.720	150yr	91,720	12,430	6.46	21.16	13.71	2.93
91.720	200yr	91,720	13,240	6.46	21.56	13.99	3.00
92.160	50yr	92,160	10,420	5.01	20.10	12.30	2.82
92.160	80yr	92,160	11,170	5.01	20.57	12.63	2.89
92.160	100yr	92,160	11,600	5.01	20.83	12.83	2.92
92.160	150yr	92,160	12,430	5.01	21.27	13.26	3.01
92.160	200yr	92,160	13,240	5.01	21.67	13.58	3.09
92.610	50yr	92,610	10,420	6.00	20.20	13.71	3.09
92.610	80yr	92,610	11,170	6.00	20.66	14.00	3.15
92.610	100yr	92,610	11,600	6.00	20.93	14.16	3.18
92.610	150yr	92,610	12,430	6.00	21.37	14.46	3.25
92.610	200yr	92,610	13,240	6.00	21.77	14.75	3.33
93.060	50yr	93,060	10,420	6.35	20.37	13.87	3.03
93.060	80yr	93,060	11,170	6.35	20.83	14.21	3.11
93.060	100yr	93,060	11,600	6.35	21.09	14.41	3.15
93.060	150yr	93,060	12,430	6.35	21.52	14.67	3.25
93.060	200yr	93,060	13,240	6.35	21.92	14.94	3.35
93.499	50yr	93,499	10,360	6.72	20.51	14.44	3.09
93.499	80yr	93,499	11,110	6.72	20.97	15.28	3.15
93.499	100yr	93,499	11,530	6.72	21.23	16.00	3.18
93.499	150yr	93,499	12,360	6.72	21.67	16.28	3.26
93.499	200yr	93,499	13,180	6.72	22.06	16.51	3.35
93.510		Bridge					
93.520	50yr	93,520	10,360	6.72	20.59	14.43	3.06
93.520	80yr	93,520	11,110	6.72	21.06	15.27	3.12
93.520	100yr	93,520	11,530	6.72	21.32	16.01	3.16
93.520	150yr	93,520	12,360	6.72	21.76	16.27	3.23
93.520	200yr	93,520	13,180	6.72	22.16	16.51	3.32
93.590	50yr	93,590	10,360	5.01	20.71	13.51	2.74
93.590	80yr	93,590	11,110	5.01	21.18	13.79	2.80
93.590	100yr	93,590	11,530	5.01	21.44	13.93	2.84
93.590	150yr	93,590	12,360	5.01	21.89	14.21	2.92
93.590	200yr	93,590	13,180	5.01	22.29	14.49	3.00
94.100	50yr	94,100	10,360	3.74	20.75	13.46	3.33
94.100	80yr	94,100	11,110	3.74	21.21	13.78	3.41
94.100	100yr	94,100	11,530	3.74	21.46	13.96	3.46
94.100	150yr	94,100	12,360	3.74	21.90	14.31	3.56
94.100	200yr	94,100	13,180	3.74	22.30	14.60	3.66
94.790	50yr	94,790	10,360	5.46	21.18	12.96	2.52
94.790	80yr	94,790	11,110	5.46	21.65	13.20	2.60
94.790	100yr	94,790	11,530	5.46	21.91	13.33	2.65
94.790	150yr	94,790	12,360	5.46	22.38	13.58	2.73

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
94.790	200yr	94.790	13.180	5.46	22.79	13.83	2.82
95.190	50yr	95.190	10.360	4.77	21.24	13.86	2.66
95.190	80yr	95.190	11.110	4.77	21.72	14.16	2.71
95.190	100yr	95.190	11.530	4.77	21.98	14.37	2.74
95.190	150yr	95.190	12.360	4.77	22.45	14.71	2.80
95.190	200yr	95.190	13.180	4.77	22.88	15.04	2.86
95.200		Bridge					
95.210	50yr	95.210	10.360	4.77	21.28	13.85	2.64
95.210	80yr	95.210	11.110	4.77	21.76	14.16	2.70
95.210	100yr	95.210	11.530	4.77	22.01	14.36	2.73
95.210	150yr	95.210	12.360	4.77	22.48	14.70	2.79
95.210	200yr	95.210	13.180	4.77	22.91	15.03	2.86
95.390	50yr	95.390	10.360	5.28	21.33	13.12	2.66
95.390	80yr	95.390	11.110	5.28	21.80	13.42	2.73
95.390	100yr	95.390	11.530	5.28	22.06	13.57	2.77
95.390	150yr	95.390	12.360	5.28	22.52	13.86	2.85
95.390	200yr	95.390	13.180	5.28	22.95	14.14	2.93
95.990	50yr	95.990	10.360	4.47	21.50	13.64	2.56
95.990	80yr	95.990	11.110	4.47	21.98	13.91	2.62
95.990	100yr	95.990	11.530	4.47	22.23	14.05	2.65
95.990	150yr	95.990	12.360	4.47	22.70	14.32	2.72
95.990	200yr	95.990	13.180	4.47	23.13	14.59	2.78
96.340	50yr	96.340	10.360	5.00	21.63	13.46	2.36
96.340	80yr	96.340	11.110	5.00	22.10	13.71	2.43
96.340	100yr	96.340	11.530	5.00	22.36	13.84	2.46
96.340	150yr	96.340	12.360	5.00	22.83	14.11	2.53
96.340	200yr	96.340	13.180	5.00	23.26	14.38	2.60
96.870	50yr	96.870	10.360	5.00	21.67	13.65	2.73
96.870	80yr	96.870	11.110	5.00	22.14	13.94	2.81
96.870	100yr	96.870	11.530	5.00	22.39	14.18	2.85
96.870	150yr	96.870	12.360	5.00	22.86	14.53	2.94
96.870	200yr	96.870	13.180	5.00	23.29	14.82	3.03
97.390	50yr	97.390	10.360	4.66	21.78	13.70	2.72
97.390	80yr	97.390	11.110	4.66	22.25	13.96	2.81
97.390	100yr	97.390	11.530	4.66	22.51	14.10	2.86
97.390	150yr	97.390	12.360	4.66	22.98	14.38	2.95
97.390	200yr	97.390	13.180	4.66	23.41	14.64	3.04
97.810	50yr	97.810	10.360	6.19	21.99	13.94	2.23
97.810	80yr	97.810	11.110	6.19	22.48	14.16	2.29
97.810	100yr	97.810	11.530	6.19	22.73	14.29	2.32
97.810	150yr	97.810	12.360	6.19	23.22	14.55	2.39
97.810	200yr	97.810	13.180	6.19	23.66	14.77	2.46
98.360	50yr	98.360	10.360	6.05	22.14	14.18	2.00
98.360	80yr	98.360	11.110	6.05	22.63	14.42	2.02
98.360	100yr	98.360	11.530	6.05	22.89	14.56	2.04
98.360	150yr	98.360	12.360	6.05	23.39	14.82	2.07
98.360	200yr	98.360	13.180	6.05	23.84	15.08	2.11
98.930	50yr	98.930	10.290	4.62	22.18	13.35	2.28
98.930	80yr	98.930	11.030	4.62	22.66	13.61	2.35
98.930	100yr	98.930	11.460	4.62	22.92	13.75	2.39
98.930	150yr	98.930	12.280	4.62	23.41	14.01	2.46
98.930	200yr	98.930	13.110	4.62	23.85	14.31	2.54
99.730	50yr	99.730	10.290	7.02	22.43	12.94	1.52
99.730	80yr	99.730	11.030	7.02	22.92	13.22	1.56
99.730	100yr	99.730	11.460	7.02	23.19	13.39	1.58

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
99.730	150yr	99.730	12.280	7.02	23.69	13.64	1.61
99.730	200yr	99.730	13.110	7.02	24.15	13.85	1.66
100.280	50yr	100.280	10.210	5.46	22.47	13.24	1.61
100.280	80yr	100.280	10.950	5.46	22.96	13.50	1.64
100.280	100yr	100.280	11.360	5.46	23.22	13.64	1.66
100.280	150yr	100.280	12.180	5.46	23.72	13.91	1.70
100.280	200yr	100.280	13.010	5.46	24.18	14.14	1.74
100.710	50yr	100.710	10.210	6.13	22.50	13.93	1.73
100.710	80yr	100.710	10.950	6.13	22.99	14.16	1.77
100.710	100yr	100.710	11.360	6.13	23.26	14.28	1.78
100.710	150yr	100.710	12.180	6.13	23.76	14.50	1.82
100.710	200yr	100.710	13.010	6.13	24.21	14.73	1.87
101.140	50yr	101.140	10.210	7.41	22.60	13.74	1.44
101.140	80yr	101.140	10.950	7.41	23.09	13.93	1.47
101.140	100yr	101.140	11.360	7.41	23.35	14.03	1.48
101.140	150yr	101.140	12.180	7.41	23.85	14.22	1.51
101.140	200yr	101.140	13.010	7.41	24.31	14.43	1.55
101.620	50yr	101.620	10.210	7.34	22.63	13.75	1.48
101.620	80yr	101.620	10.950	7.34	23.12	13.95	1.51
101.620	100yr	101.620	11.360	7.34	23.39	14.06	1.52
101.620	150yr	101.620	12.180	7.34	23.89	14.27	1.55
101.620	200yr	101.620	13.010	7.34	24.34	14.51	1.59
101.858	50yr	101.858	10.210	8.55	22.61	14.87	1.88
101.858	80yr	101.858	10.950	8.55	23.10	15.07	1.91
101.858	100yr	101.858	11.360	8.55	23.36	15.18	1.93
101.858	150yr	101.858	12.180	8.55	23.86	15.40	1.96
101.858	200yr	101.858	13.010	8.55	24.31	15.61	2.00
101.870		Bridge					
101.882	50yr	101.882	10.210	8.55	22.64	14.87	1.87
101.882	80yr	101.882	10.950	8.55	23.12	15.08	1.90
101.882	100yr	101.882	11.360	8.55	23.39	15.19	1.92
101.882	150yr	101.882	12.180	8.55	23.89	15.40	1.95
101.882	200yr	101.882	13.010	8.55	24.34	15.62	1.99
102.030	50yr	102.030	10.210	10.01	22.67	15.93	1.88
102.030	80yr	102.030	10.950	10.01	23.15	16.12	1.91
102.030	100yr	102.030	11.360	10.01	23.42	16.22	1.92
102.030	150yr	102.030	12.180	10.01	23.91	16.41	1.95
102.030	200yr	102.030	13.010	10.01	24.37	16.62	1.99
102.610	50yr	102.610	10.210	8.73	22.81	14.94	1.48
102.610	80yr	102.610	10.950	8.73	23.29	15.11	1.51
102.610	100yr	102.610	11.360	8.73	23.55	15.20	1.53
102.610	150yr	102.610	12.180	8.73	24.05	15.39	1.56
102.610	200yr	102.610	13.010	8.73	24.51	15.57	1.60
103.160	50yr	103.160	10.210	9.91	22.83	15.71	1.71
103.160	80yr	103.160	10.950	9.91	23.31	15.89	1.74
103.160	100yr	103.160	11.360	9.91	23.58	15.99	1.76
103.160	150yr	103.160	12.180	9.91	24.07	16.16	1.79
103.160	200yr	103.160	13.010	9.91	24.53	16.33	1.84
103.720	50yr	103.720	10.210	10.21	22.93	15.04	1.44
103.720	80yr	103.720	10.950	10.21	23.41	15.22	1.47
103.720	100yr	103.720	11.360	10.21	23.68	15.32	1.48
103.720	150yr	103.720	12.180	10.21	24.17	15.50	1.51
103.720	200yr	103.720	13.010	10.21	24.63	15.67	1.55
104.230	50yr	104.230	10.210	9.35	22.96	15.78	1.64
104.230	80yr	104.230	10.950	9.35	23.44	15.96	1.67

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
104.230	100yr	104.230	11.360	9.35	23.70	16.06	1.68
104.230	150yr	104.230	12.180	9.35	24.19	16.26	1.71
104.230	200yr	104.230	13.010	9.35	24.65	16.44	1.74
104.740	50yr	104.740	10.210	9.61	23.00	15.46	1.71
104.740	80yr	104.740	10.950	9.61	23.48	15.64	1.74
104.740	100yr	104.740	11.360	9.61	23.74	15.74	1.75
104.740	150yr	104.740	12.180	9.61	24.23	15.93	1.79
104.740	200yr	104.740	13.010	9.61	24.69	16.15	1.82
105.250	50yr	105.250	10.210	9.00	23.06	15.82	1.71
105.250	80yr	105.250	10.950	9.00	23.53	15.98	1.74
105.250	100yr	105.250	11.360	9.00	23.79	16.07	1.75
105.250	150yr	105.250	12.180	9.00	24.28	16.24	1.78
105.250	200yr	105.250	13.010	9.00	24.74	16.45	1.82
105.750	50yr	105.750	10.210	8.91	23.13	15.96	1.63
105.750	80yr	105.750	10.950	8.91	23.60	16.17	1.66
105.750	100yr	105.750	11.360	8.91	23.86	16.30	1.67
105.750	150yr	105.750	12.180	8.91	24.35	16.51	1.70
105.750	200yr	105.750	13.010	8.91	24.80	16.68	1.74
106.230	50yr	106.230	10.210	10.57	23.17	16.51	1.84
106.230	80yr	106.230	10.950	10.57	23.64	16.71	1.87
106.230	100yr	106.230	11.360	10.57	23.90	16.81	1.88
106.230	150yr	106.230	12.180	10.57	24.39	17.05	1.90
106.230	200yr	106.230	13.010	10.57	24.83	17.25	1.94
106.750	50yr	106.750	10.210	10.81	23.31	16.11	1.46
106.750	80yr	106.750	10.950	10.81	23.78	16.26	1.48
106.750	100yr	106.750	11.360	10.81	24.04	16.35	1.48
106.750	150yr	106.750	12.180	10.81	24.53	16.52	1.50
106.750	200yr	106.750	13.010	10.81	24.97	16.69	1.52
107.250	50yr	107.250	10.210	8.81	23.40	13.92	1.04
107.250	80yr	107.250	10.950	8.81	23.87	14.06	1.06
107.250	100yr	107.250	11.360	8.81	24.13	14.14	1.08
107.250	150yr	107.250	12.180	8.81	24.61	14.29	1.10
107.250	200yr	107.250	13.010	8.81	25.06	14.42	1.13
107.700	50yr	107.700	10.210	9.67	23.43	14.29	0.90
107.700	80yr	107.700	10.950	9.67	23.90	14.42	0.92
107.700	100yr	107.700	11.360	9.67	24.16	14.48	0.93
107.700	150yr	107.700	12.180	9.67	24.64	14.62	0.95
107.700	200yr	107.700	13.010	9.67	25.09	14.75	0.97
108.200	50yr	108.200	10.210	10.38	23.45	15.78	1.07
108.200	80yr	108.200	10.950	10.38	23.91	15.90	1.09
108.200	100yr	108.200	11.360	10.38	24.17	15.97	1.10
108.200	150yr	108.200	12.180	10.38	24.66	16.09	1.12
108.200	200yr	108.200	13.010	10.38	25.10	16.21	1.14
108.750	50yr	108.750	10.210	10.98	23.47	14.69	0.96
108.750	80yr	108.750	10.950	10.98	23.94	14.80	0.99
108.750	100yr	108.750	11.360	10.98	24.20	14.86	1.01
108.750	150yr	108.750	12.180	10.98	24.68	14.98	1.03
108.750	200yr	108.750	13.010	10.98	25.13	15.10	1.06
109.400	50yr	109.400	7.180	11.52	23.38	18.20	2.13
109.400	80yr	109.400	7.710	11.52	23.86	18.44	2.05
109.400	100yr	109.400	7.940	11.52	24.13	18.53	2.00
109.400	150yr	109.400	8.830	11.52	24.61	18.89	2.02
109.400	200yr	109.400	9.520	11.52	25.06	19.11	2.01
109.900	50yr	109.900	7.180	11.11	23.62	18.35	2.02
109.900	80yr	109.900	7.710	11.11	24.05	18.63	2.00
109.900	100yr	109.900	7.940	11.11	24.29	18.74	1.97

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
109.900	150yr	109.900	8.830	11.11	24.76	20.12	2.02
109.900	200yr	109.900	9.520	11.11	25.19	20.35	2.04
110.350	50yr	110.350	7.180	11.81	23.81	17.52	1.52
110.350	80yr	110.350	7.710	11.81	24.23	17.68	1.54
110.350	100yr	110.350	7.940	11.81	24.45	17.75	1.54
110.350	150yr	110.350	8.830	11.81	24.92	18.02	1.61
110.350	200yr	110.350	9.520	11.81	25.34	18.21	1.65
110.900	50yr	110.900	7.180	13.40	23.84	18.44	1.94
110.900	80yr	110.900	7.710	13.40	24.26	18.82	1.97
110.900	100yr	110.900	7.940	13.40	24.49	18.89	1.96
110.900	150yr	110.900	8.830	13.40	24.95	19.14	2.05
110.900	200yr	110.900	9.520	13.40	25.37	19.33	2.09
111.400	50yr	111.400	7.180	12.76	23.94	18.27	2.21
111.400	80yr	111.400	7.710	12.76	24.35	18.52	2.21
111.400	100yr	111.400	7.940	12.76	24.58	18.67	2.20
111.400	150yr	111.400	8.830	12.76	25.04	19.07	2.27
111.400	200yr	111.400	9.520	12.76	25.46	19.30	2.31
111.900	50yr	111.900	7.180	12.57	24.14	17.89	1.82
111.900	80yr	111.900	7.710	12.57	24.54	18.06	1.85
111.900	100yr	111.900	7.940	12.57	24.76	18.14	1.86
111.900	150yr	111.900	8.830	12.57	25.22	18.42	1.96
111.900	200yr	111.900	9.520	12.57	25.63	18.63	2.02
112.350	50yr	112.350	7.180	12.99	24.23	18.85	1.71
112.350	80yr	112.350	7.710	12.99	24.64	19.00	1.73
112.350	100yr	112.350	7.940	12.99	24.85	19.06	1.73
112.350	150yr	112.350	8.830	12.99	25.32	19.32	1.82
112.350	200yr	112.350	9.520	12.99	25.73	19.50	1.86
112.510	50yr	112.510	7.180	13.31	24.31	18.73	1.46
112.510	80yr	112.510	7.710	13.31	24.72	18.92	1.48
112.510	100yr	112.510	7.940	13.31	24.93	19.00	1.48
112.510	150yr	112.510	8.830	13.31	25.41	19.30	1.54
112.510	200yr	112.510	9.520	13.31	25.82	19.51	1.57
112.960	50yr	112.960	7.180	12.61	24.37	18.45	1.46
112.960	80yr	112.960	7.710	12.61	24.78	18.69	1.49
112.960	100yr	112.960	7.940	12.61	24.99	18.76	1.49
112.960	150yr	112.960	8.830	12.61	25.45	18.97	1.56
112.960	200yr	112.960	9.520	12.61	25.87	19.12	1.61
113.360	50yr	113.360	7.180	14.15	24.42	18.52	1.52
113.360	80yr	113.360	7.710	14.15	24.82	18.67	1.55
113.360	100yr	113.360	7.940	14.15	25.03	18.73	1.55
113.360	150yr	113.360	8.830	14.15	25.50	18.96	1.62
113.360	200yr	113.360	9.520	14.15	25.91	19.12	1.67
113.790	50yr	113.790	7.180	14.20	24.45	19.93	1.85
113.790	80yr	113.790	7.710	14.20	24.85	20.07	1.86
113.790	100yr	113.790	7.940	14.20	25.06	20.14	1.86
113.790	150yr	113.790	8.830	14.20	25.53	20.37	1.94
113.790	200yr	113.790	9.520	14.20	25.94	20.55	1.98
114.290	50yr	114.290	7.180	14.45	24.47	19.97	2.76
114.290	80yr	114.290	7.710	14.45	24.87	20.17	2.78
114.290	100yr	114.290	7.940	14.45	25.06	20.24	2.77
114.290	150yr	114.290	8.830	14.45	25.52	20.63	2.87
114.290	200yr	114.290	9.520	14.45	25.92	21.00	2.92
114.790	50yr	114.790	7.180	13.76	24.67	20.83	3.49
114.790	80yr	114.790	7.710	13.76	25.06	21.08	3.46
114.790	100yr	114.790	7.940	13.76	25.24	21.18	3.44
114.790	150yr	114.790	8.830	13.76	25.69	21.60	3.54

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
114.790	200yr	114.790	9.520	13.76	26.07	21.90	3.58
115.390	50yr	115.390	7.180	13.73	25.15	21.06	3.46
115.390	80yr	115.390	7.710	13.73	25.49	21.32	3.55
115.390	100yr	115.390	7.940	13.73	25.65	21.42	3.58
115.390	150yr	115.390	8.830	13.73	26.11	21.81	3.77
115.390	200yr	115.390	9.520	13.73	26.46	22.13	3.87
116.040	50yr	116.040	7.180	13.87	25.69	20.83	2.94
116.040	80yr	116.040	7.710	13.87	26.05	21.09	3.00
116.040	100yr	116.040	7.940	13.87	26.21	21.21	3.02
116.040	150yr	116.040	8.830	13.87	26.74	21.58	3.13
116.040	200yr	116.040	9.520	13.87	27.13	21.84	3.20
116.540	50yr	116.540	7.180	13.80	25.84	21.18	3.41
116.540	80yr	116.540	7.710	13.80	26.18	21.52	3.52
116.540	100yr	116.540	7.940	13.80	26.34	21.64	3.56
116.540	150yr	116.540	8.830	13.80	26.84	22.07	3.75
116.540	200yr	116.540	9.520	13.80	27.23	22.39	3.88
117.090	50yr	117.090	7.180	13.70	26.21	20.97	3.28
117.090	80yr	117.090	7.710	13.70	26.57	21.23	3.33
117.090	100yr	117.090	7.940	13.70	26.74	21.34	3.35
117.090	150yr	117.090	8.830	13.70	27.27	21.75	3.46
117.090	200yr	117.090	9.520	13.70	27.69	22.05	3.53
117.620	50yr	117.620	7.180	14.21	26.67	20.74	2.48
117.620	80yr	117.620	7.710	14.21	27.03	20.97	2.56
117.620	100yr	117.620	7.940	14.21	27.19	21.06	2.59
117.620	150yr	117.620	8.830	14.21	27.73	21.39	2.72
117.620	200yr	117.620	9.520	14.21	28.15	21.62	2.82
118.370	50yr	118.370	7.180	15.68	26.80	22.20	3.22
118.370	80yr	118.370	7.710	15.68	27.15	22.43	3.29
118.370	100yr	118.370	7.940	15.68	27.31	22.53	3.32
118.370	150yr	118.370	8.830	15.68	27.85	22.92	3.45
118.370	200yr	118.370	9.520	15.68	28.26	23.22	3.54
118.800	50yr	118.800	7.180	15.90	27.00	22.01	3.24
118.800	80yr	118.800	7.710	15.90	27.36	22.32	3.34
118.800	100yr	118.800	7.940	15.90	27.51	22.44	3.38
118.800	150yr	118.800	8.830	15.90	28.06	22.83	3.53
118.800	200yr	118.800	9.520	15.90	28.47	23.12	3.64
119.230	50yr	119.230	7.180	14.88	27.28	21.51	2.94
119.230	80yr	119.230	7.710	14.88	27.64	21.77	3.03
119.230	100yr	119.230	7.940	14.88	27.80	21.87	3.06
119.230	150yr	119.230	8.830	14.88	28.37	22.26	3.21
119.230	200yr	119.230	9.520	14.88	28.78	22.55	3.32
119.770	50yr	119.770	7.180	16.78	27.55	22.26	2.76
119.770	80yr	119.770	7.710	16.78	27.92	22.48	2.82
119.770	100yr	119.770	7.940	16.78	28.09	22.57	2.84
119.770	150yr	119.770	8.830	16.78	28.67	22.93	2.93
119.770	200yr	119.770	9.520	16.78	29.12	23.19	2.99
120.190	50yr	120.190	7.180	16.90	27.67	23.23	3.09
120.190	80yr	120.190	7.710	16.90	28.04	23.45	3.16
120.190	100yr	120.190	7.940	16.90	28.20	23.55	3.19
120.190	150yr	120.190	8.830	16.90	28.77	23.90	3.31
120.190	200yr	120.190	9.520	16.90	29.22	24.16	3.39
120.700	50yr	120.700	7.180	17.23	28.03	22.99	2.56
120.700	80yr	120.700	7.710	17.23	28.40	23.19	2.64
120.700	100yr	120.700	7.940	17.23	28.58	23.27	2.65
120.700	150yr	120.700	8.830	17.23	29.15	23.58	2.75
120.700	200yr	120.700	9.520	17.23	29.61	23.82	2.82

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
121.260	50yr	121.260	7.150	15.57	28.19	22.80	2.63
121.260	80yr	121.260	7.670	15.57	28.55	23.15	2.70
121.260	100yr	121.260	7.900	15.57	28.75	23.26	2.72
121.260	150yr	121.260	8.790	15.57	29.32	23.63	2.83
121.260	200yr	121.260	9.480	15.57	29.80	23.95	2.88
121.770	50yr	121.770	7.150	17.35	28.31	24.09	2.99
121.770	80yr	121.770	7.670	17.35	28.67	24.30	3.05
121.770	100yr	121.770	7.900	17.35	28.87	24.39	3.07
121.770	150yr	121.770	8.790	17.35	29.43	24.70	3.19
121.770	200yr	121.770	9.480	17.35	29.93	24.98	3.24
122.140	50yr	122.140	7.150	17.90	28.45	24.06	3.08
122.140	80yr	122.140	7.670	17.90	28.81	24.25	3.16
122.140	100yr	122.140	7.900	17.90	29.00	24.35	3.18
122.140	150yr	122.140	8.790	17.90	29.56	24.71	3.31
122.140	200yr	122.140	9.480	17.90	30.06	24.96	3.37
122.490	50yr	122.490	7.150	18.65	28.65	24.62	3.10
122.490	80yr	122.490	7.670	18.65	29.02	24.83	3.12
122.490	100yr	122.490	7.900	18.65	29.21	24.93	3.12
122.490	150yr	122.490	8.790	18.65	29.80	25.29	3.15
122.490	200yr	122.490	9.480	18.65	30.31	25.58	3.16
122.990	50yr	122.990	7.150	18.77	29.11	24.01	2.28
122.990	80yr	122.990	7.670	18.77	29.47	24.19	2.32
122.990	100yr	122.990	7.900	18.77	29.66	24.28	2.33
122.990	150yr	122.990	8.790	18.77	30.25	24.58	2.39
122.990	200yr	122.990	9.480	18.77	30.74	24.82	2.41
123.470	50yr	123.470	7.150	18.81	29.30	23.62	2.00
123.470	80yr	123.470	7.670	18.81	29.65	23.81	2.05
123.470	100yr	123.470	7.900	18.81	29.84	23.88	2.06
123.470	150yr	123.470	8.790	18.81	30.43	24.16	2.14
123.470	200yr	123.470	9.480	18.81	30.91	24.40	2.18
124.010	50yr	124.010	7.150	18.66	29.41	23.32	1.93
124.010	80yr	124.010	7.670	18.66	29.77	23.48	1.99
124.010	100yr	124.010	7.900	18.66	29.95	23.55	2.00
124.010	150yr	124.010	8.790	18.66	30.55	23.81	2.08
124.010	200yr	124.010	9.480	18.66	31.02	24.03	2.12
124.460	50yr	124.460	7.150	18.10	29.37	24.19	2.82
124.460	80yr	124.460	7.670	18.10	29.72	24.43	2.89
124.460	100yr	124.460	7.900	18.10	29.90	24.53	2.92
124.460	150yr	124.460	8.790	18.10	30.48	24.89	3.03
124.460	200yr	124.460	9.480	18.10	30.99	25.18	3.06
124.960	50yr	124.960	7.150	18.25	29.46	24.89	3.46
124.960	80yr	124.960	7.670	18.25	29.80	25.13	3.55
124.960	100yr	124.960	7.900	18.25	29.98	25.24	3.57
124.960	150yr	124.960	8.790	18.25	30.55	25.64	3.70
124.960	200yr	124.960	9.480	18.25	31.12	25.94	3.74
125.660	50yr	125.660	5.370	19.57	30.15	25.06	2.01
125.660	80yr	125.660	5.750	19.57	30.52	25.24	2.05
125.660	100yr	125.660	5.920	19.57	30.70	25.31	2.06
125.660	150yr	125.660	6.710	19.57	31.31	25.62	2.17
125.660	200yr	125.660	7.330	19.57	31.87	25.85	2.22
126.420	50yr	126.420	5.370	21.07	30.27	26.12	2.60
126.420	80yr	126.420	5.750	21.07	30.63	26.32	2.64
126.420	100yr	126.420	5.920	21.07	30.81	26.41	2.64
126.420	150yr	126.420	6.710	21.07	31.43	26.85	2.75
126.420	200yr	126.420	7.330	21.07	31.97	27.26	2.80

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
126.742	50yr	126.742	5.370	21.98	30.40	26.33	2.59
126.742	80yr	126.742	5.750	21.98	30.76	26.49	2.63
126.742	100yr	126.742	5.920	21.98	30.93	26.57	2.65
126.742	150yr	126.742	6.710	21.98	31.54	26.89	2.76
126.742	200yr	126.742	7.330	21.98	32.08	27.15	2.82
126.750		Bridge					
126.758	50yr	126.758	5.370	21.98	30.53	26.32	2.54
126.758	80yr	126.758	5.750	21.98	30.88	26.49	2.59
126.758	100yr	126.758	5.920	21.98	31.05	26.56	2.60
126.758	150yr	126.758	6.710	21.98	31.68	26.88	2.71
126.758	200yr	126.758	7.330	21.98	32.21	27.14	2.77
126.775	50yr	126.775	5.370	22.18	30.52	26.37	2.60
126.775	80yr	126.775	5.750	22.18	30.88	26.56	2.64
126.775	100yr	126.775	5.920	22.18	31.05	26.65	2.65
126.775	150yr	126.775	6.710	22.18	31.67	27.01	2.77
126.775	200yr	126.775	7.330	22.18	32.21	27.26	2.83
126.800		Bridge					
126.825	50yr	126.825	5.370	22.18	30.58	26.37	2.57
126.825	80yr	126.825	5.750	22.18	30.94	26.56	2.62
126.825	100yr	126.825	5.920	22.18	31.11	26.65	2.63
126.825	150yr	126.825	6.710	22.18	31.74	26.99	2.74
126.825	200yr	126.825	7.330	22.18	32.27	27.26	2.81
126.960	50yr	126.960	5.370	22.58	30.62	26.71	2.64
126.960	80yr	126.960	5.750	22.58	30.98	26.88	2.68
126.960	100yr	126.960	5.920	22.58	31.15	26.96	2.69
126.960	150yr	126.960	6.710	22.58	31.79	27.34	2.79
126.960	200yr	126.960	7.330	22.58	32.32	27.58	2.84
127.460	50yr	127.460	5.370	21.91	30.86	26.34	2.50
127.460	80yr	127.460	5.750	21.91	31.21	26.51	2.55
127.460	100yr	127.460	5.920	21.91	31.38	26.59	2.56
127.460	150yr	127.460	6.710	21.91	32.01	26.94	2.66
127.460	200yr	127.460	7.330	21.91	32.53	27.21	2.72
127.715	50yr	127.715	5.370	21.02	30.92	26.70	2.69
127.715	80yr	127.715	5.750	21.02	31.27	26.90	2.75
127.715	100yr	127.715	5.920	21.02	31.44	26.99	2.77
127.715	150yr	127.715	6.710	21.02	32.06	27.41	2.90
127.715	200yr	127.715	7.330	21.02	32.57	27.71	2.97
127.720		Bridge					
127.725	50yr	127.725	5.370	21.02	30.96	26.69	2.68
127.725	80yr	127.725	5.750	21.02	31.30	26.90	2.74
127.725	100yr	127.725	5.920	21.02	31.47	26.98	2.76
127.725	150yr	127.725	6.710	21.02	32.09	27.40	2.88
127.725	200yr	127.725	7.330	21.02	32.61	27.71	2.96
127.735	50yr	127.735	5.370	21.02	30.96	26.68	2.68
127.735	80yr	127.735	5.750	21.02	31.31	26.89	2.73
127.735	100yr	127.735	5.920	21.02	31.47	26.98	2.75
127.735	150yr	127.735	6.710	21.02	32.10	27.39	2.88
127.735	200yr	127.735	7.330	21.02	32.61	27.70	2.96
127.740		Bridge					
127.745	50yr	127.745	5.370	21.02	31.00	26.68	2.67
127.745	80yr	127.745	5.750	21.02	31.34	26.89	2.72
127.745	100yr	127.745	5.920	21.02	31.51	26.98	2.74
127.745	150yr	127.745	6.710	21.02	32.14	27.39	2.87
127.745	200yr	127.745	7.330	21.02	32.65	27.70	2.95

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
127.879	50yr	127.879	5.370	19.96	30.92	27.16	3.34
127.879	80yr	127.879	5.750	19.96	31.26	27.36	3.41
127.879	100yr	127.879	5.920	19.96	31.42	27.45	3.43
127.879	150yr	127.879	6.710	19.96	32.04	28.00	3.57
127.879	200yr	127.879	7.330	19.96	32.55	28.36	3.64
127.890		Bridge					
127.901	50yr	127.901	5.370	19.96	31.01	27.15	3.30
127.901	80yr	127.901	5.750	19.96	31.35	27.35	3.36
127.901	100yr	127.901	5.920	19.96	31.52	27.45	3.38
127.901	150yr	127.901	6.710	19.96	32.14	28.00	3.52
127.901	200yr	127.901	7.330	19.96	32.66	28.35	3.59
127.970	50yr	127.970	5.370	19.56	31.11	26.80	3.09
127.970	80yr	127.970	5.750	19.56	31.45	27.00	3.17
127.970	100yr	127.970	5.920	19.56	31.62	27.09	3.19
127.970	150yr	127.970	6.710	19.56	32.26	27.50	3.35
127.970	200yr	127.970	7.330	19.56	32.77	27.78	3.44
128.370	50yr	128.370	5.370	19.46	31.45	26.26	2.43
128.370	80yr	128.370	5.750	19.46	31.81	26.45	2.50
128.370	100yr	128.370	5.920	19.46	31.97	26.53	2.52
128.370	150yr	128.370	6.710	19.46	32.63	26.88	2.66
128.370	200yr	128.370	7.330	19.46	33.16	27.18	2.75
128.780	50yr	128.780	5.370	21.79	31.61	26.89	2.28
128.780	80yr	128.780	5.750	21.79	31.97	27.05	2.33
128.780	100yr	128.780	5.920	21.79	32.14	27.10	2.34
128.780	150yr	128.780	6.710	21.79	32.81	27.44	2.43
128.780	200yr	128.780	7.330	21.79	33.34	27.67	2.49
129.230	50yr	129.230	5.370	18.26	31.68	25.66	2.63
129.230	80yr	129.230	5.750	18.26	32.03	25.91	2.70
129.230	100yr	129.230	5.920	18.26	32.20	26.02	2.72
129.230	150yr	129.230	6.710	18.26	32.86	26.45	2.86
129.230	200yr	129.230	7.330	18.26	33.39	26.82	2.94
129.830	50yr	129.830	5.370	21.68	31.86	27.21	2.79
129.830	80yr	129.830	5.750	21.68	32.21	27.43	2.86
129.830	100yr	129.830	5.920	21.68	32.38	27.53	2.88
129.830	150yr	129.830	6.710	21.68	33.04	28.17	3.02
129.830	200yr	129.830	7.330	21.68	33.57	28.46	3.12
130.330	50yr	130.330	5.370	22.00	32.03	27.24	2.87
130.330	80yr	130.330	5.750	22.00	32.38	27.44	2.95
130.330	100yr	130.330	5.920	22.00	32.55	27.53	2.99
130.330	150yr	130.330	6.710	22.00	33.21	27.93	3.14
130.330	200yr	130.330	7.330	22.00	33.73	28.24	3.25
130.470	50yr	130.470	5.370	24.05	31.76	29.06	4.30
130.470	80yr	130.470	5.750	24.05	32.10	29.29	4.37
130.470	100yr	130.470	5.920	24.05	32.26	29.40	4.39
130.470	150yr	130.470	6.710	24.05	32.92	30.30	4.54
130.470	200yr	130.470	7.330	24.05	33.43	30.62	4.64

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▶ 금강(대청댐상류) 홍수위산정결과(개수후)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: KumKang Reach: Up-Stream

Rivers = 1
Hydraulic Reaches = 1
River Stations = 96
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
222.040	50yr		5,400	72.97	87.83	80.48	2.25
222.040	80yr		5,820	72.97	88.21	80.74	2.34
222.040	100yr		6,100	72.97	88.47	80.90	2.39
222.040	150yr		6,450	72.97	88.78	81.10	2.45
222.040	200yr		6,760	72.97	89.05	81.24	2.51
222.210	50yr	170	5,400	76.99	87.79		3.19
222.210	80yr	170	5,820	76.99	88.16		3.31
222.210	100yr	170	6,100	76.99	88.42		3.37
222.210	150yr	170	6,450	76.99	88.72		3.46
222.210	200yr	170	6,760	76.99	88.98		3.53
222.215		Inline Weir					
222.220	50yr	180	5,400	78.49	87.83	83.99	3.55
222.220	80yr	180	5,820	78.49	88.21	84.20	3.66
222.220	100yr	180	6,100	78.49	88.47	84.35	3.72
222.220	150yr	180	6,450	78.49	88.78	84.55	3.80
222.220	200yr	180	6,760	78.49	89.05	84.70	3.87
222.530	50yr	490	5,400	75.20	88.31		2.83
222.530	80yr	490	5,820	75.20	88.70		2.92
222.530	100yr	490	6,100	75.20	88.97		2.97
222.530	150yr	490	6,450	75.20	89.31		3.04
222.530	200yr	490	6,760	75.20	89.59		3.09
222.915	50yr	875	5,400	75.24	88.49		2.96
222.915	80yr	875	5,820	75.24	88.89		3.05
222.915	100yr	875	6,100	75.24	89.16		3.10
222.915	150yr	875	6,450	75.24	89.52		3.15
222.915	200yr	875	6,760	75.24	89.80		3.20
223.570	50yr	1,530	5,400	77.15	88.83		3.11
223.570	80yr	1,530	5,820	77.15	89.24		3.21
223.570	100yr	1,530	6,100	77.15	89.52		3.27
223.570	150yr	1,530	6,450	77.15	89.88		3.34
223.570	200yr	1,530	6,760	77.15	90.16		3.41
223.573	50yr	1,533	5,400	78.46	88.59	85.24	4.05
223.573	80yr	1,533	5,820	78.46	89.02	85.53	4.08
223.573	100yr	1,533	6,100	78.46	89.31	85.72	4.10
223.573	150yr	1,533	6,450	78.46	89.68	85.96	4.11
223.573	200yr	1,533	6,760	78.46	89.97	86.18	4.14
223.580		Bridge					
223.587	50yr	1,547	5,400	78.46	88.82	85.23	3.91
223.587	80yr	1,547	5,820	78.46	89.24	85.52	3.95
223.587	100yr	1,547	6,100	78.46	89.52	85.72	3.97
223.587	150yr	1,547	6,450	78.46	89.89	85.96	3.99
223.587	200yr	1,547	6,760	78.46	90.18	86.17	4.03
223.608	50yr	1,568	5,400	78.02	89.20		2.98
223.608	80yr	1,568	5,820	78.02	89.61		3.07
223.608	100yr	1,568	6,100	78.02	89.88		3.12

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
223.608	150yr	1,568	6,450	78.02	90.24		3.18
223.608	200yr	1,568	6,760	78.02	90.52		3.23
223.615		Bridge					
223.622	50yr	1,582	5,400	78.02	89.24	84.06	2.97
223.622	80yr	1,582	5,820	78.02	89.65	84.31	3.05
223.622	100yr	1,582	6,100	78.02	89.93	84.46	3.10
223.622	150yr	1,582	6,450	78.02	90.29	84.67	3.16
223.622	200yr	1,582	6,760	78.02	90.57	84.83	3.22
223.632	50yr	1,592	5,400	77.48	89.24		2.98
223.632	80yr	1,592	5,820	77.48	89.66		3.07
223.632	100yr	1,592	6,100	77.48	89.93		3.12
223.632	150yr	1,592	6,450	77.48	90.29		3.18
223.632	200yr	1,592	6,760	77.48	90.57		3.24
223.645		Bridge					
223.658	50yr	1,618	5,400	77.48	89.30	83.63	2.97
223.658	80yr	1,618	5,820	77.48	89.72	83.88	3.05
223.658	100yr	1,618	6,100	77.48	90.00	84.06	3.10
223.658	150yr	1,618	6,450	77.48	90.36	84.25	3.16
223.658	200yr	1,618	6,760	77.48	90.65	84.41	3.21
224.125	50yr	2,085	5,400	77.29	89.56		2.95
224.125	80yr	2,085	5,820	77.29	89.99		3.03
224.125	100yr	2,085	6,100	77.29	90.28		3.08
224.125	150yr	2,085	6,450	77.29	90.63		3.14
224.125	200yr	2,085	6,760	77.29	90.92		3.20
224.580	50yr	2,540	5,400	78.40	89.77		3.42
224.580	80yr	2,540	5,820	78.40	90.20		3.50
224.580	100yr	2,540	6,100	78.40	90.48		3.55
224.580	150yr	2,540	6,450	78.40	90.83		3.60
224.580	200yr	2,540	6,760	78.40	91.12		3.65
224.955	50yr	2,915	5,400	78.01	90.10		3.37
224.955	80yr	2,915	5,820	78.01	90.52		3.46
224.955	100yr	2,915	6,100	78.01	90.80		3.51
224.955	150yr	2,915	6,450	78.01	91.15		3.57
224.955	200yr	2,915	6,760	78.01	91.44		3.63
225.415	50yr	3,375	5,400	78.62	90.51		3.11
225.415	80yr	3,375	5,820	78.62	90.93		3.21
225.415	100yr	3,375	6,100	78.62	91.21		3.27
225.415	150yr	3,375	6,450	78.62	91.56		3.35
225.415	200yr	3,375	6,760	78.62	91.84		3.41
225.579	50yr	3,539	5,400	78.95	90.79		2.49
225.579	80yr	3,539	5,820	78.95	91.22		2.56
225.579	100yr	3,539	6,100	78.95	91.52		2.60
225.579	150yr	3,539	6,450	78.95	91.87		2.65
225.579	200yr	3,539	6,760	78.95	92.17		2.70
225.590		Bridge					
225.600	50yr	3,560	5,400	78.95	90.82	84.96	2.48
225.600	80yr	3,560	5,820	78.95	91.26	85.18	2.55
225.600	100yr	3,560	6,100	78.95	91.56	85.32	2.59
225.600	150yr	3,560	6,450	78.95	91.91	85.49	2.64
225.600	200yr	3,560	6,760	78.95	92.21	85.64	2.69
225.772	50yr	3,732	5,400	81.35	90.86	85.74	2.65
225.772	80yr	3,732	5,820	81.35	91.29	85.95	2.71
225.772	100yr	3,732	6,100	81.35	91.59	86.10	2.75
225.772	150yr	3,732	6,450	81.35	91.95	86.26	2.80

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
225.772	200yr	3,732	6,760	81.35	92.25	86.41	2.84
225.774		Inline Weir					
225.775	50yr	3,735	5,400	81.35	90.99	85.75	2.61
225.775	80yr	3,735	5,820	81.35	91.43	85.96	2.67
225.775	100yr	3,735	6,100	81.35	91.73	86.09	2.71
225.775	150yr	3,735	6,450	81.35	92.09	86.26	2.76
225.775	200yr	3,735	6,760	81.35	92.39	86.41	2.80
225.830	50yr	3,790	5,400	80.67	91.01	85.67	2.69
225.830	80yr	3,790	5,820	80.67	91.45	85.89	2.76
225.830	100yr	3,790	6,100	80.67	91.75	86.03	2.80
225.830	150yr	3,790	6,450	80.67	92.11	86.20	2.85
225.830	200yr	3,790	6,760	80.67	92.40	86.35	2.89
226.268	50yr	4,228	5,400	80.32	91.33		2.15
226.268	80yr	4,228	5,820	80.32	91.77		2.21
226.268	100yr	4,228	6,100	80.32	92.07		2.24
226.268	150yr	4,228	6,450	80.32	92.44		2.28
226.268	200yr	4,228	6,760	80.32	92.73		2.32
226.275		Bridge					
226.282	50yr	4,242	5,400	80.32	91.35	85.65	2.15
226.282	80yr	4,242	5,820	80.32	91.79	85.84	2.20
226.282	100yr	4,242	6,100	80.32	92.10	85.97	2.23
226.282	150yr	4,242	6,450	80.32	92.46	86.13	2.27
226.282	200yr	4,242	6,760	80.32	92.77	86.26	2.31
226.385	50yr	4,345	5,400	79.91	91.40		2.04
226.385	80yr	4,345	5,820	79.91	91.84		2.09
226.385	100yr	4,345	6,100	79.91	92.15		2.12
226.385	150yr	4,345	6,450	79.91	92.52		2.16
226.385	200yr	4,345	6,760	79.91	92.82		2.20
226.950	50yr	4,910	5,400	80.63	91.62	84.57	1.40
226.950	80yr	4,910	5,820	80.63	92.07	84.71	1.44
226.950	100yr	4,910	6,100	80.63	92.38	84.80	1.47
226.950	150yr	4,910	6,450	80.63	92.75	84.92	1.49
226.950	200yr	4,910	6,760	80.63	93.05	85.01	1.52
227.092	50yr	5,052	5,400	81.57	91.62	85.43	1.52
227.092	80yr	5,052	5,820	81.57	92.07	85.57	1.56
227.092	100yr	5,052	6,100	81.57	92.38	85.66	1.58
227.092	150yr	5,052	6,450	81.57	92.75	85.77	1.60
227.092	200yr	5,052	6,760	81.57	93.06	85.86	1.63
227.097		Inline Weir					
227.100	50yr	5,060	5,400	81.57	91.66	85.43	1.51
227.100	80yr	5,060	5,820	81.57	92.11	85.57	1.55
227.100	100yr	5,060	6,100	81.57	92.42	85.66	1.57
227.100	150yr	5,060	6,450	81.57	92.79	85.77	1.60
227.100	200yr	5,060	6,760	81.57	93.10	85.87	1.62
227.425	50yr	5,385	5,400	80.03	91.56	85.95	2.75
227.425	80yr	5,385	5,820	80.03	92.00	86.21	2.81
227.425	100yr	5,385	6,100	80.03	92.31	86.38	2.84
227.425	150yr	5,385	6,450	80.03	92.67	86.59	2.88
227.425	200yr	5,385	6,760	80.03	92.97	86.76	2.92
227.610	50yr	5,570	5,400	78.75	91.60	86.34	3.13
227.610	80yr	5,570	5,810	78.75	92.04	86.61	3.19
227.610	100yr	5,570	6,100	78.75	92.34	86.79	3.22
227.610	150yr	5,570	6,450	78.75	92.70	87.01	3.26
227.610	200yr	5,570	6,750	78.75	93.01	87.19	3.29

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
227.745	50yr	5,705	5,400	80.23	91.79	86.51	2.83
227.745	80yr	5,705	5,810	80.23	92.23	86.75	2.88
227.745	100yr	5,705	6,100	80.23	92.53	86.91	2.92
227.745	150yr	5,705	6,450	80.23	92.89	87.14	2.97
227.745	200yr	5,705	6,750	80.23	93.20	87.30	3.00
228.340	50yr	6,300	5,400	80.60	92.13		2.73
228.340	80yr	6,300	5,810	80.60	92.57		2.80
228.340	100yr	6,300	6,100	80.60	92.86		2.86
228.340	150yr	6,300	6,450	80.60	93.21		2.92
228.340	200yr	6,300	6,750	80.60	93.51		2.96
229.100	50yr	7,060	5,400	81.08	92.50		2.55
229.100	80yr	7,060	5,810	81.08	92.94		2.62
229.100	100yr	7,060	6,100	81.08	93.24		2.67
229.100	150yr	7,060	6,450	81.08	93.60		2.73
229.100	200yr	7,060	6,750	81.08	93.90		2.77
229.550	50yr	7,510	5,400	81.97	92.59		3.33
229.550	80yr	7,510	5,810	81.97	93.02		3.40
229.550	100yr	7,510	6,100	81.97	93.32		3.45
229.550	150yr	7,510	6,450	81.97	93.67		3.50
229.550	200yr	7,510	6,750	81.97	93.97		3.55
229.925	50yr	7,885	5,400	81.81	92.84		3.67
229.925	80yr	7,885	5,810	81.81	93.26		3.75
229.925	100yr	7,885	6,100	81.81	93.55		3.80
229.925	150yr	7,885	6,450	81.81	93.90		3.86
229.925	200yr	7,885	6,750	81.81	94.19		3.91
230.485	50yr	8,445	5,400	82.29	93.65	87.60	1.99
230.485	80yr	8,445	5,810	82.29	94.09	87.80	2.02
230.485	100yr	8,445	6,100	82.29	94.39	87.94	2.05
230.485	150yr	8,445	6,450	82.29	94.75	88.11	2.08
230.485	200yr	8,445	6,750	82.29	95.06	88.25	2.11
230.895	50yr	8,855	5,400	83.27	93.64		3.04
230.895	80yr	8,855	5,810	83.27	94.07		3.10
230.895	100yr	8,855	6,100	83.27	94.37		3.14
230.895	150yr	8,855	6,450	83.27	94.72		3.18
230.895	200yr	8,855	6,750	83.27	95.01		3.22
231.365	50yr	9,325	5,400	84.66	93.96		3.14
231.365	80yr	9,325	5,810	84.66	94.39		3.20
231.365	100yr	9,325	6,100	84.66	94.68		3.25
231.365	150yr	9,325	6,450	84.66	95.03		3.30
231.365	200yr	9,325	6,750	84.66	95.32		3.34
231.605	50yr	9,565	5,400	84.21	94.20		2.94
231.605	80yr	9,565	5,810	84.21	94.62		3.00
231.605	100yr	9,565	6,100	84.21	94.91		3.05
231.605	150yr	9,565	6,450	84.21	95.26		3.10
231.605	200yr	9,565	6,750	84.21	95.55		3.15
231.925	50yr	9,885	5,400	83.98	94.43		2.76
231.925	80yr	9,885	5,810	83.98	94.86		2.82
231.925	100yr	9,885	6,100	83.98	95.16		2.86
231.925	150yr	9,885	6,450	83.98	95.50		2.91
231.925	200yr	9,885	6,750	83.98	95.79		2.95
232.360	50yr	10,320	5,400	83.69	94.67		2.86
232.360	80yr	10,320	5,810	83.69	95.10		2.92
232.360	100yr	10,320	6,100	83.69	95.39		2.96
232.360	150yr	10,320	6,450	83.69	95.73		3.01
232.360	200yr	10,320	6,750	83.69	96.02		3.05

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
232.905	50yr	10,865	5,400	84.40	94.91		3.69
232.905	80yr	10,865	5,810	84.40	95.33		3.76
232.905	100yr	10,865	6,100	84.40	95.61		3.81
232.905	150yr	10,865	6,450	84.40	95.95		3.87
232.905	200yr	10,865	6,750	84.40	96.23		3.92
233.465	50yr	11,425	5,400	83.64	95.69		2.69
233.465	80yr	11,425	5,810	83.64	96.11		2.74
233.465	100yr	11,425	6,100	83.64	96.40		2.78
233.465	150yr	11,425	6,450	83.64	96.75		2.82
233.465	200yr	11,425	6,750	83.64	97.04		2.86
234.130	50yr	12,090	5,400	85.32	96.13	89.91	1.74
234.130	80yr	12,090	5,810	85.32	96.56	90.07	1.79
234.130	100yr	12,090	6,100	85.32	96.85	90.18	1.82
234.130	150yr	12,090	6,450	85.32	97.20	90.30	1.86
234.130	200yr	12,090	6,750	85.32	97.50	90.41	1.89
234.585	50yr	12,545	5,400	85.66	96.19	90.66	2.11
234.585	80yr	12,545	5,810	85.66	96.62	90.85	2.15
234.585	100yr	12,545	6,100	85.66	96.91	90.98	2.18
234.585	150yr	12,545	6,450	85.66	97.26	91.14	2.22
234.585	200yr	12,545	6,750	85.66	97.55	91.27	2.25
235.060	50yr	13,020	5,400	86.35	96.33	92.14	2.50
235.060	80yr	13,020	5,810	86.35	96.75	92.29	2.54
235.060	100yr	13,020	6,100	86.35	97.04	92.41	2.56
235.060	150yr	13,020	6,450	86.35	97.39	92.57	2.59
235.060	200yr	13,020	6,750	86.35	97.68	92.68	2.61
235.410	50yr	13,370	5,400	86.55	96.56	91.63	2.31
235.410	80yr	13,370	5,810	86.55	96.99	91.82	2.33
235.410	100yr	13,370	6,100	86.55	97.28	91.95	2.34
235.410	150yr	13,370	6,450	86.55	97.64	92.15	2.35
235.410	200yr	13,370	6,750	86.55	97.93	92.48	2.36
235.420		Bridge					
235.435	50yr	13,395	5,400	86.55	96.63	91.62	2.28
235.435	80yr	13,395	5,810	86.55	97.06	91.81	2.31
235.435	100yr	13,395	6,100	86.55	97.36	91.95	2.32
235.435	150yr	13,395	6,450	86.55	97.72	92.34	2.32
235.435	200yr	13,395	6,750	86.55	98.00	92.48	2.33
235.450		Bridge					
235.460	50yr	13,420	5,400	86.55	96.69	91.60	2.26
235.460	80yr	13,420	5,810	86.55	97.13	91.82	2.28
235.460	100yr	13,420	6,100	86.55	97.43	91.93	2.29
235.460	150yr	13,420	6,450	86.55	97.78	92.15	2.30
235.460	200yr	13,420	6,750	86.55	98.06	92.49	2.31
235.530	50yr	13,490	5,400	87.55	96.66		2.67
235.530	80yr	13,490	5,810	87.55	97.09		2.70
235.530	100yr	13,490	6,100	87.55	97.39		2.72
235.530	150yr	13,490	6,450	87.55	97.74		2.76
235.530	200yr	13,490	6,750	87.55	98.01		2.79
235.570	50yr	13,530	5,400	87.79	96.71	92.85	2.59
235.570	80yr	13,530	5,810	87.79	97.14	93.03	2.60
235.570	100yr	13,530	6,100	87.79	97.45	93.17	2.61
235.570	150yr	13,530	6,450	87.79	97.80	93.33	2.63
235.570	200yr	13,530	6,750	87.79	98.07	93.49	2.65
235.595	50yr	13,555	5,400	87.73	96.73		2.57
235.595	80yr	13,555	5,810	87.73	97.16		2.62
235.595	100yr	13,555	6,100	87.73	97.45		2.65

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
235.595	150yr	13,555	6,450	87.73	97.80		2.69
235.595	200yr	13,555	6,750	87.73	98.07		2.73
235.704	50yr	13,664	5,360	87.18	96.84	91.70	2.37
235.704	80yr	13,664	5,770	87.18	97.26	91.91	2.42
235.704	100yr	13,664	6,060	87.18	97.56	92.05	2.45
235.704	150yr	13,664	6,390	87.18	97.91	92.25	2.48
235.704	200yr	13,664	6,700	87.18	98.18	92.45	2.52
235.710		Bridge					
235.715	50yr	13,675	5,360	87.18	96.88	91.70	2.36
235.715	80yr	13,675	5,770	87.18	97.30	91.91	2.41
235.715	100yr	13,675	6,060	87.18	97.60	92.05	2.44
235.715	150yr	13,675	6,390	87.18	97.95	92.25	2.47
235.715	200yr	13,675	6,700	87.18	98.22	92.44	2.51
236.055	50yr	14,015	5,360	86.83	96.99	92.38	2.68
236.055	80yr	14,015	5,770	86.83	97.41	92.59	2.73
236.055	100yr	14,015	6,060	86.83	97.70	92.73	2.76
236.055	150yr	14,015	6,390	86.83	98.04	92.89	2.79
236.055	200yr	14,015	6,700	86.83	98.31	93.04	2.83
236.505	50yr	14,465	5,360	87.71	97.30	92.59	2.52
236.505	80yr	14,465	5,770	87.71	97.74	92.79	2.54
236.505	100yr	14,465	6,060	87.71	98.02	92.94	2.56
236.505	150yr	14,465	6,390	87.71	98.36	93.09	2.57
236.505	200yr	14,465	6,700	87.71	98.63	93.25	2.60
237.040	50yr	15,000	5,360	86.90	97.63	92.49	2.25
237.040	80yr	15,000	5,770	86.90	98.06	92.76	2.29
237.040	100yr	15,000	6,060	86.90	98.34	92.93	2.32
237.040	150yr	15,000	6,390	86.90	98.66	93.09	2.35
237.040	200yr	15,000	6,700	86.90	98.92	93.25	2.39
237.455	50yr	15,415	5,360	87.95	97.80	93.32	2.33
237.455	80yr	15,415	5,770	87.95	98.23	93.52	2.36
237.455	100yr	15,415	6,060	87.95	98.50	93.65	2.38
237.455	150yr	15,415	6,390	87.95	98.82	93.82	2.40
237.455	200yr	15,415	6,700	87.95	99.09	93.97	2.44
237.865	50yr	15,825	5,360	88.40	98.04	93.73	2.39
237.865	80yr	15,825	5,770	88.40	98.46	93.95	2.38
237.865	100yr	15,825	6,060	88.40	98.73	94.11	2.39
237.865	150yr	15,825	6,390	88.40	99.04	94.28	2.39
237.865	200yr	15,825	6,700	88.40	99.30	94.42	2.41
238.335	50yr	16,295	5,360	88.56	98.35		2.24
238.335	80yr	16,295	5,770	88.56	98.73		2.28
238.335	100yr	16,295	6,060	88.56	98.99		2.31
238.335	150yr	16,295	6,390	88.56	99.28		2.35
238.335	200yr	16,295	6,700	88.56	99.53		2.38
238.780	50yr	16,740	5,360	87.80	98.54	93.74	2.35
238.780	80yr	16,740	5,770	87.80	98.92	93.95	2.40
238.780	100yr	16,740	6,060	87.80	99.17	94.09	2.44
238.780	150yr	16,740	6,390	87.80	99.45	94.25	2.49
238.780	200yr	16,740	6,700	87.80	99.70	94.39	2.53
239.170	50yr	17,130	5,360	89.73	98.76	94.69	2.28
239.170	80yr	17,130	5,770	89.73	99.14	94.85	2.31
239.170	100yr	17,130	6,060	89.73	99.39	94.97	2.32
239.170	150yr	17,130	6,390	89.73	99.68	95.09	2.35
239.170	200yr	17,130	6,700	89.73	99.94	95.21	2.37
239.220	50yr	17,180	5,360	89.23	98.89	93.34	1.82
239.220	80yr	17,180	5,770	89.23	99.26	93.49	1.87

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
239.220	100yr	17,180	6,060	89.23	99.51	93.62	1.90
239.220	150yr	17,180	6,390	89.23	99.79	93.74	1.94
239.220	200yr	17,180	6,700	89.23	100.05	93.85	1.97
239.635	50yr	17,595	5,360	89.13	98.99	93.13	1.93
239.635	80yr	17,595	5,770	89.13	99.36	93.33	1.98
239.635	100yr	17,595	6,060	89.13	99.61	93.47	2.02
239.635	150yr	17,595	6,390	89.13	99.89	93.63	2.07
239.635	200yr	17,595	6,700	89.13	100.15	93.75	2.11
240.070	50yr	18,030	5,360	88.70	99.04	93.80	2.57
240.070	80yr	18,030	5,770	88.70	99.41	94.02	2.65
240.070	100yr	18,030	6,060	88.70	99.66	94.16	2.70
240.070	150yr	18,030	6,390	88.70	99.93	94.32	2.75
240.070	200yr	18,030	6,700	88.70	100.18	94.47	2.80
240.295	50yr	18,255	5,360	87.63	99.18	93.41	2.46
240.295	80yr	18,255	5,770	87.63	99.54	93.63	2.54
240.295	100yr	18,255	6,060	87.63	99.79	93.76	2.60
240.295	150yr	18,255	6,390	87.63	100.07	93.92	2.66
240.295	200yr	18,255	6,700	87.63	100.32	94.06	2.72
240.825	50yr	18,785	5,360	89.31	99.48	94.36	2.03
240.825	80yr	18,785	5,770	89.31	99.86	94.52	2.08
240.825	100yr	18,785	6,060	89.31	100.12	94.64	2.11
240.825	150yr	18,785	6,390	89.31	100.40	94.76	2.15
240.825	200yr	18,785	6,700	89.31	100.66	94.87	2.18
241.045	50yr	19,005	5,360	90.42	99.56	94.70	2.07
241.045	80yr	19,005	5,770	90.42	99.94	94.87	2.11
241.045	100yr	19,005	6,060	90.42	100.20	94.98	2.13
241.045	150yr	19,005	6,390	90.42	100.48	95.12	2.16
241.045	200yr	19,005	6,700	90.42	100.74	95.23	2.18
241.055		Bridge					
241.065	50yr	19,025	5,360	90.42	99.63	94.70	2.05
241.065	80yr	19,025	5,770	90.42	100.00	94.87	2.09
241.065	100yr	19,025	6,060	90.42	100.26	94.98	2.11
241.065	150yr	19,025	6,390	90.42	100.55	95.11	2.14
241.065	200yr	19,025	6,700	90.42	100.81	95.23	2.16
241.220	50yr	19,180	5,360	87.87	99.70	94.35	1.97
241.220	80yr	19,180	5,770	87.87	100.08	94.55	2.02
241.220	100yr	19,180	6,060	87.87	100.34	94.68	2.05
241.220	150yr	19,180	6,390	87.87	100.61	94.83	2.09
241.220	200yr	19,180	6,700	87.87	100.87	94.95	2.13
241.765	50yr	19,725	5,360	90.98	99.84	95.47	2.45
241.765	80yr	19,725	5,770	90.98	100.21	95.69	2.50
241.765	100yr	19,725	6,060	90.98	100.47	95.84	2.54
241.765	150yr	19,725	6,390	90.98	100.74	96.03	2.59
241.765	200yr	19,725	6,700	90.98	101.00	96.17	2.63
242.610	50yr	20,570	5,360	91.10	100.31	95.84	2.04
242.610	80yr	20,570	5,770	91.10	100.68	96.01	2.08
242.610	100yr	20,570	6,060	91.10	100.94	96.14	2.11
242.610	150yr	20,570	6,390	91.10	101.21	96.28	2.14
242.610	200yr	20,570	6,700	91.10	101.47	96.40	2.17
243.355	50yr	21,315	5,360	91.92	100.61	97.35	2.43
243.355	80yr	21,315	5,770	91.92	100.97	97.50	2.46
243.355	100yr	21,315	6,060	91.92	101.22	97.60	2.49
243.355	150yr	21,315	6,390	91.92	101.49	97.70	2.51
243.355	200yr	21,315	6,700	91.92	101.74	97.80	2.54
243.940	50yr	21,900	5,360	93.53	101.01	97.99	2.44

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
243.940	80yr	21,900	5,770	93.53	101.35	98.13	2.48
243.940	100yr	21,900	6,060	93.53	101.59	98.23	2.50
243.940	150yr	21,900	6,390	93.53	101.85	98.34	2.53
243.940	200yr	21,900	6,700	93.53	102.09	98.44	2.55
244.360	50yr	22,320	4,090	91.75	101.47	97.75	1.92
244.360	80yr	22,320	4,380	91.75	101.80	97.89	1.87
244.360	100yr	22,320	4,670	91.75	102.02	98.04	1.88
244.360	150yr	22,320	4,880	91.75	102.28	98.11	1.84
244.360	200yr	22,320	5,140	91.75	102.52	98.23	1.83
244.830	50yr	22,790	4,090	93.61	101.81	98.71	1.93
244.830	80yr	22,790	4,380	93.61	102.13	98.82	1.92
244.830	100yr	22,790	4,670	93.61	102.40	98.93	1.88
244.830	150yr	22,790	4,880	93.61	102.62	99.01	1.83
244.830	200yr	22,790	5,140	93.61	102.83	99.11	1.81
244.860	50yr	22,820	4,090	93.19	101.74	98.85	2.53
244.860	80yr	22,820	4,380	93.19	102.06	98.98	2.53
244.860	100yr	22,820	4,670	93.19	102.33	99.12	2.54
244.860	150yr	22,820	4,880	93.19	102.54	99.21	2.52
244.860	200yr	22,820	5,140	93.19	102.76	99.33	2.48
244.870		Bridge					
244.880	50yr	22,840	4,090	93.19	101.85	98.85	2.47
244.880	80yr	22,840	4,380	93.19	102.16	98.99	2.48
244.880	100yr	22,840	4,670	93.19	102.44	99.12	2.48
244.880	150yr	22,840	4,880	93.19	102.67	99.22	2.42
244.880	200yr	22,840	5,140	93.19	102.89	99.33	2.38
245.305	50yr	23,265	4,090	95.31	102.32	100.03	1.93
245.305	80yr	23,265	4,380	95.31	102.63	100.12	1.92
245.305	100yr	23,265	4,670	95.31	102.91	100.21	1.92
245.305	150yr	23,265	4,880	95.31	103.15	100.27	1.90
245.305	200yr	23,265	5,140	95.31	103.34	100.34	1.92
245.840	50yr	23,800	4,090	95.77	102.63	99.64	2.21
245.840	80yr	23,800	4,380	95.77	102.91	99.77	2.25
245.840	100yr	23,800	4,670	95.77	103.17	99.90	2.29
245.840	150yr	23,800	4,880	95.77	103.39	99.99	2.30
245.840	200yr	23,800	5,140	95.77	103.57	100.09	2.35
246.325	50yr	24,285	3,940	94.91	102.83		3.36
246.325	80yr	24,285	4,220	94.91	103.09		3.44
246.325	100yr	24,285	4,520	94.91	103.32		3.54
246.325	150yr	24,285	4,710	94.91	103.52		3.57
246.325	200yr	24,285	4,970	94.91	103.70		3.67
246.330		Bridge					
246.335	50yr	24,295	3,940	94.91	102.95	100.30	3.29
246.335	80yr	24,295	4,220	94.91	103.21	100.48	3.37
246.335	100yr	24,295	4,520	94.91	103.45	100.66	3.47
246.335	150yr	24,295	4,710	94.91	103.66	100.78	3.50
246.335	200yr	24,295	4,970	94.91	103.83	100.93	3.59
246.365	50yr	24,325	3,940	95.65	102.88		3.73
246.365	80yr	24,325	4,220	95.65	103.14		3.82
246.365	100yr	24,325	4,520	95.65	103.38		3.92
246.365	150yr	24,325	4,710	95.65	103.58		3.95
246.365	200yr	24,325	4,970	95.65	103.75		4.05

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▶갑천 홍수위산정결과(개수후)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: Gab Chun Reach: Gab Chun

Rivers = 1
Hydraulic Reaches = 1
River Stations = 380
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		2,960	19.65	30.60	24.60	0.89
0.000	80yr		3,260	19.65	30.60	24.73	0.98
0.000	100yr		3,410	19.65	30.60	24.79	1.02
0.000	150yr		3,670	19.65	30.60	24.90	1.10
0.000	200yr		3,860	19.65	30.60	24.96	1.16
0.160	50yr	160	2,960	19.75	30.60	24.42	1.03
0.160	80yr	160	3,260	19.75	30.60	24.57	1.14
0.160	100yr	160	3,410	19.75	30.60	24.65	1.19
0.160	150yr	160	3,670	19.75	30.60	24.77	1.28
0.160	200yr	160	3,860	19.75	30.60	24.85	1.35
0.390	50yr	390	2,960	20.53	30.60	24.33	1.09
0.390	80yr	390	3,260	20.53	30.60	24.50	1.20
0.390	100yr	390	3,410	20.53	30.61	24.58	1.26
0.390	150yr	390	3,670	20.53	30.61	24.70	1.35
0.390	200yr	390	3,860	20.53	30.61	24.80	1.42
0.570	50yr	570	2,960	19.91	30.61	24.84	1.20
0.570	80yr	570	3,260	19.91	30.61	25.05	1.32
0.570	100yr	570	3,410	19.91	30.61	25.15	1.38
0.570	150yr	570	3,670	19.91	30.61	25.29	1.49
0.570	200yr	570	3,860	19.91	30.62	25.39	1.57
0.770	50yr	770	2,960	20.25	30.63	24.85	1.08
0.770	80yr	770	3,260	20.25	30.64	25.01	1.19
0.770	100yr	770	3,410	20.25	30.65	25.09	1.24
0.770	150yr	770	3,670	20.25	30.66	25.22	1.34
0.770	200yr	770	3,860	20.25	30.67	25.31	1.41
0.980	50yr	980	2,960	21.21	30.66	24.95	1.03
0.980	80yr	980	3,260	21.21	30.67	25.09	1.14
0.980	100yr	980	3,410	21.21	30.68	25.16	1.19
0.980	150yr	980	3,670	21.21	30.70	25.26	1.27
0.980	200yr	980	3,860	21.21	30.71	25.37	1.34
1.010	50yr	1,010	2,960	20.76	30.66	25.00	1.05
1.010	80yr	1,010	3,260	20.76	30.68	25.14	1.16
1.010	100yr	1,010	3,410	20.76	30.69	25.22	1.21
1.010	150yr	1,010	3,670	20.76	30.70	25.35	1.30
1.010	200yr	1,010	3,860	20.76	30.71	25.43	1.36
1.015		Bridge					
1.021	50yr	1,021	2,960	20.76	30.69	24.99	1.05
1.021	80yr	1,021	3,260	20.76	30.68	25.13	1.16
1.021	100yr	1,021	3,410	20.76	30.70	25.21	1.20
1.021	150yr	1,021	3,670	20.76	30.71	25.34	1.30
1.021	200yr	1,021	3,860	20.76	30.72	25.43	1.36
1.220	50yr	1,220	2,960	20.20	30.69	25.38	1.15
1.220	80yr	1,220	3,260	20.20	30.69	25.53	1.27
1.220	100yr	1,220	3,410	20.20	30.71	25.60	1.32
1.220	150yr	1,220	3,670	20.20	30.71	25.71	1.42
1.220	200yr	1,220	3,860	20.20	30.72	25.80	1.49

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
1.450	50yr	1.450	2.960	19.64	30.70	25.71	1.21
1.450	80yr	1.450	3.260	19.64	30.70	25.87	1.33
1.450	100yr	1.450	3.410	19.64	30.72	25.95	1.39
1.450	150yr	1.450	3.670	19.64	30.73	26.09	1.49
1.450	200yr	1.450	3.860	19.64	30.75	26.19	1.56
1.710	50yr	1.710	2.960	20.19	30.72	25.69	1.21
1.710	80yr	1.710	3.260	20.19	30.73	25.86	1.33
1.710	100yr	1.710	3.410	20.19	30.75	25.94	1.39
1.710	150yr	1.710	3.670	20.19	30.77	26.09	1.49
1.710	200yr	1.710	3.860	20.19	30.78	26.19	1.56
1.950	50yr	1.950	2.960	21.81	30.73	25.83	1.45
1.950	80yr	1.950	3.260	21.81	30.74	26.03	1.59
1.950	100yr	1.950	3.410	21.81	30.77	26.14	1.66
1.950	150yr	1.950	3.670	21.81	30.78	26.29	1.78
1.950	200yr	1.950	3.860	21.81	30.80	26.41	1.86
2.205	50yr	2.205	2.960	21.96	30.80	25.54	1.22
2.205	80yr	2.205	3.260	21.96	30.82	25.71	1.34
2.205	100yr	2.205	3.410	21.96	30.85	25.80	1.40
2.205	150yr	2.205	3.670	21.96	30.88	25.95	1.50
2.205	200yr	2.205	3.860	21.96	30.91	26.06	1.57
2.455	50yr	2.455	2.960	22.83	30.81	26.49	1.49
2.455	80yr	2.455	3.260	22.83	30.83	26.64	1.63
2.455	100yr	2.455	3.410	22.83	30.86	26.71	1.70
2.455	150yr	2.455	3.670	22.83	30.89	26.84	1.82
2.455	200yr	2.455	3.860	22.83	30.92	26.94	1.91
2.528	50yr	2.528	2.960	23.23	30.80	26.89	1.65
2.528	80yr	2.528	3.260	23.23	30.83	27.06	1.81
2.528	100yr	2.528	3.410	23.23	30.86	27.15	1.88
2.528	150yr	2.528	3.670	23.23	30.89	27.29	2.02
2.528	200yr	2.528	3.860	23.23	30.92	27.39	2.11
2.535		Bridge					
2.542	50yr	2.542	2.960	23.23	30.82	26.89	1.65
2.542	80yr	2.542	3.260	23.23	30.85	27.07	1.80
2.542	100yr	2.542	3.410	23.23	30.88	27.15	1.88
2.542	150yr	2.542	3.670	23.23	30.90	27.29	2.01
2.542	200yr	2.542	3.860	23.23	30.94	27.39	2.10
2.640	50yr	2.640	2.960	22.71	30.83	26.69	1.63
2.640	80yr	2.640	3.260	22.71	30.86	26.86	1.78
2.640	100yr	2.640	3.410	22.71	30.90	26.94	1.86
2.640	150yr	2.640	3.670	22.71	30.93	27.07	1.99
2.640	200yr	2.640	3.860	22.71	30.97	27.17	2.07
2.820	50yr	2.820	2.960	22.20	30.86	26.80	1.60
2.820	80yr	2.820	3.260	22.20	30.90	26.96	1.75
2.820	100yr	2.820	3.410	22.20	30.95	27.04	1.82
2.820	150yr	2.820	3.670	22.20	30.98	27.17	1.94
2.820	200yr	2.820	3.860	22.20	31.03	27.26	2.03
2.985	50yr	2.985	2.960	22.03	30.90	26.92	1.57
2.985	80yr	2.985	3.260	22.03	30.94	27.08	1.71
2.985	100yr	2.985	3.410	22.03	31.00	27.16	1.77
2.985	150yr	2.985	3.670	22.03	31.03	27.29	1.90
2.985	200yr	2.985	3.860	22.03	31.08	27.38	1.98
3.125	50yr	3.125	2.960	22.65	30.92	27.20	1.64
3.125	80yr	3.125	3.260	22.65	30.97	27.37	1.79
3.125	100yr	3.125	3.410	22.65	31.03	27.46	1.85
3.125	150yr	3.125	3.670	22.65	31.07	27.59	1.97

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
3.125	200yr	3.125	3.860	22.65	31.12	27.71	2.06
3.335	50yr	3.335	2.960	22.86	30.96	27.53	1.62
3.335	80yr	3.335	3.260	22.86	31.03	27.71	1.76
3.335	100yr	3.335	3.410	22.86	31.09	27.79	1.82
3.335	150yr	3.335	3.670	22.86	31.14	27.93	1.94
3.335	200yr	3.335	3.860	22.86	31.20	28.03	2.02
3.550	50yr	3.550	2.960	23.52	31.01	27.64	1.59
3.550	80yr	3.550	3.260	23.52	31.09	27.78	1.72
3.550	100yr	3.550	3.410	23.52	31.15	27.84	1.78
3.550	150yr	3.550	3.670	23.52	31.22	27.96	1.89
3.550	200yr	3.550	3.860	23.52	31.28	28.04	1.97
3.755	50yr	3.755	2.900	23.60	31.03	27.52	1.93
3.755	80yr	3.755	3.190	23.60	31.11	27.77	2.08
3.755	100yr	3.755	3.330	23.60	31.17	27.85	2.15
3.755	150yr	3.755	3.590	23.60	31.24	28.57	2.28
3.755	200yr	3.755	3.770	23.60	31.30	28.69	2.36
3.897	50yr	3.897	2.900	23.77	31.06	28.52	2.02
3.897	80yr	3.897	3.190	23.77	31.15	28.66	2.19
3.897	100yr	3.897	3.330	23.77	31.21	28.72	2.25
3.897	150yr	3.897	3.590	23.77	31.29	28.83	2.39
3.897	200yr	3.897	3.770	23.77	31.36	28.89	2.47
3.915		Bridge					
3.933	50yr	3.933	2.900	23.77	31.08	28.52	2.02
3.933	80yr	3.933	3.190	23.77	31.16	28.65	2.18
3.933	100yr	3.933	3.330	23.77	31.25	28.72	2.23
3.933	150yr	3.933	3.590	23.77	31.33	28.83	2.37
3.933	200yr	3.933	3.770	23.77	31.40	28.90	2.45
3.975	50yr	3.975	2.900	23.39	31.15	27.47	1.73
3.975	80yr	3.975	3.190	23.39	31.25	27.80	1.87
3.975	100yr	3.975	3.330	23.39	31.33	27.90	1.92
3.975	150yr	3.975	3.590	23.39	31.43	28.02	2.04
3.975	200yr	3.975	3.770	23.39	31.50	28.11	2.11
4.205	50yr	4.205	2.900	23.49	31.17	28.48	2.06
4.205	80yr	4.205	3.190	23.49	31.28	28.65	2.22
4.205	100yr	4.205	3.330	23.49	31.36	28.72	2.28
4.205	150yr	4.205	3.590	23.49	31.46	28.87	2.41
4.205	200yr	4.205	3.770	23.49	31.53	28.96	2.49
4.395	50yr	4.395	2.900	23.74	31.26	28.16	1.98
4.395	80yr	4.395	3.190	23.74	31.37	28.31	2.14
4.395	100yr	4.395	3.330	23.74	31.46	28.38	2.19
4.395	150yr	4.395	3.590	23.74	31.57	28.51	2.32
4.395	200yr	4.395	3.770	23.74	31.65	28.60	2.40
4.595	50yr	4.595	2.900	23.40	31.35	28.39	1.95
4.595	80yr	4.595	3.190	23.40	31.47	28.55	2.09
4.595	100yr	4.595	3.330	23.40	31.57	28.62	2.14
4.595	150yr	4.595	3.590	23.40	31.68	28.75	2.25
4.595	200yr	4.595	3.770	23.40	31.77	28.86	2.32
4.775	50yr	4.775	2.900	21.34	31.42	28.10	1.96
4.775	80yr	4.775	3.190	21.34	31.56	28.27	2.09
4.775	100yr	4.775	3.330	21.34	31.65	28.36	2.14
4.775	150yr	4.775	3.590	21.34	31.78	28.51	2.25
4.775	200yr	4.775	3.770	21.34	31.86	28.61	2.32
4.955	50yr	4.955	2.900	23.50	31.50	28.18	1.98
4.955	80yr	4.955	3.190	23.50	31.64	28.38	2.11
4.955	100yr	4.955	3.330	23.50	31.73	28.46	2.16

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
4.955	150yr	4,955	3,590	23.50	31.86	28.61	2.26
4.955	200yr	4,955	3,770	23.50	31.95	28.71	2.33
5.003	50yr	5,003	2,900	23.70	31.51	28.20	2.03
5.003	80yr	5,003	3,190	23.70	31.65	28.40	2.16
5.003	100yr	5,003	3,330	23.70	31.74	28.49	2.21
5.003	150yr	5,003	3,590	23.70	31.87	28.65	2.32
5.003	200yr	5,003	3,770	23.70	31.96	28.77	2.39
5.004		Inline Weir					
5.005	50yr	5,005	2,900	23.70	31.58	28.19	2.00
5.005	80yr	5,005	3,190	23.70	31.74	28.38	2.12
5.005	100yr	5,005	3,330	23.70	31.83	28.47	2.17
5.005	150yr	5,005	3,590	23.70	31.96	28.65	2.27
5.005	200yr	5,005	3,770	23.70	32.06	28.76	2.34
5.165	50yr	5,165	2,900	24.43	31.68	27.97	1.79
5.165	80yr	5,165	3,190	24.43	31.84	28.28	1.91
5.165	100yr	5,165	3,330	24.43	31.94	28.47	1.95
5.165	150yr	5,165	3,590	24.43	32.08	28.74	2.05
5.165	200yr	5,165	3,770	24.43	32.18	28.91	2.11
5.262	50yr	5,262	2,900	24.90	31.70	28.27	1.88
5.262	80yr	5,262	3,190	24.90	31.87	28.60	1.99
5.262	100yr	5,262	3,330	24.90	31.96	28.75	2.04
5.262	150yr	5,262	3,590	24.90	32.11	28.98	2.13
5.262	200yr	5,262	3,770	24.90	32.21	29.12	2.20
5.265		Bridge					
5.268	50yr	5,268	2,900	24.90	31.71	28.25	1.87
5.268	80yr	5,268	3,190	24.90	31.88	28.60	1.98
5.268	100yr	5,268	3,330	24.90	31.98	28.75	2.03
5.268	150yr	5,268	3,590	24.90	32.13	28.98	2.12
5.268	200yr	5,268	3,770	24.90	32.23	29.12	2.19
5.342	50yr	5,342	2,900	25.22	31.73	28.86	1.98
5.342	80yr	5,342	3,190	25.22	31.90	29.12	2.09
5.342	100yr	5,342	3,330	25.22	32.00	29.24	2.14
5.342	150yr	5,342	3,590	25.22	32.14	29.43	2.23
5.342	200yr	5,342	3,770	25.22	32.25	29.56	2.30
5.345		Bridge					
5.348	50yr	5,348	2,900	25.22	31.75	28.86	1.97
5.348	80yr	5,348	3,190	25.22	31.92	29.12	2.08
5.348	100yr	5,348	3,330	25.22	32.02	29.24	2.13
5.348	150yr	5,348	3,590	25.22	32.16	29.42	2.22
5.348	200yr	5,348	3,770	25.22	32.27	29.56	2.29
5.402	50yr	5,402	2,900	24.62	31.78	28.41	1.89
5.402	80yr	5,402	3,190	24.62	31.96	28.62	2.00
5.402	100yr	5,402	3,330	24.62	32.06	28.82	2.05
5.402	150yr	5,402	3,590	24.62	32.20	29.13	2.14
5.402	200yr	5,402	3,770	24.62	32.31	29.29	2.20
5.405		Bridge					
5.408	50yr	5,408	2,900	24.62	31.79	28.41	1.89
5.408	80yr	5,408	3,190	24.62	31.97	28.62	2.00
5.408	100yr	5,408	3,330	24.62	32.08	28.82	2.04
5.408	150yr	5,408	3,590	24.62	32.22	29.13	2.13
5.408	200yr	5,408	3,770	24.62	32.33	29.29	2.19
5.462	50yr	5,462	2,900	24.01	31.82	28.08	1.80
5.462	80yr	5,462	3,190	24.01	32.01	28.26	1.91

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
5.462	100yr	5,462	3,330	24.01	32.11	28.37	1.95
5.462	150yr	5,462	3,590	24.01	32.26	28.54	2.04
5.462	200yr	5,462	3,770	24.01	32.36	28.63	2.10
5.465		Bridge					
5.468	50yr	5,468	2,900	24.01	31.83	28.08	1.80
5.468	80yr	5,468	3,190	24.01	32.02	28.26	1.90
5.468	100yr	5,468	3,330	24.01	32.12	28.36	1.94
5.468	150yr	5,468	3,590	24.01	32.27	28.53	2.04
5.468	200yr	5,468	3,770	24.01	32.38	28.63	2.09
5.547	50yr	5,547	2,900	23.70	31.86	27.89	1.74
5.547	80yr	5,547	3,190	23.70	32.05	28.07	1.85
5.547	100yr	5,547	3,330	23.70	32.15	28.18	1.89
5.547	150yr	5,547	3,590	23.70	32.30	28.35	1.98
5.547	200yr	5,547	3,770	23.70	32.41	28.45	2.03
5.550		Bridge					
5.553	50yr	5,553	2,900	23.70	31.88	27.88	1.74
5.553	80yr	5,553	3,190	23.70	32.05	28.08	1.84
5.553	100yr	5,553	3,330	23.70	32.16	28.16	1.88
5.553	150yr	5,553	3,590	23.70	32.31	28.33	1.97
5.553	200yr	5,553	3,770	23.70	32.42	28.44	2.03
5.632	50yr	5,632	2,900	23.39	31.90	27.75	1.70
5.632	80yr	5,632	3,190	23.39	32.08	27.95	1.80
5.632	100yr	5,632	3,330	23.39	32.18	28.04	1.84
5.632	150yr	5,632	3,590	23.39	32.34	28.21	1.93
5.632	200yr	5,632	3,770	23.39	32.45	28.32	1.99
5.635		Bridge					
5.638	50yr	5,638	2,900	23.39	31.92	27.75	1.69
5.638	80yr	5,638	3,190	23.39	32.09	27.94	1.80
5.638	100yr	5,638	3,330	23.39	32.20	28.03	1.84
5.638	150yr	5,638	3,590	23.39	32.35	28.20	1.92
5.638	200yr	5,638	3,770	23.39	32.45	28.31	1.98
5.722	50yr	5,722	2,900	24.59	31.92	28.47	1.80
5.722	80yr	5,722	3,190	24.59	32.10	28.65	1.90
5.722	100yr	5,722	3,330	24.59	32.21	28.76	1.94
5.722	150yr	5,722	3,590	24.59	32.36	29.12	2.02
5.722	200yr	5,722	3,770	24.59	32.46	29.49	2.08
5.725		Bridge					
5.728	50yr	5,728	2,900	24.59	31.94	28.47	1.79
5.728	80yr	5,728	3,190	24.59	32.12	28.65	1.89
5.728	100yr	5,728	3,330	24.59	32.23	28.75	1.93
5.728	150yr	5,728	3,590	24.59	32.37	29.10	2.02
5.728	200yr	5,728	3,770	24.59	32.47	29.49	2.08
5.815	50yr	5,815	2,900	25.80	31.95	29.51	1.90
5.815	80yr	5,815	3,190	25.80	32.13	29.80	1.99
5.815	100yr	5,815	3,330	25.80	32.24	29.87	2.03
5.815	150yr	5,815	3,590	25.80	32.39	30.00	2.11
5.815	200yr	5,815	3,770	25.80	32.49	30.08	2.17
5.975	50yr	5,975	2,900	26.05	31.99	29.59	2.14
5.975	80yr	5,975	3,190	26.05	32.17	29.89	2.25
5.975	100yr	5,975	3,330	26.05	32.27	30.01	2.28
5.975	150yr	5,975	3,590	26.05	32.42	30.22	2.38
5.975	200yr	5,975	3,770	26.05	32.52	30.33	2.44
6.145	50yr	6,145	2,900	26.47	32.06	30.04	2.36

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
6.145	80yr	6.145	3,190	26.47	32.25	30.26	2.46
6.145	100yr	6.145	3,330	26.47	32.35	30.34	2.50
6.145	150yr	6.145	3,590	26.47	32.50	30.48	2.59
6.145	200yr	6.145	3,770	26.47	32.60	30.58	2.65
6.315	50yr	6.315	2,900	26.11	32.22	29.95	2.19
6.315	80yr	6.315	3,190	26.11	32.41	30.17	2.29
6.315	100yr	6.315	3,330	26.11	32.52	30.26	2.32
6.315	150yr	6.315	3,590	26.11	32.67	30.42	2.41
6.315	200yr	6.315	3,770	26.11	32.78	30.52	2.47
6.512	50yr	6.512	2,900	25.29	32.37	29.40	2.04
6.512	80yr	6.512	3,190	25.29	32.57	29.59	2.14
6.512	100yr	6.512	3,330	25.29	32.67	29.68	2.17
6.512	150yr	6.512	3,590	25.29	32.83	29.87	2.26
6.512	200yr	6.512	3,770	25.29	32.95	30.06	2.31
6.515		Bridge					
6.518	50yr	6.518	2,900	25.29	32.38	29.39	2.04
6.518	80yr	6.518	3,190	25.29	32.58	29.59	2.13
6.518	100yr	6.518	3,330	25.29	32.69	29.68	2.17
6.518	150yr	6.518	3,590	25.29	32.85	29.87	2.25
6.518	200yr	6.518	3,770	25.29	32.96	30.07	2.30
6.610	50yr	6.610	2,900	25.95	32.42	29.71	2.07
6.610	80yr	6.610	3,190	25.95	32.63	30.04	2.16
6.610	100yr	6.610	3,330	25.95	32.73	30.34	2.20
6.610	150yr	6.610	3,590	25.95	32.89	30.53	2.28
6.610	200yr	6.610	3,770	25.95	33.00	30.65	2.34
6.613		Bridge					
6.616	50yr	6.616	2,900	25.95	32.45	29.71	2.05
6.616	80yr	6.616	3,190	25.95	32.66	30.04	2.14
6.616	100yr	6.616	3,330	25.95	32.76	30.34	2.18
6.616	150yr	6.616	3,590	25.95	32.93	30.53	2.26
6.616	200yr	6.616	3,770	25.95	33.04	30.65	2.32
6.707	50yr	6.707	2,900	26.61	32.49	30.27	2.09
6.707	80yr	6.707	3,190	26.61	32.70	30.47	2.18
6.707	100yr	6.707	3,330	26.61	32.81	30.56	2.21
6.707	150yr	6.707	3,590	26.61	32.98	30.72	2.29
6.707	200yr	6.707	3,770	26.61	33.09	30.82	2.34
6.710		Bridge					
6.713	50yr	6.713	2,900	26.61	32.51	30.28	2.08
6.713	80yr	6.713	3,190	26.61	32.72	30.47	2.17
6.713	100yr	6.713	3,330	26.61	32.83	30.56	2.20
6.713	150yr	6.713	3,590	26.61	33.00	30.72	2.28
6.713	200yr	6.713	3,770	26.61	33.12	30.82	2.33
6.792	50yr	6.792	2,900	26.91	32.54	30.29	2.16
6.792	80yr	6.792	3,190	26.91	32.75	30.49	2.25
6.792	100yr	6.792	3,330	26.91	32.86	30.58	2.29
6.792	150yr	6.792	3,590	26.91	33.03	30.74	2.37
6.792	200yr	6.792	3,770	26.91	33.15	30.85	2.42
6.795		Bridge					
6.798	50yr	6.798	2,900	26.91	32.57	30.29	2.14
6.798	80yr	6.798	3,190	26.91	32.79	30.49	2.23
6.798	100yr	6.798	3,330	26.91	32.90	30.58	2.27
6.798	150yr	6.798	3,590	26.91	33.07	30.74	2.35
6.798	200yr	6.798	3,770	26.91	33.19	30.85	2.40

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
6.877	50yr	6.877	2.900	27.20	32.60	30.45	2.27
6.877	80yr	6.877	3.190	27.20	32.82	30.65	2.37
6.877	100yr	6.877	3.330	27.20	32.93	30.74	2.41
6.877	150yr	6.877	3.590	27.20	33.10	30.89	2.49
6.877	200yr	6.877	3.770	27.20	33.22	31.00	2.54
6.880		Bridge					
6.883	50yr	6.883	2.900	27.20	32.63	30.45	2.26
6.883	80yr	6.883	3.190	27.20	32.85	30.65	2.35
6.883	100yr	6.883	3.330	27.20	32.96	30.74	2.39
6.883	150yr	6.883	3.590	27.20	33.13	30.90	2.47
6.883	200yr	6.883	3.770	27.20	33.25	31.00	2.52
6.987	50yr	6.987	2.900	27.50	32.69	30.67	2.29
6.987	80yr	6.987	3.190	27.50	32.91	30.86	2.38
6.987	100yr	6.987	3.330	27.50	33.01	30.95	2.42
6.987	150yr	6.987	3.590	27.50	33.19	31.10	2.50
6.987	200yr	6.987	3.770	27.50	33.31	31.21	2.55
6.990		Bridge					
6.993	50yr	6.993	2.900	27.50	32.73	30.67	2.26
6.993	80yr	6.993	3.190	27.50	32.95	30.86	2.35
6.993	100yr	6.993	3.330	27.50	33.05	30.95	2.39
6.993	150yr	6.993	3.590	27.50	33.23	31.10	2.47
6.993	200yr	6.993	3.770	27.50	33.36	31.21	2.52
7.097	50yr	7.097	2.900	27.79	32.79	30.97	2.32
7.097	80yr	7.097	3.190	27.79	33.01	31.12	2.41
7.097	100yr	7.097	3.330	27.79	33.10	31.20	2.45
7.097	150yr	7.097	3.590	27.79	33.29	31.32	2.53
7.097	200yr	7.097	3.770	27.79	33.41	31.40	2.57
7.100		Bridge					
7.103	50yr	7.103	2.900	27.79	32.81	30.97	2.31
7.103	80yr	7.103	3.190	27.79	33.04	31.12	2.39
7.103	100yr	7.103	3.330	27.79	33.13	31.19	2.43
7.103	150yr	7.103	3.590	27.79	33.32	31.31	2.51
7.103	200yr	7.103	3.770	27.79	33.44	31.39	2.55
7.121	50yr	7.121	2.900	27.80	32.84	30.89	2.27
7.121	80yr	7.121	3.190	27.80	33.06	31.04	2.36
7.121	100yr	7.121	3.330	27.80	33.16	31.12	2.40
7.121	150yr	7.121	3.590	27.80	33.34	31.25	2.48
7.121	200yr	7.121	3.770	27.80	33.47	31.34	2.53
7.130		Bridge					
7.138	50yr	7.138	2.900	27.80	32.87	30.89	2.25
7.138	80yr	7.138	3.190	27.80	33.10	31.05	2.34
7.138	100yr	7.138	3.330	27.80	33.20	31.12	2.38
7.138	150yr	7.138	3.590	27.80	33.38	31.25	2.46
7.138	200yr	7.138	3.770	27.80	33.51	31.34	2.51
7.143	50yr	7.143	2.900	27.79	32.86	31.00	2.35
7.143	80yr	7.143	3.190	27.79	33.09	31.15	2.43
7.143	100yr	7.143	3.330	27.79	33.18	31.22	2.47
7.143	150yr	7.143	3.590	27.79	33.37	31.36	2.55
7.143	200yr	7.143	3.770	27.79	33.49	31.46	2.60
7.150		Bridge					
7.152	50yr	7.152	2.900	27.79	32.89	31.00	2.33
7.152	80yr	7.152	3.190	27.79	33.12	31.16	2.41
7.152	100yr	7.152	3.330	27.79	33.22	31.22	2.45

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
7.152	150yr	7.152	3.590	27.79	33.40	31.36	2.53
7.152	200yr	7.152	3.770	27.79	33.53	31.46	2.58
7.155	50yr	7.155	2.900	27.84	32.93	30.89	2.22
7.155	80yr	7.155	3.190	27.84	33.15	31.05	2.31
7.155	100yr	7.155	3.330	27.84	33.25	31.12	2.35
7.155	150yr	7.155	3.590	27.84	33.44	31.25	2.42
7.155	200yr	7.155	3.770	27.84	33.57	31.34	2.47
7.160		Bridge					
7.172	50yr	7.172	2.900	27.84	32.96	30.90	2.20
7.172	80yr	7.172	3.190	27.84	33.19	31.05	2.29
7.172	100yr	7.172	3.330	27.84	33.29	31.12	2.33
7.172	150yr	7.172	3.590	27.84	33.47	31.26	2.40
7.172	200yr	7.172	3.770	27.84	33.60	31.34	2.45
7.282	50yr	7.282	2.900	27.85	33.00	31.05	2.29
7.282	80yr	7.282	3.190	27.85	33.23	31.28	2.38
7.282	100yr	7.282	3.330	27.85	33.33	31.36	2.42
7.282	150yr	7.282	3.590	27.85	33.52	31.49	2.49
7.282	200yr	7.282	3.770	27.85	33.65	31.57	2.54
7.285		Bridge					
7.288	50yr	7.288	2.900	27.85	33.02	31.05	2.28
7.288	80yr	7.288	3.190	27.85	33.25	31.28	2.36
7.288	100yr	7.288	3.330	27.85	33.35	31.36	2.41
7.288	150yr	7.288	3.590	27.85	33.54	31.47	2.48
7.288	200yr	7.288	3.770	27.85	33.67	31.56	2.53
7.392	50yr	7.392	2.900	27.89	33.08	30.78	2.34
7.392	80yr	7.392	3.190	27.89	33.31	31.04	2.44
7.392	100yr	7.392	3.330	27.89	33.41	31.15	2.48
7.392	150yr	7.392	3.590	27.89	33.60	31.35	2.56
7.392	200yr	7.392	3.770	27.89	33.72	31.48	2.61
7.395		Bridge					
7.398	50yr	7.398	2.900	27.89	33.10	30.78	2.33
7.398	80yr	7.398	3.190	27.89	33.32	31.04	2.43
7.398	100yr	7.398	3.330	27.89	33.43	31.15	2.47
7.398	150yr	7.398	3.590	27.89	33.62	31.35	2.55
7.398	200yr	7.398	3.770	27.89	33.74	31.48	2.60
7.505	50yr	7.505	2.900	27.92	33.15	30.83	2.45
7.505	80yr	7.505	3.190	27.92	33.37	31.00	2.55
7.505	100yr	7.505	3.330	27.92	33.48	31.12	2.60
7.505	150yr	7.505	3.590	27.92	33.67	31.33	2.68
7.505	200yr	7.505	3.770	27.92	33.78	31.46	2.74
7.563	50yr	7.563	2.900	29.32	33.04	32.21	3.32
7.563	80yr	7.563	3.190	29.32	33.26	32.35	3.39
7.563	100yr	7.563	3.330	29.32	33.36	32.42	3.43
7.563	150yr	7.563	3.590	29.32	33.55	32.54	3.49
7.563	200yr	7.563	3.770	29.32	33.66	32.63	3.56
7.564		Inline Weir					
7.565	50yr	7.565	2.900	29.32	33.58	32.21	2.80
7.565	80yr	7.565	3.190	29.32	33.76	32.35	2.93
7.565	100yr	7.565	3.330	29.32	33.84	32.42	2.99
7.565	150yr	7.565	3.590	29.32	34.00	32.54	3.09
7.565	200yr	7.565	3.770	29.32	34.10	32.62	3.16
7.715	50yr	7.715	2.900	28.56	33.76	32.03	2.71
7.715	80yr	7.715	3.190	28.56	33.94	32.22	2.84

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
7.715	100yr	7.715	3.330	28.56	34.02	32.32	2.90
7.715	150yr	7.715	3.590	28.56	34.18	32.48	3.01
7.715	200yr	7.715	3.770	28.56	34.29	32.58	3.08
7.905	50yr	7.905	2.900	29.02	33.92	32.51	2.89
7.905	80yr	7.905	3.190	29.02	34.11	32.70	3.02
7.905	100yr	7.905	3.330	29.02	34.20	32.77	3.08
7.905	150yr	7.905	3.590	29.02	34.36	32.92	3.18
7.905	200yr	7.905	3.770	29.02	34.47	32.98	3.25
8.125	50yr	8.125	2.900	28.63	34.20	31.96	2.61
8.125	80yr	8.125	3.190	28.63	34.40	32.13	2.75
8.125	100yr	8.125	3.330	28.63	34.49	32.23	2.81
8.125	150yr	8.125	3.590	28.63	34.66	32.40	2.92
8.125	200yr	8.125	3.770	28.63	34.77	32.52	3.00
8.365	50yr	8.365	2.900	28.00	34.37	32.62	2.85
8.365	80yr	8.365	3.190	28.00	34.57	32.83	2.97
8.365	100yr	8.365	3.330	28.00	34.67	32.93	3.03
8.365	150yr	8.365	3.590	28.00	34.84	33.09	3.13
8.365	200yr	8.365	3.770	28.00	34.96	33.21	3.19
8.555	50yr	8.555	2.900	28.20	34.60	32.18	2.59
8.555	80yr	8.555	3.190	28.20	34.82	32.34	2.72
8.555	100yr	8.555	3.330	28.20	34.91	32.43	2.78
8.555	150yr	8.555	3.590	28.20	35.09	32.58	2.88
8.555	200yr	8.555	3.770	28.20	35.21	32.69	2.96
8.775	50yr	8.775	2.900	28.13	34.75	32.27	2.67
8.775	80yr	8.775	3.190	28.13	34.96	32.46	2.80
8.775	100yr	8.775	3.330	28.13	35.07	32.55	2.86
8.775	150yr	8.775	3.590	28.13	35.25	32.71	2.96
8.775	200yr	8.775	3.770	28.13	35.37	32.82	3.03
8.985	50yr	8.985	2.900	28.44	34.93	32.34	2.56
8.985	80yr	8.985	3.190	28.44	35.15	32.52	2.68
8.985	100yr	8.985	3.330	28.44	35.25	32.61	2.74
8.985	150yr	8.985	3.590	28.44	35.44	32.77	2.84
8.985	200yr	8.985	3.770	28.44	35.57	32.85	2.91
9.190	50yr	9.190	2.900	28.56	35.04	32.38	2.67
9.190	80yr	9.190	3.190	28.56	35.26	32.57	2.80
9.190	100yr	9.190	3.330	28.56	35.37	32.66	2.87
9.190	150yr	9.190	3.590	28.56	35.56	32.83	2.98
9.190	200yr	9.190	3.770	28.56	35.69	32.96	3.05
9.370	50yr	9.370	2.900	28.60	35.13	32.70	2.85
9.370	80yr	9.370	3.190	28.60	35.36	32.91	2.99
9.370	100yr	9.370	3.330	28.60	35.47	33.01	3.05
9.370	150yr	9.370	3.590	28.60	35.66	33.17	3.17
9.370	200yr	9.370	3.770	28.60	35.79	33.28	3.25
9.550	50yr	9.550	2.900	28.61	35.24	32.97	2.98
9.550	80yr	9.550	3.190	28.61	35.47	33.17	3.12
9.550	100yr	9.550	3.330	28.61	35.58	33.26	3.19
9.550	150yr	9.550	3.590	28.61	35.78	33.44	3.31
9.550	200yr	9.550	3.770	28.61	35.91	33.58	3.39
9.720	50yr	9.720	2.900	28.62	35.52	32.55	2.45
9.720	80yr	9.720	3.190	28.62	35.78	32.75	2.54
9.720	100yr	9.720	3.330	28.62	35.90	32.86	2.59
9.720	150yr	9.720	3.590	28.62	36.12	33.04	2.67
9.720	200yr	9.720	3.770	28.62	36.26	33.14	2.72
9.905	50yr	9.905	2.900	28.83	35.58	33.30	2.83
9.905	80yr	9.905	3.190	28.83	35.83	33.49	2.95
9.905	100yr	9.905	3.330	28.83	35.95	33.61	3.00

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
9.905	150yr	9.905	3.590	28.83	36.16	33.83	3.09
9.905	200yr	9.905	3.770	28.83	36.31	34.00	3.16
10.045	50yr	10.045	2.900	29.14	35.70	33.46	2.82
10.045	80yr	10.045	3.190	29.14	35.96	33.65	2.93
10.045	100yr	10.045	3.330	29.14	36.08	33.77	2.98
10.045	150yr	10.045	3.590	29.14	36.29	34.04	3.06
10.045	200yr	10.045	3.770	29.14	36.44	34.20	3.12
10.090	50yr	10.090	2.900	30.55	35.76	33.82	2.75
10.090	80yr	10.090	3.190	30.55	36.02	34.04	2.85
10.090	100yr	10.090	3.330	30.55	36.14	34.14	2.90
10.090	150yr	10.090	3.590	30.55	36.36	34.28	2.98
10.090	200yr	10.090	3.770	30.55	36.51	34.37	3.04
10.105		Bridge					
10.120	50yr	10.120	2.900	30.55	35.83	33.82	2.71
10.120	80yr	10.120	3.190	30.55	36.09	34.04	2.81
10.120	100yr	10.120	3.330	30.55	36.21	34.14	2.85
10.120	150yr	10.120	3.590	30.55	36.43	34.28	2.94
10.120	200yr	10.120	3.770	30.55	36.58	34.37	2.99
10.225	50yr	10.225	2.900	29.77	35.84	34.20	3.10
10.225	80yr	10.225	3.190	29.77	36.10	34.39	3.22
10.225	100yr	10.225	3.330	29.77	36.22	34.47	3.27
10.225	150yr	10.225	3.590	29.77	36.43	34.61	3.36
10.225	200yr	10.225	3.770	29.77	36.57	34.72	3.43
10.415	50yr	10.415	2.900	29.58	36.03	34.24	3.15
10.415	80yr	10.415	3.190	29.58	36.29	34.49	3.27
10.415	100yr	10.415	3.330	29.58	36.41	34.59	3.33
10.415	150yr	10.415	3.590	29.58	36.61	34.75	3.44
10.415	200yr	10.415	3.770	29.58	36.76	34.86	3.50
10.595	50yr	10.595	2.900	28.29	36.26	33.43	2.96
10.595	80yr	10.595	3.190	28.29	36.51	33.66	3.10
10.595	100yr	10.595	3.330	28.29	36.63	33.76	3.16
10.595	150yr	10.595	3.590	28.29	36.84	34.03	3.28
10.595	200yr	10.595	3.770	28.29	36.98	34.29	3.36
10.765	50yr	10.765	2.900	27.85	36.47	33.00	2.66
10.765	80yr	10.765	3.190	27.85	36.74	33.24	2.78
10.765	100yr	10.765	3.330	27.85	36.86	33.36	2.85
10.765	150yr	10.765	3.590	27.85	37.07	33.58	2.96
10.765	200yr	10.765	3.770	27.85	37.22	33.70	3.03
10.925	50yr	10.925	2.900	29.16	36.55	33.62	2.74
10.925	80yr	10.925	3.190	29.16	36.82	33.85	2.86
10.925	100yr	10.925	3.330	29.16	36.94	33.96	2.92
10.925	150yr	10.925	3.590	29.16	37.15	34.23	3.03
10.925	200yr	10.925	3.770	29.16	37.31	34.44	3.10
11.105	50yr	11.105	2.900	30.89	36.73	34.14	2.57
11.105	80yr	11.105	3.190	30.89	37.02	34.34	2.64
11.105	100yr	11.105	3.330	30.89	37.15	34.43	2.68
11.105	150yr	11.105	3.590	30.89	37.38	34.60	2.75
11.105	200yr	11.105	3.770	30.89	37.54	34.73	2.79
11.325	50yr	11.325	2.900	30.80	36.93	34.08	2.41
11.325	80yr	11.325	3.190	30.80	37.22	34.28	2.47
11.325	100yr	11.325	3.330	30.80	37.35	34.37	2.50
11.325	150yr	11.325	3.590	30.80	37.59	34.55	2.56
11.325	200yr	11.325	3.770	30.80	37.76	34.67	2.60
11.415	50yr	11.415	2.900	31.04	36.99	34.31	2.47
11.415	80yr	11.415	3.190	31.04	37.27	34.52	2.53

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
11.415	100yr	11.415	3.330	31.04	37.41	34.61	2.56
11.415	150yr	11.415	3.590	31.04	37.64	34.79	2.61
11.415	200yr	11.415	3.770	31.04	37.81	34.89	2.65
11.545	50yr	11.545	2.900	31.20	37.16	34.23	2.13
11.545	80yr	11.545	3.190	31.20	37.44	34.40	2.20
11.545	100yr	11.545	3.330	31.20	37.57	34.50	2.23
11.545	150yr	11.545	3.590	31.20	37.81	34.63	2.29
11.545	200yr	11.545	3.770	31.20	37.97	34.73	2.33
11.655	50yr	11.655	1.540	31.40	37.38	33.50	1.09
11.655	80yr	11.655	1.650	31.40	37.67	33.58	1.09
11.655	100yr	11.655	1.690	31.40	37.81	33.61	1.08
11.655	150yr	11.655	1.780	31.40	38.06	33.67	1.09
11.655	200yr	11.655	1.910	31.40	38.23	33.76	1.13
11.710	50yr	11.710	1.540	31.30	37.37	34.02	1.32
11.710	80yr	11.710	1.650	31.30	37.66	34.11	1.30
11.710	100yr	11.710	1.690	31.30	37.81	34.15	1.28
11.710	150yr	11.710	1.780	31.30	38.06	34.23	1.27
11.710	200yr	11.710	1.910	31.30	38.23	34.34	1.30
11.725		Bridge					
11.741	50yr	11.741	1.540	31.30	37.39	34.02	1.31
11.741	80yr	11.741	1.650	31.30	37.69	34.12	1.29
11.741	100yr	11.741	1.690	31.30	37.83	34.15	1.27
11.741	150yr	11.741	1.780	31.30	38.08	34.23	1.26
11.741	200yr	11.741	1.910	31.30	38.25	34.34	1.30
11.785	50yr	11.785	1.540	31.60	37.41	33.77	1.23
11.785	80yr	11.785	1.650	31.60	37.71	33.86	1.22
11.785	100yr	11.785	1.690	31.60	37.85	33.89	1.21
11.785	150yr	11.785	1.780	31.60	38.10	33.97	1.21
11.785	200yr	11.785	1.910	31.60	38.27	34.07	1.25
11.817	50yr	11.817	1.540	31.10	37.43	33.05	1.13
11.817	80yr	11.817	1.650	31.10	37.72	33.14	1.13
11.817	100yr	11.817	1.690	31.10	37.87	33.17	1.13
11.817	150yr	11.817	1.780	31.10	38.12	33.24	1.13
11.817	200yr	11.817	1.910	31.10	38.29	33.35	1.17
11.818		Inline Weir					
11.820	50yr	11.820	1.540	31.10	37.45	33.05	1.12
11.820	80yr	11.820	1.650	31.10	37.75	33.14	1.13
11.820	100yr	11.820	1.690	31.10	37.89	33.17	1.12
11.820	150yr	11.820	1.780	31.10	38.15	33.25	1.12
11.820	200yr	11.820	1.910	31.10	38.32	33.35	1.17
11.960	50yr	11.960	1.540	31.44	37.47	33.80	1.20
11.960	80yr	11.960	1.650	31.44	37.77	33.89	1.20
11.960	100yr	11.960	1.690	31.44	37.91	33.92	1.19
11.960	150yr	11.960	1.780	31.44	38.16	33.99	1.18
11.960	200yr	11.960	1.910	31.44	38.34	34.09	1.23
12.060	50yr	12.060	1.540	31.66	37.49	33.75	1.18
12.060	80yr	12.060	1.650	31.66	37.79	33.84	1.18
12.060	100yr	12.060	1.690	31.66	37.93	33.87	1.17
12.060	150yr	12.060	1.780	31.66	38.18	33.94	1.16
12.060	200yr	12.060	1.910	31.66	38.36	34.04	1.20
12.160	50yr	12.160	1.540	31.81	37.51	33.96	1.21
12.160	80yr	12.160	1.650	31.81	37.81	34.05	1.20
12.160	100yr	12.160	1.690	31.81	37.95	34.08	1.19
12.160	150yr	12.160	1.780	31.81	38.20	34.16	1.18
12.160	200yr	12.160	1.910	31.81	38.37	34.26	1.22

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
12.200	50yr	12,200	1,540	31.92	37.52	33.95	1.23
12.200	80yr	12,200	1,650	31.92	37.81	34.04	1.23
12.200	100yr	12,200	1,690	31.92	37.96	34.07	1.21
12.200	150yr	12,200	1,780	31.92	38.21	34.14	1.21
12.200	200yr	12,200	1,910	31.92	38.38	34.24	1.25
12.210		Bridge					
12.220	50yr	12,220	1,540	31.92	37.53	33.95	1.23
12.220	80yr	12,220	1,650	31.92	37.83	34.04	1.22
12.220	100yr	12,220	1,690	31.92	37.97	34.07	1.21
12.220	150yr	12,220	1,780	31.92	38.22	34.14	1.21
12.220	200yr	12,220	1,910	31.92	38.39	34.24	1.25
12.260	50yr	12,260	1,540	31.53	37.54	33.84	1.20
12.260	80yr	12,260	1,650	31.53	37.84	33.93	1.20
12.260	100yr	12,260	1,690	31.53	37.98	33.96	1.19
12.260	150yr	12,260	1,780	31.53	38.23	34.03	1.19
12.260	200yr	12,260	1,910	31.53	38.41	34.13	1.23
12.355	50yr	12,355	1,540	31.71	37.56	33.88	1.23
12.355	80yr	12,355	1,650	31.71	37.85	33.97	1.23
12.355	100yr	12,355	1,690	31.71	37.99	34.00	1.22
12.355	150yr	12,355	1,780	31.71	38.24	34.07	1.22
12.355	200yr	12,355	1,910	31.71	38.42	34.17	1.26
12.460	50yr	12,460	1,540	31.67	37.57	33.93	1.24
12.460	80yr	12,460	1,650	31.67	37.86	34.02	1.24
12.460	100yr	12,460	1,690	31.67	38.00	34.05	1.23
12.460	150yr	12,460	1,780	31.67	38.25	34.12	1.23
12.460	200yr	12,460	1,910	31.67	38.43	34.23	1.27
12.560	50yr	12,560	1,540	31.60	37.58	33.95	1.24
12.560	80yr	12,560	1,650	31.60	37.87	34.04	1.24
12.560	100yr	12,560	1,690	31.60	38.01	34.08	1.23
12.560	150yr	12,560	1,780	31.60	38.26	34.15	1.23
12.560	200yr	12,560	1,910	31.60	38.44	34.25	1.27
12.660	50yr	12,660	1,540	31.46	37.60	33.71	1.17
12.660	80yr	12,660	1,650	31.46	37.89	33.80	1.18
12.660	100yr	12,660	1,690	31.46	38.03	33.83	1.17
12.660	150yr	12,660	1,780	31.46	38.28	33.90	1.17
12.660	200yr	12,660	1,910	31.46	38.46	34.00	1.21
12.760	50yr	12,760	1,540	31.71	37.61	34.06	1.24
12.760	80yr	12,760	1,650	31.71	37.90	34.15	1.24
12.760	100yr	12,760	1,690	31.71	38.05	34.18	1.23
12.760	150yr	12,760	1,780	31.71	38.30	34.25	1.23
12.760	200yr	12,760	1,910	31.71	38.48	34.36	1.27
12.860	50yr	12,860	1,540	30.76	37.64	33.04	1.05
12.860	80yr	12,860	1,650	30.76	37.93	33.13	1.06
12.860	100yr	12,860	1,690	30.76	38.08	33.16	1.06
12.860	150yr	12,860	1,780	30.76	38.32	33.23	1.06
12.860	200yr	12,860	1,910	30.76	38.51	33.33	1.10
12.916	50yr	12,916	1,540	32.71	37.63	34.59	1.33
12.916	80yr	12,916	1,650	32.71	37.92	34.68	1.32
12.916	100yr	12,916	1,690	32.71	38.07	34.71	1.30
12.916	150yr	12,916	1,780	32.71	38.31	34.78	1.28
12.916	200yr	12,916	1,910	32.71	38.49	34.88	1.32
12.918		Inline Weir					
12.920	50yr	12,920	1,540	32.71	37.68	34.59	1.31
12.920	80yr	12,920	1,650	32.71	37.96	34.68	1.30

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
12.920	100yr	12,920	1,690	32.71	38.11	34.71	1.28
12.920	150yr	12,920	1,780	32.71	38.36	34.78	1.27
12.920	200yr	12,920	1,910	32.71	38.54	34.88	1.31
12.940	50yr	12,940	1,540	33.50	37.62	35.85	1.92
12.940	80yr	12,940	1,650	33.50	37.91	35.93	1.84
12.940	100yr	12,940	1,690	33.50	38.07	35.98	1.78
12.940	150yr	12,940	1,780	33.50	38.33	36.04	1.71
12.940	200yr	12,940	1,910	33.50	38.51	36.14	1.73
12.960		Bridge					
12.981	50yr	12,981	1,540	33.50	37.69	35.85	1.87
12.981	80yr	12,981	1,650	33.50	37.98	35.94	1.79
12.981	100yr	12,981	1,690	33.50	38.13	35.96	1.74
12.981	150yr	12,981	1,780	33.50	38.38	36.04	1.68
12.981	200yr	12,981	1,910	33.50	38.56	36.15	1.70
13.035	50yr	13,035	1,540	33.70	37.78	35.52	1.59
13.035	80yr	13,035	1,650	33.70	38.05	35.60	1.56
13.035	100yr	13,035	1,690	33.70	38.19	35.62	1.53
13.035	150yr	13,035	1,780	33.70	38.42	35.69	1.51
13.035	200yr	13,035	1,910	33.70	38.60	35.78	1.55
13.165	50yr	13,165	1,540	33.64	37.76	36.52	2.43
13.165	80yr	13,165	1,650	33.64	38.03	36.67	2.34
13.165	100yr	13,165	1,690	33.64	38.17	36.72	2.28
13.165	150yr	13,165	1,780	33.64	38.40	36.83	2.22
13.165	200yr	13,165	1,910	33.64	38.57	36.95	2.25
13.265	50yr	13,265	1,540	33.77	37.88	37.04	2.81
13.265	80yr	13,265	1,650	33.77	38.11	37.14	2.72
13.265	100yr	13,265	1,690	33.77	38.24	37.18	2.65
13.265	150yr	13,265	1,780	33.77	38.45	37.26	2.58
13.265	200yr	13,265	1,910	33.77	38.62	37.38	2.61
13.355	50yr	13,355	1,540	33.80	38.10	37.21	2.73
13.355	80yr	13,355	1,650	33.80	38.29	37.31	2.71
13.355	100yr	13,355	1,690	33.80	38.39	37.35	2.68
13.355	150yr	13,355	1,780	33.80	38.58	37.43	2.64
13.355	200yr	13,355	1,910	33.80	38.74	37.54	2.68
13.460	50yr	13,460	1,540	33.62	38.32	37.22	2.67
13.460	80yr	13,460	1,650	33.62	38.46	37.32	2.72
13.460	100yr	13,460	1,690	33.62	38.55	37.36	2.70
13.460	150yr	13,460	1,780	33.62	38.72	37.44	2.69
13.460	200yr	13,460	1,910	33.62	38.87	37.56	2.76
13.555	50yr	13,555	1,540	33.47	38.49	37.14	2.56
13.555	80yr	13,555	1,650	33.47	38.63	37.26	2.62
13.555	100yr	13,555	1,690	33.47	38.71	37.30	2.62
13.555	150yr	13,555	1,780	33.47	38.85	37.39	2.64
13.555	200yr	13,555	1,910	33.47	39.00	37.51	2.71
13.673	50yr	13,673	1,540	35.29	38.56	38.11	3.43
13.673	80yr	13,673	1,650	35.29	38.69	38.20	3.46
13.673	100yr	13,673	1,690	35.29	38.77	38.23	3.44
13.673	150yr	13,673	1,780	35.29	38.90	38.30	3.43
13.673	200yr	13,673	1,910	35.29	39.05	38.40	3.49
13.674		Inline Weir					
13.675	50yr	13,675	1,540	35.29	38.75	38.11	3.16
13.675	80yr	13,675	1,650	35.29	38.88	38.20	3.21
13.675	100yr	13,675	1,690	35.29	38.95	38.23	3.20
13.675	150yr	13,675	1,780	35.29	39.08	38.30	3.21
13.675	200yr	13,675	1,910	35.29	39.22	38.40	3.27

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
13.755	50yr	13,755	1,540	34.10	39.13	37.70	2.38
13.755	80yr	13,755	1,650	34.10	39.26	37.81	2.45
13.755	100yr	13,755	1,690	34.10	39.32	37.84	2.46
13.755	150yr	13,755	1,780	34.10	39.44	37.92	2.50
13.755	200yr	13,755	1,910	34.10	39.58	38.03	2.57
13.850	50yr	13,850	1,540	34.43	39.24	37.94	2.36
13.850	80yr	13,850	1,650	34.43	39.38	38.03	2.42
13.850	100yr	13,850	1,690	34.43	39.44	38.05	2.44
13.850	150yr	13,850	1,780	34.43	39.56	38.12	2.47
13.850	200yr	13,850	1,910	34.43	39.70	38.24	2.53
13.955	50yr	13,955	1,540	34.65	39.37	38.20	2.40
13.955	80yr	13,955	1,650	34.65	39.50	38.32	2.45
13.955	100yr	13,955	1,690	34.65	39.55	38.35	2.46
13.955	150yr	13,955	1,780	34.65	39.67	38.43	2.49
13.955	200yr	13,955	1,910	34.65	39.82	38.51	2.55
14.060	50yr	14,060	1,540	34.16	39.57	38.07	2.08
14.060	80yr	14,060	1,650	34.16	39.70	38.15	2.13
14.060	100yr	14,060	1,690	34.16	39.75	38.18	2.15
14.060	150yr	14,060	1,780	34.16	39.87	38.26	2.19
14.060	200yr	14,060	1,910	34.16	40.02	38.36	2.24
14.150	50yr	14,150	1,540	34.27	39.65	38.34	2.14
14.150	80yr	14,150	1,650	34.27	39.78	38.43	2.19
14.150	100yr	14,150	1,690	34.27	39.83	38.46	2.21
14.150	150yr	14,150	1,780	34.27	39.94	38.52	2.24
14.150	200yr	14,150	1,910	34.27	40.09	38.61	2.29
14.250	50yr	14,250	1,540	35.41	39.74	38.49	2.16
14.250	80yr	14,250	1,650	35.41	39.87	38.58	2.21
14.250	100yr	14,250	1,690	35.41	39.92	38.61	2.22
14.250	150yr	14,250	1,780	35.41	40.04	38.68	2.25
14.250	200yr	14,250	1,910	35.41	40.19	38.77	2.30
14.345	50yr	14,345	1,540	35.47	39.84	38.58	2.16
14.345	80yr	14,345	1,650	35.47	39.97	38.67	2.21
14.345	100yr	14,345	1,690	35.47	40.02	38.70	2.23
14.345	150yr	14,345	1,780	35.47	40.13	38.77	2.26
14.345	200yr	14,345	1,910	35.47	40.28	38.86	2.31
14.440	50yr	14,440	1,540	35.61	39.95	38.62	2.12
14.440	80yr	14,440	1,650	35.61	40.08	38.71	2.17
14.440	100yr	14,440	1,690	35.61	40.13	38.74	2.18
14.440	150yr	14,440	1,780	35.61	40.24	38.81	2.21
14.440	200yr	14,440	1,910	35.61	40.38	38.91	2.27
14.538	50yr	14,538	1,540	35.84	40.06	38.74	2.07
14.538	80yr	14,538	1,650	35.84	40.19	38.83	2.12
14.538	100yr	14,538	1,690	35.84	40.23	38.86	2.14
14.538	150yr	14,538	1,780	35.84	40.34	38.93	2.17
14.538	200yr	14,538	1,910	35.84	40.48	39.01	2.22
14.539		Inline Weir					
14.540	50yr	14,540	1,540	35.84	40.14	38.74	2.02
14.540	80yr	14,540	1,650	35.84	40.27	38.83	2.06
14.540	100yr	14,540	1,690	35.84	40.32	38.86	2.08
14.540	150yr	14,540	1,780	35.84	40.42	38.93	2.11
14.540	200yr	14,540	1,910	35.84	40.57	39.02	2.16
14.635	50yr	14,635	1,540	35.76	40.25	38.81	1.94
14.635	80yr	14,635	1,650	35.76	40.38	38.89	1.99
14.635	100yr	14,635	1,690	35.76	40.42	38.92	2.01
14.635	150yr	14,635	1,780	35.76	40.53	38.98	2.04

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
14.635	200yr	14,635	1,910	35.76	40.67	39.07	2.09
14.720	50yr	14,720	1,540	35.83	40.29	38.93	2.21
14.720	80yr	14,720	1,650	35.83	40.42	39.03	2.27
14.720	100yr	14,720	1,690	35.83	40.46	39.06	2.29
14.720	150yr	14,720	1,780	35.83	40.56	39.13	2.33
14.720	200yr	14,720	1,910	35.83	40.71	39.23	2.39
14.830	50yr	14,830	1,540	36.15	40.33	39.27	2.75
14.830	80yr	14,830	1,650	36.15	40.46	39.35	2.82
14.830	100yr	14,830	1,690	36.15	40.50	39.39	2.85
14.830	150yr	14,830	1,780	36.15	40.60	39.46	2.91
14.830	200yr	14,830	1,910	36.15	40.74	39.56	2.99
14.945	50yr	14,945	1,540	36.92	40.50	39.36	2.86
14.945	80yr	14,945	1,650	36.92	40.62	39.45	2.95
14.945	100yr	14,945	1,690	36.92	40.66	39.48	2.99
14.945	150yr	14,945	1,780	36.92	40.76	39.56	3.05
14.945	200yr	14,945	1,910	36.92	40.89	39.67	3.15
15.045	50yr	15,045	1,390	35.88	40.64	39.33	2.97
15.045	80yr	15,045	1,490	35.88	40.76	39.44	3.07
15.045	100yr	15,045	1,530	35.88	40.80	39.48	3.12
15.045	150yr	15,045	1,610	35.88	40.90	39.56	3.20
15.045	200yr	15,045	1,730	35.88	41.03	39.69	3.32
15.140	50yr	15,140	1,390	35.90	40.83	39.33	2.83
15.140	80yr	15,140	1,490	35.90	40.96	39.48	2.92
15.140	100yr	15,140	1,530	35.90	41.00	39.52	2.97
15.140	150yr	15,140	1,610	35.90	41.10	39.62	3.04
15.140	200yr	15,140	1,730	35.90	41.25	39.74	3.14
15.235	50yr	15,235	1,390	36.04	40.98	39.58	2.75
15.235	80yr	15,235	1,490	36.04	41.12	39.71	2.83
15.235	100yr	15,235	1,530	36.04	41.17	39.75	2.87
15.235	150yr	15,235	1,610	36.04	41.28	39.83	2.93
15.235	200yr	15,235	1,730	36.04	41.43	39.96	3.02
15.325	50yr	15,325	1,390	36.05	41.17	39.65	2.51
15.325	80yr	15,325	1,490	36.05	41.30	39.76	2.59
15.325	100yr	15,325	1,530	36.05	41.35	39.80	2.62
15.325	150yr	15,325	1,610	36.05	41.46	39.88	2.67
15.325	200yr	15,325	1,730	36.05	41.62	40.00	2.75
15.352	50yr	15,352	1,390	36.27	41.07	40.28	3.23
15.352	80yr	15,352	1,490	36.27	41.19	40.38	3.31
15.352	100yr	15,352	1,530	36.27	41.24	40.42	3.34
15.352	150yr	15,352	1,610	36.27	41.36	40.50	3.38
15.352	200yr	15,352	1,730	36.27	41.51	40.61	3.45
15.375		Bridge					
15.399	50yr	15,399	1,390	36.27	41.35	40.28	2.93
15.399	80yr	15,399	1,490	36.27	41.48	40.38	3.01
15.399	100yr	15,399	1,530	36.27	41.53	40.41	3.03
15.399	150yr	15,399	1,610	36.27	41.64	40.49	3.09
15.399	200yr	15,399	1,730	36.27	41.80	40.60	3.16
15.420	50yr	15,420	1,390	37.18	41.50	40.31	2.54
15.420	80yr	15,420	1,490	37.18	41.64	40.41	2.60
15.420	100yr	15,420	1,530	37.18	41.70	40.44	2.62
15.420	150yr	15,420	1,610	37.18	41.81	40.51	2.66
15.420	200yr	15,420	1,730	37.18	41.98	40.61	2.72
15.525	50yr	15,525	1,390	37.20	41.68	40.20	2.34
15.525	80yr	15,525	1,490	37.20	41.82	40.31	2.41
15.525	100yr	15,525	1,530	37.20	41.87	40.35	2.43

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
15.525	150yr	15,525	1,610	37.20	41.98	40.42	2.48
15.525	200yr	15,525	1,730	37.20	42.16	40.52	2.53
15.620	50yr	15,620	1,390	37.22	41.78	40.47	2.44
15.620	80yr	15,620	1,490	37.22	41.91	40.57	2.51
15.620	100yr	15,620	1,530	37.22	41.97	40.60	2.53
15.620	150yr	15,620	1,610	37.22	42.08	40.67	2.57
15.620	200yr	15,620	1,730	37.22	42.25	40.77	2.62
15.720	50yr	15,720	1,390	38.56	41.82	41.22	3.12
15.720	80yr	15,720	1,490	38.56	41.95	41.31	3.17
15.720	100yr	15,720	1,530	38.56	42.01	41.34	3.19
15.720	150yr	15,720	1,610	38.56	42.12	41.41	3.21
15.720	200yr	15,720	1,730	38.56	42.29	41.50	3.24
15.820	50yr	15,820	1,390	37.62	42.23	40.83	2.36
15.820	80yr	15,820	1,490	37.62	42.36	40.92	2.43
15.820	100yr	15,820	1,530	37.62	42.41	40.96	2.45
15.820	150yr	15,820	1,610	37.62	42.51	41.03	2.50
15.820	200yr	15,820	1,730	37.62	42.67	41.13	2.56
15.925	50yr	15,925	1,390	37.74	42.35	40.84	2.30
15.925	80yr	15,925	1,490	37.74	42.48	40.94	2.37
15.925	100yr	15,925	1,530	37.74	42.53	40.98	2.39
15.925	150yr	15,925	1,610	37.74	42.64	41.06	2.44
15.925	200yr	15,925	1,730	37.74	42.80	41.17	2.50
16.021	50yr	16,021	1,390	38.53	42.38	41.61	2.89
16.021	80yr	16,021	1,490	38.53	42.51	41.67	2.94
16.021	100yr	16,021	1,530	38.53	42.56	41.70	2.97
16.021	150yr	16,021	1,610	38.53	42.67	41.77	3.00
16.021	200yr	16,021	1,730	38.53	42.83	41.87	3.05
16.023		Inline Weir					
16.025	50yr	16,025	1,390	38.93	42.95	41.82	2.52
16.025	80yr	16,025	1,490	38.93	43.05	41.90	2.61
16.025	100yr	16,025	1,530	38.93	43.09	41.93	2.64
16.025	150yr	16,025	1,610	38.93	43.18	42.00	2.70
16.025	200yr	16,025	1,730	38.93	43.30	42.09	2.80
16.125	50yr	16,125	1,390	38.51	43.10	41.96	2.50
16.125	80yr	16,125	1,490	38.51	43.20	42.04	2.58
16.125	100yr	16,125	1,530	38.51	43.25	42.08	2.61
16.125	150yr	16,125	1,610	38.51	43.33	42.14	2.67
16.125	200yr	16,125	1,730	38.51	43.46	42.24	2.76
16.225	50yr	16,225	1,390	39.45	43.18	42.51	3.00
16.225	80yr	16,225	1,490	39.45	43.29	42.59	3.08
16.225	100yr	16,225	1,530	39.45	43.34	42.63	3.11
16.225	150yr	16,225	1,610	39.45	43.42	42.69	3.16
16.225	200yr	16,225	1,730	39.45	43.54	42.79	3.25
16.325	50yr	16,325	1,390	39.47	43.51	42.49	2.62
16.325	80yr	16,325	1,490	39.47	43.62	42.57	2.70
16.325	100yr	16,325	1,530	39.47	43.67	42.60	2.73
16.325	150yr	16,325	1,610	39.47	43.75	42.67	2.78
16.325	200yr	16,325	1,730	39.47	43.88	42.76	2.87
16.435	50yr	16,435	1,390	39.70	43.69	42.71	2.69
16.435	80yr	16,435	1,490	39.70	43.80	42.79	2.77
16.435	100yr	16,435	1,530	39.70	43.84	42.83	2.80
16.435	150yr	16,435	1,610	39.70	43.93	42.90	2.85
16.435	200yr	16,435	1,730	39.70	44.06	43.00	2.94
16.511	50yr	16,511	1,390	39.84	43.83	42.93	2.69
16.511	80yr	16,511	1,490	39.84	43.94	43.01	2.76

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
16.511	100yr	16.511	1.530	39.84	43.99	43.04	2.79
16.511	150yr	16.511	1.610	39.84	44.07	43.09	2.84
16.511	200yr	16.511	1.730	39.84	44.21	43.19	2.92
16.535		Bridge					
16.558	50yr	16.558	1.390	39.84	44.01	42.91	2.51
16.558	80yr	16.558	1.490	39.84	44.13	43.00	2.58
16.558	100yr	16.558	1.530	39.84	44.18	43.03	2.60
16.558	150yr	16.558	1.610	39.84	44.27	43.10	2.66
16.558	200yr	16.558	1.730	39.84	44.40	43.19	2.73
16.635	50yr	16.635	1.390	39.32	44.12	43.02	2.58
16.635	80yr	16.635	1.490	39.32	44.23	43.12	2.65
16.635	100yr	16.635	1.530	39.32	44.28	43.15	2.68
16.635	150yr	16.635	1.610	39.32	44.37	43.23	2.74
16.635	200yr	16.635	1.730	39.32	44.51	43.33	2.82
16.735	50yr	16.735	1.390	39.44	44.29	43.15	2.51
16.735	80yr	16.735	1.490	39.44	44.41	43.25	2.58
16.735	100yr	16.735	1.530	39.44	44.45	43.28	2.61
16.735	150yr	16.735	1.610	39.44	44.55	43.35	2.66
16.735	200yr	16.735	1.730	39.44	44.68	43.44	2.74
16.835	50yr	16.835	1.390	39.78	44.49	42.90	2.18
16.835	80yr	16.835	1.490	39.78	44.61	43.00	2.25
16.835	100yr	16.835	1.530	39.78	44.66	43.05	2.28
16.835	150yr	16.835	1.610	39.78	44.76	43.13	2.33
16.835	200yr	16.835	1.730	39.78	44.90	43.24	2.40
16.935	50yr	16.935	1.390	39.97	44.58	43.25	2.25
16.935	80yr	16.935	1.490	39.97	44.71	43.35	2.31
16.935	100yr	16.935	1.530	39.97	44.76	43.38	2.33
16.935	150yr	16.935	1.610	39.97	44.85	43.45	2.38
16.935	200yr	16.935	1.730	39.97	44.99	43.54	2.45
17.035	50yr	17.035	1.390	38.83	44.77	42.73	1.71
17.035	80yr	17.035	1.490	38.83	44.90	42.84	1.77
17.035	100yr	17.035	1.530	38.83	44.95	42.87	1.79
17.035	150yr	17.035	1.610	38.83	45.05	42.95	1.83
17.035	200yr	17.035	1.730	38.83	45.20	43.04	1.89
17.135	50yr	17.135	1.250	38.59	44.77	43.38	2.21
17.135	80yr	17.135	1.330	38.59	44.91	43.45	2.25
17.135	100yr	17.135	1.370	38.59	44.95	43.48	2.28
17.135	150yr	17.135	1.440	38.59	45.05	43.55	2.32
17.135	200yr	17.135	1.550	38.59	45.20	43.64	2.39
17.240	50yr	17.240	1.250	39.08	44.90	43.41	2.14
17.240	80yr	17.240	1.330	39.08	45.02	43.49	2.19
17.240	100yr	17.240	1.370	39.08	45.07	43.52	2.22
17.240	150yr	17.240	1.440	39.08	45.17	43.58	2.26
17.240	200yr	17.240	1.550	39.08	45.32	43.68	2.33
17.335	50yr	17.335	1.250	38.89	44.98	43.55	2.18
17.335	80yr	17.335	1.330	38.89	45.11	43.62	2.23
17.335	100yr	17.335	1.370	38.89	45.16	43.66	2.26
17.335	150yr	17.335	1.440	38.89	45.26	43.72	2.30
17.335	200yr	17.335	1.550	38.89	45.41	43.82	2.37
17.435	50yr	17.435	1.250	39.30	45.08	43.66	2.19
17.435	80yr	17.435	1.330	39.30	45.20	43.74	2.24
17.435	100yr	17.435	1.370	39.30	45.26	43.77	2.27
17.435	150yr	17.435	1.440	39.30	45.35	43.84	2.31
17.435	200yr	17.435	1.550	39.30	45.50	43.93	2.38
17.535	50yr	17.535	1.250	40.12	45.17	43.82	2.23

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
17.535	80yr	17,535	1,330	40.12	45.30	43.90	2.28
17.535	100yr	17,535	1,370	40.12	45.35	43.93	2.30
17.535	150yr	17,535	1,440	40.12	45.45	44.00	2.35
17.535	200yr	17,535	1,550	40.12	45.60	44.10	2.41
17.635	50yr	17,635	1,250	40.46	45.27	44.12	2.37
17.635	80yr	17,635	1,330	40.46	45.39	44.19	2.42
17.635	100yr	17,635	1,370	40.46	45.45	44.23	2.44
17.635	150yr	17,635	1,440	40.46	45.54	44.29	2.48
17.635	200yr	17,635	1,550	40.46	45.69	44.38	2.55
17.735	50yr	17,735	1,250	40.27	45.38	44.32	2.50
17.735	80yr	17,735	1,330	40.27	45.50	44.39	2.54
17.735	100yr	17,735	1,370	40.27	45.56	44.43	2.57
17.735	150yr	17,735	1,440	40.27	45.65	44.50	2.61
17.735	200yr	17,735	1,550	40.27	45.80	44.59	2.67
17.825	50yr	17,825	1,250	40.57	45.62	44.02	1.93
17.825	80yr	17,825	1,330	40.57	45.74	44.08	1.98
17.825	100yr	17,825	1,370	40.57	45.80	44.12	2.00
17.825	150yr	17,825	1,440	40.57	45.90	44.17	2.04
17.825	200yr	17,825	1,550	40.57	46.05	44.26	2.10
17.925	50yr	17,925	1,250	40.97	45.67	44.33	2.17
17.925	80yr	17,925	1,330	40.97	45.79	44.40	2.22
17.925	100yr	17,925	1,370	40.97	45.85	44.43	2.24
17.925	150yr	17,925	1,440	40.97	45.95	44.49	2.28
17.925	200yr	17,925	1,550	40.97	46.10	44.58	2.34
18.025	50yr	18,025	1,250	41.09	45.77	44.58	2.27
18.025	80yr	18,025	1,330	41.09	45.89	44.64	2.32
18.025	100yr	18,025	1,370	41.09	45.94	44.68	2.34
18.025	150yr	18,025	1,440	41.09	46.04	44.74	2.38
18.025	200yr	18,025	1,550	41.09	46.19	44.83	2.44
18.130	50yr	18,130	1,250	40.42	45.88	44.72	2.32
18.130	80yr	18,130	1,330	40.42	46.00	44.80	2.37
18.130	100yr	18,130	1,370	40.42	46.06	44.83	2.39
18.130	150yr	18,130	1,440	40.42	46.15	44.89	2.43
18.130	200yr	18,130	1,550	40.42	46.30	44.98	2.49
18.230	50yr	18,230	1,250	40.88	46.02	44.71	2.24
18.230	80yr	18,230	1,330	40.88	46.13	44.78	2.29
18.230	100yr	18,230	1,370	40.88	46.19	44.82	2.31
18.230	150yr	18,230	1,440	40.88	46.28	44.87	2.36
18.230	200yr	18,230	1,550	40.88	46.43	44.97	2.42
18.330	50yr	18,330	1,250	40.86	46.11	44.95	2.42
18.330	80yr	18,330	1,330	40.86	46.22	45.02	2.47
18.330	100yr	18,330	1,370	40.86	46.28	45.06	2.50
18.330	150yr	18,330	1,440	40.86	46.37	45.12	2.54
18.330	200yr	18,330	1,550	40.86	46.52	45.21	2.61
18.430	50yr	18,430	1,250	40.47	46.24	44.90	2.41
18.430	80yr	18,430	1,330	40.47	46.35	44.99	2.47
18.430	100yr	18,430	1,370	40.47	46.41	45.05	2.50
18.430	150yr	18,430	1,440	40.47	46.51	45.12	2.55
18.430	200yr	18,430	1,550	40.47	46.65	45.25	2.63
18.530	50yr	18,530	1,250	41.72	46.37	45.14	2.48
18.530	80yr	18,530	1,330	41.72	46.48	45.22	2.54
18.530	100yr	18,530	1,370	41.72	46.55	45.25	2.56
18.530	150yr	18,530	1,440	41.72	46.64	45.32	2.61
18.530	200yr	18,530	1,550	41.72	46.78	45.46	2.68
18.630	50yr	18,630	1,250	42.19	46.51	45.50	2.60
18.630	80yr	18,630	1,330	42.19	46.62	45.57	2.66

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
18.630	100yr	18,630	1,370	42.19	46.68	45.61	2.68
18.630	150yr	18,630	1,440	42.19	46.77	45.67	2.73
18.630	200yr	18,630	1,550	42.19	46.91	45.77	2.81
18.720	50yr	18,720	1,250	42.06	46.72	45.28	2.26
18.720	80yr	18,720	1,330	42.06	46.83	45.35	2.32
18.720	100yr	18,720	1,370	42.06	46.89	45.39	2.34
18.720	150yr	18,720	1,440	42.06	46.98	45.45	2.39
18.720	200yr	18,720	1,550	42.06	47.12	45.55	2.47
18.825	50yr	18,825	1,250	42.08	46.81	45.87	2.50
18.825	80yr	18,825	1,330	42.08	46.93	45.95	2.54
18.825	100yr	18,825	1,370	42.08	46.99	45.98	2.56
18.825	150yr	18,825	1,440	42.08	47.08	46.04	2.59
18.825	200yr	18,825	1,550	42.08	47.23	46.13	2.65
18.925	50yr	18,925	1,250	41.99	47.06	45.61	2.02
18.925	80yr	18,925	1,330	41.99	47.17	45.68	2.06
18.925	100yr	18,925	1,370	41.99	47.24	45.71	2.08
18.925	150yr	18,925	1,440	41.99	47.33	45.77	2.12
18.925	200yr	18,925	1,550	41.99	47.47	45.85	2.18
19.025	50yr	19,025	1,250	42.65	47.14	46.06	2.20
19.025	80yr	19,025	1,330	42.65	47.26	46.14	2.23
19.025	100yr	19,025	1,370	42.65	47.32	46.17	2.24
19.025	150yr	19,025	1,440	42.65	47.41	46.23	2.27
19.025	200yr	19,025	1,550	42.65	47.56	46.33	2.32
19.125	50yr	19,125	1,250	42.16	47.34	45.79	1.76
19.125	80yr	19,125	1,330	42.16	47.45	45.86	1.80
19.125	100yr	19,125	1,370	42.16	47.51	45.89	1.81
19.125	150yr	19,125	1,440	42.16	47.61	45.95	1.84
19.125	200yr	19,125	1,550	42.16	47.75	46.04	1.89
19.230	50yr	19,230	1,250	42.25	47.40	46.34	2.03
19.230	80yr	19,230	1,330	42.25	47.52	46.40	2.06
19.230	100yr	19,230	1,370	42.25	47.57	46.43	2.07
19.230	150yr	19,230	1,440	42.25	47.67	46.48	2.10
19.230	200yr	19,230	1,550	42.25	47.81	46.54	2.14
19.335	50yr	19,335	1,250	43.09	47.52	46.56	2.19
19.335	80yr	19,335	1,330	43.09	47.63	46.62	2.22
19.335	100yr	19,335	1,370	43.09	47.68	46.65	2.24
19.335	150yr	19,335	1,440	43.09	47.77	46.71	2.27
19.335	200yr	19,335	1,550	43.09	47.91	46.78	2.31
19.435	50yr	19,435	1,250	43.36	47.71	46.29	1.80
19.435	80yr	19,435	1,330	43.36	47.82	46.35	1.84
19.435	100yr	19,435	1,370	43.36	47.87	46.38	1.86
19.435	150yr	19,435	1,440	43.36	47.96	46.43	1.90
19.435	200yr	19,435	1,550	43.36	48.10	46.51	1.95
19.535	50yr	19,535	1,250	42.94	47.77	46.71	2.08
19.535	80yr	19,535	1,330	42.94	47.87	46.76	2.12
19.535	100yr	19,535	1,370	42.94	47.93	46.79	2.14
19.535	150yr	19,535	1,440	42.94	48.02	46.84	2.18
19.535	200yr	19,535	1,550	42.94	48.15	46.90	2.23
19.630	50yr	19,630	1,250	43.87	47.93	46.55	1.78
19.630	80yr	19,630	1,330	43.87	48.03	46.61	1.82
19.630	100yr	19,630	1,370	43.87	48.09	46.63	1.84
19.630	150yr	19,630	1,440	43.87	48.18	46.67	1.88
19.630	200yr	19,630	1,550	43.87	48.31	46.75	1.92
19.740	50yr	19,740	1,250	43.21	48.02	46.79	1.92
19.740	80yr	19,740	1,330	43.21	48.12	46.85	1.95
19.740	100yr	19,740	1,370	43.21	48.17	46.88	1.97

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
19.740	150yr	19.740	1.440	43.21	48.26	46.94	1.99
19.740	200yr	19.740	1.550	43.21	48.40	47.02	2.03
19.815	50yr	19.815	1.250	44.06	48.11	46.61	1.79
19.815	80yr	19.815	1.330	44.06	48.22	46.68	1.83
19.815	100yr	19.815	1.370	44.06	48.27	46.71	1.84
19.815	150yr	19.815	1.440	44.06	48.36	46.78	1.87
19.815	200yr	19.815	1.550	44.06	48.49	46.87	1.92
19.925	50yr	19.925	1.250	44.21	48.21	46.86	1.91
19.925	80yr	19.925	1.330	44.21	48.31	46.93	1.94
19.925	100yr	19.925	1.370	44.21	48.36	46.96	1.95
19.925	150yr	19.925	1.440	44.21	48.45	47.02	1.98
19.925	200yr	19.925	1.550	44.21	48.57	47.11	2.03
20.020	50yr	20.020	1.250	44.36	48.30	47.05	2.13
20.020	80yr	20.020	1.330	44.36	48.41	47.14	2.16
20.020	100yr	20.020	1.370	44.36	48.46	47.17	2.17
20.020	150yr	20.020	1.440	44.36	48.54	47.24	2.20
20.020	200yr	20.020	1.550	44.36	48.66	47.65	2.26
20.115	50yr	20.115	1.250	44.36	48.40	47.40	2.58
20.115	80yr	20.115	1.330	44.36	48.50	47.47	2.61
20.115	100yr	20.115	1.370	44.36	48.55	47.49	2.63
20.115	150yr	20.115	1.440	44.36	48.64	47.56	2.66
20.115	200yr	20.115	1.550	44.36	48.74	47.91	2.74
20.210	50yr	20.210	1.250	44.50	48.65	47.46	2.29
20.210	80yr	20.210	1.330	44.50	48.74	47.54	2.35
20.210	100yr	20.210	1.370	44.50	48.79	47.58	2.38
20.210	150yr	20.210	1.440	44.50	48.87	47.65	2.42
20.210	200yr	20.210	1.550	44.50	48.98	47.76	2.50
20.315	50yr	20.315	1.250	44.70	48.74	47.53	2.61
20.315	80yr	20.315	1.330	44.70	48.84	47.61	2.69
20.315	100yr	20.315	1.370	44.70	48.88	47.66	2.72
20.315	150yr	20.315	1.440	44.70	48.96	47.73	2.79
20.315	200yr	20.315	1.550	44.70	49.07	47.84	2.90
20.410	50yr	20.410	1.250	44.72	48.90	48.34	2.85
20.410	80yr	20.410	1.330	44.72	49.00	48.42	2.89
20.410	100yr	20.410	1.370	44.72	49.05	48.46	2.90
20.410	150yr	20.410	1.440	44.72	49.13	48.51	2.93
20.410	200yr	20.410	1.550	44.72	49.25	48.60	2.99
20.510	50yr	20.510	1.250	44.33	49.28	47.84	2.31
20.510	80yr	20.510	1.330	44.33	49.37	48.11	2.36
20.510	100yr	20.510	1.370	44.33	49.41	48.16	2.38
20.510	150yr	20.510	1.440	44.33	49.49	48.23	2.42
20.510	200yr	20.510	1.550	44.33	49.61	48.31	2.49
20.610	50yr	20.610	1.250	44.30	49.44	47.81	2.35
20.610	80yr	20.610	1.330	44.30	49.52	47.90	2.41
20.610	100yr	20.610	1.370	44.30	49.57	47.96	2.43
20.610	150yr	20.610	1.440	44.30	49.65	48.05	2.48
20.610	200yr	20.610	1.550	44.30	49.76	48.19	2.55
20.690	50yr	20.690	1.250	44.77	49.61	47.91	1.99
20.690	80yr	20.690	1.330	44.77	49.71	48.00	2.04
20.690	100yr	20.690	1.370	44.77	49.77	48.03	2.07
20.690	150yr	20.690	1.440	44.77	49.84	48.10	2.11
20.690	200yr	20.690	1.550	44.77	49.96	48.25	2.18
20.795	50yr	20.795	1.230	44.80	49.59	48.55	3.10
20.795	80yr	20.795	1.310	44.80	49.70	48.67	3.13
20.795	100yr	20.795	1.350	44.80	49.75	48.72	3.15
20.795	150yr	20.795	1.420	44.80	49.83	48.82	3.18

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
20.795	200yr	20,795	1,530	44.80	49.94	48.97	3.24
20.895	50yr	20,895	1,230	44.15	50.04	48.21	2.12
20.895	80yr	20,895	1,310	44.15	50.15	48.32	2.18
20.895	100yr	20,895	1,350	44.15	50.20	48.37	2.21
20.895	150yr	20,895	1,420	44.15	50.27	48.46	2.27
20.895	200yr	20,895	1,530	44.15	50.39	48.59	2.37
21.043	50yr	21,043	1,230	46.68	50.12	48.66	2.54
21.043	80yr	21,043	1,310	46.68	50.23	48.74	2.62
21.043	100yr	21,043	1,350	46.68	50.28	48.78	2.66
21.043	150yr	21,043	1,420	46.68	50.36	48.85	2.73
21.043	200yr	21,043	1,530	46.68	50.48	48.96	2.85
21.044		Inline Weir					
21.045	50yr	21,045	1,230	46.98	50.18	48.95	2.72
21.045	80yr	21,045	1,310	46.98	50.30	49.04	2.80
21.045	100yr	21,045	1,350	46.98	50.35	49.08	2.84
21.045	150yr	21,045	1,420	46.98	50.43	49.15	2.91
21.045	200yr	21,045	1,530	46.98	50.55	49.26	3.02
21.095	50yr	21,095	1,230	45.93	50.40	48.91	2.15
21.095	80yr	21,095	1,310	45.93	50.53	48.98	2.20
21.095	100yr	21,095	1,350	45.93	50.58	49.02	2.22
21.095	150yr	21,095	1,420	45.93	50.68	49.08	2.28
21.095	200yr	21,095	1,530	45.93	50.82	49.18	2.35
21.200	50yr	21,200	1,230	46.05	50.49	49.02	2.17
21.200	80yr	21,200	1,310	46.05	50.62	49.09	2.22
21.200	100yr	21,200	1,350	46.05	50.68	49.13	2.24
21.200	150yr	21,200	1,420	46.05	50.77	49.19	2.29
21.200	200yr	21,200	1,530	46.05	50.92	49.29	2.37
21.290	50yr	21,290	1,230	44.97	50.63	48.74	1.87
21.290	80yr	21,290	1,310	44.97	50.76	48.81	1.92
21.290	100yr	21,290	1,350	44.97	50.82	48.85	1.95
21.290	150yr	21,290	1,420	44.97	50.91	48.91	1.99
21.290	200yr	21,290	1,530	44.97	51.06	49.00	2.06
21.390	50yr	21,390	1,230	45.60	50.67	49.33	2.13
21.390	80yr	21,390	1,310	45.60	50.80	49.40	2.17
21.390	100yr	21,390	1,350	45.60	50.86	49.43	2.19
21.390	150yr	21,390	1,420	45.60	50.95	49.49	2.23
21.390	200yr	21,390	1,530	45.60	51.11	49.58	2.29
21.513	50yr	21,513	1,230	48.90	50.79	50.23	2.54
21.513	80yr	21,513	1,310	48.90	50.92	50.28	2.54
21.513	100yr	21,513	1,350	48.90	50.97	50.31	2.54
21.513	150yr	21,513	1,420	48.90	51.07	50.36	2.55
21.513	200yr	21,513	1,530	48.90	51.23	50.43	2.56
21.514		Inline Weir					
21.515	50yr	21,515	1,230	48.90	51.44	50.23	1.89
21.515	80yr	21,515	1,310	48.90	51.51	50.28	1.95
21.515	100yr	21,515	1,350	48.90	51.55	50.31	1.99
21.515	150yr	21,515	1,420	48.90	51.61	50.36	2.04
21.515	200yr	21,515	1,530	48.90	51.70	50.43	2.12
21.525	50yr	21,525	1,230	48.10	51.45	49.94	1.86
21.525	80yr	21,525	1,310	48.10	51.52	50.01	1.93
21.525	100yr	21,525	1,350	48.10	51.56	50.04	1.96
21.525	150yr	21,525	1,420	48.10	51.62	50.09	2.02
21.525	200yr	21,525	1,530	48.10	51.72	50.17	2.11
21.585	50yr	21,585	1,230	48.55	51.47	50.30	2.17

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
21.585	80yr	21.585	1.310	48.55	51.54	50.37	2.24
21.585	100yr	21.585	1.350	48.55	51.58	50.41	2.27
21.585	150yr	21.585	1.420	48.55	51.65	50.48	2.31
21.585	200yr	21.585	1.530	48.55	51.74	50.57	2.40
21.685	50yr	21.685	1.230	47.30	51.58	50.23	2.32
21.685	80yr	21.685	1.310	47.30	51.66	50.35	2.40
21.685	100yr	21.685	1.350	47.30	51.69	50.38	2.45
21.685	150yr	21.685	1.420	47.30	51.76	50.45	2.51
21.685	200yr	21.685	1.530	47.30	51.86	50.57	2.62
21.729	50yr	21.729	1.230	47.37	51.54	50.40	2.87
21.729	80yr	21.729	1.310	47.37	51.61	50.48	2.99
21.729	100yr	21.729	1.350	47.37	51.64	50.52	3.04
21.729	150yr	21.729	1.420	47.37	51.71	50.61	3.14
21.729	200yr	21.729	1.530	47.37	51.79	50.73	3.30
21.745		Bridge					
21.762	50yr	21.762	1.230	47.37	51.70	50.39	2.73
21.762	80yr	21.762	1.310	47.37	51.78	50.48	2.83
21.762	100yr	21.762	1.350	47.37	51.82	50.53	2.89
21.762	150yr	21.762	1.420	47.37	51.89	50.60	2.97
21.762	200yr	21.762	1.530	47.37	51.99	50.72	3.10
21.805	50yr	21.805	1.230	47.69	51.78	50.32	2.65
21.805	80yr	21.805	1.310	47.69	51.87	50.41	2.75
21.805	100yr	21.805	1.350	47.69	51.92	50.45	2.80
21.805	150yr	21.805	1.420	47.69	51.99	50.53	2.88
21.805	200yr	21.805	1.530	47.69	52.10	50.65	3.01
21.848	50yr	21.848	1.230	47.61	51.85	50.34	2.62
21.848	80yr	21.848	1.310	47.61	51.93	50.43	2.72
21.848	100yr	21.848	1.350	47.61	51.98	50.48	2.77
21.848	150yr	21.848	1.420	47.61	52.06	50.55	2.85
21.848	200yr	21.848	1.530	47.61	52.17	50.67	2.98
21.850		Bridge					
21.853	50yr	21.853	1.230	47.61	51.89	50.35	2.58
21.853	80yr	21.853	1.310	47.61	51.98	50.44	2.69
21.853	100yr	21.853	1.350	47.61	52.03	50.48	2.73
21.853	150yr	21.853	1.420	47.61	52.11	50.56	2.81
21.853	200yr	21.853	1.530	47.61	52.23	50.67	2.93
21.891	50yr	21.891	1.230	47.50	51.93	50.79	2.70
21.891	80yr	21.891	1.310	47.50	52.01	50.88	2.80
21.891	100yr	21.891	1.350	47.50	52.06	50.91	2.84
21.891	150yr	21.891	1.420	47.50	52.14	50.98	2.91
21.891	200yr	21.891	1.530	47.50	52.27	51.09	3.02
21.895		Bridge					
21.897	50yr	21.897	1.230	47.50	52.12	50.79	2.54
21.897	80yr	21.897	1.310	47.50	52.22	50.87	2.62
21.897	100yr	21.897	1.350	47.50	52.28	50.92	2.65
21.897	150yr	21.897	1.420	47.50	52.38	50.98	2.71
21.897	200yr	21.897	1.530	47.50	52.53	51.09	2.80
21.900	50yr	21.900	1.230	47.97	52.11	51.00	2.60
21.900	80yr	21.900	1.310	47.97	52.22	51.08	2.66
21.900	100yr	21.900	1.350	47.97	52.28	51.12	2.69
21.900	150yr	21.900	1.420	47.97	52.38	51.18	2.74
21.900	200yr	21.900	1.530	47.97	52.53	51.29	2.82
22.095	50yr	22.095	1.230	47.62	52.40	50.93	2.54
22.095	80yr	22.095	1.310	47.62	52.51	51.03	2.61

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
22.095	100yr	22,095	1,350	47.62	52.57	51.09	2.64
22.095	150yr	22,095	1,420	47.62	52.67	51.23	2.70
22.095	200yr	22,095	1,530	47.62	52.82	51.38	2.78
22.290	50yr	22,290	1,230	49.04	52.61	51.84	3.18
22.290	80yr	22,290	1,310	49.04	52.72	51.93	3.26
22.290	100yr	22,290	1,350	49.04	52.77	51.97	3.29
22.290	150yr	22,290	1,420	49.04	52.87	52.05	3.35
22.290	200yr	22,290	1,530	49.04	53.02	52.16	3.44
22.480	50yr	22,480	1,230	48.85	53.16	51.57	2.29
22.480	80yr	22,480	1,310	48.85	53.28	51.65	2.35
22.480	100yr	22,480	1,350	48.85	53.34	51.69	2.38
22.480	150yr	22,480	1,420	48.85	53.44	51.76	2.44
22.480	200yr	22,480	1,530	48.85	53.61	51.86	2.51
22.670	50yr	22,670	1,230	49.28	53.34	51.62	2.25
22.670	80yr	22,670	1,310	49.28	53.47	51.71	2.31
22.670	100yr	22,670	1,350	49.28	53.53	51.75	2.34
22.670	150yr	22,670	1,420	49.28	53.64	51.82	2.39
22.670	200yr	22,670	1,530	49.28	53.80	51.93	2.47
22.842	50yr	22,842	1,230	48.75	53.52	51.34	2.10
22.842	80yr	22,842	1,310	48.75	53.65	51.43	2.16
22.842	100yr	22,842	1,350	48.75	53.71	51.48	2.19
22.842	150yr	22,842	1,420	48.75	53.82	51.56	2.25
22.842	200yr	22,842	1,530	48.75	53.98	51.69	2.33
22.845		Bridge					
22.848	50yr	22,848	1,230	48.75	53.55	51.33	2.08
22.848	80yr	22,848	1,310	48.75	53.68	51.43	2.14
22.848	100yr	22,848	1,350	48.75	53.74	51.48	2.18
22.848	150yr	22,848	1,420	48.75	53.85	51.56	2.23
22.848	200yr	22,848	1,530	48.75	54.02	51.68	2.31
22.885	50yr	22,885	1,230	49.32	53.53	51.77	2.37
22.885	80yr	22,885	1,310	49.32	53.66	51.86	2.44
22.885	100yr	22,885	1,350	49.32	53.72	51.91	2.47
22.885	150yr	22,885	1,420	49.32	53.83	51.98	2.53
22.885	200yr	22,885	1,530	49.32	54.00	52.11	2.61
23.080	50yr	23,080	1,230	49.36	53.71	51.91	2.42
23.080	80yr	23,080	1,310	49.36	53.84	52.01	2.49
23.080	100yr	23,080	1,350	49.36	53.91	52.05	2.52
23.080	150yr	23,080	1,420	49.36	54.02	52.13	2.58
23.080	200yr	23,080	1,530	49.36	54.18	52.26	2.66
23.280	50yr	23,280	1,230	49.40	53.90	52.11	2.52
23.280	80yr	23,280	1,310	49.40	54.03	52.20	2.59
23.280	100yr	23,280	1,350	49.40	54.10	52.25	2.63
23.280	150yr	23,280	1,420	49.40	54.21	52.33	2.69
23.280	200yr	23,280	1,530	49.40	54.38	52.47	2.78
23.480	50yr	23,480	1,230	49.83	54.16	52.30	2.38
23.480	80yr	23,480	1,310	49.83	54.29	52.39	2.44
23.480	100yr	23,480	1,350	49.83	54.36	52.44	2.47
23.480	150yr	23,480	1,420	49.83	54.50	52.52	2.51
23.480	200yr	23,480	1,530	49.83	54.70	52.64	2.55
23.670	50yr	23,670	1,230	50.69	54.37	52.99	2.51
23.670	80yr	23,670	1,310	50.69	54.52	53.07	2.54
23.670	100yr	23,670	1,350	50.69	54.59	53.11	2.55
23.670	150yr	23,670	1,420	50.69	54.75	53.19	2.54
23.670	200yr	23,670	1,530	50.69	54.97	53.30	2.55
23.830	50yr	23,830	1,230	50.70	54.55	53.29	3.03

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
23.830	80yr	23,830	1,310	50.70	54.69	53.39	3.10
23.830	100yr	23,830	1,350	50.70	54.75	53.44	3.13
23.830	150yr	23,830	1,420	50.70	54.93	53.52	3.12
23.830	200yr	23,830	1,530	50.70	55.12	53.65	3.17
23.835		Bridge					
23.840	50yr	23,840	1,230	50.70	54.68	53.29	2.91
23.840	80yr	23,840	1,310	50.70	54.83	53.39	2.98
23.840	100yr	23,840	1,350	50.70	54.90	53.44	3.00
23.840	150yr	23,840	1,420	50.70	55.08	53.52	2.98
23.840	200yr	23,840	1,530	50.70	55.28	53.65	3.02
23.875	50yr	23,875	1,230	50.94	54.70	53.55	3.13
23.875	80yr	23,875	1,310	50.94	54.85	53.65	3.20
23.875	100yr	23,875	1,350	50.94	54.92	53.70	3.23
23.875	150yr	23,875	1,420	50.94	55.11	53.79	3.22
23.875	200yr	23,875	1,530	50.94	55.30	53.92	3.26
23.880		Bridge					
23.885	50yr	23,885	1,230	50.94	54.88	53.55	2.97
23.885	80yr	23,885	1,310	50.94	55.03	53.65	3.03
23.885	100yr	23,885	1,350	50.94	55.11	53.70	3.06
23.885	150yr	23,885	1,420	50.94	55.29	53.79	3.05
23.885	200yr	23,885	1,530	50.94	55.51	53.92	3.06
24.075	50yr	24,075	1,230	50.88	55.20	53.82	3.02
24.075	80yr	24,075	1,310	50.88	55.35	53.92	3.09
24.075	100yr	24,075	1,350	50.88	55.43	53.97	3.12
24.075	150yr	24,075	1,420	50.88	55.62	54.06	3.11
24.075	200yr	24,075	1,530	50.88	55.82	54.21	3.19
24.265	50yr	24,265	1,230	51.05	55.56	54.01	2.88
24.265	80yr	24,265	1,310	51.05	55.71	54.12	2.95
24.265	100yr	24,265	1,350	51.05	55.78	54.17	2.98
24.265	150yr	24,265	1,420	51.05	55.96	54.26	3.00
24.265	200yr	24,265	1,530	51.05	56.16	54.40	3.08
24.359	50yr	24,359	1,230	52.73	55.34	55.34	4.78
24.359	80yr	24,359	1,310	52.73	55.46	55.43	4.84
24.359	100yr	24,359	1,350	52.73	55.54	55.49	4.83
24.359	150yr	24,359	1,420	52.73	55.75	55.57	4.69
24.359	200yr	24,359	1,530	52.73	55.96	55.71	4.68
24.362		Inline Weir					
24.365	50yr	24,365	1,230	52.78	57.08	55.37	2.70
24.365	80yr	24,365	1,310	52.78	57.20	55.47	2.78
24.365	100yr	24,365	1,350	52.78	57.26	55.52	2.83
24.365	150yr	24,365	1,420	52.78	57.37	55.61	2.90
24.365	200yr	24,365	1,530	52.78	57.52	55.75	3.01
24.465	50yr	24,465	1,230	52.77	57.23	55.46	2.60
24.465	80yr	24,465	1,310	52.77	57.36	55.56	2.68
24.465	100yr	24,465	1,350	52.77	57.42	55.61	2.72
24.465	150yr	24,465	1,420	52.77	57.53	55.69	2.78
24.465	200yr	24,465	1,530	52.77	57.69	55.82	2.88
24.665	50yr	24,665	1,230	52.20	57.49	55.42	2.50
24.665	80yr	24,665	1,310	52.20	57.62	55.53	2.57
24.665	100yr	24,665	1,350	52.20	57.69	55.58	2.61
24.665	150yr	24,665	1,420	52.20	57.80	55.68	2.67
24.665	200yr	24,665	1,530	52.20	57.97	55.82	2.76
24.865	50yr	24,865	1,230	51.66	57.69	55.20	2.45
24.865	80yr	24,865	1,310	51.66	57.83	55.31	2.54

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
24.865	100yr	24.865	1,350	51.66	57.90	55.37	2.58
24.865	150yr	24.865	1,420	51.66	58.01	55.46	2.65
24.865	200yr	24.865	1,530	51.66	58.18	55.60	2.76
25.060	50yr	25.060	1,230	51.79	57.92	55.43	2.10
25.060	80yr	25.060	1,310	51.79	58.07	55.53	2.16
25.060	100yr	25.060	1,350	51.79	58.14	55.57	2.19
25.060	150yr	25.060	1,420	51.79	58.27	55.64	2.25
25.060	200yr	25.060	1,530	51.79	58.46	55.76	2.33
25.255	50yr	25.255	1,230	53.09	57.94	56.61	3.08
25.255	80yr	25.255	1,310	53.09	58.09	56.72	3.15
25.255	100yr	25.255	1,350	53.09	58.16	56.77	3.18
25.255	150yr	25.255	1,420	53.09	58.28	56.86	3.24
25.255	200yr	25.255	1,530	53.09	58.47	57.00	3.33
25.445	50yr	25.445	1,230	53.36	58.46	56.59	2.03
25.445	80yr	25.445	1,310	53.36	58.62	56.66	2.06
25.445	100yr	25.445	1,350	53.36	58.70	56.70	2.08
25.445	150yr	25.445	1,420	53.36	58.84	56.77	2.11
25.445	200yr	25.445	1,530	53.36	59.04	56.87	2.16
25.483	50yr	25.483	1,230	55.45	58.28	57.52	3.28
25.483	80yr	25.483	1,310	55.45	58.44	57.61	3.30
25.483	100yr	25.483	1,350	55.45	58.52	57.66	3.31
25.483	150yr	25.483	1,420	55.45	58.65	57.73	3.33
25.483	200yr	25.483	1,530	55.45	58.86	57.85	3.37
25.484		Inline Weir					
25.485	50yr	25.485	1,230	55.45	59.23	57.52	2.43
25.485	80yr	25.485	1,310	55.45	59.34	57.61	2.51
25.485	100yr	25.485	1,350	55.45	59.40	57.66	2.55
25.485	150yr	25.485	1,420	55.45	59.49	57.73	2.61
25.485	200yr	25.485	1,530	55.45	59.63	57.85	2.71
25.630	50yr	25.630	1,230	54.39	59.39	57.03	2.38
25.630	80yr	25.630	1,310	54.39	59.50	57.14	2.46
25.630	100yr	25.630	1,350	54.39	59.56	57.19	2.51
25.630	150yr	25.630	1,420	54.39	59.65	57.28	2.58
25.630	200yr	25.630	1,530	54.39	59.80	57.41	2.69
25.850	50yr	25.850	1,230	53.65	59.54	57.57	2.71
25.850	80yr	25.850	1,310	53.65	59.66	57.68	2.81
25.850	100yr	25.850	1,350	53.65	59.72	57.73	2.85
25.850	150yr	25.850	1,420	53.65	59.82	57.83	2.93
25.850	200yr	25.850	1,530	53.65	59.97	57.97	3.05
26.050	50yr	26.050	1,230	54.64	59.86	58.51	2.48
26.050	80yr	26.050	1,310	54.64	60.00	58.58	2.53
26.050	100yr	26.050	1,350	54.64	60.07	58.62	2.56
26.050	150yr	26.050	1,420	54.64	60.18	58.69	2.60
26.050	200yr	26.050	1,530	54.64	60.36	58.81	2.66
26.092	50yr	26.092	1,230	55.70	59.98	58.38	2.20
26.092	80yr	26.092	1,310	55.70	60.12	58.46	2.24
26.092	100yr	26.092	1,350	55.70	60.19	58.50	2.27
26.092	150yr	26.092	1,420	55.70	60.31	58.56	2.31
26.092	200yr	26.092	1,530	55.70	60.49	58.67	2.37
26.095		Bridge					
26.098	50yr	26.098	1,230	55.70	60.02	58.38	2.17
26.098	80yr	26.098	1,310	55.70	60.16	58.46	2.22
26.098	100yr	26.098	1,350	55.70	60.23	58.50	2.25
26.098	150yr	26.098	1,420	55.70	60.35	58.57	2.29
26.098	200yr	26.098	1,530	55.70	60.53	58.67	2.35

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
26.120	50yr	26,120	1,230	55.38	60.02	58.36	2.31
26.120	80yr	26,120	1,310	55.38	60.16	58.45	2.37
26.120	100yr	26,120	1,350	55.38	60.23	58.50	2.39
26.120	150yr	26,120	1,420	55.38	60.34	58.58	2.44
26.120	200yr	26,120	1,530	55.38	60.52	58.69	2.51
26.125		Bridge					
26.130	50yr	26,130	1,230	55.38	60.08	58.36	2.27
26.130	80yr	26,130	1,310	55.38	60.22	58.45	2.32
26.130	100yr	26,130	1,350	55.38	60.29	58.49	2.35
26.130	150yr	26,130	1,420	55.38	60.41	58.57	2.39
26.130	200yr	26,130	1,530	55.38	60.59	58.69	2.46
26.170	50yr	26,170	1,230	55.64	60.12	58.75	2.36
26.170	80yr	26,170	1,310	55.64	60.26	58.85	2.40
26.170	100yr	26,170	1,350	55.64	60.33	58.90	2.42
26.170	150yr	26,170	1,420	55.64	60.45	58.99	2.46
26.170	200yr	26,170	1,530	55.64	60.63	59.06	2.51
26.175		Bridge					
26.180	50yr	26,180	1,230	55.64	60.16	58.75	2.32
26.180	80yr	26,180	1,310	55.64	60.31	58.85	2.36
26.180	100yr	26,180	1,350	55.64	60.38	58.89	2.39
26.180	150yr	26,180	1,420	55.64	60.49	58.98	2.42
26.180	200yr	26,180	1,530	55.64	60.68	59.06	2.47
26.245	50yr	26,245	1,230	55.79	60.23	58.46	2.44
26.245	80yr	26,245	1,310	55.79	60.37	58.55	2.47
26.245	100yr	26,245	1,350	55.79	60.44	58.60	2.49
26.245	150yr	26,245	1,420	55.79	60.56	58.68	2.51
26.245	200yr	26,245	1,530	55.79	60.75	58.80	2.54
26.301	50yr	26,301	1,230	57.16	59.96	59.60	4.23
26.301	80yr	26,301	1,310	57.16	60.12	59.91	4.18
26.301	100yr	26,301	1,350	57.16	60.20	59.98	4.17
26.301	150yr	26,301	1,420	57.16	60.35	60.07	4.11
26.301	200yr	26,301	1,530	57.16	60.55	60.20	4.07
26.303		Inline Weir					
26.305	50yr	26,305	1,230	57.67	61.55	60.26	2.54
26.305	80yr	26,305	1,310	57.67	61.65	60.36	2.62
26.305	100yr	26,305	1,350	57.67	61.70	60.41	2.66
26.305	150yr	26,305	1,420	57.67	61.78	60.49	2.72
26.305	200yr	26,305	1,530	57.67	61.91	60.60	2.82
26.455	50yr	26,455	1,230	54.40	61.82	58.87	2.20
26.455	80yr	26,455	1,310	54.40	61.93	59.05	2.28
26.455	100yr	26,455	1,350	54.40	61.98	59.14	2.32
26.455	150yr	26,455	1,420	54.40	62.07	59.29	2.39
26.455	200yr	26,455	1,530	54.40	62.20	59.52	2.49
26.660	50yr	26,660	1,230	55.25	62.08	59.93	1.80
26.660	80yr	26,660	1,310	55.25	62.20	60.02	1.85
26.660	100yr	26,660	1,350	55.25	62.26	60.05	1.87
26.660	150yr	26,660	1,420	55.25	62.35	60.13	1.91
26.660	200yr	26,660	1,530	55.25	62.50	60.24	1.97
26.865	50yr	26,865	1,230	57.00	62.22	59.96	2.26
26.865	80yr	26,865	1,310	57.00	62.34	60.08	2.31
26.865	100yr	26,865	1,350	57.00	62.40	60.14	2.33
26.865	150yr	26,865	1,420	57.00	62.49	60.24	2.37
26.865	200yr	26,865	1,530	57.00	62.63	60.39	2.44

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
27.065	50yr	27,065	1,230	56.93	62.41	60.06	2.49
27.065	80yr	27,065	1,310	56.93	62.53	60.17	2.58
27.065	100yr	27,065	1,350	56.93	62.58	60.23	2.63
27.065	150yr	27,065	1,420	56.93	62.67	60.36	2.71
27.065	200yr	27,065	1,530	56.93	62.81	60.61	2.83
27.270	50yr	27,270	1,230	55.97	62.54	60.88	3.09
27.270	80yr	27,270	1,310	55.97	62.66	60.99	3.20
27.270	100yr	27,270	1,350	55.97	62.71	61.07	3.25
27.270	150yr	27,270	1,420	55.97	62.80	61.16	3.35
27.270	200yr	27,270	1,530	55.97	62.95	61.32	3.50
27.490	50yr	27,490	1,230	57.81	63.05	61.13	2.29
27.490	80yr	27,490	1,310	57.81	63.20	61.22	2.34
27.490	100yr	27,490	1,350	57.81	63.27	61.27	2.37
27.490	150yr	27,490	1,420	57.81	63.39	61.34	2.41
27.490	200yr	27,490	1,530	57.81	63.57	61.48	2.49
27.675	50yr	27,675	1,230	57.91	63.17	61.40	2.72
27.675	80yr	27,675	1,310	57.91	63.31	61.50	2.79
27.675	100yr	27,675	1,350	57.91	63.38	61.56	2.82
27.675	150yr	27,675	1,420	57.91	63.50	61.65	2.89
27.675	200yr	27,675	1,530	57.91	63.68	61.79	2.98
27.706	50yr	27,706	1,230	58.29	63.27	61.47	2.53
27.706	80yr	27,706	1,310	58.29	63.42	61.58	2.59
27.706	100yr	27,706	1,350	58.29	63.49	61.63	2.62
27.706	150yr	27,706	1,420	58.29	63.62	61.71	2.67
27.706	200yr	27,706	1,530	58.29	63.79	61.84	2.76
27.710		Bridge					
27.713	50yr	27,713	1,230	58.29	63.32	61.48	2.50
27.713	80yr	27,713	1,310	58.29	63.47	61.57	2.56
27.713	100yr	27,713	1,350	58.29	63.54	61.62	2.59
27.713	150yr	27,713	1,420	58.29	63.66	61.70	2.64
27.713	200yr	27,713	1,530	58.29	63.84	61.83	2.73
27.885	50yr	27,885	1,230	58.44	63.45	62.08	3.03
27.885	80yr	27,885	1,310	58.44	63.60	62.18	3.11
27.885	100yr	27,885	1,350	58.44	63.67	62.23	3.14
27.885	150yr	27,885	1,420	58.44	63.79	62.32	3.20
27.885	200yr	27,885	1,530	58.44	63.97	62.45	3.30
28.095	50yr	28,095	1,230	58.45	63.94	62.24	2.46
28.095	80yr	28,095	1,310	58.45	64.10	62.36	2.51
28.095	100yr	28,095	1,350	58.45	64.17	62.41	2.53
28.095	150yr	28,095	1,420	58.45	64.31	62.50	2.56
28.095	200yr	28,095	1,530	58.45	64.51	62.62	2.62
28.295	50yr	28,295	1,230	58.90	64.26	62.35	2.02
28.295	80yr	28,295	1,310	58.90	64.43	62.43	2.04
28.295	100yr	28,295	1,350	58.90	64.50	62.47	2.06
28.295	150yr	28,295	1,420	58.90	64.64	62.57	2.08
28.295	200yr	28,295	1,530	58.90	64.84	62.78	2.12
28.495	50yr	28,495	1,230	60.30	64.45	63.27	2.31
28.495	80yr	28,495	1,310	60.30	64.60	63.35	2.33
28.495	100yr	28,495	1,350	60.30	64.70	63.38	2.31
28.495	150yr	28,495	1,420	60.30	64.84	63.45	2.30
28.495	200yr	28,495	1,530	60.30	65.03	63.54	2.30
28.602	50yr	28,602	1,230	60.02	64.68	62.94	1.86
28.602	80yr	28,602	1,310	60.02	64.83	63.02	1.87
28.602	100yr	28,602	1,350	60.02	64.94	63.06	1.85
28.602	150yr	28,602	1,420	60.02	65.07	63.12	1.86
28.602	200yr	28,602	1,530	60.02	65.24	63.25	1.89

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
28.605		Bridge					
28.609	50yr	28,609	1,230	60.02	64.71	62.95	1.84
28.609	80yr	28,609	1,310	60.02	64.86	63.02	1.85
28.609	100yr	28,609	1,350	60.02	64.97	63.06	1.84
28.609	150yr	28,609	1,420	60.02	65.09	63.12	1.85
28.609	200yr	28,609	1,530	60.02	65.26	63.24	1.88
28.673	50yr	28,673	1,230	60.59	64.68	62.87	2.54
28.673	80yr	28,673	1,310	60.59	64.82	62.97	2.58
28.673	100yr	28,673	1,350	60.59	64.93	63.02	2.57
28.673	150yr	28,673	1,420	60.59	65.05	63.10	2.60
28.673	200yr	28,673	1,530	60.59	65.21	63.23	2.66
28.674		Inline Weir					
28.675	50yr	28,675	1,230	60.59	64.90	62.88	2.37
28.675	80yr	28,675	1,310	60.59	65.03	62.97	2.42
28.675	100yr	28,675	1,350	60.59	65.12	63.02	2.42
28.675	150yr	28,675	1,420	60.59	65.23	63.10	2.45
28.675	200yr	28,675	1,530	60.59	65.39	63.23	2.51
28.690	50yr	28,690	1,230	60.58	64.80	63.55	3.03
28.690	80yr	28,690	1,310	60.58	64.93	63.65	3.07
28.690	100yr	28,690	1,350	60.58	65.02	63.71	3.06
28.690	150yr	28,690	1,420	60.58	65.13	63.79	3.09
28.690	200yr	28,690	1,530	60.58	65.29	63.92	3.16
28.895	50yr	28,895	1,230	60.30	65.39	63.48	2.81
28.895	80yr	28,895	1,310	60.30	65.51	63.61	2.86
28.895	100yr	28,895	1,350	60.30	65.58	63.67	2.88
28.895	150yr	28,895	1,420	60.30	65.67	63.78	2.93
28.895	200yr	28,895	1,530	60.30	65.82	63.94	3.00
29.090	50yr	29,090	1,230	58.95	65.67	63.75	3.60
29.090	80yr	29,090	1,310	58.95	65.78	63.98	3.73
29.090	100yr	29,090	1,350	58.95	65.83	64.08	3.79
29.090	150yr	29,090	1,420	58.95	65.91	64.28	3.91
29.090	200yr	29,090	1,530	58.95	66.03	64.51	4.09
29.285	50yr	29,285	1,230	60.76	66.41	65.17	2.67
29.285	80yr	29,285	1,310	60.76	66.56	65.28	2.70
29.285	100yr	29,285	1,350	60.76	66.63	65.33	2.73
29.285	150yr	29,285	1,420	60.76	66.75	65.40	2.76
29.285	200yr	29,285	1,530	60.76	66.94	65.53	2.80
29.495	50yr	29,495	1,230	61.18	66.71	64.93	2.97
29.495	80yr	29,495	1,310	61.18	66.84	65.06	3.06
29.495	100yr	29,495	1,350	61.18	66.90	65.11	3.10
29.495	150yr	29,495	1,420	61.18	67.02	65.21	3.17
29.495	200yr	29,495	1,530	61.18	67.19	65.36	3.28
29.680	50yr	29,680	1,230	61.25	67.11	65.48	2.51
29.680	80yr	29,680	1,310	61.25	67.26	65.60	2.56
29.680	100yr	29,680	1,350	61.25	67.33	65.66	2.59
29.680	150yr	29,680	1,420	61.25	67.45	65.75	2.63
29.680	200yr	29,680	1,530	61.25	67.65	65.86	2.70
29.776	50yr	29,776	1,230	61.95	67.29	65.20	2.25
29.776	80yr	29,776	1,310	61.95	67.44	65.30	2.29
29.776	100yr	29,776	1,350	61.95	67.51	65.34	2.32
29.776	150yr	29,776	1,420	61.95	67.64	65.42	2.36
29.776	200yr	29,776	1,530	61.95	67.84	65.56	2.42
29.780		Bridge					

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
29.783	50yr	29.783	1.230	61.95	67.33	65.20	2.22
29.783	80yr	29.783	1.310	61.95	67.48	65.30	2.27
29.783	100yr	29.783	1.350	61.95	67.55	65.34	2.29
29.783	150yr	29.783	1.420	61.95	67.68	65.43	2.33
29.783	200yr	29.783	1.530	61.95	67.88	65.54	2.39
29.895	50yr	29.895	1.230	62.12	67.32	65.82	3.06
29.895	80yr	29.895	1.310	62.12	67.46	65.99	3.14
29.895	100yr	29.895	1.350	62.12	67.52	66.04	3.18
29.895	150yr	29.895	1.420	62.12	67.64	66.14	3.25
29.895	200yr	29.895	1.530	62.12	67.82	66.27	3.35
30.105	50yr	30.105	1.230	61.83	67.70	66.58	3.20
30.105	80yr	30.105	1.310	61.83	67.84	66.68	3.27
30.105	100yr	30.105	1.350	61.83	67.91	66.73	3.30
30.105	150yr	30.105	1.420	61.83	68.03	66.82	3.35
30.105	200yr	30.105	1.530	61.83	68.22	66.95	3.43
30.290	50yr	30.290	1.140	63.57	68.27	66.42	2.34
30.290	80yr	30.290	1.210	63.57	68.44	66.51	2.35
30.290	100yr	30.290	1.250	63.57	68.51	66.56	2.38
30.290	150yr	30.290	1.310	63.57	68.64	66.65	2.40
30.290	200yr	30.290	1.410	63.57	68.85	66.77	2.43
30.340	50yr	30.340	1.140	63.12	68.27	66.30	2.71
30.340	80yr	30.340	1.210	63.12	68.42	66.41	2.78
30.340	100yr	30.340	1.250	63.12	68.49	66.46	2.83
30.340	150yr	30.340	1.310	63.12	68.61	66.55	2.88
30.340	200yr	30.340	1.410	63.12	68.80	66.69	2.98
30.345		Bridge					
30.350	50yr	30.350	1.140	63.12	68.37	66.30	2.65
30.350	80yr	30.350	1.210	63.12	68.53	66.40	2.71
30.350	100yr	30.350	1.250	63.12	68.61	66.46	2.75
30.350	150yr	30.350	1.310	63.12	68.70	66.54	2.83
30.350	200yr	30.350	1.410	63.12	68.89	66.68	2.93
30.388	50yr	30.388	1.140	64.64	68.28	67.27	3.39
30.388	80yr	30.388	1.210	64.64	68.46	67.41	3.36
30.388	100yr	30.388	1.250	64.64	68.54	67.49	3.37
30.388	150yr	30.388	1.310	64.64	68.64	67.70	3.41
30.388	200yr	30.388	1.410	64.64	68.85	67.97	3.41
30.389		Inline Weir					
30.390	50yr	30.390	1.140	64.64	68.86	67.27	2.76
30.390	80yr	30.390	1.210	64.64	68.96	67.39	2.83
30.390	100yr	30.390	1.250	64.64	69.01	67.48	2.87
30.390	150yr	30.390	1.310	64.64	69.10	67.70	2.92
30.390	200yr	30.390	1.410	64.64	69.24	67.97	3.00
30.480	50yr	30.480	1.140	63.90	69.00	67.28	2.85
30.480	80yr	30.480	1.210	63.90	69.11	67.48	2.93
30.480	100yr	30.480	1.250	63.90	69.17	67.61	2.98
30.480	150yr	30.480	1.310	63.90	69.25	67.78	3.04
30.480	200yr	30.480	1.410	63.90	69.40	68.03	3.14
30.680	50yr	30.680	1.140	64.55	69.35	68.12	2.98
30.680	80yr	30.680	1.210	64.55	69.46	68.21	3.06
30.680	100yr	30.680	1.250	64.55	69.52	68.27	3.11
30.680	150yr	30.680	1.310	64.55	69.62	68.36	3.17
30.680	200yr	30.680	1.410	64.55	69.76	68.50	3.28
30.880	50yr	30.880	1.140	64.00	69.79	67.52	2.66
30.880	80yr	30.880	1.210	64.00	69.92	67.66	2.72
30.880	100yr	30.880	1.250	64.00	69.99	67.71	2.75

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
30.880	150yr	30,880	1,310	64.00	70.08	67.82	2.81
30.880	200yr	30,880	1,410	64.00	70.24	67.98	2.89
31.070	50yr	31,070	1,140	64.12	70.03	68.33	3.18
31.070	80yr	31,070	1,210	64.12	70.17	68.62	3.23
31.070	100yr	31,070	1,250	64.12	70.25	68.68	3.26
31.070	150yr	31,070	1,310	64.12	70.34	68.79	3.32
31.070	200yr	31,070	1,410	64.12	70.50	68.95	3.40
31.290	50yr	31,290	1,140	65.08	70.59	69.11	2.75
31.290	80yr	31,290	1,210	65.08	70.74	69.20	2.80
31.290	100yr	31,290	1,250	65.08	70.81	69.25	2.84
31.290	150yr	31,290	1,310	65.08	70.91	69.33	2.90
31.290	200yr	31,290	1,410	65.08	71.07	69.46	2.99
31.465	50yr	31,465	1,050	65.71	70.93	68.92	2.37
31.465	80yr	31,465	1,110	65.71	71.08	69.02	2.39
31.465	100yr	31,465	1,150	65.71	71.16	69.07	2.42
31.465	150yr	31,465	1,200	65.71	71.27	69.14	2.45
31.465	200yr	31,465	1,300	65.71	71.45	69.27	2.52
31.470		Bridge					
31.475	50yr	31,475	1,050	65.71	71.10	68.92	2.25
31.475	80yr	31,475	1,110	65.71	71.22	69.00	2.30
31.475	100yr	31,475	1,150	65.71	71.29	69.06	2.33
31.475	150yr	31,475	1,200	65.71	71.39	69.12	2.36
31.475	200yr	31,475	1,300	65.71	71.55	69.25	2.45
31.675	50yr	31,675	1,050	65.15	71.29	69.41	2.27
31.675	80yr	31,675	1,110	65.15	71.41	69.47	2.32
31.675	100yr	31,675	1,150	65.15	71.48	69.52	2.36
31.675	150yr	31,675	1,200	65.15	71.58	69.60	2.40
31.675	200yr	31,675	1,300	65.15	71.74	69.70	2.50
31.880	50yr	31,880	1,050	65.57	71.48	69.07	2.65
31.880	80yr	31,880	1,110	65.57	71.60	69.20	2.72
31.880	100yr	31,880	1,150	65.57	71.67	69.28	2.77
31.880	150yr	31,880	1,200	65.57	71.77	69.38	2.82
31.880	200yr	31,880	1,300	65.57	71.93	69.58	2.94
32.085	50yr	32,085	1,050	65.86	71.73	69.94	2.96
32.085	80yr	32,085	1,110	65.86	71.85	70.02	3.04
32.085	100yr	32,085	1,150	65.86	71.92	70.09	3.10
32.085	150yr	32,085	1,200	65.86	72.02	70.18	3.16
32.085	200yr	32,085	1,300	65.86	72.19	70.34	3.29
32.285	50yr	32,285	1,050	66.49	72.23	70.03	1.81
32.285	80yr	32,285	1,110	66.49	72.37	70.10	1.84
32.285	100yr	32,285	1,150	66.49	72.46	70.14	1.87
32.285	150yr	32,285	1,200	66.49	72.58	70.19	1.90
32.285	200yr	32,285	1,300	66.49	72.79	70.30	1.95
32.485	50yr	32,485	1,050	66.68	72.38	70.56	1.79
32.485	80yr	32,485	1,110	66.68	72.53	70.62	1.80
32.485	100yr	32,485	1,150	66.68	72.62	70.66	1.81
32.485	150yr	32,485	1,200	66.68	72.73	70.71	1.83
32.485	200yr	32,485	1,300	66.68	72.95	70.81	1.86
32.680	50yr	32,680	1,050	66.78	72.54	69.69	1.61
32.680	80yr	32,680	1,110	66.78	72.68	69.76	1.65
32.680	100yr	32,680	1,150	66.78	72.77	69.79	1.67
32.680	150yr	32,680	1,200	66.78	72.89	69.86	1.69
32.680	200yr	32,680	1,300	66.78	73.11	69.98	1.74
32.698	50yr	32,698	1,050	68.87	72.51	70.63	1.94
32.698	80yr	32,698	1,110	68.87	72.65	70.70	1.96

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
32.698	100yr	32,698	1,150	68.87	72.75	70.74	1.98
32.698	150yr	32,698	1,200	68.87	72.86	70.80	2.00
32.698	200yr	32,698	1,300	68.87	73.08	70.90	2.03
32.699		Inline Weir					
32.700	50yr	32,700	1,050	69.62	72.73	71.39	2.23
32.700	80yr	32,700	1,110	69.62	72.81	71.46	2.28
32.700	100yr	32,700	1,150	69.62	72.88	71.50	2.31
32.700	150yr	32,700	1,200	69.62	72.96	71.56	2.34
32.700	200yr	32,700	1,300	69.62	73.14	71.66	2.39
32.885	50yr	32,885	1,050	67.53	72.94	71.46	2.73
32.885	80yr	32,885	1,110	67.53	73.03	71.54	2.81
32.885	100yr	32,885	1,150	67.53	73.09	71.60	2.86
32.885	150yr	32,885	1,200	67.53	73.17	71.66	2.93
32.885	200yr	32,885	1,300	67.53	73.33	71.80	3.03
33.075	50yr	33,075	1,050	68.74	73.40	72.00	2.11
33.075	80yr	33,075	1,110	68.74	73.51	72.08	2.15
33.075	100yr	33,075	1,150	68.74	73.57	72.10	2.17
33.075	150yr	33,075	1,200	68.74	73.67	72.15	2.20
33.075	200yr	33,075	1,300	68.74	73.86	72.26	2.24
33.270	50yr	33,270	1,050	69.18	73.60	72.69	3.04
33.270	80yr	33,270	1,110	69.18	73.70	72.77	3.10
33.270	100yr	33,270	1,150	69.18	73.76	72.82	3.14
33.270	150yr	33,270	1,200	69.18	73.84	72.89	3.19
33.270	200yr	33,270	1,300	69.18	74.01	73.00	3.27
33.311	50yr	33,311	1,050	69.77	73.80	72.67	2.72
33.311	80yr	33,311	1,110	69.77	73.89	72.74	2.79
33.311	100yr	33,311	1,150	69.77	73.96	72.79	2.83
33.311	150yr	33,311	1,200	69.77	74.05	72.85	2.87
33.311	200yr	33,311	1,300	69.77	74.22	72.97	2.96
33.315		Bridge					
33.319	50yr	33,319	1,050	69.77	73.87	72.65	2.66
33.319	80yr	33,319	1,110	69.77	73.96	72.73	2.73
33.319	100yr	33,319	1,150	69.77	74.03	72.78	2.77
33.319	150yr	33,319	1,200	69.77	74.12	72.84	2.81
33.319	200yr	33,319	1,300	69.77	74.29	72.95	2.89
33.510	50yr	33,510	630	70.04	74.36	72.39	1.34
33.510	80yr	33,510	670	70.04	74.47	72.44	1.38
33.510	100yr	33,510	690	70.04	74.55	72.46	1.38
33.510	150yr	33,510	730	70.04	74.65	72.53	1.42
33.510	200yr	33,510	780	70.04	74.84	72.58	1.43

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▶유등천 홍수위산정결과(개수후)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: YouDeung Reach: YouDeung

Rivers = 1
Hydraulic Reaches = 1
River Stations = 154
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		1,550	31.10	38.14	34.72	1.11
0.000	80yr		1,650	31.10	38.14	34.82	1.18
0.000	100yr		1,700	31.10	38.14	34.85	1.22
0.000	150yr		1,790	31.10	38.14	34.93	1.29
0.000	200yr		1,920	31.10	38.14	35.09	1.38
0.003		Bridge					
0.005	50yr	5	1,550	31.10	38.15	34.72	1.11
0.005	80yr	5	1,650	31.10	38.15	34.82	1.18
0.005	100yr	5	1,700	31.10	38.15	34.85	1.22
0.005	150yr	5	1,790	31.10	38.15	34.93	1.28
0.005	200yr	5	1,920	31.10	38.15	35.09	1.37
0.070	50yr	70	1,550	31.13	38.16	34.81	1.18
0.070	80yr	70	1,650	31.13	38.16	34.92	1.26
0.070	100yr	70	1,700	31.13	38.16	35.32	1.29
0.070	150yr	70	1,790	31.13	38.16	35.39	1.36
0.070	200yr	70	1,920	31.13	38.16	35.46	1.46
0.280	50yr	280	1,550	32.51	38.18	35.06	1.45
0.280	80yr	280	1,650	32.51	38.19	35.15	1.54
0.280	100yr	280	1,700	32.51	38.19	35.19	1.58
0.280	150yr	280	1,790	32.51	38.19	35.32	1.67
0.280	200yr	280	1,920	32.51	38.20	35.49	1.78
0.480	50yr	480	1,550	32.44	38.26	35.14	1.28
0.480	80yr	480	1,650	32.44	38.27	35.23	1.36
0.480	100yr	480	1,700	32.44	38.28	35.32	1.40
0.480	150yr	480	1,790	32.44	38.29	35.66	1.47
0.480	200yr	480	1,920	32.44	38.31	35.82	1.56
0.675	50yr	675	1,550	33.24	38.30	36.03	1.37
0.675	80yr	675	1,650	33.24	38.32	36.10	1.45
0.675	100yr	675	1,700	33.24	38.33	36.13	1.48
0.675	150yr	675	1,790	33.24	38.35	36.17	1.56
0.675	200yr	675	1,920	33.24	38.38	36.25	1.65
0.895	50yr	895	1,550	33.39	38.37	36.18	1.41
0.895	80yr	895	1,650	33.39	38.39	36.27	1.49
0.895	100yr	895	1,700	33.39	38.41	36.32	1.52
0.895	150yr	895	1,790	33.39	38.43	36.39	1.59
0.895	200yr	895	1,920	33.39	38.47	36.49	1.69
1.055	50yr	1,055	1,550	33.76	38.40	36.25	1.67
1.055	80yr	1,055	1,650	33.76	38.44	36.32	1.76
1.055	100yr	1,055	1,700	33.76	38.45	36.37	1.80
1.055	150yr	1,055	1,790	33.76	38.48	36.42	1.88
1.055	200yr	1,055	1,920	33.76	38.52	36.82	1.99
1.245	50yr	1,245	1,550	34.09	38.51	36.59	1.59
1.245	80yr	1,245	1,650	34.09	38.55	36.66	1.67
1.245	100yr	1,245	1,700	34.09	38.57	36.69	1.71
1.245	150yr	1,245	1,790	34.09	38.61	36.75	1.78
1.245	200yr	1,245	1,920	34.09	38.67	36.84	1.88

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
1.445	50yr	1,445	1,550	34.36	38.59	36.95	1.86
1.445	80yr	1,445	1,650	34.36	38.64	37.02	1.95
1.445	100yr	1,445	1,700	34.36	38.67	37.05	1.99
1.445	150yr	1,445	1,790	34.36	38.71	37.12	2.06
1.445	200yr	1,445	1,920	34.36	38.78	37.20	2.16
1.635	50yr	1,635	1,550	34.28	38.72	37.27	2.02
1.635	80yr	1,635	1,650	34.28	38.78	37.34	2.11
1.635	100yr	1,635	1,700	34.28	38.81	37.38	2.15
1.635	150yr	1,635	1,790	34.28	38.86	37.44	2.22
1.635	200yr	1,635	1,920	34.28	38.94	37.52	2.32
1.823	50yr	1,823	1,550	34.55	38.91	37.33	1.90
1.823	80yr	1,823	1,650	34.55	38.98	37.39	1.97
1.823	100yr	1,823	1,700	34.55	39.01	37.43	2.01
1.823	150yr	1,823	1,790	34.55	39.07	37.49	2.07
1.823	200yr	1,823	1,920	34.55	39.17	37.57	2.15
1.860		Bridge					
1.870	50yr	1,870	1,550	34.55	38.98	37.33	1.85
1.870	80yr	1,870	1,650	34.55	39.05	37.39	1.92
1.870	100yr	1,870	1,700	34.55	39.09	37.43	1.95
1.870	150yr	1,870	1,790	34.55	39.16	37.48	2.01
1.870	200yr	1,870	1,920	34.55	39.25	37.57	2.09
1.880	50yr	1,880	1,550	34.56	39.00	37.04	1.75
1.880	80yr	1,880	1,650	34.56	39.08	37.11	1.82
1.880	100yr	1,880	1,700	34.56	39.12	37.14	1.85
1.880	150yr	1,880	1,790	34.56	39.19	37.20	1.91
1.880	200yr	1,880	1,920	34.56	39.28	37.28	1.99
2.090	50yr	2,090	1,550	35.04	39.11	37.39	1.90
2.090	80yr	2,090	1,650	35.04	39.19	37.47	1.97
2.090	100yr	2,090	1,700	35.04	39.23	37.50	2.00
2.090	150yr	2,090	1,790	35.04	39.30	37.56	2.06
2.090	200yr	2,090	1,920	35.04	39.41	37.65	2.15
2.300	50yr	2,300	1,550	34.90	39.26	37.45	1.82
2.300	80yr	2,300	1,650	34.90	39.34	37.52	1.89
2.300	100yr	2,300	1,700	34.90	39.39	37.55	1.92
2.300	150yr	2,300	1,790	34.90	39.47	37.61	1.98
2.300	200yr	2,300	1,920	34.90	39.58	37.70	2.05
2.303	50yr	2,303	1,550	34.86	39.28	37.22	1.73
2.303	80yr	2,303	1,650	34.86	39.37	37.32	1.79
2.303	100yr	2,303	1,700	34.86	39.41	37.36	1.82
2.303	150yr	2,303	1,790	34.86	39.49	37.43	1.88
2.303	200yr	2,303	1,920	34.86	39.61	37.51	1.95
2.305		Bridge					
2.310	50yr	2,310	1,550	34.86	39.30	37.22	1.71
2.310	80yr	2,310	1,650	34.86	39.39	37.32	1.78
2.310	100yr	2,310	1,700	34.86	39.44	37.36	1.81
2.310	150yr	2,310	1,790	34.86	39.52	37.43	1.86
2.310	200yr	2,310	1,920	34.86	39.64	37.51	1.93
2.480	50yr	2,480	1,550	35.28	39.36	38.04	2.15
2.480	80yr	2,480	1,650	35.28	39.45	38.11	2.22
2.480	100yr	2,480	1,700	35.28	39.49	38.15	2.25
2.480	150yr	2,480	1,790	35.28	39.58	38.21	2.30
2.480	200yr	2,480	1,920	35.28	39.70	38.29	2.37
2.640	50yr	2,640	1,550	35.99	39.45	38.58	2.87
2.640	80yr	2,640	1,650	35.99	39.54	38.67	2.94

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
2.640	100yr	2,640	1,700	35.99	39.59	38.71	2.98
2.640	150yr	2,640	1,790	35.99	39.67	38.79	3.03
2.640	200yr	2,640	1,920	35.99	39.80	38.90	3.10
2.777	50yr	2,777	1,060	35.28	39.84	38.63	2.37
2.777	80yr	2,777	1,130	35.28	39.94	38.71	2.44
2.777	100yr	2,777	1,160	35.28	39.99	38.73	2.46
2.777	150yr	2,777	1,220	35.28	40.08	38.80	2.51
2.777	200yr	2,777	1,310	35.28	40.21	38.89	2.58
2.790		Bridge					
2.803	50yr	2,803	1,060	35.28	39.90	38.64	2.31
2.803	80yr	2,803	1,130	35.28	40.01	38.70	2.38
2.803	100yr	2,803	1,160	35.28	40.06	38.73	2.40
2.803	150yr	2,803	1,220	35.28	40.15	38.80	2.45
2.803	200yr	2,803	1,310	35.28	40.28	38.89	2.53
2.820	50yr	2,820	1,060	35.80	39.84	39.02	2.83
2.820	80yr	2,820	1,130	35.80	39.94	39.09	2.89
2.820	100yr	2,820	1,160	35.80	39.99	39.13	2.91
2.820	150yr	2,820	1,220	35.80	40.08	39.19	2.96
2.820	200yr	2,820	1,310	35.80	40.21	39.29	3.04
3.015	50yr	3,015	1,060	35.73	40.37	39.47	2.43
3.015	80yr	3,015	1,130	35.73	40.47	39.56	2.47
3.015	100yr	3,015	1,160	35.73	40.52	39.59	2.48
3.015	150yr	3,015	1,220	35.73	40.61	39.65	2.51
3.015	200yr	3,015	1,310	35.73	40.75	39.73	2.56
3.215	50yr	3,215	1,060	36.10	40.78	39.69	2.08
3.215	80yr	3,215	1,130	36.10	40.88	39.76	2.12
3.215	100yr	3,215	1,160	36.10	40.93	39.79	2.14
3.215	150yr	3,215	1,220	36.10	41.01	39.85	2.17
3.215	200yr	3,215	1,310	36.10	41.14	39.93	2.22
3.242	50yr	3,242	1,060	36.16	40.81	39.87	2.15
3.242	80yr	3,242	1,130	36.16	40.91	39.92	2.19
3.242	100yr	3,242	1,160	36.16	40.96	39.96	2.20
3.242	150yr	3,242	1,220	36.16	41.04	40.01	2.23
3.242	200yr	3,242	1,310	36.16	41.17	40.08	2.28
3.255		Bridge					
3.268	50yr	3,268	1,060	36.16	40.89	39.87	2.07
3.268	80yr	3,268	1,130	36.16	40.99	39.92	2.11
3.268	100yr	3,268	1,160	36.16	41.04	39.96	2.13
3.268	150yr	3,268	1,220	36.16	41.12	40.01	2.16
3.268	200yr	3,268	1,310	36.16	41.25	40.08	2.21
3.415	50yr	3,415	1,060	37.32	41.07	40.22	2.44
3.415	80yr	3,415	1,130	37.32	41.17	40.29	2.50
3.415	100yr	3,415	1,160	37.32	41.21	40.32	2.52
3.415	150yr	3,415	1,220	37.32	41.29	40.38	2.56
3.415	200yr	3,415	1,310	37.32	41.41	40.45	2.63
3.615	50yr	3,615	1,060	36.70	41.44	40.70	2.85
3.615	80yr	3,615	1,130	36.70	41.53	40.79	2.92
3.615	100yr	3,615	1,160	36.70	41.57	40.83	2.95
3.615	150yr	3,615	1,220	36.70	41.65	40.91	3.01
3.615	200yr	3,615	1,310	36.70	41.76	41.01	3.09
3.805	50yr	3,805	1,060	37.52	41.93	40.93	2.61
3.805	80yr	3,805	1,130	37.52	42.02	41.01	2.68
3.805	100yr	3,805	1,160	37.52	42.06	41.04	2.71
3.805	150yr	3,805	1,220	37.52	42.14	41.11	2.77
3.805	200yr	3,805	1,310	37.52	42.26	41.21	2.86

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
4.005	50yr	4,005	1,060	37.86	42.29	41.37	2.73
4.005	80yr	4,005	1,130	37.86	42.39	41.45	2.80
4.005	100yr	4,005	1,160	37.86	42.43	41.48	2.83
4.005	150yr	4,005	1,220	37.86	42.51	41.54	2.89
4.005	200yr	4,005	1,310	37.86	42.63	41.64	2.97
4.205	50yr	4,205	1,060	38.35	42.69	41.78	2.78
4.205	80yr	4,205	1,130	38.35	42.79	41.86	2.85
4.205	100yr	4,205	1,160	38.35	42.83	41.89	2.88
4.205	150yr	4,205	1,220	38.35	42.92	41.96	2.94
4.205	200yr	4,205	1,310	38.35	43.04	42.06	3.03
4.400	50yr	4,400	1,060	38.96	43.11	42.26	2.74
4.400	80yr	4,400	1,130	38.96	43.22	42.34	2.80
4.400	100yr	4,400	1,160	38.96	43.26	42.37	2.83
4.400	150yr	4,400	1,220	38.96	43.35	42.43	2.88
4.400	200yr	4,400	1,310	38.96	43.48	42.52	2.95
4.456	50yr	4,456	1,060	39.18	43.24	41.81	2.75
4.456	80yr	4,456	1,130	39.18	43.34	41.92	2.81
4.456	100yr	4,456	1,160	39.18	43.39	42.55	2.83
4.456	150yr	4,456	1,220	39.18	43.48	42.65	2.88
4.456	200yr	4,456	1,310	39.18	43.60	42.74	2.94
4.458		Inline Weir					
4.460	50yr	4,460	1,060	39.18	44.18	41.81	1.96
4.460	80yr	4,460	1,130	39.18	44.27	41.92	2.04
4.460	100yr	4,460	1,160	39.18	44.31	42.55	2.07
4.460	150yr	4,460	1,220	39.18	44.39	42.65	2.12
4.460	200yr	4,460	1,310	39.18	44.51	42.75	2.21
4.482	50yr	4,482	1,060	40.23	44.20	42.59	1.98
4.482	80yr	4,482	1,130	40.23	44.29	42.65	2.05
4.482	100yr	4,482	1,160	40.23	44.33	42.68	2.08
4.482	150yr	4,482	1,220	40.23	44.41	42.74	2.14
4.482	200yr	4,482	1,310	40.23	44.53	42.83	2.22
4.500		Bridge					
4.518	50yr	4,518	1,060	40.23	44.25	42.59	1.95
4.518	80yr	4,518	1,130	40.23	44.35	42.65	2.02
4.518	100yr	4,518	1,160	40.23	44.39	42.68	2.04
4.518	150yr	4,518	1,220	40.23	44.48	42.74	2.10
4.518	200yr	4,518	1,310	40.23	44.60	42.83	2.18
4.600	50yr	4,600	1,060	41.07	44.16	43.69	3.14
4.600	80yr	4,600	1,130	41.07	44.26	43.76	3.19
4.600	100yr	4,600	1,160	41.07	44.30	43.79	3.22
4.600	150yr	4,600	1,220	41.07	44.38	43.86	3.26
4.600	200yr	4,600	1,310	41.07	44.50	43.95	3.33
4.800	50yr	4,800	1,060	41.61	44.85	44.17	2.93
4.800	80yr	4,800	1,130	41.61	44.94	44.25	3.01
4.800	100yr	4,800	1,160	41.61	44.98	44.28	3.04
4.800	150yr	4,800	1,220	41.61	45.05	44.34	3.11
4.800	200yr	4,800	1,310	41.61	45.15	44.43	3.21
5.000	50yr	5,000	1,060	41.51	45.39	44.23	2.43
5.000	80yr	5,000	1,130	41.51	45.49	44.31	2.50
5.000	100yr	5,000	1,160	41.51	45.53	44.34	2.53
5.000	150yr	5,000	1,220	41.51	45.61	44.40	2.59
5.000	200yr	5,000	1,310	41.51	45.73	44.49	2.67
5.200	50yr	5,200	1,060	41.79	45.68	44.56	2.44
5.200	80yr	5,200	1,130	41.79	45.79	44.63	2.51

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
5.200	100yr	5.200	1.160	41.79	45.83	44.67	2.54
5.200	150yr	5.200	1.220	41.79	45.92	44.73	2.59
5.200	200yr	5.200	1.310	41.79	46.04	44.82	2.67
5.395	50yr	5.395	1.060	42.24	45.99	45.03	2.56
5.395	80yr	5.395	1.130	42.24	46.09	45.10	2.62
5.395	100yr	5.395	1.160	42.24	46.14	45.13	2.65
5.395	150yr	5.395	1.220	42.24	46.22	45.19	2.70
5.395	200yr	5.395	1.310	42.24	46.35	45.28	2.77
5.562	50yr	5.562	1.060	42.62	46.35	45.26	2.16
5.562	80yr	5.562	1.130	42.62	46.46	45.32	2.21
5.562	100yr	5.562	1.160	42.62	46.51	45.35	2.23
5.562	150yr	5.562	1.220	42.62	46.60	45.40	2.27
5.562	200yr	5.562	1.310	42.62	46.73	45.48	2.32
5.575		Bridge					
5.588	50yr	5.588	1.060	42.62	46.42	45.26	2.11
5.588	80yr	5.588	1.130	42.62	46.53	45.32	2.15
5.588	100yr	5.588	1.160	42.62	46.58	45.35	2.17
5.588	150yr	5.588	1.220	42.62	46.67	45.40	2.21
5.588	200yr	5.588	1.310	42.62	46.80	45.48	2.27
5.790	50yr	5.790	1.060	42.84	46.65	45.60	2.42
5.790	80yr	5.790	1.130	42.84	46.76	45.67	2.48
5.790	100yr	5.790	1.160	42.84	46.80	45.70	2.50
5.790	150yr	5.790	1.220	42.84	46.89	45.76	2.55
5.790	200yr	5.790	1.310	42.84	47.02	45.85	2.62
5.990	50yr	5.990	1.060	41.92	47.02	46.14	2.37
5.990	80yr	5.990	1.130	41.92	47.12	46.22	2.41
5.990	100yr	5.990	1.160	41.92	47.16	46.24	2.43
5.990	150yr	5.990	1.220	41.92	47.25	46.32	2.46
5.990	200yr	5.990	1.310	41.92	47.38	46.39	2.51
6.117	50yr	6.117	1.060	43.04	47.27	46.29	2.21
6.117	80yr	6.117	1.130	43.04	47.37	46.35	2.26
6.117	100yr	6.117	1.160	43.04	47.41	46.38	2.29
6.117	150yr	6.117	1.220	43.04	47.50	46.42	2.33
6.117	200yr	6.117	1.310	43.04	47.62	46.50	2.39
6.130		Bridge					
6.143	50yr	6.143	1.060	43.04	47.37	46.29	2.12
6.143	80yr	6.143	1.130	43.04	47.48	46.35	2.17
6.143	100yr	6.143	1.160	43.04	47.52	46.38	2.19
6.143	150yr	6.143	1.220	43.04	47.61	46.42	2.23
6.143	200yr	6.143	1.310	43.04	47.73	46.50	2.29
6.190	50yr	6.190	1.060	43.42	47.40	46.55	2.42
6.190	80yr	6.190	1.130	43.42	47.50	46.62	2.46
6.190	100yr	6.190	1.160	43.42	47.55	46.66	2.48
6.190	150yr	6.190	1.220	43.42	47.63	46.73	2.52
6.190	200yr	6.190	1.310	43.42	47.76	46.80	2.58
6.400	50yr	6.400	1.060	43.55	47.78	46.68	2.31
6.400	80yr	6.400	1.130	43.55	47.88	46.75	2.38
6.400	100yr	6.400	1.160	43.55	47.92	46.78	2.40
6.400	150yr	6.400	1.220	43.55	48.00	46.85	2.46
6.400	200yr	6.400	1.310	43.55	48.12	46.93	2.53
6.590	50yr	6.590	1.060	43.74	48.05	46.83	2.38
6.590	80yr	6.590	1.130	43.74	48.15	46.94	2.44
6.590	100yr	6.590	1.160	43.74	48.19	46.97	2.47
6.590	150yr	6.590	1.220	43.74	48.27	47.06	2.53
6.590	200yr	6.590	1.310	43.74	48.39	47.16	2.61

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
6.780	50yr	6.780	1.060	44.50	48.31	47.36	2.63
6.780	80yr	6.780	1.130	44.50	48.41	47.43	2.70
6.780	100yr	6.780	1.160	44.50	48.46	47.46	2.73
6.780	150yr	6.780	1.220	44.50	48.54	47.53	2.78
6.780	200yr	6.780	1.310	44.50	48.66	47.62	2.87
6.952	50yr	6.952	1.060	44.97	48.63	47.93	3.14
6.952	80yr	6.952	1.130	44.97	48.73	48.04	3.20
6.952	100yr	6.952	1.160	44.97	48.77	48.08	3.23
6.952	150yr	6.952	1.220	44.97	48.86	48.17	3.28
6.952	200yr	6.952	1.310	44.97	48.97	48.29	3.36
6.956		Inline Weir					
6.960	50yr	6.960	1.060	44.97	48.82	47.92	2.89
6.960	80yr	6.960	1.130	44.97	48.93	48.03	2.95
6.960	100yr	6.960	1.160	44.97	48.97	48.08	2.98
6.960	150yr	6.960	1.220	44.97	49.06	48.17	3.03
6.960	200yr	6.960	1.310	44.97	49.18	48.29	3.10
6.980	50yr	6.980	1.060	45.42	48.61	48.61	4.22
6.980	80yr	6.980	1.130	45.42	48.71	48.71	4.26
6.980	100yr	6.980	1.160	45.42	48.75	48.75	4.29
6.980	150yr	6.980	1.220	45.42	48.82	48.82	4.33
6.980	200yr	6.980	1.310	45.42	48.93	48.93	4.40
6.995	50yr	6.995	930	45.26	49.35	48.11	2.34
6.995	80yr	6.995	990	45.26	49.46	48.20	2.39
6.995	100yr	6.995	1.020	45.26	49.50	48.24	2.42
6.995	150yr	6.995	1.070	45.26	49.58	48.30	2.46
6.995	200yr	6.995	1.150	45.26	49.71	48.46	2.52
7.010		Bridge					
7.025	50yr	7.025	930	45.26	49.45	48.11	2.25
7.025	80yr	7.025	990	45.26	49.55	48.20	2.30
7.025	100yr	7.025	1.020	45.26	49.59	48.24	2.33
7.025	150yr	7.025	1.070	45.26	49.68	48.30	2.37
7.025	200yr	7.025	1.150	45.26	49.81	48.47	2.43
7.195	50yr	7.195	930	44.96	49.72	48.77	2.20
7.195	80yr	7.195	990	44.96	49.82	48.84	2.24
7.195	100yr	7.195	1.020	44.96	49.87	48.89	2.26
7.195	150yr	7.195	1.070	44.96	49.95	48.94	2.29
7.195	200yr	7.195	1.150	44.96	50.08	49.01	2.34
7.385	50yr	7.385	930	46.58	50.02	49.30	2.66
7.385	80yr	7.385	990	46.58	50.12	49.38	2.70
7.385	100yr	7.385	1.020	46.58	50.16	49.41	2.73
7.385	150yr	7.385	1.070	46.58	50.23	49.47	2.77
7.385	200yr	7.385	1.150	46.58	50.35	49.57	2.82
7.562	50yr	7.562	930	46.38	50.48	49.79	2.55
7.562	80yr	7.562	990	46.38	50.58	49.86	2.60
7.562	100yr	7.562	1.020	46.38	50.62	49.89	2.63
7.562	150yr	7.562	1.070	46.38	50.69	49.94	2.67
7.562	200yr	7.562	1.150	46.38	50.80	50.01	2.74
7.575		Bridge					
7.588	50yr	7.588	930	46.38	50.61	49.79	2.40
7.588	80yr	7.588	990	46.38	50.70	49.86	2.45
7.588	100yr	7.588	1.020	46.38	50.75	49.89	2.48
7.588	150yr	7.588	1.070	46.38	50.82	49.94	2.53
7.588	200yr	7.588	1.150	46.38	50.93	50.01	2.60

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
7.790	50yr	7.790	930	46.74	50.97	49.86	2.55
7.790	80yr	7.790	990	46.74	51.06	49.99	2.62
7.790	100yr	7.790	1,020	46.74	51.10	50.05	2.66
7.790	150yr	7.790	1,070	46.74	51.17	50.15	2.72
7.790	200yr	7.790	1,150	46.74	51.28	50.28	2.80
7.817	50yr	7.817	930	47.30	50.95	50.27	3.00
7.817	80yr	7.817	990	47.30	51.04	50.35	3.07
7.817	100yr	7.817	1,020	47.30	51.08	50.39	3.11
7.817	150yr	7.817	1,070	47.30	51.15	50.46	3.17
7.817	200yr	7.817	1,150	47.30	51.26	50.56	3.26
7.820		Bridge					
7.823	50yr	7.823	930	47.30	51.47	50.27	2.42
7.823	80yr	7.823	990	47.30	51.59	50.35	2.47
7.823	100yr	7.823	1,020	47.30	51.64	50.39	2.49
7.823	150yr	7.823	1,070	47.30	51.73	50.45	2.53
7.823	200yr	7.823	1,150	47.30	51.87	50.56	2.59
7.827	50yr	7.827	930	47.32	51.48	50.27	2.45
7.827	80yr	7.827	990	47.32	51.59	50.33	2.50
7.827	100yr	7.827	1,020	47.32	51.64	50.37	2.52
7.827	150yr	7.827	1,070	47.32	51.73	50.47	2.56
7.827	200yr	7.827	1,150	47.32	51.87	50.57	2.62
7.830		Bridge					
7.833	50yr	7.833	930	47.32	51.59	50.27	2.35
7.833	80yr	7.833	990	47.32	51.71	50.33	2.39
7.833	100yr	7.833	1,020	47.32	51.76	50.37	2.42
7.833	150yr	7.833	1,070	47.32	51.86	50.47	2.45
7.833	200yr	7.833	1,150	47.32	52.00	50.57	2.50
7.980	50yr	7.980	930	48.02	51.83	50.90	2.58
7.980	80yr	7.980	990	48.02	51.95	50.98	2.61
7.980	100yr	7.980	1,020	48.02	52.01	51.03	2.63
7.980	150yr	7.980	1,070	48.02	52.10	51.08	2.66
7.980	200yr	7.980	1,150	48.02	52.25	51.17	2.71
8.180	50yr	8.180	930	48.13	52.34	51.55	2.67
8.180	80yr	8.180	990	48.13	52.45	51.64	2.70
8.180	100yr	8.180	1,020	48.13	52.49	51.68	2.72
8.180	150yr	8.180	1,070	48.13	52.57	51.76	2.76
8.180	200yr	8.180	1,150	48.13	52.70	51.87	2.81
8.372	50yr	8.372	930	49.68	52.83	51.60	2.45
8.372	80yr	8.372	990	49.68	52.92	51.67	2.52
8.372	100yr	8.372	1,020	49.68	52.97	51.71	2.56
8.372	150yr	8.372	1,070	49.68	53.04	51.78	2.62
8.372	200yr	8.372	1,150	49.68	53.16	51.88	2.71
8.390		Bridge					
8.407	50yr	8.407	930	49.68	52.94	51.60	2.36
8.407	80yr	8.407	990	49.68	53.04	51.67	2.42
8.407	100yr	8.407	1,020	49.68	53.09	51.71	2.46
8.407	150yr	8.407	1,070	49.68	53.16	51.78	2.51
8.407	200yr	8.407	1,150	49.68	53.28	51.88	2.60
8.433	50yr	8.433	930	49.62	52.94	51.56	2.55
8.433	80yr	8.433	990	49.62	53.04	51.64	2.64
8.433	100yr	8.433	1,020	49.62	53.09	51.68	2.68
8.433	150yr	8.433	1,070	49.62	53.16	51.75	2.76
8.433	200yr	8.433	1,150	49.62	53.27	51.85	2.87
8.437		Inline Weir					

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
8.440	50yr	8,440	930	49.62	55.26	51.56	1.44
8.440	80yr	8,440	990	49.62	55.37	51.64	1.50
8.440	100yr	8,440	1,020	49.62	55.42	51.68	1.53
8.440	150yr	8,440	1,070	49.62	55.50	51.75	1.58
8.440	200yr	8,440	1,150	49.62	55.63	51.85	1.65
8.560	50yr	8,560	930	51.45	55.15	54.35	2.72
8.560	80yr	8,560	990	51.45	55.25	54.42	2.78
8.560	100yr	8,560	1,020	51.45	55.31	54.46	2.80
8.560	150yr	8,560	1,070	51.45	55.39	54.51	2.85
8.560	200yr	8,560	1,150	51.45	55.52	54.61	2.91
8.780	50yr	8,780	930	51.88	55.70	54.32	1.96
8.780	80yr	8,780	990	51.88	55.81	54.39	2.01
8.780	100yr	8,780	1,020	51.88	55.86	54.42	2.03
8.780	150yr	8,780	1,070	51.88	55.95	54.47	2.07
8.780	200yr	8,780	1,150	51.88	56.09	54.55	2.12
8.990	50yr	8,990	930	52.05	55.92	54.71	2.22
8.990	80yr	8,990	990	52.05	56.03	54.78	2.28
8.990	100yr	8,990	1,020	52.05	56.08	54.82	2.30
8.990	150yr	8,990	1,070	52.05	56.17	54.87	2.34
8.990	200yr	8,990	1,150	52.05	56.30	54.96	2.41
9.002	50yr	9,002	930	52.25	55.93	54.75	2.24
9.002	80yr	9,002	990	52.25	56.04	54.81	2.29
9.002	100yr	9,002	1,020	52.25	56.09	54.85	2.32
9.002	150yr	9,002	1,070	52.25	56.18	54.90	2.36
9.002	200yr	9,002	1,150	52.25	56.31	54.99	2.43
9.010		Bridge					
9.018	50yr	9,018	930	52.25	55.99	54.74	2.20
9.018	80yr	9,018	990	52.25	56.10	54.81	2.25
9.018	100yr	9,018	1,020	52.25	56.15	54.85	2.28
9.018	150yr	9,018	1,070	52.25	56.24	54.90	2.32
9.018	200yr	9,018	1,150	52.25	56.37	54.99	2.39
9.190	50yr	9,190	930	52.38	56.22	55.02	2.32
9.190	80yr	9,190	990	52.38	56.33	55.09	2.38
9.190	100yr	9,190	1,020	52.38	56.38	55.13	2.40
9.190	150yr	9,190	1,070	52.38	56.47	55.18	2.45
9.190	200yr	9,190	1,150	52.38	56.60	55.27	2.52
9.395	50yr	9,395	930	52.65	56.51	55.46	2.76
9.395	80yr	9,395	990	52.65	56.62	55.56	2.83
9.395	100yr	9,395	1,020	52.65	56.67	55.61	2.86
9.395	150yr	9,395	1,070	52.65	56.75	55.69	2.92
9.395	200yr	9,395	1,150	52.65	56.89	55.81	3.00
9.595	50yr	9,595	930	52.90	56.99	56.46	3.22
9.595	80yr	9,595	990	52.90	57.09	56.55	3.28
9.595	100yr	9,595	1,020	52.90	57.14	56.59	3.30
9.595	150yr	9,595	1,070	52.90	57.23	56.64	3.35
9.595	200yr	9,595	1,150	52.90	57.35	56.75	3.42
9.795	50yr	9,795	930	52.93	57.75	57.09	3.06
9.795	80yr	9,795	990	52.93	57.84	57.17	3.14
9.795	100yr	9,795	1,020	52.93	57.89	57.20	3.18
9.795	150yr	9,795	1,070	52.93	57.96	57.27	3.24
9.795	200yr	9,795	1,150	52.93	58.08	57.37	3.33
9.995	50yr	9,995	930	53.79	58.26	57.57	3.85
9.995	80yr	9,995	990	53.79	58.34	57.70	3.99
9.995	100yr	9,995	1,020	53.79	58.38	57.77	4.05
9.995	150yr	9,995	1,070	53.79	58.45	57.86	4.16

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
9.995	200yr	9.995	1.150	53.79	58.55	58.00	4.34
10.195	50yr	10.195	930	54.00	59.10	58.02	3.26
10.195	80yr	10.195	990	54.00	59.23	58.13	3.34
10.195	100yr	10.195	1.020	54.00	59.29	58.18	3.38
10.195	150yr	10.195	1.070	54.00	59.39	58.27	3.44
10.195	200yr	10.195	1.150	54.00	59.55	58.40	3.54
10.400	50yr	10.400	930	55.51	59.78	58.50	2.29
10.400	80yr	10.400	990	55.51	59.92	58.57	2.32
10.400	100yr	10.400	1.020	55.51	59.99	58.61	2.34
10.400	150yr	10.400	1.070	55.51	60.11	58.67	2.37
10.400	200yr	10.400	1.150	55.51	60.29	58.76	2.40
10.585	50yr	10.585	930	55.98	60.06	59.30	2.66
10.585	80yr	10.585	990	55.98	60.19	59.37	2.67
10.585	100yr	10.585	1.020	55.98	60.26	59.40	2.68
10.585	150yr	10.585	1.070	55.98	60.36	59.45	2.70
10.585	200yr	10.585	1.150	55.98	60.53	59.54	2.72
10.722	50yr	10.722	900	56.20	60.38	59.35	2.68
10.722	80yr	10.722	950	56.20	60.50	59.43	2.71
10.722	100yr	10.722	980	56.20	60.55	59.48	2.74
10.722	150yr	10.722	1.030	56.20	60.65	59.54	2.79
10.722	200yr	10.722	1.110	56.20	60.80	59.65	2.86
10.735		Bridge					
10.748	50yr	10.748	900	56.20	60.51	59.35	2.55
10.748	80yr	10.748	950	56.20	60.63	59.43	2.59
10.748	100yr	10.748	980	56.20	60.69	59.48	2.62
10.748	150yr	10.748	1.030	56.20	60.78	59.54	2.67
10.748	200yr	10.748	1.110	56.20	60.94	59.65	2.74
10.785	50yr	10.785	900	56.40	60.67	58.84	2.12
10.785	80yr	10.785	950	56.40	60.79	58.91	2.17
10.785	100yr	10.785	980	56.40	60.84	58.95	2.21
10.785	150yr	10.785	1.030	56.40	60.94	59.02	2.26
10.785	200yr	10.785	1.110	56.40	61.10	59.13	2.34
10.985	50yr	10.985	900	56.68	60.83	59.18	2.52
10.985	80yr	10.985	950	56.68	60.94	59.26	2.58
10.985	100yr	10.985	980	56.68	61.00	59.30	2.61
10.985	150yr	10.985	1.030	56.68	61.10	59.38	2.67
10.985	200yr	10.985	1.110	56.68	61.26	59.50	2.76
11.043	50yr	11.043	900	56.76	60.89	59.13	2.61
11.043	80yr	11.043	950	56.76	61.00	59.22	2.67
11.043	100yr	11.043	980	56.76	61.07	59.27	2.71
11.043	150yr	11.043	1.030	56.76	61.17	59.35	2.78
11.043	200yr	11.043	1.110	56.76	61.33	59.48	2.88
11.044		Inline Weir					
11.045	50yr	11.045	900	56.90	61.47	59.27	2.33
11.045	80yr	11.045	950	56.90	61.57	59.36	2.39
11.045	100yr	11.045	980	56.90	61.63	59.41	2.44
11.045	150yr	11.045	1.030	56.90	61.73	59.49	2.50
11.045	200yr	11.045	1.110	56.90	61.89	59.62	2.60
11.195	50yr	11.195	900	55.56	61.34	60.67	4.04
11.195	80yr	11.195	950	55.56	61.43	60.77	4.14
11.195	100yr	11.195	980	55.56	61.49	60.82	4.20
11.195	150yr	11.195	1.030	55.56	61.57	60.93	4.31
11.195	200yr	11.195	1.110	55.56	61.71	61.07	4.45
11.390	50yr	11.390	900	57.49	62.24	61.26	3.39

건설교통부

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
11.390	80yr	11,390	950	57.49	62.37	61.35	3.45
11.390	100yr	11,390	980	57.49	62.44	61.40	3.49
11.390	150yr	11,390	1,030	57.49	62.55	61.49	3.54
11.390	200yr	11,390	1,110	57.49	62.73	61.62	3.63
11.515	50yr	11,515	900	58.03	62.78	60.74	2.32
11.515	80yr	11,515	950	58.03	62.91	60.81	2.38
11.515	100yr	11,515	980	58.03	62.99	60.86	2.41
11.515	150yr	11,515	1,030	58.03	63.11	60.94	2.45
11.515	200yr	11,515	1,110	58.03	63.31	61.06	2.53
11.519	50yr	11,519	900	58.60	62.85	60.64	2.05
11.519	80yr	11,519	950	58.60	62.98	60.71	2.10
11.519	100yr	11,519	980	58.60	63.06	60.76	2.13
11.519	150yr	11,519	1,030	58.60	63.19	60.83	2.17
11.519	200yr	11,519	1,110	58.60	63.39	60.94	2.24
11.520		Bridge					
11.522	50yr	11,522	900	58.60	62.87	60.64	2.04
11.522	80yr	11,522	950	58.60	63.00	60.71	2.09
11.522	100yr	11,522	980	58.60	63.08	60.76	2.12
11.522	150yr	11,522	1,030	58.60	63.21	60.83	2.16
11.522	200yr	11,522	1,110	58.60	63.41	60.94	2.23
11.528	50yr	11,528	900	58.60	62.86	60.79	2.12
11.528	80yr	11,528	950	58.60	62.99	60.87	2.16
11.528	100yr	11,528	980	58.60	63.07	60.92	2.18
11.528	150yr	11,528	1,030	58.60	63.20	60.99	2.22
11.528	200yr	11,528	1,110	58.60	63.41	61.15	2.27
11.529		Inline Weir					
11.530	50yr	11,530	900	58.60	63.28	60.79	1.90
11.530	80yr	11,530	950	58.60	63.37	60.87	1.96
11.530	100yr	11,530	980	58.60	63.43	60.92	1.99
11.530	150yr	11,530	1,030	58.60	63.52	60.99	2.05
11.530	200yr	11,530	1,110	58.60	63.67	61.15	2.12
11.790	50yr	11,790	900	57.63	63.36	61.25	2.79
11.790	80yr	11,790	950	57.63	63.46	61.35	2.88
11.790	100yr	11,790	980	57.63	63.53	61.41	2.93
11.790	150yr	11,790	1,030	57.63	63.62	61.50	3.02
11.790	200yr	11,790	1,110	57.63	63.76	61.66	3.16
11.960	50yr	11,960	900	58.35	63.56	62.49	3.29
11.960	80yr	11,960	950	58.35	63.67	62.57	3.35
11.960	100yr	11,960	980	58.35	63.75	62.63	3.37
11.960	150yr	11,960	1,030	58.35	63.85	62.73	3.42
11.960	200yr	11,960	1,110	58.35	64.02	62.89	3.50
12.180	50yr	12,180	900	60.30	64.35	63.15	2.40
12.180	80yr	12,180	950	60.30	64.47	63.22	2.41
12.180	100yr	12,180	980	60.30	64.55	63.26	2.42
12.180	150yr	12,180	1,030	60.30	64.66	63.33	2.43
12.180	200yr	12,180	1,110	60.30	64.84	63.44	2.46
12.370	50yr	12,370	900	60.15	64.75	63.37	2.16
12.370	80yr	12,370	950	60.15	64.86	63.43	2.18
12.370	100yr	12,370	980	60.15	64.92	63.47	2.19
12.370	150yr	12,370	1,030	60.15	65.02	63.53	2.22
12.370	200yr	12,370	1,110	60.15	65.19	63.64	2.25
12.575	50yr	12,575	900	60.34	64.96	64.71	3.93
12.575	80yr	12,575	950	60.34	65.05	64.79	3.98
12.575	100yr	12,575	980	60.34	65.10	64.86	4.01
12.575	150yr	12,575	1,030	60.34	65.17	64.96	4.07

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
12.575	200yr	12,575	1,110	60.34	65.30	65.07	4.15
12.780	50yr	12,780	900	60.69	66.24	64.72	2.42
12.780	80yr	12,780	950	60.69	66.34	64.81	2.45
12.780	100yr	12,780	980	60.69	66.39	64.86	2.47
12.780	150yr	12,780	1,030	60.69	66.49	64.93	2.49
12.780	200yr	12,780	1,110	60.69	66.62	65.31	2.54
12.970	50yr	12,970	900	61.85	66.69	65.41	2.29
12.970	80yr	12,970	950	61.85	66.78	65.47	2.32
12.970	100yr	12,970	980	61.85	66.83	65.52	2.34
12.970	150yr	12,970	1,030	61.85	66.92	65.58	2.37
12.970	200yr	12,970	1,110	61.85	67.05	65.70	2.42
13.180	50yr	13,180	900	62.95	66.93	66.57	4.10
13.180	80yr	13,180	950	62.95	66.99	66.67	4.22
13.180	100yr	13,180	980	62.95	67.03	66.72	4.30
13.180	150yr	13,180	1,030	62.95	67.08	66.79	4.43
13.180	200yr	13,180	1,110	62.95	67.15	66.93	4.64
13.225	50yr	13,225	900	63.23	67.56	66.13	2.75
13.225	80yr	13,225	950	63.23	67.67	66.21	2.82
13.225	100yr	13,225	980	63.23	67.73	66.26	2.86
13.225	150yr	13,225	1,030	63.23	67.82	66.34	2.93
13.225	200yr	13,225	1,110	63.23	67.98	66.46	3.03
13.230		Bridge					
13.236	50yr	13,236	900	63.23	67.63	66.13	2.71
13.236	80yr	13,236	950	63.23	67.73	66.21	2.77
13.236	100yr	13,236	980	63.23	67.80	66.26	2.81
13.236	150yr	13,236	1,030	63.23	67.90	66.34	2.87
13.236	200yr	13,236	1,110	63.23	68.06	66.46	2.97
13.262	50yr	13,262	900	63.50	67.67	66.27	2.71
13.262	80yr	13,262	950	63.50	67.79	66.35	2.74
13.262	100yr	13,262	980	63.50	67.87	66.40	2.75
13.262	150yr	13,262	1,030	63.50	67.98	66.48	2.77
13.262	200yr	13,262	1,110	63.50	68.16	66.60	2.80
13.275		Bridge					
13.287	50yr	13,287	900	63.50	67.81	66.27	2.58
13.287	80yr	13,287	950	63.50	67.93	66.35	2.60
13.287	100yr	13,287	980	63.50	68.01	66.40	2.61
13.287	150yr	13,287	1,030	63.50	68.12	66.48	2.64
13.287	200yr	13,287	1,110	63.50	68.30	66.60	2.67
13.370	50yr	13,370	900	63.80	67.90	66.99	3.12
13.370	80yr	13,370	950	63.80	68.02	67.07	3.15
13.370	100yr	13,370	980	63.80	68.09	67.13	3.16
13.370	150yr	13,370	1,030	63.80	68.20	67.20	3.21
13.370	200yr	13,370	1,110	63.80	68.36	67.33	3.27
13.570	50yr	13,570	900	63.13	68.56	67.77	3.14
13.570	80yr	13,570	950	63.13	68.66	67.84	3.20
13.570	100yr	13,570	980	63.13	68.72	67.88	3.23
13.570	150yr	13,570	1,030	63.13	68.82	67.95	3.29
13.570	200yr	13,570	1,110	63.13	68.96	68.05	3.37
13.750	50yr	13,750	900	64.13	69.08	67.83	3.20
13.750	80yr	13,750	950	64.13	69.17	67.93	3.28
13.750	100yr	13,750	980	64.13	69.23	68.00	3.33
13.750	150yr	13,750	1,030	64.13	69.33	68.09	3.40
13.750	200yr	13,750	1,110	64.13	69.47	68.24	3.51
14.030	50yr	14,030	900	64.81	69.94	68.95	2.84

건설교통부

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
14.030	80yr	14.030	950	64.81	70.06	69.07	2.87
14.030	100yr	14.030	980	64.81	70.12	69.12	2.89
14.030	150yr	14.030	1.030	64.81	70.23	69.18	2.93
14.030	200yr	14.030	1.110	64.81	70.40	69.30	2.98
14.190	50yr	14.190	800	65.91	70.46	68.99	2.16
14.190	80yr	14.190	850	65.91	70.57	69.07	2.21
14.190	100yr	14.190	880	65.91	70.63	69.21	2.24
14.190	150yr	14.190	920	65.91	70.74	69.26	2.26
14.190	200yr	14.190	1.000	65.91	70.90	69.42	2.33
14.241	50yr	14.241	800	67.27	70.33	69.61	3.41
14.241	80yr	14.241	850	67.27	70.43	69.71	3.50
14.241	100yr	14.241	880	67.27	70.49	69.76	3.54
14.241	150yr	14.241	920	67.27	70.60	69.83	3.54
14.241	200yr	14.241	1.000	67.27	70.75	69.97	3.63
14.243		Inline Weir					
14.245	50yr	14.245	800	67.27	70.63	69.61	3.05
14.245	80yr	14.245	850	67.27	70.73	69.71	3.11
14.245	100yr	14.245	880	67.27	70.80	69.76	3.14
14.245	150yr	14.245	920	67.27	70.88	69.83	3.18
14.245	200yr	14.245	1.000	67.27	71.04	69.97	3.27
14.390	50yr	14.390	800	65.46	71.15	70.19	2.79
14.390	80yr	14.390	850	65.46	71.26	70.27	2.85
14.390	100yr	14.390	880	65.46	71.32	70.32	2.89
14.390	150yr	14.390	920	65.46	71.40	70.37	2.94
14.390	200yr	14.390	1.000	65.46	71.55	70.49	3.05
14.555	50yr	14.555	800	66.50	71.58	70.15	2.90
14.555	80yr	14.555	850	66.50	71.68	70.26	2.97
14.555	100yr	14.555	880	66.50	71.75	70.32	3.01
14.555	150yr	14.555	920	66.50	71.83	70.39	3.06
14.555	200yr	14.555	1.000	66.50	71.98	70.55	3.17
14.584	50yr	14.584	800	68.24	71.50	71.12	3.70
14.584	80yr	14.584	850	68.24	71.61	71.21	3.76
14.584	100yr	14.584	880	68.24	71.67	71.26	3.80
14.584	150yr	14.584	920	68.24	71.74	71.33	3.85
14.584	200yr	14.584	1.000	68.24	71.89	71.46	3.95
14.590		Bridge					
14.595	50yr	14.595	800	68.24	71.79	71.11	3.28
14.595	80yr	14.595	850	68.24	71.90	71.20	3.35
14.595	100yr	14.595	880	68.24	71.96	71.26	3.39
14.595	150yr	14.595	920	68.24	72.04	71.33	3.44
14.595	200yr	14.595	1.000	68.24	72.20	71.46	3.53
14.800	50yr	14.800	800	68.37	72.57	71.17	2.28
14.800	80yr	14.800	850	68.37	72.68	71.24	2.34
14.800	100yr	14.800	880	68.37	72.75	71.28	2.37
14.800	150yr	14.800	920	68.37	72.84	71.34	2.41
14.800	200yr	14.800	1.000	68.37	73.02	71.45	2.48
14.958	50yr	14.958	800	69.95	72.83	72.09	2.58
14.958	80yr	14.958	850	69.95	72.95	72.16	2.61
14.958	100yr	14.958	880	69.95	73.02	72.20	2.63
14.958	150yr	14.958	920	69.95	73.11	72.25	2.65
14.958	200yr	14.958	1.000	69.95	73.28	72.34	2.69
14.959		Inline Weir					
14.960	50yr	14.960	800	69.95	73.65	72.10	1.88
14.960	80yr	14.960	850	69.95	73.73	72.16	1.94

건설교통부

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
14.960	100yr	14.960	880	69.95	73.78	72.20	1.98
14.960	150yr	14.960	920	69.95	73.84	72.25	2.03
14.960	200yr	14.960	1.000	69.95	73.96	72.34	2.12
15.000	50yr	15.000	800	70.17	73.50	72.77	3.14
15.000	80yr	15.000	850	70.17	73.57	72.86	3.24
15.000	100yr	15.000	880	70.17	73.61	72.91	3.30
15.000	150yr	15.000	920	70.17	73.66	72.99	3.38
15.000	200yr	15.000	1.000	70.17	73.77	73.10	3.53
15.200	50yr	15.200	800	68.65	74.11	73.19	3.64
15.200	80yr	15.200	850	68.65	74.19	73.30	3.77
15.200	100yr	15.200	880	68.65	74.25	73.35	3.84
15.200	150yr	15.200	920	68.65	74.32	73.43	3.93
15.200	200yr	15.200	1.000	68.65	74.46	73.61	4.11
15.400	50yr	15.400	800	70.27	74.91	74.16	3.43
15.400	80yr	15.400	850	70.27	75.04	74.25	3.49
15.400	100yr	15.400	880	70.27	75.12	74.31	3.51
15.400	150yr	15.400	920	70.27	75.22	74.38	3.56
15.400	200yr	15.400	1.000	70.27	75.40	74.51	3.66
15.600	50yr	15.600	800	71.32	75.73	75.00	3.26
15.600	80yr	15.600	850	71.32	75.84	75.11	3.31
15.600	100yr	15.600	880	71.32	75.91	75.18	3.34
15.600	150yr	15.600	920	71.32	76.03	75.26	3.35
15.600	200yr	15.600	1.000	71.32	76.21	75.39	3.41

▶미호천 홍수위산정결과(개수후)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: MiHo Reach: MiHo

Rivers = 1
Hydraulic Reaches = 1
River Stations = 259
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		6,070	11.52	25.42	17.19	1.60
0.000	80yr		6,580	11.52	25.42	17.40	1.73
0.000	100yr		6,820	11.52	25.42	17.50	1.79
0.000	150yr		7,260	11.52	25.42	17.67	1.91
0.000	200yr		7,570	11.52	25.42	17.81	1.99
0.200	50yr	200	6,070	11.68	25.40		1.92
0.200	80yr	200	6,580	11.68	25.39		2.08
0.200	100yr	200	6,820	11.68	25.39		2.16
0.200	150yr	200	7,260	11.68	25.39		2.30
0.200	200yr	200	7,570	11.68	25.39		2.39
0.235	50yr	235	6,070	13.26	25.38		2.05
0.235	80yr	235	6,580	13.26	25.38		2.23
0.235	100yr	235	6,820	13.26	25.38		2.31
0.235	150yr	235	7,260	13.26	25.37		2.46
0.235	200yr	235	7,570	13.26	25.36		2.57
0.238		Inline Weir					
0.240	50yr	240	6,070	13.26	25.44	17.85	2.04
0.240	80yr	240	6,580	13.26	25.43	18.10	2.21
0.240	100yr	240	6,820	13.26	25.44	18.21	2.29
0.240	150yr	240	7,260	13.26	25.45	18.42	2.44
0.240	200yr	240	7,570	13.26	25.45	18.56	2.54
0.390	50yr	390	6,070	10.86	25.45		2.02
0.390	80yr	390	6,580	10.86	25.45		2.19
0.390	100yr	390	6,820	10.86	25.46		2.27
0.390	150yr	390	7,260	10.86	25.46		2.41
0.390	200yr	390	7,570	10.86	25.47		2.52
0.630	50yr	630	6,070	11.18	25.54		1.78
0.630	80yr	630	6,580	11.18	25.56		1.93
0.630	100yr	630	6,820	11.18	25.57		2.00
0.630	150yr	630	7,260	11.18	25.60		2.12
0.630	200yr	630	7,570	11.18	25.62		2.20
0.890	50yr	890	6,070	13.65	25.59	18.04	1.71
0.890	80yr	890	6,580	13.65	25.61	18.25	1.85
0.890	100yr	890	6,820	13.65	25.63	18.35	1.91
0.890	150yr	890	7,260	13.65	25.66	18.53	2.03
0.890	200yr	890	7,570	13.65	25.69	18.65	2.11
0.910	50yr	910	6,070	13.22	25.59	18.08	1.72
0.910	80yr	910	6,580	13.22	25.61	18.31	1.86
0.910	100yr	910	6,820	13.22	25.63	18.42	1.92
0.910	150yr	910	7,260	13.22	25.66	18.61	2.04
0.910	200yr	910	7,570	13.22	25.69	18.73	2.12
0.920		Bridge					
0.930	50yr	930	6,070	13.22	25.60	18.08	1.71
0.930	80yr	930	6,580	13.22	25.63	18.31	1.85
0.930	100yr	930	6,820	13.22	25.65	18.42	1.92

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.930	150yr	930	7.260	13.22	25.68	18.60	2.03
0.930	200yr	930	7.570	13.22	25.71	18.73	2.11
1.130	50yr	1,130	6.070	13.88	25.60	18.69	2.02
1.130	80yr	1,130	6.580	13.88	25.62	18.92	2.18
1.130	100yr	1,130	6.820	13.88	25.64	19.02	2.25
1.130	150yr	1,130	7.260	13.88	25.67	19.21	2.39
1.130	200yr	1,130	7.570	13.88	25.70	19.34	2.48
1.330	50yr	1,330	6.070	13.44	25.56	18.99	2.40
1.330	80yr	1,330	6.580	13.44	25.58	19.24	2.60
1.330	100yr	1,330	6.820	13.44	25.59	19.35	2.68
1.330	150yr	1,330	7.260	13.44	25.62	19.55	2.85
1.330	200yr	1,330	7.570	13.44	25.64	19.69	2.97
1.560	50yr	1,560	6.070	12.81	25.57		2.67
1.560	80yr	1,560	6.580	12.81	25.58		2.89
1.560	100yr	1,560	6.820	12.81	25.60		2.99
1.560	150yr	1,560	7.260	12.81	25.63		3.18
1.560	200yr	1,560	7.570	12.81	25.65		3.30
1.790	50yr	1,790	6.070	12.22	25.62		2.72
1.790	80yr	1,790	6.580	12.22	25.65		2.94
1.790	100yr	1,790	6.820	12.22	25.67		3.04
1.790	150yr	1,790	7.260	12.22	25.71		3.22
1.790	200yr	1,790	7.570	12.22	25.74		3.35
2.010	50yr	2,010	6.070	11.53	25.70		2.64
2.010	80yr	2,010	6.580	11.53	25.74		2.85
2.010	100yr	2,010	6.820	11.53	25.77		2.95
2.010	150yr	2,010	7.260	11.53	25.82		3.12
2.010	200yr	2,010	7.570	11.53	25.86		3.25
2.150	50yr	2,150	6.070	11.36	25.85		2.19
2.150	80yr	2,150	6.580	11.36	25.92		2.35
2.150	100yr	2,150	6.820	11.36	25.97		2.43
2.150	150yr	2,150	7.260	11.36	26.04		2.56
2.150	200yr	2,150	7.570	11.36	26.10		2.66
2.430	50yr	2,430	6.070	12.41	25.91	18.49	2.18
2.430	80yr	2,430	6.580	12.41	25.99	18.81	2.34
2.430	100yr	2,430	6.820	12.41	26.03	19.03	2.42
2.430	150yr	2,430	7.260	12.41	26.12	19.24	2.55
2.430	200yr	2,430	7.570	12.41	26.18	19.41	2.64
2.630	50yr	2,630	6.070	12.04	25.86		2.71
2.630	80yr	2,630	6.580	12.04	25.93		2.92
2.630	100yr	2,630	6.820	12.04	25.97		3.02
2.630	150yr	2,630	7.260	12.04	26.04		3.19
2.630	200yr	2,630	7.570	12.04	26.10		3.31
2.850	50yr	2,850	6.070	12.98	26.13		1.79
2.850	80yr	2,850	6.580	12.98	26.25		1.92
2.850	100yr	2,850	6.820	12.98	26.31		1.98
2.850	150yr	2,850	7.260	12.98	26.43		2.08
2.850	200yr	2,850	7.570	12.98	26.51		2.15
3.010	50yr	3,010	6.070	12.75	26.19	18.06	1.56
3.010	80yr	3,010	6.580	12.75	26.32	18.29	1.67
3.010	100yr	3,010	6.820	12.75	26.39	18.40	1.72
3.010	150yr	3,010	7.260	12.75	26.51	18.58	1.80
3.010	200yr	3,010	7.570	12.75	26.60	18.72	1.86
3.200	50yr	3,200	6.070	12.97	26.22	17.59	1.41
3.200	80yr	3,200	6.580	12.97	26.35	17.80	1.50
3.200	100yr	3,200	6.820	12.97	26.42	17.90	1.54
3.200	150yr	3,200	7.260	12.97	26.55	18.07	1.62

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
3.200	200yr	3.200	7.570	12.97	26.65	18.19	1.67
3.390	50yr	3.390	6.070	13.24	26.22	18.18	1.61
3.390	80yr	3.390	6.580	13.24	26.35	18.40	1.72
3.390	100yr	3.390	6.820	13.24	26.42	18.50	1.77
3.390	150yr	3.390	7.260	13.24	26.54	18.68	1.85
3.390	200yr	3.390	7.570	13.24	26.64	18.80	1.91
3.620	50yr	3.620	6.040	12.93	26.24	18.01	1.54
3.620	80yr	3.620	6.550	12.93	26.38	18.41	1.64
3.620	100yr	3.620	6.790	12.93	26.45	18.52	1.68
3.620	150yr	3.620	7.230	12.93	26.58	18.70	1.77
3.620	200yr	3.620	7.530	12.93	26.67	18.82	1.82
3.770	50yr	3.770	6.040	13.19	26.25	18.64	1.61
3.770	80yr	3.770	6.550	13.19	26.38	18.88	1.72
3.770	100yr	3.770	6.790	13.19	26.45	19.00	1.76
3.770	150yr	3.770	7.230	13.19	26.58	19.23	1.85
3.770	200yr	3.770	7.530	13.19	26.68	19.51	1.90
3.950	50yr	3.950	6.040	13.12	26.25	18.41	1.65
3.950	80yr	3.950	6.550	13.12	26.39	18.65	1.77
3.950	100yr	3.950	6.790	13.12	26.46	18.75	1.82
3.950	150yr	3.950	7.230	13.12	26.59	18.96	1.91
3.950	200yr	3.950	7.530	13.12	26.69	19.09	1.96
4.150	50yr	4.150	6.040	12.06	26.29	19.10	1.59
4.150	80yr	4.150	6.550	12.06	26.42	19.29	1.70
4.150	100yr	4.150	6.790	12.06	26.50	19.37	1.75
4.150	150yr	4.150	7.230	12.06	26.63	19.58	1.83
4.150	200yr	4.150	7.530	12.06	26.73	19.78	1.89
4.310	50yr	4.310	6.040	12.69	26.35		1.26
4.310	80yr	4.310	6.550	12.69	26.50		1.35
4.310	100yr	4.310	6.790	12.69	26.58		1.38
4.310	150yr	4.310	7.230	12.69	26.72		1.45
4.310	200yr	4.310	7.530	12.69	26.82		1.50
4.440	50yr	4.440	6.040	13.33	26.37	18.24	1.17
4.440	80yr	4.440	6.550	13.33	26.52	18.41	1.25
4.440	100yr	4.440	6.790	13.33	26.60	18.49	1.28
4.440	150yr	4.440	7.230	13.33	26.74	18.63	1.34
4.440	200yr	4.440	7.530	13.33	26.85	18.73	1.38
4.610	50yr	4.610	6.040	13.77	26.38	18.07	1.16
4.610	80yr	4.610	6.550	13.77	26.53	18.24	1.24
4.610	100yr	4.610	6.790	13.77	26.61	18.31	1.28
4.610	150yr	4.610	7.230	13.77	26.76	18.45	1.34
4.610	200yr	4.610	7.530	13.77	26.86	18.55	1.38
4.840	50yr	4.840	6.040	13.25	26.37	19.45	1.44
4.840	80yr	4.840	6.550	13.25	26.52	19.64	1.53
4.840	100yr	4.840	6.790	13.25	26.60	19.73	1.58
4.840	150yr	4.840	7.230	13.25	26.74	19.89	1.65
4.840	200yr	4.840	7.530	13.25	26.85	20.00	1.70
5.020	50yr	5.020	6.040	13.15	26.39	19.23	1.41
5.020	80yr	5.020	6.550	13.15	26.54	19.44	1.51
5.020	100yr	5.020	6.790	13.15	26.62	19.52	1.55
5.020	150yr	5.020	7.230	13.15	26.77	19.67	1.62
5.020	200yr	5.020	7.530	13.15	26.87	19.76	1.67
5.230	50yr	5.230	6.040	13.60	26.41	19.50	1.50
5.230	80yr	5.230	6.550	13.60	26.56	19.69	1.59
5.230	100yr	5.230	6.790	13.60	26.64	19.78	1.64
5.230	150yr	5.230	7.230	13.60	26.78	19.94	1.71
5.230	200yr	5.230	7.530	13.60	26.89	20.05	1.76

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
5.440	50yr	5,440	6,040	13.91	26.45	18.93	1.39
5.440	80yr	5,440	6,550	13.91	26.60	19.10	1.48
5.440	100yr	5,440	6,790	13.91	26.69	19.20	1.52
5.440	150yr	5,440	7,230	13.91	26.83	19.35	1.59
5.440	200yr	5,440	7,530	13.91	26.94	19.44	1.64
5.660	50yr	5,660	6,040	13.97	26.46	19.22	1.43
5.660	80yr	5,660	6,550	13.97	26.62	19.42	1.52
5.660	100yr	5,660	6,790	13.97	26.71	19.50	1.56
5.660	150yr	5,660	7,230	13.97	26.85	19.66	1.64
5.660	200yr	5,660	7,530	13.97	26.96	19.77	1.68
5.920	50yr	5,920	5,920	14.26	26.48	19.87	1.58
5.920	80yr	5,920	6,420	14.26	26.64	20.12	1.68
5.920	100yr	5,920	6,650	14.26	26.73	20.24	1.72
5.920	150yr	5,920	7,080	14.26	26.88	20.58	1.79
5.920	200yr	5,920	7,380	14.26	26.99	20.75	1.84
6.100	50yr	6,100	5,920	13.99	26.52	19.41	1.51
6.100	80yr	6,100	6,420	13.99	26.68	19.63	1.61
6.100	100yr	6,100	6,650	13.99	26.77	19.73	1.65
6.100	150yr	6,100	7,080	13.99	26.92	19.91	1.72
6.100	200yr	6,100	7,380	13.99	27.03	20.04	1.77
6.280	50yr	6,280	5,920	14.28	26.55	19.18	1.42
6.280	80yr	6,280	6,420	14.28	26.72	19.39	1.50
6.280	100yr	6,280	6,650	14.28	26.81	19.49	1.54
6.280	150yr	6,280	7,080	14.28	26.96	19.65	1.61
6.280	200yr	6,280	7,380	14.28	27.08	19.75	1.66
6.480	50yr	6,480	5,920	14.34	26.57	19.61	1.43
6.480	80yr	6,480	6,420	14.34	26.74	19.78	1.52
6.480	100yr	6,480	6,650	14.34	26.83	19.86	1.56
6.480	150yr	6,480	7,080	14.34	26.99	20.00	1.63
6.480	200yr	6,480	7,380	14.34	27.10	20.10	1.67
6.680	50yr	6,680	5,920	14.00	26.61	19.00	1.33
6.680	80yr	6,680	6,420	14.00	26.78	19.16	1.41
6.680	100yr	6,680	6,650	14.00	26.87	19.24	1.45
6.680	150yr	6,680	7,080	14.00	27.03	19.38	1.52
6.680	200yr	6,680	7,380	14.00	27.15	19.48	1.56
6.900	50yr	6,900	5,920	15.01	26.63	18.68	1.30
6.900	80yr	6,900	6,420	15.01	26.81	18.84	1.38
6.900	100yr	6,900	6,650	15.01	26.90	18.91	1.41
6.900	150yr	6,900	7,080	15.01	27.06	19.05	1.48
6.900	200yr	6,900	7,380	15.01	27.18	19.15	1.52
7.130	50yr	7,130	5,920	14.89	26.64	19.48	1.38
7.130	80yr	7,130	6,420	14.89	26.82	19.67	1.46
7.130	100yr	7,130	6,650	14.89	26.91	19.75	1.50
7.130	150yr	7,130	7,080	14.89	27.08	19.91	1.56
7.130	200yr	7,130	7,380	14.89	27.20	20.02	1.60
7.390	50yr	7,390	5,920	14.34	26.69	19.42	1.24
7.390	80yr	7,390	6,420	14.34	26.87	19.61	1.32
7.390	100yr	7,390	6,650	14.34	26.96	19.70	1.35
7.390	150yr	7,390	7,080	14.34	27.13	19.85	1.41
7.390	200yr	7,390	7,380	14.34	27.25	19.95	1.45
7.620	50yr	7,620	5,920	13.96	26.69	20.04	1.45
7.620	80yr	7,620	6,420	13.96	26.87	20.26	1.53
7.620	100yr	7,620	6,650	13.96	26.97	20.36	1.56
7.620	150yr	7,620	7,080	13.96	27.14	20.55	1.62
7.620	200yr	7,620	7,380	13.96	27.26	20.67	1.66

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
7.860	50yr	7,860	5,920	13.34	26.74	18.39	1.28
7.860	80yr	7,860	6,420	13.34	26.93	18.59	1.35
7.860	100yr	7,860	6,650	13.34	27.03	18.68	1.39
7.860	150yr	7,860	7,080	13.34	27.20	18.84	1.44
7.860	200yr	7,860	7,380	13.34	27.32	18.96	1.48
8.060	50yr	8,060	5,920	14.74	26.71	21.79	1.90
8.060	80yr	8,060	6,420	14.74	26.89	22.10	1.98
8.060	100yr	8,060	6,650	14.74	26.99	22.25	2.02
8.060	150yr	8,060	7,080	14.74	27.16	22.50	2.08
8.060	200yr	8,060	7,380	14.74	27.28	22.56	2.12
8.240	50yr	8,240	5,920	15.59	26.82	21.90	1.56
8.240	80yr	8,240	6,420	15.59	27.02	22.11	1.63
8.240	100yr	8,240	6,650	15.59	27.11	22.18	1.66
8.240	150yr	8,240	7,080	15.59	27.29	22.36	1.71
8.240	200yr	8,240	7,380	15.59	27.42	22.45	1.75
8.380	50yr	8,380	5,920	15.73	26.85	22.21	1.59
8.380	80yr	8,380	6,420	15.73	27.05	22.42	1.66
8.380	100yr	8,380	6,650	15.73	27.14	22.50	1.69
8.380	150yr	8,380	7,080	15.73	27.32	22.82	1.74
8.380	200yr	8,380	7,380	15.73	27.45	23.35	1.77
8.560	50yr	8,560	5,920	15.84	26.93	20.49	1.25
8.560	80yr	8,560	6,420	15.84	27.13	20.64	1.31
8.560	100yr	8,560	6,650	15.84	27.23	20.71	1.34
8.560	150yr	8,560	7,080	15.84	27.41	20.84	1.40
8.560	200yr	8,560	7,380	15.84	27.54	20.93	1.43
8.760	50yr	8,760	5,540	16.05	26.93	21.00	1.47
8.760	80yr	8,760	6,010	16.05	27.13	21.21	1.55
8.760	100yr	8,760	6,230	16.05	27.23	21.30	1.58
8.760	150yr	8,760	6,630	16.05	27.41	21.46	1.64
8.760	200yr	8,760	6,910	16.05	27.54	21.57	1.67
8.890	50yr	8,890	5,540	15.83	26.94	21.70	1.67
8.890	80yr	8,890	6,010	15.83	27.14	21.92	1.76
8.890	100yr	8,890	6,230	15.83	27.23	22.02	1.79
8.890	150yr	8,890	6,630	15.83	27.41	22.20	1.86
8.890	200yr	8,890	6,910	15.83	27.54	22.31	1.90
9.040	50yr	9,040	5,540	17.33	26.95	21.46	1.80
9.040	80yr	9,040	6,010	17.33	27.15	21.69	1.89
9.040	100yr	9,040	6,230	17.33	27.25	21.79	1.93
9.040	150yr	9,040	6,630	17.33	27.43	21.97	2.00
9.040	200yr	9,040	6,910	17.33	27.56	22.10	2.05
9.043		Inline Weir					
9.045	50yr	9,045	5,540	17.33	27.01	21.46	1.78
9.045	80yr	9,045	6,010	17.33	27.22	21.69	1.87
9.045	100yr	9,045	6,230	17.33	27.32	21.79	1.91
9.045	150yr	9,045	6,630	17.33	27.50	21.97	1.98
9.045	200yr	9,045	6,910	17.33	27.63	22.10	2.03
9.085	50yr	9,085	5,540	14.85	27.09	19.99	1.36
9.085	80yr	9,085	6,010	14.85	27.30	20.16	1.45
9.085	100yr	9,085	6,230	14.85	27.41	20.23	1.48
9.085	150yr	9,085	6,630	14.85	27.59	20.35	1.55
9.085	200yr	9,085	6,910	14.85	27.72	20.44	1.59
9.090		Bridge					
9.095	50yr	9,095	5,540	14.85	27.11	19.99	1.36
9.095	80yr	9,095	6,010	14.85	27.32	20.16	1.44
9.095	100yr	9,095	6,230	14.85	27.43	20.23	1.48

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
9.095	150yr	9.095	6.630	14.85	27.62	20.35	1.54
9.095	200yr	9.095	6.910	14.85	27.75	20.44	1.59
9.115	50yr	9.115	5.540	16.49	27.05	21.84	1.90
9.115	80yr	9.115	6.010	16.49	27.26	22.07	2.00
9.115	100yr	9.115	6.230	16.49	27.36	22.17	2.04
9.115	150yr	9.115	6.630	16.49	27.54	22.31	2.12
9.115	200yr	9.115	6.910	16.49	27.68	22.51	2.17
9.120		Bridge					
9.125	50yr	9.125	5.540	16.49	27.09	21.84	1.89
9.125	80yr	9.125	6.010	16.49	27.31	22.07	1.99
9.125	100yr	9.125	6.230	16.49	27.41	22.17	2.03
9.125	150yr	9.125	6.630	16.49	27.60	22.31	2.10
9.125	200yr	9.125	6.910	16.49	27.73	22.51	2.15
9.290	50yr	9.290	5.540	16.91	27.12	22.33	2.00
9.290	80yr	9.290	6.010	16.91	27.34	22.55	2.10
9.290	100yr	9.290	6.230	16.91	27.44	23.61	2.14
9.290	150yr	9.290	6.630	16.91	27.63	23.75	2.21
9.290	200yr	9.290	6.910	16.91	27.77	23.84	2.25
9.490	50yr	9.490	5.540	16.79	27.19	22.79	1.97
9.490	80yr	9.490	6.010	16.79	27.41	23.49	2.06
9.490	100yr	9.490	6.230	16.79	27.52	23.55	2.10
9.490	150yr	9.490	6.630	16.79	27.71	23.65	2.17
9.490	200yr	9.490	6.910	16.79	27.84	23.73	2.22
9.680	50yr	9.680	5.540	15.90	27.26	22.33	1.84
9.680	80yr	9.680	6.010	15.90	27.49	22.52	1.93
9.680	100yr	9.680	6.230	15.90	27.60	22.66	1.97
9.680	150yr	9.680	6.630	15.90	27.80	23.06	2.04
9.680	200yr	9.680	6.910	15.90	27.93	23.13	2.08
9.830	50yr	9.830	5.540	17.91	27.28	23.51	2.04
9.830	80yr	9.830	6.010	17.91	27.51	23.66	2.13
9.830	100yr	9.830	6.230	17.91	27.61	23.72	2.17
9.830	150yr	9.830	6.630	17.91	27.81	23.85	2.25
9.830	200yr	9.830	6.910	17.91	27.94	23.93	2.30
9.840		Bridge					
9.850	50yr	9.850	5.540	17.91	27.31	23.51	2.03
9.850	80yr	9.850	6.010	17.91	27.56	23.66	2.11
9.850	100yr	9.850	6.230	17.91	27.68	23.72	2.15
9.850	150yr	9.850	6.630	17.91	27.89	23.85	2.22
9.850	200yr	9.850	6.910	17.91	28.04	23.93	2.27
9.900	50yr	9.900	5.540	16.41	27.35	23.23	1.93
9.900	80yr	9.900	6.010	16.41	27.60	23.42	2.02
9.900	100yr	9.900	6.230	16.41	27.72	23.49	2.06
9.900	150yr	9.900	6.630	16.41	27.93	23.61	2.12
9.900	200yr	9.900	6.910	16.41	28.08	23.68	2.17
10.080	50yr	10.080	5.540	16.30	27.40	23.69	1.94
10.080	80yr	10.080	6.010	16.30	27.65	23.83	2.02
10.080	100yr	10.080	6.230	16.30	27.77	23.90	2.06
10.080	150yr	10.080	6.630	16.30	27.98	24.00	2.12
10.080	200yr	10.080	6.910	16.30	28.14	24.08	2.16
10.240	50yr	10.240	5.540	17.48	27.50	22.67	1.61
10.240	80yr	10.240	6.010	17.48	27.76	22.82	1.68
10.240	100yr	10.240	6.230	17.48	27.88	22.90	1.71
10.240	150yr	10.240	6.630	17.48	28.10	23.55	1.76
10.240	200yr	10.240	6.910	17.48	28.26	23.64	1.79

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
10.480	50yr	10,480	5,540	17.79	27.53	23.58	1.84
10.480	80yr	10,480	6,010	17.79	27.79	23.81	1.90
10.480	100yr	10,480	6,230	17.79	27.91	24.19	1.93
10.480	150yr	10,480	6,630	17.79	28.13	24.31	1.98
10.480	200yr	10,480	6,910	17.79	28.29	24.38	2.02
10.690	50yr	10,690	5,540	17.77	27.57	23.66	2.02
10.690	80yr	10,690	6,010	17.77	27.82	23.92	2.10
10.690	100yr	10,690	6,230	17.77	27.94	23.99	2.14
10.690	150yr	10,690	6,630	17.77	28.16	24.11	2.20
10.690	200yr	10,690	6,910	17.77	28.32	24.19	2.25
10.890	50yr	10,890	5,540	17.82	27.63	23.05	2.00
10.890	80yr	10,890	6,010	17.82	27.89	23.22	2.09
10.890	100yr	10,890	6,230	17.82	28.01	23.28	2.13
10.890	150yr	10,890	6,630	17.82	28.23	23.44	2.20
10.890	200yr	10,890	6,910	17.82	28.38	23.50	2.25
11.120	50yr	11,120	5,540	18.08	27.69	23.40	2.06
11.120	80yr	11,120	6,010	18.08	27.95	24.07	2.15
11.120	100yr	11,120	6,230	18.08	28.07	24.12	2.18
11.120	150yr	11,120	6,630	18.08	28.29	24.28	2.25
11.120	200yr	11,120	6,910	18.08	28.44	24.39	2.29
11.310	50yr	11,310	5,540	17.91	27.77	24.18	1.96
11.310	80yr	11,310	6,010	17.91	28.04	24.42	2.03
11.310	100yr	11,310	6,230	17.91	28.16	24.48	2.06
11.310	150yr	11,310	6,630	17.91	28.38	24.66	2.12
11.310	200yr	11,310	6,910	17.91	28.54	24.73	2.15
11.520	50yr	11,520	5,540	18.13	27.82	23.65	2.23
11.520	80yr	11,520	6,010	18.13	28.09	23.94	2.30
11.520	100yr	11,520	6,230	18.13	28.22	24.25	2.33
11.520	150yr	11,520	6,630	18.13	28.44	24.92	2.38
11.520	200yr	11,520	6,910	18.13	28.60	25.05	2.41
11.710	50yr	11,710	5,540	18.23	27.96	23.71	1.60
11.710	80yr	11,710	6,010	18.23	28.23	23.85	1.67
11.710	100yr	11,710	6,230	18.23	28.35	23.92	1.70
11.710	150yr	11,710	6,630	18.23	28.58	24.02	1.75
11.710	200yr	11,710	6,910	18.23	28.74	24.09	1.78
11.900	50yr	11,900	5,540	16.93	27.98	22.85	1.77
11.900	80yr	11,900	6,010	16.93	28.25	23.03	1.83
11.900	100yr	11,900	6,230	16.93	28.38	23.11	1.86
11.900	150yr	11,900	6,630	16.93	28.60	23.25	1.91
11.900	200yr	11,900	6,910	16.93	28.76	23.35	1.94
12.140	50yr	12,140	5,540	17.55	28.01	23.85	2.08
12.140	80yr	12,140	6,010	17.55	28.28	24.08	2.15
12.140	100yr	12,140	6,230	17.55	28.40	24.21	2.18
12.140	150yr	12,140	6,630	17.55	28.63	24.51	2.24
12.140	200yr	12,140	6,910	17.55	28.78	24.62	2.28
12.340	50yr	12,340	5,540	16.39	28.15	22.73	1.63
12.340	80yr	12,340	6,010	16.39	28.43	22.95	1.70
12.340	100yr	12,340	6,230	16.39	28.55	23.05	1.73
12.340	150yr	12,340	6,630	16.39	28.78	23.19	1.79
12.340	200yr	12,340	6,910	16.39	28.94	23.32	1.83
12.560	50yr	12,560	5,540	16.36	28.21	23.17	1.51
12.560	80yr	12,560	6,010	16.36	28.49	23.38	1.56
12.560	100yr	12,560	6,230	16.36	28.62	23.49	1.59
12.560	150yr	12,560	6,630	16.36	28.85	24.46	1.63
12.560	200yr	12,560	6,910	16.36	29.01	24.59	1.65
12.850	50yr	12,850	5,540	17.46	28.27	24.28	1.61

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
12.850	80yr	12,850	6,010	17.46	28.54	24.50	1.65
12.850	100yr	12,850	6,230	17.46	28.67	24.59	1.67
12.850	150yr	12,850	6,630	17.46	28.90	24.78	1.71
12.850	200yr	12,850	6,910	17.46	29.07	25.27	1.73
13.110	50yr	13,110	5,540	18.33	28.36	23.38	1.34
13.110	80yr	13,110	6,010	18.33	28.63	23.52	1.39
13.110	100yr	13,110	6,230	18.33	28.76	23.56	1.41
13.110	150yr	13,110	6,630	18.33	29.00	24.04	1.45
13.110	200yr	13,110	6,910	18.33	29.16	24.08	1.48
13.320	50yr	13,320	5,540	18.27	28.39	22.77	1.27
13.320	80yr	13,320	6,010	18.27	28.67	22.91	1.33
13.320	100yr	13,320	6,230	18.27	28.80	22.99	1.35
13.320	150yr	13,320	6,630	18.27	29.03	23.12	1.39
13.320	200yr	13,320	6,910	18.27	29.20	23.20	1.42
13.520	50yr	13,520	5,540	17.63	28.41	23.07	1.34
13.520	80yr	13,520	6,010	17.63	28.69	23.21	1.39
13.520	100yr	13,520	6,230	17.63	28.82	23.29	1.42
13.520	150yr	13,520	6,630	17.63	29.05	23.41	1.46
13.520	200yr	13,520	6,910	17.63	29.22	23.48	1.48
13.530		Bridge					
13.540	50yr	13,540	5,540	17.63	28.43	23.07	1.34
13.540	80yr	13,540	6,010	17.63	28.70	23.21	1.39
13.540	100yr	13,540	6,230	17.63	28.84	23.28	1.41
13.540	150yr	13,540	6,630	17.63	29.07	23.40	1.45
13.540	200yr	13,540	6,910	17.63	29.24	23.48	1.48
13.770	50yr	13,770	5,540	17.53	28.46	23.57	1.41
13.770	80yr	13,770	6,010	17.53	28.73	23.73	1.46
13.770	100yr	13,770	6,230	17.53	28.86	23.80	1.49
13.770	150yr	13,770	6,630	17.53	29.10	23.93	1.52
13.770	200yr	13,770	6,910	17.53	29.26	24.01	1.55
13.780		Bridge					
13.790	50yr	13,790	5,540	17.53	28.47	23.57	1.41
13.790	80yr	13,790	6,010	17.53	28.75	23.73	1.46
13.790	100yr	13,790	6,230	17.53	28.88	23.80	1.48
13.790	150yr	13,790	6,630	17.53	29.11	23.93	1.52
13.790	200yr	13,790	6,910	17.53	29.28	24.01	1.54
14.010	50yr	14,010	5,540	18.80	28.50	23.92	1.50
14.010	80yr	14,010	6,010	18.80	28.78	24.08	1.54
14.010	100yr	14,010	6,230	18.80	28.91	24.39	1.56
14.010	150yr	14,010	6,630	18.80	29.15	24.57	1.59
14.010	200yr	14,010	6,910	18.80	29.31	24.81	1.61
14.020		Bridge					
14.030	50yr	14,030	5,540	18.80	28.51	23.92	1.50
14.030	80yr	14,030	6,010	18.80	28.79	24.08	1.54
14.030	100yr	14,030	6,230	18.80	28.92	24.39	1.56
14.030	150yr	14,030	6,630	18.80	29.16	24.57	1.58
14.030	200yr	14,030	6,910	18.80	29.32	24.81	1.60
14.160	50yr	14,160	5,540	18.70	28.56	23.28	1.39
14.160	80yr	14,160	6,010	18.70	28.84	23.48	1.42
14.160	100yr	14,160	6,230	18.70	28.97	23.57	1.44
14.160	150yr	14,160	6,630	18.70	29.21	23.74	1.46
14.160	200yr	14,160	6,910	18.70	29.37	23.86	1.48
14.360	50yr	14,360	5,540	19.25	28.61	23.40	1.25
14.360	80yr	14,360	6,010	19.25	28.89	23.53	1.30

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
14.360	100yr	14,360	6,230	19.25	29.02	23.60	1.32
14.360	150yr	14,360	6,630	19.25	29.25	23.71	1.35
14.360	200yr	14,360	6,910	19.25	29.42	23.79	1.37
14.550	50yr	14,550	5,540	18.48	28.63	23.70	1.26
14.550	80yr	14,550	6,010	18.48	28.91	23.82	1.31
14.550	100yr	14,550	6,230	18.48	29.04	23.88	1.33
14.550	150yr	14,550	6,630	18.48	29.28	24.00	1.37
14.550	200yr	14,550	6,910	18.48	29.44	24.07	1.39
14.740	50yr	14,740	5,540	19.06	28.66	23.48	1.20
14.740	80yr	14,740	6,010	19.06	28.94	23.61	1.25
14.740	100yr	14,740	6,230	19.06	29.07	23.67	1.27
14.740	150yr	14,740	6,630	19.06	29.31	23.77	1.30
14.740	200yr	14,740	6,910	19.06	29.47	23.84	1.32
14.930	50yr	14,930	5,540	19.55	28.66	25.19	1.51
14.930	80yr	14,930	6,010	19.55	28.94	25.44	1.54
14.930	100yr	14,930	6,230	19.55	29.07	25.56	1.56
14.930	150yr	14,930	6,630	19.55	29.31	25.72	1.58
14.930	200yr	14,930	6,910	19.55	29.48	25.81	1.59
15.110	50yr	15,110	5,540	19.88	28.68	25.53	1.81
15.110	80yr	15,110	6,010	19.88	28.96	25.81	1.83
15.110	100yr	15,110	6,230	19.88	29.09	25.89	1.84
15.110	150yr	15,110	6,630	19.88	29.33	26.02	1.86
15.110	200yr	15,110	6,910	19.88	29.50	26.16	1.87
15.270	50yr	15,270	5,540	19.78	28.76	24.26	1.70
15.270	80yr	15,270	6,010	19.78	29.03	24.45	1.76
15.270	100yr	15,270	6,230	19.78	29.16	24.65	1.79
15.270	150yr	15,270	6,630	19.78	29.39	24.79	1.83
15.270	200yr	15,270	6,910	19.78	29.55	24.89	1.86
15.550	50yr	15,550	5,540	19.24	28.77	24.63	2.25
15.550	80yr	15,550	6,010	19.24	29.03	24.81	2.34
15.550	100yr	15,550	6,230	19.24	29.16	24.91	2.38
15.550	150yr	15,550	6,630	19.24	29.38	25.07	2.44
15.550	200yr	15,550	6,910	19.24	29.54	25.21	2.49
15.730	50yr	15,730	5,540	19.54	28.81	24.94	2.43
15.730	80yr	15,730	6,010	19.54	29.08	25.14	2.52
15.730	100yr	15,730	6,230	19.54	29.20	25.21	2.56
15.730	150yr	15,730	6,630	19.54	29.43	25.37	2.64
15.730	200yr	15,730	6,910	19.54	29.58	25.52	2.69
15.815	50yr	15,815	5,510	19.48	28.86	24.87	2.37
15.815	80yr	15,815	5,970	19.48	29.13	25.07	2.46
15.815	100yr	15,815	6,190	19.48	29.25	25.15	2.51
15.815	150yr	15,815	6,590	19.48	29.48	25.31	2.59
15.815	200yr	15,815	6,880	19.48	29.63	25.44	2.64
15.830		Bridge					
15.845	50yr	15,845	5,510	19.48	28.92	24.87	2.35
15.845	80yr	15,845	5,970	19.48	29.19	25.07	2.44
15.845	100yr	15,845	6,190	19.48	29.32	25.15	2.49
15.845	150yr	15,845	6,590	19.48	29.54	25.32	2.56
15.845	200yr	15,845	6,880	19.48	29.70	25.45	2.62
15.940	50yr	15,940	5,510	19.30	29.00	23.90	2.17
15.940	80yr	15,940	5,970	19.30	29.27	24.09	2.27
15.940	100yr	15,940	6,190	19.30	29.40	24.20	2.31
15.940	150yr	15,940	6,590	19.30	29.63	24.34	2.39
15.940	200yr	15,940	6,880	19.30	29.79	24.49	2.44
15.945	50yr	15,945	5,510	21.09	28.94	25.37	2.53

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
15.945	80yr	15,945	5,970	21.09	29.21	25.57	2.63
15.945	100yr	15,945	6,190	21.09	29.33	25.67	2.68
15.945	150yr	15,945	6,590	21.09	29.56	25.84	2.76
15.945	200yr	15,945	6,880	21.09	29.72	25.96	2.81
15.950		Bridge					
15.953	50yr	15,953	5,510	21.09	29.02	25.36	2.50
15.953	80yr	15,953	5,970	21.09	29.29	25.57	2.60
15.953	100yr	15,953	6,190	21.09	29.42	25.67	2.64
15.953	150yr	15,953	6,590	21.09	29.65	25.84	2.72
15.953	200yr	15,953	6,880	21.09	29.82	25.96	2.77
15.956	50yr	15,956	5,510	19.53	29.03	25.07	2.44
15.956	80yr	15,956	5,970	19.53	29.31	25.33	2.53
15.956	100yr	15,956	6,190	19.53	29.44	25.42	2.58
15.956	150yr	15,956	6,590	19.53	29.68	25.59	2.65
15.956	200yr	15,956	6,880	19.53	29.84	25.71	2.71
15.960		Bridge					
15.964	50yr	15,964	5,510	19.53	29.09	25.08	2.42
15.964	80yr	15,964	5,970	19.53	29.37	25.33	2.51
15.964	100yr	15,964	6,190	19.53	29.50	25.42	2.55
15.964	150yr	15,964	6,590	19.53	29.74	25.59	2.63
15.964	200yr	15,964	6,880	19.53	29.91	25.71	2.68
16.150	50yr	16,150	5,510	19.43	29.23	25.53	2.14
16.150	80yr	16,150	5,970	19.43	29.52	25.69	2.21
16.150	100yr	16,150	6,190	19.43	29.66	25.78	2.25
16.150	150yr	16,150	6,590	19.43	29.90	25.95	2.31
16.150	200yr	16,150	6,880	19.43	30.07	26.06	2.35
16.360	50yr	16,360	5,510	21.04	29.41	24.86	1.56
16.360	80yr	16,360	5,970	21.04	29.71	25.00	1.61
16.360	100yr	16,360	6,190	21.04	29.84	25.07	1.64
16.360	150yr	16,360	6,590	21.04	30.10	25.20	1.68
16.360	200yr	16,360	6,880	21.04	30.27	25.27	1.71
16.500	50yr	16,500	5,510	21.08	29.31	26.65	2.63
16.500	80yr	16,500	5,970	21.08	29.60	26.87	2.68
16.500	100yr	16,500	6,190	21.08	29.74	26.96	2.71
16.500	150yr	16,500	6,590	21.08	29.99	27.14	2.75
16.500	200yr	16,500	6,880	21.08	30.16	27.32	2.78
16.680	50yr	16,680	4,430	20.53	29.45	25.83	2.38
16.680	80yr	16,680	4,810	20.53	29.73	26.02	2.46
16.680	100yr	16,680	4,990	20.53	29.87	26.11	2.50
16.680	150yr	16,680	5,320	20.53	30.11	26.26	2.56
16.680	200yr	16,680	5,550	20.53	30.28	26.35	2.60
16.850	50yr	16,850	4,430	21.49	29.52	25.92	2.41
16.850	80yr	16,850	4,810	21.49	29.81	26.43	2.50
16.850	100yr	16,850	4,990	21.49	29.94	26.52	2.53
16.850	150yr	16,850	5,320	21.49	30.18	26.64	2.60
16.850	200yr	16,850	5,550	21.49	30.35	26.74	2.64
16.970	50yr	16,970	4,430	20.35	29.54	26.58	2.68
16.970	80yr	16,970	4,810	20.35	29.82	26.75	2.77
16.970	100yr	16,970	4,990	20.35	29.95	26.85	2.81
16.970	150yr	16,970	5,320	20.35	30.19	27.00	2.88
16.970	200yr	16,970	5,550	20.35	30.36	27.08	2.93
17.180	50yr	17,180	4,430	20.59	29.74	26.32	2.33
17.180	80yr	17,180	4,810	20.59	30.04	26.48	2.41
17.180	100yr	17,180	4,990	20.59	30.17	26.56	2.45
17.180	150yr	17,180	5,320	20.59	30.41	26.69	2.51

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
17.180	200yr	17,180	5,550	20.59	30.59	26.78	2.55
17.380	50yr	17,380	4,430	21.29	29.82	26.37	2.43
17.380	80yr	17,380	4,810	21.29	30.11	26.58	2.52
17.380	100yr	17,380	4,990	21.29	30.24	26.66	2.55
17.380	150yr	17,380	5,320	21.29	30.49	26.80	2.62
17.380	200yr	17,380	5,550	21.29	30.66	26.90	2.66
17.570	50yr	17,570	4,430	21.31	29.93	26.33	2.37
17.570	80yr	17,570	4,810	21.31	30.22	26.54	2.45
17.570	100yr	17,570	4,990	21.31	30.35	26.62	2.49
17.570	150yr	17,570	5,320	21.31	30.60	26.81	2.55
17.570	200yr	17,570	5,550	21.31	30.77	26.92	2.59
17.760	50yr	17,760	4,430	20.95	30.00	27.06	2.47
17.760	80yr	17,760	4,810	20.95	30.30	27.22	2.55
17.760	100yr	17,760	4,990	20.95	30.43	27.28	2.58
17.760	150yr	17,760	5,320	20.95	30.68	27.43	2.64
17.760	200yr	17,760	5,550	20.95	30.85	27.51	2.68
17.980	50yr	17,980	4,430	21.30	30.14	27.15	2.42
17.980	80yr	17,980	4,810	21.30	30.43	27.31	2.49
17.980	100yr	17,980	4,990	21.30	30.57	27.38	2.53
17.980	150yr	17,980	5,320	21.30	30.81	27.51	2.58
17.980	200yr	17,980	5,550	21.30	30.98	27.60	2.62
18.170	50yr	18,170	4,430	21.02	30.24	27.21	2.40
18.170	80yr	18,170	4,810	21.02	30.53	27.37	2.47
18.170	100yr	18,170	4,990	21.02	30.67	27.44	2.51
18.170	150yr	18,170	5,320	21.02	30.91	27.57	2.57
18.170	200yr	18,170	5,550	21.02	31.09	27.66	2.60
18.370	50yr	18,370	4,430	22.15	30.31	27.84	2.65
18.370	80yr	18,370	4,810	22.15	30.60	28.00	2.72
18.370	100yr	18,370	4,990	22.15	30.74	28.07	2.75
18.370	150yr	18,370	5,320	22.15	30.99	28.20	2.80
18.370	200yr	18,370	5,550	22.15	31.16	28.28	2.84
18.570	50yr	18,570	4,430	21.27	30.48	27.78	2.54
18.570	80yr	18,570	4,810	21.27	30.77	27.94	2.61
18.570	100yr	18,570	4,990	21.27	30.90	28.00	2.65
18.570	150yr	18,570	5,320	21.27	31.14	28.13	2.70
18.570	200yr	18,570	5,550	21.27	31.31	28.22	2.74
18.770	50yr	18,770	4,430	21.15	30.61	27.83	2.50
18.770	80yr	18,770	4,810	21.15	30.90	27.98	2.57
18.770	100yr	18,770	4,990	21.15	31.03	28.05	2.61
18.770	150yr	18,770	5,320	21.15	31.27	28.19	2.66
18.770	200yr	18,770	5,550	21.15	31.44	28.28	2.70
18.960	50yr	18,960	4,430	21.68	30.71	28.11	2.59
18.960	80yr	18,960	4,810	21.68	31.00	28.26	2.66
18.960	100yr	18,960	4,990	21.68	31.13	28.33	2.69
18.960	150yr	18,960	5,320	21.68	31.37	28.46	2.75
18.960	200yr	18,960	5,550	21.68	31.54	28.55	2.79
19.160	50yr	19,160	4,430	22.02	30.87	27.94	2.44
19.160	80yr	19,160	4,810	22.02	31.16	28.10	2.52
19.160	100yr	19,160	4,990	22.02	31.29	28.17	2.55
19.160	150yr	19,160	5,320	22.02	31.53	28.30	2.61
19.160	200yr	19,160	5,550	22.02	31.69	28.39	2.65
19.360	50yr	19,360	4,430	21.76	30.97	27.96	2.47
19.360	80yr	19,360	4,810	21.76	31.26	28.23	2.55
19.360	100yr	19,360	4,990	21.76	31.39	28.33	2.58
19.360	150yr	19,360	5,320	21.76	31.63	28.47	2.64
19.360	200yr	19,360	5,550	21.76	31.80	28.56	2.68

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
19.507	50yr	19.507	4.430	21.70	31.03	28.22	2.67
19.507	80yr	19.507	4.810	21.70	31.32	28.41	2.74
19.507	100yr	19.507	4.990	21.70	31.45	28.50	2.77
19.507	150yr	19.507	5.320	21.70	31.69	28.65	2.83
19.507	200yr	19.507	5.550	21.70	31.85	28.76	2.87
19.530		Bridge					
19.553	50yr	19.553	4.430	21.70	31.13	28.22	2.62
19.553	80yr	19.553	4.810	21.70	31.42	28.41	2.68
19.553	100yr	19.553	4.990	21.70	31.56	28.50	2.72
19.553	150yr	19.553	5.320	21.70	31.80	28.65	2.77
19.553	200yr	19.553	5.550	21.70	31.97	28.76	2.81
19.580	50yr	19.580	4.430	22.34	31.18	28.28	2.50
19.580	80yr	19.580	4.810	22.34	31.47	28.50	2.58
19.580	100yr	19.580	4.990	22.34	31.61	28.59	2.61
19.580	150yr	19.580	5.320	22.34	31.85	28.71	2.67
19.580	200yr	19.580	5.550	22.34	32.01	28.80	2.71
19.585	50yr	19.585	4.430	22.34	31.18	28.33	2.54
19.585	80yr	19.585	4.810	22.34	31.47	28.54	2.61
19.585	100yr	19.585	4.990	22.34	31.60	28.62	2.64
19.585	150yr	19.585	5.320	22.34	31.85	28.76	2.70
19.585	200yr	19.585	5.550	22.34	32.01	28.85	2.73
19.600		Bridge					
19.615	50yr	19.615	4.430	22.34	31.28	28.33	2.49
19.615	80yr	19.615	4.810	22.34	31.57	28.54	2.56
19.615	100yr	19.615	4.990	22.34	31.71	28.62	2.59
19.615	150yr	19.615	5.320	22.34	31.95	28.76	2.65
19.615	200yr	19.615	5.550	22.34	32.12	28.85	2.69
19.790	50yr	19.790	4.430	22.81	31.39	28.34	2.41
19.790	80yr	19.790	4.810	22.81	31.69	28.52	2.48
19.790	100yr	19.790	4.990	22.81	31.82	28.60	2.51
19.790	150yr	19.790	5.320	22.81	32.06	28.72	2.57
19.790	200yr	19.790	5.550	22.81	32.23	28.81	2.61
20.010	50yr	20.010	4.430	23.18	31.50	28.51	2.43
20.010	80yr	20.010	4.810	23.18	31.80	28.67	2.50
20.010	100yr	20.010	4.990	23.18	31.93	28.74	2.54
20.010	150yr	20.010	5.320	23.18	32.17	28.87	2.60
20.010	200yr	20.010	5.550	23.18	32.34	28.96	2.64
20.230	50yr	20.230	4.430	23.09	31.62	28.67	2.43
20.230	80yr	20.230	4.810	23.09	31.91	28.82	2.51
20.230	100yr	20.230	4.990	23.09	32.04	28.90	2.54
20.230	150yr	20.230	5.320	23.09	32.29	29.03	2.60
20.230	200yr	20.230	5.550	23.09	32.45	29.11	2.64
20.430	50yr	20.430	4.430	23.42	31.75	28.47	2.31
20.430	80yr	20.430	4.810	23.42	32.04	28.64	2.38
20.430	100yr	20.430	4.990	23.42	32.18	28.72	2.42
20.430	150yr	20.430	5.320	23.42	32.42	28.85	2.48
20.430	200yr	20.430	5.550	23.42	32.59	28.94	2.52
20.650	50yr	20.650	4.430	23.53	31.85	28.58	2.29
20.650	80yr	20.650	4.810	23.53	32.14	28.76	2.36
20.650	100yr	20.650	4.990	23.53	32.28	28.84	2.39
20.650	150yr	20.650	5.320	23.53	32.52	28.98	2.45
20.650	200yr	20.650	5.550	23.53	32.69	29.07	2.49
20.760	50yr	20.760	4.430	23.32	31.92	28.37	2.21
20.760	80yr	20.760	4.810	23.32	32.21	28.58	2.28

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
20.760	100yr	20.760	4.990	23.32	32.35	28.66	2.31
20.760	150yr	20.760	5.320	23.32	32.59	28.80	2.37
20.760	200yr	20.760	5.550	23.32	32.76	28.89	2.41
20.770		Bridge					
20.780	50yr	20.780	4.430	23.32	31.94	28.37	2.20
20.780	80yr	20.780	4.810	23.32	32.24	28.58	2.27
20.780	100yr	20.780	4.990	23.32	32.38	28.66	2.30
20.780	150yr	20.780	5.320	23.32	32.62	28.80	2.36
20.780	200yr	20.780	5.550	23.32	32.79	28.89	2.40
20.840	50yr	20.840	4.430	23.35	32.01	28.18	1.99
20.840	80yr	20.840	4.810	23.35	32.31	28.33	2.06
20.840	100yr	20.840	4.990	23.35	32.45	28.40	2.09
20.840	150yr	20.840	5.320	23.35	32.70	28.53	2.14
20.840	200yr	20.840	5.550	23.35	32.87	28.62	2.18
21.070	50yr	21.070	4.430	23.62	32.14	27.94	1.65
21.070	80yr	21.070	4.810	23.62	32.45	28.07	1.70
21.070	100yr	21.070	4.990	23.62	32.59	28.14	1.73
21.070	150yr	21.070	5.320	23.62	32.84	28.26	1.77
21.070	200yr	21.070	5.550	23.62	33.01	28.33	1.80
21.280	50yr	21.280	4.340	24.17	32.12	28.32	2.22
21.280	80yr	21.280	4.700	24.17	32.42	28.71	2.29
21.280	100yr	21.280	4.880	24.17	32.56	28.81	2.33
21.280	150yr	21.280	5.200	24.17	32.81	28.95	2.38
21.280	200yr	21.280	5.420	24.17	32.98	29.06	2.42
21.450	50yr	21.450	4.340	23.37	32.14	29.18	2.58
21.450	80yr	21.450	4.700	23.37	32.44	29.34	2.64
21.450	100yr	21.450	4.880	23.37	32.58	29.44	2.67
21.450	150yr	21.450	5.200	23.37	32.83	29.71	2.73
21.450	200yr	21.450	5.420	23.37	33.00	29.87	2.76
21.660	50yr	21.660	4.340	23.14	32.30	29.10	2.49
21.660	80yr	21.660	4.700	23.14	32.59	29.29	2.55
21.660	100yr	21.660	4.880	23.14	32.73	29.40	2.59
21.660	150yr	21.660	5.200	23.14	32.98	29.59	2.65
21.660	200yr	21.660	5.420	23.14	33.14	29.71	2.68
21.880	50yr	21.880	4.340	24.04	32.41	29.56	2.60
21.880	80yr	21.880	4.700	24.04	32.70	29.79	2.67
21.880	100yr	21.880	4.880	24.04	32.84	29.90	2.70
21.880	150yr	21.880	5.200	24.04	33.08	30.08	2.76
21.880	200yr	21.880	5.420	24.04	33.25	30.20	2.79
22.080	50yr	22.080	4.340	23.27	32.53	29.78	2.61
22.080	80yr	22.080	4.700	23.27	32.82	29.97	2.68
22.080	100yr	22.080	4.880	23.27	32.96	30.06	2.71
22.080	150yr	22.080	5.200	23.27	33.21	30.23	2.77
22.080	200yr	22.080	5.420	23.27	33.37	30.33	2.81
22.280	50yr	22.280	4.340	23.90	32.70	29.57	2.44
22.280	80yr	22.280	4.700	23.90	32.99	29.74	2.51
22.280	100yr	22.280	4.880	23.90	33.13	29.82	2.55
22.280	150yr	22.280	5.200	23.90	33.37	29.96	2.61
22.280	200yr	22.280	5.420	23.90	33.53	30.05	2.65
22.460	50yr	22.460	4.340	23.65	32.82	29.54	2.30
22.460	80yr	22.460	4.700	23.65	33.11	29.72	2.37
22.460	100yr	22.460	4.880	23.65	33.25	29.82	2.41
22.460	150yr	22.460	5.200	23.65	33.50	29.94	2.47
22.460	200yr	22.460	5.420	23.65	33.66	30.03	2.50
22.640	50yr	22.640	4.340	23.92	32.91	28.97	2.25

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
22.640	80yr	22,640	4,700	23.92	33.20	29.44	2.33
22.640	100yr	22,640	4,880	23.92	33.34	29.54	2.36
22.640	150yr	22,640	5,200	23.92	33.58	29.72	2.43
22.640	200yr	22,640	5,420	23.92	33.75	29.83	2.47
22.830	50yr	22,830	4,340	24.39	33.00	29.04	2.21
22.830	80yr	22,830	4,700	24.39	33.29	29.22	2.28
22.830	100yr	22,830	4,880	24.39	33.43	29.30	2.31
22.830	150yr	22,830	5,200	24.39	33.67	29.49	2.37
22.830	200yr	22,830	5,420	24.39	33.84	29.64	2.41
23.020	50yr	23,020	4,340	24.26	33.03	29.77	2.58
23.020	80yr	23,020	4,700	24.26	33.32	29.99	2.65
23.020	100yr	23,020	4,880	24.26	33.45	30.10	2.69
23.020	150yr	23,020	5,200	24.26	33.70	30.30	2.74
23.020	200yr	23,020	5,420	24.26	33.86	30.42	2.78
23.220	50yr	23,220	4,340	24.46	33.22	29.31	2.21
23.220	80yr	23,220	4,700	24.46	33.52	29.48	2.28
23.220	100yr	23,220	4,880	24.46	33.65	29.56	2.31
23.220	150yr	23,220	5,200	24.46	33.90	29.72	2.37
23.220	200yr	23,220	5,420	24.46	34.07	29.81	2.41
23.420	50yr	23,420	4,340	24.27	33.30	29.54	2.22
23.420	80yr	23,420	4,700	24.27	33.59	29.71	2.30
23.420	100yr	23,420	4,880	24.27	33.73	29.78	2.33
23.420	150yr	23,420	5,200	24.27	33.98	29.93	2.39
23.420	200yr	23,420	5,420	24.27	34.14	30.02	2.43
23.600	50yr	23,600	4,340	24.75	33.36	29.78	2.31
23.600	80yr	23,600	4,700	24.75	33.65	29.94	2.39
23.600	100yr	23,600	4,880	24.75	33.79	30.02	2.42
23.600	150yr	23,600	5,200	24.75	34.04	30.16	2.48
23.600	200yr	23,600	5,420	24.75	34.20	30.25	2.52
23.810	50yr	23,810	4,340	24.35	33.49	29.78	2.12
23.810	80yr	23,810	4,700	24.35	33.78	29.94	2.19
23.810	100yr	23,810	4,880	24.35	33.92	30.02	2.22
23.810	150yr	23,810	5,200	24.35	34.18	30.15	2.27
23.810	200yr	23,810	5,420	24.35	34.34	30.23	2.31
24.010	50yr	24,010	4,340	24.31	33.63	29.90	1.73
24.010	80yr	24,010	4,700	24.31	33.93	30.03	1.78
24.010	100yr	24,010	4,880	24.31	34.08	30.09	1.81
24.010	150yr	24,010	5,200	24.31	34.33	30.19	1.85
24.010	200yr	24,010	5,420	24.31	34.51	30.26	1.88
24.150	50yr	24,150	4,340	25.51	33.66	29.98	1.82
24.150	80yr	24,150	4,700	25.51	33.96	30.11	1.88
24.150	100yr	24,150	4,880	25.51	34.10	30.17	1.90
24.150	150yr	24,150	5,200	25.51	34.36	30.28	1.95
24.150	200yr	24,150	5,420	25.51	34.53	30.36	1.97
24.350	50yr	24,350	4,340	25.16	33.71	30.02	1.90
24.350	80yr	24,350	4,700	25.16	34.00	30.15	1.96
24.350	100yr	24,350	4,880	25.16	34.15	30.22	1.98
24.350	150yr	24,350	5,200	25.16	34.40	30.34	2.03
24.350	200yr	24,350	5,420	25.16	34.57	30.42	2.06
24.530	50yr	24,530	4,340	25.75	33.76	30.11	1.88
24.530	80yr	24,530	4,700	25.75	34.06	30.24	1.94
24.530	100yr	24,530	4,880	25.75	34.20	30.31	1.97
24.530	150yr	24,530	5,200	25.75	34.46	30.42	2.01
24.530	200yr	24,530	5,420	25.75	34.63	30.50	2.04
24.710	50yr	24,710	4,340	25.55	33.82	30.19	1.85
24.710	80yr	24,710	4,700	25.55	34.12	30.33	1.90

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
24.710	100yr	24,710	4,880	25.55	34.26	30.39	1.93
24.710	150yr	24,710	5,200	25.55	34.52	30.51	1.97
24.710	200yr	24,710	5,420	25.55	34.69	30.59	2.00
24.920	50yr	24,920	4,340	25.62	33.88	30.53	1.94
24.920	80yr	24,920	4,700	25.62	34.18	30.68	1.98
24.920	100yr	24,920	4,880	25.62	34.32	30.74	2.01
24.920	150yr	24,920	5,200	25.62	34.57	30.85	2.05
24.920	200yr	24,920	5,420	25.62	34.75	30.93	2.07
25.120	50yr	25,120	4,340	25.50	33.95	30.62	1.94
25.120	80yr	25,120	4,700	25.50	34.25	30.85	1.98
25.120	100yr	25,120	4,880	25.50	34.39	30.92	2.01
25.120	150yr	25,120	5,200	25.50	34.64	31.05	2.04
25.120	200yr	25,120	5,420	25.50	34.82	31.12	2.07
25.320	50yr	25,320	4,340	25.76	34.06	30.07	1.69
25.320	80yr	25,320	4,700	25.76	34.35	30.20	1.74
25.320	100yr	25,320	4,880	25.76	34.50	30.26	1.77
25.320	150yr	25,320	5,200	25.76	34.75	30.37	1.81
25.320	200yr	25,320	5,420	25.76	34.92	30.45	1.83
25.520	50yr	25,520	4,340	25.80	34.07	31.28	2.06
25.520	80yr	25,520	4,700	25.80	34.37	31.44	2.10
25.520	100yr	25,520	4,880	25.80	34.51	31.49	2.12
25.520	150yr	25,520	5,200	25.80	34.76	31.59	2.16
25.520	200yr	25,520	5,420	25.80	34.93	31.67	2.18
25.690	50yr	25,690	4,340	25.64	34.15	31.47	2.12
25.690	80yr	25,690	4,700	25.64	34.44	31.64	2.16
25.690	100yr	25,690	4,880	25.64	34.58	31.70	2.18
25.690	150yr	25,690	5,200	25.64	34.83	31.86	2.20
25.690	200yr	25,690	5,420	25.64	35.00	31.97	2.22
25.695	50yr	25,695	4,340	25.35	34.19	30.55	1.94
25.695	80yr	25,695	4,700	25.35	34.48	30.72	1.98
25.695	100yr	25,695	4,880	25.35	34.62	30.81	2.00
25.695	150yr	25,695	5,200	25.35	34.87	30.96	2.03
25.695	200yr	25,695	5,420	25.35	35.04	31.03	2.05
25.710		Bridge					
25.725	50yr	25,725	4,340	25.35	34.23	30.55	1.92
25.725	80yr	25,725	4,700	25.35	34.53	30.72	1.96
25.725	100yr	25,725	4,880	25.35	34.67	30.81	1.98
25.725	150yr	25,725	5,200	25.35	34.92	30.96	2.02
25.725	200yr	25,725	5,420	25.35	35.09	31.03	2.04
25.930	50yr	25,930	4,340	26.05	34.32	30.84	1.85
25.930	80yr	25,930	4,700	26.05	34.61	30.98	1.89
25.930	100yr	25,930	4,880	26.05	34.75	31.03	1.91
25.930	150yr	25,930	5,200	26.05	35.00	31.17	1.94
25.930	200yr	25,930	5,420	26.05	35.17	31.25	1.97
26.150	50yr	26,150	4,340	26.33	34.39	31.55	2.06
26.150	80yr	26,150	4,700	26.33	34.67	31.70	2.09
26.150	100yr	26,150	4,880	26.33	34.81	31.76	2.11
26.150	150yr	26,150	5,200	26.33	35.06	31.91	2.14
26.150	200yr	26,150	5,420	26.33	35.23	32.03	2.15
26.360	50yr	26,360	4,340	25.54	34.48	31.73	2.16
26.360	80yr	26,360	4,700	25.54	34.77	31.87	2.19
26.360	100yr	26,360	4,880	25.54	34.90	31.95	2.20
26.360	150yr	26,360	5,200	25.54	35.15	32.08	2.23
26.360	200yr	26,360	5,420	25.54	35.31	32.16	2.25
26.570	50yr	26,570	4,340	26.31	34.64	31.21	1.94

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
26.570	80yr	26.570	4.700	26.31	34.91	31.36	1.98
26.570	100yr	26.570	4.880	26.31	35.05	31.43	2.00
26.570	150yr	26.570	5.200	26.31	35.29	31.56	2.04
26.570	200yr	26.570	5.420	26.31	35.45	31.66	2.06
26.615	50yr	26.615	4.340	28.37	34.67	31.04	1.87
26.615	80yr	26.615	4.700	28.37	34.94	31.18	1.92
26.615	100yr	26.615	4.880	28.37	35.08	31.25	1.94
26.615	150yr	26.615	5.200	28.37	35.32	31.38	1.98
26.615	200yr	26.615	5.420	28.37	35.48	31.47	2.00
26.618		Inline Weir					
26.620	50yr	26.620	4.340	30.55	34.67	33.24	2.66
26.620	80yr	26.620	4.700	30.55	34.95	33.37	2.67
26.620	100yr	26.620	4.880	30.55	35.08	33.43	2.67
26.620	150yr	26.620	5.200	30.55	35.32	33.52	2.68
26.620	200yr	26.620	5.420	30.55	35.48	33.59	2.68
26.800	50yr	26.800	4.340	29.45	34.95	32.30	2.12
26.800	80yr	26.800	4.700	29.45	35.21	32.44	2.16
26.800	100yr	26.800	4.880	29.45	35.34	32.51	2.18
26.800	150yr	26.800	5.200	29.45	35.57	32.63	2.22
26.800	200yr	26.800	5.420	29.45	35.72	32.74	2.24
27.010	50yr	27.010	4.340	29.30	35.06	32.88	2.25
27.010	80yr	27.010	4.700	29.30	35.31	33.03	2.30
27.010	100yr	27.010	4.880	29.30	35.43	33.09	2.32
27.010	150yr	27.010	5.200	29.30	35.66	33.20	2.36
27.010	200yr	27.010	5.420	29.30	35.81	33.27	2.38
27.230	50yr	27.230	4.340	28.18	35.23	33.05	2.08
27.230	80yr	27.230	4.700	28.18	35.48	33.16	2.12
27.230	100yr	27.230	4.880	28.18	35.61	33.21	2.14
27.230	150yr	27.230	5.200	28.18	35.83	33.32	2.17
27.230	200yr	27.230	5.420	28.18	35.98	33.37	2.19
27.520	50yr	27.520	3.670	29.37	35.46	32.78	1.58
27.520	80yr	27.520	3.990	29.37	35.71	32.90	1.61
27.520	100yr	27.520	4.140	29.37	35.83	32.95	1.63
27.520	150yr	27.520	4.410	29.37	36.05	33.03	1.65
27.520	200yr	27.520	4.610	29.37	36.20	33.10	1.67
27.760	50yr	27.760	3.670	28.95	35.53	31.92	1.55
27.760	80yr	27.760	3.990	28.95	35.78	32.05	1.61
27.760	100yr	27.760	4.140	28.95	35.90	32.11	1.63
27.760	150yr	27.760	4.410	28.95	36.11	32.24	1.67
27.760	200yr	27.760	4.610	28.95	36.26	32.33	1.70
27.890	50yr	27.890	3.670	28.43	35.53	32.53	1.90
27.890	80yr	27.890	3.990	28.43	35.77	32.82	1.95
27.890	100yr	27.890	4.140	28.43	35.90	32.97	1.97
27.890	150yr	27.890	4.410	28.43	36.11	33.18	2.00
27.890	200yr	27.890	4.610	28.43	36.26	33.40	2.02
28.210	50yr	28.210	3.670	28.95	35.69	32.24	1.69
28.210	80yr	28.210	3.990	28.95	35.94	32.41	1.75
28.210	100yr	28.210	4.140	28.95	36.06	32.56	1.77
28.210	150yr	28.210	4.410	28.95	36.27	32.67	1.80
28.210	200yr	28.210	4.610	28.95	36.42	32.77	1.83
28.410	50yr	28.410	3.670	28.53	35.77	32.53	1.63
28.410	80yr	28.410	3.990	28.53	36.02	32.87	1.67
28.410	100yr	28.410	4.140	28.53	36.14	32.98	1.69
28.410	150yr	28.410	4.410	28.53	36.35	33.14	1.72
28.410	200yr	28.410	4.610	28.53	36.50	33.28	1.75

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
28.630	50yr	28,630	3,670	29.26	35.87	32.26	1.38
28.630	80yr	28,630	3,990	29.26	36.11	32.39	1.43
28.630	100yr	28,630	4,140	29.26	36.23	32.45	1.45
28.630	150yr	28,630	4,410	29.26	36.45	32.61	1.48
28.630	200yr	28,630	4,610	29.26	36.60	32.68	1.51
28.840	50yr	28,840	3,670	28.79	35.87	32.98	1.85
28.840	80yr	28,840	3,990	28.79	36.12	33.12	1.90
28.840	100yr	28,840	4,140	28.79	36.24	33.18	1.92
28.840	150yr	28,840	4,410	28.79	36.45	33.83	1.95
28.840	200yr	28,840	4,610	28.79	36.60	33.88	1.97
29.000	50yr	29,000	3,670	28.37	35.95	33.19	1.84
29.000	80yr	29,000	3,990	28.37	36.19	33.32	1.89
29.000	100yr	29,000	4,140	28.37	36.31	33.40	1.91
29.000	150yr	29,000	4,410	28.37	36.52	33.50	1.94
29.000	200yr	29,000	4,610	28.37	36.66	33.61	1.96
29.180	50yr	29,180	3,670	28.29	36.03	32.99	1.79
29.180	80yr	29,180	3,990	28.29	36.27	33.23	1.85
29.180	100yr	29,180	4,140	28.29	36.39	33.30	1.87
29.180	150yr	29,180	4,410	28.29	36.60	33.40	1.90
29.180	200yr	29,180	4,610	28.29	36.74	33.48	1.93
29.370	50yr	29,370	3,670	28.32	36.11	32.69	1.86
29.370	80yr	29,370	3,990	28.32	36.35	33.22	1.91
29.370	100yr	29,370	4,140	28.32	36.46	33.29	1.93
29.370	150yr	29,370	4,410	28.32	36.67	33.42	1.97
29.370	200yr	29,370	4,610	28.32	36.81	33.52	1.99
29.670	50yr	29,670	3,670	28.67	36.24	33.06	1.88
29.670	80yr	29,670	3,990	28.67	36.48	33.88	1.93
29.670	100yr	29,670	4,140	28.67	36.59	33.93	1.95
29.670	150yr	29,670	4,410	28.67	36.80	34.04	1.99
29.670	200yr	29,670	4,610	28.67	36.94	34.15	2.02
29.870	50yr	29,870	3,670	29.00	36.36	32.53	1.70
29.870	80yr	29,870	3,990	29.00	36.59	32.70	1.76
29.870	100yr	29,870	4,140	29.00	36.71	32.80	1.78
29.870	150yr	29,870	4,410	29.00	36.91	33.02	1.82
29.870	200yr	29,870	4,610	29.00	37.05	33.27	1.86
30.090	50yr	30,090	3,670	29.91	36.44	32.64	1.57
30.090	80yr	30,090	3,990	29.91	36.68	32.77	1.63
30.090	100yr	30,090	4,140	29.91	36.79	32.83	1.65
30.090	150yr	30,090	4,410	29.91	37.00	32.93	1.70
30.090	200yr	30,090	4,610	29.91	37.14	33.02	1.73
30.330	50yr	30,330	3,670	29.98	36.52	32.71	1.47
30.330	80yr	30,330	3,990	29.98	36.76	32.83	1.53
30.330	100yr	30,330	4,140	29.98	36.87	32.88	1.55
30.330	150yr	30,330	4,410	29.98	37.07	32.97	1.60
30.330	200yr	30,330	4,610	29.98	37.21	33.04	1.63
30.370	50yr	30,370	3,670	30.07	36.51	33.03	1.65
30.370	80yr	30,370	3,990	30.07	36.74	33.16	1.71
30.370	100yr	30,370	4,140	30.07	36.86	33.22	1.73
30.370	150yr	30,370	4,410	30.07	37.06	33.33	1.78
30.370	200yr	30,370	4,610	30.07	37.20	33.40	1.81
30.390		Bridge					
30.410	50yr	30,410	3,670	30.07	36.53	33.03	1.64
30.410	80yr	30,410	3,990	30.07	36.77	33.16	1.70
30.410	100yr	30,410	4,140	30.07	36.89	33.22	1.72
30.410	150yr	30,410	4,410	30.07	37.09	33.33	1.77
30.410	200yr	30,410	4,610	30.07	37.23	33.40	1.80

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
30.550	50yr	30,550	3,670	30.05	36.58	33.07	1.60
30.550	80yr	30,550	3,990	30.05	36.82	33.19	1.66
30.550	100yr	30,550	4,140	30.05	36.93	33.24	1.68
30.550	150yr	30,550	4,410	30.05	37.14	33.34	1.72
30.550	200yr	30,550	4,610	30.05	37.28	33.41	1.76
30.730	50yr	30,730	3,670	28.52	36.64	32.80	1.49
30.730	80yr	30,730	3,990	28.52	36.88	32.93	1.55
30.730	100yr	30,730	4,140	28.52	37.00	32.98	1.57
30.730	150yr	30,730	4,410	28.52	37.20	33.08	1.62
30.730	200yr	30,730	4,610	28.52	37.34	33.15	1.65
30.910	50yr	30,910	3,670	29.82	36.66	33.66	1.76
30.910	80yr	30,910	3,990	29.82	36.90	33.78	1.82
30.910	100yr	30,910	4,140	29.82	37.01	33.83	1.84
30.910	150yr	30,910	4,410	29.82	37.22	33.93	1.88
30.910	200yr	30,910	4,610	29.82	37.36	34.00	1.91
31.120	50yr	31,120	3,670	29.68	36.73	33.57	1.76
31.120	80yr	31,120	3,990	29.68	36.97	33.70	1.82
31.120	100yr	31,120	4,140	29.68	37.09	33.76	1.84
31.120	150yr	31,120	4,410	29.68	37.29	33.86	1.88
31.120	200yr	31,120	4,610	29.68	37.43	33.94	1.92
31.290	50yr	31,290	3,670	29.35	36.77	33.92	1.99
31.290	80yr	31,290	3,990	29.35	37.01	34.07	2.04
31.290	100yr	31,290	4,140	29.35	37.13	34.13	2.07
31.290	150yr	31,290	4,410	29.35	37.33	34.25	2.11
31.290	200yr	31,290	4,610	29.35	37.47	34.33	2.13
31.450	50yr	31,450	3,670	29.50	36.85	34.07	2.06
31.450	80yr	31,450	3,990	29.50	37.09	34.21	2.11
31.450	100yr	31,450	4,140	29.50	37.20	34.28	2.13
31.450	150yr	31,450	4,410	29.50	37.40	34.40	2.17
31.450	200yr	31,450	4,610	29.50	37.54	34.48	2.20
31.650	50yr	31,650	3,670	30.49	36.97	34.05	2.04
31.650	80yr	31,650	3,990	30.49	37.20	34.20	2.10
31.650	100yr	31,650	4,140	30.49	37.31	34.26	2.12
31.650	150yr	31,650	4,410	30.49	37.51	34.38	2.16
31.650	200yr	31,650	4,610	30.49	37.65	34.47	2.19
31.660	50yr	31,660	3,670	30.46	36.96	34.34	2.16
31.660	80yr	31,660	3,990	30.46	37.19	34.50	2.21
31.660	100yr	31,660	4,140	30.46	37.30	34.57	2.23
31.660	150yr	31,660	4,410	30.46	37.50	34.69	2.26
31.660	200yr	31,660	4,610	30.46	37.64	34.78	2.29
31.680		Bridge					
31.700	50yr	31,700	3,670	30.46	37.02	34.34	2.12
31.700	80yr	31,700	3,990	30.46	37.26	34.50	2.17
31.700	100yr	31,700	4,140	30.46	37.37	34.57	2.19
31.700	150yr	31,700	4,410	30.46	37.57	34.69	2.23
31.700	200yr	31,700	4,610	30.46	37.71	34.78	2.25
31.830	50yr	31,830	3,670	30.61	37.09	34.73	2.29
31.830	80yr	31,830	3,990	30.61	37.32	34.86	2.34
31.830	100yr	31,830	4,140	30.61	37.43	34.93	2.36
31.830	150yr	31,830	4,410	30.61	37.63	35.04	2.40
31.830	200yr	31,830	4,610	30.61	37.77	35.13	2.43
32.060	50yr	32,060	3,670	30.56	37.26	34.85	2.38
32.060	80yr	32,060	3,990	30.56	37.49	35.00	2.43
32.060	100yr	32,060	4,140	30.56	37.60	35.07	2.45
32.060	150yr	32,060	4,410	30.56	37.79	35.19	2.49

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
32.060	200yr	32.060	4.610	30.56	37.92	35.28	2.52
32.140	50yr	32.140	3.670	30.25	37.47	33.70	1.59
32.140	80yr	32.140	3.990	30.25	37.70	33.85	1.66
32.140	100yr	32.140	4.140	30.25	37.81	33.92	1.68
32.140	150yr	32.140	4.410	30.25	38.00	34.04	1.73
32.140	200yr	32.140	4.610	30.25	38.14	34.13	1.77
32.150		Bridge					
32.160	50yr	32.160	3.670	30.25	37.51	33.70	1.58
32.160	80yr	32.160	3.990	30.25	37.74	33.85	1.64
32.160	100yr	32.160	4.140	30.25	37.85	33.92	1.67
32.160	150yr	32.160	4.410	30.25	38.04	34.04	1.72
32.160	200yr	32.160	4.610	30.25	38.18	34.13	1.75
32.220	50yr	32.220	3.670	30.71	37.50	34.44	1.82
32.220	80yr	32.220	3.990	30.71	37.73	34.56	1.88
32.220	100yr	32.220	4.140	30.71	37.84	34.62	1.91
32.220	150yr	32.220	4.410	30.71	38.03	34.73	1.95
32.220	200yr	32.220	4.610	30.71	38.17	34.82	1.99
32.420	50yr	32.420	3.670	30.97	37.58	34.73	1.78
32.420	80yr	32.420	3.990	30.97	37.82	35.10	1.83
32.420	100yr	32.420	4.140	30.97	37.93	35.16	1.85
32.420	150yr	32.420	4.410	30.97	38.12	35.25	1.89
32.420	200yr	32.420	4.610	30.97	38.26	35.36	1.91
32.610	50yr	32.610	3.670	30.54	37.66	34.87	1.87
32.610	80yr	32.610	3.990	30.54	37.89	35.00	1.93
32.610	100yr	32.610	4.140	30.54	38.00	35.07	1.95
32.610	150yr	32.610	4.410	30.54	38.19	35.18	1.99
32.610	200yr	32.610	4.610	30.54	38.33	35.27	2.02
32.740	50yr	32.740	3.670	30.93	37.69	35.32	2.09
32.740	80yr	32.740	3.990	30.93	37.92	35.44	2.14
32.740	100yr	32.740	4.140	30.93	38.03	35.46	2.17
32.740	150yr	32.740	4.410	30.93	38.22	35.66	2.21
32.740	200yr	32.740	4.610	30.93	38.36	35.96	2.24
32.910	50yr	32.910	3.670	30.72	37.79	36.00	2.23
32.910	80yr	32.910	3.990	30.72	38.02	36.13	2.26
32.910	100yr	32.910	4.140	30.72	38.13	36.17	2.28
32.910	150yr	32.910	4.410	30.72	38.32	36.28	2.31
32.910	200yr	32.910	4.610	30.72	38.45	36.34	2.33
33.080	50yr	33.080	3.670	30.15	37.95	35.88	2.15
33.080	80yr	33.080	3.990	30.15	38.17	35.99	2.20
33.080	100yr	33.080	4.140	30.15	38.27	36.06	2.22
33.080	150yr	33.080	4.410	30.15	38.45	36.16	2.25
33.080	200yr	33.080	4.610	30.15	38.59	36.23	2.28
33.270	50yr	33.270	3.450	30.93	38.08	35.54	2.19
33.270	80yr	33.270	3.760	30.93	38.30	35.69	2.25
33.270	100yr	33.270	3.900	30.93	38.40	35.76	2.28
33.270	150yr	33.270	4.160	30.93	38.58	35.89	2.32
33.270	200yr	33.270	4.350	30.93	38.71	35.98	2.35
33.420	50yr	33.420	3.450	30.83	38.17	35.60	2.24
33.420	80yr	33.420	3.760	30.83	38.40	35.75	2.29
33.420	100yr	33.420	3.900	30.83	38.50	35.82	2.32
33.420	150yr	33.420	4.160	30.83	38.68	35.92	2.36
33.420	200yr	33.420	4.350	30.83	38.81	36.01	2.39
33.630	50yr	33.630	3.450	30.49	38.37	35.22	1.74
33.630	80yr	33.630	3.760	30.49	38.62	35.35	1.80
33.630	100yr	33.630	3.900	30.49	38.72	35.40	1.83

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
33.630	150yr	33,630	4,160	30.49	38.89	35.51	1.88
33.630	200yr	33,630	4,350	30.49	39.02	35.58	1.92
33.840	50yr	33,840	3,450	31.21	38.43	35.44	1.86
33.840	80yr	33,840	3,760	31.21	38.68	35.57	1.91
33.840	100yr	33,840	3,900	31.21	38.78	35.63	1.94
33.840	150yr	33,840	4,160	31.21	38.96	35.73	1.99
33.840	200yr	33,840	4,350	31.21	39.09	35.80	2.03
34.030	50yr	34,030	3,450	31.61	38.51	35.87	1.92
34.030	80yr	34,030	3,760	31.61	38.76	36.00	1.96
34.030	100yr	34,030	3,900	31.61	38.86	36.05	1.99
34.030	150yr	34,030	4,160	31.61	39.04	36.15	2.04
34.030	200yr	34,030	4,350	31.61	39.17	36.22	2.07
34.240	50yr	34,240	3,450	31.16	38.67	35.43	1.51
34.240	80yr	34,240	3,760	31.16	38.92	35.54	1.55
34.240	100yr	34,240	3,900	31.16	39.02	35.60	1.57
34.240	150yr	34,240	4,160	31.16	39.20	35.70	1.61
34.240	200yr	34,240	4,350	31.16	39.34	35.77	1.63
34.390	50yr	34,390	3,450	31.25	38.73	35.95	1.34
34.390	80yr	34,390	3,760	31.25	38.99	36.05	1.37
34.390	100yr	34,390	3,900	31.25	39.09	36.09	1.39
34.390	150yr	34,390	4,160	31.25	39.27	36.18	1.42
34.390	200yr	34,390	4,350	31.25	39.41	36.25	1.45
34.570	50yr	34,570	3,300	31.74	38.74	35.95	1.88
34.570	80yr	34,570	3,580	31.74	38.99	36.10	1.89
34.570	100yr	34,570	3,720	31.74	39.09	36.16	1.90
34.570	150yr	34,570	3,970	31.74	39.27	36.27	1.93
34.570	200yr	34,570	4,140	31.74	39.41	36.35	1.94
34.750	50yr	34,750	3,300	31.98	38.85	35.99	1.83
34.750	80yr	34,750	3,580	31.98	39.09	36.11	1.86
34.750	100yr	34,750	3,720	31.98	39.19	36.18	1.89
34.750	150yr	34,750	3,970	31.98	39.36	36.28	1.94
34.750	200yr	34,750	4,140	31.98	39.49	36.36	1.96
34.940	50yr	34,940	3,300	31.94	38.93	35.98	1.99
34.940	80yr	34,940	3,580	31.94	39.16	36.12	2.02
34.940	100yr	34,940	3,720	31.94	39.26	36.19	2.05
34.940	150yr	34,940	3,970	31.94	39.44	36.31	2.09
34.940	200yr	34,940	4,140	31.94	39.56	36.40	2.12
35.130	50yr	35,130	3,300	31.78	39.07	35.82	1.76
35.130	80yr	35,130	3,580	31.78	39.30	35.96	1.81
35.130	100yr	35,130	3,720	31.78	39.40	36.02	1.84
35.130	150yr	35,130	3,970	31.78	39.57	36.13	1.88
35.130	200yr	35,130	4,140	31.78	39.70	36.20	1.91
35.330	50yr	35,330	3,300	32.39	39.16	35.70	1.66
35.330	80yr	35,330	3,580	32.39	39.39	35.82	1.72
35.330	100yr	35,330	3,720	32.39	39.48	35.88	1.75
35.330	150yr	35,330	3,970	32.39	39.66	35.99	1.80
35.330	200yr	35,330	4,140	32.39	39.79	36.06	1.83
35.530	50yr	35,530	3,300	32.33	39.20	36.33	1.92
35.530	80yr	35,530	3,580	32.33	39.43	36.45	1.97
35.530	100yr	35,530	3,720	32.33	39.53	36.51	2.00
35.530	150yr	35,530	3,970	32.33	39.71	36.62	2.05
35.530	200yr	35,530	4,140	32.33	39.83	36.69	2.08
35.740	50yr	35,740	3,300	32.59	39.28	36.77	2.24
35.740	80yr	35,740	3,580	32.59	39.51	36.91	2.28
35.740	100yr	35,740	3,720	32.59	39.61	36.98	2.31
35.740	150yr	35,740	3,970	32.59	39.79	37.10	2.35

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
35.740	200yr	35,740	4,140	32.59	39.91	37.19	2.37
35.880	50yr	35,880	3,300	32.52	39.42	37.12	2.20
35.880	80yr	35,880	3,580	32.52	39.65	37.26	2.22
35.880	100yr	35,880	3,720	32.52	39.74	37.33	2.24
35.880	150yr	35,880	3,970	32.52	39.92	37.46	2.27
35.880	200yr	35,880	4,140	32.52	40.04	37.54	2.29
36.120	50yr	36,120	3,300	32.98	39.58	37.51	2.58
36.120	80yr	36,120	3,580	32.98	39.78	37.66	2.66
36.120	100yr	36,120	3,720	32.98	39.88	37.73	2.70
36.120	150yr	36,120	3,970	32.98	40.05	37.84	2.76
36.120	200yr	36,120	4,140	32.98	40.17	37.92	2.80
36.300	50yr	36,300	3,300	33.12	39.80	37.28	2.24
36.300	80yr	36,300	3,580	33.12	40.02	37.42	2.31
36.300	100yr	36,300	3,720	33.12	40.12	37.49	2.34
36.300	150yr	36,300	3,970	33.12	40.31	37.62	2.39
36.300	200yr	36,300	4,140	33.12	40.44	37.71	2.42
36.490	50yr	36,490	3,300	33.29	39.93	37.58	2.26
36.490	80yr	36,490	3,580	33.29	40.15	37.73	2.31
36.490	100yr	36,490	3,720	33.29	40.26	37.80	2.33
36.490	150yr	36,490	3,970	33.29	40.45	37.91	2.37
36.490	200yr	36,490	4,140	33.29	40.58	37.99	2.40
36.680	50yr	36,680	3,300	32.85	40.11	37.02	2.04
36.680	80yr	36,680	3,580	32.85	40.33	37.19	2.10
36.680	100yr	36,680	3,720	32.85	40.43	37.27	2.13
36.680	150yr	36,680	3,970	32.85	40.62	37.39	2.17
36.680	200yr	36,680	4,140	32.85	40.75	37.47	2.20
36.880	50yr	36,880	3,300	33.29	40.20	37.73	2.29
36.880	80yr	36,880	3,580	33.29	40.42	37.87	2.34
36.880	100yr	36,880	3,720	33.29	40.52	37.94	2.36
36.880	150yr	36,880	3,970	33.29	40.71	38.06	2.40
36.880	200yr	36,880	4,140	33.29	40.84	38.14	2.43
37.080	50yr	37,080	3,300	33.09	40.39	37.81	2.13
37.080	80yr	37,080	3,580	33.09	40.60	37.94	2.19
37.080	100yr	37,080	3,720	33.09	40.70	38.01	2.22
37.080	150yr	37,080	3,970	33.09	40.89	38.12	2.27
37.080	200yr	37,080	4,140	33.09	41.01	38.20	2.30
37.290	50yr	37,290	3,300	32.14	40.53	37.77	2.07
37.290	80yr	37,290	3,580	32.14	40.74	37.90	2.13
37.290	100yr	37,290	3,720	32.14	40.85	37.97	2.16
37.290	150yr	37,290	3,970	32.14	41.03	38.09	2.21
37.290	200yr	37,290	4,140	32.14	41.15	38.17	2.24
37.490	50yr	37,490	3,300	35.74	40.58	39.11	2.86
37.490	80yr	37,490	3,580	35.74	40.79	39.26	2.90
37.490	100yr	37,490	3,720	35.74	40.89	39.34	2.92
37.490	150yr	37,490	3,970	35.74	41.07	39.71	2.95
37.490	200yr	37,490	4,140	35.74	41.19	39.82	2.98
37.710	50yr	37,710	3,300	34.71	40.87	39.55	3.37
37.710	80yr	37,710	3,580	34.71	41.05	39.77	3.47
37.710	100yr	37,710	3,720	34.71	41.14	39.86	3.51
37.710	150yr	37,710	3,970	34.71	41.29	40.04	3.58
37.710	200yr	37,710	4,140	34.71	41.40	40.24	3.63
37.930	50yr	37,930	3,300	35.57	41.48	39.21	2.30
37.930	80yr	37,930	3,580	35.57	41.68	39.47	2.37
37.930	100yr	37,930	3,720	35.57	41.77	39.54	2.40
37.930	150yr	37,930	3,970	35.57	41.94	39.66	2.45
37.930	200yr	37,930	4,140	35.57	42.05	39.74	2.49

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
38.140	50yr	38,140	3,300	35.90	41.66	39.94	2.26
38.140	80yr	38,140	3,580	35.90	41.86	40.06	2.32
38.140	100yr	38,140	3,720	35.90	41.96	40.12	2.35
38.140	150yr	38,140	3,970	35.90	42.13	40.22	2.39
38.140	200yr	38,140	4,140	35.90	42.24	40.28	2.42
38.340	50yr	38,340	3,300	35.35	41.87	39.59	1.94
38.340	80yr	38,340	3,580	35.35	42.07	39.70	1.99
38.340	100yr	38,340	3,720	35.35	42.17	39.76	2.02
38.340	150yr	38,340	3,970	35.35	42.35	39.87	2.06
38.340	200yr	38,340	4,140	35.35	42.46	39.93	2.10
38.510	50yr	38,510	3,300	35.50	41.96	39.66	2.02
38.510	80yr	38,510	3,580	35.50	42.16	39.78	2.09
38.510	100yr	38,510	3,720	35.50	42.25	39.83	2.12
38.510	150yr	38,510	3,970	35.50	42.43	39.93	2.17
38.510	200yr	38,510	4,140	35.50	42.54	40.00	2.21
38.710	50yr	38,710	3,300	35.73	42.01	40.14	2.55
38.710	80yr	38,710	3,580	35.73	42.21	40.27	2.63
38.710	100yr	38,710	3,720	35.73	42.30	40.34	2.68
38.710	150yr	38,710	3,970	35.73	42.47	40.45	2.75
38.710	200yr	38,710	4,140	35.73	42.57	40.52	2.80
38.900	50yr	38,900	3,300	36.24	42.26	39.97	2.12
38.900	80yr	38,900	3,580	36.24	42.46	40.08	2.19
38.900	100yr	38,900	3,720	36.24	42.56	40.14	2.23
38.900	150yr	38,900	3,970	36.24	42.73	40.25	2.28
38.900	200yr	38,900	4,140	36.24	42.85	40.32	2.32
39.075	50yr	39,075	2,930	37.03	42.27	40.75	2.89
39.075	80yr	39,075	3,190	37.03	42.46	40.88	2.99
39.075	100yr	39,075	3,310	37.03	42.55	40.94	3.03
39.075	150yr	39,075	3,530	37.03	42.72	41.06	3.10
39.075	200yr	39,075	3,690	37.03	42.83	41.16	3.15
39.090		Bridge					
39.105	50yr	39,105	2,930	37.03	42.35	40.75	2.82
39.105	80yr	39,105	3,190	37.03	42.55	40.88	2.92
39.105	100yr	39,105	3,310	37.03	42.64	40.93	2.96
39.105	150yr	39,105	3,530	37.03	42.81	41.06	3.03
39.105	200yr	39,105	3,690	37.03	42.92	41.16	3.08
39.110	50yr	39,110	2,930	37.16	42.35	40.41	2.88
39.110	80yr	39,110	3,190	37.16	42.54	40.56	3.00
39.110	100yr	39,110	3,310	37.16	42.63	40.64	3.05
39.110	150yr	39,110	3,530	37.16	42.79	40.77	3.13
39.110	200yr	39,110	3,690	37.16	42.90	40.87	3.20
39.330	50yr	39,330	2,930	36.46	42.56	40.43	2.89
39.330	80yr	39,330	3,190	36.46	42.75	40.60	3.02
39.330	100yr	39,330	3,310	36.46	42.85	40.67	3.07
39.330	150yr	39,330	3,530	36.46	43.02	40.80	3.17
39.330	200yr	39,330	3,690	36.46	43.13	40.90	3.24
39.475	50yr	39,475	2,930	36.50	42.64	40.77	3.21
39.475	80yr	39,475	3,190	36.50	42.84	40.97	3.35
39.475	100yr	39,475	3,310	36.50	42.93	41.06	3.41
39.475	150yr	39,475	3,530	36.50	43.10	41.22	3.50
39.475	200yr	39,475	3,690	36.50	43.21	41.32	3.58
39.480		Bridge					
39.485	50yr	39,485	2,930	36.50	42.87	40.77	3.05
39.485	80yr	39,485	3,190	36.50	43.09	40.97	3.17

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
39.485	100yr	39.485	3.310	36.50	43.20	41.06	3.22
39.485	150yr	39.485	3.530	36.50	43.38	41.22	3.31
39.485	200yr	39.485	3.690	36.50	43.51	41.32	3.37

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▶논산천 홍수위산정결과(개수후)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: NonSan Reach: NonSan

Rivers = 1
Hydraulic Reaches = 1
River Stations = 130
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		2,630	-3.84	9.09	2.25	0.74
0.000	80yr		2,850	-3.84	9.09	2.52	0.80
0.000	100yr		2,960	-3.84	9.09	2.66	0.83
0.000	150yr		3,210	-3.84	9.09	3.00	0.90
0.000	200yr		3,380	-3.84	9.09	3.19	0.95
0.165	50yr	165	2,630	-2.44	9.08	4.31	1.05
0.165	80yr	165	2,850	-2.44	9.08	4.43	1.13
0.165	100yr	165	2,960	-2.44	9.08	4.49	1.18
0.165	150yr	165	3,210	-2.44	9.08	4.59	1.28
0.165	200yr	165	3,380	-2.44	9.07	4.66	1.35
0.167		Inline Weir					
0.170	50yr	170	2,630	-2.44	9.11	4.31	1.04
0.170	80yr	170	2,850	-2.44	9.10	4.43	1.13
0.170	100yr	170	2,960	-2.44	9.11	4.49	1.17
0.170	150yr	170	3,210	-2.44	9.10	4.58	1.27
0.170	200yr	170	3,380	-2.44	9.10	4.66	1.34
0.220	50yr	220	2,630	-4.16	9.12	2.30	0.89
0.220	80yr	220	2,850	-4.16	9.13	2.48	0.97
0.220	100yr	220	2,960	-4.16	9.13	3.30	1.01
0.220	150yr	220	3,210	-4.16	9.13	2.71	1.09
0.220	200yr	220	3,380	-4.16	9.14	2.78	1.15
0.420	50yr	420	2,630	-2.12	9.14	2.62	0.90
0.420	80yr	420	2,850	-2.12	9.14	3.63	0.97
0.420	100yr	420	2,960	-2.12	9.14	3.29	1.01
0.420	150yr	420	3,210	-2.12	9.15	3.88	1.09
0.420	200yr	420	3,380	-2.12	9.15	3.96	1.15
0.620	50yr	620	2,150	-2.47	9.14	4.04	1.01
0.620	80yr	620	2,390	-2.47	9.14	4.21	1.12
0.620	100yr	620	2,500	-2.47	9.14	4.26	1.17
0.620	150yr	620	2,710	-2.47	9.15	4.38	1.27
0.620	200yr	620	2,860	-2.47	9.15	4.45	1.34
0.820	50yr	820	2,150	-1.59	9.15	4.18	1.08
0.820	80yr	820	2,390	-1.59	9.15	4.32	1.20
0.820	100yr	820	2,500	-1.59	9.15	4.37	1.26
0.820	150yr	820	2,710	-1.59	9.16	4.49	1.36
0.820	200yr	820	2,860	-1.59	9.17	4.57	1.43
0.828	50yr	828	2,150	-1.64	9.15	3.98	1.06
0.828	80yr	828	2,390	-1.64	9.16	4.13	1.17
0.828	100yr	828	2,500	-1.64	9.16	4.20	1.23
0.828	150yr	828	2,710	-1.64	9.17	4.32	1.33
0.828	200yr	828	2,860	-1.64	9.18	4.40	1.40
0.835		Bridge					
0.837	50yr	837	2,150	-1.64	9.17	3.98	1.05
0.837	80yr	837	2,390	-1.64	9.18	4.13	1.17
0.837	100yr	837	2,500	-1.64	9.19	4.20	1.22

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.837	150yr	837	2,710	-1.64	9.20	4.32	1.32
0.837	200yr	837	2,860	-1.64	9.21	4.39	1.39
0.840	50yr	840	2,150	-3.29	9.17	3.11	1.08
0.840	80yr	840	2,390	-3.29	9.17	4.15	1.20
0.840	100yr	840	2,500	-3.29	9.18	4.23	1.26
0.840	150yr	840	2,710	-3.29	9.19	4.37	1.36
0.840	200yr	840	2,860	-3.29	9.20	4.49	1.43
0.845		Bridge					
0.854	50yr	854	2,150	-3.29	9.18	3.11	1.08
0.854	80yr	854	2,390	-3.29	9.18	4.15	1.20
0.854	100yr	854	2,500	-3.29	9.19	4.23	1.25
0.854	150yr	854	2,710	-3.29	9.20	4.37	1.36
0.854	200yr	854	2,860	-3.29	9.22	4.49	1.43
1.035	50yr	1,035	2,150	-1.86	9.19	3.75	1.10
1.035	80yr	1,035	2,390	-1.86	9.20	4.07	1.22
1.035	100yr	1,035	2,500	-1.86	9.21	4.26	1.27
1.035	150yr	1,035	2,710	-1.86	9.22	4.37	1.38
1.035	200yr	1,035	2,860	-1.86	9.23	4.46	1.45
1.220	50yr	1,220	2,150	-2.08	9.20	3.65	1.10
1.220	80yr	1,220	2,390	-2.08	9.21	3.83	1.22
1.220	100yr	1,220	2,500	-2.08	9.22	4.04	1.27
1.220	150yr	1,220	2,710	-2.08	9.24	4.21	1.37
1.220	200yr	1,220	2,860	-2.08	9.26	4.29	1.45
1.420	50yr	1,420	2,150	-1.78	9.21	3.95	1.13
1.420	80yr	1,420	2,390	-1.78	9.23	4.22	1.26
1.420	100yr	1,420	2,500	-1.78	9.24	4.29	1.31
1.420	150yr	1,420	2,710	-1.78	9.26	4.41	1.42
1.420	200yr	1,420	2,860	-1.78	9.28	4.50	1.49
1.620	50yr	1,620	2,150	-1.32	9.22	3.99	1.17
1.620	80yr	1,620	2,390	-1.32	9.24	4.16	1.30
1.620	100yr	1,620	2,500	-1.32	9.25	4.24	1.35
1.620	150yr	1,620	2,710	-1.32	9.28	4.57	1.46
1.620	200yr	1,620	2,860	-1.32	9.30	4.64	1.54
1.820	50yr	1,820	2,150	-2.18	9.24	3.98	1.13
1.820	80yr	1,820	2,390	-2.18	9.27	4.12	1.25
1.820	100yr	1,820	2,500	-2.18	9.28	4.21	1.30
1.820	150yr	1,820	2,710	-2.18	9.31	4.33	1.41
1.820	200yr	1,820	2,860	-2.18	9.33	4.42	1.48
2.020	50yr	2,020	2,150	-1.64	9.26	4.21	1.16
2.020	80yr	2,020	2,390	-1.64	9.28	4.36	1.29
2.020	100yr	2,020	2,500	-1.64	9.30	4.43	1.34
2.020	150yr	2,020	2,710	-1.64	9.33	4.55	1.45
2.020	200yr	2,020	2,860	-1.64	9.36	4.63	1.52
2.240	50yr	2,240	2,150	-1.86	9.27	4.04	1.15
2.240	80yr	2,240	2,390	-1.86	9.30	4.19	1.28
2.240	100yr	2,240	2,500	-1.86	9.32	4.26	1.33
2.240	150yr	2,240	2,710	-1.86	9.36	4.38	1.44
2.240	200yr	2,240	2,860	-1.86	9.39	4.47	1.51
2.450	50yr	2,450	2,150	-1.36	9.29	4.08	1.16
2.450	80yr	2,450	2,390	-1.36	9.32	4.22	1.28
2.450	100yr	2,450	2,500	-1.36	9.34	4.29	1.34
2.450	150yr	2,450	2,710	-1.36	9.38	4.42	1.44
2.450	200yr	2,450	2,860	-1.36	9.42	4.51	1.52
2.660	50yr	2,660	2,150	-1.40	9.31	3.93	1.13
2.660	80yr	2,660	2,390	-1.40	9.35	4.09	1.25

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
2.660	100yr	2,660	2,500	-1.40	9.37	4.16	1.30
2.660	150yr	2,660	2,710	-1.40	9.41	4.28	1.40
2.660	200yr	2,660	2,860	-1.40	9.45	4.37	1.47
2.860	50yr	2,860	2,150	-0.70	9.32	3.64	1.08
2.860	80yr	2,860	2,390	-0.70	9.37	3.79	1.19
2.860	100yr	2,860	2,500	-0.70	9.39	3.85	1.25
2.860	150yr	2,860	2,710	-0.70	9.44	3.97	1.34
2.860	200yr	2,860	2,860	-0.70	9.48	4.07	1.41
3.070	50yr	3,070	2,150	-0.97	9.34	4.10	1.14
3.070	80yr	3,070	2,390	-0.97	9.38	4.24	1.26
3.070	100yr	3,070	2,500	-0.97	9.41	4.31	1.31
3.070	150yr	3,070	2,710	-0.97	9.46	4.43	1.41
3.070	200yr	3,070	2,860	-0.97	9.50	4.52	1.48
3.260	50yr	3,260	2,150	-0.65	9.35	4.11	1.14
3.260	80yr	3,260	2,390	-0.65	9.40	4.25	1.26
3.260	100yr	3,260	2,500	-0.65	9.42	4.32	1.31
3.260	150yr	3,260	2,710	-0.65	9.48	4.44	1.41
3.260	200yr	3,260	2,860	-0.65	9.52	4.52	1.48
3.450	50yr	3,450	2,150	-0.75	9.36	4.13	1.15
3.450	80yr	3,450	2,390	-0.75	9.41	4.32	1.27
3.450	100yr	3,450	2,500	-0.75	9.44	4.37	1.32
3.450	150yr	3,450	2,710	-0.75	9.49	4.49	1.42
3.450	200yr	3,450	2,860	-0.75	9.54	4.57	1.49
3.660	50yr	3,660	2,150	-0.70	9.37	4.29	1.17
3.660	80yr	3,660	2,390	-0.70	9.43	4.45	1.29
3.660	100yr	3,660	2,500	-0.70	9.46	4.52	1.35
3.660	150yr	3,660	2,710	-0.70	9.51	4.64	1.45
3.660	200yr	3,660	2,860	-0.70	9.56	4.72	1.52
3.830	50yr	3,830	2,150	-0.93	9.39	4.16	1.15
3.830	80yr	3,830	2,390	-0.93	9.45	4.35	1.26
3.830	100yr	3,830	2,500	-0.93	9.48	4.41	1.32
3.830	150yr	3,830	2,710	-0.93	9.54	4.53	1.41
3.830	200yr	3,830	2,860	-0.93	9.59	4.62	1.48
4.040	50yr	4,040	2,150	-0.15	9.40	4.34	1.17
4.040	80yr	4,040	2,390	-0.15	9.47	4.49	1.29
4.040	100yr	4,040	2,500	-0.15	9.50	4.54	1.34
4.040	150yr	4,040	2,710	-0.15	9.56	4.66	1.44
4.040	200yr	4,040	2,860	-0.15	9.61	4.75	1.51
4.225	50yr	4,225	2,150	-3.02	9.42	4.40	1.18
4.225	80yr	4,225	2,390	-3.02	9.48	4.54	1.30
4.225	100yr	4,225	2,500	-3.02	9.52	4.59	1.35
4.225	150yr	4,225	2,710	-3.02	9.58	4.70	1.45
4.225	200yr	4,225	2,860	-3.02	9.64	4.79	1.52
4.257	50yr	4,257	2,150	-2.63	9.42	4.30	1.16
4.257	80yr	4,257	2,390	-2.63	9.49	4.45	1.28
4.257	100yr	4,257	2,500	-2.63	9.53	4.50	1.33
4.257	150yr	4,257	2,710	-2.63	9.59	4.61	1.43
4.257	200yr	4,257	2,860	-2.63	9.65	4.70	1.50
4.265		Bridge					
4.273	50yr	4,273	2,150	-2.63	9.43	4.29	1.16
4.273	80yr	4,273	2,390	-2.63	9.50	4.44	1.28
4.273	100yr	4,273	2,500	-2.63	9.54	4.51	1.33
4.273	150yr	4,273	2,710	-2.63	9.60	4.61	1.43
4.273	200yr	4,273	2,860	-2.63	9.66	4.69	1.49
4.435	50yr	4,435	2,000	-0.50	9.45	4.13	1.07

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
4.435	80yr	4,435	2,180	-0.50	9.53	4.25	1.15
4.435	100yr	4,435	2,280	-0.50	9.57	4.31	1.20
4.435	150yr	4,435	2,450	-0.50	9.64	4.42	1.27
4.435	200yr	4,435	2,570	-0.50	9.70	4.49	1.33
4.625	50yr	4,625	2,000	0.23	9.46	4.48	1.12
4.625	80yr	4,625	2,180	0.23	9.54	4.60	1.21
4.625	100yr	4,625	2,280	0.23	9.58	4.65	1.26
4.625	150yr	4,625	2,450	0.23	9.66	4.75	1.33
4.625	200yr	4,625	2,570	0.23	9.72	4.82	1.39
4.845	50yr	4,845	2,000	-0.28	9.48	4.77	1.16
4.845	80yr	4,845	2,180	-0.28	9.56	4.88	1.24
4.845	100yr	4,845	2,280	-0.28	9.60	4.94	1.29
4.845	150yr	4,845	2,450	-0.28	9.68	5.04	1.37
4.845	200yr	4,845	2,570	-0.28	9.74	5.10	1.43
5.040	50yr	5,040	2,000	-0.46	9.49	4.72	1.14
5.040	80yr	5,040	2,180	-0.46	9.58	4.82	1.23
5.040	100yr	5,040	2,280	-0.46	9.62	4.88	1.28
5.040	150yr	5,040	2,450	-0.46	9.70	4.98	1.36
5.040	200yr	5,040	2,570	-0.46	9.76	5.05	1.41
5.235	50yr	5,235	2,000	0.15	9.51	4.61	1.13
5.235	80yr	5,235	2,180	0.15	9.60	4.73	1.22
5.235	100yr	5,235	2,280	0.15	9.64	4.79	1.26
5.235	150yr	5,235	2,450	0.15	9.72	4.89	1.34
5.235	200yr	5,235	2,570	0.15	9.79	4.96	1.39
5.425	50yr	5,425	2,000	-0.47	9.53	4.72	1.15
5.425	80yr	5,425	2,180	-0.47	9.61	4.83	1.24
5.425	100yr	5,425	2,280	-0.47	9.66	4.89	1.28
5.425	150yr	5,425	2,450	-0.47	9.74	4.99	1.36
5.425	200yr	5,425	2,570	-0.47	9.81	5.06	1.41
5.640	50yr	5,640	2,000	-0.38	9.54	4.72	1.15
5.640	80yr	5,640	2,180	-0.38	9.63	4.83	1.23
5.640	100yr	5,640	2,280	-0.38	9.68	4.89	1.28
5.640	150yr	5,640	2,450	-0.38	9.77	4.99	1.36
5.640	200yr	5,640	2,570	-0.38	9.83	5.06	1.41
5.845	50yr	5,845	2,000	0.35	9.56	4.53	1.11
5.845	80yr	5,845	2,180	0.35	9.66	4.66	1.20
5.845	100yr	5,845	2,280	0.35	9.70	4.72	1.24
5.845	150yr	5,845	2,450	0.35	9.79	4.82	1.32
5.845	200yr	5,845	2,570	0.35	9.86	4.89	1.37
6.055	50yr	6,055	2,000	0.05	9.58	4.70	1.12
6.055	80yr	6,055	2,180	0.05	9.68	4.80	1.20
6.055	100yr	6,055	2,280	0.05	9.72	4.86	1.25
6.055	150yr	6,055	2,450	0.05	9.82	4.96	1.32
6.055	200yr	6,055	2,570	0.05	9.89	5.03	1.37
6.260	50yr	6,260	2,000	-0.23	9.59	5.18	1.20
6.260	80yr	6,260	2,180	-0.23	9.69	5.29	1.29
6.260	100yr	6,260	2,280	-0.23	9.74	5.35	1.34
6.260	150yr	6,260	2,450	-0.23	9.83	5.45	1.41
6.260	200yr	6,260	2,570	-0.23	9.91	5.52	1.47
6.470	50yr	6,470	2,000	-0.53	9.62	5.05	1.17
6.470	80yr	6,470	2,180	-0.53	9.72	5.15	1.26
6.470	100yr	6,470	2,280	-0.53	9.77	5.21	1.30
6.470	150yr	6,470	2,450	-0.53	9.87	5.31	1.38
6.470	200yr	6,470	2,570	-0.53	9.94	5.38	1.43
6.670	50yr	6,670	2,000	-0.35	9.64	5.22	1.21
6.670	80yr	6,670	2,180	-0.35	9.74	5.33	1.29

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
6.670	100yr	6.670	2.280	-0.35	9.79	5.39	1.34
6.670	150yr	6.670	2.450	-0.35	9.89	5.48	1.42
6.670	200yr	6.670	2.570	-0.35	9.96	5.55	1.47
6.890	50yr	6.890	2.000	0.03	9.66	5.50	1.31
6.890	80yr	6.890	2.180	0.03	9.76	5.61	1.40
6.890	100yr	6.890	2.280	0.03	9.81	5.68	1.45
6.890	150yr	6.890	2.450	0.03	9.91	5.78	1.53
6.890	200yr	6.890	2.570	0.03	9.99	5.85	1.59
7.075	50yr	7.075	2.000	0.53	9.69	5.45	1.23
7.075	80yr	7.075	2.180	0.53	9.80	5.54	1.32
7.075	100yr	7.075	2.280	0.53	9.85	5.60	1.37
7.075	150yr	7.075	2.450	0.53	9.96	5.70	1.45
7.075	200yr	7.075	2.570	0.53	10.03	5.77	1.50
7.285	50yr	7.285	2.000	-0.13	9.71	5.51	1.24
7.285	80yr	7.285	2.180	-0.13	9.82	5.62	1.33
7.285	100yr	7.285	2.280	-0.13	9.88	5.68	1.37
7.285	150yr	7.285	2.450	-0.13	9.98	5.78	1.45
7.285	200yr	7.285	2.570	-0.13	10.07	5.85	1.50
7.505	50yr	7.505	2.000	-0.69	9.74	5.62	1.25
7.505	80yr	7.505	2.180	-0.69	9.85	5.72	1.33
7.505	100yr	7.505	2.280	-0.69	9.91	5.78	1.38
7.505	150yr	7.505	2.450	-0.69	10.01	5.87	1.46
7.505	200yr	7.505	2.570	-0.69	10.10	5.94	1.51
7.705	50yr	7.705	2.000	0.61	9.76	5.40	1.22
7.705	80yr	7.705	2.180	0.61	9.88	5.49	1.30
7.705	100yr	7.705	2.280	0.61	9.94	5.55	1.35
7.705	150yr	7.705	2.450	0.61	10.05	5.66	1.42
7.705	200yr	7.705	2.570	0.61	10.13	5.72	1.47
7.724	50yr	7.724	2.000	0.99	9.76	5.42	1.22
7.724	80yr	7.724	2.180	0.99	9.88	5.53	1.31
7.724	100yr	7.724	2.280	0.99	9.94	5.59	1.35
7.724	150yr	7.724	2.450	0.99	10.05	5.69	1.43
7.724	200yr	7.724	2.570	0.99	10.13	5.76	1.48
7.735		Bridge					
7.746	50yr	7.746	2.000	0.99	9.77	5.42	1.22
7.746	80yr	7.746	2.180	0.99	9.88	5.53	1.30
7.746	100yr	7.746	2.280	0.99	9.95	5.59	1.35
7.746	150yr	7.746	2.450	0.99	10.06	5.69	1.42
7.746	200yr	7.746	2.570	0.99	10.14	5.76	1.47
7.895	50yr	7.895	2.000	0.38	9.78	5.77	1.29
7.895	80yr	7.895	2.180	0.38	9.90	5.89	1.37
7.895	100yr	7.895	2.280	0.38	9.96	5.94	1.42
7.895	150yr	7.895	2.450	0.38	10.07	6.04	1.50
7.895	200yr	7.895	2.570	0.38	10.16	6.11	1.55
8.095	50yr	8.095	2.000	0.83	9.80	5.87	1.32
8.095	80yr	8.095	2.180	0.83	9.92	5.97	1.41
8.095	100yr	8.095	2.280	0.83	9.99	6.05	1.46
8.095	150yr	8.095	2.450	0.83	10.10	6.15	1.53
8.095	200yr	8.095	2.570	0.83	10.19	6.22	1.59
8.270	50yr	8.270	2.000	1.27	9.83	5.73	1.27
8.270	80yr	8.270	2.180	1.27	9.95	5.84	1.36
8.270	100yr	8.270	2.280	1.27	10.02	5.90	1.41
8.270	150yr	8.270	2.450	1.27	10.13	6.00	1.48
8.270	200yr	8.270	2.570	1.27	10.22	6.07	1.53
8.285		Bridge					

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
8.300	50yr	8,300	2,000	1.27	9.83	5.73	1.27
8.300	80yr	8,300	2,180	1.27	9.96	5.84	1.36
8.300	100yr	8,300	2,280	1.27	10.03	5.90	1.40
8.300	150yr	8,300	2,450	1.27	10.15	6.00	1.48
8.300	200yr	8,300	2,570	1.27	10.25	6.07	1.53
8.465	50yr	8,465	2,000	0.91	9.85	6.16	1.37
8.465	80yr	8,465	2,180	0.91	9.98	6.27	1.46
8.465	100yr	8,465	2,280	0.91	10.04	6.33	1.51
8.465	150yr	8,465	2,450	0.91	10.17	6.42	1.58
8.465	200yr	8,465	2,570	0.91	10.27	6.49	1.63
8.660	50yr	8,660	2,000	0.84	9.88	6.21	1.37
8.660	80yr	8,660	2,180	0.84	10.01	6.32	1.45
8.660	100yr	8,660	2,280	0.84	10.08	6.38	1.50
8.660	150yr	8,660	2,450	0.84	10.21	6.48	1.58
8.660	200yr	8,660	2,570	0.84	10.31	6.55	1.62
8.855	50yr	8,855	2,000	0.82	9.91	6.34	1.39
8.855	80yr	8,855	2,180	0.82	10.04	6.45	1.48
8.855	100yr	8,855	2,280	0.82	10.11	6.50	1.52
8.855	150yr	8,855	2,450	0.82	10.24	6.60	1.60
8.855	200yr	8,855	2,570	0.82	10.34	6.67	1.65
9.070	50yr	9,070	2,000	0.53	9.95	6.38	1.33
9.070	80yr	9,070	2,180	0.53	10.09	6.49	1.41
9.070	100yr	9,070	2,280	0.53	10.16	6.55	1.46
9.070	150yr	9,070	2,450	0.53	10.30	6.64	1.53
9.070	200yr	9,070	2,570	0.53	10.40	6.71	1.57
9.245	50yr	9,245	2,000	0.66	10.00	6.05	1.10
9.245	80yr	9,245	2,180	0.66	10.15	6.13	1.17
9.245	100yr	9,245	2,280	0.66	10.22	6.19	1.21
9.245	150yr	9,245	2,450	0.66	10.36	6.27	1.26
9.245	200yr	9,245	2,570	0.66	10.47	6.34	1.30
9.465	50yr	9,465	1,410	1.19	10.02	5.81	1.15
9.465	80yr	9,465	1,550	1.19	10.17	5.94	1.23
9.465	100yr	9,465	1,620	1.19	10.24	6.00	1.27
9.465	150yr	9,465	1,730	1.19	10.39	6.07	1.32
9.465	200yr	9,465	1,820	1.19	10.49	6.14	1.37
9.670	50yr	9,670	1,410	0.72	10.04	5.95	1.17
9.670	80yr	9,670	1,550	0.72	10.19	6.06	1.26
9.670	100yr	9,670	1,620	0.72	10.26	6.11	1.29
9.670	150yr	9,670	1,730	0.72	10.41	6.20	1.35
9.670	200yr	9,670	1,820	0.72	10.52	6.26	1.39
9.875	50yr	9,875	1,410	1.00	10.06	5.53	1.17
9.875	80yr	9,875	1,550	1.00	10.21	5.74	1.25
9.875	100yr	9,875	1,620	1.00	10.29	5.83	1.29
9.875	150yr	9,875	1,730	1.00	10.43	6.21	1.34
9.875	200yr	9,875	1,820	1.00	10.54	6.31	1.39
10.062	50yr	10,062	1,410	1.65	10.07	6.42	1.36
10.062	80yr	10,062	1,550	1.65	10.22	6.76	1.45
10.062	100yr	10,062	1,620	1.65	10.30	6.87	1.49
10.062	150yr	10,062	1,730	1.65	10.44	6.99	1.55
10.062	200yr	10,062	1,820	1.65	10.55	7.09	1.59
10.065		Bridge					
10.068	50yr	10,068	1,410	1.65	10.07	6.42	1.36
10.068	80yr	10,068	1,550	1.65	10.23	6.76	1.45
10.068	100yr	10,068	1,620	1.65	10.31	6.87	1.49
10.068	150yr	10,068	1,730	1.65	10.45	6.99	1.55

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
10.068	200yr	10.068	1.820	1.65	10.56	7.09	1.59
10.085	50yr	10.085	1.410	1.47	10.09	5.62	1.27
10.085	80yr	10.085	1.550	1.47	10.24	6.24	1.35
10.085	100yr	10.085	1.620	1.47	10.32	6.49	1.39
10.085	150yr	10.085	1.730	1.47	10.47	6.69	1.44
10.085	200yr	10.085	1.820	1.47	10.58	6.74	1.49
10.275	50yr	10.275	1.410	0.57	10.12	5.88	1.22
10.275	80yr	10.275	1.550	0.57	10.28	6.11	1.30
10.275	100yr	10.275	1.620	0.57	10.36	6.38	1.34
10.275	150yr	10.275	1.730	0.57	10.51	6.48	1.39
10.275	200yr	10.275	1.820	0.57	10.62	6.55	1.44
10.475	50yr	10.475	1.410	1.53	10.14	6.64	1.32
10.475	80yr	10.475	1.550	1.53	10.30	6.77	1.41
10.475	100yr	10.475	1.620	1.53	10.38	6.81	1.45
10.475	150yr	10.475	1.730	1.53	10.53	6.90	1.50
10.475	200yr	10.475	1.820	1.53	10.64	6.98	1.54
10.583	50yr	10.583	1.410	2.13	10.15	6.71	1.34
10.583	80yr	10.583	1.550	2.13	10.32	6.85	1.43
10.583	100yr	10.583	1.620	2.13	10.40	6.92	1.47
10.583	150yr	10.583	1.730	2.13	10.55	7.00	1.52
10.583	200yr	10.583	1.820	2.13	10.66	7.08	1.57
10.585		Culvert					
10.587	50yr	10.587	1.410	2.13	10.18	6.71	1.34
10.587	80yr	10.587	1.550	2.13	10.34	6.85	1.42
10.587	100yr	10.587	1.620	2.13	10.43	6.92	1.46
10.587	150yr	10.587	1.730	2.13	10.58	7.00	1.51
10.587	200yr	10.587	1.820	2.13	10.69	7.08	1.56
10.665	50yr	10.665	1.410	2.28	10.20	6.82	1.33
10.665	80yr	10.665	1.550	2.28	10.36	6.92	1.42
10.665	100yr	10.665	1.620	2.28	10.44	6.98	1.46
10.665	150yr	10.665	1.730	2.28	10.60	7.07	1.51
10.665	200yr	10.665	1.820	2.28	10.71	7.13	1.55
10.875	50yr	10.875	1.410	2.45	10.23	6.83	1.34
10.875	80yr	10.875	1.550	2.45	10.40	6.95	1.42
10.875	100yr	10.875	1.620	2.45	10.48	7.00	1.46
10.875	150yr	10.875	1.730	2.45	10.64	7.09	1.51
10.875	200yr	10.875	1.820	2.45	10.75	7.16	1.56
11.085	50yr	11.085	1.410	1.21	10.27	6.48	1.27
11.085	80yr	11.085	1.550	1.21	10.44	6.63	1.35
11.085	100yr	11.085	1.620	1.21	10.53	6.70	1.39
11.085	150yr	11.085	1.730	1.21	10.68	6.78	1.44
11.085	200yr	11.085	1.820	1.21	10.80	6.85	1.48
11.202	50yr	11.202	1.410	2.35	10.28	6.62	1.32
11.202	80yr	11.202	1.550	2.35	10.45	6.76	1.40
11.202	100yr	11.202	1.620	2.35	10.54	6.91	1.44
11.202	150yr	11.202	1.730	2.35	10.70	7.05	1.49
11.202	200yr	11.202	1.820	2.35	10.82	7.13	1.53
11.205		Bridge					
11.208	50yr	11.208	1.410	2.35	10.30	6.62	1.31
11.208	80yr	11.208	1.550	2.35	10.47	6.76	1.40
11.208	100yr	11.208	1.620	2.35	10.56	6.92	1.43
11.208	150yr	11.208	1.730	2.35	10.72	7.05	1.49
11.208	200yr	11.208	1.820	2.35	10.85	7.13	1.53
11.217	50yr	11.217	1.410	2.20	10.30	6.71	1.34

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
11.217	80yr	11,217	1,550	2.20	10.47	6.94	1.42
11.217	100yr	11,217	1,620	2.20	10.56	7.01	1.46
11.217	150yr	11,217	1,730	2.20	10.72	7.11	1.51
11.217	200yr	11,217	1,820	2.20	10.84	7.18	1.55
11.220		Bridge					
11.223	50yr	11,223	1,410	2.20	10.31	6.71	1.33
11.223	80yr	11,223	1,550	2.20	10.49	6.94	1.41
11.223	100yr	11,223	1,620	2.20	10.58	7.01	1.45
11.223	150yr	11,223	1,730	2.20	10.74	7.11	1.50
11.223	200yr	11,223	1,820	2.20	10.87	7.18	1.54
11.280	50yr	11,280	1,410	2.77	10.32	6.86	1.32
11.280	80yr	11,280	1,550	2.77	10.50	6.97	1.40
11.280	100yr	11,280	1,620	2.77	10.59	7.03	1.44
11.280	150yr	11,280	1,730	2.77	10.75	7.12	1.49
11.280	200yr	11,280	1,820	2.77	10.88	7.19	1.53
11.374	50yr	11,374	1,400	2.66	10.35	6.63	1.20
11.374	80yr	11,374	1,530	2.66	10.54	6.74	1.27
11.374	100yr	11,374	1,600	2.66	10.62	6.80	1.31
11.374	150yr	11,374	1,700	2.66	10.79	6.87	1.35
11.374	200yr	11,374	1,780	2.66	10.92	6.93	1.38
11.380		Bridge					
11.386	50yr	11,386	1,400	2.66	10.37	6.63	1.20
11.386	80yr	11,386	1,530	2.66	10.55	6.74	1.27
11.386	100yr	11,386	1,600	2.66	10.64	6.80	1.30
11.386	150yr	11,386	1,700	2.66	10.81	6.87	1.34
11.386	200yr	11,386	1,780	2.66	10.95	6.93	1.37
11.418	50yr	11,418	1,400	3.11	10.36	6.78	1.26
11.418	80yr	11,418	1,530	3.11	10.55	6.89	1.32
11.418	100yr	11,418	1,600	3.11	10.64	6.94	1.36
11.418	150yr	11,418	1,700	3.11	10.81	7.02	1.40
11.418	200yr	11,418	1,780	3.11	10.95	7.08	1.43
11.430		Bridge					
11.442	50yr	11,442	1,400	3.11	10.38	6.78	1.25
11.442	80yr	11,442	1,530	3.11	10.56	6.89	1.32
11.442	100yr	11,442	1,600	3.11	10.65	6.94	1.36
11.442	150yr	11,442	1,700	3.11	10.83	7.02	1.40
11.442	200yr	11,442	1,780	3.11	10.96	7.08	1.43
11.480	50yr	11,480	1,400	3.12	10.38	6.89	1.30
11.480	80yr	11,480	1,530	3.12	10.56	6.99	1.37
11.480	100yr	11,480	1,600	3.12	10.66	7.04	1.41
11.480	150yr	11,480	1,700	3.12	10.83	7.12	1.45
11.480	200yr	11,480	1,780	3.12	10.96	7.18	1.48
11.680	50yr	11,680	1,400	3.22	10.41	7.16	1.36
11.680	80yr	11,680	1,530	3.22	10.59	7.27	1.42
11.680	100yr	11,680	1,600	3.22	10.69	7.32	1.46
11.680	150yr	11,680	1,700	3.22	10.86	7.40	1.50
11.680	200yr	11,680	1,780	3.22	10.99	7.46	1.53
11.865	50yr	11,865	1,400	3.41	10.44	7.04	1.35
11.865	80yr	11,865	1,530	3.41	10.63	7.16	1.42
11.865	100yr	11,865	1,600	3.41	10.72	7.22	1.46
11.865	150yr	11,865	1,700	3.41	10.89	7.29	1.50
11.865	200yr	11,865	1,780	3.41	11.03	7.37	1.53
12.080	50yr	12,080	1,400	3.72	10.49	6.85	1.22
12.080	80yr	12,080	1,530	3.72	10.68	6.95	1.29

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
12.080	100yr	12,080	1,600	3.72	10.78	7.00	1.32
12.080	150yr	12,080	1,700	3.72	10.95	7.08	1.36
12.080	200yr	12,080	1,780	3.72	11.09	7.14	1.39
12.275	50yr	12,275	1,400	4.06	10.52	6.90	1.20
12.275	80yr	12,275	1,530	4.06	10.71	7.00	1.26
12.275	100yr	12,275	1,600	4.06	10.81	7.05	1.29
12.275	150yr	12,275	1,700	4.06	10.98	7.13	1.33
12.275	200yr	12,275	1,780	4.06	11.12	7.18	1.35
12.475	50yr	12,475	1,400	4.00	10.54	7.10	1.26
12.475	80yr	12,475	1,530	4.00	10.74	7.28	1.32
12.475	100yr	12,475	1,600	4.00	10.83	7.34	1.36
12.475	150yr	12,475	1,700	4.00	11.01	7.42	1.39
12.475	200yr	12,475	1,780	4.00	11.15	7.48	1.42
12.695	50yr	12,695	1,400	3.38	10.58	7.16	1.24
12.695	80yr	12,695	1,530	3.38	10.77	7.26	1.30
12.695	100yr	12,695	1,600	3.38	10.87	7.31	1.34
12.695	150yr	12,695	1,700	3.38	11.05	7.38	1.37
12.695	200yr	12,695	1,780	3.38	11.18	7.44	1.40
12.885	50yr	12,885	1,400	4.61	10.60	7.63	1.34
12.885	80yr	12,885	1,530	4.61	10.80	7.73	1.40
12.885	100yr	12,885	1,600	4.61	10.90	7.79	1.43
12.885	150yr	12,885	1,700	4.61	11.07	7.86	1.46
12.885	200yr	12,885	1,780	4.61	11.21	7.96	1.49
13.095	50yr	13,095	1,400	5.24	10.63	8.11	1.50
13.095	80yr	13,095	1,530	5.24	10.83	8.21	1.56
13.095	100yr	13,095	1,600	5.24	10.93	8.27	1.59
13.095	150yr	13,095	1,700	5.24	11.10	8.36	1.62
13.095	200yr	13,095	1,780	5.24	11.24	8.41	1.64
13.280	50yr	13,280	1,400	5.57	10.69	8.21	1.49
13.280	80yr	13,280	1,530	5.57	10.88	8.31	1.55
13.280	100yr	13,280	1,600	5.57	10.98	8.36	1.58
13.280	150yr	13,280	1,700	5.57	11.16	8.43	1.61
13.280	200yr	13,280	1,780	5.57	11.29	8.49	1.63
13.465	50yr	13,465	1,400	6.28	10.74	8.22	1.47
13.465	80yr	13,465	1,530	6.28	10.94	8.31	1.53
13.465	100yr	13,465	1,600	6.28	11.04	8.36	1.56
13.465	150yr	13,465	1,700	6.28	11.21	8.44	1.59
13.465	200yr	13,465	1,780	6.28	11.35	8.50	1.61
13.468		Inline Weir					
13.470	50yr	13,470	1,400	6.28	10.78	8.22	1.46
13.470	80yr	13,470	1,530	6.28	10.98	8.31	1.51
13.470	100yr	13,470	1,600	6.28	11.08	8.36	1.54
13.470	150yr	13,470	1,700	6.28	11.26	8.44	1.57
13.470	200yr	13,470	1,780	6.28	11.39	8.49	1.60
13.490	50yr	13,490	1,400	6.12	10.78	8.37	1.52
13.490	80yr	13,490	1,530	6.12	10.97	8.47	1.58
13.490	100yr	13,490	1,600	6.12	11.08	8.52	1.61
13.490	150yr	13,490	1,700	6.12	11.25	8.59	1.64
13.490	200yr	13,490	1,780	6.12	11.39	8.65	1.66
13.680	50yr	13,680	1,400	6.32	10.82	8.71	1.70
13.680	80yr	13,680	1,530	6.32	11.02	8.82	1.75
13.680	100yr	13,680	1,600	6.32	11.13	8.87	1.78
13.680	150yr	13,680	1,700	6.32	11.30	8.95	1.80
13.680	200yr	13,680	1,780	6.32	11.44	9.01	1.82
13.806	50yr	13,806	1,400	6.26	10.87	8.60	1.78

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
13.806	80yr	13,806	1,530	6.26	11.07	8.72	1.83
13.806	100yr	13,806	1,600	6.26	11.17	8.78	1.85
13.806	150yr	13,806	1,700	6.26	11.34	8.87	1.87
13.806	200yr	13,806	1,780	6.26	11.48	8.94	1.89
13.810		Bridge					
13.814	50yr	13,814	1,400	6.26	10.94	8.60	1.74
13.814	80yr	13,814	1,530	6.26	11.13	8.72	1.79
13.814	100yr	13,814	1,600	6.26	11.23	8.78	1.82
13.814	150yr	13,814	1,700	6.26	11.40	8.87	1.84
13.814	200yr	13,814	1,780	6.26	11.53	8.94	1.86
13.855	50yr	13,855	1,400	7.22	10.98	8.77	1.57
13.855	80yr	13,855	1,530	7.22	11.18	8.87	1.63
13.855	100yr	13,855	1,600	7.22	11.28	8.92	1.66
13.855	150yr	13,855	1,700	7.22	11.45	8.99	1.69
13.855	200yr	13,855	1,780	7.22	11.58	9.04	1.71
13.858		Inline Weir					
13.860	50yr	13,860	1,400	7.32	11.05	8.87	1.59
13.860	80yr	13,860	1,530	7.32	11.24	8.97	1.64
13.860	100yr	13,860	1,600	7.32	11.35	9.02	1.67
13.860	150yr	13,860	1,700	7.32	11.52	9.09	1.70
13.860	200yr	13,860	1,780	7.32	11.65	9.13	1.72
13.875	50yr	13,875	1,400	5.94	11.05	8.77	1.57
13.875	80yr	13,875	1,530	5.94	11.25	8.91	1.63
13.875	100yr	13,875	1,600	5.94	11.36	8.97	1.66
13.875	150yr	13,875	1,700	5.94	11.52	9.04	1.69
13.875	200yr	13,875	1,780	5.94	11.66	9.10	1.71
14.095	50yr	14,095	1,400	7.38	11.10	9.69	2.02
14.095	80yr	14,095	1,530	7.38	11.30	9.80	2.06
14.095	100yr	14,095	1,600	7.38	11.41	9.86	2.08
14.095	150yr	14,095	1,700	7.38	11.57	9.94	2.09
14.095	200yr	14,095	1,780	7.38	11.70	10.00	2.10
14.285	50yr	14,285	1,400	7.31	11.27	9.62	1.88
14.285	80yr	14,285	1,530	7.31	11.46	9.72	1.93
14.285	100yr	14,285	1,600	7.31	11.56	9.78	1.96
14.285	150yr	14,285	1,700	7.31	11.72	9.84	1.98
14.285	200yr	14,285	1,780	7.31	11.84	9.90	2.00
14.465	50yr	14,465	1,400	4.89	11.38	9.96	1.94
14.465	80yr	14,465	1,530	4.89	11.57	10.06	1.99
14.465	100yr	14,465	1,600	4.89	11.67	10.11	2.01
14.465	150yr	14,465	1,700	4.89	11.82	10.19	2.03
14.465	200yr	14,465	1,780	4.89	11.94	10.23	2.05
14.645	50yr	14,645	1,400	7.92	11.48	10.58	2.40
14.645	80yr	14,645	1,530	7.92	11.66	10.67	2.44
14.645	100yr	14,645	1,600	7.92	11.76	10.72	2.45
14.645	150yr	14,645	1,700	7.92	11.91	10.79	2.46
14.645	200yr	14,645	1,780	7.92	12.02	10.84	2.47
14.845	50yr	14,845	1,400	7.93	11.75	10.85	2.43
14.845	80yr	14,845	1,530	7.93	11.91	10.94	2.49
14.845	100yr	14,845	1,600	7.93	12.00	10.99	2.51
14.845	150yr	14,845	1,700	7.93	12.13	11.06	2.54
14.845	200yr	14,845	1,780	7.93	12.24	11.11	2.55
15.045	50yr	15,045	1,400	8.22	12.03	11.42	2.76
15.045	80yr	15,045	1,530	8.22	12.18	11.51	2.81
15.045	100yr	15,045	1,600	8.22	12.26	11.56	2.83
15.045	150yr	15,045	1,700	8.22	12.38	11.63	2.85

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
15.045	200yr	15.045	1.780	8.22	12.48	11.69	2.87
15.245	50yr	15.245	1.400	9.03	12.34	12.08	3.82
15.245	80yr	15.245	1.530	9.03	12.58	12.21	3.66
15.245	100yr	15.245	1.600	9.03	12.64	12.38	3.69
15.245	150yr	15.245	1.700	9.03	12.73	12.57	3.74
15.245	200yr	15.245	1.780	9.03	12.81	12.62	3.76
15.445	50yr	15.445	1.400	8.21	13.20	11.44	1.77
15.445	80yr	15.445	1.530	8.21	13.37	11.53	1.84
15.445	100yr	15.445	1.600	8.21	13.44	11.57	1.88
15.445	150yr	15.445	1.700	8.21	13.54	11.65	1.94
15.445	200yr	15.445	1.780	8.21	13.61	11.70	1.99
15.645	50yr	15.645	1.400	7.78	13.25	12.09	2.36
15.645	80yr	15.645	1.530	7.78	13.42	12.19	2.43
15.645	100yr	15.645	1.600	7.78	13.49	12.26	2.48
15.645	150yr	15.645	1.700	7.78	13.59	12.33	2.55
15.645	200yr	15.645	1.780	7.78	13.67	12.38	2.61
15.835	50yr	15.835	1.400	6.21	13.49	12.50	2.38
15.835	80yr	15.835	1.530	6.21	13.65	12.57	2.43
15.835	100yr	15.835	1.600	6.21	13.72	12.65	2.46
15.835	150yr	15.835	1.700	6.21	13.83	12.72	2.51
15.835	200yr	15.835	1.780	6.21	13.93	12.77	2.53
16.035	50yr	16.035	1.400	8.10	13.75	12.91	2.60
16.035	80yr	16.035	1.530	8.10	13.90	13.01	2.67
16.035	100yr	16.035	1.600	8.10	13.97	13.06	2.71
16.035	150yr	16.035	1.700	8.10	14.07	13.13	2.77
16.035	200yr	16.035	1.780	8.10	14.21	13.19	2.73
16.320	50yr	16.320	1.400	6.85	14.36	13.52	2.31
16.320	80yr	16.320	1.530	6.85	14.50	13.64	2.31
16.320	100yr	16.320	1.600	6.85	14.58	13.64	2.31
16.320	150yr	16.320	1.700	6.85	14.68	13.76	2.32
16.320	200yr	16.320	1.780	6.85	14.84	13.81	2.23
16.585	50yr	16.585	1.400	11.53	15.21	15.21	4.77
16.585	80yr	16.585	1.530	11.53	15.35	15.35	4.90
16.585	100yr	16.585	1.600	11.53	15.43	15.43	4.97
16.585	150yr	16.585	1.700	11.53	15.54	15.54	5.06
16.585	200yr	16.585	1.780	11.53	15.62	15.62	5.14
16.587		Inline Weir					
16.590	50yr	16.590	1.400	12.64	15.99	15.68	4.17
16.590	80yr	16.590	1.530	12.64	16.16	15.82	4.29
16.590	100yr	16.590	1.600	12.64	16.24	15.90	4.35
16.590	150yr	16.590	1.700	12.64	16.36	16.00	4.43
16.590	200yr	16.590	1.780	12.64	16.45	16.09	4.50
16.670	50yr	16.670	1.400	11.23	16.36	15.57	3.87
16.670	80yr	16.670	1.530	11.23	16.49	15.73	4.06
16.670	100yr	16.670	1.600	11.23	16.56	15.81	4.17
16.670	150yr	16.670	1.700	11.23	16.66	15.93	4.31
16.670	200yr	16.670	1.780	11.23	16.73	16.02	4.42

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▶노성천 홍수위산정결과(개수후)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: NoSung Reach: NoSung

Rivers = 1
Hydraulic Reaches = 1
River Stations = 41
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		1,560	1.21	10.22	6.48	1.49
0.000	80yr		1,720	1.21	10.22	6.65	1.64
0.000	100yr		1,800	1.21	10.22	6.70	1.72
0.000	150yr		1,950	1.21	10.22	6.84	1.86
0.000	200yr		2,050	1.21	10.22	6.93	1.96
0.130	50yr	130	1,560	1.51	10.22	6.85	1.71
0.130	80yr	130	1,720	1.51	10.23	6.98	1.88
0.130	100yr	130	1,800	1.51	10.23	7.06	1.97
0.130	150yr	130	1,950	1.51	10.23	7.19	2.13
0.130	200yr	130	2,050	1.51	10.23	7.27	2.24
0.335	50yr	335	1,560	1.81	10.28	6.94	1.73
0.335	80yr	335	1,720	1.81	10.29	7.09	1.90
0.335	100yr	335	1,800	1.81	10.30	7.15	1.99
0.335	150yr	335	1,950	1.81	10.31	7.29	2.15
0.335	200yr	335	2,050	1.81	10.32	7.37	2.25
0.525	50yr	525	1,560	1.98	10.33	6.91	1.73
0.525	80yr	525	1,720	1.98	10.36	7.07	1.90
0.525	100yr	525	1,800	1.98	10.37	7.14	1.98
0.525	150yr	525	1,950	1.98	10.40	7.27	2.13
0.525	200yr	525	2,050	1.98	10.42	7.35	2.24
0.550	50yr	550	1,560	1.85	10.35	6.85	1.67
0.550	80yr	550	1,720	1.85	10.38	6.99	1.83
0.550	100yr	550	1,800	1.85	10.39	7.07	1.91
0.550	150yr	550	1,950	1.85	10.42	7.20	2.06
0.550	200yr	550	2,050	1.85	10.45	7.28	2.15
0.565		Bridge					
0.580	50yr	580	1,560	1.85	10.37	6.85	1.66
0.580	80yr	580	1,720	1.85	10.40	7.00	1.82
0.580	100yr	580	1,800	1.85	10.42	7.07	1.90
0.580	150yr	580	1,950	1.85	10.46	7.20	2.04
0.580	200yr	580	2,050	1.85	10.49	7.28	2.14
0.725	50yr	725	1,560	1.90	10.39	7.11	1.80
0.725	80yr	725	1,720	1.90	10.43	7.26	1.96
0.725	100yr	725	1,800	1.90	10.45	7.34	2.05
0.725	150yr	725	1,950	1.90	10.49	7.47	2.20
0.725	200yr	725	2,050	1.90	10.52	7.56	2.30
0.925	50yr	925	1,560	2.19	10.45	7.37	1.86
0.925	80yr	925	1,720	2.19	10.50	7.51	2.03
0.925	100yr	925	1,800	2.19	10.52	7.58	2.11
0.925	150yr	925	1,950	2.19	10.57	7.71	2.26
0.925	200yr	925	2,050	2.19	10.61	7.80	2.36
1.032	50yr	1,032	1,560	1.43	10.51	6.93	1.71
1.032	80yr	1,032	1,720	1.43	10.57	7.08	1.87
1.032	100yr	1,032	1,800	1.43	10.60	7.16	1.94
1.032	150yr	1,032	1,950	1.43	10.66	7.29	2.08
1.032	200yr	1,032	2,050	1.43	10.71	7.38	2.17

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
1.035		Bridge					
1.038	50yr	1,038	1,560	1.43	10.52	6.93	1.71
1.038	80yr	1,038	1,720	1.43	10.58	7.08	1.86
1.038	100yr	1,038	1,800	1.43	10.62	7.16	1.94
1.038	150yr	1,038	1,950	1.43	10.68	7.29	2.07
1.038	200yr	1,038	2,050	1.43	10.73	7.38	2.16
1.115	50yr	1,115	1,560	1.73	10.52	7.46	1.86
1.115	80yr	1,115	1,720	1.73	10.59	7.61	2.02
1.115	100yr	1,115	1,800	1.73	10.62	7.68	2.10
1.115	150yr	1,115	1,950	1.73	10.69	7.82	2.25
1.115	200yr	1,115	2,050	1.73	10.74	7.90	2.34
1.325	50yr	1,325	1,560	2.02	10.59	7.57	1.88
1.325	80yr	1,325	1,720	2.02	10.67	7.72	2.04
1.325	100yr	1,325	1,800	2.02	10.71	7.80	2.11
1.325	150yr	1,325	1,950	2.02	10.79	7.93	2.25
1.325	200yr	1,325	2,050	2.02	10.84	8.02	2.34
1.545	50yr	1,545	1,560	1.78	10.67	7.59	1.86
1.545	80yr	1,545	1,720	1.78	10.76	7.74	2.01
1.545	100yr	1,545	1,800	1.78	10.81	7.81	2.09
1.545	150yr	1,545	1,950	1.78	10.90	7.95	2.22
1.545	200yr	1,545	2,050	1.78	10.96	8.04	2.30
1.750	50yr	1,750	1,560	1.84	10.74	7.71	1.87
1.750	80yr	1,750	1,720	1.84	10.84	7.86	2.02
1.750	100yr	1,750	1,800	1.84	10.89	7.93	2.10
1.750	150yr	1,750	1,950	1.84	10.99	8.06	2.23
1.750	200yr	1,750	2,050	1.84	11.06	8.15	2.31
1.970	50yr	1,970	1,560	2.58	10.82	7.65	1.84
1.970	80yr	1,970	1,720	2.58	10.93	7.81	1.99
1.970	100yr	1,970	1,800	2.58	10.99	7.91	2.05
1.970	150yr	1,970	1,950	2.58	11.10	8.04	2.18
1.970	200yr	1,970	2,050	2.58	11.18	8.12	2.26
2.175	50yr	2,175	1,560	2.44	10.88	7.79	1.86
2.175	80yr	2,175	1,720	2.44	11.00	7.94	2.00
2.175	100yr	2,175	1,800	2.44	11.07	8.02	2.07
2.175	150yr	2,175	1,950	2.44	11.19	8.15	2.19
2.175	200yr	2,175	2,050	2.44	11.27	8.24	2.26
2.380	50yr	2,380	1,560	2.65	10.95	8.00	1.89
2.380	80yr	2,380	1,720	2.65	11.08	8.13	2.03
2.380	100yr	2,380	1,800	2.65	11.15	8.21	2.09
2.380	150yr	2,380	1,950	2.65	11.27	8.34	2.21
2.380	200yr	2,380	2,050	2.65	11.36	8.43	2.29
2.585	50yr	2,585	1,560	1.27	11.02	8.23	1.96
2.585	80yr	2,585	1,720	1.27	11.15	8.39	2.10
2.585	100yr	2,585	1,800	1.27	11.22	8.45	2.17
2.585	150yr	2,585	1,950	1.27	11.36	8.58	2.28
2.585	200yr	2,585	2,050	1.27	11.45	8.67	2.35
2.785	50yr	2,785	1,560	1.95	11.10	8.32	1.97
2.785	80yr	2,785	1,720	1.95	11.24	8.47	2.11
2.785	100yr	2,785	1,800	1.95	11.32	8.54	2.17
2.785	150yr	2,785	1,950	1.95	11.46	8.68	2.29
2.785	200yr	2,785	2,050	1.95	11.55	8.75	2.36
2.985	50yr	2,985	1,560	2.63	11.16	8.77	2.13
2.985	80yr	2,985	1,720	2.63	11.32	8.92	2.27
2.985	100yr	2,985	1,800	2.63	11.39	8.99	2.34
2.985	150yr	2,985	1,950	2.63	11.54	9.12	2.45

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
2.985	200yr	2,985	2,050	2.63	11.64	9.21	2.52
3.185	50yr	3,185	1,560	3.90	11.30	8.50	1.96
3.185	80yr	3,185	1,720	3.90	11.46	8.64	2.09
3.185	100yr	3,185	1,800	3.90	11.55	8.72	2.14
3.185	150yr	3,185	1,950	3.90	11.70	8.85	2.25
3.185	200yr	3,185	2,050	3.90	11.81	8.94	2.32
3.188		Inline Weir					
3.190	50yr	3,190	1,560	5.56	11.34	9.04	2.17
3.190	80yr	3,190	1,720	5.56	11.50	9.19	2.30
3.190	100yr	3,190	1,800	5.56	11.59	9.26	2.36
3.190	150yr	3,190	1,950	5.56	11.75	9.39	2.47
3.190	200yr	3,190	2,050	5.56	11.86	9.48	2.54
3.395	50yr	3,395	1,560	4.55	11.47	8.96	2.08
3.395	80yr	3,395	1,720	4.55	11.65	9.11	2.21
3.395	100yr	3,395	1,800	4.55	11.73	9.17	2.26
3.395	150yr	3,395	1,950	4.55	11.90	9.31	2.37
3.395	200yr	3,395	2,050	4.55	12.02	9.39	2.43
3.605	50yr	3,605	1,560	4.98	11.58	8.87	2.00
3.605	80yr	3,605	1,720	4.98	11.77	9.02	2.11
3.605	100yr	3,605	1,800	4.98	11.86	9.09	2.17
3.605	150yr	3,605	1,950	4.98	12.04	9.22	2.27
3.605	200yr	3,605	2,050	4.98	12.16	9.31	2.33
3.815	50yr	3,815	1,560	5.47	11.66	9.20	2.12
3.815	80yr	3,815	1,720	5.47	11.85	9.35	2.24
3.815	100yr	3,815	1,800	5.47	11.95	9.43	2.30
3.815	150yr	3,815	1,950	5.47	12.13	9.56	2.39
3.815	200yr	3,815	2,050	5.47	12.25	9.65	2.46
4.020	50yr	4,020	1,560	5.63	11.76	9.42	2.12
4.020	80yr	4,020	1,720	5.63	11.97	9.56	2.24
4.020	100yr	4,020	1,800	5.63	12.06	9.63	2.29
4.020	150yr	4,020	1,950	5.63	12.25	9.76	2.38
4.020	200yr	4,020	2,050	5.63	12.37	9.84	2.44
4.205	50yr	4,205	1,560	5.24	11.87	9.24	2.03
4.205	80yr	4,205	1,720	5.24	12.08	9.39	2.14
4.205	100yr	4,205	1,800	5.24	12.18	9.46	2.20
4.205	150yr	4,205	1,950	5.24	12.37	9.59	2.29
4.205	200yr	4,205	2,050	5.24	12.50	9.68	2.35
4.400	50yr	4,400	1,560	5.14	11.98	9.36	1.94
4.400	80yr	4,400	1,720	5.14	12.19	9.51	2.04
4.400	100yr	4,400	1,800	5.14	12.30	9.57	2.08
4.400	150yr	4,400	1,950	5.14	12.49	9.70	2.17
4.400	200yr	4,400	2,050	5.14	12.62	9.78	2.22
4.527	50yr	4,527	1,560	5.06	12.03	9.63	1.98
4.527	80yr	4,527	1,720	5.06	12.25	9.76	2.07
4.527	100yr	4,527	1,800	5.06	12.36	9.83	2.11
4.527	150yr	4,527	1,950	5.06	12.55	9.95	2.19
4.527	200yr	4,527	2,050	5.06	12.68	10.04	2.24
4.530		Bridge					
4.533	50yr	4,533	1,560	5.06	12.05	9.63	1.97
4.533	80yr	4,533	1,720	5.06	12.27	9.76	2.06
4.533	100yr	4,533	1,800	5.06	12.38	9.83	2.10
4.533	150yr	4,533	1,950	5.06	12.57	9.95	2.18
4.533	200yr	4,533	2,050	5.06	12.70	10.03	2.23
4.580	50yr	4,580	1,560	5.13	12.06	9.68	1.95

건설교통부

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
4.580	80yr	4,580	1,720	5.13	12.30	9.82	2.04
4.580	100yr	4,580	1,800	5.13	12.41	9.89	2.08
4.580	150yr	4,580	1,950	5.13	12.60	10.00	2.16
4.580	200yr	4,580	2,050	5.13	12.74	10.08	2.21
4.750	50yr	4,750	1,560	5.85	12.20	9.49	1.63
4.750	80yr	4,750	1,720	5.85	12.43	9.64	1.71
4.750	100yr	4,750	1,800	5.85	12.55	9.69	1.74
4.750	150yr	4,750	1,950	5.85	12.75	9.80	1.81
4.750	200yr	4,750	2,050	5.85	12.89	9.87	1.85
4.915	50yr	4,915	880	5.69	12.30	9.20	1.33
4.915	80yr	4,915	960	5.69	12.54	9.31	1.37
4.915	100yr	4,915	990	5.69	12.65	9.34	1.38
4.915	150yr	4,915	1,060	5.69	12.87	9.43	1.41
4.915	200yr	4,915	1,100	5.69	13.01	9.50	1.42
4.920		Bridge					
4.925	50yr	4,925	880	5.69	12.31	9.20	1.33
4.925	80yr	4,925	960	5.69	12.55	9.31	1.37
4.925	100yr	4,925	990	5.69	12.67	9.35	1.37
4.925	150yr	4,925	1,060	5.69	12.88	9.43	1.41
4.925	200yr	4,925	1,100	5.69	13.02	9.49	1.42
4.980	50yr	4,980	880	5.95	12.31	9.37	1.45
4.980	80yr	4,980	960	5.95	12.55	9.47	1.50
4.980	100yr	4,980	990	5.95	12.66	9.51	1.51
4.980	150yr	4,980	1,060	5.95	12.87	9.60	1.54
4.980	200yr	4,980	1,100	5.95	13.02	9.65	1.56
5.130	50yr	5,130	880	6.03	12.33	9.29	1.63
5.130	80yr	5,130	960	6.03	12.56	9.40	1.69
5.130	100yr	5,130	990	6.03	12.68	9.45	1.70
5.130	150yr	5,130	1,060	6.03	12.89	9.55	1.74
5.130	200yr	5,130	1,100	6.03	13.03	9.61	1.76

건설교통부

▶강경천 홍수위산정결과(개수후)

Profile Output Table - Standard Table 1
HEC-RAS Plan: kda River: KangKyung Reach: KangKyung

Rivers = 1
Hydraulic Reaches = 1
River Stations = 87
Plans = 1
Profiles = 5

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.000	50yr		990	-1.09	9.14	3.18	0.75
0.000	80yr		1,070	-1.09	9.14	3.35	0.81
0.000	100yr		1,100	-1.09	9.14	3.41	0.83
0.000	150yr		1,170	-1.09	9.14	3.55	0.89
0.000	200yr		1,220	-1.09	9.14	3.59	0.92
0.200	50yr	200	990	-0.54	9.13	3.73	1.05
0.200	80yr	200	1,070	-0.54	9.13	3.91	1.13
0.200	100yr	200	1,100	-0.54	9.13	4.12	1.17
0.200	150yr	200	1,170	-0.54	9.13	4.23	1.24
0.200	200yr	200	1,220	-0.54	9.13	4.29	1.29
0.270	50yr	270	990	-2.41	9.13	3.44	1.08
0.270	80yr	270	1,070	-2.41	9.13	3.62	1.17
0.270	100yr	270	1,100	-2.41	9.13	3.63	1.20
0.270	150yr	270	1,170	-2.41	9.13	4.33	1.28
0.270	200yr	270	1,220	-2.41	9.13	4.44	1.33
0.275		Bridge					
0.280	50yr	280	990	-2.41	9.15	3.44	1.08
0.280	80yr	280	1,070	-2.41	9.15	3.62	1.17
0.280	100yr	280	1,100	-2.41	9.15	3.63	1.20
0.280	150yr	280	1,170	-2.41	9.15	4.33	1.27
0.280	200yr	280	1,220	-2.41	9.16	4.44	1.33
0.283	50yr	283	990	-2.75	9.15	3.38	1.07
0.283	80yr	283	1,070	-2.75	9.15	3.91	1.15
0.283	100yr	283	1,100	-2.75	9.15	3.99	1.19
0.283	150yr	283	1,170	-2.75	9.16	4.10	1.26
0.283	200yr	283	1,220	-2.75	9.16	4.19	1.31
0.290		Bridge					
0.297	50yr	297	990	-2.75	9.16	3.38	1.07
0.297	80yr	297	1,070	-2.75	9.16	3.92	1.15
0.297	100yr	297	1,100	-2.75	9.16	3.99	1.18
0.297	150yr	297	1,170	-2.75	9.16	4.10	1.26
0.297	200yr	297	1,220	-2.75	9.17	4.19	1.31
0.415	50yr	415	990	-0.23	9.17	3.52	1.09
0.415	80yr	415	1,070	-0.23	9.17	3.69	1.17
0.415	100yr	415	1,100	-0.23	9.17	3.76	1.20
0.415	150yr	415	1,170	-0.23	9.18	3.89	1.28
0.415	200yr	415	1,220	-0.23	9.18	4.61	1.33
0.610	50yr	610	990	-0.15	9.18	3.88	1.12
0.610	80yr	610	1,070	-0.15	9.18	4.54	1.21
0.610	100yr	610	1,100	-0.15	9.19	4.58	1.24
0.610	150yr	610	1,170	-0.15	9.19	4.68	1.32
0.610	200yr	610	1,220	-0.15	9.20	4.72	1.38
0.815	50yr	815	990	-0.15	9.20	3.55	1.08
0.815	80yr	815	1,070	-0.15	9.21	4.29	1.16
0.815	100yr	815	1,100	-0.15	9.21	4.34	1.19

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
0.815	150yr	815	1,170	-0.15	9.22	4.46	1.27
0.815	200yr	815	1,220	-0.15	9.23	4.53	1.32
1.035	50yr	1,035	990	-0.84	9.21	3.39	1.05
1.035	80yr	1,035	1,070	-0.84	9.23	3.54	1.13
1.035	100yr	1,035	1,100	-0.84	9.24	4.18	1.16
1.035	150yr	1,035	1,170	-0.84	9.25	4.27	1.24
1.035	200yr	1,035	1,220	-0.84	9.26	4.33	1.29
1.097	50yr	1,097	990	-0.62	9.21	3.55	1.11
1.097	80yr	1,097	1,070	-0.62	9.23	4.39	1.19
1.097	100yr	1,097	1,100	-0.62	9.24	4.43	1.23
1.097	150yr	1,097	1,170	-0.62	9.25	4.53	1.30
1.097	200yr	1,097	1,220	-0.62	9.26	4.59	1.36
1.105		Bridge					
1.112	50yr	1,112	990	-0.62	9.23	3.55	1.10
1.112	80yr	1,112	1,070	-0.62	9.25	4.39	1.19
1.112	100yr	1,112	1,100	-0.62	9.26	4.43	1.22
1.112	150yr	1,112	1,170	-0.62	9.27	4.53	1.30
1.112	200yr	1,112	1,220	-0.62	9.28	4.59	1.35
1.113	50yr	1,113	990	0.07	9.23	4.85	1.16
1.113	80yr	1,113	1,070	0.07	9.25	4.95	1.25
1.113	100yr	1,113	1,100	0.07	9.25	4.99	1.29
1.113	150yr	1,113	1,170	0.07	9.27	5.07	1.36
1.113	200yr	1,113	1,220	0.07	9.28	5.12	1.42
1.115		Bridge					
1.119	50yr	1,119	990	0.07	9.25	4.85	1.16
1.119	80yr	1,119	1,070	0.07	9.27	4.95	1.25
1.119	100yr	1,119	1,100	0.07	9.28	4.99	1.28
1.119	150yr	1,119	1,170	0.07	9.30	5.07	1.36
1.119	200yr	1,119	1,220	0.07	9.31	5.12	1.41
1.120		Bridge					
1.123	50yr	1,123	990	0.07	9.25	4.86	1.16
1.123	80yr	1,123	1,070	0.07	9.28	4.95	1.25
1.123	100yr	1,123	1,100	0.07	9.28	4.99	1.28
1.123	150yr	1,123	1,170	0.07	9.30	5.07	1.36
1.123	200yr	1,123	1,220	0.07	9.32	5.12	1.41
1.235	50yr	1,235	990	-0.04	9.27	4.10	1.04
1.235	80yr	1,235	1,070	-0.04	9.30	4.22	1.12
1.235	100yr	1,235	1,100	-0.04	9.31	4.25	1.15
1.235	150yr	1,235	1,170	-0.04	9.33	4.33	1.22
1.235	200yr	1,235	1,220	-0.04	9.35	4.39	1.27
1.350	50yr	1,350	990	-0.94	9.28	3.76	1.09
1.350	80yr	1,350	1,070	-0.94	9.31	4.27	1.17
1.350	100yr	1,350	1,100	-0.94	9.32	4.33	1.21
1.350	150yr	1,350	1,170	-0.94	9.34	4.45	1.28
1.350	200yr	1,350	1,220	-0.94	9.36	4.52	1.33
1.355		Bridge					
1.360	50yr	1,360	990	-0.94	9.30	3.76	1.09
1.360	80yr	1,360	1,070	-0.94	9.33	4.27	1.17
1.360	100yr	1,360	1,100	-0.94	9.34	4.33	1.20
1.360	150yr	1,360	1,170	-0.94	9.37	4.45	1.27
1.360	200yr	1,360	1,220	-0.94	9.39	4.52	1.32
1.370	50yr	1,370	990	-0.09	9.30	4.66	1.14
1.370	80yr	1,370	1,070	-0.09	9.33	4.76	1.22

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
1.370	100yr	1,370	1,100	-0.09	9.34	4.79	1.26
1.370	150yr	1,370	1,170	-0.09	9.36	4.88	1.33
1.370	200yr	1,370	1,220	-0.09	9.38	4.93	1.38
1.375		Bridge					
1.380	50yr	1,380	990	-0.09	9.32	4.66	1.13
1.380	80yr	1,380	1,070	-0.09	9.36	4.76	1.22
1.380	100yr	1,380	1,100	-0.09	9.37	4.79	1.25
1.380	150yr	1,380	1,170	-0.09	9.40	4.88	1.32
1.380	200yr	1,380	1,220	-0.09	9.42	4.93	1.38
1.415	50yr	1,415	990	0.65	9.33	4.26	1.07
1.415	80yr	1,415	1,070	0.65	9.37	4.40	1.15
1.415	100yr	1,415	1,100	0.65	9.38	4.45	1.18
1.415	150yr	1,415	1,170	0.65	9.41	4.56	1.25
1.415	200yr	1,415	1,220	0.65	9.44	4.64	1.30
1.425		Bridge					
1.435	50yr	1,435	990	0.65	9.33	4.26	1.07
1.435	80yr	1,435	1,070	0.65	9.37	4.40	1.15
1.435	100yr	1,435	1,100	0.65	9.39	4.45	1.18
1.435	150yr	1,435	1,170	0.65	9.42	4.56	1.25
1.435	200yr	1,435	1,220	0.65	9.44	4.64	1.30
1.440	50yr	1,440	990	0.83	9.34	4.32	1.04
1.440	80yr	1,440	1,070	0.83	9.38	4.42	1.12
1.440	100yr	1,440	1,100	0.83	9.39	4.45	1.15
1.440	150yr	1,440	1,170	0.83	9.43	4.53	1.21
1.440	200yr	1,440	1,220	0.83	9.45	4.58	1.26
1.650	50yr	1,650	990	0.81	9.35	4.21	1.05
1.650	80yr	1,650	1,070	0.81	9.39	4.31	1.13
1.650	100yr	1,650	1,100	0.81	9.41	4.35	1.16
1.650	150yr	1,650	1,170	0.81	9.44	4.44	1.22
1.650	200yr	1,650	1,220	0.81	9.47	4.50	1.27
1.840	50yr	1,840	990	0.97	9.36	4.28	1.04
1.840	80yr	1,840	1,070	0.97	9.41	4.37	1.12
1.840	100yr	1,840	1,100	0.97	9.42	4.41	1.15
1.840	150yr	1,840	1,170	0.97	9.46	4.49	1.21
1.840	200yr	1,840	1,220	0.97	9.49	4.55	1.26
2.035	50yr	2,035	990	1.03	9.38	4.39	1.06
2.035	80yr	2,035	1,070	1.03	9.42	4.49	1.14
2.035	100yr	2,035	1,100	1.03	9.44	4.53	1.17
2.035	150yr	2,035	1,170	1.03	9.48	4.62	1.24
2.035	200yr	2,035	1,220	1.03	9.51	4.69	1.28
2.240	50yr	2,240	990	0.92	9.39	4.39	1.04
2.240	80yr	2,240	1,070	0.92	9.44	4.49	1.12
2.240	100yr	2,240	1,100	0.92	9.45	4.52	1.14
2.240	150yr	2,240	1,170	0.92	9.50	4.61	1.21
2.240	200yr	2,240	1,220	0.92	9.53	4.67	1.25
2.293	50yr	2,293	990	0.71	9.39	4.27	1.04
2.293	80yr	2,293	1,070	0.71	9.44	4.37	1.12
2.293	100yr	2,293	1,100	0.71	9.46	4.40	1.14
2.293	150yr	2,293	1,170	0.71	9.50	4.50	1.21
2.293	200yr	2,293	1,220	0.71	9.54	4.56	1.25
2.300		Bridge					
2.308	50yr	2,308	990	0.71	9.43	4.27	1.04
2.308	80yr	2,308	1,070	0.71	9.48	4.37	1.11
2.308	100yr	2,308	1,100	0.71	9.50	4.40	1.14

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
2.308	150yr	2,308	1,170	0.71	9.55	4.50	1.20
2.308	200yr	2,308	1,220	0.71	9.58	4.56	1.25
2.455	50yr	2,455	990	1.03	9.44	4.34	1.04
2.455	80yr	2,455	1,070	1.03	9.49	4.44	1.12
2.455	100yr	2,455	1,100	1.03	9.51	4.48	1.14
2.455	150yr	2,455	1,170	1.03	9.56	4.56	1.21
2.455	200yr	2,455	1,220	1.03	9.59	4.62	1.25
2.650	50yr	2,650	990	1.16	9.45	4.40	1.06
2.650	80yr	2,650	1,070	1.16	9.50	4.50	1.13
2.650	100yr	2,650	1,100	1.16	9.52	4.54	1.16
2.650	150yr	2,650	1,170	1.16	9.57	4.62	1.22
2.650	200yr	2,650	1,220	1.16	9.61	4.68	1.27
2.840	50yr	2,840	990	0.64	9.47	3.66	0.94
2.840	80yr	2,840	1,070	0.64	9.53	3.75	1.00
2.840	100yr	2,840	1,100	0.64	9.55	3.79	1.03
2.840	150yr	2,840	1,170	0.64	9.61	3.88	1.09
2.840	200yr	2,840	1,220	0.64	9.64	3.95	1.13
3.030	50yr	3,030	990	1.40	9.47	4.66	1.11
3.030	80yr	3,030	1,070	1.40	9.53	4.76	1.19
3.030	100yr	3,030	1,100	1.40	9.55	4.80	1.22
3.030	150yr	3,030	1,170	1.40	9.60	4.89	1.29
3.030	200yr	3,030	1,220	1.40	9.64	4.94	1.33
3.235	50yr	3,235	990	1.14	9.49	4.41	1.05
3.235	80yr	3,235	1,070	1.14	9.55	4.51	1.12
3.235	100yr	3,235	1,100	1.14	9.57	4.54	1.15
3.235	150yr	3,235	1,170	1.14	9.63	4.62	1.21
3.235	200yr	3,235	1,220	1.14	9.67	4.68	1.26
3.410	50yr	3,410	990	1.29	9.51	4.46	1.03
3.410	80yr	3,410	1,070	1.29	9.57	4.56	1.11
3.410	100yr	3,410	1,100	1.29	9.59	4.59	1.13
3.410	150yr	3,410	1,170	1.29	9.65	4.67	1.19
3.410	200yr	3,410	1,220	1.29	9.69	4.73	1.24
3.415		Bridge					
3.420	50yr	3,420	990	1.29	9.52	4.46	1.03
3.420	80yr	3,420	1,070	1.29	9.58	4.56	1.10
3.420	100yr	3,420	1,100	1.29	9.61	4.59	1.13
3.420	150yr	3,420	1,170	1.29	9.67	4.67	1.19
3.420	200yr	3,420	1,220	1.29	9.71	4.73	1.23
3.435	50yr	3,435	990	1.23	9.52	4.57	1.04
3.435	80yr	3,435	1,070	1.23	9.58	4.66	1.12
3.435	100yr	3,435	1,100	1.23	9.61	4.70	1.14
3.435	150yr	3,435	1,170	1.23	9.67	4.78	1.21
3.435	200yr	3,435	1,220	1.23	9.71	4.83	1.25
3.470	50yr	3,470	990	1.10	9.53	4.58	1.02
3.470	80yr	3,470	1,070	1.10	9.59	4.67	1.10
3.470	100yr	3,470	1,100	1.10	9.61	4.70	1.12
3.470	150yr	3,470	1,170	1.10	9.67	4.78	1.18
3.470	200yr	3,470	1,220	1.10	9.72	4.84	1.23
3.475		Bridge					
3.480	50yr	3,480	990	1.10	9.57	4.58	1.02
3.480	80yr	3,480	1,070	1.10	9.64	4.67	1.09
3.480	100yr	3,480	1,100	1.10	9.66	4.71	1.11
3.480	150yr	3,480	1,170	1.10	9.73	4.79	1.17
3.480	200yr	3,480	1,220	1.10	9.78	4.84	1.21

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River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
3.645	50yr	3,645	990	1.63	9.58	4.60	1.00
3.645	80yr	3,645	1,070	1.63	9.65	4.69	1.07
3.645	100yr	3,645	1,100	1.63	9.68	4.72	1.10
3.645	150yr	3,645	1,170	1.63	9.75	4.80	1.15
3.645	200yr	3,645	1,220	1.63	9.80	4.86	1.19
3.810	50yr	3,810	990	1.49	9.61	4.18	0.76
3.810	80yr	3,810	1,070	1.49	9.69	4.27	0.81
3.810	100yr	3,810	1,100	1.49	9.72	4.29	0.83
3.810	150yr	3,810	1,170	1.49	9.79	4.36	0.88
3.810	200yr	3,810	1,220	1.49	9.84	4.41	0.91
3.985	50yr	3,985	830	1.52	9.60	4.88	1.14
3.985	80yr	3,985	910	1.52	9.67	5.00	1.24
3.985	100yr	3,985	950	1.52	9.69	5.06	1.29
3.985	150yr	3,985	1,020	1.52	9.76	5.18	1.37
3.985	200yr	3,985	1,070	1.52	9.81	5.31	1.43
4.082	50yr	4,082	830	1.38	9.60	4.94	1.23
4.082	80yr	4,082	910	1.38	9.67	5.07	1.33
4.082	100yr	4,082	950	1.38	9.69	5.13	1.38
4.082	150yr	4,082	1,020	1.38	9.76	5.24	1.47
4.082	200yr	4,082	1,070	1.38	9.81	5.31	1.53
4.085		Bridge					
4.088	50yr	4,088	830	1.38	9.62	4.94	1.22
4.088	80yr	4,088	910	1.38	9.69	5.07	1.33
4.088	100yr	4,088	950	1.38	9.72	5.13	1.38
4.088	150yr	4,088	1,020	1.38	9.79	5.24	1.46
4.088	200yr	4,088	1,070	1.38	9.84	5.31	1.52
4.220	50yr	4,220	830	1.69	9.63	4.92	1.22
4.220	80yr	4,220	910	1.69	9.71	5.05	1.32
4.220	100yr	4,220	950	1.69	9.74	5.11	1.37
4.220	150yr	4,220	1,020	1.69	9.81	5.22	1.45
4.220	200yr	4,220	1,070	1.69	9.86	5.29	1.51
4.430	50yr	4,430	830	1.66	9.67	4.72	0.97
4.430	80yr	4,430	910	1.66	9.76	4.83	1.05
4.430	100yr	4,430	950	1.66	9.79	4.88	1.09
4.430	150yr	4,430	1,020	1.66	9.87	4.97	1.15
4.430	200yr	4,430	1,070	1.66	9.93	5.04	1.20
4.630	50yr	4,630	830	1.70	9.69	4.94	1.00
4.630	80yr	4,630	910	1.70	9.77	5.05	1.08
4.630	100yr	4,630	950	1.70	9.81	5.10	1.12
4.630	150yr	4,630	1,020	1.70	9.89	5.19	1.19
4.630	200yr	4,630	1,070	1.70	9.95	5.25	1.24
4.810	50yr	4,810	830	1.41	9.70	4.90	1.03
4.810	80yr	4,810	910	1.41	9.78	5.01	1.11
4.810	100yr	4,810	950	1.41	9.82	5.06	1.15
4.810	150yr	4,810	1,020	1.41	9.90	5.16	1.22
4.810	200yr	4,810	1,070	1.41	9.96	5.22	1.26
4.839	50yr	4,839	830	1.94	9.70	4.93	1.01
4.839	80yr	4,839	910	1.94	9.79	5.04	1.09
4.839	100yr	4,839	950	1.94	9.83	5.10	1.13
4.839	150yr	4,839	1,020	1.94	9.91	5.19	1.20
4.839	200yr	4,839	1,070	1.94	9.97	5.26	1.25
4.845		Bridge					
4.851	50yr	4,851	830	1.94	9.71	4.93	1.01
4.851	80yr	4,851	910	1.94	9.79	5.04	1.09
4.851	100yr	4,851	950	1.94	9.83	5.10	1.13

건설교통부

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
4.851	150yr	4.851	1,020	1.94	9.92	5.19	1.20
4.851	200yr	4.851	1,070	1.94	9.97	5.26	1.25
4.860	50yr	4.860	830	1.37	9.70	5.42	1.07
4.860	80yr	4.860	910	1.37	9.79	5.53	1.16
4.860	100yr	4.860	950	1.37	9.82	5.58	1.20
4.860	150yr	4.860	1,020	1.37	9.91	5.67	1.27
4.860	200yr	4.860	1,070	1.37	9.97	5.73	1.32
5.030	50yr	5.030	830	1.98	9.72	4.92	1.05
5.030	80yr	5.030	910	1.98	9.81	5.04	1.13
5.030	100yr	5.030	950	1.98	9.84	5.09	1.18
5.030	150yr	5.030	1,020	1.98	9.93	5.19	1.25
5.030	200yr	5.030	1,070	1.98	9.99	5.25	1.30
5.225	50yr	5.225	830	1.74	9.74	5.06	1.05
5.225	80yr	5.225	910	1.74	9.83	5.16	1.13
5.225	100yr	5.225	950	1.74	9.86	5.22	1.18
5.225	150yr	5.225	1,020	1.74	9.95	5.31	1.24
5.225	200yr	5.225	1,070	1.74	10.01	5.38	1.29
5.382	50yr	5.382	830	1.70	9.75	5.33	1.13
5.382	80yr	5.382	910	1.70	9.84	5.44	1.22
5.382	100yr	5.382	950	1.70	9.87	5.49	1.26
5.382	150yr	5.382	1,020	1.70	9.96	5.59	1.33
5.382	200yr	5.382	1,070	1.70	10.02	5.66	1.39
5.385		Bridge					
5.388	50yr	5.388	830	1.70	9.76	5.32	1.12
5.388	80yr	5.388	910	1.70	9.85	5.44	1.21
5.388	100yr	5.388	950	1.70	9.89	5.49	1.26
5.388	150yr	5.388	1,020	1.70	9.98	5.59	1.33
5.388	200yr	5.388	1,070	1.70	10.05	5.66	1.38
5.425	50yr	5.425	830	1.62	9.76	5.38	1.11
5.425	80yr	5.425	910	1.62	9.86	5.49	1.19
5.425	100yr	5.425	950	1.62	9.90	5.55	1.24
5.425	150yr	5.425	1,020	1.62	9.99	5.63	1.31
5.425	200yr	5.425	1,070	1.62	10.05	5.70	1.36
5.600	50yr	5.600	830	1.73	9.78	5.37	1.08
5.600	80yr	5.600	910	1.73	9.88	5.48	1.17
5.600	100yr	5.600	950	1.73	9.92	5.54	1.21
5.600	150yr	5.600	1,020	1.73	10.01	5.64	1.28
5.600	200yr	5.600	1,070	1.73	10.08	5.70	1.32
5.815	50yr	5.815	830	1.79	9.80	5.49	1.09
5.815	80yr	5.815	910	1.79	9.90	5.59	1.17
5.815	100yr	5.815	950	1.79	9.94	5.64	1.22
5.815	150yr	5.815	1,020	1.79	10.04	5.73	1.28
5.815	200yr	5.815	1,070	1.79	10.10	5.79	1.33
6.015	50yr	6.015	830	1.74	9.82	5.39	1.08
6.015	80yr	6.015	910	1.74	9.92	5.49	1.16
6.015	100yr	6.015	950	1.74	9.96	5.54	1.20
6.015	150yr	6.015	1,020	1.74	10.06	5.65	1.27
6.015	200yr	6.015	1,070	1.74	10.13	5.71	1.32
6.205	50yr	6.205	830	1.98	9.83	5.61	1.14
6.205	80yr	6.205	910	1.98	9.94	5.71	1.22
6.205	100yr	6.205	950	1.98	9.98	5.77	1.27
6.205	150yr	6.205	1,020	1.98	10.08	5.87	1.34
6.205	200yr	6.205	1,070	1.98	10.15	5.94	1.38
6.261	50yr	6.262	830	1.51	9.84	5.81	1.12
6.261	80yr	6.262	910	1.51	9.95	5.91	1.20

건설교통부

River Sta	Profile	Cum Ch Len (m)	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	Vel Chnl (m/s)
6.261	100yr	6,262	950	1.51	9.99	5.97	1.25
6.261	150yr	6,262	1,020	1.51	10.09	6.03	1.31
6.261	200yr	6,262	1,070	1.51	10.16	6.11	1.36
6.265		Bridge					
6.268	50yr	6,268	830	1.51	9.85	5.81	1.12
6.268	80yr	6,268	910	1.51	9.95	5.91	1.20
6.268	100yr	6,268	950	1.51	10.00	5.97	1.24
6.268	150yr	6,268	1,020	1.51	10.10	6.03	1.31
6.268	200yr	6,268	1,070	1.51	10.17	6.11	1.36
6.385	50yr	6,385	830	2.02	9.87	5.65	1.01
6.385	80yr	6,385	910	2.02	9.98	5.75	1.09
6.385	100yr	6,385	950	2.02	10.02	5.80	1.13
6.385	150yr	6,385	1,020	2.02	10.13	5.88	1.19
6.385	200yr	6,385	1,070	2.02	10.20	5.94	1.23
6.565	50yr	6,565	440	1.70	9.90	5.46	0.82
6.565	80yr	6,565	470	1.70	10.02	5.53	0.86
6.565	100yr	6,565	490	1.70	10.06	5.58	0.89
6.565	150yr	6,565	520	1.70	10.18	5.64	0.92
6.565	200yr	6,565	540	1.70	10.25	5.67	0.95
6.765	50yr	6,765	440	1.96	9.91	5.63	0.87
6.765	80yr	6,765	470	1.96	10.03	5.69	0.91
6.765	100yr	6,765	490	1.96	10.07	5.74	0.94
6.765	150yr	6,765	520	1.96	10.19	5.80	0.98
6.765	200yr	6,765	540	1.96	10.27	5.84	1.00
6.937	50yr	6,937	440	1.81	9.91	6.18	0.98
6.937	80yr	6,937	470	1.81	10.03	6.25	1.02
6.937	100yr	6,937	490	1.81	10.08	6.30	1.06
6.937	150yr	6,937	520	1.81	10.20	6.37	1.09
6.937	200yr	6,937	540	1.81	10.27	6.42	1.12
6.940		Bridge					
6.942	50yr	6,942	440	1.81	9.92	6.18	0.98
6.942	80yr	6,942	470	1.81	10.04	6.25	1.02
6.942	100yr	6,942	490	1.81	10.08	6.30	1.05
6.942	150yr	6,942	520	1.81	10.20	6.37	1.09
6.942	200yr	6,942	540	1.81	10.28	6.42	1.12
6.965	50yr	6,965	440	2.12	9.92	5.96	0.97
6.965	80yr	6,965	470	2.12	10.04	6.03	1.01
6.965	100yr	6,965	490	2.12	10.09	6.07	1.04
6.965	150yr	6,965	520	2.12	10.20	6.14	1.08
6.965	200yr	6,965	540	2.12	10.28	6.19	1.10
7.170	50yr	7,170	440	2.28	9.95	5.99	0.85
7.170	80yr	7,170	470	2.28	10.07	6.06	0.88
7.170	100yr	7,170	490	2.28	10.12	6.10	0.91
7.170	150yr	7,170	520	2.28	10.23	6.16	0.95
7.170	200yr	7,170	540	2.28	10.31	6.20	0.97
7.360	50yr	7,360	440	2.57	9.95	5.99	1.01
7.360	80yr	7,360	470	2.57	10.07	6.07	1.05
7.360	100yr	7,360	490	2.57	10.12	6.12	1.08
7.360	150yr	7,360	520	2.57	10.24	6.19	1.12
7.360	200yr	7,360	540	2.57	10.32	6.24	1.15
7.565	50yr	7,565	440	1.94	9.97	6.05	1.02
7.565	80yr	7,565	470	1.94	10.09	6.12	1.06
7.565	100yr	7,565	490	1.94	10.14	6.17	1.10
7.565	150yr	7,565	520	1.94	10.26	6.24	1.14
7.565	200yr	7,565	540	1.94	10.34	6.29	1.16

건설교통부

1.6 하천구역 결정을 위한 1년빈도 홍수위

건설교통부

■ 하천별 1년빈도 홍수위산정

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
금강(하)	0+000	0	0	3,770	-7.48	3.00	0.55	6,855	713	금강하구둑
	0+350	350	350	3,770	-14.68	3.00	0.28	13,672	1,569	
	0+720	370	720	3,770	-10.08	3.00	0.31	12,118	1,528	길산천합류후
	1+140	420	1,140	3,740	-7.77	3.00	0.39	9,503	1,275	길산천합류전
	1+480	340	1,480	3,740	-11.06	3.00	0.42	8,929	991	
	2+020	540	2,020	3,740	-9.56	3.00	0.41	9,096	1,214	
	2+450	430	2,450	3,740	-7.16	3.01	0.42	8,855	1,349	
	2+920	470	2,920	3,740	-6.76	3.01	0.42	8,845	1,454	
	3+330	410	3,330	3,740	-7.25	3.01	0.44	8,584	1,476	
	3+780	450	3,780	3,730	-9.05	3.01	0.61	6,144	1,356	옥포수위표
	4+240	460	4,240	3,730	-11.04	3.02	0.60	6,249	946	
	4+580	340	4,580	3,730	-12.24	3.03	0.55	6,740	1,298	금강대교
	4+860	280	4,860	3,730	-9.74	3.03	0.57	6,555	1,353	
	5+390	530	5,390	3,730	-8.34	3.04	0.46	8,193	1,367	
	6+110	720	6,110	3,730	-6.13	3.05	0.50	7,486	1,126	
	6+750	640	6,750	3,730	-8.73	3.06	0.51	7,269	1,488	
	7+210	460	7,210	3,730	-8.22	3.07	0.47	7,962	1,625	
	7+740	530	7,740	3,730	-7.42	3.09	0.47	7,909	1,553	
	8+160	420	8,160	3,730	-11.52	3.10	0.48	7,702	1,364	
	8+670	510	8,670	3,730	-5.01	3.11	0.59	6,303	1,220	
	9+170	500	9,170	3,730	-6.71	3.12	0.58	6,481	1,136	
	9+640	470	9,640	3,730	-6.70	3.13	0.58	6,383	1,096	
	10+130	490	10,130	3,730	-4.20	3.14	0.65	5,703	1,053	
	10+600	470	10,600	3,730	-4.50	3.15	0.70	5,350	967	
	11+060	460	11,060	3,730	-7.69	3.16	0.74	5,071	811	
	11+520	460	11,520	3,730	-24.99	3.18	0.44	8,420	824	
	12+250	730	12,250	3,730	-6.28	3.19	0.67	5,605	1,005	
	12+850	600	12,850	3,730	-10.98	3.20	0.75	5,001	1,018	
	13+450	600	13,450	3,730	-5.88	3.23	0.56	6,644	1,433	원산천합류후
	13+970	520	13,970	3,700	-4.97	3.25	0.62	5,971	1,153	원산천합류전
	14+490	520	14,490	3,700	-5.87	3.26	0.63	5,830	1,180	
	15+020	530	15,020	3,700	-6.66	3.28	0.72	5,143	959	
	15+460	440	15,460	3,700	-7.76	3.29	0.83	4,440	891	
	15+960	500	15,960	3,700	-7.86	3.31	0.90	4,115	898	
	16+420	460	16,420	3,700	-8.05	3.34	0.91	4,053	989	
	16+910	490	16,910	3,700	-12.95	3.37	0.92	4,009	964	
	17+380	470	17,380	3,700	-10.84	3.42	0.90	4,099	746	웅포대교
	17+850	470	17,850	3,700	-7.54	3.44	0.83	4,446	1,085	
	18+190	340	18,190	3,700	-5.34	3.47	0.79	4,710	1,011	
	18+710	520	18,710	3,700	-4.93	3.50	0.85	4,329	939	
	19+180	470	19,180	3,700	-6.03	3.52	0.81	4,544	1,060	
	19+620	440	19,620	3,700	-5.72	3.55	0.91	4,073	1,013	
	20+130	510	20,130	3,700	-5.92	3.58	0.96	3,850	976	
	20+580	450	20,580	3,700	-8.81	3.62	1.07	3,466	840	입포수위표
	21+000	420	21,000	3,690	-13.40	3.65	1.27	2,901	395	
	21+400	400	21,400	3,690	-20.01	3.72	0.94	3,912	698	
	21+660	260	21,660	3,690	-5.50	3.73	1.00	3,691	700	
	22+110	450	22,110	3,690	-4.70	3.76	0.83	4,459	795	
	22+550	440	22,550	3,690	-6.60	3.78	0.92	3,991	942	
	23+250	700	23,250	3,690	-15.09	3.83	0.96	3,848	954	
	23+550	300	23,550	3,690	-7.88	3.88	0.75	4,930	1,040	
	24+050	500	24,050	3,690	-4.18	3.91	0.73	5,030	1,050	함열천합류후
	24+680	630	24,680	3,640	-7.88	3.94	0.85	4,307	1,224	함열천합류전
	25+330	650	25,330	3,640	-5.46	3.98	0.88	4,153	1,127	
	25+810	480	25,810	3,640	-6.47	4.03	0.88	4,151	1,086	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
금강(하)	26+140	330	26,140	3,640	-5.15	4.06	0.84	4,312	1,213	
	26+600	460	26,600	3,640	-5.66	4.10	0.86	4,241	1,148	
	26+990	390	26,990	3,640	-5.36	4.14	0.87	4,169	1,023	
	27+400	410	27,400	3,640	-21.35	4.17	0.84	4,324	889	
	27+890	490	27,890	3,640	-10.85	4.19	1.15	3,159	841	
	28+290	400	28,290	3,640	-6.24	4.26	1.05	3,458	983	
	28+630	340	28,630	3,640	-4.64	4.32	0.97	3,759	1,212	
	29+030	400	29,030	3,640	-7.34	4.37	0.88	4,146	1,164	
	29+570	540	29,570	3,640	-9.53	4.42	0.89	4,067	956	
	30+160	590	30,160	3,640	-6.43	4.47	0.82	4,461	1,290	
	30+830	670	30,830	3,640	-2.92	4.51	0.76	4,761	1,217	
	31+400	570	31,400	3,640	-7.22	4.55	1.04	3,488	991	
	32+120	720	32,120	3,640	-13.72	4.64	1.19	3,056	777	
	32+590	470	32,590	3,640	-12.21	4.71	1.10	3,320	755	
	32+920	330	32,920	3,640	-13.90	4.76	1.02	3,584	776	황산대교
	33+060	140	33,060	3,640	-11.71	4.77	0.92	3,944	676	
	33+270	210	33,270	3,640	-14.31	4.79	1.03	3,551	967	
	33+830	560	33,830	3,640	-5.50	4.86	1.04	3,486	1,213	
	34+490	660	34,490	3,350	-3.30	4.96	1.00	3,353	1,056	논산천합류전
	34+920	430	34,920	3,350	-5.20	5.02	0.97	3,445	987	
	35+370	450	35,370	3,350	-6.89	5.08	0.78	4,318	966	
	36+000	630	36,000	3,350	-6.29	5.13	0.94	3,549	969	
	36+560	560	36,560	3,350	-3.28	5.18	0.99	3,398	915	
	37+010	450	37,010	3,350	-3.08	5.24	1.20	2,800	826	
	37+710	700	37,710	3,350	-3.08	5.38	1.15	2,913	908	
	38+220	510	38,220	3,350	-4.07	5.44	1.42	2,353	832	석성천합류후
	38+620	400	38,620	3,300	-8.17	5.51	1.35	2,439	431	반조원수위표
	39+050	430	39,050	3,300	-5.76	5.57	1.24	2,651	543	
	39+520	470	39,520	3,300	-6.26	5.65	0.84	3,939	810	
	40+000	480	40,000	3,300	-9.06	5.68	0.77	4,260	849	
	40+470	470	40,470	3,300	-7.45	5.70	0.88	3,768	683	
	40+890	420	40,890	3,300	-2.55	5.71	1.20	2,758	615	
	41+490	600	41,490	3,300	-9.64	5.78	1.33	2,472	509	
	41+990	500	41,990	3,300	-6.34	5.87	1.11	2,963	648	
	42+540	550	42,540	3,300	-4.94	5.91	1.44	2,295	407	
	43+290	750	43,290	3,300	-2.63	6.03	1.23	2,680	485	
	43+850	560	43,850	3,300	-2.03	6.13	0.91	3,643	860	
	44+450	600	44,450	3,300	-4.42	6.19	0.82	4,004	919	
	45+060	610	45,060	3,300	-4.02	6.23	1.02	3,251	710	
	45+650	590	45,650	3,300	-7.42	6.28	0.73	4,516	783	
	46+200	550	46,200	3,300	-2.91	6.31	0.72	4,603	1,159	
	46+670	470	46,670	3,300	-1.71	6.35	0.83	3,979	1,136	
	47+270	600	47,270	3,300	-1.90	6.39	0.86	3,818	1,002	
	47+800	530	47,800	3,300	-3.29	6.44	0.99	3,339	792	
	48+100	300	48,100	3,300	-4.38	6.48	0.83	3,968	627	
	48+500	400	48,500	3,300	-5.31	6.49	0.96	3,424	533	
	48+970	470	48,970	3,300	-6.52	6.48	1.54	2,137	317	
	49+400	430	49,400	3,300	-5.08	6.60	0.90	3,650	895	금천합류후
	49+820	420	49,820	3,240	-2.55	6.62	1.00	3,229	699	금천합류전
	50+300	480	50,300	3,240	-3.68	6.65	1.03	3,154	516	
	50+800	500	50,800	3,240	-4.54	6.70	0.65	5,010	596	
	51+220	420	51,220	3,240	-1.09	6.70	0.84	3,846	690	
	51+540	320	51,540	3,240	-1.44	6.70	1.11	2,917	466	
	52+090	550	52,090	3,240	-15.11	6.74	1.21	2,681	550	
	52+160	70	52,160	3,240	-6.07	6.75	1.32	2,455	484	백제대교
	52+180	20	52,180	3,240	-6.07	6.77	1.32	2,460	485	백제대교(신)
	52+540	360	52,540	3,240	-3.72	6.83	1.18	2,756	552	
	52+910	370	52,910	3,240	-4.37	6.88	1.10	2,951	508	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
금강(하)	53+350	440	53,350	3,240	-3.28	6.92	0.96	3,367	474	
	53+760	410	53,760	3,240	-3.25	6.95	0.93	3,500	522	
	54+270	510	54,270	3,240	-3.49	6.94	1.52	2,134	374	
	54+730	460	54,730	3,240	-2.45	7.00	1.68	1,932	338	
	55+320	590	55,320	3,240	-3.81	7.17	1.20	2,694	553	
	55+940	620	55,940	3,240	0.29	7.24	1.45	2,235	526	
	56+420	480	56,420	3,240	-3.91	7.32	1.59	2,040	323	백마강교
	56+510	90	56,510	3,240	-2.81	7.33	1.69	1,922	322	
	56+970	460	56,970	3,240	-0.72	7.43	1.58	2,056	326	
	57+330	360	57,330	3,240	-3.01	7.51	1.45	2,229	472	지천합류후
	57+810	480	57,810	3,090	-0.51	7.64	1.12	2,750	615	지천합류전
	58+080	270	58,080	3,090	-3.11	7.68	0.95	3,239	480	
	58+570	490	58,570	3,090	-1.11	7.68	1.38	2,237	473	
	59+060	490	59,060	3,090	-1.81	7.79	1.05	2,952	650	
	59+520	460	59,520	3,090	-0.30	7.84	1.03	2,986	566	
	59+990	470	59,990	3,090	-0.92	7.87	1.37	2,257	432	
	60+510	520	60,510	3,090	0.21	7.96	1.19	2,606	488	
	60+950	440	60,950	3,090	1.00	8.02	1.23	2,511	708	
	61+430	480	61,430	3,090	0.03	8.10	1.08	2,849	712	
	61+870	440	61,870	3,090	-1.09	8.13	1.19	2,604	445	
	61+900	30	61,900	3,090	-1.09	8.12	1.41	2,195	427	왕진교
	62+320	420	62,320	3,090	0.80	8.19	1.52	2,027	424	
	62+790	470	62,790	3,090	-0.87	8.26	1.49	2,079	292	
	63+390	600	63,390	3,090	-3.04	8.35	1.27	2,428	357	
	64+040	650	64,040	3,090	-1.35	8.43	1.25	2,472	515	
	64+510	470	64,510	3,090	1.34	8.50	1.51	2,040	484	
	65+040	530	65,040	3,090	0.08	8.62	1.41	2,198	438	
	65+470	430	65,470	3,090	0.01	8.68	1.45	2,136	351	
	66+110	640	66,110	3,090	-0.70	8.75	1.59	1,946	282	
	66+470	360	66,470	3,090	-0.72	8.82	1.41	2,196	309	
	66+920	450	66,920	3,090	0.50	8.87	1.61	1,919	328	
	67+400	480	67,400	3,090	0.32	8.99	1.25	2,468	388	
	67+910	510	67,910	3,090	-1.25	9.05	1.26	2,444	534	
	68+370	460	68,370	3,090	-3.22	9.13	0.97	3,192	589	
	68+970	600	68,970	3,090	-1.48	9.19	0.87	3,535	652	
	69+500	530	69,500	3,090	-1.42	9.21	1.19	2,589	504	
	70+100	600	70,100	3,090	-0.32	9.29	0.97	3,184	568	
	70+610	510	70,610	3,090	-1.92	9.32	1.20	2,583	468	
	71+110	500	71,110	3,090	-1.02	9.36	1.18	2,615	451	진두수위표
	71+560	450	71,560	3,050	-0.48	9.41	1.26	2,420	421	
	72+060	500	72,060	3,050	0.81	9.49	1.02	3,003	602	
	72+570	510	72,570	3,050	-1.12	9.51	1.29	2,365	332	
	73+010	440	73,010	3,050	-1.73	9.54	1.31	2,328	337	
	73+540	530	73,540	3,050	1.52	9.59	1.53	1,998	383	
	74+180	640	74,180	3,050	1.19	9.70	1.51	2,021	339	
	74+640	460	74,640	3,050	-1.30	9.76	1.60	1,908	296	
	75+120	480	75,120	3,050	-0.97	9.85	1.48	2,065	334	
	75+630	510	75,630	3,050	1.16	9.91	1.68	1,813	307	
	76+270	640	76,270	3,050	0.30	10.04	1.54	1,986	274	
	76+720	450	76,720	3,050	0.31	10.08	1.80	1,691	266	
	77+320	600	77,320	3,050	2.21	10.23	1.55	1,967	323	
	77+910	590	77,910	3,050	-0.40	10.35	1.37	2,228	371	
	78+320	410	78,320	3,050	1.33	10.39	1.50	2,033	351	
	78+920	600	78,920	3,050	1.06	10.47	1.75	1,747	298	
	79+490	570	79,490	3,050	0.89	10.65	1.31	2,320	482	
	80+190	700	80,190	3,050	0.46	10.75	1.27	2,393	416	유구천합류후
	80+480	290	80,480	2,890	0.19	10.76	2.07	1,398	263	유구천합류전
	80+640	160	80,640	2,890	0.48	10.91	1.46	1,983	458	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
금강(하)	81+120	480	81,120	2,890	1.79	10.99	1.49	1,936	370	
	81+610	490	81,610	2,890	1.87	11.07	1.48	1,958	328	
	81+980	370	81,980	2,890	2.26	11.12	1.63	1,777	323	
	82+600	620	82,600	2,890	0.61	11.21	1.90	1,518	224	
	82+980	380	82,980	2,890	3.77	11.33	1.72	1,678	322	
	83+410	430	83,410	2,890	0.92	11.48	1.12	2,588	411	
	83+830	420	83,830	2,890	2.22	11.49	1.45	2,000	294	
	84+300	470	84,300	2,890	4.34	11.56	1.54	1,874	438	
	84+700	400	84,700	2,890	3.73	11.68	1.48	1,959	489	백제큰길
	84+790	90	84,790	2,890	3.66	11.73	1.27	2,284	514	정안천합류후
	85+070	280	85,070	2,830	4.10	11.76	1.76	1,606	408	금강교
	85+220	150	85,220	2,830	5.07	11.75	2.40	1,181	390	
	85+730	510	85,730	2,830	4.94	12.18	1.74	1,627	420	
	86+240	510	86,240	2,830	5.19	12.36	1.65	1,718	391	
	86+500	260	86,500	2,830	3.16	12.46	1.40	2,028	353	공주대교
	86+780	280	86,780	2,830	6.99	12.48	1.66	1,710	383	
	87+280	500	87,280	2,830	5.29	12.62	1.83	1,548	405	
	87+680	400	87,680	2,830	7.82	12.81	1.64	1,726	462	
	88+030	350	88,030	2,830	7.55	12.94	1.50	1,881	427	신공주대교
	88+250	220	88,250	2,830	7.11	12.96	1.74	1,622	327	
	88+800	550	88,800	2,830	5.86	13.11	1.62	1,745	330	
	89+280	480	89,280	2,830	5.90	13.22	1.61	1,754	353	
	89+750	470	89,750	2,830	5.69	13.33	1.57	1,802	299	
	90+230	480	90,230	2,830	5.48	13.41	1.64	1,728	303	
	90+730	500	90,730	2,830	5.47	13.51	1.60	1,770	298	
	91+190	460	91,190	2,830	6.18	13.59	1.89	1,498	329	
	91+720	530	91,720	2,830	6.46	13.76	1.71	1,659	286	
	92+160	440	92,160	2,830	5.01	13.85	1.66	1,705	251	
	92+610	450	92,610	2,830	6.00	13.90	2.00	1,417	234	
	93+060	450	93,060	2,830	6.35	14.04	1.92	1,475	266	
	93+510	450	93,510	2,810	6.72	14.16	2.29	1,225	191	청벽대교
	93+590	80	93,590	2,810	5.01	14.30	1.74	1,617	263	
	94+100	510	94,100	2,810	3.74	14.38	1.88	1,493	208	
	94+790	690	94,790	2,810	5.46	14.57	1.42	1,984	310	
	95+200	410	95,200	2,810	4.77	14.61	1.81	1,549	249	불티교
	95+390	190	95,390	2,810	5.28	14.69	1.56	1,796	258	
	95+990	600	95,990	2,810	4.47	14.77	1.62	1,731	272	
	96+340	350	96,340	2,810	5.00	14.84	1.51	1,866	299	
	96+870	530	96,870	2,810	5.00	14.91	1.69	1,665	252	
	97+390	520	97,390	2,810	4.66	15.02	1.56	1,799	279	
	97+810	420	97,810	2,810	6.19	15.11	1.47	1,917	338	
	98+360	550	98,360	2,810	6.05	15.19	1.59	1,765	297	대교천합류후
	98+930	570	98,930	2,780	4.62	15.31	1.36	2,048	319	대교천합류전
	99+730	800	99,730	2,780	7.02	15.42	1.01	2,746	474	
	100+280	550	100,280	2,750	5.46	15.46	1.13	2,444	411	용수천합류전
	100+710	430	100,710	2,750	6.13	15.49	1.28	2,153	383	
	101+140	430	101,140	2,750	7.41	15.57	1.10	2,502	512	
	101+620	480	101,620	2,750	7.34	15.62	1.17	2,342	437	
	101+870	250	101,870	2,750	8.55	15.64	1.47	1,877	384	금남교
	102+030	160	102,030	2,750	10.01	15.65	1.79	1,539	431	
	102+610	580	102,610	2,750	8.73	15.89	1.20	2,291	558	
	103+160	550	103,160	2,750	9.91	15.98	1.44	1,908	532	
	103+720	560	103,720	2,750	10.21	16.13	1.14	2,423	592	
	104+230	510	104,230	2,750	9.35	16.20	1.41	1,953	513	
	104+740	510	104,740	2,750	9.61	16.32	1.35	2,035	444	
	105+250	510	105,250	2,750	9.00	16.42	1.33	2,070	525	
	105+750	500	105,750	2,750	8.91	16.53	1.37	2,004	531	
	106+230	480	106,230	2,750	10.57	16.63	1.61	1,707	431	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
금강(하)	106+750	520	106,750	2,750	10.81	16.81	1.23	2,229	584	
	107+250	500	107,250	2,750	8.81	16.91	0.67	4,092	796	
	107+700	450	107,700	2,750	9.67	16.93	0.62	4,401	979	
	108+200	500	108,200	2,750	10.38	16.95	0.87	3,166	924	
	108+750	550	108,750	2,750	10.98	16.99	0.64	4,267	943	미호천합류후
	109+400	650	109,400	1,650	11.52	16.90	2.12	777	243	미호천합류전
	109+900	500	109,900	1,650	11.11	17.19	2.11	784	184	
	110+350	450	110,350	1,650	11.81	17.49	1.31	1,260	394	
	110+900	550	110,900	1,650	13.40	17.63	1.75	942	282	
	111+400	500	111,400	1,650	12.76	17.84	1.67	989	252	
	111+900	500	111,900	1,650	12.57	18.04	1.29	1,278	352	
	112+350	450	112,350	1,650	12.99	18.14	1.64	1,009	307	부강수위표
	112+510	160	112,510	1,650	13.31	18.23	1.49	1,104	378	
	112+960	450	112,960	1,650	12.61	18.42	1.23	1,337	460	
	113+360	400	113,360	1,650	14.15	18.53	1.22	1,354	470	
	113+790	430	113,790	1,650	14.20	18.64	2.13	775	400	
	114+290	500	114,290	1,650	14.45	19.10	1.85	892	273	
	114+790	500	114,790	1,650	13.76	19.30	2.26	731	168	
	115+390	600	115,390	1,650	13.73	19.64	2.18	755	187	
	116+040	650	116,040	1,650	13.87	20.04	1.86	887	239	
	116+540	500	116,540	1,650	13.80	20.23	1.99	830	189	
	117+090	550	117,090	1,650	13.70	20.47	1.80	918	203	
	117+620	530	117,620	1,650	14.21	20.68	1.49	1,104	269	
	118+370	750	118,370	1,650	15.68	20.86	2.13	774	190	
	118+800	430	118,800	1,650	15.90	21.11	1.96	842	206	
	119+230	430	119,230	1,650	14.88	21.31	1.64	1,005	214	
	119+770	540	119,770	1,650	16.78	21.46	1.83	902	249	
	120+190	420	120,190	1,650	16.90	21.63	2.33	709	227	
	120+700	510	120,700	1,650	17.23	22.11	1.84	899	299	매포수위표
	121+260	560	121,260	1,640	15.57	22.35	1.70	964	214	
	121+770	510	121,770	1,640	17.35	22.51	2.33	704	260	
	122+140	370	122,140	1,640	17.90	22.89	2.05	800	247	
	122+490	350	122,490	1,640	18.65	23.10	2.29	716	222	
	122+990	500	122,990	1,640	18.77	23.51	1.61	1,016	301	
	123+470	480	123,470	1,640	18.81	23.70	1.32	1,241	349	
	124+010	540	124,010	1,640	18.66	23.83	1.15	1,432	371	
	124+460	450	124,460	1,640	18.10	23.88	1.63	1,004	242	
	124+960	500	124,960	1,640	18.25	24.02	1.94	845	206	갑천합류후
	125+660	700	125,660	1,090	19.57	24.37	1.39	786	236	갑천합류전
	126+420	760	126,420	1,090	21.07	24.64	2.01	541	215	
	126+750	330	126,750	1,090	21.98	25.08	1.82	600	238	고속철도교
	126+800	50	126,800	1,090	22.18	25.17	1.79	609	237	금강1교
	126+960	160	126,960	1,090	22.58	25.24	2.02	539	241	
	127+460	500	127,460	1,090	21.91	25.64	1.50	725	240	
	127+720	260	127,720	1,090	21.02	25.74	1.63	669	191	금강철교(상행)
	127+740	20	127,740	1,090	21.02	25.76	1.62	674	192	금강철교(하행)
	127+890	150	127,890	1,090	19.96	25.82	1.91	572	174	현도교
	127+970	80	127,970	1,090	19.56	25.90	1.66	655	189	
	128+370	400	128,370	1,090	19.46	26.08	1.30	837	232	
	128+780	410	128,780	1,090	21.79	26.17	1.45	752	238	
	129+230	450	129,230	1,090	18.26	26.29	1.21	900	176	
	129+830	600	129,830	1,090	21.68	26.36	1.63	667	181	
	130+330	500	130,330	1,090	22.00	26.54	1.55	702	197	
	130+470	140	130,470	1,090	24.05	26.40	3.05	357	152	역조정지
금강(상)	222+040		222,040	1,640	72.97	82.47	1.42	1,158	206	
	222+220	180	222,220	1,640	78.49	82.47	3.00	546	171	금강유원지보
	222+530	310	222,530	1,640	75.20	83.08	1.87	876	183	
	222+915	385	222,915	1,640	75.24	83.28	1.89	866	179	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
금강(상)	223+570	655	223,570	1,640	77.15	83.59	1.91	860	155	
	223+580	10	223,580	1,640	78.46	83.50	3.18	516	132	고속도로신설교
	223+615	35	223,615	1,640	78.02	83.87	2.10	779	181	고속도로신설교
	223+645	30	223,645	1,640	77.48	83.95	1.94	845	170	금강3교
	224+125	480	224,125	1,640	77.29	84.18	1.99	826	158	
	224+580	455	224,580	1,640	78.40	84.41	2.48	662	137	
	224+955	375	224,955	1,640	78.01	84.75	2.33	704	138	
	225+415	460	225,415	1,640	78.62	85.11	2.04	805	155	
	225+590	175	225,590	1,640	78.95	85.28	1.79	917	209	금강2교
	225+775	185	225,775	1,640	81.35	85.45	2.05	799	216	
	225+830	55	225,830	1,640	80.67	85.51	2.03	808	201	
	226+275	445	226,275	1,640	80.32	85.89	1.68	978	262	고속도로신설교
	226+385	110	226,385	1,640	79.91	85.97	1.49	1,097	275	
	226+950	565	226,950	1,640	80.63	86.18	0.98	1,672	453	
	227+100	150	227,100	1,640	81.57	86.21	1.21	1,356	546	
	227+425	325	227,425	1,640	80.03	86.27	1.90	865	179	
	227+610	185	227,610	1,640	78.75	86.34	2.14	768	154	옥천수위표
	227+745	135	227,745	1,640	80.23	86.45	2.05	800	181	
	228+340	595	228,340	1,640	80.60	86.84	1.82	902	190	
	229+100	760	229,100	1,640	81.08	87.20	1.69	969	203	
	229+550	450	229,550	1,640	81.97	87.38	2.50	657	165	
	229+925	375	229,925	1,640	81.81	87.77	2.62	626	139	
	230+485	560	230,485	1,640	82.29	88.37	1.51	1,085	255	
	230+895	410	230,895	1,640	83.27	88.52	2.38	688	202	
	231+365	470	231,365	1,640	84.66	89.13	2.38	688	200	
	231+605	240	231,605	1,640	84.21	89.45	2.01	814	196	
	231+925	320	231,925	1,640	83.98	89.70	1.87	879	211	
	232+360	435	232,360	1,640	83.69	89.94	1.81	904	180	
	232+905	545	232,905	1,640	84.40	90.18	2.32	708	143	
	233+465	560	233,465	1,640	83.64	90.62	1.86	881	173	
	234+130	665	234,130	1,640	85.32	90.96	1.22	1,346	339	
	234+585	455	234,585	1,640	85.66	91.08	1.65	995	246	
	235+060	475	235,060	1,640	86.35	91.35	2.25	730	228	
	235+420	360	235,420	1,640	86.55	91.80	1.77	926	234	경부선철도신설교
	235+450	30	235,450	1,640	86.55	91.85	1.75	938	235	고속철도신설교
	235+530	80	235,530	1,640	87.55	91.83	2.28	718	238	경부선(하행)
	235+570	40	235,570	1,640	87.79	91.87	2.45	669	237	
	235+595	25	235,595	1,640	87.73	92.01	1.99	822	261	경부선(상행)
	235+710	115	235,710	1,640	87.18	92.18	1.66	991	241	이원대교(이원)
	236+055	345	236,055	1,640	86.83	92.34	1.92	854	219	
	236+505	450	236,505	1,640	87.71	92.66	1.88	874	219	
	237+040	535	237,040	1,640	86.90	93.00	1.66	986	246	
	237+455	415	237,455	1,640	87.95	93.22	1.91	857	234	
	237+865	410	237,865	1,640	88.40	93.54	1.98	830	228	
	238+335	470	238,335	1,640	88.56	93.90	1.63	1,004	256	
	238+780	445	238,780	1,640	87.80	94.13	1.66	987	253	
	239+170	390	239,170	1,640	89.73	94.38	1.88	873	304	
	239+220	50	239,220	1,640	89.23	94.51	1.29	1,272	323	
	239+635	415	239,635	1,640	89.13	94.63	1.24	1,318	293	
	240+070	435	240,070	1,640	88.70	94.73	1.59	1,031	216	
	240+295	225	240,295	1,640	87.63	94.83	1.47	1,115	217	
	240+825	530	240,825	1,640	89.31	95.02	1.38	1,189	303	
	241+055	230	241,055	1,640	90.42	95.13	1.39	1,181	311	고속철도신설교
	241+220	165	241,220	1,640	87.87	95.19	1.23	1,339	316	
	241+765	545	241,765	1,640	90.98	95.34	1.89	867	245	
	242+610	845	242,610	1,640	91.10	95.99	1.59	1,031	331	
	243+355	745	243,355	1,640	91.92	96.67	2.13	771	344	
	243+940	585	243,940	1,640	93.53	97.60	1.86	884	369	초강합류후

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
금강(상)	244+360	420	244,360	1,640	91.75	98.05	1.90	862	285	초강합류전
	244+830	470	244,830	1,640	93.61	98.61	2.00	819	364	
	244+870	40	244,870	1,640	93.19	98.75	2.22	740	271	고속철도신설교
	245+305	435	245,305	1,640	95.31	99.62	2.20	745	445	
	245+840	535	245,840	1,640	95.77	100.36	1.55	1,058	339	
	246+330	490	246,330	1,640	94.91	100.69	2.22	740	192	양강교수위표
	246+365	35	246,365	1,640	95.65	100.67	2.58	636	171	
갑천	0+000	0	0	570	19.65	24.22	1.04	549	372	갑천하구
	0+160	160	160	570	19.75	24.28	0.95	602	299	
	0+390	230	390	570	20.53	24.35	0.92	618	263	
	0+570	180	570	570	19.91	24.38	1.18	483	219	
	0+770	200	770	570	20.25	24.46	1.12	511	258	
	0+980	210	980	570	21.21	24.54	1.09	523	304	
	1+015	35	1,015	570	20.76	24.56	1.11	513	306	불무교
	1+220	205	1,220	570	20.20	24.66	1.34	426	294	
	1+450	230	1,450	570	19.64	24.83	1.48	385	230	
	1+710	260	1,710	570	20.19	25.01	1.31	435	217	
	1+950	240	1,950	570	21.81	25.12	1.35	423	183	
	2+205	255	2,205	570	21.96	25.24	1.09	521	231	
	2+455	250	2,455	570	22.83	25.30	1.72	332	182	
	2+535	80	2,535	570	23.23	25.40	2.07	276	157	신구교
	2+640	105	2,640	570	22.71	25.61	1.68	340	219	
	2+820	180	2,820	570	22.20	25.81	1.55	369	209	
	2+985	165	2,985	570	22.03	25.94	1.57	364	199	
	3+125	140	3,125	570	22.65	26.07	1.66	343	211	
	3+335	210	3,335	570	22.86	26.26	1.76	324	169	
	3+550	215	3,550	570	23.52	26.50	1.75	325	210	관평천합류후
	3+755	205	3,755	560	23.60	26.70	1.46	384	147	관평천합류전
	3+915	160	3,915	560	23.77	27.11	2.32	241	169	용신교
	3+975	60	3,975	560	23.39	27.38	1.01	557	222	
	4+205	230	4,205	560	23.49	27.42	1.46	383	176	
	4+395	190	4,395	560	23.74	27.56	1.24	451	263	
	4+595	200	4,595	560	23.40	27.65	1.30	431	203	
	4+775	180	4,775	560	21.34	27.75	1.13	494	222	
	4+955	180	4,955	560	23.50	27.80	1.14	492	213	
	5+005	50	5,005	560	23.70	27.85	1.15	488	204	취입보
	5+165	160	5,165	560	24.43	27.90	1.07	522	178	
	5+345	180	5,345	560	25.22	27.95	1.39	402	178	
	5+465	120	5,465	560	24.01	28.05	1.05	533	183	
	5+635	170	5,635	560	23.39	28.11	0.93	603	182	
	5+815	180	5,815	560	25.80	28.13	1.61	347	181	
	5+975	160	5,975	560	26.05	28.25	1.67	336	170	
	6+145	170	6,145	560	26.47	28.39	1.89	297	168	
	6+315	170	6,315	560	26.11	28.60	1.65	339	176	
	6+515	200	6,515	560	25.29	28.77	1.32	425	182	
	6+710	195	6,710	560	26.61	28.88	1.70	330	182	
	6+880	170	6,880	560	27.20	29.07	1.77	317	184	
	7+100	220	7,100	560	27.79	29.41	1.98	282	207	
	7+130	30	7,130	560	27.80	29.52	1.94	289	219	호남고속도로교
	7+150	20	7,150	560	27.79	29.58	1.99	282	218	갑천교
	7+160	10	7,160	560	27.84	29.68	1.75	320	224	호남고속도로교
	7+285	125	7,285	560	27.85	29.84	1.61	347	209	
	7+505	220	7,505	560	27.92	30.03	1.42	395	209	
	7+565	60	7,565	560	29.32	31.57	1.18	473	210	취입보
	7+715	150	7,715	560	28.56	31.63	1.12	500	216	
	7+905	190	7,905	560	29.02	31.69	1.34	419	211	
	8+125	220	8,125	560	28.63	31.80	1.05	534	213	
	8+365	240	8,365	560	28.00	31.86	1.37	410	198	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
갑천	8+555	190	8,555	560	28.20	31.96	1.08	516	205	
	8+775	220	8,775	560	28.13	32.02	1.12	499	191	
	8+985	210	8,985	560	28.44	32.07	1.11	503	201	
	9+190	205	9,190	560	28.56	32.12	1.14	493	187	
	9+370	180	9,370	560	28.60	32.17	1.28	438	181	
	9+550	180	9,550	560	28.61	32.23	1.39	403	174	
	9+720	170	9,720	560	28.62	32.31	1.15	485	173	
	9+905	185	9,905	560	28.83	32.34	1.54	363	176	
	10+045	140	10,045	560	29.14	32.43	1.59	352	167	
	10+105	60	10,105	550	30.55	32.52	1.81	304	188	회덕수위표
	10+225	120	10,225	550	29.77	32.64	1.81	305	161	
	10+415	190	10,415	550	29.58	32.82	1.69	326	146	
	10+595	180	10,595	550	28.29	32.97	1.29	425	137	
	10+765	170	10,765	550	27.85	33.02	1.12	489	136	
	10+925	160	10,925	550	29.16	33.05	1.32	418	152	
	11+105	180	11,105	550	30.89	33.11	1.56	352	172	
	11+325	220	11,325	550	30.80	33.27	1.40	392	175	
	11+415	90	11,415	550	31.04	33.31	1.54	356	171	
	11+545	130	11,545	550	31.20	33.43	1.39	395	225	유등천합류후
	11+655	110	11,655	340	31.40	33.55	0.88	389	227	유등천합류전
	11+725	70	11,725	340	31.30	33.59	1.26	269	164	둔산대교
	11+785	60	11,785	340	31.60	33.63	1.04	328	187	
	11+820	35	11,820	340	31.10	33.73	0.71	478	186	라바보
	11+960	140	11,960	340	31.44	33.74	0.99	343	188	
	12+060	100	12,060	340	31.66	33.76	0.95	358	187	
	12+160	100	12,160	340	31.81	33.79	1.05	323	187	
	12+210	50	12,210	340	31.92	33.83	1.02	333	187	엑스포다리
	12+260	50	12,260	340	31.53	33.85	0.95	356	188	
	12+355	95	12,355	340	31.71	33.87	0.96	354	187	
	12+460	105	12,460	340	31.67	33.90	0.98	348	187	
	12+560	100	12,560	340	31.60	33.92	0.98	349	187	
	12+660	100	12,660	340	31.46	33.96	0.85	401	187	
	12+760	100	12,760	340	31.71	33.98	1.00	339	187	
	12+860	100	12,860	340	30.76	34.02	0.63	539	188	
	12+920	60	12,920	340	32.71	35.24	0.71	481	190	취입보
	12+960	40	12,960	340	33.50	35.28	1.37	249	191	대덕대교
	13+035	75	13,035	340	33.70	35.37	0.99	343	224	
	13+165	130	13,165	340	33.64	35.39	1.83	186	137	
	13+265	100	13,265	340	33.77	35.55	2.01	169	105	
	13+355	90	13,355	340	33.80	35.71	2.03	167	97	
	13+460	105	13,460	340	33.62	35.92	1.75	194	98	
	13+555	95	13,555	340	33.47	36.04	1.54	220	97	
	13+675	120	13,675	340	35.29	37.03	1.98	171	119	라바보
	13+755	80	13,755	340	34.10	37.25	1.22	278	145	
	13+850	95	13,850	340	34.43	37.30	1.35	253	133	
	13+955	105	13,955	340	34.65	37.35	1.39	245	98	
	14+060	105	14,060	340	34.16	37.41	1.31	259	106	
	14+150	90	14,150	340	34.27	37.45	1.54	221	103	
	14+250	100	14,250	340	35.41	37.52	1.67	203	104	
	14+345	95	14,345	340	35.47	37.62	1.69	201	109	
	14+440	95	14,440	340	35.61	37.74	1.57	216	119	
	14+540	100	14,540	340	35.84	38.33	1.16	293	219	신설보
	14+635	95	14,635	340	35.76	38.42	1.13	300	230	
	14+720	85	14,720	340	35.83	38.49	1.20	283	221	
	14+830	110	14,830	340	36.15	38.56	1.45	234	229	
	14+945	115	14,945	340	36.92	38.68	1.40	242	194	갈마2보
	15+045	100	15,045	300	35.88	38.76	1.32	228	100	유성천합류전
	15+140	95	15,140	300	35.90	38.82	1.29	233	100	

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갑천	15+235	95	15,235	300	36.04	38.87	1.38	217	100	
	15+325	90	15,325	300	36.05	38.92	1.36	221	100	
	15+375	50	15,375	300	36.27	39.02	1.89	159	90	갑천대교
	15+420	45	15,420	300	37.18	39.05	1.91	157	100	
	15+525	105	15,525	300	37.20	39.27	1.59	189	117	
	15+620	95	15,620	300	37.22	39.37	1.63	184	98	
	15+720	100	15,720	300	38.56	39.79	2.99	100	110	
	15+820	100	15,820	300	37.62	40.37	1.20	250	153	
	15+925	105	15,925	300	37.74	40.44	1.16	258	151	
	16+025	100	16,025	300	38.93	41.40	1.18	255	183	구억보
	16+125	100	16,125	300	38.51	41.48	1.23	245	190	
	16+225	100	16,225	300	39.45	41.56	1.63	185	109	
	16+325	100	16,325	300	39.47	41.69	1.42	211	120	
	16+435	110	16,435	300	39.70	41.79	1.57	191	115	
	16+535	100	16,535	300	39.84	42.04	1.71	175	146	만년교
	16+635	100	16,635	300	39.32	42.20	1.53	196	133	
	16+735	100	16,735	300	39.44	42.34	1.50	200	135	
	16+835	100	16,835	300	39.78	42.48	1.17	257	141	
	16+935	100	16,935	300	39.97	42.53	1.39	216	136	
	17+035	100	17,035	300	38.83	42.64	0.92	325	191	진잠천합류후
	17+135	100	17,135	250	38.59	42.67	1.38	182	146	진잠천합류전
	17+240	105	17,240	250	39.08	42.81	1.26	199	157	
	17+335	95	17,335	250	38.89	42.91	1.31	191	160	
	17+435	100	17,435	250	39.30	43.03	1.30	192	175	
	17+535	100	17,535	250	40.12	43.15	1.32	190	134	
	17+635	100	17,635	250	40.46	43.26	1.56	161	121	
	17+735	100	17,735	250	40.27	43.44	1.68	149	152	
	17+825	90	17,825	250	40.57	43.65	1.03	243	202	
	17+925	100	17,925	250	40.97	43.72	1.26	198	175	
	18+025	100	18,025	250	41.09	43.85	1.41	177	170	
	18+130	105	18,130	250	40.42	44.00	1.37	183	131	
	18+230	100	18,230	250	40.88	44.13	1.20	209	158	
	18+330	100	18,330	250	40.86	44.21	1.32	189	138	
	18+430	100	18,430	250	40.47	44.32	1.26	198	149	
	18+530	100	18,530	250	41.72	44.42	1.37	182	140	
	18+630	100	18,630	250	42.19	44.52	1.67	150	109	
	18+720	90	18,720	250	42.06	44.71	1.24	202	173	
	18+825	105	18,825	250	42.08	44.81	1.79	140	102	
	18+925	100	18,925	250	41.99	45.03	1.17	213	152	
	19+025	100	19,025	250	42.65	45.12	1.82	138	177	
	19+125	100	19,125	250	42.16	45.40	1.03	243	211	
	19+230	105	19,230	250	42.25	45.49	1.68	149	177	
	19+335	105	19,335	250	43.09	45.77	1.41	177	166	
	19+435	100	19,435	250	43.36	45.94	0.99	253	242	
	19+535	100	19,535	250	42.94	46.04	1.41	177	222	
	19+630	95	19,630	250	43.87	46.22	0.96	260	245	
	19+740	110	19,740	250	43.21	46.31	1.10	227	225	
	19+815	75	19,815	250	44.06	46.39	0.90	277	204	
	19+925	110	19,925	250	44.21	46.45	1.02	244	177	
	20+020	95	20,020	250	44.36	46.51	1.20	208	148	
	20+115	95	20,115	250	44.36	46.58	1.52	164	144	
	20+210	95	20,210	250	44.50	46.75	1.35	185	155	
	20+315	105	20,315	250	44.70	46.88	1.30	192	138	
	20+410	95	20,410	250	44.72	46.95	1.83	137	95	
	20+510	100	20,510	250	44.33	47.16	1.33	188	121	
	20+610	100	20,610	250	44.30	47.26	1.23	204	127	
	20+690	80	20,690	250	44.77	47.32	1.21	206	127	무명천합류후
	20+795	105	20,795	240	44.80	47.37	1.70	141	81	무명천합류전

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
갑천	20+895	100	20,895	240	44.15	47.53	1.27	190	110	
	21+045	150	21,045	240	46.98	48.38	1.22	197	141	정림취입보
	21+095	50	21,095	240	45.93	48.44	1.10	218	175	
	21+200	105	21,200	240	46.05	48.52	1.14	210	177	
	21+290	90	21,290	240	44.97	48.60	0.86	278	177	
	21+390	100	21,390	240	45.60	48.63	1.35	177	175	
	21+515	125	21,515	240	48.90	50.25	0.69	346	257	태봉보
	21+525	10	21,525	240	48.10	50.26	0.61	392	222	
	21+585	60	21,585	240	48.55	50.27	0.79	305	201	
	21+685	100	21,685	240	47.30	50.29	0.80	301	166	
	21+745	60	21,745	240	47.37	50.32	0.91	263	132	가수원교(신)
	21+805	60	21,805	240	47.69	50.33	0.88	272	131	
	21+850	45	21,850	240	47.61	50.35	0.88	271	131	가수원교(구)
	21+895	45	21,895	240	47.50	50.38	1.07	225	135	가수원철교
	21+900	5	21,900	240	47.97	50.37	1.23	194	139	
	22+095	195	22,095	240	47.62	50.52	1.12	214	121	
	22+290	195	22,290	240	49.04	50.64	1.80	133	107	
	22+480	190	22,480	240	48.85	50.94	1.17	205	121	
	22+670	190	22,670	240	49.28	51.07	1.18	203	140	
	22+845	175	22,845	240	48.75	51.20	0.95	254	125	잠수교
	22+885	40	22,885	240	49.32	51.21	1.22	197	130	
	23+080	195	23,080	240	49.36	51.35	1.22	197	124	
	23+280	200	23,280	240	49.40	51.50	1.26	191	116	
	23+480	200	23,480	240	49.83	51.67	1.27	189	127	
	23+670	190	23,670	240	50.69	51.93	1.85	130	134	
	23+835	165	23,835	240	50.70	52.41	1.49	161	110	모세골교
	23+880	45	23,880	240	50.94	52.52	1.67	144	109	모세골교
	24+075	195	24,075	240	50.88	52.86	1.57	153	103	
	24+265	190	24,265	240	51.05	53.12	1.46	165	98	
	24+365	100	24,365	240	52.78	55.05	1.08	222	107	중보
	24+465	100	24,465	240	52.77	55.10	1.10	219	115	
	24+665	200	24,665	240	52.20	55.19	1.06	226	98	
	24+865	200	24,865	240	51.66	55.28	0.95	253	98	
	25+060	195	25,060	240	51.79	55.34	0.94	255	123	
	25+255	195	25,255	240	53.09	55.40	1.92	125	98	
	25+445	190	25,445	240	53.36	55.89	1.33	180	159	
	25+485	40	25,485	240	55.45	57.42	0.92	260	133	상보
	25+630	145	25,630	240	54.39	57.47	0.80	300	107	
	25+850	220	25,850	240	53.65	57.52	0.98	244	100	
	26+050	200	26,050	240	54.64	57.58	1.35	177	99	
	26+095	45	26,095	240	55.70	57.69	1.31	183	175	잠수교
	26+125	30	26,125	240	55.38	57.75	1.18	204	104	괴곡철교
	26+175	50	26,175	240	55.64	57.79	1.44	166	101	괴곡교
	26+245	70	26,245	240	55.79	57.88	1.22	196	115	
	26+305	60	26,305	240	57.67	59.83	1.08	222	103	새보
	26+455	150	26,455	240	54.40	59.91	0.79	302	117	
	26+660	205	26,660	240	55.25	59.95	0.85	283	144	
	26+865	205	26,865	240	57.00	60.00	0.98	244	92	
	27+065	200	27,065	240	56.93	60.05	1.00	239	90	
	27+270	205	27,270	240	55.97	60.09	1.39	172	76	
	27+490	220	27,490	240	57.81	60.30	1.44	167	120	
	27+675	185	27,675	240	57.91	60.52	1.46	164	100	
	27+710	35	27,710	240	58.29	60.63	1.41	170	102	잠수교
	27+885	175	27,885	240	58.44	60.79	1.83	131	69	
	28+095	210	28,095	240	58.45	61.15	1.61	149	91	
	28+295	200	28,295	240	58.90	61.46	1.53	157	111	
	28+495	200	28,495	240	60.30	61.80	1.97	122	93	
	28+605	110	28,605	240	60.02	62.10	1.37	175	101	잠수교

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
갑천	28+675	70	28,675	240	60.59	62.90	0.91	264	116	흑석보
	28+690	15	28,690	240	60.58	62.87	1.32	182	105	
	28+895	205	28,895	240	60.30	63.02	1.24	194	80	
	29+090	195	29,090	240	58.95	63.10	1.41	170	52	
	29+285	195	29,285	240	60.76	63.17	2.01	119	65	
	29+495	210	29,495	240	61.18	63.57	1.93	125	70	
	29+680	185	29,680	240	61.25	63.92	1.97	122	72	
	29+780	100	29,780	240	61.95	64.22	1.57	153	93	잠수교
	29+895	115	29,895	240	62.12	64.36	2.12	113	81	
	30+105	210	30,105	240	61.83	64.90	2.14	112	63	매노천합류후
	30+290	185	30,290	210	63.57	65.38	1.56	135	102	매노천합류전
	30+345	55	30,345	210	63.12	65.51	1.34	157	91	물안리다리
	30+390	45	30,390	210	64.64	66.82	1.13	186	85	수내보
	30+480	90	30,480	210	63.90	66.86	1.15	183	75	
	30+680	200	30,680	210	64.55	66.95	1.55	135	75	
	30+880	200	30,880	210	64.00	67.14	1.14	184	71	
	31+070	190	31,070	210	64.12	67.21	1.57	134	66	
	31+290	220	31,290	210	65.08	67.48	2.39	88	59	금곡천합류후
	31+470	180	31,470	180	65.71	68.00	1.28	140	74	금곡천합류전
	31+675	205	31,675	180	65.15	68.16	1.39	130	61	
	31+880	205	31,880	180	65.57	68.32	1.23	147	63	
	32+085	205	32,085	180	65.86	68.48	1.86	97	72	
	32+285	200	32,285	180	66.49	68.98	1.39	129	102	
	32+485	200	32,485	180	66.68	69.28	1.65	109	63	
	32+680	195	32,680	180	66.78	69.54	0.80	224	131	
	32+700	20	32,700	180	69.62	71.16	0.81	222	150	유천동보
	32+885	185	32,885	180	67.53	71.23	0.88	204	99	
	33+075	190	33,075	180	68.74	71.33	1.16	155	149	
	33+270	195	33,270	180	69.18	71.67	1.57	115	110	
	33+315	45	33,315	180	69.77	71.83	1.31	137	121	두계천합류후
	33+510	195	33,510	90	70.04	72.07	0.65	138	111	두계천합류전
유등천	0+000	0	0	260	31.10	33.43	1.99	130	153	유등천하구
	0+070	70	70	260	31.13	33.72	1.55	168	146	
	0+280	210	280	260	32.51	34.05	1.42	183	146	
	0+480	200	480	260	32.44	34.28	1.27	205	144	
	0+675	195	675	260	33.24	34.50	1.94	134	149	
	0+895	220	895	260	33.39	35.04	1.39	187	149	
	1+055	160	1,055	260	33.76	35.24	1.44	180	151	
	1+245	190	1,245	260	34.09	35.53	1.50	174	161	
	1+445	200	1,445	260	34.36	35.91	1.57	165	170	
	1+635	190	1,635	260	34.28	36.28	1.42	183	170	
	1+860	225	1,860	260	34.55	36.57	1.10	237	174	한밭대교
	1+880	20	1,880	260	34.56	36.59	0.92	283	241	
	2+090	210	2,090	260	35.04	36.72	1.09	239	197	
	2+300	210	2,300	260	34.90	36.89	1.02	255	228	
	2+305	5	2,305	260	34.86	36.93	0.81	319	208	잠수교
	2+480	175	2,480	260	35.28	36.98	1.42	183	149	
	2+640	160	2,640	260	35.99	37.27	1.95	133	166	대전천합류후
	2+790	150	2,790	160	35.28	37.69	1.09	146	100	삼천교
	2+820	30	2,820	160	35.80	37.67	1.40	114	83	
	3+015	195	3,015	160	35.73	37.95	1.67	96	79	
	3+215	200	3,215	160	36.10	38.35	1.50	107	84	
	3+255	40	3,255	160	36.16	38.46	1.58	101	77	용문교
	3+415	160	3,415	160	37.32	38.72	1.62	99	78	
	3+615	200	3,615	160	36.70	39.05	1.47	109	75	
	3+805	190	3,805	160	37.52	39.35	1.82	88	77	
	4+005	200	4,005	160	37.86	39.85	1.65	97	79	
	4+205	200	4,205	160	38.35	40.29	1.76	91	79	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
유등천	4+400	195	4,400	160	38.96	40.68	1.45	110	76	
	4+460	60	4,460	160	39.18	42.43	0.62	260	109	유등1보
	4+500	40	4,500	160	40.23	42.45	0.66	243	166	수침교
	4+600	100	4,600	160	41.07	42.41	1.72	93	94	
	4+800	200	4,800	160	41.61	42.97	1.60	100	100	
	5+000	200	5,000	160	41.51	43.35	1.19	135	116	
	5+200	200	5,200	160	41.79	43.60	1.30	123	111	
	5+395	195	5,395	160	42.24	43.91	1.56	102	97	
	5+575	180	5,575	160	42.62	44.34	1.36	118	111	가장교
	5+790	215	5,790	160	42.84	44.73	1.28	125	159	
	5+990	200	5,990	160	41.92	45.05	1.36	117	89	
	6+130	140	6,130	160	43.04	45.26	1.25	128	97	태평교
	6+190	60	6,190	160	43.42	45.29	1.50	107	61	
	6+400	210	6,400	160	43.55	45.51	1.33	120	71	
	6+590	190	6,590	160	43.74	45.67	1.22	132	75	
	6+780	190	6,780	160	44.50	45.83	1.77	91	76	
	6+960	180	6,960	160	44.97	46.67	1.25	128	76	유등2라바보
	6+980	20	6,980	160	45.42	46.56	2.78	58	73	
	7+010	30	7,010	150	45.26	46.97	1.28	117	74	유등교
	7+195	185	7,195	150	44.96	47.15	1.65	91	74	
	7+385	190	7,385	150	46.58	47.66	2.40	62	67	
	7+575	190	7,575	150	46.38	48.41	1.51	100	73	도마교
	7+790	215	7,790	150	46.74	48.66	1.27	118	68	
	7+820	30	7,820	150	47.30	49.08	1.38	109	69	유등철교
	7+830	10	7,830	150	47.32	49.12	1.36	110	69	유등철교
	7+980	150	7,980	150	48.02	49.31	1.86	81	69	
	8+180	200	8,180	150	48.13	49.92	1.82	82	70	
	8+390	210	8,390	150	49.68	50.73	1.30	115	118	버드내다리
	8+440	50	8,440	150	49.62	53.41	0.36	417	122	산성취입보
	8+560	120	8,560	150	51.45	53.36	1.36	111	74	
	8+780	220	8,780	150	51.88	53.66	1.07	140	161	
	8+990	210	8,990	150	52.05	53.95	1.22	123	132	
	9+010	20	9,010	150	52.25	54.02	1.17	128	144	복수교
	9+190	180	9,190	150	52.38	54.30	1.15	130	132	
	9+395	205	9,395	150	52.65	54.52	1.20	125	79	
	9+595	200	9,595	150	52.90	54.68	2.83	53	49	
	9+795	200	9,795	150	52.93	55.96	1.65	91	98	
	9+995	200	9,995	150	53.79	56.34	1.43	105	59	
	10+195	200	10,195	150	54.00	56.59	1.70	88	60	
	10+400	205	10,400	150	55.51	57.06	2.09	72	57	
	10+585	185	10,585	150	55.98	57.66	2.10	71	49	
	10+735	150	10,735	130	56.20	58.09	1.29	101	61	안영교
	10+785	50	10,785	130	56.40	58.16	0.96	136	96	
	10+985	200	10,985	130	56.68	58.29	1.09	119	85	
	11+045	60	11,045	130	56.90	59.26	0.68	191	85	성산보
	11+195	150	11,195	130	55.56	59.26	1.26	103	43	
	11+390	195	11,390	130	57.49	59.38	1.89	69	41	
	11+515	125	11,515	130	58.03	59.67	1.24	105	70	
	11+520	5	11,520	130	58.60	59.68	1.25	104	106	만성교
	11+530	10	11,530	130	58.60	61.36	0.51	255	107	만성라바보
	11+790	260	11,790	130	57.63	61.38	0.70	185	67	
	11+960	170	11,960	130	58.35	61.40	1.17	111	64	
	12+180	220	12,180	130	60.30	61.67	2.17	60	90	
	12+370	190	12,370	130	60.15	62.39	1.18	110	100	
	12+575	205	12,575	130	60.34	62.72	2.11	62	52	
	12+780	205	12,780	130	60.69	63.37	1.54	84	63	
	12+970	190	12,970	130	61.85	63.77	1.95	67	57	
	13+180	210	13,180	130	62.95	64.81	2.48	52	69	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
유등천	13+230	50	13,230	130	63.23	65.21	1.14	114	84	침산교
	13+275	45	13,275	130	63.50	65.28	1.21	107	87	무수1교
	13+370	95	13,370	130	63.80	65.38	1.65	79	67	
	13+570	200	13,570	130	63.13	65.83	1.57	83	54	
	13+750	180	13,750	130	64.13	66.19	1.73	75	58	
	14+030	280	14,030	130	64.81	67.00	2.28	57	39	정생천합류후
	14+190	160	14,190	100	65.91	67.73	1.41	71	100	정생천합류전
	14+245	55	14,245	100	67.27	68.59	1.03	97	75	침산하보
	14+390	145	14,390	100	65.46	68.71	1.15	87	51	
	14+555	165	14,555	100	66.50	68.88	1.25	80	64	
	14+590	35	14,590	100	68.24	69.60	1.70	59	65	수련교
	14+800	210	14,800	100	68.37	70.23	1.10	91	106	
	14+960	160	14,960	100	69.95	72.09	0.49	206	138	침산상보
	15+000	40	15,000	100	70.17	72.08	0.83	120	86	
	15+200	200	15,200	100	68.65	72.16	0.95	106	44	
	15+400	200	15,400	100	70.27	72.50	2.35	43	76	
	15+600	200	15,600	100	71.32	73.35	1.35	74	51	
미호천	0+000	0	0	1,970	11.52	16.99	2.10	936	255	미호천하구
	0+200	200	200	1,970	11.68	17.09	2.13	923	209	
	0+240	40	240	1,970	13.26	17.18	2.52	782	207	합강보
	0+390	150	390	1,970	10.86	17.22	3.00	656	155	
	0+630	240	630	1,970	11.18	17.52	2.89	682	200	
	0+890	260	890	1,970	13.65	17.95	2.03	972	262	
	0+920	30	920	1,970	13.22	18.08	2.01	978	252	공사중교량
	1+130	210	1,130	1,970	13.88	18.15	2.36	836	241	
	1+330	200	1,330	1,970	13.44	18.27	2.55	773	208	
	1+560	230	1,560	1,970	12.81	18.45	2.61	753	187	
	1+790	230	1,790	1,970	12.22	18.64	2.55	773	180	
	2+010	220	2,010	1,970	11.53	18.86	2.05	960	166	
	2+150	140	2,150	1,970	11.36	18.95	1.81	1,088	192	
	2+430	280	2,430	1,970	12.41	19.00	2.05	962	191	
	2+630	200	2,630	1,970	12.04	19.06	2.11	933	184	
	2+850	220	2,850	1,970	12.98	19.22	1.68	1,172	361	
	3+010	160	3,010	1,970	12.75	19.28	1.56	1,260	323	
	3+200	190	3,200	1,970	12.97	19.35	1.33	1,480	277	
	3+390	190	3,390	1,970	13.24	19.37	1.52	1,299	322	연기천합류후
	3+620	230	3,620	1,950	12.93	19.41	1.50	1,298	262	연기천합류전
	3+770	150	3,770	1,950	13.19	19.42	1.77	1,104	240	
	3+950	180	3,950	1,950	13.12	19.49	1.64	1,191	250	
	4+150	200	4,150	1,950	12.06	19.54	1.74	1,123	275	
	4+310	160	4,310	1,950	12.69	19.67	1.12	1,745	354	
	4+440	130	4,440	1,950	13.33	19.68	1.19	1,642	379	
	4+610	170	4,610	1,950	13.77	19.71	1.11	1,753	438	
	4+840	230	4,840	1,950	13.25	19.70	1.71	1,137	323	
	5+020	180	5,020	1,950	13.15	19.80	1.51	1,292	365	
	5+230	210	5,230	1,950	13.60	19.85	1.70	1,146	304	
	5+440	210	5,440	1,950	13.91	19.97	1.38	1,409	331	
	5+660	220	5,660	1,950	13.97	20.02	1.52	1,285	308	월하천합류후
	5+920	260	5,920	1,910	14.26	20.05	2.02	944	210	월하천합류전
	6+100	180	6,100	1,910	13.99	20.19	1.67	1,145	246	
	6+280	180	6,280	1,910	14.28	20.28	1.41	1,350	307	
	6+480	200	6,480	1,910	14.34	20.33	1.44	1,327	351	
	6+680	200	6,680	1,910	14.00	20.41	1.18	1,625	380	
	6+900	220	6,900	1,910	15.01	20.46	1.09	1,758	377	
	7+130	230	7,130	1,910	14.89	20.47	1.42	1,342	315	
	7+390	260	7,390	1,910	14.34	20.55	1.29	1,480	377	
	7+620	230	7,620	1,910	13.96	20.57	1.72	1,110	265	
	7+860	240	7,860	1,910	13.34	20.71	1.15	1,661	288	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
미호천	8+060	200	8,060	1,910	14.74	20.47	3.10	617	149	
	8+240	180	8,240	1,910	15.59	20.83	2.64	725	223	
	8+380	140	8,380	1,910	15.73	20.99	2.88	664	244	
	8+560	180	8,560	1,910	15.84	21.47	1.22	1,568	443	조천합류후
	8+760	200	8,760	1,780	16.05	21.48	1.65	1,078	275	조천합류전
	8+890	130	8,890	1,780	15.83	21.49	2.04	874	241	
	9+045	155	9,045	1,780	17.33	21.70	1.89	942	226	수몰두강보
	9+090	45	9,090	1,780	14.85	21.87	0.98	1,819	405	수몰두강다리(상)
	9+120	30	9,120	1,780	16.49	21.86	2.00	890	222	수몰두강다리(하)
	9+290	170	9,290	1,780	16.91	21.92	2.30	774	198	
	9+490	200	9,490	1,780	16.79	22.07	2.36	754	224	
	9+680	190	9,680	1,780	15.90	22.32	1.89	940	267	
	9+840	160	9,840	1,780	17.91	22.49	2.38	748	283	신미호교
	9+900	60	9,900	1,780	16.41	22.61	2.03	876	210	
	10+080	180	10,080	1,780	16.30	22.69	2.40	740	257	
	10+240	160	10,240	1,780	17.48	22.97	1.65	1,082	318	
	10+480	240	10,480	1,780	17.79	23.06	2.08	857	272	
	10+690	210	10,690	1,780	17.77	23.23	1.95	914	247	
	10+890	200	10,890	1,780	17.82	23.40	1.57	1,136	340	
	11+120	230	11,120	1,780	18.08	23.47	1.90	936	253	
	11+310	190	11,310	1,780	17.91	23.57	2.08	854	288	
	11+520	210	11,520	1,780	18.13	23.72	2.02	881	211	
	11+710	190	11,710	1,780	18.23	23.94	1.38	1,285	565	
	11+900	190	11,900	1,780	16.93	24.00	1.35	1,320	303	
	12+140	240	12,140	1,780	17.55	24.04	1.73	1,032	310	
	12+340	200	12,340	1,780	16.39	24.19	1.14	1,557	440	
	12+560	220	12,560	1,780	16.36	24.23	1.45	1,228	470	
	12+850	290	12,850	1,780	17.46	24.36	1.70	1,048	340	
	13+110	260	13,110	1,780	18.33	24.54	1.10	1,619	550	
	13+320	210	13,320	1,780	18.27	24.60	0.95	1,869	620	
	13+530	210	13,530	1,780	17.63	24.64	1.01	1,768	454	
	13+780	250	13,780	1,780	17.53	24.68	1.19	1,499	436	고속철도교
	14+020	240	14,020	1,780	18.80	24.73	1.43	1,247	378	
	14+160	140	14,160	1,780	18.70	24.79	1.28	1,390	405	
	14+360	200	14,360	1,780	19.25	24.87	0.95	1,866	537	
	14+550	190	14,550	1,780	18.48	24.90	0.98	1,824	541	
	14+740	190	14,740	1,780	19.06	24.94	0.89	2,007	563	
	14+930	190	14,930	1,780	19.55	24.89	1.82	980	334	
	15+110	180	15,110	1,780	19.88	24.99	1.98	899	269	
	15+270	160	15,270	1,780	19.78	25.17	1.35	1,316	367	
	15+550	280	15,550	1,780	19.24	25.24	1.55	1,145	304	
	15+730	180	15,730	1,780	19.54	25.30	1.68	1,062	294	
	15+830	100	15,830	1,760	19.48	25.39	1.57	1,123	307	미호천교
	15+940	110	15,940	1,760	19.30	25.46	1.31	1,339	309	
	15+950	10	15,950	1,760	21.09	25.45	1.76	1,001	304	미호철교(상)
	15+960	10	15,960	1,760	19.53	25.51	1.63	1,080	303	미호철교(하)
	16+150	190	16,150	1,760	19.43	25.60	1.65	1,066	367	
	16+360	210	16,360	1,760	21.04	25.75	1.15	1,531	468	
	16+500	140	16,500	1,760	21.08	25.65	2.39	736	575	병천천합류후
	16+680	180	16,680	1,380	20.53	25.95	1.72	803	234	병천천합류전
	16+850	170	16,850	1,380	21.49	26.02	1.77	778	220	
	16+970	120	16,970	1,380	20.35	26.07	2.04	677	236	
	17+180	210	17,180	1,380	20.59	26.30	1.65	835	302	
	17+380	200	17,380	1,380	21.29	26.40	1.70	814	262	
	17+570	190	17,570	1,380	21.31	26.51	1.65	835	255	
	17+760	190	17,760	1,380	20.95	26.60	1.95	709	287	
	17+980	220	17,980	1,380	21.30	26.82	1.83	755	301	
	18+170	190	18,170	1,380	21.02	26.99	1.76	786	314	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
미호천	18+370	200	18,370	1,380	22.15	27.14	2.16	638	311	
	18+570	200	18,570	1,380	21.27	27.45	1.83	755	312	
	18+770	200	18,770	1,380	21.15	27.63	1.73	796	318	
	18+960	190	18,960	1,380	21.68	27.77	1.83	754	315	
	19+160	200	19,160	1,380	22.02	27.96	1.60	862	320	
	19+360	200	19,360	1,380	21.76	28.06	1.63	848	287	
	19+530	170	19,530	1,380	21.70	28.20	1.73	799	262	미호천교
	19+580	50	19,580	1,380	22.34	28.22	1.69	816	284	
	19+600	20	19,600	1,380	22.34	28.28	1.69	815	284	폐교량
	19+790	190	19,790	1,380	22.81	28.40	1.59	869	308	
	20+010	220	20,010	1,380	23.18	28.52	1.61	859	316	
	20+230	220	20,230	1,380	23.09	28.65	1.62	852	318	
	20+430	200	20,430	1,380	23.42	28.78	1.45	949	320	
	20+650	220	20,650	1,380	23.53	28.87	1.47	938	322	
	20+770	120	20,770	1,380	23.32	28.95	1.37	1,005	313	옥산교
	20+840	70	20,840	1,380	23.35	28.98	1.23	1,120	325	
	21+070	230	21,070	1,380	23.62	29.06	1.02	1,357	423	석남천합류후
	21+280	210	21,280	1,340	24.17	29.08	1.38	968	298	석남천합류전
	21+450	170	21,450	1,340	23.37	29.11	1.76	763	248	
	21+660	210	21,660	1,340	23.14	29.24	1.64	815	248	
	21+880	220	21,880	1,340	24.04	29.34	1.82	737	246	
	22+080	200	22,080	1,340	23.27	29.48	1.84	728	260	
	22+280	200	22,280	1,340	23.90	29.65	1.61	834	285	
	22+460	180	22,460	1,340	23.65	29.76	1.50	894	309	
	22+640	180	22,640	1,340	23.92	29.85	1.38	971	306	
	22+830	190	22,830	1,340	24.39	29.91	1.39	967	278	
	23+020	190	23,020	1,340	24.26	29.95	1.65	814	245	
	23+220	200	23,220	1,340	24.46	30.07	1.37	979	258	
	23+420	200	23,420	1,340	24.27	30.13	1.38	968	281	
	23+600	180	23,600	1,340	24.75	30.18	1.46	921	278	
	23+810	210	23,810	1,340	24.35	30.27	1.37	980	305	
	24+010	200	24,010	1,340	24.31	30.36	1.21	1,105	410	
	24+150	140	24,150	1,340	25.51	30.40	1.26	1,064	386	
	24+350	200	24,350	1,340	25.16	30.47	1.29	1,041	362	
	24+530	180	24,530	1,340	25.75	30.53	1.28	1,043	368	
	24+710	180	24,710	1,340	25.55	30.60	1.29	1,039	374	
	24+920	210	24,920	1,340	25.62	30.67	1.43	936	369	
	25+120	200	25,120	1,340	25.50	30.77	1.47	910	343	
	25+320	200	25,320	1,340	25.76	30.89	1.09	1,224	393	
	25+520	200	25,520	1,340	25.80	30.90	1.76	761	356	
	25+690	170	25,690	1,340	25.64	31.04	1.80	744	288	
	25+710	20	25,710	1,340	25.35	31.15	1.36	985	296	미호천교
	25+930	220	25,930	1,340	26.05	31.23	1.33	1,011	355	
	26+150	220	26,150	1,340	26.33	31.30	1.73	775	339	
	26+360	210	26,360	1,340	25.54	31.48	1.73	774	332	
	26+570	210	26,570	1,340	26.31	31.65	1.37	975	311	
	26+620	50	26,620	1,340	30.55	32.44	2.22	604	349	작천보
	26+800	180	26,800	1,340	29.45	32.76	1.27	1,054	386	
	27+010	210	27,010	1,340	29.30	32.84	1.46	915	421	
	27+230	220	27,230	1,340	28.18	32.99	1.40	955	486	무심천합류후
	27+520	290	27,520	1,120	29.37	33.18	1.06	1,053	485	무심천합류전
	27+760	240	27,760	1,120	28.95	33.25	0.84	1,330	442	
	27+890	130	27,890	1,120	28.43	33.25	1.26	887	336	
	28+210	320	28,210	1,120	28.95	33.37	1.02	1,103	368	
	28+410	200	28,410	1,120	28.53	33.42	1.05	1,063	478	
	28+630	220	28,630	1,120	29.26	33.49	0.83	1,356	538	
	28+840	210	28,840	1,120	28.79	33.51	1.34	834	406	
	29+000	160	29,000	1,120	28.37	33.60	1.24	905	341	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
미호천	29+180	180	29,180	1,120	28.29	33.67	1.15	971	346	
	29+370	190	29,370	1,120	28.32	33.72	1.23	912	314	
	29+670	300	29,670	1,120	28.67	33.83	1.34	839	392	
	29+870	200	29,870	1,120	29.00	33.94	1.08	1,039	376	
	30+090	220	30,090	1,120	29.91	34.00	0.91	1,232	357	
	30+330	240	30,330	1,120	29.98	34.03	0.84	1,340	400	
	30+390	60	30,390	1,120	30.07	34.04	0.98	1,143	360	공항대교
	30+550	160	30,550	1,120	30.05	34.07	0.94	1,195	389	
	30+730	180	30,730	1,120	28.52	34.11	0.83	1,352	414	
	30+910	180	30,910	1,120	29.82	34.12	1.12	1,002	404	
	31+120	210	31,120	1,120	29.68	34.18	1.11	1,009	363	
	31+290	170	31,290	1,120	29.35	34.22	1.32	846	317	
	31+450	160	31,450	1,120	29.50	34.27	1.43	784	284	
	31+650	200	31,650	1,120	30.49	34.37	1.36	826	291	
	31+680	30	31,680	1,120	30.46	34.40	1.49	751	292	공사중교량
	31+830	150	31,830	1,120	30.61	34.47	1.69	664	298	
	32+060	230	32,060	1,120	30.56	34.65	1.66	673	281	
	32+150	90	32,150	1,120	30.25	34.80	0.96	1,165	393	팔결교
	32+220	70	32,220	1,120	30.71	34.79	1.26	892	339	
	32+420	200	32,420	1,120	30.97	34.86	1.45	772	328	
	32+610	190	32,610	1,120	30.54	34.97	1.39	804	336	
	32+740	130	32,740	1,120	30.93	35.03	1.69	662	314	
	32+910	170	32,910	1,120	30.72	35.15	1.97	570	224	
	33+080	170	33,080	1,120	30.15	35.34	1.79	627	551	석화천합류후
	33+270	190	33,270	1,040	30.93	35.52	1.53	679	262	
	33+420	150	33,420	1,040	30.83	35.63	1.43	727	309	
	33+630	210	33,630	1,040	30.49	35.75	1.10	945	360	
	33+840	210	33,840	1,040	31.21	35.81	1.18	879	351	
	34+030	190	34,030	1,040	31.61	35.88	1.37	758	364	
	34+240	210	34,240	1,040	31.16	36.01	0.99	1,052	441	
	34+390	150	34,390	1,040	31.25	36.05	1.13	924	566	성암천합류후
	34+570	180	34,570	970	31.74	36.13	1.31	738	297	성암천합류전
	34+750	180	34,750	970	31.98	36.21	1.24	781	324	
	34+940	190	34,940	970	31.94	36.28	1.30	747	271	
	35+130	190	35,130	970	31.78	36.37	1.10	879	324	
	35+330	200	35,330	970	32.39	36.43	1.01	960	337	
	35+530	200	35,530	970	32.33	36.47	1.29	755	325	
	35+740	210	35,740	970	32.59	36.55	1.61	603	259	
	35+880	140	35,880	970	32.52	36.65	1.81	535	260	
	36+120	240	36,120	970	32.98	36.92	1.90	509	274	
	36+300	180	36,300	970	33.12	37.16	1.51	642	281	
	36+490	190	36,490	970	33.29	37.28	1.63	595	277	
	36+680	190	36,680	970	32.85	37.43	1.27	766	272	
	36+880	200	36,880	970	33.29	37.50	1.60	608	273	
	37+080	200	37,080	970	33.09	37.66	1.52	639	291	
	37+290	210	37,290	970	32.14	37.80	1.42	685	282	
	37+490	200	37,490	970	35.74	37.80	2.95	329	241	
	37+710	220	37,710	970	34.71	38.56	2.32	418	192	
	37+930	220	37,930	970	35.57	38.94	1.66	583	245	
	38+140	210	38,140	970	35.90	39.11	2.00	485	255	
	38+340	200	38,340	970	35.35	39.42	1.44	672	356	
	38+510	170	38,510	970	35.50	39.55	1.40	692	357	
	38+710	200	38,710	970	35.73	39.68	1.74	557	304	
	38+900	190	38,900	970	36.24	39.90	1.39	696	336	보강천합류후
	39+090	190	39,090	840	37.03	40.07	1.93	436	240	보강천합류전
	39+110	20	39,110	840	37.16	40.13	1.64	513	217	
	39+330	220	39,330	840	36.46	40.28	1.59	530	201	
	39+485	155	39,485	840	36.50	40.42	1.75	479	171	구여암교

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
논산천	0+000	0	0	870	-3.84	4.91	0.83	1,054	493	논산천하구
	0+170	170	170	870	-2.44	4.98	1.05	832	355	강경보
	0+220	50	220	870	-4.16	5.02	0.70	1,234	384	
	0+420	200	420	870	-2.12	5.04	0.72	1,210	414	강경천합류후
	0+620	200	620	720	-2.47	5.06	0.88	817	313	강경천합류전
	0+820	200	820	720	-1.59	5.09	0.94	769	291	
	0+835	15	835	720	-1.64	5.10	0.87	824	291	강경대교(구)
	0+845	10	845	720	-3.29	5.11	0.91	795	287	강경대교(신)
	1+035	190	1,035	720	-1.86	5.14	0.90	797	278	
	1+220	185	1,220	720	-2.08	5.17	0.86	835	271	
	1+420	200	1,420	720	-1.78	5.19	0.92	786	267	
	1+620	200	1,620	720	-1.32	5.22	0.97	745	263	
	1+820	200	1,820	720	-2.18	5.26	0.88	817	265	
	2+020	200	2,020	720	-1.64	5.28	0.93	770	263	
	2+240	220	2,240	720	-1.86	5.32	0.89	809	258	
	2+450	210	2,450	720	-1.36	5.35	0.89	806	257	
	2+660	210	2,660	720	-1.40	5.38	0.84	854	258	
	2+860	200	2,860	720	-0.70	5.40	0.77	939	259	
	3+070	210	3,070	720	-0.97	5.42	0.87	826	261	
	3+260	190	3,260	720	-0.65	5.44	0.86	833	260	
	3+450	190	3,450	720	-0.75	5.46	0.87	823	260	
	3+660	210	3,660	720	-0.70	5.48	0.91	792	259	
	3+830	170	3,830	720	-0.93	5.50	0.87	829	261	
	4+040	210	4,040	720	-0.15	5.53	0.90	798	260	
	4+225	185	4,225	720	-3.02	5.55	0.91	787	259	
	4+265	40	4,265	720	-2.63	5.57	0.88	818	259	논산1교
	4+435	170	4,435	670	-0.50	5.59	0.80	838	259	방축천합류전
	4+625	190	4,625	670	0.23	5.61	0.88	757	258	
	4+845	220	4,845	670	-0.28	5.64	0.96	697	261	
	5+040	195	5,040	670	-0.46	5.68	0.93	722	261	
	5+235	195	5,235	670	0.15	5.71	0.89	751	260	
	5+425	190	5,425	670	-0.47	5.74	0.92	729	259	
	5+640	215	5,640	670	-0.38	5.78	0.91	740	259	
	5+845	205	5,845	670	0.35	5.81	0.85	792	259	
	6+055	210	6,055	670	0.05	5.84	0.88	764	263	
	6+260	205	6,260	670	-0.23	5.86	1.04	647	262	
	6+470	210	6,470	670	-0.53	5.92	0.96	696	263	
	6+670	200	6,670	670	-0.35	5.95	1.01	662	261	
	6+890	220	6,890	670	0.03	6.00	1.16	578	241	
	7+075	185	7,075	670	0.53	6.06	1.06	633	262	
	7+285	210	7,285	670	-0.13	6.12	1.07	628	264	
	7+505	220	7,505	670	-0.69	6.17	1.08	619	265	
	7+705	200	7,705	670	0.61	6.23	0.97	689	262	
	7+735	30	7,735	670	0.99	6.24	0.98	683	263	논산신대교
	7+895	160	7,895	670	0.38	6.27	1.12	600	263	
	8+095	200	8,095	670	0.83	6.33	1.13	591	262	
	8+285	190	8,285	670	1.27	6.40	1.03	649	264	논산대교
	8+465	180	8,465	670	0.91	6.44	1.23	543	260	
	8+660	195	8,660	670	0.84	6.52	1.21	553	261	
	8+855	195	8,855	670	0.82	6.60	1.24	542	262	
	9+070	215	9,070	670	0.53	6.70	1.18	565	278	
	9+245	175	9,245	670	0.66	6.78	0.91	740	324	노성천합류후
	9+465	220	9,465	320	1.19	6.84	0.59	544	204	노성천합류전
	9+670	205	9,670	320	0.72	6.85	0.61	522	205	
	9+875	205	9,875	320	1.00	6.86	0.61	523	206	
	10+065	190	10,065	320	1.65	6.89	0.88	365	179	합천잠수교
	10+085	20	10,085	320	1.47	6.90	0.73	438	202	
	10+275	190	10,275	320	0.57	6.93	0.67	481	203	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
논산천	10+475	200	10,475	320	1.53	6.95	0.80	401	200	
	10+585	110	10,585	320	2.13	6.99	0.83	388	195	덕지잠수교
	10+665	80	10,665	320	2.28	7.01	0.83	384	203	
	10+875	210	10,875	320	2.45	7.06	0.83	387	201	
	11+085	210	11,085	320	1.21	7.10	0.70	455	199	
	11+205	120	11,205	320	2.35	7.12	0.78	409	203	논산철교(상)
	11+220	15	11,220	320	2.20	7.13	0.81	393	197	논산철교(하)
	11+280	60	11,280	320	2.77	7.15	0.80	399	201	
	11+380	100	11,380	320	2.66	7.17	0.70	459	215	아호교
	11+430	50	11,430	320	3.11	7.19	0.75	427	210	계백교
	11+480	50	11,480	320	3.12	7.19	0.80	401	202	
	11+680	200	11,680	320	3.22	7.23	0.90	357	204	
	11+865	185	11,865	320	3.41	7.28	0.86	372	182	
	12+080	215	12,080	320	3.72	7.32	0.72	446	212	
	12+275	195	12,275	320	4.06	7.35	0.71	448	219	
	12+475	200	12,475	320	4.00	7.38	0.82	391	218	
	12+695	220	12,695	320	3.38	7.43	0.78	410	218	
	12+885	190	12,885	320	4.61	7.47	1.03	311	205	
	13+095	210	13,095	320	5.24	7.58	1.35	237	203	
	13+280	185	13,280	320	5.57	7.78	1.24	258	219	
	13+470	190	13,470	320	6.28	7.97	1.08	297	219	상평낙차공
	13+490	20	13,490	320	6.12	7.97	1.21	265	220	
	13+680	190	13,680	320	6.32	8.14	1.40	228	206	
	13+810	130	13,810	320	6.26	8.30	1.18	272	172	신교잠수교
	13+860	50	13,860	320	7.32	9.05	0.80	401	233	성평취입보
	13+875	15	13,875	320	5.94	9.05	0.78	408	229	
	14+095	220	14,095	320	7.38	9.09	1.40	229	192	
	14+285	190	14,285	320	7.31	9.30	1.14	281	225	
	14+465	180	14,465	320	4.89	9.45	1.34	239	240	
	14+645	180	14,645	320	7.92	9.73	1.86	172	185	
	14+845	200	14,845	320	7.93	10.24	1.48	216	233	
	15+045	200	15,045	320	8.22	10.59	1.72	186	171	
	15+245	200	15,245	320	9.03	11.06	2.11	151	164	
	15+445	200	15,445	320	8.21	11.42	0.89	360	240	
	15+645	200	15,645	320	7.78	11.48	1.36	236	126	
	15+835	190	15,835	320	6.21	11.60	1.62	198	123	
	16+035	200	16,035	320	8.10	11.80	2.13	150	94	왕암천합류후
	16+320	285	16,320	270	6.85	12.19	1.64	164	63	왕암천합류전
	16+590	270	16,590	270	12.64	14.12	2.64	102	104	탑정낙차공
	16+670	80	16,670	270	11.23	14.53	1.61	167	104	
노성천	0+000	0	0	350	1.21	6.78	0.88	397	174	노성천하구
	0+130	130	130	350	1.51	6.80	1.05	332	160	
	0+335	205	335	350	1.81	6.87	1.06	329	158	
	0+525	190	525	350	1.98	6.94	1.03	340	155	
	0+565	40	565	350	1.85	6.96	0.98	358	161	노성대교
	0+725	160	725	350	1.90	7.00	1.10	317	152	
	0+925	200	925	350	2.19	7.07	1.20	292	154	
	1+035	110	1,035	350	1.43	7.15	0.95	367	153	호산잠수교
	1+115	80	1,115	350	1.73	7.16	1.20	291	151	
	1+325	210	1,325	350	2.02	7.26	1.21	288	154	
	1+545	220	1,545	350	1.78	7.37	1.16	302	153	
	1+750	205	1,750	350	1.84	7.46	1.18	297	156	
	1+970	220	1,970	350	2.58	7.56	1.10	319	149	
	2+175	205	2,175	350	2.44	7.63	1.12	312	155	
	2+380	205	2,380	350	2.65	7.72	1.18	296	157	
	2+585	205	2,585	350	1.27	7.82	1.28	273	156	
	2+785	200	2,785	350	1.95	7.95	1.25	279	156	
	2+985	200	2,985	350	2.63	8.07	1.53	229	156	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
노성천	3+190	205	3,190	350	5.56	8.40	1.47	238	154	거교보
	3+395	205	3,395	350	4.55	8.58	1.25	280	157	
	3+605	210	3,605	350	4.98	8.70	1.12	312	156	
	3+815	210	3,815	350	5.47	8.79	1.28	274	153	
	4+020	205	4,020	350	5.63	8.92	1.34	262	157	
	4+205	185	4,205	350	5.24	9.05	1.13	309	155	
	4+400	195	4,400	350	5.14	9.13	1.14	308	166	
	4+530	130	4,530	350	5.06	9.22	1.24	283	159	항월잠수교
	4+580	50	4,580	350	5.13	9.25	1.26	277	177	
	4+750	170	4,750	350	5.85	9.37	1.02	345	200	연산천합류후
	4+920	170	4,920	190	5.69	9.45	0.77	246	164	초포잠수교
	4+980	60	4,980	190	5.95	9.46	0.84	228	128	
	5+130	150	5,130	190	6.03	9.50	0.85	224	106	
강경천	0+000	0	0	250	-1.09	5.04	0.59	426	201	강경천하구
	0+200	200	200	250	-0.54	5.05	0.68	368	133	
	0+275	75	275	250	-2.41	5.06	0.73	342	134	하강경교(구)
	0+290	15	290	250	-2.75	5.07	0.73	342	138	하강경교(신)
	0+415	125	415	250	-0.23	5.08	0.75	333	134	
	0+610	195	610	250	-0.15	5.11	0.79	317	131	
	0+815	205	815	250	-0.15	5.13	0.72	348	132	
	1+035	220	1,035	250	-0.84	5.16	0.67	372	129	
	1+105	70	1,105	250	-0.62	5.17	0.73	342	131	상강경교(신)
	1+115	10	1,115	250	0.07	5.17	0.90	277	133	상강경교(구)
	1+235	120	1,235	250	-0.04	5.20	0.66	377	133	
	1+355	120	1,355	250	-0.94	5.22	0.72	348	130	강경철교(상)
	1+375	20	1,375	250	-0.09	5.22	0.82	305	130	강경철교(하)
	1+425	50	1,425	250	0.65	5.24	0.74	338	133	강경대교
	1+440	15	1,440	250	0.83	5.24	0.70	359	136	
	1+650	210	1,650	250	0.81	5.26	0.68	367	132	
	1+840	190	1,840	250	0.97	5.28	0.68	368	134	
	2+035	195	2,035	250	1.03	5.29	0.71	351	134	
	2+240	205	2,240	250	0.92	5.31	0.70	359	136	
	2+300	60	2,300	250	0.71	5.33	0.68	368	134	강경미내리교
	2+455	155	2,455	250	1.03	5.34	0.68	367	135	
	2+650	195	2,650	250	1.16	5.35	0.70	358	133	
	2+840	190	2,840	250	0.64	5.37	0.53	468	138	
	3+030	190	3,030	250	1.40	5.37	0.77	323	129	
	3+235	205	3,235	250	1.14	5.40	0.69	363	133	
	3+415	180	3,415	250	1.29	5.42	0.68	366	137	제내교
	3+435	20	3,435	250	1.23	5.42	0.71	352	137	
	3+475	40	3,475	250	1.10	5.43	0.69	360	143	신제내교
	3+645	170	3,645	250	1.63	5.44	0.70	359	143	
	3+810	165	3,810	250	1.49	5.46	0.51	492	185	어량천합류후
	3+985	175	3,985	180	1.52	5.47	0.72	251	173	어량천합류전
	4+085	100	4,085	180	1.38	5.48	0.75	240	98	신용교
	4+220	135	4,220	180	1.69	5.50	0.74	244	98	
	4+430	210	4,430	180	1.66	5.53	0.59	303	125	
	4+630	200	4,630	180	1.70	5.54	0.65	278	125	
	4+810	180	4,810	180	1.41	5.55	0.64	279	119	
	4+845	35	4,845	180	1.94	5.56	0.66	274	118	선리교
	4+860	15	4,860	180	1.37	5.56	0.81	223	125	
	5+030	170	5,030	180	1.98	5.59	0.65	275	116	
	5+225	195	5,225	180	1.74	5.61	0.68	266	119	
	5+385	160	5,385	180	1.70	5.63	0.78	232	114	작산교
	5+425	40	5,425	180	1.62	5.63	0.78	230	118	
	5+600	175	5,600	180	1.73	5.66	0.76	237	120	
	5+815	215	5,815	180	1.79	5.70	0.79	229	122	
	6+015	200	6,015	180	1.74	5.73	0.74	243	121	

하천	측점 (No.)	거리 (m)	누가거리 (m)	홍수량 (CMS)	최심하상고 (EL.m)	홍수위 (EL.m)	유속 (m/s)	통수단면적 (㎡)	수면폭 (m)	비고
강경천	6+205	190	6,205	180	1.98	5.76	0.82	218	116	
	6+265	60	6,265	180	1.51	5.79	0.88	204	124	포변잠수교
	6+385	120	6,385	180	2.02	5.83	0.76	236	137	마산천합류후
	6+565	180	6,565	90	1.70	5.87	0.59	152	86	마산천합류전
	6+765	200	6,765	90	1.96	5.89	0.65	139	83	
	6+940	175	6,940	90	1.81	5.94	0.94	96	71	잠수교
	6+965	25	6,965	90	2.12	5.96	0.79	114	75	
	7+170	205	7,170	90	2.28	6.02	0.73	123	92	
	7+360	190	7,360	90	2.57	6.06	0.77	117	74	
	7+565	205	7,565	90	1.94	6.10	0.78	116	73	

건설교통부

1.7 홍수위 비교

(금회 계산수위 대비 기수립 계획홍수위)

건설교통부

□ 홍수위 비교

하천명	측정(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
금	-4	0+000	0	4.62	4.62	4.62	4.62	4.62	4.62	4.62	금 강 하 구 둑
	-3	0+350	350	4.62	4.62	4.62	4.62	4.62	4.62	4.62	
강	-2	0+720	370	4.62	4.62	4.62	4.62	4.62	4.63	4.63	길 산 천 합 류 후
	-1	1+140	420	4.62	4.63	4.63	4.63	4.63	4.63	4.63	길 산 천 합 류 전
	0	1+480	340	4.63	4.63	4.63	4.63	4.63	4.63	4.63	
	1	2+020	540	4.65	4.66	4.67	4.67	4.68	4.65	4.67	
	2	2+450	430	4.67	4.69	4.70	4.71	4.72	4.69	4.70	
	3	2+920	470	4.69	4.72	4.73	4.74	4.75	4.72	4.73	
	4	3+330	410	4.72	4.75	4.76	4.78	4.79	4.74	4.76	
	5	3+780	450	4.73	4.76	4.77	4.79	4.80	4.75	4.77	옥 포 수 위 표
	6	4+240	460	4.78	4.83	4.84	4.87	4.88	4.78	4.84	
		4+580	340	4.86	4.91	4.93	4.97	4.99		4.93	금 강 대 교
	7	4+860	280	4.88	4.93	4.96	5.00	5.02	4.81	4.96	
	8	5+390	530	4.95	5.01	5.04	5.09	5.12	4.85	5.04	
	9	6+110	720	4.98	5.04	5.08	5.13	5.16	4.89	5.08	
	10	6+750	640	5.03	5.10	5.13	5.19	5.24	4.96	5.13	
	11	7+210	460	5.07	5.15	5.19	5.26	5.31	5.00	5.19	
	13	7+740	530	5.11	5.19	5.23	5.31	5.36	5.04	5.23	
	14	8+160	420	5.14	5.22	5.27	5.34	5.40	5.05	5.27	
	15	8+670	510	5.16	5.25	5.29	5.36	5.42	5.08	5.29	
	16	9+170	500	5.20	5.29	5.33	5.42	5.49	5.10	5.33	
	17	9+640	470	5.24	5.34	5.38	5.48	5.55	5.13	5.38	
	18	10+130	490	5.28	5.38	5.42	5.53	5.60	5.14	5.42	
	19	10+600	470	5.32	5.42	5.47	5.58	5.65	5.16	5.47	
	20	11+060	460	5.36	5.47	5.51	5.63	5.70	5.17	5.51	
	21	11+520	460	5.49	5.62	5.67	5.80	5.88	5.24	5.67	
	22	12+250	730	5.49	5.62	5.67	5.81	5.89	5.32	5.67	
	23	12+850	600	5.56	5.69	5.75	5.89	5.98	5.48	5.75	
	24	13+450	600	5.68	5.83	5.89	6.04	6.14	5.58	5.89	원 산 천 합 류 후
	25	13+970	520	5.71	5.86	5.93	6.08	6.17	5.62	5.93	원 산 천 합 류 전
	26	14+490	520	5.75	5.90	5.97	6.12	6.22	5.65	5.97	
	27	15+020	530	5.78	5.93	6.01	6.16	6.26	5.70	6.01	
	28	15+460	440	5.81	5.97	6.04	6.20	6.30	5.73	6.04	
	29	15+960	500	5.89	6.05	6.13	6.29	6.39	5.77	6.13	
	30	16+420	460	5.98	6.15	6.23	6.40	6.51	5.85	6.23	
	31	16+910	490	6.08	6.25	6.33	6.50	6.62	5.90	6.33	
	32	17+380	470	6.20	6.38	6.47	6.65	6.77	6.08	6.47	웅 포 대 교
	33	17+850	470	6.29	6.47	6.57	6.75	6.87	6.15	6.57	
	34	18+190	340	6.34	6.52	6.62	6.81	6.93	6.21	6.62	
	35	18+710	520	6.38	6.57	6.67	6.86	6.98	6.27	6.67	
	36	19+180	470	6.47	6.67	6.77	6.97	7.09	6.38	6.77	
	37	19+620	440	6.53	6.72	6.83	7.03	7.15	6.44	6.83	

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
금	38	20+130	510	6.59	6.79	6.90	7.10	7.23	6.53	6.90	
	39	20+580	450	6.65	6.86	6.97	7.17	7.30	6.60	6.97	입 포 수 위 표
강	40	21+000	420	6.72	6.93	7.04	7.24	7.37	6.63	7.04	
	41	21+400	400	6.90	7.12	7.24	7.44	7.58	6.81	7.24	
	42	21+660	260	6.94	7.16	7.28	7.49	7.63	6.90	7.28	
	43	22+110	450	7.02	7.24	7.36	7.57	7.71	6.98	7.36	
	44	22+550	440	7.08	7.30	7.42	7.64	7.78	7.04	7.42	
	45	23+250	700	7.17	7.40	7.53	7.74	7.89	7.09	7.53	
	46	23+550	300	7.26	7.49	7.63	7.85	8.00	7.15	7.63	
	47	24+050	500	7.31	7.54	7.68	7.90	8.05	7.25	7.68	산 북 천 합 류 후
	48	24+680	630	7.37	7.61	7.75	7.97	8.12	7.36	7.75	산 북 천 합 류 전
	49	25+330	650	7.43	7.67	7.81	8.04	8.18	7.41	7.81	
	50	25+810	480	7.49	7.73	7.88	8.11	8.24	7.50	7.88	
	51	26+140	330	7.53	7.78	7.93	8.16	8.30	7.53	7.93	
	52	26+600	460	7.58	7.84	7.98	8.21	8.35	7.55	7.98	
	53	26+990	390	7.62	7.87	8.02	8.25	8.39	7.58	8.02	
	54	27+400	410	7.66	7.91	8.06	8.28	8.43	7.60	8.06	
	55	27+890	490	7.69	7.94	8.09	8.31	8.46	7.69	8.09	
	56	28+290	400	7.80	8.06	8.21	8.44	8.59	7.80	8.21	
	57	28+630	340	7.91	8.18	8.34	8.57	8.73	7.94	8.34	
	58	29+030	400	7.96	8.23	8.39	8.62	8.78	8.00	8.39	
	59	29+570	540	8.01	8.29	8.44	8.68	8.83	8.03	8.44	
	60	30+160	590	8.11	8.39	8.55	8.79	8.94	8.15	8.55	
	61	30+830	670	8.17	8.45	8.61	8.85	9.01	8.22	8.61	
	62	31+400	570	8.18	8.46	8.62	8.86	9.01	8.27	8.62	
	63	32+120	720	8.29	8.57	8.72	8.97	9.12	8.35	8.72	
		32+590	470	8.39	8.67	8.83	9.08	9.23		8.83	
	+800	32+920	330	8.46	8.74	8.89	9.14	9.30	8.67	8.89	황 산 대 교
	64	33+060	140	8.48	8.77	8.92	9.17	9.33	8.71	8.92	
	+250	33+270	210	8.50	8.78	8.94	9.18	9.35	8.78	8.94	
	65	33+830	560	8.61	8.90	9.05	9.31	9.47	8.91	9.05	논 산 천 합 류 후
	66	34+490	660	8.70	8.97	9.13	9.38	9.55	8.97	9.13	논 산 천 합 류 전
	67	34+920	430	8.76	9.03	9.19	9.44	9.61	9.07	9.19	
	68	35+370	450	8.84	9.11	9.27	9.53	9.70	9.17	9.27	
	69	36+000	630	8.90	9.17	9.33	9.59	9.75	9.30	9.33	
	70	36+560	560	8.95	9.23	9.39	9.65	9.82	9.32	9.39	
	71	37+010	450	9.01	9.29	9.45	9.71	9.88	9.40	9.45	
	72	37+710	700	9.14	9.42	9.58	9.84	10.01	9.49	9.58	
	73	38+220	510	9.20	9.48	9.63	9.89	10.05	9.53	9.63	석 성 천 합 류 후
	74	38+620	400	9.25	9.52	9.67	9.93	10.09	9.66	9.67	반 조 원 수 위 표
	75	39+050	430	9.44	9.73	9.89	10.15	10.33	9.77	9.89	
	76	39+520	470	9.70	10.00	10.17	10.45	10.64	10.12	10.17	
	77	40+000	480	9.77	10.08	10.25	10.54	10.73	10.16	10.25	

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
금	78	40+470	470	9.78	10.09	10.26	10.54	10.74	10.25	10.26	
	79	40+890	420	9.80	10.10	10.27	10.55	10.75	10.30	10.30	
강	80	41+490	600	9.89	10.19	10.36	10.64	10.84	10.38	10.38	
	81	41+990	500	10.09	10.40	10.58	10.87	11.07	10.58	10.58	
	82	42+540	550	10.14	10.45	10.62	10.92	11.12	10.62	10.62	
	83	43+290	750	10.43	10.74	10.92	11.23	11.43	10.95	10.95	
	84	43+850	560	10.58	10.90	11.09	11.39	11.61	11.12	11.12	
	85	44+450	600	10.66	10.98	11.17	11.48	11.69	11.22	11.22	
	86	45+060	610	10.69	11.02	11.20	11.51	11.73	11.25	11.25	
	87	45+650	590	10.79	11.12	11.30	11.62	11.83	11.35	11.35	
	88	46+200	550	10.85	11.18	11.37	11.69	11.91	11.49	11.49	
	89	46+670	470	10.87	11.21	11.39	11.71	11.93	11.52	11.52	
	90	47+270	600	10.91	11.24	11.43	11.74	11.96	11.54	11.54	
	91	47+800	530	10.94	11.27	11.46	11.77	11.99	11.58	11.58	
	92	48+100	300	10.97	11.31	11.49	11.79	12.01	11.60	11.60	
	93	48+500	400	11.01	11.34	11.53	11.82	12.04	11.68	11.68	
	94	48+970	470	11.05	11.38	11.57	11.86	12.08	11.83	11.83	
	95	49+400	430	11.22	11.55	11.74	12.04	12.26	11.98	11.98	금 천 합 류 후
	96	49+820	420	11.25	11.58	11.77	12.07	12.29	12.04	12.04	금 천 합 류 전
	97	50+300	480	11.29	11.62	11.81	12.10	12.32	12.11	12.11	
	98	50+800	500	11.37	11.70	11.89	12.19	12.41	12.23	12.23	
	99	51+220	420	11.39	11.71	11.90	12.20	12.42	12.27	12.27	
	100	51+540	320	11.39	11.72	11.91	12.20	12.42	12.29	12.29	
	101	52+090	550	11.46	11.78	11.97	12.26	12.48	12.31	12.31	
	+80	52+160	70	11.49	11.81	12.00	12.29	12.51	12.34	12.34	규 암 수 위 표
		52+180	20	11.51	11.83	12.02	12.32	12.53		12.34	백 제 대 교 (신)
	102	52+540	360	11.59	11.92	12.11	12.40	12.62	12.41	12.41	
	103	52+910	370	11.62	11.94	12.13	12.43	12.64	12.45	12.45	
	104	53+350	440	11.72	12.04	12.23	12.53	12.74	12.51	12.51	
	105	53+760	410	11.79	12.12	12.31	12.61	12.83	12.70	12.70	
	106	54+270	510	11.83	12.15	12.34	12.64	12.86	12.72	12.72	
	107	54+730	460	11.86	12.18	12.37	12.67	12.89	12.87	12.87	
	108	55+320	590	12.20	12.53	12.73	13.04	13.27	13.03	13.03	
	109	55+940	620	12.28	12.62	12.81	13.13	13.36	13.23	13.23	
		56+420	480	12.33	12.67	12.87	13.17	13.40		13.37	백 마 강 교
	110	56+510	90	12.35	12.69	12.88	13.17	13.41	13.40	13.40	
	111	56+970	460	12.51	12.84	13.03	13.32	13.55	13.56	13.56	
	112	57+330	360	12.70	13.03	13.23	13.52	13.76	13.68	13.68	지 천 합 류 후
	113	57+810	480	12.89	13.22	13.42	13.72	13.96	13.88	13.88	지 천 합 류 전
	114	58+080	270	12.91	13.25	13.44	13.75	13.98	13.90	13.90	
	115	58+570	490	12.94	13.27	13.47	13.77	14.01	13.93	13.93	
	116	59+060	490	13.11	13.44	13.64	13.95	14.20	14.11	14.11	
	117	59+520	460	13.15	13.49	13.69	14.00	14.25	14.22	14.22	

하천명	측점(No.)		구간거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
금	118	59+990	470	13.18	13.51	13.71	14.02	14.26	14.27	14.27	
	119	60+510	520	13.28	13.61	13.81	14.11	14.36	14.34	14.34	
강	120	60+950	440	13.39	13.71	13.92	14.23	14.47	14.60	14.60	
	121	61+430	480	13.47	13.80	14.01	14.31	14.55	14.64	14.64	
	122	61+870	440	13.50	13.83	14.04	14.35	14.59	14.67	14.67	
		61+900	30	13.50	13.83	14.04	14.35	14.59		14.67	왕 진 교
	123	62+320	420	13.52	13.85	14.06	14.36	14.60	14.69	14.69	
	124	62+790	470	13.58	13.90	14.11	14.41	14.64	14.72	14.72	
	125	63+390	600	13.82	14.15	14.36	14.68	14.93	14.85	14.85	
	126	64+040	650	14.03	14.36	14.58	14.91	15.17	15.18	15.18	
	127	64+510	470	14.12	14.45	14.67	15.00	15.27	15.42	15.42	
	128	65+040	530	14.20	14.53	14.75	15.08	15.35	15.49	15.49	
	129	65+470	430	14.22	14.55	14.77	15.10	15.36	15.53	15.53	
	130	66+110	640	14.30	14.63	14.85	15.17	15.42	15.58	15.58	
	131	66+470	360	14.47	14.82	15.03	15.37	15.63	15.71	15.71	
	132	66+920	450	14.61	14.97	15.19	15.55	15.83	15.95	15.95	
	133	67+400	480	14.81	15.18	15.41	15.78	16.06	16.09	16.09	
	134	67+910	510	14.97	15.35	15.58	15.95	16.25	16.32	16.32	
	135	68+370	460	15.07	15.45	15.68	16.06	16.36	16.39	16.39	
	136	68+970	600	15.16	15.54	15.78	16.16	16.46	16.53	16.53	
	137	69+500	530	15.17	15.55	15.78	16.16	16.46	16.56	16.56	
	138	70+100	600	15.24	15.62	15.85	16.23	16.54	16.60	16.60	
	139	70+610	510	15.25	15.63	15.86	16.24	16.54	16.61	16.61	
	140	71+110	500	15.31	15.69	15.92	16.30	16.60	16.76	16.76	진 두 수 위 표
	141	71+560	450	15.38	15.76	15.99	16.37	16.68	16.84	16.84	
	142	72+060	500	15.49	15.87	16.11	16.49	16.80	17.08	17.08	
	143	72+570	510	15.49	15.88	16.12	16.50	16.81	17.10	17.10	
	144	73+010	440	15.55	15.94	16.17	16.56	16.86	17.10	17.10	
	145	73+540	530	15.67	16.05	16.29	16.67	16.99	17.35	17.35	
	146	74+180	640	15.79	16.17	16.41	16.79	17.11	17.51	17.51	
	147	74+640	460	15.88	16.27	16.49	16.87	17.18	17.76	17.51	
	148	75+120	480	16.04	16.42	16.64	17.02	17.33	17.90	17.76	
	149	75+630	510	16.13	16.51	16.73	17.11	17.42	17.92	17.90	
	150	76+270	640	16.25	16.62	16.84	17.22	17.53	18.14	17.92	
	151	76+720	450	16.32	16.69	16.91	17.28	17.60	18.64	18.14	
	152	77+320	600	16.66	17.05	17.29	17.68	18.01	18.77	18.64	
	153	77+910	590	16.81	17.21	17.44	17.84	18.18	18.79	18.77	
	154	78+320	410	16.84	17.23	17.47	17.86	18.20	18.99	18.79	
	155	78+920	600	16.98	17.38	17.62	18.03	18.37	19.32	18.99	
	156	79+490	570	17.20	17.61	17.86	18.27	18.62	19.34	19.32	
	157	80+190	700	17.26	17.67	17.91	18.32	18.67		19.34	유 구 천 합 류 후
		80+480	290	17.29	17.70	17.94	18.35	18.71	19.40	19.40	유 구 천 합 류 전
	158	80+640	160	17.46	17.87	18.12	18.53	18.89	19.43	19.43	

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
금	159	81+120	480	17.52	17.93	18.17	18.59	18.95	19.67	19.67	
	160	81+610	490	17.58	17.99	18.23	18.64	19.00	19.69	19.69	
강	161	81+980	370	17.64	18.05	18.29	18.70	19.06	19.71	19.71	
	162	82+600	620	17.70	18.12	18.36	18.77	19.12	19.86	19.86	
	163	82+980	380	17.94	18.35	18.59	18.99	19.35	19.98	19.98	
	164	83+410	430	18.21	18.64	18.89	19.31	19.68	20.26	20.26	
	165	83+830	420	18.22	18.65	18.90	19.32	19.70	20.33	20.33	
	166	84+300	470	18.33	18.77	19.01	19.44	19.83	20.45	20.45	
		84+700	400	18.46	18.89	19.14	19.57	19.96		20.50	금 강 대 교
	167	84+790	90	18.49	18.93	19.18	19.61	20.00	20.51	20.51	정 안 천 합 류 후
	+280	85+070	280	18.52	18.96	19.21	19.64	20.03	20.55	20.55	금 강 교
	168	85+220	150	18.54	18.98	19.23	19.66	20.04	20.57	20.57	
	169	85+730	510	18.60	19.04	19.28	19.71	20.09	20.64	20.64	
	170	86+240	510	18.69	19.13	19.37	19.80	20.18	20.70	20.70	
	+280	86+500	260	18.76	19.19	19.44	19.87	20.25	20.74	20.74	공 주 대 교
	171	86+780	280	18.77	19.20	19.44	19.92	20.25	20.80	20.80	
	172	87+280	500	18.88	19.32	19.57	20.00	20.40	20.94	20.94	
	173	87+680	400	19.08	19.53	19.78	20.22	20.62	21.11	21.11	
		88+030	350	19.14	19.58	19.83	20.26	20.66		21.13	신 공 주 대 교
	174	88+250	220	19.17	19.61	19.86	20.29	20.68	21.15	21.15	
	175	88+800	550	19.24	19.67	19.92	20.35	20.74	21.18	21.18	
	176	89+280	480	19.38	19.83	20.07	20.50	20.89	21.34	21.34	
	177	89+750	470	19.47	19.91	20.15	20.58	20.97	21.37	21.37	
	178	90+230	480	19.56	20.00	20.25	20.68	21.07	21.50	21.50	
	179	90+730	500	19.71	20.16	20.40	20.84	21.24	21.55	21.55	
	180	91+190	460	19.81	20.26	20.52	20.96	21.37	21.94	21.94	
	181	91+720	530	19.99	20.45	20.72	21.16	21.56	21.97	21.97	
	182	92+160	440	20.10	20.57	20.83	21.27	21.67	22.08	22.08	
	183	92+610	450	20.20	20.66	20.93	21.37	21.77	22.28	22.28	
	184	93+060	450	20.37	20.83	21.09	21.52	21.92	22.45	22.45	
	+430	93+510	450	20.59	21.06	21.32	21.76	22.16	22.47	22.47	청 벽 대 교
	185	93+590	80	20.71	21.18	21.44	21.89	22.29	22.57	22.57	
	186	94+100	510	20.75	21.21	21.46	21.90	22.30	22.78	22.78	
	187	94+790	690	21.18	21.65	21.91	22.38	22.79	23.04	23.04	
		95+200	410	21.28	21.76	22.01	22.48	22.91		23.19	봄 티 교
	188	95+390	190	21.33	21.80	22.06	22.52	22.95	23.26	23.26	
	189	95+990	600	21.50	21.98	22.23	22.70	23.13	23.46	23.46	
	190	96+340	350	21.63	22.10	22.36	22.83	23.26	23.56	23.56	
	191	96+870	530	21.67	22.14	22.39	22.86	23.29	23.57	23.57	
	192	97+390	520	21.78	22.25	22.51	22.98	23.41	23.63	23.63	
	193	97+810	420	21.99	22.48	22.73	23.22	23.66	24.00	24.00	
	194	98+360	550	22.14	22.63	22.89	23.39	23.84	24.11	24.11	대 교 천 합 류 후
	195	98+930	570	22.18	22.66	22.92	23.41	23.85	24.23	24.23	대 교 천 합 류 전

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
금	196	99+730	800	22.43	22.92	23.19	23.69	24.15	24.40	24.40	
	197	100+280	550	22.47	22.96	23.22	23.72	24.18	24.44	24.44	용수천합류전
강	198	100+710	430	22.50	22.99	23.26	23.76	24.21	24.52	24.52	
	199	101+140	430	22.60	23.09	23.35	23.85	24.31	24.56	24.56	
	200	101+620	480	22.63	23.12	23.39	23.89	24.34	24.59	24.59	
	+280	101+870	250	22.64	23.12	23.39	23.89	24.34	24.59	24.59	금 남 교
	201	102+030	160	22.67	23.15	23.42	23.91	24.37	24.61	24.61	
	202	102+610	580	22.81	23.29	23.55	24.05	24.51	24.72	24.72	
	203	103+160	550	22.83	23.31	23.58	24.07	24.53	24.74	24.74	
	204	103+720	560	22.93	23.41	23.68	24.17	24.63	24.83	24.83	
	205	104+230	510	22.96	23.44	23.70	24.19	24.65	24.86	24.86	
	206	104+740	510	23.00	23.48	23.74	24.23	24.69	24.89	24.89	
	207	105+250	510	23.06	23.53	23.79	24.28	24.74	24.92	24.92	
	208	105+750	500	23.13	23.60	23.86	24.35	24.80	25.02	25.02	
	209	106+230	480	23.17	23.64	23.90	24.39	24.83	25.11	25.11	
	210	106+750	520	23.31	23.78	24.04	24.53	24.97	25.21	25.21	
	211	107+250	500	23.40	23.87	24.13	24.61	25.06	25.31	25.31	
	212	107+700	450	23.43	23.90	24.16	24.64	25.09	25.34	25.34	
	213	108+200	500	23.45	23.91	24.17	24.66	25.10	25.40	25.40	
	214	108+750	550	23.47	23.94	24.20	24.68	25.13	25.42	25.42	미호천합류후
	215	109+400	650	23.55	24.00	24.25	24.73	25.16	25.46	25.46	미호천합류전
	216	109+900	500	23.62	24.05	24.29	24.76	25.19	25.52	25.52	
	217	110+350	450	23.81	24.23	24.45	24.92	25.34	25.60	25.60	
	218	110+900	550	23.84	24.26	24.49	24.95	25.37	25.63	25.63	
	219	111+400	500	23.94	24.35	24.58	25.04	25.46	25.68	25.68	
	220	111+900	500	24.14	24.54	24.76	25.22	25.63	25.78	25.78	
	221	112+350	450	24.23	24.64	24.85	25.32	25.73	25.97	25.97	부강수위표
	222	112+510	160	24.31	24.72	24.93	25.41	25.82	26.09	26.09	
	223	112+960	450	24.37	24.78	24.99	25.45	25.87	26.18	26.18	
	224	113+360	400	24.42	24.82	25.03	25.50	25.91	26.19	26.19	
	225	113+790	430	24.45	24.85	25.06	25.53	25.94	26.31	26.31	
	226□	114+290	500	24.47	24.87	25.06	25.61	26.01	26.45	26.45□	
	227□	114+790	500	24.67	25.06	25.24	25.69	26.07	26.59	26.59□	
	228□	115+390	600	25.15	25.49	25.65	26.11	26.46	26.76	26.76□	
	229□	116+040	650	25.69	26.05	26.21	26.74	27.13	26.94	26.94□	
	230□	116+540	500	25.84	26.18	26.34	26.84	27.23	27.05	27.05□	
	231□	117+090	550	26.21	26.57	26.74	27.27	27.69	27.38	27.38□	
	232□	117+620	530	26.67	27.03	27.19	27.73	28.15	27.72	27.72□	
	233□	118+370	750	26.80	27.15	27.31	27.85	28.26	27.83	27.83□	
	234□	118+800	430	27.00	27.36	27.51	28.06	28.47	27.85	27.85□	
	235□	119+230	430	27.28	27.64	27.80	28.37	28.78	28.26	28.26□	
	236□	119+770	540	27.55	27.92	28.09	28.67	29.12	28.56	28.56□	
	237□	120+190	420	27.67	28.04	28.20	28.77	29.22	28.71	28.71□	

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
금	238□	120+700	510	28.03	28.40	28.58	29.15	29.61	29.00	29.00□	매 포 수 위 표
	239□	121+260	560	28.19	28.55	28.75	29.32	29.80	29.20	29.20□	
강	240□	121+770	510	28.31	28.67	28.87	29.43	29.93	29.32	29.32□	
	241□	122+140	370	28.45	28.81	29.00	29.56	30.06	29.41	29.41□	
	242□	122+490	350	28.65	29.02	29.21	29.80	30.31	29.60	29.60□	
	243□	122+990	500	29.11	29.47	29.66	30.25	30.74	29.88	29.88□	
	244	123+470	480	29.30	29.65	29.84	30.43	30.91	30.01	30.01	
	245	124+010	540	29.41	29.77	29.95	30.55	31.02	30.16	30.16	
	246	124+460	450	29.43	29.78	29.96	30.55	31.07	30.30	30.30	
	247	124+960	500	29.46	29.80	29.98	30.55	31.12	30.46	30.46	갑 천 합 류 후
	248	125+660	700	30.15	30.52	30.70	31.31	31.87	30.70	30.70	갑 천 합 류 전
	249	126+420	760	30.27	30.63	30.81	31.43	31.97	30.91	30.91	
		126+750	330	30.53	30.88	31.05	31.68	32.21		31.13	고 속 철 도 교
	+390	126+800	50	30.58	30.94	31.11	31.74	32.27	31.16	31.16	금 강 1 교
	250	126+960	160	30.62	30.98	31.15	31.79	32.32	31.18	31.18	
	251	127+460	500	30.86	31.21	31.38	32.01	32.53	31.40	31.40	
	+260	127+720	260	30.96	31.30	31.47	32.09	32.61	31.51	31.51	금강철교(상)
	+280	127+740	20	31.00	31.34	31.51	32.14	32.65	31.52	31.52	금강철교(하)
	+425	127+890	150	31.01	31.35	31.52	32.14	32.66	31.58	31.58	현 도 교
	252	127+970	80	31.11	31.45	31.62	32.26	32.77	31.61	31.62	
	253	128+370	400	31.45	31.81	31.97	32.63	33.16	31.78	31.97	
	254	128+780	410	31.61	31.97	32.14	32.81	33.34	31.92	32.14	
	255	129+230	450	31.68	32.03	32.20	32.86	33.39	31.95	32.20	
	256	129+830	600	31.86	32.21	32.38	33.04	33.57	32.12	32.38	
	257	130+330	500	32.03	32.38	32.55	33.21	33.73	32.29	32.55	
	+120	130+470	140	35.10	35.10	35.10	35.10	35.10	41.05	35.10	역 조 정 지 댐
	0	222+040	0	87.83	88.21	88.47	88.78	89.05		90.00	
	+210	222+220	180	87.83	88.21	88.47	88.78	89.05		90.00	금강유원지보
	1	222+530	310	88.31	88.70	88.97	89.31	89.59	90.00	90.00	
	2	222+915	385	88.49	88.89	89.16	89.52	89.80	90.27	90.27	
	3	223+570	655	88.83	89.24	89.52	89.88	90.16	90.36	90.36	
		223+580	10	88.92	89.24	89.52	89.89	90.18		90.37	고 속 도 로 교
		223+615	35	89.24	89.65	89.93	90.29	90.57		90.39	고 속 도 로 교
		223+645	30	89.30	89.72	90.00	90.36	90.65		90.42	금 강 3 교
	4	224+125	480	89.56	89.99	90.28	90.63	90.92	90.79	90.79	
	5	224+580	455	89.77	90.20	90.48	90.83	91.12	90.96	90.96	
	6	224+955	375	90.10	90.52	90.80	91.15	91.44	91.11	91.11	
	7	225+415	460	90.51	90.93	91.21	91.56	91.84	91.41	91.41	
		225+590	175	90.82	91.26	91.56	91.91	92.21		91.65	금 강 2 교
		225+775	185	90.99	91.43	91.73	92.09	92.39		91.91	
	8	225+830	55	91.01	91.45	91.75	92.11	92.40	91.99	91.99	
		226+275	445	91.35	91.79	92.10	92.46	92.77		92.33	고 속 도 로 교

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
금	9	226+385	110	91.40	91.85	92.15	92.52	92.82	92.42	92.42	
	10	226+950	565	91.62	92.07	92.38	92.75	93.05	92.83	92.83	
강		227+100	150	91.66	92.11	92.42	92.79	93.10		92.88	
	11	227+425	325	91.73	92.17	92.48	92.84	93.15	92.73	92.99	
	+240	227+610	185	91.76	92.20	92.51	92.87	93.18	92.32	93.06	옥 천 수 위 표
	12	227+745	135	91.79	92.23	92.53	92.89	93.20	92.61	93.10	
	13	228+340	595	92.13	92.57	92.86	93.21	93.51	93.31	93.31	
	14	229+100	760	92.50	92.94	93.24	93.60	93.90	93.74	93.74	
	15	229+550	450	92.59	93.02	93.32	93.67	93.97	93.68	93.93	
	16	229+925	375	92.84	93.26	93.55	93.90	94.19	94.08	94.08	
	17	230+485	560	93.65	94.09	94.39	94.75	95.06	95.00	95.00	
	18	230+895	410	93.79	94.23	94.53	94.88	95.18	95.05	95.05	
		231+365	470	93.96	94.39	94.68	95.03	95.32		95.28	
	19	231+605	240	94.20	94.62	94.91	95.26	95.55	95.40	95.40	
	20	231+925	320	94.43	94.86	95.16	95.50	95.79	95.67	95.67	
	21	232+360	435	94.67	95.10	95.39	95.73	96.02	95.88	95.88	
	22	232+905	545	94.91	95.33	95.61	95.95	96.23	96.00	96.00	
	23	233+465	560	95.69	96.11	96.40	96.75	97.04	96.89	96.89	
	24	234+130	665	96.13	96.56	96.85	97.20	97.50	96.57	97.57	
	25	234+585	455	96.19	96.62	96.91	97.26	97.55	97.54	97.76	
	26	235+060	475	96.33	96.75	97.04	97.39	97.68	97.96	97.96	
		235+420	360	96.63	97.06	97.36	97.72	98.00		98.18	경 부 선 철 교
		235+450	30	96.69	97.13	97.43	97.78	98.06		98.20	고 속 철 도 교
		235+530	80	96.70	97.14	97.44	97.79	98.07		98.25	
	27	235+570	40	96.71	97.14	97.45	97.80	98.07	98.27	98.27	
		235+595	25	96.73	97.16	97.45	97.80	98.07		98.28	
		235+710	115	96.87	97.30	97.60	97.95	98.22		98.32	이 원 대 교
	28	236+055	345	96.99	97.41	97.70	98.04	98.31	98.44	98.44	
	29	236+505	450	97.30	97.74	98.02	98.36	98.63	98.88	98.88	
	30	237+040	535	97.63	98.06	98.34	98.66	98.92	99.08	99.08	
	31	237+455	415	97.80	98.23	98.50	98.82	99.09	99.41	99.41	
	32	237+865	410	98.04	98.46	98.73	99.04	99.30	99.58	99.58	
	33	238+335	470	98.35	98.73	98.99	99.28	99.53	99.80	99.80	
	34	238+780	445	98.54	98.92	99.17	99.45	99.70	99.80	99.80	
		239+170	390	98.76	99.14	99.39	99.68	99.94		100.25	
	35	239+220	50	98.89	99.26	99.51	99.79	100.05	100.31	100.31	
	36	239+635	415	98.99	99.36	99.61	99.89	100.15	100.24	100.33	
	37	240+070	435	99.04	99.41	99.66	99.93	100.18	100.35	100.35	
	38	240+295	225	99.18	99.54	99.79	100.07	100.32	100.56	100.56	
	39	240+825	530	99.48	99.86	100.12	100.40	100.66	101.14	101.14	
		241+055	230	99.63	100.00	100.26	100.55	100.81		101.37	고 속 철 도 교
	40	241+220	165	99.70	100.08	100.34	100.61	100.87	101.53	101.53	
	41	241+765	545	99.84	100.21	100.47	100.74	101.00	101.54	101.54	

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
금	42	242+610	845	100.31	100.68	100.94	101.21	101.47	102.18	102.18	
	43	243+355	745	100.61	100.97	101.22	101.49	101.74	102.70	102.70	
강	44	243+940	585	101.01	101.35	101.59	101.85	102.09	103.08	103.08	초 강 합 류 후
	45	244+360	420	101.47	101.80	102.02	102.28	102.52	103.35	103.35	초 강 합 류 전
	46	244+830	470	101.81	102.13	102.40	102.62	102.83	103.55	103.55	
		244+870	40	101.85	102.16	102.44	102.67	102.89		103.57	고 속 철 도 교
	47	245+305	435	102.32	102.63	102.91	103.15	103.34	103.83	103.83	
	48	245+840	535	102.63	102.91	103.17	103.39	103.57	104.09	104.09	
		246+330	490	102.95	103.21	103.45	103.66	103.83		104.38	영 동 천 합 류 전
	49	246+365	35	102.95	103.21	103.45	103.66	103.83	104.40	104.40	

건설교통부

하천명	측점(No.)			구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립 1	기수립 2	금회		50년	80년	100년	150년	200년	기고시	계 획	
갑		0	0+000	0	30.60	30.60	30.60	30.60	30.60	30.46	30.60	갑 천 하 구
		1	0+160	160	30.60	30.60	30.60	30.60	30.60	30.48	30.60	
천		2	0+390	230	30.60	30.60	30.61	30.61	30.61	30.50	30.61	
		3	0+570	180	30.61	30.61	30.61	30.61	30.62	30.52	30.62	
		4	0+770	200	30.63	30.64	30.65	30.66	30.67	30.53	30.67	
		5	0+980	210	30.66	30.67	30.68	30.70	30.71	30.54	30.71	
			1+015	35	30.69	30.68	30.70	30.71	30.72		30.72	불 무 교
		6	1+220	205	30.69	30.69	30.71	30.71	30.72	30.55	30.72	
		7	1+450	230	30.70	30.70	30.72	30.73	30.75	30.56	30.75	
		8	1+710	260	30.72	30.73	30.75	30.77	30.78	30.58	30.78	
		9	1+950	240	30.73	30.74	30.77	30.78	30.80	30.61	30.80	
		+250	2+205	255	30.80	30.82	30.85	30.88	30.91	30.65	30.91	
		10	2+455	250	30.81	30.83	30.86	30.89	30.92	30.65	30.92	
		+70	2+535	80	30.82	30.85	30.88	30.90	30.94	30.65	30.94	신 구 교
		11	2+640	105	30.83	30.86	30.90	30.93	30.97	30.66	30.97	
		12	2+820	180	30.86	30.90	30.95	30.98	31.03	30.72	31.03	
		13	2+985	165	30.90	30.94	31.00	31.03	31.08	30.79	31.08	
		14	3+125	140	30.92	30.97	31.03	31.07	31.12	30.85	31.12	
		15	3+335	210	30.96	31.03	31.09	31.14	31.20	30.94	31.20	
		16	3+550	215	31.01	31.09	31.15	31.22	31.28	31.02	31.28	관평천합류후
		17	3+755	205	31.03	31.11	31.17	31.24	31.30	31.03	31.30	관평천합류전
			3+915	160	31.08	31.16	31.25	31.33	31.40		31.40	용 신 교
		18	3+975	60	31.15	31.25	31.33	31.43	31.50	31.03	31.50	
		19	4+205	230	31.17	31.28	31.36	31.46	31.53	31.14	31.53	
		20	4+395	190	31.26	31.37	31.46	31.57	31.65	31.27	31.65	
		21	4+595	200	31.35	31.47	31.57	31.68	31.77	31.38	31.77	
		22	4+775	180	31.42	31.56	31.65	31.78	31.86	31.46	31.86	
		23	4+955	180	31.50	31.64	31.73	31.86	31.95	31.61	31.95	
		+10	5+005	50	31.58	31.74	31.83	31.96	32.06	31.62	32.06	취 입 보
		24	5+165	160	31.68	31.84	31.94	32.08	32.18	31.63	32.18	
		25	5+345	180	31.75	31.92	32.02	32.16	32.27	31.83	32.27	
		26	5+465	120	31.83	32.02	32.12	32.27	32.38	31.92	32.38	
		27	5+635	170	31.92	32.09	32.20	32.35	32.45	32.04	32.45	
		28	5+815	180	31.95	32.13	32.24	32.39	32.49	32.17	32.49	
		29	5+975	160	31.99	32.17	32.27	32.42	32.52	32.18	32.52	
		30	6+145	170	32.06	32.25	32.35	32.50	32.60	32.27	32.60	
		31	6+315	170	32.22	32.41	32.52	32.67	32.78	32.44	32.78	
		32	6+515	200	32.38	32.58	32.69	32.85	32.96	32.57	32.96	
		33	6+710	195	32.51	32.72	32.83	33.00	33.12	32.81	33.12	
		34	6+880	170	32.63	32.85	32.96	33.13	33.25	32.93	33.25	
		35	7+100	220	32.81	33.04	33.13	33.32	33.44	33.15	33.44	
		+30	7+130	30	32.87	33.10	33.20	33.38	33.51	33.26	33.51	호남고속도로교
			7+150	20	32.89	33.12	33.22	33.40	33.53		33.53	갑 천 교

하천명	측점(No.)			구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립 1	기수립 2	금회		50년	80년	100년	150년	200년	기고시	계 획	
갑			7+160	10	32.96	33.19	33.29	33.47	33.60		33.60	호남고속도로교
		36	7+285	125	33.02	33.25	33.35	33.54	33.67	33.47	33.67	
천		37	7+505	220	33.15	33.37	33.48	33.67	33.78	33.66	33.78	
		+80	7+565	60	33.58	33.76	33.84	34.00	34.10	33.81	34.10	취 입 보
		38	7+715	150	33.76	33.94	34.02	34.18	34.29	34.04	34.29	
		39	7+905	190	33.92	34.11	34.20	34.36	34.47	34.21	34.47	
		40	8+125	220	34.20	34.40	34.49	34.66	34.77	34.41	34.77	
		41	8+365	240	34.37	34.57	34.67	34.84	34.96	35.44	35.56	
		42	8+555	190	34.60	34.82	34.91	35.09	35.21	35.49	35.60	
		43	8+775	220	34.75	34.96	35.07	35.25	35.37	35.61	35.64	
		44	8+985	210	34.93	35.15	35.25	35.44	35.57	35.73	35.69	
		45	9+190	205	35.04	35.26	35.37	35.56	35.69	35.86	35.73	
		46	9+370	180	35.13	35.36	35.47	35.66	35.79	35.93	35.79	
		47	9+550	180	35.24	35.47	35.58	35.78	35.91	36.20	35.91	
		48	9+720	170	35.52	35.78	35.90	36.12	36.26	36.36	36.26	
		49	9+905	185	35.58	35.83	35.95	36.16	36.31	36.45	36.31	
		50	10+045	140	35.70	35.96	36.08	36.29	36.44	36.58	36.44	
		+90	10+105	60	35.83	36.09	36.21	36.43	36.58	36.62	36.58	원 촌 교
		51	10+225	120	35.84	36.10	36.22	36.43	36.65	36.69	36.65	
		52	10+415	190	36.03	36.29	36.41	36.61	36.76	36.83	36.76	
		53	10+595	180	36.26	36.51	36.63	36.84	36.98	36.90	36.98	
		54	10+765	170	36.47	36.74	36.86	37.07	37.22	37.18	37.22	
		55	10+925	160	36.55	36.82	36.94	37.15	37.31	37.37	38.05	
		56	11+105	180	36.73	37.02	37.15	37.38	37.54	37.83	38.08	
	0	57	11+325	220	36.93	37.22	37.35	37.59	37.76	38.05	38.10	
			11+415	90	36.99	37.27	37.41	37.64	37.81		38.12	
	1	58	11+545	130	37.16	37.44	37.57	37.81	37.97	38.15	38.14	유 등 천 합 류 후
			11+655	110	37.38	37.67	37.81	38.06	38.23		38.23	유 등 천 합 류 전
			11+725	70	37.39	37.69	37.83	38.08	38.25		38.25	둔 산 대 교
	2	59	11+785	60	37.41	37.71	37.85	38.10	38.27	38.29	38.27	
			11+820	35	37.45	37.75	37.89	38.15	38.32		38.32	라 바 보
	3	60	11+960	140	37.47	37.77	37.91	38.16	38.34	38.32	38.34	
			12+060	100	37.49	37.79	37.93	38.18	38.36		38.36	
	4	61	12+160	100	37.51	37.81	37.95	38.20	38.37	38.34	38.37	
			12+210	50	37.53	37.83	37.97	38.22	38.39		38.39	엑 스 포 다 리
			12+260	50	37.54	37.84	37.98	38.23	38.41		38.41	
	5	62	12+355	95	37.56	37.85	37.99	38.24	38.42	38.38	38.42	
			12+460	105	37.57	37.86	38.00	38.25	38.43		38.43	
	6		12+560	100	37.58	37.87	38.01	38.26	38.44	38.61	38.44	
			12+660	100	37.60	37.89	38.03	38.28	38.46		38.46	
	7		12+760	100	37.61	37.90	38.05	38.30	38.48	38.65	38.48	
			12+860	100	37.64	37.93	38.08	38.32	38.51		38.51	
			12+920	60	37.68	37.96	38.11	38.36	38.54		38.54	취 입 보

하천명	측점(No.)			구간거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립 1	기수립 2	금회		50년	80년	100년	150년	200년	기고시	계 획	
갑	8		12+960	40	37.69	37.98	38.13	38.38	38.56	38.79	38.56	대 덕 대 교
			13+035	75	37.78	38.05	38.19	38.42	38.60		38.60	
천	9		13+165	130	37.84	38.08	38.22	38.44	38.61	38.83	38.61	
			13+265	100	37.88	38.11	38.24	38.45	38.62		38.62	
	10		13+355	90	38.10	38.29	38.39	38.58	38.74	38.91	38.74	
			13+460	105	38.32	38.46	38.55	38.72	38.87		38.87	
	11		13+555	95	38.49	38.63	38.71	38.85	39.00	39.06	39.00	
			13+675	120	38.75	38.88	38.95	39.08	39.22		39.22	라 바 보
	12		13+755	80	39.13	39.26	39.32	39.44	39.58	39.27	39.58	
			13+850	95	39.24	39.38	39.44	39.56	39.70		39.70	
	13		13+955	105	39.37	39.50	39.55	39.67	39.82	39.57	39.82	
			14+060	105	39.57	39.70	39.75	39.87	40.02		40.02	
	14		14+150	90	39.65	39.78	39.83	39.94	40.09	39.87	40.09	
			14+250	100	39.74	39.87	39.92	40.04	40.19		40.19	
	15		14+345	95	39.84	39.97	40.02	40.13	40.28	39.97	40.28	
			14+440	95	39.95	40.08	40.13	40.24	40.38		40.38	
	16		14+540	100	40.14	40.27	40.32	40.42	40.57	40.09	40.57	
			14+635	95	40.25	40.38	40.42	40.53	40.67		40.67	
	17		14+720	85	40.29	40.42	40.46	40.56	40.71	40.32	40.71	
			14+830	110	40.33	40.46	40.50	40.60	40.74		40.74	
	18		14+945	115	40.50	40.62	40.66	40.76	40.89	40.66	41.10	유 성 천 합 류 후
			15+045	100	40.64	40.76	40.80	40.90	41.03		41.18	유 성 천 합 류 전
	19		15+140	95	40.83	40.96	41.00	41.10	41.25	40.75	41.25	
			15+235	95	40.98	41.12	41.17	41.28	41.43		41.43	
	20		15+325	90	41.17	41.30	41.35	41.46	41.62	40.93	41.62	
			15+375	50	41.35	41.48	41.53	41.64	41.80		41.80	갑 천 대 교
			15+420	45	41.50	41.64	41.70	41.81	41.98		41.98	
	21		15+525	105	41.68	41.82	41.87	41.98	42.16	41.01	42.16	
			15+620	95	41.78	41.91	41.97	42.08	42.25		42.25	
	22		15+720	100	41.82	41.95	42.01	42.12	42.29	41.23	42.29	
			15+820	100	42.23	42.36	42.41	42.51	42.67		42.67	
	23		15+925	105	42.35	42.48	42.53	42.64	42.80	41.48	42.80	
			16+025	100	42.95	43.05	43.09	43.18	43.30	42.87	43.65	구 억 보
	24		16+125	100	43.10	43.20	43.25	43.33	43.46	43.95	43.71	
			16+225	100	43.18	43.29	43.34	43.42	43.54		43.80	
	25		16+325	100	43.51	43.62	43.67	43.75	43.88	44.09	43.88	
			16+435	110	43.69	43.80	43.84	43.93	44.06		44.06	
	26		16+535	100	44.01	44.13	44.18	44.27	44.40	44.50	44.40	만 년 교
			16+635	100	44.12	44.23	44.28	44.37	44.51		44.51	
	27		16+735	100	44.29	44.41	44.45	44.55	44.68	44.66	44.68	
			16+835	100	44.49	44.61	44.66	44.76	44.90		44.90	
	28		16+935	100	44.58	44.71	44.76	44.85	44.99	44.73	44.99	
			17+035	100	44.77	44.90	44.95	45.05	45.20		45.20	진 잠 천 합 류 후

하천명	측점(No.)			구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립 1	기수립 2	금회		50년	80년	100년	150년	200년	기고시	계 획	
갑	29		17+135	100	44.77	44.91	44.95	45.05	45.20	45.05	45.20	진 잠 천 합 류 전
			17+240	105	44.90	45.02	45.07	45.17	45.32		45.32	
천	30		17+335	95	44.98	45.11	45.16	45.26	45.41	45.17	45.41	
			17+435	100	45.08	45.20	45.26	45.35	45.50		45.50	
	31		17+535	100	45.17	45.30	45.35	45.45	45.60	45.39	45.60	
			17+635	100	45.27	45.39	45.45	45.54	45.69		45.69	
	32		17+735	100	45.38	45.50	45.56	45.65	45.80	45.66	45.80	
			17+825	90	45.62	45.74	45.80	45.90	46.05		46.05	
	33		17+925	100	45.67	45.79	45.85	45.95	46.10	45.79	46.10	
			18+025	100	45.77	45.89	45.94	46.04	46.19		46.19	
	34		18+130	105	45.88	46.00	46.06	46.15	46.30	46.59	46.30	
			18+230	100	46.02	46.13	46.19	46.28	46.43		46.43	
	35		18+330	100	46.11	46.22	46.28	46.37	46.52	46.74	46.52	
			18+430	100	46.24	46.35	46.41	46.51	46.65		46.65	
	36		18+530	100	46.37	46.48	46.55	46.64	46.78	46.87	46.78	
			18+630	100	46.51	46.62	46.68	46.77	46.91		46.91	
	37		18+720	90	46.72	46.83	46.89	46.98	47.12	47.02	47.12	
			18+825	105	46.81	46.93	46.99	47.08	47.23		47.23	
	38		18+925	100	47.06	47.17	47.24	47.33	47.47	47.16	47.47	
			19+025	100	47.14	47.26	47.32	47.41	47.56		47.56	
	39		19+125	100	47.34	47.45	47.51	47.61	47.75	47.46	47.75	
			19+230	105	47.40	47.52	47.57	47.67	47.81		47.81	
	40		19+335	105	47.52	47.63	47.68	47.77	47.91	47.55	47.91	
			19+435	100	47.71	47.82	47.87	47.96	48.10		48.10	
	41		19+535	100	47.77	47.87	47.93	48.02	48.15	47.76	48.15	
			19+630	95	47.93	48.03	48.09	48.18	48.31		48.31	
	42		19+740	110	48.02	48.12	48.17	48.26	48.40	47.89	48.40	
			19+815	75	48.11	48.22	48.27	48.36	48.49		48.49	
	43		19+925	110	48.21	48.31	48.36	48.45	48.57	48.02	48.57	
			20+020	95	48.30	48.41	48.46	48.54	48.66		48.66	
	44		20+115	95	48.40	48.50	48.55	48.64	48.74	48.18	48.74	
			20+210	95	48.65	48.74	48.79	48.87	48.98		48.98	
	45		20+315	105	48.74	48.84	48.88	48.96	49.07	48.57	49.07	
			20+410	95	48.90	49.00	49.05	49.13	49.25		49.25	
	46		20+510	100	49.28	49.37	49.41	49.49	49.61	48.99	49.61	
			20+610	100	49.44	49.52	49.57	49.65	49.76		49.76	
	47		20+690	80	49.61	49.71	49.77	49.84	49.96	49.37	49.96	
			20+795	105	49.83	49.94	49.99	50.06	50.18		50.18	
	48		20+895	100	50.04	50.15	50.20	50.27	50.39	49.49	50.39	
			21+045	150	50.18	50.30	50.35	50.43	50.55	49.42	50.55	정 림 취 입 보
	49		21+095	50	50.40	50.53	50.58	50.68	50.82	50.42	50.82	
			21+200	105	50.49	50.62	50.68	50.77	50.92		50.92	
	50		21+290	90	50.63	50.76	50.82	50.91	51.06	50.58	51.06	

하천명	측점(No.)			구간거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립 1	기수립 2	금회		50년	80년	100년	150년	200년	기고시	계 획	
갑			21+390	100	50.67	50.80	50.86	50.95	51.11		51.11	
			21+515	125	51.44	51.51	51.55	51.61	51.70		51.70	태 봉 보
천	51		21+525	10	51.45	51.52	51.56	51.62	51.72	50.75	51.72	
			21+585	60	51.47	51.54	51.58	51.65	51.74	51.11	51.74	
	52		21+685	100	51.58	51.66	51.69	51.76	51.86	52.48	51.86	
			21+745	60	51.70	51.78	51.82	51.89	51.99	52.55	51.99	가 수 원 교 (신)
			21+805	60	51.78	51.87	51.92	51.99	52.10		52.10	
			21+850	45	51.89	51.98	52.03	52.11	52.23	52.52	52.23	가 수 원 교 (구)
	53		21+895	45	52.12	52.22	52.28	52.38	52.53	52.85	52.53	가 수 원 철 교
			21+900	5	52.13	52.22	52.28	52.38	52.53		52.53	
	54		22+095	195	52.40	52.51	52.57	52.67	52.82	52.92	52.82	
	55		22+290	195	52.61	52.72	52.77	52.87	53.02	53.09	53.02	
	56		22+480	190	53.16	53.28	53.34	53.44	53.61	53.38	53.61	
	57		22+670	190	53.34	53.47	53.53	53.64	53.80	53.48	53.80	
			22+845	175	53.55	53.68	53.74	53.85	54.02		54.02	잠 수 교
	58		22+885	40	53.58	53.71	53.77	53.88	54.05	53.72	54.05	
	59		23+080	195	53.71	53.84	53.91	54.02	54.18	54.00	54.18	
	60		23+280	200	53.90	54.03	54.10	54.21	54.38	54.32	54.38	
	61		23+480	200	54.16	54.29	54.36	54.50	54.70	54.56	54.70	
	62		23+670	190	54.37	54.52	54.59	54.75	54.97	54.73	54.97	
			23+835	165	54.68	54.83	54.90	55.08	55.28		55.28	모 세 골 교 (하)
	63		23+880	45	54.88	55.03	55.11	55.29	55.51	55.06	55.51	모 세 골 교 (상)
	64		24+075	195	55.20	55.35	55.43	55.62	55.82	55.30	55.82	
	65		24+265	190	55.56	55.71	55.78	55.96	56.16	55.70	56.16	
	+105		24+365	100	57.08	57.20	57.26	57.37	57.52	56.72	57.52	중 보
	66		24+465	100	57.23	57.36	57.42	57.53	57.69	58.08	58.08	
	67		24+665	200	57.49	57.62	57.69	57.80	57.97	58.36	58.36	
	68		24+865	200	57.69	57.83	57.90	58.01	58.18	58.42	58.42	
	69		25+060	195	57.92	58.07	58.14	58.27	58.46	58.59	58.59	
	70		25+255	195	57.94	58.09	58.16	58.28	58.47	58.63	58.63	
	71		25+445	190	58.46	58.62	58.70	58.84	59.04	58.82	59.04	
	+50		25+485	40	59.23	59.34	59.40	59.49	59.63	58.75	59.63	상 보
	72		25+630	145	59.39	59.50	59.56	59.65	59.80	60.22	60.22	
	73		25+850	220	59.54	59.66	59.72	59.82	59.97	60.39	60.39	
	74		26+050	200	59.86	60.00	60.07	60.18	60.36	60.68	60.68	
	+80		26+095	45	60.02	60.16	60.23	60.35	60.53	60.92	60.92	잠 수 교
	+130		26+125	30	60.08	60.22	60.29	60.41	60.59	61.01	61.01	괴 곡 철 교
	+160		26+175	50	60.16	60.31	60.38	60.49	60.68	61.23	61.23	괴 곡 교
	75		26+245	70	60.23	60.37	60.44	60.56	60.75	61.26	61.26	
	+40		26+305	60	61.55	61.65	61.70	61.78	61.91	61.08	61.70	새 보
	76		26+455	150	61.82	61.93	61.98	62.07	62.20	61.81	61.98	
	77		26+660	205	62.08	62.20	62.26	62.35	62.50	62.15	62.26	
	78		26+865	205	62.22	62.34	62.40	62.49	62.63	62.16	62.40	

하천명	측점(No.)			구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립 1	기수립 2	금회		50년	80년	100년	150년	200년	기고시	계 획	
갑	79		27+065	200	62.41	62.53	62.58	62.67	62.81	62.26	62.58	
	80		27+270	205	62.54	62.66	62.71	62.80	62.95	62.54	62.71	
천	81		27+490	220	63.05	63.20	63.27	63.39	63.57	62.64	63.27	
	82		27+675	185	63.17	63.31	63.38	63.50	63.68	62.59	63.38	
			27+710	35	63.32	63.47	63.54	63.66	63.84		63.54	잠 수 교
	83		27+885	175	63.45	63.60	63.67	63.79	63.97	63.00	63.67	
	84		28+095	210	63.94	64.10	64.17	64.31	64.51	63.39	64.17	
	85		28+295	200	64.26	64.43	64.50	64.64	64.84	63.57	64.50	
	86		28+495	200	64.45	64.60	64.70	64.84	65.03	63.89	64.70	
			28+605	110	64.71	64.86	64.97	65.09	65.26		64.97	잠 수 교
			28+675	70	64.90	65.03	65.12	65.23	65.39		65.12	흑 석 보
	87		28+690	15	64.93	65.06	65.15	65.26	65.42	64.28	65.15	
	88		28+895	205	65.39	65.51	65.58	65.67	65.82	66.33	66.33	
	89		29+090	195	65.67	65.78	65.83	65.91	66.03	66.49	66.49	
	90		29+285	195	66.41	66.56	66.63	66.75	66.94	66.90	66.90	
	91		29+495	210	66.71	66.84	66.90	67.02	67.19	66.98	66.98	
	92		29+680	185	67.11	67.26	67.33	67.45	67.65	67.06	67.33	
			29+780	100	67.33	67.48	67.55	67.68	67.88		67.55	잠 수 교
	93		29+895	115	67.46	67.61	67.68	67.80	68.00	67.06	67.68	
	94		30+105	210	67.70	67.84	67.91	68.03	68.22	67.91	67.91	매 노 천 합 류 후
	95		30+290	185	68.27	68.44	68.51	68.64	68.85	68.49	68.51	매 노 천 합 류 전
	+55		30+345	55	68.37	68.53	68.61	68.70	68.89	68.65	68.65	물 안 리 다 리
	+90		30+390	45	68.86	68.96	69.01	69.10	69.24	68.83	69.01	수 내 보
	96		30+480	90	69.00	69.11	69.17	69.25	69.40	70.54	70.54	
	97		30+680	200	69.35	69.46	69.52	69.62	69.76	70.75	70.75	
	98		30+880	200	69.79	69.92	69.99	70.08	70.24	70.85	70.85	
	99		31+070	190	70.03	70.17	70.25	70.34	70.50	70.96	70.96	
	100		31+290	220	70.59	70.74	70.81	70.91	71.07	71.20	71.20	금 곡 천 합 류 후
	101		31+470	180	71.10	71.22	71.29	71.39	71.55	71.36	71.36	금 곡 천 합 류 전
	102		31+675	205	71.29	71.41	71.48	71.58	71.74	71.72	71.72	
	103		31+880	205	71.48	71.60	71.67	71.77	71.93	71.87	71.87	
	104		32+085	205	71.73	71.85	71.92	72.02	72.19	71.97	71.97	
	105		32+285	200	72.23	72.37	72.46	72.58	72.79	72.41	72.46	
	106		32+485	200	72.38	72.53	72.62	72.73	72.95	72.47	72.62	
	107		32+680	195	72.54	72.68	72.77	72.89	73.11	72.73	72.77	
	+50		32+700	20	72.73	72.81	72.88	72.96	73.14	72.48	72.88	유 천 동 보
	108		32+885	185	72.94	73.03	73.09	73.17	73.33	73.95	73.95	
	109		33+075	190	73.40	73.51	73.57	73.67	73.86	74.31	74.31	
	110		33+270	195	73.60	73.70	73.76	73.84	74.01	74.35	74.35	
	+50		33+315	45	73.87	73.96	74.03	74.12	74.29	74.62	74.62	두 계 천 합 류 후
	111		33+510	195	74.36	74.47	74.55	74.65	74.84	74.99	74.99	두 계 천 합 류 전

하천명	측점(No.)		구간거리 (m)	금회계산수위 (EL. m)					용수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
유		0+000	0	38.14	38.14	38.14	38.14	38.14		38.14	유 등 천 하 구
등	0	0+070	70	38.16	38.16	38.16	38.16	38.16	38.50	38.16	
천	1	0+280	210	38.18	38.19	38.19	38.19	38.20	38.48	38.20	
	2	0+480	200	38.26	38.27	38.28	38.29	38.31	38.52	38.31	
	3	0+675	195	38.30	38.32	38.33	38.35	38.38	38.56	38.38	
	4	0+895	220	38.37	38.39	38.41	38.43	38.47	38.56	38.47	
	5	1+055	160	38.40	38.44	38.45	38.48	38.52	38.59	38.52	
	6	1+245	190	38.51	38.55	38.57	38.61	38.67	38.65	38.67	
	7	1+445	200	38.59	38.64	38.67	38.71	38.78	38.70	38.78	
	8	1+635	190	38.72	38.78	38.81	38.86	38.94	39.70	38.94	
		1+860	225	38.98	39.05	39.09	39.16	39.25		39.25	한 밭 대 교
	9	1+880	20	39.00	39.08	39.12	39.19	39.28	39.74	39.28	
	10	2+090	210	39.11	39.19	39.23	39.30	39.41	39.81	39.41	
	11	2+300	210	39.26	39.34	39.39	39.47	39.58	39.87	39.58	
		2+305	5	39.30	39.39	39.44	39.52	39.64		39.64	잠 수 교
	12	2+480	175	39.36	39.45	39.49	39.58	39.70	39.93	39.70	
	13	2+640	160	39.45	39.54	39.59	39.67	39.80	39.99	39.80	대 전 천 합 류 후
		2+790	150	39.90	40.01	40.06	40.15	40.28		40.28	대 전 천 합 류 전
	14	2+820	30	39.96	40.07	40.12	40.21	40.34	40.31	40.34	
	15	3+015	195	40.37	40.47	40.52	40.61	40.75	40.64	40.75	
	16	3+215	200	40.78	40.88	40.93	41.01	41.14	40.91	41.14	
		3+255	40	40.89	40.99	41.04	41.12	41.25		41.25	용 문 교
	17	3+415	160	41.07	41.17	41.21	41.29	41.41	41.14	41.41	
	18	3+615	200	41.44	41.53	41.57	41.65	41.76	41.45	41.76	
	19	3+805	190	41.93	42.02	42.06	42.14	42.26	41.91	42.26	
	20	4+005	200	42.29	42.39	42.43	42.51	42.63	42.43	42.63	
	21	4+205	200	42.69	42.79	42.83	42.92	43.04	42.75	43.04	
	22	4+400	195	43.11	43.22	43.26	43.35	43.48	43.20	43.48	
		4+460	60	44.18	44.27	44.31	44.39	44.51		44.51	유 등 1 보
	+130	4+500	40	44.25	44.35	44.39	44.48	44.60	43.75	44.60	수 침 교
	23	4+600	100	44.45	44.55	44.59	44.67	44.78	43.86	44.78	
	24	4+800	200	44.85	44.94	44.98	45.05	45.15	44.14	45.15	
	25	5+000	200	45.39	45.49	45.53	45.61	45.73	44.57	45.73	
	26	5+200	200	45.68	45.79	45.83	45.92	46.04	44.93	46.04	
	27	5+395	195	45.99	46.09	46.14	46.22	46.35	45.46	46.35	
	28	5+575	180	46.42	46.53	46.58	46.67	46.80	45.96	46.80	가 장 교
	29	5+790	215	46.65	46.76	46.80	46.89	47.02	46.25	47.02	
	30	5+990	200	47.02	47.12	47.16	47.25	47.38	46.56	47.38	
		6+130	140	47.37	47.48	47.52	47.61	47.73		47.73	태 평 교
	31	6+190	60	47.40	47.50	47.55	47.63	47.76	46.88	47.76	
	32	6+400	210	47.78	47.88	47.92	48.00	48.12	47.30	48.12	
	33	6+590	190	48.05	48.15	48.19	48.27	48.39	47.66	48.39	
	34	6+780	190	48.31	48.41	48.46	48.54	48.66	48.06	48.66	

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
유		6+960	180	48.82	48.93	48.97	49.06	49.18		49.18	유등2라바보
등	35	6+980	20	49.07	49.18	49.22	49.31	49.43	48.46	49.43	
천	+40	7+010	30	49.45	49.55	49.59	49.68	49.81	48.76	49.81	유등교
	36	7+195	185	49.72	49.82	49.87	49.95	50.08	49.24	50.08	
	37	7+385	190	50.02	50.12	50.16	50.23	50.35	49.64	50.35	
	38	7+575	190	50.61	50.70	50.75	50.82	50.93	50.01	50.93	도마교
	39	7+790	215	50.97	51.06	51.10	51.17	51.28	50.49	51.28	
		7+820	30	51.47	51.59	51.64	51.73	51.87		51.87	유등철교
	+45	7+830	10	51.59	51.71	51.76	51.86	52.00	50.75	52.00	유등철교
	40	7+980	150	51.83	51.95	52.01	52.10	52.25	51.07	52.25	
	41	8+180	200	52.34	52.45	52.49	52.57	52.70	51.57	52.70	
	42	8+390	210	52.94	53.04	53.09	53.16	53.28	52.02	53.28	버드내다리
	+60	8+440	50	55.26	55.37	55.42	55.50	55.63	54.36	55.63	산성취입보
	43	8+560	120	55.42	55.53	55.58	55.66	55.79	55.83	55.79	
	44	8+780	220	55.70	55.81	55.86	55.95	56.09	56.07	56.09	
	45	8+990	210	55.92	56.03	56.08	56.17	56.30	56.15	56.30	
	+25	9+010	20	55.99	56.10	56.15	56.24	56.37	56.32	56.37	복수교
	46	9+190	180	56.22	56.33	56.38	56.47	56.60	56.55	56.60	
	47	9+395	205	56.51	56.62	56.67	56.75	56.89	56.67	56.89	
	48	9+595	200	56.99	57.09	57.14	57.23	57.35	57.01	57.35	
	49	9+795	200	57.75	57.84	57.89	57.96	58.08	57.32	58.08	
	50	9+995	200	58.26	58.34	58.38	58.45	58.55	57.60	58.55	
	51	10+195	200	59.10	59.23	59.29	59.39	59.55	58.39	59.55	
	52	10+400	205	59.78	59.92	59.99	60.11	60.29	59.34	60.29	
	53	10+585	185	60.06	60.19	60.26	60.36	60.53	59.58	60.53	
	+160	10+735	150	60.51	60.63	60.69	60.78	60.94	60.06	60.94	안영교
	54	10+785	50	60.67	60.79	60.84	60.94	61.10	60.05	60.94	
	55	10+985	200	60.83	60.94	61.00	61.10	61.26	60.68	61.00	
		11+045	60	61.47	61.57	61.63	61.73	61.89		61.63	성산보
	56	11+195	150	61.80	61.92	61.98	62.09	62.26	61.60	61.98	
	57	11+390	195	62.24	62.37	62.44	62.55	62.73	62.27	62.44	
	58	11+515	125	62.78	62.91	62.99	63.11	63.31	64.69	64.69	
		11+520	5	62.87	63.00	63.08	63.21	63.41		64.69	만성교
		11+530	10	63.28	63.37	63.43	63.52	63.67		64.70	만성라바보
	59	11+790	260	63.36	63.46	63.53	63.62	63.76	64.81	64.81	
	60	11+960	170	63.56	63.67	63.75	63.85	64.02	64.87	64.87	
	61	12+180	220	64.35	64.47	64.55	64.66	64.84	65.23	65.23	
	62	12+370	190	64.75	64.86	64.92	65.02	65.19	65.29	65.29	
	63	12+575	205	64.96	65.05	65.10	65.17	65.30	66.00	66.00	
	64	12+780	205	66.24	66.34	66.39	66.49	66.62	66.32	66.39	
	65	12+970	190	66.69	66.78	66.83	66.92	67.05	66.73	66.83	
	66	13+180	210	66.93	66.99	67.03	67.08	67.15	67.20	67.20	
	+40	13+230	50	67.63	67.73	67.80	67.90	68.06	66.91	67.80	침산교

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					용수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
유	+75	13+275	45	67.81	67.93	68.01	68.12	68.30	67.74	68.01	무 수 1 교
등	67	13+370	95	67.90	68.02	68.09	68.20	68.36	68.37	68.37	
천	68	13+570	200	68.56	68.66	68.72	68.82	68.96	68.72	68.72	
	69	13+750	180	69.08	69.17	69.23	69.33	69.47	68.80	69.23	
	70	14+030	280	69.94	70.06	70.12	70.23	70.40	69.10	70.12	정생천합류후
	71	14+190	160	70.46	70.57	70.63	70.74	70.90	69.31	70.63	정생천합류전
	+40	14+245	55	70.63	70.73	70.80	70.88	71.04	69.97	70.80	침 산 하 보
	72	14+390	145	71.15	71.26	71.32	71.40	71.55	71.67	71.67	
	73	14+555	165	71.58	71.68	71.75	71.83	71.98	71.74	71.75	
		14+590	35	71.79	71.90	71.96	72.04	72.20		71.96	수 련 교
	74	14+800	210	72.57	72.68	72.75	72.84	73.02	71.93	72.75	
	+180	14+960	160	73.65	73.73	73.78	73.84	73.96	73.24	73.78	침 산 상 보
	75	15+000	40	73.73	73.81	73.86	73.92	74.04	74.12	74.12	
	76	15+200	200	74.11	74.19	74.25	74.32	74.46	74.32	74.32	
	77	15+400	200	74.91	75.04	75.12	75.22	75.40	74.41	75.12	
	78	15+600	200	75.73	75.84	75.91	76.03	76.21	74.70	75.91	

건설교통부

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
미	0	0+000	0	25.42	25.42	25.42	25.42	25.42	25.42	25.42	미 호 천 하 구
호	1	0+200	200	25.44	25.43	25.44	25.45	25.45	25.43	25.44	
천		0+240	40	25.44	25.43	25.44	25.45	25.45		25.44	합 강 보
	2	0+390	150	25.45	25.45	25.46	25.46	25.47	25.45	25.46	
	3	0+630	240	25.54	25.56	25.57	25.60	25.62	25.50	25.57	
	4	0+890	260	25.59	25.61	25.63	25.66	25.69	25.58	25.63	
		0+920	30	25.60	25.63	25.65	25.68	25.71		25.65	월 산 교
	5	1+130	210	25.60	25.63	25.65	25.69	25.72	25.61	25.65	
	6	1+330	200	25.61	25.64	25.66	25.69	25.72	25.62	25.66	
	7	1+560	230	25.61	25.64	25.66	25.70	25.73	25.63	25.66	
	8	1+790	230	25.62	25.65	25.67	25.71	25.74	25.72	25.72	
	9	2+010	220	25.70	25.74	25.77	25.82	25.86	25.81	25.81	
	10	2+150	140	25.85	25.92	25.97	26.04	26.10	25.90	25.97	
	11	2+430	280	25.91	25.99	26.03	26.12	26.18	26.06	26.06	
	12	2+630	200	26.01	26.11	26.16	26.27	26.34	26.24	26.24	
	13	2+850	220	26.13	26.25	26.31	26.43	26.51	26.42	26.42	
	14	3+010	160	26.19	26.32	26.39	26.51	26.60	26.55	26.55	
	15	3+200	190	26.22	26.35	26.42	26.55	26.65	26.59	26.59	
	16	3+390	190	26.22	26.35	26.42	26.56	26.66	26.60	26.60	연 기 천 합 류 후
	17	3+620	230	26.24	26.38	26.45	26.58	26.67	26.64	26.64	연 기 천 합 류 전
	18	3+770	150	26.25	26.38	26.45	26.58	26.68	26.66	26.66	
	19	3+950	180	26.25	26.39	26.46	26.59	26.69	26.68	26.68	
	20	4+150	200	26.29	26.42	26.50	26.63	26.73	26.71	26.71	
	21	4+310	160	26.35	26.50	26.58	26.72	26.82	26.77	26.77	
	22	4+440	130	26.37	26.52	26.60	26.74	26.85	26.82	26.82	
	23	4+610	170	26.38	26.53	26.61	26.76	26.86	26.83	26.83	
	24	4+840	230	26.39	26.54	26.62	26.77	26.87	26.83	26.83	
	25	5+020	180	26.39	26.54	26.62	26.77	26.87	26.83	26.83	
	26	5+230	210	26.41	26.56	26.64	26.78	26.89	26.84	26.84	
	27	5+440	210	26.45	26.60	26.69	26.83	26.94	26.88	26.88	
	28	5+660	220	26.46	26.62	26.71	26.85	26.96	26.94	26.94	월 하 천 합 류 후
	29	5+920	260	26.48	26.64	26.73	26.88	26.99	26.98	26.98	월 하 천 합 류 전
	30	6+100	180	26.52	26.68	26.77	26.92	27.03	27.01	27.01	
	31	6+280	180	26.55	26.72	26.81	26.96	27.08	27.06	27.06	
	32	6+480	200	26.57	26.74	26.83	26.99	27.10	27.10	27.10	
	33	6+680	200	26.61	26.78	26.87	27.03	27.15	27.14	27.14	
	34	6+900	220	26.63	26.81	26.90	27.06	27.18	27.22	27.22	
	35	7+130	230	26.64	26.82	26.91	27.08	27.20	27.28	27.28	
	36	7+390	260	26.69	26.87	26.96	27.13	27.25	27.36	27.36	
	37	7+620	230	26.69	26.87	26.97	27.14	27.26	27.37	27.37	
	38	7+860	240	26.74	26.93	27.03	27.20	27.32	27.41	27.41	
	39	8+060	200	26.78	26.98	27.07	27.25	27.37	27.44	27.44	
	40	8+240	180	26.82	27.02	27.11	27.29	27.42	27.55	27.55	

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					용수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
미	41	8+380	140	26.85	27.05	27.14	27.32	27.45	27.58	27.58	
호	42	8+560	180	26.93	27.13	27.23	27.41	27.54	27.59	27.59	조 천 합 류 후
천	43	8+760	200	26.93	27.13	27.23	27.41	27.54	27.61	27.61	조 천 합 류 전
	44	8+890	130	26.94	27.14	27.23	27.41	27.54	27.62	27.62	
		9+045	155	27.01	27.22	27.32	27.50	27.63		27.63	수 몰 두 강 보
	45	9+090	45	27.11	27.32	27.43	27.62	27.75	27.63	27.63	수몰두강다리(차)
	+30	9+120	30	27.11	27.32	27.43	27.62	27.75	27.63	27.63	수몰두강다리(사)
	46	9+290	170	27.12	27.34	27.44	27.63	27.77	27.63	27.63	
	47	9+490	200	27.19	27.41	27.52	27.71	27.84	27.74	27.74	
	48	9+680	190	27.26	27.49	27.60	27.80	27.93	27.78	27.78	
	+150	9+840	160	27.31	27.56	27.68	27.89	28.04	27.86	27.86	신 미 호 교
	49	9+900	60	27.35	27.60	27.72	27.93	28.08	27.89	27.89	
	50	10+080	180	27.40	27.65	27.77	27.98	28.14	27.97	27.97	
	51	10+240	160	27.50	27.76	27.88	28.10	28.26	28.08	28.08	
	52	10+480	240	27.53	27.79	27.91	28.13	28.29	28.14	28.14	
	53	10+690	210	27.57	27.82	27.94	28.16	28.32	28.14	28.14	
	54	10+890	200	27.63	27.89	28.01	28.23	28.38	28.17	28.17	
	55	11+120	230	27.69	27.95	28.07	28.29	28.44	28.25	28.25	
	56	11+310	190	27.77	28.04	28.16	28.38	28.54	28.31	28.31	
	57	11+520	210	27.82	28.09	28.22	28.44	28.60	28.35	28.35	
	58	11+710	190	27.96	28.23	28.35	28.58	28.74	28.39	28.39	
	59	11+900	190	27.98	28.25	28.38	28.60	28.76	28.43	28.43	
	60	12+140	240	28.01	28.28	28.40	28.63	28.78	28.52	28.52	
	61	12+340	200	28.15	28.43	28.55	28.78	28.94	28.62	28.62	
	62	12+560	220	28.21	28.49	28.62	28.85	29.01	28.70	28.70	
	63	12+850	290	28.27	28.54	28.67	28.90	29.07	28.73	28.73	
	64	13+110	260	28.36	28.63	28.76	29.00	29.16	28.75	28.76	
	65	13+320	210	28.39	28.67	28.80	29.03	29.20	28.81	28.81	
	66	13+530	210	28.43	28.70	28.84	29.07	29.24	28.84	28.84	
	67	13+780	250	28.47	28.75	28.88	29.11	29.28	28.89	28.89	고 속 철 도 교
	68	14+020	240	28.51	28.79	28.92	29.16	29.32	28.93	28.93	
	69	14+160	140	28.56	28.84	28.97	29.21	29.37	28.94	28.97	
	70	14+360	200	28.61	28.89	29.02	29.25	29.42	28.98	29.02	
	71	14+550	190	28.63	28.91	29.04	29.28	29.44	28.98	29.04	
	72	14+740	190	28.66	28.94	29.07	29.31	29.47	29.03	29.07	
	73	14+930	190	28.66	28.94	29.07	29.31	29.48	29.11	29.11	
	74	15+110	180	28.68	28.96	29.09	29.33	29.50	29.13	29.13	
	75	15+270	160	28.76	29.03	29.16	29.39	29.55	29.14	29.16	
	76	15+550	280	28.77	29.03	29.16	29.41	29.57	29.19	29.19	
	77	15+730	180	28.81	29.08	29.20	29.43	29.58	29.23	29.23	
	+100	15+830	100	28.92	29.19	29.32	29.54	29.70	29.27	29.32	미 호 천 교
	78	15+940	110	29.00	29.27	29.40	29.63	29.79	29.30	29.40	
	+10	15+950	10	29.02	29.29	29.42	29.65	29.82	29.33	29.42	미 호 철 교 (상)

하천명	측점(No.)		구간거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
미		15+960	10	29.09	29.37	29.50	29.74	29.91		29.50	미호철교(하)
호	79	16+150	190	29.23	29.52	29.66	29.90	30.07	29.42	29.66	
천	80	16+360	210	29.41	29.71	29.84	30.10	30.27	29.59	29.84	
	81	16+500	140	29.43	29.72	29.85	30.10	30.27	29.62	29.85	병천천합류후
	82	16+680	180	29.45	29.73	29.87	30.11	30.28	29.72	29.87	병천천합류전
	83	16+850	170	29.52	29.81	29.94	30.18	30.35	29.77	29.94	
	84	16+970	120	29.54	29.82	29.95	30.19	30.36	29.87	29.95	
	85	17+180	210	29.74	30.04	30.17	30.41	30.59	29.95	30.17	
	86	17+380	200	29.82	30.11	30.24	30.49	30.66	30.03	30.24	
	87	17+570	190	29.93	30.22	30.35	30.60	30.77	30.14	30.35	
	88	17+760	190	30.00	30.30	30.43	30.68	30.85	30.28	30.43	
	89	17+980	220	30.14	30.43	30.57	30.81	30.98	30.39	30.57	
	90	18+170	190	30.24	30.53	30.67	30.91	31.09	30.55	30.67	
	91	18+370	200	30.31	30.60	30.74	30.99	31.16	30.64	30.74	
	92	18+570	200	30.48	30.77	30.90	31.14	31.31	30.79	30.90	
	93	18+770	200	30.61	30.90	31.03	31.27	31.44	30.92	31.03	
	94	18+960	190	30.71	31.00	31.13	31.37	31.54	31.05	31.13	
	95	19+160	200	30.87	31.16	31.29	31.53	31.69	31.17	31.29	
	96	19+360	200	30.97	31.26	31.39	31.63	31.80	31.28	31.39	
		19+530	170	31.13	31.42	31.56	31.80	31.97		31.56	미 호 천 교
	97	19+580	50	31.18	31.47	31.61	31.85	32.01	31.47	31.61	
	+30	19+600	20	31.28	31.57	31.71	31.95	32.12	31.58	31.71	구 경 부 고 속
	98	19+790	190	31.39	31.69	31.82	32.06	32.23	31.60	31.82	
	99	20+010	220	31.50	31.80	31.93	32.17	32.34	31.75	31.93	
	100	20+230	220	31.62	31.91	32.04	32.29	32.45	31.85	32.04	
	101	20+430	200	31.75	32.04	32.18	32.42	32.59	31.97	32.18	
	102	20+650	220	31.85	32.14	32.28	32.52	32.69	32.11	32.28	
	+120	20+770	120	31.94	32.24	32.38	32.62	32.79	32.22	32.38	옥 산 교
	103	20+840	70	32.01	32.31	32.45	32.70	32.87	32.28	32.45	
	104	21+070	230	32.14	32.45	32.59	32.84	33.01	32.39	32.59	석남천합류후
	105	21+280	210	32.14	32.50	32.64	32.89	33.06	32.40	32.64	석남천합류전
	106	21+450	170	32.14	32.54	32.68	32.93	33.09	32.48	32.68	
	107	21+660	210	32.30	32.59	32.73	32.98	33.14	32.59	32.73	
	108	21+880	220	32.41	32.70	32.84	33.08	33.25	32.73	32.84	
	109	22+080	200	32.53	32.82	32.96	33.21	33.37	32.85	32.96	
	110	22+280	200	32.70	32.99	33.13	33.37	33.53	32.99	33.13	
	111	22+460	180	32.82	33.11	33.25	33.50	33.66	33.17	33.25	
	112	22+640	180	32.91	33.20	33.34	33.58	33.75	33.22	33.34	
	113	22+830	190	33.00	33.29	33.43	33.67	33.84	33.27	33.43	
	114	23+020	190	33.03	33.32	33.45	33.70	33.86	33.35	33.45	
	115	23+220	200	33.22	33.52	33.65	33.90	34.07	33.45	33.65	
	116	23+420	200	33.30	33.59	33.73	33.98	34.14	33.49	33.73	
	117	23+600	180	33.36	33.65	33.79	34.04	34.20	33.58	33.79	

하천명	측점(No.)		구간거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
미	118	23+810	210	33.49	33.78	33.92	34.18	34.34	33.67	33.92	
호	119	24+010	200	33.63	33.93	34.08	34.33	34.51	33.82	34.08	
천	120	24+150	140	33.66	33.96	34.10	34.36	34.53	33.83	34.10	
	121	24+350	200	33.71	34.00	34.15	34.40	34.57	33.87	34.15	
	122	24+530	180	33.76	34.06	34.20	34.46	34.63	33.91	34.20	
	123	24+710	180	33.82	34.12	34.26	34.52	34.69	33.94	34.26	
	124	24+920	210	33.88	34.18	34.32	34.57	34.75	34.00	34.32	
	125	25+120	200	33.95	34.25	34.39	34.64	34.82	34.07	34.39	
	126	25+320	200	34.06	34.35	34.50	34.75	34.92	34.14	34.50	
	127	25+520	200	34.07	34.37	34.51	34.76	34.93	34.20	34.51	
	128	25+690	170	34.15	34.44	34.58	34.83	35.00	34.20	34.58	
	+20	25+710	20	34.23	34.53	34.67	34.92	35.09	34.25	34.67	미 호 천 교
	129	25+930	220	34.32	34.61	34.75	35.00	35.17	34.35	34.75	
	130	26+150	220	34.39	34.67	34.81	35.06	35.23	34.39	34.81	
	131	26+360	210	34.48	34.77	34.90	35.15	35.31	34.53	34.90	
	132	26+570	210	34.64	34.91	35.05	35.29	35.45	34.65	35.05	
	+50	26+620	50	34.67	34.95	35.08	35.32	35.48	34.70	35.08	작 천 보
	133	26+800	180	34.95	35.21	35.34	35.57	35.72	34.97	35.34	
	134	27+010	210	35.06	35.31	35.43	35.66	35.81	34.99	35.43	
	135	27+230	220	35.23	35.48	35.61	35.83	35.98	35.11	35.61	무 심 천 합 류 후
	136	27+520	290	35.46	35.71	35.83	36.05	36.20	35.33	35.83	무 심 천 합 류 전
	137	27+760	240	35.53	35.78	35.90	36.11	36.26	35.40	35.90	
	138	27+890	130	35.53	35.83	35.90	36.11	36.26	35.49	35.90	
	139	28+210	320	35.69	35.94	36.06	36.27	36.42	35.63	36.06	
	140	28+410	200	35.77	36.02	36.14	36.35	36.50	35.78	36.14	
	141	28+630	220	35.87	36.11	36.23	36.45	36.60	35.86	36.23	
	142	28+840	210	35.87	36.12	36.24	36.45	36.60	35.86	36.24	
	143	29+000	160	35.95	36.19	36.31	36.52	36.66	35.90	36.31	
	144	29+180	180	36.03	36.27	36.39	36.60	36.74	35.93	36.39	
	145	29+370	190	36.11	36.35	36.46	36.67	36.81	36.04	36.46	
	146	29+670	300	36.24	36.48	36.59	36.80	36.94	36.32	36.59	
	147	29+870	200	36.36	36.59	36.71	36.91	37.05	36.46	36.71	
	148	30+090	220	36.44	36.68	36.79	37.00	37.14	36.58	36.79	
	149	30+330	240	36.52	36.76	36.87	37.07	37.21	36.72	36.87	
		30+390	60	36.53	36.77	36.89	37.09	37.23		36.89	공 항 대 교
	150	30+550	160	36.58	36.82	36.93	37.14	37.28	36.83	36.93	
	151	30+730	180	36.64	36.88	37.00	37.20	37.34	36.92	37.00	
	152	30+910	180	36.66	36.90	37.01	37.22	37.36	36.97	37.01	
	153	31+120	210	36.73	36.97	37.09	37.29	37.43	37.03	37.09	
	154	31+290	170	36.77	37.01	37.13	37.33	37.47	37.07	37.13	
	155	31+450	160	36.85	37.09	37.20	37.40	37.54	37.14	37.20	
	156	31+650	200	36.97	37.20	37.31	37.51	37.65	37.27	37.31	
		31+680	30	37.02	37.26	37.37	37.57	37.71		37.37	공 사 중 교 량

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
미	157	31+830	150	37.09	37.32	37.43	37.63	37.77	37.40	37.43	
호	158	32+060	230	37.26	37.49	37.60	37.79	37.92	37.64	37.64	
천	+90	32+150	90	37.51	37.74	37.85	38.04	38.18	37.85	37.85	팔 결 교
	159	32+220	70	37.53	37.76	37.87	38.06	38.20	37.92	37.92	
	160	32+420	200	37.58	37.82	37.93	38.12	38.26	38.13	38.13	
	161	32+610	190	37.66	37.89	38.00	38.19	38.33	38.13	38.13	
	162	32+740	130	37.69	37.92	38.03	38.22	38.36	38.19	38.19	
	163	32+910	170	37.79	38.02	38.13	38.32	38.45	38.35	38.35	
	164	33+080	170	37.95	38.17	38.27	38.45	38.59	38.54	38.54	석 화 천 합 류 후
	165	33+270	190	38.08	38.30	38.40	38.58	38.71	38.65	38.65	
	166	33+420	150	38.17	38.40	38.50	38.68	38.81	38.94	38.94	
	167	33+630	210	38.37	38.62	38.72	38.89	39.02	39.13	39.13	
	168	33+840	210	38.43	38.68	38.78	38.96	39.09	39.29	39.29	
	169	34+030	190	38.51	38.76	38.86	39.04	39.17	39.45	39.45	
	170	34+240	210	38.67	38.92	39.02	39.20	39.34	39.63	39.63	
	171	34+390	150	38.73	38.99	39.09	39.27	39.41	39.73	39.73	성 암 천 합 류 후
	172	34+570	180	38.74	38.99	39.09	39.27	39.41	39.73	39.73	성 암 천 합 류 전
	173	34+750	180	38.85	39.09	39.19	39.36	39.49	39.83	39.83	
	174	34+940	190	38.93	39.16	39.26	39.44	39.56	39.99	39.99	
	175	35+130	190	39.07	39.30	39.40	39.57	39.70	40.03	40.03	
	176	35+330	200	39.16	39.39	39.48	39.66	39.79	40.22	40.22	
	177	35+530	200	39.20	39.43	39.53	39.71	39.83	40.54	40.54	
	178	35+740	210	39.28	39.51	39.61	39.79	39.91	40.87	40.87	
	179	35+880	140	39.42	39.65	39.74	39.92	40.04	41.08	41.08	
	180	36+120	240	39.58	39.78	39.88	40.05	40.17	41.12	41.12	
	181	36+300	180	39.80	40.02	40.12	40.31	40.44	41.40	41.40	
	182	36+490	190	39.93	40.15	40.26	40.45	40.58	41.56	41.56	
	183	36+680	190	40.11	40.33	40.43	40.62	40.75	41.76	41.76	
	184	36+880	200	40.20	40.42	40.52	40.71	40.84	41.85	41.85	
	185	37+080	200	40.39	40.60	40.70	40.89	41.01	41.90	41.90	
	186	37+290	210	40.53	40.74	40.85	41.03	41.15	42.01	42.01	
	187	37+490	200	40.58	40.79	40.89	41.07	41.19	42.22	42.22	
	188	37+710	220	40.87	41.05	41.14	41.29	41.40	42.25	42.25	
	189	37+930	220	41.48	41.68	41.77	41.94	42.05	42.59	42.59	
	190	38+140	210	41.66	41.86	41.96	42.13	42.24	42.82	42.82	
	191	38+340	200	41.87	42.07	42.17	42.35	42.46	42.90	42.90	
	192	38+510	170	41.96	42.16	42.25	42.43	42.54	42.92	42.92	
	193	38+710	200	42.01	42.21	42.30	42.47	42.57	43.06	43.06	
	194	38+900	190	42.26	42.46	42.56	42.73	42.85	43.38	43.38	보 강 천 합 류 후
		39+090	190	42.35	42.55	42.64	42.81	42.92		43.42	보 강 천 합 류 전
	195	39+110	20	42.35	42.57	42.66	42.83	42.94	43.42	43.42	
	196	39+330	220	42.56	42.75	42.85	43.02	43.13	43.46	43.46	
	+155	39+485	155	42.87	43.09	43.20	43.38	43.51	43.92	43.92	구 여 암 교

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
논	0	0+000	0	9.09	9.09	9.09	9.09	9.09	8.91	9.09	논산천하구
산	+170	0+170	170	9.11	9.10	9.11	9.10	9.10	8.91	9.11	강경보
천	1	0+220	50	9.12	9.13	9.13	9.13	9.14	8.92	9.13	
	2	0+420	200	9.14	9.14	9.14	9.15	9.15	8.94	9.14	강경천합류후
	3	0+620	200	9.14	9.14	9.14	9.15	9.15	8.94	9.14	강경천합류전
	4	0+820	200	9.15	9.15	9.15	9.16	9.17	8.95	9.15	
	+20	0+835	15	9.17	9.18	9.19	9.20	9.21	8.95	9.19	강경대교(구)
	+33	0+845	10	9.18	9.18	9.19	9.20	9.22	8.96	9.19	강경대교(신)
	5	1+035	190	9.19	9.20	9.21	9.22	9.23	8.97	9.21	
	6	1+220	185	9.20	9.21	9.22	9.24	9.26	8.99	9.22	
	7	1+420	200	9.21	9.23	9.24	9.26	9.28	9.00	9.24	
	8	1+620	200	9.22	9.24	9.25	9.28	9.30	9.02	9.25	
	9	1+820	200	9.24	9.27	9.28	9.31	9.33	9.04	9.28	
	10	2+020	200	9.26	9.28	9.30	9.33	9.36	9.06	9.30	
	11	2+240	220	9.27	9.30	9.32	9.36	9.39	9.08	9.32	
	12	2+450	210	9.29	9.32	9.34	9.38	9.42	9.10	9.34	
	13	2+660	210	9.31	9.35	9.37	9.41	9.45	9.12	9.37	
	14	2+860	200	9.32	9.37	9.39	9.44	9.48	9.15	9.39	
	15	3+070	210	9.34	9.38	9.41	9.46	9.50	9.17	9.41	
	16	3+260	190	9.35	9.40	9.42	9.48	9.52	9.18	9.42	
	17	3+450	190	9.36	9.41	9.44	9.49	9.54	9.20	9.44	
	18	3+660	210	9.37	9.43	9.46	9.51	9.56	9.22	9.46	
	19	3+830	170	9.39	9.45	9.48	9.54	9.59	9.24	9.48	
	20	4+040	210	9.40	9.47	9.50	9.56	9.61	9.26	9.50	
	21	4+225	185	9.42	9.48	9.52	9.58	9.64	9.29	9.52	
		4+265	40	9.43	9.50	9.54	9.60	9.66		9.54	방축천합류후
	22	4+435	170	9.45	9.53	9.57	9.64	9.70	9.33	9.57	방축천합류전
	23	4+625	190	9.46	9.54	9.58	9.66	9.72	9.34	9.58	
	24	4+845	220	9.48	9.56	9.60	9.68	9.74	9.36	9.60	
	25	5+040	195	9.49	9.58	9.62	9.70	9.76	9.38	9.62	
	26	5+235	195	9.51	9.60	9.64	9.72	9.79	9.40	9.64	
	27	5+425	190	9.53	9.61	9.66	9.74	9.81	9.42	9.66	
	28	5+640	215	9.54	9.63	9.68	9.77	9.83	9.44	9.68	
	29	5+845	205	9.56	9.66	9.70	9.79	9.86	9.45	9.70	
	30	6+055	210	9.58	9.68	9.72	9.82	9.89	9.48	9.72	
	31	6+260	205	9.59	9.69	9.74	9.83	9.91	9.49	9.74	
	32	6+470	210	9.62	9.72	9.77	9.87	9.94	9.52	9.77	
	33	6+670	200	9.64	9.74	9.79	9.89	9.96	9.54	9.79	
	34	6+890	220	9.66	9.76	9.81	9.91	9.99	9.55	9.81	
	35	7+075	185	9.69	9.80	9.85	9.96	10.03	9.58	9.85	
	36	7+285	210	9.71	9.82	9.88	9.98	10.07	9.60	9.88	
	37	7+505	220	9.74	9.85	9.91	10.01	10.10	9.63	9.91	
	38	7+705	200	9.76	9.88	9.94	10.05	10.13	9.65	9.94	

건설기술연구원

하천명	측점(No.)		구간거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
논		7+735	30	9.77	9.88	9.95	10.06	10.14		9.95	논 산 신 대 교
산	39	7+895	160	9.78	9.90	9.96	10.07	10.16	9.67	9.96	
천	40	8+095	200	9.80	9.92	9.99	10.10	10.19	9.69	9.99	
	41	8+285	190	9.83	9.96	10.03	10.15	10.25	9.72	10.03	논 산 대 교
	42	8+465	180	9.85	9.98	10.04	10.17	10.27	9.75	10.04	
	43	8+660	195	9.88	10.01	10.08	10.21	10.31	9.78	10.08	
	44	8+855	195	9.91	10.04	10.11	10.24	10.34	9.81	10.11	
	45	9+070	215	9.95	10.09	10.16	10.30	10.40	9.85	10.16	
	46	9+245	175	10.00	10.15	10.22	10.36	10.47	9.90	10.22	노 성 천 합 류 후
	47	9+465	220	10.02	10.17	10.24	10.39	10.49	9.91	10.24	노 성 천 합 류 전
	48	9+670	205	10.04	10.19	10.26	10.41	10.52	9.93	10.26	
	49	9+875	205	10.06	10.21	10.29	10.43	10.54	9.94	10.29	
	+180	10+065	190	10.07	10.23	10.31	10.45	10.56	9.94	10.31	합 천 잠 수 교
	50	10+085	20	10.09	10.24	10.32	10.47	10.58	9.95	10.32	
	51	10+275	190	10.12	10.28	10.36	10.51	10.62	10.00	10.36	
	52	10+475	200	10.14	10.30	10.38	10.53	10.64	10.04	10.38	
	90	10+585	110	10.18	10.34	10.43	10.58	10.69	10.04	10.43	덕 지 잠 수 교
	53	10+665	80	10.20	10.36	10.44	10.60	10.71	10.04	10.44	
	54	10+875	210	10.23	10.40	10.48	10.64	10.75	10.09	10.48	
	55	11+085	210	10.27	10.44	10.53	10.68	10.80	10.14	10.53	
	+140	11+205	120	10.30	10.47	10.56	10.72	10.85	10.20	10.56	논 산 철 교 (상)
	+160	11+220	15	10.31	10.49	10.58	10.74	10.87	10.24	10.58	논 산 철 교 (하)
	56	11+280	60	10.32	10.50	10.59	10.75	10.88	10.27	10.59	
	+120	11+380	100	10.37	10.55	10.64	10.81	10.95	10.31	10.64	아 호 교
	+170	11+430	50	10.38	10.56	10.65	10.83	10.96	10.31	10.65	계 백 교
	57	11+480	50	10.38	10.56	10.66	10.83	10.96	10.31	10.66	
	58	11+680	200	10.41	10.59	10.69	10.86	10.99	10.32	10.69	
	59	11+865	185	10.44	10.63	10.72	10.89	11.03	10.38	10.72	
	60	12+080	215	10.49	10.68	10.78	10.95	11.09	10.44	10.78	
	61	12+275	195	10.52	10.71	10.81	10.98	11.12	10.49	10.81	
	62	12+475	200	10.54	10.74	10.83	11.01	11.15	10.51	10.83	
	63	12+695	220	10.58	10.77	10.87	11.05	11.18	10.56	10.87	
	64	12+885	190	10.60	10.80	10.90	11.07	11.21	10.58	10.90	
	65	13+095	210	10.63	10.83	10.93	11.10	11.24	10.63	10.93	
	66	13+280	185	10.69	10.88	10.98	11.16	11.29	10.67	10.98	
		13+470	190	10.78	10.98	11.08	11.26	11.39		11.08	상 평 낙 차 공
	67	13+490	20	10.78	10.98	11.08	11.26	11.39	10.73	11.08	
	68	13+680	190	10.82	11.02	11.13	11.30	11.44	10.77	11.13	
	+130	13+810	130	10.94	11.13	11.23	11.40	11.53	10.89	11.23	신 교 잠 수 교
		13+860	50	11.05	11.24	11.35	11.52	11.65		11.35	성 평 취 입 보
	69	13+875	15	11.05	11.25	11.36	11.52	11.66	10.97	11.36	
	70	14+095	220	11.10	11.30	11.41	11.57	11.70	11.06	11.41	
	71	14+285	190	11.27	11.46	11.56	11.72	11.84	11.27	11.56	

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					용수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
논	72	14+465	180	11.38	11.57	11.67	11.82	11.94	11.43	11.67	
산	73	14+645	180	11.48	11.66	11.76	11.91	12.02	11.53	11.76	
천	74	14+845	200	11.75	11.91	12.00	12.13	12.24	11.77	12.00	
	75	15+045	200	12.03	12.18	12.26	12.38	12.48	12.01	12.26	
	76	15+245	200	12.34	12.58	12.64	12.73	12.81	12.27	12.64	
	77	15+445	200	13.20	13.37	13.44	13.54	13.61	12.87	13.44	
	78	15+645	200	13.25	13.42	13.49	13.59	13.67	12.91	13.49	
	79	15+835	190	13.49	13.65	13.72	13.83	13.93	13.33	13.72	
	80	16+035	200	13.75	13.90	13.97	14.07	14.21	13.63	13.97	왕암천합류후
	81	16+320	285	14.36	14.50	14.58	14.68	14.84	14.11	14.58	왕암천합류전
		16+590	270	15.99	16.16	16.24	16.36	16.45		16.24	탑정낙차공
		16+670	80	16.36	16.49	16.56	16.66	16.73		16.56	

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하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
노	0	0+000	0	10.22	10.22	10.22	10.22	10.22	9.90	10.22	노 성 천 하 구
성	1	0+130	130	10.22	10.23	10.23	10.23	10.23	9.92	10.23	
천	2	0+335	205	10.28	10.29	10.30	10.31	10.32	9.94	10.30	
	3	0+525	190	10.33	10.36	10.37	10.40	10.42	9.97	10.37	
		0+565	40	10.37	10.40	10.42	10.46	10.49		10.42	노 성 대 교
	4	0+725	160	10.39	10.43	10.45	10.49	10.52	10.03	10.45	
	5	0+925	200	10.45	10.50	10.52	10.57	10.61	10.11	10.52	
	+100	1+035	110	10.52	10.58	10.62	10.68	10.73	10.17	10.62	호 산 잠 수 교
	6	1+115	80	10.52	10.59	10.62	10.69	10.74	10.20	10.62	
	7	1+325	210	10.59	10.67	10.71	10.79	10.84	10.30	10.71	
	8	1+545	220	10.67	10.76	10.81	10.90	10.96	10.41	10.81	
	9	1+750	205	10.74	10.84	10.89	10.99	11.06	10.54	10.89	
	10	1+970	220	10.82	10.93	10.99	11.10	11.18	10.56	10.99	
	11	2+175	205	10.88	11.00	11.07	11.19	11.27	10.71	11.07	
	12	2+380	205	10.95	11.08	11.15	11.27	11.36	10.82	11.15	
	13	2+585	205	11.02	11.15	11.22	11.36	11.45	10.88	11.22	
	14	2+785	200	11.10	11.24	11.32	11.46	11.55	11.00	11.32	
	15	2+985	200	11.16	11.32	11.39	11.54	11.64	11.12	11.39	
	16	3+190	205	11.34	11.50	11.59	11.75	11.86	11.22	11.59	거 교 보
	17	3+395	205	11.47	11.65	11.73	11.90	12.02	11.29	11.73	
	18	3+605	210	11.58	11.77	11.86	12.04	12.16	11.44	11.86	
	19	3+815	210	11.66	11.85	11.95	12.13	12.25	11.64	11.95	
	20	4+020	205	11.76	11.97	12.06	12.25	12.37	11.75	12.06	
	21	4+205	185	11.87	12.08	12.18	12.37	12.50	11.94	12.18	
	22	4+400	195	11.98	12.19	12.30	12.49	12.62	12.09	12.30	
	+130	4+530	130	12.05	12.27	12.38	12.57	12.70	12.17	12.38	항 월 장 수 교
	23	4+580	50	12.08	12.30	12.41	12.60	12.74	12.19	12.41	
	24	4+750	170	12.20	12.43	12.55	12.75	12.89	12.38	12.55	연 산 천 합 류 후
	+190	4+920	170	12.31	12.55	12.67	12.88	13.02	12.50	12.67	연 산 천 합 류 전
	25	4+980	60	12.31	12.55	12.67	12.88	13.02	12.51	12.67	
	26	5+130	150	12.33	12.56	12.68	12.89	13.03	12.52	12.68	

하천명	측점(No.)		구간거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
강	0	0+000	0	9.14	9.14	9.14	9.14	9.14	8.94	9.14	강 경 천 하 구
경	1	0+200	200	9.15	9.15	9.15	9.15	9.15	8.94	9.15	
천	+75	0+275	75	9.15	9.15	9.15	9.15	9.16	8.94	9.15	하 강 경 교 (구)
	+85	0+290	15	9.16	9.16	9.16	9.16	9.17	8.94	9.16	하 강 경 교 (신)
	2	0+415	125	9.17	9.17	9.17	9.18	9.18	8.94	9.17	
	3	0+610	195	9.18	9.18	9.19	9.19	9.20	8.96	9.19	
	4	0+815	205	9.20	9.21	9.21	9.22	9.23	8.97	9.21	
	5	1+035	220	9.21	9.23	9.24	9.25	9.26	8.99	9.24	
	+60	1+105	70	9.23	9.25	9.26	9.27	9.28	8.99	9.26	상 강 경 교 (신)
	+75	1+115	10	9.25	9.28	9.28	9.30	9.32	8.99	9.28	상 강 경 교 (구)
	6	1+235	120	9.27	9.30	9.31	9.33	9.35	9.00	9.31	
	+125	1+355	120	9.30	9.33	9.34	9.37	9.39	9.01	9.34	강 경 철 교 (상)
	+135	1+375	20	9.32	9.36	9.37	9.40	9.42	9.01	9.37	강 경 철 교 (하)
		1+425	50	9.33	9.37	9.39	9.42	9.44		9.39	강 경 대 교
	7	1+440	15	9.34	9.38	9.39	9.43	9.45	9.04	9.39	
	8	1+650	210	9.35	9.39	9.41	9.44	9.47	9.04	9.41	
	9	1+840	190	9.36	9.41	9.42	9.46	9.49	9.06	9.42	
	10	2+035	195	9.38	9.42	9.44	9.48	9.51	9.07	9.44	
	11	2+240	205	9.39	9.44	9.45	9.50	9.53	9.09	9.45	
	+65	2+300	60	9.43	9.48	9.50	9.55	9.58	9.09	9.50	강 경 미 내 리 교
	12	2+455	155	9.44	9.49	9.51	9.56	9.59	9.11	9.51	
	13	2+650	195	9.45	9.50	9.52	9.57	9.61	9.12	9.52	
	14	2+840	190	9.47	9.53	9.55	9.61	9.64	9.14	9.55	
	15	3+030	190	9.47	9.53	9.55	9.62	9.64	9.15	9.55	
	16	3+235	205	9.49	9.55	9.57	9.63	9.67	9.17	9.57	
	+180	3+415	180	9.52	9.58	9.61	9.67	9.71	9.19	9.61	제 내 교
	17	3+435	20	9.52	9.58	9.61	9.67	9.71	9.19	9.61	
	+40	3+475	40	9.57	9.64	9.66	9.73	9.78	9.22	9.66	신 제 내 교
	18	3+645	170	9.58	9.65	9.68	9.75	9.80	980.00	9.68	
	19	3+810	165	9.61	9.69	9.72	9.79	9.84	980.00	9.72	어 량 천 합 류 후
	20	3+985	175	9.62	9.69	9.72	9.79	9.84	950.00	9.72	어 량 천 합 류 전
	+65	4+085	100	9.62	9.69	9.72	9.79	9.84	950.00	9.72	신 용 교
	21	4+220	135	9.63	9.71	9.74	9.81	9.86	950.00	9.74	
	22	4+430	210	9.67	9.76	9.79	9.87	9.93	950.00	9.79	
	23	4+630	200	9.69	9.77	9.81	9.89	9.95	950.00	9.81	
	24	4+810	180	9.70	9.78	9.82	9.90	9.96	9.36	9.82	
		4+845	35	9.71	9.79	9.83	9.92	9.97		9.83	선 리 교
	+150	4+860	15	9.71	9.79	9.83	9.92	9.97	9.36	9.83	
	25	5+030	170	9.72	9.81	9.84	9.93	9.99	9.38	9.84	
	26	5+225	195	9.74	9.83	9.86	9.95	10.01	9.41	9.86	
	+160	5+385	160	9.76	9.85	9.89	9.98	10.05	9.42	9.89	작 산 교
	27	5+425	40	9.76	9.86	9.90	9.99	10.05	9.44	9.90	
	28	5+600	175	9.78	9.88	9.92	10.01	10.08	9.47	9.92	

하천명	측점(No.)		구간 거리 (m)	금회계산수위 (EL. m)					홍수위 (EL. m)		비 고
	기수립	금회		50년	80년	100년	150년	200년	기고시	계 획	
강	29	5+815	215	9.80	9.90	9.94	10.04	10.10	9.49	9.94	
경	30	6+015	200	9.82	9.92	9.96	10.06	10.13	9.53	9.96	
천	31	6+205	190	9.83	9.94	9.98	10.08	10.15	9.57	9.98	
	+60	6+265	60	9.85	9.95	10.00	10.10	10.17	9.57	10.00	포 변 잠 수 교
	32	6+385	120	9.87	9.98	10.02	10.13	10.20	9.62	10.02	마 산 천 합 류 후
	+160	6+565	180	9.90	10.02	10.06	10.18	10.25	9.67	10.06	마 산 천 합 류 전
		6+765	200	9.91	10.03	10.07	10.19	10.27		10.07	
		6+940	175	9.92	10.04	10.08	10.20	10.28		10.08	장 수 교
		6+965	25	9.92	10.04	10.09	10.20	10.28		10.09	
		7+170	205	9.95	10.07	10.12	10.23	10.31		10.12	
		7+360	190	9.95	10.07	10.12	10.24	10.32		10.12	
		7+565	205	9.97	10.09	10.14	10.26	10.34		10.14	

건설교통부

2. 홍수위 개선효과 검토

(갑천대교 지점)

건설교통부

2. 홍수위 개선효과 검토(갑천대교 지점)

2.1 검 토 개 요

본 과업대상하천 중 갑천은 고밀도의 주거·상업지인 대전광역시를 관류하는 하천으로 일반하천에 비해 개수율은 높으나 홍수 피해밀도가 매우 높은 지역이며, 특히 갑천 중류부(갈마2보~갑천대교) 구간은 유성천 합류부 직하에 콘크리트 고정보가 설치되어 있으며 과거 넓게 형성되었던 하도에 배할제 형태의 매립이 이루어져 복잡한 수리특성을 나타내고 있다.

또한 합류부 상류로 갑천대교가 설치되어 있는데 현재 기준 여유고를 확보하지 못 한 상태이다. 따라서 갑천대교 지점의 홍수위 개선을 위해 다음과 같은 4가지의 하도개선안을 가지고 수리검토를 실시하였다.

1안 : 기존보(갈마2보) 철거

2안 : 배할제(매립부지) 제거

3안 : 기존보 철거 및 배할제 제거

4안 : 기존보 철거 및 고수부지 굴착

건설교통부

2.2 검 토 내 용

상기 안을 대상으로 기수립 홍수량(1,530㎥/sec, 100년빈도)을 이용하여 홍수위를 산정한 결과 <표 1>와 같이 갑천대교 지점에서의 수위개선 효과는 "4안", "3안"순이었으며, 2안 및 3안 적용시 매립부지를 제거하는 대규모공사가 필요하며, 효율적인 토지이용측면에서 불리할 것으로 판단된다.

한편 대상지점의 갈마2보는 수위유지를 위한 콘크리트 고정식 보로 수변경관 조성을 목적으로 설치되었으나, 유성천에서 유입되는 오폐수로 인하여 오염도가 매우 심한 상태이며, 보로 인한 수위상승 영향으로 치수적 측면에서도 악영향을 주고있으며, 현재 잘 정비되어 친수성이 매우 높은 고수부지를 제척하는 것 또한 반대 민원이 예상되는바 하도개선은 갈마보를 이설하는 것을 전제하에 하천구역 결정에서

매립부지를 폐천화 가능 토지로 분류하였다.

하도개선(안)별 장단점 비교

<표 1>

구 분	하 도 개 선 (안)				비 고
	①안	②안	③안	④안	
공사내용	갈마보철거	매립지제거	갈마보철거 매립지제거	갈마보철거 고수부굴착	
수위개선 효과(m)	0.19	0.24	0.29	0..37	갑천대교 지 점
시 공 성	양호	곤란	매우 곤란	비교적 곤란	
경 제 성	양호	곤란	매우 곤란	비교적 곤란	
문 제 점	기존보 대안시설 필요	굴착토사 처리 곤란	굴착토사 처리 곤란 및 기존보 대안시설 필요	기존보 대안시설 필요 및 친수공간 감소	
건의	◉				

주) 수위계산시 기수립 계획홍수위 이용

건설교통부

따라서 갈마2보를 제거하고 하류 약400m 지점에 거석보를 설치하는 경우에 대하여 금회 계획홍수량(1,730㎥/sec, 200년빈도)을 이용하여 수리검토를 시행하였다.

수리계산결과 갈마2보는 현 위치와 이설구간 사이에서 홍수위가 최대 9㎝ 상승하였으나, 현 위치 상류측에서는 최대 57㎝의 수위 저하효과가 있는 것으로 나타났으며, 갑천대교 지점에서는 수위가 25㎝ 저하되어 교량의 치수적 안정성이 증대되는 것으로 나타났다. 또한 작천보를 상류측으로 이설하였을 경우에는 보 지점은 약 23cm, 무심천 합류지점은 15~19cm 정도 수위가 저하하는 것으로 나타났다.

수리계산 결과는 <표 2>과 같다

갈마2보 이전에 따른 수리검토

<표 2>

측점 (No.)	홍수량 (㎥/sec)	수 위 (EL.m)			유 속 (m/sec)			비 고
		현상태	이설후	변화량	현상태	이설후	변화량	
14+345	1,910	40.28	40.28	-	2.31	2.31	-	
14+440	1,910	40.38	40.38	-	2.27	2.27	-	
14+540	1,910	40.48	40.57	-0.09	2.23	2.22	0.01	이설위치
14+635	1,910	40.59	40.67	-0.08	2.15	2.09	0.06	
14+720	1,910	40.62	40.71	-0.09	2.45	2.39	0.06	
14+830	1,910	40.66	40.74	-0.08	3.06	2.99	0.07	
14+945	1,910	41.46	40.89	0.57	3.16	3.15	0.01	기 존 위 치
15+045	1,730	41.53	41.03	0.50	2.93	3.32	-0.39	유성천합류전
15+140	1,730	41.66	41.25	0.41	2.84	3.14	-0.30	
15+235	1,730	41.80	41.43	0.37	2.74	3.02	-0.28	
15+325	1,730	41.95	41.62	0.33	2.53	2.75	-0.22	
15+375	1,730	42.05	41.80	0.25	3.11	3.45	-0.34	갑 천 대 교
15+420	1,730	42.20	41.98	0.22	2.55	2.72	-0.17	
15+525	1,730	42.35	42.16	0.19	2.41	2.53	-0.12	
15+620	1,730	42.42	42.25	0.17	2.50	2.62	-0.12	
15+720	1,730	42.45	42.29	0.16	3.06	3.24	-0.18	
15+820	1,730	42.77	42.67	0.10	2.49	2.56	-0.07	
15+925	1,730	42.89	42.80	0.09	2.44	2.50	-0.06	
16+025	1,730	43.30	43.30	-	2.79	3.05	-0.26	구 억 보

주) 상기 수리검토는 200년 빈도 홍수량을 대상으로 하였으며, 갈마보는 이설계획을 반영하였으므로 이설후 홍수위를 계획홍수위로 결정

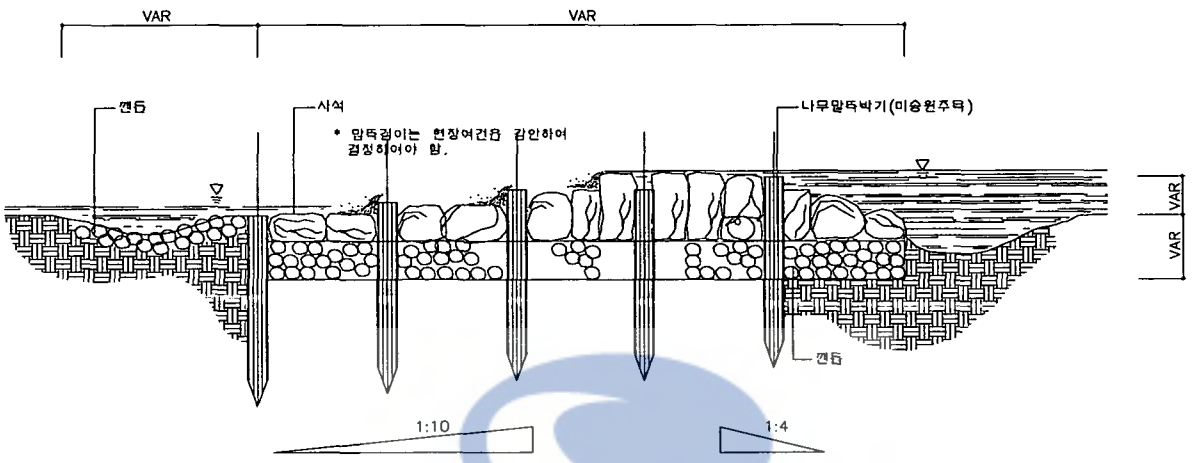
2.3 갈마보 이설계획

갈마2보는 기존 위치에서 철거하고 하류 약 400m지점에 거석을 이용한 돌보를 설치하여 수질정화 효과 및 수위유지, 상류 갑천대교의 홍수여유고를 확보코자 금회 계획에 반영하였으며 이설계획은 <표 3> 및 <그림 3>과 같다.

갈마2보 이전 계획

<표 3>

구 분	현 상태	이전시	비 고
위 치	갑천 No. 14+945	갑천 No. 14+540	하류 405m
형 식	콘크리트 고정식	거석보	



<그림 1> 신설 갈마2보(돌보) 표준단면도

건설교통부

□. 갑천대교 지점 하도개선(안)별 홍수위 개선효과 검토

하천명	측점(No.)		거 리(m)		홍수량	최심하상(EL.m)		'88계획 홍수위	금회검토홍수위 (EL.m)					금회검토유속 (m/s)					비 고
	'85	금회	구간	누가	(CMS)	'85	금회	(EL.m)	현상태	보제거	매립지굴착	보제거및 매립지굴착	보제거및 고수부지굴착	현상태	보제거	매립지굴착	보제거및 매립지굴착	보제거및 고수부지굴착	
갑천	13	13+955	0	13,955	1,690	35.63	34.65	39.57	40.17	40.17	40.17	40.17	40.17	2.03	2.03	2.03	2.03	2.03	
		14+060	105	14,060	1,670		34.16		40.28	40.28	40.28	40.28	40.28	1.82	1.82	1.82	1.82	1.82	
	14	14+150	90	14,150	1,670	34.76	34.27	39.87	40.33	40.33	40.33	40.33	40.33	1.87	1.87	1.87	1.87	1.87	
		14+250	100	14,250	1,670		35.41		40.38	40.38	40.38	40.38	40.38	1.89	1.89	1.89	1.89	1.89	
	15	14+345	95	14,345	1,670	35.34	35.47	39.97	40.44	40.44	40.44	40.44	40.44	1.92	1.92	1.92	1.92	1.92	
		14+440	95	14,440	1,670		35.61		40.50	40.50	40.50	40.50	40.50	1.91	1.91	1.91	1.91	1.91	
	16	14+540	100	14,540	1,670	36.13	35.84	40.09	40.56	40.56	40.56	40.56	40.56	1.90	1.90	1.90	1.90	1.90	
		14+635	95	14,635	1,670		35.76		40.63	40.63	40.63	40.63	40.63	1.86	1.86	1.86	1.86	1.86	
	17	14+720	85	14,720	1,670	36.30	35.83	40.32	40.65	40.65	40.69	40.69	40.65	2.13	2.13	1.88	1.88	2.13	
		14+830	110	14,830	1,670		36.15		40.68	40.68	40.75	40.75	40.68	2.66	2.66	2.03	2.03	2.66	
	18	14+945	115	14,945	1,670	36.96	36.86	40.66	41.24	40.81	40.97	40.82	40.85	2.79	2.79	2.20	2.20	2.53	갈마2보
		15+045	100	15,045	1,530		35.88		41.29	40.90	40.99	40.83	40.90	2.75	3.04	2.54	2.66	2.80	
	19	15+140	95	15,140	1,530	36.81	35.90	40.75	41.41	41.08	41.11	40.98	41.03	2.67	2.91	2.52	2.63	2.73	
		15+230	90	15,230	1,530		36.04		41.53	41.24	41.20	41.09	41.16	2.60	2.81	2.72	2.82	2.57	
	20	15+325	95	15,325	1,530	37.27	36.05	40.93	41.67	41.42	41.34	41.25	41.30	2.40	2.57	2.62	2.69	2.33	
		15+375	50	15,375	1,530		36.27		41.77	41.58	41.53	41.48	41.40	2.98	3.26	3.35	3.47	3.10	갑천대교
		15+420	45	15,420	1,530		37.18		41.91	41.74	41.69	41.65	41.58	2.46	2.59	2.63	2.67	2.37	
	21	15+525	105	15,525	1,530	37.34	37.20	41.01	42.04	41.90	41.87	41.83	41.70	2.32	2.41	2.44	2.46	2.31	
		15+620	95	15,620	1,530		37.22		42.12	41.99	41.96	41.93	41.74	2.41	2.51	2.53	2.56	2.72	
	22	15+720	100	15,720	1,530	37.70	38.56	41.23	42.15	42.03	42.00	41.97	41.79	3.01	3.15	3.19	3.23	3.49	
		15+820	100	15,820	1,530		37.62		42.49	42.42	42.41	42.39	42.32	2.39	2.44	2.45	2.46	2.52	
	23	15+925	105	15,925	1,530	37.75	37.74	41.48	42.61	42.54	42.53	42.52	42.45	2.33	2.38	2.39	2.40	2.45	
		16+025	100	16,025	1,530	40.52	38.53	42.87	43.16	43.22	43.22	43.22	43.26	2.88	2.95	2.97	2.97	3.05	구억보
	24	16+125	100	16,125	1,530	39.59	38.51	43.95	43.25	43.31	43.31	43.31	43.34	2.61	2.56	2.56	2.56	2.53	
		16+225	100	16,225	1,500		39.45		43.35	43.40	43.40	43.39	43.43	3.03	2.97	2.97	2.98	2.94	
	25	16+325	100	16,325	1,500	39.07	39.47	44.09	43.66	43.69	43.69	43.69	43.70	2.68	2.65	2.65	2.66	2.64	

3. 댐의 홍수조절 능력검토

건설교통부

○ 댐의 홍수조절능력 검토

금강 유역내에는 대청댐, 용담댐 등 2개의 다목적 댐이 건설되어 있고 지천댐이 계획중에 있다. 또한 논산천 유역에 탑정저수지, 미호천 유역에 미호지, 백곡지 등의 농업용 저수지가 있으나 본 과업에서는 계획중인 지천댐과 농업용저수지의 홍수조절효과는 고려하지 않았다.

상기한 대청댐, 용담댐의 홍수조절효과는 관리규정상의 운용방법을 적용하였으며, 모두 일정율, 일정량 방법에 의해 운용하는 것으로 나타났다. 본 계획시 분석한 댐에 의한 홍수조절효과는 다음 표와 같다. 댐별 홍수조절효과 분석시 유입량 자료는 댐건설당시 수문곡선을 이용하였으며, 용담댐의 경우 200년빈도 홍수량 유입시 조절율은 41.6%, 대청댐의 경우 100년빈도 홍수량 유입시 조절율은 43.8%로 나타났다.

댐별 홍수조절효과

댐	구 분	빈 도 별					비 고
		50년	80년	100년	150년	200년	
용담	유입량(㎥/sec)	4,500	4,750	5,000	5,250	5,500	
	방류량(㎥/sec)	2,650	2,790	2,930	3,070	3,210	
	조 절 율(%)	41.1	41.3	41.4	41.5	41.6	
대청	유입량(㎥/sec)	8,500	9,200	9,500	10,170	10,700	
	방류량(㎥/sec)	4,830	5,180	5,340	6,140	6,780	
	조 절 율(%)	43.2	43.7	43.8	39.6	36.6	

주) 댐의 홍수조절효과는 댐 지점이며 유입량은 댐 건설당시 계획유입량임.

한편 상류 용담댐의 홍수조절로 인한 대청댐의 홍수조절효과를 분석하였으며, 동 분석시 대청댐의 유입량 자료는 금회 계산한 Clark 유역추적법에 의한 빈도별 홍수량을 적용하였다. 그 결과 용담댐 조절방류후 대청댐의 조절율은 약 1.5% 정도 증가하는 것으로 나타났다.

한편 각 댐별 홍수조절방법은 향후 댐군의 신뢰성 있고 신속한 홍수예경보 시스템, 홍수시 유출모형, 하도추적모형등의 개발과 아울러 재검토되어야 할 것이다.

대청댐 홍수조절효과

댐	구 분	빈 도 별					비 고
		50년	80년	100년	150년	200년	
대청	유입량(㎥/sec)	7,640	8,210	8,560	9,070	9,480	용담댐 미고려시
	방류량(㎥/sec)	4,850	5,180	5,390	5,680	5,920	
	조 절 율(%)	36.5	36.9	37.0	37.4	37.6	
대청	유입량(㎥/sec)	6,530	7,070	7,370	7,830	8,180	용담댐 고려시
	방류량(㎥/sec)	4,100	4,400	4,530	4,820	5,020	
	조 절 율(%)	37.2	37.8	38.5	38.4	38.6	

건설교통부

○ 다목적 댐 홍수조절능력 검토

- 용담댐

YONGDAM DAM RESERVOIR OPERATION

hwl	263.500	meter
fwl	265.500	meter
weir crest elevation	252.800	meter
flood frequency	50	year
peak inflow	4500.00	cms
peak outflow	2652.00	cms
flood reduction ratio	.589	
max. water level	265.073	
flood control volume	56634980.0	

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	263.50	.0	742.57
1.00	52.1	263.50	52.1	742.57
2.00	52.1	263.50	52.1	742.57
3.00	52.1	263.50	52.1	742.57
4.00	52.1	263.50	52.1	742.57
5.00	55.7	263.50	55.7	742.57
6.00	64.6	263.50	64.6	742.57
7.00	80.3	263.50	80.3	742.57
8.00	103.3	263.50	103.3	742.57
9.00	137.7	263.50	137.7	742.57
10.00	181.9	263.50	181.9	742.57
11.00	231.6	263.50	231.6	742.57
12.00	278.1	263.50	278.1	742.57
13.00	325.3	263.50	314.2	742.59
14.00	371.7	263.50	340.2	742.66
15.00	418.8	263.51	366.5	742.81
16.00	463.9	263.51	391.8	743.04
17.00	513.2	263.52	419.4	743.34
18.00	567.3	263.53	449.7	743.72
19.00	626.2	263.55	482.7	744.19
20.00	684.9	263.56	515.5	744.75
21.00	756.8	263.58	555.8	745.42
22.00	843.8	263.60	604.5	746.21
23.00	948.4	263.63	663.1	747.15
24.00	1062.7	263.66	727.1	748.27
25.00	1257.8	263.70	836.4	749.63
26.00	1556.5	263.75	1003.6	751.39
27.00	1976.7	263.81	1239.0	753.71
28.00	2501.0	263.90	1532.6	756.78
29.00	3110.8	264.01	1874.0	760.75
30.00	3727.4	264.15	2219.3	765.69
31.00	4245.3	264.31	2509.4	771.53
32.00	4500.0	264.49	2652.0	777.98
33.00	4455.0	264.68	2652.0	784.55
34.00	4124.0	264.84	2652.0	790.45
35.00	3646.7	264.97	2652.0	794.89
36.00	3204.9	265.04	2652.0	797.68
37.00	2799.6	265.07	2652.0	798.94
38.00	2477.4	265.07	2652.0	798.89
39.00	2204.9	265.04	2652.0	797.77
40.00	1978.9	264.99	2652.0	795.75
41.00	1785.5	264.91	2652.0	792.98
42.00	1606.2	264.82	2652.0	789.54
43.00	1460.8	264.70	2652.0	785.51
44.00	1300.0	264.57	2652.0	780.93
45.00	1180.0	264.43	2652.0	775.85
46.00	1070.0	264.28	2652.0	770.35
47.00	970.0	264.11	2652.0	764.48
48.00	900.0	263.94	2652.0	758.30
49.00	820.0	263.76	2652.0	751.85
50.00	730.0	263.57	2652.0	745.09
51.00	670.0	263.50	1370.6	742.57
52.00	600.0	263.50	600.0	742.57
53.00	535.0	263.50	535.0	742.57
54.00	480.0	263.50	480.0	742.57

YONGDAM DAM RESERVOIR OPERATION

hwl	263.500	meter
fwl	265.500	meter
weir crest elevation	252.800	meter
flood frequency	80	year
peak inflow	4750.00	cms
peak outflow	2792.00	cms
flood reduction ratio	.588	
max. water level	265.178	
flood control volume	60656640.0	

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	263.50	.0	742.57
1.00	52.1	263.50	52.1	742.57
2.00	52.1	263.50	52.1	742.57
3.00	52.1	263.50	52.1	742.57
4.00	52.1	263.50	52.1	742.57
5.00	56.0	263.50	56.0	742.57
6.00	65.7	263.50	65.7	742.57
7.00	82.9	263.50	82.9	742.57
8.00	108.1	263.50	108.1	742.57
9.00	145.7	263.50	145.7	742.57
10.00	193.7	263.50	193.7	742.57
11.00	247.7	263.50	247.7	742.57
12.00	298.1	263.50	298.1	742.57
13.00	348.8	263.50	327.3	742.61
14.00	398.4	263.50	355.1	742.72
15.00	448.5	263.51	383.2	742.92
16.00	496.4	263.52	410.0	743.19
17.00	548.6	263.53	439.2	743.54
18.00	605.9	263.54	471.3	743.98
19.00	668.1	263.55	506.1	744.52
20.00	730.2	263.57	540.9	745.15
21.00	806.1	263.59	583.4	745.89
22.00	897.8	263.62	634.8	746.76
23.00	1008.1	263.65	696.5	747.80
24.00	1128.7	263.68	764.1	749.02
25.00	1334.6	263.72	879.4	750.49
26.00	1649.7	263.77	1055.8	752.38
27.00	2093.0	263.84	1304.1	754.87
28.00	2646.3	263.94	1613.9	758.15
29.00	3289.6	264.05	1974.2	762.37
30.00	3940.0	264.20	2338.4	767.62
31.00	4485.9	264.38	2644.1	773.82
32.00	4750.0	264.57	2792.0	780.66
33.00	4705.5	264.76	2792.0	787.63
34.00	4355.1	264.94	2792.0	793.89
35.00	3850.2	265.06	2792.0	798.61
36.00	3383.0	265.14	2792.0	801.58
37.00	2954.4	265.18	2792.0	802.93
38.00	2613.7	265.18	2792.0	802.90
39.00	2325.6	265.15	2792.0	801.74
40.00	2086.7	265.09	2792.0	799.63
41.00	1882.2	265.02	2792.0	796.73
42.00	1692.7	264.92	2792.0	793.11
43.00	1539.0	264.80	2792.0	788.88
44.00	1350.0	264.66	2792.0	784.02
45.00	1240.0	264.51	2792.0	778.64
46.00	1125.0	264.35	2792.0	772.84
47.00	1010.0	264.17	2792.0	766.63
48.00	950.0	263.99	2792.0	760.11
49.00	860.0	263.80	2792.0	753.32
50.00	765.0	263.60	2792.0	746.19
51.00	700.0	263.50	1706.5	742.57
52.00	630.0	263.50	630.0	742.57
53.00	567.5	263.50	567.5	742.57
54.00	500.0	263.50	500.0	742.57

YONGDAM DAM RESERVOIR OPERATION

hwl	263.500	meter
fwl	265.500	meter
weir crest elevation	252.800	meter
flood frequency	100	year
peak inflow	5000.00	cms
peak outflow	2932.00	cms
flood reduction ratio	.586	
max. water level	265.283	
flood control volume	64706930.0	

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	263.50	.0	742.57
1.00	52.1	263.50	52.1	742.57
2.00	52.1	263.50	52.1	742.57
3.00	52.1	263.50	52.1	742.57
4.00	52.1	263.50	52.1	742.57
5.00	56.3	263.50	56.3	742.57
6.00	66.9	263.50	66.9	742.57
7.00	85.6	263.50	85.6	742.57
8.00	112.9	263.50	112.9	742.57
9.00	153.6	263.50	153.6	742.57
10.00	205.6	263.50	205.6	742.57
11.00	263.9	263.50	263.9	742.57
12.00	318.0	263.50	310.1	742.58
13.00	372.3	263.50	340.5	742.65
14.00	425.1	263.51	370.1	742.81
15.00	478.3	263.51	399.8	743.05
16.00	528.9	263.52	428.2	743.37
17.00	584.1	263.53	459.1	743.78
18.00	644.5	263.55	492.9	744.28
19.00	710.1	263.56	529.7	744.87
20.00	775.4	263.58	566.2	745.57
21.00	855.3	263.61	611.0	746.39
22.00	951.9	263.63	665.1	747.35
23.00	1067.9	263.67	730.0	748.47
24.00	1194.7	263.70	801.0	749.79
25.00	1411.4	263.75	922.4	751.38
26.00	1742.9	263.80	1108.0	753.40
27.00	2209.4	263.88	1369.3	756.06
28.00	2791.6	263.98	1695.3	759.54
29.00	3468.4	264.10	2074.3	764.02
30.00	4152.5	264.26	2457.4	769.58
31.00	4726.5	264.44	2778.8	776.14
32.00	5000.0	264.64	2932.0	783.37
33.00	4956.1	264.85	2932.0	790.74
34.00	4586.2	265.03	2932.0	797.36
35.00	4053.6	265.16	2932.0	802.35
36.00	3561.0	265.24	2932.0	805.50
37.00	3109.2	265.28	2932.0	806.95
38.00	2750.0	265.28	2932.0	806.95
39.00	2446.3	265.25	2932.0	805.74
40.00	2194.5	265.19	2932.0	803.54
41.00	1979.0	265.11	2932.0	800.50
42.00	1779.2	265.02	2932.0	796.71
43.00	1617.1	264.89	2932.0	792.27
44.00	1400.0	264.75	2932.0	787.14
45.00	1300.0	264.59	2932.0	781.45
46.00	1180.0	264.42	2932.0	775.36
47.00	1050.0	264.24	2932.0	768.82
48.00	1000.0	264.04	2932.0	761.95
49.00	900.0	263.84	2932.0	754.82
50.00	800.0	263.63	2932.0	747.32
51.00	730.0	263.50	2050.2	742.57
52.00	660.0	263.50	660.0	742.57
53.00	600.0	263.50	600.0	742.57
54.00	520.0	263.50	520.0	742.57

YONGDAM DAM RESERVOIR OPERATION

hwl	263.500	meter
fwl	265.500	meter
weir crest elevation	252.800	meter
flood frequency	150	year
peak inflow	5250.00	cms
peak outflow	3072.00	cms
flood reduction ratio	.585	
max. water level	265.389	
flood control volume	68777300.0	

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	263.50	.0	742.57
1.00	52.1	263.50	52.1	742.57
2.00	52.1	263.50	52.1	742.57
3.00	52.1	263.50	52.1	742.57
4.00	52.1	263.50	52.1	742.57
5.00	56.7	263.50	56.7	742.57
6.00	68.2	263.50	68.2	742.57
7.00	88.5	263.50	88.5	742.57
8.00	118.2	263.50	118.2	742.57
9.00	162.3	263.50	162.3	742.57
10.00	218.5	263.50	218.5	742.57
11.00	281.4	263.50	281.4	742.57
12.00	339.5	263.50	322.1	742.60
13.00	397.4	263.50	354.5	742.71
14.00	453.3	263.51	385.8	742.91
15.00	509.4	263.52	417.3	743.19
16.00	562.7	263.53	447.1	743.57
17.00	620.6	263.54	479.5	744.03
18.00	684.1	263.56	515.1	744.59
19.00	752.8	263.58	553.6	745.25
20.00	821.4	263.60	592.0	746.02
21.00	905.2	263.62	638.9	746.91
22.00	1006.3	263.65	695.5	747.95
23.00	1128.0	263.68	763.7	749.17
24.00	1261.0	263.72	838.2	750.58
25.00	1488.4	263.77	965.5	752.29
26.00	1836.3	263.83	1160.3	754.44
27.00	2325.9	263.91	1434.5	757.27
28.00	2936.9	264.02	1776.7	760.96
29.00	3647.1	264.15	2174.4	765.70
30.00	4364.9	264.31	2576.3	771.57
31.00	4967.0	264.51	2913.5	778.48
32.00	5250.0	264.72	3072.0	786.10
33.00	5206.4	264.94	3072.0	793.86
34.00	4817.1	265.12	3072.0	800.85
35.00	4257.0	265.26	3072.0	806.12
36.00	3738.9	265.35	3072.0	809.45
37.00	3263.8	265.39	3072.0	811.00
38.00	2886.2	265.39	3072.0	811.01
39.00	2566.9	265.36	3072.0	809.77
40.00	2302.1	265.30	3072.0	807.47
41.00	2075.5	265.21	3072.0	804.29
42.00	1865.4	265.11	3072.0	800.33
43.00	1695.0	264.99	3072.0	795.68
44.00	1512.6	264.84	3072.0	790.39
45.00	1402.5	264.68	3072.0	784.58
46.00	1265.0	264.50	3072.0	778.32
47.00	1150.0	264.31	3072.0	771.61
48.00	1055.0	264.11	3072.0	764.52
49.00	970.0	263.91	3072.0	757.10
50.00	870.0	263.69	3072.0	749.36
51.00	790.0	263.50	2676.0	742.57
52.00	710.0	263.50	710.0	742.57
53.00	640.0	263.50	640.0	742.57
54.00	570.0	263.50	570.0	742.57

YONGDAM DAM RESERVOIR OPERATION

hwl	263.500 meter
fwl	265.500 meter
weir crest elevation	252.800 meter
flood frequency	200 year
peak inflow	5500.00 cms
peak outflow	3212.00 cms
flood reduction ratio	.584
max. water level	265.495
flood control volume	72847840.0

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	263.50	.0	742.57
1.00	52.1	263.50	52.1	742.57
2.00	52.1	263.50	52.1	742.57
3.00	52.1	263.50	52.1	742.57
4.00	52.1	263.50	52.1	742.57
5.00	57.1	263.50	57.1	742.57
6.00	69.5	263.50	69.5	742.57
7.00	91.4	263.50	91.4	742.57
8.00	123.4	263.50	123.4	742.57
9.00	171.0	263.50	171.0	742.57
10.00	231.5	263.50	231.5	742.57
11.00	298.9	263.50	298.9	742.57
12.00	361.0	263.50	334.2	742.62
13.00	422.5	263.51	368.6	742.76
14.00	481.5	263.51	401.6	743.00
15.00	540.5	263.52	434.7	743.34
16.00	596.5	263.53	466.0	743.76
17.00	657.2	263.55	500.0	744.28
18.00	723.6	263.57	537.2	744.90
19.00	795.6	263.59	577.5	745.63
20.00	867.4	263.61	617.7	746.47
21.00	955.0	263.64	666.8	747.44
22.00	1060.8	263.67	726.0	748.56
23.00	1188.1	263.70	797.3	749.86
24.00	1327.3	263.75	875.3	751.38
25.00	1565.4	263.80	1008.6	753.20
26.00	1929.7	263.86	1212.6	755.49
27.00	2442.4	263.95	1499.7	758.48
28.00	3082.2	264.05	1858.0	762.38
29.00	3825.9	264.19	2274.5	767.37
30.00	4577.3	264.37	2695.3	773.55
31.00	5207.4	264.57	3048.1	780.83
32.00	5500.0	264.80	3212.0	788.83
33.00	5456.7	265.02	3212.0	796.99
34.00	5048.0	265.21	3212.0	804.34
35.00	4460.3	265.36	3212.0	809.89
36.00	3916.8	265.45	3212.0	813.40
37.00	3418.5	265.49	3212.0	815.04
38.00	3022.5	265.49	3212.0	815.07
39.00	2687.5	265.46	3212.0	813.79
40.00	2409.8	265.40	3212.0	811.40
41.00	2172.0	265.31	3212.0	808.08
42.00	1951.6	265.20	3212.0	803.94
43.00	1772.8	265.08	3212.0	799.08
44.00	1625.3	264.93	3212.0	793.64
45.00	1505.0	264.76	3212.0	787.71
46.00	1350.0	264.58	3212.0	781.29
47.00	1250.0	264.39	3212.0	774.40
48.00	1110.0	264.19	3212.0	767.09
49.00	1040.0	263.97	3212.0	759.39
50.00	940.0	263.75	3212.0	751.39
51.00	850.0	263.51	3212.0	743.05
52.00	760.0	263.50	895.1	742.57
53.00	680.0	263.50	680.0	742.57
54.00	620.0	263.50	620.0	742.57

YONGDAM DAM RESERVOIR OPERATION

hwl	263.500 meter
fwl	265.500 meter
weir crest elevation	252.800 meter
flood frequency	500 year
peak inflow	10000.00 cms
peak outflow	7306.40 cms
flood reduction ratio	.731
max. water level	266.412
flood control volume	107994100.0

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	263.50	.0	742.57
1.00	87.1	263.50	87.1	742.57
2.00	87.1	263.50	87.1	742.57
3.00	87.1	263.50	87.1	742.57
4.00	87.1	263.50	87.1	742.57
5.00	91.3	263.50	91.3	742.57
6.00	101.6	263.50	101.6	742.57
7.00	120.0	263.50	120.0	742.57
8.00	146.8	263.50	146.8	742.57
9.00	186.7	263.50	186.7	742.57
10.00	273.7	263.50	273.7	742.57
11.00	294.8	263.50	294.8	742.57
12.00	347.8	263.50	326.8	742.60
13.00	410.9	263.50	362.1	742.73
14.00	487.1	263.51	404.8	742.97
15.00	582.8	263.52	458.4	743.34
16.00	696.1	263.54	521.8	743.88
17.00	846.3	263.56	605.9	744.62
18.00	1029.7	263.59	708.6	745.63
19.00	1234.8	263.62	823.5	746.95
20.00	1432.4	263.67	934.1	748.59
21.00	1654.1	263.72	1058.3	750.56
22.00	1900.8	263.79	1196.4	752.90
23.00	2181.2	263.87	1353.5	755.66
24.00	2477.2	263.96	1519.2	758.87
25.00	2958.2	264.06	1788.6	762.70
26.00	3677.5	264.20	2191.4	767.48
27.00	4676.6	264.37	2750.9	773.62
28.00	5915.8	264.59	3444.8	781.54
29.00	7348.3	264.87	4247.0	791.57
30.00	8792.9	265.16	5857.9	802.43
31.00	9950.0	265.43	7246.4	812.58
32.00	10000.0	265.68	7306.4	822.30
33.00	9980.0	265.94	7306.4	831.96
34.00	9686.8	266.17	7306.4	841.05
35.00	8554.9	266.34	7306.4	847.59
36.00	7508.7	266.41	7306.4	850.20
37.00	6541.2	266.39	7306.4	849.18
38.00	5757.4	266.28	7306.4	845.02
39.00	5074.5	266.10	7306.4	838.21
40.00	4483.7	265.86	7306.4	829.11
41.00	3944.6	265.57	7306.4	817.98
42.00	3420.3	265.23	7306.4	804.94
43.00	2968.9	264.83	7306.4	790.13
44.00	2593.5	264.38	7306.4	773.84
45.00	2303.9	263.89	7306.4	756.36
46.00	2065.8	263.50	5895.8	742.57
47.00	1860.0	263.50	1860.0	742.57
48.00	1675.0	263.50	1675.0	742.57
49.00	1490.0	263.50	1490.0	742.57
50.00	1330.0	263.50	1330.0	742.57
51.00	1180.0	263.50	1180.0	742.57
52.00	1040.0	263.50	1040.0	742.57
53.00	900.0	263.50	900.0	742.57
54.00	770.0	263.50	770.0	742.57

- 대청댐 : 댐 설계유입량 유입시

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500 meter
fwl	80.000 meter
weir crest elevation	64.500 meter
flood frequency	50 year
peak inflow	8500.00 cms
peak outflow	4825.00 cms
flood reduction ratio	.568
max. water level	79.556
flood control volume	215513300.0

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	.0	76.50	.0	1241.69
2.00	.0	76.50	.0	1241.69
3.00	5.0	76.50	5.0	1241.69
4.00	20.0	76.50	20.0	1241.69
5.00	120.0	76.50	120.0	1241.69
6.00	160.0	76.50	160.0	1241.69
7.00	300.0	76.50	300.0	1241.69
8.00	400.0	76.50	400.0	1241.69
9.00	500.0	76.50	500.0	1241.69
10.00	700.0	76.50	700.0	1241.69
11.00	850.0	76.50	850.0	1241.69
12.00	1150.0	76.50	1076.5	1241.83
13.00	1400.0	76.51	1204.0	1242.31
14.00	1700.0	76.52	1357.0	1243.28
15.00	2020.0	76.55	1520.2	1244.80
16.00	2400.0	76.58	1714.0	1246.93
17.00	3000.0	76.62	2020.0	1249.93
18.00	3500.0	76.68	2275.0	1253.90
19.00	4000.0	76.75	2530.0	1258.75
20.00	4500.0	76.84	2785.0	1264.48
21.00	5100.0	76.94	3091.0	1271.19
22.00	5700.0	77.05	3397.0	1278.95
23.00	6400.0	77.18	3754.0	1287.86
24.00	6900.0	77.33	4009.0	1297.82
25.00	7300.0	77.48	4213.0	1308.58
26.00	7700.0	77.65	4417.0	1320.05
27.00	8000.0	77.82	4570.0	1332.13
28.00	8300.0	78.01	4723.0	1344.75
29.00	8450.0	78.19	4799.5	1357.76
30.00	8500.0	78.37	4825.0	1370.94
31.00	8400.0	78.55	4825.0	1383.99
32.00	8150.0	78.73	4825.0	1396.41
33.00	8000.0	78.89	4825.0	1408.11
34.00	7600.0	79.04	4825.0	1418.82
35.00	7250.0	79.17	4825.0	1428.18
36.00	6900.0	79.28	4825.0	1436.28
37.00	6500.0	79.37	4825.0	1443.03
38.00	6100.0	79.44	4825.0	1448.34
39.00	5750.0	79.49	4825.0	1452.30
40.00	5450.0	79.53	4825.0	1455.09
41.00	5100.0	79.55	4825.0	1456.71
42.00	4750.0	79.56	4825.0	1457.07
43.00	4450.0	79.54	4825.0	1456.26
44.00	4150.0	79.52	4825.0	1454.37
45.00	3850.0	79.48	4825.0	1451.40
46.00	3500.0	79.42	4825.0	1447.26
47.00	3300.0	79.35	4825.0	1442.13
48.00	3050.0	79.27	4825.0	1436.19
49.00	2800.0	79.18	4825.0	1429.35
50.00	2600.0	79.08	4825.0	1421.70
51.00	2500.0	78.97	4825.0	1413.51
52.00	2300.0	78.84	4825.0	1404.78
53.00	2100.0	78.71	4825.0	1395.33
54.00	1900.0	78.57	4825.0	1385.16

건설교통부

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500 meter
fwl	80.000 meter
weir crest elevation	64.500 meter
flood frequency	80 year
peak inflow	9200.00 cms
peak outflow	5182.00 cms
flood reduction ratio	.563
max. water level	79.807
flood control volume	234034900.0

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	.0	76.50	.0	1241.69
2.00	.0	76.50	.0	1241.69
3.00	10.0	76.50	10.0	1241.69
4.00	50.0	76.50	50.0	1241.69
5.00	140.0	76.50	140.0	1241.69
6.00	200.0	76.50	200.0	1241.69
7.00	350.0	76.50	350.0	1241.69
8.00	500.0	76.50	500.0	1241.69
9.00	600.0	76.50	600.0	1241.69
10.00	810.0	76.50	810.0	1241.69
11.00	970.0	76.50	970.0	1241.69
12.00	1250.0	76.50	1127.5	1241.91
13.00	1500.0	76.51	1255.0	1242.58
14.00	1800.0	76.53	1408.0	1243.72
15.00	2180.0	76.56	1601.8	1245.47
16.00	2600.0	76.59	1816.0	1247.92
17.00	3200.0	76.64	2122.0	1251.27
18.00	3800.0	76.71	2428.0	1255.68
19.00	4300.0	76.79	2683.0	1261.06
20.00	4950.0	76.88	3014.5	1267.46
21.00	5600.0	77.00	3346.0	1275.00
22.00	6200.0	77.12	3652.0	1283.64
23.00	6800.0	77.26	3958.0	1293.34
24.00	7300.0	77.42	4213.0	1304.02
25.00	7800.0	77.58	4468.0	1315.57
26.00	8300.0	77.76	4723.0	1328.01
27.00	8550.0	77.95	4850.5	1341.10
28.00	8850.0	78.14	5003.5	1354.69
29.00	9150.0	78.34	5156.5	1368.80
30.00	9200.0	78.54	5182.0	1383.22
31.00	9020.0	78.74	5182.0	1397.36
32.00	8750.0	78.93	5182.0	1410.69
33.00	8500.0	79.10	5182.0	1423.09
34.00	8200.0	79.25	5182.0	1434.49
35.00	7800.0	79.39	5182.0	1444.64
36.00	7450.0	79.51	5182.0	1453.43
37.00	7020.0	79.61	5182.0	1460.82
38.00	6550.0	79.68	5182.0	1466.59
39.00	6150.0	79.74	5182.0	1470.80
40.00	5850.0	79.78	5182.0	1473.74
41.00	5400.0	79.80	5182.0	1475.34
42.00	5150.0	79.81	5182.0	1475.67
43.00	4750.0	79.80	5182.0	1474.84
44.00	4450.0	79.77	5182.0	1472.74
45.00	4150.0	79.72	5182.0	1469.57
46.00	3750.0	79.66	5182.0	1465.13
47.00	3510.0	79.59	5182.0	1459.54
48.00	3250.0	79.50	5182.0	1453.06
49.00	3000.0	79.40	5182.0	1445.65
50.00	2800.0	79.29	5182.0	1437.44
51.00	2650.0	79.17	5182.0	1428.59
52.00	2500.0	79.04	5182.0	1419.21
53.00	2250.0	78.90	5182.0	1409.10
54.00	2050.0	78.75	5182.0	1398.18

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500	meter
fwl	80.000	meter
weir crest elevation	64.500	meter
flood frequency	100	year
peak inflow	9500.00	cms
peak outflow	5335.00	cms
flood reduction ratio	.562	
max. water level	80.013	
flood control volume	249323000.0	

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	.0	76.50	.0	1241.69
2.00	.0	76.50	.0	1241.69
3.00	15.0	76.50	15.0	1241.69
4.00	70.0	76.50	70.0	1241.69
5.00	160.0	76.50	160.0	1241.69
6.00	250.0	76.50	250.0	1241.69
7.00	420.0	76.50	420.0	1241.69
8.00	560.0	76.50	560.0	1241.69
9.00	650.0	76.50	650.0	1241.69
10.00	900.0	76.50	900.0	1241.69
11.00	1050.0	76.50	1025.5	1241.74
12.00	1350.0	76.51	1178.5	1242.09
13.00	1610.0	76.52	1311.1	1242.94
14.00	2000.0	76.54	1510.0	1244.36
15.00	2350.0	76.57	1688.5	1246.43
16.00	2850.0	76.61	1943.5	1249.25
17.00	3500.0	76.67	2275.0	1253.09
18.00	4150.0	76.74	2606.5	1258.07
19.00	4700.0	76.83	2887.0	1264.11
20.00	5300.0	76.94	3193.0	1271.17
21.00	6000.0	77.06	3550.0	1279.37
22.00	6600.0	77.19	3856.0	1288.72
23.00	7200.0	77.35	4162.0	1299.13
24.00	7700.0	77.51	4417.0	1310.51
25.00	8250.0	77.69	4697.5	1322.81
26.00	8700.0	77.88	4927.0	1336.00
27.00	8950.0	78.08	5054.5	1349.80
28.00	9200.0	78.28	5182.0	1364.05
29.00	9400.0	78.48	5284.0	1378.69
30.00	9500.0	78.69	5335.0	1393.59
31.00	9300.0	78.89	5335.0	1408.23
32.00	9100.0	79.08	5335.0	1422.14
33.00	8800.0	79.26	5335.0	1435.15
34.00	8500.0	79.42	5335.0	1447.09
35.00	8100.0	79.56	5335.0	1457.76
36.00	7700.0	79.69	5335.0	1467.00
37.00	7200.0	79.79	5335.0	1474.61
38.00	6750.0	79.87	5335.0	1480.51
39.00	6400.0	79.93	5335.0	1484.98
40.00	6100.0	79.98	5335.0	1488.27
41.00	5700.0	80.00	5335.0	1490.31
42.00	5350.0	80.01	5335.0	1490.99
43.00	5000.0	80.01	5335.0	1490.41
44.00	4680.0	79.98	5335.0	1488.63
45.00	4350.0	79.94	5335.0	1485.68
46.00	4000.0	79.89	5335.0	1481.50
47.00	3750.0	79.81	5335.0	1476.25
48.00	3450.0	79.73	5335.0	1470.00
49.00	3200.0	79.63	5335.0	1462.77
50.00	3000.0	79.52	5335.0	1454.72
51.00	2800.0	79.41	5335.0	1445.95
52.00	2600.0	79.28	5335.0	1436.47
53.00	2350.0	79.14	5335.0	1426.17
54.00	2150.0	78.99	5335.0	1415.07

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500 meter
fwl	80.000 meter
weir crest elevation	64.500 meter
flood frequency	150 year
peak inflow	10170.00 cms
peak outflow	6139.00 cms
flood reduction ratio	.604
max. water level	79.985
flood control volume	247516200.0

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	.0	76.50	.0	1241.69
2.00	.0	76.50	.0	1241.69
3.00	18.0	76.50	18.0	1241.69
4.00	87.0	76.50	87.0	1241.69
5.00	185.0	76.50	185.0	1241.69
6.00	280.0	76.50	280.0	1241.69
7.00	468.0	76.50	468.0	1241.69
8.00	584.0	76.50	584.0	1241.69
9.00	680.0	76.50	680.0	1241.69
10.00	930.0	76.50	930.0	1241.69
11.00	1110.0	76.50	1056.1	1241.79
12.00	1450.0	76.51	1229.5	1242.28
13.00	1700.0	76.52	1357.0	1243.30
14.00	2065.0	76.55	1543.2	1244.86
15.00	2435.0	76.58	1731.8	1247.06
16.00	3000.0	76.63	2020.0	1250.09
17.00	3700.0	76.69	2377.0	1254.24
18.00	4350.0	76.77	2708.5	1259.57
19.00	5100.0	76.86	3091.0	1266.14
20.00	5700.0	76.98	3397.0	1273.90
21.00	6460.0	77.11	3784.6	1282.87
22.00	7130.0	77.26	4126.3	1293.09
23.00	7680.0	77.42	4406.8	1304.39
24.00	8420.0	77.60	4784.2	1316.82
25.00	8900.0	77.80	5029.0	1330.33
26.00	9350.0	78.00	5258.5	1344.67
27.00	9615.0	78.21	5473.0	1359.49
28.00	9780.0	78.42	5671.0	1374.34
29.00	10100.0	78.62	6055.0	1389.02
30.00	10170.0	78.83	6139.0	1403.55
31.00	10080.0	79.03	6139.0	1417.90
32.00	9770.0	79.21	6139.0	1431.53
33.00	9485.0	79.38	6139.0	1444.09
34.00	9100.0	79.53	6139.0	1455.44
35.00	8614.0	79.67	6139.0	1465.23
36.00	8157.0	79.77	6139.0	1473.32
37.00	7657.0	79.86	6139.0	1479.68
38.00	7178.0	79.92	6139.0	1484.28
39.00	6742.0	79.96	6139.0	1487.24
40.00	6385.0	79.98	6139.0	1488.77
41.00	5957.0	79.99	6139.0	1488.88
42.00	5578.0	79.97	6139.0	1487.55
43.00	5200.0	79.93	6139.0	1484.85
44.00	4862.0	79.88	6139.0	1480.86
45.00	4492.0	79.81	6139.0	1475.59
46.00	4085.0	79.72	6139.0	1468.93
47.00	3835.0	79.61	6139.0	1461.09
48.00	3535.0	79.49	6139.0	1452.25
49.00	3257.0	79.36	6139.0	1442.38
50.00	3057.0	79.21	6139.0	1431.64
51.00	2857.0	79.06	6139.0	1420.19
52.00	2628.0	78.89	6139.0	1407.96
53.00	2367.0	78.71	6139.0	1394.85
54.00	2172.0	78.51	6139.0	1380.92

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500 meter
fwl	80.000 meter
weir crest elevation	64.500 meter
flood frequency	200 year
peak inflow	10700.00 cms
peak outflow	6775.00 cms
flood reduction ratio	.633
max. water level	79.925
flood control volume	243077400.0

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	.0	76.50	.0	1241.69
2.00	.0	76.50	.0	1241.69
3.00	20.0	76.50	20.0	1241.69
4.00	100.0	76.50	100.0	1241.69
5.00	200.0	76.50	200.0	1241.69
6.00	300.0	76.50	300.0	1241.69
7.00	500.0	76.50	500.0	1241.69
8.00	600.0	76.50	600.0	1241.69
9.00	700.0	76.50	700.0	1241.69
10.00	950.0	76.50	950.0	1241.69
11.00	1150.0	76.50	1076.5	1241.83
12.00	1500.0	76.51	1255.0	1242.40
13.00	1750.0	76.53	1382.5	1243.50
14.00	2100.0	76.55	1561.0	1245.13
15.00	2500.0	76.59	1765.0	1247.43
16.00	3100.0	76.63	2071.0	1250.60
17.00	3850.0	76.70	2453.5	1254.97
18.00	4500.0	76.78	2785.0	1260.57
19.00	5300.0	76.88	3193.0	1267.45
20.00	6000.0	77.01	3550.0	1275.65
21.00	6750.0	77.14	3932.5	1285.13
22.00	7500.0	77.30	4315.0	1295.94
23.00	8200.0	77.47	4672.0	1308.02
24.00	8800.0	77.67	4978.0	1321.25
25.00	9350.0	77.87	5258.5	1335.49
26.00	9700.0	78.08	5575.0	1350.28
27.00	10100.0	78.29	6055.0	1364.99
28.00	10350.0	78.49	6355.0	1379.46
29.00	10550.0	78.69	6595.0	1393.77
30.00	10700.0	78.89	6775.0	1407.96
31.00	10500.0	79.08	6775.0	1421.73
32.00	10300.0	79.25	6775.0	1434.78
33.00	10000.0	79.42	6775.0	1446.93
34.00	9550.0	79.56	6775.0	1457.73
35.00	9000.0	79.69	6775.0	1466.73
36.00	8500.0	79.78	6775.0	1473.84
37.00	8000.0	79.85	6775.0	1479.15
38.00	7500.0	79.90	6775.0	1482.66
39.00	7000.0	79.92	6775.0	1484.37
40.00	6600.0	79.93	6775.0	1484.46
41.00	6150.0	79.91	6775.0	1483.02
42.00	5750.0	79.87	6775.0	1480.05
43.00	5350.0	79.81	6775.0	1475.64
44.00	5000.0	79.73	6775.0	1469.88
45.00	4600.0	79.63	6775.0	1462.77
46.00	4150.0	79.52	6775.0	1454.13
47.00	3900.0	79.38	6775.0	1444.23
48.00	3600.0	79.24	6775.0	1433.34
49.00	3300.0	79.07	6775.0	1421.37
50.00	3100.0	78.90	6775.0	1408.50
51.00	2900.0	78.71	6775.0	1394.91
52.00	2650.0	78.51	6775.0	1380.51
53.00	2380.0	78.29	6775.0	1365.17
54.00	2190.0	78.07	6775.0	1349.01

건설교통부

- 대청댐 : 금회 기본홍수 유입시(용담댐 미고려)

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500	meter
fwl	80.000	meter
weir crest elevation	64.500	meter
flood frequency	50	year
peak inflow	7644.87	cms
peak outflow	4854.02	cms
flood reduction ratio	.635	
max. water level	79.455	
flood control volume	208262400.0	

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	36.0	76.50	36.0	1241.69
2.00	62.1	76.50	62.1	1241.69
3.00	97.7	76.50	97.7	1241.69
4.00	143.0	76.50	143.0	1241.69
5.00	197.9	76.50	197.9	1241.69
6.00	262.9	76.50	262.9	1241.69
7.00	340.3	76.50	340.3	1241.69
8.00	434.5	76.50	434.5	1241.69
9.00	551.8	76.50	551.8	1241.69
10.00	699.8	76.50	699.8	1241.69
11.00	885.7	76.50	885.7	1241.69
12.00	1115.6	76.50	1067.1	1241.78
13.00	1393.2	76.51	1228.0	1242.17
14.00	1718.7	76.52	1416.8	1243.01
15.00	2089.1	76.54	1631.7	1244.37
16.00	2498.0	76.57	1868.8	1246.33
17.00	2936.4	76.61	2123.1	1248.93
18.00	3393.3	76.66	2388.1	1252.20
19.00	3856.6	76.72	2656.8	1256.17
20.00	4313.9	76.78	2922.1	1260.83
21.00	4753.6	76.86	3177.1	1266.18
22.00	5165.4	76.95	3415.9	1272.16
23.00	5541.0	77.05	3633.8	1278.74
24.00	5874.8	77.15	3827.4	1285.86
25.00	6164.5	77.26	3995.4	1293.45
26.00	6411.7	77.38	4138.8	1301.45
27.00	6622.0	77.50	4260.7	1309.79
28.00	6803.8	77.62	4366.2	1318.43
29.00	6966.9	77.75	4460.8	1327.33
30.00	7119.7	77.89	4549.4	1336.46
31.00	7266.2	78.02	4634.4	1345.83
32.00	7404.0	78.15	4714.3	1355.41
33.00	7523.4	78.29	4783.6	1365.18
34.00	7609.2	78.43	4833.4	1375.11
35.00	7644.9	78.57	4854.0	1385.13
36.00	7616.5	78.71	4854.0	1395.12
37.00	7516.2	78.85	4854.0	1404.89
38.00	7343.6	78.98	4854.0	1414.16
39.00	7104.8	79.09	4854.0	1422.69
40.00	6811.0	79.19	4854.0	1430.27
41.00	6477.4	79.28	4854.0	1436.71
42.00	6119.8	79.35	4854.0	1441.91
43.00	5752.5	79.40	4854.0	1445.81
44.00	5385.8	79.44	4854.0	1448.38
45.00	5025.5	79.46	4854.0	1449.65
46.00	4673.6	79.46	4854.0	1449.63
47.00	4330.4	79.44	4854.0	1448.36
48.00	3995.1	79.40	4854.0	1445.88
49.00	3668.1	79.35	4854.0	1442.19
50.00	3351.1	79.29	4854.0	1437.35
51.00	3047.7	79.21	4854.0	1431.40
52.00	2760.6	79.11	4854.0	1424.38
53.00	2491.1	79.01	4854.0	1416.36
54.00	2239.6	78.88	4854.0	1407.40

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500	meter
fwl	80.000	meter
weir crest elevation	64.500	meter
flood frequency	80	year
peak inflow	8211.92	cms
peak outflow	5182.91	cms
flood reduction ratio	.631	
max. water level	79.741	
flood control volume	229407200.0	

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	43.0	76.50	43.0	1241.69
2.00	72.3	76.50	72.3	1241.69
3.00	112.1	76.50	112.1	1241.69
4.00	162.4	76.50	162.4	1241.69
5.00	223.4	76.50	223.4	1241.69
6.00	296.0	76.50	296.0	1241.69
7.00	383.1	76.50	383.1	1241.69
8.00	489.4	76.50	489.4	1241.69
9.00	622.0	76.50	622.0	1241.69
10.00	788.9	76.50	788.9	1241.69
11.00	997.8	76.50	997.8	1241.69
12.00	1255.2	76.50	1148.0	1241.89
13.00	1564.2	76.51	1327.2	1242.51
14.00	1924.7	76.53	1536.3	1243.63
15.00	2332.8	76.55	1773.0	1245.34
16.00	2781.3	76.59	2033.1	1247.69
17.00	3259.9	76.63	2310.7	1250.75
18.00	3756.7	76.69	2598.9	1254.54
19.00	4258.3	76.76	2889.8	1259.09
20.00	4751.6	76.84	3176.0	1264.39
21.00	5224.1	76.93	3450.0	1270.42
22.00	5664.7	77.03	3705.5	1277.14
23.00	6064.9	77.13	3937.6	1284.49
24.00	6418.6	77.25	4142.8	1292.42
25.00	6723.8	77.37	4319.8	1300.84
26.00	6982.2	77.50	4469.7	1309.69
27.00	7200.0	77.63	4596.0	1318.90
28.00	7386.4	77.77	4704.1	1328.42
29.00	7551.7	77.91	4800.0	1338.20
30.00	7705.1	78.05	4889.0	1348.22
31.00	7851.1	78.20	4973.6	1358.47
32.00	7987.3	78.34	5052.6	1368.93
33.00	8103.6	78.49	5120.1	1379.58
34.00	8184.3	78.64	5166.9	1390.39
35.00	8211.9	78.80	5182.9	1401.27
36.00	8172.0	78.95	5182.9	1412.10
37.00	8056.5	79.09	5182.9	1422.65
38.00	7865.0	79.23	5182.9	1432.65
39.00	7604.0	79.35	5182.9	1441.84
40.00	7285.4	79.46	5182.9	1449.98
41.00	6925.2	79.55	5182.9	1456.90
42.00	6540.4	79.63	5182.9	1462.48
43.00	6145.8	79.69	5182.9	1466.66
44.00	5752.4	79.72	5182.9	1469.42
45.00	5366.0	79.74	5182.9	1470.77
46.00	4988.9	79.74	5182.9	1470.75
47.00	4621.2	79.72	5182.9	1469.39
48.00	4262.3	79.69	5182.9	1466.72
49.00	3912.2	79.63	5182.9	1462.78
50.00	3573.1	79.56	5182.9	1457.59
51.00	3248.5	79.48	5182.9	1451.21
52.00	2941.6	79.38	5182.9	1443.70
53.00	2653.6	79.26	5182.9	1435.11
54.00	2385.2	79.13	5182.9	1425.52

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500 meter
fwl	80.000 meter
weir crest elevation	64.500 meter
flood frequency	100 year
peak inflow	8562.04 cms
peak outflow	5385.98 cms
flood reduction ratio	.629
max. water level	79.908
flood control volume	241846500.0

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	46.4	76.50	46.4	1241.69
2.00	77.3	76.50	77.3	1241.69
3.00	119.0	76.50	119.0	1241.69
4.00	171.7	76.50	171.7	1241.69
5.00	235.7	76.50	235.7	1241.69
6.00	312.1	76.50	312.1	1241.69
7.00	403.9	76.50	403.9	1241.69
8.00	516.2	76.50	516.2	1241.69
9.00	656.3	76.50	656.3	1241.69
10.00	832.6	76.50	832.6	1241.69
11.00	1053.1	76.50	1030.8	1241.73
12.00	1324.2	76.50	1188.0	1242.02
13.00	1648.9	76.52	1376.4	1242.76
14.00	2026.9	76.53	1595.6	1244.02
15.00	2454.0	76.56	1843.3	1245.90
16.00	2922.3	76.60	2114.9	1248.45
17.00	3421.2	76.65	2404.3	1251.73
18.00	3938.0	76.71	2704.1	1255.79
19.00	4459.1	76.78	3006.3	1260.62
20.00	4970.7	76.87	3303.0	1266.24
21.00	5460.0	76.96	3586.8	1272.61
22.00	5915.7	77.06	3851.1	1279.70
23.00	6329.0	77.18	4090.8	1287.45
24.00	6694.0	77.30	4302.5	1295.78
25.00	7008.5	77.43	4484.9	1304.63
26.00	7274.7	77.56	4639.3	1313.91
27.00	7499.2	77.70	4769.5	1323.57
28.00	7691.6	77.84	4881.2	1333.54
29.00	7863.1	77.99	4980.6	1343.79
30.00	8023.1	78.14	5073.4	1354.29
31.00	8176.3	78.29	5162.2	1365.02
32.00	8320.0	78.44	5245.6	1375.98
33.00	8443.7	78.60	5317.4	1387.14
34.00	8530.5	78.76	5367.7	1398.46
35.00	8562.0	78.92	5386.0	1409.87
36.00	8522.9	79.07	5386.0	1421.24
37.00	8404.5	79.22	5386.0	1432.32
38.00	8206.2	79.36	5386.0	1442.83
39.00	7934.9	79.49	5386.0	1452.49
40.00	7603.0	79.61	5386.0	1461.07
41.00	7227.3	79.71	5386.0	1468.37
42.00	6825.4	79.79	5386.0	1474.28
43.00	6412.9	79.85	5386.0	1478.72
44.00	6001.3	79.89	5386.0	1481.67
45.00	5596.8	79.91	5386.0	1483.16
46.00	5201.9	79.91	5386.0	1483.21
47.00	4816.9	79.89	5386.0	1481.85
48.00	4441.3	79.85	5386.0	1479.13
49.00	4075.2	79.80	5386.0	1475.07
50.00	3721.0	79.73	5386.0	1469.71
51.00	3382.3	79.64	5386.0	1463.11
52.00	3062.1	79.53	5386.0	1455.32
53.00	2762.1	79.41	5386.0	1446.41
54.00	2482.6	79.28	5386.0	1436.46

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500 meter
fwl	80.000 meter
weir crest elevation	64.500 meter
flood frequency	150 year
peak inflow	9072.22 cms
peak outflow	5681.89 cms
flood reduction ratio	.626
max. water level	80.161
flood control volume	260982000.0

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	53.0	76.50	53.0	1241.69
2.00	86.8	76.50	86.8	1241.69
3.00	132.2	76.50	132.2	1241.69
4.00	189.6	76.50	189.6	1241.69
5.00	259.2	76.50	259.2	1241.69
6.00	342.6	76.50	342.6	1241.69
7.00	443.2	76.50	443.2	1241.69
8.00	566.5	76.50	566.5	1241.69
9.00	720.4	76.50	720.4	1241.69
10.00	913.7	76.50	913.7	1241.69
11.00	1154.8	76.50	1089.8	1241.81
12.00	1450.2	76.51	1261.1	1242.27
13.00	1802.7	76.52	1465.5	1243.22
14.00	2211.5	76.55	1702.7	1244.74
15.00	2671.6	76.58	1969.5	1246.92
16.00	3174.4	76.62	2261.1	1249.83
17.00	3708.2	76.68	2570.8	1253.52
18.00	4259.5	76.74	2890.5	1258.03
19.00	4813.8	76.82	3212.0	1263.38
20.00	5356.3	76.91	3526.7	1269.55
21.00	5873.7	77.02	3826.8	1276.53
22.00	6354.2	77.13	4105.4	1284.26
23.00	6788.6	77.25	4357.4	1292.69
24.00	7170.8	77.38	4579.1	1301.73
25.00	7498.7	77.52	4769.2	1311.31
26.00	7774.8	77.67	4929.4	1321.34
27.00	8006.1	77.82	5063.6	1331.76
28.00	8203.1	77.97	5177.8	1342.50
29.00	8377.5	78.13	5278.9	1353.52
30.00	8539.4	78.29	5372.8	1364.80
31.00	8693.8	78.45	5462.4	1376.32
32.00	8838.1	78.61	5546.1	1388.06
33.00	8961.3	78.78	5617.5	1400.00
34.00	9045.7	78.95	5666.5	1412.11
35.00	9072.2	79.11	5681.9	1424.29
36.00	9024.7	79.28	5681.9	1436.41
37.00	8894.2	79.44	5681.9	1448.21
38.00	8680.1	79.59	5681.9	1459.39
39.00	8389.7	79.73	5681.9	1469.66
40.00	8036.0	79.85	5681.9	1478.77
41.00	7636.7	79.95	5681.9	1486.53
42.00	7210.4	80.04	5681.9	1492.80
43.00	6773.7	80.10	5681.9	1497.51
44.00	6339.0	80.14	5681.9	1500.66
45.00	5913.0	80.16	5681.9	1502.26
46.00	5497.9	80.16	5681.9	1502.34
47.00	5093.9	80.14	5681.9	1500.96
48.00	4700.0	80.11	5681.9	1498.13
49.00	4316.1	80.05	5681.9	1493.90
50.00	3944.3	79.98	5681.9	1488.32
51.00	3588.3	79.88	5681.9	1481.42
52.00	3251.6	79.77	5681.9	1473.28
53.00	2935.5	79.65	5681.9	1463.96
54.00	2640.5	79.51	5681.9	1453.54

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500 meter
fwl	80.000 meter
weir crest elevation	64.500 meter
flood frequency	200 year
peak inflow	9476.96 cms
peak outflow	5916.64 cms
flood reduction ratio	.624
max. water level	80.355
flood control volume	275800000.0

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	57.8	76.50	57.8	1241.69
2.00	93.7	76.50	93.7	1241.69
3.00	141.7	76.50	141.7	1241.69
4.00	202.4	76.50	202.4	1241.69
5.00	276.2	76.50	276.2	1241.69
6.00	364.8	76.50	364.8	1241.69
7.00	471.7	76.50	471.7	1241.69
8.00	603.0	76.50	603.0	1241.69
9.00	766.8	76.50	766.8	1241.69
10.00	972.4	76.50	972.4	1241.69
11.00	1228.6	76.50	1132.6	1241.87
12.00	1541.6	76.51	1314.1	1242.45
13.00	1914.2	76.53	1530.2	1243.55
14.00	2345.3	76.55	1780.3	1245.26
15.00	2829.3	76.59	2061.0	1247.66
16.00	3357.0	76.64	2367.1	1250.82
17.00	3916.1	76.70	2691.3	1254.81
18.00	4492.3	76.77	3025.5	1259.65
19.00	5070.5	76.85	3360.9	1265.37
20.00	5635.5	76.95	3688.6	1271.95
21.00	6173.3	77.06	4000.5	1279.37
22.00	6671.9	77.18	4289.7	1287.57
23.00	7121.8	77.31	4550.7	1296.48
24.00	7517.0	77.45	4779.8	1306.04
25.00	7855.3	77.59	4976.1	1316.15
26.00	8139.6	77.75	5141.0	1326.73
27.00	8377.5	77.90	5278.9	1337.70
28.00	8579.8	78.07	5396.3	1349.01
29.00	8759.0	78.23	5500.2	1360.61
30.00	8925.6	78.39	5596.9	1372.46
31.00	9085.1	78.56	5689.3	1384.57
32.00	9234.5	78.73	5776.0	1396.91
33.00	9362.1	78.91	5850.0	1409.45
34.00	9449.7	79.08	5900.8	1422.16
35.00	9477.0	79.26	5916.6	1434.96
36.00	9427.0	79.43	5916.6	1447.69
37.00	9290.4	79.60	5916.6	1460.08
38.00	9066.5	79.75	5916.6	1471.82
39.00	8762.7	79.90	5916.6	1482.61
40.00	8392.8	80.03	5916.6	1492.19
41.00	7975.1	80.14	5916.6	1500.36
42.00	7529.5	80.22	5916.6	1506.96
43.00	7073.2	80.29	5916.6	1511.95
44.00	6619.6	80.33	5916.6	1515.30
45.00	6175.8	80.35	5916.6	1517.03
46.00	5744.2	80.35	5916.6	1517.18
47.00	5324.7	80.34	5916.6	1515.81
48.00	4916.0	80.30	5916.6	1512.94
49.00	4517.5	80.24	5916.6	1508.62
50.00	4131.5	80.17	5916.6	1502.89
51.00	3761.8	80.08	5916.6	1495.80
52.00	3411.6	79.97	5916.6	1487.41
53.00	3082.5	79.84	5916.6	1477.80
54.00	2775.0	79.69	5916.6	1467.04

- 대청댐 : 금회 계획홍수 유입시(용담댐 고려)

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500	meter
fwl	80.000	meter
weir crest elevation	64.500	meter
flood frequency	50	year
peak inflow	6527.11	cms
peak outflow	4095.18	cms
flood reduction ratio	.627	
max. water level	79.427	
flood control volume	205924700.0	

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	36.0	76.50	36.0	1241.69
2.00	62.1	76.50	62.1	1241.69
3.00	97.7	76.50	97.7	1241.69
4.00	143.0	76.50	143.0	1241.69
5.00	197.9	76.50	197.9	1241.69
6.00	262.9	76.50	262.9	1241.69
7.00	340.3	76.50	340.3	1241.69
8.00	434.5	76.50	434.5	1241.69
9.00	551.8	76.50	551.8	1241.69
10.00	699.5	76.50	699.5	1241.69
11.00	884.7	76.50	884.7	1241.69
12.00	1113.0	76.50	1063.3	1241.78
13.00	1387.3	76.51	1216.9	1242.18
14.00	1707.7	76.52	1396.3	1243.05
15.00	2070.8	76.54	1599.7	1244.46
16.00	2470.3	76.57	1823.4	1246.47
17.00	2897.2	76.61	2062.4	1249.14
18.00	3340.6	76.66	2310.7	1252.49
19.00	3788.4	76.72	2561.5	1256.55
20.00	4228.5	76.79	2807.9	1261.32
21.00	4648.8	76.87	3043.3	1266.77
22.00	5038.8	76.96	3261.7	1272.85
23.00	5389.6	77.06	3458.2	1279.53
24.00	5694.3	77.17	3628.8	1286.72
25.00	5948.5	77.28	3771.2	1294.36
26.00	6150.6	77.39	3884.4	1302.36
27.00	6302.3	77.51	3969.3	1310.64
28.00	6408.2	77.63	4028.6	1319.12
29.00	6475.4	77.76	4066.2	1327.74
30.00	6512.5	77.89	4087.0	1336.44
31.00	6527.1	78.01	4095.2	1345.19
32.00	6523.4	78.13	4095.2	1353.94
33.00	6501.6	78.26	4095.2	1362.64
34.00	6459.7	78.38	4095.2	1371.23
35.00	6395.3	78.49	4095.2	1379.62
36.00	6307.4	78.61	4095.2	1387.74
37.00	6196.7	78.72	4095.2	1395.51
38.00	6065.7	78.82	4095.2	1402.84
39.00	5918.0	78.91	4095.2	1409.67
40.00	5758.2	79.00	4095.2	1415.94
41.00	5592.1	79.08	4095.2	1421.63
42.00	5425.8	79.15	4095.2	1426.72
43.00	5263.9	79.21	4095.2	1431.22
44.00	5109.0	79.26	4095.2	1435.15
45.00	4960.0	79.31	4095.2	1438.53
46.00	4814.1	79.34	4095.2	1441.38
47.00	4667.7	79.38	4095.2	1443.70
48.00	4518.0	79.40	4095.2	1445.49
49.00	4363.5	79.42	4095.2	1446.74
50.00	4205.8	79.43	4095.2	1447.42
51.00	4047.7	79.43	4095.2	1447.53
52.00	3889.7	79.42	4095.2	1447.08
53.00	3726.2	79.41	4095.2	1446.04
54.00	3546.3	79.38	4095.2	1444.39
55.00	3338.9	79.35	4095.2	1442.04
56.00	3099.3	79.31	4095.2	1438.89
57.00	2831.1	79.26	4095.2	1434.82
58.00	2544.5	79.19	4095.2	1429.75
59.00	2252.5	79.10	4095.2	1423.65
60.00	1967.2	79.01	4095.2	1416.50

건설교통

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500 meter
fwl	80.000 meter
weir crest elevation	64.500 meter
flood frequency	80 year
peak inflow	7068.17 cms
peak outflow	4398.18 cms
flood reduction ratio	.622
max. water level	79.697
flood control volume	225983700.0

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	43.0	76.50	43.0	1241.69
2.00	72.3	76.50	72.3	1241.69
3.00	112.1	76.50	112.1	1241.69
4.00	162.4	76.50	162.4	1241.69
5.00	223.4	76.50	223.4	1241.69
6.00	296.0	76.50	296.0	1241.69
7.00	383.1	76.50	383.1	1241.69
8.00	489.4	76.50	489.4	1241.69
9.00	622.0	76.50	622.0	1241.69
10.00	788.6	76.50	788.6	1241.69
11.00	996.8	76.50	996.8	1241.69
12.00	1252.4	76.50	1141.3	1241.89
13.00	1557.9	76.51	1312.4	1242.54
14.00	1912.9	76.53	1511.2	1243.70
15.00	2313.3	76.56	1735.4	1245.46
16.00	2751.6	76.59	1980.9	1247.89
17.00	3217.9	76.64	2242.0	1251.03
18.00	3700.3	76.70	2512.1	1254.93
19.00	4185.5	76.77	2783.9	1259.59
20.00	4660.3	76.85	3049.8	1265.01
21.00	5112.0	76.94	3302.7	1271.17
22.00	5529.5	77.04	3536.5	1278.01
23.00	5903.3	77.15	3745.8	1285.48
24.00	6226.2	77.26	3926.7	1293.51
25.00	6493.8	77.39	4076.5	1302.00
26.00	6704.5	77.52	4194.5	1310.87
27.00	6860.3	77.65	4281.8	1320.02
28.00	6966.3	77.78	4341.1	1329.39
29.00	7030.3	77.92	4377.0	1338.89
30.00	7061.5	78.06	4394.5	1348.47
31.00	7068.2	78.19	4398.2	1358.08
32.00	7054.9	78.33	4398.2	1367.66
33.00	7022.2	78.46	4398.2	1377.17
34.00	6968.0	78.59	4398.2	1386.52
35.00	6890.0	78.72	4398.2	1395.63
36.00	6787.5	78.84	4398.2	1404.42
37.00	6661.1	78.96	4398.2	1412.79
38.00	6513.8	79.06	4398.2	1420.67
39.00	6349.3	79.16	4398.2	1427.99
40.00	6172.5	79.25	4398.2	1434.70
41.00	5989.6	79.34	4398.2	1440.76
42.00	5807.1	79.41	4398.2	1446.16
43.00	5630.1	79.47	4398.2	1450.91
44.00	5460.9	79.53	4398.2	1455.04
45.00	5298.5	79.58	4398.2	1458.57
46.00	5139.7	79.62	4398.2	1461.53
47.00	4980.7	79.65	4398.2	1463.91
48.00	4818.2	79.67	4398.2	1465.72
49.00	4650.9	79.69	4398.2	1466.93
50.00	4480.2	79.70	4398.2	1467.53
51.00	4309.1	79.70	4398.2	1467.52
52.00	4137.9	79.69	4398.2	1466.89
53.00	3960.3	79.67	4398.2	1465.63
54.00	3764.2	79.65	4398.2	1463.70
55.00	3538.7	79.61	4398.2	1461.01
56.00	3279.4	79.56	4398.2	1457.45
57.00	2991.0	79.50	4398.2	1452.91
58.00	2684.6	79.42	4398.2	1447.29
59.00	2373.8	79.33	4398.2	1440.56
60.00	2071.4	79.23	4398.2	1432.73

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500 meter
fwl	80.000 meter
weir crest elevation	64.500 meter
flood frequency	100 year
peak inflow	7296.93 cms
peak outflow	4526.28 cms
flood reduction ratio	.620
max. water level	79.925
flood control volume	242878100.0

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	46.4	76.50	46.4	1241.69
2.00	77.3	76.50	77.3	1241.69
3.00	119.0	76.50	119.0	1241.69
4.00	171.6	76.50	171.6	1241.69
5.00	235.5	76.50	235.5	1241.69
6.00	311.6	76.50	311.6	1241.69
7.00	402.5	76.50	402.5	1241.69
8.00	513.2	76.50	513.2	1241.69
9.00	650.3	76.50	650.3	1241.69
10.00	821.1	76.50	821.1	1241.69
11.00	1032.7	76.50	1018.3	1241.72
12.00	1290.0	76.50	1162.4	1241.98
13.00	1595.1	76.51	1333.3	1242.68
14.00	1947.2	76.53	1530.4	1243.90
15.00	2342.0	76.56	1751.5	1245.71
16.00	2772.7	76.60	1992.7	1248.18
17.00	3230.0	76.64	2248.8	1251.35
18.00	3703.1	76.70	2513.8	1255.25
19.00	4180.3	76.77	2781.0	1259.91
20.00	4649.5	76.85	3043.7	1265.32
21.00	5099.3	76.94	3295.6	1271.46
22.00	5519.2	77.04	3530.7	1278.29
23.00	5900.4	77.15	3744.2	1285.75
24.00	6235.8	77.27	3932.1	1293.78
25.00	6520.9	77.39	4091.7	1302.29
26.00	6753.9	77.52	4222.2	1311.22
27.00	6936.0	77.65	4324.1	1320.48
28.00	7071.6	77.79	4400.1	1329.99
29.00	7167.9	77.93	4454.0	1339.69
30.00	7233.2	78.07	4490.6	1349.51
31.00	7274.9	78.21	4513.9	1359.41
32.00	7296.3	78.35	4525.9	1369.37
33.00	7296.9	78.49	4526.3	1379.34
34.00	7273.5	78.63	4526.3	1389.28
35.00	7222.9	78.76	4526.3	1399.08
36.00	7143.4	78.90	4526.3	1408.64
37.00	7035.5	79.03	4526.3	1417.87
38.00	6901.6	79.15	4526.3	1426.66
39.00	6745.6	79.26	4526.3	1434.93
40.00	6572.4	79.36	4526.3	1442.61
41.00	6388.9	79.46	4526.3	1449.64
42.00	6201.9	79.54	4526.3	1456.01
43.00	6017.2	79.62	4526.3	1461.71
44.00	5838.0	79.69	4526.3	1466.76
45.00	5663.8	79.75	4526.3	1471.17
46.00	5492.2	79.80	4526.3	1474.95
47.00	5320.1	79.84	4526.3	1478.12
48.00	5145.0	79.87	4526.3	1480.66
49.00	4965.9	79.90	4526.3	1482.57
50.00	4784.9	79.92	4526.3	1483.82
51.00	4604.8	79.92	4526.3	1484.43
52.00	4425.1	79.92	4526.3	1484.39
53.00	4237.9	79.91	4526.3	1483.69
54.00	4029.9	79.90	4526.3	1482.28
55.00	3789.3	79.87	4526.3	1480.06
56.00	3512.3	79.82	4526.3	1476.90
57.00	3204.5	79.77	4526.3	1472.70
58.00	2877.9	79.69	4526.3	1467.35
59.00	2546.8	79.61	4526.3	1460.82
60.00	2224.9	79.50	4526.3	1453.12

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500 meter
fwl	80.000 meter
weir crest elevation	64.500 meter
flood frequency	150 year
peak inflow	7826.01 cms
peak outflow	4822.57 cms
flood reduction ratio	.616
max. water level	80.179
flood control volume	262040700.0

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	53.0	76.50	53.0	1241.69
2.00	86.8	76.50	86.8	1241.69
3.00	132.2	76.50	132.2	1241.69
4.00	189.6	76.50	189.6	1241.69
5.00	259.2	76.50	259.2	1241.69
6.00	342.6	76.50	342.6	1241.69
7.00	443.2	76.50	443.2	1241.69
8.00	566.5	76.50	566.5	1241.69
9.00	720.3	76.50	720.3	1241.69
10.00	913.3	76.50	913.3	1241.69
11.00	1153.6	76.50	1086.0	1241.82
12.00	1446.9	76.51	1250.3	1242.29
13.00	1795.5	76.52	1445.5	1243.28
14.00	2198.1	76.55	1670.9	1244.85
15.00	2649.4	76.58	1923.6	1247.11
16.00	3140.7	76.63	2198.8	1250.11
17.00	3660.5	76.68	2489.9	1253.91
18.00	4195.5	76.75	2789.5	1258.55
19.00	4731.2	76.83	3089.5	1264.04
20.00	5252.9	76.93	3381.6	1270.36
21.00	5747.1	77.03	3658.4	1277.49
22.00	6201.6	77.15	3912.9	1285.37
23.00	6606.5	77.27	4139.7	1293.93
24.00	6954.3	77.40	4334.4	1303.08
25.00	7240.3	77.54	4494.6	1312.74
26.00	7463.4	77.69	4619.5	1322.80
27.00	7626.0	77.84	4710.6	1333.17
28.00	7734.0	77.99	4771.1	1343.75
29.00	7796.4	78.14	4806.0	1354.47
30.00	7823.8	78.29	4821.3	1365.26
31.00	7826.0	78.44	4822.6	1376.07
32.00	7808.8	78.59	4822.6	1386.85
33.00	7773.1	78.74	4822.6	1397.53
34.00	7716.4	78.89	4822.6	1408.05
35.00	7635.6	79.03	4822.6	1418.33
36.00	7529.0	79.17	4822.6	1428.26
37.00	7396.9	79.30	4822.6	1437.77
38.00	7241.6	79.42	4822.6	1446.75
39.00	7067.1	79.53	4822.6	1455.15
40.00	6878.2	79.63	4822.6	1462.89
41.00	6681.9	79.73	4822.6	1469.94
42.00	6485.2	79.81	4822.6	1476.28
43.00	6293.6	79.89	4822.6	1481.92
44.00	6110.1	79.96	4822.6	1486.88
45.00	5933.5	80.02	4822.6	1491.20
46.00	5760.3	80.06	4822.6	1494.89
47.00	5586.5	80.10	4822.6	1497.95
48.00	5408.8	80.14	4822.6	1500.38
49.00	5225.4	80.16	4822.6	1502.16
50.00	5037.1	80.17	4822.6	1503.27
51.00	4844.1	80.18	4822.6	1503.70
52.00	4640.4	80.18	4822.6	1503.41
53.00	4413.4	80.16	4822.6	1502.34
54.00	4150.5	80.14	4822.6	1500.40
55.00	3848.0	80.10	4822.6	1497.43
56.00	3512.2	80.04	4822.6	1493.32
57.00	3156.4	79.97	4822.6	1487.96
58.00	2796.4	79.88	4822.6	1481.32
59.00	2446.3	79.78	4822.6	1473.39
60.00	2117.4	79.65	4822.6	1464.24

DAECHUNG DAM RESERVOIR OPERATION

hwl	76.500	meter
fwl	80.000	meter
weir crest elevation	64.500	meter
flood frequency	200	year
peak inflow	8175.29	cms
peak outflow	5018.16	cms
flood reduction ratio	.614	
max. water level	80.432	
flood control volume	281536100.0	

time (hr)	inflow (cms)	r.level (el.m)	outflow (cms)	storage (m.cm)
.00	.0	76.50	.0	1241.69
1.00	57.8	76.50	57.8	1241.69
2.00	93.7	76.50	93.7	1241.69
3.00	141.7	76.50	141.7	1241.69
4.00	202.4	76.50	202.4	1241.69
5.00	276.2	76.50	276.2	1241.69
6.00	364.8	76.50	364.8	1241.69
7.00	471.7	76.50	471.7	1241.69
8.00	602.9	76.50	602.9	1241.69
9.00	766.7	76.50	766.7	1241.69
10.00	972.1	76.50	972.1	1241.69
11.00	1227.3	76.50	1127.3	1241.87
12.00	1538.1	76.51	1301.3	1242.48
13.00	1906.6	76.53	1507.7	1243.62
14.00	2331.1	76.56	1745.4	1245.40
15.00	2805.7	76.59	2011.2	1247.88
16.00	3321.2	76.64	2299.9	1251.15
17.00	3865.5	76.70	2604.7	1255.26
18.00	4424.5	76.78	2917.7	1260.24
19.00	4983.0	76.86	3230.5	1266.11
20.00	5526.0	76.96	3534.5	1272.84
21.00	6039.3	77.07	3822.0	1280.42
22.00	6510.5	77.20	4085.9	1288.78
23.00	6929.4	77.33	4320.5	1297.84
24.00	7288.4	77.47	4521.5	1307.51
25.00	7582.7	77.61	4686.3	1317.71
26.00	7811.4	77.77	4814.4	1328.31
27.00	7977.1	77.93	4907.2	1339.23
28.00	8086.1	78.08	4968.2	1350.37
29.00	8147.9	78.24	5002.8	1361.65
30.00	8174.1	78.40	5017.5	1372.99
31.00	8175.3	78.56	5018.2	1384.35
32.00	8158.3	78.72	5018.2	1395.69
33.00	8124.4	78.87	5018.2	1406.93
34.00	8071.0	79.03	5018.2	1418.02
35.00	7994.4	79.18	5018.2	1428.87
36.00	7892.1	79.32	5018.2	1439.40
37.00	7763.6	79.45	5018.2	1449.52
38.00	7610.8	79.58	5018.2	1459.12
39.00	7437.2	79.71	5018.2	1468.15
40.00	7247.8	79.82	5018.2	1476.51
41.00	7049.6	79.92	5018.2	1484.18
42.00	6849.9	80.01	5018.2	1491.14
43.00	6654.7	80.10	5018.2	1497.38
44.00	6466.9	80.17	5018.2	1502.93
45.00	6285.6	80.23	5018.2	1507.82
46.00	6107.3	80.29	5018.2	1512.06
47.00	5927.8	80.34	5018.2	1515.66
48.00	5742.8	80.37	5018.2	1518.60
49.00	5547.4	80.40	5018.2	1520.86
50.00	5334.9	80.42	5018.2	1522.38
51.00	5094.9	80.43	5018.2	1523.09
52.00	4817.0	80.43	5018.2	1522.87
53.00	4495.7	80.41	5018.2	1521.57
54.00	4135.1	80.38	5018.2	1519.04
55.00	3748.1	80.33	5018.2	1515.16
56.00	3351.3	80.26	5018.2	1509.87
57.00	2960.8	80.17	5018.2	1503.17
58.00	2589.4	80.07	5018.2	1495.09
59.00	2245.9	79.94	5018.2	1485.73
60.00	1935.0	79.80	5018.2	1475.19

건설교통부

제Ⅶ장 하천환경 조사 및 예측

1. 수질.유량 및 저질조사 성과

2. 생태계(동.식물상)조사 성과

3. 수질예측 모형 입.출력 자료

건설교통부

1. 수질.유량 및 저질조사 성과

1.1 1차 조사성과

1.2 2차 조사성과

1.3 3차 조사성과

1.4 4차 조사성과

건설교통부

1.1 1차 조사성과

건설교통부

1. 조 사 개 요

1) 조사기간 및 조사내역

금강수계 하천정비 기본계획 및 하천대장 작성용역 (하천수질,저질 유량분석)(1차)(표1-1.조사내역참조)를 2000년 12월 20일부터 1월 17일(단, 현장조사기간 : 12월 20일 ~ 12월 30일)에 실시하였다.

(표1-1. 조사내역)

분 야	지점수	조 사 항 목	비 고
1) 하천 수질	33	수온, pH, SS, COD, BOD, DO, T-N, T-P, Cn, Cd, Hg, 유기인, As, Pb, Cr^{+6}, ABS, PCB, Chl-a, 대장균군수	19 항목
2) 하천 저질	33	강열감량, TS, VS, COD, T-N, T-P, Cn, Zn, Cu, Cd, Hg, 유기인, As, Pb, Cr^{+6}, PCB	16 항목

2) 측정기간중 기상상태

측정시일 \ 구 분		일 기	기온(℃)	기습(%)	기압 (mmHg)	풍 향	풍 속 (m/sec)
2000. 12. 20.	(낮) 13 : 00	흐림	2	66	756	서	2.7
	(밤) 22 : 00	흐림	-3	68	755	북서	3.2
2000. 12. 21.	(낮) 13 : 00	구름	4	59	761	북서	1.7
	(밤) 22 : 00	맑음	-1	60	760	북	2.0
2000. 12. 22.	(낮) 13 : 00	흐림	8	48	757	남서	3.6
	(밤) 22 : 00	흐림	1	44	754	서	3.4
2000. 12. 23.	(낮) 13 : 00	맑음	5	44	757	북서	3.7
	(밤) 22 : 00	맑음	-2	59	754	남서	3.2
2000. 12. 24.	(낮) 13 : 00	흐림	2	61	762	북서	2.4
	(밤) 22 : 00	눈	-3	72	763	서	2.7
2000. 12. 25.	(낮) 13 : 00	맑음	1	44	761	남서	1.8
	(밤) 22 : 00	맑음	-4	43	760	남	2.4
2000. 12. 26.	(낮) 13 : 00	맑음	-2	47	764	북동	3.1
	(밤) 22 : 00	맑음	-8	44	762	북	3.0
2000. 12. 27.	(낮) 13 : 00	흐림	0	44	760	남서	2.4
	(밤) 22 : 00	흐림	-5	48	759	남	2.6
2000. 12. 28.	(낮) 13 : 00	맑음	1	51	764	북서	2.4
	(밤) 22 : 00	맑음	-4	54	763	서	2.7
2000. 12. 29.	(낮) 13 : 00	구름	2	44	761	남	1.4
	(밤) 22 : 00	구름	-2	41	760	남서	1.2
2000. 12. 30.	(낮) 13 : 00	흐림	4	39	758	서	1.4
	(밤) 22 : 00	흐림	-1	35	754	서	1.6

건설교통부

株式會社 産業公害研究所

2. 조 사 결 과

1) 하 천 수 질

(1) 측정 지점 (⬇ W-1 .. W-16)

지점번호	측 정 지 점	비 고
W - 1	금강 하구둑	
W - 2	전라북도 익산시 양화면 입포리 입포초교 앞	
W - 3	충청남도 부여군 세도면 양대리 다근이마을	
W - 4	충청남도 부여군 세도면 반조원리	흙탕물
W - 5	충청남도 부여군 양암면 장정마을	흙탕물
W - 6	충청남도 부여군 청남면 왕진리 왕진마을	흙탕물
W - 7	충청남도 청양군 목면 어천리 놋점나루터	흙탕물
W - 8	충청남도 청양군 우성면 옥성리 계전마을 앞	흙탕물
W - 9	충청남도 공주시 관동 공주대교 상류 50m	흙탕물
W - 10	충청남도 공주시 장암리 청벽대교 상류 50m	흙탕물
W - 11	충청남도 연기군 남면 월산리 새터말 앞	
W - 12	충청남도 연기군 동면 합강리 469번지 금강양어장 앞	
W - 13	충청북도 청원군 무강면 노호리 한라시멘트 하류 300m	
W - 14	충청남도 대전광역시 불로동	
W - 15	충청남도 대전광역시 용호동 용호교 하류 200m (신탄진 용호초교 앞)	
W - 16	충청남도 옥천군 이원면 원동리 원동철교하류 150m	

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1) 하 천 수 질

(1) 채수 지점 (⬇ W-16 .. W-33)

지 점 번 호	측 정 지 점	비 고
W - 17	대전광역시 운평동 대전3,4사업단지 폐수종말처리장 뒷편	모래
W - 18	충청남도 대전시 서구 원촌동 원촌교 상류 300m	〃
W - 19	충청남도 대전시 서구 도안동 가수원교 하류 1.5Km (도안마을)	〃
W - 20	충청남도 대전시 금산군 해노동 봉곡2교 하류 100m	〃
W - 21	충청남도 대전시 서구 대화동 평송청소년 수련원 앞	생활하수 유입 자갈 · 모래
W - 22	충청남도 대전시 중구 침산동 침산교 밑	모래
W - 23	충청남도 연기군 동면 합강1리 월산교	〃
W - 24	충청북도 강내면 궁평3리 미호천교	〃
W - 25	충청북도 청주시 흥덕구 원평동 앞 하천	〃
W - 26	충청북도 청주시 북이면 화하리	〃
W - 27	충청남도 부여군 세도면 강경읍 강경대교 밑	진흙
W - 28	충청남도 논산시 대교동 논산대교 밑	모래
W - 29	충청남도 논산시 은진면 성덕리 탑정양수정 앞	탑정저수지수문 유입수없음. 모래
W - 30	충청남도 논산시 부적면 덕평리 항월보건소 앞	모래
W - 31	충청남도 논산시 은진면 산동리 산동교 상류 20m	국도 확,포장공사중 모래
W - 32	전라북도 익산시 두여리 두여교 하류 200m	모래
W - 33	충청남도 부여군 세도면 강경읍 하강경교 밑	진흙

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(2) 분석 결과

(⬇ W-1 .. W-8)

분석항목 \ 지점번호	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8
수온 (℃)	1.5	1.5	1.0	1.0	0.5	0.5	0.4	0.4
pH	7.8	7.3	7.3	7.3	7.2	7.2	7.2	7.3
SS (mg/l)	6	5	4	4	5	4	6	8
COD (mg/l)	4.6	4.2	4.1	3.9	4.0	3.8	4.0	5.0
BOD (mg/l)	3.8	3.5	3.3	3.2	3.3	3.1	3.2	4.1
DO (mg/l)	8.7	8.8	8.9	8.9	8.9	8.9	8.9	8.7
T-N (mg/l)	5.31	5.22	4.35	3.97	4.12	4.05	4.02	4.19
T-P (mg/l)	0.24	0.21	0.19	0.14	0.17	0.16	0.17	0.22
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	0.03	0.02	0.03	불검출	불검출	0.02	0.02	0.02
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (㎍/l)	2.0	1.5	1.0	불검출	불검출	불검출	불검출	불검출
대장균군수 (MPN/100㎖)	6000	5000	4000	4000	3000	4000	5000	4000

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(2) 분석 결과

(⬇ W-9 .. W-16)

분석항목 \ 지점번호	W-9	W-10	W-11	W-12	W-13	W-14	W-15	W-16
수온 (℃)	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
pH	7.2	7.1	7.3	7.2	7.2	7.2	7.2	7.5
SS (mg/l)	10	9	9	8	6	4	4	3
COD (mg/l)	5.8	5.6	5.0	3.8	3.2	3.0	2.3	1.8
BOD (mg/l)	4.6	4.5	4.1	3.1	2.6	2.4	1.7	1.2
DO (mg/l)	8.6	8.6	8.7	9.0	9.1	9.1	9.3	9.4
T-N (mg/l)	5.95	5.88	4.89	3.75	2.86	2.51	1.32	3.05
T-P (mg/l)	0.24	0.23	0.22	0.20	0.18	0.10	0.03	0.02
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	0.04	0.02	불검출	불검출	불검출	불검출	불검출	불검출
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (㎍/l)	1.5	1.0	불검출	불검출	불검출	불검출	불검출	불검출
대장균군수 (MPN/100㎖)	4000	3000	2400	2200	1600	2400	230	130

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(2) 분석 결과

(⬇ W-17 .. W-24)

분석항목 \ 지점번호		W-17	W-18	W-19	W-20	W-21	W-22	W-23	W-24
수온	(℃)	0.4	0.4	0.3	0.2	0.3	0.2	0.3	0.3
pH		7.3	7.4	7.3	7.3	7.4	7.4	7.3	7.4
SS	(mg/l)	33	57	6	5	9	6	11	10
COD	(mg/l)	7.4	5.2	3.2	2.6	6.1	2.3	7.0	6.7
BOD	(mg/l)	6.1	4.3	2.6	2.0	4.8	1.8	5.6	5.5
DO	(mg/l)	8.4	8.6	9.1	9.2	8.6	9.3	8.5	8.5
T-N	(mg/l)	13.47	4.68	2.24	2.19	5.41	3.67	6.63	6.43
T-P	(mg/l)	0.60	0.27	0.12	0.11	0.25	0.14	0.31	0.27
CN	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6}	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS	(mg/l)	0.05	0.04	0.03	불검출	0.05	0.02	불검출	불검출
PCB	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a	(㎍/l)	2.0	1.5	1.0	불검출	2.0	불검출	불검출	불검출
대장균군수 (MPN/100㎖)		4000	3000	2400	140	300	1600	220	170

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(2) 분석 결과

(⬇ W-25 .. W-33)

분석항목 \ 지점번호	W-25	W-26	W-27	W-28	W-29	W-30	W-31	W-32	W-33
수온 (℃)	0.3	0.2	0.5	1.5	0.4	0.2	0.3	0.2	0.3
pH	7.3	7.3	7.3	7.3	7.3	7.4	7.4	7.4	7.4
SS (mg/l)	8	3	6	4	4	4	5	4	8
COD (mg/l)	4.7	4.3	3.5	3.4	3.0	2.6	2.8	2.0	6.0
BOD (mg/l)	3.8	3.4	2.9	2.8	2.4	2.1	2.3	1.6	5.0
DO (mg/l)	8.7	8.8	9.0	9.0	9.1	9.2	9.2	9.3	8.6
T-N (mg/l)	5.46	5.27	4.62	4.57	2.93	1.28	1.51	2.12	8.24
T-P (mg/l)	0.27	0.16	0.17	0.16	0.07	0.07	0.09	0.12	0.58
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	불검출	불검출	0.05	0.03	0.02	불검출	불검출	불검출	0.06
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (㎍/l)	불검출	불검출	1.0	0.5	불검출	불검출	불검출	불검출	0.2
대장균군수 (MPN/100㎖)	140	130	2400	1600	220	130	170	140	3000

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2) 하 천 저 질

(1) 채취 지점 (⬇ WS-1 .. WS-16)

지 점 번 호	측 정 지 점	비 고
WS - 1	금강 하구둑	벌
WS - 2	전라북도 익산시 양화면 입포리 입포초교 앞	〃
WS - 3	충청남도 부여군 세도면 양대리 다근이마을	모래
WS - 4	충청남도 부여군 세도면 반조원리	〃
WS - 5	충청남도 부여군 양암면 장정마을	〃
WS - 6	충청남도 부여군 청남면 왕진리 왕진마을	상류1Km지점 교각공사중 모래
WS - 7	충청남도 청양군 목면 어천리 놋점나루터	모래채취장 모래
WS - 8	충청남도 청양군 우성면 옥성리 계전마을 앞	모래채취장, 상류500m 논산고속도로 교각공사중 모래
WS - 9	충청남도 공주시 관동 공주대교 상류 50m	모래
WS - 10	충청남도 공주시 장암리 청벽대교 상류 50m	자갈 · 모래
WS - 11	충청북도 청원군 금남면 월산리 새터말 앞	모래채취장 모래
WS - 12	충청북도 연기군 동면 합강리 469번지 금강양어장 앞	모래
WS - 13	충청북도 청원군 부강면 노호리 한라시멘트 하류 300m	자갈 · 모래
WS - 14	충청남도 대전광역시 볼로동	자갈 · 모래
WS - 15	충청남도 대전시 용호동 용호교 하류 200m (신탄진 용호초교 앞)	모래
WS - 16	충청남도 옥천군 이원면 원동리 원동철교 하류 150m	원동철교 하류100m 고속철도 공사중 모래

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2) 하 천 저 질

(1) 채취 지점 (⬇ WS-16 .. WS-33)

지 점 번 호	측 정 지 점	비 고
WS - 17	대전광역시 운평동 대전3,4사업단지 폐수종말처리장 뒷편	모래
WS - 18	충청남도 대전시 서구 원촌동 원촌교 상류 300m	〃
WS - 19	충청남도 대전시 서구 도안동 가수원교 하류 1.5Km (도안마을)	〃
WS - 20	충청남도 대전시 금산군 해노동 봉곡2교 하류 100m	〃
WS - 21	충청남도 대전시 서구 대화동 평송청소년 수련원 앞	생활하수 유입 자갈 · 모래
WS - 22	충청남도 대전시 중구 침산동 침산교 밑	모래
WS - 23	충청남도 연기군 동면 합강1리 월산교	〃
WS - 24	충청북도 강내면 궁평3리 미호천교	〃
WS - 25	충청북도 청주시 흥덕구 원평동 앞 하천	〃
WS - 26	충청북도 청주시 북이면 화하리	〃
WS - 27	충청남도 부여군 세도면 강경읍 강경대교 밑	진흙
WS - 28	충청남도 논산시 대교동 논산대교 밑	모래
WS - 29	충청남도 논산시 은진면 성덕리 탑정양수정 앞	탑정저수지수문 유입수없음. 모래
WS - 30	충청남도 논산시 부적면 덕평리 항월보건소 앞	모래
WS - 31	충청남도 논산시 은진면 산동리 산동교 상류 20m	국도 확,포장공사중 모래
WS - 32	전라북도 익산시 두여리 두여교 하류 200m	모래
WS - 33	충청남도 부여군 세도면 강경읍 하강경교 밑	진흙

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(2) 분석 결과

(⬇ WS-1 .. WS-8)

분석항목 \ 지점번호		WS-1	WS-2	WS-3	WS-4	WS-5	WS-6	WS-7	WS-8
감열감량	(mg/kg)	2.7	3.5	2.7	2.6	2.1	2.4	2.8	2.7
TS	(%)	75.9	76.8	77.2	77.8	77.5	80.4	83.3	82.6
VS	(%)	2.6	2.4	1.6	1.4	1.0	1.2	1.6	1.5
COD	(mg/kg)	2608.1	2598.1	2104.6	2014.0	735.1	1409.8	85.6	795.5
T-N	(mg/kg)	668.3	622.5	213.6	206.9	136.7	172.3	114.9	95.2
T-P	(mg/kg)	166.59	156.03	77.12	68.24	33.09	67.12	37.70	26.35
CN	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Zn	(mg/kg)	7.28	7.26	5.86	5.60	2.58	6.36	5.64	0.49
Cu	(mg/kg)	2.82	2.80	2.37	2.17	1.05	2.21	1.84	1.64
Cd	(mg/kg)	0.11	0.10	0.08	0.07	0.04	0.10	0.07	0.06
Hg	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As	(mg/kg)	0.10	0.09	0.06	0.05	0.03	0.09	0.07	0.06
Pb	(mg/kg)	2.62	2.60	2.29	2.02	1.80	2.58	2.01	1.87
Cr^{+6}	(mg/kg)	0.20	0.19	0.16	0.15	0.13	0.17	0.14	0.12
PCB	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출

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(2) 분석 결과

(⬇ WS-9 .. WS-16)

분석항목 \ 지점번호		WS-9	WS-10	WS-11	WS-12	WS-13	WS-14	WS-15	WS-16
감열감량	(mg/kg)	3.0	2.6	2.0	2.1	3.3	3.0	3.1	2.2
TS	(%)	82.3	83.5	86.2	86.8	79.6	85.4	81.7	81.5
VS	(%)	1.8	1.4	0.7	0.9	2.3	0.8	1.0	1.1
COD	(mg/kg)	725.0	664.6	261.8	141.9	1309.1	119.8	141.9	1409.9
T-N	(mg/kg)	116.9	80.2	78.1	36.5	667.8	65.3	45.3	174.6
T-P	(mg/kg)	26.75	22.76	21.10	10.47	127.38	82.46	23.11	46.98
CN	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Zn	(mg/kg)	7.86	7.23	2.84	1.85	8.48	2.31	2.55	8.62
Cu	(mg/kg)	2.96	2.73	1.07	1.02	8.36	0.96	1.05	3.46
Cd	(mg/kg)	0.12	0.11	0.04	0.02	0.17	0.02	0.03	0.18
Hg	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As	(mg/kg)	0.10	0.09	0.04	0.02	0.16	0.02	0.03	0.17
Pb	(mg/kg)	2.84	2.61	1.02	0.86	2.86	0.62	0.58	3.10
Cr^{+6}	(mg/kg)	0.20	0.18	0.12	0.14	0.27	0.11	0.15	0.28
PCB	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출

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(2) 분석 결과

(⬇ WS-17 .. WS-24)

분석항목 \ 지점번호		WS-17	WS-18	WS-19	WS-20	WS-21	WS-22	WS-23	WS-24
감열감량	(mg/kg)	3.4	3.1	2.9	2.8	3.5	2.9	2.5	2.4
TS	(%)	80.3	81.8	83.2	84.1	80.5	85.9	80.0	80.5
VS	(%)	2.2	2.0	1.8	1.7	2.3	1.8	1.4	1.2
COD	(mg/kg)	211.5	197.4	192.3	164.3	966.7	196.4	394.7	212.5
T-N	(mg/kg)	13.9	13.3	8.9	8.5	144.9	10.8	21.7	19.5
T-P	(mg/kg)	13.21	3.62	3.44	3.12	23.10	3.02	14.90	12.90
CN	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Zn	(mg/kg)	8.12	7.56	7.35	7.05	8.94	4.81	5.63	9.92
Cu	(mg/kg)	2.99	2.78	2.71	2.58	2.91	1.57	1.87	1.68
Cd	(mg/kg)	0.13	0.12	0.11	0.10	0.12	0.06	0.11	0.07
Hg	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As	(mg/kg)	0.11	0.10	0.09	0.08	0.10	0.07	0.08	0.09
Pb	(mg/kg)	2.94	2.74	2.66	2.55	2.90	2.04	2.24	2.10
Cr^{+6}	(mg/kg)	0.21	0.19	0.18	0.16	0.20	0.18	0.19	0.20
PCB	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출

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(2) 분석 결과

(◘ WS-25 .. WS-33)

분석항목 \ 지점번호		WS-25	WS-26	WS-27	WS-28	WS-29	WS-30	WS-31	WS-32	WS-33
감열감량	(mg/kg)	2.1	2.4	4.0	3.6	3.1	2.5	2.4	3.0	3.9
TS	(%)	83.5	80.5	74.8	76.8	79.6	81.9	82.5	74.5	75.2
VS	(%)	1.0	1.3	2.8	2.4	1.9	1.4	1.2	1.9	2.7
COD	(mg/kg)	166.2	1742.6	2869.7	694.8	253.7	209.5	154.1	372.6	2880.0
T-N	(mg/kg)	19.1	224.1	626.9	326.2	20.7	34.0	26.2	45.6	722.4
T-P	(mg/kg)	7.05	31.65	23.00	18.40	6.84	5.12	3.64	11.35	68.4
CN	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Zn	(mg/kg)	3.82	7.21	8.72	7.32	3.34	2.51	2.46	4.46	8.68
Cu	(mg/kg)	1.41	1.48	3.01	2.86	1.04	1.01	0.96	1.53	2.94
Cd	(mg/kg)	0.05	0.06	0.13	0.11	0.05	0.04	0.03	0.06	0.12
Hg	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As	(mg/kg)	0.04	0.06	0.11	0.09	0.05	0.03	0.03	0.05	0.10
Pb	(mg/kg)	2.00	2.02	2.96	2.80	1.12	1.08	1.00	1.51	2.67
Cr^{+6}	(mg/kg)	0.14	0.16	0.26	0.18	0.12	0.11	0.09	0.11	0.27
PCB	(mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출

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§. T.M 좌표

지점	x	y
W - 1	177.33	279.83
W - 2	189.53	292.58
W - 3	196.00	295.08
W - 4	199.95	299.59
W - 5	195.37	304.95
W - 6	196.03	313.97
W - 7	202.97	322.43
W - 8	206.93	327.48
W - 9	212.43	328.99
W - 10	218.88	326.17
W - 11	227.68	334.98
W - 12	231.98	335.56
W - 13	235.28	332.57
W - 14	235.73	329.75
W - 15	238.28	328.55
W - 16	260.15	305.03
W - 17	235.73	328.27
W - 18	236.58	319.88
W - 19	231.43	313.58
W - 20	229.05	306.00
W - 21	235.42	318.38
W - 22	235.69	308.62
W - 23	228.53	336.08
W - 24	231.35	346.97
W - 25	238.83	353.48
W - 26	244.33	361.90
W - 27	201.49	296.68
W - 28	207.19	301.08
W - 29	213.10	297.28
W - 30	211.65	303.65
W - 31	208.53	302.63
W - 32	206.38	285.38
W - 33	201.55	296.38

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§. T.M 좌표

지점	x	y
WS - 1	177.33	279.83
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WS - 6	196.03	313.97
WS - 7	202.97	322.43
WS - 8	206.93	327.48
WS - 9	212.43	328.99
WS - 10	218.88	326.17
WS - 11	227.68	334.98
WS - 12	231.98	335.56
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WS - 26	244.33	361.90
WS - 27	201.49	296.68
WS - 28	207.19	301.08
WS - 29	213.10	297.28
WS - 30	211.65	303.65
WS - 31	208.53	302.63
WS - 32	206.38	285.38
WS - 33	201.55	296.38

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1.2 2차 조사성과

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1. 조 사 개 요

1) 조사기간 및 조사내역

금강수계 하천정비 기본계획 및 하천대장 작성용역 (하천수질·저질 유량분석) (2차) (표1-1.조사내역참조)를 2001년 4월 16일부터 5월 12일(단, 현장조사기간 : 4월 16일 ~ 4월 27일)에 실시하였다.

(표1-1. 조사내역)

분 야	지점수	조 사 항 목	비 고
1) 하천 수질	33	수온, pH, SS, COD, BOD, DO, T-N, T-P, CN, Cd, Hg, 유기인, As, Pb, Cr^{+6}, ABS, PCB, Chl-a, 대장균군수	19 항목
2) 하천 저질	33	강열감량, TS, VS, COD, T-N, T-P, CN, Zn, Cu, Cd, Hg, 유기인, As, Pb, Cr^{+6}, PCB	16 항목

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2) 측정기간중 기상상태

측정시일 \ 구 분		일 기	기온(℃)	기습(%)	기압 (mmHg)	풍 향	풍 속 (m/sec)
2001. 4. 16.	(낮) 13 : 00	맑음	28	35	763	남서	4.1
	(밤) 22 : 00	맑음	14	29	764	서	3.9
2001. 4. 17.	(낮) 13 : 00	맑음	27	18	764	북서	1.4
	(밤) 22 : 00	맑음	13	20	762	남서	1.1
2001. 4. 18.	(낮) 13 : 00	맑음	25	31	761	북서	2.1
	(밤) 22 : 00	맑음	13	29	761	북	2.2
2001. 4. 19.	(낮) 13 : 00	맑음	23	51	759	서	3.2
	(밤) 22 : 00	맑음	10	48	760	남동	2.9
2001. 4. 20.	(낮) 13 : 00	흐림	24	32	760	북동	2.1
	(밤) 22 : 00	흐림	11	40	757	북서	1.8
2001. 4. 21.	(낮) 13 : 00	맑음	22	34	762	남서	4.2
	(밤) 22 : 00	맑음	10	21	760	서	4.0
2001. 4. 23.	(낮) 13 : 00	맑음	19	39	764	서	4.4
	(밤) 22 : 00	맑음	11	41	765	북서	3.5
2001. 4. 24.	(낮) 13 : 00	맑음	19	23	763	북	2.2
	(밤) 22 : 00	맑음	10	34	761	남서	1.7
2001. 4. 25.	(낮) 13 : 00	맑음	19	39	761	북서	2.1
	(밤) 22 : 00	맑음	11	31	763	서	1.9
2001. 4. 26.	(낮) 13 : 00	맑음	18	30	764	남동	3.4
	(밤) 22 : 00	맑음	10	26	762	북동	2.9
2001. 4. 27.	(낮) 13 : 00	맑음	19	34	760	북서	2.7
	(밤) 22 : 00	맑음	11	37	758	북	2.5

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2. 조 사 결 과

1) 하 천 수 질

(1) 측정 지점 (◘ W-1 .. W-16)

지점번호	측 정 지 점	비 고
W - 1	금강 하구둑	
W - 2	전라북도 익산시 양화면 입포리 입포초교 앞	
W - 3	충청남도 부여군 세도면 양대리 다근이마을	
W - 4	충청남도 부여군 세도면 반조원리	흙탕물
W - 5	충청남도 부여군 양암면 장정마을	흙탕물
W - 6	충청남도 부여군 청남면 왕진리 왕진마을	흙탕물
W - 7	충청남도 청양군 목면 어천리 놋점나루터	흙탕물
W - 8	충청남도 청양군 우성면 옥성리 계전마을 앞	흙탕물
W - 9	충청남도 공주시 관동 공주대교 상류 50m	흙탕물
W - 10	충청남도 공주시 장암리 청벽대교 상류 50m	흙탕물
W - 11	충청남도 연기군 남면 월산리 새터말 앞	
W - 12	충청남도 연기군 동면 합강리 469번지 금강양어장 앞	
W - 13	충청북도 청원군 무강면 노호리 한라시멘트 하류 300m	
W - 14	충청남도 대전광역시 불로동	
W - 15	충청남도 대전광역시 용호동 용호교 하류 200m (신탄진 용호초교 앞)	
W - 16	충청남도 옥천군 이원면 원동리 원동철교하류 150m	

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1) 하 천 수 질

(1) 측정 지점 (⬇ W-17 .. W-32)

지점번호	측 정 지 점	비 고
W - 17	대전광역시 운평동 대전3,4산업단지 폐수종말처리장 뒷편	모래
W - 18	충청남도 대전광역시 서구 원촌동 원촌교상류 300m	〃
W - 19	대전광역시 서구 도안동 가수원교 하류 1.5Km (도안마을)	〃
W - 20	대전광역시 금산군 해노동 봉곡2교 하류 100m	〃
W - 21	대전광역시 서구 대화동 평송청소년수련원 앞	생활하수유입 자갈,모래
W - 22	대전광역시 중구 침산동 침산교 밑	모래
W - 23	충청남도 연기군 동면 합강1리 월산교	〃
W - 24	충청북도 강내면 궁평3리 미호천교	〃
W - 25	충청북도 청주시 흥덕구 원평동 앞 하천	〃
W - 26	충청북도 청주시 북이면 화하리	〃
W - 27	충청남도 부여군 세도면 강경읍 강경대교 밑	진흙
W - 28	충청남도 논산시 대교동 논산대교 밑	모래
W - 29	충청남도 논산시 은진면 성덕리 탑정야수정 앞	탑전저수지 수문 유입수없음, 모래
W - 30	충청남도 논산시 부적면 덕평리 항월보건소 앞	모래
W - 31	충청남도 논산시 은진면 산동리 산동교 상류 20m	국도확포장공사중 모래
W - 32	전라북도 익산시 두여리 두여교 하류 200m	모래
W - 33	충청남도 부여군 세도면 강경읍 하강경교 밑	진흙

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(2) 분석 결과

(⬇ W-1 .. W-8)

분석항목 \ 지점번호	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8
수온 (℃)	14.0	14.0	13.5	13.5	13.0	13.0	12.8	12.8
pH	7.4	7.2	7.2	7.2	7.3	7.2	7.2	7.3
SS (mg/l)	7	6	5	6	8	6	8	10
COD (mg/l)	5.4	5.2	4.8	5.0	6.2	5.8	6.4	6.8
BOD (mg/l)	4.5	4.3	3.4	4.2	5.3	4.7	5.3	5.6
DO (mg/l)	7.4	7.5	7.9	7.5	6.9	7.3	6.9	6.8
T-N (mg/l)	5.37	5.27	4.41	4.03	4.16	4.11	4.07	4.25
T-P (mg/l)	0.27	0.25	0.23	0.17	0.21	0.19	0.20	0.26
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	0.05	0.03	0.04	불검출	불검출	0.04	0.03	0.03
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (㎍/l)	2.8	2.0	1.5	불검출	불검출	불검출	불검출	불검출
대장균군수 (MPN/100㎖)	8000	7000	6000	7000	4000	7000	8000	7000

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(2) 분석 결과

(⬇ W-9 .. W-16)

분석항목 \ 지점번호	W-9	W-10	W-11	W-12	W-13	W-14	W-15	W-16
수온 (℃)	12.8	12.8	12.0	12.0	13.0	12.0	12.0	12.0
pH	7.3	7.2	7.0	7.1	7.4	7.2	7.1	7.5
SS (mg/l)	11	12	10	9	15	6	5	6
COD (mg/l)	6.2	6.3	6.4	4.8	5.4	4.0	2.8	3.1
BOD (mg/l)	5.1	5.2	5.3	4.0	4.5	3.3	2.4	2.5
DO (mg/l)	7.1	7.0	6.9	7.6	7.4	8.0	8.2	8.2
T-N (mg/l)	5.99	5.94	4.94	3.81	2.89	2.56	1.37	3.11
T-P (mg/l)	0.27	0.26	0.25	0.24	0.21	0.14	0.09	0.06
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	0.06	0.03	불검출	불검출	불검출	불검출	불검출	불검출
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (㎍/l)	1.9	1.3	불검출	불검출	불검출	불검출	불검출	불검출
대장균군수 (MPN/100㎖)	6000	4000	3000	2400	4000	3000	500	700

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(2) 분석 결과

(W-17 .. W-24)

분석항목 \ 지점번호	W-17	W-18	W-19	W-20	W-21	W-22	W-23	W-24
수온 (℃)	13.0	13.0	12.5	12.0	12.5	12.0	12.5	12.5
pH	7.2	7.6	7.5	7.4	7.6	7.6	7.3	7.3
SS (mg/l)	36	51	10	9	13	4	15	12
COD (mg/l)	14.2	6.2	5.0	4.8	8.1	2.0	11.2	7.0
BOD (mg/l)	11.8	5.1	4.1	3.7	6.7	1.7	9.2	5.8
DO (mg/l)	6.0	7.1	7.6	7.9	6.5	8.5	6.1	6.9
T-N (mg/l)	10.54	4.74	2.29	2.25	5.47	3.74	6.69	6.47
T-P (mg/l)	0.65	0.31	0.16	0.15	0.28	0.17	0.35	0.30
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	0.07	0.06	0.04	불검출	0.06	0.03	불검출	불검출
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (μg/l)	2.6	2.0	1.4	불검출	2.4	불검출	불검출	불검출
대장균군수 (MPN/100㎖)	7000	2300	5000	2200	3000	1700	5000	2300

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(2) 분석 결과

(⬇ W-25 .. W-33)

분석항목 \ 지점번호	W-25	W-26	W-27	W-28	W-29	W-30	W-31	W-32	W-33
수온 (℃)	12.5	12.5	12.0	13.0	12.5	12.0	12.5	12.0	12.5
pH	7.3	7.2	7.2	7.2	7.2	7.3	7.3	7.3	7.3
SS (mg/l)	12	9	11	7	5	6	12	5	13
COD (mg/l)	8.9	7.5	7.9	5.2	3.2	4.8	5.2	3.2	9.0
BOD (mg/l)	7.4	6.2	6.6	4.3	2.6	3.9	4.3	2.7	7.5
DO (mg/l)	6.0	6.4	6.5	7.5	8.3	7.7	7.5	8.3	6.2
T-N (mg/l)	5.50	5.29	4.68	4.63	2.99	1.34	1.56	2.17	8.28
T-P (mg/l)	0.30	0.19	0.21	0.20	0.11	0.12	0.12	0.16	0.61
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	불검출	불검출	0.07	0.05	0.03	불검출	불검출	불검출	0.08
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (㎍/l)	불검출	불검출	1.4	0.8	불검출	불검출	불검출	불검출	0.6
대장균군수 (MPN/100㎖)	2300	2200	4000	3000	500	400	500	240	5000

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2) 하 천 저 질

(1) 측정 지점 (⬇ WS-1 .. WS-16)

지점번호	측 정 지 점	비 고
WS - 1	금강 하구둑	벌
WS - 2	전라북도 익산시 양화면 입포리 입포초교 앞	〃
WS - 3	충청남도 부여군 세도면 양대리 다근이마을	모래
WS - 4	충청남도 부여군 세도면 반조원리	〃
WS - 5	충청남도 부여군 양암면 장정마을	〃
WS - 6	충청남도 부여군 청남면 왕진리 왕진마을	상류1Km지점 교각공사중, 모래
WS - 7	충청남도 청양군 목면 어천리 놋점나루터	모래채취장, 모래
WS - 8	충청남도 청양군 우성면 옥성리 계전마을 앞	모래채취장 상류500m 논산고속도로 교각공사중, 모래
WS - 9	충청남도 공주시 관동 공주대교 상류 50m	모래
WS - 10	충청남도 공주시 장암리 청벽대교 상류 50m	자갈,모래
WS - 11	충청북도 청원군 금남면 월산리 새터말 앞	모래채취장 모래
WS - 12	충청북도 연기군 동민 합강리 469번지 금강양어장 앞	모래
WS - 13	충청북도 청원군 무강면 노호리 한라시멘트 하류 300m	자갈,모래
WS - 14	충청남도 대전광역시 불로동	자갈,모래
WS - 15	충청남도 대전광역시 용호동 용호교 하류 200m (신탄진 용호초교 앞)	모래
WS - 16	충청남도 옥천군 이원면 원동리 원동철교하류 150m	원동철교하류100m 고속철도공사중, 모래

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2) 하 천 저 질

(1) 측정 지점 (⬇ WS-17 .. WS-32)

지점번호	측 정 지 점	비 고
WS - 17	대전광역시 운평동 대전3,4산업단지 폐수종말처리장 뒷편	모래
WS - 18	충청남도 대전광역시 서구 원촌동 원촌교상류 300m	〃
WS - 19	대전광역시 서구 도안동 가수원교 하류 1.5Km (도안마을)	〃
WS - 20	대전광역시 금산군 해노동 봉곡2교 하류 100m	〃
WS - 21	대전광역시 서구 대화동 평송청소년수련원 앞	생활하수유입 자갈,모래
WS - 22	대전광역시 중구 침산동 침산교 밑	모래
WS - 23	충청남도 연기군 동면 합강1리 월산교	〃
WS - 24	충청북도 강내면 궁평3리 미호천교	〃
WS - 25	충청북도 청주시 흥덕구 원평동 앞 하천	〃
WS - 26	충청북도 청주시 북이면 화하리	〃
WS - 27	충청남도 부여군 세도면 강경읍 강경대교 밑	진흙
WS - 28	충청남도 논산시 대교동 논산대교 밑	모래
WS - 29	충청남도 논산시 은진면 성덕리 탑정야수정 앞	탑전저수지 수문 유입수없음, 모래
WS - 30	충청남도 논산시 부적면 덕평리 항월보건소 앞	모래
WS - 31	충청남도 논산시 은진면 산동리 산동교 상류 20m	국도확포장공사중 모래
WS - 32	전라북도 익산시 두여리 두여교 하류 200m	모래
WS - 33	충청남도 부여군 세도면 강경읍 하강경교 밑	진흙

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(2) 분석 결과

(■ WS-1 .. WS-8)

분석항목 \ 지점번호	WS-1	WS-2	WS-3	WS-4	WS-5	WS-6	WS-7	WS-8
강열감량 (㎎/㎏)	2.9	3.8	2.8	2.7	2.3	2.7	3.0	2.9
TS (%)	75.2	76.2	76.7	77.4	77.2	80.0	83.0	82.0
VS (%)	3.2	2.7	2.0	1.8	1.3	1.6	1.9	1.8
COD (mg/㎏)	2627.2	2607.2	2113.5	2020.4	746.0	1420.3	286.7	813.5
T-N (mg/㎏)	672.1	658.3	264.2	218.1	157.0	193.4	126.3	108.5
T-P (mg/㎏)	167.6	164.0	78.8	71.4	39.2	70.4	41.4	27.3
CN (mg/㎏)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Zn (mg/㎏)	7.35	7.31	5.92	5.64	2.64	6.40	5.68	4.57
Cu (mg/㎏)	2.86	2.85	2.42	2.30	1.10	2.26	1.87	1.69
Cd (mg/㎏)	0.13	0.12	0.09	0.08	0.06	0.12	0.09	0.07
Hg (mg/㎏)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/㎏)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/㎏)	0.12	0.10	0.07	0.06	0.05	0.11	0.09	0.08
Pb (mg/㎏)	2.66	2.64	2.32	2.06	1.83	2.61	2.06	1.91
Cr^{+6} (mg/㎏)	0.23	0.21	0.18	0.17	0.14	0.19	0.17	0.13
PCB (mg/㎏)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출

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(2) 분석 결과

(⬇ WS-9 .. WS-16)

분석항목 \ 지점번호	WS-9	WS-10	WS-11	WS-12	WS-13	WS-14	WS-15	WS-16
강열감량 (mg/kg)	3.2	2.7	2.2	2.4	3.7	3.2	3.4	2.4
TS (%)	82.7	83.9	86.7	87.3	79.8	85.9	82.1	82.3
VS (%)	2.3	1.8	1.2	1.4	2.9	1.2	1.4	1.4
COD (mg/kg)	740.2	680.1	275.4	196.0	1346.9	232.1	226.1	1620.3
T-N (mg/kg)	138.3	113.2	80.8	48.6	674.2	69.5	57.6	208.0
T-P (mg/kg)	32.6	26.2	23.2	11.9	148.3	85.2	24.2	51.8
CN (mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Zn (mg/kg)	7.92	7.28	2.88	1.90	8.52	2.35	2.58	8.65
Cu (mg/kg)	2.99	2.78	1.11	1.06	8.41	0.99	1.12	3.51
Cd (mg/kg)	0.14	0.13	0.05	0.03	0.18	0.04	0.05	0.21
Hg (mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/kg)	0.12	0.11	0.05	0.03	0.18	0.04	0.06	0.13
Pb (mg/kg)	2.89	2.67	1.08	0.89	2.91	0.67	0.61	3.13
Cr^{+6} (mg/kg)	0.23	0.20	0.15	0.16	0.30	0.14	0.17	0.31
PCB (mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출

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(2) 분석 결과

(■ WS-17 .. WS-24)

분석항목 \ 지점번호	WS-17	WS-18	WS-19	WS-20	WS-21	WS-22	WS-23	WS-24
강열감량 (mg/kg)	3.7	3.3	3.1	3.0	3.8	3.2	2.7	2.6
TS (%)	80.8	82.2	83.6	84.5	80.8	86.3	80.5	80.9
VS (%)	2.7	2.4	2.2	2.1	2.8	2.3	1.8	1.6
COD (mg/kg)	259.4	214.0	204.7	176.0	980.2	208.0	412.1	324.7
T-N (mg/kg)	26.9	24.4	25.6	9.9	156.3	13.9	36.5	28.4
T-P (mg/kg)	16.5	4.8	5.1	3.4	28.4	3.5	19.1	14.9
CN (mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Zn (mg/kg)	8.22	7.61	7.42	7.11	8.99	4.90	5.68	9.96
Cu (mg/kg)	3.04	2.83	2.74	5.63	2.95	1.62	1.92	1.72
Cd (mg/kg)	0.15	0.14	0.13	0.11	0.15	0.08	0.12	0.09
Hg (mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/kg)	0.14	0.12	0.11	0.09	0.13	0.09	0.10	0.12
Pb (mg/kg)	2.98	2.76	2.70	2.59	2.90	2.10	2.28	2.15
Cr^{+6} (mg/kg)	0.24	0.21	0.20	0.17	0.23	0.21	0.22	0.21
PCB (mg/kg)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출

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(2) 분석 결과

(⬇ WS-25 .. WS-33)

분석항목 \ 지점번호	WS-25	WS-26	WS-27	WS-28	WS-29	WS-30	WS-31	WS-32	WS-33
강열감량 (㎎/㎏)	2.3	2.6	4.3	3.9	3.3	2.7	2.6	3.3	4.2
TS (%)	83.9	90.0	75.4	77.3	80.1	82.5	82.9	74.9	75.7
VS (%)	1.4	1.7	3.3	2.8	2.3	1.7	1.5	2.4	3.2
COD (mg/㎏)	486.8	1760.4	2880.6	706.8	264.7	218.6	272.7	419.4	2900.6
T-N (mg/㎏)	24.5	250.2	737.3	338.6	28.6	39.8	34.6	49.2	742.6
T-P (mg/㎏)	7.35	42.4	33.8	28.3	7.13	7.62	4.90	12.3	84.0
CN (mg/㎏)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Zn (mg/㎏)	3.88	7.26	8.77	7.38	3.37	2.57	2.50	4.51	8.72
Cu (mg/㎏)	1.47	1.53	3.07	2.91	1.07	1.05	1.02	1.59	2.99
Cd (mg/㎏)	0.07	0.08	0.16	0.14	0.06	0.05	0.04	0.08	0.14
Hg (mg/㎏)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/㎏)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/㎏)	0.06	0.08	0.12	0.10	0.07	0.05	0.04	0.06	0.12
Pb (mg/㎏)	2.06	2.09	3.01	2.86	1.17	1.2	1.05	1.58	2.71
Cr^{+6} (mg/㎏)	0.16	0.19	0.29	0.23	0.16	0.15	0.11	0.13	0.31
PCB (mg/㎏)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출

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§. T.M 좌표

지점	x	y
W - 1	177.33	279.83
W - 2	189.53	292.58
W - 3	196.00	295.08
W - 4	199.95	299.59
W - 5	195.37	304.95
W - 6	196.03	313.97
W - 7	202.97	322.43
W - 8	206.93	327.48
W - 9	212.43	328.99
W - 10	218.88	326.17
W - 11	227.68	334.98
W - 12	231.98	335.56
W - 13	235.28	332.57
W - 14	235.73	329.75
W - 15	238.28	328.27
W - 16	260.15	305.03
W - 17	235.73	328.27
W - 18	236.58	319.88
W - 19	231.43	313.58
W - 20	229.05	306.00
W - 21	235.42	318.38
W - 22	235.69	308.62
W - 23	228.53	336.08
W - 24	231.35	346.97
W - 25	238.83	353.48
W - 26	244.33	361.90
W - 27	201.49	296.68
W - 28	207.19	301.08
W - 29	213.10	297.28
W - 30	211.65	303.65
W - 31	208.53	302.63
W - 32	206.38	285.38
W - 33	201.55	296.38

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§. T.M 좌표

지점	x	y
WS - 1	177.33	279.83
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WS - 31	208.53	302.63
WS - 32	206.38	285.38
WS - 33	201.55	296.38

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1.3 3차 조사성과

건설교통부

1. 조 사 개 요

1) 조사기간 및 조사내역

금강수계 하천정비 기본계획 및 하천대장 작성용역 (하천수질 · 저질 유량분석) (3차) (표1-1.조사내역참조)를 2001년 7월 18일부터 8월 20일(단, 현장조사기간 : 7월 18일~7월 21일, 7월 24일~7월 27일, 8월 6일~8월 7일)에 실시하였다.

(표1-1. 조사내역)

분 야	지점수	조 사 항 목	비 고
1) 하천 수질	33	수온, pH, SS, COD, BOD, DO, T-N, T-P, CN, Cd, Hg, 유기인, As, Pb, Cr^{+6}, ABS, PCB, Chl-a, 대장균군수	19 항목

2) 측정기간중 기상상태

구분 / 측정시일		일 기	기온(℃)	기습(%)	기압 (mmHg)	풍 향	풍 속 (m/sec)
2001. 7. 18.	(낮) 13 : 00	맑음	30.4	37	760	남	0.4
	(밤) 22 : 00	맑음	26.4	43	759	남동	1.1
2001. 7. 19.	(낮) 13 : 00	흐림	29.3	42	759	북	2.1
	(밤) 22 : 00	흐림	26.1	51	760	남서	1.1
2001. 7. 20.	(낮) 13 : 00	흐림	29.4	63	761	북동	2.6
	(밤) 22 : 00	맑음	25.9	55	760	남동	2.1
2001. 7. 21.	(낮) 13 : 00	흐림	28.3	47	759	남동	1.7
	(밤) 22 : 00	흐림	26.1	51	760	남서	0.9
2001. 7. 24.	(낮) 13 : 00	흐림	30.2	50	758	북동	1.3
	(밤) 22 : 00	흐림	27.6	48	759	북서	1.1
2001. 7. 25.	(낮) 13 : 00	맑음	31.4	27	758	남동	0.8
	(밤) 22 : 00	맑음	27.1	29	759	남서	1.3
2001. 7. 26.	(낮) 13 : 00	맑음	32.4	31	757	남서	1.6
	(밤) 22 : 00	맑음	27.7	42	758	남동	1.9
2001. 7. 27.	(낮) 13 : 00	맑음	33.1	34	760	남서	1.4
	(밤) 22 : 00	맑음	28.3	44	759	남	1.2
2001. 8. 6.	(낮) 13 : 00	맑음	32.4	38	760	남동	1.8
	(밤) 22 : 00	맑음	29.1	61	757	남서	2.1
2001. 8. 7.	(낮) 13 : 00	흐림	31.7	49	759	북서	1.1

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2. 조 사 결 과

1) 하 천 수 질

(1) 측정 지점 (⬇ W-1 .. W-16)

지점번호	측 정 지 점	비 고
W - 1	금강 하구둑	
W - 2	전라북도 익산시 양화면 입포리 입포초교 앞	
W - 3	충청남도 부여군 세도면 양대리 다근이마을	
W - 4	충청남도 부여군 세도면 반조원리	흙탕물
W - 5	충청남도 부여군 양암면 장정마을	흙탕물
W - 6	충청남도 부여군 청남면 왕진리 왕진마을	흙탕물
W - 7	충청남도 청양군 목면 어천리 놋점나루터	흙탕물
W - 8	충청남도 청양군 우성면 옥성리 계전마을 앞	흙탕물
W - 9	충청남도 공주시 관동 공주대교 상류 50m	흙탕물
W - 10	충청남도 공주시 장암리 청벽대교 상류 50m	흙탕물
W - 11	충청북도 청원군 금남면 월산리 새터말 앞	
W - 12	충청북도 연기군 동민 합강리 469번지 금강양어장 앞	
W - 13	충청북도 청원군 무강면 노호리 한라시멘트 하류 300m	
W - 14	충청남도 대전광역시 불로동	
W - 15	충청남도 대전광역시 용호동 용호교 하류 200m (신탄진 용호초교 앞)	
W - 16	충청남도 옥천군 이원면 원동리 원동철교하류 150m	

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1) 하 천 수 질

(1) 측정 지점 (🔽 W-17 .. W-32)

지점번호	측 정 지 점	비 고
W - 17	대전광역시 운평동 대전3,4산업단지 폐수종말처리장 뒷편	
W - 18	충청남도 대전광역시 서구 원촌동 원촌교상류 300m	
W - 19	대전광역시 서구 도안동 가수원교 하류 1.5Km (도안마을)	
W - 20	대전광역시 금산군 해노동 봉곡2교 하류 100m	
W - 21	대전광역시 서구 대화동 평송청소년수련원 앞	
W - 22	대전광역시 중구 침산동 침산교 밑	
W - 23	충청남도 연기군 동면 합강1리 월산교	흙탕물
W - 24	충청북도 강내면 궁평3리 미호천교	
W - 25	충청북도 청주시 흥덕구 원평동 앞 하천	
W - 26	충청북도 청주시 북이면 화하리	
W - 27	충청남도 부여군 세도면 강경읍 강경대교 밑	
W - 28	충청남도 논산시 대교동 논산대교 밑	
W - 29	충청남도 논산시 은진면 성덕리 탑정야수정 앞	
W - 30	충청남도 논산시 부적면 덕평리 항월보건소 앞	
W - 31	충청남도 논산시 은진면 산동리 산동교 상류 20m	
W - 32	전라북도 익산시 두여리 두여교 하류 200m	
W - 33	충청남도 부여군 세도면 강경읍 하강경교 밑	

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(2) 분석 결과

(◘ W-1 .. W-8)

분석항목 \ 지점번호	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8
수온 (℃)	27.0	27.0	26.5	26.5	26.0	26.0	25.5	25.5
pH	7.3	7.2	7.1	7.1	7.0	7.0	7.0	7.1
SS (mg/l)	6	7	4	29	26	28	25	13
COD (mg/l)	5.1	5.3	4.5	5.6	6.4	5.0	6.0	6.2
BOD (mg/l)	4.2	4.4	3.8	4.8	5.6	4.2	5.2	5.6
DO (mg/l)	7.3	7.2	7.4	7.1	6.9	7.3	7.0	6.9
T-N (mg/l)	5.32	5.30	4.38	4.10	4.18	4.13	4.09	4.27
T-P (mg/l)	0.25	0.27	0.22	0.19	0.23	0.21	0.22	0.28
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	0.04	0.05	0.06	0.03	불검출	0.07	0.04	0.05
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (㎍/l)	3.2	2.6	1.7	불검출	불검출	불검출	불검출	불검출
대장균군수 (MPN/100㎖)	12000	11000	9000	11000	7000	11000	12000	9000

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(2) 분석 결과

(■ W-9 .. W-16)

분석항목 \ 지점번호	W-9	W-10	W-11	W-12	W-13	W-14	W-15	W-16
수온 (℃)	25.5	25.5	25.0	25.0	25.0	25.0	25.0	25.0
pH	7.2	7.1	7.0	7.1	7.2	7.1	7.0	7.6
SS (mg/l)	14	~~143~~ 14	6	8	9	7	6	9
COD (mg/l)	5.2	~~48.0~~ 4.8	5.0	3.8	4.5	5.0	3.7	3.3
BOD (mg/l)	4.4	~~52.0~~ 5.2	4.2	3.0	3.6	4.2	3.2	2.7
DO (mg/l)	7.2	5.0	7.3	7.6	7.4	7.3	7.5	7.7
T-N (mg/l)	5.92	6.82	4.82	3.76	2.82	2.59	1.42	3.18
T-P (mg/l)	0.26	0.31	0.23	0.21	0.20	0.16	0.11	0.09
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	0.05	0.04	불검출	불검출	불검출	불검출	불검출	불검출
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (㎍/l)	2.3	1.6	불검출	불검출	불검출	불검출	불검출	불검출
대장균군수 (MPN/100㎖)	8000	7000	6000	5000	7000	6000	2400	3000

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(2) 분석 결과

(⬇ W-17 .. W-24)

분석항목 \ 지점번호	W-17	W-18	W-19	W-20	W-21	W-22	W-23	W-24
수온 (℃)	25.0	25.0	24.8	24.5	24.8	24.5	25.0	25.0
pH	7.0	7.4	7.7	7.3	7.6	7.6	7.2	7.1
SS (mg/l)	16	22	8	7	11	5	45	10
COD (mg/l)	12.6	7.8	5.0	4.0	6.1	2.2	12.4	6.8
BOD (mg/l)	10.9	6.4	4.2	3.2	5.4	1.8	10.8	5.2
DO (mg/l)	5.9	6.2	7.3	7.6	7.5	7.8	5.9	7.0
T-N (mg/l)	10.24	4.68	2.32	2.26	5.40	3.76	6.72	6.42
T-P (mg/l)	0.62	0.29	0.18	0.16	0.27	0.19	0.40	0.31
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	0.05	0.05	0.06	불검출	0.05	0.04	불검출	불검출
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (㎍/l)	2.9	2.4	1.8	불검출	2.7	불검출	불검출	불검출
대장균군수 (MPN/100㎖)	12000	5000	13000	3000	8000	2300	8000	5000

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(2) 분석 결과

(◘ W-25 .. W-33)

분석항목 \ 지점번호	W-25	W-26	W-27	W-28	W-29	W-30	W-31	W-32	W-33
수온 (℃)	25.0	25.0	24.8	25.5	24.8	25.5	25.5	25.0	25.5
pH	7.1	7.0	7.0	7.0	7.1	7.2	7.1	7.2	7.2
SS (mg/l)	9	12	10	6	6	7	9	6	14
COD (mg/l)	8.2	7.6	7.8	5.0	4.0	4.2	4.6	4.0	9.2
BOD (mg/l)	6.8	6.4	6.8	4.1	3.2	3.4	3.6	3.2	7.6
DO (mg/l)	6.1	6.2	6.1	7.3	7.5	7.5	7.4	7.5	6.0
T-N (mg/l)	5.47	5.31	4.70	4.60	3.02	1.37	1.59	2.20	8.30
T-P (mg/l)	0.29	0.21	0.23	0.20	0.14	0.13	0.14	0.18	0.64
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	불검출	불검출	0.09	0.06	0.05	불검출	불검출	불검출	0.09
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (μg/l)	불검출	불검출	1.8	1.0	불검출	불검출	불검출	불검출	0.8
대장균군수 (MPN/100㎖)	6000	5000	7000	6000	3000	2400	4000	3000	7000

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§. T.M 좌표

지점	x	y
W - 1	177.33	279.83
W - 2	189.53	292.58
W - 3	196.00	295.08
W - 4	199.95	299.59
W - 5	195.37	304.95
W - 6	196.03	313.97
W - 7	202.97	322.43
W - 8	206.93	327.48
W - 9	212.43	328.99
W - 10	218.88	326.17
W - 11	227.68	334.98
W - 12	231.98	335.56
W - 13	235.28	332.57
W - 14	235.73	329.75
W - 15	238.28	328.27
W - 16	260.15	305.03
W - 17	235.73	328.27
W - 18	236.58	319.88
W - 19	231.43	313.58
W - 20	229.05	306.00
W - 21	235.42	318.38
W - 22	235.69	308.62
W - 23	228.53	336.08
W - 24	231.35	346.97
W - 25	238.83	353.48
W - 26	244.33	361.90
W - 27	201.49	296.68
W - 28	207.19	301.08
W - 29	213.10	297.28
W - 30	211.65	303.65
W - 31	208.53	302.63
W - 32	206.38	285.38
W - 33	201.55	296.38

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1.4 4차 조사성과

건설교통부

1. 조 사 개 요

1) 조사기간 및 조사내역

금강수계 하천정비 기본계획 및 하천대장 작성용역 (하천수질·저질 유량분석) (4차) (표1-1.조사내역참조)를 2001년 9월 6일부터 9월 29일(단, 현장조사기간 : 9월 6일~ 9월 15일까지)에 실시하였다.

(표1-1. 조사내역)

분 야	지점수	조 사 항 목	비 고
1) 하천 수질	33	수온, pH, SS, COD, BOD, DO, T-N, T-P, CN, Cd, Hg, 유기인, As, Pb, Cr^{+6}, ABS, PCB, Chl-a, 대장균군수	19 항목

2) 측정기간중 기상상태

구분 / 측정시일		일 기	기온(℃)	기습(%)	기압 (mmHg)	풍 향	풍 속 (m/sec)
2001. 9. 6.	(낮) 13 : 00	맑음	29.1	29	756	북서	1.3
	(밤) 22 : 00	맑음	21.8	38	757	북동	1.8
2001. 9. 7.	(낮) 13 : 00	맑음	28.0	34	760	북동	0.9
	(밤) 22 : 00	맑음	22.1	39	761	남서	1.9
2001. 9. 8.	(낮) 13 : 00	맑음	28.4	41	757	서	1.3
	(밤) 22 : 00	흐림	21.9	53	760	남동	1.9
2001. 9. 10.	(낮) 13 : 00	흐림	27.1	42	758	북	2.7
	(밤) 22 : 00	맑음	21.4	43	755	북서	2.4
2001. 9. 11.	(낮) 13 : 00	맑음	27.3	52	756	북동	3.1
	(밤) 22 : 00	맑음	21.9	41	759	북동	2.4
2001. 9. 12.	(낮) 13 : 00	맑음	27.9	33	758	남동	2.8
	(밤) 22 : 00	맑음	21.0	38	760	남서	1.1
2001. 9. 13.	(낮) 13 : 00	맑음	28.2	26	757	북동	0.8
	(밤) 22 : 00	맑음	22.3	38	760	북서	1.0
2001. 9. 14.	(낮) 13 : 00	흐림	26.3	54	758	북동	1.3
	(밤) 22 : 00	흐림	21.1	51	758	북	0.7
2001. 9. 15.	(낮) 13 : 00	맑음	27.8	39	757	남동	1.8

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2. 조 사 결 과

1) 하 천 수 질

(1) 측정 지점 (🔽 W-1 .. W-16)

지점번호	측 정 지 점	비 고
W - 1	금강 하구둑	
W - 2	전라북도 익산시 양화면 입포리 입포초교 앞	
W - 3	충청남도 부여군 세도면 양대리 다근이마을	
W - 4	충청남도 부여군 세도면 반조원리	흙탕물
W - 5	충청남도 부여군 양암면 장정마을	흙탕물
W - 6	충청남도 부여군 청남면 왕진리 왕진마을	흙탕물
W - 7	충청남도 청양군 목면 어천리 놋점나루터	흙탕물
W - 8	충청남도 청양군 우성면 옥성리 계전마을 앞	흙탕물
W - 9	충청남도 공주시 관동 공주대교 상류 50m	흙탕물
W - 10	충청남도 공주시 장암리 청벽대교 상류 50m	흙탕물
W - 11	충청남도 연기군 남면 월산리 새터말 앞	
W - 12	충청남도 연기군 동면 합강리 469번지 금강양어장 앞	
W - 13	충청북도 청원군 무강면 노호리 한라시멘트 하류 300m	
W - 14	충청남도 대전광역시 불로동	
W - 15	충청남도 대전광역시 용호동 용호교 하류 200m (신탄진 용호초교 앞)	
W - 16	충청남도 옥천군 이원면 원동리 원동철교하류 150m	

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1) 하 천 수 질

(1) 측정 지점 (🔽 W-17 .. W-32)

지점번호	측 정 지 점	비 고
W - 17	대전광역시 운평동 대전3,4산업단지 폐수종말처리장 뒷편	
W - 18	충청남도 대전광역시 서구 원촌동 원촌교상류 300m	
W - 19	대전광역시 서구 도안동 가수원교 하류 1.5Km (도안마을)	
W - 20	대전광역시 금산군 해노동 봉곡2교 하류 100m	
W - 21	대전광역시 서구 대화동 평송청소년수련원 앞	
W - 22	대전광역시 중구 침산동 침산교 밑	
W - 23	충청남도 연기군 동면 합강1리 월산교	
W - 24	충청북도 강내면 궁평3리 미호천교	
W - 25	충청북도 청주시 흥덕구 원평동 앞 하천	
W - 26	충청북도 청주시 북이면 화하리	
W - 27	충청남도 부여군 세도면 강경읍 강경대교 밑	
W - 28	충청남도 논산시 대교동 논산대교 밑	
W - 29	충청남도 논산시 은진면 성덕리 탑정야수정 앞	
W - 30	충청남도 논산시 부적면 덕평리 항월보건소 앞	
W - 31	충청남도 논산시 은진면 산동리 산동교 상류 20m	
W - 32	전라북도 익산시 두여리 두여교 하류 200m	
W - 33	충청남도 부여군 세도면 강경읍 하강경교 밑	

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(2) 분석 결과

(⬇ W-1 .. W-8)

분석항목 \ 지점번호		W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8
수온	(℃)	22.0	22.0	22.0	22.0	22.0	22.0	22.5	22.0
pH		7.5	7.3	7.5	7.4	7.4	7.3	7.3	7.3
SS	(mg/l)	35	7	6	7	9	8	10	11
COD	(mg/l)	6.8	5.4	5.6	5.4	6.3	6.2	7.0	6.6
BOD	(mg/l)	5.6	4.5	4.5	4.4	5.5	5.0	6.0	5.4
DO	(mg/l)	7.6	7.9	7.9	7.8	7.6	7.7	7.5	7.6
T-N	(mg/l)	5.42	5.30	4.45	4.06	4.19	4.14	4.09	4.20
T-P	(mg/l)	0.30	0.27	0.25	0.18	0.23	0.20	0.23	0.25
CN	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6}	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS	(mg/l)	0.06	0.04	0.06	불검출	불검출	0.05	0.04	0.03
PCB	(mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a	(㎍/l)	3.2	2.3	1.7	불검출	불검출	불검출	불검출	불검출
대장균군수 (MPN/100㎖)		9000	8000	7000	8000	6000	9000	11000	9000

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(2) 분석 결과

(◘ W-9 .. W-16)

분석항목 \ 지점번호	W-9	W-10	W-11	W-12	W-13	W-14	W-15	W-16
수온 (℃)	22.0	22.0	21.5	21.5	21.5	21.5	21.0	21.0
pH	7.3	7.4	7.2	7.2	7.3	7.2	7.3	7.3
SS (mg/l)	12	13	8	10	13	7	6	5
COD (mg/l)	6.8	6.9	6.0	5.4	5.9	5.2	3.0	3.2
BOD (mg/l)	5.6	5.8	4.8	4.5	4.8	4.4	2.6	2.7
DO (mg/l)	7.6	7.5	7.8	7.9	7.8	7.9	8.1	8.1
T-N (mg/l)	6.01	6.04	4.92	3.84	2.92	2.59	1.38	3.14
T-P (mg/l)	0.29	0.27	0.24	0.26	0.23	0.17	0.11	0.07
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	0.05	0.04	불검출	불검출	불검출	불검출	불검출	불검출
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (㎍/l)	2.2	1.5	불검출	불검출	불검출	불검출	불검출	불검출
대장균군수 (MPN/100㎖)	8000	5000	4000	3000	6000	5000	800	1200

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(2) 분석 결과

(⬇ W-17 .. W-24)

분석항목 \ 지점번호	W-17	W-18	W-19	W-20	W-21	W-22	W-23	W-24
수온 (℃)	25.0	23.0	22.0	22.0	22.5	21.5	22.5	22.5
pH	7.2	7.4	7.3	7.2	7.8	7.6	7.3	7.4
SS (mg/l)	22	44	8	7	12	3	19	13
COD (mg/l)	10.5	12.3	5.6	3.5	7.8	1.8	8.5	8.3
BOD (mg/l)	8.6	10.8	4.2	2.4	6.5	1.5	6.8	7.4
DO (mg/l)	7.2	7.0	7.9	8.1	7.4	8.2	7.4	7.3
T-N (mg/l)	4.78	9.62	2.32	2.20	5.26	3.70	6.54	6.51
T-P (mg/l)	0.36	0.62	0.18	0.14	0.26	0.16	0.32	0.30
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	0.05	0.06	0.05	불검출	0.05	0.02	불검출	불검출
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (㎍/l)	3.0	8.5	1.6	불검출	10.4	불검출	불검출	불검출
대장균군수 (MPN/100㎖)	9000	6000	8000	3000	5000	2200	7000	3000

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(2) 분석 결과

(◘ W-25 .. W-33)

분석항목 \ 지점번호	W-25	W-26	W-27	W-28	W-29	W-30	W-31	W-32	W-33
수온 (℃)	22.5	22.5	22.5	22.5	21.5	21.5	21.5	21.5	22.0
pH	7.4	7.1	7.3	7.2	7.4	7.2	7.2	7.2	7.2
SS (mg/l)	9	10	14	6	6	5	10	7	12
COD (mg/l)	8.3	7.6	8.0	4.2	3.8	4.0	4.6	3.9	8.8
BOD (mg/l)	6.8	6.4	6.7	3.5	2.8	3.2	3.8	3.2	7.2
DO (mg/l)	7.4	7.5	7.4	7.9	8.1	8.0	7.9	8.0	7.3
T-N (mg/l)	5.48	5.31	4.71	4.61	3.01	1.31	1.54	2.19	8.25
T-P (mg/l)	0.29	0.21	0.24	0.18	0.13	0.11	0.10	0.17	0.59
CN (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cd (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Hg (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
유기인 (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
As (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Pb (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Cr^{+6} (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
ABS (mg/l)	불검출	불검출	0.08	0.04	0.04	불검출	불검출	불검출	0.06
PCB (mg/l)	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출	불검출
Chl-a (μg/l)	불검출	불검출	1.6	10.0	불검출	불검출	불검출	불검출	1.7
대장균군수 (MPN/100㎖)	4000	3000	7000	6000	900	800	1200	4000	6000

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§. T.M 좌표

지점	x	y
W - 1	177.33	279.83
W - 2	189.53	292.58
W - 3	196.00	295.08
W - 4	199.95	299.59
W - 5	195.37	304.95
W - 6	196.03	313.97
W - 7	202.97	322.43
W - 8	206.93	327.48
W - 9	212.43	328.99
W - 10	218.88	326.17
W - 11	227.68	334.98
W - 12	231.98	335.56
W - 13	235.28	332.57
W - 14	235.73	329.75
W - 15	238.28	328.27
W - 16	260.15	305.03
W - 17	235.73	328.27
W - 18	236.58	319.88
W - 19	231.43	313.58
W - 20	229.05	306.00
W - 21	235.42	318.38
W - 22	235.69	308.62
W - 23	228.53	336.08
W - 24	231.35	346.97
W - 25	238.83	353.48
W - 26	244.33	361.90
W - 27	201.49	296.68
W - 28	207.19	301.08
W - 29	213.10	297.28
W - 30	211.65	303.65
W - 31	208.53	302.63
W - 32	206.38	285.38
W - 33	201.55	296.38

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2. 생태계(동,식물상)조사 성과

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1.1 생태계 조사성과

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1. 동 · 식물상

가. 현황

1) 조사방법

가) 조사항목

(1) 육상동물상

포유류, 조류, 양서 · 파충류 및 육상곤충류를 대상으로 종의 분포현황, 다수 출현종, 특징있는 동물의 분포현황(법적보호종, 희귀종 등), 생물다양도 분석 등을 조사하였다.

(2) 육수동 · 식물상

하천식물, 부착조류, 동물성플랑크톤, 저서성대형무척추동물, 어류

나) 조사일정 및 조사지점

동 · 식물상의 현지조사는 <표 1 - 1> 및 (그림 1-1, 2)과 같이 23개의 조사지점으로 구분하여 각 하천별로 5월(봄), 8월(여름), 10월(가을)의 3회에 걸쳐 실시하였으며, 조류의 경우 계절에 따른 출현양상의 변화를 고려하여 겨울조사를 추가로 실시하였다.

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< 표 1 - 1 > 동 · 식물상 조사일정 및 조사지점

구 분		조사시기 및 조사지점	비 고
조사시기	1차조사	2001년 5월 5일 ~ 2001년 5월 10일	조류는 겨울철 조사 추가실시
	2차조사	2001년 8월 15일 ~ 2001년 8월 19일	
	3차조사	2001년 10월 15일 ~ 2001년 10월 19일	
금강본류	St. 1	충남 부여군 양화면 시음리	임야, 농경지, 하천, 주거밀집지역
	St. 2	충남 논산시 강경읍 황산리 황산대교	
	St. 3	충남 부여군 석성면 봉정리(봉두정이)	주거밀집지역, 농경지, 하천, 임야
	St. 4	충남 공주시 탄천면 유하리 원산	
	St. 5	충남 연기군 금남면 대평리 금남교	임야, 농경지, 하천
	St. 6	대전광역시 대덕구 용호동 용호	
	St. 7	충북 옥천군 청성면 평촌	임야, 농경지, 하천
	St. 8	충북 영동군 심천면 고당리 영강교	

(계속)

구 분		조사시기 및 조사지점	비 고
논산천	St. 9	충남 논산시 채운면 장화리 강경대교	임야, 농경지, 하천, 주거밀집지역
	St. 10	충남 논산시 대교동 논산대교	
	St. 11	충남 논산시 부적면 종연리 논산저수지밑	
강경천	St. 12	충남 논산시 강경읍 홍교리 하강경교	농경지, 주거밀집지역, 하천, 임야
	St. 13	전북 익산시 망성면 무형리 포변	
노성천	St. 14	충남 논산시 광석면 산동리 가름네	농경지, 주거밀집지역, 하천, 임야
	St. 15	충남 논산시 광석면 항월리 초포	
미호천	St. 16	충남 연기군 남면 보통리	농경지, 주거밀집지역, 하천, 임야
	St. 17	충북 청원군 강내면 석화리 미호천교	
	St. 18	충북 청원군 옥산면 소로리 봉점	
갑 천	St. 19	대전광역시 유성구 송강동 신구교	주거밀집지역, 하천, 임야
	St. 20	대전광역시 유성구 도룡동 둔산대교	
	St. 21	대전광역시 서구 흑석동 피곡교	
유등천	St. 22	대전광역시 중구 둔산동	농경지, 주거밀집지역, 하천, 임야
	St. 23	대전광역시 중구 안영동 안영교	

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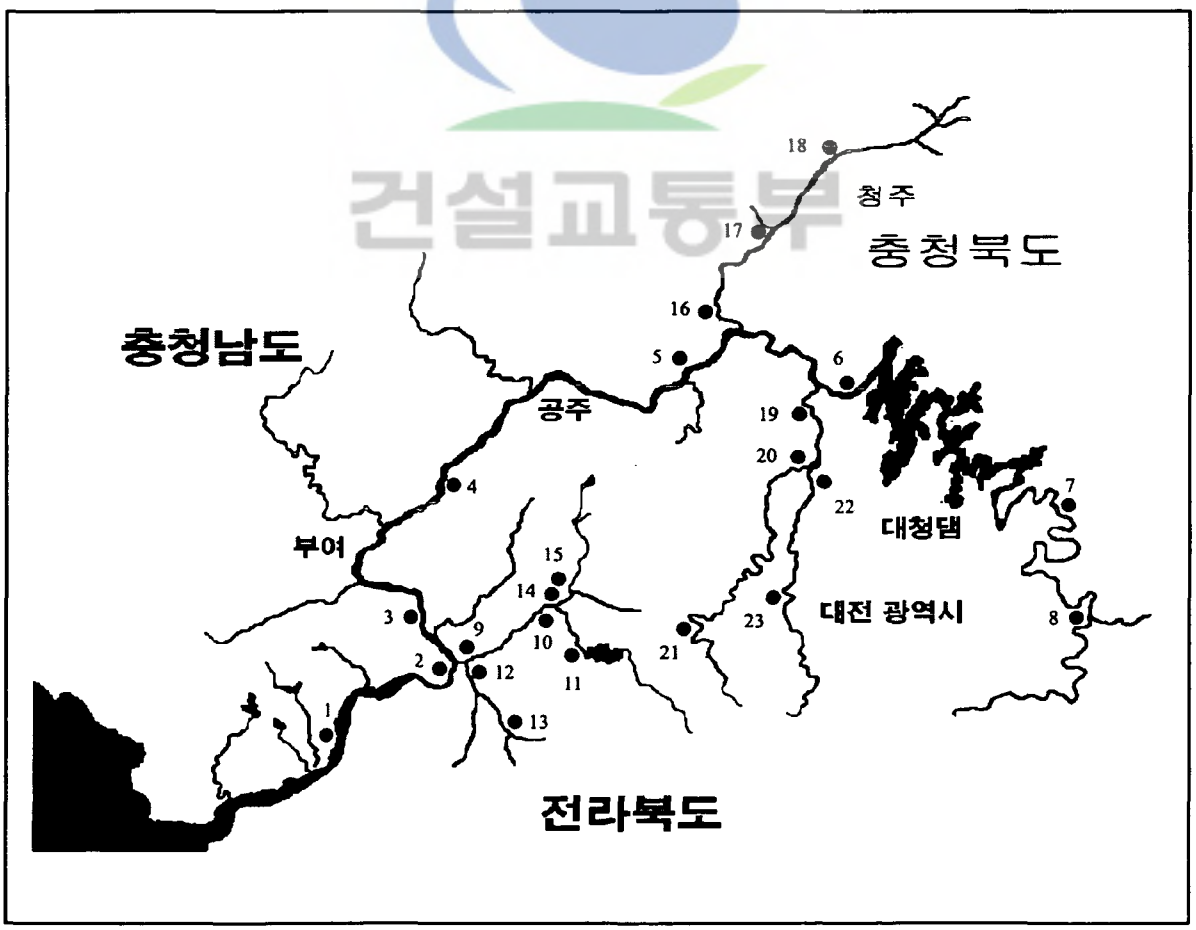

(그림 1 - 1) 동·식물상 조사지점도

< 부록 표 1 - 1 >　　조사지역의 하천별 포유류 목록

학 명 / 국 명	금강본류			논산천			강경천			노성천		
	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차
Erinaceidae 고슴도치과												
Erinaceus amurensis 고슴도치	○	○	○	○	○	○	○	○	○	○	○	○
Talpidea 두더지과												
Mogera wogura 두더지	○	◇	◇	○	○	○	○	◇	○	○	○	○
Canidae 개과												
Nyctereutes pryocyonoides 너구리	○	○	○	○	○	○	○	○	○	○	○	○
Mustelidae 족제비과												
Mustela sibirica 족제비	○	○	●	○	○	○	○	○	○	○	○	○
Meles meles 오소리	○	○	○	○	○	○	○	○	○			
Leporidae 토끼과												
Lepus coreanus 멧토끼	△	○	○	○	○	○	○	○	○	○	△	○
Sciuridae 다람쥐과												
Sciurus vulgaris 청설모	○	○	○	○	○	●	○	○	○	○	○	○
Tamias sibiricus 다람쥐	○	○	○	○	○	○	○	○	○	○	○	○
Muelidae 쥐과												
Rattus norvegicus 집쥐	●	●	○	○	○	○	●	●	○	○	○	○
Mus molossinus 생쥐	○	○	○	○	●	○	○	○	○	○	○	○
Micromys minutus 멧밭쥐	○	○	○	○	○	○	○	○	○			
Microtus fortis 갈밭쥐	●	○	●	○	○	○	●	●	○	○	○	●
Apodemus agrarius 등줄쥐				○	○	○	○	○	○			
Total Species No.	12	12	12	13	13	13	13	13	13	10	10	10

학 명 / 국 명	미호천			갑천			유등천		
	1차	2차	3차	1차	2차	3차	1차	2차	3차
Erinaceidae 고슴도치과									
Erinaceus amurensis 고슴도치	○	○	○	○	○	○	○	○	○
Talpidea 두더지과									
Mogera wogura 두더지	◇	◇	○	○	○	○	○	○	○
Canidae 개과									
Nyctereutes pryocyonoides 너구리	○	○	○	○	○	○	○	○	○
Mustelidae 족제비과									
Mustela sibirica 족제비	○	○	●	○	○	○	○	○	○
Meles meles 오소리	○	○	○	○	○	○			
Leporidae 토끼과									
Lepus coreanus 멧토끼	○	○	○	○	○	○	○	○	○
Sciuridae 다람쥐과									
Sciurus vulgaris 청설모	○	●	○	○	○	○	●	○	○
Tamias sibiricus 다람쥐	○	○	○	○	○	○	○	○	○
Muelidae 쥐과									
Rattus norvegicus 집쥐	○	○	○	○	○	○	○	○	○
Mus molossinus 생쥐	○	○	○	○	○	○			
Micromys minutus 멧밭쥐	○	○	○	○	○	○	○	○	○
Microtus fortis 갈밭쥐	○	○	○	○	●	○	○	○	○
Apodemus agrarius 등줄쥐	○	○	○	○	○	○			
Total Species No.	13	13	13	13	13	13	10	10	10

주) ○ : 문헌 및 청문 조사, ◇ : 터널관찰, ● : 직접관찰, ◎ : 식흔관찰,
△ : 배설물 확인

건설교통부

< 부록 표 1 - 2 >　금강 본류지역의 양서·파충류 목록

No	조사지점 및 시기 / 학 명	금강 본류																						계
		St. 1			St. 2			St. 3			St. 4			St. 5			St. 6			St. 7			St. 8			
		①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	
1	*Hynobius leechii* (도롱뇽)							1									1						1			3
2	*Bombina orientalis* (무당개구리)	2	2	1	1			2			1						2	1		1			2			15
3	*Hyla arborea japonica* (청개구리)	1	3	1	1			2			2			1			1			1						13
4	*Rana nigromaculata* (참개구리)	1	2								2	7	1	1			1	5			3					23
5	*Rana dybowskii* (산개구리)	2	3					3									4						1			13
6	*Rana rugosa* (옴개구리)	2			1			1						1			2									7
7	*Rana amurensis coreana*(아무르산개구리)		3		1						1			1			1			2			12			21
개체수		8	13	2	4			9			6	7	1	4			12	6		4	3		16			95
8	*Takydromus amurensis* (아무르장지뱀)																			1						1
9	*Elaphe dione* (누룩뱀)	1						1			1															3
10	*Rhabdophis tigrinus* (유혈목이)	1						1																		2
11	*Agkistrodon brevicaudus* (살모사)																1						1			2
12	*Agkistrodon ussuriensis* (쇠살모사)																			1						1
개체수		2						2			1						1			2			1			9

< 부록 표 1 - 3 >　논산천, 강경천, 노성천의 양서·파충류 목록

No	조사지점 및 시기 / 학 명	논산천									계	강경천						계	노성천						계
		St. 9			St. 10			St. 11				St. 12			St. 13				St. 14			St. 15			
		①	②	③	①	②	③	①	②	③		①	②	③	①	②	③		①	②	③	①	②	③	
1	*Hynobius leechii* (도롱뇽)	1						1			2															
2	*Bombina orientalis* (무당개구리)		2	1	1	3		2			9	1			2			3							
3	*Hyla arborea japonica* (청개구리)	1	3	1	1		1	2	1		10	2				1		3		1					1
4	*Rana nigromaculata* (참개구리)	3	2				7		5	1	18	2	7	2	2	5		18	1		3		2		6
5	*Rana dybowskii* (산개구리)	1	3					3			7		1					1							
6	*Rana rugosa* (옴개구리)				1			1			2					1		1		1					1
7	*Rana amurensis coreana*(아무르산개구리)		3		1						4	1						1							
개체수		6	13	2	4	3	8	9	6	1	52	6	8	2	4	7		27	1	1	3		2		8
8	*Elaphe dione* (누룩뱀)							1		1	2	1						1							
9	*Rhabdophis tigrinus* (유혈목이)	1						1		2	4						1	1						1	1
개체수		1						2		3	6	1					1	2						1	1

< 부록 표 1 - 4 > 미호천, 갑천, 유등천의 양서·파충류 목록

No	조사지점 및 시기 / 학 명	미호천									계	갑천									계	유등천						계
		St.16			St.17			St.18				St.19			St.20			St.21				St.22			St.23			
		①	②	③	①	②	③	①	②	③		①	②	③	①	②	③	①	②	③		①	②	③	①	②	③	
1	*Hynobius leechii* (도롱뇽)												1						1		2							
2	*Bombina orientalis* (무당개구리)																		5		5							
3	*Hyla arborea japonica* (청개구리)		1	1							2								2		2							
4	*Rana nigromaculata* (참개구리)		3	1					6		10				3	2	1	3	3	1	13							
5	*Rana dybowskii* (산개구리)		1						1		2		3	2					2		7				1	2		3
	개체수		5	2					7		14		4	2	3	2	1	3	13	1	29				1	2		3
6	*Elaphe rufodorsata* (무자치)								1		1								1		1							
	개체수								1		1								1		1							

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< 부록 표 1 - 5 >

금강본류의 조류목록

학 명 \ 조사지점 및 시기	금강본류																														계	비고
	St. 1				St. 2				St. 3				St. 4				St. 5				St. 6				St. 7				St. 8					
	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		
PODICIPEDIFORMES 논병아리목																																		
PODICIPEDIDAE 논병아리 과																																		
Tachybaptus ruficollis 논병아리															1	1							1										3	WV
CICONIFORMES 황새목																																		
ARDEIDAE 백로과																																		
Butorides striatus 검은댕기해오라기						1																											1	SV
Bubulcus ibis 황로										5																							5	SV
Egretta alba 중대백로						7				2												3			1					12			25	SV
Egretta 쇠백로						2																					3			1			6	SV
Ardea cinerea 왜가리		2													5								1						1				9	Res
ANSERIFORMES 기러기목																																		
ANATIDAE오리과																																		
Anser albifrons frontalis 쇠기러기																				7				12									19	WV
Anser fabalis 큰기러기																				5				21									26	WV
Anas poecilorhyncha 흰뺨검둥오리									6								2						25										33	Res
Anas clypeata 넓적부리									2															5									7	WV
Anas crecca 쇠오리																								2									2	WV
GALLFORMES 닭목																																		
PHASIANIDAE 꿩과																																		
Phasianus colchicus Linnaeus 꿩		2					7				2															3	3						17	Res
CHARADRIFORMES 도요목																																		
SCOLOPACIDAE 도요과																																		
Calidris alpina 민물도요																														3			3	PM

조사지점 및 시기 / 학 명	금 강 본 류																												계	비고
	St. 1				St. 2				St. 3				St. 4				St. 5				St. 6				St. 7				St. 8					
	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		
LARIDAE 갈매기과																																		
Larus crassirostris 괭이갈매기																															1	2	3	Res
Larus argentatus 재갈매기																											2					7	9	WV
COLUMBIFORMES 비둘기목																																		
COLUMBIDAE 비둘기과																																		
Streptopelia orientalis 멧비둘기			3						2				12	7	3			12				2	5						1				47	Res
CUCULIFORMES 두견이목																																		
CUCULIDAE 두견이과																																		
Cuculus canorus 뻐꾸기										1				1																2			4	SV
Cuculus micropterus 검은등뻐꾸기																														1			1	SV
CORACIIFORMES 파랑새목																																		
ALCEDINIDAE 물총새과																																		
Alcedo atthis (Linnaeus) 물총새																										1							1	SV
Halcyon coromanda 호반새																										1							1	SV
UPUPIDAE 후투티과																																		
Upupa epops Linnaeus 후투티														1											2								3	SV
PICIFORMES 딱다구리목																																		
PICIDAE 딱다구리과																																		
Dendrocopos kizuki 쇠딱다구리														1																1			2	Res
Picus canus 청딱다구리														1																			1	Res

학 명 \ 조사지점 및 시기	금 강 본 류																												계	비고
	St. 1				St. 2				St. 3				St. 4				St. 5				St. 6				St. 7				St. 8					
	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		
PASSERIFORMES 참새 목																																		
ALAUDIDAE 종다리과																																		
Alauda arvensis 종다리		1																															1	Res
HIRUNDINIDAE 제비과																																		
Hirundo daurica 제비		1																				2				1							4	SV
MOTACILLIDAE 할미새과																																		
Motacilla cinerea 노랑할미새																										2							2	SV
Motacilla alba 알락할미새										2																							2	SV
Anthus hodgsoni 힝둥새						1																1											2	PM
Anthus spinoletta 밭종다리											3																				1		4	PM
PYCNONOTIDAE 직박구리과																																		
Hypsipetes amaurotis 직박구리		2	7	3			1									8		3	2				1				2				2		36	Res
LANNIDAE 때까치과																																		
Lanius cristatus 노랑때까치			2																			1											3	SV
MUSCICAPIDAE 딱새과																																		
Saxicola torquata 딱새	1	1		1	2			2	1		2		1		1			2	1				1				2				1		19	Res
Turdus dauma 호랑지빠귀			1																										1				2	SV
Tarsiger naumanni 개똥지빠귀						2											2															1	5	WV
Tarsiger naumanni 노랑지빠귀					1				1										2						1								6	WV
Paradoxornis webbiana 붉은머리오목눈이		12		32			5		2		7	9		4	7			2	5				3				25	12		12		17	142	Res
Acrocephalus arundinaceus 개개비	7					9				10												21				7				12			66	SV
AEGITHALIDAE 오목눈이과																																		
Aegithalos caudatus 오목눈이		7	2				1	8																	2					4			24	Res
PARIDAE 박새과																																		

학 명 \ 조사지점 및 시기	금 강 본 류																														계	비고
	St. 1				St. 2				St. 3				St. 4				St. 5				St. 6				St. 7				St. 8					
	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		
Parus palustris 진박새																			2											3	2		7	Res
Parus ater 쇠박새																	1											2					3	Res
Parus varius 곤줄박이	1	1		1							2				1											1					1		8	Res
SITTIDAE동고비 과																																		
Sitta europaea Linnaeus 동고비										1																							1	Res
EMBERIZIDAE 멧새과																																		
Emberiza cioides 멧새																										2					1		3	Res
Emberiza elegans 노랑턱멧새			5											3						7										2			17	Res
Emberiza fucata 붉은뺨멧새							1																				1						2	SV
Emberiza rustica 쑥새															1										2						1		4	WV
FRINGILLIDE 되새과																																		
Fringilla mongifringilla 되새			1																														1	WV
Eophona migratoria 밀화부리		2																									2						4	SV
PLOCIEDAE 참새과																																		
Passer montanus 참새		17												7																5			29	Res
ORIOLIDAE 꾀꼬리과																																		
Oriolus chinensis 꾀꼬리																											1						1	SV
CORVIDAE 까마귀과																																		
Corvus corone 까마귀																										17							17	Res
Garrulus galndarius 어치																						2											2	Res
Pica pica 까치	11			7			9	8		4	5					2	7				12									7		5	77	Res
과 / 종	14 / 18				8 / 14				10 / 16				12 / 15				7 / 13				10 / 18				15 / 23				14 / 26					

주) Res : 텃새, SV : 여름철새, WV : 겨울철새, PM : 통과새

<부록 표 1 - 6 >

논산천, 강경천, 노성천의 조류목록

조사지점 및 시기 / 학 명	논 산 천												계	강 경 천								계	노 성 천								계	비고
	St. 9				St. 10				St. 11					St. 12				St. 13					St. 14				St. 15					
	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차		
PODICIPEDIFORMES 논병아리목																																
PODICIPEDIDAE 논병아리과																																
Tachybaptus ruficollis 논병아리				1									1																			WV
CICONIFORMES 황새목																																
ARDEIDAE 백로과																																
Butorides striatus 검은댕기해오라기		1											1						1			1										SV
Bubulcus ibis 황로															5							5		2							2	SV
Egretta alba 중대백로			2							7		2	11		2				5			7						5			5	SV
Egretta 쇠백로																	1					1								1	1	SV
Ardea cinerea 왜가리				1					2	1			4	1							1	2										Res
ANSERIFORMES 기러기목																																
ANATIDAE오리과																																
Anser albifrons frontalis 쇠기러기												5	5																			WV
Anas platyrhynchos 청둥오리									2				2				2					2		2								WV
Anas poecilorhyncha 흰뺨검둥오리				2			4			6	2		14	6					2			8				7			6		14	Res
Anas crecca 쇠오리								2				2	4				2					2								2	2	WV
Aythya ferina 흰죽지																										2					2	WV
GALLFORMES 닭목																																
PHASIANIDAE 꿩과																																
Phasianus colchicus Linnaeus 꿩												2	2		1							1	1								1	Res
CHARADRIFORMES 도요목																																
SCOLOPACIDAE 도요과																																
Calidris alpina 민물도요												2	2																			PM

조사지점 및 시기 / 학 명	논 산 천												계	강 경 천								계	노 성 천								계	비고
	St. 9				St. 10				St. 11					St. 12				St. 13					St. 14				St. 15					
	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차		
LARIDAE 갈매기과																																
Larus crassirostris 괭이갈매기												1	1																			Res
Larus argentatus 재갈매기				2								1	3																			WV
COLUMBIFORMES 비둘기목																																
COLUMBIDAE 비둘기과																																
Columba rupestris Pallas 양비둘기																								2					3		5	Res
Streptopelia orientalis 멧비둘기	3	2				1			2			7	15		2		4			3	1	10		2				4		1	7	Res
CUCULIFORMES 두견이목																																
CUCULIDAE 두견이과																																
Cuculus canorus 뻐꾸기		1								1			2						1			1						1			1	SV
Cuculus micropterus 검은등뻐꾸기															1							1										SV
CORACIIFORMES 파랑새목																																
ALCEDINIDAE 물총새과																																
Alcedo atthis (Linnaeus) 물총새												1	1																			SV
UPUPIFORMES 후투티목																																
UPUPIDAE 후투티과																																
Upupa epops Linnaeus 후투티		1								1			2																			SV
PICIFORMES 딱다구리목																																
PICIDAE 딱다구리과																																
Dendrocopos major 오색딱다구리										1			1						1			1										Res
Dendrocopos kizuki 쇠딱다구리				1						1			2									3										Res
PASSERIFORMES 참새목																																
ALAUDIDAE 종다리과																																
Alauda arvensis 종다리							1						1																			Res

조사지점 및 시기 / 학 명	논 산 천												계	강 경 천								계	노 성 천								계	비고
	St. 9				St. 10				St. 11					St. 12				St. 13					St. 14				St. 15					
	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차		
HIRUNDINIDAE 제비과																																
Hirundo daurica 제비		2				1				1			4		1				3			4		2				1			3	WV
MOTACILLIDAE 할미새과																																
Motacilla cinerea 노랑할미새	2					2							4		2	2				1		5	2				2				4	SV
Motacilla alba 알락할미새									2										2			2					2				1	SV
Anthus hodgsoni 힝둥새											1		1																1		1	PM
Anthus spinoletta 밭종다리		1											1								1	1						1			1	PM
PYCNONOTIDAE 직박구리과																																
Hypsipetes amaurotis 직박구리	1	7	2			5				4	4		23	7	5	4	7	1		9	2	35				5	4	8	5		22	Res
LANNIDAE 때까치과																																
Lanius cristatus 노랑때까치		1											1		1							1										SV
MUSCICAPIDAE 딱새과																																
Saxicola torquata 딱새			2			1	1		1			1	6	2			1	3		1	2	9	1				2			1	4	Res
Turdus dauma 호랑지빠귀		1								1			1											1							1	SV
Tarsiger naumanni 개똥지빠귀				1									1									2					1	2			3	WV
Tarsiger naumanni 노랑지빠귀			2									2	4																			WV
Paradoxornis webbiana 붉은머리오목눈이	12	7		21				33		5			78	15		5		12	35		27	94	12			29		21		10	72	Res
Acrocephalus arundinaceus 개개비												12	12							7		7										SV
Ficedula zanthopygia 흰눈썹황금새		1								1			2		1							1						1			1	SV
AEGITHALIDAE 오목눈이과																																
Aegithalos caudatus 오목눈이		2			3				5			3	13		3	2		2	5		1	14			5			7			12	Res
PARIDAE 박새과																																
Parus palustris 진박새	1					1					2		4								1	1		1				2			3	Res
Parus ater 쇠박새				1							1		2					2			1	3			2					1	3	Res
Parus major 박새	5		1			3				2	2	4	17										1		2	1	1	1	5		11	Res

조사지점 및 시기 / 학 명	논 산 천												계	강 경 천								계	노 성 천								계	비고
	St. 9				St. 10				St. 11					St. 12				St. 13					St. 14				St. 15					
	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차		
Parus varius 곤줄박이	1	1			1	1			1				5											1				1		1	3	Res
EMBERIZIDAE 멧새과																																
Emberiza cioides 멧새	2		1						5				8							1	1	2				5			2		7	Res
Emberiza elegans 노랑턱멧새		7	1			7						2	17	2	3				5			10		1							1	Res
Emberiza fucata 붉은뺨멧새														1								1										SV
Emberiza rustica 쑥새																			1			1		1								WV
FRINGILLIDE 되새과																																
Fringilla mongifringilla 되새				1				1				1	3				1				1	2				1					1	WV
Eophona migratoria 밀화부리		2					4						6		2							2		2					2		4	SV
PLOCIEDAE 참새과																																
Passer montanus 참새	5			12						7			24			5	21		12		7	45	2		7	12	10		9	7	47	Res
ORIOLIDAE 꾀꼬리과																																
Oriolus chinensis 꾀꼬리		1											1																1		1	SV
CORVIDAE 까마귀과																																
Corvus corone 까마귀								35					35														12				12	Res
Garrulus galndarius 어치				2									2			2						2						1			1	Res
Pica pica 까치		6				7		2				4	19	5		9					12	26		5	2		3	7			17	Res
과 / 종	19 / 34				12 / 18				20 / 35					15 / 25				15 / 24					14 / 24				15 / 29					

주) Res : 텃새, SV : 여름철새, WV : 겨울철새, PM : 통과새

< 부록 표 1 - 7 >

미호천, 갑천, 유등천의 조류목록

조사지점 및 시기 / 학 명	미호천												계	갑천												계	유등천								계	비고
	St. 16				St. 17				St. 18					St. 19				St. 20				St. 21					St. 22				St. 23					
	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차		
CICONIFORMES 황새목																																				
ARDEIDAE 백로과																																				
Butorides striatus 검은댕기해오라기																						1			1										SV
Bubulcus ibis 황로		2				7			1		2		12					2							2		5							5	SV
Egretta alba 중대백로							12				1		13		5			7				5	1		18	7					2		1	10	SV
Egretta 쇠백로										1			1																				1	2	SV
Ardea cinerea 왜가리																	1			1					2				1					1	Res
ANSERIFORMES 기러기목																																				
ANATIDAE오리과																																				
Anas platyrhynchos 청둥오리												2	2																						WV
Anas poecilorhyncha 흰뺨검둥오리		2							8			4	14	2	2					2					2		2			2	2			6	Res
Anas clypeata 넓적부리																						4			6	10						2		2	WV
Anas crecca 쇠오리																2									2	4									WV
GALLFORMES 닭목																																				
PHASIANIDAE 꿩과																																				
Phasianus colchicus Linnaeus 꿩											2		2									1		3		4				1		2			3	Res
COLUMBIFORMES 비둘기목																																				
COLUMBIDAE 비둘기과																																				
Columba rupestris Pallas 양비둘기												1	1														2							2	Res
Streptopelia orientalis 멧비둘기		2	1		1							7	11			2			1	3			1		5	12			3			1	1	2	7	Res
CUCULIFORMES 두견이목																																				
CUCULIDAE 두견이과																																				
Cuculus canorus 뻐꾸기															1								1		2		1								1	SV
CORACIIFORMES 파랑새목																																				

조사지점 / 및 시기 / 학 명	미호천												계	갑천												계	유등천								계	비고
	St. 16				St. 17				St. 18					St. 19				St. 20				St. 21					St. 22				St. 23					
	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차		
ALCEDINIDAE물총새과																																				
Alcedo atthis (Linnaeus) 물총새										1			1						1							1										SV
UPUPIFORMES후투티목																																				
UPUPIDAE 후투티과																																				
Upupa epops Linnaeus 후투티		1									1		2																							SV
PICIFORMES딱다구리목																																				
PICIDAE딱다구리과																																				
Dendrocopos major 오색딱다구리															1							1				2										Res
Dendrocopos kizuki 쇠딱다구리											1		1																							Res
PASSERIFORMES 참새목																																				
ALAUDIDAE 종다리과																																				
Alauda arvensis 종다리																										1						2			3	Res
HIRUNDINIDAE 제비과																																				
Hirundo daurica 제비		1											1		2							7				9		1				1			2	SV
MOTACILLIDAE 할미새과																																				
Motacilla cinerea 노랑할미새		2											2									2				2										SV
Motacilla alba 알락할미새											2		2		2									2		4										
Anthus spinoletta 밭종다리					2								2									1				1										PM
PYCNONOTIDAE 직박구리과																																				
Hypsipetes amaurotis 직박구리		7	2	5									14	1	2		2									5			7			15			22	Res
LANNIDAE 때까치과																																				
Lanius cristatus 노랑때까치																						1				1					1				1	SV
MUSCICAPIDAE 딱새과																																				
Saxicola torquata 딱새		1					1	1		1			4			1						2	1			4	1							1	2	Res
Tarsiger naumanni 개똥지빠귀																									1	1										WV
Tarsiger naumanni 노랑지빠귀																	2									2										WV
Paradoxornis webbiana 붉은머리오목눈이	12			21				8			32		73			7	12		8			9			17	53	21		12	7	20		25		85	Res

조사지점 및 시기 / 학 명	미호천												계	갑천												계	유등천								계	비고
	St. 16				St. 17				St. 18					St. 19				St. 20				St. 21					St. 22				St. 23					
	1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차	1차	2차	3차	4차		1차	2차	3차	4차	1차	2차	3차	4차		
Acrocephalus arundinaceus 개개비																												7						7	SV
Ficedula zanthopygia 흰눈썹황금새		1																																	SV
AEGITHALIDAE 오목눈이과																																			
Aegithalos caudatus 오목눈이			7			5			2				14									5		2	3	10			5	1	3			2	11	Res
PARIDAE 박새과																																			
Parus palustris 진박새				2			1	1					4						1							1									Res
Parus ater 쇠박새	1												1		2			1								3					1				1	Res
Parus major 박새	1				1		2				3		7		2				5					1		8		7				2			9	Res
Parus varius 곤줄박이			1							1			2	1								2				3		1		1		1			3	Res
EMBERIZIDAE 멧새과																																			
Emberiza cioides 멧새		2				1						1	4		1											1	1				2	1			4	Res
Emberiza elegans 노랑턱멧새			3							5	7		15						2				7			9	9			2					11	Res
Emberiza fucata 붉은뺨멧새								1					1																		1				1	SV
Emberiza rustica 쑥새												2	2															1			1	1			3	WV
FRINGILLIDE 되새과																																			
Fringilla mongifringilla 되새												1	1			1							1			2		1						2	3	WV
Eophona migratoria 밀화부리																								2		2					2				2	SV
PLOCIEDAE 참새과																																			
Passer montanus 참새		12				7		3		15			37						5			7			12	24	9	8	8			12			37	Res
ORIOLIDAE 꾀꼬리과																																			
Oriolus chinensis 꾀꼬리																							1			1									SV
CORVIDAE 까마귀과																																			
Corvus corone 까마귀															7										15	22						22			22	Res
Cynopica cyanus 물까치																															1				1	Res
Garrulus galndarius 어치												2	2																		2				2	Res
Pica pica 까치	5			2					1	2	2		12		5	7	2					4	9			27					5		3		8	Res
과 / 종	13 / 19				8 / 12				14 / 24					13 / 20				8 / 12				17 / 26					13 / 23				15 / 24				

주) Res : 텃새, SV : 여름철새, WV : 겨울철새, PM : 통과새

< 부록 표 1 - 8 >

금강본류의 조사지점별 육상곤충 목록

학명		St. 1			St. 2			St. 3			St. 4			St. 5			St. 6			St. 7			St. 8			계
	조사지점 및 시기	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Odonata	**잠자리목**																									
Coenagrionidae	**실잠자리과**																									
Ischnura asiatica	아시아실잠자리		4			1												1								6
Cercion calamorum	등검은실잠자리											1														1
Libellulidae	**잠자리과**																									
Orthetrum albistylum	밀잠자리		1																							1
Sympetrum eroticum	두점박이좀잠자리																								2	2
S. infuscatum	깃동잠자리																								1	1
Blattaria	**바퀴목**																									
Blattellidae	**바퀴과**																									
Blattella germanica	바퀴																						1			1
Ephemeroptera	**하루살이목**																									
Potamanthidae	**강하루살이과**																									
Rhoenantus coreanus	강하루살이																	1								1
Ephemeridae	**하루살이과**																									
Ephemera orientalis	동양하루살이																						1			1
Orthopetera	**메뚜기목**																									
Tettigoniidae	**여치과**																									
Conocepahlus chinensis	쌕새기		13			6									1										2	22
C. gladiatus	긴꼬리쌕새기																	1								1
Metrioptera bonneti	잔날개여치							1																		1
Phaneroptera falcata	실베짱이																								3	3
Gryllotalpidae	**땅강아지과**																									
Gryllotalpa orientalis	땅강아지										1															1

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		1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Gryllidae	**귀뚜라미과**																									
Dianemobius furumagiensis	여울알락방울벌레																								3	3
Tetrigidae	**모메뚜기과**																									
Euparatettix insulairs	장삼모메뚜기																								4	4
Tetrix japonica	모메뚜기																						1		1	2
Pyrgomorphidae	**섭서구메뚜기과**																									
Atractomorpha lata	섭서구메뚜기		9			1			1						2										4	17
Acrididae	**메뚜기과**																									
Acrida cinerea cinerea	방아깨비		3			1												1							2	7
Oxyz chinensis	벼메뚜기		1			3			1						2			2							8	17
Oedaleus infenalis	팥중이														1											1
Shirakiacris shirakii	등검은메뚜기																			2		4			7	13
Hemiptera	**노린재목**																									
Pentatomidae	**장님노린재과**																									
Adelphocoris triannulatus	연리초장님노린재											1														1
A. triannulatus	설상무늬장님노린재																	2							2	4
Deraeocoris aster	밀감무늬검정장님노린재								5																	5
Lygocoris limbatus	무늬고리장님노린재					11																			1	12
Orthocephalus funestus	암수다른장님노린재																			1						1
Scutelleridae	**광대노린재과**																									
Eurygaster testudinaria	도토리노린재																								1	1
Reduviidae	**침노린재과**																									
Peirates turpis	검정무늬침노린재																1									1
Lygaeidae	**긴노린재과**																									
Geocoris varius	큰딱부리긴노린재											1						1								2

학명	조사지점 및 시기	St. 1			St. 2			St. 3			St. 4			St. 5			St. 6			St. 7			St. 8			계
		1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Nysius plebejus	애기노린재	1	5			73			7			31			2			1				6			1	127
Pachygrontha antennata	더듬이긴노린재																						6			6
Tropidothorax cruciger	십자무늬긴노린재																								11	11
Lygaeidae	**허리노린재과**																									
Acanthocoris sordidus	꽈리허리노린재											1														1
Cltus schmidti	우리가시허리노린재					1			2			3													1	7
Homoeocerus dilatatus	넓적배허리노린재											1													6	7
H. unipunctatus	두점배허리노린재																1									1
Alydidae	**호리허리노린재과**																									
Riptortus clavatus	톱다리개미허리노린재																					1				1
Rhopalidae	**잡초노린재과**																									
Rhopalus sapporensis	삿뽀로잡초노린재	1													1											2
R. maculatus	붉은잡초노린재					1																				1
Stictopleurus crassicornis	혹다리잡초노린재	2				8					1											2			1	14
Pentatomidae	**노린재과**																									
Aelia fieberi	메추리노린재					1																				1
Carbula putoni	가시노린재								1																	1
Dolycoris baccarum	알락수염노린재	1										1						1				1				4
Eurydema gebleri	북쪽비단노린재							1						1											3	5
Eysarcoris aeneus	가시점둥글노린재														1											1
Nezara antennata	풀색노린재													2												2
Plataspididae	**알노린재과**																									
Megacopta punctatissima	무당알노린재																					9				9
Homotpera	**매미목**																									
Cicadellidae	**매미충과**																									

학명	조사지점 및 시기	St. 1			St. 2			St. 3			St. 4			St. 5			St. 6			St. 7			St. 8			계
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Bothrogonia japonica	끝검은말매미충																	1								1
Cicadella viridis	말매미충											4			3			1								8
Nephotettix cincticeps	끝동매미충		1								1				1			2								5
Dictyopharidae	**상투벌레과**																									
Orthopagus lunlifer	깃동상투벌레																	1								1
Delphacidae	**멸구과**																									
Laodelphax striatellus	애멸구											3														3
Derbidae	**긴날개멸구과**																									
Diostrombus plitus	주홍긴날개멸구																	1								1
Coleoptera	**딱정벌레목**																									
Harpalidae	**먼지벌레과**																									
Anisodactylus punctatipennis	점박이먼지벌레							3																		3
Coccinellidae	**무당벌레과**																									
Coccinella septempunctata	칠성무당벌레											1		1						1		3			8	14
Harmonia axyridis	무당벌레																					9				9
Hippodamia tredecimpunctata	열석점긴다리무당벌레													1												1
Propylea japonica	꼬마남생이무당벌레	1			3						2			5			2	1		10			5		2	31
Chrysomela vigintipuncta	**잎벌레과**																									
Agelastica coerulea	오리나무잎벌레																					2				2
Chrysochus chinensis	중국청람색잎벌레																						2		5	7
Dactylispa angulosa	노랑테가시잎벌레																	1								1
Gastrophysa atrocyanea	좀남색잎벌레																			2			3		5	10
Lilioceris merdigera	백합긴가슴잎벌레																	1								1
Lema diversa	적갈색긴가슴잎벌레																	1								1

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Menolepta quadriguttata	크로바잎벌레											1			2											3
Paridea angulicollis	세점박이잎벌레																	1								1
Physosmaragdina nigrfrons	밤나무잎벌레								1									5								6
Phyllotreta striolata	버룩잎벌레											1														1
Pyrrhalta annulicornis	외잎벌레																					2				2
Cantharidae	**병대벌레과**																									
A. suturellus	왕병대벌레																						5			5
Bruchidae	**콩바구미과**																									
Callosobruchus chinensis	팥바구미											4														4
Hymenoptera	**벌목**																									
Tenthredinidae	**잎벌과**																									
Dolerus armillatus	어리노랑배잎벌																1			1						2
D. gessneri	큰검정잎벌																						1			1
Chalcididae	**수중다리좀벌과**																									
Brachymeria lasus	무늬수중다리좀벌								1																	1
B. minuta	꼬마수중다리좀벌																	1								1
Ichneumonidae	**맵시벌과**																									
Tryphon obtusator	배끝검은마디뭉툭맵시벌																						4			4
Sphecoidae	**구멍벌과**																									
Cerceris saishuensis	제주노래기벌											1														1
Vespidae	**말벌과**																									
Polistes japonicus	꼬마쌍살벌																					1				1
Polistes jadwigae	등검정쌍살벌																					1				1
Apidae	**꿀벌과**																									
Apis mellifera	양봉꿀벌	6			1																	2				9

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		1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Colletes esakii	에사키어리꿀벌																1									1
Halictus aeraius	스미드애꽃벌								1																	1
Lasioglossum duplex	두플렉스줄애꽃벌																					1				1
L. occidens	흰줄꼬마꽃벌				2																	3				5
Nomada japonica	왜알락꽃벌													1												1
Xylocopa appendiculata	어리호박벌																	1								1
Formicidae	**개미과**																									
Camponotus japonicus	일본왕개미																						1			1
Pristomyrmex pungens	그물등개미								5																	5
Diptera	**파리목**																									
Tipulidae	**각다귀과**																									
Nephrotoma virgata	황나각다귀	1																								1
Tabanidae	**등에과**																									
Atylotus horvathi	황등에붙이					1																				1
Syrphidae	**꽃등에과**																									
Allograpta balteata	호리꽃등에																					4				4
Betasyrphus serarius	검정넓적꽃등에																					1				1
Eristalis cerealis	배짧은꽃등에																					8				8
E. tenx	꽃등에																					15				15
Helophilus virgatus	수중다리꽃등에		1														1									2
M. mellinum	광붙이꽃등에				1									1			1									3
Metasyrphus cinctella	가는줄납작꽃등에	2																								2
M. frequens	물결넓적꽃등에																					1				1
Sphaerophora menthastri	꼬마꽃등에	7			6			1			2	1					1									18
Syritta pipiens	알통다리꽃등에																					1				1

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		1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Sarcophagidae	쉬파리과																									
Helicophagella melanura	검정불기쉬파리				4				1			3			1											9
Sepsidae	꽉지파리과																									
Sepsis monostigma	꽉지파리				1						12			6			2									21
Tachinidae	기생파리과																									
Cylindromyia brassicaria	표주박기생파리														1			1								2
Gymnosoma rotundatum	뚱보기생파리					2																				2
Lepidoptera	나비목																									
Hesperiidae	팔랑나비과																									
Parnara guttata	줄점팔랑나비		1																		2					3
Papilionidaea	호랑나비과																									
Papilio bianor	제비나비	1																								1
Pieridae	흰나비과																									
Artogeia rapae	배추흰나비	3	3		5	5		5	5		4															30
Coliad erate	노랑나비				1			1														8				10
Nymphalidae	네발나비과																									
Polygonia c-aureum	네발나비		3			2			8			3			1			5							1	23

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논산천, 강경천, 노성천의 조사지점별 육상곤충 목록

학명 \ 조사지점 및 시기		논산천									계	강경천						계	노성천						계
		St. 9			St. 10			St. 11				St. 12			St. 13				St. 14			St. 15			
		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	
Odonata	**잠자리목**																								
Libellulidae	**잠자리과**																								
Sympetrum eroticum	두점박이좀잠자리									3	3										3				3
S. infuscatum	깃동잠자리																1	1							
Orthopetera	**메뚜기목**																								
Tettigoniidae	**여치과**																								
Conocephalus chinensis	쌕새기			6			1			2	9						5	5							
Phaneroptera falcata	실베짱이							1			1						4	4	3						3
Tetrigidae	**모메뚜기과**																								
Euparatettix insulairs	장삼모메뚜기						1				1													1	1
Acrididae	**메뚜기과**																								
Acrida cinerea cinerea	방아깨비			2							2			1			1								
Oxyz chinensis	벼메뚜기			3						3	6						7	7			2				2
Oedaleus infenalis	팥중이																				1				1
Shirakiacris shirakii	등검은메뚜기									3	3														
Hemiptera	**노린재목**																								
Pentatomidae	**장님노린재과**																								
A. triannulatus	실상무늬장님노린재			2							2														
Lygocoris limbatus	무늬고리장님노린재			1							1						2	2			1				1
Orthocephalus funestus	암수다른장님노린재							2			2														
Stenodema rubrinervis	보리장님노린재																		2						2
Lygaeidae	**긴노린재과**																								
Geocoris varius	큰딱부리긴노린재							1			1														

학명	조사지점 및 시기	논산천									계	강경천						계	노성천						계
		St. 9			St. 10			St. 11				St. 12			St. 13				St. 14			St. 15			
		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	
Nysius plebejus	애기노린재			1			1				2				1		5	6			4				4
Pachygrontha antennata	더듬이긴노린재							1			1						1	1							
Lygaeidae	**허리노린재과**																								
Cltus schmidti	우리가시허리노린재			2							2										2				2
Homoeocerus dilatatus	넓적배허리노린재																1	1							
H. unipunctatus	두점배허리노린재			2							2														
Plinachtus icoloripes	노랑배허리노린재																							1	1
Alydidae	**호리허리노린재과**																								
Riptortus clavatus	톱다리개미허리노린재			1							1								1						1
Rhopalidae	**잡초노린재과**																								
Rhopalus sapporensis	삿뽀로잡초노린재									2	2			2			5	7			1				1
R. maculatus	붉은잡초노린재			3			1				4				1			1	2					1	3
Stictopleurus crassicornis	혹다리잡초노린재			4			1			7	12	2		1	1		8	12			3			2	5
Phyllocephalidae	**억새노린재과**																								
Gonopsis affinis	억새노린재	1									1														
Pentatomidae	**노린재과**																								
Dolycoris baccarum	알락수염노린재			5						2	7				1		2	3						3	3
Eurydema gebleri	북쪽비단노린재									3	3														
Nezara antennata	풀색노린재														1			1	1						1
Pyrrhocoridae	**별노린재과**																								
Pyrrohocoris sibiricus	땅별노린재									5	5													4	4
Homotpera	**매미목**																								
Cicadellidae	**매미충과**																								

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		St. 9			St. 10			St. 11				St. 12			St. 13				St. 14			St. 15			
		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	
Cicadella viridis	말매미충			8						1	9						1	1			2			4	6
Drabescus nigrifemoratus	알락맥각시매미충			7						1	8						1	1						17	17
Yanocephalus yanonis	야노뾰족매미충																							3	3
Coleoptera	**딱정벌레목**																								
Harpalidae	**먼지벌레과**																								
Anisodactylus punctatipennis	점박이먼지벌레														2			2							
Buprestidae	**비단벌레과**																								
Agrilus tibialis	풀색호리비단벌레							1			1														
Coccinellidae	**무당벌레과**																								
Coccinella septempunctata	칠성무당벌레						1				1										17			1	18
Harmonia axyridis	무당벌레			1							1	1						1						1	1
Hippodamia tredecimpunctata	열석점긴다리무당벌레									2	2														
Propylea japonica	꼬마남생이무당벌레			7			1				8	3		7	1			11			5				5
Chrysomela vigintipuncta	**잎벌레과**																								
Agelastica coerulea	오리나무잎벌레							1			1	1						1							
Cantharidae	**병대벌레과**																								
Athemellus oedemeroides	등붉은병대벌레																					4			4
A. suturellus	왕병대벌레																					5			5
Attelabidae	**거위벌레과**																								
Involvulus plumbeus	땡땡이덩굴털거위벌레							1			1														
Staphylinidae	**반날개과**																								
Chrysochus chinensis	중국청람색잎벌레			1			1	2		2	6			1			2	3							
Paederus parallelus	개미반날개						10				10			1	1			2							

학명 \ 조사지점 및 시기		논 산 천									계	강 경 천						계	노 성 천						계
		St. 9			St. 10			St. 11				St. 12			St. 13				St. 14			St. 15			
		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	
Mordellidae	**꽃벼룩과**																								
Hoshihananomia hananomi	광대꽃벼룩																		1						1
Cerambycideae	**하늘소과**																								
Carilia virginea	작은청동하늘소														2			2	4						4
Phytoecia rufiventris	극화하늘소											1						1							
Hymenoptera	**벌목**																								
Tenthredinidae	**잎벌과**																								
Dolerus armillatus	이리노랑배잎벌							2			2	2						2							
D. gessneri	큰검정잎벌	1									1											1			1
Ichneumonidae	**맵시벌과**																								
Tryphon obtusator	배끝검은마디붕룩맵시벌	8									8	3						3				10			10
Vespidae	**말벌과**																								
Polistes japonicus	꼬마쌍살벌							1			1														
Apidae	**꿀벌과**																								
Apis mellifera	양봉꿀벌				4						4	3			5			8							
Diptera	**파리목**																								
Tipulidae	**각다귀과**																								
Nephrotoma virgata	황나각다귀														2			2							
Tipula taikun	줄각다귀																					1			1
Syrphidae	**꽃등에과**																								
Allograpta balteata	호리꽃등에	1						2			3	2						2							
E. tenx	꽃등에											1						1							
M. frequens	물결넓적꽃등에	1										1													
Sphaerophora menthastri	꼬마꽃등에	1			3						4	1			1		1	3	2						2

학명	조사지점 및 시기	논 산 천									계	강 경 천						계	노 성 천						계
		St. 9			St. 10			St. 11				St. 12			St. 13				St. 14			St. 15			
		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	
Tachinidae	**기생파리과**																								
Gymnosoma rotundatum	뚱보기생파리			1							1														
Asilidae	**파리매과**																								
Neoitamus angusticornis	광대파리매																		1						1
Lepidoptera	**나비목**																								
Hesperiidae	**팔랑나비과**																								
Parnara guttata	줄점팔랑나비			1							1														
Papilionidaea	**호랑나비과**																								
Papilio bianor	제비나비	1									1														
Pieridae	**흰나비과**																								
Artogeia rapae	배추흰나비											3			2			5							
Coliad erate	노랑나비	3									3				3			3							
Lycaenidae	**부전나비과**																								
Celastina srgiolus	푸른부전나비				2						2														
Nymphalidae	**네발나비과**																								
Polygonia c-aureum	네발나비																							1	1

< 부록 표 1 - 10 >

미호천, 갑천, 유등천의 조사지점별 육상곤충 목록

학명		미호천 St. 16 1차	미호천 St. 16 2차	미호천 St. 16 3차	미호천 St. 17 1차	미호천 St. 17 2차	미호천 St. 17 3차	미호천 St. 18 1차	미호천 St. 18 2차	미호천 St. 18 3차	계	갑천 St. 19 1차	갑천 St. 19 2차	갑천 St. 19 3차	갑천 St. 20 1차	갑천 St. 20 2차	갑천 St. 20 3차	갑천 St. 21 1차	갑천 St. 21 2차	갑천 St. 21 3차	계	유등천 St. 22 1차	유등천 St. 22 2차	유등천 St. 22 3차	유등천 St. 23 1차	유등천 St. 23 2차	유등천 St. 23 3차	계
Odonata	잠자리목																											
Coenagrionidae	실잠자리과																											
Ischnura asiatica	아시아실잠자리	2									2											3						3
C. hieroglyphicum	등줄실잠자리																	1		3	4							
Libellulidae	잠자리과																											
Sympetrum eroticum	두점박이좀잠자리						3				3																	
Mantodea	사마귀목																											
Mantidae	사마귀과																											
Mantis religiosa	황라사마귀																										1	1
Ephemeroptera	하루살이목																											
Ephemeridae	하루살이과																											
Ephemera orientalis	동양하루살이																	3			3							
Dermaptera	집게목																											
Forficulidae	집게벌레과																											
Timomenus komaovi	고마로브집게벌레	1									1																	
Orthopetera	메뚜기목																											
Tettigoniidae	여치과																											
Conocepahlus chinensis	팩새기			3			5				8																	
Phaneroptera falcata	실베짱이																								1			1
Tetrigidae	모메뚜기과																											
Euparatettix insulairs	장삼모메뚜기			8							8											2						2
Tetrix japonica	모메뚜기																											

학명	조사지점 및 시기	미호천									계	감천									계	유등천						계
		St. 16			St. 17			St. 18				St. 19			St. 20			St. 21				St. 22			St. 23			
		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	
Acrididae	**메뚜기과**																											
Oxyz chinensis	벼메뚜기																					1						1
Hemiptera	**노린재목**																											
Pentatomidae	**장님노린재과**																											
Lygocoris limbatus	무늬고리장님노린재						3				3																2	2
Orthocephalus funestus	암수다른장님노린재																	1			1	1						1
Stenodema rubrinervis	보리장님노린재																					3			2			5
Lygaeidae	**긴노린재과**																											
Nysius plebejus	애기노린재			5				1		3	9							5			5			2	6			8
Tropidothorax cruciger	십자무늬긴노린재																								2			2
Lygaeidae	**허리노린재과**																											
Cltus schmidti	우리가시허리노린재											1									1							
Alydidae	**호리허리노린재과**																											
Riptortus clavatus	톱다리개미허리노린재									2	2																	
Rhopalidae	**잡초노린재과**																											
Rhopalus sapporensis	삿뽀로잡초노린재											1		3			2				6				2		4	6
R. maculatus	붉은잡초노린재																	1							2			3
Stictopleurus crassicornis	흑다리잡초노린재			4			5				9						2			2								4
Pentatomidae	**노린재과**																											
Eurydema gebleri	붉쪽비단노린재																	1			1	2						2
Eysarcoris aeneus	가시점둥글노린재													3							3						2	2
Homotpera	**매미목**																											
Cicadellidae	**매미충과**																											
Bothrogonia japonica	끝검은말매미충																	2			2				1			1

학명	조사지점 및 시기	미호천									계	갑천									계	유등천						계
		St. 16			St. 17			St. 18				St. 19			St. 20			St. 21				St. 22			St. 23			
		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	
Pentatomidae	**노린재과**																											
Eurydema gebleri	북쪽비단노린재																	1			1	2						2
Eysarcoris aeneus	가시점등글노린재													3							3						2	2
Homotpera	**매미목**																											
Cicadellidae	**매미충과**																											
Bothrogonia japonica	끝검은말매미충																	2			2				1			1
Cicadella viridis	말매미충						2	1		4	7																10	10
Aphrophoridae	**거품벌레과**																											
Aphrophora major	노랑무늬거품벌레																			1	1							
Coleoptera	**딱정벌레목**																											
Harpalidae	**먼지벌레과**																											
Anisodactylus punctatipennis	점박이먼지벌레	2			2						4				2						2							
Coccinellidae	**무당벌레과**																											
Coccinella septempunctata	칠성무당벌레			3							3			8			2			4	14			2			5	7
Harmonia axyridis	무당벌레	1									1						1	1			2	1					2	3
Henosepilachna vigintioctomaculata	큰이십팔점박이무당벌레																	1			1							
Hippodamia tredecimpunctata	열석점긴다리무당벌레	2									2			5							5						9	9
Propylea japonica	꼬마남생이무당벌레	1		2			6				9								3		3	9			7			16
Chrysomela vigintipuncta	**잎벌레과**																											
Agelastica coerulea	오리나무잎벌레														3						3							
Aulacophora nigripennis	검정오이잎벌레				2						2																	
Chrysochus chinensis	중국청람색잎벌레				3						3				1			2		5	8							
Gastrophysa atrocyanea	좀남색잎벌레																	2		2	4				4			4
Lema decempunctata	열점박이잎벌레																	1			1							

학명 \ 조사지점 및 시기		미호천									계	갑천									계	유등천						계
		St. 16			St. 17			St. 18				St. 19			St. 20			St. 21				St. 22			St. 23			
		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	
Cantharidae	**병대벌레과**																											
Athemellus oedemeroides	등붉은병대벌레																	1			1	1						1
A. suturellus	왕병대벌레				7						7																	
Attelabidae	**거위벌레과**																											
Involvulus plumbeus	댕댕이덩굴털거위벌레																	4			4	4						4
Staphylinidae	**반날개과**																											
Paederus parallelus	개미반날개						4				4														1			1
Mordellidae	**꽃벼룩과**																											
Hoshihananomia hananomi	광대꽃벼룩																	1			1							
Cerambycideae	**하늘소과**																											
Leptura aethiops	꽃하늘소																								1			1
Oedemeridae	**하늘소붙이과**																											
Xanthochroa luteipennis	노랑하늘소붙이	1									1																	
Hymenoptera	**벌목**																											
Tenthredinidae	**잎벌과**																											
Dolerus armillatus	어리노랑배잎벌							2			2														1			1
Macrophya kongosana	금강산잎벌																	5			5							
Tenthredo moritivaga	황호리병잎벌				1						1											1						1
Ichneumonidae	**맵시벌과**																											
Tryphon obtusator	배끝검은마디뭉툭맵시벌											3									3							
Vespidae	**말벌과**																											
Polistes japonicus	꼬마쌍살벌							1			1																	
Apidae	**꿀벌과**																											
Apis mellifera	양봉꿀벌	2			2						4	15						3		4	22	1			2			3

학명 \ 조사지점 및 시기		미호천									계	갑천									계	유등천						계
		St. 16			St. 17			St. 18				St. 19			St. 20			St. 21				St. 22			St. 23			
		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	
Diptera	**파리목**																											
Tipulidae	**각다귀과**																											
Nephrotoma virgata	황나각다귀	1									1				1						1				3			3
Tipula taikun	줄각다귀																	3			3							
T. aino	아이노각다귀							1			1				3						3	1						1
Syrphidae	**꽃등에과**																											
Allograpta balteata	호리꽃등에	2									2									2	2							
Eristalis arbustorum	덩굴꽃등에																	1			1							
E. tenx	꽃등에	1									1							2			2							
Helophilus virgatus	수중다리꽃등에											1						1			2							
Melangyna lasiophthalma	보라무늬꽃등에																2	2			4	1						1
M. frequens	물결넓적꽃등에	2									2				2						2							
Sphaerophora menthastri	꼬마꽃등에				4						4	1			4			3			8	2						2
Calliphoridae	**검정파리과**																											
Aldrichina grahami	털검정파리																	1			1							
Tachinidae	**기생파리과**																											
Gymnosoma rotundatum	뚱보기생파리																					2						2
Asilidae	**파리매과**																											
Neoitamus angusticornis	광대파리매																								3			3
Lepidoptera	**나비목**																											
Hesperiidae	**팔랑나비과**																											
Parnara guttata	줄점팔랑나비			1							1																	

학명 / 조사지점 및 시기		미호천									계	갑천									계	유등천						계
		St. 16			St. 17			St. 18				St. 19			St. 20			St. 21				St. 22			St. 23			
		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	1차	2차	3차		1차	2차	3차	1차	2차	3차	
Pieridae	**흰나비과**																											
Artogeia rapae	배추흰나비				2						2	1						2			3							
Coliad erate	노랑나비	2									2	1									1							
Lycaenidae	**부전나비과**																											
Celastina srgiolus	푸른부전나비				1						1											1						1
Nymphalidae	**네발나비과**																											
Polygonia c-aureum	네발나비						1				1																	

< 부록 표 1 - 11 > 금강본류의 하천식물 목록

학 명	국 명	금강본류								A	B
		1	2	3	4	5	6	7	8		
Equisetaceae	속새과										
Equisetum arvense L.	쇠뜨기	○	○	○	○	○	○	○	○	G	수
Typhaceae	부들과										
Typha orientalis PRESL	부들				○		○	○	○	HH	정
Typha angustata BORY et CHAUB	애기부들	○	○	○		○	○	○	○	HH	정
Potamogetonaceae	가래과										
Potamogeton crispus L.	말즘			○	○	○	○		○	HH	침
Hydrocharitaceae	자라풀과										
Hydrilla verticillata CASP.	검정말			○	○			○	○	HH	침
Gramineae	벼과										
Alopecurus aequalis var. *amurensis* (KOM.) OHWI	뚝새풀			○		○		○	○	Th	수
Avena fatua L.	메귀리	○	○			○		○	○	Th	수
Setaria viridis (L.) BEAUV.	강아지풀	○	○	○	○	○	○	○	○	Th	수
Digitaria sanguinalis (L.) SCOP.	바랭이		○	○		○	○	○	○	Th	수
Beckmannia syzigachne (STEUD.) FERN.	개피	○		○	○	○		○	○	Th	수
Zizania latifolia TURCZ.	줄	○		○	○	○	○	○	○	HH	정
Phragmites communis TRIN.	갈대	○	○	○	○	○	○	○	○	G	수
Phragmites japonica STEUD.	달뿌리풀	○	○	○		○	○		○	G	수
Miscanthus sacchariflorus BENTH.	물억새	○		○	○		○	○	○	H	수
Miscanthus sinensis var. *purpurascens* RENDLE	억새	○		○	○	○		○	○	H	수
Echinochloa crus-galli (L.) BEAUV.	돌피		○	○		○		○	○	Th	수
Cyperaceae	사초과										
Scirpus triqueter L.	세모고랭이				○					HH	정
Eleocharis acicularis for. *longiseta* T. KOYAMA	쇠털골				○		○		○	Th	수
Cyperus tenuispica STEUD.	우산방동사니	○			○				○	Th	수
Eleocharis kuroguwai OHWI	올방개	○							○	HH	정
Cyperus nipponicus FR. et SAV.	나도방동사니	○			○					Th	수
Kyllinga brevifolia var. *leiolepis* HARA	파대가리	○				○	○			H	수
Cyperus amuricus MAX.	방동사니	○			○			○		Th	수
Lemnaceae	개구리밥과										
Spirodela polyrhiza (L.) SCHLEID.	개구리밥	○		○	○	○	○	○	○	HH	부
Lemna paucicostata HEGELM.	좀개구리밥	○					○			HH	부
Commelinaceae	닭의장풀과										
Commelina communis L.	닭의장풀	○	○	○	○	○	○	○	○	Th	수
Aneilema keisak HASSK.	사마귀풀	○			○			○	○	Th	수
Pontederaceae	물옥잠과										
Monochoria vaginalis var. *plantaginea* SOLM.-LAUB.	물닭개비	○			○					HH	정
Salicaceae	버드나무과										
Salix koreensis ANDERSS.	버드나무					○	○	○	○	M	수
Populus deltoides MARSH.	미류나무	○								M	수
Populus tomentiglandulosa T. LEE	은사시나무						○			M	수
Salix glandulosa SEEM.	왕버들								○	M	수
Salix purpurea var. *japonica* NAKAI	키버들	○		○	○		○		○	N	수
Salix gracilistyla MIQ.	갯버들	○	○	○	○	○	○	○	○	N	수
Cannabinaceae	삼과										
Humulus japonicus S. et Z.	환삼덩굴	○	○	○	○	○	○	○	○	Th	수
Polygonaceae	마디풀과										
Rumex acetosa L.	수영	○	○			○	○		○	H	수
Rumex crispus L.	소리쟁이	○	○	○	○	○	○	○	○	H	수

(계속)

학 명	국 명	금강본류								A	B
		1	2	3	4	5	6	7	8		
Persicaria perfoliata H. GROSS	며느리배꼽	○	○		○	○	○	○	○	Th	수
Persicaria senticosa GROSS	며느리밑씻개	○	○	○			○	○	○	Th	수
Persicaria thunbergii H. GROSS	고마리	○	○	○	○	○	○	○	○	Th	수
Persicaria sieboldi OHKI	미꾸리낚시	○	○		○				○	Th	수
Persicaria japonica (MEISN.) H. GROSS	흰꽃여뀌		○	○				○		Th	수
Persicaria conspicua NAKAI	꽃여뀌				○					Th	수
Persicaria hydropiper (L.) SPACH	여뀌	○	○	○	○	○	○	○	○	Th	수
Persicaria cochinchinensis KITAGAWA	털여뀌	○			○				○	Th	수
Persicaria viscosa H. GROSS	기생여뀌		○						○	Th	수
Persicaria nodosa OPIZ	큰개여뀌					○				Th	수
Polygonum aviculare L.	마디풀		○			○	○	○	○	Th	수
Chenopodiaceae	명아주과										
Chenopodium album var. *centrorubrum* MAKINO	명아주	○	○	○	○	○	○	○	○	Th	수
Chenopodium ficifolium SMITH	좀명아주		○	○			○	○	○	Th	수
Amaranthaceae	비름과										
Amaranthus mangostanus L.	비름			○			○	○		Th	수
Amaranthus lividus L.	개비름		○	○	○	○	○	○	○	Th	수
Achyranthes japonica (MIQ.) NAKAI	쇠무릎	○	○	○		○	○		○	H	수
Portulacaceae	쇠비름과										
Portulaca oleracea L.	쇠비름	○	○	○	○	○	○	○	○	Th	수
Caryophyllaceae	자리공과										
Arenaria serpyllifolia L.	자리공	○			○		○	○	○	H	수
Phytolacca americana L.	미국자리공	○						○		Th	수
Aizoaceae	석류풀과										
Mollugo pentaphylla L.	석류풀	○	○	○	○			○	○	Th	수
Caryophyllaceae	석죽과										
Arenaria serpyllifolia L.	벼룩이자리							○	○	H	수
Stellaria aquatica SCOP.	쇠별꽃	○	○	○	○	○	○		○	H	수
Cerastium holosteoides var. *hallaisanense* MIZUSHIMA	점나도나물		○	○						Th	수
Ceratophyllaceae	붕어마름과										
Ceratophyllum demersum L.	붕어마름	○	○	○	○	○		○	○	HH	침
Ranunculaceae	미나리아재비과										
Clematis apiifolia A.P. DC.	사위질빵	○	○		○	○	○		○	N	수
Papaveraceae	양귀비과										
Chelidonium majus var. *asiaticum* (HARA) OHWI	애기똥풀	○		○	○	○			○	Th	수
Cruciferae	십자화과										
Cardamine flexuosa WITH.	황새냉이			○	○	○		○		Th	수
Capsella bursa-pastoris (L.) MEDICUS	냉이	○		○		○	○			Th	수
Rosaceae	장미과										
Potentilla fragarioides var. *major* MAX.	양지꽃	○				○				H	수
Rosa multiflora THUNB.	찔레꽃	○	○		○	○		○		N	수
Rosa maximowicziana REGEL	용가시나무	○	○	○	○				○	N	수
Rubus parvifolius L.	멍석딸기	○		○	○			○	○	N	수
Leguminosae	콩과										
Cassia mimosoides var. *nomame* MAKINO	차풀	○						○	○	Th	수
Albizzia julibrissin DURAZZ.	자귀나무		○								수
Kummerowia striata (THUNB.) SCHINDL.	매듭풀	○	○		○	○		○		H	수
Aeschynomene indica L.	자귀풀	○	○	○				○	○	Th	수

(계속)

학 명	국 명	금강본류								A	B
		1	2	3	4	5	6	7	8		
Glycine soja S. et Z.	돌콩					○				Th	수
Sophora flavescens AIT.	고삼	○	○		○					H	수
Amphicarpaea edgeworthii var. *trisperma* OHWI	새콩	○	○		○			○	○	Th	수
Amorpha fruticosa L.	족제비싸리	○		○	○		○			M	수
Lespedeza cuneata G. DON	비수리	○	○		○			○	○	Ch	수
Trifolium repens L.	토끼풀	○	○	○	○	○	○	○	○	Ch	수
Robinia pseudo-acacia L.	아까시나무	○	○	○			○	○	○	M	수
Anacardiaceae	옻나무과										
Rhus chinensis MILL.	붉나무	○	○	○				○	○	M	수
Anacardiaceae	포도나무과										
Vitis thunbergii var. *sinuata* (REGEL) REHDER	까마귀머루	○		○			○	○		M	수
Violaceae	제비꽃과										
Viola mandshurica W. BECKER	제비꽃	○	○		○				○	H	수
Hydrocaryaceae	마름과										
Trapa japonica FLEROV.	마름	○				○		○	○	HH	침
Onagraceae	바늘꽃과										
Oenothera odorata JACQ.	달맞이꽃	○		○	○	○	○			H	수
Halorrhagaceae	개미탑과										
Myriophyllum verticillatum L.	물수세미	○					○	○	○	HH	침
Umbelliferae	산형과										
Oenanthe javanica (BL.) DC.	미나리	○		○	○		○	○	○	H	수
Convolvulaceae	메꽃과										
Calystegia japonica (THUNB.) CHOIS.	메꽃	○	○	○		○	○		○	H	수
Cuscuta japonica CHOIS.	새삼	○								Th	수
Labiatae	꿀풀과										
Leonurus sibiricus L.	익모초			○		○		○		Th	수
Salvia plebeia R. BR.	배암차즈기		○		○			○	○	H	수
Mosla punctulata (GMEL.) NAKAI	들깨풀	○	○	○	○		○			Th	수
Solanaceae	가지과										
Solanum nigrum L.	까마중	○		○	○	○		○		Th	수
Plantaginaceae	질경이과										
Plantago asiatica L.	질경이	○	○		○	○			○	H	수
Rubiaceae	꼭두서니과										
Galium dahuricum TURCZ	큰잎갈퀴		○							Th	수
Compositae	국화과										
Xanthium strumarium L.	도꼬마리		○	○			○		○	Th	수
Ambrosia artemisiifolia var. *elatior* DESCOURTILS	돼지풀	○	○	○	○	○	○	○	○	Th	수
Erigeron annuus (L.) PERS.	개망초	○	○	○		○		○	○	Th	수
Erigeron canadensis L.	망초			○		○		○	○	Th	수
Eclipta prostrata L.	한련초						○	○		Th	수
Youngia japonica (L.) DC.	뽀리뱅이	○		○					○	H	수
Artemisia princeps var. *orientalis* (PAMPAN.) HARA	쑥	○	○	○	○	○	○	○	○	H	수
Bidens frondosa L.	미국가막살이		○	○	○		○	○	○	Th	수
Cirsium japonicum var. *ussuriense* KITAMURA	엉겅퀴							○		G	수
Bidens bipinnata L.	도깨비바늘	○	○	○	○	○	○	○	○	Th	수
Cosmos bipinnatus CAV.	코스모스				○					Th	수
Taraxacum officinale WEBER	서양민들레	○	○	○	○		○		○	H	수
Ixeris dentata (THUNB.) NAKAI	씀바귀		○							H	수
Lactuca indica var. *laciniata* (O. KUNTZE) HARA	왕고들빼기	○		○	○	○	○	○	○	Th	수
Sonchus oleraceus L.	방가지똥				○					Th	수
Sonchus asper (L.) HILL	큰방가지똥		○							Th	수
합 계		75	57	61	63	53	53	65	75		

건설교통부

< 부록 표 1 - 12 > 논산천, 강경천, 노성천의 하천식물 목록

학 명	국 명	논산천			강경천		노성천		A	B
		9	10	11	12	13	14	15		
Equisetaceae	속새과									
Equisetum arvense L.	쇠뜨기	O	O	O	O	O	O	O	G	수
Typhaceae	부들과									
Typha orientalis PRESL	부들		O						HH	정
Typha angustata BORY et CHAUB	애기부들	O		O		O	O	O	HH	정
Potamogetonaceae	가래과									
Potamogeton crispus L.	말즘	O		O			O		HH	침
Hydrocharitaceae	자라풀과									
Hydrilla verticillata CASP.	검정말	O	O	O			O		HH	침
Gramineae	벼과									
Alopecurus aequalis var. *amurensis* (KOM.) OHWI	뚝새풀			O		O		O	Th	수
Avena fatua L.	메귀리	O		O		O			Th	수
Setaria viridis (L.) BEAUV.	강아지풀		O	O	O	O	O	O	Th	수
Digitaria sanguinalis (L.) SCOP.	바랭이		O	O	O			O	Th	수
Beckmannia syzigachne (STEUD.) FERN.	개피	O	O	O	O	O		O	Th	수
Echinochloa crus-galli (L.) BEAUV.	돌피	O	O		O		O	O	Th	수
Zizania latifolia TURCZ.	줄	O	O	O		O		O	HH	정
Phragmites communis TRIN.	갈대	O	O	O	O	O	O	O	G	수
Phragmites japonica STEUD.	달뿌리풀	O	O	O		O		O	G	수
Miscanthus sacchariflorus BENTH.	물억새	O	O	O	O	O		O	H	수
Miscanthus sinensis var. *purpurascens* RENDLE	억새		O		O	O	O	O	H	수
Cyperaceae	사초과									
Carex neurocarpa MAX.	괭이사초				O				H	수
Scirpus triqueter L.	세모고랭이							O	HH	정
Eleocharis acicularis for. *longiseta* T. KOYAMA	쇠털골		O			O			Th	수
Cyperus tenuispica STEUD.	우산방동사니				O				Th	수
Eleocharis kuroguwai OHWI	올방개						O		HH	정
Cyperus nipponicus FR. et SAV.	나도방동사니	O					O		Th	수
Kyllinga brevifolia var. *leiolepis* HARA	파대가리			O		O	O		H	수
Cyperus amuricus MAX.	방동사니				O			O	Th	수
Lemnaceae	개구리밥과									
Spirodela polyrhiza (L.) SCHLEID.	개구리밥	O	O	O	O		O	O	HH	부
Lemna paucicostata HEGELM.	좀개구리밥		O	O	O		O		HH	부
Commelinaceae	닭의장풀과									
Commelina communis L.	닭의장풀	O	O	O	O		O	O	Th	수
Aneilema keisak HASSK.	사마귀풀	O		O	O		O	O	Th	수
Pontederaceae	물옥잠과									
Monochoria vaginalis var. *plantaginea* SOLM.-LAUB.	물닭개비	O		O	O			O	HH	정
Salicaceae	버드나무과									
Salix koreensis ANDERSS.	버드나무	O			O			O	M	수
Salix purpurea var. *japonica* NAKAI	키버들	O	O			O	O		N	수
Salix gracilistyla MIQ.	갯버들	O	O	O		O	O	O	N	수
Cannabinaceae	삼과									
Humulus japonicus S. et Z.	환삼덩굴	O	O	O	O	O	O	O	Th	수
Polygonaceae	마디풀과									
Rumex acetosa L.	수영		O	O	O				H	수
Rumex crispus L.	소리쟁이	O	O	O	O	O		O	H	수

(계속)

학 명	국 명	논산천			강경천		노성천		A	B
		9	10	11	12	13	14	15		
Persicaria perfoliata H. GROSS	며느리배꼽	O	O	O		O			Th	수
Persicaria senticosa GROSS	며느리밑씻개	O	O			O	O	O	Th	수
Persicaria thunbergii H. GROSS	고마리	O	O	O	O	O	O	O	Th	수
Persicaria sieboldi OHKI	미꾸리낚시	O		O	O			O	Th	수
Persicaria japonica (MEISN.) H. GROSS	흰꽃여뀌			O				O	Th	수
Persicaria conspicua NAKAI	꽃여뀌		O	O			O		Th	수
Persicaria hydropiper (L.) SPACH	여뀌	O	O	O	O	O	O		Th	수
Persicaria cochinchinensis KITAGAWA	털여뀌			O					Th	수
Persicaria viscosa H. GROSS	기생여뀌						O		Th	수
Polygonum aviculare L.	마디풀	O	O			O	O	O	Th	수
Chenopodiaceae	명아주과									
Chenopodium album var. *centrorubrum* MAKINO	명아주	O	O	O	O	O	O		Th	수
Chenopodium ficifolium SMITH	좀명아주	O	O	O	O			O	Th	수
Amaranthaceae	비름과									
Amaranthus mangostanus L.	비름		O	O		O	O	O	Th	수
Amaranthus lividus L.	개비름		O	O			O		Th	수
Achyranthes japonica (MIQ.) NAKAI	쇠무릎	O			O	O		O	H	수
Portulacaceae	쇠비름과									
Portulaca oleracea L.	쇠비름	O		O	O		O	O	Th	수
Caryophyllaceae	자리공과									
Arenaria serpyllifolia L.	자리공	O	O		O				H	수
Aizoaceae	석류풀과									
Mollugo pentaphylla L.	석류풀	O			O			O	Th	수
Caryophyllaceae	석죽과									
Arenaria serpyllifolia L.	벼룩이자리			O	O				H	수
Stellaria aquatica SCOP.	쇠별꽃	O	O		O	O	O	O	H	수
Cerastium holosteoides var. *hallaisanense* MIZUSHIMA	점나도나물		O						Th	수
Ceratophyllaceae	붕어마름과									
Ceratophyllum demersum L.	붕어마름	O	O	O		O		O	HH	침
Ranunculaceae	미나리아재비과									
Clematis apiifolia A.P. DC.	사위질빵		O	O		O	O	O	N	수
Ranunculus sceleratus L.	개구리자리			O					Th	수
Papaveraceae	양귀비과									
Chelidonium majus var. *asiaticum* (HARA) OHWI	애기똥풀	O	O	O	O		O	O	Th	수
Cruciferae	십자화과									
Cardamine flexuosa WITH.	황새냉이	O	O	O	O		O		Th	수
Capsella bursa-pastoris (L.) MEDICUS	냉이		O	O	O		O	O	Th	수
Brassica juncea var. *integrifolia* SINSK.	갓					O	O		Th	수
Brassica juncea campestris subsp. *napus* var. *nippoo-leifera* MAKINO	유채						O		Th	수
Rosaceae	장미과									
Potentilla fragarioides var. *major* MAX.	양지꽃	O	O	O			O	O	H	수
Rosa multiflora THUNB.	찔레꽃	O	O				O		N	수
Rosa maximowicziana REGEL	용가시나무	O	O	O					N	수
Rubus parvifolius L.	멍석딸기			O		O	O		N	수
Leguminosae	콩과									
Cassia mimosoides var. *nomame* MAKINO	차풀	O		O	O			O	Th	수
Kummerowia striata (THUNB.) SCHINDL.	매듭풀		O		O		O	O	H	수
Aeschynomene indica L.	자귀풀	O		O	O			O	Th	수

(계속)

학 명	국 명	논산천			강경천		노성천		A	B
		9	10	11	12	13	14	15		
Glycine soja S. et Z.	돌콩	O					O		Th	수
Sophora flavescens AIT.	고삼							O	H	수
Amphicarpaea edgeworthii var. *trisperma* OHWI	새콩	O	O	O		O	O	O	Th	수
Amorpha fruticosa L.	족제비싸리	O				O		O	M	수
Lespedeza cuneata G. DON	비수리		O				O	O	Ch	수
Trifolium repens L.	토끼풀	O	O	O	O	O	O	O	Ch	수
Robinia pseudo-acacia L.	아까시나무	O		O			O	O	M	수
Vicia dasycarpa TENORE	각시갈퀴나물		O				O		Th	수
Anacardiaceae	옻나무과									
Rhus chinensis MILL.	붉나무	O	O	O			O	O	M	수
Anacardiaceae	포도나무과									
Vitis thunbergii var. *sinuata* (REGEL) REHDER	까마귀머루			O		O	O		M	수
Violaceae	제비꽃과									
Viola mandshurica W. BECKER	제비꽃	O	O	O			O	O	H	수
Hydrocaryaceae	마름과									
Trapa japonica FLEROV.	마름		O				O	O	HH	침
Onagraceae	바늘꽃과									
Oenothera odorata JACQ.	달맞이꽃	O	O	O	O		O	O	H	수
Halorrhagaceae	개미탑과									
Myriophyllum verticillatum L.	물수세미		O			O			HH	침
Umbelliferae	산형과									
Oenanthe javanica (BL.) DC.	미나리	O				O	O		H	수
Convolvulaceae	메꽃과									
Calystegia japonica (THUNB.) CHOIS.	메꽃	O			O			O	H	수
Cuscuta japonica CHOIS.	새삼	O					O		Th	수
Labiatae	꿀풀과									
Leonurus sibiricus L.	익모초						O		Th	수
Salvia plebeia R. BR.	배암차즈기			O				O	H	수
Mosla punctulata (GMEL.) NAKAI	들깨풀	O	O	O		O			Th	수
Solanaceae	가지과									
Solanum nigrum L.	까마중		O		O		O	O	Th	수
Plantaginaceae	질경이과									
Plantago asiatica L.	질경이	O		O	O	O			H	수
Rubiaceae	꼭두서니과									
Galium dahuricum TURCZ	큰잎갈퀴		O	O				O	Th	수
Compositae	국화과									
Xanthium strumarium L.	도꼬마리	O	O	O	O			O	Th	수
Ambrosia artemisiifolia var. *elatior* DESCOURTILS	돼지풀	O	O	O	O	O	O	O	Th	수
Erigeron annuus (L.) PERS.	개망초	O	O	O	O			O	Th	수
Erigeron canadensis L.	망초	O			O		O		Th	수
Eclipta prostrata L.	한련초			O		O			Th	수
Youngia japonica (L.) DC.	뽀리뱅이			O				O	H	수
Artemisia princeps var. *orientalis* (PAMPAN.) HARA	쑥	O	O	O	O	O	O	O	H	수
Bidens frondosa L.	미국가막살이	O		O	O			O	Th	수
Cirsium japonicum var. *ussuriense* KITAMURA	엉겅퀴						O		G	수
Bidens bipinnata L.	도깨비바늘		O	O	O			O	Th	수
Cosmos bipinnatus CAV.	코스모스		O				O		Th	수
Taraxacum officinale WEBER	서양민들레	O	O	O	O	O	O		H	수
Ixeris dentata (THUNB.) NAKAI	씀바귀		O				O		H	수
Lactuca indica var. *laciniata* (O. KUNTZE) HARA	왕고들빼기		O	O		O	O	O	Th	수
Sonchus oleraceus L.	방가지똥		O					O	Th	수
Sonchus asper (L.) HILL	큰방가지똥	O				O			Th	수
합 계		63	66	68	50	44	62	64		

건설교통부

< 부록 표 1 - 13 > 미호천, 갑천, 유등천의 하천식물 목록

학 명	국 명	미호천			갑 천			유등천		A	B
		16	17	18	19	20	21	22	23		
Equisetaceae	속새과										
Equisetum arvense L.	쇠뜨기	○	○	○	○	○	○	○	○	G	수
Typhaceae	부들과										
Typha orientalis PRESL	부들		○			○	○	○		HH	정
Typha angustata BORY et CHAUB	애기부들		○	○	○		○		○	HH	정
Potamogetonaceae	가래과										
Potamogeton crispus L.	말즘	○			○	○		○	○	HH	침
Hydrocharitaceae	자라풀과										
Hydrilla verticillata CASP.	검정말	○	○	○		○	○	○		HH	침
Gramineae	벼과										
Alopecurus aequalis var. *amurensis* (KOM.) OHWI	뚝새풀		○	○		○		○		Th	수
Avena fatua L.	메귀리	○			○	○	○			Th	수
Setaria viridis (L.) BEAUV.	강아지풀	○		○	○	○	○	○	○	Th	수
Digitaria sanguinalis (L.) SCOP.	바랭이	○	○	○		○		○		Th	수
Echinochloa crus-galli (L.) BEAUV.	돌피	○		○			○		○	Th	수
Beckmannia syzigachne (STEUD.) FERN.	개피	○	○		○	○	○	○	○	Th	수
Zizania latifolia TURCZ.	줄		○		○	○	○		○	HH	정
Phragmites communis TRIN.	갈대	○	○	○	○	○	○	○	○	G	수
Phragmites japonica STEUD.	달뿌리풀	○	○	○			○		○	G	수
Miscanthus sacchariflorus BENTH.	물억새	○	○		○		○		○	H	수
Miscanthus sinensis var. *purpurascens* RENDLE	억새	○		○	○	○		○	○	H	수
Cyperaceae	사초과										
Carex neurocarpa MAX.	괭이사초			○			○			H	수
Scirpus triqueter L.	세모고랭이				○					HH	정
Eleocharis acicularis for. *longiseta* T. KOYAMA	쇠털골						○			Th	수
Cyperus tenuispica STEUD.	우산방동사니	○			○			○		Th	수
Eleocharis kuroguwai OHWI	올방개				○					HH	정
Cyperus nipponicus FR. et SAV.	나도방동사니						○			Th	수
Kyllinga brevifolia var. *leiolepis* HARA	파대가리		○		○	○	○	○	○	H	수
Cyperus amuricus MAX.	방동사니		○	○	○	○			○	Th	수
Lemnaceae	개구리밥과										
Spirodela polyrhiza (L.) SCHLEID.	개구리밥	○		○	○	○	○		○	HH	부
Lemna paucicostata HEGELM.	좀개구리밥			○	○		○			HH	부
Commelinaceae	닭의장풀과										
Commelina communis L.	닭의장풀		○	○	○	○	○	○		Th	수
Aneilema keisak HASSK.	사마귀풀	○			○			○	○	Th	수
Pontederaceae	물옥잠과										
Monochoria vaginalis var. *plantaginea* SOLM.-LAUB.	물닭개비	○		○		○			○	HH	정
Salicaceae	버드나무과										
Salix koreensis ANDERSS.	버드나무	○			○		○	○		M	수
Populus tomentiglandulosa T. LEE	은사시나무		○							M	수
Salix glandulosa SEEM.	왕버들					○	○			M	수
Salix purpurea var. *japonica* NAKAI	키버들				○				○	N	수
Salix gracilistyla MIQ.	갯버들	○	○	○	○		○		○	N	수
Cannabinaceae	삼과										
Humulus japonicus S. et Z.	환삼덩굴	○	○	○v	○	○	○	○	○	Th	수
Polygonaceae	마디풀과										

(계속)

학 명	국 명	미호천			갑 천			유등천		A	B
		16	17	18	19	20	21	22	23		
Rumex acetosa L.	수영		○			○		○		H	수
Rumex crispus L.	소리쟁이	○	○	○	○	○	○	○	○	H	수
Persicaria perfoliata H. GROSS	며느리배꼽	○		○	○		○		○	Th	수
Persicaria senticosa GROSS	며느리밑씻개		○	○	○		○	○		Th	수
Persicaria thunbergii H. GROSS	고마리	○	○	○	○	○	○	○	○	Th	수
Persicaria sieboldi OHKI	미꾸리낚시	○		○				○		Th	수
Persicaria japonica (MEISN.) H. GROSS	흰꽃여뀌		○		○			○	○	Th	수
Persicaria conspicua NAKAI	꽃여뀌		○				○			Th	수
Persicaria hydropiper (L.) SPACH	여뀌	○	○	○	○	○	○	○		Th	수
Persicaria cochinchinensis KITAGAWA	털여뀌	○	○			○			○	Th	수
Persicaria viscosa H. GROSS	기생여뀌						○			Th	수
Polygonum aviculare L.	마디풀	○			○	○		○	○	Th	수
Chenopodiaceae	명아주과										
Chenopodium album var. *centrorubrum* MAKINO	명아주	○	○	○	○	○	○	○	○	Th	수
Chenopodium ficifolium SMITH	좀명아주		○		○	○			○	Th	수
Amaranthaceae	비름과										
Amaranthus mangostanus L.	비름		○				○	○	○	Th	수
Amaranthus lividus L.	개비름	○	○		○	○	○		○	Th	수
Achyranthes japonica (MIQ.) NAKAI	쇠무릎	○	○	○		○		○	○	H	수
Portulacaceae	쇠비름과										
Portulaca oleracea L.	쇠비름	○		○	○	○	○	○		Th	수
Caryophyllaceae	자리공과										
Arenaria serpyllifolia L.	자리공	○			○			○		H	수
Phytolacca americana L.	미국자리공	○			○		○	○	○	Th	수
Aizoaceae	석류풀과										
Mollugo pentaphylla L.	석류풀	○		○		○	○		○	Th	수
Caryophyllaceae	석죽과										
Arenaria serpyllifolia L.	벼룩이자리	○					○	○	○	H	수
Stellaria aquatica SCOP.	쇠별꽃		○	○	○	○		○	○	H	수
Ceratophyllaceae	붕어마름과									Th	수
Ceratophyllum demersum L.	붕어마름	○	○		○	○	○	○	○	HH	침
Ranunculaceae	미나리아재비과										
Clematis apiifolia A.P. DC.	사위질빵	○	○		○	○		○	○	N	수
Ranunculus sceleratus L.	개구리자리		○				○			Th	수
Papaveraceae	양귀비과										
Chelidonium majus var. *asiaticum* (HARA) OHWI	애기똥풀	○	○		○		○	○	○	Th	수
Cruciferae	십자화과										
Cardamine flexuosa WITH.	황새냉이	○	○			○	○	○		Th	수
Capsella bursa-pastoris (L.) MEDICUS	냉이		○	○	○		○	○	○	Th	수
Lepidium virginicum L.	콩다닥냉이						○			Th	수
Brassica juncea campestris subsp. *rapus* var. *nippo-leifera* MAKINO	유채		○				○			Th	수
Rosaceae	장미과										
Potentilla fragarioides var. *major* MAX.	양지꽃		○		○		○	○		H	수
Rosa multiflora THUNB.	찔레꽃	○		○	○	○	○		○	N	수
Rosa maximowicziana REGEL	용가시나무				○		○			N	수
Rubus parvifolius L.	멍석딸기	○			○	○		○		N	수
Leguminosae	콩과										
Cassia mimosoides var. *nomame* MAKINO	차풀		○				○			Th	수

(계속)

학 명	국 명	미호천			갑 천			유등천		A	B
		16	17	18	19	20	21	22	23		
Albizzia julibrissin DURAZZ.	자귀나무	○				○			○		수
Kummerowia striata (THUNB.) SCHINDL.	매듭풀		○	○	○		○	○	○	H	수
Aeschynomene indica L.	자귀풀				○			○	○	Th	수
Glycine soja S. et Z.	돌콩	○		○			○			Th	수
Sophora flavescens AIT.	고삼					○				H	수
Amphicarpaea edgeworthii var. *trisperma* OHWI	새콩	○	○		○	○	○		○	Th	수
Amorpha fruticosa L.	족제비싸리			○			○	○		M	수
Lespedeza cuneata G. DON	비수리	○	○	○		○	○		○	Ch	수
Trifolium repens L.	토끼풀	○	○	○	○	○	○	○	○	Ch	수
Robinia pseudo-acacia L.	아까시나무	○		○	○		○	○	○	M	수
Anacardiaceae	옻나무과										
Rhus chinensis MILL.	붉나무				○	○			○	M	수
Anacardiaceae	포도나무과										
Vitis thunbergii var. *sinuata* (REGEL) REHDER	까마귀머루		○	○			○	○		M	수
Violaceae	제비꽃과										
Viola mandshurica W. BECKER	제비꽃		○			○		○	○	H	수
Hydrocaryaceae	마름과										
Trapa japonica FLEROV.	마름		○	○	○			○		HH	침
Onagraceae	바늘꽃과										
Oenothera odorata JACQ.	달맞이꽃	○	○		○	○	○		○	H	수
Oenothera lamarckiana SER.	큰달맞이꽃								○	H	수
Halorrhagaceae	개미탑과										
Myriophyllum verticillatum L.	물수세미	○	○	○		○	○	○	○	HH	침
Umbelliferae	산형과										
Oenanthe javanica (BL.) DC.	미나리	○		○		○		○		H	수
Convolvulaceae	메꽃과										
Calystegia japonica (THUNB.) CHOIS.	메꽃	○		○	○	○	○		○	H	수
Cuscuta japonica CHOIS.	새삼					○				Th	수
Labiatae	꿀풀과										
Leonurus sibiricus L.	익모초					○		○		Th	수
Salvia plebeia R. BR.	배암차즈기							○		H	수
Mosla punctulata (GMEL.) NAKAI	물깨풀	○	○		○		○		○	Th	수
Solanaceae	가지과										
Solanum nigrum L.	까마중		○	○			○		○	Th	수
Plantaginaceae	질경이과										
Plantago asiatica L.	질경이	○	○	○		○		○	○	H	수
Compositae	국화과										
Xanthium strumarium L.	도꼬마리	○	○		○	○		○	○	Th	수
Ambrosia artemisiifolia var. *elatior* DESCOURTILS	돼지풀	○	○	○	○	○	○	○	○	Th	수
Erigeron annuus (L.) PERS.	개망초	○	○	○	○		○			Th	수
Erigeron canadensis L.	망초	○	○	○		○		○		Th	수
Eclipta prostrata L.	한련초	○			○		○		○	Th	수
Youngia japonica (L.) DC.	뽀리뱅이							○		H	수
Artemisia princeps var. *orientalis* (PAMPAN.) HARA	쑥	○	○	○	○	○	○	○	○	H	수
Bidens frondosa L.	미국가막살이		○		○	○	○	○		Th	수
Cirsium japonicum var. *ussuriense* KITAMURA	엉겅퀴			○					○	G	수
Bidens bipinnata L.	도깨비바늘	○		○		○		○	○	Th	수
Cosmos bipinnatus CAV.	코스모스			○				○		Th	수

(계속)

건설환경뉴

학 명	국 명	미호천			갑 천			유등천		A	B
		16	17	18	19	20	21	22	23		
Taraxacum officinale WEBER	서양민들레	○	○			○	○	○	○	H	수
Ixeris dentata (THUNB.) NAKAI	씀바귀				○			○		H	수
Lactuca indica var. *laciniata* (O. KUNTZE) HARA	왕고들빼기	○	○	○	○	○		○	○	Th	수
Sonchus oleraceus L.	방가지똥					○			○	Th	수
Sonchus asper (L.) HILL	큰방가지똥		○			○				Th	수
합 계		61	61	52	63	61	67	63	64		

주) A : Raunkiaer의 생활형(M : 대형지상식물, N : 소형지상식물, G : 지중식물, H : 반지중식물, Ch : 지표식물, HH : 수생식물, Th : 일년생식물)
B : 수생식물의 생활형(정 : 정수식물, 침 : 침수식물, 부 : 부엽식물, 수 : 수변식물)

건설교통부

< 부록 표 1 - 14 >

금강본류지역의 부착조류 종조성 및 채집개체수

조사지점 및 시기 / 학 명	St.1			St.2			St.3			St.4		
	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차
Class CYANOPHYCEAE (남조강)												
Order CHROOCOCCALES												
Family Chroococcaceae												
Microcystis aeruginosa Kutzing	416	324	210	841	570						351	212
Chroococcus minutus Nageli				88	153	64		125	95			
Order NOSTOCALES												
Family Oscillatoriaceae												
Spirulina laxa G. M. Smith				136	125	103				587	552	325
Oscillatoria princeps Vaucher		524	110	625	514	462		386				
Lyngbya contorta Lemmermann	494	335	120	916	824	798	1428	894	236	1125	1241	895
Class BACILLARIOPHYCEAE (규조강)												
Order CENTALES												
Family Thalassirosiraceae												
Auacoseira granlata (Ehrenberg) Simonsen	1128	975	542	4365	3524	2310	1021	981	1039	1954	1555	1563
Cyclostephanos dubius (Fricke) Round		1598	623		1285	869		1524	1230	2051	1952	1658
Cyclotella cornata (Ehrenberg) Kutzing	809	881	765	1032			761	852	526		741	
Cyclotella meneghiniana Kutzing	1668	1549	1103	2753	2984	2456	1306	1248	1132	1415	1823	1633
Family Melosiraceae												
Melosira varians Agardh	1562	1781	1642	4113	3948	2369	3501	4121	3256	2149	1987	2153
Order PENNALES												
Family Diastomaceae												
Asterionella formosa Hassel	485	524	325	349	354	346		287		116	198	135
Synedra acus Kutzing	4072	3987	4652	3738	3854	2689	2954	2854	2156	947	1127	802
Synedra delicatissima var. *angustissima* Grunow	1868	1756	1652	2121	2081	1699		1274	1023		2151	980
Synedra inaequalis H. Kobayasi	759	1875	1123	2368	2185	2645	1179	1089	1156	883	1897	1476
Synedra ulna Ehrenberg	419	1269	987	2854	1945	1659	1032	859	1036	669	1845	856
Family Achnanthaceae												
Achanthes laevis Qstrrup		157	98			136		187	120	153		

(계속)

조사지점 및 시기 / 학 명	St.1			St.2			St.3			St.4		
	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차
Family Naviculaceae												
Caloneis silicula (Ehrenberg) Cleve	885	754	712	1043	954	465	715	589	645	638	812	465
Cymbella affinis Kutzing	2501	2895	2698	2432	2461	2231	1980	1298	1356	3114	2987	1952
Cymbella japonica Reichelt	1143	924	986	893	1284	1164	238	452	235		824	645
Cymbella tumida (Brebisson) H.	4516	2256	3265	6188	5127	6054	1168	981	1130	3159	2589	2103
Gomphonema clevei Fricke	386	259	323		123	113	203	197	120		182	130
Gomphonema parvalum Kutzing	1650	1482	1167	3025	3187	2678	1432	1268	1132	1159	1028	856
Gomphonema quadripunctatum Q. W.	448	812	568	506	495	346	216	224	203	876	645	756
Navicula bacillum Ehrenberg	3386	2954	975	1915	2014	1645	2831	2914	2456	3014	2931	2300
Navicula cuspidata Kutzing	736	1825	2654	3959	2845	3202	1480	1284	1132	2149	1958	1532
Navicula pseudolanceolata L.-B.		587	236	496	427	357		189		851	754	620
Naviacula viridula var. *rostellata* C.	3062	1954	2065	5094	4879	4623	1785	2089	1685	4025	3946	3468
Stauroneis acuta W. Smith	1754	1852	1520	1532	1745	1365	938	859	648	1868	1258	1623
Family Nitzschiaceae												
Nitzschia gessneri Hustedt	431	394	450		510	342	326	289	106		347	206
Nitzschia palea W. Smith	5325	4987	3465	6954	7154	6485	3887	4198	3469	3756	4764	3168
Family Surirellaceae												
Surirella splendida (E.) K.	443	489	465	2088	1958	2046	2031	1278	1623	1881	1567	1652
Surirella tenera Grunow					258	230	607	569	316		159	135
Class EUGLENOPHYCEAE (유글레나강)												
Order EUGLENLES												
Family Euglenaceae												
Euglena oxyuris Schmarda		269	203		147		186	158	165		278	210
Euglena viridis Ehrenberg	795	746	468	508	498	302	406	394	408	106	124	205
Trachelomonas similis Stokes	1236	1345	1020	185	264	201	1156	987	1064			
Class CHLOROPHYCEAE (녹조강)												
Order VOLVOCALES												
Family Volvocaceae												
Eudoria elegans Ehrenberg	1469	2897	2035	2019	1945	1652	4937	3578	3468	3964	4512	3468

(계속)

조사지점 및 시기 / 학 명	St.1			St.2			St.3			St.4		
	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차
Order TETRASPORALES												
Family Palmellaceae												
Gloeocystis vesiculosa Nageli		574	326		845	469			206		745	
Asterococcus superbus (C.) S.		246			312	265		154		407	394	264
Order CHAETOPHORALES												
Family Trentepohliaceae												
Cephaleuros virescns Kunze		185	136	158	145	132	485	385	236		187	
Order CHLOROCOCCALES												
Family Oocystaceae												
Westella botryoides (W.) W.		785	641		158	206		482	316			
Family Hydrodictyacea												
Pediastrum biwae Negoro		1276	679	1532	1448	1346	958	1139	1425	1498	1287	1633
Pediastrum boryanum (T.) M.	1023	1298	946	1543	1745	1489	211	3924	2847	397	1589	469
Pediastrum boryanum var. *longicome* Raciborski		295	164	384	285	235	539	459	346		754	
Pediastrum duplex var. *rotundatum* Lucks	156	425	316	1832	485	613	186	876	1065	495	874	469
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst		512	106	514	486	316	653	812	326		721	265
Family Scenedesmaceae												
Scenedesmus acuminatus (L.) Chodat	438	552	346	1025	952	1379	156	247	164	1832	1854	1326
Scenedesmus bernardii G.M. Smith	843	812	760	1282	1189	1356	515	812	711		733	563
Scenedesmus ellipsoideus Chodat		287			159			753	563	117	158	136
Scenedesmus opoliensis Richter		258		318	295	307		328	263	395	418	204
Scenedesmus tibiscensis Uherkovich		298	264		389	206	495	278	245	428	618	598
Order ZYGNEMATALES												
Family Zygnemataceae												
Mougeotia parvula Hassall		389	205		265	164		185	123	312	254	320
Spirogyra sp. (영양세포)	165	159	120	114	141	135	183	162	168	125	174	132
Family Desmidiaceae												
Clostrium gracile Brebisson		158		288				257	152	228	157	320

(계속)

조사지점 및 시기 / 학 명	St.1			St.2			St.3			St.4		
	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West	163	184	123	901				152			213	159
Cosmarium pachydermum Lundell		215	103		197		445	338	456		158	136
Cosmarium suberenatum Hantzsch	462	358	369	209	195	206					198	125
Staurastrum gracile Ralfs	402	358	267	108	214	163	203	199	205	109	98	136
Staurastrum tetracerum var. *subexcavatum* Gronblad	731	597	552					458	388		189	
Hyalotheca dissiliens (Smith) Brebisson		289		482	512	346	491	534	598			
㉮현종수	37	56	51	45	54	51	40	55	51	37	52	48
현존량	48,229	57726	45650	75826	73038	63439	45224	53410	45169	48952	60858	45437

조사지점 및 시기 / 학 명	St.5			St.6			St.7			St.8			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Class CYANOPHYCEAE (남조강)													
Order CHROOCOCCALES													
Family Chroococcaceae													
Microcystis aeruginosa Kutzing				665	612	642	421	534	346	785	628	465	0.58
Chroococcus minutus Nageli	146	141	123	204	224	246	95	191	132	80	124	130	0.17
Order NOSTOCALES													
Family Oscillatoriaceae													
Spirulina laxa G. M. Smith				493	328	316	128	256	216	187	285	210	0.31
Oscillatoria princeps Vaucher		154	132	815	712		215	341	236	5145		3265	0.98
Lyngbya contorta Lemmermann	476	877	568	1325	1124	869	372	259	320	794	845	645	1.28
Class BACILLARIOPHYCEAE (규조강)													
Order CENTALES													
Family Thalassirosiraceae													
Auacoseira granlata (Ehrenberg) Simonsen	4489	3978	3265	4908	4312	5201	1017	2567	2461	3248	2945	3951	4.56
Cyclostephanos dubius (Fricke) Round		3231	2653	1534	1241	1647	1374			1522	2541	2144	2.01
Cyclotella cornata (Ehrenberg) Kutzing	905	821	569	851	755	649	975	814	468	1102			1.03
Cyclotella meneghiniana Kutzing	2806	2254	1896	1582	1718	1645	1553	2487	2477	2571	1952	2301	3.33
Family Melosiraceae													
Melosira varians Agardh	1805	2784	2498	2631	2548	2502	1340		1456	3997	2856	3215	4.33
Order PENNALES													
Family Diastomaceae													
Asterionella formosa Hassel	302	412	265	296	324	265	475	241	326	331			0.46
Synedra acus Kutzing	2415	2197	2155	3086	3123	2465	9867	8547	4689	3597	7458	3256	6.24
Synedra delicatissima var. *angustissima* G.	2016	1857	1652	1954	1651	1465	1786	1852	1357	2012	5241	2654	3.03
Synedra inaequalis H. Kobayasi	498	1285	845				694	568	325	2157	1478	2365	2.08
Synedra ulna Ehrenberg	845	756	346	796	851	647	406	385	234	2631		1452	1.78
Family Achnanthaceae													
Achanthes laevis Qstrrup	119	119	152	128		201		258	320				0.15

(계속)

조사지점 및 시기 / 학 명	St.5			St.6			St.7			St.8			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Family Naviculaceae													
Caloneis silicula (Ehrenberg) Cleve		894	798		1284	1136	798	854	462	989	1427	895	1.31
Cymbella affinis Kutzing	2048	1923	2350	2509	2781	3152	2491	3257	3014	2351	2587	2415	4.23
Cymbella japonica Reichelt	1387	1854	1236	198	541	326	1093	9853	3201	998			2.12
Cymbella tumida (Brebisson) H.		856		3288	2978	3265	3964	2587	3284	5912	4859	3465	5.25
Gomphonema clevei Fricke	196	145	132		218		375	295	320		185	210	0.30
Gomphonema parvalum Kutzing	2062	1982	2365	1854	1258	1645	1590	2134	2145	2981	3015	2645	3.29
Gomphonema quadripunctatum Q. W.	1153	1012	856	435	385	326	505	396	563	492	529	410	0.95
Navicula bacillum Ehrenberg		1012	1325		1157		3289	2894	2457	2064	1952	2451	3.45
Navicula cuspidata Kutzing	2853	2546	2689	3510	3487	3562	807	754		4014	3241	4520	4.08
Navicula pseudolanceolata L.-B.	1103	1098	568		1850	1356	586	512	468	398		265	0.92
Naviacula viridula var. *rostellata* C.	856	1456	452	1886	1247	1154	3001	2578	2654	4966	5163	3216	4.84
Stauroneis acuta W. Smith		897	256	760	810	547	1567	1476	1256	1320		874	1.92
Family Nitzschiaceae													
Nitzschia gessneri Hustedt	159	258	140		254	156	394	289	258		245	168	0.42
Nitzschia palea W. Smith	5697	4576	3256	2894	2117	1652	5218	4852	3469	5879	6057	5423	7.82
Family Surirellaceae													
Surirella splendida (E.) K.	519	654	325	1954	2159	2015	489	526	462	1989	2089	1652	2.33
Surirella tenera Grunow		412	320	458	524	236	573		324	885	945	495	0.54
Class EUGLENOPHYCEAE (유글레나강)													
Order EUGLENLES													
Family Euglenaceae													
Euglena oxyuris Schmarda	335	341	215		264	240	127	218	167	109	95		0.27
Euglena viridis Ehrenberg					158	132	809	257	578	591	189	234	0.57
Trachelomonas similis Stokes		178	135	1032	852	745	1156	924	1358	195	248	144	1.04
Class CHLOROPHYCEAE (녹조강)													
Order VOLVOCALES													
Family Volvocaceae													
Eudoria elegans Ehrenberg	5432	6748	5200	5158	4821	5985	1358	1859	1026	2191	2854	2451	5.83

(계속)

조사지점 및 시기 / 학 명	St.5			St.6			St.7			St.8			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Order TETRASPORALES													
Family Palmellaceae													
Gloeocystis vesiculosa Nageli	851	741	458	403	395	268	572	473	410		211	168	0.58
Asterococcus superbus (C.) S.	286	318	246		197		285	185	268		121	203	0.30
Order CHAETOPHORALES													
Family Trentepohliaceae													
Cephaleuros virescns Kunze			130		195	210	209	185	175	182		145	0.25
Order CHLOROCOCCALES													
Family Oocystaceae													
Westella botryoides (W.) W.		175	95	1704	1544	1422		1854	1652	1501	1674	986	1.09
Family Hydrodictyacea													
Pediastrum biwae Negoro		857	468		769			1124	498	1295	1765	1269	1.60
Pediastrum boryanum (T.) M.	507	1284	1102	1924	1546	2510	1108	1854	1524	1351	1475	1125	2.50
Pediastrum boryanum var. *longicome* R.	1024	942	597	861	741	147		240		197		205	0.61
Pediastrum duplex var. *rotundatum* Lucks	936	811	942	1044	925	985	208	268	241	1789	1546	1647	1.38
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst		543		778	637	505		258	209	508	485	369	0.65
Family Scenedesmaceae													
Scenedesmus acuminatus (L.) Chodat	543	1289	569	981	1164	574	398	485	321	1107	1025	1547	1.46
Scenedesmus bernardii G.M. Smith	406	569	745	1035	957	641	758		322	1187	1855	325	1.32
Scenedesmus ellipsoideus Chodat	189	257	268	253	324	246		148	165	127		105	0.31
Scenedesmus opoliensis Richter	416	395	369	295	342	398		269	241	285	185	241	0.45
Scenedesmus tibiscensis Uherkovich	451	294	326		327	342		308	236				0.44
Order ZYGNEMATALES													
Family Zygnemataceae													
Mougeotia parvula Hassall	393	294	324	83	159	102		84		102	75	50	0.28
Spirogyra sp. (영양세포)	159	132	139		152	214	156		241	105	157	241	0.25
Family Desmidiaceae													
Clostrium gracile Brebisson	241		168		254	210		285	168	265			0.23

(계속)

조사지점 및 시기 / 학 명	St.5			St.6			St.7			St.8			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West		195	145	169	141	168	155		164	1011	857	542	0.39
Cosmarium pachydermum Lundell					179	236		169	168	391	254	210	0.26
Cosmarium suberenatum Hantzsch		258	215	591	491	297	394		342	198			0.35
Staurastrum gracile Ralfs	114	214	298	761	659	598	392	254	187	198		164	0.45
Staurastrum tetracerum var. *subexcavatum* Gronblad		543	354	384	294	267	597	285	167		185	132	0.44
Hyalotheca dissiliens (Smith) Brebisson		452	268	44	109	168		125	268	391	244	264	0.40
출현종수	39	53	53	44	57	53	47	52	55	52	44	51	
현존량	47138	60271	47963	58514	61169	56898	56140	64668	50796	80673	74147	67924	

(계속)

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논산천의 부착조류 종조성 및 채집개체수

학명 \ 조사지점 및 시기	St.9			St.10			St.11			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Class CYANOPHYCEAE (남조강)										
Order CHROOCOCCALES										
Family Chroococcaceae										
Microcystis aeruginosa Kutzing		431	326	159	225	164		243	326	0.43
Chroococcus minutus Nageli		168	142	135	175	102	144	187	123	0.27
Order NOSTOCALES										
Family Oscillatoriaceae										
Spirulina laxa G. M. Smith		246	264	577		264	438		325	0.49
Oscillatoria princeps Vaucher	285		127	150	289	133				0.23
Lyngbya contorta Lemmermann	1206	1154	597	903	1352	845	154	249	134	1.53
Class BACILLARIOPHYCEAE (규조강)										
Order CENTALES										
Family Thalassirosiraceae										
Auacoseira granlata (Ehrenberg) Simonsen	998	2567	1765	1846	2164	1641	4471	3912	2346	5.02
Cyclostephanos dubius (Fricke) Round				2941	3195	1648	2891		2015	2.94
Cyclotella cornata (Ehrenberg) Kutzing	650	814	246	715	857	689	891		542	1.25
Cyclotella meneghiniana Kutzing	1191	2487	1346	1301	1524	952	2694	2158	1678	3.55
Family Melosiraceae										
Melosira varians Agardh	3498	2456	3024	2027	1952	1645	1695		1325	4.08
Order PENNALES										
Family Diastomaceae										
Asterionella formosa Hassel		245	325	104		109	297	341	230	0.38
Synedra acus Kutzing	2694	3652	2641	922	852	268	2305	2145	1684	3.97
Synedra delicatissima var. *angustissima* Grunow	1843	1876	1645	1528	1625	1648	1982	2185	2348	3.86
Synedra inaequalis H. Kobayasi	1069	982	645	798	952	548	390		268	1.31
Synedra ulna Ehrenberg	986	845	769	496	524	346	798	852	569	1.43
Family Achnanthaceae										
Achanthes laevis Qstrrup		542	320	149			101	117	98	0.31

(계속)

조사지점 및 시기 / 학 명	St.9			St.10			St.11			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Family Naviculaceae										
Caloneis silicula (Ehrenberg) Cleve	704		412	598	245	304			160	0.56
Cymbella affinis Kutzing	1890	2189	1320	2041	1987	1645	1989	1587	1200	3.67
Cymbella japonica Reichelt	219	259	105		189	236	1278	1475	1458	1.21
Cymbella tumida (Brebisson) H.	1095	958	547	2998	3275	1652		1587	1268	3.10
Gomphonema clevei Fricke	197	243	132		174	203	189	215	134	0.34
Gomphonema parvalum Kutzing	1296	1648	1625	1095	981	1034	1979	2078	1647	3.10
Gomphonema quadripunctatum Q.	301	257	265	794	812	548	1038	941	758	1.32
Navicula bacillum Ehrenberg	2729	947	674	2987	3157	2674		2547	2157	4.14
Navicula cuspidata Kutzing	1890	1524	1249	2094	3089	1642	2995	3047	2647	4.67
Navicula pseudolanceolata L.-B.		258	326	642		630	1030			0.67
Naviacula viridula var. *rostellata* C.	1558	2419	1647	3954	4187	2644	837	952	652	4.36
Stauroneis acuta W. Smith	889	1586	846	1758	2514	1358		462	320	2.25
Family Nitzschiaceae										
Nitzschia gessneri Hustedt	362	378	326		189	265	194	254	264	0.52
Nitzschia palea W. Smith	3726	4517	2485	3825	2941	3205	5481	5233	3256	8.02
Family Surirellaceae										
Surirella splendida (E.) K.	1985	1457	1345	2012	3157	2455	498	846	652	3.33
Surirella tenera Grunow	594	312	264		157		501		123	0.45
Class EUGLENOPHYCEAE (유글레나강)										
Order EUGLENLES										
Family Euglenaceae										
Euglena oxyuris Schmarda	166	148	122		135	102	327	248		0.29
Euglena viridis Ehrenberg	468	285	326	125	193	133	185	218		0.45
Trachelomonas similis Stokes	1048	859	945	1204	822	652		185	132	1.35
Class CHLOROPHYCEAE (녹조강)										
Order VOLVOCALES										
Family Volvocaceae										
Eudoria elegans Ehrenberg	4795	5109	3205	3725	3287	1398	5391	4107	3665	8.03

(계속)

조사지점 및 시기 / 학 명	St.9			St.10			St.11			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Order TETRASPORALES										
Family Palmellaceae										
Gloeocystis vesiculosa Nageli	498	418	456		269	132	799	812	326	0.86
Asterococcus superbus (C.) S.	215		326	398	410	326	276		230	0.50
Order CHAETOPHORALES										
Family Trentepohliaceae										
Cephaleuros virescns Kunze	448	287	234		185	205	493		236	0.48
Order CHLOROCOCCALES										
Family Oocystaceae										
Westella botryoides (W.) W.		1584	652	752	2041	1645		1563	326	1.98
Family Hydrodictyacea										
Pediastrum biwae Negoro	897	1278	758	1248	857	465		458	326	1.45
Pediastrum boryanum (T.) M.	198	495	455	409	154	236	492	579	265	0.76
Pediastrum boryanum var. *longicome* R.	528	481	663		825	625	997		365	1.04
Pediastrum duplex var. *rotundatum* Lucks	254	592	109	509	512	326	1014	984	859	1.19
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	679	589	653	681			428	385	268	0.85
Family Scenedesmaceae										
Scenedesmus acuminatus (L.) Chodat	213	256		1791	2056	1258	608	592	345	1.65
Scenedesmus bernardii G.M. Smith	492		125		478		394		135	0.38
Scenedesmus ellipsoideus Chodat		185	135	108	92	132	218	158	135	0.27
Scenedesmus opoliensis Richter	264	547	305	359	257	264	392	195	230	0.65
Scenedesmus tibiscensis Uherkovich	508		304	489	510	324	487	398	325	0.77
Order ZYGNEMATALES										
Family Zygnemataceae										
Mougeotia parvula Hassall	89	88	80	416		324	434	514	316	0.52
Spirogyra sp. (영양세포)	179	265	264	148		132	145	185	136	0.34
Family Desmidiaceae										
Clostrium gracile Brebisson		182	130	261	189	164	238	287	234	0.39
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West		185		985	822	640	185	241	134	0.74
Cosmarium pachydermum Lundell	385	312	236		185	205	358	297	326	0.53

(계속)

조사지점 및 시기 / 학 명	St.9			St.10			St.11			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Cosmarium suberenatum Hantzsch		285	246	185				511		0.28
Staurastrum gracile Ralfs	192			188	124	132	129		106	0.20
Staurastrum tetracerum var. *subexcavatum* Gronblad	185	177	164	601	365	325	438	415	326	0.69
Hyalotheca dissiliens (Smith) Brebisson	512	485	326		199	236	325	289	189	0.59
출현종수	47	52	55	48	51	54	49	45	54	
현존량	47068	52509	38969	54131	57707	41878	52013	47234	40642	

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강경천의 부착조류 종조성 및 채집개체수

학명 \ 조사지점 및 시기	St. 12			St. 13			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	
Class CYANOPHYCEAE (남조강)							
Order CHROOCOCCALES							
Family Chroococcaceae							
Microcystis aeruginosa Kutzing	289	312	231		245	167	0.44
Chroococcus minutus Nageli	235	195	102	325	214	167	0.44
Order NOSTOCALES							
Family Oscillatoriaceae							
Spirulina laxa G. M. Smith	372	248	304	245	389	211	0.63
Oscillatoria princeps Vaucher	704	546	467	458	625	314	1.11
Lyngbya contorta Lemmermann	1215	1426	1024	1025	1687	1542	2.82
Class BACILLARIOPHYCEAE (규조강)							
Order CENTALES							
Family Thalassirosiraceae							
Auacoseira granlata (Ehrenberg) Simonsen	4799	5147	2485	3652	4120	3210	8.33
Cyclostephanos dubius (Fricke) Round	1321	2456	1645		625	458	2.32
Cyclotella cornata (Ehrenberg) Kutzing	750		245	465		65	0.54
Cyclotella meneghiniana Kutzing	1392		854	520	1230	841	1.72
Family Melosiraceae							
Melosira varians Agardh	2420	2241	2034	2156	3102	1578	4.82
Order PENNALES							
Family Diastomaceae							
Asterionella formosa Hassel	279				205	106	0.21
Synedra acus Kutzing	2978	3287	1645	1354	1250	953	4.08
Synedra delicatissima var. *angustissima* Grunow	1847	2364	1645	859	2150	756	3.42
Synedra inaequalis H. Kobayasi		1243			230		0.52
Synedra ulna Ehrenberg	689	524	526	426	854	236	1.16
Family Achnanthaceae							
Achanthes laevis Qstrrup	119	243	136	65	245	158	0.34

(계속)

조사지점 및 시기 / 학 명	St. 12			St. 13			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	
Family Naviculaceae							
Caloneis silicula (Ehrenberg) Cleve		152			642		0.28
Cymbella affinis Kutzing	2491	2431	1678	1678	2569	1345	4.34
Cymbella japonica Reichelt	179	524	325	268	325	167	0.64
Cymbella tumida (Brebisson) H.	3165	2587	2485	1359	3205	1648	5.14
Gomphonema clevei Fricke		185	236	135	205	167	0.33
Gomphonema parvalum Kutzing	1694	1956	1645		1678	659	2.72
Gomphonema quadripunctatum Q.	395	287	326	369	215	340	0.69
Navicula bacillum Ehrenberg		1532	1265		1236	1758	2.06
Navicula cuspidata Kutzing	3491	4175	2675	2563	2078	1642	5.92
Navicula pseudolanceolata L.-B.		485	326		623	320	0.62
Naviacula viridula var. *rostellata* C.	2076	1852	1326	945	1320	1127	3.08
Stauroneis acuta W. Smith	550		65	230	325		0.42
Family Nitzschiaceae							
Nitzschia gessneri Hustedt		381	286		323	167	0.41
Nitzschia palea W. Smith	2579	2174	2249	3202	3462	3325	6.05
Family Surirellaceae							
Surirella splendida (E.) K.	1758	1869	1648	1658	1843	1644	3.71
Surirella tenera Grunow	398		362		125	122	0.36
Class EUGLENOPHYCEAE (유글레나강)							
Order EUGLENLES							
Family Euglenaceae							
Euglena oxyuris Schmarda		195	80			300	0.20
Euglena viridis Ehrenberg		210	67	165	201	102	0.27
Trachelomonas similis Stokes	997	1054	1023	645	788	468	1.77
Class CHLOROPHYCEAE (녹조강)							
Order VOLVOCALES							
Family Volvocaceae							
Eudoria elegans Ehrenberg	5098	4900	4529	2236	2854	1356	7.46

(계속)

조사지점 및 시기 / 학 명	St. 12			St. 13			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	
Order TETRASPORALES							
Family Palmellaceae							
Gloeocystis vesiculosa Nageli	399	284	136	236	568	425	0.73
Asterococcus superbus (C.) S.		254			253		0.18
Order CHAETOPHORALES							
Family Trentepohliaceae							
Cephaleuros virescns Kunze		851		136	526	320	0.65
Order CHLOROCOCCALES							
Family Oocystaceae							
Westella botryoides (W.) W.	1584	1850	1621	658	945	346	2.49
Family Hydrodictyacea							
Pediastrum biwae Negoro		1628	1523	1645	1869	2015	3.09
Pediastrum boryanum (T.) M.	1809	2014	1658	136	459	325	2.28
Pediastrum boryanum var. *longicome* R.	758	185	268	136	203		0.55
Pediastrum duplex var. *rotundatum* Lucks	998	531	458	236	859	645	1.33
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	812	798	785	569	1254	658	1.74
Family Scenedesmaceae							
Scenedesmus acuminatus (L.) Chodat	859	795	569	625	958	236	1.44
Scenedesmus bernardii G.M. Smith	1187	894	654		236		1.06
Scenedesmus ellipsoideus Chodat	195		85		215		0.18
Scenedesmus opoliensis Richter	315	248	186	326	440	382	0.68
Scenedesmus tibiscensis Uherkovich		384	236	234	468	247	0.56
Order ZYGNEMATALES							
Family Zygnemataceae							
Mougeotia parvula Hassall	91	154	134		85		0.17
Spirogyra sp. (영양세포)		124		136	95		0.13
Family Desmidiaceae							
Clostrium gracile Brebisson		155		135	241	167	0.25
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West	157		245	136	245	167	0.34
Cosmarium pachydermum Lundell	129	155	145	124	164	105	0.29

(계속)

조사지점 및 시기 / 학 명	St. 12			St. 13			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	
Cosmarium suberenatum Hantzsch	514	428	314	345	470	421	0.89
Staurastrum gracile Ralfs	694	396	562	326	339	214	0.90
Staurastrum tetracerum var. *subexcavatum* Gronblad	297	309	265		246	164	0.46
Hyalotheca dissiliens (Smith) Brebisson	121	109	132	85	168	137	0.27
출현종수	45	52	52	43	57	50	
현존량	55199	59727	45915	33227	52494	34393	

< 부록 표 1 - 17 >

노성천의 부착조류 종조성 및 채집개체수

조사지점 및 시기 / 학 명	St. 14			St. 15			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	
Class CYANOPHYCEAE (남조강)							
Order CHROOCOCCALES							
Family Chroococcaceae							
Microcystis aeruginosa Kutzing	246	311	165	134	288	215	0.56
Chroococcus minutus Nageli	165	195	89	264	356		0.44
Order NOSTOCALES							
Family Oscillatoriaceae							
Spirulina laxa G. M. Smith		345	210		245	333	0.47
Oscillatoria princeps Vaucher	346	524	411	421	611	248	1.06
Lyngbya contorta Lemmermann	856	1132	326	856	1347	1013	2.28
Class BACILLARIOPHYCEAE (규조강)							
Order CENTALES							
Family Thalassirosiraceae							
Auacoseira granlata (Ehrenberg) Simonsen	3654	4649	2654	3321	4820	2640	8.96
Cyclostephanos dubius (Fricke) Round		1354	866		622	346	1.31
Cyclotella cornata (Ehrenberg) Kutzing	246	521	332				0.45
Cyclotella meneghiniana Kutzing	1031	1645	946	465	853	465	2.23
Family Melosiraceae							
Melosira varians Agardh	1654	2641	1654	1166	2972	1358	4.72
Order PENNALES							
Family Diastomaceae							
Asterionella formosa Hassel		346			205	106	0.27
Synedra acus Kutzing	978	2321	1654	1956	1164	755	3.64
Synedra delicatissima var. *angustissima* Grunow	847	1984	1645	859	2150	756	3.40
Synedra inaequalis H. Kobayasi		645	231		230	135	0.51
Synedra ulna Ehrenberg	346	468	264	164	564	221	0.84
Family Achnanthaceae							
Achanthes laevis Qstrrup	134	267	89	132	346	220	0.49

(계속)

조사지점 및 시기 / 학 명	St. 14			St. 15			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	
Family Naviculaceae							
Caloneis silicula (Ehrenberg) Cleve		152			642		0.33
Cymbella affinis Kutzing	2165	2845	1325	1266	2456	1654	4.83
Cymbella japonica Reichelt		265	165		465	263	0.48
Cymbella tumida (Brebisson) H.	2656	2789	1656	1200	2548	1465	5.08
Gomphonema clevei Fricke		265	165		222		0.27
Gomphonema parvalum Kutzing	1333	2462	1120		852	465	2.57
Gomphonema quadripunctatum Q.	132	220	135	165	120	117	0.37
Navicula bacillum Ehrenberg		2251	1325		1026	702	2.19
Navicula cuspidata Kutzing	2265	4652	3252	3465	4120	2451	8.33
Navicula pseudolanceolata L.-B.		652	256		314		0.50
Naviacula viridula var. *rostellata* C.	1352	1645	1323	468	1987	267	2.90
Stauroneis acuta W. Smith					132		0.05
Family Nitzschiaceae							
Nitzschia gessneri Hustedt		381	286		323	167	0.48
Nitzschia palea W. Smith	1985	2210	1645	2645	4150	2647	6.30
Family Surirellaceae							
Surirella splendida (E.) K.	2301	1759	1459	1631	1473	1031	3.98
Surirella tenera Grunow	164		132				0.12
Class EUGLENOPHYCEAE (유글레나강)							
Order EUGLENLES							
Family Euglenaceae							
Euglena oxyuris Schmarda		245					0.10
Euglena viridis Ehrenberg	132	256		86	165		0.26
Trachelomonas similis Stokes	856	1456	756	598	487	859	2.07
Class CHLOROPHYCEAE (녹조강)							
Order VOLVOCALES							
Family Volvocaceae							
Eudoria elegans Ehrenberg	3465	4152	2985	1958	2020	1645	6.69

(계속)

조사지점 및 시기 / 학 명	St. 14			St. 15			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	
Order TETRASPORALES							
Family Palmellaceae							
Gloeocystis vesiculosa Nageli	320	251	215	252	641	356	0.84
Asterococcus superbus (C.) S.		95					0.04
Order CHAETOPHORALES							
Family Trentepohliaceae							
Cephaleuros virescns Kunze	265	658		654	859	326	1.14
Order CHLOROCOCCALES							
Family Oocystaceae							
Westella botryoides (W.) W.	856	1320	1142	568	356	165	1.82
Family Hydrodictyacea							
Pediastrum biwae Negoro	1252	1354	1165	1366	1425	1265	3.23
Pediastrum boryanum (T.) M.	1645	1846	1256	236	387	165	2.28
Pediastrum boryanum var. *longicome* R.	346	466	187		164		0.48
Pediastrum duplex var. *rotundatum* Lucks	322	498	246	102	654	366	0.90
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	965	1126	465	465	879	164	1.68
Family Scenedesmaceae							
Scenedesmus acuminatus (L.) Chodat	596	644	316	346	745	165	1.16
Scenedesmus bernardii G.M. Smith	365	798	465	165	188	123	0.87
Scenedesmus ellipsoideus Chodat		220	156				0.16
Scenedesmus opoliensis Richter	213	465	244	267	103	135	0.59
Scenedesmus tibiscensis Uherkovich		246	311	465	552	316	0.78
Order ZYGNEMATALES							
Family Zygnemataceae							
Mougeotia parvula Hassall	132	168	155				0.19
Spirogyra sp. (영양세포)	105	165		120	186		0.24
Family Desmidiaceae							
Clostrium gracile Brebisson		232		113	312	285	0.39
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West	134	215	225	195	213	175	0.48

(계속)

조사지점 및 시기 / 학 명	St. 14			St. 15			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	
Cosmarium pachydermum Lundell	165	135	132	161	161	147	0.37
Cosmarium suberenatum Hantzsch	432	585	298	265	544	345	1.02
Staurastrum gracile Ralfs	279	466	498	265	198	144	0.76
Staurastrum tetracerum var. *subexcavatum* Gronblad	198	622	344	263	379	244	0.85
Hyalotheca dissiliens (Smith) Brebisson		265	199		144		0.25
출현종수	42	57	50	39	53	44	
현존량	37899	60845	37540	29488	49365	27430	

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미호천의 부착조류 종조성 및 채집개체수

조사지점 및 시기 / 학 명	St. 16			St. 17			St. 18			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Class CYANOPHYCEAE (남조강)										
Order CHROOCOCCALES										
Family Chroococcaceae										
Microcystis aeruginosa Kutzing	162	236	264		326	245	122	345	286	0.47
Chroococcus minutus Nageli	95	123	85	122	265	167	167	294	133	0.34
Order NOSTOCALES										
Family Oscillatoriaceae										
Spirulina laxa G. M. Smith	244	316	216	455	556	316				0.50
Oscillatoria princeps Vaucher		264	211	120	245	244		210		0.31
Lyngbya contorta Lemmermann	856	1064	348	498	852	751	150	348	247	1.21
Class BACILLARIOPHYCEAE (규조강)										
Order CENTALES										
Family Thalassirosiraceae										
Auacoseira granlata (Ehrenberg) Simonsen	655	1564	1064	1257	1895	1200	2658	2144	1652	3.34
Cyclostephanos dubius (Fricke) Round	1032	1653	856	1652	2974	856	1985	520	1441	3.07
Cyclotella cornata (Ehrenberg) Kutzing	254	623	355	465	784	366	625		156	0.86
Cyclotella meneghiniana Kutzing	2666	2157	1578	1160	1654	750	2480	2297	1655	3.88
Family Melosiraceae										
Melosira varians Agardh	4651	6451	4665	3465	5461	2013	1944	2065	2230	7.81
Order PENNALES										
Family Diastomaceae										
Asterionella formosa Hassel	164	228	165	84	120	117	165	269	215	0.36
Synedra acus Kutzing	2450	3168	2197	746	685	319	1685	2985	1455	3.72
Synedra delicatissima var. *angustissima* Grunow	2164	2258	1670	1680	1476	1308	1652	2102	1608	3.77
Synedra inaequalis H. Kobayasi	1165	965	665	716	987	503	302	652	378	1.50
Synedra ulna Ehrenberg	641	754	564	326	465	316	649	1125	644	1.30
Family Achnanthaceae										
Achanthes laevis Qstrrup		495					116	132	84	0.19

(계속)

조사지점 및 시기 / 학 명	St. 16			St. 17			St. 18			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Family Naviculaceae										
Caloneis silicula (Ehrenberg) Cleve	346	552	165	660	520	316				0.61
Cymbella affinis Kutzing	2132	2249	2102	1652	1755	1233	1646	1604	1098	3.67
Cymbella japonica Reichelt	197	220	186	85	156	122	1260	1523	955	1.11
Cymbella tumida (Brebisson) H.	951	1146	687	2658	3370	1864	952	1289	1044	3.31
Gomphonema clevei Fricke	168	206	136	88	146	116		164		0.24
Gomphonema parvalum Kutzing	1642	1755	1532	1246	1578	1209	1156	1644	1326	3.10
Gomphonema quadripunctatum Q.	266	344	255	566	1154	316	648	755	654	1.17
Navicula bacillum Ehrenberg	1652	1322	456	2987	3157	2674		2547	2157	4.02
Navicula cuspidata Kutzing	1485	1652	1022	1622	2645	1020	2569	3415	1856	4.10
Navicula pseudolanceolata L.-B.	122	201	165		230		245	168		0.27
Naviacula viridula var. *rostellata* C.	1985	2203	1458	2649	3198	2297	469	597	336	3.60
Stauroneis acuta W. Smith	756	1623	498	1279	2201	1652	326	589		1.96
Family Nitzschiaceae										
Nitzschia gessneri Hustedt	311	422	165		216			207	122	0.34
Nitzschia palea W. Smith	2648	3444	1985	3100	3589	2659	4210	5982	3320	6.48
Family Surirellaceae										
Surirella splendida (E.) K.	1623	1025	1354	1659	2846	1623	552	620	311	2.75
Surirella tenera Grunow	364	265		185				316		0.27
Class EUGLENOPHYCEAE (유글레나강)										
Order EUGLENLES										
Family Euglenaceae										
Euglena oxyuris Schmarda	98	123		155	162	84				0.15
Euglena viridis Ehrenberg	316	220	167	195	214	355	265	411	305	0.58
Trachelomonas similis Stokes	652	744	598	1103	1288	920	245	109	266	1.40
Class CHLOROPHYCEAE (녹조강)										
Order VOLVOCALES										
Family Volvocaceae										
Eudoria elegans Ehrenberg	3985	4561	3758	3112	2900	2122	4896	5200	3743	8.12

(계속)

조사지점 및 시기 / 학 명	St. 16			St. 17			St. 18			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Order TETRASPORALES										
Family Palmellaceae										
Gloeocystis vesiculosa Nageli	346	541	268	165	225	197	498	598	477	0.78
Asterococcus superbus (C.) S.			165	268	333	291			111	0.28
Order CHAETOPHORALES										
Family Trentepohliaceae										
Cephaleuros virescns Kunze	346	465	311	201	256	221	316	522	387	0.72
Order CHLOROCOCCALES										
Family Oocystaceae										
Westella botryoides (W.) W.	678	1185	644	1185	2510	1278	1025	14298	755	5.58
Family Hydrodictyacea										
Pediastrum biwae Negoro	492	1232	566	1154	1259	751	265	388	177	1.49
Pediastrum boryanum (T.) M.	326	551	316	298	542	301	299	465	241	0.79
Pediastrum boryanum var. *longicome* R.	322	211			455	102				0.26
Pediastrum duplex var. *rotundatum* Lucks		508		216	662	95	566	850	346	0.77
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	256	744	390	265	855	460	855	498	301	1.09
Family Scenedesmaceae										
Scenedesmus acuminatus (L.) Chodat	223	294	185	1144	1945	855	384	622	167	1.38
Scenedesmus bernardii G.M. Smith		248			513		165	206	132	0.30
Scenedesmus ellipsoideus Chodat	210	285	98	84	116		165	85		0.25
Scenedesmus opoliensis Richter	122	346	255	279	465	311	277	346	210	0.62
Scenedesmus tibiscensis Uherkovich		463		265	311	297	165	265		0.42
Order ZYGNEMATALES										
Family Zygnemataceae										
Mougeotia parvula Hassall					346	165		205	177	0.21
Spirogyra sp. (영양세포)	239	654	321	654	651	321	132	198	198	0.80
Family Desmidiaceae										
Clostrium gracile Brebisson	122	245	165	198	247	201	111	208	167	0.39
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West	85	90		165	552	498	422	320	188	0.55

(계속)

조사지점 및 시기 / 학 명	St. 16			St. 17			St. 18			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Cosmarium pachydermum Lundell	323	432	296	165	294	169	465	316	198	0.63
Cosmarium suberenatum Hantzsch		285	246	185				511		0.29
Staurastrum gracile Ralfs				288	132	167	136	285		0.24
Staurastrum tetracerum var. *subexcavatum* Gronblad	288	316	93	264	488	245	224	370	188	0.73
Hyalotheca dissiliens (Smith) Brebisson	422	574	346	188	207	316	199	585		0.67
출현종수	50	56	49	52	56	52	47	53	45	
현존량	43698	56265	36257	45378	63434	37294	40808	64769	34097	

< 부록 표 1 - 19 >

갑천의 부착조류 종조성 및 채집개체수

조사지점 및 시기 / 학 명	St. 19			St. 20			St. 21			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Class CYANOPHYCEAE (남조강)										
Order CHROOCOCCALES										
Family Chroococcaceae										
Microcystis aeruginosa Kutzing	265	316	265	245	455	216				0.45
Chroococcus minutus Nageli		264	113	185	246			266		0.27
Order NOSTOCALES										
Family Oscillatoriaceae										
Spirulina laxa G. M. Smith	133	288	165	316	201	187	388	165	339	0.56
Oscillatoria princeps Vaucher	165	225	212	215	344	278				0.37
Lyngbya contorta Lemmermann	956	1077	645	649	866	498	625	889	465	1.71
Class BACILLARIOPHYCEAE (규조강)										
Order CENTALES										
Family Thalassirosiraceae										
Auacoseira granlata (Ehrenberg) Simonsen	2655	3956	1485	1652	2265	952	2645	2645	1885	5.16
Cyclostephanos dubius (Fricke) Round	1544	2465	944	1652	1444	1326	2465	2885	1653	4.19
Cyclotella cornata (Ehrenberg) Kutzing	351	465	455	652	758	598	465	655	184	1.17
Cyclotella meneghiniana Kutzing	689	1659	2156	1754	2645	1654	1159	1756	1057	3.72
Family Melosiraceae										
Melosira varians Agardh	4556	6895	4522	1658	3466	2498	2869	3655	1856	8.11
Order PENNALES										
Family Diastomaceae										
Asterionella formosa Hassel	233	345			202		316	455	289	0.47
Synedra acus Kutzing	1258	2674	1856	789	1254	644	1697	2098	1225	3.50
Synedra delicatissima var. *angustissima* Grunow	1266	1044	953	1366	1654	1744	923	1666	1346	3.06
Synedra inaequalis H. Kobayasi	366	651	132	654	765	126	655	1165	132	1.19
Synedra ulna Ehrenberg	659	788	480	659	465	188	620	941	577	1.38
Family Achnanthaceae										
Achanthes laevis Qstrrup	233	491						117		0.21

(계속)

조사지점 및 시기 / 학 명	St. 19			St. 20			St. 21			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Family Naviculaceae										
Caloneis silicula (Ehrenberg) Cleve	628	815	246	233	410	246	277	437	219	0.90
Cymbella affinis Kutzing	2166	4213	2891	2461	2795	1461	1465	2165	1126	5.31
Cymbella japonica Reichelt							645	1313	854	0.72
Cymbella tumida (Brebisson) H.	914	1671	643	1675	2468	1046	854	1673	678	2.98
Gomphonema clevei Fricke					246	521				0.20
Gomphonema parvalum Kutzing	1673	2031	945	763	812	485	957	1564	715	2.55
Gomphonema quadripunctatum Q.		356		465	678	319	942	1124	700	1.17
Navicula bacillum Ehrenberg	765	813	432	1654	2648	1642	1463	2688	1654	3.52
Navicula cuspidata Kutzing	2165	2495	1176	1065	1945	772	1731	3548	1765	0.42
Navicula pseudolanceolata L.-B.	167	316	177	125	98	85	215		320	0.38
Naviacula viridula var. *rostellata* C.	1220	2918	1325	4651	5123	3162				4.71
Stauroneis acuta W. Smith	754	1025	799	2106	3160	1675	316	745	613	2.87
Family Nitzschiaceae										
Nitzschia gessneri Hustedt	160	451	266		123					0.26
Nitzschia palea W. Smith	2681	4123	3156	2081	3120	1645	2465	3455	1765	6.27
Family Surirellaceae										
Surirella splendida (E.) K.	1508	2062	462	1024	2185	1577	518	491	316	2.60
Surirella tenera Grunow				265	316	218	265	455	320	0.47
Class EUGLENOPHYCEAE (유글레나강)										
Order EUGLENLES										
Family Euglenaceae										
Euglena oxyuris Schmarda	200	164	326			205	233	241	105	0.38
Euglena viridis Ehrenberg	222	341	98	105	100	85	77	185	65	0.33
Trachelomonas similis Stokes	899	487	346	1189	1852	756				1.41
Class CHLOROPHYCEAE (녹조강)										
Order VOLVOCALES										
Family Volvocaceae										
Eudoria elegans Ehrenberg	3689	5689	4412	3994	4102	2201	4986	3741	3194	9.22

(계속)

조사지점 및 시기 / 학 명	St. 19			St. 20			St. 21			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Order TETRASPORALES										
Family Palmellaceae										
Gloeocystis vesiculosa Nageli					316	245	451	746	366	0.54
Asterococcus superbus (C.) S.	123	250		189	320	268				0.29
Order CHAETOPHORALES										
Family Trentepohliaceae										
Cephaleuros virescns Kunze	267	288			210	92		154		0.26
Order CHLOROCOCCALES										
Family Oocystaceae										
Westella botryoides (W.) W.				1126	1859	1245	1523	1053	865	1.96
Family Hydrodictyacea										
Pediastrum biwae Negoro	1026	1853	988	895	900	856				1.67
Pediastrum boryanum (T.) M.		562	241				216	398	244	0.42
Pediastrum boryanum var. *longicome* R.	359	412	208					105		0.28
Pediastrum duplex var. *rotundatum* Lucks	311	754	269	415	550	377	549	610	319	1.06
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	599	620	185	316			205	371	219	0.64
Family Scenedesmaceae										
Scenedesmus acuminatus (L.) Chodat		300		1022	1869	1452	963	1178	657	1.90
Scenedesmus bernardii G.M. Smith		150	77		260			289	205	0.25
Scenedesmus ellipsoideus Chodat	241	220	185					206		0.22
Scenedesmus opoliensis Richter	115	349	205	226	348	185	200	346	188	0.55
Scenedesmus tibiscensis Uherkovich				246	311	155	348	588	156	0.46
Order ZYGNEMATALES										
Family Zygnemataceae										
Mougeotia parvula Hassall							263	461	226	0.24
Spirogyra sp. (영양세포)		645	120	216	855	260		288		0.61
Family Desmidiaceae										
Clostrium gracile Brebisson	132	256		165	258	122	189	320	158	0.41

(계속)

조사지점 및 시기 / 학 명	St. 19			St. 20			St. 21			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West				369	454	166				0.25
Cosmarium pachydermum Lundell	265	381	158				265	349	215	0.42
Cosmarium suberenatum Hantzsch	122	349	120							0.15
Staurastrum gracile Ralfs	95	145	65				205	251	154	0.23
Staurastrum tetracerum var. *subexcavatum* Gronblad				256	300	178	411	589	416	0.55
Hyalotheca dissiliens (Smith) Brebisson	256	349	165	158	259	266	208	211	156	0.53
출현종수	44	50	43	43	48	45	42	48	43	
현존량	39051	61456	35069	41901	58280	34877	38232	51696	29961	

< 부록 표 1 - 20 > 유등천의 부착조류 종조성 및 채집개체수

조사지점 및 시기 / 학 명	St. 22			St. 23			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	
Class CYANOPHYCEAE (남조강)							
Order CHROOCOCCALES							
Family Chroococcaceae							
Microcystis aeruginosa Kutzing				215	321	253	0.33
Chroococcus minutus Nageli	355	264		165	255	188	0.52
Order NOSTOCALES							
Family Oscillatoriaceae							
Spirulina laxa G. M. Smith	265	316	266	311	422	165	0.74
Oscillatoria princeps Vaucher	465	644	346	488	664	411	1.28
Lyngbya contorta Lemmermann	845	955	465	755	842	662	1.91
Class BACILLARIOPHYCEAE (규조강)							
Order CENTALES							
Family Thalassirosiraceae							
Auacoseira granlata (Ehrenberg) Simonsen	2365	3115	2446	4521	6444	2659	9.11
Cyclostephanos dubius (Fricke) Round	895	1659	633	522	489		1.77
Cyclotella cornata (Ehrenberg) Kutzing	465	123	156				0.31
Cyclotella meneghiniana Kutzing	623	421	322	622	1154	487	1.53
Family Melosiraceae							
Melosira varians Agardh	1362	2845	1956	2854	3256	2461	6.23
Order PENNALES							
Family Diastomaceae							
Asterionella formosa Hassel				152	232	157	0.23
Synedra acus Kutzing	1542	2111	1437	1205	2165	794	3.91
Synedra delicatissima var. *angustissima* Grunow	846	1602	955		2413	511	2.67
Synedra inaequalis H. Kobayasi		302	105		266		0.28
Synedra ulna Ehrenberg	568	612	316	250	745	322	1.19
Family Achnanthaceae							
Achanthes laevis Qstrrup	205	236	185				0.26

(계속)

조사지점 및 시기 / 학 명	St. 22			St. 23			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	
Family Naviculaceae							
Caloneis silicula (Ehrenberg) Cleve	105	145					0.10
Cymbella affinis Kutzing	1672	2205	1235	1708	2631	1654	4.70
Cymbella japonica Reichelt	236	449	305	211	249	260	0.72
Cymbella tumida (Brebisson) H.	2641	2946	2215	1605	2731	1455	5.75
Gomphonema clevei Fricke				316	326	246	0.37
Gomphonema parvalum Kutzing	581	1246	964	654	1198	469	2.16
Gomphonema quadripunctatum Q.	208	226	175	265	211	100	0.50
Navicula bacillum Ehrenberg				1023	1501	1130	1.54
Navicula cuspidata Kutzing	2263	3164	1856	2056	1160	1325	5.00
Navicula pseudolanceolata L.-B.	165	316	220	568	465	132	0.79
Naviacula viridula var. *rostellata* C.	1264	2485	1653	1124	1652	1445	3.46
Stauroneis acuta W. Smith				163	224	185	0.24
Family Nitzschiaceae							
Nitzschia gessneri Hustedt				132	278	144	0.23
Nitzschia palea W. Smith	1644	1689	1421	2646	2888	1977	5.19
Family Surirellaceae							
Surirella splendida (E.) K.	1264	2649	1977	951	1542	784	3.88
Surirella tenera Grunow	362	461	288				0.47
Class EUGLENOPHYCEAE (유글레나강)							
Order EUGLENLES							
Family Euglenaceae							
Euglena oxyuris Schmarda	85	150			126		0.15
Euglena viridis Ehrenberg				122	254	180	0.23
Trachelomonas similis Stokes	1154	1623	1220	874	956	552	2.70
Class CHLOROPHYCEAE (녹조강)							
Order VOLVOCALES							
Family Volvocaceae							
Eudoria elegans Ehrenberg	3084	4255	4122	3622	3165	1778	8.47

(계속)

조사지점 및 시기 / 학 명	St. 22			St. 23			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	
Order TETRASPORALES							
Family Palmellaceae							
Gloeocystis vesiculosa Nageli	405	259	188				0.36
Asterococcus superbus (C.) S.	165	305	188				0.28
Order CHAETOPHORALES							
Family Trentepohliaceae							
Cephaleuros virescns Kunze	562	799	455	306	459	286	1.21
Order CHLOROCOCCALES							
Family Oocystaceae							
Westella botryoides (W.) W.	1465	1490	869	988	1430	821	2.99
Family Hydrodictyacea							
Pediastrum biwae Negoro		2410			1622		1.70
Pediastrum boryanum (T.) M.	2065	2569	1477				2.58
Pediastrum boryanum var. *longicome* R.	502	688	341	298	455	299	1.09
Pediastrum duplex var. *rotundatum* Lucks	305	486	271	655	785	569	1.30
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	454	608	499	346	1184	900	1.69
Family Scenedesmaceae							
Scenedesmus acuminatus (L.) Chodat				322	705	188	0.51
Scenedesmus bernardii G.M. Smith	306	955	758	235	522	455	1.37
Scenedesmus ellipsoideus Chodat	209	223	154	122	158	98	0.15
Scenedesmus opoliensis Richter	208	255	196	273	208	112	0.53
Scenedesmus tibiscensis Uherkovich				306	444	326	0.45
Order ZYGNEMATALES							
Family Zygnemataceae							
Mougeotia parvula Hassall		213	174				0.16
Spirogyra sp. (영양세포)	115	95		152	230		0.25
Family Desmidiaceae							
Clostrium gracile Brebisson				265	355	218	0.35

(계속)

조사지점 및 시기 / 학 명	St. 22			St. 23			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West				299	316	95	0.30
Cosmarium pachydermum Lundell	208	322	185	165	205		0.46
Cosmarium suberenatum Hantzsch	399	512	298	211	377	264	0.87
Staurastrum gracile Ralfs	333	458	298	125	288	179	0.72
Staurastrum tetracerum var. *subexcavatum* Gronblad	366	405	511				0.54
Hyalotheca dissiliens (Smith) Brebisson	266	178	76		133		0.28
출현종수	45	48	43	45	50	43	
현존량	35862	52444	34177	35168	51101	27696	

< 부록 표 1 - 21 >

금강본류의 동물플랑크톤 종조성 및 채집개체수(개체/㎥)

조사지점 및 시기 / 학 명	St.1			St.2			St.3			St.4			St.5			St.6			St.7			St.8			상 대 풍부도 (%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	
PROTOZOA (원생동물문)																									
Mastigophora (편모충강)																									
Chrysomonadida (황녹색편모충목)																									
Ochromanadidae (민털수염벌레과)																									
Uroglenopsis americana CALKINS		2			5		31	22			12		1	5			9		2	5		5	9		0.46
Dinoflagellida (와편모충목)																									
Peridinidae (Peridinidae과)																									
Peridinium bipes STEIN		32	15		25	17	48	31	24		21	17		8	5		5	8	15	24	5		14		1.35
Peridinium quadridens STEIN		25	15	25	25	18		51	42	19	11	9		25	18	101	38	41	39	85	42	18	25	20	2.97
Euglenoida (연두벌레목)																									
Chlamydomonadae(가루수염벌레과																									
Pandorina morum BORY	24	20		33	14						34			23		58	41		19	24		31	37		1.54
Volvocidae (테두리수염과)																									
Volvox aureaus EHRENBERG		25		41			15	17		38	29						25		29	35		35	25		1.35
Rhizopodea (근족충강)																									
Arcellida (유각변형충목)																									
Arcellidae (꽃병벌레과)																									
Difflugia globulosa DUJARDIN		15	8	19	11	9	41	25	17	27	37	21	40	29	26	16	27	24	32	28	16	25	38	15	1.54
Arcella artocrea LEIDY			15		21	9	28	34	7	29		17		25	5	4	9	6	15			19		8	1.08
Arcella vulgaris EHRENBERG	18	25	12	47	18	10		19		19	28	16	26	14	9	14	11	12	21	26	20	40	28	18	1.94
TROCHELMINTHES (윤형동물문)																									
Rotatoria (윤충강)																									
Bdelloidea (거머리꼴윤충목)																									
Philodidae (거머리꼴윤충과)																									
Philodina roseola EHRENBERG	18	18	12	47	25	11		41	21	19	18	8	26	21	14	14	19	13	15	22	10	38			1.85
Dissotrocha aculeata EHRENBERG	38			62	52		103	61		49	28		11	38		85	48		39			54	29		2.99
Ploima (유영목)																									
Conochilidae (뿔윤충과)																									
Conochilus unicornis ROUSSELET		24	18	23	18	9		11	7	41	35	21		28	16		17	12	20	28	10	18	14	12	1.64

(계속)

조사지점 및 시기 / 학 명	St.1			St.2			St.3			St.4			St.5			St.6			St.7			St.8			상 대 풍부도 (%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Synchaetidae (뻘윤충과)																									
Polyarthra euryptera WIEZEJSKI		23			27		74	48		38	41		24	39		77	57		71	56		54	18		2.78
Trichocericidae (쥐꼬리윤충과)																									
Trichocera logiseta SCHRANK		28	21	31	18	14	19	26	15	25	17	11		28	19		16	13	21	10	9	29		11	1.64
Brachionidae (방패윤충과)																									
Brachionus calyciflorus var. *amphiceros* EHRENBERG		25	21	14	47	28	231	78	34	92	59	14	224	151	28	204	117	29	38	28	22	21	47	16	6.74
Brachionus capsuliforus PALLAS		21		13			4				45			15			9		11			15	11		0.62
Brachionus budapestinensis DADAY	32	25	21		11	8	88	55	41		47	31	67	28	10	19	17	9	29	34	11	35	28	24	2.89
Brachionus angularis GOSSE		28	21	136		11	156	114	51	25	38	31	28	17	11		21	8	161	125	48	127	98	34	5.54
Brachionus rubens EHRENBERG	45			114	58			19		128	75	21	34	28		45			35	27		98	82		3.48
Keratella cochlearis GOSSE		15	9	108	45	21	209	125	34		26			27	14		38	23		54		121	86	25	4.21
Keratella cochlearis var. *tecta* f. *micracantha* LAUTERBORN		9			18			21			41		15	20		38	18			25		19			0.96
Keratella cochlearis var. *irregularis* LAUTERBORN	91	58		4	18		28	32			18		77	54		41	31		85	28		8	14		2.52
Keratella valga asymmetrica B. et D.		28	10		18	14	38		8	49		14	32		11	15	21	17	18	21	10	28	38	16	1.74
Keratella valga f. *tropica* APSTEIN		25	12		12	9		26	14	34		12	22	31	18	14	9	13		28	16	26			1.38
Notholca labis GOSSE	48			76	28		94			59	27						31		52	59		72			2.35
Euchlanidae (장삼윤충과)																									
Mytilina ventralis EHRENBERG		22	14		36	20		18	13	40	28	16	29		11		41	23	28	34	12	38	31	9	1.99
Monostyla pygmaea DADAY		32		43		12	59		17		25			18		28	13			25		34		11	1.36
Filiniidae (Filiniidae과)																									
Filinia longiseta EHRENBERG	29			92	28		49	54			18		16				24		35	33		89	74		2.32
Filinia longiseta var. *limnetica* HRENBERG		58		105	84			74		36			62	58			18		72	45		94	78		3.37
Testudinellidae (Testudinellidae과)																									
Testudinella patina HERMANN		8		14	11			12			17	13		11		16	20	13	15	12	11	21			0.83
ARTHROPODA (절지동물문)																									
Crustacea (갑강강)																									
Branchiopoda (지각목)																									

(계속)

학명 \ 조사지점 및 시기	St.1			St.2			St.3			St.4			St.5			St.6			St.7			St.8			상대풍부도 (%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Sididae (Sididae과)																									
Diaphanosoma brachyurum LIEVIN	3	2	3		7		2	4			3	4	9	6			5	3	2			4	8	4	3.01
Daphniidae (물벼룩과)																									
Moina macrocopa STRAUS	36	29		22	18	13	12	24		14	9			5	14	10	14	11	32	28	12	28	17	10	1.54
Moina rectirostris LEYDIG	1	8	6	41	14	11	28	18		35	28	15	18	17	13		12	10	8			35	31	14	1.56
Daphnia pulex LEYDIG	99	67		84		12	169		9	41	48			74		16	27	18	81	57	14	75			3.83
Bosminidae (코끼리물벼룩과)																									
Bosmina coregoni BAILD	123	91		216	127		110	107		59	47			85		44	47		119	95		184	127		6.79
Copepoda (요각목)																									
Cyclopidae (칼날노물벼룩과)																									
Tropocyclops prasinus FISCHER		8			9	7	77	58	16	46	41	11		28		3	21		54	32	22	61	28		2.24
Cyclops vicinus ULJANIN	2	9	6	38	27	15		17	12		28	17	57	61	21		27	20	12	21		27	24	16	1.96
Copepoda 유생	94	85	23	235	178	18	157	129	29	116	97	47	124	86	31	108	91	28	81	77	20	258	157	20	9.84
Cyclops 유생	127	145	28	104	91	54	48	57	31	15	21	17	31	28	14	64	54	37	118	87	21	92	58	14	5.83
종 수	17	33	20	27	33	23	26	32	20	25	34	22	22	33	20	23	37	23	34	33	19	37	29	19	
현존량	828	1035	290	1787	1144	350	1918	1428	442	1093	1064	383	973	1131	308	1034	1048	391	1424	1318	331	1976	1274	297	

< 부록 표 1 - 22 > 논산천의 동물플랑크톤 종조성 및 채집개체수(개체/㎥)

종 명 \ 조사지점 및 시기	St. 9			St. 10			St. 11			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
PROTOZOA (원생동물문)										
Mastigophora (편모충강)										
Chrysomonadida (황녹색편모충목)										
Ochromanadidae (민털수염벌레과)										
Uroglenopsis americana CALKINS	21	14			8		1	7		0.48
Dinoflagellida (와편모충목)										
Peridinidae (Peridinidae과)										
Peridinium bipes STEIN	24	37	10	18	14	12	6	12	8	1.33
Peridinium quadridens STEIN	24	31	16	14	24	20	78	51	46	2.86
Euglenoida (연두벌레목)										
Chlamydomonadae(가루수염벌레과)										
Pandorina morum BORY	29	25		37	31		29	28		1.69
Volvocidae (테두리수염과)										
Volvox aureaus EHRENBERG	21	22		31	27		28	37		1.56
Rhizopodea (근족충강)										
Arcellida (유각변형충목)										
Arcellidae (꽃병벌레과)										
Difflugia globulosa DUJARDIN	34	24	23	38	18	20	42	31	30	2.45
Arcella artocrea LEIDY	24	38		27	21		21	33		1.54
Arcella vulgaris EHRENBERG	28		12	21			35	28	10	1.26
TROCHELMINTHES (윤형동물문)										
Rotatoria (윤충강)										
Bdelloidea (거머리꼴윤충목)										
Philodidae (거머리꼴윤충과)										
Philodina roseola EHRENBERG	27		13	26	18	11	20		8	1.16
Dissotrocha aculeata EHRENBERG	75	47		81			27	21		2.36
Ploima (유영목)										
Conochilidae (뿔윤충과)										
Conochilus unicornis ROUSSELET	31	29	25	35	32	30	42	38	22	2.68
Synchaetidae (삘윤충과)										
Polyarthra euryptera WIEZEJSKI	68	28		32	34		29	41		2.19
Trichocericidae (쥐꼬리윤충과)										
Trichocera logiseta SCHRANK	15	18	5	31	27	16	38	21	19	1.79
Brachionidae (방패윤충과)										
Brachionus calyciflorus var. *amphiceros* EHRENBERG	157	117	85	89			214	210	155	9.68
Brachionus capsuliforus PALLAS	9			8			12	18		0.44
Brachionus budapestinensis DADAY	78	48	35	59	57	16	58	47	20	3.94
Brachionus angularis GOSSE	143	144	16	31	27	12	19	28	10	4.05
Brachionus rubens EHRENBERG	74	71		118	85		52	41		4.16
Keratella cochlearis GOSSE	187	165	30	114	81	16	103	75	24	7.49

(계속)

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종 명 \ 조사지점 및 시기	St. 9			St. 10			St. 11			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Keratella cochlearis var. *tecta* f. *micracantha* LAUTERBORN	24				17		19			0.56
Keratella cochlearis var. *irregularis*LAUTERBORN	35	51		14	23		68	58		2.35
Keratella valga asymmetrica B. et D.	48	34	19	52	41	13	38	27	12	2.68
Keratella valga f. *tropica* APSTEIN		17	5	31			18	25	10	1.00
Notholca labis GOSSE	85	82		62	55		51			3.16
Euchlanidae (장삼윤충과)										
Mytilina ventralis EHRENBERG	39	29	10	28	17	16	38	11	10	1.87
Monostyla pygmaea DADAY	48	19	8		41			22	13	1.42
Filiniidae (Filiniidae과)										
Filinia longiseta EHRENBERG	52	44			12		28	32		1.58
Filinia longiseta var. *limnetica*EHRENBERG		55		39	18		54	47		2.01
Testudinellidae (Testudinellidae과)										
Testudinella patina HERMANN	17			16			14	18	11	0.72
ARTHROPODA (절지동물문)										
Crustacea (갑강강)										
Branchiopoda (지각목)										
Sididae (Sididae과)										
Diaphanosoma brachyurum LIEVIN	3	4		8		5	4	2	3	0.27
Daphniidae (물벼룩과)										
Moina macrocopa STRAUS	17	45	11	19	27	10	14	12	6	1.52
Moina rectirostris LEYDIG	24			31			14	28	8	0.99
Daphnia pulex LEYDIG	146	112	13	52	47	20	71	45	13	4.89
Bosminidae (코끼리물벼룩과)										
Bosmina coregoni BAILD	98	108		74	127			54		4.34
Copepoda (요각목)										
Cyclopidae (칼날노물벼룩과)										
Tropocyclops prasinus FISCHER	69	57	16	51	48		8	47		2.79
Cyclops vicinus ULJANIN	17	28		37	19	16	45	37	11	1.98
Copepoda 유생	174	127	42	126	210	35	98	162	50	9.65
Cyclops 유생	58	47	28	21	67	20	43	28	16	3.09
종 수	36	32	20	34	30	17	36	35	23	
현존량	2023	1717	422	1471	1273	288	1479	1422	515	

건설교통부

< 부록 표 1 - 23 > 강경천의 동물플랑크톤 종조성 및 채집개체수(개체/㎥)

조사지점 및 시기 / 종 명	St. 12			St. 13			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	
PROTOZOA (원생동물문)							
Mastigophora (편모충강)							
Chrysomonadida (황녹색편모충목)							
Ochromanadidae (민털수염벌레과)							
Uroglenopsis americana CALKINS	13	14		10	14		0.82
Dinoflagellida (와편모충목)							
Peridinidae (Peridinidae과)							
Peridinium bipes STEIN	12	10	9	21	16	11	1.26
Peridinium quadridens STEIN	12	16	11	16	21	10	1.38
Euglenoida (연두벌레목)							
Chlamydomonadae(가루수염벌레과)							
Pandorina morum BORY	19	21		20	28		1.41
Volvocidae (테두리수염과)							
Volvox aureaus EHRENBERG	22	19		15	19		1.20
Rhizopodea (근족충강)							
Arcellida (유각변형충목)							
Arcellidae (꽃병벌레과)							
Difflugia globulosa DUJARDIN	16	28	8	13	19	8	1.47
Arcella artocrea LEIDY	14	22		21	19		1.22
Arcella vulgaris EHRENBERG	18	18	12	21	28	10	1.71
TROCHELMINTHES (윤형동물문)							
Rotatoria (윤충강)							
Bdelloidea (거머리꼴윤충목)							
Philodidae (거머리꼴윤충과)							
Philodina roseola EHRENBERG	21	16		22	28	11	1.57
Dissotrocha aculeata EHRENBERG	31	44		34	24		2.13
Ploima (유영목)							
Conochilidae (뿔윤충과)							
Conochilus unicornis ROUSSELET	12	18	10	49	51	20	2.56
Synchaetidae (뻘윤충과)							
Polyarthra euryptera WIEZEJSKI				32	29		0.98
Trichocericidae (쥐꼬리윤충과)							
Trichocera logiseta SCHRANK				16	18	11	0.72
Brachionidae (방패윤충과)							
Brachionus calyciflorus var. *amphiceros* EHRENBERG	85	124	75	68	84	37	7.57
Brachionus capsuliforus PALLAS		16			8		0.38
Brachionus budapestinensis DADAY	46	55	19	36	48	16	3.52
Brachionus angularis GOSSE	185	156	44	132	207	28	12.04

(계속)

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종 명 \ 조사지점 및 시기	St. 12			St. 13			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	
Brachionus rubens EHRENBERG	28	34		46	44		2.43
Keratella cochlearis GOSSE	80	102	31	49	65	33	5.76
Keratella cochlearis var. *tecta* f. *micracantha* LAUTERBORN		15			18		0.53
Keratella cochlearis var. *irregularis* LAUTERBORN	20	28		14	10		1.15
Keratella valga asymmetrica B. et D.		15			33	16	1.02
Keratella valga f. *tropica* APSTEIN	18	22	14		12		1.06
Notholca labis GOSSE	16	22		36	30		1.66
Euchlanidae (장삼윤충과)							
Mytilina ventralis EHRENBERG	16	55		21	29	18	2.22
Monostyla pygmaea DADAY		16	8	16	27		1.07
Filiniidae (Filiniidae과)							
Filinia longiseta EHRENBERG	22	29		44	49		2.30
Filinia longiseta var. *limnetica* EHRENBERG	32	33		16	12		1.49
Testudinellidae (Testudinellidae과)							
Testudinella patina HERMANN	16	20	12	11	16	9	1.34
ARTHROPODA (절지동물문)							
Crustacea (갑강강)							
Branchiopoda (지각목)							
Sididae (Sididae과)							
Diaphanosoma brachyurum LIEVIN	11	10	6	15	8	5	0.88
Daphniidae (물벼룩과)							
Moina macrocopa STRAUS	11	20	11	24	27	16	1.74
Moina rectirostris LEYDIG	26	19	10	15	28		1.57
Daphnia pulex LEYDIG	159	126	10	111	148	35	9.43
Bosminidae (코끼리물벼룩과)							
Bosmina coregoni BAILD	94	118		46	70		5.25
Tropocyclops prasinus FISCHER	36	37	16	29	47	13	2.85
Cyclops vicinus ULJANIN				16	21	7	0.70
Copepoda 유생	159	200	27	74	126	38	9.99
Cyclops 유생	55	45	20	36	51	15	3.55

건설교통부

< 부록 표 1 - 24 > 노성천의 동물플랑크톤 종조성 및 채집개체수(개체/㎥)

종 명 \ 조사지점 및 시기	St. 14			St. 15			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	
PROTOZOA (원생동물문)							
Mastigophora (편모충강)							
Chrysomonadida (황녹색편모충목)							
Ochromanadidae (민털수염벌레과)							
Uroglenopsis americana CALKINS	13	20			12		0.79
Dinoflagellida (와편모충목)							
Peridinidae (Peridinidae과)							
Peridinium bipes STEIN	10	20	10	12	17	11	1.41
Peridinium quadridens STEIN	12	18	17	13	21	10	1.61
Euglenoida (연두벌레목)							
Chlamydomonadae(가루수염벌레과)							
Pandorina morum BORY				23	18		0.72
Volvocidae (테두리수염과)							
Volvox aureaus EHRENBERG	22	16		12	18		1.20
Rhizopodea (근족충강)							
Arcellida (유각변형충목)							
Arcellidae (꽃병벌레과)							
Difflugia globulosa DUJARDIN	16	28	10	18	27	13	1.98
Arcella artocrea LEIDY		12		8	12		0.56
Arcella vulgaris EHRENBERG	11	16	10	16	15	8	1.34
TROCHELMINTHES (윤형동물문)							
Rotatoria (윤충강)							
Bdelloidea (거머리꼴윤충목)							
Philodidae (거머리꼴윤충과)							
Philodina roseola EHRENBERG	22	28	9	11	16	10	1.70
Dissotrocha aculeata EHRENBERG	20	34		39	30		2.17
Ploima (유영목)							
Conochilidae (뿔윤충과)							
Conochilus unicornis ROUSSELET		11	7	44	38	15	2.03
Synchaetidae (뻘윤충과)							
Polyarthra euryptera WIEZEJSKI	32	39					1.25
Trichocericidae (쥐꼬리윤충과)							
Trichocera logiseta SCHRANK		12		22	26	14	1.31
Brachionidae (방패윤충과)							
Brachionus calyciflorus var. *amphiceros* EHRENBERG	100	124	81	134	126	40	10.69
Brachionus capsuliforus PALLAS	10	21			9		0.71
Brachionus budapestinensis DADAY	34	110	29	20	31	12	4.17
Brachionus angularis GOSSE	83	94	19	75	142	27	7.77

(계속)

건설교통부

종 명 \ 조사지점 및 시기	St. 14			St. 15			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	
Brachionus rubens EHRENBERG	23	31		78	84		3.82
Keratella cochlearis GOSSE	87	118	21	149	74	29	8.44
Keratella cochlearis var. *tecta* f. *micracantha* LAUTERBORN		16			12		0.49
Keratella cochlearis var. *irregularis* LAUTERBORN	13	24		10	17		1.13
Keratella valga asymmetrica B. et D.	10	19	5	24	30	12	1.77
Keratella valga f. *tropica* APSTEIN	24	22	8	12	19	5	1.59
Notholca labis GOSSE	22	41		34	33		2.30
Euchlanidae (장삼윤충과)							
Mytilina ventralis EHRENBERG	33	34	20	38	41	9	3.09
Monostyla pygmaea DADAY				22	19	7	0.85
Filiniidae (Filiniidae과)							
Filinia longiseta EHRENBERG	16	21		33	41		1.96
Filinia longiseta var. *limnetica* EHRENBERG	21	34		17	25		1.71
Testudinellidae (Testudinellidae과)							
Testudinella patina HERMANN	16	21	10	8	11		1.17
ARTHROPODA (절지동물문)							
Crustacea (갑강강)							
Branchiopoda (지각목)							
Sididae (Sididae과)							
Diaphanosoma brachyurum LIEVIN	12	16	7	11	15		1.08
Daphniidae (물벼룩과)							
Moina macrocopa STRAUS	21	29	13	55	62	17	3.48
Moina rectirostris LEYDIG	12	26	5	16	24	11	1.66
Daphnia pulex LEYDIG	64	149	31	68	77	20	7.23
Bosminidae (코끼리물벼룩과)							
Bosmina coregoni BAILD	59	64		34	44		3.55
Copepoda (요각목)							
Cyclopidae (칼날노물벼룩과)							
Tropocyclops prasinus FISCHER	31	33	10	57	55	18	3.60
Cyclops vicinus ULJANIN	16	22		30	37	13	2.08
Copepoda 유생	79	108	12	55	74	24	6.22
Cyclops 유생	29	22	10		15		1.34
종 수	32	36	21	33	37	21	
현존량	973	1453	344	1198	1367	325	

건설교통부

< 부록 표 1 - 25 > 미호천의 동물플랑크톤 종조성 및 채집개체수(개체/㎥)

조사지점 및 시기 / 종 명	St. 16			St. 17			St. 18			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
PROTOZOA (원생동물문)										
Mastigophora (편모충강)										
Chrysomonadida (황녹색편모충목)										
Ochromanadidae (민털수염벌레과)										
Uroglenopsis americana CALKINS	11	13		5	4					0.40
Dinoflagellida (와편모충목)										
Peridinidae (Peridinidae과)										
Peridinium bipes STEIN	16	23	11	20	28	8	15	10	5	1.64
Peridinium quadridens STEIN	18	11	5		30	80	8	33	24	2.52
Euglenoida (연두벌레목)										
Chlamydomonadae(가루수염벌레과)										
Pandorina morum BORY	22	16		23	28		27	18		1.62
Volvocidae (테두리수염과)										
Volvox aureaus EHRENBERG	26	23		26	11		16	24		1.52
Rhizopodea (근족충강)										
Arcellida (유각변형충목)										
Arcellidae (꽃병벌레과)										
Difflugia globulosa DUJARDIN	23	16	10	29	22	16	50	25	16	2.50
Arcella artocrea LEIDY	20	121		22	31		38	29		3.15
Arcella vulgaris EHRENBERG		26	22				26	33	16	1.49
TROCHELMINTHES (윤형동물문)										
Rotatoria (윤충강)										
Bdelloidea (거머리꼴윤충목)										
Philodidae (거머리꼴윤충과)										
Philodina roseola EHRENBERG		26	22	34	22	16	31	22		2.09
Dissotrocha aculeata EHRENBERG	34	55					55	10		1.86
Ploima (유영목)										
Conochilidae (뿔윤충과)										
Conochilus unicornis ROUSSELET	16	28	11	26	19		31	29	11	2.07
Synchaetidae (뻘윤충과)										
Polyarthra euryptera WIEZEJSKI	22	64		16	11		24	19		1.88
Trichocericidae (쥐꼬리윤충과)										
Trichocera logiseta SCHRANK	10	8		22	19	10	29	31	13	1.72
Brachionidae (방패윤충과)										
Brachionus calyciflorus var. *amphiceros* EHRENBERG	88	52	31		22	31	75	40	52	4.72
Brachionus capsuliforus PALLAS							8	11		0.23
Brachionus budapestinensis DADAY	35	85	44	44	26	10	44	28	75	4.72
Brachionus angularis GOSSE	130	98	35	112	185	40	31	85	22	8.92
Brachionus rubens EHRENBERG	35	22		25	16		31	29		1.55
Keratella cochlearis GOSSE	85	56	45	38	26	10	96	88	8	5.46

(계속)

건설교통부

종 명 \ 조사지점 및 시기	St. 16			St. 17			St. 18			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Keratella cochlearis var. *tecta* f. *micracantha* LAUTERBORN							23	16		0.47
Keratella cochlearis var. *irregularis* LAUTERBORN		23		26	11		20	31		1.34
Keratella valga asymmetrica B. et D.	26	44	10	34	55	8	26	12	18	2.81
Keratella valga f. *tropica* APSTEIN	13	16	9	26	22	10	16	22		1.62
Notholca labis GOSSE	26	75		66	46		42	32		3.47
Euchlanidae (장삼윤충과)										
Mytilina ventralis EHRENBERG	29	25	11	24	16	10	28	16	8	1.98
Monostyla pygmaea DADAY	26	38	11	20	21	11	16	12	6	1.94
Filiniidae (Filiniidae과)										
Filinia longiseta EHRENBERG	46	45					30	45		2.01
Filinia longiseta var. *limnetica* EHRENBERG	35	26		40	22		16	31		2.05
Testudinellidae (Testudinellidae과)										
Testudinella patina HERMANN	22	16	8				15	22	13	1.16
ARTHROPODA (절지동물문)										
Crustacea (갑강강)										
Branchiopoda (지각목)										
Sididae (Sididae과)										
Diaphanosoma brachyurum LIEVIN				11	5	2	5			0.28
Daphniidae (물벼룩과)										
Moina macrocopa STRAUS	22	31	20	22	30	7				1.59
Moina rectirostris LEYDIG				42	35	11	13			1.22
Daphnia pulex LEYDIG	102	95	20	85	44	11	49	37	8	5.45
Bosminidae (코끼리물벼룩과)										
Bosmina coregoni BAILD	75	85		45	25			24		3.07
Copepoda (요각목)										
Cyclopidae (칼날노물벼룩과)										
Tropocyclops prasinus FISCHER	115	52	11	62	29	9	13	26	10	3.95
Cyclops vicinus ULJANIN	10	20	8	26	11	6	30	21		1.59
Copepoda 유생	122	109	52	142	155	26	115	104	48	10.55
Cyclops 유생	26	55		33	46	11	39		34	2.95
종 수	31	34	20	30	32	21	35	33	18	
현존량	1286	1498	396	1146	1073	343	1131	1015	387	

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< 부록 표 1 - 26 > 갑천의 동물플랑크톤 종조성 및 채집개체수(개체/㎥)

종 명 \ 조사지점 및 시기	St. 19			St. 20			St. 21			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
PROTOZOA (원생동물문)										
Mastigophora (편모충강)										
Chrysomonadida (황녹색편모충목)										
Ochromanadidae (민털수염벌레과)										
Uroglenopsis americana CALKINS				12	15					0.28
Dinoflagellida (와편모충목)										
Peridinidae (Peridinidae과)										
Peridinium bipes STEIN	15	13	11	16	20	9	11	26	11	1.36
Peridinium quadridens STEIN	13	22	10	10	16	8	13	16	10	1.21
Euglenoida (연두벌레목)										
Chlamydomonadae(가루수염벌레과)										
Pandorina morum BORY	22	15		16	22		34	16		1.29
Volvocidae (테두리수염과)										
Volvox aureaus EHRENBERG	16	20		16	22		34	15		1.27
Rhizopodea (근족충강)										
Arcellida (유각변형충목)										
Arcellidae (꽃병벌레과)										
Difflugia globulosa DUJARDIN	22	34	16	12	26	11	16	18	10	1.70
Arcella artocrea LEIDY	16	20		17	20		13	36		1.26
Arcella vulgaris EHRENBERG	16	22		32	13	11	16	21	8	1.43
TROCHELMINTHES (윤형동물문)										
Rotatoria (윤충강)										
Bdelloidea (거머리꼴윤충목)										
Philodidae (거머리꼴윤충과)										
Philodina roseola EHRENBERG	25	11	10	24	17	7				0.97
Dissotrocha aculeata EHRENBERG	26	58		55	36					1.80
Ploima (유영목)										
Conochilidae (뿔윤충과)										
Conochilus unicornis ROUSSELET	16	10		55	46	29	34	26	18	2.41
Synchaetidae (뻘윤충과)										
Polyarthra euryptera WIEZEJSKI	50	46		16	12		32	28		1.89
Trichocericidae (쥐꼬리윤충과)										
Trichocera logiseta SCHRANK	13	15	10	15	22	24	16	27	14	1.61
Brachionidae (방패윤충과)										
Brachionus calyciflorus var. *amphiceros* EHRENBERG	122	163	112	165	115	85	152	175	120	12.45
Brachionus capsuliforus PALLAS				12	14			8		0.35
Brachionus budapestinensis DADAY	55	85	24	46	28	11	34	28	15	3.36
Brachionus angularis GOSSE	122	111	34	118	132	26	85	46	16	7.10
Brachionus rubens EHRENBERG	55	46		85	26		32	57		3.10
Keratella cochlearis GOSSE	132	184	26	85	116	25	78	49	19	7.35

(계속)

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종 명 \ 조사지점 및 시기	St. 19			St. 20			St. 21			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	1차	2차	3차	
Keratella cochlearis var. *tecta* f. *micracantha* LAUTERBORN				20	18					0.39
Keratella cochlearis var. *irregularis* LAUTERBORN	26	18		22	16		24	16		1.26
Keratella valga asymmetrica B. et D.	16	21	9	34	26	10	51	39	18	2.31
Keratella valga f. *tropica* APSTEIN	26	15	10		20	11				0.84
Notholca labis GOSSE	23	34		52	49		26	22		1.89
Euchlanidae (장삼윤충과)										
Mytilina ventralis EHRENBERG	26	39	11	24	38	22	19	21	7	2.13
Monostyla pygmaea DADAY	19	20	11	28	30	8	11	16	7	1.54
Filiniidae (Filiniidae과)										
Filinia longiseta EHRENBERG	26	33		52	26		39	44		2.26
Filinia longiseta var. *limnetica* EHRENBERG	29	46		29	22		36	40		2.08
Testudinellidae (Testudinellidae과)										
Testudinella patina HERMANN		11		16	22	19		18		0.88
ARTHROPODA (절지동물문)										
Crustacea (갑강강)										
Branchiopoda (지각목)										
Sididae (Sididae과)										
Diaphanosoma brachyurum LIEVIN		13	5				8	12	6	0.45
Daphniidae (물벼룩과)										
Moina macrocopa STRAUS	26	33	8	36	22	11	19	22	10	1.92
Moina rectirostris LEYDIG		20		26	35	8	13	20		1.26
Daphnia pulex LEYDIG	121	155	26	55	67	12	56	85	20	6.15
Bosminidae (코끼리물벼룩과)										
Bosmina coregoni BAILD	116	86		59	85		26	32		4.16
Copepoda (요각목)										
Cyclopidae (칼날노물벼룩과)										
Tropocyclops prasinus FISCHER	55	49	11	46	64	9	50	44	8	3.46
Cyclops vicinus ULJANIN	22	19	10	26	28	8	31	33	16	1.99
Copepoda 유생	116	157	29	85	142	10	165	190	48	9.70
Cyclops 유생	46	39	16	11	10	8	55	76	20	2.89
종 수	32	35	20	36	37	23	31	33	20	
현존량	1429	1683	399	1428	1438	382	1229	1322	401	

(계속)

건설교통부

<부록 표 1 - 27 > 유등천의 동물플랑크톤 종조성 및 채집개체수(개체/㎥)

조사지점 및 시기 / 종 명	St. 22			St. 23			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	
PROTOZOA (원생동물문)							
Mastigophora (편모충강)							
Chrysomonadida (황녹색편모충목)							
Ochromanadidae (민털수염벌레과)							
Uroglenopsis americana CALKINS	12	18			10		0.57
Dinoflagellida (와편모충목)							
Peridinidae (Peridinidae과)							
Peridinium bipes STEIN	13	22	10	14	15	7	1.16
Peridinium quadridens STEIN	15	29	13	22	27	16	1.76
Euglenoida (연두벌레목)							
Chlamydomonadae(가루수염벌레과)							
Pandorina morum BORY		18			13		0.45
Volvocidae (데두리수염과)							
Volvox aureaus EHRENBERG	13	20		12	17		0.89
Rhizopodea (근족충강)							
Arcellida (유각변형충목)							
Arcellidae (꽃병벌레과)							
Difflugia globulosa DUJARDIN	16	28	11	17	19	9	1.44
Arcella artocrea LEIDY	18	17			12		0.68
Arcella vulgaris EHRENBERG	14	28	10	16	30	13	1.60
TROCHELMINTHES (윤형동물문)							
Rotatoria (윤충강)							
Bdelloidea (거머리꼴윤충목)							
Philodidae (거머리꼴윤충과)							
Philodina roseola EHRENBERG	16	24	8	22	27	13	1.58
Dissotrocha aculeata EHRENBERG	20	46		34	47		2.12
Ploima (유영목)							
Conochilidae (뿔윤충과)							
Conochilus unicornis ROUSSELET	10	13	11	46	59	24	2.35
Synchaetidae (뻘윤충과)							
Polyarthra euryptera WIEZEJSKI	26	39		34	39		1.99
Trichocericidae (쥐꼬리윤충과)							
Trichocera logiseta SCHRANK		12	5	13	19	8	0.82
Brachionidae (방패윤충과)							
Brachionus calyciflorus var. *amphiceros* EHRENBERG	146	189	120	207	228	84	14.02
Brachionus capsuliforus PALLAS	11	20			13		0.63
Brachionus budapestinensis DADAY	46	69	19	35	47	20	3.40
Brachionus angularis GOSSE	95	134	26	124	167	34	8.35
Brachionus rubens EHRENBERG	41	59		74	52		3.25
Keratella cochlearis GOSSE	67	127	16	77	146	30	6.66

(계속)

건설교통부

종 명 \ 조사지점 및 시기	St. 22			St. 23			상대풍부도(%)
	1차	2차	3차	1차	2차	3차	
Keratella cochlearis var. *tecta* f. *micracantha* LAUTERBORN	13	15		20	14		0.89
Keratella cochlearis var. *irregularis* LAUTERBORN	15	24		16	28		1.19
Keratella valga asymmetrica B. et D.	22	27	12	33	38	17	2.14
Keratella valga f. *tropica* APSTEIN	32	39	15	12	27	10	1.94
Notholca labis GOSSE	20	24		34	44		1.76
Euchlanidae (장삼윤충과)							
Mytilina ventralis EHRENBERG	22	30	8	19	27	16	1.76
Monostyla pygmaea DADAY	27	34	12	31	49	19	2.47
Filiniidae (Filiniidae과)							
Filinia longiseta EHRENBERG	16	21		49	55		2.03
Filinia longiseta var. *limnetica* EHRENBERG	22	37		19	27		1.51
Testudinellidae (Testudinellidae과)							
Testudinella patina HERMANN	16	21	10	24	28	11	1.58
ARTHROPODA (절지동물문)							
Crustacea (갑강강)							
Branchiopoda (지각목)							
Sididae (Sididae과)							
Diaphanosoma brachyurum LIEVIN		8		27	25		0.86
Daphniidae (물벼룩과)							
Moina macrocopa STRAUS	31	39	16	27	31	12	2.24
Moina rectirostris LEYDIG	11	19	6	22	41	15	1.64
Daphnia pulex LEYDIG	109	112	18	79	106	20	6.39
Bosminidae (코끼리물벼룩과)							
Bosmina coregoni BAILD	79	94		84	88		4.97
Copepoda (요각목)							
Cyclopidae (칼날노물벼룩과)							
Tropocyclops prasinus FISCHER	46	57	13	26	49	7	2.85
Cyclops vicinus ULJANIN	16	24	8	22	31	11	1.61
Copepoda 유생	80	128	21	49	64	16	5.15
Cyclops 유생	34	58	13	49	55	18	3.27
종 수	35	38	23	34	38	23	
현존량	1190	1723	401	1389	1814	430	

건설교통부

< 부록 표 1 - 28 > 저서성 대형무척추동물의 목록

(출현종-출현지점-채집월-정량(개체수),정성(개체수))

Phylum Annelida 환형동물문
Class Hirudinea 거머리강
Order Rhynchobdellida 부리거머리목
Family Clossiphoniidae 넙적거머리과
Clossiphoniidae sp. 넙적거머리과 sp., 1-Ⅴ-량1, 2-Ⅴ-량3성9, 3-Ⅴ-량6, 4-Ⅴ-량1성17, 7-Ⅹ-량1, 8-Ⅹ-성2, 10-Ⅺ-량2성6, 12-Ⅹ-성1, 13-Ⅹ-량2, 14-Ⅴ-성1, 16-Ⅺ-량2, 18-Ⅺ-량1, 19-Ⅴ-량1성1, 19-Ⅺ-량1성3, 20-Ⅺ-량2성2, 21-Ⅺ-성1, 22-Ⅺ-량2

Order Arhynchobdellida 턱거머리목
Family Erpobdellidae 돌거머리과
Erpobdella lineata Mulle 돌거머리, 11-Ⅴ-량1, 14-Ⅴ-량1, 15-Ⅺ-량1, 22-Ⅴ-성1, 22-Ⅺ-량1

Phylum Molluska 연체동물문
Class Gastropoda 복족강
Order Mesogastropoda 중복족목
Family Viviparidae 논우렁이과
Cipangopaludina chinensis malleata Reeve 논우렁이, 21-Ⅺ-량1

Family Pleuroceridae 다슬기과
Semisulcospira gottschei 곳체다슬기, 6-Ⅴ-량1, 11-Ⅴ-성1, 23-Ⅴ-량1
Semisulcospira forticosta (v. Mattens) 주름다슬기, 6-Ⅷ-량2, 11-Ⅺ-량6성1, 11-Ⅴ-량1성2, 21-Ⅺ-량1성1, 23-Ⅴ-량2성2,
Semisulcospira tegulata (v. Martens) 좀주름다슬기, 11-Ⅴ-량2, 11-Ⅺ-량2성3, 21-Ⅺ-량1성1, 23-Ⅴ-량2성1, 23-Ⅺ-량8성5

Family Bithyniidae 쇠우렁이과
Parafossarulus Manchouricus 쇠우렁이, 11-Ⅴ-량1, 15-Ⅺ-량1

Class Pulmonata 유폐아강
Order Basommatophora 기안목
Family Bradybaenidae 달팽이과
Acusta despecta (Gray) 달팽이 , 1-Ⅴ-량3, 3-Ⅷ-량2, 23-Ⅴ-성1

Family Lymnaeidae 물달팽이과
Austropeplea ollula (Gould) 애기물달팽이, 8-Ⅴ-량2, 21-Ⅺ-성1
Radix auricularia coreana (v. Martens) 물달팽이, 1-Ⅴ-량2, 3-Ⅷ-량8, 4-Ⅷ-량1, 8-Ⅴ-성3, 8-Ⅹ-량1성1, 11-Ⅴ-량1성1, 11-Ⅺ-량10성6, 14-Ⅺ-량2, 15-Ⅺ-량1, 16-Ⅺ-량3, 17-Ⅺ-량3성2, 20-Ⅺ-성3, 21-Ⅺ-량5, 22-Ⅴ-성1, 23-Ⅺ-량6

Family Physidae 왼돌이물달팽이과
Physa (Physella) acuta (Draparnaud) 왼돌이물달팽이, 2-Ⅴ-량1성1, 3-Ⅷ-량13성2, 7-Ⅹ-량2, 8-Ⅹ-성1, 9-Ⅹ-량1, 11-Ⅴ-량6성5, 11-Ⅺ-량59성5, 12-Ⅹ-량8성2, 13-Ⅹ-량26성14, 15-Ⅴ-량1, 16-Ⅺ-량1성2, 19-Ⅴ-성5, 19-Ⅺ-량2, 20-Ⅺ-량7성3, 21-Ⅺ-량2, 22-Ⅺ-량1, 22-Ⅴ-량4성5

Family Planorbidae 또아리물달팽이과
Gyraulus convexiusculus (Hutton) 또아리물달팽이, 3-Ⅷ-량1, 9-Ⅹ-량1, 11-Ⅴ-량3성2, 11-Ⅺ-량3, 12-Ⅹ-량1, 13-Ⅴ-량1, 15-Ⅺ-량1
Hippeutis cantori 수정또아리물달팽이, 1-Ⅴ-량4, 9-Ⅹ-량1, 21-Ⅺ-량1

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Class Pelecypoda 부족강
Order Mytiloida 담치목
Family Ancyidae 민물삿갓조개과
Petlancylus nipponicus 민물삿갓조개, 10-XI-량1, 11-XI-성1
Order Veneroidae 백합목
Family Corbiculidae 재첩과
Corbicula fluminea (v. Müller) 재첩, 4-VIII-량1, 6-V-성3, 7-X-량2, 7-V-성5, 8-V-량1, 10-XI-량1, 11-V-량4성5, 11-XI-량3, 14-XI-량1, 21-XI-량1, 23-XI-량4

Order Unionoida 석패목
Family Unionidae 석패과
Anodonata arcaeformis Moder 대칭이, 6-V-성1

Phylum Arthropoda 절지동물문
Class Crustacea 갑각강
Order Branchiopoda 지각목
Family Daphniidae 물벼룩과
Daphniidae sp. 물벼룩과 sp., 1-V-량14, 9-V-량3성3, 9-X-량2성1, 10-V-량2, 11-XI-량1, 11-V-량3성1, 12-V-성3, 13-X-량1성3, 13-V-량4성7, 14-V-량2, 15-XI-량1, 15-V-량3성5, 16-V-량2성5, 16-XI-량1, 19-XI-성1, 20-V-량2, 20-XI-량1성3, 21-XI-량2

Order Isopoda 등각목
Isopoda sp. 등각목 sp., 1-V-성1, 6-V-량6, 6-VIII-량1

Order Decapoda 십각목
Family Atyidae 새뱅이과
Caridina denticulata denticulat De Haan 새뱅이, 11-XI-량4성3, 21-XI-량11성5

Family Palaemonidae 징거미새우과
Macrobrachium nipponense (De Haan) 징거미새우, 2-V-량1

Class Insecta 곤충강
Order Collembola 톡토기목
Collembola sp. 톡토기목 sp., 6-VIII-량1

Order Odonata 잠자리목
Family Coenagrionidae 실잠자리과
Cercion calamorum calamorum (Ris) 등검은실잠자리, 2-V-량1성2, 2-VIII-량1, 11-V-량1, 13-X-량2, 19-XI-량5, 20-XI-량5성2, 21-XI-량2성1
Cercion hieroglyphicum (Brauer) 등줄실잠자리, 9-X-량1성1, 19-XI-량2, 21-XI-량1
Ischnura asiatica (Brauer) 아시아실잠자리, 1-V-량1, 2-VIII-량4성1, 4-VIII-량3성1, 9-X-량8성1, 11-V-량1, 12-X-량3성1, 13-X-량51성21, 16-XI-량6성1, 19-XI-량4성2, 20-XI-량1성1, 21-XI-량7

Family Platycnemididae 방울실잠자리과
Copera annulata (Selys) 자실잠자리, 9-X-량5성5, 10-XI-량1, 11-XI-량20성4, 11-V-량3성3, 14-XI-량1, 16-XI-량4, 19-XI-량1성9, 20-XI-량1, 23-XI-11량1
Platycnemis phillopoda Djakonov 방울실잠자리, 4-VIII-성1, 11-V-량16성5, 15-XI-량1, 16-XI-량1, 21-XI-량1

Family Calopterygidae 물잠자리과
Calopteryx japonica Selys 물잠자리, 2-V-량1, 23-XI-량1
Calopteryx atrata Selys 검은물잠자리, 2-V-량2, 21-XI-량2, 23-XI-량1

Family Aeshnidae 왕잠자리과
Anax parthenope julius Brauer 왕잠자리, 21-XI-량2성2

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Family Gomphidae 부채장수잠자리과
Ictinogomphus clavatus (Fabricius) 부채장수잠자리, 7-X-량1, 23-XI-량3
Onychogomphus ringens Needham 노란측범잠자리, 21-V-량1

Family Libellulidae 잠자리과
Orthetrum albistylum speciosum (Uhler) 밀잠자리, 16-XI-량1

Order Coleoptera 딱정벌레목
Family Hydrophilidae 물땡땡이과
Helochares (Hydrobaticus) striatus Sharp 좁물땡땡이, 1-V-량2, 4-VIII-량2성1, 9-X-량1, 9-V-량2, 11-V-량1성2, 12-X-량1, 16-V-량1

Family Dytiscidae 물방개과
Ilybius apicalis Sharp 모래무지물방개, 4-VIII-성1
Hydaticus (Hydaticus) grammicus Germar 꼬마줄물방개, 11-V-량1
Laccophilus difficilis Sharp 깨알물방개, 16-XI-량1
Rhantus (Rhantus) pulverosus (Stephens) 애기물방개, 11-XI-성1, 20-XI-량1

Family Curculionidae 바구미과
Bagous sp. 물바구미속 sp. , 1-V-량2, 3-V-량1, 15-V-량2성2

Family Haliplidae 물진드기과
Peltodytes sinensis Hope 중국물진드기, 11-V-량11성2, 12-X-량1

Family Psephenidae 물삿갓벌레과
Eubrianax KUa 둥근물삿갓벌레 KUa, 23-XI-량6
Mataeopsephus KUa 넓은물삿갓벌레 KUa, 8-V-량2, 23-XI-량2

Family Elmidae 여울벌레과
Optioserus variabilis Nomura 무늬여울벌레, 10-XI-량1, 23-V-성1

Order Megaloptera 뱀잠자리목
Family Corydalidae 뱀잠자리과
Parachauliodes continentalis Weele 대륙뱀잠자리, 19-V-량1
Protohermes grandis (Thunberg) 뱀잠자리, 8-V-량1, 21-V-성1

Order Trichoptera 날도래목
Family Limnephilidae 우묵날도래과
Apatania KUa 애우묵날도래 KUa , 6-V-량1
Goera japonica Banks 가시날도래, 6-V-성1, 21-V-량1
Neophylax ussuriensis Martynov 가시우묵날도래, 21-V-량1, 23-V-량7성2
Nothopsyche KUa 갈색우묵날도래 KUa, 11-V-량3

Family Leptoceridae 나비날도래과
Ceraclea KUb 나비날도래 KUb, 6-V-성9
Mystacides KUa 청나비날도래 KUa, 21-XI-량1, 23-V-량1, 23-XI-량1

Family Rhyacophilidae 물날도래과
Rhyacophila nigrocephala Iwata 검은머리물날도래, 6-V-성1

Family Glossosomatidae 광택날도래과
Glossosoma KUa 광택날도래 KUa, 6-V-성3, 18-V-량3, 21-V-량2

Family Hydropsychidae 줄날도래과
Cheumatopsyche brevilineata Iwata 꼬마줄날도래, 5-V-량1, 15-V-량1, 18-V-성1
Cheumatopsyche KUb 꼬마줄날도래 KUb, 7-X-량2성3, 10-V-량2, 14-XI-성1

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Hydropsyche KUa 줄날도래 KUa, 5-V-량2성4, 6-V-성1
Hydropsyche KUb 줄날도래 KUb, 7-X-성1, 7-V-성1, 10-XI-량54성1, 14-XI-량3성1, 18-V-량2성1, 19-V-성1, 21-V-량3
Hydropsyche KUc 줄날도래 KUc, 10-XI-량5, 18-V-량8성9, 18-XI-량55성21
Hydropsyche KUd 줄날도래 KUd, 18-XI-량2
Hydropsyche KUe 줄날도래 KUe, 7-X-량1, 23-XI-량3성1
Macornema radiatum McLachlan 큰줄날도래, 7-X-량4, 23-XI-량4

Family Hydroptilidae 애날도래과
Hydroptila KUa 애날도래 KUa, 5-V-량1, 5-VIII-량1, 6-V-량1성3, 6-VIII-성1, 7-X-량8성2, 8-X-량2성3, 10-XI-량13성17, 10-V-량1, 14-XI-량14성5, 15-XI-량1, 21-V-량2성1, 23-XI-량34성1, 23-V-량1성1

Family Lepidostomatidae 네모집날도래과
Goerodes KUa 네모집날도래 KUa, 6-V-량1

Family Odontoceridae 바수염날도래과
Psilotreta kisoensis Iwata 바수염날도래, 6-V-량1

Order Hemiptera 노린재목
Family Gerridae 소금쟁이과
Gerridae sp. 소금쟁이과 sp., 1-V-성3, 1-VIII-량2성3, 3-V-성2, 3-VIII-성4, 4-VIII-성5, 5-V-성3, 5-VIII-성2, 8-V-성1, 12-V-량1, 13-V-성3, 14-V-량2, 20-V-성1, 21-V-량1성1

Family Nepidae 장구애비과
Laccotrephes japonensis Scott 장구애비, 4-VIII-성1, 11-V-성2, 19-XI-량1
Nepa hoffmanni Esaki 메추리장구애비, 11-V-성1, 15-V-성1

Family Belostomatidae 물장군과
Muljarus japonicus (Vuillefroy) 물자라, 4-VIII-량4

Family Corixidae 물벌레과
Micronecta (*Basilionecta*) *sedula* Horváth 꼬마물벌레, 8-X-량2성1, 8-V-량8성5, 9-X-량27성9, 12-X-량124성52, 13-X-량3성2, 16-XI-량2

Order Ephemeroptera 하루살이목
Family Siphlonuridae 옛하루살이과
Siphlonurus chankae Tsherova 옛하루살이, 8-V-량5성2

Family Baetidae 꼬마하루살이과
Baetiella tuberculata (Kazlauskas) 애호랑하루살이, 7-X-량1
Baetis thermicus Ueno 꼬마하루살이, 2-VIII-성1, 3-V-성1, 5-V-량5, 18-XI-량49성11, 19-V-량1, 21-V-량16
Cloeon dipterum (Linnaeus) 연못하루살이, 2-VIII-량2성1, 8-X-량3성4, 9-X-량4성3, 10-V-량1성1, 11-V-량12성4, 11-XI-량2, 13-X-량182성23, 14-XI-량1성1, 15-V-성2, 15-XI-성1, 16-XI-량153성25, 17-XI-량1, 18-XI-량1, 19-XI-량41성12, 20-XI-량15, 21-XI-량99성4, 21-V-성2, 23-V-성5

Family Ephemerellidae 알락하루살이과
Uracanthella rufa (Imanishi) 등줄하루살이, 5-V-량2, 7-X-량8성4, 8-X-량1, 10-V-량8성1, 20-V-량1성1, 23-V-량2, 23-XI-량9성3
Ephemerella notofascia Yoon & Bae 흰등하루살이, 6-V-량126성62

Family Isonychiidae 납작하루살이과
Ecdyonurus levis (Navas) 네점하루살이, 7-X-량28성11, 8-V-량15성9, 8-X-량2, 23-V-량13, 23-XI-량6성3
Ecdyonurus kibunensis Imanishi 두점하루살이, 21-XI-량3

Family Leptophlebiidae 갈래하루살이과

Choroterpes (Euthraulus) altioculus Kluge 세갈래하루살이, 7-X-량1, 7-V-량12성3, 21-V-성3, 21-XI-량8, 23-V-량14성2, 23-XI-량4

Family Potamanthidae 강하루살이과

Rhoenanthus coreanus (Yoon et Bae) 강하루살이, 21-V-량1성3

Family Ephemeridae 하루살이과

Ephemera orientalis McLachlan 동양하루살이, 7-V-량1, 7-X-량4, 8-X-량2성2, 10-XI-량2성1, 11-V-량9성1, 12-V-성1, 14-XI-량1성1

Ephemera separigata Bae 가는무늬하루살이, 21-V-량1

Family Caenidae 등딱지하루살이과

Caenis KUa 등딱지하루살이 KUa, 8-V-량2성1, 14-XI-성1, 20-V-량2, 21-XI-량6, 23-V-량1, 23-XI-량16성5

Order Diptera 파리목

Family Chironomidae 깔따구과

Chironominae sp. 깔따구아과 sp., 1-V-량2성5, 1-VIII-량4성2, 2-V-량8성4, 2-VIII-량2성1, 3-V-량13성12, 4-V-량8성2, 4-VIII-성1, 5-V-량14성14, 5-VIII-량2, 6-V-량3성7, 6-VIII-량6, 7-V-량1, 7-X-량4성2, 8-V-량1성1, 8-X-성2, 9-V-량4성2, 9-X-량2, 10-V-량3성2, 10-XI-량4성1, 11-XI-량1, 11-V-량1, 12-X-량3성2, 12-V-량4성13, 13-V-량2성5, 13-X-량2성3, 14-XI-량3성2, 14-V-량4성9, 15-V-량6성8, 15-XI-성2, 16-XI-량1성2, 16-V-량1성3, 17-XI-량1, 17-V-량5성3, 18-XI-량1성1, 19-XI-량4성2, 19-V-량6성12, 20-V-량4성7, 21-XI-량4성1, 21-V-량2성2, 22-V-량8성7, 22-XI-량8성1, 23-V-성1, 23-XI-량3성3

Tandypodinae sp. 늪깔따구아과 sp., 6-V-량1성2, 7-X-량2, 8-V-량4, 11-XI-성1, 13-X-량4성1, 13-V-량1, 14-XI-량3성1, 15-V-량4성2, 21-V-량1성2, 22-XI-량2, 23-V-량3성3

Family Tipulidae 각다귀과

Antocha KUa 명주각다귀 KUa, 1-V-량1성3, 5-V-성1, 6-V-량4성1, 15-XI-량1성2

Dicranota KUa 애기각다귀 KUa, 10-V-량1, 13-V-량2성1, 14-V-량2성2, 15-V-량1성9, 17-V-성1, 18-V-성1

Tipulidae sp. 각다귀과 sp., 16-XI-량2

Family Psychodidae 나방파리과

Psychodidae sp. 나방파리과 sp., 2-VIII-량1, 3-V-량1, 3-VIII-량2, 10-XI-량1, 16-XI-량2

Family Tabanidae 등에과

Suragina KUa 긴개울등에 KUa, 6-VIII-량1

Family Sarcophagidae 쉬파리과

Sarcophagidae sp. 쉬파리과 sp., 1-V-성1, 2-VIII-량1, 3-VIII-성1, 4-V-성1, 4-VIII-량1성2, 6-VIII-성1

Family Ceratopogonidae=Heleidae 등에모기과

Ceratopogonidae=Heleidae sp. 등애모기과 sp., 14-XI-성1

Family Dolichopodidae 장다리파리과

Dolichopodidae sp. 장다리파리과 sp., 21-V-량1

Family Ephydridae 물가파리과

Ephydridae sp. 물가파리 sp., 12-V-량1, 13-V-량6성4, 16-XI-성1, 17-V-량1성2, 19-V-량1, 20-V-성1

Family Empididae 춤파리과

Empididae sp. 춤파리과 sp., 17-XI-량1

Family Culicidae 모기과

Culicidae sp. 모기과 sp., 9-X-량1성1, 13-X-량3성2, 16-XI-성1

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< 부록 표 1 - 29 > 금강본류의 조사지점별 어류목록

조사지점 / 학 명	St.1	St.2	St.3	St.4	St.5	St.6	St.7	St.8	문헌
Order Clupeiformes 청어목									
Family Engraulidae 멸치과									
Coilia nasus 웅어									●
Order Cypriniformes 잉어목									
Family Cyprinidae 잉어과									
Cyprinus carpio 잉어									●
Carassius auratus 붕어		1	2			1	3	2	●
Rhodeus ocellatus 흰줄납줄개									●
Acheilognathus lanceolatus 납자루						1	6	4	●
Acheilognathus yamatsutae 줄납자루*									●
Acanthorhodeus gracilis 가시납지리*									●
Acheilognathus rhombeus 납지리									●
Acanthorhodeus macropterus 큰납지리									●
Pseudorasbora parva 참붕어									●
Coreoleuciscus splendidus 쉬리*							1		
Squalidus japonicus coreanus 몰개*				5	3				●
Gnathopogon strigatus 줄몰개									●
Hemibarbus labeo 누치			1	1		1			●
Hemibarbus longirostris 참마자	7			2					●
Hemiculter eigenmanni 치리*									●
Microphysogobio tungtingensis 둥경모치*									●
Macrophysogobio yaluensis 돌마자*									●
Pseudogobio esocinus 모래무지	1			2	1		1		●
Zacco platypus 피라미					1		2	3	●
Opsariichthys bidens 끄리									●
Squaliobarbus curriculus 눈불개									●
Pungtungia herzi 돌고기									●
Sarcocheilichthys nigripinnis morii 중고기*									●
Sarcocheilichthys variegatus wakiyae 참중고기*									●
Erythroculter erythropterus 강준치									●
Family Cobitidae 미꾸리과									
Misgurnus anguillicaudatus 미꾸리									●
Iksookimia choii 미호종개*									●
Order Siluriformes 메기목									
Family Siluridae 메기과									
Silurus asotus 메기								1	●

(계속)

조사지점 / 학 명	St.1	St.2	St.3	St.4	St.5	St.6	St.7	St.8	문헌
Family Adrianichthyidae 송사리과									
Oryzias latipes 송사리									●
Family Bagridae 동자개과									
Pseudobagrus fulvidraco 동자개									●
Leiocassis nitidus 밀자개									●
Order Osmeriformes 바다빙어목									
Family Osmeridae 바다빙어과									
Hypomesus olidus 빙어									●
Order Mugiliformes 숭어목									
Family Mugilidae 숭어과									
Mugil cephalus 숭어		3							●
Order Perciformes 농어목									
Family Centropomidae 꺽지과									
Coreoperca kawamebari 꺽저기								2	
Siniperca scherzeri 쏘가리					2				●
Family Gobiidae 망둑어과									
Rhinogobius brunneus 밀어						1			●
Tridentiger brevispinis 민물검정망둑						5			
Tridentiger obscurus 검정망둑									●
Rhinogobius giurinus 갈문망둑									●
Family Eleotrididae 동사리과									
Odontobutis obscurus interrupta 얼룩동사리*									●
Family Channidae 가물치과									
Channa argus 가물치									●
과 / 종	1/2	2/2	1/2	1/4	2/4	2/5	1/5	3/5	12/39

주1) * : 한국특산종

주2) 문헌 : 방성자, 홍영표, 최신석, 1995, 금강 수서생태계의 구조와 기능에 관한 연구 : 담수어류, 충남대학교 환경연구보고, 13 : 84-91

건설교통부

< 부록 표 1 - 30 > 논산천, 강경천, 노성천의 조사지점별 어류목록

학명 \ 조사지점	논산천			강경천		노성천	
	St. 9	St. 10	St. 11	St. 12	St. 13	St. 14	St. 15
Order Cypriniformes 잉어목							
Family Cyprinidae 잉어과							
Carassius auratus 붕어	5	2	1	11	6	1	5
Rhodeus uyekii 각시붕어*				3			
Acheilognathus lanceolatus 납자루			8	7			
Squalidus chankaensis 참몰개*				2			
Hemibarbus longirostris 참마자						3	
Hemiculter eigenmanni 치리*			2				
Pseudogobio esocinus 모래무지		2			2	2	2
Zacco platypus 피라미	3	3			2		3
Squaliobarbus curriculus 눈불개	1						
Family Bagridae 동자개과							
Pseudobagrus fulvidraco 동자개		1					
Order Perciformes 농어목							
Family Centropomidae 꺽지과							
Siniperca scherzeri 쏘가리		1					
Family Gobiidae 망둑어과							
Rhinogobius brunneus 밀어		2	1				
과 / 종	1/3	4/6	2/4	1/4	1/3	1/3	1/3

주) * : 한국특산종

건설교통부

< 부록 표 1 - 31 > 미호천, 갑천, 유등천의 조사지점별 어류목록

조사지점 / 학 명	미호천			갑 천			유등천	
	St.16	St.17	St.18	St.19	St.20	St.21	St.22	St.23
Order Cypriniformes 잉어목								
Family Cyprinidae 잉어과								
Carassius auratus 붕어	5	1	3	5	25	7	2	
Pseudorasbora parva 참붕어						4		
Rhodeus uyekii 각시붕어*						4		
Acheilognathus yamatsutae 줄납자루*	2							
Hemibarbus longirostris 참마자								3
Macrophysogobio yaluensis 돌마자*						2		
Pseudogobio esocinus 모래무지	3	1		6	3	8	1	5
Zacco platypus 피라미	6	2	1	4	10	2	6	1
Order Siluriformes 메기목								
Family Siluridae 메기과								
Silurus asotus 메기			1					
Family Bagridae 동자개과								
Pseudobagrus fulvidraco 동자개					1	2		
Family Amblycipitidae 퉁가리과								
Liobagrus andersoni 퉁가리*			1					
Order Perciformes 농어목								
Family Gobiidae 망둑어과								
Rhinogobius brunneus 밀어				3				
과 / 종	1/4	1/3	3/4	2/4	2/4	2/7	1/3	1/3

주) * : 한국특산종

건설교통부

1.2 생태계조사(추가분)

건설교통부

1. 동 · 식물상

가. 현황

1) 조사방법

가) 조사항목

(1) 육상동물상

포유류, 조류, 양서 · 파충류 및 육상곤충류를 대상으로 종의 분포현황, 다수 출현종, 특징있는 동물의 분포현황(법적보호종, 희귀종 등), 생물다양도 분석 등을 조사하였다.

(2) 육수동 · 식물상

하천식물, 부착조류, 동물성플랑크톤, 저서성대형무척추동물, 어류

나) 조사일정 및 조사지점

(1) 육상동물상

조류와 양서 · 파충류를 대상으로 조사수역인 금강본류 및 유입지천인 논산천, 강경천, 노성천, 미호천, 갑천, 유등천 등 7개 하천지역을 총 23개 지점으로 구분하여 <표 1 - 1>과 같은 방법으로 현지조사를 실시하였다.

건설교통부

< 표 1 - 1 > 육상동물상 현지조사 일정 및 지점

항 목	조 사 내 용		
조사일정	2002. 7. 30 ~ 2002. 8. 2		
조사지역	금 강 (St.1~St.8)	상류	충북 옥천군 청성면 평촌 ~ 영동군 심천면 고당리 일대
		중류	충남 공주시 탄천면 유하리 ~ 대전시 대덕구 용호동 일대
		하류	충남 부여군 양화면 시음리 ~ 석성면 봉정리 일대
	논산천 (St.9~St.11)	충남 논산시 채운면 장화리 ~ 부적면 종연리 및 논산저수지 일대	
	강경천 (St.12~St.13)	충남 논산시 강경읍 홍교리 ~ 전북 익산시 망성면 무형리 일대	
	노성천 (St.14~St.15)	충남 논산시 광석면 산동리 ~ 광석면 항월리 일대	
	미호천 (St.16~St.18)	충남 연기군 남면 보통리 ~ 청원군 옥산면 소로리 일대	
	갑 천 (St.19~St.21)	대전시 유성구 송강동 ~서구 흑석동 일대	
	유등천 (St.22~St.23)	대전시 중구 둔산동 ~ 안영동 일대	

(계속)

(2) 육수동·식물상

조사수역인 금강 본류 및 유입지천인 논산천, 강경천, 노성천, 미호천, 갑천, 유등천의 집수역, 토지이용, 하천의 특성을 고려하여 조사수역을 대표할 수 있다고 판단되는 23개지점을 (그림 1 - 1)과 같이 선정하여 하천식물, 부착조류, 저서성대형무척추동물 및 어류를 대상으로 <표 1 - 2>와 같은 방법으로 현지조사를 실시하였다.

< 표 1 - 2 > 육수동·식물상 현지조사 방법

항 목	조 사 내 용		
조사일정	2002. 7. 30 ~ 2002. 8. 2		
조사지점	금강본류	St. 1	충남 부여군 양화면 시음리
		St. 2	충남 논산시 강경읍 황산리 황산대교
		St. 3	충남 부여군 석성면 봉정리(봉두정이)
		St. 4	충남 공주시 탄천면 유하리 원산
		St. 5	충남 연기군 금남면 대평리 금남교
		St. 6	대전광역시 대덕구 용호동 용호
		St. 7	충북 옥천군 청성면 지수리 평촌
		St. 8	충북 영동군 심천면 고당리 영강교
	논산천	St. 9	충남 논산시 채운면 장화리 강경대교
		St. 10	충남 논산시 대교동 논산대교
		St. 11	충남 논산시 부적면 종연리 논산저수지밑
	강경천	St. 12	충남 논산시 강경읍 홍교리 하강경교
		St. 13	전북 익산시 망성면 무형리 포변
	노성천	St. 14	충남 논산시 광석면 산동리 가름네
		St. 15	충남 논산시 광석면 항월리 초포
	미호천	St. 16	충남 연기군 남면 보통리
		St. 17	충북 청원군 강내면 석화리 미호천교
		St. 18	충북 청원군 옥산면 소로리 봉점
	갑 천	St. 19	대전광역시 유성구 송강동 신구교
		St. 20	대전광역시 유성구 도룡동 둔산대교
		St. 21	대전광역시 서구 흑석동 피곡교
	유등천	St. 22	대전광역시 중구 둔산동
		St. 23	대전광역시 중구 안영동 안영교

< 부록 표 1 - 1 >　　조사하천별 식물목록

국명	학명	생활형	St.A	St.B	St.C	St.D	St.E	St.F	St.G
속새과 (Equisetaceae)									
쇠뜨기	*Equisetum arvense* L.	G	O	O	O	O	O	O	O
부들과 (Typhaceae)									
애기부들	*Typha angustata* BORY et CHAUB	HH	O	.	.	.	O	.	.
부들	*Typha orientalis* PRESL	HH	O	.	O	.	.	O	.
가래과 (Potamogetonaceae)									
말즘	*Potamogeton crispus* L.	HH	O	O	.	.	O	O	.
택사과 (Alismataceae)									
보풀	*Sagittaria aginashi* MAKINO	HH	O	.	.	.	O	.	.
자라풀과 (Hydrocharitaceae)									
검정말	*Hydrilla verticillata* CASP.	HH	O		.	.	O	O	O
벼과 (Gramineae)									
뚝새풀	*Alopecurus aequalis* var. *amurensis* (KOM.) OHWI	Th	O	O	O	O	O	O	O
메귀리	*Avena fatua* L.	Th							
갈풀	*Phalaris arundinacea* L.	H	O	O	O	O	O	O	O
속털개밀	*Agropyron ciliare* (TRIN.) FR.	Th	O	O	O	O	O	O	O
개피	*Beckmannia syzigachne* FERN.	Th							
개밀	*Agropyron tsukushiense* var. *transiens* OHWI	Th	O	O	O	O	O	O	O
까락빕새귀리	*Bromus sterilis* L.	H	O	O	O	O	O	O	O
호밀	*Secale cereale* L.	Th	O	O	O	.	O	.	.
왕포아풀	*Poa pratensis* L.	H	O	.	.	O	O	O	O
줄	*Zizania latifolia* TURCZ.	HH	O	O	O	O	O	O	O
갈대	*Phragmites communis* TRIN.	G	O	O	O	O	O	O	O

국명	학명	생활형	St.A	St.B	St.C	St.D	St.E	St.F	St.G
달뿌리풀	*Phragmites japonica* STEUD.	G	O	O	O	O	O	O	O
그령	*Eragrostis ferruginea* (THUNB.) P. BEAUV.	H	O	O	O	O	.	O	O
비노리	*Eragrostis multicaulis* STEUD.	Th	O	.	.	.	.	O	.
물잔디	*Pseudoraphis ukishiba* OHWI	H	O	.	.	.	O	.	.
수크령	*Pennisetum alopecuroides* (L.) SPRENG.	H	O	O	O	O	O	O	O
강아지풀	*Setaria viridis* (L.) BEAUV.	Th	O	O	O	O	O	O	O
바랭이	*Digitaria sanguinalis* (L.) SCOP.	Th	O	O	O	O	O	O	O
띠	*Imperata cylindrica* var. *koenigii* DURAND et SCHINZ	H	O	O	O	O	O	O	O
억새	*Miscanthus sinensis* var. *purpurascens* RENDLE	H	O	O	O	O	O	O	O
물억새	*Miscanthus sacchariflorus* BENTH.	H	O	O	O	O	O	O	O
개솔새	*Cymbopogon tortilis* var. *goeringii* HAND.-MAZZ.	H	O	.	.	.	O	O	O
사초과 (Cyperaceae)									
괭이사초	*Carex neurocarpa* MAX.	H	O	.	.	O	O	.	O
이삭사초	*Carex dimorpholepis* STEUD.	H	O	O	O	O	.	O	O
길뚝사초	*Carex bostrychostigma* MAX.	H	O	.	.	O	O	.	.
삿갓사초	*Carex dispalata* BOOTT	H	.	.	.	O	.	O	.
세모고랭이	*Scirpus triqueter* L.	HH	O	.	.	.	O	.	.
쇠털골	*Eleocharis acicularis* for. *longiseta* T. KOYAMA	Th	O	.	.	.	.	.	.
우산방동사니	*Cyperus tenuispica* STEUD	Th	O	O	O	.	O	.	O
방동사니	*Cyperus amuricus* MAX.	Th	O	O	O	O	O	O	O
나도방동사니	*Cyperus nipponicus* FR. et SAV.	Th	O	.	.	O	O	.	.
파대가리	*Kyllinga brevifolia* var. *leiolepis* HARA	H	O	.	.	.	.	O	O
올방개	*Eleocharis kuroguwai* OHWI	HH	O	O	.	.	O	.	.

국명	학명	생활형	St.A	St.B	St.C	St.D	St.E	St.F	St.G
개구리밥과 (Lemnaceae)									
개구리밥	*Spirodela polyrhiza* (L.) SCHLEID.	HH	O	O	O	O	O	O	O
좀개구리밥	*Lemna paucicostata* HEGELM.	HH	O	O	O	O	O	O	O
닭의장풀과 (Commelinaceae)									
닭의장풀	*Commelina communis* L.	Th	O	O	O	O	O	O	O
사마귀풀	*Aneilema keisak* HASSK	Th	O	.	.	.	.	.	.
물옥잠과 (Pontederaceae)									
물닭개비	*Monochora vaginalis* var. *plantaginea* SOLM.-LAUB	HH	O	.	.	.	.	.	.
골풀과 (Juncaceae)									
골풀	*Juncus effusus* var. *decipiens* BUCHEN.	H	.	.	O	.	O	.	.
백합과 (LiLiaceae)									
무릇	*Scilla scilloides* (LIND.) DRUCE	G	O	O	O	O	O	O	O
청미래덩굴	*Smilax china* L.	N	O	.	.	.	.	O	.
버드나무과 (Salicaceae)									
미류나무	*Populus deltoides* MARSH.	M	.	.	.	O	.	.	.
은사시나무	*Populus tomentiglandulosa* T. LEE	M	O	.	.	.	.	O	.
왕버들	*Salix glandulosa* SEEM.	M	O	O	O	O	O	O	O
버드나무	*Salix koreensis* ANDERSS.	M	O	O	.	.	.	O	O
수양버들	*Salix babylonica* L.	M	O	.	O	O	O	O	.
갯버들	*Salix gracilistyla* MIQ.	N	O	O	O	O	O	O	O
키버들	*Salix purpurea* var. *japonica* NAKAI	N	O	.	.	.	.	.	.
참나무과 (Fagaceae)									
상수리나무	*Quercus acutissima* CARRUTH.	M	.	.	.	O	.	.	.

국명	학명	생활형	St.A	St.B	St.C	St.D	St.E	St.F	St.G
굴참나무	*Quercus variabilis* L.	M	O	.	.	.	.	.	.
느릅나무과 (Ulmaceae)									
느티나무	*Zelkova serrata* MAKINO	M	O	O	O	O	.	O	O
뽕나무과 (Moraceae)									
뽕나무	*Morus alba* L.	M	O	O	O	O	O	O	O
삼과 (Cannabinaceae)									
환삼덩굴	*Humulus japonicus* S. et Z.	Th	O	O	O	O	O	O	O
쐐기풀과 (Urticaceae)									
좀깨잎나무	*Boehmeria spicata* THUNB.	CH	O	O	O	O	O	O	O
마디풀과 (Polygonaceae)									
애기수영	*Rumex acetocella* L.	H	O	O	O	O	.	O	O
수영	*Rumex acetosa* L.	H	O	O	.	O	.	.	O
소리쟁이	*Rumex crispus* L.	H	O	O	O	O	O	O	O
호장근	*Reynoutria elliptica* (KOIDZ.) MIGO	H	O	O	.	O	.	.	O
며느리배꼽	*Persicaria perfoliata* H. GROSS	Th	O	O	O	O	O	O	O
며느리밑씻개	*Persicaria senticosa* GROSS	Th	O	O	.	.	.	O	.
미꾸리낚시	*Persicaria sieboldi* OHKI	Th	O	.	.	.	.	.	.
흰꽃여뀌	*Persicaria japonica* H. GROSS	Th	O	.	.	.	.	.	.
꽃여뀌	*Persicaria hydropiper* SPACH	Th	O	.	.	.	.	.	.
고마리	*Persicaria thunbergii* H. GROSS	Th	O	O	O	O	O	O	O
털여뀌	*Persicaria cochinchinensis* KITAGAWA	Th	O	.	O	.	.	.	.
큰개여뀌	*Persicaria nodosa* OPIZ	Th	O	O	O	O	O	O	O
여뀌	*Persicaria hydropiper* (L.) SPACH	Th	O	O	O	O	O	O	O

국명	학명	생활형	St.A	St.B	St.C	St.D	St.E	St.F	St.G
봄여뀌	*Persicaria vulgaris* WEBB et MOQ.	Th	O	O	O	O	O	.	.
개여뀌	*Persicaria blumei* GROSS	Th	O	.	.	.	.	.	.
마디풀	*Polygonum aviculare* L.	Th	O	O	O	O	O	O	O
명아주과 (Chenopodiaceae)									
좀명아주	*Chenopodium ficifolium* SMITH	Th	O	.	.	.	.	O	O
명아주	*Chenopodium album* var. *centrorubrum* MAKINO	Th	O	O	O	O	O	O	O
비름과 (Amaranthaceae)									
비름	*Amaranthus mangostanus* L.	Th	O	.	.	O	.	.	.
개비름	*Amaranthus lividus* L.	Th	O	.	.	.	.	.	.
청비름	*Amaranthus viridis* L.	Th	.	O	O	O	.	.	.
쇠무릅	*Achyranthes japonica* (MIQ.) NAKAI	H	O	O	O	O	O	O	O
자리공과 (Phytolaccaceae)									
자리공	*Phytolacca esculenta* V. HOUTTE	H	.	.	.	.	O	.	O
미국자리공	*Phytolacca americana* L.	Th	O	.	O	.	O	.	O
쇠비름과 (Portulacaceae)									
쇠비름	*Portulaca oleracea* L.	Th	O	O	O	O	O	O	O
석류풀과 (Aizoaceae)									
석류풀	*Mollugo pentaphylla* L.	Th	O	O	.	.	.	.	O
석죽과 (Caryophyllaceae)									
벼룩이자리	*Arenaria serpyllifolia* L.	H	O	O	O	O	O	O	O
쇠별꽃	*Stellaria aquatica* SCOP	H	O	O	O	O	O	O	O
벼룩나물	*Stellaria alsine* var. *undulata* OHWI	Th	O	O	O	O	O	O	O
점나도나물	*Cerastium holosteoides* var. *hallaisanense* MIZUSHIMA	Th	O	O	O	O	O	O	O

국명	학명	생활형	St.A	St.B	St.C	St.D	St.E	St.F	St.G
붕어마름과 (Ceratophyllaceae)									
붕어마름	*Ceratophyllum demersum* L.	HH	O	O	.	.	.	.	.
미나리아재비과 (Ranunculaceae)									
사위질빵	*Clematis apiifolia* A.P. DC.	N	O	O	O	O	O	O	O
젓가락나물	*Ranunculus chinensis* BUNGE	Th	O	.	.	.	O	.	.
방기과 (Menispermaceae)									
댕댕이덩굴	*Cocculus trilobus* DC.	N	O	O	O	.	O	.	O
양귀비과 (Papaveraceae)									
애기똥풀	*Chelidonium majus* var. *asiaticum* (HARA) OHWI	Th	O	O	O	O	O	O	O
현호색과 (Fumariaceae)									
눈괴불주머니	*Corydalis ochotensis* TURCZ.	Th	O	O	.	.	.	.	.
십자화과 (Cruciferae)									
갓	*Brassica juncea* var. *integrifolia* SINSK.	Th	O	O	O	O	O	O	O
유채	*Brassica campestris* subsp. *napus* var. *nippoo-leifera* MAKINO	Th	.	.	.	.	.	.	O
다닥냉이	*Lepidium apetalum* WILLD.	Th	O	O	O	O	O	O	O
콩다닥냉이	*Lepidium virginicum* L.	Th	O	.	.	.	.	O	.
말냉이	*Thlaspi arvense* L.	Th	O	.	O	O	.	.	.
황새냉이	*Cardamine flexuosa* WITH.	Th	O	.	.	.	.	O	O
속속이풀	*Rorippa islandica* (OED.) BORB.	H	O	.	O	O	O	.	.
냉이	*Capsella bursa-pastoris* (L.) MEDICUS	Th	O	O	O	O	O	O	O
꽃다지	*Draba nemorosa* var. *hebecarpa* LINDBL.	Th	O	O	O	O	O	O	O
재쑥	*Descurainia sophia* (L.) PRANTL	Th	O	O	O	O	O	O	O

국명	학명	생활형	St.A	St.B	St.C	St.D	St.E	St.F	St.G
장미과 (Rosaceae)									
조팝나무	*Spiraea prunifolia* for. *simpliciflora* NAKAI	N	O	.	.	.	.	.	O
가락지나물	*Potentilla kleiniana* WIGHT et ARNOTT	H	O	O	O	O	O	.	O
양지꽃	*Potentilla fragarioieds* var. *major* MAX.	H	O	O	O	.	.	O	.
산딸기	*Rubus crataegifolius* BUNGE	N	O	.	.	.	O	.	.
멍석딸기	*Rubus parvifolius* L.	N	O	O	O	.	O	O	O
찔레꽃	*Rosa multiflora* THUNB.	N	O	O	O	O	O	O	O
용가시나무	*Rosa maximowicziana* REGEL	N	O	O	O	O	.	.	.
복사나무	*Prunus persica* (L.) BATSCH	M	O	O	.	.	.	.	O
콩과 (Leguminosae)									
자귀나무	*Albizzia julibrissin* DURAZZ.	M	O	O	O	O	.	.	.
풀싸리	*Lespedeza thunbergii* var. *intermedia* (NAK.) T.LEE	N	O	.	O	O	O	O	O
싸리	*Lespedeza bicolor* TURCZ.	N	O	O	O	O	.	.	.
비수리	*Lespedeza cuneata* G. DON	CH	O	O	O	O	O	O	O
차풀	*Vassia mimosoides* var. *nomame* MAKINO	Th	O	.	.	.	.	.	.
매듭풀	*Kummerowia striata* (THUNB.) SCHINDL.	H	O	O	O	O	O	O	O
둥근매듭풀	*Kummerowia stipulacea* (MAX.) MAKINO	Th	O	O	O	O	O	O	O
자귀풀	*Aeschynomene indica* L.	Th	O	O	O	O	O	O	O
벳지(털갈퀴덩굴)	*Vicia villosa* ROTH	Th	O	.	O	.	.	.	O
칡	*Pueraria thunbergiana* BENTH.	M	O	O	O	O	O	O	O
돌콩	*Glycine soja* S. et Z.	Th	O	.	.	.	.	.	.
고삼	*Sophora flavescens* AIT.	H	O	.	.	.	.	.	.
새콩	*Amphicarpaea edgeworthii* var. *trisperma* OHWI	Th	O	O	O	O	O	O	O

국명	학명	생활형	St.A	St.B	St.C	St.D	St.E	St.F	St.G
땅비싸리	*Indigofera kirilowii* MAX.	N	O	.	.	.	.	.	.
등	*Wistaria floribunda* A.P. DC.	M	.	O	.	.	.	.	.
아까시나무	*Robinia pseudo-acacia* L.	M	O	O	O	O	O	O	O
족제비싸리	*Amorpha fruticosa* L.	N귀	O	O	O	O	O	O	O
자운영	*Astragalus sinicus* L.	H	O	O	O	.	O	O	.
붉은토끼풀	*Trifolium pratense* L.	CH	O	.	O	.	O	.	O
토끼풀	*Trifolium repens* L.	CH	O	O	O	O	O	O	O
잔개자리	*Medicago lupulina* L.	Th	.	.	O	O	O	O	.
괭이밥과 (Oxalidaceae)									
괭이밥	*Oxalis corniculata* L.	G	O	O	.	.	O	.	.
운향과 (Rutaceae)									
산초나무	*Zanthoxylum schinifolium* S. et Z.	N	O	.	O	.	.	.	.
소태나무과 (Simaroubaceae)									
가죽나무	*Ailanthus altissima* SWINGLE	M	O	O	O	O	O	O	O
옻나무과 (Anacardiaceae)									
붉나무(오배자나무)	*Rhus chinensis* MILL.	N	O	.	O	.	.	.	.
개옻나무	*Rhus trichocarpa* MIQ.	N	.	O	.	.	.	.	.
포도과 (Vitaceae)									
개머루	*Ampelopsis brevipedunculata* var. *heterophylla* HARA	M	O	O	.	.	.	.	.
담쟁이덩굴	*Parthenocissus tricuspidata* (S. ET Z.) PLANCH.	M	O	.	O	O	O	O	.
까마귀머루	*Vitis thunbergii* var. *sinuata* REHDER	M	O	.	.	.	.	.	.
제비꽃과 (Violaceae)									
제비꽃	*Viola mandshurica* W. BECKER	H	O	O	O	O	O	O	O

국명	학명	생활형	St.A	St.B	St.C	St.D	St.E	St.F	St.G
마름과 (Hydrocaryaceae)									
애기마름	*Trapa pseudo-incisa* S. et Z.	HH	O	O	O	O	O	O	O
마름	*Trapa japonica* FLEROV.	HH	O	.	.	.	.	.	.
바늘꽃과 (Onagraceae)									
달맞이꽃	*Oenothera odorata* JACQ.	H	O	O	O	O	O	O	O
큰달맞이꽃	*Oenothera lamarckiana* SER.	H	O	O	O	O	O	O	O
개미탑과 (Halorrhagaceae)									
물수세미	*Myriophyllum verticillatum* L.	HH	O	.	.	.	.	.	.
산형과 (Umbelliferae)									
사상자	*Torilis japonica* (HOUTT.) DC.	H	O	.	O	O	.	.	.
미나리	*Oenanthe javanica* (BL.) DC.	H	O	O	O	O	O	O	O
물푸레나무과 (Oleaceae)									
쥐똥나무	*Ligustrum obtusifolium* S. et Z.	N	O	O	.	.	.	.	.
박주가리과 (Asclepiadaceae)									
박주가리	*Metaplexis japonica* (THUNB.) MAKINO	G	O	O	O	O	O	O	O
마편초과 (Verbenaceae)									
작살나무	*Callicarpa japonica* THUNB.	N	O	O	.	.	.	O	.
메꽃과 (Convolvulaceae)									
메꽃	*Calystegia japonica* CHOIS.	H	O	.	.	.	.	.	.
새삼	*Cuscuta japonica* CHOIS.	TH	O	.	.	.	.	.	.
꿀풀과 (Labiatae)									
익모초	*Leonurus sibiricus* L.	Th	O	O	.	.	.	.	O
배암차즈기	*Salvia plebeia* R. BR.	H	O	O	.	O	.	.	.

국명	학명	생활형	St.A	St.B	St.C	St.D	St.E	St.F	St.G
들깨풀	*Mosla punctulata* NAKAI	Th	O	O	.	.	.	.	.
석잠풀	*Stachys riederi* var. *japonica* MIQ.	H	O	O	O	O	O	O	O
가지과 (Solanaceae)									
까마중(까마종이)	*Solanum nigrum* L.	Th	O	.	.	.	.	.	.
현삼과 (Scrophulariaceae)									
오동	*Paulownia coreana* UYEKI	M	O	O	.	O	O	O	O
선개불알풀	*Veronica arvensis* L.	Th	O	O	O	O	O	O	O
큰개불알풀	*Veronica persica* POIR.	Th	O	O	O	O	O	O	O
질경이과 (Plantaginaceae)									
질경이	*Plantago asiatica* L.	H	O	O	O	O	O	O	O
꼭두서니과 (Rubiaceae)									
꼭두서니	*Rubia akane* NAKAI	G	O	O	O	O	.	.	.
갈퀴덩굴	*Galium spurium* L.	Th	O	.	.	.	.	.	O
큰잎갈퀴	*Galium dahuricum* TURCZ.	Th	O	O	O	O	O	O	O
국화과 (Compositae)									
도꼬마리	*Manthium strumarium* L.	Th	O	.	.	.	.	.	.
한련초	*Eclipta prostrata* L.	Th	O	.	.	.	.	.	.
돼지풀	*Ambrosia artemisiifolia* var. *elatior* DESCOURTILS	Th	O	O	O	O	O	O	O
단풍잎돼지풀	*Ambrosia trifida* L.	Th	.	.	.	.	.	O	.
개망초	*Erigeron annuus* (L.) PERS.	Th	O	O	O	O	O	O	O
망초	*Erigeron canadensis* L.	Th	O	O	O	O	O	O	O
사철쑥	*Artemisia capillaris* THUNB.	H	O	O	.	O	.	.	O
물쑥	*Artemisia selengensis* TURCZ.	H	O	O	O	O	O	O	O

국명	학명	생활형	St.A	St.B	St.C	St.D	St.E	St.F	St.G
쑥	*Artemisia princeps* var. *orientalis* (PAMPAN.) HARA	H	O	O	O	O	O	O	O
미국가막사리	*Bidens frondosa* L.	Th	O	O	O	O	O	O	O
도깨비바늘	*Bidens bipinnata* L.	Th	O	O	O	O	.	O	O
코스모스	*Cosmos bipinnatus* CAV.	Th	O	O	O	O	O	O	O
서양민들레	*Taraxacum officinale* WEBER	H	O	O	O	O	O	O	O
씀바귀	*Ixeris dentata* (THUNB.) NAKAI	H	O	.	O	O	.	.	O
왕고들빼기	*Lactuca indica* var. *laciniata* (O. KUNTZE) HARA	Th	O	O	O	O	O	O	O
엉겅퀴	*Cirsium japonicum* var. *ussuriense* KITAMURA	G	O	.	O	.	.	.	.
큰방가지똥	*Sonchus asper* HILL	Th	O	O	O	.	O	.	O
방가지똥	*Sonchus oleraceus* L.	Th	O	O	.	.	O	O	O
고들빼기	*Youngia sonchifolia* MAX.	Th	O	O	.	.	.	O	O
뽀리뱅이	*Youngia japonica* DC.	Th	O	O	O	O	.	O	.

생활형 - M : 대형지상식물, N : 소형지상식물, E : 착생식물, G : 지중식물, CH : 지표식물, H : 반지중식물, HH : 수생식물, Th : 일년생식물

주) St. A : 금강본류, St. B : 논산천, St. C : 강경천, St. D : 노성천, St.E : 미호천, St. F : 갑천, St. G : 유등천

< 부록 표 1 - 2 >금강본류지역의 부착조류 종조성 및 채집개체수

조사지점 / 학 명	St.1	St.2	St.3	St.4
Class CYANOPHYCEAE (남조강)				
Order CHROOCOCCALES				
Family Chroococcaceae				
Microcystis aeruginosa Kutzing	324	570		351
Chroococcus minutus Nageli		153	125	
Order NOSTOCALES				
Family Oscillatoriaceae				
Spirulina laxa G. M. Smith		125		552
Oscillatoria princeps Vaucher	524	514	386	
Lyngbya contorta Lemmermann	335	824	894	1241
Class BACILLARIOPHYCEAE (규조강)				
Order CENTALES				
Family Thalassirosiraceae				
Auacoseira granlata (Ehrenberg) Simonsen	975	3524	981	1555
Cyclostephanos dubius (Fricke) Round	1598	1285	1524	1952
Cyclotella cornata (Ehrenberg) Kutzing	881		852	741
Cyclotella meneghiniana Kutzing	1549	2984	1248	1823
Family Melosiraceae				
Melosira varians Agardh	1781	3948	4121	1987
Order PENNALES				
Family Diastomaceae				
Asterionella formosa Hassel	524	354	287	198
Synedra acus Kutzing	3987	3854	2854	1127
Synedra delicatissima var. *angustissima* Grunow	1756	2081	1274	2151
Synedra inaequalis H. Kobayasi	1875	2185	1089	1897
Synedra ulna Ehrenberg	1269	1945	859	1845
Family Achnanthaceae				
Achanthes laevis Qstrrup	157		187	
Family Naviculaceae				
Caloneis silicula (Ehrenberg) Cleve	754	954	589	812
Cymbella affinis Kutzing	2895	2461	1298	2987
Cymbella japonica Reichelt	924	1284	452	824
Cymbella tumida (Brebisson) H.	2256	5127	981	2589
Gomphonema clevei Fricke	259	123	197	182
Gomphonema parvalum Kutzing	1482	3187	1268	1028
Gomphonema quadripunctatum Q. W.	812	495	224	645
Navicula bacillum Ehrenberg	2954	2014	2914	2931
Navicula cuspidata Kutzing	1825	2845	1284	1958
Navicula pseudolanceolata L.-B.	587	427	189	754
Naviacula viridula var. *rostellata* C.	1954	4879	2089	3946
Stauroneis acuta W. Smith	1852	1745	859	1258
Family Nitzschiaceae				
Nitzschia gessneri Hustedt	394	510	289	347
Nitzschia palea W. Smith	4987	7154	4198	4764
Family Surirellaceae				
Surirella splendida (E.) K.	489	1958	1278	1567
Surirella tenera Grunow		258	569	159

(계속)

건설교통부

조사지점 / 학 명	St.1	St.2	St.3	St.4
Class EUGLENOPHYCEAE (유글레나강)				
Order EUGLENLES				
Family Euglenaceae				
Euglena oxyuris Schmarda	269	147	158	278
Euglena viridis Ehrenberg	746	498	394	124
Trachelomonas similis Stokes	1345	264	987	
Class CHLOROPHYCEAE (녹조강)				
Order VOLVOCALES				
Family Volvocaceae				
Eudoria elegans Ehrenberg	2897	1945	3578	4512
Order TETRASPORALES				
Family Palmellaceae				
Gloeocystis vesiculosa Nageli	574	845		745
Asterococcus superbus (C.) S.	246	312	154	394
Order CHAETOPHORALES				
Family Trentepohliaceae				
Cephaleuros virescns Kunze	185	145	385	187
Order CHLOROCOCCALES				
Family Oocystaceae				
Westella botryoides (W.) W.	785	158	482	
Family Hydrodictyacea				
Pediastrum biwae Negoro	1276	1448	1139	1287
Pediastrum boryanum (T.) M.	1298	1745	3924	1589
Pediastrum boryanum var. *longicorne* Raciborski	295	285	459	754
Pediastrum duplex var. *rotundatum* Lucks	425	485	876	874
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	512	486	812	721
Family Scenedesmaceae				
Scenedesmus acuminatus (L.) Chodat	552	952	247	1854
Scenedesmus bernardii G.M. Smith	812	1189	812	733
Scenedesmus ellipsoideus Chodat	287	159	753	158
Scenedesmus opoliensis Richter	258	295	328	418
Scenedesmus tibiscensis Uherkovich	298	389	278	618
Order ZYGNEMATALES				
Family Zygnemataceae				
Mougeotia parvula Hassall	389	265	185	254
Spirogyra sp. (영양세포)	159	141	162	174
Family Desmidiaceae				
Clostrium gracile Brebisson	158		257	157
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West	184		152	213
Cosmarium pachydermum Lundell	215	197	338	158
Cosmarium suberenatum Hantzsch	358	195		198
Staurastrum gracile Ralfs	358	214	199	98
Staurastrum tetracerum var. *subexcavatum* Gronblad	597		458	187
Hyalotheca dissiliens (Smith) Brebisson	288	511	535	
출현종수	56	54	55	52
현존량	57725	73037	53411	60856

(계속)

학 명 \ 조사지점	St.5	St.6	St.7	St.8
Class CYANOPHYCEAE (남조강)				
Order CHROOCOCCALES				
Family Chroococcaceae				
Microcystis aeruginosa Kutzing		612	534	628
Chroococcus minutus Nageli	141	224	191	124
Order NOSTOCALES				
Family Oscillatoriaceae				
Spirulina laxa G. M. Smith		328	256	285
Oscillatoria princeps Vaucher	154	712	341	
Lyngbya contorta Lemmermann	877	1124	259	845
Class BACILLARIOPHYCEAE (규조강)				
Order CENTALES				
Family Thalassirosiraceae				
Auacoseira granlata (Ehrenberg) Simonsen	3978	4312	2567	2945
Cyclostephanos dubius (Fricke) Round	3231	1241		2541
Cyclotella cornata (Ehrenberg) Kutzing	821	755	814	
Cyclotella meneghiniana Kutzing	2254	1718	2487	1952
Family Melosiraceae				
Melosira varians Agardh	2784	2548		2856
Order PENNALES				
Family Diastomaceae				
Asterionella formosa Hassel	412	324	241	
Synedra acus Kutzing	2197	3123	8547	7458
Synedra delicatissima var. *angustissima* G.	1857	1651	1852	5241
Synedra inaequalis H. Kobayasi	1285		568	1478
Synedra ulna Ehrenberg	756	851	385	
Family Achnanthaceae				
Achanthes laevis Qstrrup	119		258	
Family Naviculaceae				
Caloneis silicula (Ehrenberg) Cleve	894	1284	854	1427
Cymbella affinis Kutzing	1923	2781	3257	2587
Cymbella japonica Reichelt	1854	541	9853	
Cymbella tumida (Brebisson) H.	856	2978	2587	4859
Gomphonema clevei Fricke	145	218	295	185
Gomphonema parvalum Kutzing	1982	1258	2134	3015
Gomphonema quadripunctatum Q. W.	1012	385	396	529
Navicula bacillum Ehrenberg	1012	1157	2894	1952
Navicula cuspidata Kutzing	2546	3487	754	3241
Navicula pseudolanceolata L.-B.	1098	1850	512	
Naviacula viridula var. *rostellata* C.	1456	1247	2578	5163
Stauroneis acuta W. Smith	897	810	1476	
Family Nitzschiaceae				
Nitzschia gessneri Hustedt	258	254	289	245
Nitzschia palea W. Smith	4576	2117	4852	6057
Family Surirellaceae				
Surirella splendida (E.) K.	654	2159	526	2089
Surirella tenera Grunow	412	524		945

(계속)

건설교통부

조사지점 / 학 명	St.5	St.6	St.7	St.8
Class EUGLENOPHYCEAE (유글레나강)				
Order EUGLENLES				
Family Euglenaceae				
Euglena oxyuris Schmarda	341	264	218	95
Euglena viridis Ehrenberg		158	257	189
Trachelomonas similis Stokes	178	852	924	248
Class CHLOROPHYCEAE (녹조강)				
Order VOLVOCALES				
Family Volvocaceae				
Eudoria elegans Ehrenberg	6748	4821	1859	2854
Order TETRASPORALES				
Family Palmellaceae				
Gloeocystis vesiculosa Nageli	741	395	473	211
Asterococcus superbus (C.) S.	318	197	185	121
Order CHAETOPHORALES				
Family Trentepohliaceae				
Cephaleuros virescns Kunze		195	185	
Order CHLOROCOCCALES				
Family Oocystaceae				
Westella botryoides (W.) W.	175	1544	1854	1674
Family Hydrodictyacea				
Pediastrum biwae Negoro	857	769	1124	1765
Pediastrum boryanum (T.) M.	1284	1546	1854	1475
Pediastrum boryanum var. *longicome* R.	942	741	240	
Pediastrum duplex var. *rotundatum* Lucks	811	925	268	1546
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	543	637	258	485
Family Scenedesmaceae				
Scenedesmus acuminatus (L.) Chodat	1289	1164	485	1025
Scenedesmus bernardii G.M. Smith	569	957		1855
Scenedesmus ellipsoideus Chodat	257	324	148	
Scenedesmus opoliensis Richter	395	342	269	185
Scenedesmus tibiscensis Uherkovich	294	327	308	
Order ZYGNEMATALES				
Family Zygnemataceae				
Mougeotia parvula Hassall	294	159	84	75
Spirogyra sp. (영양세포)	132	152		157
Family Desmidiaceae				
Clostrium gracile Brebisson		254	285	
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West	195	141		857
Cosmarium pachydermum Lundell		179	169	254
Cosmarium suberenatum Hantzsch	258	491		
Staurastrum gracile Ralfs	214	659	254	
Staurastrum tetracerum var. *subexcavatum* Gronblad	543	294	285	185
Hyalotheca dissiliens (Smith) Brebisson	452	109	125	244
출현종수	53	57	52	44
현존량	60271	61169	64668	74147

< 부록 표 1 - 3 > 논산천의 부착조류 종조성 및 채집개체수

조사지점 / 학 명	St.9	St.10	St.11
Class CYANOPHYCEAE (남조강)			
Order CHROOCOCCALES			
Family Chroococcaceae			
Microcystis aeruginosa Kutzing	431	225	243
Chroococcus minutus Nageli	168	175	187
Order NOSTOCALES			
Family Oscillatoriaceae			
Spirulina laxa G. M. Smith	246		
Oscillatoria princeps Vaucher		289	
Lyngbya contorta Lemmermann	1154	1352	249
Class BACILLARIOPHYCEAE (규조강)			
Order CENTALES			
Family Thalassirosiraceae			
Auacoseira granlata (Ehrenberg) Simonsen	2567	2164	3912
Cyclostephanos dubius (Fricke) Round		3195	
Cyclotella cornata (Ehrenberg) Kutzing	814	857	
Cyclotella meneghiniana Kutzing	2487	1524	2158
Family Melosiraceae			
Melosira varians Agardh	2456	1952	
Order PENNALES			
Family Diastomaceae			
Asterionella formosa Hassel	245		341
Synedra acus Kutzing	3652	852	2145
Synedra delicatissima var. *angustissima* Grunow	1876	1625	2185
Synedra inaequalis H. Kobayasi	982	952	
Synedra ulna Ehrenberg	845	524	852
Family Achnanthaceae			
Achanthes laevis Qstrrup	542		117
Family Naviculaceae			
Caloneis silicula (Ehrenberg) Cleve		245	
Cymbella affinis Kutzing	2189	1987	1587
Cymbella japonica Reichelt	259	189	1475
Cymbella tumida (Brebisson) H.	958	3275	1587
Gomphonema clevei Fricke	243	174	215
Gomphonema parvalum Kutzing	1648	981	2078
Gomphonema quadripunctatum Q.	257	812	941
Navicula bacillum Ehrenberg	947	3157	2547
Navicula cuspidata Kutzing	1524	3089	3047
Navicula pseudolanceolata L.-B.	258		
Naviacula viridula var. *rostellata* C.	2419	4187	952
Stauroneis acuta W. Smith	1586	2514	462
Family Nitzschiaceae			
Nitzschia gessneri Hustedt	378	189	254
Nitzschia palea W. Smith	4517	2941	5233
Family Surirellaceae			
Surirella splendida (E.) K.	1457	3157	846
Surirella tenera Grunow	312	157	

(계속)

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학 명 \ 조사지점	St.9	St.10	St.11
Class EUGLENOPHYCEAE (유글레나강)			
Order EUGLENLES			
Family Euglenaceae			
Euglena oxyuris Schmarda	148	135	248
Euglena viridis Ehrenberg	285	193	218
Trachelomonas similis Stokes	859	822	185
Class CHLOROPHYCEAE (녹조강)			
Order VOLVOCALES			
Family Volvocaceae			
Eudoria elegans Ehrenberg	5109	3287	4107
Order TETRASPORALES			
Family Palmellaceae			
Gloeocystis vesiculosa Nageli	418	269	799
Asterococcus superbus (C.) S.		410	276
Order CHAETOPHORALES			
Family Trentepohliaceae			
Cephaleuros virescns Kunze	287	185	493
Order CHLOROCOCCALES			
Family Oocystaceae			
Westella botryoides (W.) W.	1584	2041	
Family Hydrodictyacea			
Pediastrum biwae Negoro	1278	857	
Pediastrum boryanum (T.) M.	495	154	492
Pediastrum boryanum var. *longicome* R.	481	825	997
Pediastrum duplex var. *rotundatum* Lucks	592	512	1014
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	589		428
Family Scenedesmaceae			
Scenedesmus acuminatus (L.) Chodat	256	2056	608
Scenedesmus bernardii G.M. Smith		478	394
Scenedesmus ellipsoideus Chodat	185	92	218
Scenedesmus opoliensis Richter	547	257	392
Scenedesmus tibiscensis Uherkovich		510	487
Order ZYGNEMATALES			
Family Zygnemataceae			
Mougeotia parvula Hassall	88		434
Spirogyra sp. (영양세포)	265		145
Family Desmidiaceae			
Clostrium gracile Brebisson	182	189	238
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West	185	822	185
Cosmarium pachydermum Lundell	312	185	358
Cosmarium suberenatum Hantzsch	285		511
Staurastrum gracile Ralfs		124	
Staurastrum tetracerum var. *subexcavatum* Gronblad	176	365	414
Hyalotheca dissiliens (Smith) Brebisson	485	199	289
출현종수	52	50	45
현존량	52508	57706	47233

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< 부록 표 1 - 4 > 강경천의 부착조류 종조성 및 채집개체수

조사지점 / 학 명	St. 12	St. 13
Class CYANOPHYCEAE (남조강)		
Order CHROOCOCCALES		
Family Chroococcaceae		
Microcystis aeruginosa Kutzing	312	245
Chroococcus minutus Nageli	195	214
Order NOSTOCALES		
Family Oscillatoriaceae		
Spirulina laxa G. M. Smith	248	389
Oscillatoria princeps Vaucher	546	625
Lyngbya contorta Lemmermann	1426	1687
Class BACILLARIOPHYCEAE (규조강)		
Order CENTALES		
Family Thalassirosiraceae		
Auacoseira granlata (Ehrenberg) Simonsen	5147	4120
Cyclostephanos dubius (Fricke) Round	2456	625
Cyclotella cornata (Ehrenberg) Kutzing		
Cyclotella meneghiniana Kutzing		1230
Family Melosiraceae		
Melosira varians Agardh	2241	3102
Order PENNALES		
Family Diastomaceae		
Asterionella formosa Hassel		205
Synedra acus Kutzing	3287	1250
Synedra delicatissima var. *angustissima* Grunow	2364	2150
Synedra inaequalis H. Kobayasi	1243	230
Synedra ulna Ehrenberg	524	854
Family Achnanthaceae		
Achanthes laevis Qstrrup	243	245
Family Naviculaceae		
Caloneis silicula (Ehrenberg) Cleve	152	642
Cymbella affinis Kutzing	2431	2569
Cymbella japonica Reichelt	524	325
Cymbella tumida (Brebisson) H.	2587	3205
Gomphonema clevei Fricke	185	205
Gomphonema parvalum Kutzing	1956	1678
Gomphonema quadripunctatum Q.	287	215
Navicula bacillum Ehrenberg	1532	1236
Navicula cuspidata Kutzing	4175	2078
Navicula pseudolanceolata L.-B.	485	623
Naviacula viridula var. *rostellata* C.	1852	1320
Stauroneis acuta W. Smith		325
Family Nitzschiaceae		
Nitzschia gessneri Hustedt	381	323
Nitzschia palea W. Smith	2174	3462
Family Surirellaceae		
Surirella splendida (E.) K.	1869	1843

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조사지점 / 학 명	St. 12	St. 13
Surirella tenera Grunow		125
Class EUGLENOPHYCEAE (유글레나강)		
Order EUGLENLES		
Family Euglenaceae		
Euglena oxyuris Schmarda	195	
Euglena viridis Ehrenberg	210	201
Trachelomonas similis Stokes	1054	788
Class CHLOROPHYCEAE (녹조강)		
Order VOLVOCALES		
Family Volvocaceae		
Eudoria elegans Ehrenberg	4900	2854
Order TETRASPORALES		
Family Palmellaceae		
Gloeocystis vesiculosa Nageli	284	568
Asterococcus superbus (C.) S.	254	253
Order CHAETOPHORALES		
Family Trentepohliaceae		
Cephaleuros virescns Kunze	851	526
Order CHLOROCOCCALES		
Family Oocystaceae		
Westella botryoides (W.) W.	1850	945
Family Hydrodictyacea		
Pediastrum biwae Negoro	1628	1869
Pediastrum boryanum (T.) M.	2014	459
Pediastrum boryanum var. *longicome* R.	185	203
Pediastrum duplex var. *rotundatum* Lucks	531	859
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	798	1254
Family Scenedesmaceae		
Scenedesmus acuminatus (L.) Chodat	795	958
Scenedesmus bernardii G.M. Smith	894	236
Scenedesmus ellipsoideus Chodat		215
Scenedesmus opoliensis Richter	248	440
Scenedesmus tibiscensis Uherkovich	384	468
Order ZYGNEMATALES		
Family Zygnemataceae		
Mougeotia parvula Hassall	154	85
Spirogyra sp. (영양세포)	124	95
Family Desmidiaceae		
Clostrium gracile Brebisson	155	241
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West		245
Cosmarium pachydermum Lundell	155	164
Cosmarium suberenatum Hantzsch	428	470
Staurastrum gracile Ralfs	396	339
Staurastrum tetracerum var. *subexcavatum* Gronblad	309	246
Hyalotheca dissiliens (Smith) Brebisson	109	168
출현종수	52	57
현존량	59727	52494

< 부록 표 1 - 5 > 노성천의 부착조류 종조성 및 채집개체수

조사지점 / 학 명	St. 14	St. 15
Class CYANOPHYCEAE (남조강)		
Order CHROOCOCCALES		
Family Chroococcaceae		
Microcystis aeruginosa Kutzing	311	288
Chroococcus minutus Nageli	195	356
Order NOSTOCALES		
Family Oscillatoriaceae		
Spirulina laxa G. M. Smith	345	245
Oscillatoria princeps Vaucher	524	611
Lyngbya contorta Lemmermann	1132	1347
Class BACILLARIOPHYCEAE (규조강)		
Order CENTALES		
Family Thalassirosiraceae		
Auacoseira granlata (Ehrenberg) Simonsen	4649	4820
Cyclostephanos dubius (Fricke) Round	1354	622
Cyclotella cornata (Ehrenberg) Kutzing	521	
Cyclotella meneghiniana Kutzing	1645	853
Family Melosiraceae		
Melosira varians Agardh	2641	2972
Order PENNALES		
Family Diastomaceae		
Asterionella formosa Hassel	346	205
Synedra acus Kutzing	2321	1164
Synedra delicatissima var. *angustissima* Grunow	1984	2150
Synedra inaequalis H. Kobayasi	645	230
Synedra ulna Ehrenberg	468	564
Family Achnanthaceae		
Achanthes laevis Qstrrup	267	346
Family Naviculaceae		
Caloneis silicula (Ehrenberg) Cleve	152	642
Cymbella affinis Kutzing	2845	2456
Cymbella japonica Reichelt	265	465
Cymbella tumida (Brebisson) H.	2789	2548
Gomphonema clevei Fricke	265	222
Gomphonema parvalum Kutzing	2462	852
Gomphonema quadripunctatum Q.	220	120
Navicula bacillum Ehrenberg	2251	1026
Navicula cuspidata Kutzing	4652	4120
Navicula pseudolanceolata L.-B.	652	314
Naviacula viridula var. *rostellata* C.	1645	1987
Stauroneis acuta W. Smith		132
Family Nitzschiaceae		
Nitzschia gessneri Hustedt	381	323
Nitzschia palea W. Smith	2210	4150
Family Surirellaceae		
Surirella splendida (E.) K.	1759	1473
Surirella tenera Grunow		

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조사지점 / 학 명	St. 14	St. 15
Class EUGLENOPHYCEAE (유글레나강)		
Order EUGLENLES		
Family Euglenaceae		
Euglena oxyuris Schmarda	245	
Euglena viridis Ehrenberg	256	165
Trachelomonas similis Stokes	1456	487
Class CHLOROPHYCEAE (녹조강)		
Order VOLVOCALES		
Family Volvocaceae		
Eudoria elegans Ehrenberg	4152	2020
Order TETRASPORALES		
Family Palmellaceae		
Gloeocystis vesiculosa Nageli	251	641
Asterococcus superbus (C.) S.	95	
Order CHAETOPHORALES		
Family Trentepohliaceae		
Cephaleuros virescns Kunze	658	859
Order CHLOROCOCCALES		
Family Oocystaceae		
Westella botryoides (W.) W.	1320	356
Family Hydrodictyacea		
Pediastrum biwae Negoro	1354	1425
Pediastrum boryanum (T.) M.	1846	387
Pediastrum boryanum var. *longicome* R.	466	164
Pediastrum duplex var. *rotundatum* Lucks	498	654
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	1126	879
Family Scenedesmaceae		
Scenedesmus acuminatus (L.) Chodat	644	745
Scenedesmus bernardii G.M. Smith	798	188
Scenedesmus ellipsoideus Chodat	220	
Scenedesmus opoliensis Richter	465	103
Scenedesmus tibiscensis Uherkovich	246	552
Order ZYGNEMATALES		
Family Zygnemataceae		
Mougeotia parvula Hassall	168	
Spirogyra sp. (영양세포)	165	186
Family Desmidiaceae		
Clostrium gracile Brebisson	232	312
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West	215	213
Cosmarium pachydermum Lundell	135	161
Cosmarium suberenatum Hantzsch	585	544
Staurastrum gracile Ralfs	466	198
Staurastrum tetracerum var. *subexcavatum* Gronblad	622	379
Hyalotheca dissiliens (Smith) Brebisson	265	144
출현종수	57	53
현존량	60845	49365

< 부록 표 1 - 6 > 미호천의 부착조류 종조성 및 채집개체수

조사지점 / 학 명	St. 16	St. 17	St. 18
Class CYANOPHYCEAE (남조강)			
Order CHROOCOCCALES			
Family Chroococcaceae			
Microcystis aeruginosa Kutzing	236	326	345
Chroococcus minutus Nageli	123	265	294
Order NOSTOCALES			
Family Oscillatoriaceae			
Spirulina laxa G. M. Smith	316	556	
Oscillatoria princeps Vaucher	264	245	210
Lyngbya contorta Lemmermann	1064	852	348
Class BACILLARIOPHYCEAE (규조강)			
Order CENTALES			
Family Thalassirosiraceae			
Auacoseira granlata (Ehrenberg) Simonsen	1564	1895	2144
Cyclostephanos dubius (Fricke) Round	1653	2974	520
Cyclotella cornata (Ehrenberg) Kutzing	623	784	
Cyclotella meneghiniana Kutzing	2157	1654	2297
Family Melosiraceae			
Melosira varians Agardh	6451	5461	2065
Order PENNALES			
Family Diastomaceae			
Asterionella formosa Hassel	228	120	269
Synedra acus Kutzing	3168	685	2985
Synedra delicatissima var. *angustissima* Grunow	2258	1476	2102
Synedra inaequalis H. Kobayasi	965	987	652
Synedra ulna Ehrenberg	754	465	1125
Family Achnanthaceae			
Achanthes laevis Qstrrup	495		132
Family Naviculaceae			
Caloneis silicula (Ehrenberg) Cleve	552	520	
Cymbella affinis Kutzing	2249	1755	1604
Cymbella japonica Reichelt	220	156	1523
Cymbella tumida (Brebisson) H.	1146	3370	1289
Gomphonema clevei Fricke	206	146	164
Gomphonema parvalum Kutzing	1755	1578	1644
Gomphonema quadripunctatum Q.	344	1154	755
Navicula bacillum Ehrenberg	1322	3157	2547
Navicula cuspidata Kutzing	1652	2645	3415
Navicula pseudolanceolata L.-B.	201	230	168
Naviacula viridula var. *rostellata* C.	2203	3198	597
Stauroneis acuta W. Smith	1623	2201	589
Family Nitzschiaceae			
Nitzschia gessneri Hustedt	422	216	207
Nitzschia palea W. Smith	3444	3589	5982
Family Surirellaceae			
Surirella splendida (E.) K.	1025	2846	620
Surirella tenera Grunow	265		316

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조사지점 / 학 명	St. 16	St. 17	St. 18
Class EUGLENOPHYCEAE (유글레나강)			
Order EUGLENLES			
Family Euglenaceae			
Euglena oxyuris Schmarda	123	162	
Euglena viridis Ehrenberg	220	214	411
Trachelomonas similis Stokes	744	1288	109
Class CHLOROPHYCEAE (녹조강)			
Order VOLVOCALES			
Family Volvocaceae			
Eudoria elegans Ehrenberg	4561	2900	5200
Order TETRASPORALES			
Family Palmellaceae			
Gloeocystis vesiculosa Nageli	541	225	598
Asterococcus superbus (C.) S.		333	
Order CHAETOPHORALES			
Family Trentepohliaceae			
Cephaleuros virescns Kunze	465	256	522
Order CHLOROCOCCALES			
Family Oocystaceae			
Westella botryoides (W.) W.	1185	2510	14298
Family Hydrodictyacea			
Pediastrum biwae Negoro	1232	1259	388
Pediastrum boryanum (T.) M.	551	542	465
Pediastrum boryanum var. *longicome* R.	211	455	
Pediastrum duplex var. *rotundatum* Lucks	508	662	850
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	744	855	498
Family Scenedesmaceae			
Scenedesmus acuminatus (L.) Chodat	294	1945	622
Scenedesmus bernardii G.M. Smith	248	513	206
Scenedesmus ellipsoideus Chodat	285	116	85
Scenedesmus opoliensis Richter	346	465	346
Scenedesmus tibiscensis Uherkovich	463	311	265
Order ZYGNEMATALES			
Family Zygnemataceae			
Mougeotia parvula Hassall		346	205
Spirogyra sp. (영양세포)	654	651	198
Family Desmidiaceae			
Clostrium gracile Brebisson	245	247	208
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West	90	552	320
Cosmarium pachydermum Lundell	432	294	316
Cosmarium suberenatum Hantzsch	285		511
Staurastrum gracile Ralfs		132	285
Staurastrum tetracerum var. *subexcavatum* Gronblad	316	488	370
Hyalotheca dissiliens (Smith) Brebisson	574	207	585
출현종수	56	56	53
현존량	56265	63434	64769

< 부록 표 1 - 7 >　　갑천의 부착조류 종조성 및 채집개체수

조사지점 / 학　명	St. 19	St. 20	St. 21
Class CYANOPHYCEAE (남조강)			
Order CHROOCOCCALES			
Family Chroococcaceae			
Microcystis aeruginosa Kutzing	316	455	
Chroococcus minutus Nageli	264	246	266
Order NOSTOCALES			
Family Oscillatoriaceae			
Spirulina laxa G. M. Smith	288	201	165
Oscillatoria princeps Vaucher	225	344	
Lyngbya contorta Lemmermann	1077	866	889
Class BACILLARIOPHYCEAE (규조강)			
Order CENTALES			
Family Thalassirosiraceae			
Auacoseira granlata (Ehrenberg) Simonsen	3956	2265	2645
Cyclostephanos dubius (Fricke) Round	2465	1444	2885
Cyclotella cornata (Ehrenberg) Kutzing	465	758	655
Cyclotella meneghiniana Kutzing	1659	2645	1756
Family Melosiraceae			
Melosira varians Agardh	6895	3466	3655
Order PENNALES			
Family Diastomaceae			
Asterionella formosa Hassel	345	202	455
Synedra acus Kutzing	2674	1254	2098
Synedra delicatissima var. *angustissima* Grunow	1044	1654	1666
Synedra inaequalis H. Kobayasi	651	765	1165
Synedra ulna Ehrenberg	788	465	941
Family Achnanthaceae			
Achanthes laevis Qstrrup	491		117
Family Naviculaceae			
Caloneis silicula (Ehrenberg) Cleve	815	410	437
Cymbella affinis Kutzing	4213	2795	2165
Cymbella japonica Reichelt			1313
Cymbella tumida (Brebisson) H.	1671	2468	1673
Gomphonema clevei Fricke		246	
Gomphonema parvalum Kutzing	2031	812	1564
Gomphonema quadripunctatum Q.	356	678	1124
Navicula bacillum Ehrenberg	813	2648	2688
Navicula cuspidata Kutzing	2495	1945	3548
Navicula pseudolanceolata L.-B.	316	98	
Naviacula viridula var. *rostellata* C.	2918	5123	
Stauroneis acuta W. Smith	1025	3160	745
Family Nitzschiaceae			
Nitzschia gessneri Hustedt	451	123	
Nitzschia palea W. Smith	4123	3120	3455
Family Surirellaceae			
Surirella splendida (E.) K.	2062	2185	491
Surirella tenera Grunow		316	455
Class EUGLENOPHYCEAE (유글레나강)			

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조사지점 / 학 명	St. 19	St. 20	St. 21
Order EUGLENLES			
Family Euglenaceae			
Euglena oxyuris Schmarda	164		241
Euglena viridis Ehrenberg	341	100	185
Trachelomonas similis Stokes	487	1852	
Class CHLOROPHYCEAE (녹조강)			
Order VOLVOCALES			
Family Volvocaceae			
Order TETRASPORALES			
Family Palmellaceae			
Gloeocystis vesiculosa Nageli		316	746
Asterococcus superbus (C.) S.	250	320	
Order CHAETOPHORALES			
Family Trentepohliaceae			
Cephaleuros virescns Kunze	288	210	154
Order CHLOROCOCCALES			
Family Oocystaceae			
Westella botryoides (W.) W.		1859	1053
Family Hydrodictyacea			
Pediastrum biwae Negoro	1853	900	
Pediastrum boryanum (T.) M.	562		398
Pediastrum boryanum var. *longicome* R.	412		105
Pediastrum duplex var. *rotundatum* Lucks	754	550	610
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	620		371
Family Scenedesmaceae			
Scenedesmus acuminatus (L.) Chodat	300	1869	1178
Scenedesmus bernardii G.M. Smith	150	260	289
Scenedesmus ellipsoideus Chodat	220		206
Scenedesmus opoliensis Richter	349	348	346
Scenedesmus tibiscensis Uherkovich		311	588
Order ZYGNEMATALES			
Family Zygnemataceae			
Mougeotia parvula Hassall			461
Spirogyra sp. (영양세포)	645	855	288
Family Desmidiaceae			
Clostrium gracile Brebisson	256	258	320
Eudoria elegans Ehrenberg	5689	4102	3741
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West		454	
Cosmarium pachydermum Lundell	381		349
Cosmarium suberenatum Hantzsch	349		
Staurastrum gracile Ralfs	145		251
Staurastrum tetracerum var. *subexcavatum* Gronblad		300	589
Hyalotheca dissiliens (Smith) Brebisson	349	259	211
출현종수	50	48	48
현존량	61456	58280	51696

환경부

< 부록 표 1 - 8 > 유등천의 부착조류 종조성 및 채집개체수

조사지점 / 학 명	St. 22	St. 23
Class CYANOPHYCEAE (남조강)		
Order CHROOCOCCALES		
Family Chroococcaceae		
Microcystis aeruginosa Kutzing		321
Chroococcus minutus Nageli	264	255
Order NOSTOCALES		
Family Oscillatoriaceae		
Spirulina laxa G. M. Smith	316	422
Oscillatoria princeps Vaucher	644	664
Lyngbya contorta Lemmermann	955	842
Class BACILLARIOPHYCEAE (규조강)		
Order CENTALES		
Family Thalassirosiraceae		
Auacoseira granlata (Ehrenberg) Simonsen	3115	6444
Cyclostephanos dubius (Fricke) Round	1659	489
Cyclotella cornata (Ehrenberg) Kutzing	123	
Cyclotella meneghiniana Kutzing	421	1154
Family Melosiraceae		
Melosira varians Agardh	2845	3256
Order PENNALES		
Family Diastomaceae		
Asterionella formosa Hassel		232
Synedra acus Kutzing	2111	2165
Synedra delicatissima var. *angustissima* Grunow	1602	2413
Synedra inaequalis H. Kobayasi	302	266
Synedra ulna Ehrenberg	612	745
Family Achnanthaceae		
Achanthes laevis Qstrrup	236	
Family Naviculaceae		
Caloneis silicula (Ehrenberg) Cleve	145	
Cymbella affinis Kutzing	2205	2631
Cymbella japonica Reichelt	449	249
Cymbella tumida (Brebisson) H.	2946	2731
Gomphonema clevei Fricke		326
Gomphonema parvalum Kutzing	1246	1198
Gomphonema quadripunctatum Q.	226	211
Navicula bacillum Ehrenberg		1501
Navicula cuspidata Kutzing	3164	1160
Navicula pseudolanceolata L.-B.	316	465
Naviacula viridula var. *rostellata* C.	2485	1652
Stauroneis acuta W. Smith		224
Family Nitzschiaceae		
Nitzschia gessneri Hustedt		278
Nitzschia palea W. Smith	1689	2888
Family Surirellaceae		
Surirella splendida (E.) K.	2649	1542
Surirella tenera Grunow	461	

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조사지점 / 학 명	St. 22	St. 23
Class EUGLENOPHYCEAE (유글레나강)		
Order EUGLENLES		
Family Euglenaceae		
Euglena oxyuris Schmarda	150	126
Euglena viridis Ehrenberg		254
Trachelomonas similis Stokes	1623	956
Class CHLOROPHYCEAE (녹조강)		
Order VOLVOCALES		
Family Volvocaceae		
Eudoria elegans Ehrenberg	4255	3165
Order TETRASPORALES		
Family Palmellaceae		
Gloeocystis vesiculosa Nageli	259	
Asterococcus superbus (C.) S.	305	
Order CHAETOPHORALES		
Family Trentepohliaceae		
Cephaleuros virescns Kunze	799	459
Order CHLOROCOCCALES		
Family Oocystaceae		
Westella botryoides (W.) W.	1490	1430
Family Hydrodictyacea		
Pediastrum biwae Negoro	2410	1622
Pediastrum boryanum (T.) M.	2569	
Pediastrum boryanum var. *longicome* R.	688	455
Pediastrum duplex var. *rotundatum* Lucks	486	785
Pediastrum simplex var. *duodenrium* (Bailey) Rabenhorst	608	1184
Family Scenedesmaceae		
Scenedesmus acuminatus (L.) Chodat		705
Scenedesmus bernardii G.M. Smith	955	522
Scenedesmus ellipsoideus Chodat	223	158
Scenedesmus opoliensis Richter	255	208
Scenedesmus tibiscensis Uherkovich		444
Order ZYGNEMATALES		
Family Zygnemataceae		
Mougeotia parvula Hassall	213	
Spirogyra sp. (영양세포)	95	230
Family Desmidiaceae		
Clostrium gracile Brebisson		355
Cosmarium contractum var. *ellipsoideum* (Elfving) W. et. G. S. West		315
Cosmarium pachydermum Lundell	322	205
Cosmarium suberenatum Hantzsch	512	377
Staurastrum gracile Ralfs	458	288
Staurastrum tetracerum var. *subexcavatum* Gronblad	405	
Hyalotheca dissiliens (Smith) Brebisson	178	133
출현종수	48	50
현존량	52444	51100

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< 부록 표 1 - 9 >　금강 본류의 저서성 대형무척추동물 목록

출 현 종	조 사 지 점							
	St. 1	St. 2	St. 3	St. 4	St. 5	St. 6	St. 7	St. 8
Platyhelminthes 편형동물문								
Turbellaria 와충강								
Tricladida 삼기장목								
Planariidae 플라나리아과								
Phagocata sp. 플라나리아						2		8
Annelida 환형동물문								
Hirudinea 거머리강								
Arhynchobdellidae 턱거머리목								
Hirudinidae 거머리과								
Hirudo nipponica 거머리	2	1	1	3	3	8	6	2
Whitmania pigra 말거머리						1	2	3
Erpobdellidae 돌거머리과								
Erpobdella lineata 돌거머리	1		1					
Mollusca 연체동물문								
Gastropoda 복족강								
Mesogastropoda 중복족목								
Viviparidae 논우렁이과								
Cipangopaludina chinensis malleata 논우렁이						2		
Bithyniidae 쇠우렁이과								
Parafossarulus manchouricus 쇠우렁이	1						3	3
Pleuroceridae 다슬기과								
Semisulcospira forticosta 주름다슬기						2		
Semisulcospira tegulata 좀주름다슬기						1		
Semisulcospira gottschei 곳체다슬기						3		6
Basommatophora 기안목								
Lymnaeidae 물달팽이과								
Lymnaea auricularia 물달팽이	2		4	1	2			14
Austropeplea ollula 애기물달팽이							2	2
Physidae 왼돌이물달팽이과								
Physa acuta 왼돌이물달팽이								
Planorbidae 또아리물달팽이과								
Gyraulus chinensis 또아리물달팽이			3					
Hippeutis cantori 수정또아리물달팽이	2		12					6
Pelecypoda 부족강								
Unionoida 석패목								
Unionidae 석패과								
Unio douglasiae 말조개	2							
Veneroida 백합목								
Corbiculidae 재첩과								
Corbicula fluminea 재첩	1			2	1	4	2	2
Arthropoda 절지동물문								
Crustacea 갑각강								
Isopoda 등각목								
Asellidae 물벌레과								
Asellus sp. 물벌레 sp.						2		
Decapoda 십각목								
Palaemonidae 징거미새우과								
Palaemon paucidens 줄새우	2		2					

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출 현 종	조 사 지 점							
	St. 1	St. 2	St. 3	St. 4	St. 5	St. 6	St. 7	St. 8
Insecta 곤충강								
Ephemeroptera 하루살이목								
Baetidae 꼬마하루살이과								
Baitis thermicus 꼬마하루살이		2	3		1	8	43	
Cloeon dipterum 연못하루살이								2
Ephemerellidae 알락하루살이과								
Uracanthella rufa 등줄하루살이					2		4	1
Ephemerella kozhovi 흰등하루살이						36		
Ephemeridae 하루살이과								
Ephemera orientalis 동양하루살이							2	1
Heptageniidae 납작하루살이과								
Ecdyonurus levis 네점하루살이							23	16
Leptophlebiidae 갈래하루살이과								
Choroterpes altioculus 세갈래하루살이							64	
Potamanthidae 강하루살이과								
Rhoenanthus coreanus 강하루살이						2	6	
Odonata 잠자리목								
Coenagrionoidae 실잠자리과								
Ischnura asiatica 아시아실잠자리	3	1	1	2				1
Cercion calamorum 등검은실잠자리		1						
Cercion hieroglyphicum 등줄실잠자리	1		1	1				1
Platycnemididae 방울실잠자리과								
Platycnemis phillopoda 방울실잠자리				1				
Calopterygidae 물잠자리과								
Calopteryx japonica 물잠자리		1						
Libellulidae 잠자리과								
Orthetrum albistylum speciosum 밀잠자리	1							
Sympetrum pedemontanum elatum 날개띠좀잠자리				1				
Gomphidae 부채장수잠자리과								
Onychogomphus ringens 노란측범잠자리							1	2
Ictinogomphus clavatus 부채장수잠자리							1	
Aeshnidae 왕잠자리과								
Aeshna juncea 별박이왕잠자리	1							
Hemiptera 노린재목								
Gerridae 소금쟁이과								
Aquaris sp. 소금쟁이	4		6	11	2			3
Belostomatidae 물장군과								
Muljarus japonicus 물자라				2				
Nepidae 장구애비과								
Laccotrephes japonensis 장구애비				1				
Megaloptera 뱀잠자리목								
Corydalidae 뱀잠자리과								
Protohermes grandis 뱀잠자리								1
Coleoptera 딱정벌레목								
Hydrophilidae 물땡땡이과								
Helochares striatus 좀물땡땡이	1			2				
Psephenidae 물삿갓벌레과								
Eubrianax KUa 둥근물삿갓벌레 KUa								2

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출 현 종	조 사 지 점							
	St. 1	St. 2	St. 3	St. 4	St. 5	St. 6	St. 7	St. 8
Diptera 파리목								
Tipulidae 각다귀과								
Antocha KUa 명주각다귀 KUa	1						1	
Psychodidae 나방파리과								
Psychoda KUa 나방파리 KUa			1					
Tabamidae 등에과								
Tabanus sp. 등에유충						1		
Chironomidae 깔다구과								
Chironomus sp.1(red type)	3	13					6	4
Chironomus sp.2(white type)	5	3			6	22	14	18
Trichoptera 날도래목								
Hydropsychidae 줄날도래과								
Macronema radiatum 큰줄날도래							7	
Hydropsyche kozhantschikovi 줄날도래					4	1	2	
Hydropsyche orientalis 동양줄날도래							4	
Cheumatopsyche brevilineata 꼬마줄날도래					2			
Cheumatopsyche KUb 꼬마줄날도래 KUb							1	
Limnephilidae 우묵날도래과								
Goera japonica 가시날도래						2		
Apatania KUa 애우묵날도래 KUa						6		
Lepidostomatidae 네모집날도래과								
Goerodes KUa 네모집날도래 KUa						1		
Odontoceridae 바수염날도래과								
Psilotreta kisoensis 바수염날도래						1		
Rhyacophilidae 물날도래과								
Rhyacophila nigrocephala 검은머리물날도래						1		
Glossosomatidae 광택날도래과								
Glossosoma KUa 광택날도래 KUa						1		
과(Family)/아과(Subfamily)	15	6	9	10	9	17/1	14	16/1
종(Species)	17	7	11	11	9	21	20	21
개체수	33	22	35	27	23	107	194	98
총 4문 6강 15목 40과 1아과 52속 58종 539개체								

건설교통부

< 부록 표 1 - 10 > 논산천, 강경천, 노성천 일대의 저서성 대형무척추동물 목록

출 현 종	논산천			강경천		노성천	
	St. 9	St. 10	St. 11	St. 12	St. 13	St. 14	St. 15
Annelida 환형동물문							
Hirudinea 거머리강							
Arhynchobdellidae 턱거머리목							
Hirudinidae 거머리과							
Hirudo nipponica 거머리		3	3	2	1	1	
Whitmania pigra 말거머리			8				
Erpobdellidae 돌거머리과							
Erpobdella lineata 돌거머리	1		1			2	1
Mollusca 연체동물문							
Gastropoda 복족강							
Mesogastropoda 중복족목							
Viviparidae 논우렁이과							
Cipangopaludina chinensis malleata 논우렁이			2				2
Bithyniidae 쇠우렁이과							
Parafossarulus manchouricus 쇠우렁이			1				5
Pleuroceridae 다슬기과							
Semisulcospira forticosta 주름다슬기			3				
Semisulcospira tegulata 좀주름다슬기			2				
Semisulcospira gottschei 곳체다슬기			2				
Basommatophora 기안목							
Lymnaeidae 물달팽이과				2	1	1	3
Lymnaea auricularia 물달팽이			2			3	2
Austropeplea ollula 애기물달팽이	1						
Physidae 왼돌이물달팽이과							
Physa acuta 왼돌이물달팽이			6			6	2
Planorbidae 또아리물달팽이과							
Gyraulus chinensis 또아리물달팽이	1		2	1			
Hippeutis cantori 수정또아리물달팽이	4			2			
Pelecypoda 부족강							
Veneroida 백합목							
Corbiculidae 재첩과							
Corbicula fluminea 재첩		1	2			1	
Arthropoda 절지동물문							
Crustacea 갑각강							
Decapoda 십각목							
Atyidae 새뱅이과							
Caridina denticulata denticulata 새뱅이			2				
Palaemonidae 징거미새우과							
Palaemon paucidens 줄새우	1						
Insecta 곤충강							
Ephemeroptera 하루살이목							
Baetidae 꼬마하루살이과							
Cloeon dipterum 연못하루살이	1		2		23	4	6
Uracanthella rufa 등줄하루살이		5					
Ephemeridae 하루살이과							
Ephemera orientalis 동양하루살이		2	1	2	3		
Odonata 잠자리목							
Coenagrionoidae 실잠자리과							

(계속)

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출 현 종	논산천			강경천		노성천	
	St. 9	St. 10	St. 11	St. 12	St. 13	St. 14	St. 15
Ischnura asiatica 아시아실잠자리	3		1	3	3	1	1
Cercion calamorum 등검은실잠자리			1		1		
Cercion hieroglyphicum 등줄실잠자리	2		2				1
Platycnemididae 방울실잠자리과							
Copera annulata 자실잠자리			1			1	
Libellulidae 잠자리과							
Orthetrum albistylum speciosum 밀잠자리				1			
Gomphidae 부채장수잠자리과							
Onychogomphus ringens 노란측범잠자리			1				
Hemiptera 노린재목							
Gerridae 소금쟁이과							
Aquaris sp. 소금쟁이				8	11	2	
Nepidae 장구애비과							
Laccotrephes japonensis 장구애비			1				
Coleoptera 딱정벌레목							
Dytiscidae 물방개과							
Cybister japonicus 물방개							1
Rhantus pulverosus 애기물방개			1				
Hydrophilidae 물땡땡이과							
Helochares striatus 좀물땡땡이	1		2	1			
Diptera 파리목							
Tipulidae 각다귀과							
Antocha KUa 명주각다귀 KUa							1
Ceratopogonidae 등에모기과							
Ceratopogonidae sp. 등에모기류					2	1	
Chironomidae 깔다구과							
Chironomus sp.1(red type)				6	4		1
Chironomus sp.2(white type)			7	10	2	9	8
Trichoptera 날도래목							
Hydropsychidae 줄날도래과							
Hydropsyche kozhantschikovi 줄날도래		1				2	
Cheumatopsyche brevilineata 꼬마줄날도래							2
Cheumatopsyche KUb 꼬마줄날도래 KUb		1				1	
Limnephilidae 우묵날도래과							
Nothopsyche KUa 갈색우묵날도래 KUa			1				
과(Family)/종(Species)	7/10	5/7	20/26	9/12	8/11	12/15	11/15
개체수	15	13	57	39	51	35	36
논산천	총 3문 5강 11목 23과 28속 31종 85개체						
강경천	총 3문 3강 7목 11과 13속 14종 90개체						
노성천	총 3문 4강 10목 16과 20속 21종 71개체						

(계속)

건설교통부

< 부록 표 1 - 11 > 미호천, 갑천, 유등천 일대의 저서성 대형무척추동물 목록

출 현 종	미호천			갑천			유등천	
	St. 16	St. 17	St. 18	St. 19	St. 20	St. 21	St. 22	St. 23
Platyhelminthes 편형동물문								
Turbellaria 와충강								
Tricladida 삼기장목								
Planariidae 플라나리아과								
Phagocata sp. 플라나리아								16
Annelida 환형동물문								
Oligochaeta 빈모강								
Archioligochaeta 물지렁이목								
Tubificidae 실지렁이과								
Limnodrilus gotoi 실지렁이	16							
Hirudinea 거머리강								
Arhynchobdellidae 턱거머리목								
Hirudinidae 거머리과								
Hirudo nipponica 거머리	1	2	1	11	8	3		2
Whitmania pigra 말거머리	2	1		4		1		
Erpobdellidae 돌거머리과								
Erpobdella lineata 돌거머리						2	1	
Mollusca 연체동물문								
Gastropoda 복족강								
Mesogastropoda 중복족목								
Viviparidae 논우렁이과								
Cipangopaludina chinensis malleata 논우렁이							2	3
Bithyniidae 쇠우렁이과								
Parafossarulus manchouricus 쇠우렁이						168		
Pleuroceridae 다슬기과								
Semisulcospira forticosta 주름다슬기						3		1
Semisulcospira tegulata 좀주름다슬기						8		13
Basommatophora 기안목								
Lymnaeidae 물달팽이과								
Lymnaea auricularia 물달팽이	3	2	6		3	34	4	2
Austropeplea ollula 애기물달팽이	1					3		
Physidae 왼돌이물달팽이과								
Physa acuta 왼돌이물달팽이	4	3		3	2	1	3	
Planorbidae 또아리물달팽이과								
Gyraulus chinensis 또아리물달팽이				1				
Polypylis hemisphaerula 배꼽또아리물달팽이	1							
Hippeutis cantori 수정또아리물달팽이						1		
Pelecypoda 부족강								
Unionoida 석패목								
Unionidae 석패과								
Unio douglasiae 말조개						3		
Unio douglasiae sinuolatus 작은말조개						1		
Veneroida 백합목								
Corbiculidae 재첩과								
Corbicula fluminea 재첩						16		1
Arthropoda 절지동물문								
Crustacea 갑각강								
Decapoda 십각목								
Atyidae 새뱅이과								

(계속)

건설교통부

출 현 종	미호천			갑천			유등천	
	St. 16	St. 17	St. 18	St. 19	St. 20	St. 21	St. 22	St. 23
Caridina denticulata denticulata 새뱅이						8		3
Palaemonidae 징거미새우과								
Palaemon paucidens 줄새우						64		
Insecta 곤충강								
Ephemeroptera 하루살이목								
Baetidae 꼬마하루살이과								
Baitis thermicus 꼬마하루살이		3	2	6	4	6		32
Cloeon dipterum 연못하루살이	3	2	1	2	1	2		1
Ephemerellidae 알락하루살이과								
Uracanthella rufa 등줄하루살이				2	6	3		18
Ephemerella kozhovi 흰등하루살이								14
Ephemeridae 하루살이과								
Ephemera orientalis 동양하루살이						2		
Heptageniidae 납작하루살이과								
Ecdyonurus levis 네점하루살이				1		38		63
Ecdyonurus kibunensis 두점하루살이						6		
Leptophlebiidae 갈래하루살이과								
Choroterpes altioculus 세갈래하루살이						8		
Potamanthidae 강하루살이과								
Rhoenanthus coreanus 강하루살이						2		3
Odonata 잠자리목								
Coenagrionoidae 실잠자리과								
Ischnura asiatica 아시아실잠자리	1	2	1	2	2	1		
Cercion calamorum 등검은실잠자리				1	1			
Cercion hieroglyphicum 등줄실잠자리	1			1			1	
Platycnemididae 방울실잠자리과								
Copera annulata 자실잠자리	1				1	1		
Calopterygidae 물잠자리과								
Calopteryx japonica 물잠자리						1		1
Libellulidae 잠자리과								
Orthetrum albistylum speciosum 밀잠자리	8	2	1		1			
Sympetrum pedemontanum elatum 날개띠좀잠자리		2				1		
Gomphidae 부채장수잠자리과								
Onychogomphus ringens 노란측범잠자리						2		
Ictinogomphus clavatus 부채장수잠자리								1
Aeshnidae 왕잠자리과								
Aeshna juncea 별박이왕잠자리	1						1	
Hemiptera 노린재목								
Gerridae 소금쟁이과								
Aquaris sp. 소금쟁이					6	4		
Nepidae 장구애비과								
Laccotrephes japonensis 장구애비				1				
Megaloptera 뱀잠자리목								
Corydalidae 뱀잠자리과								
Protohermes grandis 뱀잠자리						1		
Parachauliodes continentalis 대륙뱀잠자리				1				
Coleoptera 딱정벌레목								
Dytiscidae 물방개과								
Laccophilus difficilis 깨알물방개	1							
Rhantus pulverosus 애기물방개					1			

(계속)

건설교통부

출 현 종	미호천			갑천			유등천	
	St. 16	St. 17	St. 18	St. 19	St. 20	St. 21	St. 22	St. 23
Hydrophilidae 물땡땡이과								
Helochares striatus 좀물땡땡이	1							
Psephenidae 물삿갓벌레과								
Eubrianax KUa 둥근물삿갓벌레 KUa								23
Diptera 파리목								
Psychodidae 나방파리과								
Psychoda KUa 나방파리 KUa	1							
Culicidae sp. 모기과 sp.			3					
Chironomidae 깔다구과								
Chironomus sp.1(red type)	34	4	2	83				
Chironomus sp.2(white type)		24		62	11	16		12
Trichoptera 날도래목								
Hydropsychidae 줄날도래과								
Macronema radiatum 큰줄날도래				2				48
Hydropsyche kozhantschikovi 줄날도래			1	2		3		
Hydropsyche orientalis 동양줄날도래								2
Limnephilidae 우묵날도래과								
Goera japonica 가시날도래						2		2
Apatania KUa 애우묵날도래 KUa						1		
Glossosomatidae 광택날도래과								
Glossosoma KUa 광택날도래 KUa						2		
과(Family)/아과(Subfamily)	14/17	7/11	8/9	11/17	11/13	28/35	6/6	16/1/2 1
개체수	80	47	18	185	47	418	11	261
미호천	총 3문 4강 8목 16과 21속 22종 145개체							
갑천	총 3문 5강 13목 29과 39속 44종 650개체							
유등천	총 4문 6강 11목 19과 1아과 24속 25종 272개체							

건설교통부

< 부록 표 1 - 12 >　금강본류의 조사지점별 어류 분포목록

출 현 종	조 사 지 점							
	St.1	St.2	St.3	St.4	St.5	St.6	St.7	St.8
Cyprinidae 잉어과								
Cyprinus carpio 잉어	4	1						
Carassius auratus 붕어	30	19	2	4	7	2		3
Acheilognathus intermedia 납자루			29	18	3	6	11	121
Acheilognathus rhombeus 납지리						5		
**Acanthorhodeus gracilis* 가시납지리		9		3	1		16	8
Acanthorhodeus macropterus 큰납지리		11		1	10			
Pseudorasbora parva 참붕어	64	38	3	9	15			24
Pungtungia herzi 돌고기					22	26		38
**Squalidus japonicus coreanus*몰개		53	13	26	61		123	2
Gnathopogon strigatus 줄몰개						1		
Hemibarbus longirostris 참마자			16	8	2	43		5
Hemibarbus labeo 누치	24	6	17	15	8	3		7
**Sarcocheilichthys variegatus wakiyae* 참중고기						4		
**Microphysogobio yaluensis* 돌마자				1		9		
**Microphysogobio tungtingensis* 둥경모치	1	6						
Pseudogobio esocinus 모래무지		3	20	16		33		
Opsariichthys bidens 끄리		24	98	53	1	2		1
**Hemiculter eigenmanni* 치리	15	136	32	18	11			
Zacco platypus 피라미	6		51	49	58	215	64	213
Cobitidae 미꾸리과								
Misgurnus anguillicaudatus 미꾸리	1		1					3
**Iksookimia koreensis* 참종개							7	2
Bagridae 동자개과								
Pseudobagrus fulvidraco 동자개		5						2
Centropomidae 꺽지과								
**Coreoperca herzi* 꺽지								2
Adrianichthyidae 송사리과								
Oryzias sinensis 대륙송사리	21							
Odontobutidae 동사리과								
**Odontobutis platycephala* 동사리				1				1
Mugilidae 숭어과								
Mugil cephalus 숭어	138	78						
Gobiidae 망둑어과								
Rhinogobius brunneus 밀어				1	5	16	186	8
Rhinogobius giurinus 갈문망둑	6					22		
Tridentiger obscurus 검정망둑	1				2	38		
과(Family)	5	3	2	3	2	2	3	6
종 수(Species)	12	13	11	15	14	15	6	16

* : 한국특산종

건설교통부

< 부록 표 1 - 13 > 논산천, 강경천, 노성천의 조사지점별 어류 분포 목록

출 현 종	논산천			강경천		노성천	
	St. 9	St. 10	St.11	St.12	St.13	St.14	St.15
Cyprinidae 잉어과							
Cyprinus carpio 잉어	1			1			
Carassius auratus 붕어	24	23	15	6	9	24	1
Acheilognathus intermedia 납자루	1	8	3	1	2	1	3
Acheilognathus rhombeus 납지리	4	1	2	6		4	16
**Acanthorhodeus gracilis* 가시납지리		4					
**Rhodeus uyekii* 각시붕어					6	1	3
Rhodeus notatus 떡납줄갱이					15	5	1
Pseudorasbora parva 참붕어	36	15	16	86	22	69	26
Pungtungia herzi 돌고기			18				
**Squalidus gracilis majimae* 긴몰개	7	13	84	3	26	4	32
Hemibarbus longirostris 참마자			1				
Hemibarbus labeo 누치	3		2	6	1		
**Sarocheilichthys variegatus wakiyae* 참중고기						7	
**Microphysogobio yaluensis* 돌마자		2		1	4	6	
**Microphysogobio tungtingensis* 둥경모치						5	7
Pseudogobio esocinus 모래무지		6	1	9	8	20	42
Opsariichthys bidens 끄리	1						
**Hemiculter eigenmanni* 치리	2						
Zacco platypus 피라미	59	139	126	53	59	36	67
Cobitidae 미꾸리과							
Misgurnus anguillicaudatus 미꾸리		2		1	2		
Bagridae 동자개과							
Pseudobagrus fulvidraco 동자개		1				1	
Odontobutidae 동사리과							
**Odontobutis platycephala* 동사리		2					
Mugilidae 숭어과							
Mugil cephalus 숭어	3			8	4		
Gobiidae 망둑어과							
Rhinogobius brunneus 밀어		19		4	11	6	
Rhinogobius giurinus 갈문망둑			2				
Tridentiger brevispinis 민물검정망둑			1				
과(Family)	2	5	2	4	4	4	1
종 수(Species)	11	13	12	13	13	14	10
조사하천별 과/종	6/22			4/15		3/14	

* : 한국특산종

건설교통부

< 부록 표 1 - 14 > 미호천, 갑천, 유등천의 조사지점별 어류 분포 목록

출 현 종	미호천			갑 천			유등천	
	St. 16	St. 17	St. 18	St. 19	St. 20	St. 21	St. 22	St. 23
Cyprinidae 잉어과								
Carassius auratus 붕어	28	4	6	5	8	2	3	6
Acheilognathus intermedia 납자루			2	1	32	9	2	8
Acheilognathus rhombeus 납지리								
**Acanthorhodeus gracilis* 가시납지리				7	3		1	3
Acanthorhodeus macropterus 큰납지리								
Rhodeus ocellatus 흰줄납줄개	2		1					
**Rhodeus uyekii* 각시붕어						4		2
Rhodeus notatus 떡납줄갱이						3		
Pseudorasbora parva 참붕어	11	15	18	18	65	4	3	
Pungtungia herzi 돌고기								116
**Coreoleuciscus splendidus* 쉬리								16
**Squalidus japonicus coreanus* 몰개		4			1	2		
Gnathopogon strigatus 줄몰개	6		2	3	3		2	
**Squalidus gracilis majimae* 긴몰개		154					19	32
Hemibarbus longirostris 참마자			6					
Hemibarbus labeo 누치				1	18			
**Microphysogobio yaluensis* 돌마자	8		4			8	1	29
Pseudogobio esocinus 모래무지	7	6	6				7	4
Opsariichthys bidens 끄리	1			1				
Zacco platypus 피라미	48	2	64	55	63	434	48	38
Cobitidae 미꾸리과								
Misgurnus anguillicaudatus 미꾸리		1					1	
Misgurnus mizolepis 미꾸라지		1						
**Iksookimia koreensis* 참종개								3
Bagridae 동자개과								
**Pseudobagrus koreanus* 눈동자개			1					
Centropomidae 꺽지과								
**Coreoperca herzi* 꺽지								4
Odontobutidae 동사리과								
**Odontobutis platycephala* 동사리								1
**Odontobutis interrupta* 얼룩동사리			1					
Gobiidae 망둑어과								
Rhinogobius brunneus 밀어		3	4	32	258	218		164
과(Family)	1	3	4	2	2	2	5	
종 수(Species)	8	9	12	9	9	10	14	
	5/17			2/13			5/17	

* : 한국특산종

건설교통부

3.0 수질예측모형 입.출력 자료

건설교통부

■ 수질예측 IN-PUT DATA (2005년)

```
TITLE01          Calibration for Kum River 2005 Annual
TITLE02          WATER QUALITY SIMULATION
TITLE03  NO      CONSERVATIVE MINERAL  I
TITLE04  NO      CONSERVATIVE MINERAL  II
TITLE05  NO      CONSERVATIVE MINERAL III
TITLE06  NO      TEMPERATURE
TITLE07  YES         5-DAY BIOCHEMICAL OXYGEN
DEMAND IN MG/L
TITLE08  NO      ALGAE AS CHL-A IN UG/L
TITLE09  NO      PHOSPHORUS CYCLE AS P IN MG/L
TITLE10           (ORGANIC-P; DISSOLVED-P)
TITLE11  NO      NITROGEN CYCLE AS N IN MG/L
TITLE12                  (ORGANIC-N; AMMONIA-N;
NITRITE-N; NITRATE-N)
TITLE13  YES     DISSOLVED OXYGEN IN MG/L
TITLE14  NO      FECAL COLIFORMS IN NO./100 ML
TITLE15  N0      ARBITRARY NON-CONSERVATIVE
ENDTITLE
LIST DATA INPUT
NO WRITE OPTIONAL SUMMARY
NO FLOW AUGMENTATION
STEADY STATE
TRAPEZOIDAL CHANNELS
PRINT LCD/SOLAR DATA
PLOT DO AND BOD
FIXED DNSTM CONC (YES=1)=      1.0          5D-ULT
BOD CONV RATE COEF     0.30
INPUT METRIC (YES=1)   =       1            OUTPUT
METRIC (YES=1)   =     1
NUMBER OF REACHES      =       17           NUMBER
OF JUNCTIONS     =     0
NUM OF HEADWATERS      =       1            NUMBER
OF POINT LOADS   =     8
TIME STEP (HOURS)      =       0.1          LNTH
COMP ELEMENT (DX)=     0.5
MAXIMUM ITERATIONS     =       100          TIME
INC. FOR RPT2 (HRS)=
LATITUDE OF BASIN (DEG)   =                 37.45
LONGITUDE OF BASIN (DEG)=    128.54
STANDARD MERIDIAN (DEG) =    135.0          DAY OF
YEAR START TIME  =     0.0
EVAP. COEFF. (AE)      = 0.0000062          EVAP. COEFF.
(BE)     = 0.0000055
ELEV. OF BASIN (ELEV)  =     80.0           DUST
ATTENUATION COEFF. =   0.13
ENDATA1
O UPTAKE BY NH3 OXID(MG O/MG N)=   0.0  O UPTAKE
BY NO2 OXID(MG O/MG N)=    0.0
O PROD BY ALGAE (MG N/MG A)  =   0.0  O UPTAKE
BY ALGAE (MG O/MG A)  =    0.0
N CONTENT OF ALGAE (MG N/MG A) =   0.000   P
CONTENT OF ALGAE (MG P/MG A) =  0.000
ALG MAX SPEC GROWTH RATE(1/DAY)=   0.00  ALGAE
RESPIRATION RATE (1/DAY) =   0.00
N HALF SATURATION CONST (MG/L) =   0.0   P HALF
SATURATION CONST (MG/L)=   0.00
LIN ALG SHADE CO (1/H-UGCHA/L) = 0.0000  NLIN SHADE
(1/H-(UGCHA/L)**2/3)=  0.000
LIGHT FUNCTION OPTION (LFNOPT) =       0   LIGHT
SATURATION COEF (INT/MIN)=     0
DAILY AVERAGING OPTION (LAVOPT)=       0   LIGHT
AVERAGING FACTOR (AFACT) =     0
NUMBER OF DAYLIGHT HOURS (DLH) =       0   TOTAL
DAILY SOLAR RADTN (INT)  =     0
ALGY GROWTH CALC OPTION(LGROPT0=       0   ALGAR
PREF FOR NH3-N (PREFN)   =     0
ALG/TEMP SOLR RAD FACTOR(TFACT)=               0
NITRIFICATION INHIBITION COEF  =   0.0
ENDATA1A
THETA    BOD DECA    1.067
THETA    BOD SETT    1.024
THETA    OXY TRAN    1.024
THETA    SOD RATE    1.054
THETA    ORGN DEC    1.024
THETA    NH3 DECA    1.021
THETA    NH3 SRCE    1.024
THETA    NO2 DECA    1.024
THETA    PORG DEC    1.021
THETA    PORG SET    1.024
THETA    DISP SRC    1.024
THETA    ALG GROW    1.021
THETA    ALG RESP    1.024
THETA    ALG SETT    1.124
THETA    COLI DEC    1.021
THETA    ANC DECA    1.000
THETA    ANC SETT    1.024
THETA    ANC SRCE    1.000
ENDATA1B
STREAM REACH      1.0RCH= 대청댐-갑천합류      FROM
 114.5   TO      108.5
STREAM REACH      2.0RCH= 갑천합류-댓골        FROM
 108.5   TO      104.5
STREAM REACH      3.0RCH= 댓골-부용면          FROM
 104.5   TO      96.0
STREAM REACH      4.0RCH= 부용면-미호천합류    FROM
 96.0    TO      91.0
STREAM REACH      5.0RCH= 미호천합류-대평리    FROM
 91.0    TO      85.0
STREAM REACH      6.0RCH= 대평리-마어구        FROM
 85.0    TO      76.5
STREAM REACH      7.0RCH= 마어구-금강교        FROM
 76.5    TO      67.0
STREAM REACH      8.0RCH= 금강교-옥성리        FROM
 67.0    TO      62.0
STREAM REACH      9.0RCH= 옥성리-어천리        FROM
 62.0    TO      54.5
STREAM REACH      10.0RCH= 어천리-온미들       FROM
 54.5    TO      44.5
STREAM REACH      11.0RCH= 온미들-쌍북리       FROM
 44.5    TO      38.0
STREAM REACH      12.0RCH= 쌍북리-장암면       FROM
 38.0    TO      31.5
STREAM REACH      13.0RCH= 장암면-검신들       FROM
 31.5    TO      25.0
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STREAM REACH      14.0RCH= 검신들-성동면        FROM
  25.0   TO         19.0
STREAM REACH      15.0RCH= 성동면-강경읍        FROM
  19.0   TO         14.5
STREAM REACH      16.0RCH= 강경읍-용두리        FROM
  14.5   TO         8.0
STREAM REACH      17.0RCH= 용두리-양화면        FROM
  8.0    TO         0.0
ENDATA2
ENDATA3
FLAG FIELD RCH=  1.0     12.0      1.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH=  2.0     8.0       6.2.2.2.2.2.2.2.
FLAG   FIELD   RCH=      3.0                   17.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH=  4.0     10.0      2.2.2.2.2.2.2.6.2.
FLAG FIELD RCH=  5.0     12.0      2.2.2.2.2.2.2.2.2.2.2.
FLAG   FIELD   RCH=      6.0                   17.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG   FIELD   RCH=      7.0                   19.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH=  8.0     10.0      6.2.2.2.2.2.2.2.6.
FLAG   FIELD   RCH=      9.0                   15.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG   FIELD   RCH=      10.0                  20.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG   FIELD   RCH=      11.0                  13.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG   FIELD   RCH=      12.0                  13.0
2.2.2.2.2.2.2.2.2.2.6.2.
FLAG   FIELD   RCH=      13.0                  13.0
6.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH= 14.0     12.0      2.2.2.2.2.2.2.2.2.6.
FLAG FIELD RCH= 15.0     9.0       2.6.2.2.2.2.2.2.2.
FLAG   FIELD   RCH=      16.0                  13.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG   FIELD   RCH=      17.0                  15.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.5.
ENDATA4
HYDRAULICS RCH=  1.      150.0     0.67      0.67
152  0.00250     .023
HYDRAULICS RCH=  2.      150.0     0.67      0.67
220  0.00472     .023
HYDRAULICS RCH=  3.      150.0     0.67      0.67
242  0.00370     .023
HYDRAULICS RCH=  4.      150.0     0.67      0.67
220  0.00263     .023
HYDRAULICS RCH=  5.      150.0     0.67      0.67
214  0.00139     .023
HYDRAULICS RCH=  6.      150.0     0.67      0.67
175  0.00333     .023
HYDRAULICS RCH=  7.      150.0     0.67      0.67
150  0.00333     .033
HYDRAULICS RCH=  8.      150.0     0.67      0.67
280  0.00250     .033
HYDRAULICS RCH=  9.      150.0     0.67      0.67
225  0.00472     .033
HYDRAULICS RCH= 10.      150.0     0.67      0.67
210  0.00370     .033
HYDRAULICS RCH= 11.      150.0     0.67      0.67
180  0.00263     .033
HYDRAULICS RCH= 12.      150.0     0.67      0.67
222  0.00139     .033
HYDRAULICS RCH= 13.      150.0     0.67      0.67
504  0.00333     .033
HYDRAULICS RCH= 14.      150.0     0.67      0.67
344  0.00333     .033
HYDRAULICS RCH= 15.      150.0     0.67      0.67
387  0.00250     .033
HYDRAULICS RCH= 16.      150.0     0.67      0.67
432  0.00472     .033
HYDRAULICS RCH= 17.      150.0     0.67      0.67
596  0.00370     .033
ENDATA5
REACT COEF RCH=  1.0  0.040   0.00   0.00 1.0   0.22
REACT COEF RCH=  2.0  0.040   0.00   0.00 1.0   0.23
REACT COEF RCH=  3.0  0.040   0.00   0.00 1.0   0.32
REACT COEF RCH=  4.0  0.040   0.00   0.00 1.0   0.23
REACT COEF RCH=  5.0  0.080   0.00   0.00 1.0   0.23
REACT COEF RCH=  6.0  0.080   0.00   0.82 1.0   1.32
REACT COEF RCH=  7.0  0.080   0.10   0.66 1.0   1.47
REACT COEF RCH=  8.0  0.100   0.10   0.70 1.0   1.55
REACT COEF RCH=  9.0  0.100   0.10   0.55 1.0   1.23
REACT COEF RCH= 10.0  0.110   0.10   0.71 1.0   1.27
REACT COEF RCH= 11.0  0.110   0.10   0.89 1.0   1.29
REACT COEF RCH= 12.0  0.510   0.10   0.86 1.0   2.51
REACT COEF RCH= 13.0  0.630   0.10   0.25 1.0   2.12
REACT COEF RCH= 14.0  0.740   0.10   0.29 1.0   2.15
REACT COEF RCH= 15.0  0.831   0.10   1.74 1.0   2.15
REACT COEF RCH= 16.0  0.931   0.20   1.87 1.0   3.15
REACT COEF RCH= 17.0  0.931   0.20   2.87 1.0   3.15
ENDATA6
ENDATA6A
ENDATA6B
INITIAL COND-1 RCH=  1.0   15.0   9.0   1.6
INITIAL COND-1 RCH=  2.0   15.0   9.0   2.0
INITIAL COND-1 RCH=  3.0   15.0   9.0   3.0
INITIAL COND-1 RCH=  4.0   15.0   9.0   2.0
INITIAL COND-1 RCH=  5.0   15.0   9.0   2.0
INITIAL COND-1 RCH=  6.0   15.0   9.0   3.0
INITIAL COND-1 RCH=  7.0   15.0   9.0   3.0
INITIAL COND-1 RCH=  8.0   15.0   9.0   3.1
INITIAL COND-1 RCH=  9.0   15.0   8.0   4.5
INITIAL COND-1 RCH= 10.0   15.0   8.0   4.5
INITIAL COND-1 RCH= 11.0   15.0   8.0   4.5
INITIAL COND-1 RCH= 12.0   15.0   9.0   4.1
INITIAL COND-1 RCH= 13.0   15.0   8.0   8.5
INITIAL COND-1 RCH= 14.0   15.0   9.0   8.2
INITIAL COND-1 RCH= 15.0   15.0   9.0   8.2
INITIAL COND-1 RCH= 16.0   15.0   9.0   9.2
INITIAL COND-1 RCH= 17.0   12.0   9.0   9.6
ENDATA7
ENDATA7A
INCR INFLOW-1  RCH=  1.0  1.000   18.0   9.9   1.5
INCR INFLOW-1  RCH=  2.0  3.000   16.7   9.2   2.8
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INCR INFLOW-1  RCH=  3.0  3.000   15.7   9.2   1.8
INCR INFLOW-1  RCH=  4.0  2.000   17.7   9.6   1.0
INCR INFLOW-1  RCH=  5.0  4.000   16.7   9.0   1.0
INCR INFLOW-1  RCH=  6.0  2.000   16.7  10.0   1.0
INCR INFLOW-1  RCH=  7.0  4.000   16.7   9.0   1.0
INCR INFLOW-1  RCH=  8.0  4.000   17.3   9.0   1.1
INCR INFLOW-1  RCH=  9.0  3.000   17.7   8.6   1.5
INCR INFLOW-1  RCH= 10.0  2.000   17.7   8.9   1.5
INCR INFLOW-1  RCH= 11.0  2.000   17.7  10.9   1.5
INCR INFLOW-1  RCH= 12.0  2.500   17.3  10.6   1.7
INCR INFLOW-1  RCH= 13.0 18.500   17.7  10.9  26.5
INCR INFLOW-1  RCH= 14.0  8.500   16.3  10.3  16.2
INCR INFLOW-1  RCH= 15.0 15.000   16.3  10.3  16.2
INCR INFLOW-1  RCH= 16.0 15.000   16.3  10.3  16.2
INCR INFLOW-1  RCH= 17.0 15.000   16.0  10.3  16.6
ENDATA8
ENDATA8A
ENDATA9
HEADWTR-1 HDW=  1.0     DAECHUNG-DAM     110.10  15.0
 8.4  1.63
ENDATA10
ENDATA10A
POINT LOAD      1.0      갑  천  0.0   26.80  18.0   8.6 10.20
POINT LOAD      2.0      미호천  0.0   57.30  15.0   9.2  4.60
POINT LOAD      3.0      정안천  0.0    0.70  13.0  10.0  2.20
POINT LOAD      4.0      유구천  0.0   12.20  15.0  10.5  1.80
POINT LOAD      5.0      지  천  0.0    7.20  14.0  11.2  1.70
POINT LOAD      6.0      금  천  0.0    0.80  15.0  10.3  3.20
POINT LOAD      7.0      석성천  0.0    8.20  17.0   9.0  7.50
POINT LOAD      8.0      논산천  0.0   12.80  16.0   9.7  8.50
ENDATA11
ENDATA11A
ENDATA12
DOWNSTREAM BOUNDARY-1      16.0    9.8    4.5
ENDATA13
DOWNSTREAM BOUNDARY-2      40.0    2.2    1.5
ENDATA13A
LOCAL CLIMATOLOGY                          0.5    13.0
   9.6  1012.4    2.85
BEGIN  RCH    1
PLOT   RCH    1    2    3    4    5    6    7    8    9
10   11   12   13   14
           15   16   17
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건설교통부

■ 수질예측 OUT-PUT DATA (2005년)

1	1	15.00	.00	.00	.00	8.40	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3	10	15.00	.00	.00	.00	8.50	3.26	.00			
1	2	15.00	.00	.00	.00	8.40	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3	11	15.00	.00	.00	.00	8.51	3.25	.00			
1	3	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3	12	15.00	.00	.00	.00	8.51	3.25	.00			
1	4	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3	13	15.00	.00	.00	.00	8.51	3.25	.00			
1	5	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3	14	15.00	.00	.00	.00	8.51	3.25	.00			
1	6	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3	15	15.00	.00	.00	.00	8.51	3.25	.00			
1	7	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3	16	15.00	.00	.00	.00	8.52	3.24	.00			
1	8	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3	17	15.00	.00	.00	.00	8.52	3.24	.00			
1	9	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4	1	15.00	.00	.00	.00	8.52	3.24	.00			
1	10	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4	2	15.00	.00	.00	.00	8.52	3.23	.00			
1	11	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4	3	15.00	.00	.00	.00	8.53	3.23	.00			
1	12	15.00	.00	.00	.00	8.43	1.65	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4	4	15.00	.00	.00	.00	8.53	3.23	.00			
2	1	15.00	.00	.00	.00	8.46	3.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4	5	15.00	.00	.00	.00	8.53	3.22	.00			
2	2	15.00	.00	.00	.00	8.47	3.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4	6	15.00	.00	.00	.00	8.53	3.22	.00			
2	3	15.00	.00	.00	.00	8.47	3.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4	7	15.00	.00	.00	.00	8.54	3.22	.00			
2	4	15.00	.00	.00	.00	8.47	3.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4	8	15.00	.00	.00	.00	8.54	3.22	.00			
2	5	15.00	.00	.00	.00	8.47	3.28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4	9	15.00	.00	.00	.00	8.73	3.60	.00			
2	6	15.00	.00	.00	.00	8.48	3.28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4	10	15.00	.00	.00	.00	8.73	3.60	.00			
2	7	15.00	.00	.00	.00	8.48	3.28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5	1	15.00	.00	.00	.00	8.73	3.59	.00			
2	8	15.00	.00	.00	.00	8.48	3.28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5	2	15.00	.00	.00	.00	8.73	3.59	.00			
3	1	15.00	.00	.00	.00	8.48	3.28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5	3	15.00	.00	.00	.00	8.73	3.58	.00			
3	2	15.00	.00	.00	.00	8.49	3.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5	4	15.00	.00	.00	.00	8.73	3.58	.00			
3	3	15.00	.00	.00	.00	8.49	3.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5	5	15.00	.00	.00	.00	8.73	3.57	.00			
3	4	15.00	.00	.00	.00	8.49	3.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5	6	15.00	.00	.00	.00	8.73	3.57	.00			
3	5	15.00	.00	.00	.00	8.49	3.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5	7	15.00	.00	.00	.00	8.73	3.56	.00			
3	6	15.00	.00	.00	.00	8.49	3.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5	8	15.00	.00	.00	.00	8.73	3.56	.00			
3	7	15.00	.00	.00	.00	8.50	3.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5	9	15.00	.00	.00	.00	8.73	3.55	.00			
3	8	15.00	.00	.00	.00	8.50	3.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5	10	15.00	.00	.00	.00	8.73	3.55	.00			
3	9	15.00	.00	.00	.00	8.50	3.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

건설교통부

5	11	15.00	.00	.00	.00	8.73	3.54	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	12	15.00	.00	.00	.00	8.73	3.54	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	1	15.00	.00	.00	.00	8.73	3.54	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	2	15.00	.00	.00	.00	8.73	3.53	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	3	15.00	.00	.00	.00	8.74	3.53	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	4	15.00	.00	.00	.00	8.74	3.53	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	5	15.00	.00	.00	.00	8.74	3.53	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	6	15.00	.00	.00	.00	8.74	3.53	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	7	15.00	.00	.00	.00	8.74	3.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	8	15.00	.00	.00	.00	8.75	3.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	9	15.00	.00	.00	.00	8.75	3.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	10	15.00	.00	.00	.00	8.75	3.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	11	15.00	.00	.00	.00	8.75	3.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	12	15.00	.00	.00	.00	8.75	3.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	13	15.00	.00	.00	.00	8.75	3.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	14	15.00	.00	.00	.00	8.76	3.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	15	15.00	.00	.00	.00	8.76	3.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	16	15.00	.00	.00	.00	8.76	3.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	17	15.00	.00	.00	.00	8.76	3.50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	1	15.00	.00	.00	.00	8.76	3.50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	2	15.00	.00	.00	.00	8.77	3.49	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	3	15.00	.00	.00	.00	8.77	3.49	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	4	15.00	.00	.00	.00	8.77	3.49	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	5	15.00	.00	.00	.00	8.78	3.48	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	6	15.00	.00	.00	.00	8.78	3.48	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	7	15.00	.00	.00	.00	8.78	3.47	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	8	15.00	.00	.00	.00	8.79	3.47	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	9	15.00	.00	.00	.00	8.79	3.46	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	10	15.00	.00	.00	.00	8.79	3.46	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	11	15.00	.00	.00	.00	8.80	3.46	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	12	15.00	.00	.00	.00	8.80	3.45	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	13	15.00	.00	.00	.00	8.80	3.45	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	14	15.00	.00	.00	.00	8.81	3.44	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	15	15.00	.00	.00	.00	8.81	3.44	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	16	15.00	.00	.00	.00	8.81	3.43	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	17	15.00	.00	.00	.00	8.82	3.43	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	18	15.00	.00	.00	.00	8.82	3.43	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	19	15.00	.00	.00	.00	8.82	3.42	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	1	15.00	.00	.00	.00	8.83	3.41	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	2	15.00	.00	.00	.00	8.83	3.40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	3	15.00	.00	.00	.00	8.83	3.40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	4	15.00	.00	.00	.00	8.84	3.39	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	5	15.00	.00	.00	.00	8.84	3.38	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	6	15.00	.00	.00	.00	8.84	3.38	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	7	15.00	.00	.00	.00	8.85	3.37	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	8	15.00	.00	.00	.00	8.85	3.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	9	15.00	.00	.00	.00	8.86	3.35	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	10	15.00	.00	.00	.00	8.94	3.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	1	15.00	.00	.00	.00	8.95	3.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	2	15.00	.00	.00	.00	8.95	3.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	3	15.00	.00	.00	.00	8.95	3.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	4	15.00	.00	.00	.00	8.95	3.25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	5	15.00	.00	.00	.00	8.95	3.25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	6	15.00	.00	.00	.00	8.95	3.25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	7	15.00	.00	.00	.00	8.95	3.24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	8	15.00	.00	.00	.00	8.95	3.24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	9	15.00	.00	.00	.00	8.95	3.24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

9	10	15.00	.00	.00	.00	8.95	3.23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	4	15.00	.00	.00	.00	8.98	3.15	.00			
9	11	15.00	.00	.00	.00	8.95	3.23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	5	15.00	.00	.00	.00	8.98	3.14	.00			
9	12	15.00	.00	.00	.00	8.95	3.22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	6	15.00	.00	.00	.00	8.98	3.14	.00			
9	13	15.00	.00	.00	.00	8.95	3.22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	7	15.00	.00	.00	.00	8.98	3.14	.00			
9	14	15.00	.00	.00	.00	8.96	3.22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	8	15.00	.00	.00	.00	8.99	3.13	.00			
9	15	15.00	.00	.00	.00	8.96	3.21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	9	15.00	.00	.00	.00	8.99	3.13	.00			
10	1	15.00	.00	.00	.00	8.96	3.21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	10	15.00	.00	.00	.00	8.99	3.13	.00			
10	2	15.00	.00	.00	.00	8.96	3.21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	11	15.00	.00	.00	.00	8.99	3.12	.00			
10	3	15.00	.00	.00	.00	8.96	3.21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	12	15.00	.00	.00	.00	8.99	3.12	.00			
10	4	15.00	.00	.00	.00	8.96	3.20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	13	15.00	.00	.00	.00	9.00	3.12	.00			
10	5	15.00	.00	.00	.00	8.96	3.20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	1	15.00	.00	.00	.00	8.99	3.11	.00			
10	6	15.00	.00	.00	.00	8.96	3.20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	2	15.00	.00	.00	.00	9.00	3.10	.00			
10	7	15.00	.00	.00	.00	8.96	3.20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	3	15.00	.00	.00	.00	9.00	3.09	.00			
10	8	15.00	.00	.00	.00	8.96	3.19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	4	15.00	.00	.00	.00	9.00	3.08	.00			
10	9	15.00	.00	.00	.00	8.96	3.19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	5	15.00	.00	.00	.00	9.01	3.08	.00			
10	10	15.00	.00	.00	.00	8.96	3.19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	6	15.00	.00	.00	.00	9.01	3.07	.00			
10	11	15.00	.00	.00	.00	8.96	3.18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	7	15.00	.00	.00	.00	9.01	3.06	.00			
10	12	15.00	.00	.00	.00	8.96	3.18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	8	15.00	.00	.00	.00	9.01	3.05	.00			
10	13	15.00	.00	.00	.00	8.97	3.18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	9	15.00	.00	.00	.00	9.02	3.04	.00			
10	14	15.00	.00	.00	.00	8.97	3.18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	10	15.00	.00	.00	.00	9.02	3.03	.00			
10	15	15.00	.00	.00	.00	8.97	3.17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	11	15.00	.00	.00	.00	9.02	3.02	.00			
10	16	15.00	.00	.00	.00	8.97	3.17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	12	15.00	.00	.00	.00	9.09	2.98	.00			
10	17	15.00	.00	.00	.00	8.97	3.17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	13	15.00	.00	.00	.00	9.09	2.97	.00			
10	18	15.00	.00	.00	.00	8.97	3.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	1	15.00	.00	.00	.00	9.10	3.10	.00			
10	19	15.00	.00	.00	.00	8.97	3.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	2	15.00	.00	.00	.00	9.11	3.22	.00			
10	20	15.00	.00	.00	.00	8.97	3.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	3	15.00	.00	.00	.00	9.12	3.34	.00			
11	1	15.00	.00	.00	.00	8.97	3.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	4	15.00	.00	.00	.00	9.12	3.46	.00			
11	2	15.00	.00	.00	.00	8.97	3.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	5	15.00	.00	.00	.00	9.13	3.58	.00			
11	3	15.00	.00	.00	.00	8.98	3.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

13	6	15.00	.00	.00	.00	9.13	3.70	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	1	15.00	.00	.00	.00	8.99	5.33	.00		
13	7	15.00	.00	.00	.00	9.14	3.81	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	2	15.00	.00	.00	.00	8.98	5.35	.00		
13	8	15.00	.00	.00	.00	9.14	3.93	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	3	15.00	.00	.00	.00	8.97	5.37	.00		
13	9	15.00	.00	.00	.00	9.15	4.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	4	15.00	.00	.00	.00	8.95	5.39	.00		
13	10	15.00	.00	.00	.00	9.15	4.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	5	15.00	.00	.00	.00	8.94	5.41	.00		
13	11	15.00	.00	.00	.00	9.16	4.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	6	15.00	.00	.00	.00	8.93	5.43	.00		
13	12	15.00	.00	.00	.00	9.16	4.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	7	15.00	.00	.00	.00	8.92	5.45	.00		
13	13	15.00	.00	.00	.00	9.16	4.47	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	8	15.00	.00	.00	.00	8.90	5.47	.00		
14	1	15.00	.00	.00	.00	9.16	4.48	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	9	15.00	.00	.00	.00	8.89	5.49	.00		
14	2	15.00	.00	.00	.00	9.15	4.50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	10	15.00	.00	.00	.00	8.88	5.51	.00		
14	3	15.00	.00	.00	.00	9.15	4.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	11	15.00	.00	.00	.00	8.87	5.53	.00		
14	4	15.00	.00	.00	.00	9.14	4.54	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	12	15.00	.00	.00	.00	8.86	5.54	.00		
14	5	15.00	.00	.00	.00	9.14	4.56	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	13	15.00	.00	.00	.00	8.84	5.56	.00		
14	6	15.00	.00	.00	.00	9.13	4.57	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	1	12.00	.00	.00	.00	8.83	5.58	.00		
14	7	15.00	.00	.00	.00	9.13	4.59	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	2	12.00	.00	.00	.00	8.82	5.59	.00		
14	8	15.00	.00	.00	.00	9.12	4.61	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	3	12.00	.00	.00	.00	8.81	5.60	.00		
14	9	15.00	.00	.00	.00	9.12	4.62	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	4	12.00	.00	.00	.00	8.80	5.62	.00		
14	10	15.00	.00	.00	.00	9.11	4.64	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	5	12.00	.00	.00	.00	8.80	5.63	.00		
14	11	15.00	.00	.00	.00	9.11	4.66	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	6	12.00	.00	.00	.00	8.79	5.64	.00		
14	12	15.00	.00	.00	.00	9.10	4.76	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	7	12.00	.00	.00	.00	8.78	5.65	.00		
15	1	15.00	.00	.00	.00	9.09	4.81	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	8	12.00	.00	.00	.00	8.77	5.67	.00		
15	2	15.00	.00	.00	.00	9.10	5.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	9	12.00	.00	.00	.00	8.76	5.68	.00		
15	3	15.00	.00	.00	.00	9.09	5.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	10	12.00	.00	.00	.00	8.75	5.69	.00		
15	4	15.00	.00	.00	.00	9.07	5.10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	11	12.00	.00	.00	.00	8.74	5.70	.00		
15	5	15.00	.00	.00	.00	9.06	5.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	12	12.00	.00	.00	.00	8.73	5.71	.00		
15	6	15.00	.00	.00	.00	9.05	5.19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	13	12.00	.00	.00	.00	8.73	5.72	.00		
15	7	15.00	.00	.00	.00	9.04	5.23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	14	12.00	.00	.00	.00	8.72	5.74	.00		
15	8	15.00	.00	.00	.00	9.02	5.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	15	12.00	.00	.00	.00	8.73	5.73	.00		
15	9	15.00	.00	.00	.00	9.01	5.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

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■ 수질예측 IN-PUT DATA (2010년)

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TITLE01          Calibration for Kum River 2010 Annual
TITLE02          WATER QUALITY SIMULATION
TITLE03  NO      CONSERVATIVE MINERAL  I
TITLE04  NO      CONSERVATIVE MINERAL  II
TITLE05  NO      CONSERVATIVE MINERAL III
TITLE06  NO      TEMPERATURE
TITLE07  YES         5-DAY BIOCHEMICAL OXYGEN
DEMAND IN MG/L
TITLE08  NO      ALGAE AS CHL-A IN UG/L
TITLE09  NO      PHOSPHORUS CYCLE AS P IN MG/L
TITLE10           (ORGANIC-P; DISSOLVED-P)
TITLE11  NO      NITROGEN CYCLE AS N IN MG/L
TITLE12                (ORGANIC-N;  AMMONIA-N;
NITRITE-N; NITRATE-N)
TITLE13  YES     DISSOLVED OXYGEN IN MG/L
TITLE14  NO      FECAL COLIFORMS IN NO./100 ML
TITLE15  N0      ARBITRARY NON-CONSERVATIVE
ENDTITLE
LIST DATA INPUT
NO WRITE OPTIONAL SUMMARY
NO FLOW AUGMENTATION
STEADY STATE
TRAPEZOIDAL CHANNELS
PRINT LCD/SOLAR DATA
PLOT DO AND BOD
FIXED DNSTM CONC (YES=1)=      1.0          5D-ULT
BOD CONV RATE COEF     0.30
INPUT METRIC (YES=1)   =       1            OUTPUT
METRIC (YES=1)   =     1
NUMBER OF REACHES      =       17           NUMBER
OF JUNCTIONS     =     0
NUM OF HEADWATERS      =       1            NUMBER
OF POINT LOADS   =     8
TIME STEP (HOURS)      =       0.1          LNTH
COMP ELEMENT (DX)=     0.5
MAXIMUM ITERATIONS     =       100          TIME
INC. FOR RPT2 (HRS)=
LATITUDE OF BASIN (DEG)  =                  37.45
LONGITUDE OF BASIN (DEG)=    128.54
STANDARD MERIDIAN (DEG) =    135.0          DAY OF
YEAR START TIME  =     0.0
EVAP. COEFF. (AE)      = 0.0000062          EVAP. COEFF.
(BE)     = 0.0000055
ELEV. OF BASIN (ELEV)  =     80.0           DUST
ATTENUATION COEFF. =   0.13
ENDATA1
O UPTAKE BY NH3 OXID(MG O/MG N)=   0.0  O UPTAKE
BY NO2 OXID(MG O/MG N)=    0.0
O PROD BY ALGAE (MG N/MG A)  =   0.0  O UPTAKE
BY ALGAE (MG O/MG A)  =    0.0
N CONTENT OF ALGAE (MG N/MG A)  =  0.000  P
CONTENT OF ALGAE (MG P/MG A) =  0.000
ALG MAX SPEC GROWTH RATE(1/DAY)=   0.00  ALGAE
RESPIRATION RATE (1/DAY) =   0.00
N HALF SATURATION CONST (MG/L) =   0.0  P HALF
SATURATION CONST (MG/L)=   0.00
LIN ALG SHADE CO (1/H-UGCHA/L) = 0.0000  NLIN SHADE
(1/H-(UGCHA/L)**2/3)=  0.000
LIGHT FUNCTION OPTION (LFNOPT)  =      0  LIGHT
SATURATION COEF (INT/MIN)=     0
DAILY AVERAGING OPTION (LAVOPT)=       0  LIGHT
AVERAGING FACTOR (AFACT) =     0
NUMBER OF DAYLIGHT HOURS (DLH) =       0  TOTAL
DAILY SOLAR RADTN (INT)  =     0
ALGY GROWTH CALC OPTION(LGROPT0=       0  ALGAR
PREF FOR NH3-N (PREFN)   =     0
ALG/TEMP SOLR RAD FACTOR(TFACT)=           0
NITRIFICATION INHIBITION COEF  =   0.0
ENDATA1A
THETA    BOD DECA    1.067
THETA    BOD SETT    1.024
THETA    OXY TRAN    1.024
THETA    SOD RATE    1.054
THETA    ORGN DEC    1.024
THETA    NH3 DECA    1.021
THETA    NH3 SRCE    1.024
THETA    NO2 DECA    1.024
THETA    PORG DEC    1.021
THETA    PORG SET    1.024
THETA    DISP SRC    1.024
THETA    ALG GROW    1.021
THETA    ALG RESP    1.024
THETA    ALG SETT    1.124
THETA    COLI DEC    1.021
THETA    ANC DECA    1.000
THETA    ANC SETT    1.024
THETA    ANC SRCE    1.000
ENDATA1B
STREAM REACH       1.0RCH= 대청댐-갑천합류     FROM
 114.5  TO      108.5
STREAM REACH       2.0RCH= 갑천합류-댓골       FROM
 108.5  TO      104.5
STREAM REACH       3.0RCH= 댓골-부용면         FROM
 104.5  TO      96.0
STREAM REACH       4.0RCH= 부용면-미호천합류   FROM
 96.0   TO      91.0
STREAM REACH       5.0RCH= 미호천합류-대평리   FROM
 91.0   TO      85.0
STREAM REACH       6.0RCH= 대평리-마어구       FROM
 85.0   TO      76.5
STREAM REACH       7.0RCH= 마어구-금강교       FROM
 76.5   TO      67.0
STREAM REACH       8.0RCH= 금강교-옥성리       FROM
 67.0   TO      62.0
STREAM REACH       9.0RCH= 옥성리-어천리       FROM
 62.0   TO      54.5
STREAM REACH       10.0RCH= 어천리-온미들      FROM
 54.5   TO      44.5
STREAM REACH       11.0RCH= 온미들-쌍북리      FROM
 44.5   TO      38.0
STREAM REACH       12.0RCH- 쌍북리-장암면      FROM
 38.0   TO      31.5
STREAM REACH       13.0RCH- 장암면-검신들      FROM
 31.5   TO      25.0
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STREAM REACH      14.0RCH= 검신들-성동면          FROM
  25.0   TO        19.0
STREAM REACH      15.0RCH= 성동면-강경읍          FROM
  19.0   TO        14.5
STREAM REACH      16.0RCH= 강경읍-용두리          FROM
  14.5   TO        8.0
STREAM REACH      17.0RCH= 용두리-양화면          FROM
   8.0   TO        0.0
ENDATA2
ENDATA3
FLAG FIELD RCH= 1.0     12.0        1.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH= 2.0     8.0         6.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=      3.0                    17.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH= 4.0     10.0        2.2.2.2.2.2.2.6.2.
FLAG FIELD RCH= 5.0     12.0        2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=      6.0                    17.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=      7.0                    19.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH= 8.0     10.0        6.2.2.2.2.2.2.2.6.
FLAG    FIELD    RCH=      9.0                    15.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=     10.0                    20.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=     11.0                    13.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=     12.0                    13.0
2.2.2.2.2.2.2.2.2.2.2.6.2.
FLAG    FIELD    RCH=     13.0                    13.0
6.2.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH= 14.0    12.0        2.2.2.2.2.2.2.2.2.2.6.
FLAG FIELD RCH= 15.0    9.0         2.6.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=     16.0                    13.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=     17.0                    15.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.5.
ENDATA4
HYDRAULICS RCH=  1.     150.0     0.67     0.67
152  0.00250    .023
HYDRAULICS RCH=  2.     150.0     0.67     0.67
220  0.00472    .023
HYDRAULICS RCH=  3.     150.0     0.67     0.67
242  0.00370    .023
HYDRAULICS RCH=  4.     150.0     0.67     0.67
220  0.00263    .023
HYDRAULICS RCH=  5.     150.0     0.67     0.67
214  0.00139    .023
HYDRAULICS RCH=  6.     150.0     0.67     0.67
175  0.00333    .023
HYDRAULICS RCH=  7.     150.0     0.67     0.67
150  0.00333    .033
HYDRAULICS RCH=  8.     150.0     0.67     0.67
280  0.00250    .033
HYDRAULICS RCH=  9.     150.0     0.67     0.67
225  0.00472    .033
HYDRAULICS RCH= 10.     150.0     0.67     0.67
210  0.00370    .033
HYDRAULICS RCH= 11.     150.0     0.67     0.67
180  0.00263    .033
HYDRAULICS RCH= 12.     150.0     0.67     0.67
222  0.00139    .033
HYDRAULICS RCH= 13.     150.0     0.67     0.67
504  0.00333    .033
HYDRAULICS RCH= 14.     150.0     0.67     0.67
344  0.00333    .033
HYDRAULICS RCH= 15.     150.0     0.67     0.67
387  0.00250    .033
HYDRAULICS RCH= 16.     150.0     0.67     0.67
432  0.00472    .033
HYDRAULICS RCH= 17.     150.0     0.67     0.67
596  0.00370    .033
ENDATA5
REACT COEF RCH=  1.0  0.040  0.00  0.00 1.0  0.22
REACT COEF RCH=  2.0  0.040  0.00  0.00 1.0  0.23
REACT COEF RCH=  3.0  0.040  0.00  0.00 1.0  0.32
REACT COEF RCH=  4.0  0.040  0.00  0.00 1.0  0.23
REACT COEF RCH=  5.0  0.080  0.00  0.00 1.0  0.23
REACT COEF RCH=  6.0  0.080  0.00  0.82 1.0  1.32
REACT COEF RCH=  7.0  0.080  0.10  0.66 1.0  1.47
REACT COEF RCH=  8.0  0.100  0.10  0.70 1.0  1.55
REACT COEF RCH=  9.0  0.100  0.10  0.55 1.0  1.23
REACT COEF RCH= 10.0  0.110  0.10  0.71 1.0  1.27
REACT COEF RCH= 11.0  0.110  0.10  0.89 1.0  1.29
REACT COEF RCH= 12.0  0.510  0.10  0.86 1.0  2.51
REACT COEF RCH= 13.0  0.630  0.10  0.25 1.0  2.12
REACT COEF RCH= 14.0  0.740  0.10  0.29 1.0  2.15
REACT COEF RCH= 15.0  0.831  0.10  1.74 1.0  2.15
REACT COEF RCH= 16.0  0.931  0.20  1.87 1.0  3.15
REACT COEF RCH= 17.0  0.931  0.20  2.87 1.0  3.15
ENDATA6
ENDATA6A
ENDATA6B
INITIAL COND-1 RCH=  1.0  15.0  9.0  1.6
INITIAL COND-1 RCH=  2.0  15.0  9.0  2.0
INITIAL COND-1 RCH=  3.0  15.0  9.0  3.0
INITIAL COND-1 RCH=  4.0  15.0  9.0  2.0
INITIAL COND-1 RCH=  5.0  15.0  9.0  2.0
INITIAL COND-1 RCH=  6.0  15.0  9.0  3.0
INITIAL COND-1 RCH=  7.0  15.0  9.0  3.0
INITIAL COND-1 RCH=  8.0  15.0  9.0  3.1
INITIAL COND-1 RCH=  9.0  15.0  8.0  4.5
INITIAL COND-1 RCH= 10.0  15.0  8.0  4.5
INITIAL COND-1 RCH= 11.0  15.0  8.0  4.5
INITIAL COND-1 RCH= 12.0  15.0  9.0  4.1
INITIAL COND-1 RCH= 13.0  15.0  8.0  8.5
INITIAL COND-1 RCH= 14.0  15.0  9.0  8.2
INITIAL COND-1 RCH= 15.0  15.0  9.0  8.2
INITIAL COND-1 RCH= 16.0  15.0  9.0  9.2
INITIAL COND-1 RCH= 17.0  12.0  9.0  9.6
ENDATA7
ENDATA7A
INCR INFLOW-1  RCH=  1.0  1.000  18.0  9.9  1.5
INCR INFLOW-1  RCH=  2.0  3.000  16.7  9.2  2.8
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INCR INFLOW-1  RCH=  3.0  3.000   15.7   9.2   1.8
INCR INFLOW-1  RCH=  4.0  2.000   17.7   9.6   1.0
INCR INFLOW-1  RCH=  5.0  4.000   16.7   9.0   1.0
INCR INFLOW-1  RCH=  6.0  2.000   16.7  10.0   1.0
INCR INFLOW-1  RCH=  7.0  4.000   16.7   9.0   1.0
INCR INFLOW-1  RCH=  8.0  4.000   17.3   9.0   1.1
INCR INFLOW-1  RCH=  9.0  3.000   17.7   8.6   1.5
INCR INFLOW-1  RCH= 10.0  2.000   17.7   8.9   1.5
INCR INFLOW-1  RCH= 11.0  2.000   17.7  10.9   1.5
INCR INFLOW-1  RCH= 12.0  2.500   17.3  10.6   1.7
INCR INFLOW-1  RCH= 13.0 18.500   17.7  10.9  26.5
INCR INFLOW-1  RCH= 14.0  8.500   16.3  10.3  16.2
INCR INFLOW-1  RCH= 15.0 15.000   16.3  10.3  16.2
INCR INFLOW-1  RCH= 16.0 15.000   16.3  10.3  16.2
INCR INFLOW-1  RCH= 17.0 15.000   16.0  10.3  16.6
ENDATA8
ENDATA8A
ENDATA9
HEADWTR-1 HDW=  1.0     DAECHUNG-DAM    110.10   15.0
 8.4  1.63
ENDATA10
ENDATA10A
POINT LOAD      1.0      갑  천  0.0   26.80  18.0   8.6 12.60
POINT LOAD      2.0      미호천  0.0   57.30  15.0   9.2  4.80
POINT LOAD      3.0      정안천  0.0    0.70  13.0  10.0  2.30
POINT LOAD      4.0      유구천  0.0   12.20  15.0  10.5  1.90
POINT LOAD      5.0      지  천  0.0    7.20  14.0  11.2  1.80
POINT LOAD      6.0      금  천  0.0    0.80  15.0  10.3  3.40
POINT LOAD      7.0      석성천  0.0    8.20  17.0   9.0  8.10
POINT LOAD      8.0      논산천  0.0   12.80  16.0   9.7  9.00
ENDATA11
ENDATA11A
ENDATA12
DOWNSTREAM BOUNDARY-1       16.0    9.8    4.5
ENDATA13
DOWNSTREAM BOUNDARY-2       40.0    2.2    1.5
ENDATA13A
LOCAL CLIMATOLOGY                          0.5    13.0
   9.6  1012.4    2.85
BEGIN  RCH    1
PLOT    RCH    1    2    3    4    5    6    7    8    9
10   11   12   13   14
           15   16   17
```

건설교통부

■ 수질예측 OUT-PUT DATA (2010년)

1	1	15.00	.00	.00	.00	8.40	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	2	15.00	.00	.00	.00	8.40	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	3	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	4	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	5	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	6	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	7	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	8	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	9	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	10	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	11	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	12	15.00	.00	.00	.00	8.43	1.65	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	1	15.00	.00	.00	.00	8.46	3.76	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	2	15.00	.00	.00	.00	8.47	3.75	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	3	15.00	.00	.00	.00	8.47	3.75	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	4	15.00	.00	.00	.00	8.47	3.75	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	5	15.00	.00	.00	.00	8.47	3.74	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	6	15.00	.00	.00	.00	8.48	3.74	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	7	15.00	.00	.00	.00	8.48	3.74	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	8	15.00	.00	.00	.00	8.48	3.73	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	1	15.00	.00	.00	.00	8.48	3.73	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	2	15.00	.00	.00	.00	8.49	3.73	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	3	15.00	.00	.00	.00	8.49	3.73	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	4	15.00	.00	.00	.00	8.49	3.72	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	5	15.00	.00	.00	.00	8.49	3.72	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	6	15.00	.00	.00	.00	8.49	3.72	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	7	15.00	.00	.00	.00	8.50	3.71	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	8	15.00	.00	.00	.00	8.50	3.71	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	9	15.00	.00	.00	.00	8.50	3.71	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	10	15.00	.00	.00	.00	8.50	3.71	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	11	15.00	.00	.00	.00	8.50	3.70	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	12	15.00	.00	.00	.00	8.51	3.70	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	13	15.00	.00	.00	.00	8.51	3.70	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	14	15.00	.00	.00	.00	8.51	3.70	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	15	15.00	.00	.00	.00	8.51	3.69	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	16	15.00	.00	.00	.00	8.52	3.69	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	17	15.00	.00	.00	.00	8.52	3.69	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	1	15.00	.00	.00	.00	8.52	3.68	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	2	15.00	.00	.00	.00	8.52	3.68	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	3	15.00	.00	.00	.00	8.52	3.67	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	4	15.00	.00	.00	.00	8.53	3.67	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	5	15.00	.00	.00	.00	8.53	3.67	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	6	15.00	.00	.00	.00	8.53	3.66	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	7	15.00	.00	.00	.00	8.53	3.66	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	8	15.00	.00	.00	.00	8.54	3.66	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	9	15.00	.00	.00	.00	8.72	3.97	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	10	15.00	.00	.00	.00	8.73	3.97	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	1	15.00	.00	.00	.00	8.73	3.96	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	2	15.00	.00	.00	.00	8.73	3.96	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	3	15.00	.00	.00	.00	8.73	3.95	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	4	15.00	.00	.00	.00	8.73	3.95	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	5	15.00	.00	.00	.00	8.73	3.94	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	6	15.00	.00	.00	.00	8.73	3.94	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	7	15.00	.00	.00	.00	8.73	3.93	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	8	15.00	.00	.00	.00	8.73	3.92	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	9	15.00	.00	.00	.00	8.73	3.92	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	10	15.00	.00	.00	.00	8.73	3.91	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

건설교통부

5	11	15.00	.00	.00	.00	8.73	3.91	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		7	11	15.00	.00	.00	.00	8.79	3.81	.00	
5	12	15.00	.00	.00	.00	8.73	3.90	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		7	12	15.00	.00	.00	.00	8.79	3.80	.00	
6	1	15.00	.00	.00	.00	8.73	3.90	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		7	13	15.00	.00	.00	.00	8.80	3.80	.00	
6	2	15.00	.00	.00	.00	8.73	3.90	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		7	14	15.00	.00	.00	.00	8.80	3.79	.00	
6	3	15.00	.00	.00	.00	8.73	3.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		7	15	15.00	.00	.00	.00	8.80	3.79	.00	
6	4	15.00	.00	.00	.00	8.74	3.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		7	16	15.00	.00	.00	.00	8.81	3.78	.00	
6	5	15.00	.00	.00	.00	8.74	3.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		7	17	15.00	.00	.00	.00	8.81	3.78	.00	
6	6	15.00	.00	.00	.00	8.74	3.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		7	18	15.00	.00	.00	.00	8.81	3.77	.00	
6	7	15.00	.00	.00	.00	8.74	3.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		7	19	15.00	.00	.00	.00	8.82	3.77	.00	
6	8	15.00	.00	.00	.00	8.74	3.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		8	1	15.00	.00	.00	.00	8.82	3.76	.00	
6	9	15.00	.00	.00	.00	8.74	3.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		8	2	15.00	.00	.00	.00	8.83	3.75	.00	
6	10	15.00	.00	.00	.00	8.74	3.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		8	3	15.00	.00	.00	.00	8.83	3.74	.00	
6	11	15.00	.00	.00	.00	8.75	3.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		8	4	15.00	.00	.00	.00	8.83	3.73	.00	
6	12	15.00	.00	.00	.00	8.75	3.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		8	5	15.00	.00	.00	.00	8.83	3.73	.00	
6	13	15.00	.00	.00	.00	8.75	3.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		8	6	15.00	.00	.00	.00	8.84	3.72	.00	
6	14	15.00	.00	.00	.00	8.75	3.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		8	7	15.00	.00	.00	.00	8.84	3.71	.00	
6	15	15.00	.00	.00	.00	8.75	3.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		8	8	15.00	.00	.00	.00	8.84	3.70	.00	
6	16	15.00	.00	.00	.00	8.75	3.86	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		8	9	15.00	.00	.00	.00	8.85	3.69	.00	
6	17	15.00	.00	.00	.00	8.76	3.86	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		8	10	15.00	.00	.00	.00	8.94	3.59	.00	
7	1	15.00	.00	.00	.00	8.76	3.86	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		9	1	15.00	.00	.00	.00	8.94	3.59	.00	
7	2	15.00	.00	.00	.00	8.76	3.85	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		9	2	15.00	.00	.00	.00	8.94	3.58	.00	
7	3	15.00	.00	.00	.00	8.77	3.85	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		9	3	15.00	.00	.00	.00	8.94	3.58	.00	
7	4	15.00	.00	.00	.00	8.77	3.84	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		9	4	15.00	.00	.00	.00	8.94	3.58	.00	
7	5	15.00	.00	.00	.00	8.77	3.84	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		9	5	15.00	.00	.00	.00	8.94	3.57	.00	
7	6	15.00	.00	.00	.00	8.78	3.83	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		9	6	15.00	.00	.00	.00	8.94	3.57	.00	
7	7	15.00	.00	.00	.00	8.78	3.83	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		9	7	15.00	.00	.00	.00	8.94	3.56	.00	
7	8	15.00	.00	.00	.00	8.78	3.82	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		9	8	15.00	.00	.00	.00	8.94	3.56	.00	
7	9	15.00	.00	.00	.00	8.78	3.82	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00		9	9	15.00	.00	.00	.00	8.94	3.56	.00	
7	10	15.00	.00	.00	.00	8.79	3.81	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

건설교통부

9	10	15.00	.00	.00	.00	8.95	3.55	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		11	4	15.00	.00	.00	.00	8.97	3.46	.00	
9	11	15.00	.00	.00	.00	8.95	3.55	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		11	5	15.00	.00	.00	.00	8.97	3.45	.00	
9	12	15.00	.00	.00	.00	8.95	3.55	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		11	6	15.00	.00	.00	.00	8.97	3.45	.00	
9	13	15.00	.00	.00	.00	8.95	3.54	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		11	7	15.00	.00	.00	.00	8.97	3.45	.00	
9	14	15.00	.00	.00	.00	8.95	3.54	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		11	8	15.00	.00	.00	.00	8.98	3.44	.00	
9	15	15.00	.00	.00	.00	8.95	3.53	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		11	9	15.00	.00	.00	.00	8.98	3.44	.00	
10	1	15.00	.00	.00	.00	8.95	3.53	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		11	10	15.00	.00	.00	.00	8.98	3.44	.00	
10	2	15.00	.00	.00	.00	8.95	3.53	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		11	11	15.00	.00	.00	.00	8.98	3.43	.00	
10	3	15.00	.00	.00	.00	8.95	3.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		11	12	15.00	.00	.00	.00	8.98	3.43	.00	
10	4	15.00	.00	.00	.00	8.95	3.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		11	13	15.00	.00	.00	.00	8.99	3.42	.00	
10	5	15.00	.00	.00	.00	8.95	3.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	1	15.00	.00	.00	.00	8.98	3.42	.00	
10	6	15.00	.00	.00	.00	8.95	3.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	2	15.00	.00	.00	.00	8.99	3.41	.00	
10	7	15.00	.00	.00	.00	8.95	3.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	3	15.00	.00	.00	.00	8.99	3.40	.00	
10	8	15.00	.00	.00	.00	8.95	3.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	4	15.00	.00	.00	.00	8.99	3.39	.00	
10	9	15.00	.00	.00	.00	8.95	3.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	5	15.00	.00	.00	.00	8.99	3.38	.00	
10	10	15.00	.00	.00	.00	8.95	3.50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	6	15.00	.00	.00	.00	8.99	3.37	.00	
10	11	15.00	.00	.00	.00	8.96	3.50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	7	15.00	.00	.00	.00	9.00	3.36	.00	
10	12	15.00	.00	.00	.00	8.96	3.50	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	8	15.00	.00	.00	.00	9.00	3.35	.00	
10	13	15.00	.00	.00	.00	8.96	3.49	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	9	15.00	.00	.00	.00	9.00	3.34	.00	
10	14	15.00	.00	.00	.00	8.96	3.49	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	10	15.00	.00	.00	.00	9.00	3.33	.00	
10	15	15.00	.00	.00	.00	8.96	3.49	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	11	15.00	.00	.00	.00	9.01	3.32	.00	
10	16	15.00	.00	.00	.00	8.96	3.48	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	12	15.00	.00	.00	.00	9.07	3.27	.00	
10	17	15.00	.00	.00	.00	8.96	3.48	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		12	13	15.00	.00	.00	.00	9.07	3.26	.00	
10	18	15.00	.00	.00	.00	8.96	3.48	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		13	1	15.00	.00	.00	.00	9.08	3.38	.00	
10	19	15.00	.00	.00	.00	8.96	3.47	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		13	2	15.00	.00	.00	.00	9.09	3.51	.00	
10	20	15.00	.00	.00	.00	8.96	3.47	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		13	3	15.00	.00	.00	.00	9.10	3.62	.00	
11	1	15.00	.00	.00	.00	8.96	3.47	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		13	4	15.00	.00	.00	.00	9.10	3.74	.00	
11	2	15.00	.00	.00	.00	8.96	3.46	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		13	5	15.00	.00	.00	.00	9.11	3.86	.00	
11	3	15.00	.00	.00	.00	8.97	3.46	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

13	6	15.00	.00	.00	.00	9.11	3.97	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	1	15.00	.00	.00	.00	8.96	5.57	.00			
13	7	15.00	.00	.00	.00	9.12	4.08	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	2	15.00	.00	.00	.00	8.95	5.59	.00			
13	8	15.00	.00	.00	.00	9.12	4.20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	3	15.00	.00	.00	.00	8.93	5.61	.00			
13	9	15.00	.00	.00	.00	9.13	4.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	4	15.00	.00	.00	.00	8.92	5.63	.00			
13	10	15.00	.00	.00	.00	9.13	4.41	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	5	15.00	.00	.00	.00	8.91	5.64	.00			
13	11	15.00	.00	.00	.00	9.13	4.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	6	15.00	.00	.00	.00	8.89	5.66	.00			
13	12	15.00	.00	.00	.00	9.14	4.62	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	7	15.00	.00	.00	.00	8.88	5.68	.00			
13	13	15.00	.00	.00	.00	9.14	4.72	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	8	15.00	.00	.00	.00	8.87	5.70	.00			
14	1	15.00	.00	.00	.00	9.13	4.74	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	9	15.00	.00	.00	.00	8.86	5.72	.00			
14	2	15.00	.00	.00	.00	9.13	4.76	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	10	15.00	.00	.00	.00	8.84	5.73	.00			
14	3	15.00	.00	.00	.00	9.12	4.77	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	11	15.00	.00	.00	.00	8.83	5.75	.00			
14	4	15.00	.00	.00	.00	9.12	4.79	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	12	15.00	.00	.00	.00	8.82	5.77	.00			
14	5	15.00	.00	.00	.00	9.11	4.81	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	13	15.00	.00	.00	.00	8.81	5.78	.00			
14	6	15.00	.00	.00	.00	9.11	4.82	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	1	12.00	.00	.00	.00	8.80	5.80	.00			
14	7	15.00	.00	.00	.00	9.10	4.84	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	2	12.00	.00	.00	.00	8.79	5.81	.00			
14	8	15.00	.00	.00	.00	9.09	4.85	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	3	12.00	.00	.00	.00	8.78	5.82	.00			
14	9	15.00	.00	.00	.00	9.09	4.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	4	12.00	.00	.00	.00	8.77	5.83	.00			
14	10	15.00	.00	.00	.00	9.08	4.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	5	12.00	.00	.00	.00	8.76	5.84	.00			
14	11	15.00	.00	.00	.00	9.08	4.90	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	6	12.00	.00	.00	.00	8.75	5.85	.00			
14	12	15.00	.00	.00	.00	9.07	5.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	7	12.00	.00	.00	.00	8.74	5.86	.00			
15	1	15.00	.00	.00	.00	9.06	5.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	8	12.00	.00	.00	.00	8.73	5.87	.00			
15	2	15.00	.00	.00	.00	9.07	5.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	9	12.00	.00	.00	.00	8.72	5.89	.00			
15	3	15.00	.00	.00	.00	9.06	5.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	10	12.00	.00	.00	.00	8.71	5.90	.00			
15	4	15.00	.00	.00	.00	9.04	5.35	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	11	12.00	.00	.00	.00	8.70	5.91	.00			
15	5	15.00	.00	.00	.00	9.03	5.40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	12	12.00	.00	.00	.00	8.70	5.92	.00			
15	6	15.00	.00	.00	.00	9.02	5.44	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	13	12.00	.00	.00	.00	8.69	5.93	.00			
15	7	15.00	.00	.00	.00	9.00	5.48	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	14	12.00	.00	.00	.00	8.68	5.94	.00			
15	8	15.00	.00	.00	.00	8.99	5.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	15	12.00	.00	.00	.00	8.69	5.92	.00			
15	9	15.00	.00	.00	.00	8.98	5.55	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

■ 수질예측 IN-PUT DATA (2015년)

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TITLE01                Calibration for Kum River 2015 annual
TITLE02                WATER QUALITY SIMULATION
TITLE03   NO           CONSERVATIVE MINERAL  I
TITLE04   NO           CONSERVATIVE MINERAL  II
TITLE05   NO           CONSERVATIVE MINERAL III
TITLE06   NO           TEMPERATURE
TITLE07   YES              5-DAY BIOCHEMICAL OXYGEN
DEMAND IN MG/L
TITLE08   NO           ALGAE AS CHL-A IN UG/L
TITLE09   NO           PHOSPHORUS CYCLE AS P IN MG/L
TITLE10                 (ORGANIC-P; DISSOLVED-P)
TITLE11   NO           NITROGEN CYCLE AS N IN MG/L
TITLE12                        (ORGANIC-N;  AMMONIA-N;
NITRITE-N; NITRATE-N)
TITLE13   YES          DISSOLVED OXYGEN IN MG/L
TITLE14   NO           FECAL COLIFORMS IN NO./100 ML
TITLE15   N0           ARBITRARY NON-CONSERVATIVE
ENDTITLE
LIST DATA INPUT
NO WRITE OPTIONAL SUMMARY
NO FLOW AUGMENTATION
STEADY STATE
TRAPEZOIDAL CHANNELS
PRINT LCD/SOLAR DATA
PLOT DO AND BOD
FIXED DNSTM CONC (YES=1)=        1.0          5D-ULT
BOD CONV RATE COEF      0.30
INPUT METRIC (YES=1)    =        1            OUTPUT
METRIC (YES=1)   =       1
NUMBER OF REACHES        =       17           NUMBER
OF JUNCTIONS     =       0
NUM OF HEADWATERS        =       1            NUMBER
OF POINT LOADS   =       8
TIME STEP (HOURS)        =       0.1          LNTH
COMP  ELEMENT (DX)=      0.5
MAXIMUM ITERATIONS       =       100          TIME
INC. FOR RPT2 (HRS)=
LATITUDE  OF  BASIN  (DEG)  =                 37.45
LONGITUDE OF BASIN (DEG)=    128.54
STANDARD MERIDIAN (DEG) =    135.0            DAY OF
YEAR START TIME  =       0.0
EVAP. COEFF. (AE)        = 0.0000062          EVAP. COEFF.
(BE)       = 0.0000055
ELEV. OF BASIN (ELEV)    =       80.0         DUST
ATTENUATION COEFF. =     0.13
ENDATA1
O UPTAKE BY NH3 OXID(MG O/MG N)=    0.0  O UPTAKE
BY NO2 OXID(MG O/MG N)=    0.0
O PROD  BY ALGAE (MG N/MG A)   =    0.0  O UPTAKE
BY ALGAE (MG O/MG A)  =    0.0
N  CONTENT  OF  ALGAE  (MG  N/MG  A)  =    0.000   P
CONTENT OF ALGAE (MG P/MG A) =  0.000
ALG MAX SPEC GROWTH RATE(1/DAY)=    0.00  ALGAE
RESPIRATION RATE (1/DAY) =  0.00
N HALF SATURATION CONST (MG/L) =    0.0  P HALF
SATURATION CONST  (MG/L)=   0.00
LIN ALG SHADE CO (1/H-UGCHA/L) = 0.0000  NLIN SHADE
(1/H-(UGCHA/L)**2/3)=  0.000
LIGHT FUNCTION OPTION (LFNOPT) =        0   LIGHT
SATURATION COEF (INT/MIN)=      0
DAILY AVERAGING OPTION (LAVOPT)=        0   LIGHT
AVERAGING FACTOR (AFACT) =      0
NUMBER OF DAYLIGHT HOURS (DLH) =        0   TOTAL
DAILY SOLAR RADTN (INT)  =      0
ALGY GROWTH CALC OPTION(LGROPT0=        0   ALGAR
PREF FOR NH3-N (PREFN)   =      0
ALG/TEMP  SOLR  RAD  FACTOR(TFACT)=             0
NITRIFICATION INHIBITION COEF  =    0.0
ENDATA1A
THETA     BOD DECA     1.067
THETA     BOD SETT     1.024
THETA     OXY TRAN     1.024
THETA     SOD RATE     1.054
THETA     ORGN DEC     1.024
THETA     NH3 DECA     1.021
THETA     NH3 SRCE     1.024
THETA     NO2 DECA     1.024
THETA     PORG DEC     1.021
THETA     PORG SET     1.024
THETA     DISP SRC     1.024
THETA     ALG GROW     1.021
THETA     ALG RESP     1.024
THETA     ALG SETT     1.124
THETA     COLI DEC     1.021
THETA     ANC DECA     1.000
THETA     ANC SETT     1.024
THETA     ANC SRCE     1.000
ENDATA1B
STREAM REACH       1.0RCH= 대청댐-갑천합류      FROM
 114.5    TO        108.5
STREAM REACH       2.0RCH= 갑천합류-댓골        FROM
 108.5    TO        104.5
STREAM REACH       3.0RCH= 댓골-부용면          FROM
 104.5    TO        96.0
STREAM REACH       4.0RCH= 부용면-미호천합류    FROM
 96.0     TO        91.0
STREAM REACH       5.0RCH= 미호천합류-대평리    FROM
 91.0     TO        85.0
STREAM REACH       6.0RCH= 대평리-마어구        FROM
 85.0     TO        76.5
STREAM REACH       7.0RCH= 마어구-금강교        FROM
 76.5     TO        67.0
STREAM REACH       8.0RCH= 금강교-옥성리        FROM
 67.0     TO        62.0
STREAM REACH       9.0RCH= 옥성리-어천리        FROM
 62.0     TO        54.5
STREAM REACH       10.0RCH= 어천리-온미들       FROM
 54.5     TO        44.5
STREAM REACH       11.0RCH= 온미들-쌍북리       FROM
 44.5     TO        38.0
STREAM REACH       12.0RCH= 쌍북리-장암면       FROM
 38.0     TO        31.5
STREAM REACH       13.0RCH= 장암면-검신들       FROM
 31.5     TO        25.0
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STREAM REACH      14.0RCH= 검신들-성동면          FROM
  25.0    TO          19.0
STREAM REACH      15.0RCH= 성동면-강경읍          FROM
  19.0    TO          14.5
STREAM REACH      16.0RCH= 강경읍-용두리          FROM
  14.5    TO          8.0
STREAM REACH      17.0RCH= 용두리-양화면          FROM
  8.0     TO          0.0
ENDATA2
ENDATA3
FLAG FIELD RCH=  1.0      12.0          1.2.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH=  2.0      8.0           6.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=        3.0                    17.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH=  4.0      10.0          2.2.2.2.2.2.2.6.2.
FLAG FIELD RCH=  5.0      12.0          2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=        6.0                    17.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=        7.0                    19.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH=  8.0      10.0          6.2.2.2.2.2.2.2.6.
FLAG    FIELD    RCH=        9.0                    15.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=        10.0                   20.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=        11.0                   13.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=        12.0                   13.0
2.2.2.2.2.2.2.2.2.2.2.6.2.
FLAG    FIELD    RCH=        13.0                   13.0
6.2.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH=  14.0     12.0          2.2.2.2.2.2.2.2.2.2.6.
FLAG FIELD RCH=  15.0     9.0           2.6.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=        16.0                   13.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=        17.0                   15.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.5.
ENDATA4
HYDRAULICS RCH=  1.       150.0      0.67       0.67
152  0.00250    .023
HYDRAULICS RCH=  2.       150.0      0.67       0.67
220  0.00472    .023
HYDRAULICS RCH=  3.       150.0      0.67       0.67
242  0.00370    .023
HYDRAULICS RCH=  4.       150.0      0.67       0.67
220  0.00263    .023
HYDRAULICS RCH=  5.       150.0      0.67       0.67
214  0.00139    .023
HYDRAULICS RCH=  6.       150.0      0.67       0.67
175  0.00333    .023
HYDRAULICS RCH=  7.       150.0      0.67       0.67
150  0.00333    .033
HYDRAULICS RCH=  8.       150.0      0.67       0.67
280  0.00250    .033
HYDRAULICS RCH=  9.       150.0      0.67       0.67
225  0.00472    .033
HYDRAULICS RCH= 10.       150.0      0.67       0.67
210  0.00370    .033
HYDRAULICS RCH= 11.       150.0      0.67       0.67
180  0.00263    .033
HYDRAULICS RCH= 12.       150.0      0.67       0.67
222  0.00139    .033
HYDRAULICS RCH= 13.       150.0      0.67       0.67
504  0.00333    .033
HYDRAULICS RCH= 14.       150.0      0.67       0.67
344  0.00333    .033
HYDRAULICS RCH= 15.       150.0      0.67       0.67
387  0.00250    .033
HYDRAULICS RCH= 16.       150.0      0.67       0.67
432  0.00472    .033
HYDRAULICS RCH= 17.       150.0      0.67       0.67
596  0.00370    .033
ENDATA5
REACT COEF RCH=  1.0  0.040  0.00  0.00 1.0  0.22
REACT COEF RCH=  2.0  0.040  0.00  0.00 1.0  0.23
REACT COEF RCH=  3.0  0.040  0.00  0.00 1.0  0.32
REACT COEF RCH=  4.0  0.040  0.00  0.00 1.0  0.23
REACT COEF RCH=  5.0  0.080  0.00  0.00 1.0  0.23
REACT COEF RCH=  6.0  0.080  0.00  0.82 1.0  1.32
REACT COEF RCH=  7.0  0.080  0.10  0.66 1.0  1.47
REACT COEF RCH-  8.0  0.100  0.10  0.70 1.0  1.55
REACT COEF RCH=  9.0  0.100  0.10  0.55 1.0  1.23
REACT COEF RCH= 10.0  0.110  0.10  0.71 1.0  1.27
REACT COEF RCH= 11.0  0.110  0.10  0.89 1.0  1.29
REACT COEF RCH= 12.0  0.510  0.10  0.86 1.0  2.51
REACT COEF RCH= 13.0  0.630  0.10  0.25 1.0  2.12
REACT COEF RCH= 14.0  0.740  0.10  0.29 1.0  2.15
REACT COEF RCH= 15.0  0.831  0.10  1.74 1.0  2.15
REACT COEF RCH= 16.0  0.931  0.20  1.87 1.0  3.15
REACT COEF RCH= 17.0  0.931  0.20  2.87 1.0  3.15
ENDATA6
ENDATA6A
ENDATA6B
INITIAL COND-1 RCH=  1.0  15.0  9.0  1.6
INITIAL COND-1 RCH=  2.0  15.0  9.0  2.0
INITIAL COND-1 RCH=  3.0  15.0  9.0  3.0
INITIAL COND-1 RCH=  4.0  15.0  9.0  2.0
INITIAL COND-1 RCH=  5.0  15.0  9.0  2.0
INITIAL COND-1 RCH=  6.0  15.0  9.0  3.0
INITIAL COND-1 RCH=  7.0  15.0  9.0  3.0
INITIAL COND-1 RCH=  8.0  15.0  9.0  3.1
INITIAL COND-1 RCH=  9.0  15.0  8.0  4.5
INITIAL COND-1 RCH= 10.0  15.0  8.0  4.5
INITIAL COND-1 RCH= 11.0  15.0  8.0  4.5
INITIAL COND-1 RCH= 12.0  15.0  9.0  4.1
INITIAL COND-1 RCH= 13.0  15.0  8.0  8.5
INITIAL COND-1 RCH= 14.0  15.0  9.0  8.2
INITIAL COND-1 RCH= 15.0  15.0  9.0  8.2
INITIAL COND-1 RCH= 16.0  15.0  9.0  9.2
INITIAL COND-1 RCH= 17.0  12.0  9.0  9.6
ENDATA7
ENDATA7A
INCR INFLOW-1  RCH=  1.0  1.000  18.0  9.9  1.5
INCR INFLOW-1  RCH=  2.0  3.000  16.7  9.2  2.8
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INCR INFLOW-1  RCH=  3.0  3.000   15.7   9.2   1.8
INCR INFLOW-1  RCH=  4.0  2.000   17.7   9.6   1.0
INCR INFLOW-1  RCH=  5.0  4.000   16.7   9.0   1.0
INCR INFLOW-1  RCH=  6.0  2.000   16.7  10.0   1.0
INCR INFLOW-1  RCH=  7.0  4.000   16.7   9.0   1.0
INCR INFLOW-1  RCH=  8.0  4.000   17.3   9.0   1.1
INCR INFLOW-1  RCH=  9.0  3.000   17.7   8.6   1.5
INCR INFLOW-1  RCH= 10.0  2.000   17.7   8.9   1.5
INCR INFLOW-1  RCH= 11.0  2.000   17.7  10.9   1.5
INCR INFLOW-1  RCH= 12.0  2.500   17.3  10.6   1.7
INCR INFLOW-1  RCH= 13.0 18.500   17.7  10.9  26.5
INCR INFLOW-1  RCH= 14.0  8.500   16.3  10.3  16.2
INCR INFLOW-1  RCH= 15.0 15.000   16.3  10.3  16.2
INCR INFLOW-1  RCH= 16.0 15.000   16.3  10.3  16.2
INCR INFLOW-1  RCH= 17.0 15.000   16.0  10.3  16.6
ENDATA8
ENDATA8A
ENDATA9
HEADWTR-1 HDW=  1.0     DAECHUNG-DAM     110.10   15.0
 8.4  1.63
ENDATA10
ENDATA10A
POINT LOAD      1.0      갑 천  0.0   26.80  18.0   8.6  15.60
POINT LOAD      2.0      미호천  0.0   57.30  15.0   9.2   5.10
POINT LOAD      3.0      정안천  0.0    0.70  13.0  10.0   2.50
POINT LOAD      4.0      유구천  0.0   12.20  15.0  10.5   2.00
POINT LOAD      5.0      지 천  0.0    7.20  14.0  11.2   1.90
POINT LOAD      6.0      금 천  0.0    0.80  15.0  10.3   3.60
POINT LOAD      7.0      석성천  0.0    8.20  17.0   9.0   9.20
POINT LOAD      8.0      논산천  0.0   12.80  16.0   9.7   9.60
ENDATA11
ENDATA11A
ENDATA12
DOWNSTREAM BOUNDARY-1      16.0    9.8    4.5
ENDATA13
DOWNSTREAM BOUNDARY-2      40.0    2.2    1.5
ENDATA13A
LOCAL CLIMATOLOGY                          0.5    13.0
   9.6  1012.4    2.85
BEGIN  RCH    1
PLOT   RCH    1    2    3    4    5    6    7    8    9
10   11   12   13   14
           15   16   17
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■ 수질예측 OUT-PUT DATA (2015년)

1	1	15.00	.00	.00	.00	8.40	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	2	15.00	.00	.00	.00	8.40	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	3	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	4	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	5	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	6	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	7	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	8	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	9	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	10	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	11	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	12	15.00	.00	.00	.00	8.43	1.66	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	1	15.00	.00	.00	.00	8.46	4.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	2	15.00	.00	.00	.00	8.47	4.33	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	3	15.00	.00	.00	.00	8.47	4.33	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	4	15.00	.00	.00	.00	8.47	4.32	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	5	15.00	.00	.00	.00	8.47	4.32	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	6	15.00	.00	.00	.00	8.48	4.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	7	15.00	.00	.00	.00	8.48	4.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	8	15.00	.00	.00	.00	8.48	4.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	1	15.00	.00	.00	.00	8.48	4.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	2	15.00	.00	.00	.00	8.48	4.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	3	15.00	.00	.00	.00	8.49	4.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	4	15.00	.00	.00	.00	8.49	4.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	5	15.00	.00	.00	.00	8.49	4.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	6	15.00	.00	.00	.00	8.49	4.28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	7	15.00	.00	.00	.00	8.49	4.28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	8	15.00	.00	.00	.00	8.50	4.28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	9	15.00	.00	.00	.00	8.50	4.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	10	15.00	.00	.00	.00	8.50	4.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	11	15.00	.00	.00	.00	8.50	4.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	12	15.00	.00	.00	.00	8.51	4.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	13	15.00	.00	.00	.00	8.51	4.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	14	15.00	.00	.00	.00	8.51	4.25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	15	15.00	.00	.00	.00	8.51	4.25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	16	15.00	.00	.00	.00	8.51	4.25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	17	15.00	.00	.00	.00	8.52	4.24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	1	15.00	.00	.00	.00	8.52	4.24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	2	15.00	.00	.00	.00	8.52	4.23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	3	15.00	.00	.00	.00	8.52	4.23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	4	15.00	.00	.00	.00	8.52	4.22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	5	15.00	.00	.00	.00	8.53	4.22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	6	15.00	.00	.00	.00	8.53	4.21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	7	15.00	.00	.00	.00	8.53	4.21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	8	15.00	.00	.00	.00	8.53	4.21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	9	15.00	.00	.00	.00	8.72	4.45	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	10	15.00	.00	.00	.00	8.72	4.45	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	1	15.00	.00	.00	.00	8.72	4.44	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	2	15.00	.00	.00	.00	8.72	4.44	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	3	15.00	.00	.00	.00	8.72	4.43	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	4	15.00	.00	.00	.00	8.72	4.42	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	5	15.00	.00	.00	.00	8.72	4.42	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	6	15.00	.00	.00	.00	8.72	4.41	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	7	15.00	.00	.00	.00	8.73	4.40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	8	15.00	.00	.00	.00	8.73	4.40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	9	15.00	.00	.00	.00	8.73	4.39	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	10	15.00	.00	.00	.00	8.73	4.38	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

건설교통부

5	11	15.00	.00	.00	.00	8.73	4.38	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	11	15.00	.00	.00	.00	8.79	4.26	.00			
5	12	15.00	.00	.00	.00	8.73	4.37	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	12	15.00	.00	.00	.00	8.79	4.26	.00			
6	1	15.00	.00	.00	.00	8.73	4.37	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	13	15.00	.00	.00	.00	8.79	4.25	.00			
6	2	15.00	.00	.00	.00	8.73	4.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	14	15.00	.00	.00	.00	8.79	4.25	.00			
6	3	15.00	.00	.00	.00	8.73	4.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	15	15.00	.00	.00	.00	8.80	4.24	.00			
6	4	15.00	.00	.00	.00	8.73	4.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	16	15.00	.00	.00	.00	8.80	4.24	.00			
6	5	15.00	.00	.00	.00	8.73	4.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	17	15.00	.00	.00	.00	8.80	4.23	.00			
6	6	15.00	.00	.00	.00	8.73	4.35	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	18	15.00	.00	.00	.00	8.81	4.22	.00			
6	7	15.00	.00	.00	.00	8.74	4.35	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	19	15.00	.00	.00	.00	8.81	4.22	.00			
6	8	15.00	.00	.00	.00	8.74	4.35	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	1	15.00	.00	.00	.00	8.82	4.20	.00			
6	9	15.00	.00	.00	.00	8.74	4.35	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	2	15.00	.00	.00	.00	8.82	4.20	.00			
6	10	15.00	.00	.00	.00	8.74	4.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	3	15.00	.00	.00	.00	8.82	4.19	.00			
6	11	15.00	.00	.00	.00	8.74	4.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	4	15.00	.00	.00	.00	8.82	4.18	.00			
6	12	15.00	.00	.00	.00	8.74	4.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	5	15.00	.00	.00	.00	8.83	4.17	.00			
6	13	15.00	.00	.00	.00	8.74	4.33	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	6	15.00	.00	.00	.00	8.83	4.16	.00			
6	14	15.00	.00	.00	.00	8.75	4.33	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	7	15.00	.00	.00	.00	8.83	4.15	.00			
6	15	15.00	.00	.00	.00	8.75	4.33	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	8	15.00	.00	.00	.00	8.84	4.14	.00			
6	16	15.00	.00	.00	.00	8.75	4.33	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	9	15.00	.00	.00	.00	8.84	4.13	.00			
6	17	15.00	.00	.00	.00	8.75	4.32	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	10	15.00	.00	.00	.00	8.93	4.01	.00			
7	1	15.00	.00	.00	.00	8.75	4.32	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	1	15.00	.00	.00	.00	8.93	4.01	.00			
7	2	15.00	.00	.00	.00	8.76	4.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	2	15.00	.00	.00	.00	8.93	4.00	.00			
7	3	15.00	.00	.00	.00	8.76	4.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	3	15.00	.00	.00	.00	8.93	4.00	.00			
7	4	15.00	.00	.00	.00	8.76	4.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	4	15.00	.00	.00	.00	8.93	3.99	.00			
7	5	15.00	.00	.00	.00	8.77	4.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	5	15.00	.00	.00	.00	8.93	3.99	.00			
7	6	15.00	.00	.00	.00	8.77	4.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	6	15.00	.00	.00	.00	8.93	3.98	.00			
7	7	15.00	.00	.00	.00	8.77	4.28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	7	15.00	.00	.00	.00	8.93	3.98	.00			
7	8	15.00	.00	.00	.00	8.78	4.28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	8	15.00	.00	.00	.00	8.94	3.97	.00			
7	9	15.00	.00	.00	.00	8.78	4.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	9	15.00	.00	.00	.00	8.94	3.97	.00			
7	10	15.00	.00	.00	.00	8.78	4.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

건설교통부

9	10	15.00	.00	.00	.00	8.94	3.97	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	4	15.00	.00	.00	.00	8.96	3.86	.00			
9	11	15.00	.00	.00	.00	8.94	3.96	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	5	15.00	.00	.00	.00	8.96	3.85	.00			
9	12	15.00	.00	.00	.00	8.94	3.96	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	6	15.00	.00	.00	.00	8.96	3.85	.00			
9	13	15.00	.00	.00	.00	8.94	3.95	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	7	15.00	.00	.00	.00	8.96	3.84	.00			
9	14	15.00	.00	.00	.00	8.94	3.95	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	8	15.00	.00	.00	.00	8.96	3.84	.00			
9	15	15.00	.00	.00	.00	8.94	3.94	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	9	15.00	.00	.00	.00	8.97	3.83	.00			
10	1	15.00	.00	.00	.00	8.94	3.94	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	10	15.00	.00	.00	.00	8.97	3.83	.00			
10	2	15.00	.00	.00	.00	8.94	3.94	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	11	15.00	.00	.00	.00	8.97	3.83	.00			
10	3	15.00	.00	.00	.00	8.94	3.93	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	12	15.00	.00	.00	.00	8.97	3.82	.00			
10	4	15.00	.00	.00	.00	8.94	3.93	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	13	15.00	.00	.00	.00	8.97	3.82	.00			
10	5	15.00	.00	.00	.00	8.94	3.92	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	1	15.00	.00	.00	.00	8.97	3.81	.00			
10	6	15.00	.00	.00	.00	8.94	3.92	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	2	15.00	.00	.00	.00	8.97	3.80	.00			
10	7	15.00	.00	.00	.00	8.94	3.92	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	3	15.00	.00	.00	.00	8.97	3.79	.00			
10	8	15.00	.00	.00	.00	8.94	3.91	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	4	15.00	.00	.00	.00	8.97	3.78	.00			
10	9	15.00	.00	.00	.00	8.94	3.91	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	5	15.00	.00	.00	.00	8.98	3.77	.00			
10	10	15.00	.00	.00	.00	8.94	3.91	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	6	15.00	.00	.00	.00	8.98	3.75	.00			
10	11	15.00	.00	.00	.00	8.94	3.90	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	7	15.00	.00	.00	.00	8.98	3.74	.00			
10	12	15.00	.00	.00	.00	8.95	3.90	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	8	15.00	.00	.00	.00	8.98	3.73	.00			
10	13	15.00	.00	.00	.00	8.95	3.90	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	9	15.00	.00	.00	.00	8.98	3.72	.00			
10	14	15.00	.00	.00	.00	8.95	3.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	10	15.00	.00	.00	.00	8.98	3.71	.00			
10	15	15.00	.00	.00	.00	8.95	3.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	11	15.00	.00	.00	.00	8.99	3.70	.00			
10	16	15.00	.00	.00	.00	8.95	3.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	12	15.00	.00	.00	.00	9.05	3.64	.00			
10	17	15.00	.00	.00	.00	8.95	3.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	13	15.00	.00	.00	.00	9.05	3.63	.00			
10	18	15.00	.00	.00	.00	8.95	3.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	1	15.00	.00	.00	.00	9.06	3.75	.00			
10	19	15.00	.00	.00	.00	8.95	3.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	2	15.00	.00	.00	.00	9.07	3.87	.00			
10	20	15.00	.00	.00	.00	8.95	3.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	3	15.00	.00	.00	.00	9.07	3.98	.00			
11	1	15.00	.00	.00	.00	8.95	3.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	4	15.00	.00	.00	.00	9.08	4.10	.00			
11	2	15.00	.00	.00	.00	8.95	3.86	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	5	15.00	.00	.00	.00	9.08	4.21	.00			
11	3	15.00	.00	.00	.00	8.96	3.86	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

건설교통부

13	6	15.00	.00	.00	.00	9.09	4.32	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	1	15.00	.00	.00	.00	8.92	5.89	.00			
13	7	15.00	.00	.00	.00	9.09	4.43	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	2	15.00	.00	.00	.00	8.90	5.90	.00			
13	8	15.00	.00	.00	.00	9.10	4.54	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	3	15.00	.00	.00	.00	8.89	5.92	.00			
13	9	15.00	.00	.00	.00	9.10	4.65	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	4	15.00	.00	.00	.00	8.88	5.93	.00			
13	10	15.00	.00	.00	.00	9.10	4.75	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	5	15.00	.00	.00	.00	8.86	5.95	.00			
13	11	15.00	.00	.00	.00	9.10	4.85	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	6	15.00	.00	.00	.00	8.85	5.97	.00			
13	12	15.00	.00	.00	.00	9.11	4.96	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	7	15.00	.00	.00	.00	8.84	5.98	.00			
13	13	15.00	.00	.00	.00	9.11	5.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	8	15.00	.00	.00	.00	8.82	6.00	.00			
14	1	15.00	.00	.00	.00	9.10	5.07	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	9	15.00	.00	.00	.00	8.81	6.01	.00			
14	2	15.00	.00	.00	.00	9.09	5.08	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	10	15.00	.00	.00	.00	8.80	6.03	.00			
14	3	15.00	.00	.00	.00	9.09	5.10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	11	15.00	.00	.00	.00	8.79	6.04	.00			
14	4	15.00	.00	.00	.00	9.08	5.11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	12	15.00	.00	.00	.00	8.77	6.06	.00			
14	5	15.00	.00	.00	.00	9.08	5.13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	13	15.00	.00	.00	.00	8.76	6.07	.00			
14	6	15.00	.00	.00	.00	9.07	5.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	1	12.00	.00	.00	.00	8.75	6.08	.00			
14	7	15.00	.00	.00	.00	9.06	5.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	2	12.00	.00	.00	.00	8.74	6.09	.00			
14	8	15.00	.00	.00	.00	9.06	5.17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	3	12.00	.00	.00	.00	8.73	6.10	.00			
14	9	15.00	.00	.00	.00	9.05	5.19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	4	12.00	.00	.00	.00	8.72	6.11	.00			
14	10	15.00	.00	.00	.00	9.05	5.20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	5	12.00	.00	.00	.00	8.71	6.12	.00			
14	11	15.00	.00	.00	.00	9.04	5.21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	6	12.00	.00	.00	.00	8.70	6.13	.00			
14	12	15.00	.00	.00	.00	9.03	5.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	7	12.00	.00	.00	.00	8.69	6.14	.00			
15	1	15.00	.00	.00	.00	9.02	5.39	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	8	12.00	.00	.00	.00	8.68	6.15	.00			
15	2	15.00	.00	.00	.00	9.04	5.61	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	9	12.00	.00	.00	.00	8.67	6.16	.00			
15	3	15.00	.00	.00	.00	9.02	5.65	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	10	12.00	.00	.00	.00	8.66	6.17	.00			
15	4	15.00	.00	.00	.00	9.01	5.69	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	11	12.00	.00	.00	.00	8.65	6.18	.00			
15	5	15.00	.00	.00	.00	8.99	5.72	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	12	12.00	.00	.00	.00	8.65	6.18	.00			
15	6	15.00	.00	.00	.00	8.98	5.76	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	13	12.00	.00	.00	.00	8.64	6.19	.00			
15	7	15.00	.00	.00	.00	8.96	5.80	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	14	12.00	.00	.00	.00	8.63	6.20	.00			
15	8	15.00	.00	.00	.00	8.95	5.83	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	15	12.00	.00	.00	.00	8.64	6.18	.00			
15	9	15.00	.00	.00	.00	8.94	5.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

건설교통부

■ 수질예측 IN-PUT DATA (2020년)

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TITLE01              Calibration for Kum River 2020 Annual
TITLE02              WATER QUALITY SIMULATION
TITLE03   NO          CONSERVATIVE MINERAL  I
TITLE04   NO          CONSERVATIVE MINERAL  II
TITLE05   NO          CONSERVATIVE MINERAL III
TITLE06   NO          TEMPERATURE
TITLE07   YES              5-DAY BIOCHEMICAL OXYGEN
DEMAND IN MG/L
TITLE08   NO          ALGAE AS CHL-A IN UG/L
TITLE09   NO          PHOSPHORUS CYCLE AS P IN MG/L
TITLE10               (ORGANIC-P; DISSOLVED-P)
TITLE11   NO          NITROGEN CYCLE AS N IN MG/L
TITLE12                        (ORGANIC-N; AMMONIA-N;
NITRITE-N; NITRATE-N)
TITLE13  YES          DISSOLVED OXYGEN IN MG/L
TITLE14   NO          FECAL COLIFORMS IN NO./100 ML
TITLE15   N0          ARBITRARY NON-CONSERVATIVE
ENDTITLE
LIST DATA INPUT
NO WRITE OPTIONAL SUMMARY
NO FLOW AUGMENTATION
STEADY STATE
TRAPEZOIDAL CHANNELS
PRINT LCD/SOLAR DATA
PLOT DO AND BOD
FIXED DNSTM CONC (YES=1)=        1.0          5D-ULT
BOD CONV RATE COEF       0.30
INPUT METRIC (YES=1)    =         1           OUTPUT
METRIC (YES=1)   =        1
NUMBER OF REACHES        =        17          NUMBER
OF JUNCTIONS     =        0
NUM OF HEADWATERS        =         1          NUMBER
OF POINT LOADS   =        8
TIME STEP (HOURS)        =       0.1          LNTH
COMP ELEMENT (DX)=       0.5
MAXIMUM ITERATIONS       =       100          TIME
INC. FOR RPT2 (HRS)=
LATITUDE OF BASIN (DEG)  =                    37.45
LONGITUDE OF BASIN (DEG)=    128.54
STANDARD MERIDIAN (DEG) =     135.0          DAY OF
YEAR START TIME  =       0.0
EVAP. COEFF. (AE)       = 0.0000062          EVAP. COEFF.
(BE)       = 0.0000055
ELEV. OF BASIN (ELEV)    =       80.0          DUST
ATTENUATION COEFF. =      0.13
ENDATA1
O UPTAKE BY NH3 OXID(MG O/MG N)=    0.0  O UPTAKE
BY NO2 OXID(MG O/MG N)=    0.0
O PROD  BY ALGAE (MG N/MG A)   =    0.0  O UPTAKE
BY ALGAE (MG O/MG A)  =    0.0
N CONTENT OF ALGAE (MG N/MG A) =   0.000   P
CONTENT OF ALGAE (MG P/MG A) =  0.000
ALG MAX SPEC GROWTH RATE(1/DAY)=    0.00  ALGAE
RESPIRATION RATE (1/DAY) =   0.00
N HALF SATURATION CONST (MG/L) =    0.0  P HALF
SATURATION CONST  (MG/L)=    0.00
LIN ALG SHADE CO (1/H-UGCHA/L) - 0.0000  NLIN SHADE
(1/H-(UGCHA/L)**2/3)-  0.000
LIGHT FUNCTION OPTION (LFNOPT) =         0  LIGHT
SATURATION COEF (INT/MIN)=      0
DAILY AVERAGING OPTION (LAVOPT)=         0  LIGHT
AVERAGING FACTOR (AFACT) =      0
NUMBER OF DAYLIGHT HOURS (DLH) =         0  TOTAL
DAILY SOLAR RADTN (INT)  =      0
ALGY GROWTH CALC OPTION(LGROPT0-         0  ALGAR
PREF FOR NH3-N (PREFN)   =      0
ALG/TEMP SOLR RAD FACTOR(TFACT)=                0
NITRIFICATION INHIBITION COEF  -    0.0
ENDATA1A
THETA    BOD DECA    1.067
THETA    BOD SETT    1.024
THETA    OXY TRAN    1.024
THETA    SOD RATE    1.054
THETA    ORGN DEC    1.024
THETA    NH3 DECA    1.021
THETA    NH3 SRCE    1.024
THETA    NO2 DECA    1.024
THETA    PORG DEC    1.021
THETA    PORG SET    1.024
THETA    DISP SRC    1.024
THETA    ALG GROW    1.021
THETA    ALG RESP    1.024
THETA    ALG SETT    1.124
THETA    COLI DEC    1.021
THETA    ANC DECA    1.000
THETA    ANC SETT    1.024
THETA    ANC SRCE    1.000
ENDATA1B
STREAM REACH       1.0RCH=  대청댐-갑천합류      FROM
 114.5    TO       108.5
STREAM REACH       2.0RCH=  갑천합류-댓골        FROM
 108.5    TO       104.5
STREAM REACH       3.0RCH=  댓골-부용면          FROM
 104.5    TO        96.0
STREAM REACH       4.0RCH=  부용면-미호천합류    FROM
  96.0    TO        91.0
STREAM REACH       5.0RCH=  미호천합류-대평리    FROM
  91.0    TO        85.0
STREAM REACH       6.0RCH=  대평리-마어구        FROM
  85.0    TO        76.5
STREAM REACH       7.0RCH=  마어구-금강교        FROM
  76.5    TO        67.0
STREAM REACH       8.0RCH=  금강교-옥성리        FROM
  67.0    TO        62.0
STREAM REACH       9.0RCH=  옥성리-어천리        FROM
  62.0    TO        54.5
STREAM REACH      10.0RCH=  어천리-온미들        FROM
  54.5    TO        44.5
STREAM REACH      11.0RCH=  온미들-쌍북리        FROM
  44.5    TO        38.0
STREAM REACH      12.0RCH-  쌍북리-장암면        FROM
  38.0    TO        31.5
STREAM REACH      13.0RCH=  장암면-검신들        FROM
  31.5    TO        25.0
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건설교통부

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STREAM REACH      14.0RCH= 검신들-성동변          FROM
  25.0    TO          19.0
STREAM REACH      15.0RCH= 성동변-강경읍          FROM
  19.0    TO          14.5
STREAM REACH      16.0RCH= 강경읍-용두리          FROM
  14.5    TO          8.0
STREAM REACH      17.0RCH= 용두리-양화변          FROM
   8.0    TO          0.0
ENDATA2
ENDATA3
FLAG FIELD RCH=  1.0      12.0          1.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH=  2.0       8.0          6.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=        3.0                    17.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH=  4.0      10.0          2.2.2.2.2.2.2.6.2.
FLAG FIELD RCH=  5.0      12.0          2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=        6.0                    17.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=        7.0                    19.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH=  8.0      10.0          6.2.2.2.2.2.2.2.6.
FLAG    FIELD    RCH=        9.0                    15.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=       10.0                    20.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=       11.0                    13.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=       12.0                    13.0
2.2.2.2.2.2.2.2.2.2.6.2.
FLAG    FIELD    RCH=       13.0                    13.0
6.2.2.2.2.2.2.2.2.2.2.
FLAG FIELD RCH= 14.0      12.0          2.2.2.2.2.2.2.2.2.6.
FLAG FIELD RCH= 15.0       9.0          2.6.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=       16.0                    13.0
2.2.2.2.2.2.2.2.2.2.2.2.2.
FLAG    FIELD    RCH=       17.0                    15.0
2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.5.
ENDATA4
HYDRAULICS RCH=  1.      150.0      0.67      0.67
152  0.00250     .023
HYDRAULICS RCH=  2.      150.0      0.67      0.67
220  0.00472     .023
HYDRAULICS RCH=  3.      150.0      0.67      0.67
242  0.00370     .023
HYDRAULICS RCH=  4.      150.0      0.67      0.67
220  0.00263     .023
HYDRAULICS RCH=  5.      150.0      0.67      0.67
214  0.00139     .023
HYDRAULICS RCH=  6.      150.0      0.67      0.67
175  0.00333     .023
HYDRAULICS RCH=  7.      150.0      0.67      0.67
150  0.00333     .033
HYDRAULICS RCH=  8.      150.0      0.67      0.67
280  0.00250     .033
HYDRAULICS RCH=  9.      150.0      0.67      0.67
225  0.00472     .033
HYDRAULICS RCH= 10.      150.0      0.67      0.67
210  0.00370     .033
HYDRAULICS RCH= 11.      150.0      0.67      0.67
180  0.00263     .033
HYDRAULICS RCH= 12.      150.0      0.67      0.67
222  0.00139     .033
HYDRAULICS RCH= 13.      150.0      0.67      0.67
504  0.00333     .033
HYDRAULICS RCH= 14.      150.0      0.67      0.67
344  0.00333     .033
HYDRAULICS RCH= 15.      150.0      0.67      0.67
387  0.00250     .033
HYDRAULICS RCH= 16.      150.0      0.67      0.67
432  0.00472     .033
HYDRAULICS RCH= 17.      150.0      0.67      0.67
596  0.00370     .033
ENDATA5
REACT COEF RCH=  1.0  0.040  0.00  0.00 1.0  0.22
REACT COEF RCH=  2.0  0.040  0.00  0.00 1.0  0.23
REACT COEF RCH=  3.0  0.040  0.00  0.00 1.0  0.32
REACT COEF RCH=  4.0  0.040  0.00  0.00 1.0  0.23
REACT COEF RCH=  5.0  0.080  0.00  0.00 1.0  0.23
REACT COEF RCH=  6.0  0.080  0.00  0.82 1.0  1.32
REACT COEF RCH=  7.0  0.080  0.10  0.66 1.0  1.47
REACT COEF RCH=  8.0  0.100  0.10  0.70 1.0  1.55
REACT COEF RCH=  9.0  0.100  0.10  0.55 1.0  1.23
REACT COEF RCH= 10.0  0.110  0.10  0.71 1.0  1.27
REACT COEF RCH= 11.0  0.110  0.10  0.89 1.0  1.29
REACT COEF RCH= 12.0  0.510  0.10  0.86 1.0  2.51
REACT COEF RCH= 13.0  0.630  0.10  0.25 1.0  2.12
REACT COEF RCH= 14.0  0.740  0.10  0.29 1.0  2.15
REACT COEF RCH= 15.0  0.831  0.10  1.74 1.0  2.15
REACT COEF RCH= 16.0  0.931  0.20  1.87 1.0  3.15
REACT COEF RCH= 17.0  0.931  0.20  2.87 1.0  3.15
ENDATA6
ENDATA6A
ENDATA6B
INITIAL COND-1 RCH=  1.0  15.0  9.0  1.6
INITIAL COND-1 RCH=  2.0  15.0  9.0  2.0
INITIAL COND-1 RCH=  3.0  15.0  9.0  3.0
INITIAL COND-1 RCH=  4.0  15.0  9.0  2.0
INITIAL COND-1 RCH=  5.0  15.0  9.0  2.0
INITIAL COND-1 RCH=  6.0  15.0  9.0  3.0
INITIAL COND-1 RCH=  7.0  15.0  9.0  3.0
INITIAL COND-1 RCH=  8.0  15.0  9.0  3.1
INITIAL COND-1 RCH=  9.0  15.0  8.0  4.5
INITIAL COND-1 RCH= 10.0  15.0  8.0  4.5
INITIAL COND-1 RCH= 11.0  15.0  8.0  4.5
INITIAL COND-1 RCH= 12.0  15.0  9.0  4.1
INITIAL COND-1 RCH= 13.0  15.0  8.0  8.5
INITIAL COND-1 RCH= 14.0  15.0  9.0  8.2
INITIAL COND-1 RCH= 15.0  15.0  9.0  8.2
INITIAL COND-1 RCH= 16.0  15.0  9.0  9.2
INITIAL COND-1 RCH= 17.0  12.0  9.0  9.6
ENDATA7
ENDATA7A
INCR INFLOW-1  RCH=  1.0  1.000  18.0  9.9  1.5
INCR INFLOW-1  RCH=  2.0  3.000  16.7  9.2  2.8
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건설교통부

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INCR INFLOW-1  RCH=  3.0  3.000   15.7   9.2   1.8
INCR INFLOW-1  RCH=  4.0  2.000   17.7   9.6   1.0
INCR INFLOW-1  RCH=  5.0  4.000   16.7   9.0   1.0
INCR INFLOW-1  RCH=  6.0  2.000   16.7  10.0   1.0
INCR INFLOW-1  RCH=  7.0  4.000   16.7   9.0   1.0
INCR INFLOW-1  RCH=  8.0  4.000   17.3   9.0   1.1
INCR INFLOW-1  RCH=  9.0  3.000   17.7   8.6   1.5
INCR INFLOW-1  RCH= 10.0  2.000   17.7   8.9   1.5
INCR INFLOW-1  RCH= 11.0  2.000   17.7  10.9   1.5
INCR INFLOW-1  RCH= 12.0  2.500   17.3  10.6   1.7
INCR INFLOW-1  RCH= 13.0 18.500   17.7  10.9  26.5
INCR INFLOW-1  RCH= 14.0  8.500   16.3  10.3  16.2
INCR INFLOW-1  RCH= 15.0 15.000   16.3  10.3  16.2
INCR INFLOW-1  RCH= 16.0 15.000   16.3  10.3  16.2
INCR INFLOW-1  RCH= 17.0 15.000   16.0  10.3  16.6
ENDATA8
ENDATA8A
ENDATA9
HEADWTR-1 HDW=  1.0     DAECHUNG-DAM     110.10   15.0
 8.4  1.63
ENDATA10
ENDATA10A
POINT LOAD      1.0      갑 천  0.0   26.80  18.0   8.6 19.20
POINT LOAD      2.0      미호천  0.0   57.30  15.0   9.2  5.30
POINT LOAD      3.0      정안천  0.0    0.70  13.0  10.0  2.60
POINT LOAD      4.0      유구천  0.0   12.20  15.0  10.5  2.00
POINT LOAD      5.0      지 천  0.0    7.20  14.0  11.2  2.10
POINT LOAD      6.0      금 천  0.0    0.80  15.0  10.3  3.80
POINT LOAD      7.0      석성천  0.0    8.20  17.0   9.0  9.30
POINT LOAD      8.0      논산천  0.0   12.80  16.0   9.7 10.20
ENDATA11
ENDATA11A
ENDATA12
DOWNSTREAM BOUNDARY-1       16.0   9.8   4.5
ENDATA13
DOWNSTREAM BOUNDARY-2       40.0   2.2   1.5
ENDATA13A
LOCAL CLIMATOLOGY                          0.5    13.0
   9.6  1012.4    2.85
BEGIN  RCH    1
PLOT   RCH    1    2    3    4    5    6    7    8    9
10   11   12   13   14
           15   16   17
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건설교통부

■ 수질예측 OUT-PUT DATA (2020년)

1	1	15.00	.00	.00	.00	8.40	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	2	15.00	.00	.00	.00	8.40	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	3	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	4	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	5	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	6	15.00	.00	.00	.00	8.41	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	7	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	8	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	9	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	10	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	11	15.00	.00	.00	.00	8.42	1.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
1	12	15.00	.00	.00	.00	8.43	1.67	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	1	15.00	.00	.00	.00	8.46	5.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	2	15.00	.00	.00	.00	8.47	5.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	3	15.00	.00	.00	.00	8.47	5.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	4	15.00	.00	.00	.00	8.47	5.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	5	15.00	.00	.00	.00	8.47	5.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	6	15.00	.00	.00	.00	8.48	5.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	7	15.00	.00	.00	.00	8.48	4.99	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	8	15.00	.00	.00	.00	8.48	4.99	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	1	15.00	.00	.00	.00	8.48	4.98	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	2	15.00	.00	.00	.00	8.48	4.98	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	3	15.00	.00	.00	.00	8.49	4.97	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	4	15.00	.00	.00	.00	8.49	4.97	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	5	15.00	.00	.00	.00	8.49	4.97	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	6	15.00	.00	.00	.00	8.49	4.96	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	7	15.00	.00	.00	.00	8.49	4.96	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	8	15.00	.00	.00	.00	8.50	4.95	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	9	15.00	.00	.00	.00	8.50	4.95	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	10	15.00	.00	.00	.00	8.50	4.94	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	11	15.00	.00	.00	.00	8.50	4.94	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	12	15.00	.00	.00	.00	8.50	4.93	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	13	15.00	.00	.00	.00	8.51	4.93	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	14	15.00	.00	.00	.00	8.51	4.93	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	15	15.00	.00	.00	.00	8.51	4.92	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	16	15.00	.00	.00	.00	8.51	4.92	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	17	15.00	.00	.00	.00	8.51	4.91	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	1	15.00	.00	.00	.00	8.52	4.91	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	2	15.00	.00	.00	.00	8.52	4.90	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	3	15.00	.00	.00	.00	8.52	4.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	4	15.00	.00	.00	.00	8.52	4.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	5	15.00	.00	.00	.00	8.52	4.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	6	15.00	.00	.00	.00	8.53	4.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	7	15.00	.00	.00	.00	8.53	4.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	8	15.00	.00	.00	.00	8.53	4.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	9	15.00	.00	.00	.00	8.72	4.98	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	10	15.00	.00	.00	.00	8.72	4.98	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	1	15.00	.00	.00	.00	8.72	4.97	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	2	15.00	.00	.00	.00	8.72	4.96	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	3	15.00	.00	.00	.00	8.72	4.96	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	4	15.00	.00	.00	.00	8.72	4.95	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	5	15.00	.00	.00	.00	8.72	4.94	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	6	15.00	.00	.00	.00	8.72	4.93	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	7	15.00	.00	.00	.00	8.72	4.92	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	8	15.00	.00	.00	.00	8.72	4.92	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	9	15.00	.00	.00	.00	8.72	4.91	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	10	15.00	.00	.00	.00	8.72	4.90	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

건설교통부

5	11	15.00	.00	.00	.00	8.72	4.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	11	15.00	.00	.00	.00	8.78	4.76	.00			
5	12	15.00	.00	.00	.00	8.72	4.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	12	15.00	.00	.00	.00	8.78	4.76	.00			
6	1	15.00	.00	.00	.00	8.72	4.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	13	15.00	.00	.00	.00	8.78	4.75	.00			
6	2	15.00	.00	.00	.00	8.72	4.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	14	15.00	.00	.00	.00	8.79	4.75	.00			
6	3	15.00	.00	.00	.00	8.72	4.88	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	15	15.00	.00	.00	.00	8.79	4.74	.00			
6	4	15.00	.00	.00	.00	8.73	4.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	16	15.00	.00	.00	.00	8.79	4.73	.00			
6	5	15.00	.00	.00	.00	8.73	4.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	17	15.00	.00	.00	.00	8.80	4.73	.00			
6	6	15.00	.00	.00	.00	8.73	4.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	18	15.00	.00	.00	.00	8.80	4.72	.00			
6	7	15.00	.00	.00	.00	8.73	4.87	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	7	19	15.00	.00	.00	.00	8.80	4.71	.00			
6	8	15.00	.00	.00	.00	8.73	4.86	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	1	15.00	.00	.00	.00	8.81	4.70	.00			
6	9	15.00	.00	.00	.00	8.73	4.86	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	2	15.00	.00	.00	.00	8.81	4.69	.00			
6	10	15.00	.00	.00	.00	8.73	4.86	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	3	15.00	.00	.00	.00	8.81	4.68	.00			
6	11	15.00	.00	.00	.00	8.74	4.85	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	4	15.00	.00	.00	.00	8.82	4.67	.00			
6	12	15.00	.00	.00	.00	8.74	4.85	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	5	15.00	.00	.00	.00	8.82	4.66	.00			
6	13	15.00	.00	.00	.00	8.74	4.85	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	6	15.00	.00	.00	.00	8.82	4.65	.00			
6	14	15.00	.00	.00	.00	8.74	4.84	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	7	15.00	.00	.00	.00	8.82	4.64	.00			
6	15	15.00	.00	.00	.00	8.74	4.84	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	8	15.00	.00	.00	.00	8.83	4.63	.00			
6	16	15.00	.00	.00	.00	8.74	4.84	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	9	15.00	.00	.00	.00	8.83	4.61	.00			
6	17	15.00	.00	.00	.00	8.74	4.83	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	8	10	15.00	.00	.00	.00	8.92	4.47	.00			
7	1	15.00	.00	.00	.00	8.75	4.83	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	1	15.00	.00	.00	.00	8.92	4.46	.00			
7	2	15.00	.00	.00	.00	8.75	4.82	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	2	15.00	.00	.00	.00	8.92	4.46	.00			
7	3	15.00	.00	.00	.00	8.75	4.82	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	3	15.00	.00	.00	.00	8.92	4.45	.00			
7	4	15.00	.00	.00	.00	8.76	4.81	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	4	15.00	.00	.00	.00	8.92	4.45	.00			
7	5	15.00	.00	.00	.00	8.76	4.80	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	5	15.00	.00	.00	.00	8.92	4.44	.00			
7	6	15.00	.00	.00	.00	8.76	4.80	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	6	15.00	.00	.00	.00	8.92	4.44	.00			
7	7	15.00	.00	.00	.00	8.77	4.79	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	7	15.00	.00	.00	.00	8.92	4.43	.00			
7	8	15.00	.00	.00	.00	8.77	4.78	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	8	15.00	.00	.00	.00	8.93	4.43	.00			
7	9	15.00	.00	.00	.00	8.77	4.78	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9	9	15.00	.00	.00	.00	8.93	4.42	.00			
7	10	15.00	.00	.00	.00	8.77	4.77	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

건설교통부

9	10	15.00	.00	.00	.00	8.93	4.41	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	4	15.00	.00	.00	.00	8.94	4.29	.00			
9	11	15.00	.00	.00	.00	8.93	4.41	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	5	15.00	.00	.00	.00	8.95	4.29	.00			
9	12	15.00	.00	.00	.00	8.93	4.40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	6	15.00	.00	.00	.00	8.95	4.28	.00			
9	13	15.00	.00	.00	.00	8.93	4.40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	7	15.00	.00	.00	.00	8.95	4.28	.00			
9	14	15.00	.00	.00	.00	8.93	4.39	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	8	15.00	.00	.00	.00	8.95	4.27	.00			
9	15	15.00	.00	.00	.00	8.93	4.39	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	9	15.00	.00	.00	.00	8.95	4.27	.00			
10	1	15.00	.00	.00	.00	8.93	4.39	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	10	15.00	.00	.00	.00	8.95	4.26	.00			
10	2	15.00	.00	.00	.00	8.93	4.38	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	11	15.00	.00	.00	.00	8.96	4.26	.00			
10	3	15.00	.00	.00	.00	8.93	4.38	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	12	15.00	.00	.00	.00	8.96	4.25	.00			
10	4	15.00	.00	.00	.00	8.93	4.37	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	13	15.00	.00	.00	.00	8.96	4.25	.00			
10	5	15.00	.00	.00	.00	8.93	4.37	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	1	15.00	.00	.00	.00	8.96	4.24	.00			
10	6	15.00	.00	.00	.00	8.93	4.37	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	2	15.00	.00	.00	.00	8.96	4.22	.00			
10	7	15.00	.00	.00	.00	8.93	4.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	3	15.00	.00	.00	.00	8.96	4.21	.00			
10	8	15.00	.00	.00	.00	8.93	4.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	4	15.00	.00	.00	.00	8.96	4.20	.00			
10	9	15.00	.00	.00	.00	8.93	4.35	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	5	15.00	.00	.00	.00	8.96	4.19	.00			
10	10	15.00	.00	.00	.00	8.93	4.35	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	6	15.00	.00	.00	.00	8.96	4.18	.00			
10	11	15.00	.00	.00	.00	8.93	4.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	7	15.00	.00	.00	.00	8.96	4.16	.00			
10	12	15.00	.00	.00	.00	8.93	4.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	8	15.00	.00	.00	.00	8.96	4.15	.00			
10	13	15.00	.00	.00	.00	8.93	4.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	9	15.00	.00	.00	.00	8.96	4.14	.00			
10	14	15.00	.00	.00	.00	8.93	4.33	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	10	15.00	.00	.00	.00	8.96	4.13	.00			
10	15	15.00	.00	.00	.00	8.93	4.33	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	11	15.00	.00	.00	.00	8.96	4.11	.00			
10	16	15.00	.00	.00	.00	8.94	4.32	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	12	15.00	.00	.00	.00	9.03	4.05	.00			
10	17	15.00	.00	.00	.00	8.94	4.32	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12	13	15.00	.00	.00	.00	9.03	4.04	.00			
10	18	15.00	.00	.00	.00	8.94	4.32	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	1	15.00	.00	.00	.00	9.04	4.15	.00			
10	19	15.00	.00	.00	.00	8.94	4.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	2	15.00	.00	.00	.00	9.04	4.27	.00			
10	20	15.00	.00	.00	.00	8.94	4.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	3	15.00	.00	.00	.00	9.05	4.38	.00			
11	1	15.00	.00	.00	.00	8.94	4.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	4	15.00	.00	.00	.00	9.05	4.49	.00			
11	2	15.00	.00	.00	.00	8.94	4.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	5	15.00	.00	.00	.00	9.06	4.60	.00			
11	3	15.00	.00	.00	.00	8.94	4.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

건설교통부

13	6	15.00	.00	.00	.00	9.06	4.71	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
13	7	15.00	.00	.00	.00	9.06	4.81	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
13	8	15.00	.00	.00	.00	9.07	4.92	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
13	9	15.00	.00	.00	.00	9.07	5.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
13	10	15.00	.00	.00	.00	9.07	5.12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
13	11	15.00	.00	.00	.00	9.07	5.22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
13	12	15.00	.00	.00	.00	9.07	5.32	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
13	13	15.00	.00	.00	.00	9.07	5.42	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
14	1	15.00	.00	.00	.00	9.07	5.43	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
14	2	15.00	.00	.00	.00	9.06	5.44	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
14	3	15.00	.00	.00	.00	9.05	5.46	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
14	4	15.00	.00	.00	.00	9.05	5.47	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
14	5	15.00	.00	.00	.00	9.04	5.48	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
14	6	15.00	.00	.00	.00	9.03	5.49	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
14	7	15.00	.00	.00	.00	9.03	5.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
14	8	15.00	.00	.00	.00	9.02	5.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
14	9	15.00	.00	.00	.00	9.01	5.53	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
14	10	15.00	.00	.00	.00	9.01	5.54	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
14	11	15.00	.00	.00	.00	9.00	5.56	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
14	12	15.00	.00	.00	.00	8.99	5.67	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
15	1	15.00	.00	.00	.00	8.98	5.72	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
15	2	15.00	.00	.00	.00	9.00	5.95	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
15	3	15.00	.00	.00	.00	8.98	5.98	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
15	4	15.00	.00	.00	.00	8.97	6.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
15	5	15.00	.00	.00	.00	8.95	6.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
15	6	15.00	.00	.00	.00	8.94	6.09	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
15	7	15.00	.00	.00	.00	8.92	6.12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
15	8	15.00	.00	.00	.00	8.91	6.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00											
15	9	15.00	.00	.00	.00	8.89	6.19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	1	15.00	.00	.00	.00	8.87	6.20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	2	15.00	.00	.00	.00	8.86	6.22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	3	15.00	.00	.00	.00	8.84	6.23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	4	15.00	.00	.00	.00	8.83	6.24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	5	15.00	.00	.00	.00	8.82	6.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	6	15.00	.00	.00	.00	8.80	6.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	7	15.00	.00	.00	.00	8.79	6.28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	8	15.00	.00	.00	.00	8.78	6.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	9	15.00	.00	.00	.00	8.76	6.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	10	15.00	.00	.00	.00	8.75	6.32	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	11	15.00	.00	.00	.00	8.74	6.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	12	15.00	.00	.00	.00	8.72	6.35	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	13	15.00	.00	.00	.00	8.71	6.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	1	12.00	.00	.00	.00	8.70	6.37	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	2	12.00	.00	.00	.00	8.69	6.38	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	3	12.00	.00	.00	.00	8.68	6.39	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	4	12.00	.00	.00	.00	8.67	6.39	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	5	12.00	.00	.00	.00	8.66	6.40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	6	12.00	.00	.00	.00	8.65	6.41	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	7	12.00	.00	.00	.00	8.64	6.42	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	8	12.00	.00	.00	.00	8.63	6.42	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	9	12.00	.00	.00	.00	8.62	6.43	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	10	12.00	.00	.00	.00	8.61	6.44	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	11	12.00	.00	.00	.00	8.60	6.44	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	12	12.00	.00	.00	.00	8.59	6.45	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	13	12.00	.00	.00	.00	8.59	6.46	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	14	12.00	.00	.00	.00	8.58	6.46	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	15	12.00	.00	.00	.00	8.59	6.44	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

건설교통부

제Ⅷ장 안정하상 유지

1. 하상구성재료 입도분포

2. 유사량 산정결과

3. Hec-6 모형에 의한 장래하상예측

4. Kubo공식에 의한 평형하상고 검토

5. 하상변동 양상

건설교통부

1. 하상구성 재료 및 입도분포

건설교통부

하상구성재료의 입도분포

소하천	측 점 (No.)	통과중량 백분율별 입경 D(mm)										D_m (mm)	P_m (%)	100-P_m (%)	λ	λ x D_m (mm)
		D_{10} (10%)	D_{20} (20%)	D_{30} (30%)	D_{40} (40%)	D_{50} (50%)	D_{60} (60%)	D_{70} (70%)	D_{80} (80%)	D_{90} (90%)	D_{100} (100%)					
갑천	우 No. 0	0.16	0.28	0.37	0.47	0.60	0.71	0.85	1.01	1.36	19.10	2.49	95.83	4.17	0.043	0.108
갑천	우 No. 19	0.03	0.08	0.19	0.30	0.44	0.65	1.05	2.16	8.05	19.10	3.21	82.46	17.54	0.213	0.682
갑천	우 No. 39	0.01	0.03	0.04	0.06	0.07	0.08	0.11	0.15	0.25	9.52	1.03	98.26	1.74	0.018	0.018
갑천	우 No. 59	0.00	0.01	0.02	0.03	0.04	0.07	0.11	0.16	0.25	9.52	1.02	98.51	1.49	0.015	0.015
갑천	우 No. 79	0.19	0.30	0.35	0.41	0.48	0.56	0.67	0.82	0.99	4.76	0.95	87.94	12.06	0.137	0.131
갑천	좌 No. 99	0.00	0.00	0.01	0.02	0.03	0.06	0.10	0.14	0.22	4.76	0.53	98.79	1.21	0.012	0.007
갑천	우 No. 119	0.09	0.18	0.27	0.36	0.45	0.58	0.73	0.93	1.22	19.10	2.39	97.82	2.18	0.022	0.053
갑천	우 No. 139	0.36	0.65	0.95	1.39	2.02	3.48	6.46	10.77	15.61	38.10	7.98	73.64	26.36	0.358	2.856
갑천	우 No. 159	0.01	0.03	0.08	0.16	0.22	0.30	0.39	0.50	0.92	9.52	1.21	91.88	8.12	0.088	0.107
갑천	우No.164(EP)	1.69	3.18	5.41	8.96	12.88	18.14	25.11	34.65	50.75	76.20	23.70	68.20	31.80	0.466	11.050
강경천	좌 No. 0	0.00	0.01	0.02	0.02	0.04	0.05	0.08	0.11	0.16	2.36	0.28	96.44	3.56	0.037	0.011
강경천	우 No. 20	0.25	0.65	1.16	2.06	6.72	12.51	17.48	31.55	50.97	76.20	19.95	73.30	26.70	0.364	7.270
강경천	좌No.38(EP)	0.13	0.37	0.54	0.69	0.83	1.01	1.23	1.63	2.15	9.52	1.81	83.78	16.22	0.194	0.351
금강본류	좌 No. 2	0.01	0.03	0.04	0.05	0.06	0.06	0.07	0.11	0.25	4.76	0.54	94.66	5.34	0.056	0.031
금강본류	좌 No. 8	0.00	0.01	0.03	0.05	0.05	0.06	0.06	0.07	0.09	4.76	0.52	97.45	2.55	0.026	0.014
금강본류	좌 No. 18	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.33	19.10	1.97	94.64	5.36	0.057	0.112
금강본류	좌 No. 24	0.00	0.01	0.03	0.05	0.06	0.08	0.12	0.21	1.23	19.10	2.09	92.46	7.54	0.082	0.170
금강본류	좌 No. 32	0.00	0.01	0.03	0.03	0.04	0.05	0.06	0.07	0.11	4.76	0.52	99.74	0.26	0.003	0.001
금강본류	좌 No. 40	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.06	0.07	9.52	0.98	99.52	0.48	0.005	0.005
금강본류	좌 No. 48	0.00	0.01	0.01	0.02	0.03	0.03	0.05	0.06	0.09	4.76	0.51	99.28	0.72	0.007	0.004
금강본류	좌 No. 56	0.01	0.02	0.04	0.05	0.06	0.07	0.08	0.12	0.17	2.36	0.30	99.67	0.33	0.003	0.001
금강본류	좌 No. 64	0.01	0.02	0.03	0.03	0.04	0.05	0.06	0.07	0.08	2.36	0.27	96.62	3.38	0.035	0.010
금강본류	좌 No. 72	0.31	0.36	0.43	0.51	0.59	0.77	1.01	5.15	22.36	38.10	6.96	80.88	19.12	0.236	1.645
금강본류	좌 No. 81	0.04	0.14	0.16	0.18	0.20	0.22	0.24	0.26	0.29	2.36	0.41	96.98	3.02	0.031	0.013
금강본류	좌 No. 88	0.16	0.28	0.35	0.41	0.49	0.58	0.85	1.31	1.87	19.10	2.54	96.72	3.28	0.034	0.086
금강본류	좌 No. 96	0.00	0.01	0.03	0.05	0.06	0.07	0.08	0.12	0.17	2.36	0.30	99.67	0.33	0.003	0.001

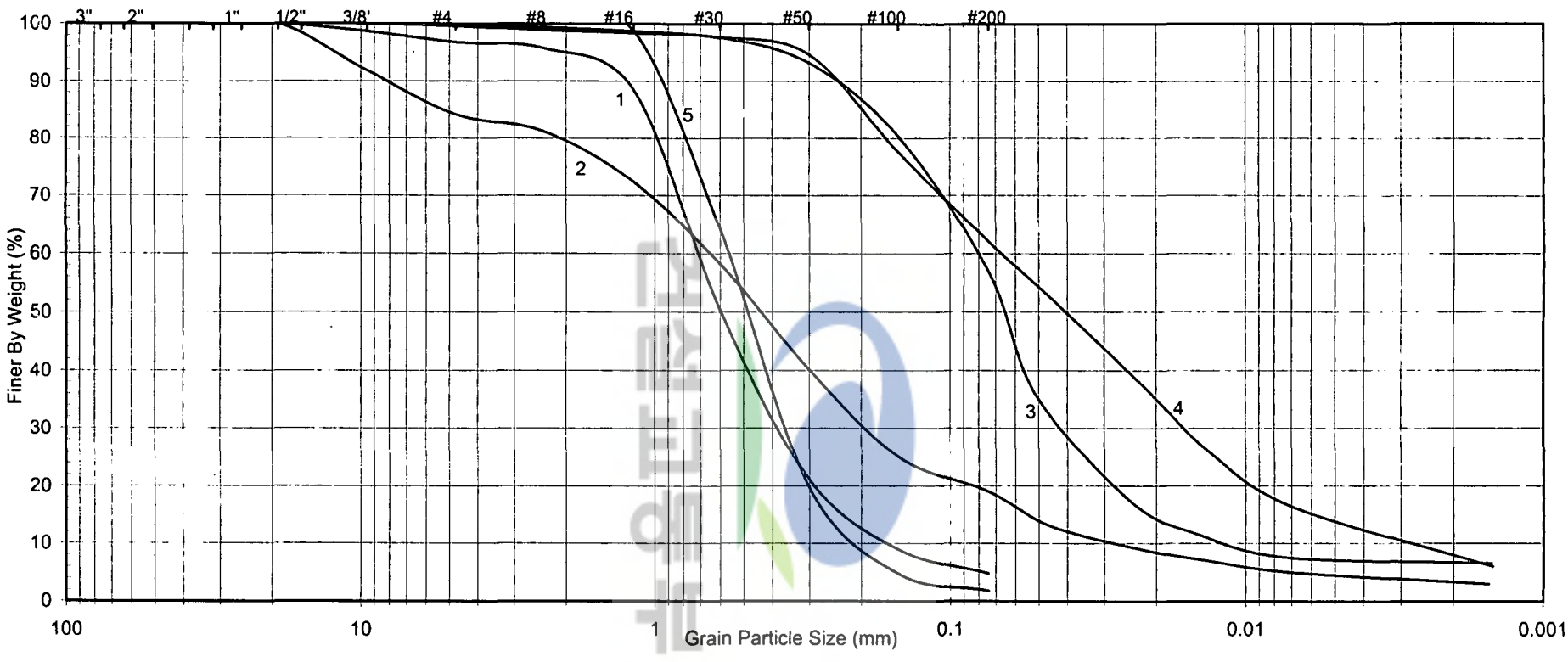
하상구성재료의 입도분포

소하천	측 점 (No.)	통과중량 백분율별 입경 D(mm)										D_m (mm)	P_m (%)	100-P_m (%)	λ	λ x D_m (mm)
		D_{10} (10%)	D_{20} (20%)	D_{30} (30%)	D_{40} (40%)	D_{50} (50%)	D_{60} (60%)	D_{70} (70%)	D_{80} (80%)	D_{90} (90%)	D_{100} (100%)					
금강본류	좌 No. 104	0.16	0.21	0.26	0.32	0.35	0.39	0.44	0.49	0.54	2.36	0.55	91.42	8.58	0.094	0.052
금강본류	좌 No. 112	0.16	0.19	0.24	0.29	0.34	0.39	0.45	0.51	0.59	4.76	0.79	94.31	5.69	0.060	0.048
금강본류	좌 No. 120	0.21	0.57	0.74	0.93	1.17	1.41	1.71	2.07	2.97	19.10	3.09	90.50	9.50	0.105	0.324
금강본류	좌 No. 128	0.18	0.31	0.36	0.40	0.46	0.52	0.59	0.81	1.13	9.52	1.43	93.18	6.82	0.073	0.105
금강본류	좌 No. 136	0.23	0.33	0.38	0.43	0.50	0.57	0.69	0.87	1.10	9.52	1.46	94.39	5.61	0.059	0.087
금강본류	좌 No. 144	0.19	0.29	0.33	0.36	0.39	0.43	0.47	0.52	0.57	2.36	0.59	94.75	5.25	0.055	0.033
금강본류	좌 No. 152	0.01	0.02	0.09	0.15	0.18	0.22	0.27	0.33	0.45	4.76	0.65	99.72	0.28	0.003	0.002
금강본류	좌 No. 160	0.04	0.09	0.15	0.19	0.25	0.38	0.86	1.49	2.30	9.52	1.53	80.54	19.46	0.242	0.370
금강본류	좌 No. 168	0.30	0.39	0.50	0.64	0.79	0.97	1.24	2.03	7.10	38.10	5.21	88.51	11.49	0.130	0.676
금강본류	우 No. 176	0.18	0.36	0.49	0.69	1.03	2.18	11.83	22.86	32.56	76.20	14.84	72.33	27.67	0.383	5.676
금강본류	우 No. 184	0.20	0.32	0.35	0.38	0.42	0.46	0.51	0.56	0.72	19.10	2.30	98.32	1.68	0.017	0.039
금강본류	우 No. 192	0.01	0.03	0.06	0.09	0.14	0.17	0.20	0.23	0.27	2.36	0.36	97.61	2.39	0.025	0.009
금강본류	우 No. 200	0.15	0.31	0.34	0.37	0.41	0.46	0.50	0.56	0.71	38.10	4.19	98.86	1.14	0.012	0.048
금강본류	우 No. 208	0.18	0.30	0.33	0.36	0.40	0.44	0.48	0.53	0.58	4.76	0.84	95.87	4.13	0.043	0.036
금강본류	우 No. 216	0.00	0.01	0.02	0.03	0.04	0.06	0.09	0.12	0.19	2.36	0.29	97.36	2.64	0.027	0.008
금강본류	우 No. 224	0.21	0.37	0.47	0.61	0.70	0.81	0.93	1.07	1.43	9.52	1.61	91.87	8.13	0.088	0.143
금강본류	우 No. 232	0.01	0.05	0.12	0.21	0.31	0.36	0.41	0.48	0.55	4.76	0.73	96.52	3.48	0.036	0.026
금강본류	우 No. 240	0.39	0.63	1.25	5.47	10.26	13.57	17.95	23.18	29.72	38.10	14.05	61.25	38.75	0.633	8.891
금강본류	우 No. 248	0.30	0.38	0.48	0.60	0.75	0.95	1.20	1.96	4.37	19.10	3.01	86.25	13.75	0.159	0.480
금강본류	좌 No. 256	0.62	0.77	0.95	1.18	1.57	2.10	7.34	20.86	28.19	38.10	10.17	71.36	28.64	0.401	4.081
금강본류	우No.260(EP)	0.41	0.71	0.91	1.17	1.61	2.22	5.87	19.45	27.22	38.10	9.77	73.59	26.41	0.359	3.504
금강상류	우 No. 0	1.87	5.01	8.91	13.27	19.21	23.39	28.48	34.67	48.32	76.20	25.93	65.25	34.75	0.533	13.813
금강상류	좌 No. 8	0.20	0.45	0.63	0.70	0.78	0.86	0.96	1.07	1.28	9.52	1.65	92.73	7.27	0.078	0.129
금강상류	좌 No. 18	1.24	2.35	6.83	12.17	17.60	24.57	33.96	45.12	58.63	76.20	27.87	63.89	36.11	0.565	15.753
금강상류	우 No. 24	0.00	0.01	0.01	0.02	0.04	0.05	0.06	0.07	0.10	4.76	0.51	99.56	0.44	0.004	0.002
금강상류	좌 No. 32	0.00	0.01	0.01	0.03	0.04	0.06	0.08	0.13	0.23	9.52	1.01	98.90	1.10	0.011	0.011

하상구성재료의 입도분포

소하천	측 점 (No.)	통과중량 백분율별 입경 D(mm)										D_m (mm)	P_m (%)	100-P_m (%)	λ	λ x D_m (mm)
		D_{10} (10%)	D_{20} (20%)	D_{30} (30%)	D_{40} (40%)	D_{50} (50%)	D_{60} (60%)	D_{70} (70%)	D_{80} (80%)	D_{90} (90%)	D_{100} (100%)					
금강상류	좌 No. 40	0.17	0.22	0.29	0.34	0.39	0.44	0.51	0.58	0.97	19.10	2.30	96.85	3.15	0.033	0.075
금강상류	좌No.48(EP)	0.19	0.26	0.32	0.37	0.41	0.47	0.53	0.63	1.07	19.10	2.33	95.85	4.15	0.043	0.101
노성천	우 No. 0	0.00	0.01	0.01	0.02	0.03	0.04	0.06	0.11	0.19	4.76	0.52	99.14	0.86	0.009	0.005
노성천	우 No. 20	0.20	0.33	0.38	0.44	0.50	0.58	0.74	0.96	1.37	9.52	1.50	91.28	8.72	0.095	0.143
노성천	우No.25(EP)	0.32	0.49	0.72	1.03	1.35	1.67	2.07	2.75	4.13	19.10	3.36	84.95	15.05	0.177	0.596
논산천	좌 No. 0	0.01	0.03	0.05	0.07	0.11	0.16	0.20	0.24	0.29	4.76	0.59	98.12	1.88	0.019	0.011
논산천	좌 No. 20	0.00	0.00	0.01	0.01	0.03	0.09	0.16	0.25	2.56	4.76	0.79	86.39	13.61	0.158	0.124
논산천	우 No. 40	0.00	0.02	0.03	0.04	0.05	0.07	0.10	0.17	0.24	2.36	0.31	97.08	2.92	0.030	0.009
논산천	좌 No. 60	0.00	0.03	0.06	0.11	0.20	0.34	0.65	4.00	11.72	19.10	3.62	79.64	20.36	0.256	0.925
논산천	좌No.80(EP)	0.03	0.12	0.19	0.27	0.35	0.46	0.60	1.10	5.17	19.10	2.74	87.24	12.76	0.146	0.401
미호천	좌 No. 0	0.74	1.25	1.53	1.86	2.28	2.76	3.34	4.04	5.21	19.10	4.21	82.14	17.86	0.217	0.916
미호천	좌 No. 20	0.01	0.04	0.08	0.11	0.14	0.17	0.21	0.25	0.30	4.76	0.61	96.35	3.65	0.038	0.023
미호천	좌 No. 40	0.11	0.19	0.27	0.33	0.39	0.45	0.52	0.60	0.99	19.10	2.30	97.12	2.88	0.030	0.068
미호천	우 No. 60	0.15	0.30	0.41	0.55	0.91	2.10	13.78	22.76	29.45	38.10	10.85	67.67	32.33	0.478	5.185
미호천	우 No. 80	0.32	0.42	0.54	0.65	0.72	0.81	0.91	1.02	1.14	4.76	1.13	88.92	11.08	0.125	0.141
미호천	좌 No. 100	0.01	0.07	0.14	0.18	0.21	0.26	0.32	0.44	0.60	19.10	2.13	94.55	5.45	0.058	0.123
미호천	우 No. 120	0.11	0.22	0.32	0.41	0.51	0.65	0.85	1.13	1.69	9.52	1.54	87.83	12.17	0.139	0.213
미호천	우 No. 140	0.00	0.01	0.03	0.06	0.08	0.11	0.16	0.20	0.26	9.52	1.04	99.00	1.00	0.010	0.011
미호천	좌 No. 160	0.48	0.81	1.21	1.68	2.34	4.31	11.14	21.29	28.48	38.10	10.98	69.84	30.16	0.432	4.743
미호천	좌 No. 180	0.08	0.16	0.19	0.23	0.28	0.33	0.38	0.45	0.52	2.36	0.50	87.48	12.52	0.143	0.071
미호천	우No.195(EP)	0.04	0.22	0.36	0.48	0.62	0.77	0.96	1.21	1.69	2.36	0.87	65.46	34.54	0.528	0.460
유등천	좌 No. 0	0.08	0.10	0.12	0.14	0.17	0.19	0.22	0.26	0.32	2.36	0.40	92.12	7.88	0.086	0.034
유등천	우 No. 20	0.00	0.02	0.04	0.06	0.09	0.13	0.19	0.25	0.43	19.10	2.03	96.29	3.71	0.039	0.078
유등천	좌 No. 40	0.19	0.35	0.56	0.91	1.48	2.48	6.01	11.29	17.22	38.10	7.86	73.47	26.53	0.361	2.838
유등천	좌 No. 60	0.28	1.55	4.15	8.36	12.47	17.48	22.36	27.71	34.33	76.20	20.49	65.91	34.09	0.517	10.597
유등천	좌No.75(EP)	0.17	0.31	0.34	0.38	0.42	0.47	0.53	0.59	0.89	9.52	1.36	96.78	3.22	0.033	0.045

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
갑천	우 No. 0	0.159	0.282	0.371	0.470	0.596	0.712	0.850	1.014	1.356	12.6	2.638	SP
갑천	우 No. 19	0.027	0.083	0.188	0.298	0.438	0.654	1.053	2.158	8.052	14.5	2.657	SM
갑천	우 No. 39	0.011	0.027	0.041	0.055	0.066	0.081	0.110	0.148	0.252	28.4	2.649	ML
갑천	우 No. 59	0.003	0.009	0.016	0.025	0.041	0.067	0.106	0.165	0.248	48.8	2.592	ML
갑천	우 No. 79	0.191	0.302	0.352	0.412	0.481	0.563	0.673	0.818	0.994	8.4	2.627	SP

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

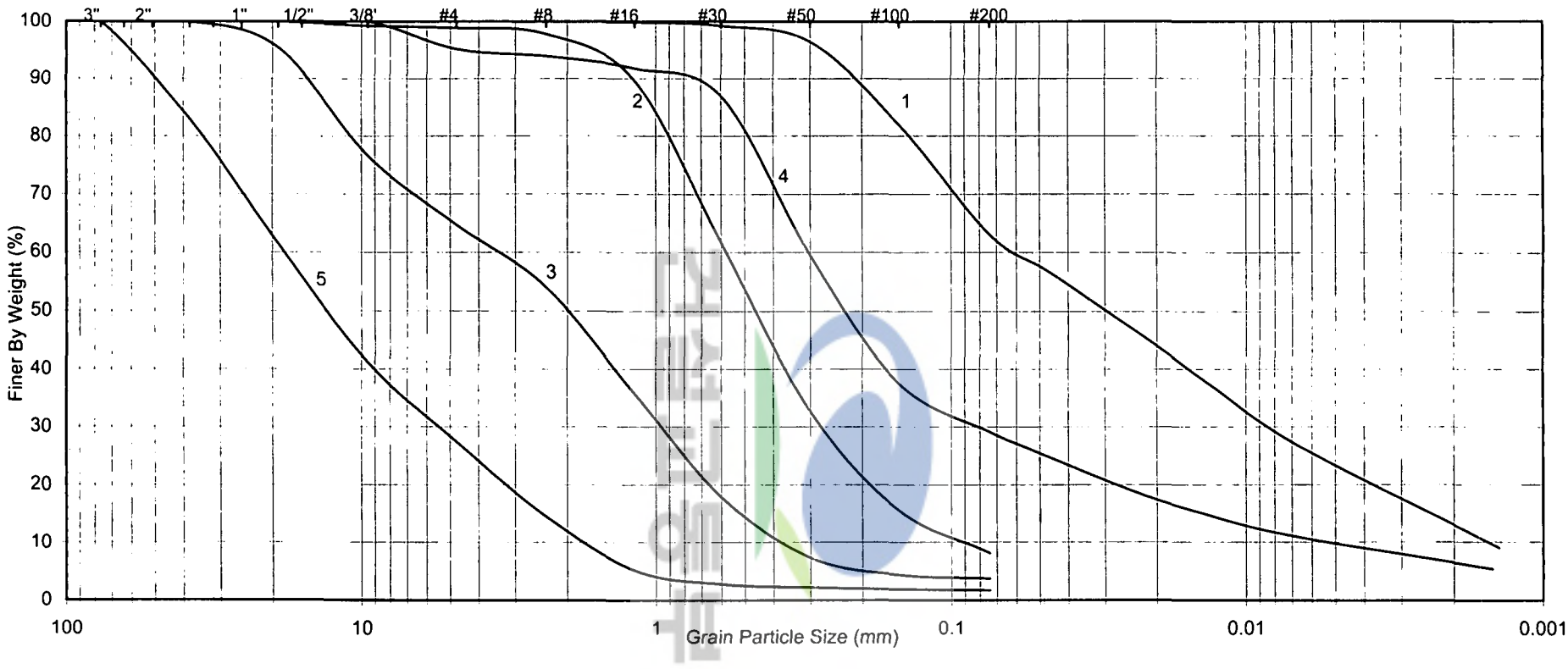
Area : 갑천

Date : 2001 년 4 월

Checked By :

Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
갑천	좌 No. 99	0.002	0.004	0.008	0.016	0.030	0.059	0.096	0.139	0.220	54.7	2.624	ML
갑천	우 No. 119	0.089	0.180	0.270	0.358	0.454	0.576	0.734	0.934	1.216	13.2	2.617	SW-SM
갑천	우 No. 139	0.358	0.650	0.949	1.386	2.022	3.481	6.457	10.770	15.605	3.7	2.671	SP
갑천	우 No. 159	0.005	0.027	0.080	0.162	0.222	0.304	0.391	0.503	0.916	26.7	2.604	SM
갑천	우No.164(EP	1.692	3.176	5.412	8.963	12.876	18.143	25.113	34.651	50.750	1.5	2.627	GP

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

Area : 갑천

Date : 2001 년 4 월

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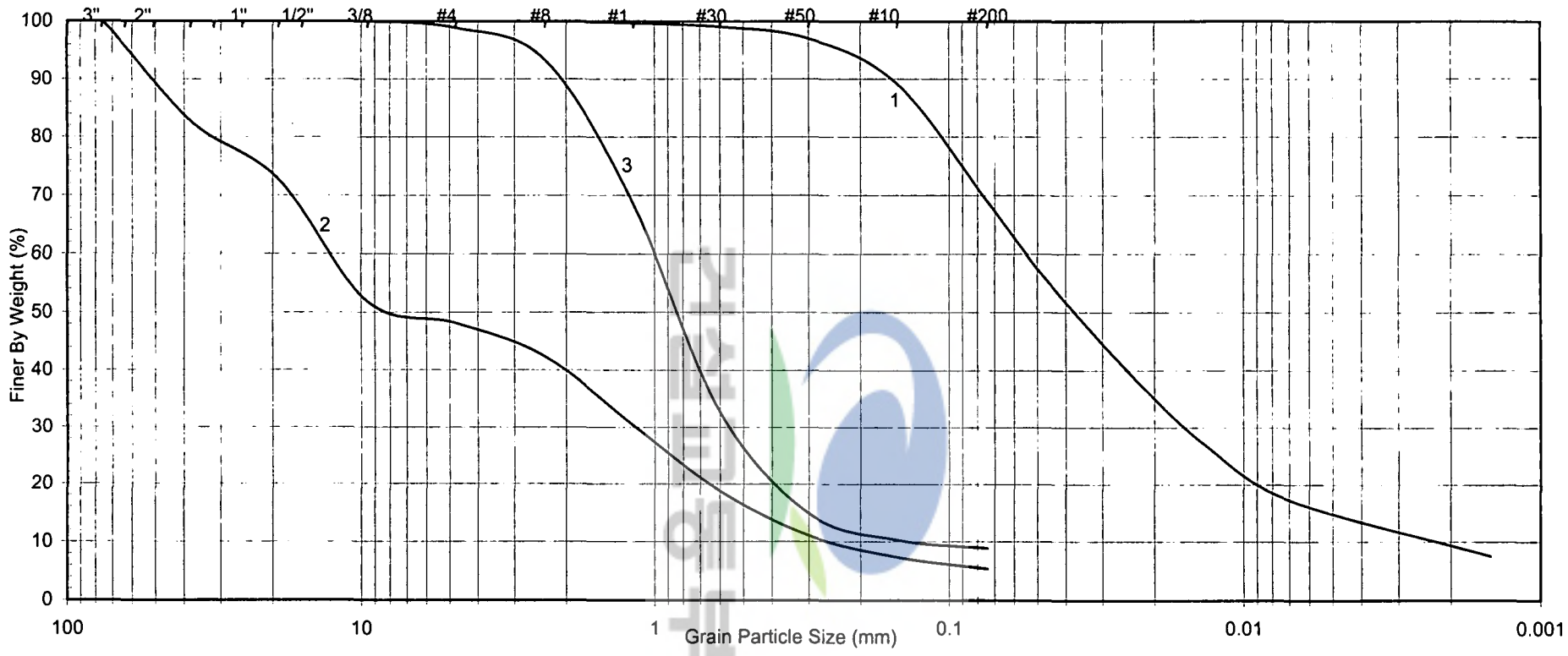
Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
강경천	좌 No. 0	0.002	0.008	0.016	0.025	0.037	0.054	0.077	0.109	0.161	30.8	2.605	ML
강경천	우 No. 20	0.247	0.646	1.158	2.057	6.717	12.507	17.476	31.549	50.973	5.2	2.630	GP-GM
강경천	좌No.38(EP)	0.132	0.366	0.540	0.689	0.833	1.006	1.233	1.629	2.153	8.7	2.640	SW-SM

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

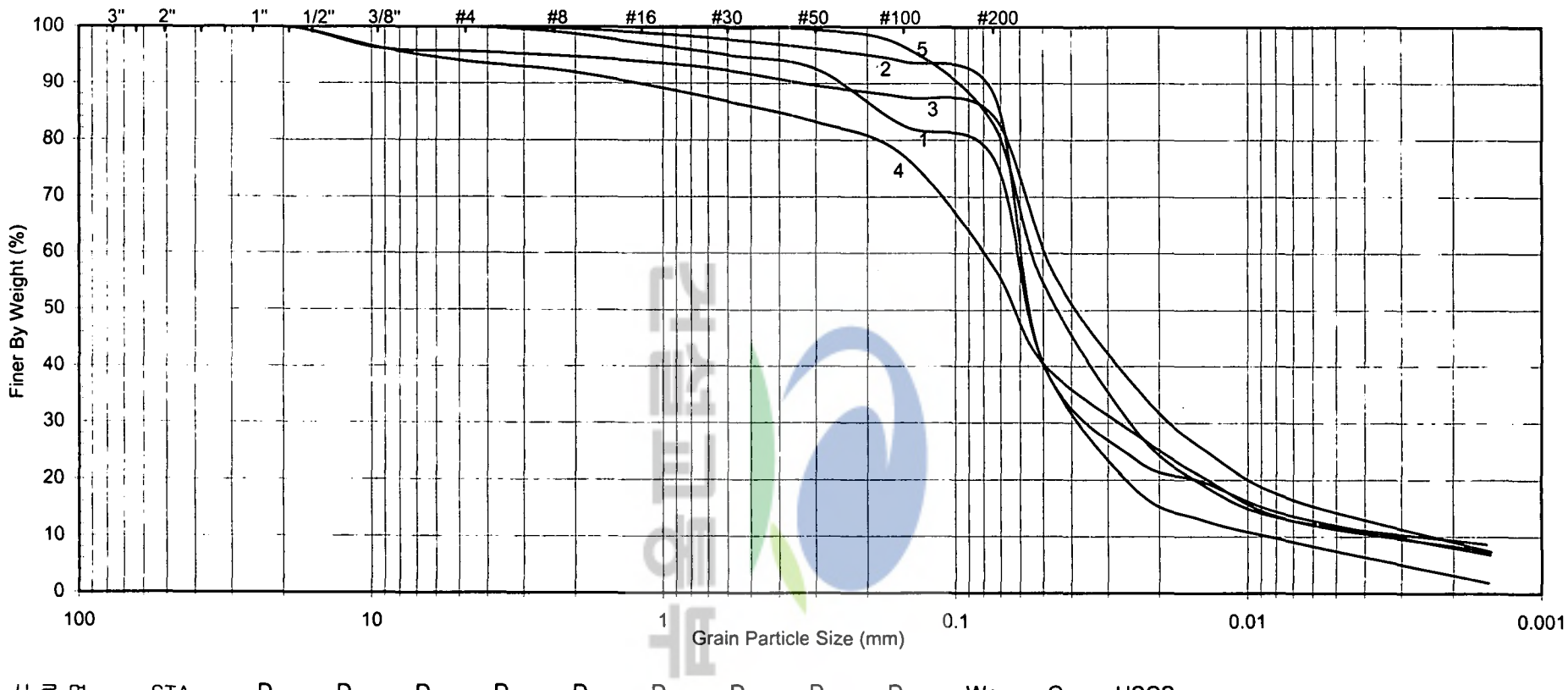
Area : 강경천

Date : 2001 년 4 월

Checked By :

Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
금강본류	좌 No. 2	0.008	0.026	0.035	0.049	0.056	0.062	0.069	0.109	0.251	21.0	2.672	ML
금강본류	좌 No. 8	0.003	0.015	0.032	0.048	0.054	0.059	0.064	0.069	0.093	28.5	2.611	ML
금강본류	좌 No. 18	0.002	0.009	0.018	0.027	0.037	0.049	0.058	0.069	0.331	18.0	2.599	ML
금강본류	좌 No. 24	0.003	0.014	0.027	0.048	0.062	0.081	0.116	0.206	1.229	28.6	2.672	ML
금강본류	좌 No. 32	0.002	0.015	0.025	0.033	0.044	0.054	0.062	0.071	0.107	28.6	2.597	ML

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

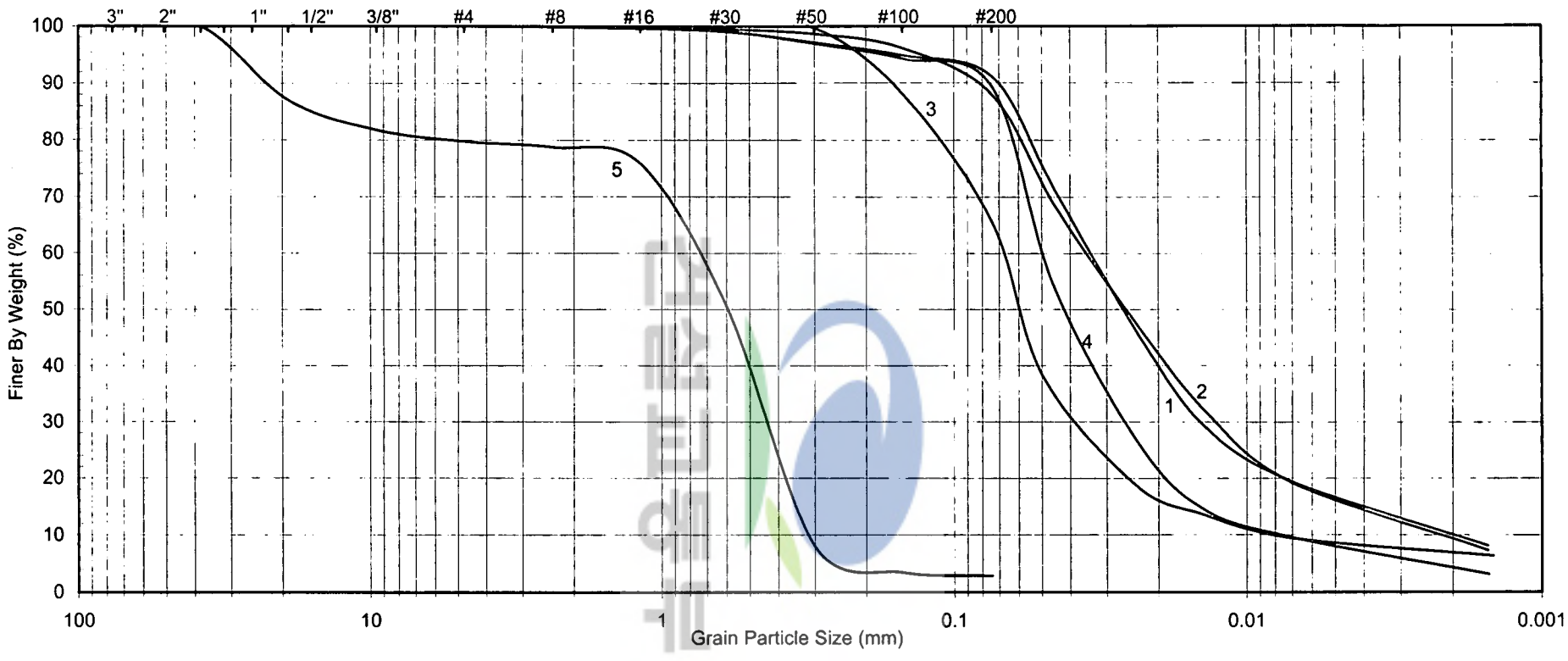
Area : 금강본류

Date : 2001 년 4 월

Checked By :

Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
금강본류	좌 No. 40	0.002	0.007	0.014	0.020	0.026	0.034	0.044	0.056	0.072	29.4	2.646	ML
금강본류	좌 No. 48	0.002	0.007	0.013	0.018	0.026	0.035	0.047	0.060	0.088	48.0	2.619	ML
금강본류	좌 No. 56	0.008	0.025	0.036	0.051	0.059	0.068	0.085	0.116	0.168	30.6	2.678	ML
금강본류	좌 No. 64	0.007	0.018	0.026	0.032	0.041	0.049	0.057	0.065	0.082	41.4	2.631	ML
금강본류	좌 No. 72	0.310	0.365	0.429	0.505	0.595	0.772	1.009	5.154	22.364	4.0	2.607	SP

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

Area : 금강본류

Date : 2001 년 4 월

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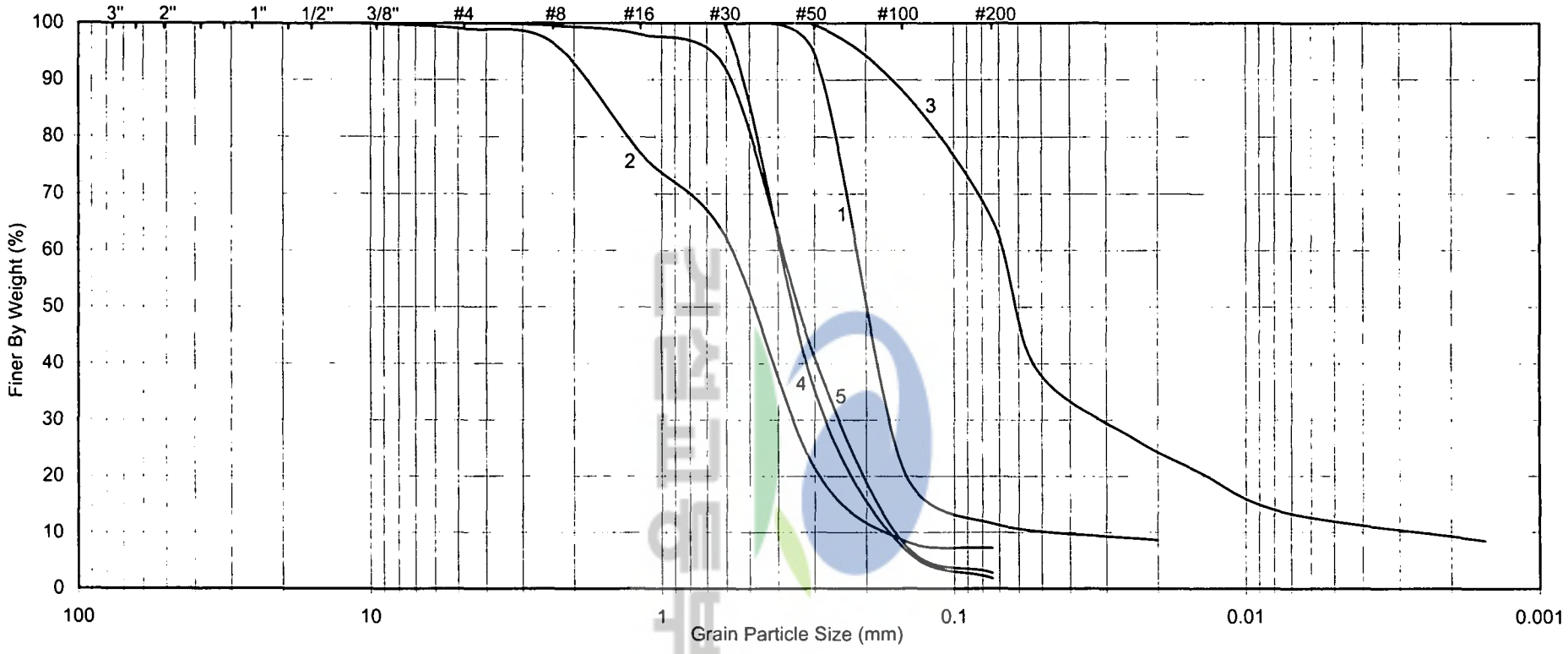
Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
금강본류	좌 No. 81	0.037	0.136	0.163	0.179	0.197	0.216	0.238	0.261	0.287	7.2	2.646	SP-SM
금강본류	좌 No. 88	0.162	0.279	0.348	0.412	0.488	0.579	0.855	1.306	1.871	1.0	2.615	SP-SM
금강본류	좌 No. 96	0.002	0.013	0.030	0.053	0.060	0.069	0.085	0.116	0.168	30.4	2.633	ML
금강본류	좌 No. 104	0.160	0.206	0.264	0.316	0.352	0.393	0.438	0.488	0.544	10.8	2.652	SP
금강본류	좌 No. 112	0.156	0.193	0.238	0.294	0.339	0.389	0.446	0.511	0.586	7.9	2.653	SP

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

Area : 금강본류

Date : 2001 년 4 월

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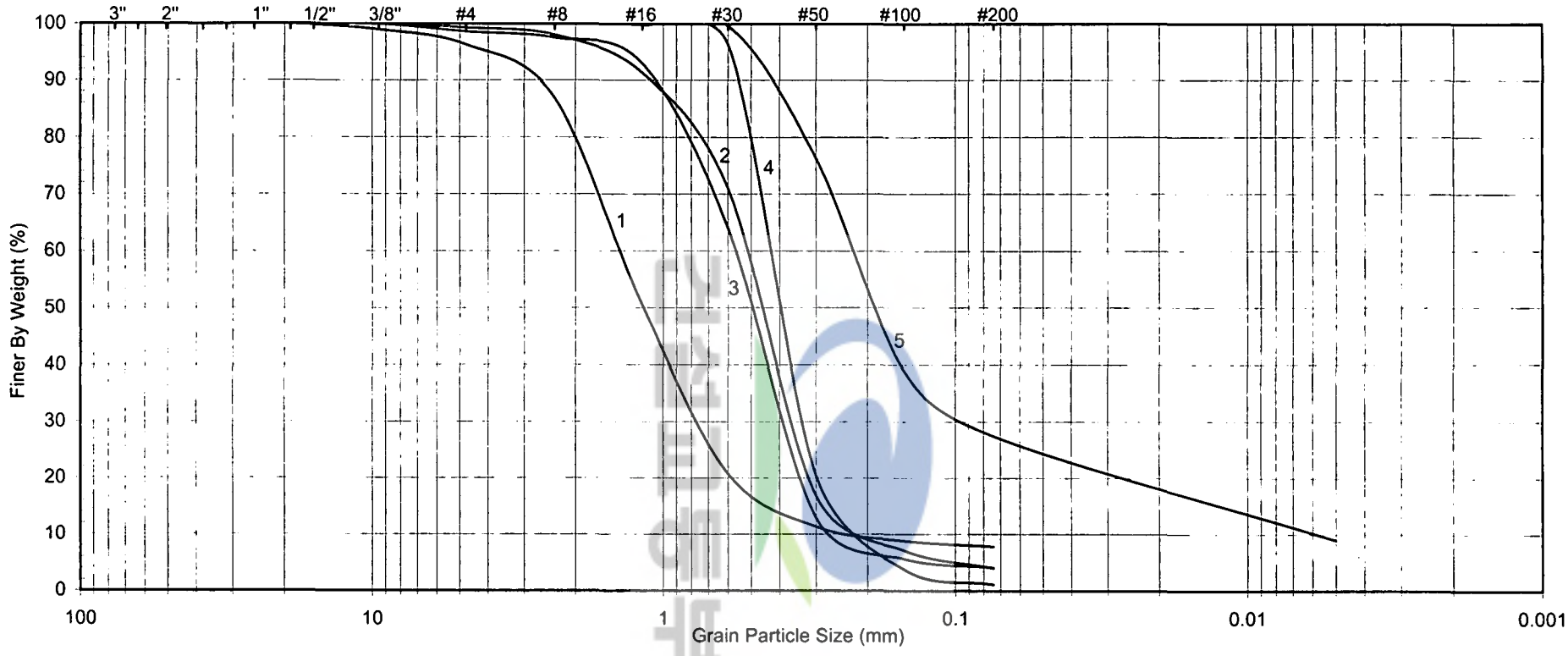
Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
금강본류	좌 No. 120	0.207	0.567	0.740	0.929	1.166	1.414	1.710	2.069	2.974	3.1	2.661	SW-SM
금강본류	좌 No. 128	0.184	0.313	0.355	0.404	0.459	0.521	0.592	0.809	1.129	1.2	2.619	SP
금강본류	좌 No. 136	0.227	0.330	0.378	0.433	0.496	0.568	0.689	0.871	1.101	0.7	2.678	SP
금강본류	좌 No. 144	0.194	0.295	0.327	0.359	0.393	0.431	0.472	0.517	0.566	1.0	2.631	SP
금강본류	좌 No. 152	0.006	0.025	0.086	0.153	0.184	0.222	0.267	0.335	0.450	1.2	2.607	SM

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

Area : 금강본류

Date : 2001 년 4 월

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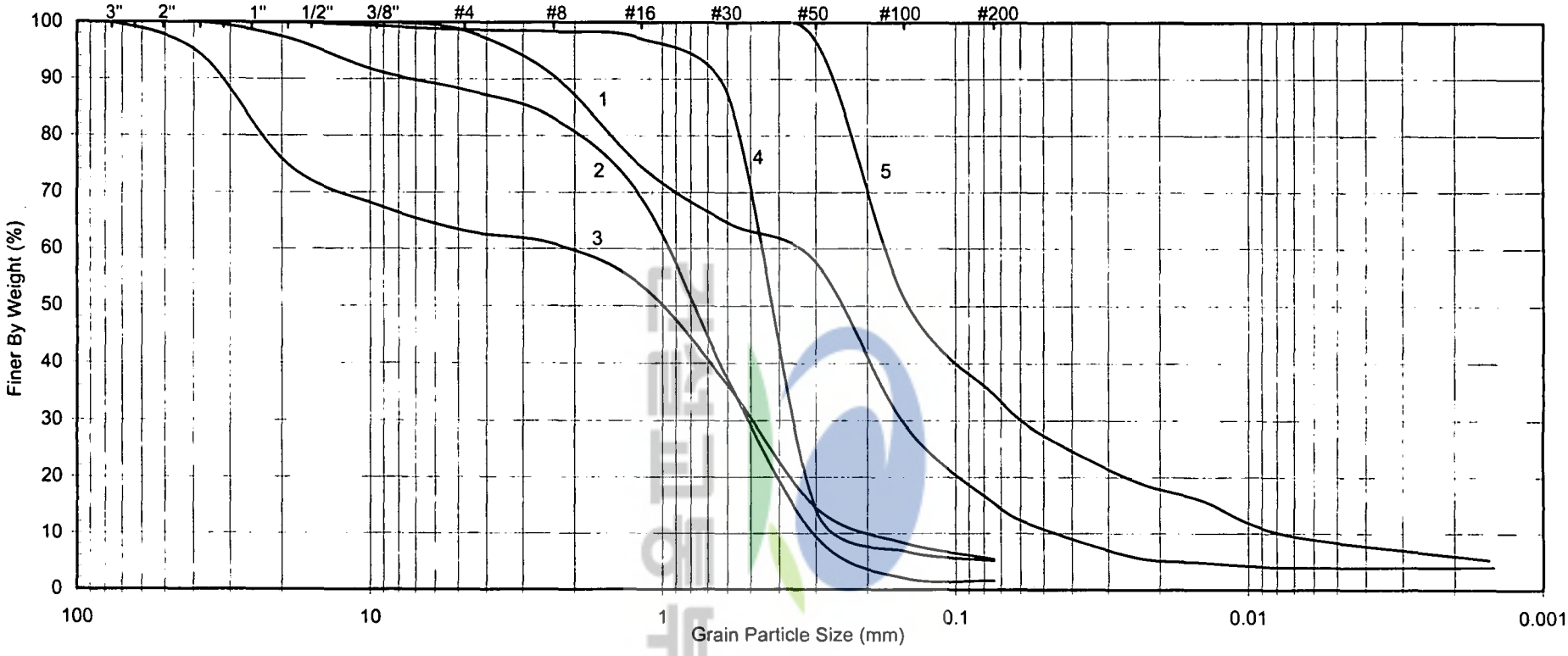
Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
금강본류	좌 No. 160	0.044	0.093	0.152	0.194	0.249	0.379	0.865	1.494	2.304	15.6	2.661	SM
금강본류	좌 No. 168	0.305	0.391	0.501	0.636	0.787	0.974	1.239	2.030	7.104	4.0	2.619	SP
금강본류	우 No. 176	0.181	0.356	0.491	0.695	1.026	2.178	11.827	22.859	32.564	1.6	2.678	SP-SM
금강본류	우 No. 184	0.202	0.317	0.348	0.383	0.421	0.463	0.509	0.559	0.719	9.8	2.631	SP-SM
금강본류	우 No. 192	0.008	0.026	0.058	0.093	0.141	0.171	0.199	0.232	0.270	36.7	2.619	SM

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

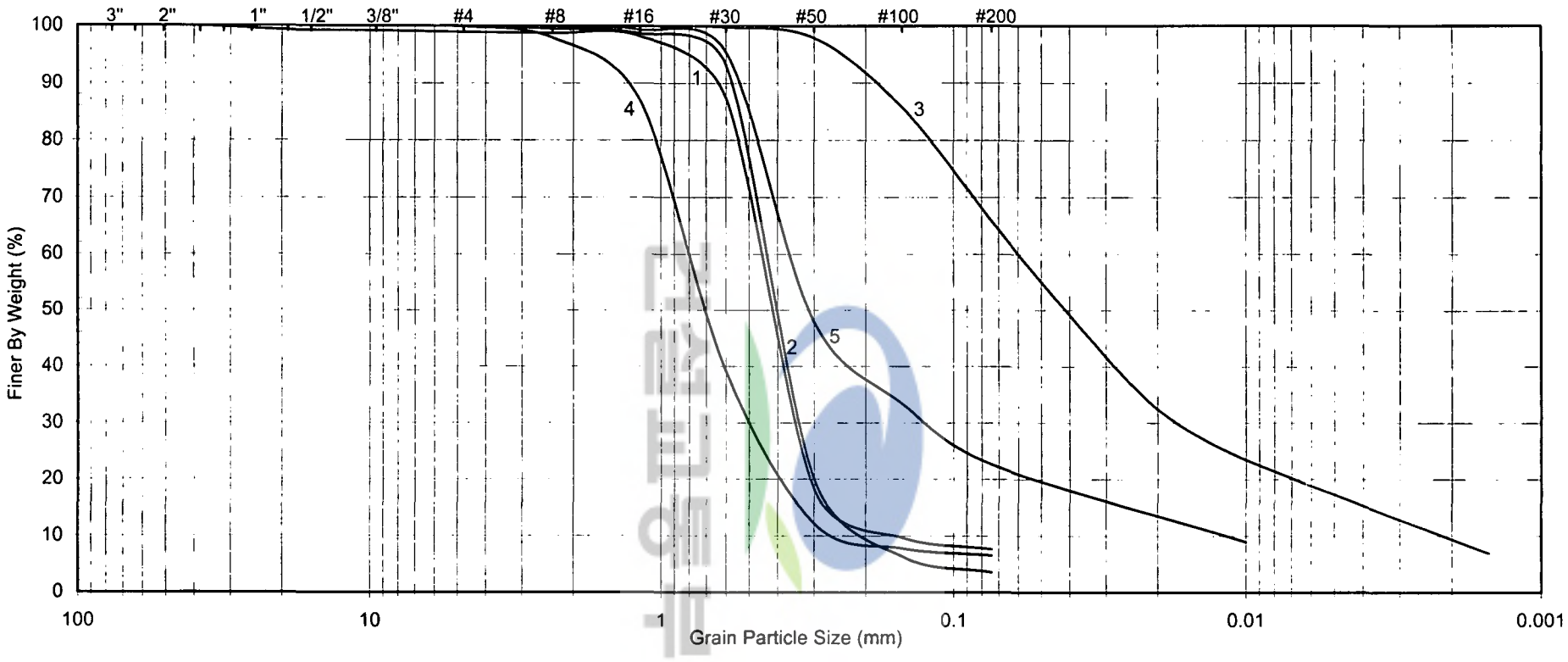
Area : 금강본류

Date : 2001 년 4 월

Checked By :

Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
금강본류	우 No. 200	0.153	0.305	0.337	0.373	0.412	0.456	0.504	0.557	0.707	11.4	2.661	SP-SM
금강본류	우 No. 208	0.181	0.300	0.330	0.363	0.399	0.438	0.482	0.530	0.582	9.3	2.619	SP
금강본류	우 No. 216	0.002	0.007	0.017	0.028	0.041	0.060	0.086	0.122	0.191	51.6	2.678	ML
금강본류	우 No. 224	0.211	0.366	0.474	0.607	0.700	0.806	0.928	1.069	1.431	3.0	2.631	SP-SM
금강본류	우 No. 232	0.012	0.050	0.120	0.206	0.309	0.358	0.414	0.479	0.555	12.3	2.653	SM

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

Area : 금강본류

Date : 2001 년 4 월

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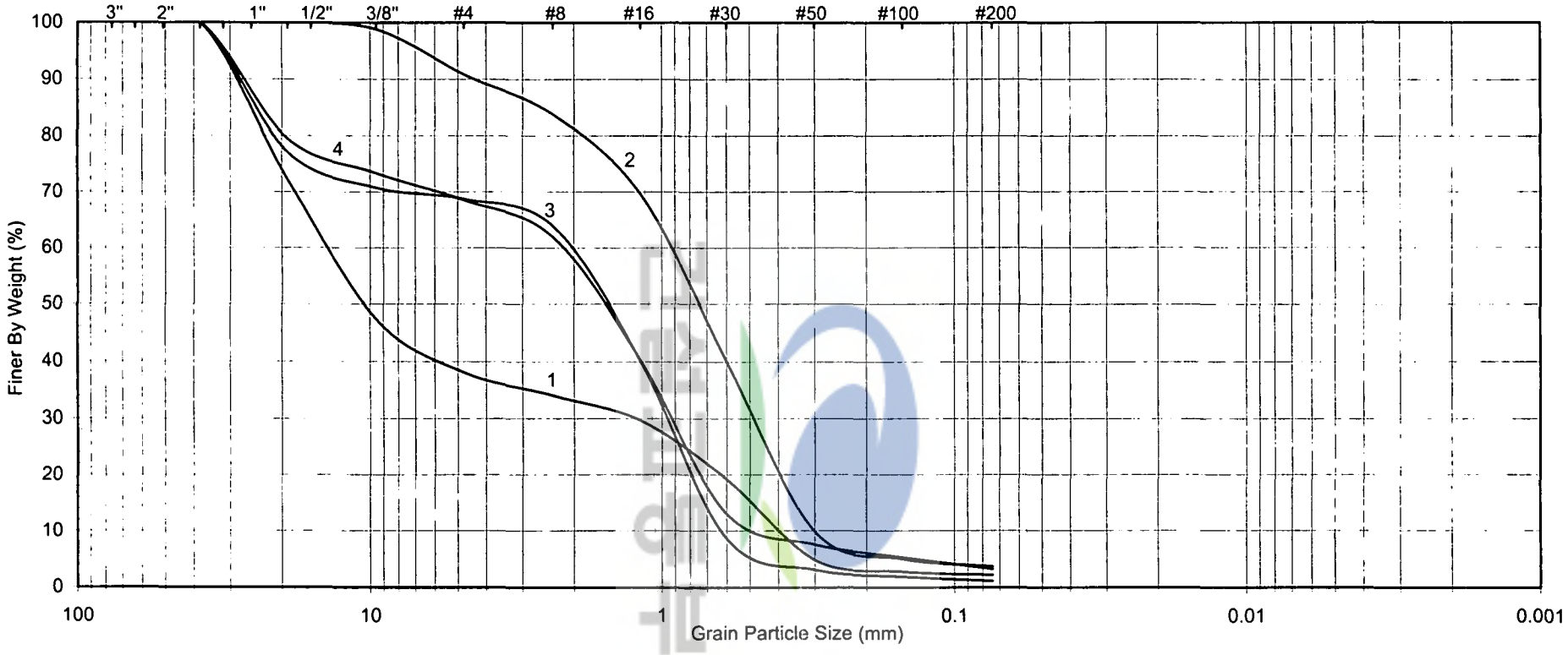
Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
금강본류	우 No. 240	0.385	0.631	1.252	5.474	10.256	13.570	17.954	23.179	29.717	3.3	2.661	GP
금강본류	우 No. 248	0.301	0.379	0.476	0.599	0.753	0.947	1.201	1.959	4.374	1.1	2.619	SP
금강본류	좌 No. 256	0.618	0.766	0.950	1.178	1.573	2.104	7.339	20.861	28.192	1.4	2.678	SP
금강본류	우No.260(EP	0.409	0.713	0.914	1.173	1.610	2.216	5.868	19.448	27.221	1.5	2.678	SP

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

Area : 금강본류

Date : 2001 년 4 월

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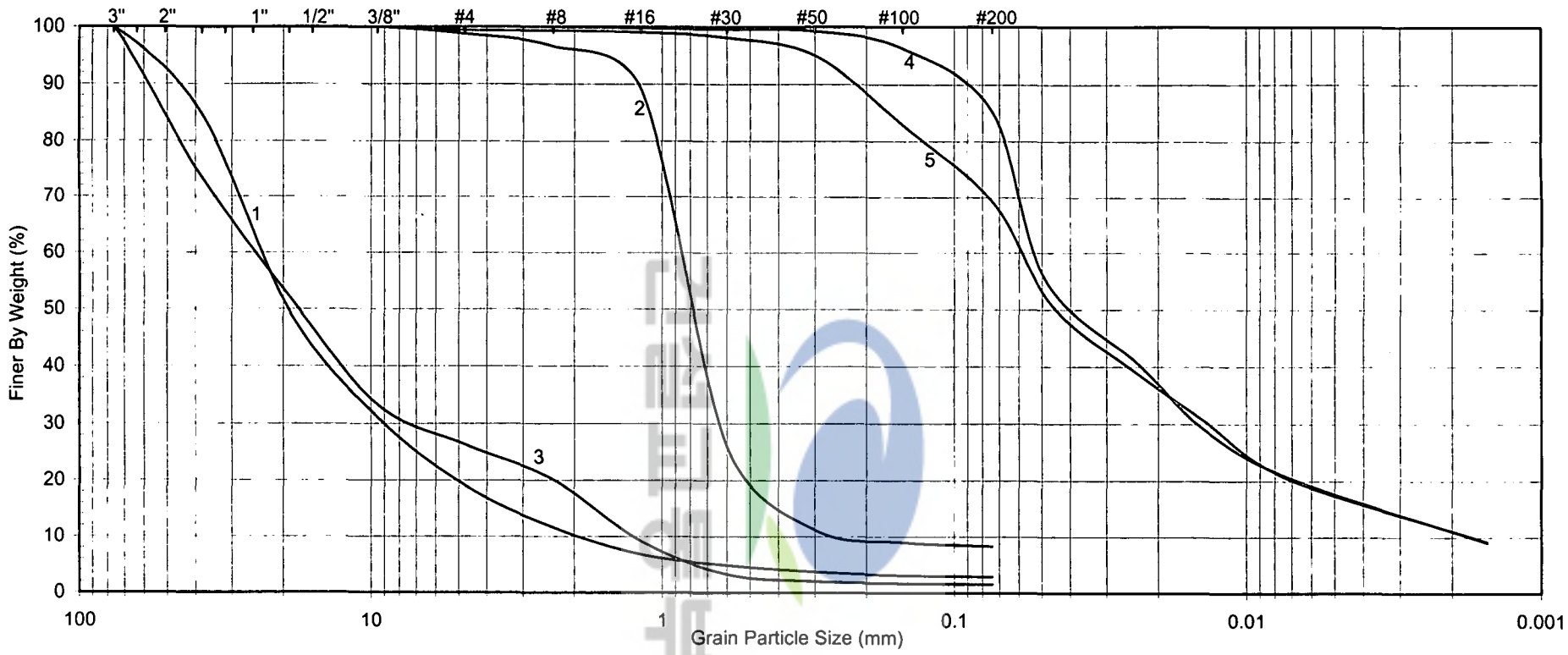
Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
금강상류	우 No. 0	1.867	5.012	8.910	13.267	19.207	23.387	28.477	34.674	48.317	2.4	2.690	GW
금강상류	좌 No. 8	0.203	0.453	0.626	0.697	0.776	0.864	0.961	1.070	1.280	6.4	2.638	SP-SM
금강상류	좌 No. 18	1.242	2.345	6.830	12.168	17.601	24.573	33.965	45.116	58.633	2.5	2.652	GW
금강상류	우 No. 24	0.002	0.007	0.015	0.023	0.037	0.052	0.060	0.069	0.101	67.0	2.643	ML
금강상류	좌 No. 32	0.002	0.007	0.013	0.025	0.044	0.059	0.077	0.129	0.225	39.6	2.597	ML

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

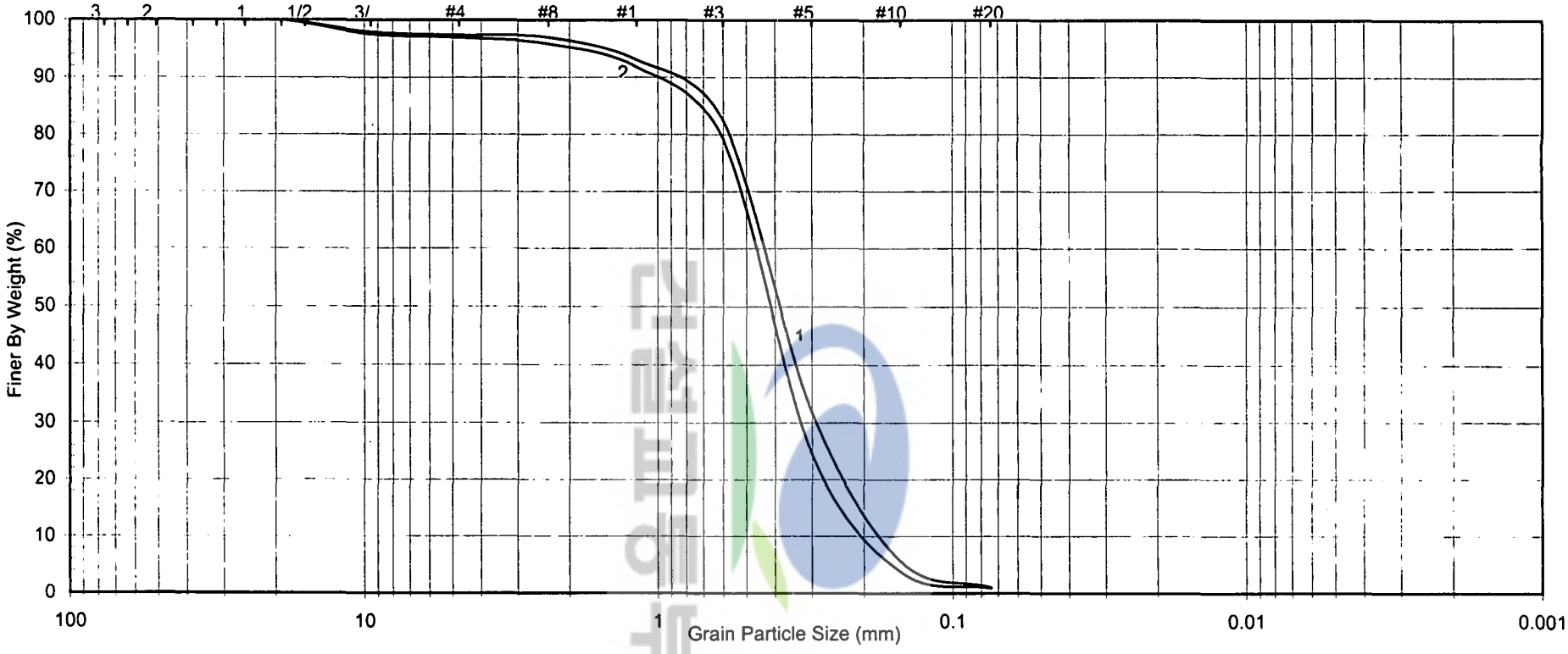
Area : 금강상류

Date : 2001 년 4 월

Checked By :

Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
금강상류	좌 No. 40	0.169	0.220	0.286	0.336	0.385	0.441	0.506	0.580	0.971	16.5	2.609	SP
금강상류	좌No.48(EP)	0.185	0.259	0.322	0.365	0.415	0.471	0.534	0.626	1.071	15.2	2.638	SP

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

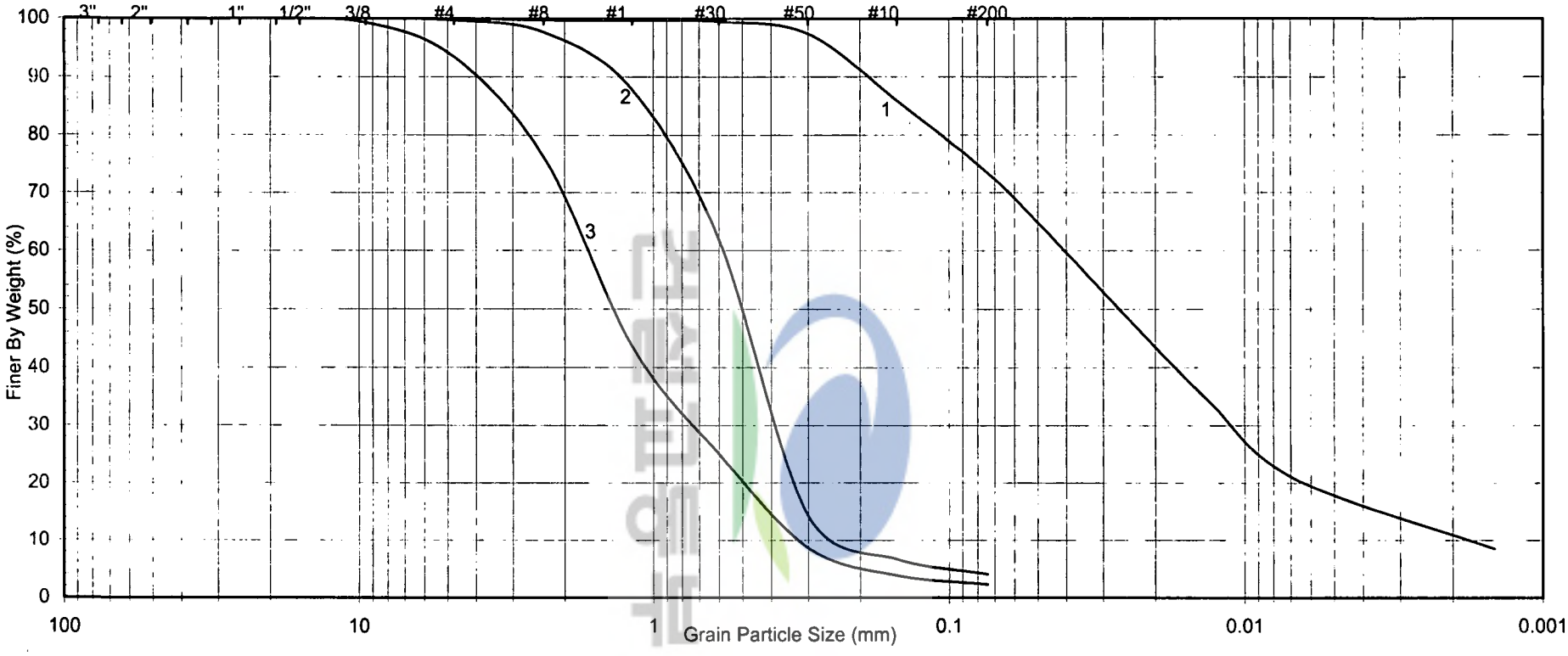
Area : 금강상류

Date : 2001 년 4 월

Checked By :

Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
노성천	우 No. 0	0.002	0.006	0.011	0.017	0.026	0.041	0.063	0.107	0.191	37.0	2.602	ML
노성천	우 No. 20	0.203	0.326	0.377	0.437	0.505	0.584	0.741	0.962	1.372	7.3	2.603	SP
노성천	우No.25(EP)	0.317	0.486	0.720	1.034	1.351	1.670	2.065	2.746	4.132	0.8	2.648	SP

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

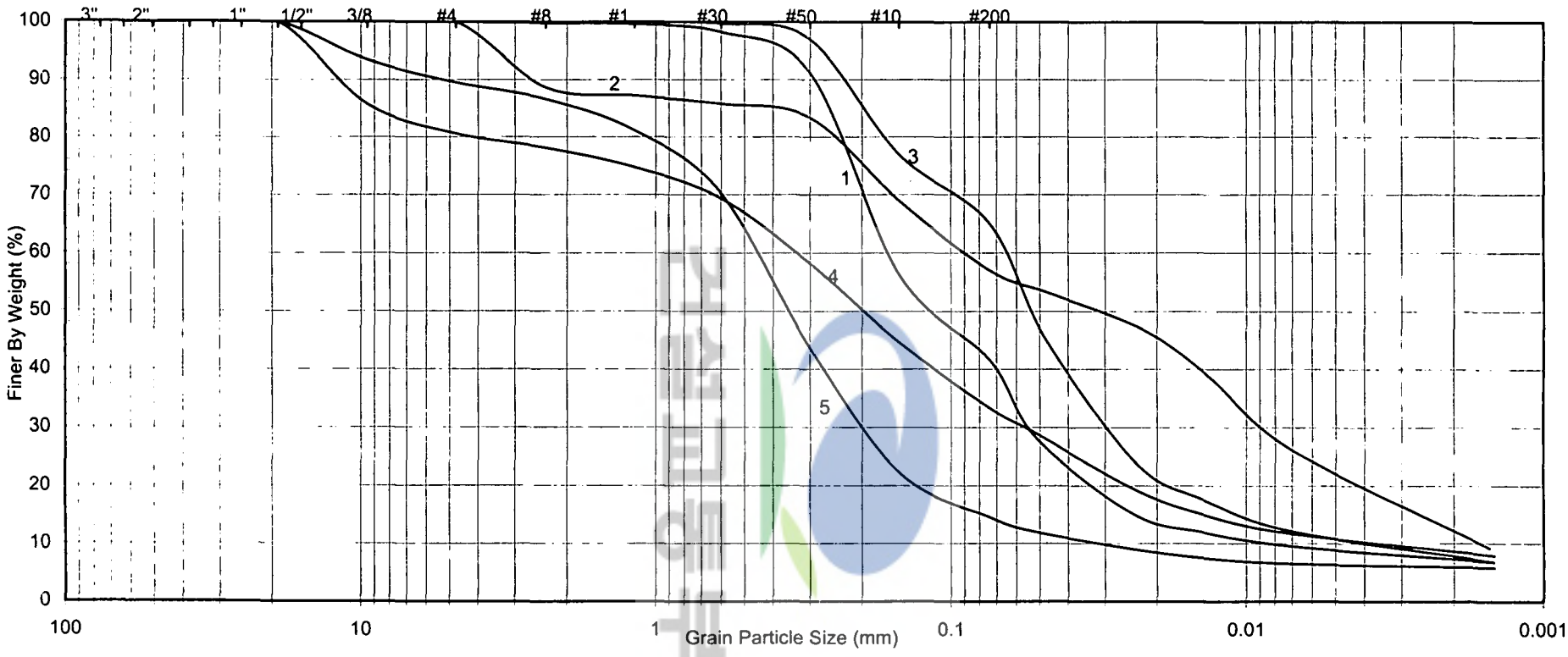
Area : 노성천

Date : 2001 년 4 월

Checked By :

Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
논산천	좌 No. 0	0.008	0.032	0.054	0.071	0.111	0.161	0.197	0.240	0.293	20.6	2.649	SM
논산천	좌 No. 20	0.002	0.004	0.009	0.014	0.032	0.088	0.157	0.255	2.561	16.2	2.613	ML
논산천	우 No. 40	0.004	0.017	0.029	0.040	0.053	0.066	0.099	0.167	0.236	35.6	2.624	ML
논산천	좌 No. 60	0.003	0.025	0.056	0.112	0.197	0.336	0.648	4.002	11.715	12.2	2.627	SM
논산천	좌No.80(EP)	0.031	0.122	0.192	0.266	0.354	0.459	0.596	1.098	5.171	20.9	2.691	SM

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

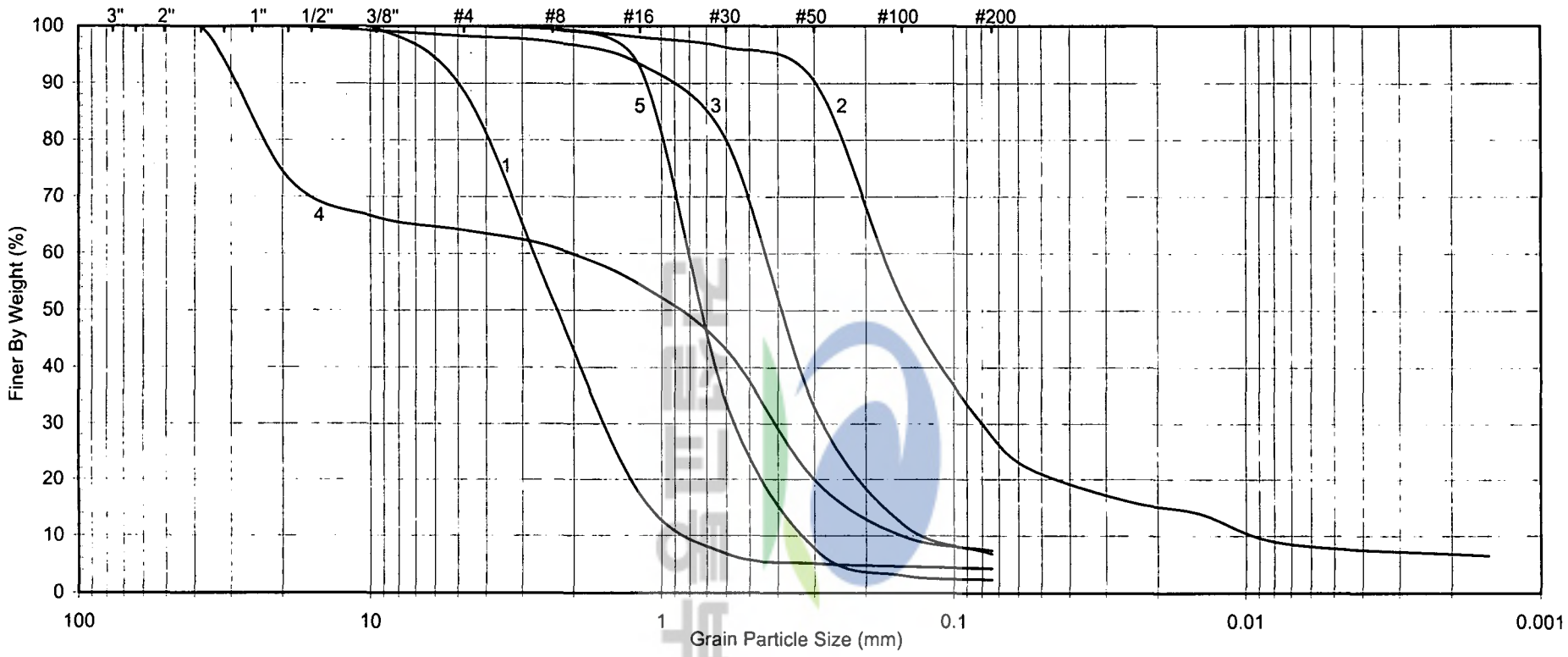
Area : 논산천

Date : 2001 년 4 월

Checked By :

Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
미호천	좌 No. 0	0.740	1.250	1.527	1.865	2.278	2.761	3.341	4.043	5.206	1.4	2.642	SP
미호천	좌 No. 20	0.009	0.043	0.079	0.106	0.143	0.174	0.208	0.249	0.298	24.8	2.682	SM
미호천	좌 No. 40	0.114	0.195	0.272	0.333	0.386	0.447	0.518	0.603	0.995	3.9	2.663	SP-SM
미호천	우 No. 60	0.151	0.301	0.406	0.548	0.906	2.099	13.782	22.765	29.451	4.4	2.642	SP-SM
미호천	우 No. 80	0.319	0.417	0.544	0.645	0.723	0.811	0.909	1.020	1.143	3.8	2.645	SP

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

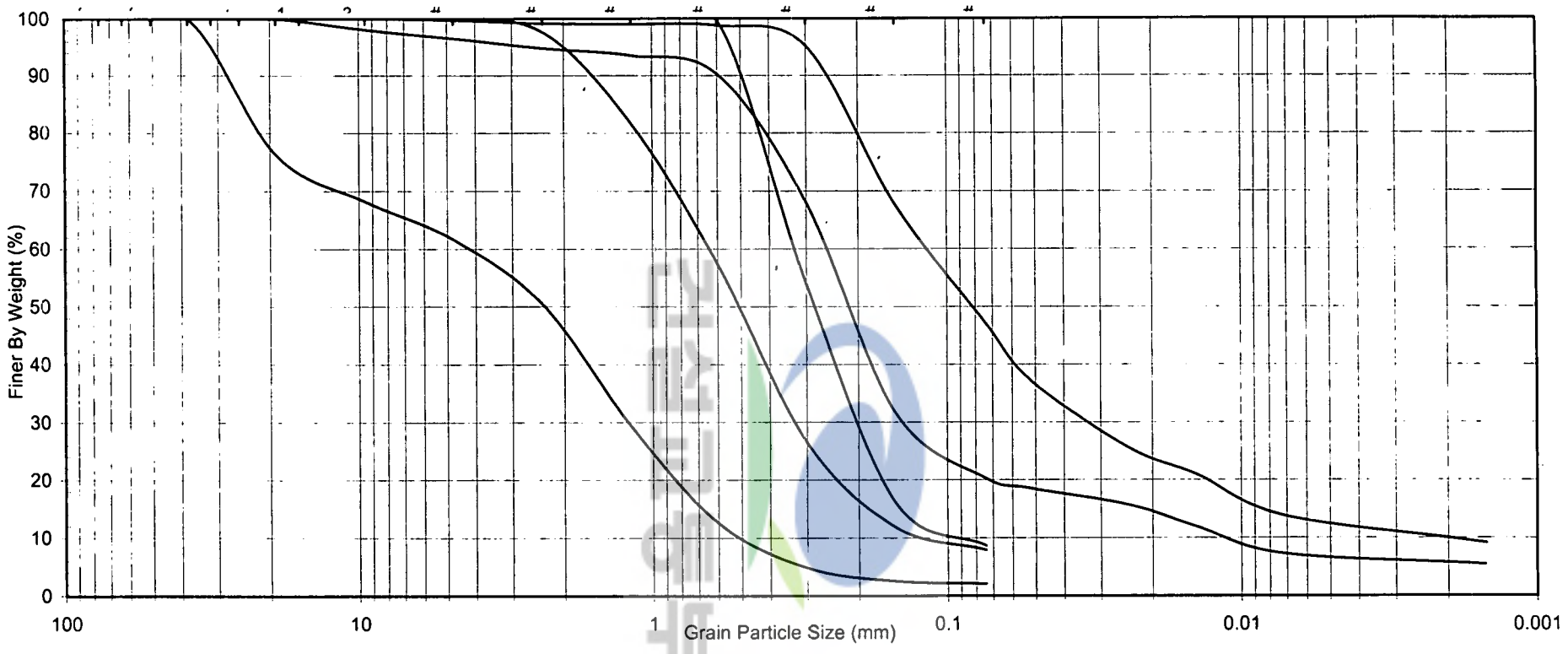
Area : 미호천

Date : 2001 년 4 월

Checked By :

Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
미호천	좌 No. 100	0.011	0.070	0.135	0.176	0.213	0.257	0.319	0.436	0.595	13.2	2.635	SM
미호천	우 No. 120	0.108	0.221	0.324	0.406	0.509	0.646	0.853	1.125	1.693	12.4	2.604	SW-SM
미호천	우 No. 140	0.002	0.013	0.032	0.057	0.082	0.115	0.159	0.204	0.263	44.8	2.629	SM
미호천	좌 No. 160	0.477	0.812	1.212	1.684	2.338	4.305	11.136	21.293	28.483	4.2	2.619	SP
미호천	좌 No. 180	0.084	0.161	0.194	0.233	0.279	0.329	0.383	0.445	0.518	30.2	2.687	SP-SM

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

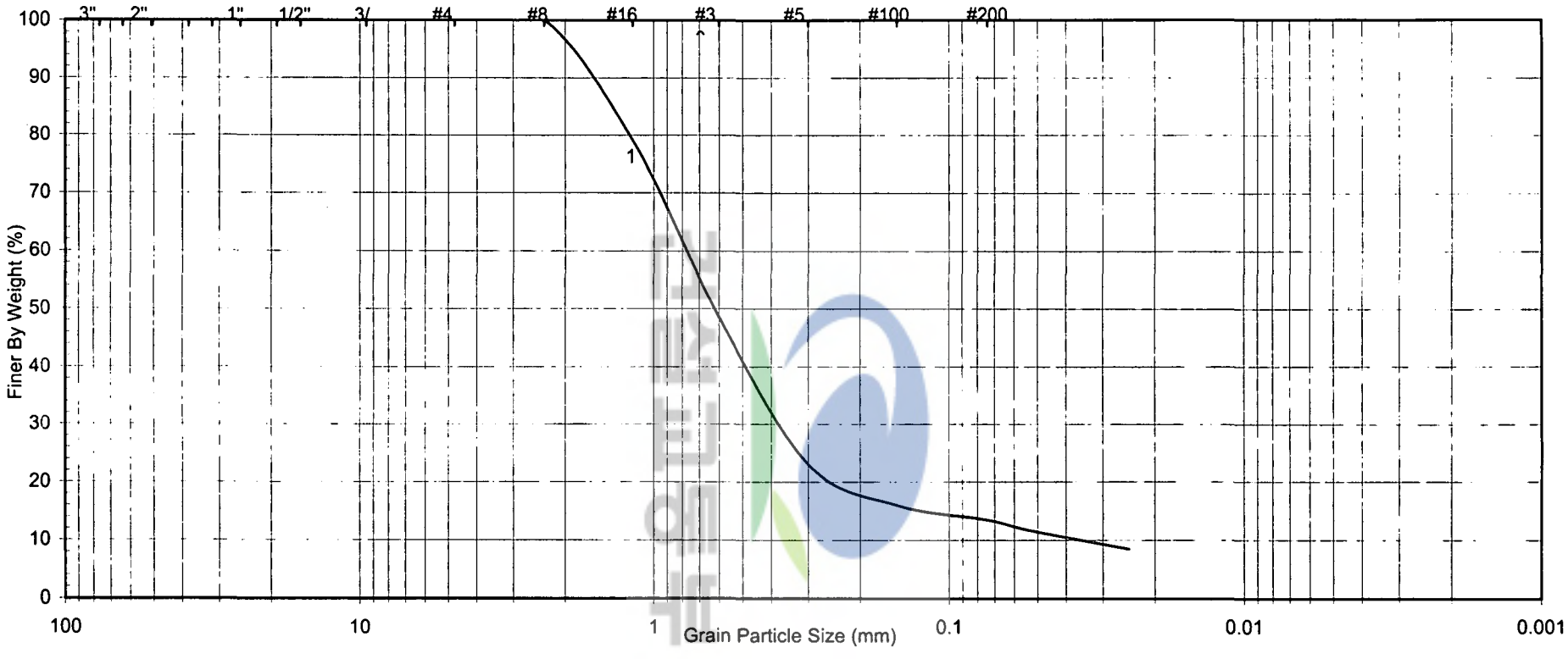
Area : 미호천

Date : 2001 년 4 월

Checked By :

Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
미호천	쿠No.195(EP	0.035	0.223	0.363	0.476	0.619	0.773	0.964	1.213	1.692	1.4	2.657	SM

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

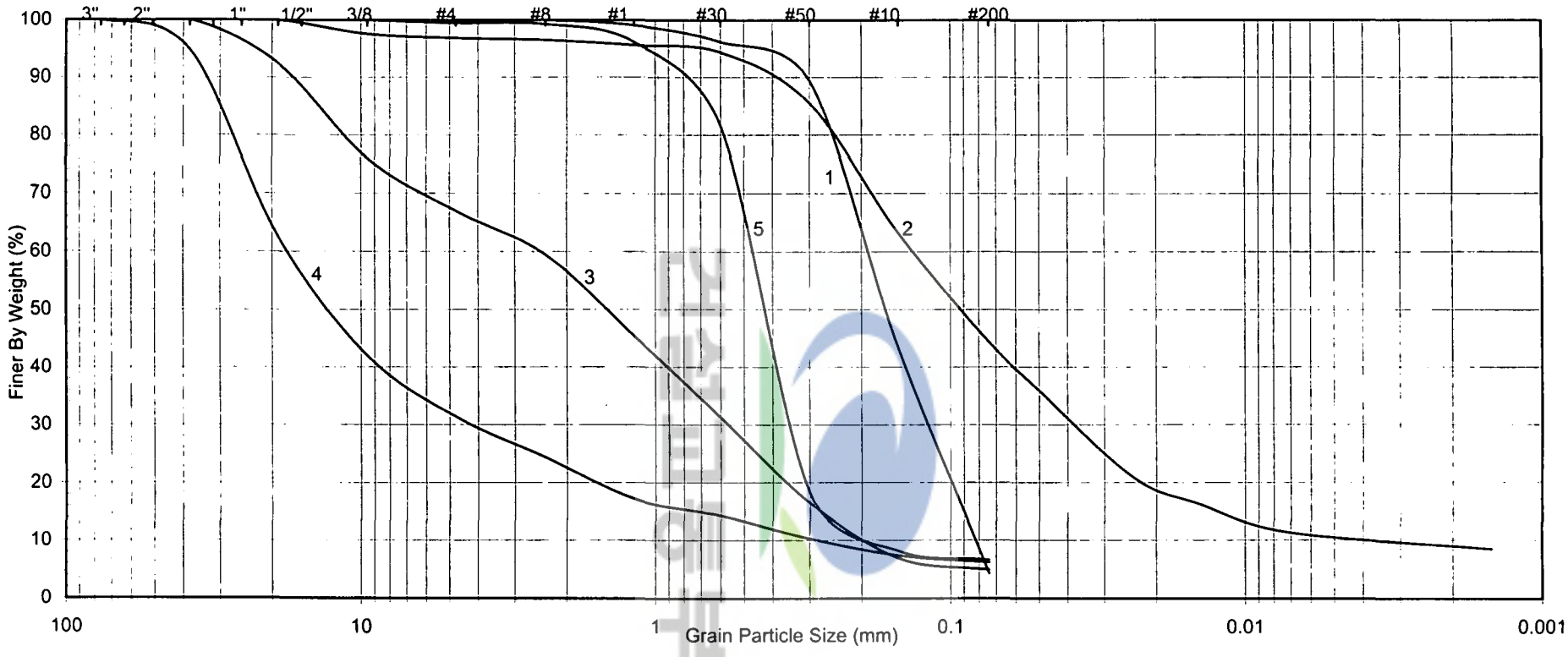
Area : 미호천

Date : 2001 년 4 월

Checked By :

Remarks :

Grain Size Distribution Curves



시 료 명	STA	D_{10}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{70}	D_{80}	D_{90}	Wn	Gs	USCS
유등천	좌 No. 0	0.082	0.098	0.118	0.141	0.166	0.193	0.224	0.260	0.319	16.9	2.636	SP
유등천	우 No. 20	0.003	0.022	0.037	0.060	0.091	0.133	0.185	0.253	0.426	50.8	2.623	SM
유등천	좌 No. 40	0.188	0.354	0.564	0.910	1.479	2.478	6.012	11.292	17.218	12.0	2.670	SP
유등천	좌 No. 60	0.281	1.550	4.147	8.357	12.471	17.475	22.364	27.708	34.328	0.9	2.646	GP-GM
유등천	좌No.75(EP)	0.170	0.306	0.341	0.381	0.425	0.474	0.528	0.590	0.887	7.8	2.635	SP-SM

Project : 금강수계 하천정비 기본계획 및 하천대장 작성 용역

Area : 유동천

Date : 2001 년 4 월

Checked By :

Remarks :

2. 유사량 산정결과

건설교통부

■ 주요지점별 유사량산정

금강 - 하구

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
3,745.0	1	3.37E+01		3.66E+04	4.22E+02	1.11E+03	3.94E+03	1.26E+04	1.76E+04	1.53E+03	7.08E+01	3.37E+01		3.66E+04	4.22E+02	1.11E+03	3.94E+03	1.26E+04	1.76E+04	1.53E+03	7.08E+01
2,859.0	1			2.17E+04	8.82E+01	2.84E+02	1.38E+03	5.71E+03	1.02E+04	6.27E+02				2.17E+04	8.82E+01	2.84E+02	1.38E+03	5.71E+03	1.02E+04	6.27E+02	
2,387.0	1			1.53E+04	3.13E+01	1.09E+02	7.22E+02	3.04E+03	7.13E+03	3.46E+02				1.53E+04	3.13E+01	1.09E+02	7.22E+02	3.04E+03	7.13E+03	3.46E+02	
1,878.0	3			9.65E+03	7.09E+00	2.76E+01	2.78E+02	9.15E+02	4.40E+03	1.56E+02				2.90E+04	2.13E+01	8.28E+01	8.34E+02	2.75E+03	1.32E+04	4.68E+02	
1,370.0	4			5.29E+03	1.03E+00	4.01E+00	6.66E+01		2.35E+03	5.54E+01				2.12E+04	4.12E+00	1.60E+01	2.66E+02		9.40E+03	2.22E+02	
962.0	5			2.73E+03	1.28E-01	4.01E-01	8.52E+00		1.18E+03	1.78E+01				1.37E+04	6.40E-01	2.01E+00	4.26E+01		5.90E+03	8.90E+01	
653.0	10			1.30E+03	1.36E-02	2.39E-02	2.71E-02		5.42E+02	4.79E+00				1.30E+04	1.36E-01	2.39E-01	2.71E-01		5.42E+03	4.79E+01	
407.0	20			5.27E+02	9.39E-04	5.25E-04			2.10E+02	9.52E-01				1.05E+04	1.88E-02	1.05E-02			4.20E+03	1.90E+01	
243.0	40			1.96E+02	5.84E-05	4.89E-06			7.32E+01	1.53E-01				7.84E+03	2.34E-03	1.96E-04			2.93E+03	6.12E+00	
153.0	60			7.87E+01	4.13E-06	2.87E-08			2.79E+01	2.90E-02				4.72E+03	2.48E-04	1.72E-06			1.67E+03	1.74E+00	
96.0	100			3.10E+01		6.15E-11			1.05E+01	5.40E-03				3.10E+03		6.15E-09			1.05E+03	5.40E-01	
57.0	120			1.17E+01		1.62E-13			3.60E+00	7.64E-04				1.40E+03		1.94E-11			4.32E+02	9.17E-02	
계	365											3.37E+01		1.78E+05	5.68E+02	1.60E+03	7.19E+03	2.41E+04	7.91E+04	3.36E+03	7.08E+01

금강 - 규암수위표

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
3,147.0	1	5.16E+03	3.45E+04	1.58E+05	1.22E+04	7.11E+04	3.84E+04	7.29E+04	7.58E+04	4.57E+04	5.98E+04	5.16E+03	3.45E+04	1.58E+05	1.22E+04	7.11E+04	3.84E+04	7.29E+04	7.58E+04	4.57E+04	5.98E+04
2,102.0	1	3.49E+03	2.13E+04	1.07E+05	7.90E+03	4.45E+04	2.62E+04	5.00E+04	5.16E+04	2.66E+04	3.87E+04	3.49E+03	2.13E+04	1.07E+05	7.90E+03	4.45E+04	2.62E+04	5.00E+04	5.16E+04	2.66E+04	3.87E+04
2,005.0	1	2.77E+03	1.60E+04	8.25E+04	4.85E+03	3.30E+04	2.08E+04	3.91E+04	3.99E+04	1.85E+04	3.01E+04	2.77E+03	1.60E+04	8.25E+04	4.85E+03	3.30E+04	2.08E+04	3.91E+04	3.99E+04	1.85E+04	3.01E+04
1,578.0	3	2.01E+03	1.05E+04	5.85E+04	2.46E+03	2.19E+04	1.51E+04	2.80E+04	2.84E+04	1.15E+04	2.10E+04	6.03E+03	3.15E+04	1.76E+05	7.38E+03	6.57E+04	4.53E+04	8.40E+04	8.52E+04	3.45E+04	6.30E+04
1,151.0	4	1.23E+03	5.21E+03	3.57E+04	1.48E+03	1.17E+04	9.34E+03	1.72E+04	1.73E+04	5.67E+03	1.21E+04	4.92E+03	2.08E+04	1.43E+05	5.92E+03	4.68E+04	3.74E+04	6.88E+04	6.92E+04	2.27E+04	4.84E+04
808.0	5	6.03E+02	1.57E+03	1.98E+04	8.43E+02	4.96E+03	4.79E+03	9.36E+03	9.52E+03	2.35E+03	5.35E+03	3.02E+03	7.85E+03	9.90E+04	4.22E+03	2.48E+04	2.40E+04	4.68E+04	4.76E+04	1.18E+04	2.68E+04
548.0	10	2.63E+02	2.05E+02	1.04E+04	4.49E+02	1.79E+03	2.16E+03	4.63E+03	4.89E+03	8.79E+02	1.91E+03	2.63E+03	2.05E+03	1.04E+05	4.49E+03	1.79E+04	2.16E+04	4.63E+04	4.89E+04	8.79E+03	1.91E+04
342.0	20	4.60E+01		4.71E+03	1.90E+02	4.59E+02	7.29E+02	1.84E+03	2.16E+03	2.58E+02	3.98E+02	9.20E+02		9.42E+04	3.80E+03	9.18E+03	1.46E+04	3.68E+04	4.32E+04	5.16E+03	7.96E+03
204.0	40			1.97E+03	2.88E+01	9.43E+01	2.02E+02	6.11E+02	8.66E+02	6.56E+01	3.15E+01			7.88E+04	1.15E+03	3.77E+03	8.08E+03	2.44E+04	3.46E+04	2.62E+03	1.26E+03
129.0	60			8.72E+02	3.68E+00	1.47E+01	3.86E+01	1.53E+02	3.62E+02	1.63E+01				5.23E+04	2.21E+02	8.82E+02	2.32E+03	9.18E+03	2.17E+04	9.78E+02	
81.0	100			3.59E+02	2.80E-01	1.13E+00	1.80E+00		1.38E+02	3.14E+00				3.59E+04	2.80E+01	1.13E+02	1.80E+02		1.38E+04	3.14E+02	
48.0	120			1.63E+02	6.63E-02	5.42E-02	6.61E-03		5.97E+01	9.47E-01				1.96E+04	7.96E+00	6.50E+00	7.93E-01		7.16E+03	1.14E+02	
계	365											2.89E+04	1.34E+05	1.15E+06	5.22E+04	3.18E+05	2.39E+05	4.78E+05	5.39E+05	1.78E+05	2.95E+05

금강 - 공주수위표

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
2,486.0	1	5.17E+03	7.32E+04	4.81E+05	2.23E+04	2.88E+05	7.73E+04	1.96E+05	2.24E+05	4.71E+05	1.68E+05	5.17E+03	7.32E+04	4.81E+05	2.23E+04	2.88E+05	7.73E+04	1.96E+05	2.24E+05	4.71E+05	1.68E+05
1,988.0	1	3.54E+03	5.29E+04	3.38E+05	1.88E+04	1.98E+05	5.74E+04	1.43E+05	1.61E+05	2.71E+05	1.19E+05	3.54E+03	5.29E+04	3.38E+05	1.88E+04	1.98E+05	5.74E+04	1.43E+05	1.61E+05	2.71E+05	1.19E+05
1,538.0	1	1.97E+03	3.12E+04	2.22E+05	1.49E+04	1.21E+05	3.77E+04	9.61E+04	1.08E+05	1.43E+05	7.16E+04	1.97E+03	3.12E+04	2.22E+05	1.49E+04	1.21E+05	3.77E+04	9.61E+04	1.08E+05	1.43E+05	7.16E+04
1,147.0	3	9.85E+02	1.65E+04	1.35E+05	8.37E+03	6.80E+04	2.34E+04	6.04E+04	6.74E+04	6.62E+04	4.01E+04	2.96E+03	4.95E+04	4.05E+05	2.51E+04	2.04E+05	7.02E+04	1.81E+05	2.02E+05	1.99E+05	1.20E+05
851.0	4	4.09E+02	7.28E+03	8.05E+04	4.41E+03	3.53E+04	1.34E+04	3.64E+04	4.08E+04	2.96E+04	2.00E+04	1.64E+03	2.91E+04	3.22E+05	1.76E+04	1.41E+05	5.36E+04	1.46E+05	1.63E+05	1.18E+05	8.00E+04
609.0	5	1.60E+02	2.82E+03	4.71E+04	1.41E+03	1.77E+04	7.45E+03	2.13E+04	2.42E+04	1.32E+04	9.64E+03	8.00E+02	1.41E+04	2.36E+05	7.05E+03	8.85E+04	3.73E+04	1.07E+05	1.21E+05	6.60E+04	4.82E+04
429.0	10	4.13E+01	6.19E+02	2.55E+04	7.15E+02	7.54E+03	3.64E+03	1.13E+04	1.32E+04	5.02E+03	3.78E+03	4.13E+02	6.19E+03	2.55E+05	7.15E+03	7.54E+04	3.64E+04	1.13E+05	1.32E+05	5.02E+04	3.78E+04
283.0	20	4.51E+00	2.30E+01	1.26E+04	3.47E+02	2.66E+03	1.52E+03	5.24E+03	6.51E+03	1.63E+03	1.15E+03	9.02E+01	4.60E+02	2.52E+05	6.94E+03	5.32E+04	3.04E+04	1.05E+05	1.30E+05	3.26E+04	2.30E+04
180.0	40			5.91E+03	1.55E+02	7.98E+02	5.39E+02	2.16E+03	3.04E+03	4.99E+02	2.28E+02			2.36E+05	6.20E+03	3.19E+04	2.16E+04	8.64E+04	1.22E+05	2.00E+04	9.12E+03
109.0	60			2.41E+03	2.21E+01	1.53E+02	1.26E+02	6.20E+02	1.21E+03	1.12E+02	1.38E+00			1.45E+05	1.33E+03	9.18E+03	7.56E+03	3.72E+04	7.26E+04	6.72E+03	8.28E+01
68.0	100			1.06E+03	2.80E+00	2.83E+01	2.46E+01	1.13E+02	5.17E+02	2.82E+01				1.06E+05	2.80E+02	2.83E+03	2.46E+03	1.13E+04	5.17E+04	2.82E+03	
40.0	120			4.08E+02	1.77E-01	2.76E+00	1.09E+00		1.91E+02	5.47E+00				4.90E+04	2.12E+01	3.31E+02	1.31E+02		2.29E+04	6.56E+02	
계	365											1.66E+04	2.57E+05	3.05E+06	1.28E+05	1.21E+06	4.32E+05	1.22E+06	1.51E+06	1.38E+06	6.77E+05

금강 - 매포수위표

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
1,419.0	1	7.35E+03		2.02E+05	2.07E+03	2.10E+05	3.86E+04	1.58E+05	1.49E+05	8.27E+04	1.51E+05	7.35E+03		2.02E+05	2.07E+03	2.10E+05	3.86E+04	1.58E+05	1.49E+05	8.27E+04	1.51E+05
1,084.0	1	4.53E+03		1.32E+05	1.69E+03	1.34E+05	2.72E+04	1.08E+05	1.01E+05	4.71E+04	1.01E+05	4.53E+03		1.32E+05	1.69E+03	1.34E+05	2.72E+04	1.08E+05	1.01E+05	4.71E+04	1.01E+05
958.0	1	3.48E+03		1.07E+05	1.55E+03	1.07E+05	2.28E+04	8.97E+04	8.33E+04	3.55E+04	8.13E+04	3.48E+03		1.07E+05	1.55E+03	1.07E+05	2.28E+04	8.97E+04	8.33E+04	3.55E+04	8.13E+04
776.0	3	2.24E+03		7.63E+04	1.33E+03	7.40E+04	1.71E+04	6.58E+04	6.06E+04	2.25E+04	5.79E+04	6.72E+03		2.29E+05	3.99E+03	2.22E+05	5.13E+04	1.97E+05	1.82E+05	6.75E+04	1.74E+05
514.0	4	8.02E+02		3.83E+04	1.00E+03	3.38E+04	9.16E+03	3.47E+04	3.17E+04	8.72E+03	2.75E+04	3.21E+03		1.53E+05	4.00E+03	1.35E+05	3.66E+04	1.39E+05	1.27E+05	3.49E+04	1.10E+05
369.0	5	3.31E+02		2.23E+04	5.75E+02	1.82E+04	5.57E+03	2.08E+04	1.90E+04	4.22E+03	1.54E+04	1.66E+03		1.12E+05	2.88E+03	9.10E+04	2.79E+04	1.04E+05	9.50E+04	2.11E+04	7.70E+04
304.0	10	1.74E+02		1.61E+04	3.97E+02	1.23E+04	4.04E+03	1.51E+04	1.39E+04	2.68E+03	1.06E+04	1.74E+03		1.61E+05	3.97E+03	1.23E+05	4.04E+04	1.51E+05	1.39E+05	2.68E+04	1.06E+05
244.0	20	7.21E+01		1.11E+04	2.60E+02	7.75E+03	2.73E+03	1.04E+04	9.73E+03	1.60E+03	6.65E+03	1.44E+03		2.22E+05	5.20E+03	1.55E+05	5.46E+04	2.08E+05	1.95E+05	3.20E+04	1.33E+05
170.0	40	8.86E+00		6.08E+03	8.12E+01	3.54E+03	1.37E+03	5.49E+03	5.39E+03	6.75E+02	2.95E+03	3.54E+02		2.43E+05	3.25E+03	1.42E+05	5.48E+04	2.20E+05	2.16E+05	2 70E+04	1.18E+05
88.0	60			1.95E+03	2.48E+01	6.70E+02	2.48E+02	1.34E+03	1.75E+03	1.18E+02	3.65E+02			1.17E+05	1.49E+03	4.02E+04	1.49E+04	8.04E+04	1.05E+05	7 08E+03	2.19E+04
44.0	100			5.94E+02	6.09E+00	9.00E+01	8.31E+00	9.32E+01	5.26E+02	1.72E+01				5.94E+04	6.09E+02	9.00E+03	8.31E+02	9.32E+03	5.26E+04	1.72E+03	
31.0	120			3.31E+02	2.51E+00	3.15E+01			2.90E+02	6.70E+00				3.97E+04	3.01E+02	3.78E+03			3.48E+04	8.04E+02	
계	365											3.05E+04		1.78E+06	3.10E+04	1.37E+06	3.70E+05	1.46E+06	1.48E+06	3.84E+05	1.07E+06

금강 - 금강4교(대청댐수몰선단)

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
2,278.9	1	3.12E+04		1.66E+05	3.85E+02	2.38E+05	1.40E+04	3.14E+05	2.73E+05	3.17E+04	1.70E+04	3.12E+04		1.66E+05	3.85E+02	2.38E+05	1.40E+04	3.14E+05	2.73E+05	3.17E+04	1.70E+04
1,075.3	3	5.77E+03		4.66E+04	2.37E+02	5.26E+04	3.69E+03	9.83E+04	8.67E+04	5.09E+03	2.10E+03	1.73E+04		1.40E+05	7.11E+02	1.58E+05	1.11E+04	2.95E+05	2.60E+05	1.53E+04	6.30E+03
468.5	7	4.14E+02		1.14E+04	5.16E+01	8.53E+03	5.10E+02	2.24E+04	2.38E+04	6.52E+02		2.90E+03		7.98E+04	3.61E+02	5.97E+04	3.57E+03	1.57E+05	1.67E+05	4.56E+03	
223.3	14	5.13E+00		3.40E+03	1.02E+01	1.67E+03	1.49E+01	3.65E+03	7.55E+03	1.19E+02		7.18E+01		4.76E+04	1.43E+02	2.34E+04	2.09E+02	5.11E+04	1.06E+05	1.67E+03	
103.9	30			9.38E+02	1.76E+00	1.94E+02			2.20E+03	1.50E+01				2.81E+04	5.28E+01	5.82E+03			6.60E+04	4.50E+02	
41.7	60			1.91E+02	1.74E-01	8.15E+00			4.72E+02	1.00E+00				1.15E+04	1.04E+01	4.89E+02			2.83E+04	6.00E+01	
18.2	100			3.98E+01	3.83E-03	9.21E-02			1.04E+02	4.25E-02				3.98E+03	3.83E-01	9.21E+00			1.04E+04	4.25E+00	
11.7	150			1.69E+01	3.58E-04	4.50E-03			4.53E+01	7.05E-03				2.54E+03	5.37E-02	6.75E-01			6.80E+03	1.06E+00	
계	365											5.15E+04		4.79E+05	1.66E+03	4.85E+05	2.88E+04	8.17E+05	9.17E+05	5.37E+04	2.33E+04

금강 - 옥천수위표

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
2,269.1	1	4.09E+04		1.84E+05	2.76E+02	3.20E+05	1.69E+04	3.93E+05	3.35E+05	4.20E+04	2.77E+04	4.09E+04		1.84E+05	2.76E+02	3.20E+05	1.69E+04	3.93E+05	3.35E+05	4.20E+04	2.77E+04
1,070.7	3	1.28E+04		5.63E+04	1.64E+02	9.34E+04	6.75E+03	1.41E+05	1.15E+05	9.77E+03	7.82E+03	3.84E+04		1.69E+05	4.92E+02	2.80E+05	2.03E+04	4.23E+05	3.45E+05	2.93E+04	2.35E+04
466.5	7	2.12E+03		1.48E+04	5.87E+01	2.07E+04	1.82E+03	4.05E+04	3.39E+04	1.76E+03	1.04E+03	1.48E+04		1.04E+05	4.11E+02	1.45E+05	1.27E+04	2.84E+05	2.37E+05	1.23E+04	7.28E+03
222.4	14	1.73E+02		4.30E+03	1.24E+01	4.49E+03	3.24E+02	1.04E+04	1.08E+04	3.37E+02	7.65E-01	2.42E+03		6.02E+04	1.74E+02	6.29E+04	4.54E+03	1.46E+05	1.51E+05	4.72E+03	1.07E+01
103.5	30			1.20E+03	2.22E+00	7.57E+02			3.20E+03	5.45E+01				3.60E+04	6.66E+01	2.27E+04			9.60E+04	1.64E+03	
41.5	60			2.49E+02	2.44E-01	5.66E+01			7.01E+02	4.75E+00				1.49E+04	1.46E+01	3.40E+03			4.21E+04	2.85E+02	
18.2	100			5.81E+01	2.89E-02	2.74E+00			1.68E+02	3.84E-01				5.81E+03	2.89E+00	2.74E+02			1.68E+04	3.84E+01	
11.6	150			2.74E+01	9.66E-03	4.78E-01			8.02E+01	1.04E-01				4.11E+03	1.45E+00	7.17E+01			1.20E+04	1.56E+01	
계	365											9.66E+04		5.78E+05	1.44E+03	8.34E+05	5.44E+04	1.25E+06	1.24E+06	9.03E+04	5.85E+04

갑천 – 하구

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
519.3	1	1.06E+04	2.63E+04	9.14E+04	1.38E+04	6.34E+04	5.33E+04	4.24E+04	4.52E+04	6.88E+04	6.36E+04	1.06E+04	2.63E+04	9.14E+04	1.38E+04	6.34E+04	5.33E+04	4.24E+04	4.52E+04	6.88E+04	6.36E+04
236.8	3	4.35E+03	7.88E+03	3.04E+04	4.01E+03	1.92E+04	1.74E+04	1.47E+04	1.54E+04	1.61E+04	1.95E+04	1.31E+04	2.36E+04	9.12E+04	1.20E+04	5.76E+04	5.22E+04	4.41E+04	4.62E+04	4.83E+04	5.85E+04
114.4	7	1.54E+03	1.86E+03	1.01E+04	6.79E+02	5.27E+03	5.25E+03	4.91E+03	5.19E+03	3.53E+03	5.18E+03	1.08E+04	1.30E+04	7.07E+04	4.75E+03	3.69E+04	3.68E+04	3.44E+04	3.63E+04	2.47E+04	3.63E+04
58.6	14	4.95E+02	4.45E+02	3.49E+03	2.54E+02	1.54E+03	1.80E+03	1.73E+03	1.84E+03	8.14E+02	1.71E+03	6.93E+03	6.23E+03	4.89E+04	3.56E+03	2.16E+04	2.52E+04	2.42E+04	2.58E+04	1.14E+04	2.39E+04
29.3	30	1.34E+02	5.99E+01	1.18E+03	9.24E+01	4.09E+02	5.54E+02	5.64E+02	6.20E+02	1.89E+02	4.89E+02	4.02E+03	1.80E+03	3.54E+04	2.77E+03	1.23E+04	1.66E+04	1.69E+04	1.86E+04	5.67E+03	1.47E+04
14.5	60	3.79E-01		3.76E+02	1.66E+01	7.74E+01	1.22E+02	1.46E+02	1.89E+02	3.51E+01	7.15E+01	2.27E+01		2.26E+04	9.96E+02	4.64E+03	7.32E+03	8.76E+03	1.13E+04	2.11E+03	4.29E+03
7.9	100			1.38E+02	2.09E+00	1.52E+01	2.70E+01	3.60E+01	6.53E+01	7.63E+00	4.59E+00			1.38E+04	2.09E+02	1.52E+03	2.70E+03	3.60E+03	6.53E+03	7.63E+02	4.59E+02
3.6	150			3.83E+01	1.28E-01	1.34E+00	2.41E+00	1.65E+00	1.64E+01	9.65E-01				5.75E+03	1.92E+01	2.01E+02	3.62E+02	2.48E+02	2.46E+03	1.45E+02	
계	365											4.54E+04	7.10E+04	3.80E+05	3.81E+04	1.98E+05	1.94E+05	1.75E+05	1.92E+05	1.62E+05	2.02E+05

갑천 – 회덕수위표

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
486.3	1	7.83E+03	2.31E+04	1.58E+05	1.49E+04	9.22E+04	5.10E+04	6.36E+04	7.31E+04	2.06E+05	5.55E+04	7.83E+03	2.31E+04	1.58E+05	1.49E+04	9.22E+04	5.10E+04	6.36E+04	7.31E+04	2.06E+05	5.55E+04
221.8	3	2.74E+03	4.47E+03	4.13E+04	3.55E+03	2.09E+04	1.33E+04	1.82E+04	2.06E+04	2.59E+04	1.15E+04	8.22E+03	1.34E+04	1.24E+05	1.07E+04	6.27E+04	3.99E+04	5.46E+04	6.18E+04	7.77E+04	3.45E+04
107.1	7	6.49E+02	2.90E+02	1.12E+04	4.80E+02	3.83E+03	2.73E+03	4.68E+03	5.71E+03	3.43E+03	1.48E+03	4.54E+03	2.03E+03	7.84E+04	3.36E+03	2.68E+04	1.91E+04	3.28E+04	4.00E+04	2.40E+04	1.04E+04
54.9	14	4.17E+01		3.35E+03	1.13E+02	6.18E+03	5.21E+02	1.13E+03	1.68E+03	4.93E+02	1.00E+02	5.84E+02		4.69E+04	1.58E+03	8.65E+04	7.29E+03	1.58E+04	2.35E+04	6.90E+03	1.40E+03
27.4	30			9.33E+02	3.87E+00	6.16E+01	6.65E+01	1.57E+02	4.45E+02	5.85E+01				2.80E+04	1.16E+02	1.85E+03	2.00E+03	4.71E+03	1.34E+04	1.76E+03	
13.6	60			2.51E+02	7.84E-02	3.10E+00	4.08E+00		1.11E+02	6.21E+00				1.51E+04	4.70E+00	1.86E+02	2.45E+02		6.66E+03	3.73E+02	
7.4	100			8.17E+01	3.76E-03	1.73E-01	9.82E-02		3.37E+01	8.64E-01				8.17E+03	3.76E-01	1.73E+01	9.82E+00		3.37E+03	8.64E+01	
3.4	150			1.80E+01	4.20E-05	8.91E-04			6.60E+00	5.97E-02				2.70E+03	6.30E-03	1.34E-01			9.90E+02	8.96E+00	
계	365											2.12E+04	3.85E+04	4.61E+05	3.06E+04	2.70E+05	1.20E+05	1.71E+05	2.23E+05	3.17E+05	1.02E+05

유등천 - 하구

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
229.0	1	3.95E+03	1.84E+04	5.36E+04	5.98E+03	4.31E+04	3.80E+04	2.88E+04	2.94E+04	4.13E+04	6.51E+04	3.95E+03	1.84E+04	5.36E+04	5.98E+03	4.31E+04	3.80E+04	2.88E+04	2.94E+04	4.13E+04	6.51E+04
104.4	3	1.30E+03	4.95E+03	1.51E+04	1.86E+03	1.14E+04	1.14E+04	8.92E+03	8.86E+03	7.71E+03	1.92E+04	3.90E+03	1.49E+04	4.53E+04	5.58E+03	3.42E+04	3.42E+04	2.68E+04	2.66E+04	2.31E+04	5.76E+04
50.4	7	4.65E+02	1.38E+03	4.90E+03	3.50E+02	3.38E+03	3.78E+03	3.03E+03	2.98E+03	1.81E+03	6.49E+03	3.26E+03	9.66E+03	3.43E+04	2.45E+03	2.37E+04	2.65E+04	2.12E+04	2.09E+04	1.27E+04	4.54E+04
25.8	14	1.54E+02	2.88E+02	1.72E+03	1.15E+02	9.88E+02	1.20E+03	1.04E+03	1.05E+03	4.49E+02	1.97E+03	2.16E+03	4.03E+03	2.41E+04	1.61E+03	1.38E+04	1.68E+04	1.46E+04	1.47E+04	6.29E+03	2.76E+04
12.9	30	5.15E+01	3.91E+01	5.67E+02	4.25E+01	2.70E+02	3.68E+02	3.27E+02	3.51E+02	1.11E+02	6.41E+02	1.55E+03	1.17E+03	1.70E+04	1.28E+03	8.10E+03	1.10E+04	9.81E+03	1.05E+04	3.33E+03	1.92E+04
6.4	60	1.15E+01	6.67E-01	1.97E+02	1.68E+01	7.13E+01	1.03E+02	9.78E+01	1.20E+02	2.84E+01		6.90E+02	4.00E+01	1.18E+04	1.01E+03	4.28E+03	6.18E+03	5.87E+03	7.20E+03	1.70E+03	
3.5	100			7.41E+01	2.52E+00	1.75E+01	2.50E+01	2.55E+01	4.32E+01	7.16E+00				7.41E+03	2.52E+02	1.75E+03	2.50E+03	2.55E+03	4.32E+03	7.16E+02	
1.6	150			2.14E+01	2.23E-01	2.43E+00	2.75E+00	1.79E+00	1.16E+01	1.15E+00				3.21E+03	3.35E+01	3.65E+02	4.13E+02	2.69E+02	1.74E+03	1.73E+02	
계	365											1.55E+04	4.82E+04	1.97E+05	1.82E+04	1.29E+05	1.36E+05	1.10E+05	1.15E+05	8.93E+04	2.15E+05

미호천 - 하구

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
1,167.7	1	1.35E+03	3.03E+04	6.12E+04	3.94E+03	4.67E+04	2.40E+04	3.96E+04	3.50E+04	1.66E+04	6.13E+04	1.35E+03	3.03E+04	6.12E+04	3.94E+03	4.67E+04	2.40E+04	3.96E+04	3.50E+04	1.66E+04	6.13E+04
567.8	3	1.88E+02	6.02E+03	1.83E+04	9.71E+02	1.01E+04	7.25E+03	1.23E+04	1.06E+04	3.10E+03	1.53E+04	5.64E+02	1.81E+04	5.49E+04	2.91E+03	3.03E+04	2.18E+04	3.69E+04	3.18E+04	9.30E+03	4.59E+04
291.4	7	1.36E+01	7.45E+02	6.09E+03	1.76E+02	2.15E+03	2.11E+03	3.92E+03	3.47E+03	6.42E+02	3.55E+03	9.52E+01	5.22E+03	4.26E+04	1.23E+03	1.51E+04	1.48E+04	2.74E+04	2.43E+04	4.49E+03	2.49E+04
157.3	14		1.93E+00	2.13E+03	6.37E+01	3.89E+02	5.08E+02	1.17E+03	1.17E+03	1.27E+02	5.73E+02		2.70E+01	2.98E+04	8.92E+02	5.45E+03	7.11E+03	1.64E+04	1.64E+04	1.78E+03	8.02E+03
94.6	30			8.73E+02	1.92E+01	7.39E+01	1.15E+02	3.50E+02	4.59E+02	3.00E+01	4.94E+01			2.62E+04	5.76E+02	2.22E+03	3.45E+03	1.05E+04	1.38E+04	9.00E+02	1.48E+03
57.3	60			3.65E+02	2.49E+00	1.15E+01	1.52E+01	6.67E+01	1.82E+02	6.75E+00				2.19E+04	1.49E+02	6.90E+02	9.12E+02	4.00E+03	1.09E+04	4.05E+02	
30.1	100			1.13E+02	1.38E-01	6.10E-01			5.16E+01	8.31E-01				1.13E+04	1.38E+01	6.10E+01			5.16E+03	8.31E+01	
10.9	150			1.69E+01	9.36E-04	1.38E-03			6.44E+00	2.26E-02				2.54E+03	1.40E-01	2.07E-01			9.66E+02	3.39E+00	
계	365											2.01E+03	5.36E+04	2.50E+05	9.72E+03	1.00E+05	7.20E+04	1.35E+05	1.38E+05	3.36E+04	1.42E+05

미호천 - 석화수위표

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
1,003.3	1	8.87E+03	5.23E+04	1.22E+05	6.08E+03	1.16E+05	5.62E+04	7.07E+04	6.73E+04	6.52E+04	1.47E+05	8.87E+03	5.23E+04	1.22E+05	6.08E+03	1.16E+05	5.62E+04	7.07E+04	6.73E+04	6.52E+04	1.47E+05
487.8	3	3.06E+03	2.02E+04	3.82E+04	3.34E+03	3.30E+04	2.05E+04	2.44E+04	2.21E+04	1.44E+04	4.97E+04	9.18E+03	6.06E+04	1.15E+05	1.00E+04	9.90E+04	6.15E+04	7.32E+04	6.63E+04	4.32E+04	1.49E+05
250.3	7	1.06E+03	6.53E+03	1.35E+04	1.09E+03	1.03E+04	8.00E+03	9.09E+03	7.98E+03	3.87E+03	1.83E+04	7.42E+03	4.57E+04	9.45E+04	7.63E+03	7.21E+04	5.60E+04	6.36E+04	5.59E+04	2.71E+04	1.28E+05
135.2	14	3.20E+02	1.47E+02	5.11E+03	2.14E+02	3.14E+03	2.94E+03	3.44E+03	3.03E+03	1.07E+03	6.06E+03	4.48E+03	2.06E+03	7.15E+04	3.00E+03	4.40E+04	4.12E+04	4.82E+04	4.24E+04	1.50E+04	8.48E+04
81.3	30	1.29E+02	5.62E+02	2.40E+03	1.07E+02	1.25E+03	1.36E+03	1.60E+03	1.42E+03	4.14E+02	2.67E+03	3.87E+03	1.69E+04	7.20E+04	3.21E+03	3.75E+04	4.08E+04	4.80E+04	4.26E+04	1.24E+04	8.01E+04
49.2	60	5.10E+01	1.51E+02	1.13E+03	5.43E+01	4.93E+02	6.18E+02	7.30E+02	6.64E+02	1.63E+02	1.17E+03	3.06E+03	9.06E+03	6.78E+04	3.26E+03	2.96E+04	3.71E+04	4.38E+04	3.98E+04	9.78E+03	7.02E+04
25.8	100	1.07E+01	5.06E+00	4.21E+02	2.11E+01	1.25E+02	1.82E+02	2.37E+02	2.39E+02	4.34E+01	3.01E+02	1.07E+03	5.06E+02	4.21E+04	2.11E+03	1.25E+04	1.82E+04	2.37E+04	2.39E+04	4.34E+03	3.01E+04
9.3	150			8.56E+01	1.59E+00	1.02E+01	1.46E+01	2.61E+01	4.48E+01	4.44E+00	1.03E+01			1.28E+04	2.39E+02	1.53E+03	2.19E+03	3.92E+03	6.72E+03	6.66E+02	1.55E+03
계	365											3.80E+04	1.87E+05	5.97E+05	3.56E+04	4.12E+05	3.13E+05	3.75E+05	3.45E+05	1.78E+05	6.91E+05

논산천 - 하구

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
456.0	1	5.41E+01	1.11E+04	3.69E+04	1.70E+04	1.22E+04	2.39E+06	1.23E+04	1.84E+04	5.30E+06	8.67E+03	5.41E+01	1.11E+04	3.69E+04	1.70E+04	1.22E+04	2.39E+06	1.23E+04	1.84E+04	5.30E+06	8.67E+03
275.3	3	4.14E-02	2.31E+03	1.52E+04	4.46E+03	3.28E+03	5.88E+05	4.59E+03	7.16E+03	1.70E+06	1.94E+03	1.24E-01	6.93E+03	4.56E+04	1.34E+04	9.84E+03	1.76E+06	1.38E+04	2.15E+04	5.10E+06	5.82E+03
134.3	7		1.12E+01	4.37E+03	1.24E+02	3.34E+02	9.10E+04	9.88E+02	1.78E+03	9.45E+05	9.27E+01		7.84E+01	3.06E+04	8.68E+02	2.34E+03	6.37E+05	6.92E+03	1.25E+04	6.62E+06	6.49E+02
40.8	14			6.82E+02	1.71E-01	2.47E+00	9.24E+03	6.38E+01	2.03E+02					9.55E+03	2.39E+00	3.46E+01	1.29E+05	8.93E+02	2.84E+03		
15.8	30			1.24E+02		2.00E-02	6.41E+02	3.34E+00	3.06E+01					3.72E+03		6.00E-01	1.92E+04	1.00E+02	9.18E+02		
8.9	60			4.27E+01		4.82E-04	1.18E+02		9.23E+00					2.56E+03		2.89E-02	7.08E+03	0.00E+00	5.54E+02		
5.6	100			1.78E+01		1.39E-05	2.88E+01		3.42E+00					1.78E+03		1.39E-03	2.88E+03	0.00E+00	3.42E+02		
2.4	150			3.44E+00		3.89E-09	1.91E+00		5.19E-01					5.16E+02		5.84E-07	2.87E+02	0.00E+00	7.79E+01		
계	365											5.42E+01	1.81E+04	1.31E+05	3.13E+04	2.44E+04	4.95E+06	3.40E+04	5.71E+04	1.70E+07	1.51E+04

논산천 - 논산수위표

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
393.7	1	4.61E+03	1.84E+04	3.18E+04	7.52E+03	1.91E+04	8.87E+04	1.36E+04	1.54E+04	2.75E+04	3.90E+04	4.61E+03	1.84E+04	3.18E+04	7.52E+03	1.91E+04	8.87E+04	1.36E+04	1.54E+04	2.75E+04	3.90E+04
237.6	3	6.93E+02	6.13E+03	1.51E+04	3.47E+03	7.02E+03	3.29E+04	6.03E+03	6.99E+03	1.08E+04	1.34E+04	2.08E+03	1.84E+04	4.53E+04	1.04E+04	2.11E+04	9.87E+04	1.81E+04	2.10E+04	3.24E+04	4.02E+04
115.9	7	1.18E+02	1.81E+03	7.08E+03	1.41E+03	2.61E+03	1.30E+04	2.54E+03	3.09E+03	5.37E+03	4.17E+03	8.26E+02	1.27E+04	4.96E+04	9.87E+03	1.83E+04	9.10E+04	1.78E+04	2.16E+04	3.76E+04	2.92E+04
35.2	14	1.21E-01	1.15E+02	1.20E+03	2.24E+02	2.63E+02	1.42E+03	4.03E+02	5.02E+02	4.05E+02	4.87E+02	1.69E+00	1.61E+03	1.68E+04	3.14E+03	3.68E+03	1.99E+04	5.64E+03	7.03E+03	5.67E+03	6.82E+03
13.7	30		1.84E+00	2.77E+02	1.74E+01	3.54E+01	2.10E+02	8.41E+01	1.11E+02	4.60E+01	8.02E+01		5.52E+01	8.31E+03	5.22E+02	1.06E+03	6.30E+03	2.52E+03	3.33E+03	1.38E+03	2.41E+03
7.6	60			1.06E+02	2.63E+00	7.43E+00	5.16E+01	2.65E+01	3.97E+01	1.08E+01	1.54E+01			6.36E+03	1.58E+02	4.46E+02	3.10E+03	1.59E+03	2.38E+03	6.48E+02	9.24E+02
4.8	100			5.19E+01	6.38E-01	2.13E+00	1.76E+01	1.04E+01	1.84E+01	3.75E+00	2.68E+00			5.19E+03	6.38E+01	2.13E+02	1.76E+03	1.04E+03	1.84E+03	3.75E+02	2.68E+02
2.1	150			1.25E+01	2.42E-02	8.84E-02	1.42E+00	7.36E-01	3.72E+00	3.72E-01				1.88E+03	3.63E+00	1.33E+01	2.13E+02	1.10E+02	5.58E+02	5.58E+01	
계	365											7.52E+03	5.11E+04	1.65E+05	3.17E+04	6.38E+04	3.10E+05	6.04E+04	7.31E+04	1.06E+05	1.19E+05

노성천 - 하구

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
165.0	1	2.53E+03	3.22E+03	9.61E+03	6.62E+02	6.07E+03	4.20E+03	5.52E+03	5.18E+03	2.48E+03	5.16E+03	2.53E+03	3.22E+03	9.61E+03	6.62E+02	6.07E+03	4.20E+03	5.52E+03	5.18E+03	2.48E+03	5.16E+03
99.6	3	8.98E+02	8.49E+02	4.53E+03	1.76E+02	2.15E+03	1.62E+06	2.47E+03	2.39E+03	8.24E+02	1.56E+03	2.69E+03	2.55E+03	1.36E+04	5.28E+02	6.45E+03	4.86E+06	7.41E+03	7.17E+03	2.47E+03	4.68E+03
48.6	7	1.98E+02	8.26E+01	1.51E+03	6.05E+01	4.73E+02	4.35E+02	7.68E+02	7.82E+02	1.70E+02	2.92E+02	1.39E+03	5.78E+02	1.06E+04	4.24E+02	3.31E+03	3.05E+03	5.38E+03	5.47E+03	1.19E+03	2.04E+03
14.8	14			2.04E+02	2.39E+00	1.78E+01	2.55E+01	6.45E+01	9.78E+01	7.80E+00	7.45E-02			2.86E+03	3.35E+01	2.49E+02	3.57E+02	9.03E+02	1.37E+03	1.09E+02	1.04E+00
5.7	30			3.68E+01	4.78E-02	4.88E-01	3.58E-01		1.57E+01	4.47E-01				1.10E+03	1.43E+00	1.46E+01	1.07E+01		4.71E+02	1.34E+01	
3.2	60			1.28E+01	3.91E-03	3.28E-02			4.99E+00	6.96E-02				7.68E+02	2.35E-01	1.97E+00			2.99E+02	4.18E+00	
2.0	100			5.44E+00	5.16E-04	2.88E-03			1.98E+00	1.53E-02				5.44E+02	5.16E-02	2.88E-01			1.98E+02	1.53E+00	
0.9	150			1.26E+00	1.12E-05	1.49E-05			3.82E-01	9.14E-04				1.89E+02	1.68E-03	2.24E-03			5.73E+01	1.37E-01	
계	365											6.61E+03	6.35E+03	3.92E+04	1.65E+03	1.61E+04	4.87E+06	1.92E+04	2.02E+04	6.27E+03	1.19E+04

강경천 - 하구

평균유량	일수	일유사량 (ton/day)										년유사량 (ton/year)									
(CMS)	(DAY)	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn	Einstein	Colby	Engelund & Hansen	Toffaleti	Shen & Hung	Ackers & Whites	Yang (1973)	Yang (1979)	Ranga Raju	Rijn
106.2	1	1.53E+03	2.76E+03	4.53E+03	3.83E+02	2.83E+03	3.41E+03	2.28E+03	2.12E+03	1.37E+03	4.03E+03	1.53E+03	2.76E+03	4.53E+03	3.83E+02	2.83E+03	3.41E+03	2.28E+03	2.12E+03	1.37E+03	4.03E+03
64.1	3	8.42E+02	1.19E+03	1.98E+03	1.89E+02	1.08E+03	1.57E+03	1.03E+03	9.33E+02	4.99E+02	1.87E+03	2.53E+03	3.57E+03	5.94E+03	5.67E+02	3.24E+03	4.71E+03	3.09E+03	2.80E+03	1.50E+03	5.61E+03
31.3	7	2.35E+02	3.32E+02	6.34E+02	7.50E+01	2.81E+02	5.13E+02	3.35E+02	2.96E+02	1.32E+02	6.52E+02	1.65E+03	2.32E+03	4.44E+03	5.25E+02	1.97E+03	3.59E+03	2.35E+03	2.07E+03	9.24E+02	4.56E+03
9.5	14		1.03E+00	8.64E+01	4.23E+00	1.42E+01	3.65E+01	3.39E+01	3.57E+01	8.91E+00	3.30E+01		1.44E+01	1.21E+03	5.92E+01	1.99E+02	5.11E+02	4.75E+02	5.00E+02	1.25E+02	4.62E+02
3.7	30			1.75E+01	1.64E-01	8.10E-01	1.80E+00	3.02E+00	6.18E+00	8.92E-01				5.25E+02	4.92E+00	2.43E+01	5.40E+01	9.06E+01	1.85E+02	2.68E+01	
2.1	60			6.66E+00	2.14E-02	1.04E-01	6.46E-02	1.06E-01	2.09E+00	1.96E-01				4.00E+02	1.28E+00	6.24E+00	3.88E+00	6.36E+00	1.25E+02	1.18E+01	
1.3	100			2.98E+00	4.09E-03	1.64E-02			8.39E-01	5.49E-02				2.98E+02	4.09E-01	1.64E+00			8.39E+01	5.49E+00	
0.6	150			7.74E-01	2.44E-04	4.13E-04			1.76E-01	5.54E-03				1.16E+02	3.66E-02	6.20E-02			2.64E+01	8.31E-01	
계	365											5.70E+03	8.67E+03	1.75E+04	1.54E+03	8.27E+03	1.23E+04	8.29E+03	7.91E+03	3.96E+03	1.47E+04

3. Hec-6 모형에 의한 장래하상예측

건설교통부

■ HEC-6에 의한 장기하상변동 검토

▸ 지류(支流) 및 상류(上流)의 유입유사량 및 유사입경분포 추정

대상하천의 상류 및 지류 유입유사량 및 유사입경분포는 경험식에 의해 추정하였다.

금강(대청댐하류)는 상류에 대청댐이 있어 상류에서 유입되는 유사가 대청댐에 모두 포촉된다고 가정하였으며, 지류 유입유사의 경우는 갑천, 미호천, 논산천은 금회 과업대상하천으로 입도분석결과 및 측량성과 등을 이용하여 경험식에 의해 추정된 값을 적용하였으며, 기타 지류의 경우 갑천, 미호천, 논산천의 유입유사량을 산술평균하여 적용하였다.

갑천은 지류하천중 금회 과업대상하천인 유등천의 입도분석결과 및 측량성과 등을 이용하여 경험식에 의해 추정된 값을 적용하였다.

논산천은 지류하천중 금회 과업대상하천인 노성천, 강경천의 입도분석결과 및 측량성과 등을 이용하여 경험식에 의해 추정된 값을 적용하였다.

금강(대청댐상류) 및 유등천, 미호천, 노성천, 노성천 등은 지류하천중 금회 과업대상하천이 없으므로 상류의 유입유사량을 경험식에 의해 추정하여 그 지류의 유입유사량으로 적용하였다.

▸ 하류 기점수위 산정

각 하천의 유량-기점수위 관계는 실측자료가 없으므로 유량에 대한 등류수심을 HEC-RAS에서 계산하여 적용하였다.

건설교통부

▸ 유사량산정공식

금번 과업에서는 Yang 공식(1973) 및 Toffaleti 공식에 의한 결과를 도출하여, 적용성이 뛰어난 Yang 공식에 의한 결과를 채택하였다.

■ 금강(대청댐하류) 유입유사량 및 유사입경분포 추정

금강(대청댐하류, 갑천 유입유사)

```
Title: Gab Chun Q = 1 CMS

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width      B =     36.00 m
     Flow depth         d =       .39 m
     Flow discharge     Q =      1.00 cms
     Energy slope       S =   .001048
     Water temperature  T =      15.0 o C
     Bedform              =Dunes
     D35                  =         .42 mm
     D50                  =         .60 mm
     D65                  =         .78 mm
     D90                  =        1.36 mm
     Specific gravity Sg =       2.65
     Gradation Grd       =       2.50
     Dune height   Delta =       1.00 m

     Size fraction ( mm )
           Size          Percentage

        .063 -    .125         3.9
        .125 -    .250         9.5
        .250 -    .500        25.0
        .500 -   1.000        36.7
       1.000 -   2.000        11.2
       2.000 -   4.000         1.1
       4.000 -   8.000         2.3
       8.000 -  16.000         4.5


Results
     Mean velocity                  V    =       .07 m/sec
     Hydraulic radius               R    =       .38 m
     Kinematic viscosity            Nu   = .1148E-05 m2/sec


Yang's method(1973)
*******************

  I       Dm         Im       Vc/W         W        Ct

  1      .088        3.9      4.672      .007       1.2
  2      .177        9.5      3.365      .020        .1
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  3      .354       25.0      2.700      .048        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  4      .707       36.7      2.298      .096        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  5     1.414       11.2      2.050      .165        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  6     2.828        1.1      2.050      .249        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  7     5.657        2.3      2.050      .355        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  8    11.314        4.5      2.050      .471        .0

Total bed material discharge
     qt       =          .369E-07 tons/sec/m
              =          .319E-02 tons/day/m
     Qt       =          .133E-05 tons/sec
              =          .115E+00 tons/day
   Sediment concentration
     Ct       =          .133E+01 ppm
```

건설교통부

Title: Gab Chun Q = 20 CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	66.00	m
Flow depth	d =	.64	m
Flow discharge	Q =	20.00	cms
Energy slope	S =	.001048	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.42	mm
D50	=	.60	mm
D65	=	.78	mm
D90	=	1.36	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	1.00	m

Size fraction (mm)

Size	Percentage
.063 - .125	3.9
.125 - .250	9.5
.250 - .500	25.0
.500 - 1.000	36.7
1.000 - 2.000	11.2
2.000 - 4.000	1.1
4.000 - 8.000	2.3
8.000 - 16.000	4.5

Results

Mean velocity	V =	.47	m/sec
Hydraulic radius	R =	.63	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	3.9	4.079	.007	60.4
2	.177	9.5	3.082	.020	46.0
3	.354	25.0	2.535	.048	57.2
4	.707	36.7	2.190	.096	54.9
5	1.414	11.2	2.050	.165	11.2
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
6	2.828	1.1	2.050	.249	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	2.3	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	4.5	2.050	.471	.0

Total bed material discharge

qt	=	.696E-04	tons/sec/m
	=	.601E+01	tons/day/m
Qt	=	.459E-02	tons/sec
	=	.397E+03	tons/day

Sediment concentration

Ct	=	.230E+03	ppm

Title: Gab Chun Q = 100 CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	95.00	m
Flow depth	d =	1.20	m
Flow discharge	Q =	100.00	cms
Energy slope	S =	.001048	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.42	mm
D50	=	.60	mm
D65	=	.78	mm
D90	=	1.36	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	1.00	m

Size fraction (mm)

Size	Percentage
.063 - .125	3.9
.125 - .250	9.5
.250 - .500	25.0
.500 - 1.000	36.7
1.000 - 2.000	11.2
2.000 - 4.000	1.1
4.000 - 8.000	2.3
8.000 - 16.000	4.5

Results

Mean velocity	V =	.88	m/sec
Hydraulic radius	R =	1.17	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	3.9	3.545	.007	159.0
2	.177	9.5	2.801	.020	120.2
3	.354	25.0	2.362	.048	155.2
4	.707	36.7	2.073	.096	165.3
5	1.414	11.2	2.050	.165	45.8
6	2.828	1.1	2.050	.249	4.7
7	5.657	2.3	2.050	.355	9.6
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	4.5	2.050	.471	.0

Total bed material discharge

qt	=	.695E-03	tons/sec/m
	=	.600E+02	tons/day/m
Qt	=	.660E-01	tons/sec
	=	.570E+04	tons/day

Sediment concentration

Ct	=	.660E+03	ppm

건설교통부

Title: Gab Chun Q = 500 CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	228.00	m
Flow depth	d =	1.65	m
Flow discharge	Q =	500.00	cms
Energy slope	S =	.001048	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.42	mm
D50	=	.60	mm
D65	=	.78	mm
D90	=	1.36	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	1.00	m

Size fraction (mm)

Size			Percentage
.063	-	.125	3.9
.125	-	.250	9.5
.250	-	.500	25.0
.500	-	1.000	36.7
1.000	-	2.000	11.2
2.000	-	4.000	1.1
4.000	-	8.000	2.3
8.000	-	16.000	4.5

Results

Mean velocity	V =	1.33	m/sec
Hydraulic radius	R =	1.63	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	3.9	3.326	.007	294.0
2	.177	9.5	2.678	.020	216.0
3	.354	25.0	2.283	.048	274.7
4	.707	36.7	2.050	.096	290.7
5	1.414	11.2	2.050	.165	82.8
6	2.828	1.1	2.050	.249	9.3
7	5.657	2.3	2.050	.355	24.6
8	11.314	4.5	2.050	.471	66.9

Total bed material discharge

qt	=	.276E-02	tons/sec/m
	=	.239E+03	tons/day/m
Qt	=	.630E+00	tons/sec
	=	.544E+05	tons/day

Sediment concentration

Ct	=	.126E+04	ppm

건설교통부

금강(대청댐하류, 미호천 유입유사)

```
Title: MI Ho Chun Q = 20 CMS

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width     B =    134.00 m
     Flow depth        d =      1.04 m
     Flow discharge    Q =     20.00 cms
     Energy slope      S =   .000366
     Water temperature T =      15.0 o C
     Bedform             =Dunes
     D35                 =       1.70 mm
     D50                 =       2.28 mm
     D65                 =       3.05 mm
     D90                 =       5.21 mm
     Specific gravity Sg =      2.65
     Gradation Grd       =      2.50
     Dune height   Delta =      1.00 m

     Size fraction ( mm )
           Size          Percentage

        .063 -    .125          .8
        .125 -    .250         1.7
        .250 -    .500         3.4
        .500 -   1.000         8.3
       1.000 -   2.000        28.2
       2.000 -   4.000        36.1
       4.000 -   8.000        12.6
       8.000 -  16.000         5.8


Results
     Mean velocity                  V    =       .14 m/sec
     Hydraulic radius               R    =      1.02 m
     Kinematic viscosity            Nu   = .1148E-05 m2/sec


Yang's method(1973)
*******************

  I       Dm        Im       Vc/W        W        Ct

  1      .088        .8      4.765      .007       .2
  2      .177       1.7      3.407      .020       .2
  3      .354       3.4      2.724      .048       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  4      .707       8.3      2.313      .096       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  5     1.414      28.2      2.050      .165       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  6     2.828      36.1      2.050      .249       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  7     5.657      12.6      2.050      .355       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  8    11.314       5.8      2.050      .471       .0

Total bed material discharge
     qt       =        .641E-07 tons/sec/m
              =        .554E-02 tons/day/m
     Qt       =        .859E-05 tons/sec
              =        .742E+00 tons/day
   Sediment concentration
     Ct       =        .430E+00 ppm
```

건설교통부

```
Title: Mi Ho Chun Q = 100 CMS

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width      B =    163.00 m
     Flow depth         d =      1.38 m
     Flow discharge     Q =    100.00 cms
     Energy slope       S =   .000366
     Water temperature  T =      15.0 o C
     Bedform              =Dunes
     D35                  =        1.70 mm
     D50                  =        2.28 mm
     D65                  =        3.05 mm
     D90                  =        5.21 mm
     Specific gravity Sg  =      2.65
     Gradation Grd        =      2.50
     Dune height   Delta  =      1.00 m

     Size fraction ( mm )
           Size          Percentage

        .063 -    .125          .8
        .125 -    .250         1.7
        .250 -    .500         3.4
        .500 -   1.000         8.3
       1.000 -   2.000        28.2
       2.000 -   4.000        36.1
       4.000 -   8.000        12.6
       8.000 -  16.000         5.8


Results
     Mean velocity                    V    =       .44 m/sec
     Hydraulic radius                 R    =      1.36 m
     Kinematic viscosity              Nu   = .1148E-05 m2/sec


Yang's method(1973)
*******************

  I       Dm         Im       Vc/W        W         Ct

  1      .088         .8      4.391      .007       2.1
  2      .177        1.7      3.234      .020       1.6
  3      .354        3.4      2.625      .048       1.8
  4      .707        8.3      2.249      .096       3.1
  5     1.414       28.2      2.050      .165       7.5
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  6     2.828       36.1      2.050      .249        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  7     5.657       12.6      2.050      .355        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  8    11.314        5.8      2.050      .471        .0

Total bed material discharge
     qt       =        .984E-05 tons/sec/m
              =        .850E+00 tons/day/m
     Qt       =        .160E-02 tons/sec
              =        .139E+03 tons/day
   Sediment concentration
     Ct       =        .160E+02 ppm
```

Title: Mi Ho Chun Q = 500CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	185.00	m
Flow depth	d =	2.34	m
Flow discharge	Q =	500.00	cms
Energy slope	S =	.000366	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	1.70	mm
D50	=	2.28	mm
D65	=	3.05	mm
D90	=	5.21	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	1.00	m

Size fraction (mm)

Size	Percentage
.063 - .125	.8
.125 - .250	1.7
.250 - .500	3.4
.500 - 1.000	8.3
1.000 - 2.000	28.2
2.000 - 4.000	36.1
4.000 - 8.000	12.6
8.000 - 16.000	5.8

Results

Mean velocity	V =	1.16	m/sec
Hydraulic radius	R =	2.28	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	.8	3.853	.007	10.1
2	.177	1.7	2.966	.020	7.5
3	.354	3.4	2.465	.048	8.2
4	.707	8.3	2.143	.096	16.5
5	1.414	28.2	2.050	.165	59.8
6	2.828	36.1	2.050	.249	97.0
7	5.657	12.6	2.050	.355	46.5
8	11.314	5.8	2.050	.471	29.4

Total bed material discharge

qt	=	.743E-03	tons/sec/m
	=	.642E+02	tons/day/m
Qt	=	.138E+00	tons/sec
	=	.119E+05	tons/day

Sediment concentration

Ct	=	.275E+03	ppm

건설교통부

금강(대청댐하류, 논산천 유입유사)

```
Title: Non San Chun Q = 1 CMS

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width     B =     86.00 m
     Flow depth        d =      2.15 m
     Flow discharge    Q =      1.00 cms
     Energy slope      S =   .001089
     Water temperature T =      15.0 o C
     Bedform             =Dunes
     D35                 =         .06 mm
     D50                 =         .11 mm
     D65                 =         .18 mm
     D90                 =         .29 mm
     Specific gravity Sg =      2.65
     Gradation Grd       =      2.50
     Dune height   Delta =      1.00 m

     Size fraction ( mm )
          Size          Percentage

        .063 -    .125        17.8
        .125 -    .250        29.1
        .250 -    .500         8.6
        .500 -   1.000         1.1
       1.000 -   2.000         2.2
       2.000 -   4.000         4.5
       4.000 -   8.000         1.7
       8.000 -  16.000          .0


Results
     Mean velocity                  V    =       .01 m/sec
     Hydraulic radius               R    =      2.05 m
     Kinematic viscosity            Nu   = .1148E-05 m2/sec


Yang's method(1973)
*******************

  I       Dm        Im      Vc/W        W        Ct

     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  1      .088      17.8     3.169      .007        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  2      .177      29.1     2.587      .020        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  3      .354       8.6     2.224      .048        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  4      .707       1.1     2.050      .096        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  5     1.414       2.2     2.050      .165        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  6     2.828       4.5     2.050      .249        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  7     5.657       1.7     2.050      .355        .0

Total bed material discharge
     qt       =        .000E+00 tons/sec/m
              =        .000E+00 tons/day/m
     Qt       =        .000E+00 tons/sec
              =        .000E+00 tons/day
   Sediment concentration
     Ct       =        .000E+00 ppm
```

건설교통부

Title: Non San Chun Q = 20 CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	95.00	m
Flow depth	d =	2.71	m
Flow discharge	Q =	20.00	cms
Energy slope	S =	.001089	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.06	mm
D50	=	.11	mm
D65	=	.18	mm
D90	=	.29	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	1.00	m

Size fraction (mm)

Size			Percentage
.063	-	.125	17.8
.125	-	.250	29.1
.250	-	.500	8.6
.500	-	1.000	1.1
1.000	-	2.000	2.2
2.000	-	4.000	4.5
4.000	-	8.000	1.7
8.000	-	16.000	.0

Results

Mean velocity	V	=	.08 m/sec
Hydraulic radius	R	=	2.56 m
Kinematic viscosity	Nu	=	.1148E-05 m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	17.8	3.052	.007	13.0
2	.177	29.1	2.517	.020	4.6
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
3	.354	8.6	2.178	.048	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
4	.707	1.1	2.050	.096	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
5	1.414	2.2	2.050	.165	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
6	2.828	4.5	2.050	.249	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	1.7	2.050	.355	.0

Total bed material discharge

qt	=	.372E-05	tons/sec/m
	=	.321E+00	tons/day/m
Qt	=	.353E-03	tons/sec
	=	.305E+02	tons/day

Sediment concentration

Ct	=	.177E+02	ppm

Title: Non San Chun Q = 100 CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	144.00	m
Flow depth	d =	2.68	m
Flow discharge	Q =	100.00	cms
Energy slope	S =	.001089	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.06	mm
D50	=	.11	mm
D65	=	.18	mm
D90	=	.29	mm
Specific gravity Sg	=	2.65	
Gradation Grd	=	2.50	
Dune height Delta	=	1.00	m

Size fraction (mm)

Size	Percentage
.063 - .125	17.8
.125 - .250	29.1
.250 - .500	8.6
.500 - 1.000	1.1
1.000 - 2.000	2.2
2.000 - 4.000	4.5
4.000 - 8.000	1.7
8.000 - 16.000	.0

Results

Mean velocity	V =	.26	m/sec
Hydraulic radius	R =	2.58	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	17.8	3.048	.007	108.2
2	.177	29.1	2.515	.020	63.8
3	.354	8.6	2.176	.048	9.3
4	.707	1.1	2.050	.096	.5
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
5	1.414	2.2	2.050	.165	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
6	2.828	4.5	2.050	.249	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	1.7	2.050	.355	.0

Total bed material discharge

qt	=	.126E-03	tons/sec/m
	=	.109E+02	tons/day/m
Qt	=	.182E-01	tons/sec
	=	.157E+04	tons/day

Sediment concentration

Ct	=	.182E+03	ppm

Title: Non San Chun Q = 500 CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	275.00	m
Flow depth	d =	2.23	m
Flow discharge	Q =	500.00	cms
Energy slope	S =	.001089	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.06	mm
D50	=	.11	mm
D65	=	.18	mm
D90	=	.29	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	1.00	m

Size fraction (mm)

Size			Percentage
.063	-	.125	17.8
.125	-	.250	29.1
.250	-	.500	8.6
.500	-	1.000	1.1
1.000	-	2.000	2.2
2.000	-	4.000	4.5
4.000	-	8.000	1.7
8.000	-	16.000	.0

Results

Mean velocity	V =	.82	m/sec
Hydraulic radius	R =	2.19	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	17.8	3.132	.007	650.1
2	.177	29.1	2.565	.020	348.3
3	.354	8.6	2.210	.048	53.0
4	.707	1.1	2.050	.096	5.0
5	1.414	2.2	2.050	.165	9.3
6	2.828	4.5	2.050	.249	20.1
7	5.657	1.7	2.050	.355	6.4

Total bed material discharge

qt	=	.199E-02	tons/sec/m
	=	.172E+03	tons/day/m
Qt	=	.546E+00	tons/sec
	=	.472E+05	tons/day

Sediment concentration

Ct	=	.109E+04	ppm

건설교통부

■ 금강(대청댐상류) 유입유사량 및 유사입경분포 추정

금강(대청댐상류, 상류유입유사량)

```
Title: Keum Gang Up  Q = 0.3CMS

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width      B =     37.00 m
     Flow depth         d =       .27 m
     Flow discharge     Q =       .30 cms
     Energy slope       S =   .001144
     Water temperature  T =      15.0 o C
     Bedform              =Dunes
     D35                  =          .34 mm
     D50                  =          .41 mm
     D65                  =          .50 mm
     D90                  =         1.07 mm
     Specific gravity Sg  =      2.65
     Gradation Grd        =      2.50
     Dune height    Delta =       .50 m

     Size fraction ( mm )
           Size          Percentage

        .063 -    .125        3.4
        .125 -    .250       12.0
        .250 -    .500       45.8
        .500 -   1.000       23.8
       1.000 -   2.000        2.1
       2.000 -   4.000        1.1
       4.000 -   8.000        2.2
       8.000 -  16.000        4.4

Results
     Mean velocity                  V    =        .03 m/sec
     Hydraulic radius               R    =        .27 m
     Kinematic viscosity            Nu   = .1148E-05 m2/sec

Yang's method(1973)
*******************

  I       Dm        Im      Vc/W        W        Ct

     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  1      .088       3.4     5.094      .007        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  2      .177      12.0     3.551      .020        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  3      .354      45.8     2.804      .048        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  4      .707      23.8     2.364      .096        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  5     1.414       2.1     2.074      .165        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  6     2.828       1.1     2.050      .249        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  7     5.657       2.2     2.050      .355        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  8    11.314       4.4     2.050      .471        .0

Total bed material discharge
     qt       =        .000E+00 tons/sec/m
              =        .000E+00 tons/day/m
     Qt       =        .000E+00 tons/sec
              =        .000E+00 tons/day
   Sediment concentration
     Ct       =        .000E+00 ppm
```

건설교통부

Title: Keum Gang Up Q = 5.0CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	69.00	m
Flow depth	d =	.40	m
Flow discharge	Q =	5.00	cms
Energy slope	S =	.001144	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.34	mm
D50	=	.41	mm
D65	=	.50	mm
D90	=	1.07	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.50	m

Size fraction (mm)

Size	Percentage
.063 - .125	3.4
.125 - .250	12.0
.250 - .500	45.8
.500 - 1.000	23.8
1.000 - 2.000	2.1
2.000 - 4.000	1.1
4.000 - 8.000	2.2
8.000 - 16.000	4.4

Results

Mean velocity	V =	.18	m/sec
Hydraulic radius	R =	.40	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	3.4	4.507	.007	10.8
2	.177	12.0	3.289	.020	10.6
3	.354	45.8	2.657	.048	10.5
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
4	.707	23.8	2.270	.096	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
5	1.414	2.1	2.050	.165	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
6	2.828	1.1	2.050	.249	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	2.2	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	4.4	2.050	.471	.0

Total bed material discharge

qt	=	.231E-05	tons/sec/m
	=	.200E+00	tons/day/m
Qt	=	.159E-03	tons/sec
	=	.138E+02	tons/day

Sediment concentration

Ct	=	.319E+02	ppm

Title: Keum Gang Up Q = 100CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	146.00	m
Flow depth	d =	.90	m
Flow discharge	Q =	100.00	cms
Energy slope	S =	.001144	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.34	mm
D50	=	.41	mm
D65	=	.50	mm
D90	=	1.07	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.50	m

Size fraction (mm)

Size			Percentage
.063	-	.125	3.4
.125	-	.250	12.0
.250	-	.500	45.8
.500	-	1.000	23.8
1.000	-	2.000	2.1
2.000	-	4.000	1.1
4.000	-	8.000	2.2
8.000	-	16.000	4.4

Results

Mean velocity	V =	.76	m/sec
Hydraulic radius	R =	.89	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	3.4	3.688	.007	128.4
2	.177	12.0	2.879	.020	138.8
3	.354	45.8	2.411	.048	255.3
4	.707	23.8	2.106	.096	93.9
5	1.414	2.1	2.050	.165	7.2
6	2.828	1.1	2.050	.249	3.6
7	5.657	2.2	2.050	.355	3.5

The value of (V * S / W - Vcw * S) is less than zero.
Sediment concentration for this size fraction is assumed zero.

8	11.314	4.4	2.050	.471	.0

Total bed material discharge

qt	=	.432E-03	tons/sec/m
	=	.373E+02	tons/day/m
Qt	=	.631E-01	tons/sec
	=	.545E+04	tons/day

Sediment concentration

Ct	=	.631E+03	ppm

건설교통부

Title: Keum Gang Up Q = 1500CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	316.00	m
Flow depth	d =	2.81	m
Flow discharge	Q =	1500.00	cms
Energy slope	S =	.001144	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.34	mm
D50	=	.41	mm
D65	=	.50	mm
D90	=	1.07	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.50	m

Size fraction (mm)

Size	Percentage
.063 - .125	3.4
.125 - .250	12.0
.250 - .500	45.8
.500 - 1.000	23.8
1.000 - 2.000	2.1
2.000 - 4.000	1.1
4.000 - 8.000	2.2
8.000 - 16.000	4.4

Results

Mean velocity	V =	1.69	m/sec
Hydraulic radius	R =	2.76	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	3.4	2.992	.007	388.3
2	.177	12.0	2.481	.020	412.4
3	.354	45.8	2.154	.048	759.5
4	.707	23.8	2.050	.096	282.4
5	1.414	2.1	2.050	.165	23.4
6	2.828	1.1	2.050	.249	14.0
7	5.657	2.2	2.050	.355	36.6
8	11.314	4.4	2.050	.471	107.3

Total bed material discharge

qt	=	.962E-02	tons/sec/m
	=	.831E+03	tons/day/m
Qt	=	.304E+01	tons/sec
	=	.263E+06	tons/day

Sediment concentration

Ct	=	.202E+04	ppm

건설교통부

■ 갑천 유입유사량 및 유사입경분포 추정

갑천(유등천 유입유사)

```
Title: You Deung Q = 0.1CMS

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width      B =     28.00 m
     Flow depth         d =       .04 m
     Flow discharge     Q =       .10 cms
     Energy slope       S =   .001685
     Water temperature T =      15.0 o C
     Bedform              =Dunes
     D35                  =       1.51 mm
     D50                  =       2.93 mm
     D65                  =       5.01 mm
     D90                  =      10.64 mm
     Specific gravity Sg =      2.65
     Gradation Grd       =      2.50
     Dune height   Delta =       .50 m

     Size fraction ( mm )
          Size          Percentage

        .063 -    .125         4.3
        .125 -    .250         4.6
        .250 -    .500         7.3
        .500 -   1.000         8.7
       1.000 -   2.000        11.0
       2.000 -   4.000        18.5
       4.000 -   8.000        21.1
       8.000 -  16.000        13.0

Results
     Mean velocity                  V    =        .09 m/sec
     Hydraulic radius               R    =        .04 m
     Kinematic viscosity            Nu   = .1148E-05 m2/sec

Yang's method(1973)
*******************

  I       Dm        Im      Vc/W         W        Ct

  1      .088       4.3    11.263      .007        .3
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  2      .177       4.6     5.317      .020        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  3      .354       7.3     3.644      .048        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  4      .707       8.7     2.855      .096        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  5     1.414      11.0     2.396      .165        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  6     2.828      18.5     2.096      .249        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  7     5.657      21.1     2.050      .355        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  8    11.314      13.0     2.050      .471        .0

Total bed material discharge
     qt       =        .124E-08 tons/sec/m
              =        .107E-03 tons/day/m
     Qt       =        .348E-07 tons/sec
              =        .300E-02 tons/day
   Sediment concentration
     Ct       =        .348E+00 ppm
```

건설교통부

Title: You Deung Q = 1CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	45.00	m
Flow depth	d =	.10	m
Flow discharge	Q =	1.00	cms
Energy slope	S =	.001685	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	1.51	mm
D50	=	2.93	mm
D65	=	5.01	mm
D90	=	10.64	mm
Specific gravity Sg	=	2.65	
Gradation Grd	=	2.50	
Dune height Delta	=	.50	m

Size fraction (mm)

Size	Percentage
.063 - .125	4.3
.125 - .250	4.6
.250 - .500	7.3
.500 - 1.000	8.7
1.000 - 2.000	11.0
2.000 - 4.000	18.5
4.000 - 8.000	21.1
8.000 - 16.000	13.0

Results

Mean velocity	V =	.22	m/sec
Hydraulic radius	R =	.10	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	4.3	6.415	.007	34.0
2	.177	4.6	4.059	.020	8.8
3	.354	7.3	3.072	.048	3.5
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
4	.707	8.7	2.529	.096	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
5	1.414	11.0	2.186	.165	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
6	2.828	18.5	2.050	.249	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	21.1	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	13.0	2.050	.471	.0

Total bed material discharge

qt	=	.103E-05	tons/sec/m
	=	.889E-01	tons/day/m
Qt	=	.463E-04	tons/sec
	=	.400E+01	tons/day

Sediment concentration

Ct	=	.463E+02	ppm

Title: You Deung Q =10CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	91.00	m
Flow depth	d =	.26	m
Flow discharge	Q =	10.00	cms
Energy slope	S =	.001685	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	1.51	mm
D50	=	2.93	mm
D65	=	5.01	mm
D90	=	10.64	mm
Specific gravity Sg	=	2.65	
Gradation Grd	=	2.50	
Dune height Delta	=	.50	m

Size fraction (mm)

Size			Percentage
.063	-	.125	4.3
.125	-	.250	4.6
.250	-	.500	7.3
.500	-	1.000	8.7
1.000	-	2.000	11.0
2.000	-	4.000	18.5
4.000	-	8.000	21.1
8.000	-	16.000	13.0

Results

Mean velocity	V	=	.42 m/sec
Hydraulic radius	R	=	.26 m
Kinematic viscosity	Nu	=	.1148E-05 m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	4.3	4.556	.007	118.2
2	.177	4.6	3.312	.020	35.4
3	.354	7.3	2.670	.048	23.4
4	.707	8.7	2.278	.096	15.6
5	1.414	11.0	2.050	.165	10.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
6	2.828	18.5	2.050	.249	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	21.1	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	13.0	2.050	.471	.0

Total bed material discharge

qt	=	.223E-04	tons/sec/m
	=	.192E+01	tons/day/m
Qt	=	.203E-02	tons/sec
	=	.175E+03	tons/day

Sediment concentration

Ct	=	.202E+03	ppm

건설교통부

Title: You Deung Q = 70CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	138.00	m
Flow depth	d =	.62	m
Flow discharge	Q =	70.00	cms
Energy slope	S =	.001685	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	1.51	mm
D50	=	2.93	mm
D65	=	5.01	mm
D90	=	10.64	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.50	m

Size fraction (mm)

Size			Percentage
.063	-	.125	4.3
.125	-	.250	4.6
.250	-	.500	7.3
.500	-	1.000	8.7
1.000	-	2.000	11.0
2.000	-	4.000	18.5
4.000	-	8.000	21.1
8.000	-	16.000	13.0

Results

Mean velocity	V =	.82	m/sec
Hydraulic radius	R =	.61	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	4.3	3.673	.007	331.4
2	.177	4.6	2.871	.020	101.1
3	.354	7.3	2.406	.048	72.5
4	.707	8.7	2.103	.096	57.7
5	1.414	11.0	2.050	.165	61.0
6	2.828	18.5	2.050	.249	97.0
7	5.657	21.1	2.050	.355	82.0

The value of (V * S / W - Vcw * S) is less than zero.
Sediment concentration for this size fraction is assumed zero.

8	11.314	13.0	2.050	.471	.0

Total bed material discharge

qt	=	.407E-03	tons/sec/m
	=	.352E+02	tons/day/m
Qt	=	.562E-01	tons/sec
	=	.486E+04	tons/day

Sediment concentration

Ct	=	.803E+03	ppm

건설교통부

■ 유등천 유입유사량 및 유사입경분포 추정

유등천(상류 유입유사)

```
Title: You Deung Q = 3CMS

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width      B =     28.00 m
     Flow depth         d =       .47 m
     Flow discharge     Q =      3.00 cms
     Energy slope       S =   .000100
     Water temperature  T =      15.0 o C
     Bedform              =Dunes
     D35                  =       3.31 mm
     D50                  =       6.45 mm
     D65                  =      10.21 mm
     D90                  =      17.61 mm
     Specific gravity Sg  =      2.65
     Gradation Grd        =      2.50
     Dune height   Delta  =       .30 m

     Size fraction ( mm )
          Size          Percentage

        .063 -    .125        2.8
        .125 -    .250        4.8
        .250 -    .500        3.6
        .500 -   1.000        6.6
       1.000 -   2.000        7.6
       2.000 -   4.000       10.1
       4.000 -   8.000       17.9
       8.000 -  16.000       29.2


Results
     Mean velocity                  V    =        .23 m/sec
     Hydraulic radius               R    =        .45 m
     Kinematic viscosity            Nu   = .1148E-05 m2/sec


Yang's method(1973)
********************

  I       Dm        Im      Vc/W        W        Ct

  1      .088       2.8    17.221      .007       .1
  2      .177       4.8     6.191      .020       .1
  3      .354       3.6     3.980      .048       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  4      .707       6.6     3.032      .096       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  5     1.414       7.6     2.505      .165       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  6     2.828      10.1     2.170      .249       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  7     5.657      17.9     2.050      .355       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  8    11.314      29.2     2.050      .471       .0

Total bed material discharge
     qt       =        .145E-07 tons/sec/m
              =        .126E-02 tons/day/m
     Qt       =        .407E-06 tons/sec
              =        .352E-01 tons/day
   Sediment concentration
     Ct       =        .136E+00 ppm
```

건설교통부

Title: You Deung Q = 20CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	44.00	m
Flow depth	d =	.82	m
Flow discharge	Q =	20.00	cms
Energy slope	S =	.000100	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	3.31	mm
D50	=	6.45	mm
D65	=	10.21	mm
D90	=	17.61	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.30	m

Size fraction (mm)

Size			Percentage
.063	-	.125	2.8
.125	-	.250	4.8
.250	-	.500	3.6
.500	-	1.000	6.6
1.000	-	2.000	7.6
2.000	-	4.000	10.1
4.000	-	8.000	17.9
8.000	-	16.000	29.2

Results

Mean velocity	V =	.55	m/sec
Hydraulic radius	R =	.79	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	2.8	9.884	.007	1.0
2	.177	4.8	5.030	.020	.7
3	.354	3.6	3.523	.048	.3
4	.707	6.6	2.789	.096	.4
5	1.414	7.6	2.355	.165	.4
6	2.828	10.1	2.068	.249	.3
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	17.9	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	29.2	2.050	.471	.0

Total bed material discharge

qt	=	.139E-05	tons/sec/m
	=	.120E+00	tons/day/m
Qt	=	.610E-04	tons/sec
	=	.527E+01	tons/day

Sediment concentration

Ct	=	.305E+01	ppm

건설교통부

Title: You Deung Q = 100CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	62.00	m
Flow depth	d =	1.31	m
Flow discharge	Q =	100.00	cms
Energy slope	S =	.000100	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	3.31	mm
D50	=	6.45	mm
D65	=	10.21	mm
D90	=	17.61	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.30	m

Size fraction (mm)

Size			Percentage
.063	-	.125	2.8
.125	-	.250	4.8
.250	-	.500	3.6
.500	-	1.000	6.6
1.000	-	2.000	7.6
2.000	-	4.000	10.1
4.000	-	8.000	17.9
8.000	-	16.000	29.2

Results

Mean velocity	V =	1.23	m/sec
Hydraulic radius	R =	1.26	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	2.8	7.385	.007	4.6
2	.177	4.8	4.376	.020	2.9
3	.354	3.6	3.227	.048	1.3
4	.707	6.6	2.621	.096	2.1
5	1.414	7.6	2.246	.165	2.9
6	2.828	10.1	2.050	.249	5.7
7	5.657	17.9	2.050	.355	15.4
8	11.314	29.2	2.050	.471	39.0

Total bed material discharge

qt	=	.119E-03	tons/sec/m
	=	.103E+02	tons/day/m
Qt	=	.739E-02	tons/sec
	=	.638E+03	tons/day

Sediment concentration

Ct	=	.739E+02	ppm

건설교통부

■ 미호천 유입유사량 및 유사입경분포 추정

미호천(상류 유입유사)

```
Title: Mi Ho Q = 0.2 CMS

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width     B =     35.00 m
     Flow depth        d =       .25 m
     Flow discharge    Q =       .20 cms
     Energy slope      S =   .001232
     Water temperature T =     15.0 o C
     Bedform             =Dunes
     D35                 =        .42 mm
     D50                 =        .62 mm
     D65                 =        .87 mm
     D90                 =       1.69 mm
     Specific gravity Sg =      2.65
     Gradation Grd       =      2.50
     Dune height   Delta =       .50 m

     Size fraction ( mm )
          Size          Percentage

        .063 -    .125        3.3
        .125 -    .250        7.2
        .250 -    .500       19.8
        .500 -   1.000       29.8
       1.000 -   2.000       23.2
       2.000 -   4.000        5.4
       4.000 -   8.000         .0
       8.000 -  16.000         .0


Results
     Mean velocity                 V    =       .02 m/sec
     Hydraulic radius              R    =       .25 m
     Kinematic viscosity           Nu   = .1148E-05 m2/sec


Yang's method(1973)
*******************

  I       Dm        Im      Vc/W         W        Ct

     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  1      .088       3.3     5.098       .007        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  2      .177       7.2     3.552       .020        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  3      .354      19.8     2.805       .048        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  4      .707      29.8     2.365       .096        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  5     1.414      23.2     2.075       .165        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  6     2.828       5.4     2.050       .249        .0

Total bed material discharge
     qt       =        .000E+00 tons/sec/m
              =        .000E+00 tons/day/m
     Qt       =        .000E+00 tons/sec
              =        .000E+00 tons/day
   Sediment concentration
     Ct       =        .000E+00 ppm
```

건설교통부

Title: Mi Ho Q = 2.5 CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	58.00	m
Flow depth	d =	.37	m
Flow discharge	Q =	2.50	cms
Energy slope	S =	.001232	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.42	mm
D50	=	.62	mm
D65	=	.87	mm
D90	=	1.69	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.50	m

Size fraction (mm)

Size	Percentage
.063 - .125	3.3
.125 - .250	7.2
.250 - .500	19.8
.500 - 1.000	29.8
1.000 - 2.000	23.2
2.000 - 4.000	5.4
4.000 - 8.000	.0
8.000 - 16.000	.0

Results

Mean velocity	V =	.12	m/sec
Hydraulic radius	R =	.37	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	3.3	4.514	.007	4.8
2	.177	7.2	3.292	.020	2.2
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
3	.354	19.8	2.659	.048	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
4	.707	29.8	2.271	.096	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
5	1.414	23.2	2.050	.165	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
6	2.828	5.4	2.050	.249	.0

Total bed material discharge

qt	=	.303E-06	tons/sec/m
	=	.262E-01	tons/day/m
Qt	=	.176E-04	tons/sec
	=	.152E+01	tons/day

Sediment concentration

Ct	=	.702E+01	ppm

Title: Mi Ho Q = 30 CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	112.00	m
Flow depth	d =	.69	m
Flow discharge	Q =	30.00	cms
Energy slope	S =	.001232	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.42	mm
D50	=	.62	mm
D65	=	.87	mm
D90	=	1.69	mm
Specific gravity Sg	=	2.65	
Gradation Grd	=	2.50	
Dune height Delta	=	.50	m

Size fraction (mm)

Size			Percentage
.063	-	.125	3.3
.125	-	.250	7.2
.250	-	.500	19.8
.500	-	1.000	29.8
1.000	-	2.000	23.2
2.000	-	4.000	5.4
4.000	-	8.000	.0
8.000	-	16.000	.0

Results

Mean velocity	V =	.39	m/sec
Hydraulic radius	R =	.68	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	3.3	3.848	.007	47.0
2	.177	7.2	2.964	.020	32.2
3	.354	19.8	2.463	.048	40.9
4	.707	29.8	2.142	.096	37.3
5	1.414	23.2	2.050	.165	11.4
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
6	2.828	5.4	2.050	.249	.0

Total bed material discharge

qt	=	.452E-04	tons/sec/m
	=	.391E+01	tons/day/m
Qt	=	.507E-02	tons/sec
	=	.438E+03	tons/day

Sediment concentration

Ct	=	.169E+03	ppm

Title: Mi Ho Q = 350 CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	236.00	m
Flow depth	d =	1.44	m
Flow discharge	Q =	350.00	cms
Energy slope	S =	.001232	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.42	mm
D50	=	.62	mm
D65	=	.87	mm
D90	=	1.69	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.50	m

Size fraction (mm)

Size			Percentage
.063	-	.125	3.3
.125	-	.250	7.2
.250	-	.500	19.8
.500	-	1.000	29.8
1.000	-	2.000	23.2
2.000	-	4.000	5.4
4.000	-	8.000	.0
8.000	-	16.000	.0

Results

Mean velocity	V =	1.03	m/sec
Hydraulic radius	R =	1.42	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	3.3	3.308	.007	213.8
2	.177	7.2	2.668	.020	142.0
3	.354	19.8	2.277	.048	189.0
4	.707	29.8	2.050	.096	203.7
5	1.414	23.2	2.050	.165	144.5
6	2.828	5.4	2.050	.249	36.7

Total bed material discharge

qt	=	.138E-02	tons/sec/m
	=	.119E+03	tons/day/m
Qt	=	.326E+00	tons/sec
	=	.281E+05	tons/day

Sediment concentration

Ct	=	.930E+03	ppm

건설교통부

■ 논산천 유입유사량 및 유사입경분포 추정

논산천(노성천 유입유사)

```
Title: No Sung Q = 0.2CMS

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width     B =     12.00 m
     Flow depth        d =       .16 m
     Flow discharge    Q =       .20 cms
     Energy slope      S =   .000566
     Water temperature T =      15.0 o C
     Bedform             =Dunes
     D35                 =         .43 mm
     D50                 =         .63 mm
     D65                 =         .86 mm
     D90                 =        1.90 mm
     Specific gravity Sg =      2.65
     Gradation Grd       =      2.50
     Dune height   Delta =       .50 m

     Size fraction ( mm )
           Size          Percentage

        .063 -    .125         3.6
        .125 -    .250        10.5
        .250 -    .500        22.6
        .500 -   1.000        31.1
       1.000 -   2.000        18.7
       2.000 -   4.000         2.2
       4.000 -   8.000         4.3
       8.000 -  16.000         3.4


Results
     Mean velocity                 V    =       .10 m/sec
     Hydraulic radius              R    =       .16 m
     Kinematic viscosity           Nu   = .1148E-05 m2/sec


Yang's method(1973)
*******************

  I       Dm        Im      Vc/W         W        Ct

  1      .088       3.6     9.139      .007       .4
  2      .177      10.5     4.856      .020       .1
    The value of ( V * S / W - Vcw * S ) is less than zero.
    Sediment concentration for this size fraction is assumed zero.
  3      .354      22.6     3.447      .048       .0
    The value of ( V * S / W - Vcw * S ) is less than zero.
    Sediment concentration for this size fraction is assumed zero.
  4      .707      31.1     2.747      .096       .0
    The value of ( V * S / W - Vcw * S ) is less than zero.
    Sediment concentration for this size fraction is assumed zero.
  5     1.414      18.7     2.328      .165       .0
    The value of ( V * S / W - Vcw * S ) is less than zero.
    Sediment concentration for this size fraction is assumed zero.
  6     2.828       2.2     2.050      .249       .0
    The value of ( V * S / W - Vcw * S ) is less than zero.
    Sediment concentration for this size fraction is assumed zero.
  7     5.657       4.3     2.050      .355       .0
    The value of ( V * S / W - Vcw * S ) is less than zero.
    Sediment concentration for this size fraction is assumed zero.
  8    11.314       3.4     2.050      .471       .0

Total bed material discharge
     qt       =        .704E-08 tons/sec/m
              =        .608E-03 tons/day/m
     Qt       =        .844E-07 tons/sec
              =        .730E-02 tons/day
   Sediment concentration
     Ct       =        .422E+00 ppm
```

건설교통부

Title: No Sung Q = 2CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	20.00	m
Flow depth	d =	.33	m
Flow discharge	Q =	2.00	cms
Energy slope	S =	.000566	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.43	mm
D50	=	.63	mm
D65	=	.86	mm
D90	=	1.90	mm
Specific gravity Sg	=	2.65	
Gradation Grd	=	2.50	
Dune height Delta	=	.50	m

Size fraction (mm)

Size	Percentage
.063 - .125	3.6
.125 - .250	10.5
.250 - .500	22.6
.500 - 1.000	31.1
1.000 - 2.000	18.7
2.000 - 4.000	2.2
4.000 - 8.000	4.3
8.000 - 16.000	3.4

Results

Mean velocity	V =	.30	m/sec
Hydraulic radius	R =	.32	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	3.6	6.207	.007	8.7
2	.177	10.5	3.986	.020	7.8
3	.354	22.6	3.035	.048	6.8
4	.707	31.1	2.507	.096	3.3
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
5	1.414	18.7	2.171	.165	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
6	2.828	2.2	2.050	.249	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	4.3	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	3.4	2.050	.471	.0

Total bed material discharge

qt	=	.266E-05	tons/sec/m
	=	.230E+00	tons/day/m
Qt	=	.532E-04	tons/sec
	=	.460E+01	tons/day

Sediment concentration

Ct	=	.266E+02	ppm

Title: No Sung Q = 20CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	29.00	m
Flow depth	d =	.95	m
Flow discharge	Q =	20.00	cms
Energy slope	S =	.000566	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.43	mm
D50	=	.63	mm
D65	=	.86	mm
D90	=	1.90	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.50	m

Size fraction (mm)

Size			Percentage
.063	-	.125	3.6
.125	-	.250	10.5
.250	-	.500	22.6
.500	-	1.000	31.1
1.000	-	2.000	18.7
2.000	-	4.000	2.2
4.000	-	8.000	4.3
8.000	-	16.000	3.4

Results

Mean velocity	V	=	.73 m/sec
Hydraulic radius	R	=	.89 m
Kinematic viscosity	Nu	=	.1148E-05 m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	3.6	4.372	.007	43.0
2	.177	10.5	3.225	.020	41.0
3	.354	22.6	2.620	.048	45.3
4	.707	31.1	2.246	.096	46.7
5	1.414	18.7	2.050	.165	26.5
6	2.828	2.2	2.050	.249	3.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	4.3	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	3.4	2.050	.471	.0

Total bed material discharge

qt	=	.142E-03	tons/sec/m
	=	.123E+02	tons/day/m
Qt	=	.411E-02	tons/sec
	=	.355E+03	tons/day

Sediment concentration

Ct	=	.206E+03	ppm

Title: No Sung Q = 200CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	84.00	m
Flow depth	d =	1.92	m
Flow discharge	Q =	200.00	cms
Energy slope	S =	.000566	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.43	mm
D50	=	.63	mm
D65	=	.86	mm
D90	=	1.90	mm
Specific gravity Sg	=	2.65	
Gradation Grd	=	2.50	
Dune height Delta	=	.50	m

Size fraction (mm)

Size		Percentage
.063 -	.125	3.6
.125 -	.250	10.5
.250 -	.500	22.6
.500 -	1.000	31.1
1.000 -	2.000	18.7
2.000 -	4.000	2.2
4.000 -	8.000	4.3
8.000 -	16.000	3.4

Results

Mean velocity	V =	1.24	m/sec
Hydraulic radius	R =	1.84	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	3.6	3.670	.007	99.3
2	.177	10.5	2.870	.020	94.1
3	.354	22.6	2.405	.048	105.2
4	.707	31.1	2.102	.096	112.3
5	1.414	18.7	2.050	.165	67.8
6	2.828	2.2	2.050	.249	9.7
7	5.657	4.3	2.050	.355	25.2
8	11.314	3.4	2.050	.471	28.2

Total bed material discharge

qt	=	.129E-02	tons/sec/m
	=	.111E+03	tons/day/m
Qt	=	.108E+00	tons/sec
	=	.937E+04	tons/day

Sediment concentration

Ct	=	.542E+03	ppm

건설교통부

논산천(강경천 유입유사)

```
Title: Kang Kyung Q = 0.2CMS

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width      B =     24.00 m
     Flow depth         d =       .17 m
     Flow discharge     Q =       .20 cms
     Energy slope       S =   .000897
     Water temperature T =      15.0 o C
     Bedform              =Dunes
     D35                  =        .75 mm
     D50                  =       2.53 mm
     D65                  =       5.39 mm
     D90                  =      17.76 mm
     Specific gravity Sg =      2.65
     Gradation Grd       =      2.50
     Dune height   Delta =       .50 m

     Size fraction ( mm )
          Size          Percentage

        .063 -    .125        4.9
        .125 -    .250        5.9
        .250 -    .500       11.1
        .500 -   1.000       13.6
       1.000 -   2.000        6.2
       2.000 -   4.000       10.7
       4.000 -   8.000       16.2
       8.000 -  16.000       13.8


Results
     Mean velocity                  V    =       .05 m/sec
     Hydraulic radius               R    =       .17 m
     Kinematic viscosity            Nu   = .1148E-05 m2/sec


Yang's method(1973)
*******************

  I       Dm        Im      Vc/W        W        Ct

  1      .088       4.9     6.748      .007       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  2      .177       5.9     4.173      .020       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  3      .354      11.1     3.129      .048       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  4      .707      13.6     2.563      .096       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  5     1.414       6.2     2.208      .165       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  6     2.828      10.7     2.050      .249       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  7     5.657      16.2     2.050      .355       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  8    11.314      13.8     2.050      .471       .0

Total bed material discharge
     qt       =        .122E-09 tons/sec/m
              =        .106E-04 tons/day/m
     Qt       =        .293E-08 tons/sec
              =        .253E-03 tons/day
   Sediment concentration
     Ct       =        .147E-01 ppm
```

건설교통부

```
Title: Kang Kyung Q = 2CMS

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width      B =     35.00 m
     Flow depth         d =       .31 m
     Flow discharge     Q =      2.00 cms
     Energy slope       S =   .000897
     Water temperature  T =      15.0 o C
     Bedform               =Dunes
     D35                   =        .75 mm
     D50                   =       2.53 mm
     D65                   =       5.39 mm
     D90                   =      17.76 mm
     Specific gravity Sg   =      2.65
     Gradation Grd         =      2.50
     Dune height   Delta   =       .50 m

     Size fraction ( mm )
           Size          Percentage

        .063 -    .125         4.9
        .125 -    .250         5.9
        .250 -    .500        11.1
        .500 -   1.000        13.6
       1.000 -   2.000         6.2
       2.000 -   4.000        10.7
       4.000 -   8.000        16.2
       8.000 -  16.000        13.8


Results
     Mean velocity                  V    =       .18 m/sec
     Hydraulic radius               R    =       .30 m
     Kinematic viscosity            Nu   = .1148E-05 m2/sec


Yang's method(1973)
*******************

  I       Dm        Im       Vc/W          W          Ct

  1      .088       4.9     5.287       .007       10.1
  2      .177       5.9     3.631       .020        3.3
  3      .354      11.1     2.848       .048        1.4
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  4      .707      13.6     2.392       .096        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  5     1.414       6.2     2.093       .165        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  6     2.828      10.7     2.050       .249        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  7     5.657      16.2     2.050       .355        .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  8    11.314      13.8     2.050       .471        .0

Total bed material discharge
     qt        =          .847E-06 tons/sec/m
               =          .732E-01 tons/day/m
     Qt        =          .297E-04 tons/sec
               =          .256E+01 tons/day
   Sediment concentration
     Ct        =          .148E+02 ppm
```

건설교통부

Title: Kang Kyung Q = 20CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	46.00	m
Flow depth	d =	.72	m
Flow discharge	Q =	20.00	cms
Energy slope	S =	.000897	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.75	mm
D50	=	2.53	mm
D65	=	5.39	mm
D90	=	17.76	mm
Specific gravity Sg	=	2.65	
Gradation Grd	=	2.50	
Dune height Delta	=	.50	m

Size fraction (mm)

Size	Percentage
.063 - .125	4.9
.125 - .250	5.9
.250 - .500	11.1
.500 - 1.000	13.6
1.000 - 2.000	6.2
2.000 - 4.000	10.7
4.000 - 8.000	16.2
8.000 - 16.000	13.8

Results

Mean velocity	V =	.60	m/sec
Hydraulic radius	R =	.70	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	4.9	4.130	.007	89.1
2	.177	5.9	3.107	.020	33.7
3	.354	11.1	2.550	.048	30.8
4	.707	13.6	2.200	.096	26.4
5	1.414	6.2	2.050	.165	10.0
6	2.828	10.7	2.050	.249	11.5
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	16.2	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	13.8	2.050	.471	.0

Total bed material discharge

qt	=	.876E-04	tons/sec/m
	=	.757E+01	tons/day/m
Qt	=	.403E-02	tons/sec
	=	.348E+03	tons/day

Sediment concentration

Ct	=	.201E+03	ppm

건설교통부

Title: Kang Kyung Q = 200CMS

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	70.00	m
Flow depth	d =	2.14	m
Flow discharge	Q =	200.00	cms
Energy slope	S =	.000897	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.75	mm
D50	=	2.53	mm
D65	=	5.39	mm
D90	=	17.76	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.50	m

Size fraction (mm)

Size		Percentage
.063 -	.125	4.9
.125 -	.250	5.9
.250 -	.500	11.1
.500 -	1.000	13.6
1.000 -	2.000	6.2
2.000 -	4.000	10.7
4.000 -	8.000	16.2
8.000 -	16.000	13.8

Results

Mean velocity	V =	1.34	m/sec
Hydraulic radius	R =	2.02	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	4.9	3.289	.007	292.2
2	.177	5.9	2.657	.020	109.3
3	.354	11.1	2.270	.048	102.2
4	.707	13.6	2.050	.096	92.7
5	1.414	6.2	2.050	.165	40.5
6	2.828	10.7	2.050	.249	81.4
7	5.657	16.2	2.050	.355	160.6
8	11.314	13.8	2.050	.471	195.1

Total bed material discharge

qt	=	.307E-02	tons/sec/m
	=	.265E+03	tons/day/m
Qt	=	.215E+00	tons/sec
	=	.186E+05	tons/day

Sediment concentration

Ct	=	.107E+04	ppm

건설교통부

■ 노성천 유입유사량 및 유사입경분포 추정

노성천(상류 유입유사)

```
Title: No Sung Q=0.2cms

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width      B =     68.00 m
     Flow depth         d =       .74 m
     Flow discharge     Q =       .20 cms
     Energy slope       S =   .000854
     Water temperature  T =      15.0 o C
     Bedform              =Dunes
     D35                  =         .88 mm
     D50                  =        1.35 mm
     D65                  =        1.87 mm
     D90                  =        4.13 mm
     Specific gravity Sg  =      2.65
     Gradation Grd        =      2.50
     Dune height   Delta  =       .30 m

     Size fraction ( mm )
          Size          Percentage

        .063 -    .125        2.0
        .125 -    .250        3.9
        .250 -    .500       12.7
        .500 -   1.000       18.3
       1.000 -   2.000       29.4
       2.000 -   4.000       20.7
       4.000 -   8.000        3.5
       8.000 -  16.000        5.3

Results
     Mean velocity                  V    =       .00 m/sec
     Hydraulic radius               R    =       .72 m
     Kinematic viscosity            Nu   = .1148E-05 m2/sec

Yang's method(1973)
*******************

  I       Dm         Im       Vc/W          W         Ct

     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  1      .088        2.0      4.143       .007         .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  2      .177        3.9      3.114       .020         .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  3      .354       12.7      2.554       .048         .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  4      .707       18.3      2.202       .096         .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  5     1.414       29.4      2.050       .165         .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  6     2.828       20.7      2.050       .249         .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  7     5.657        3.5      2.050       .355         .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  8    11.314        5.3      2.050       .471         .0

Total bed material discharge
     qt       =          .000E+00 tons/sec/m
              =          .000E+00 tons/day/m
     Qt       =          .000E+00 tons/sec
              =          .000E+00 tons/day
   Sediment concentration
     Ct       =          .000E+00 ppm
```

건설교통부

Title: No Sung Q=10cms

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	74.00	m
Flow depth	d =	1.04	m
Flow discharge	Q =	10.00	cms
Energy slope	S =	.000854	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.88	mm
D50	=	1.35	mm
D65	=	1.87	mm
D90	=	4.13	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.30	m

Size fraction (mm)

Size	Percentage
.063 - .125	2.0
.125 - .250	3.9
.250 - .500	12.7
.500 - 1.000	18.3
1.000 - 2.000	29.4
2.000 - 4.000	20.7
4.000 - 8.000	3.5
8.000 - 16.000	5.3

Results

Mean velocity	V =	.13	m/sec
Hydraulic radius	R =	1.01	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	2.0	3.823	.007	2.3
2	.177	3.9	2.951	.020	1.3
3	.354	12.7	2.456	.048	.4
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
4	.707	18.3	2.136	.096	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
5	1.414	29.4	2.050	.165	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
6	2.828	20.7	2.050	.249	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	3.5	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	5.3	2.050	.471	.0

Total bed material discharge

qt	=	.536E-06	tons/sec/m
	=	.463E-01	tons/day/m
Qt	=	.396E-04	tons/sec
	=	.343E+01	tons/day

Sediment concentration

Ct	=	.396E+01	ppm

건설교통부

Title: No Sung Q=50cms

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	91.00	m
Flow depth	d =	1.50	m
Flow discharge	Q =	50.00	cms
Energy slope	S =	.000854	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.88	mm
D50	=	1.35	mm
D65	=	1.87	mm
D90	=	4.13	mm
Specific gravity Sg	=	2.65	
Gradation Grd	=	2.50	
Dune height Delta	=	.30	m

Size fraction (mm)

Size	Percentage
.063 - .125	2.0
.125 - .250	3.9
.250 - .500	12.7
.500 - 1.000	18.3
1.000 - 2.000	29.4
2.000 - 4.000	20.7
4.000 - 8.000	3.5
8.000 - 16.000	5.3

Results

Mean velocity	V =	.37	m/sec
Hydraulic radius	R =	1.45	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	2.0	3.537	.007	14.7
2	.177	3.9	2.797	.020	9.9
3	.354	12.7	2.360	.048	16.3
4	.707	18.3	2.071	.096	15.3
5	1.414	29.4	2.050	.165	7.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
6	2.828	20.7	2.050	.249	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	3.5	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	5.3	2.050	.471	.0

Total bed material discharge

qt	=	.347E-04	tons/sec/m
	=	.299E+01	tons/day/m
Qt	=	.315E-02	tons/sec
	=	.272E+03	tons/day

Sediment concentration

Ct	=	.631E+02	ppm

건설교통부

Title: No Sung Q=170cms

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	157.00	m
Flow depth	d =	1.75	m
Flow discharge	Q =	170.00	cms
Energy slope	S =	.000854	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.88	mm
D50	=	1.35	mm
D65	=	1.87	mm
D90	=	4.13	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.30	m

Size fraction (mm)

Size	Percentage
.063 - .125	2.0
.125 - .250	3.9
.250 - .500	12.7
.500 - 1.000	18.3
1.000 - 2.000	29.4
2.000 - 4.000	20.7
4.000 - 8.000	3.5
8.000 - 16.000	5.3

Results

Mean velocity	V =	.62	m/sec
Hydraulic radius	R =	1.71	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	2.0	3.424	.007	34.0
2	.177	3.9	2.734	.020	22.4
3	.354	12.7	2.319	.048	38.2
4	.707	18.3	2.050	.096	41.4
5	1.414	29.4	2.050	.165	57.3
6	2.828	20.7	2.050	.249	31.3
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	3.5	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	5.3	2.050	.471	.0

Total bed material discharge

qt	=	.243E-03	tons/sec/m
	=	.210E+02	tons/day/m
Qt	=	.382E-01	tons/sec
	=	.330E+04	tons/day

Sediment concentration

Ct	=	.225E+03	ppm

건설교통부

■ 강경천 유입유사량 및 유사입경분포 추정

강경천(상류 유입유사)

```
Title: Kang Kyung Q=0.4cms

Options : SI unit
          Size fraction
          No side wall corr.

Input data
     Channel width      B =     24.00 m
     Flow depth         d =       .19 m
     Flow discharge     Q =       .40 cms
     Energy slope       S =   .000354
     Water temperature  T =     15.0 o C
     Bedform              =Dunes
     D35                  =         .62 mm
     D50                  =         .83 mm
     D65                  =        1.12 mm
     D90                  =        2.15 mm
     Specific gravity Sg  =      2.65
     Gradation Grd        =      2.50
     Dune height   Delta  =       .30 m

     Size fraction ( mm )
          Size          Percentage

        .063 -    .125        4.8
        .125 -    .250        5.5
        .250 -    .500       12.6
        .500 -   1.000       32.0
       1.000 -   2.000       27.4
       2.000 -   4.000        5.4
       4.000 -   8.000        5.4
       8.000 -  16.000        2.1

Results
     Mean velocity                  V    =       .09 m/sec
     Hydraulic radius               R    =       .19 m
     Kinematic viscosity            Nu   = .1148E-05 m2/sec

Yang's method(1973)
*******************

  I       Dm        Im      Vc/W        W        Ct

  1      .088       4.8    11.411      .007       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  2      .177       5.5     5.345      .020       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  3      .354      12.6     3.655      .048       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  4      .707      32.0     2.861      .096       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  5     1.414      27.4     2.400      .165       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  6     2.828       5.4     2.099      .249       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  7     5.657       5.4     2.050      .355       .0
     The value of ( V * S / W - Vcw * S ) is less than zero.
     Sediment concentration for this size fraction is assumed zero.
  8    11.314       2.1     2.050      .471       .0

Total bed material discharge
     qt       =        .290E-09 tons/sec/m
              =        .251E-04 tons/day/m
     Qt       =        .696E-08 tons/sec
              =        .602E-03 tons/day
   Sediment concentration
     Ct       =        .174E-01 ppm
```

건설교통부

Title: Kang Kyung Q=2.0 cms

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	30.00	m
Flow depth	d =	.37	m
Flow discharge	Q =	2.00	cms
Energy slope	S =	.000354	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.62	mm
D50	=	.83	mm
D65	=	1.12	mm
D90	=	2.15	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.30	m

Size fraction (mm)

Size	Percentage
.063 - .125	4.8
.125 - .250	5.5
.250 - .500	12.6
.500 - 1.000	32.0
1.000 - 2.000	27.4
2.000 - 4.000	5.4
4.000 - 8.000	5.4
8.000 - 16.000	2.1

Results

Mean velocity	V =	.18	m/sec
Hydraulic radius	R =	.36	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	4.8	7.320	.007	1.6
2	.177	5.5	4.356	.020	.5
3	.354	12.6	3.218	.048	.2
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
4	.707	32.0	2.615	.096	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
5	1.414	27.4	2.243	.165	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
6	2.828	5.4	2.050	.249	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	5.4	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	2.1	2.050	.471	.0

Total bed material discharge

qt	=	.153E-06	tons/sec/m
	=	.132E-01	tons/day/m
Qt	=	.458E-05	tons/sec
	=	.396E+00	tons/day

Sediment concentration

Ct	=	.229E+01	ppm

Title: Kang Kyung Q=10.0 cms

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	34.00 m	
Flow depth	d =	.87 m	
Flow discharge	Q =	10.00 cms	
Energy slope	S =	.000354	
Water temperature	T =	15.0 C	
Bedform		=Dunes	
D35	=	2.52 mm	
D50	=	3.83 mm	
D65	=	12.12 mm	
D90	=	21.15 mm	
Specific gravity Sg	=	2.65	
Gradation Grd	=	2.50	
Dune height	Delta =	.30 m	

Size fraction (mm)

Size	Percentage
.063 - .125	4.8
.125 - .250	5.5
.250 - .500	12.6
.500 - 1.000	32.0
1.000 - 2.000	27.4
2.000 - 4.000	5.4
4.000 - 8.000	5.4
8.000 - 16.000	2.1

Results

Mean velocity	V =	.34	m/sec
Hydraulic radius	R =	.83	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	4.8	5.160	.700	7.3
2	.177	5.5	3.579	.020	2.8
3	.354	12.6	2.820	.048	3.1
4	.707	32.0	2.574	.096	4.4

The value of (V * S / W - Vc / W) is less than zero.
Sediment concentration for this size fraction is assumed zero.

5	1.414	27.4	2.081	.165	0.

The value of (V * S / W - Vc / W) is less than zero.
Sediment concentration for this size fraction is assumed zero.

6	2.828	5.4	2.050	.249	0.

The value of (V * S / W - Vc / W) is less than zero.
Sediment concentration for this size fraction is assumed zero.

7	5.657	5.4	2.050	.355	0.

The value of (V * S / W - Vc / W) is less than zero.
Sediment concentration for this size fraction is assumed zero.

8	11.314	2.1	2.050	.471	0.

Sediment concentration for this size fraction is assumed zero.

Total bed material discharge

qt	=	.509E-05	tons/sec/m
	=	.440E+00	tons/day/m
Qt	=	.173E-03	tons/sec
	=	.150E+02	tons/day

Sediment concentration

Ct	=	.173E+02	ppm

Title: Kang Kyung Q=50.0 cms

Options : SI unit
Size fraction
No side wall corr.

Input data

Channel width	B =	44.00	m
Flow depth	d =	1.81	m
Flow discharge	Q =	50.00	cms
Energy slope	S =	.000354	
Water temperature	T =	15.0	o C
Bedform	=Dunes		
D35	=	.62	mm
D50	=	.83	mm
D65	=	1.12	mm
D90	=	2.15	mm
Specific gravity	Sg =	2.65	
Gradation	Grd =	2.50	
Dune height	Delta =	.30	m

Size fraction (mm)

Size			Percentage
.063	-	.125	4.8
.125	-	.250	5.5
.250	-	.500	12.6
.500	-	1.000	32.0
1.000	-	2.000	27.4
2.000	-	4.000	5.4
4.000	-	8.000	5.4
8.000	-	16.000	2.1

Results

Mean velocity	V =	.63	m/sec
Hydraulic radius	R =	1.67	m
Kinematic viscosity	Nu =	.1148E-05	m2/sec

Yang's method(1973)
****

I	Dm	Im	Vc/W	W	Ct
1	.088	4.8	4.190	.007	21.4
2	.177	5.5	3.137	.020	8.9
3	.354	12.6	2.568	.048	11.4
4	.707	32.0	2.212	.096	23.4
5	1.414	27.4	2.050	.165	19.4
6	2.828	5.4	2.050	.249	3.2
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
7	5.657	5.4	2.050	.355	.0
	The value of (V * S / W - Vcw * S) is less than zero.				
	Sediment concentration for this size fraction is assumed zero.				
8	11.314	2.1	2.050	.471	.0

Total bed material discharge

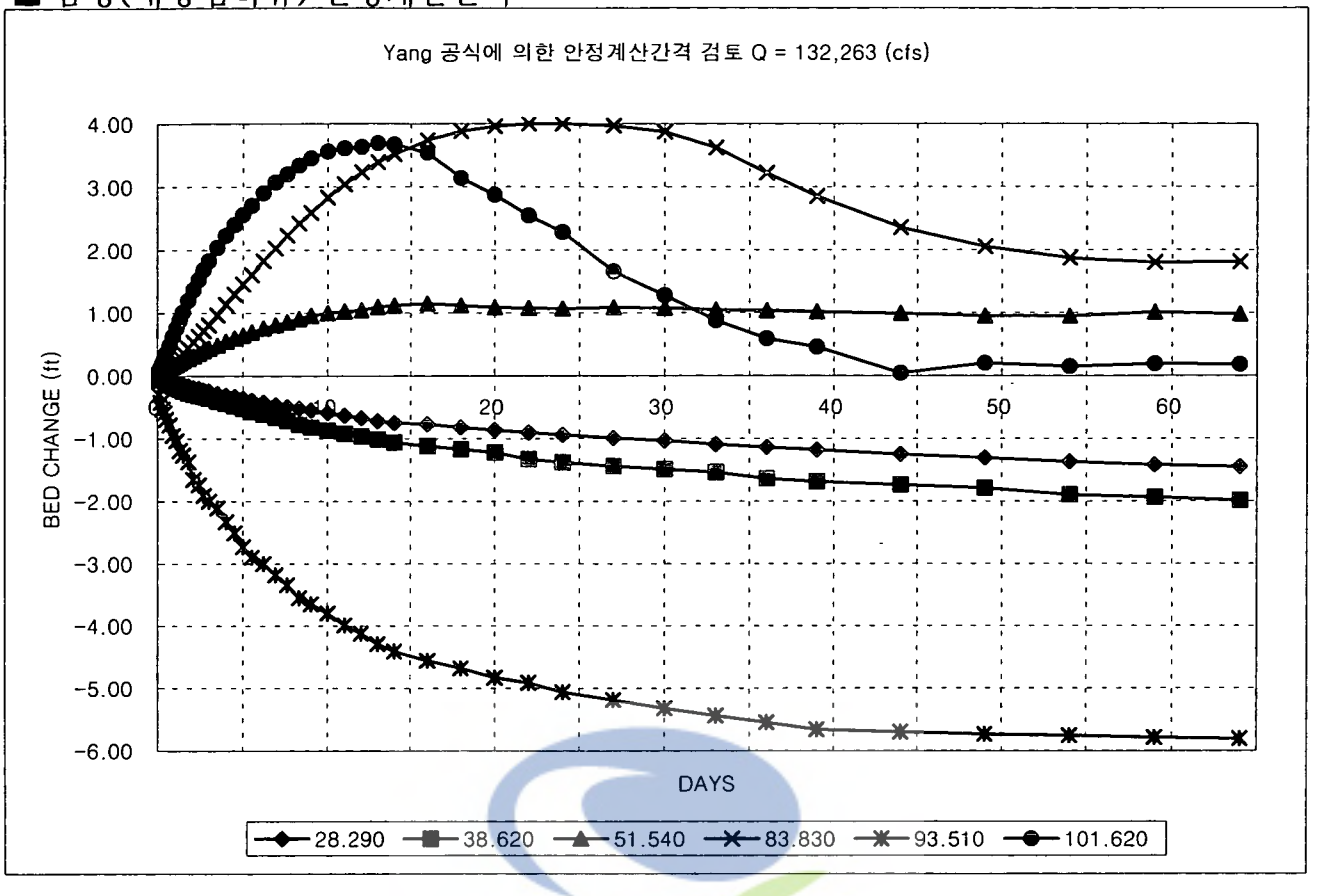
qt	=	.997E-04	tons/sec/m
	=	.862E+01	tons/day/m
Qt	=	.439E-02	tons/sec
	=	.379E+03	tons/day

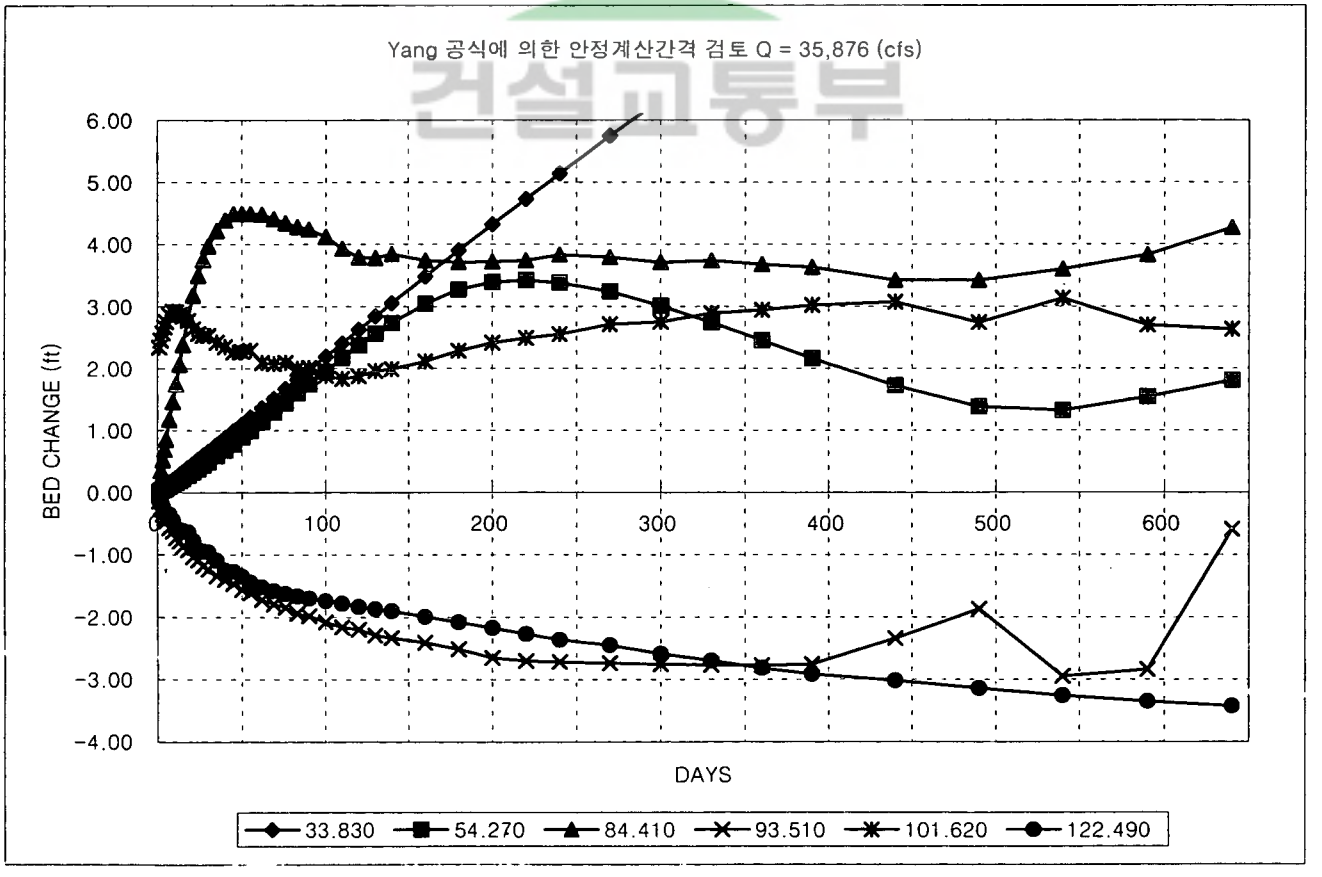
Sediment concentration

Ct	=	.878E+02	ppm

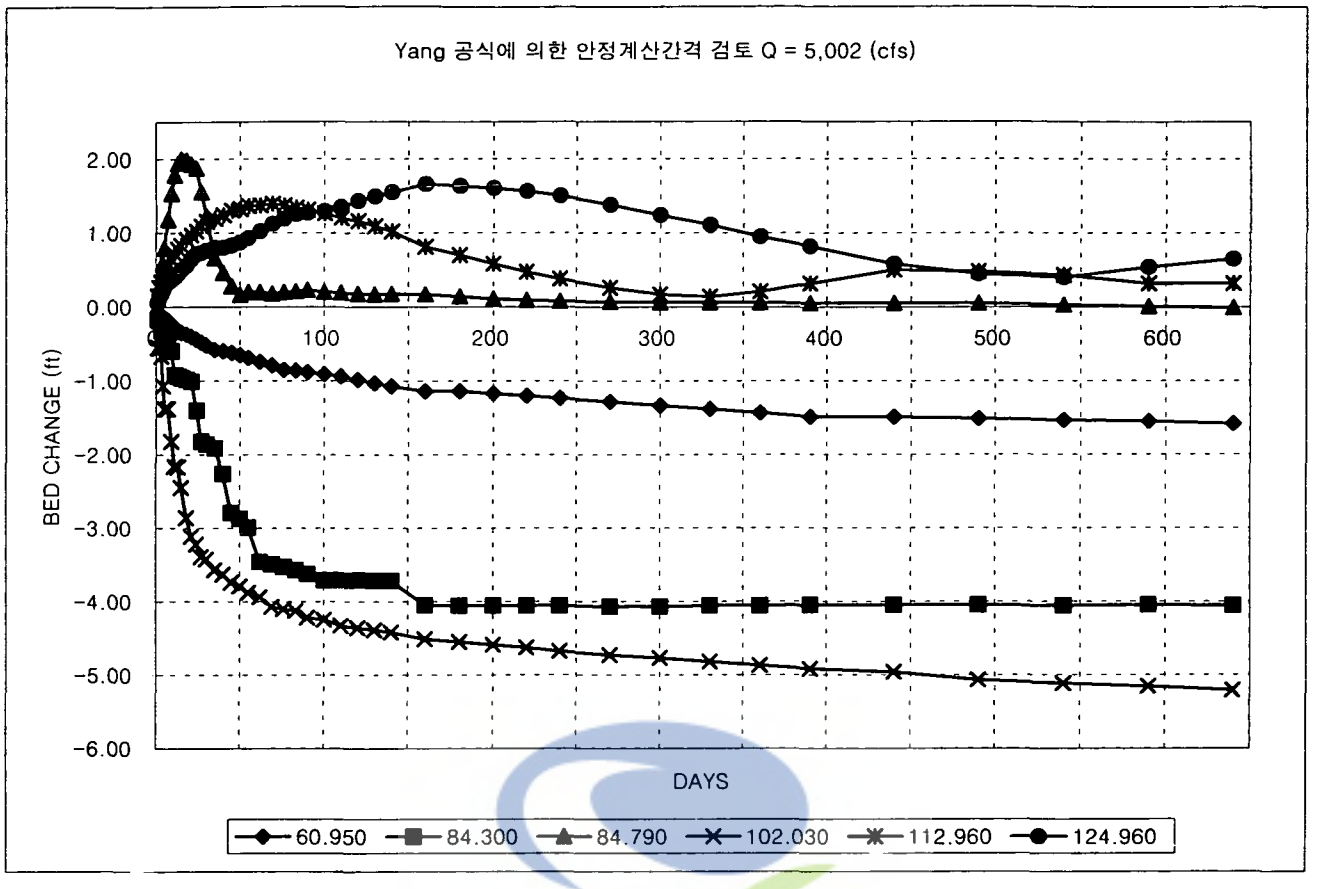
건설교통부

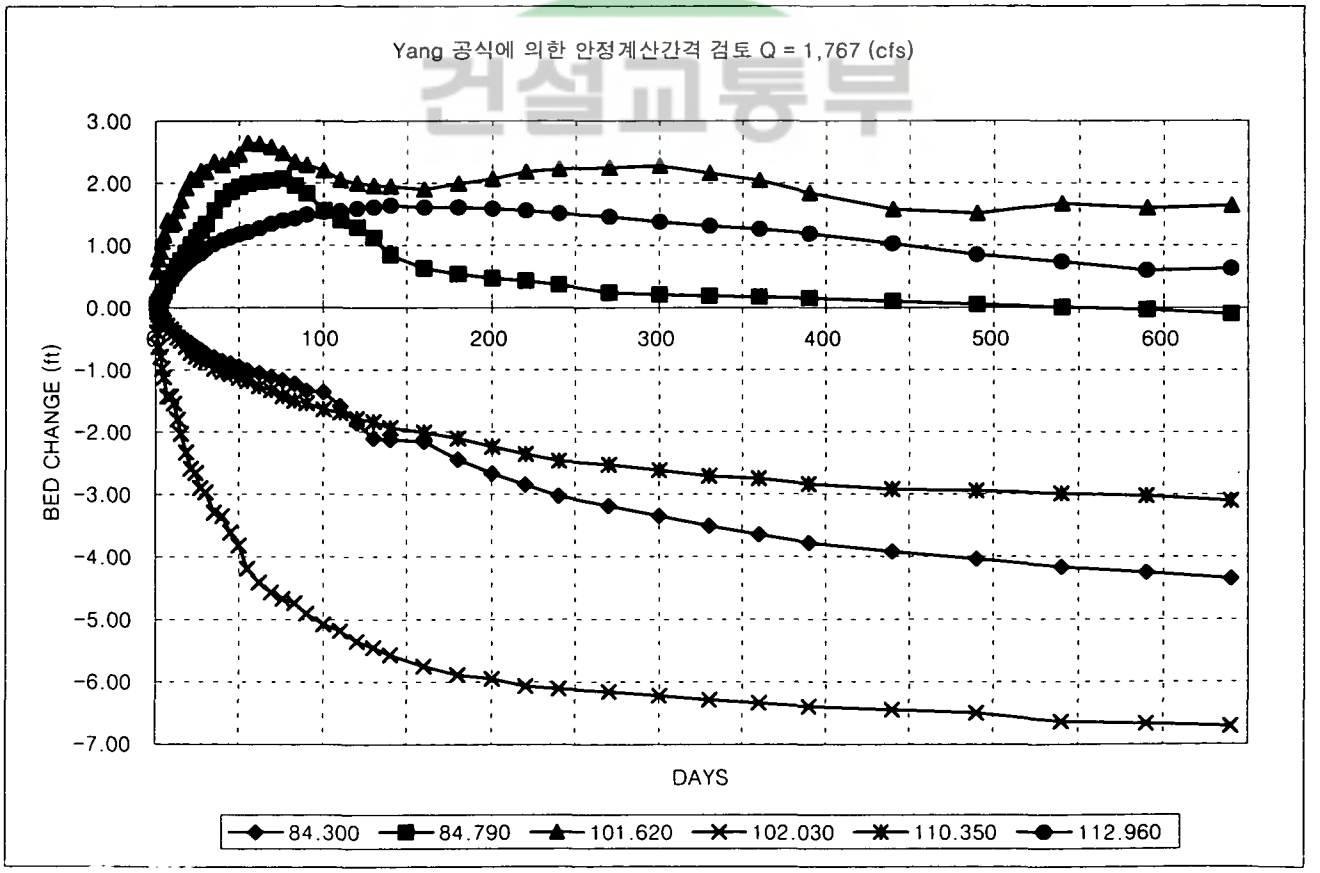
■ 금강(대청댐하류) 안정계산간격



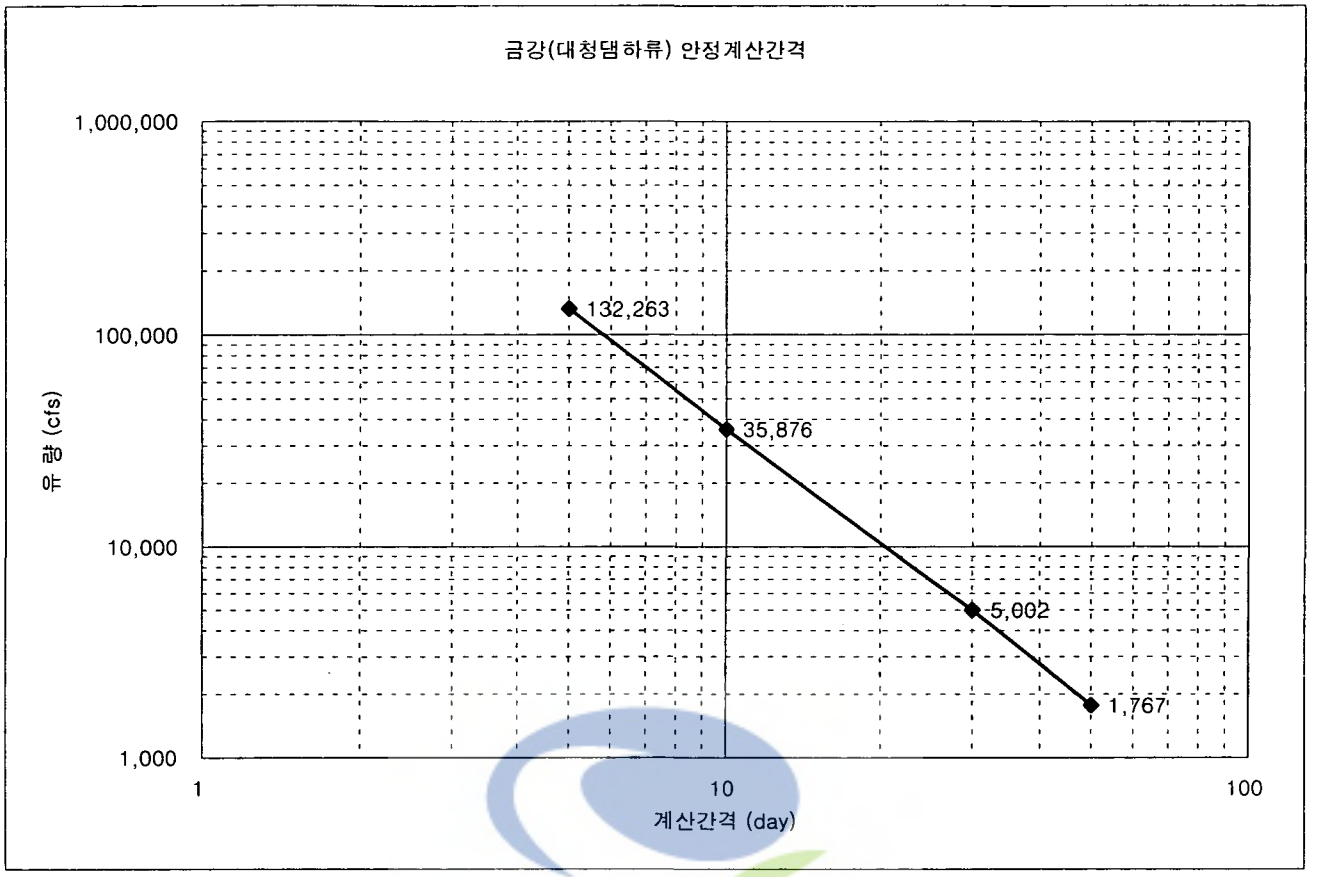


건설교통부

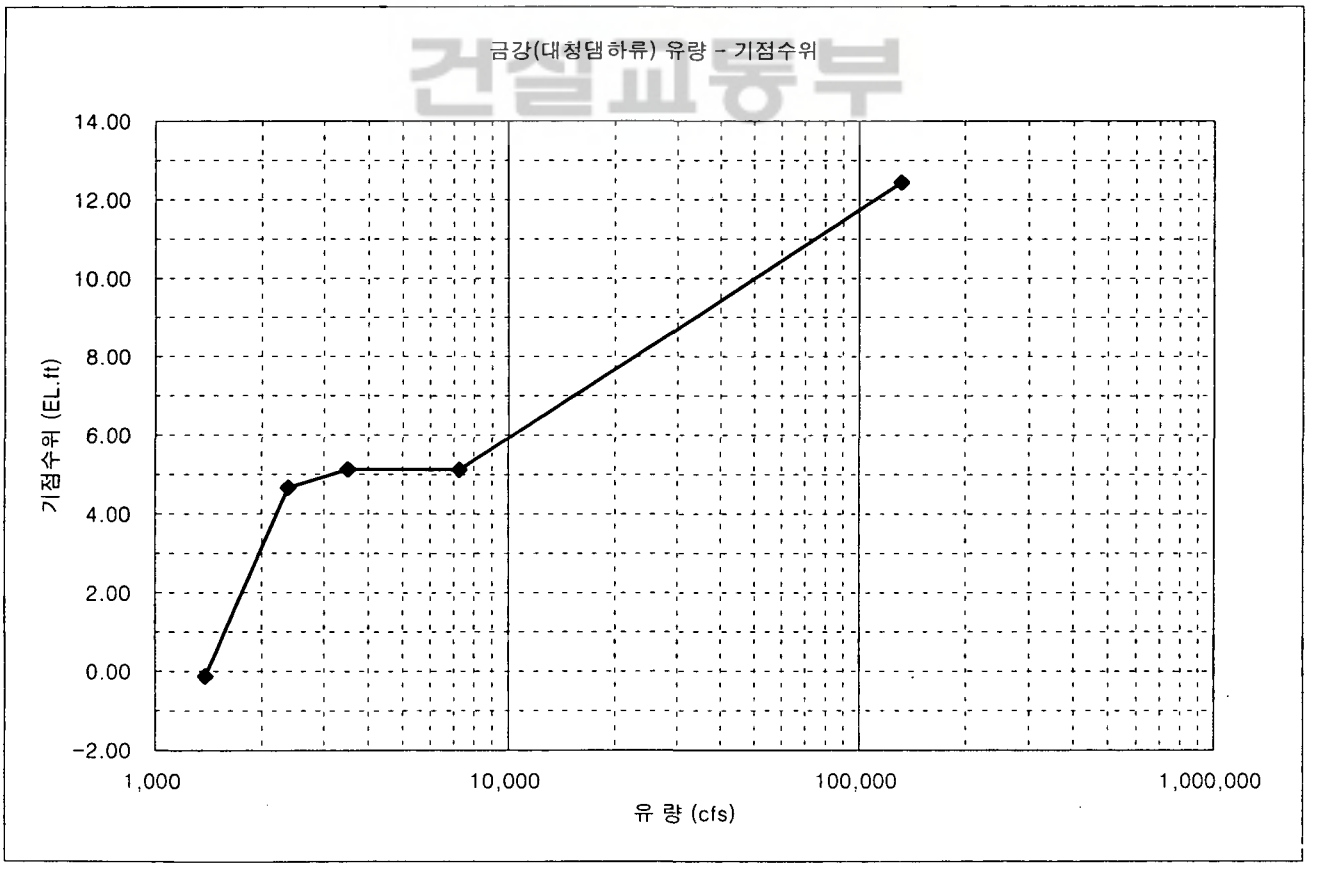

Yang 공식에 의한 안정계산간격 검토 Q = 5,002 (cfs)
BED CHANGE (ft)
2.00
1.00
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
100
200
300
400
500
600
DAYS
60.950
84.300
84.790
102.030
112.960
124.960


Yang 공식에 의한 안정계산간격 검토 Q = 1,767 (cfs)
BED CHANGE (ft)
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
100
200
300
400
500
600
DAYS
84.300
84.790
101.620
102.030
110.350
112.960

건설교통부

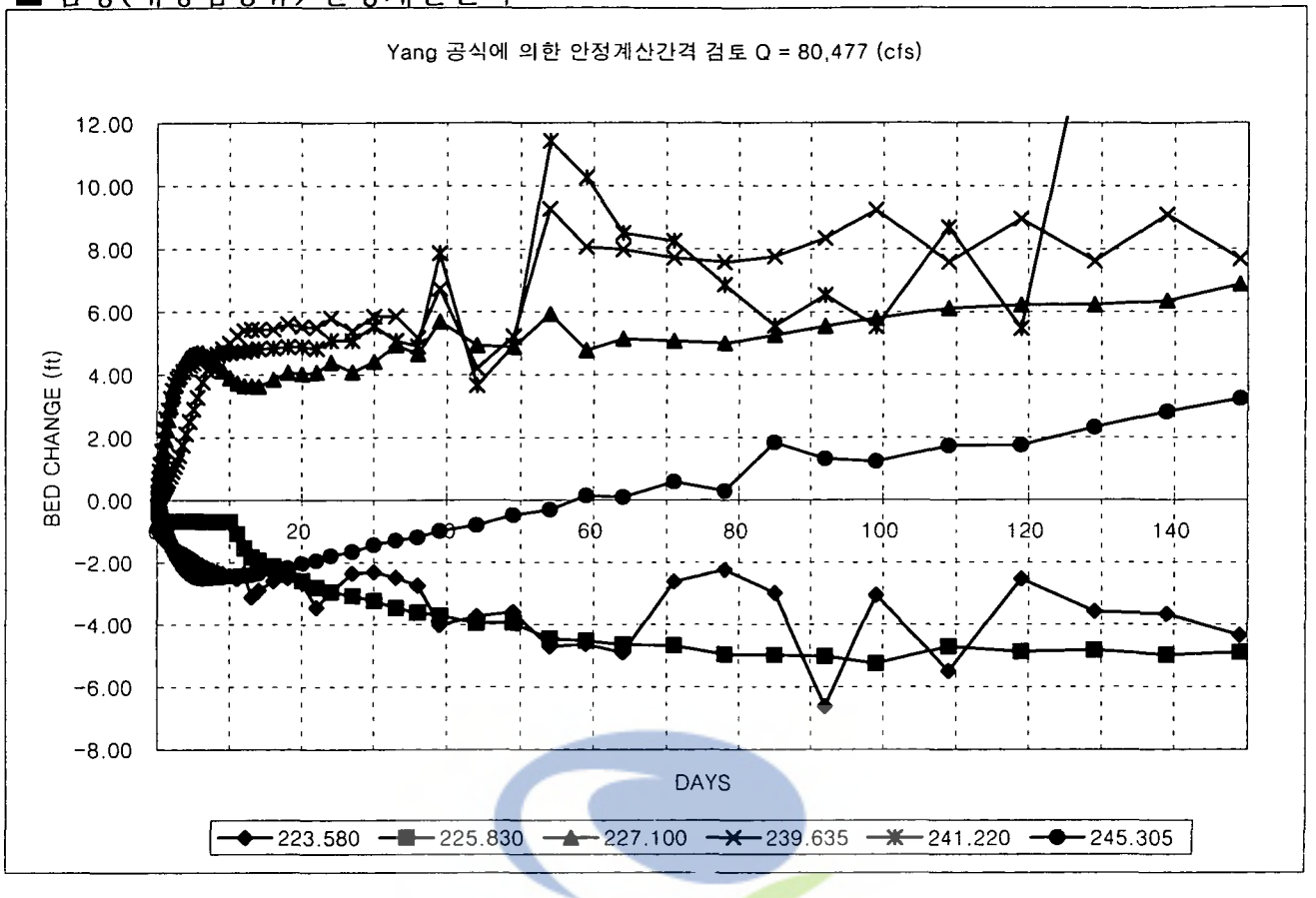


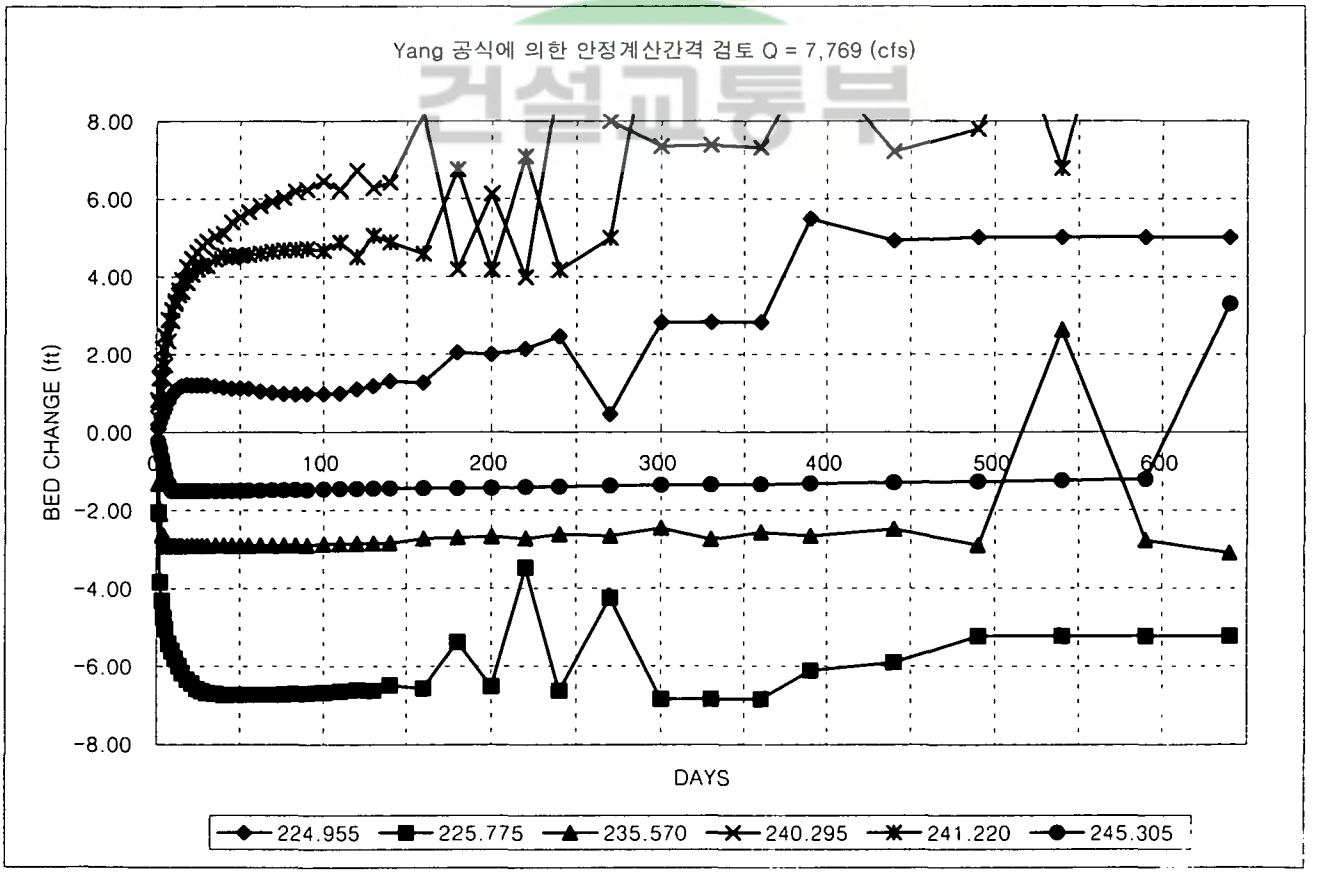
■ 금강(대청댐하류) 유량 - 기점수위



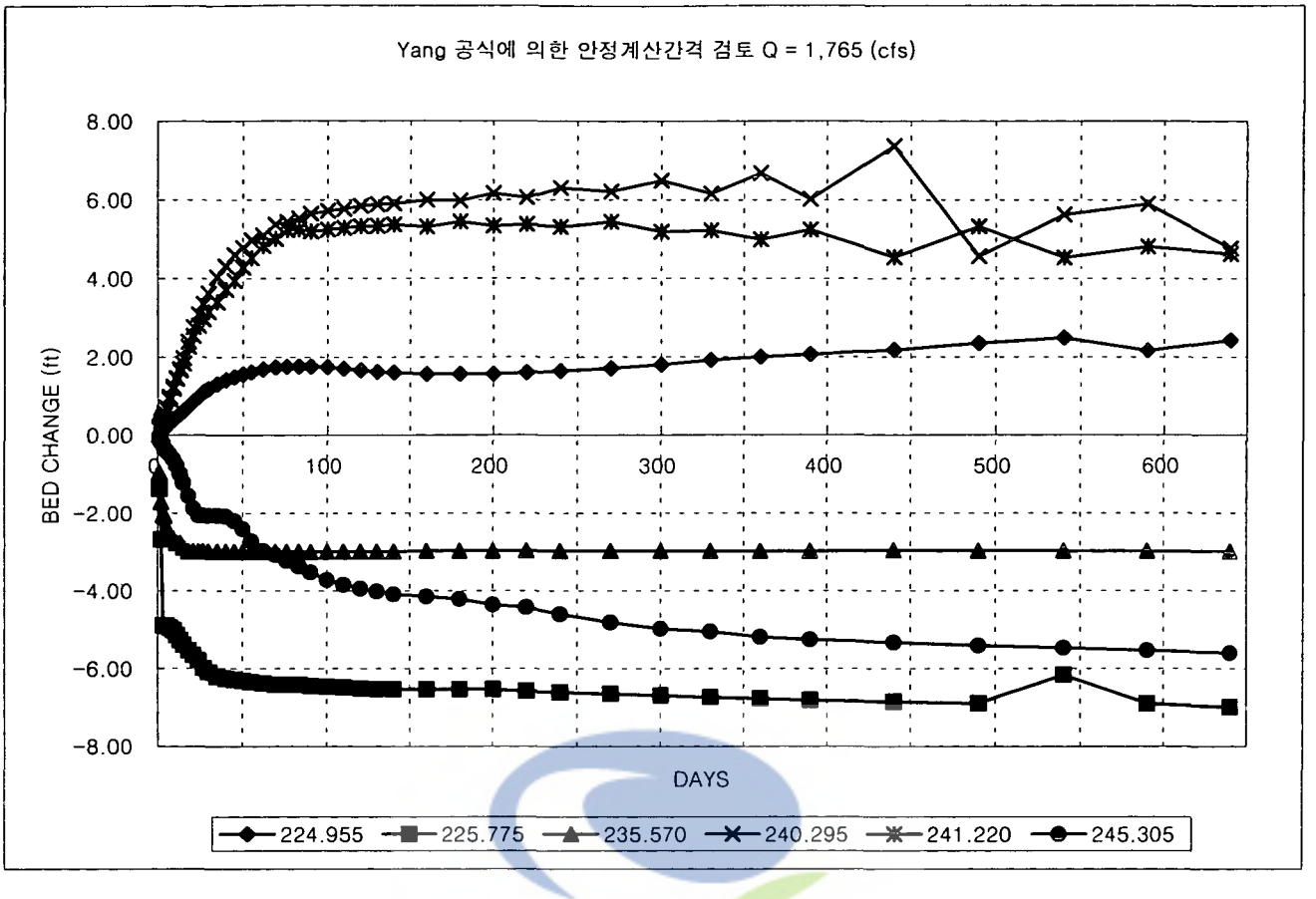
건설교통부

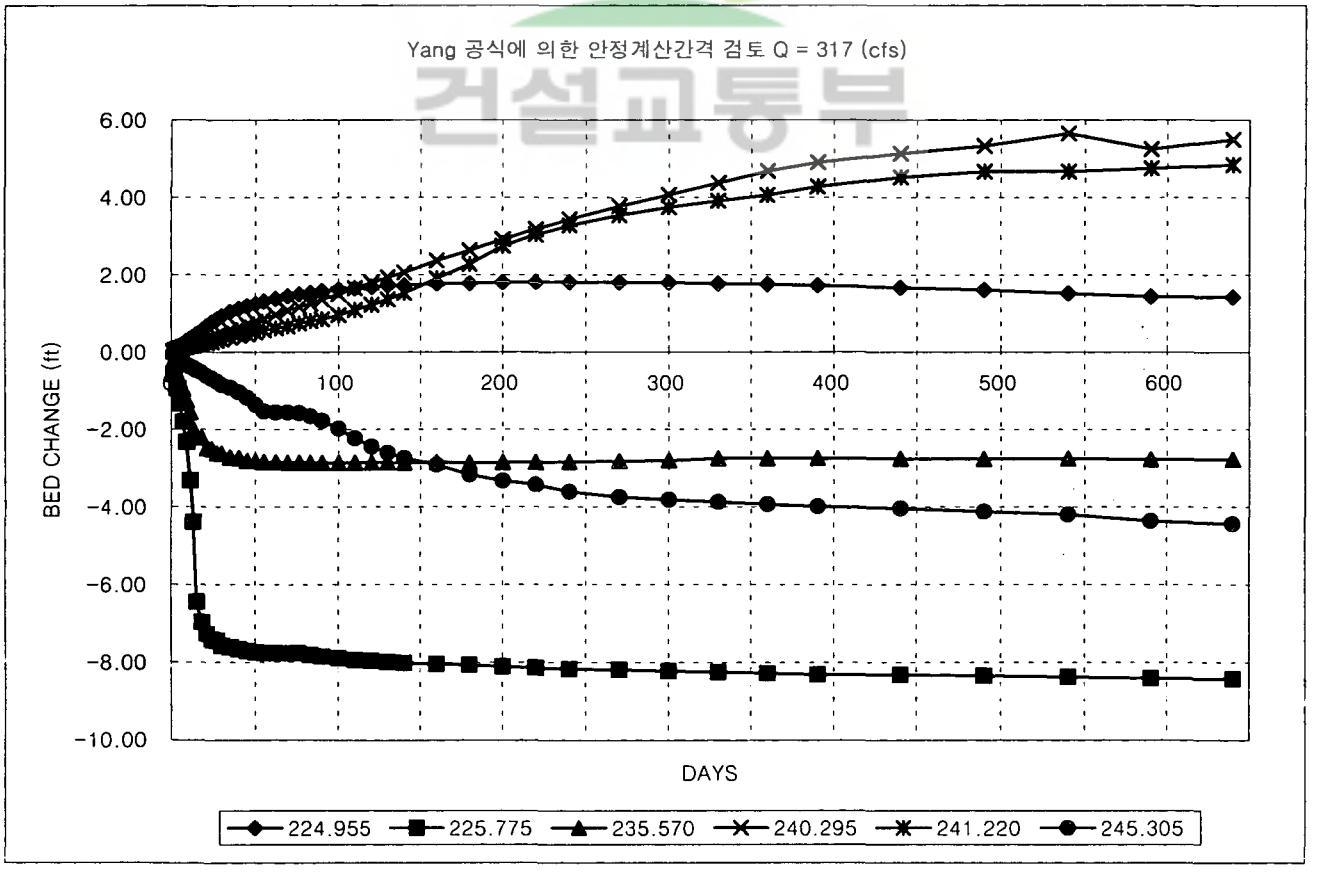
■ 금강(대청댐상류) 안정계산간격



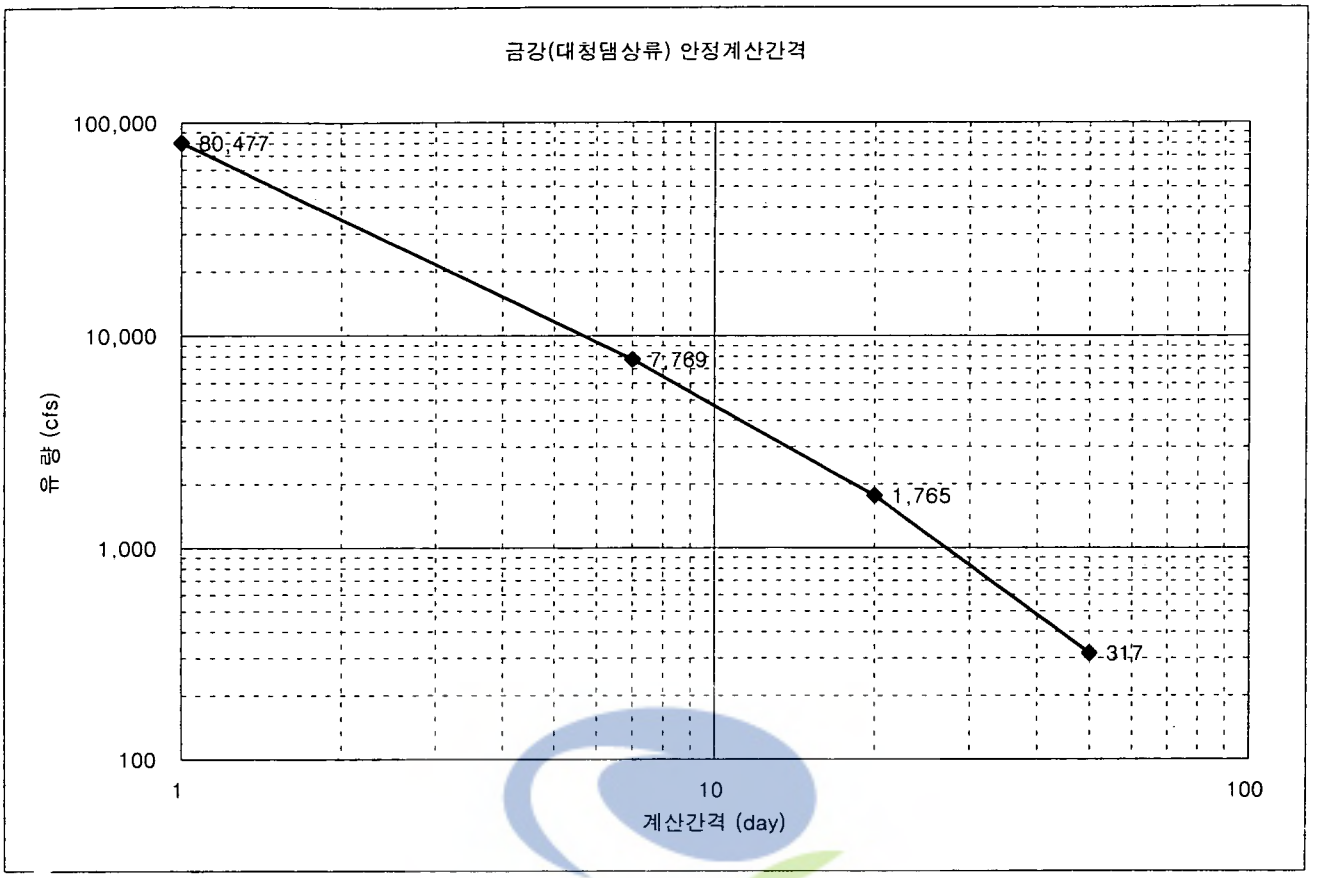


건설교통부

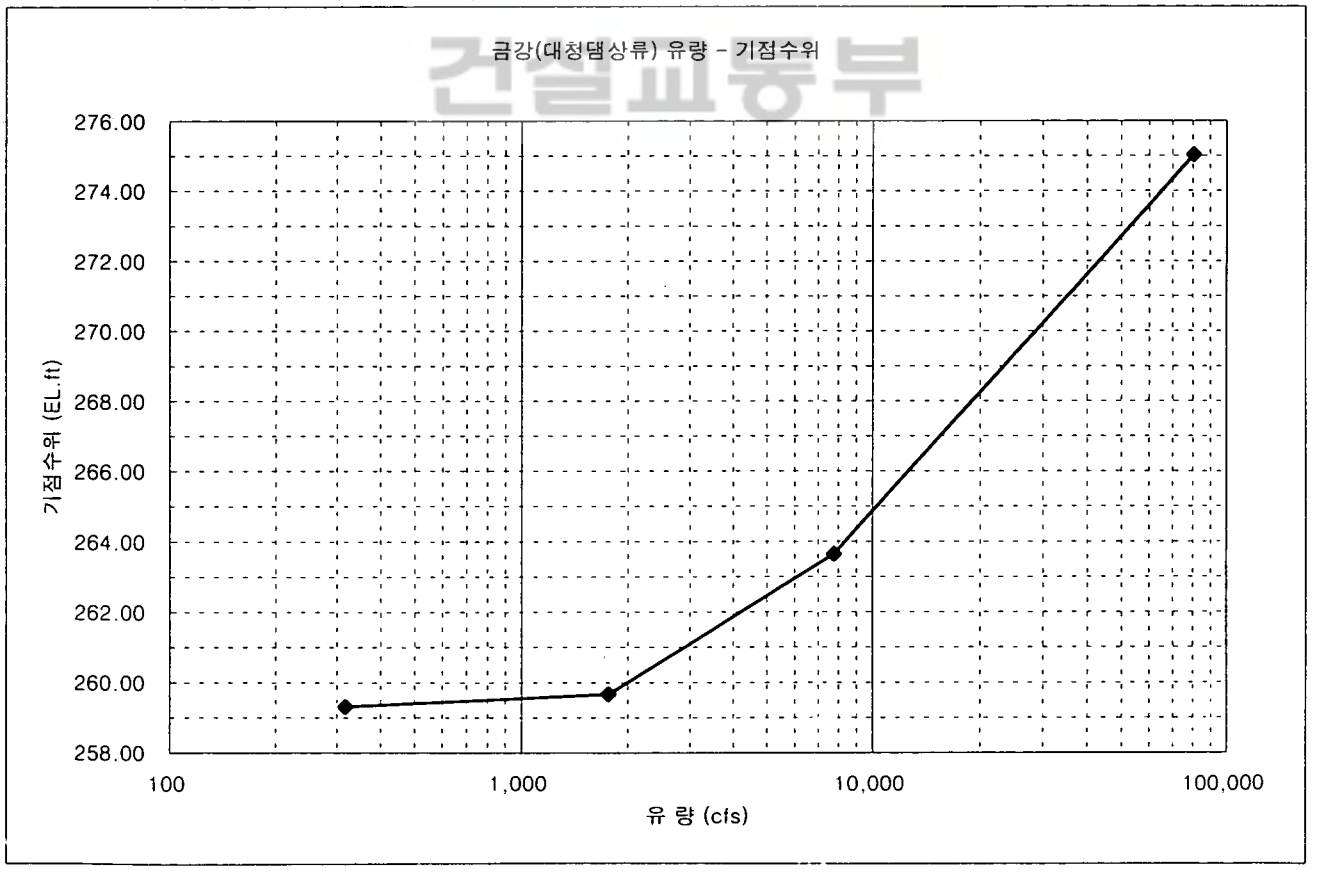

Yang 공식에 의한 안정계산간격 검토 Q = 1,765 (cfs)
8.00
6.00
4.00
2.00
0.00
-2.00
-4.00
-6.00
-8.00
BED CHANGE (ft)
100
200
300
400
500
600
DAYS
224.955
225.775
235.570
240.295
241.220
245.305


Yang 공식에 의한 안정계산간격 검토 Q = 317 (cfs)
6.00
4.00
2.00
0.00
-2.00
-4.00
-6.00
-8.00
-10.00
BED CHANGE (ft)
100
200
300
400
500
600
DAYS
224.955
225.775
235.570
240.295
241.220
245.305

건설교통부

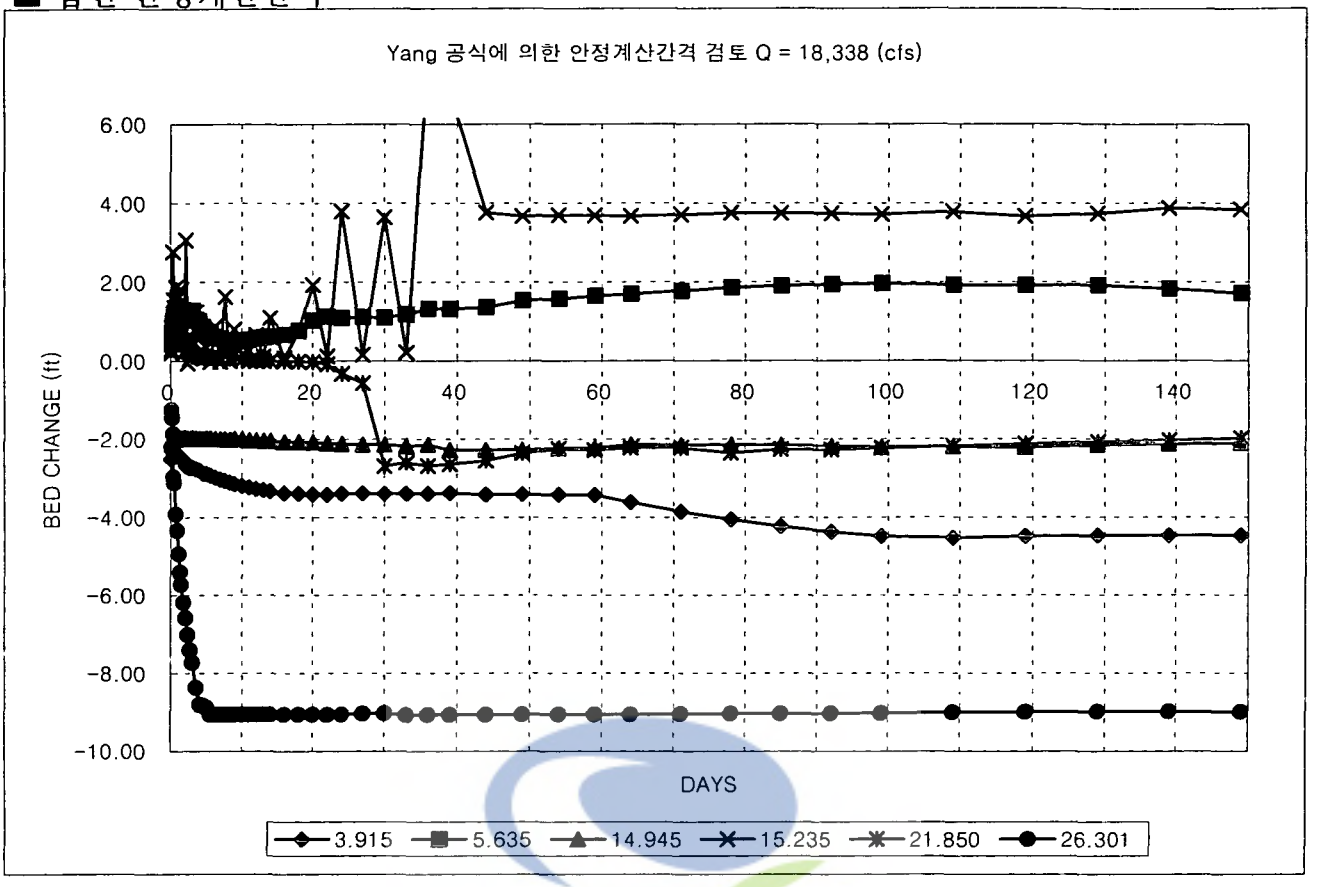


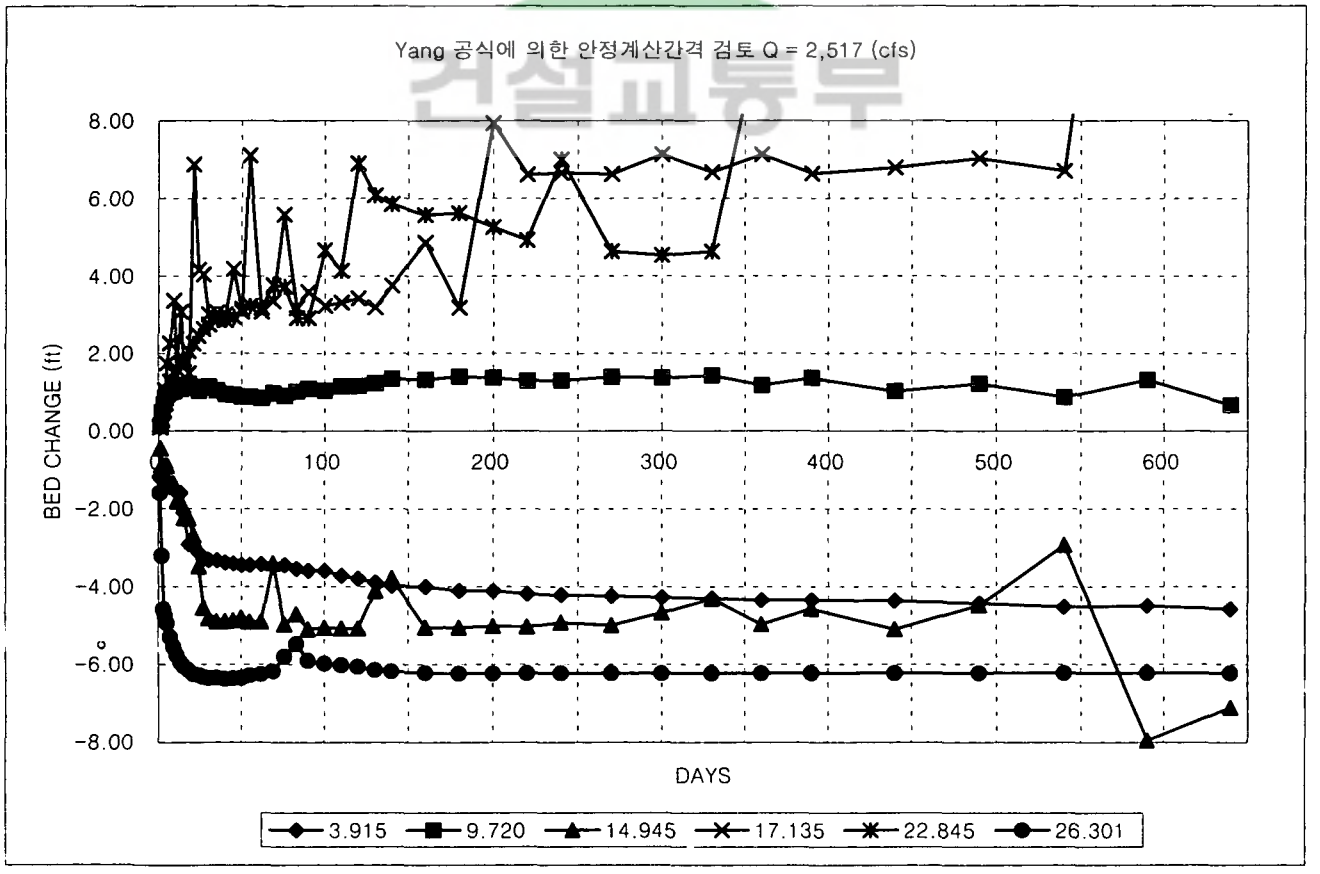
■ 금강(대청댐상류) 유량 - 기점수위



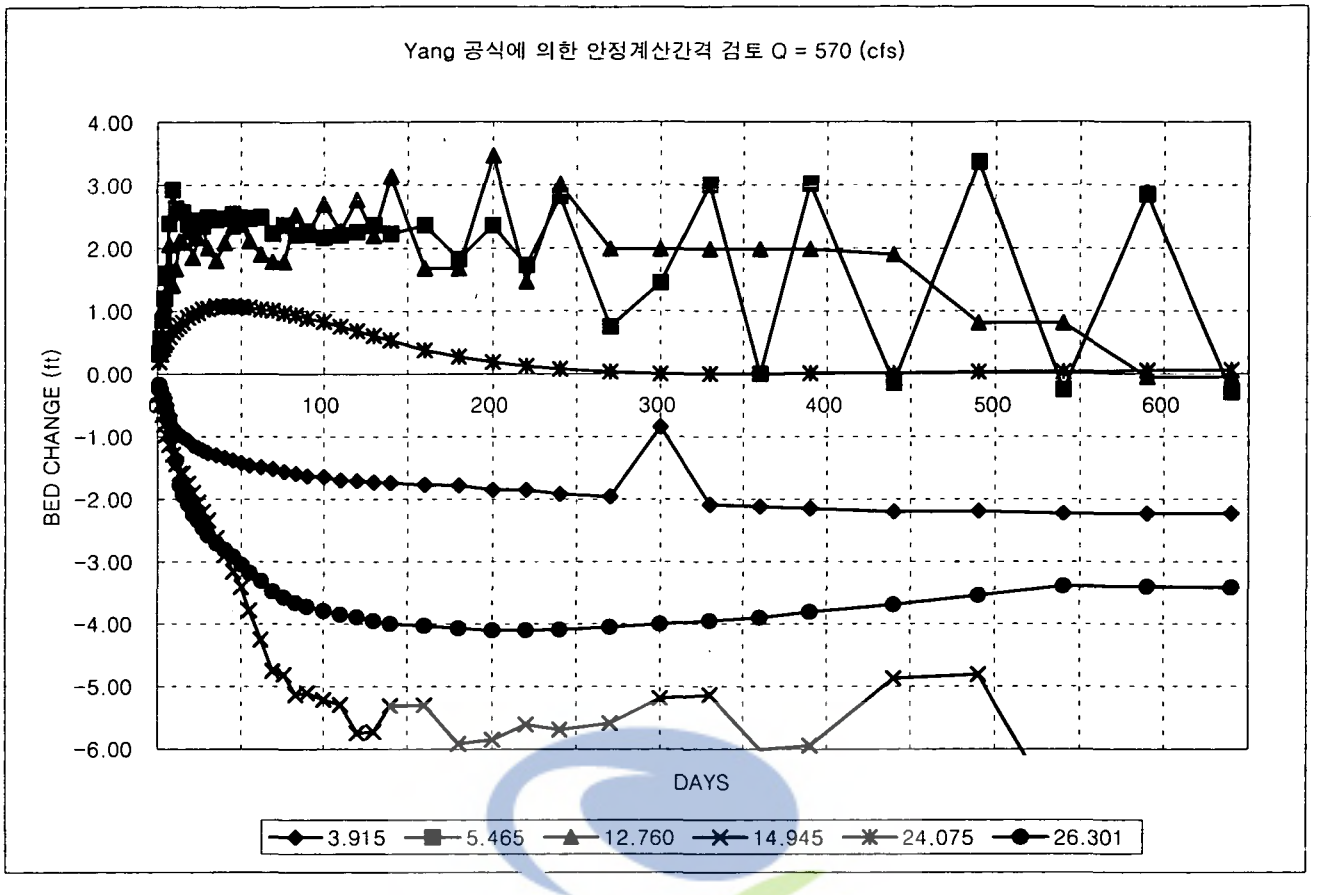
건설교통부

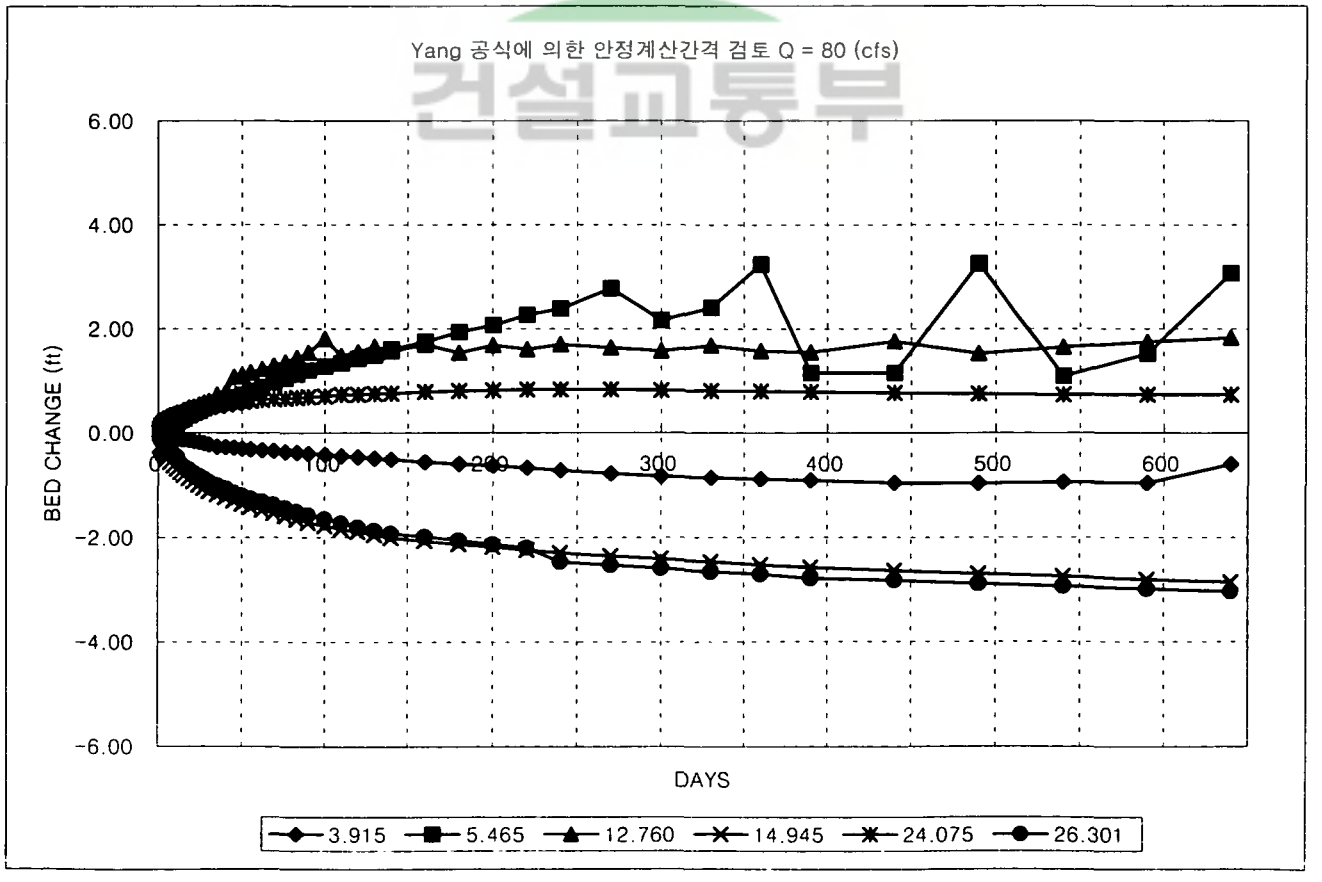
■ 갑천 안정계산간격



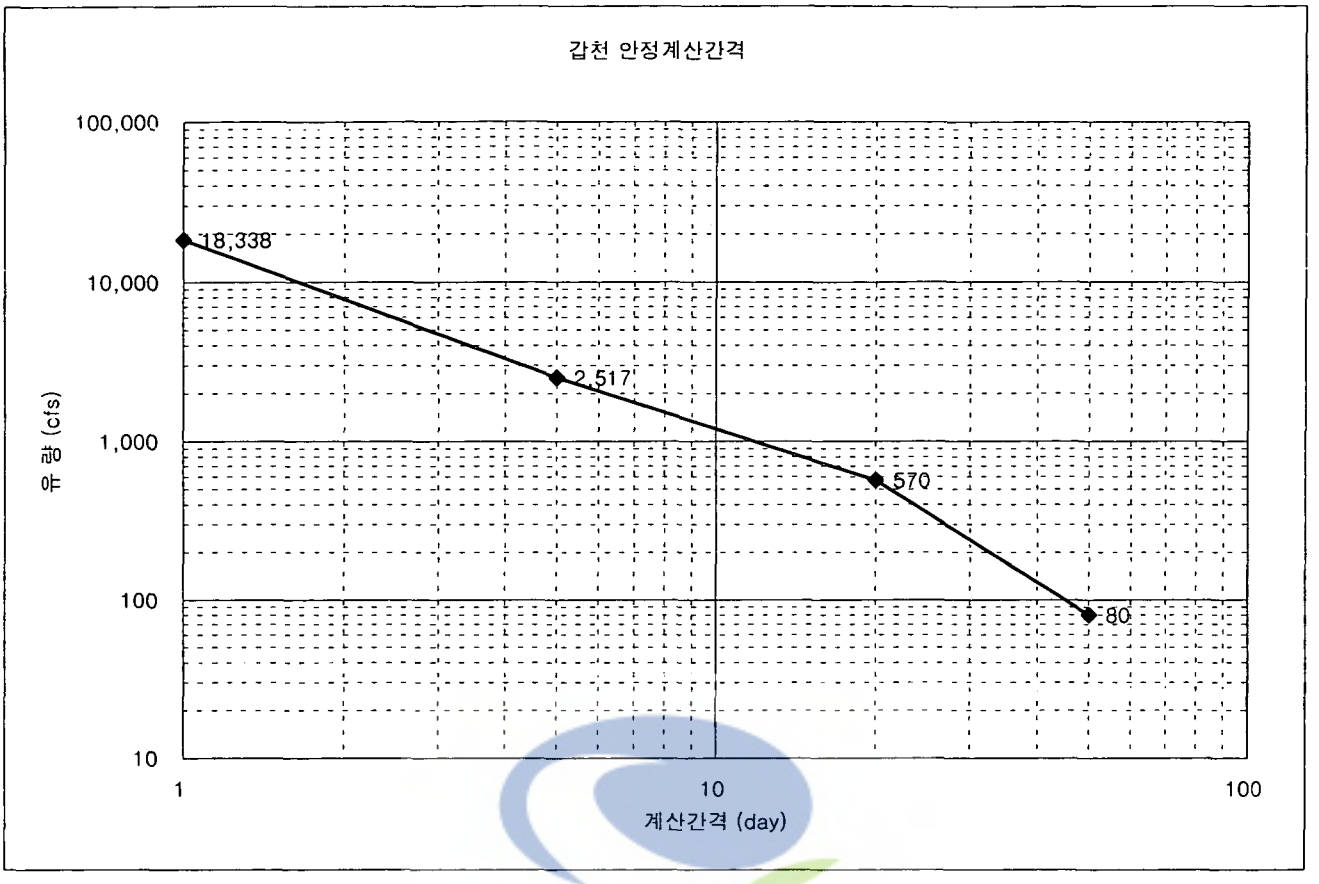


건설교통부

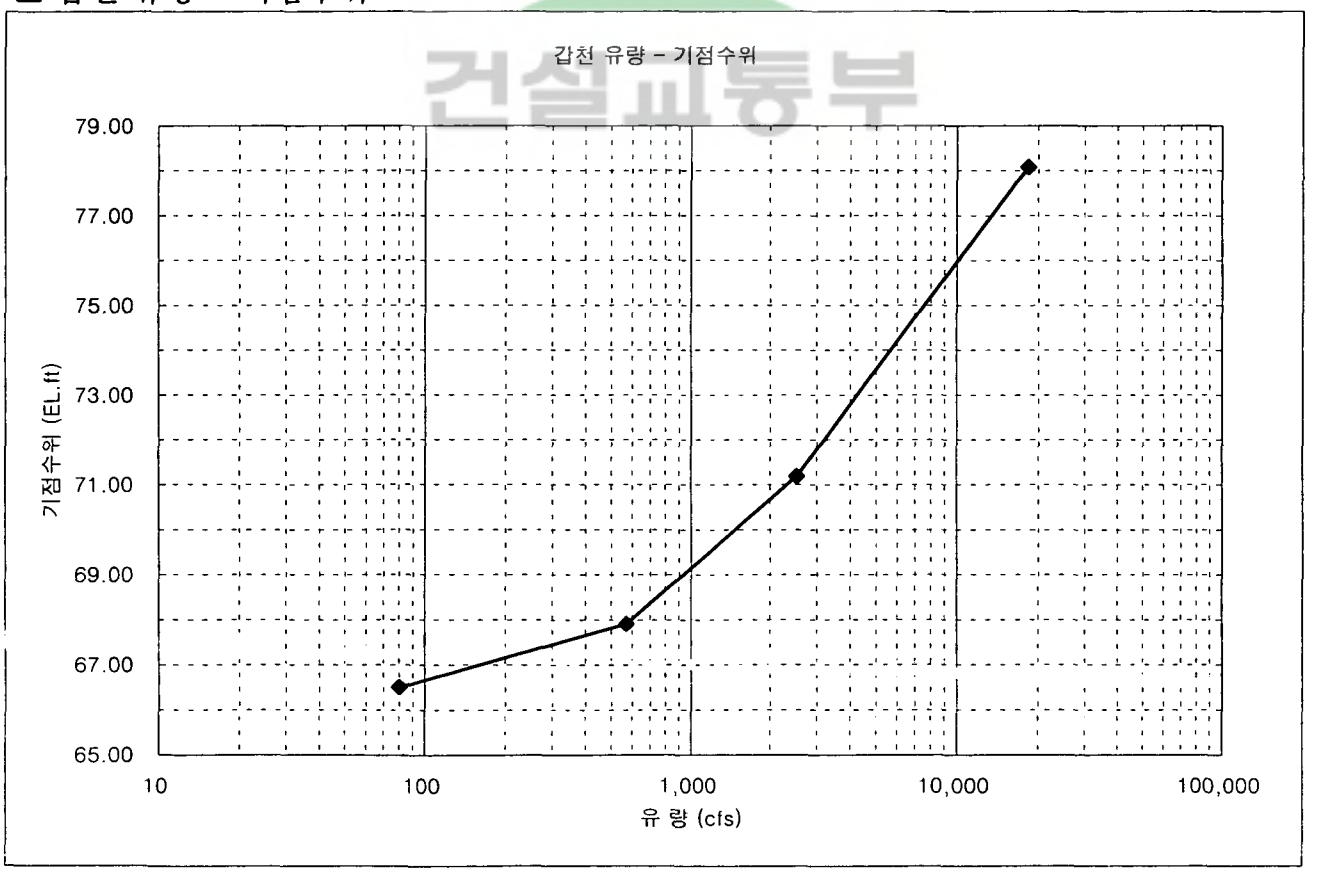

Yang 공식에 의한 안정계산간격 검토 Q = 570 (cfs)
BED CHANGE (ft)
4.00
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
100
200
300
400
500
600
DAYS
3.915
5.465
12.760
14.945
24.075
26.301


Yang 공식에 의한 안정계산간격 검토 Q = 80 (cfs)
BED CHANGE (ft)
6.00
4.00
2.00
0.00
-2.00
-4.00
-6.00
100
200
300
400
500
600
DAYS
3.915
5.465
12.760
14.945
24.075
26.301

건설교통부

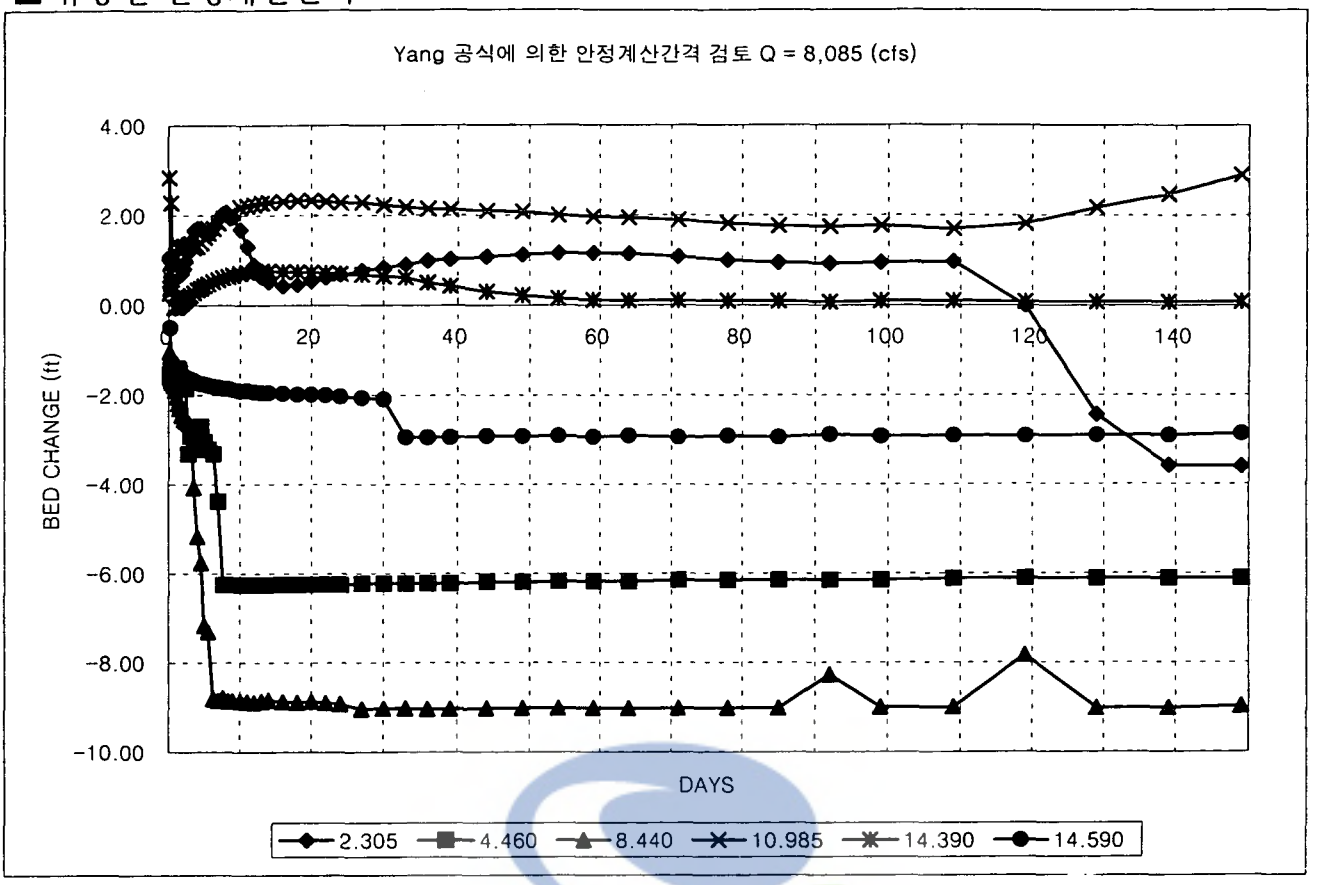


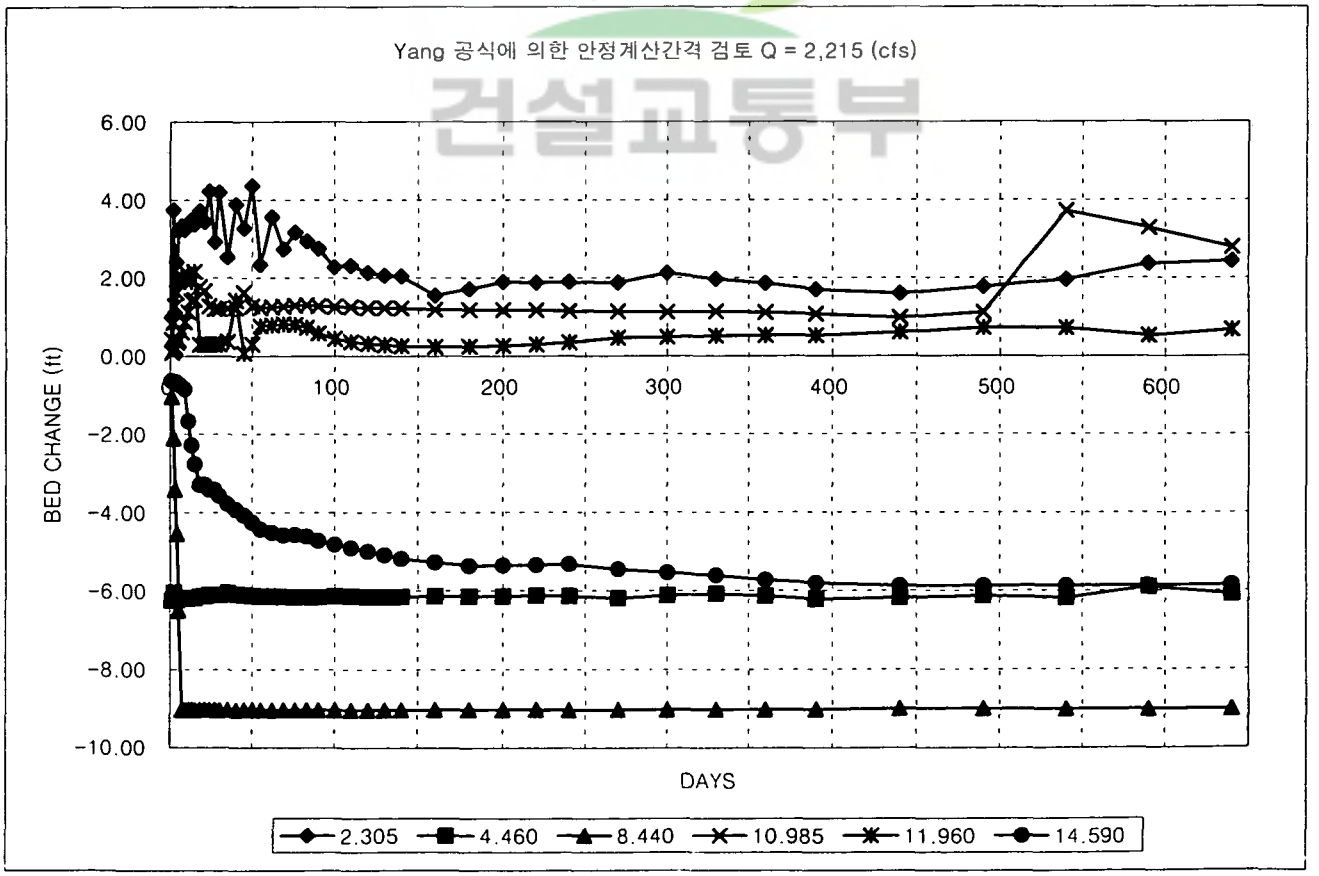
■ 갑천 유량 - 기점수위



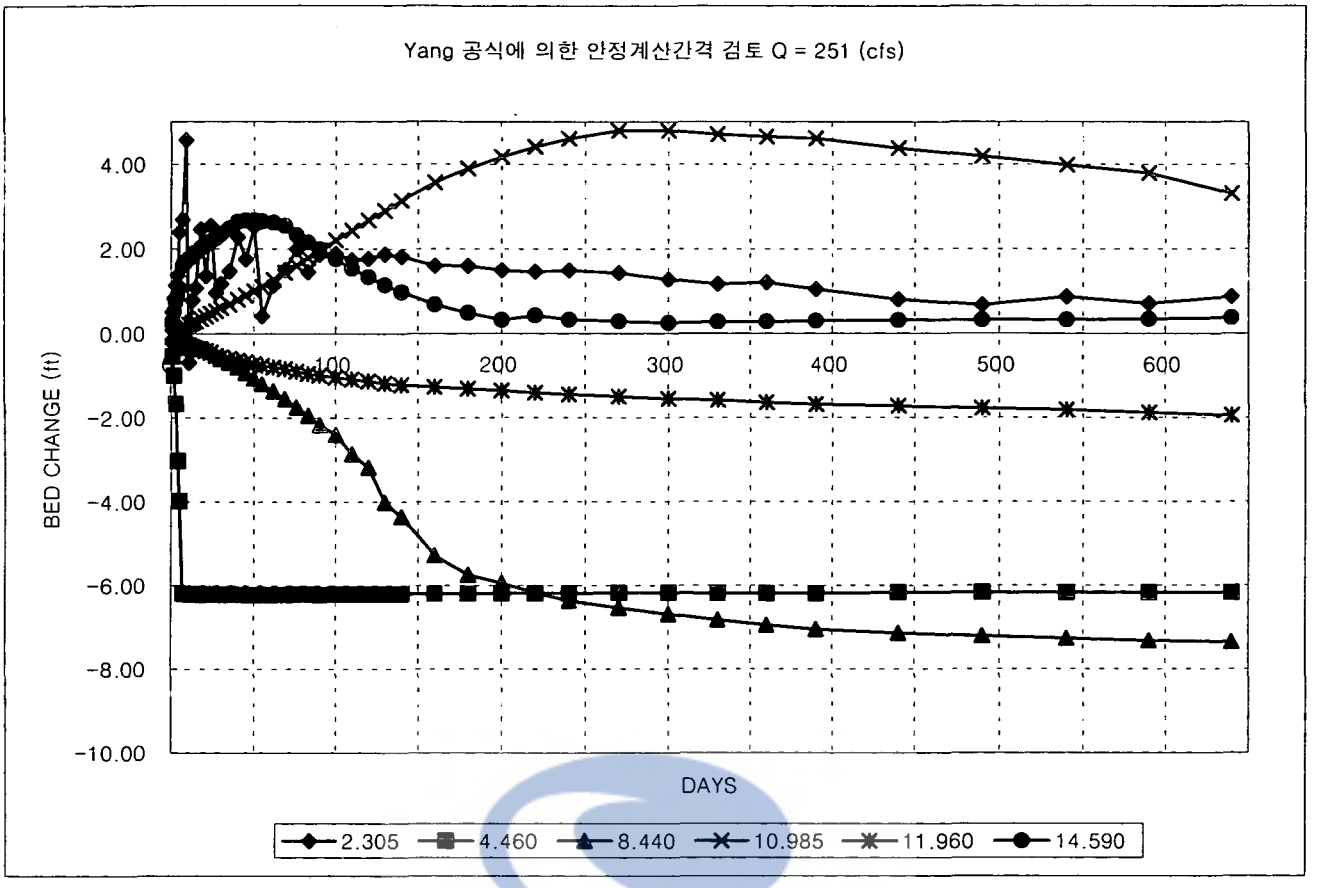
건설교통부

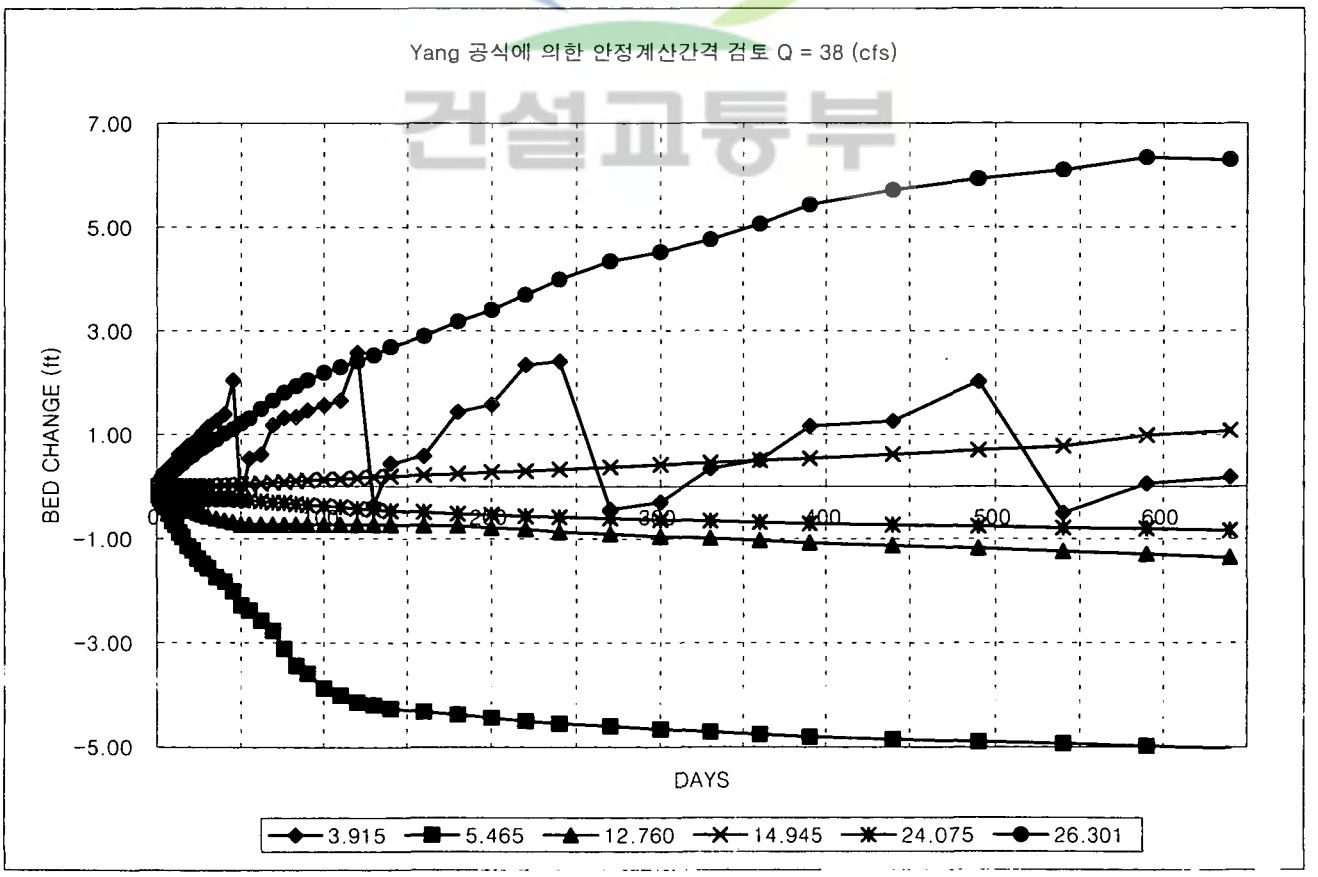
■ 유등천 안정계산간격



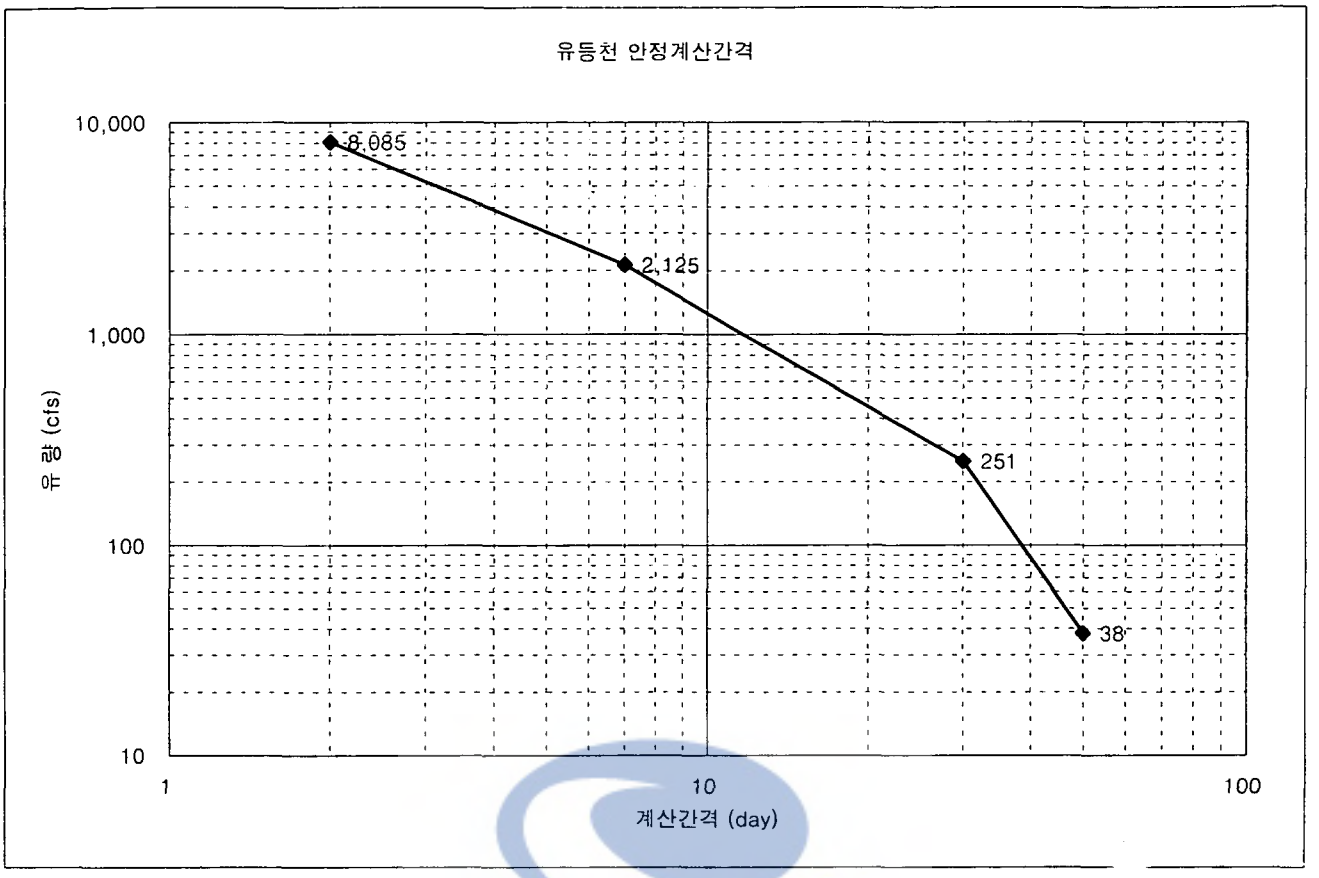


건설교통부

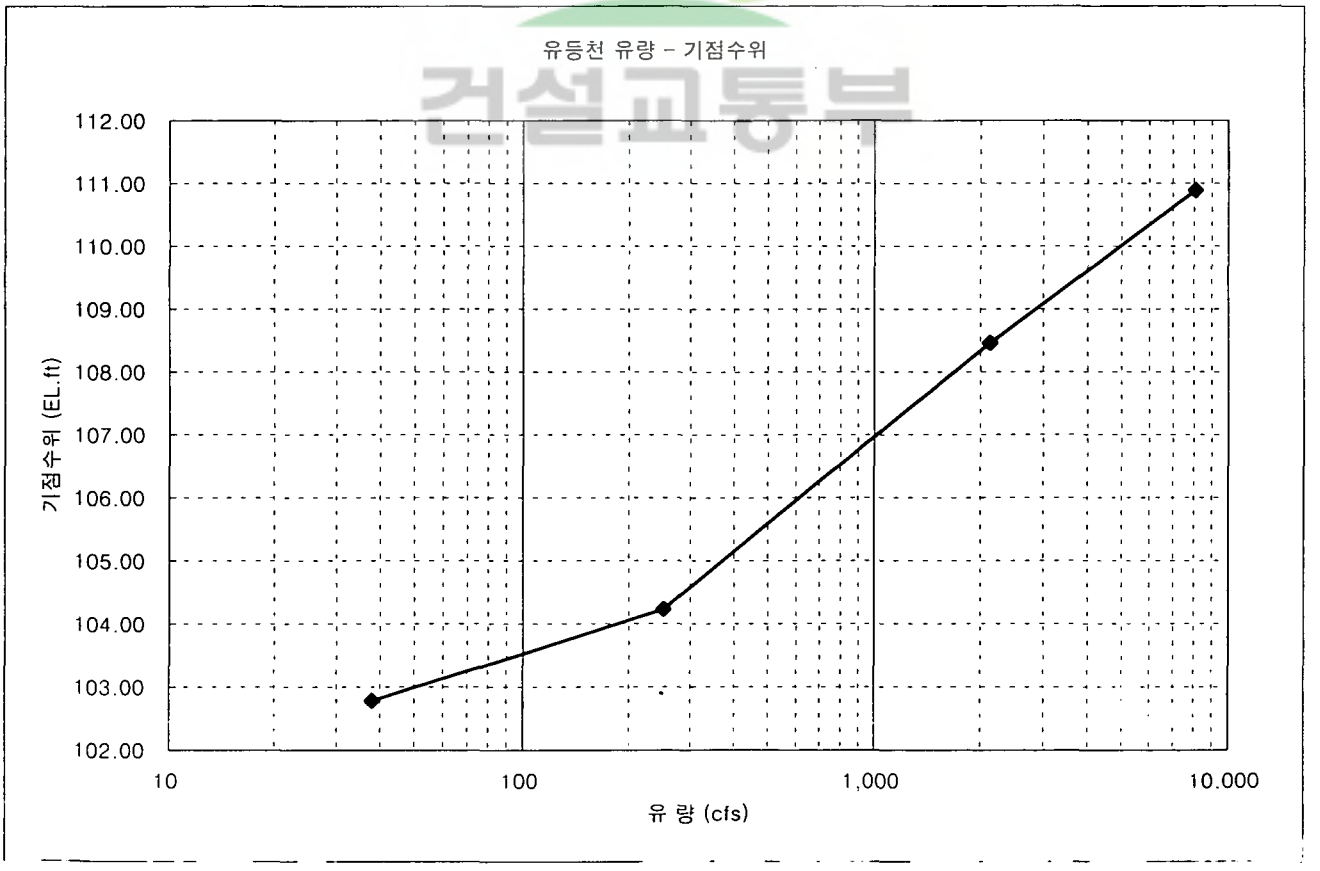

Yang 공식에 의한 안정계산간격 검토 Q = 251 (cfs)
BED CHANGE (ft)
4.00
2.00
0.00
-2.00
-4.00
-6.00
-8.00
-10.00
100
200
300
400
500
600
DAYS
2.305
4.460
8.440
10.985
11.960
14.590


Yang 공식에 의한 안정계산간격 검토 Q = 38 (cfs)
BED CHANGE (ft)
7.00
5.00
3.00
1.00
-1.00
-3.00
-5.00
200
300
400
500
600
DAYS
3.915
5.465
12.760
14.945
24.075
26.301

건설교통부

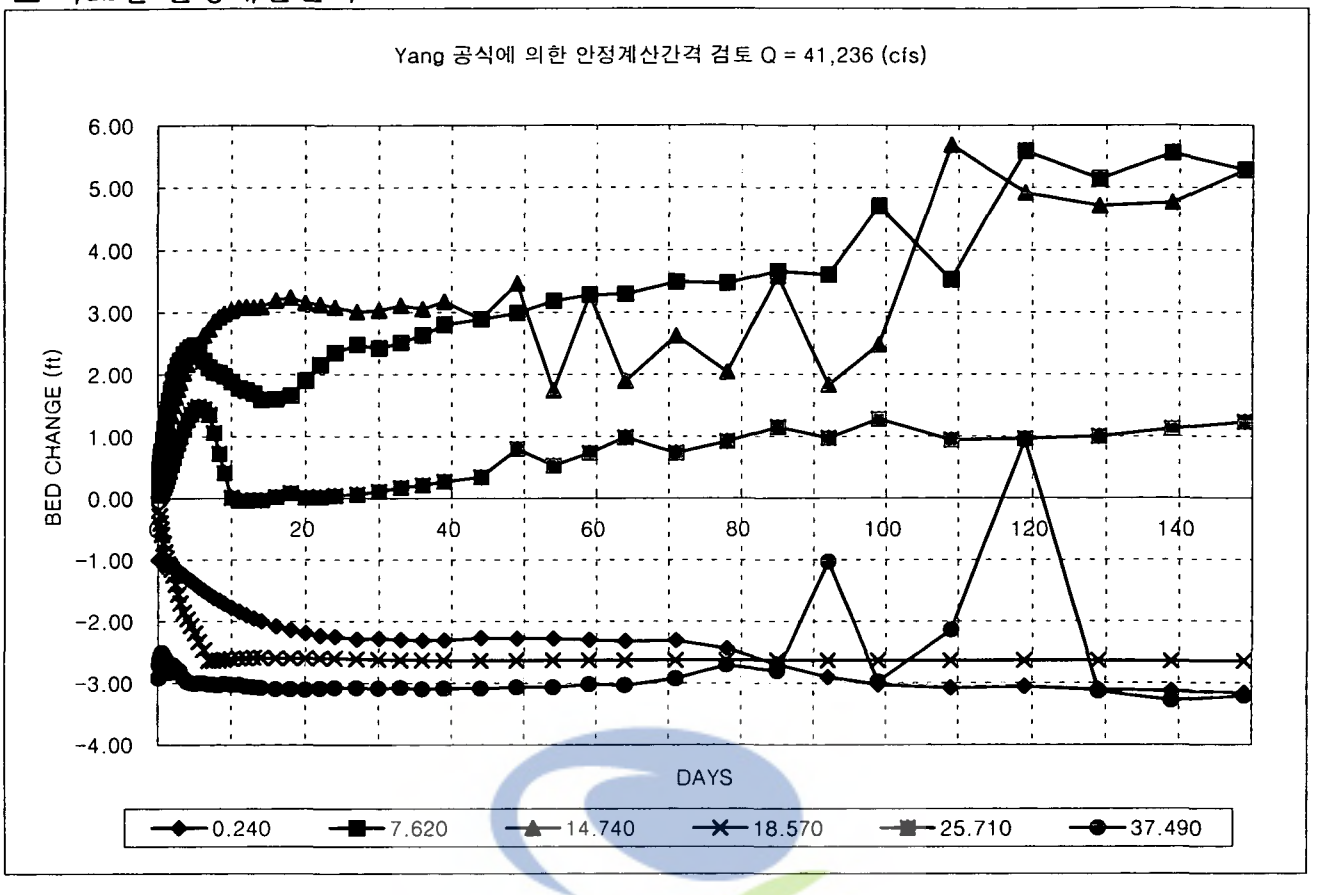


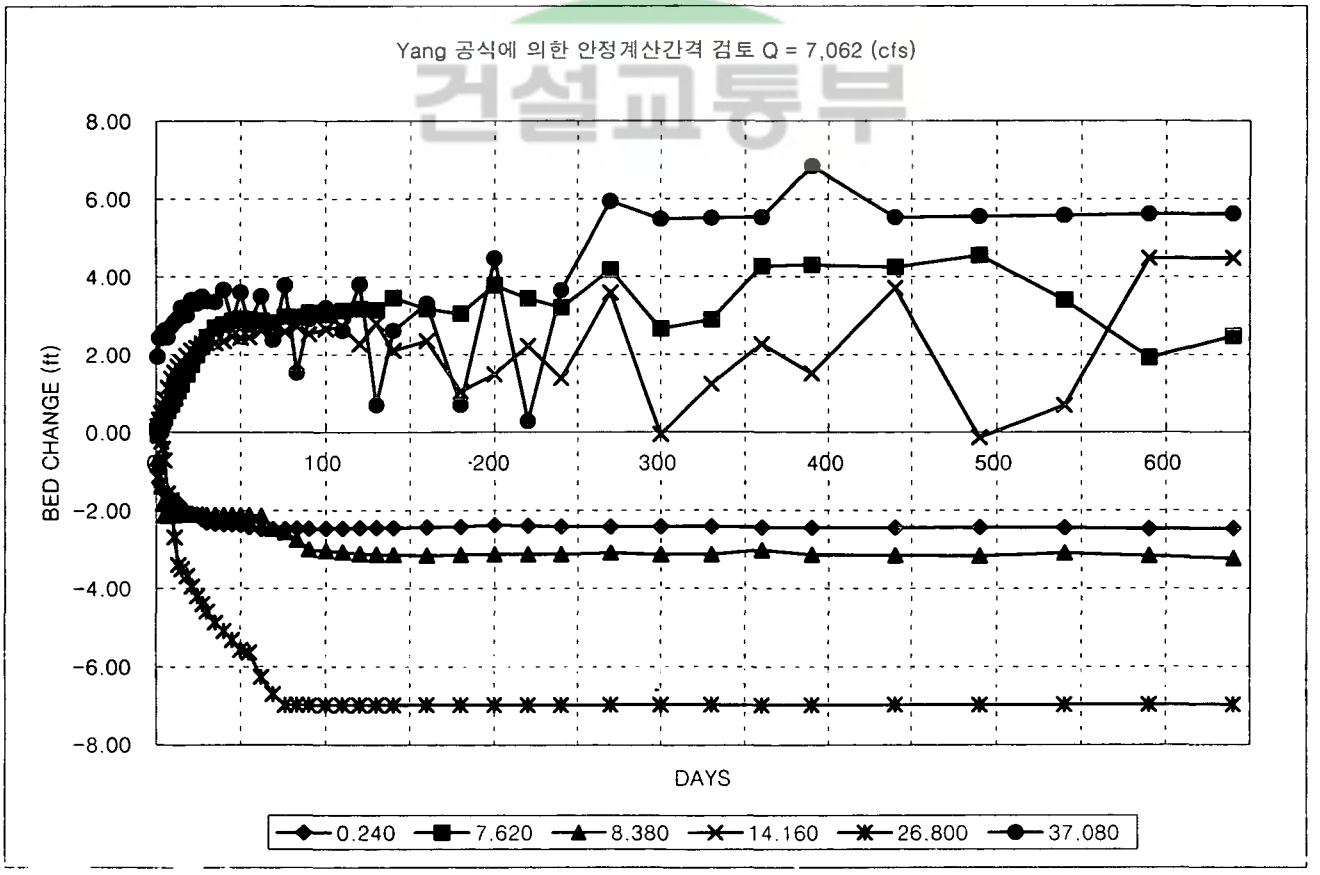
■ 유등천 유량 - 기점수위



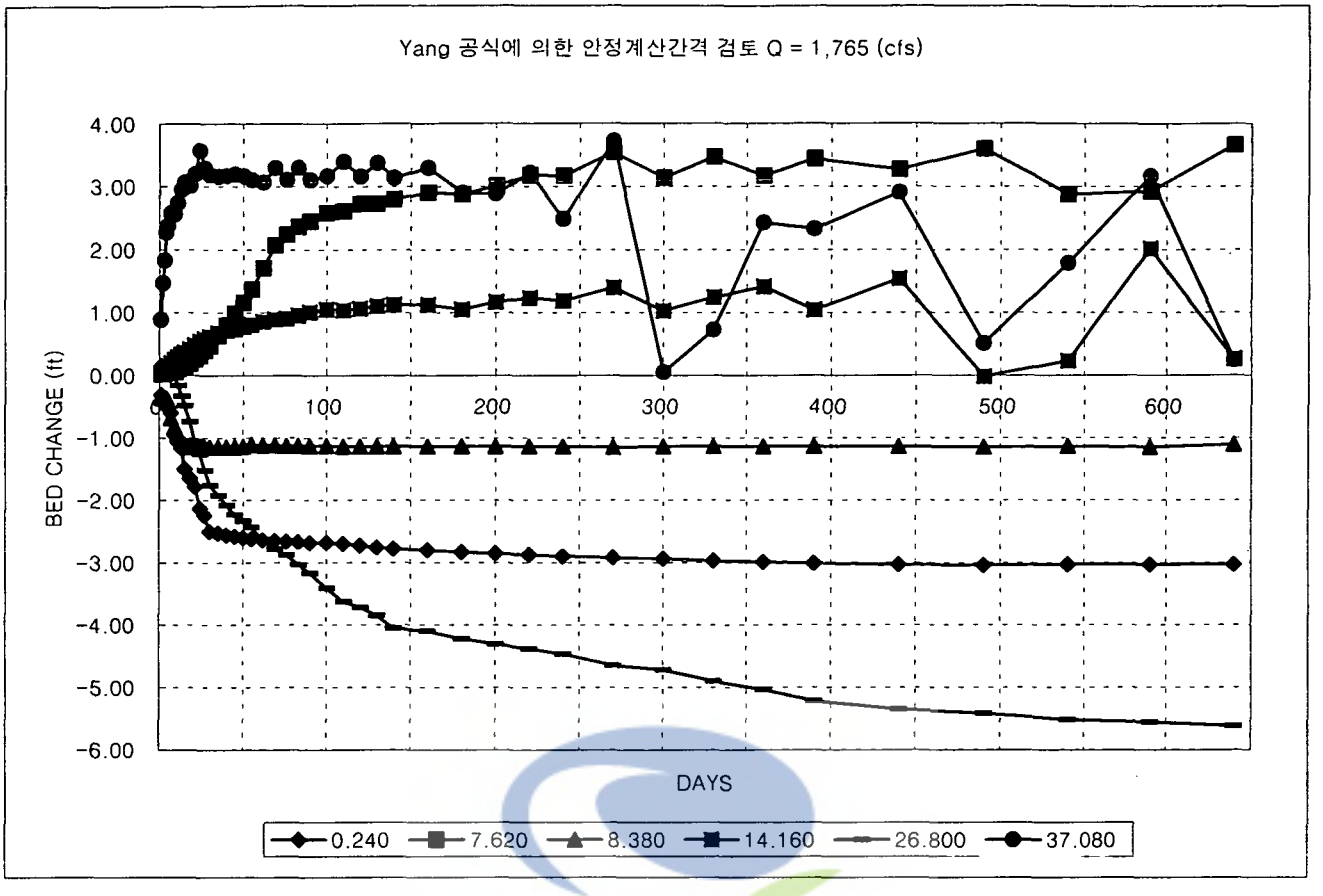
건설교통부

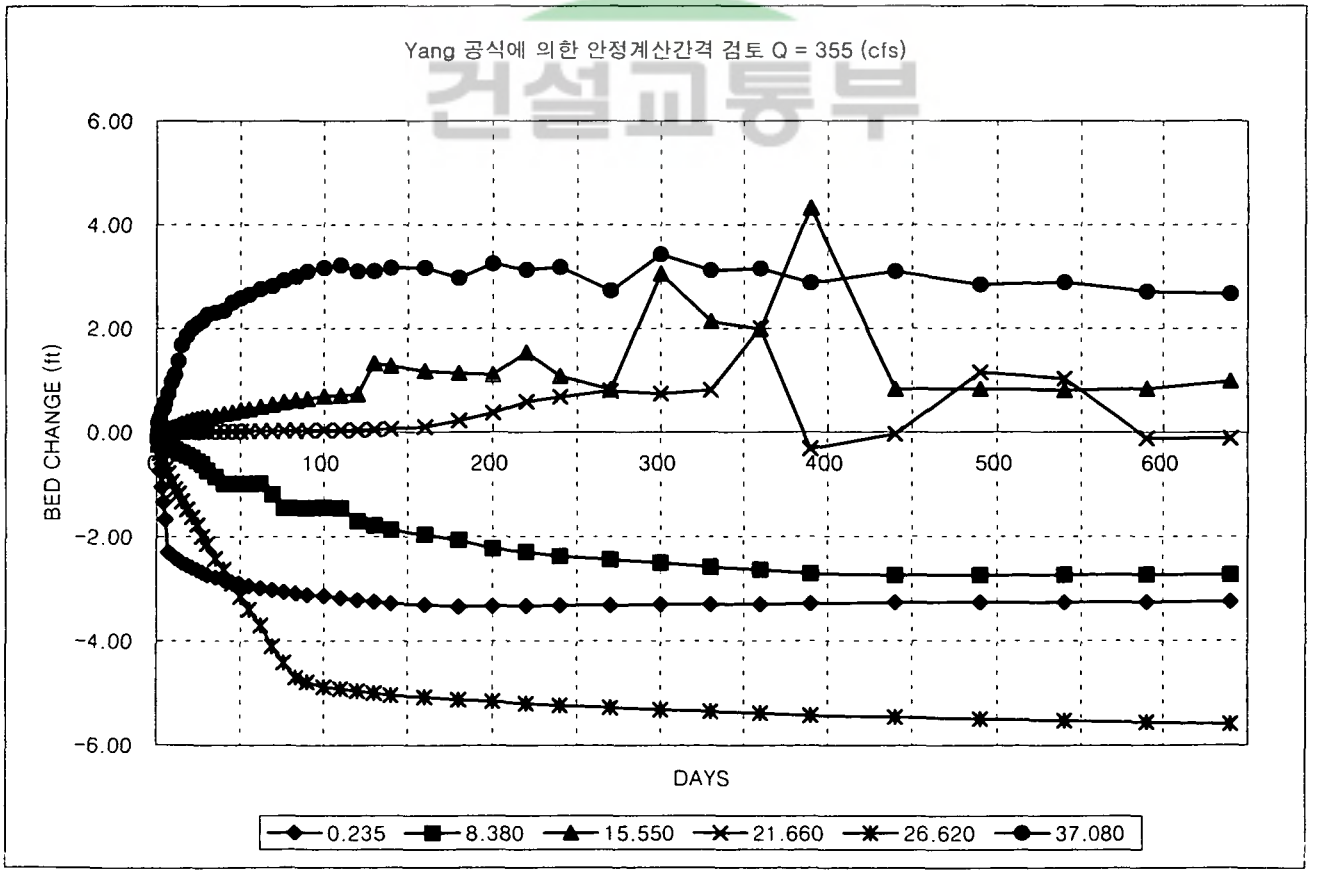
■ 미호천 안정계산간격



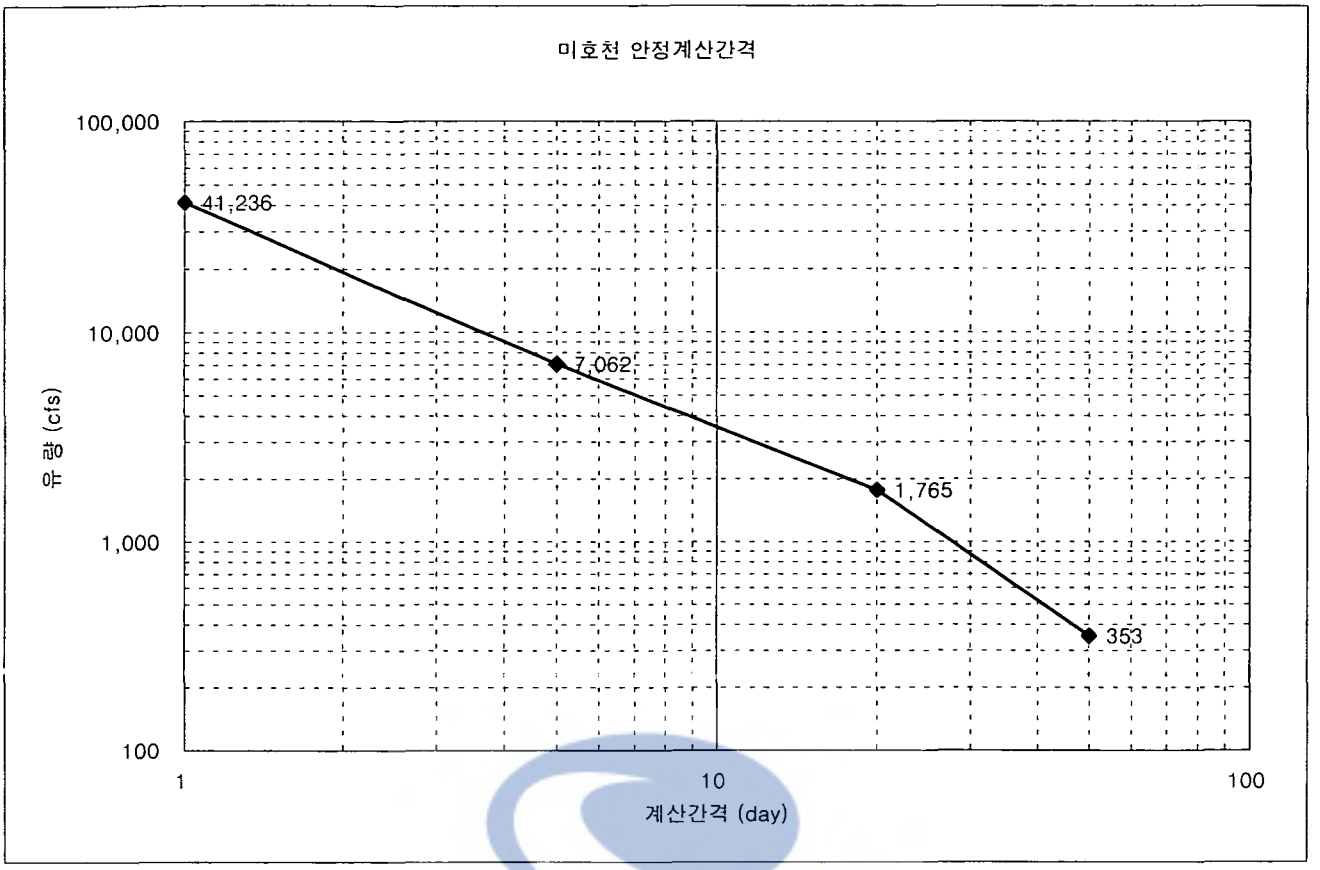


건설교통부

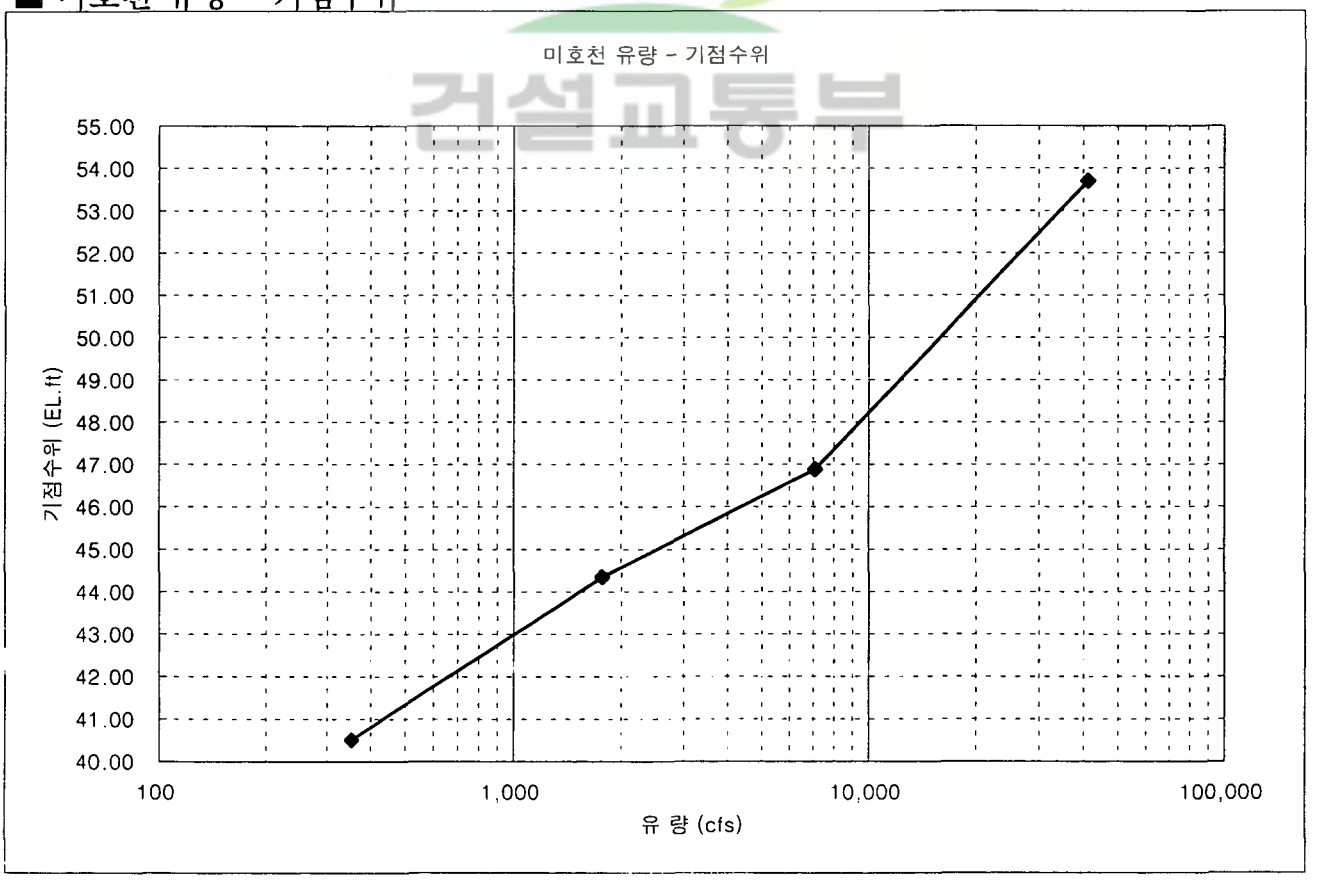

Yang 공식에 의한 안정계산간격 검토 Q = 1,765 (cfs)
BED CHANGE (ft)
4.00
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
100
200
300
400
500
600
DAYS
0.240
7.620
8.380
14.160
26.800
37.080


Yang 공식에 의한 안정계산간격 검토 Q = 355 (cfs)
BED CHANGE (ft)
6.00
4.00
2.00
0.00
-2.00
-4.00
-6.00
100
200
300
400
500
600
DAYS
0.235
8.380
15.550
21.660
26.620
37.080

건설교통부

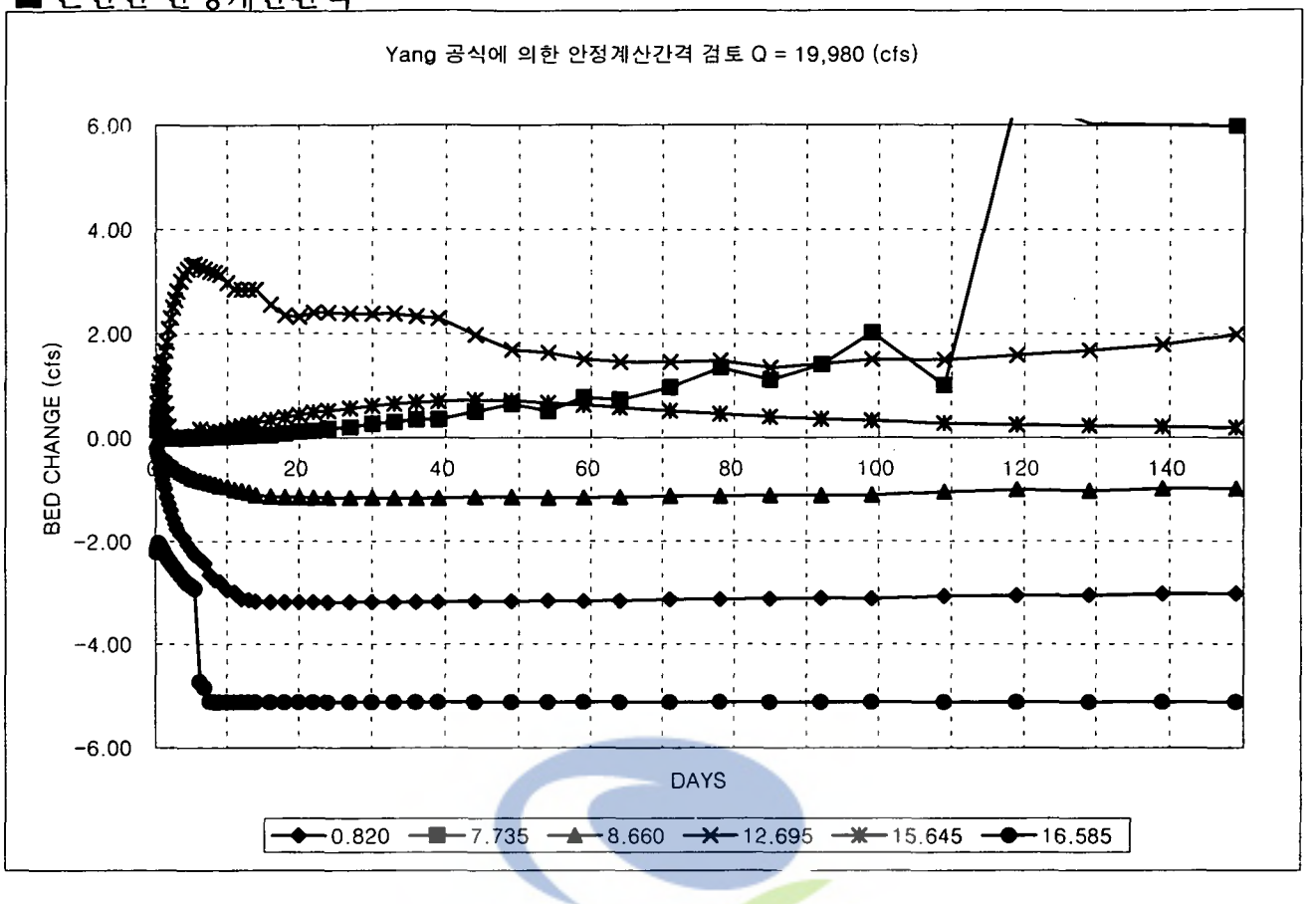


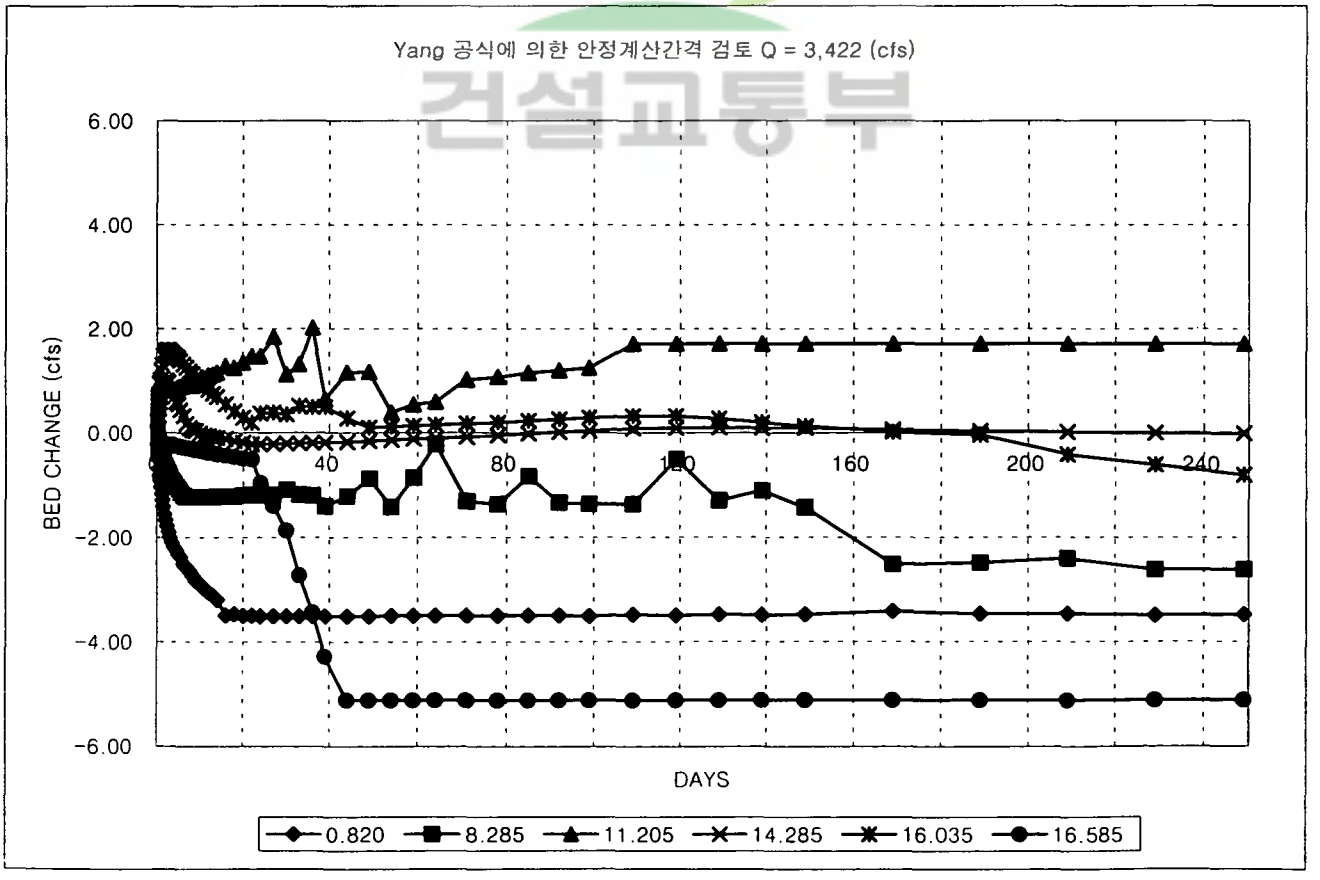
■ 미호천 유량 - 기점수위



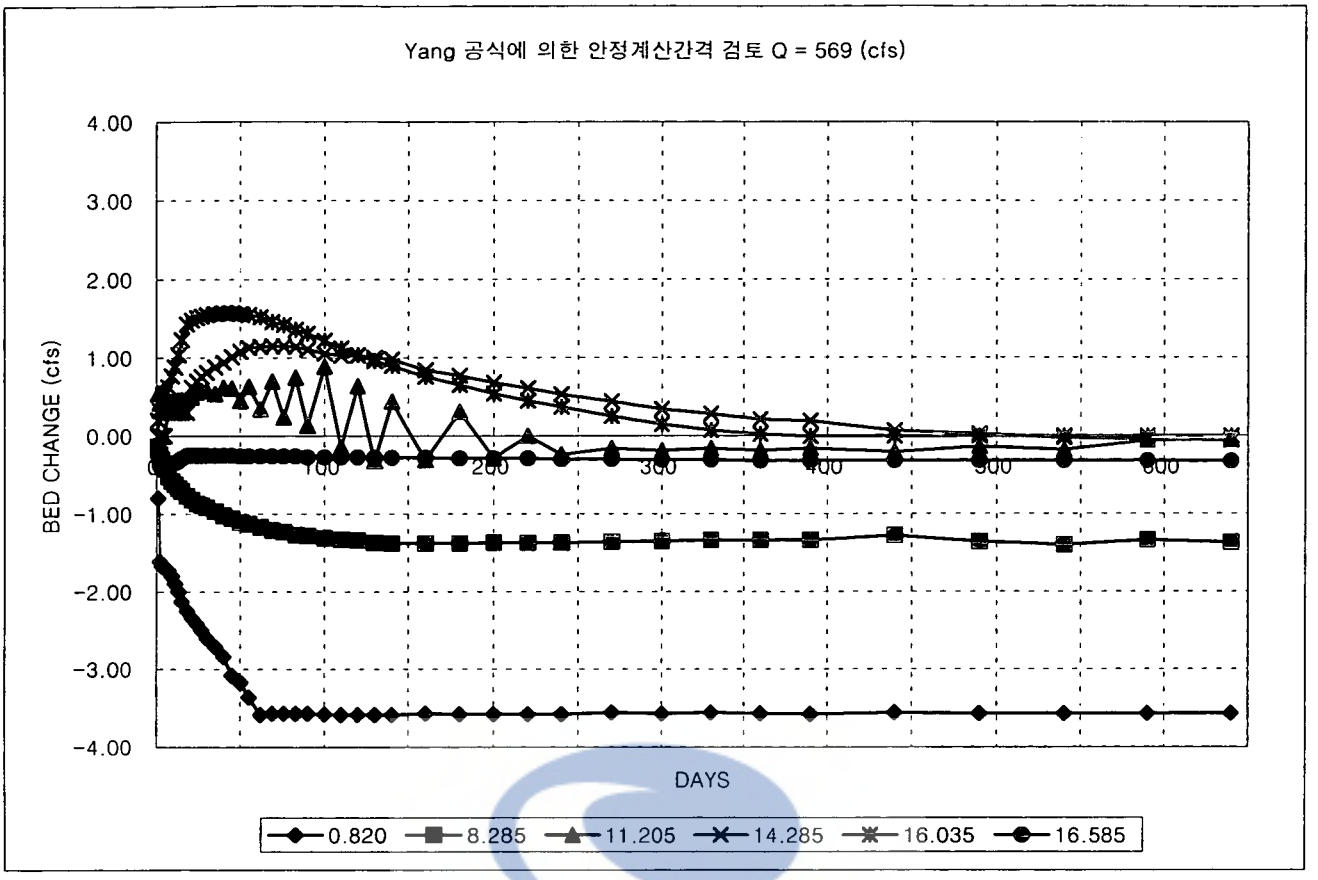
건설교통부

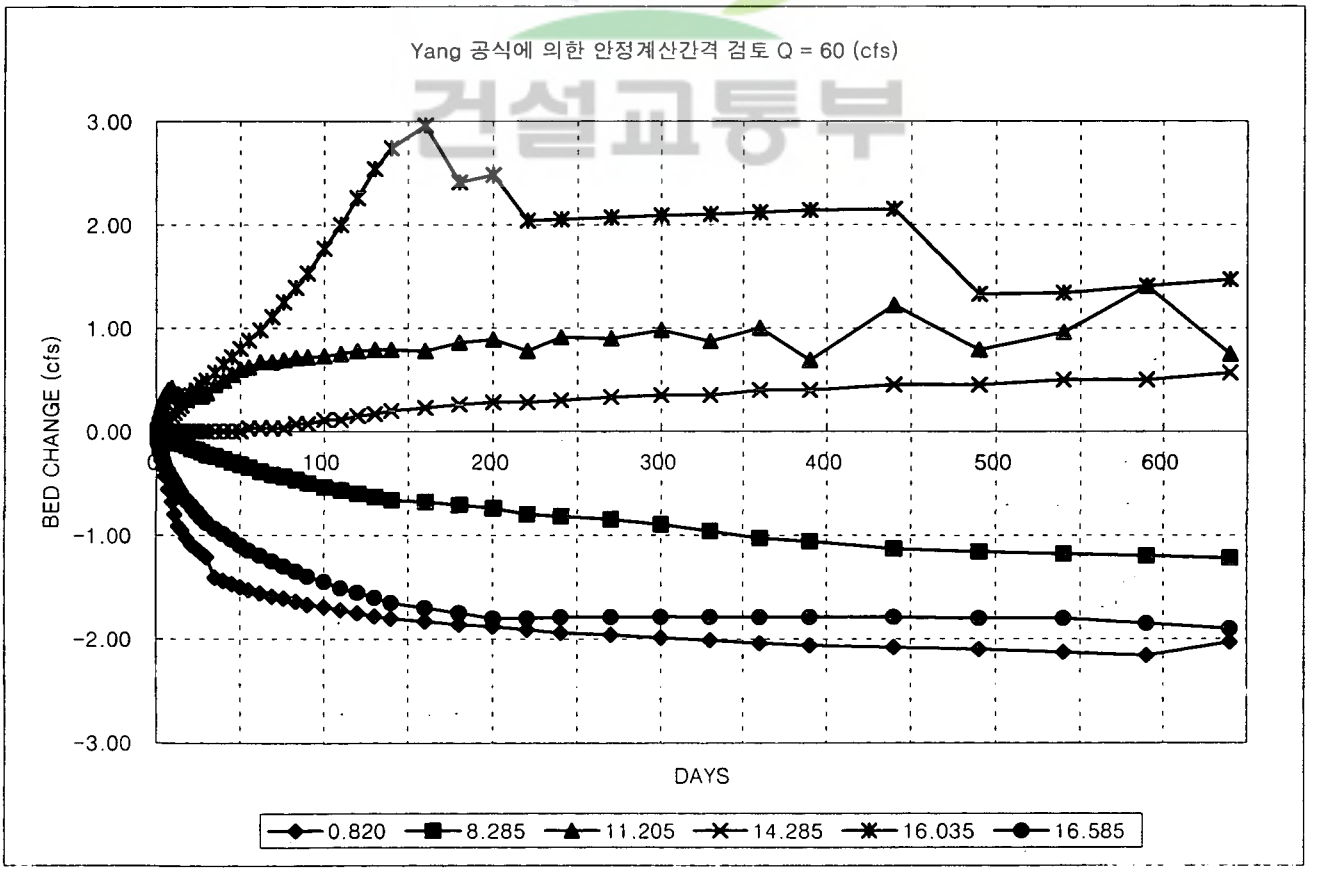
■ 논산천 안정계산간격



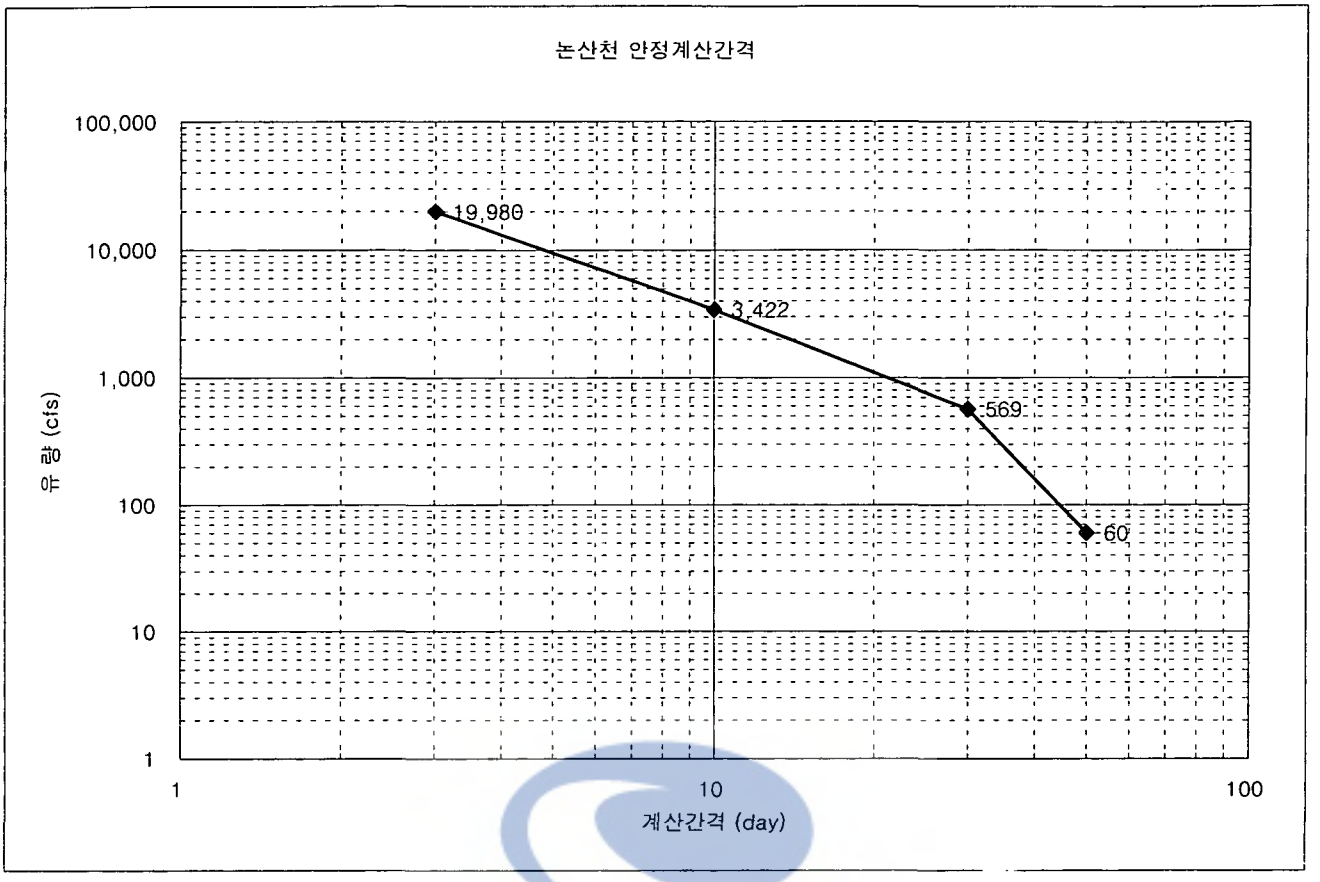


건설교통부

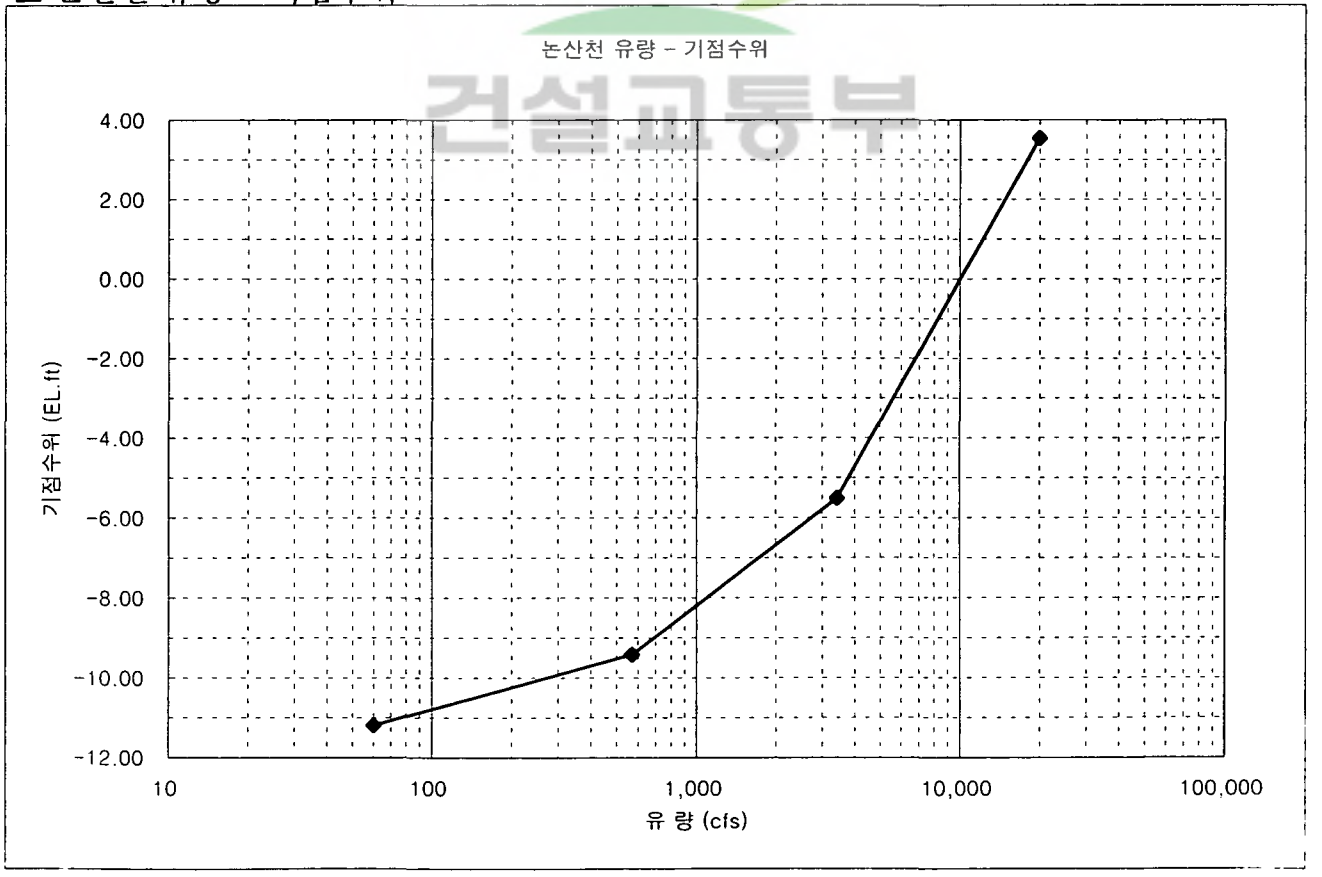

Yang 공식에 의한 안정계산간격 검토 Q = 569 (cfs)
BED CHANGE (cfs)
4.00
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
-4.00
100
200
300
400
500
600
DAYS
0.820
8.285
11.205
14.285
16.035
16.585


Yang 공식에 의한 안정계산간격 검토 Q = 60 (cfs)
BED CHANGE (cfs)
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
100
200
300
400
500
600
DAYS
0.820
8.285
11.205
14.285
16.035
16.585

건설교통부

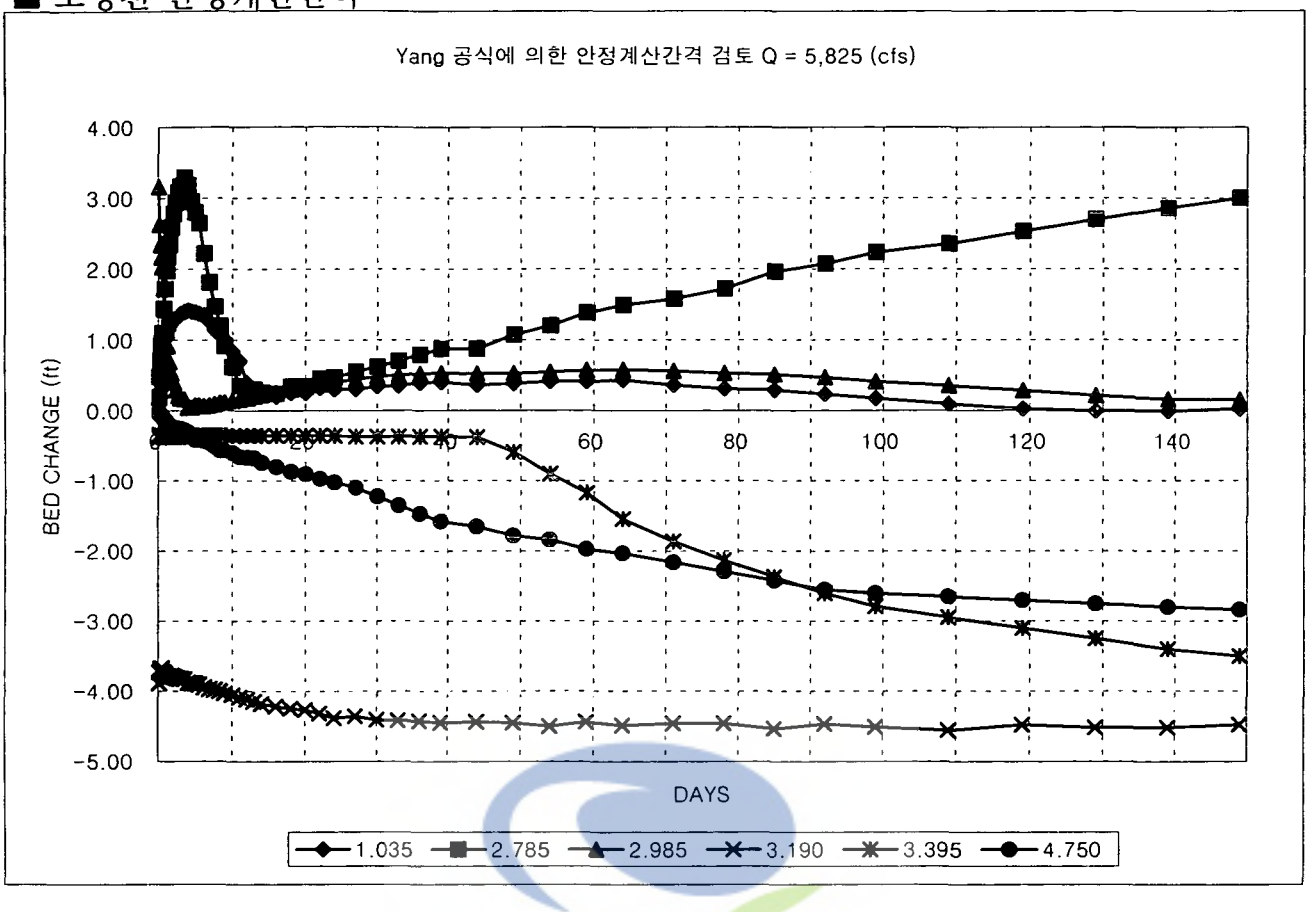


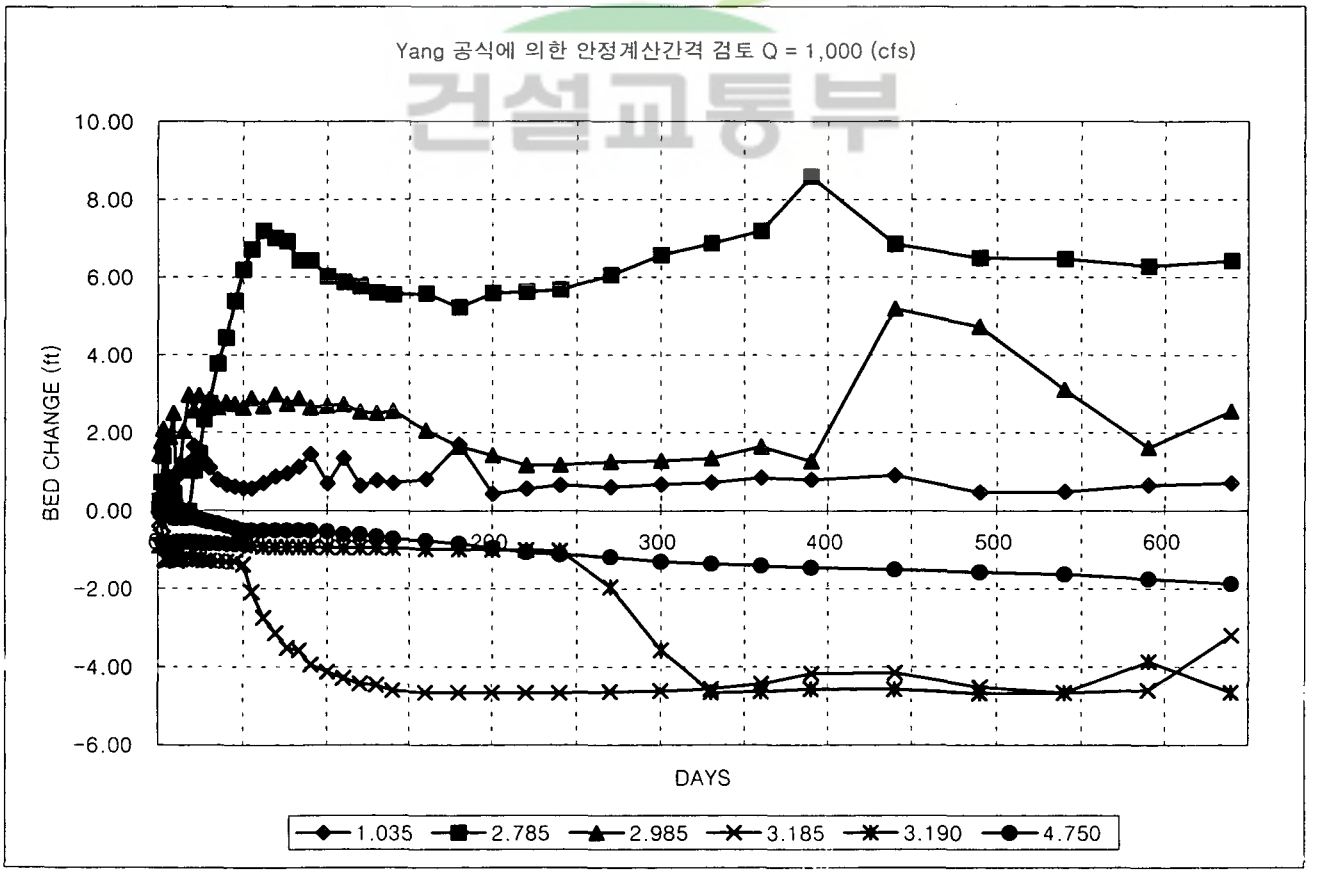
■ 논산천 유량 - 기점수위



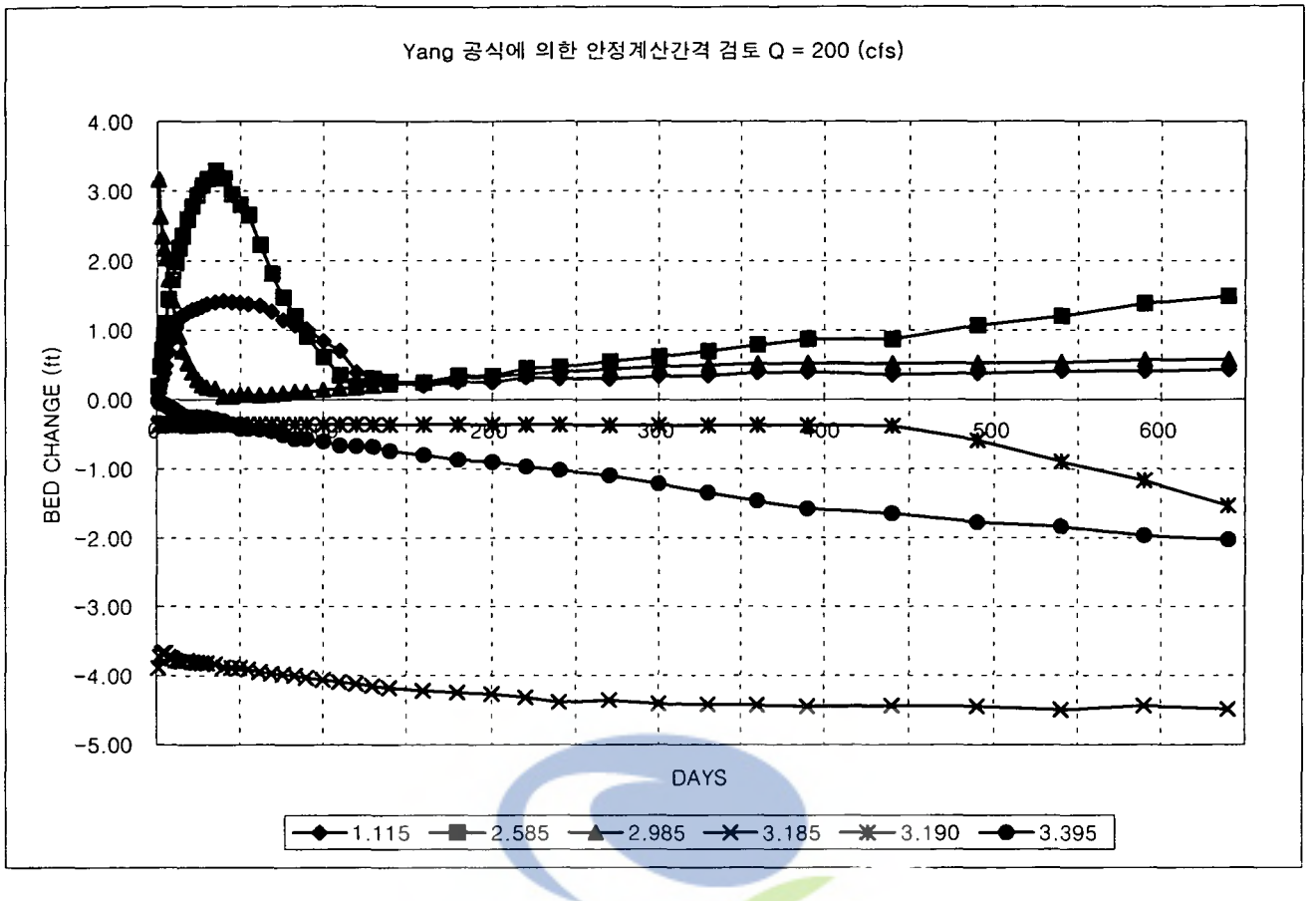
건설교통부

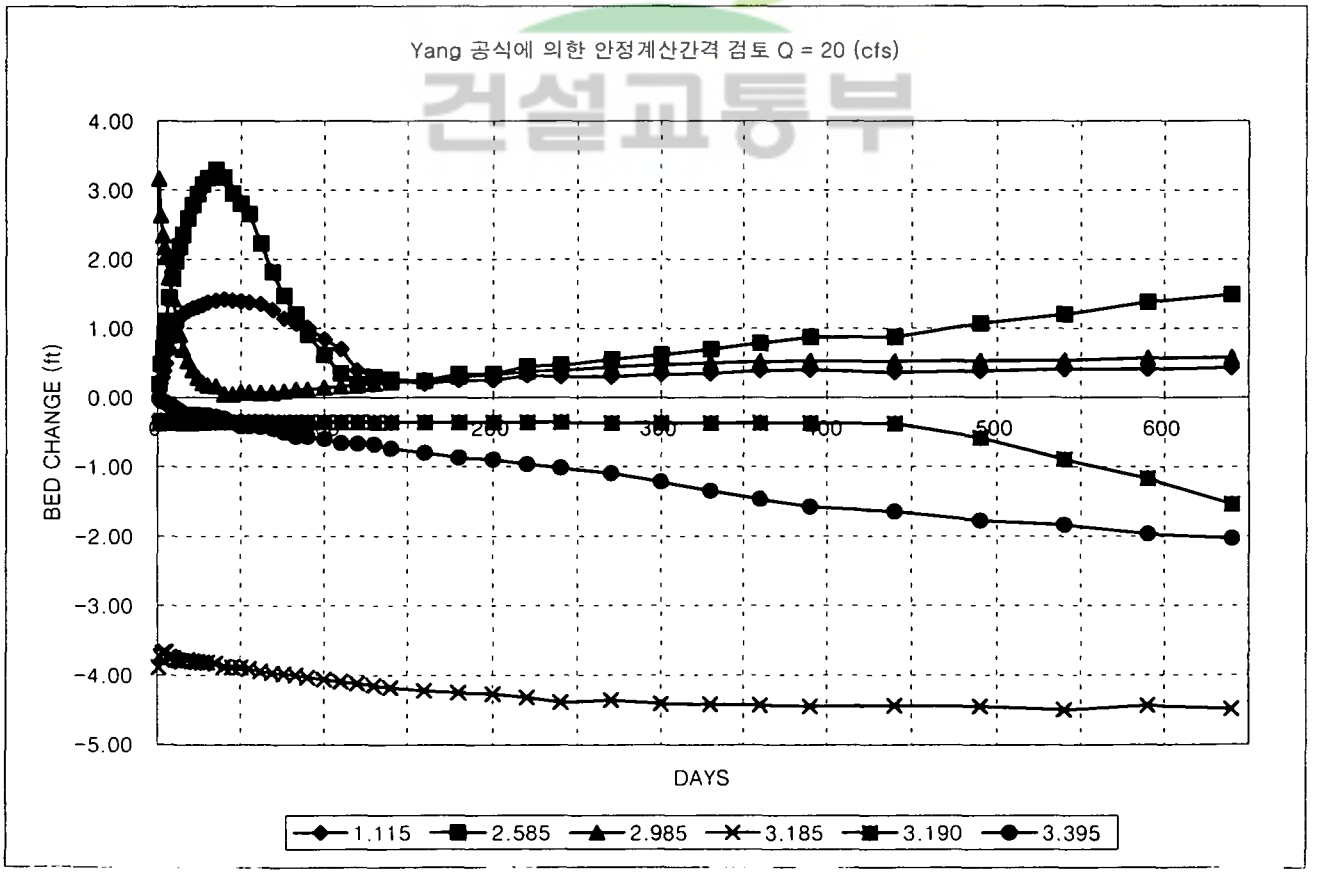
■ 노성천 안정계산간격



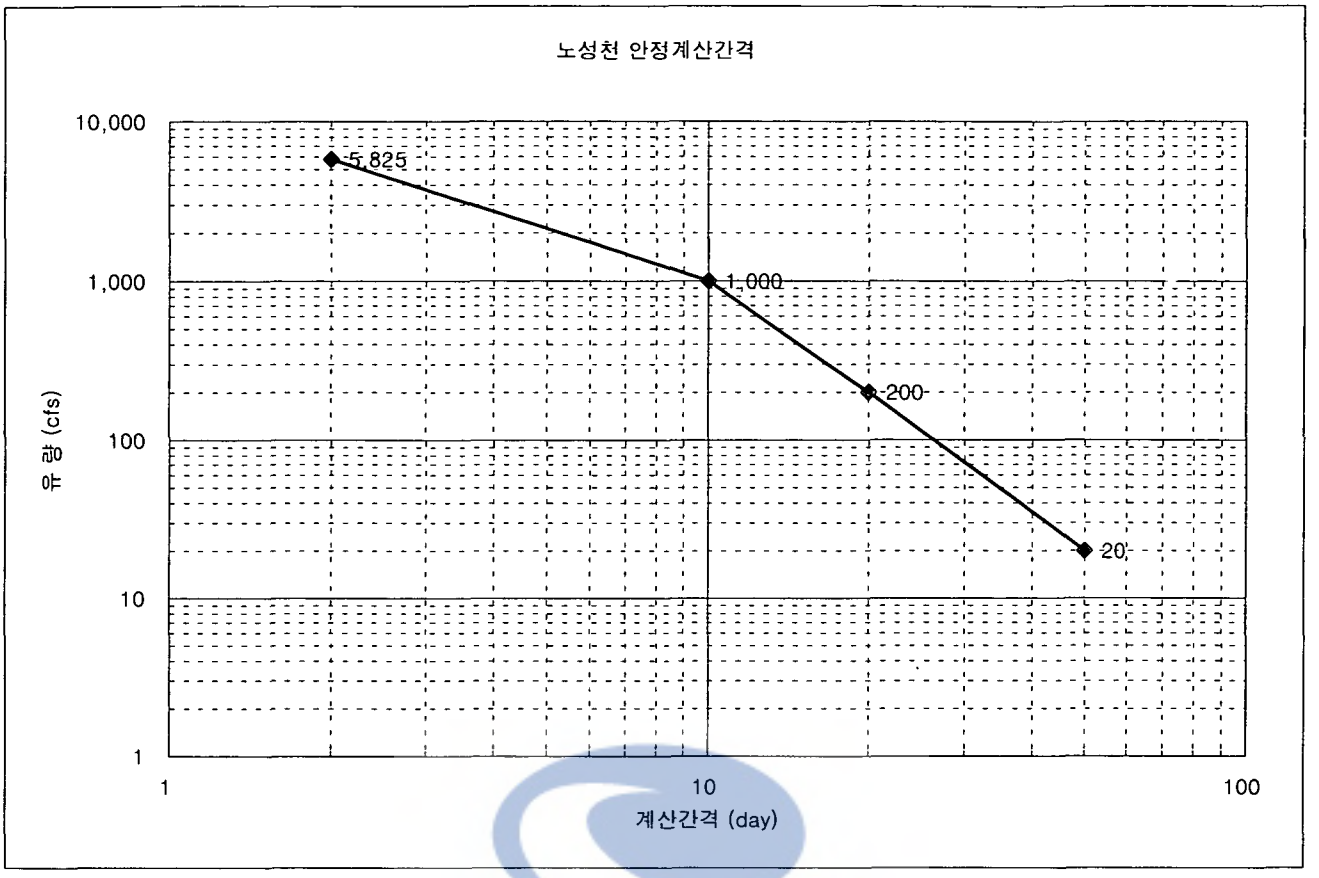


건설교통부

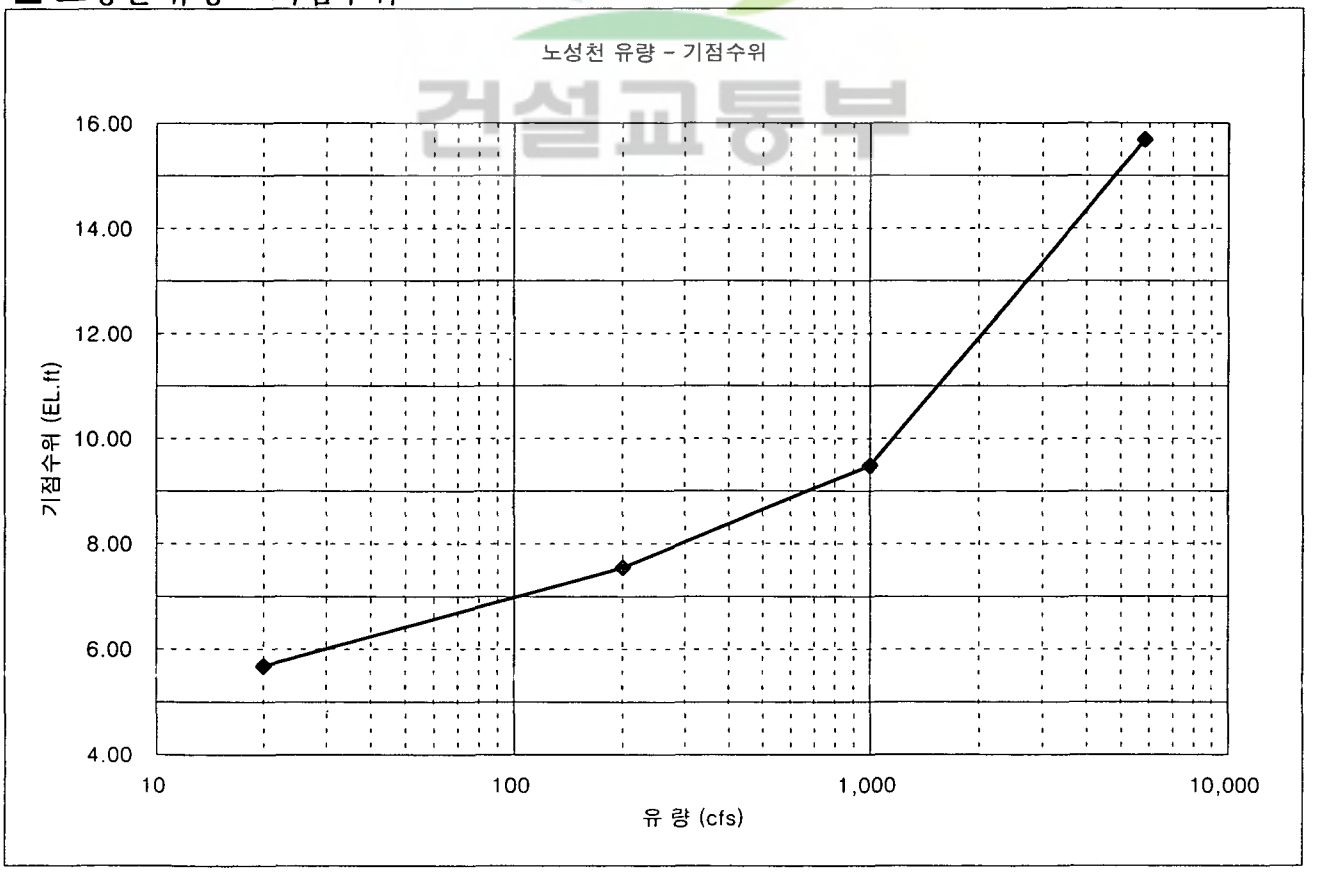

Yang 공식에 의한 안정계산간격 검토 Q = 200 (cfs)
BED CHANGE (ft)
4.00
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
200
300
400
500
600
DAYS
1.115
2.585
2.985
3.185
3.190
3.395


Yang 공식에 의한 안정계산간격 검토 Q = 20 (cfs)
BED CHANGE (ft)
4.00
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
200
300
400
500
600
DAYS
1.115
2.585
2.985
3.185
3.190
3.395

건설교통부

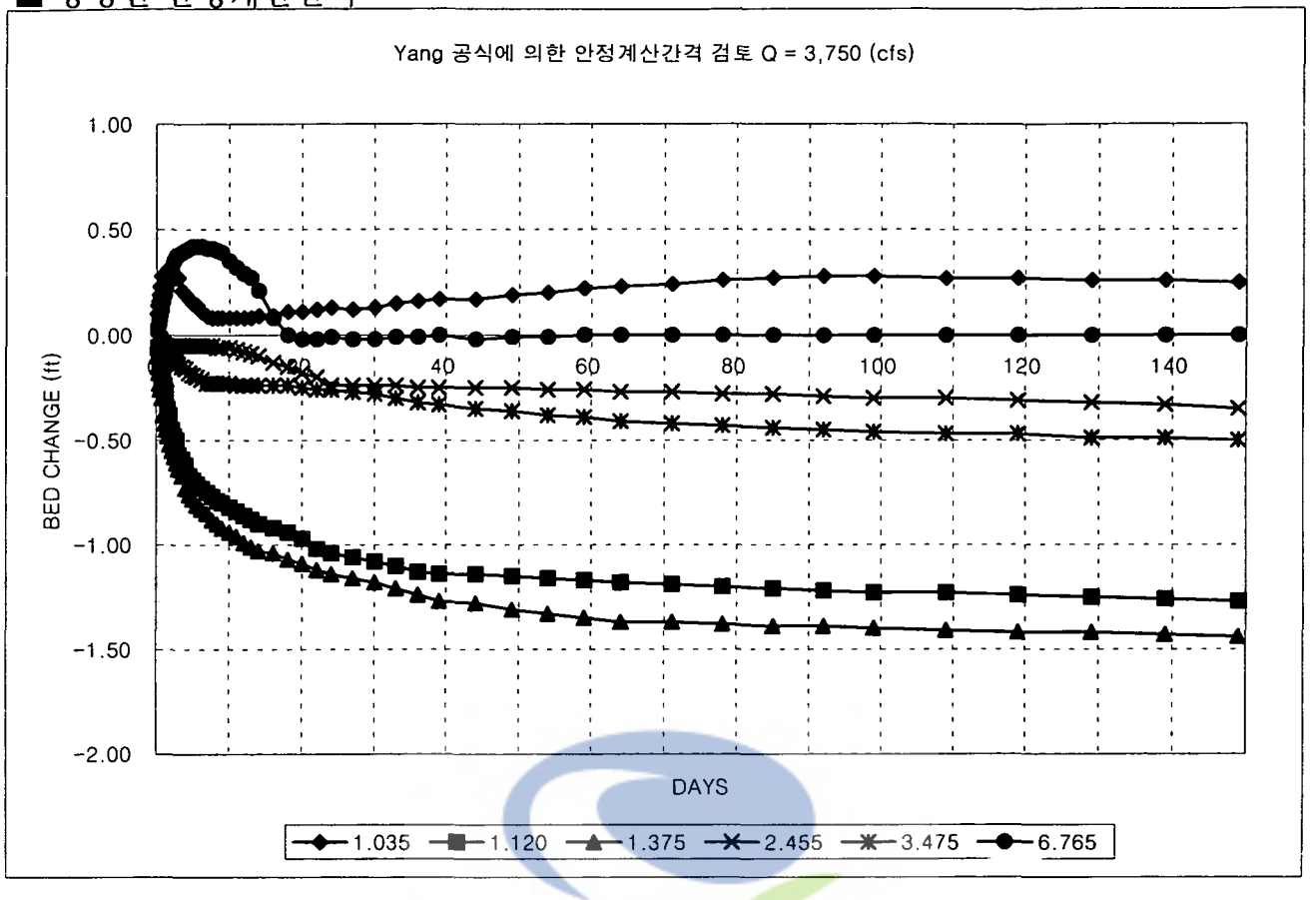


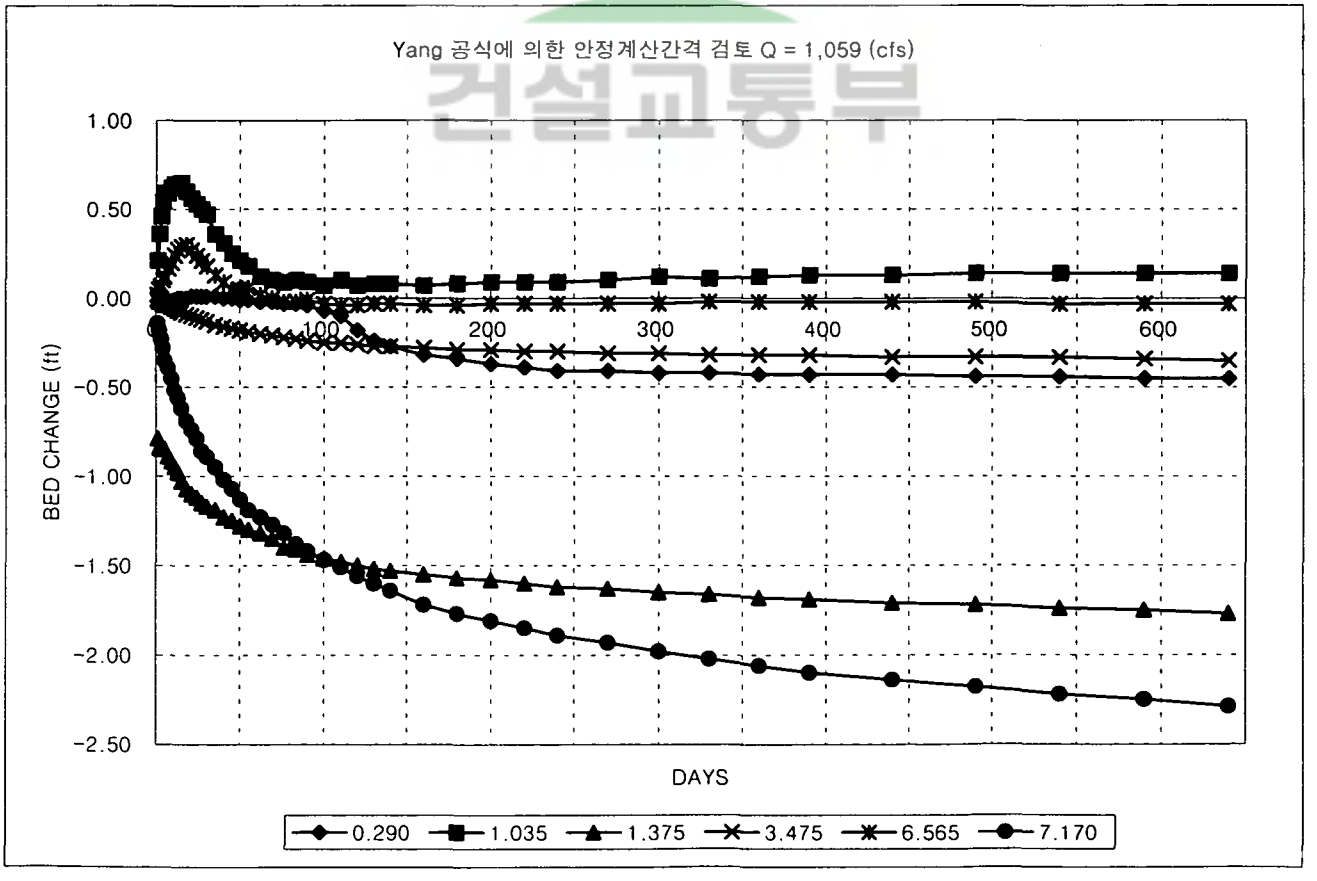
■ 노성천 유량 - 기점수위



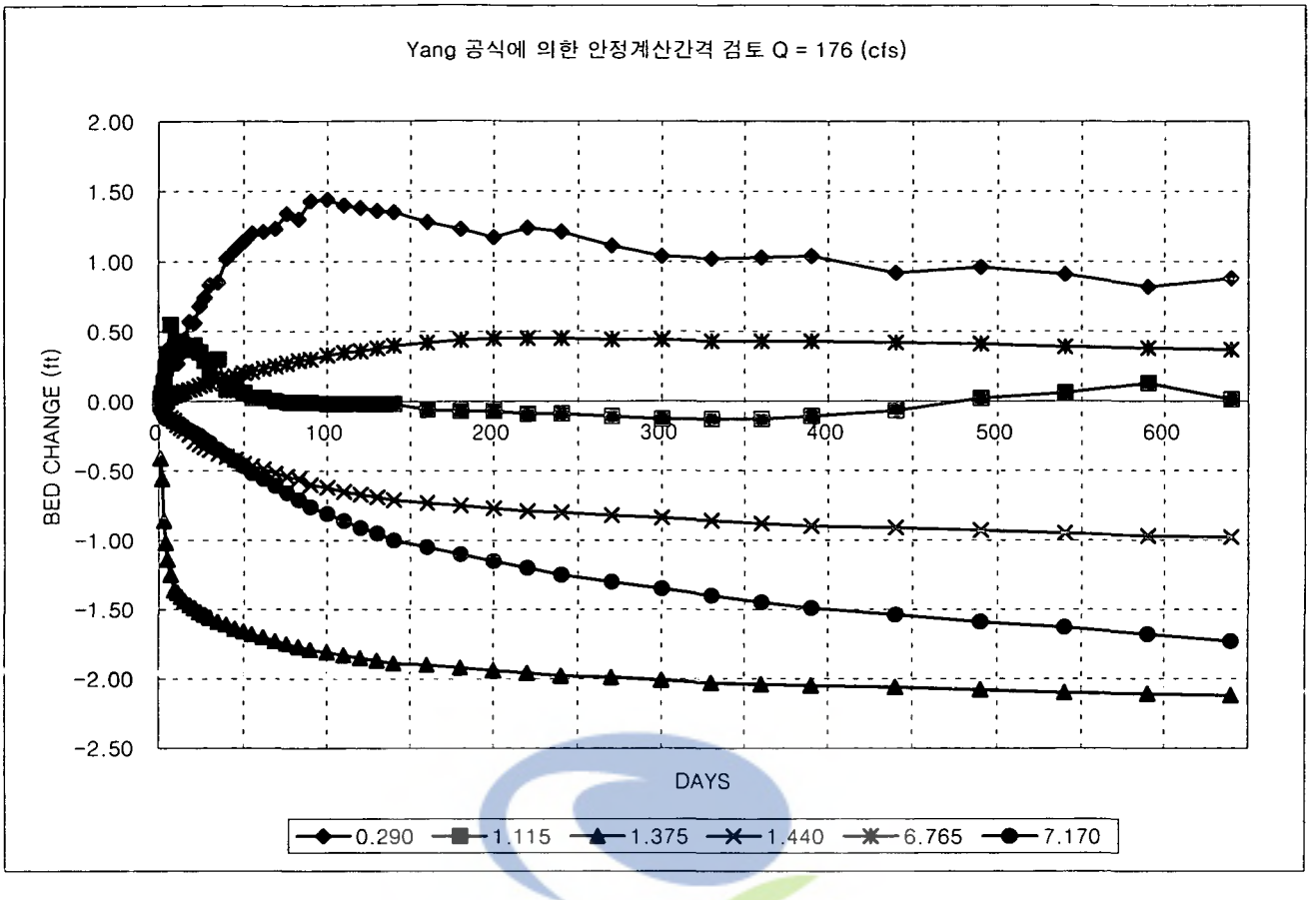
건설교통부

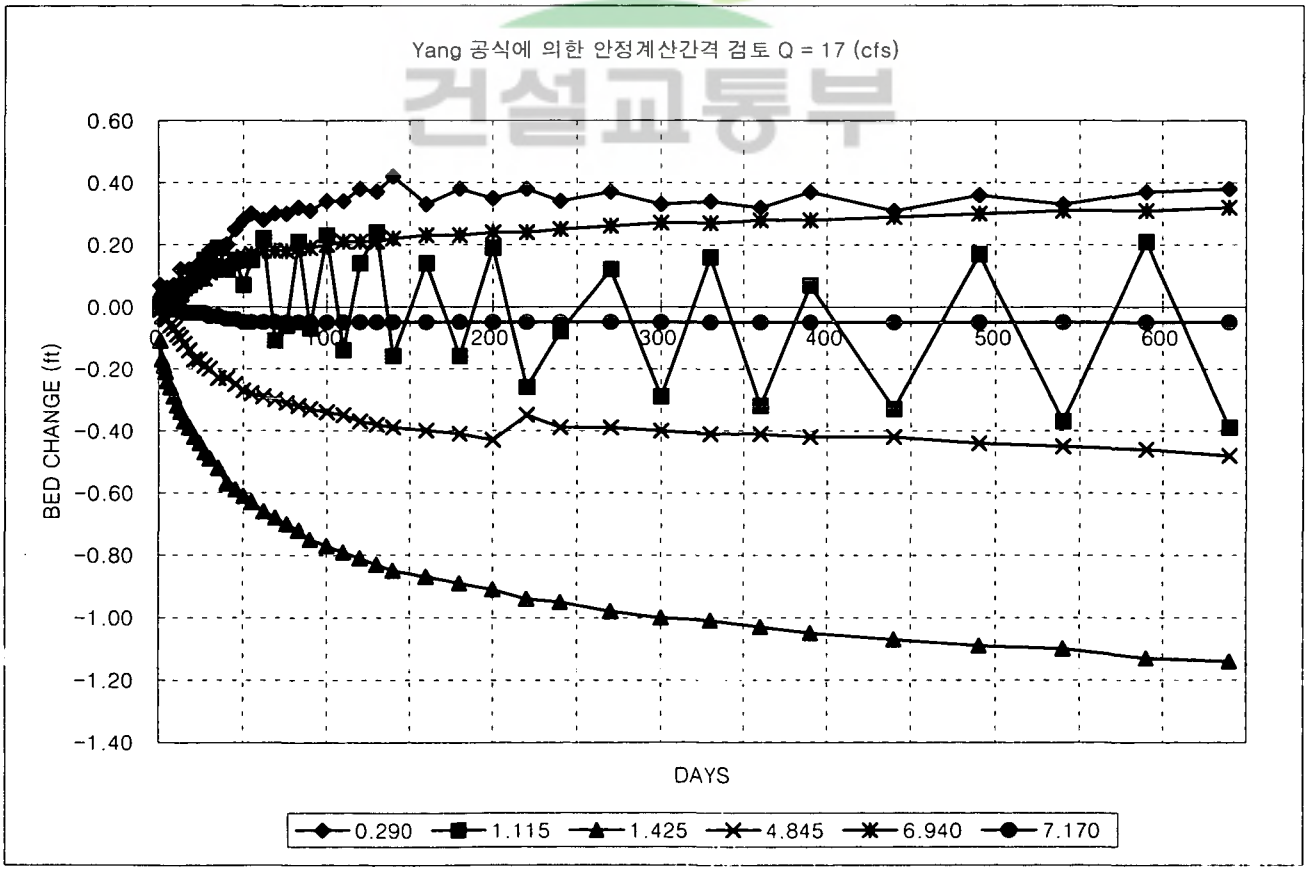
■ 강경천 안정계산간격



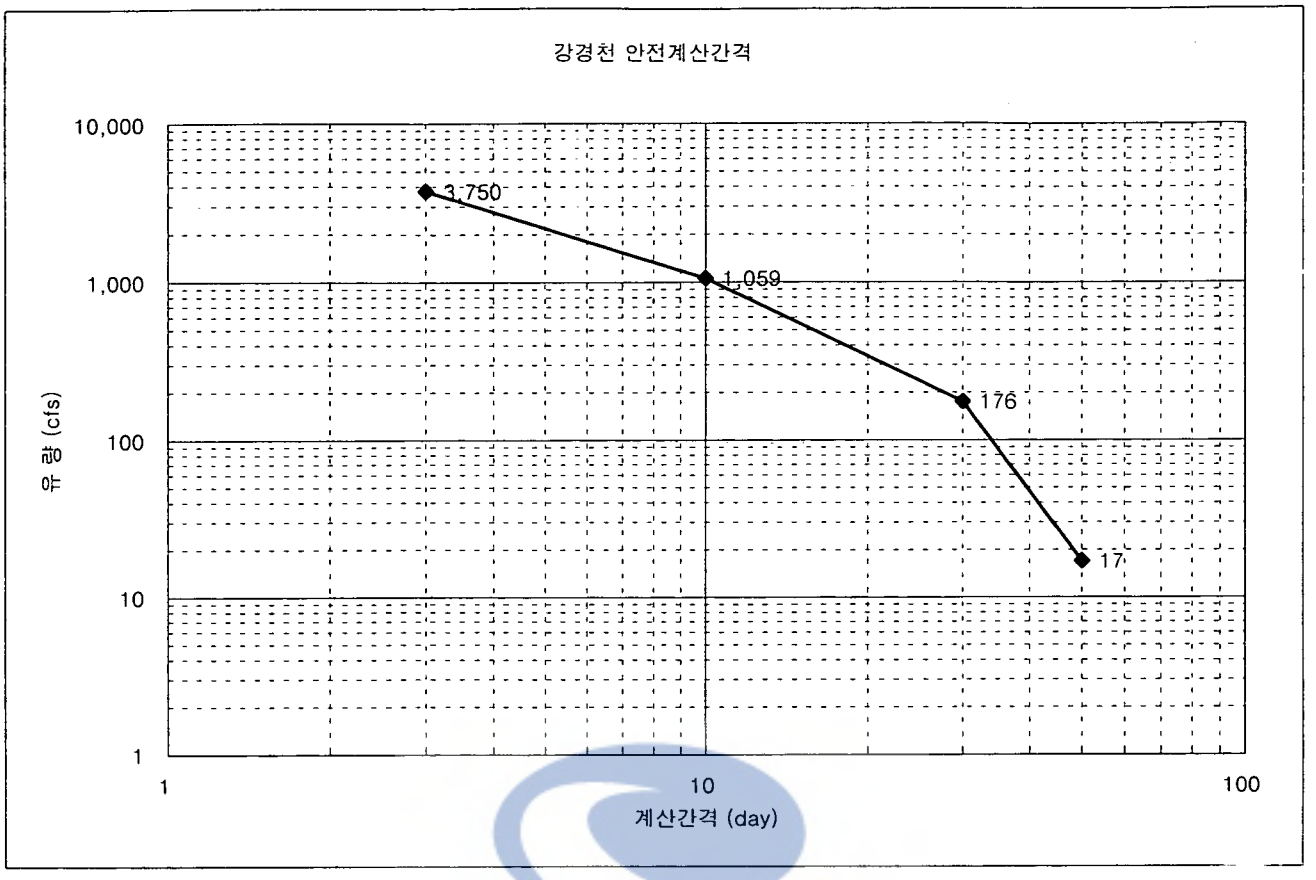


건설교통부

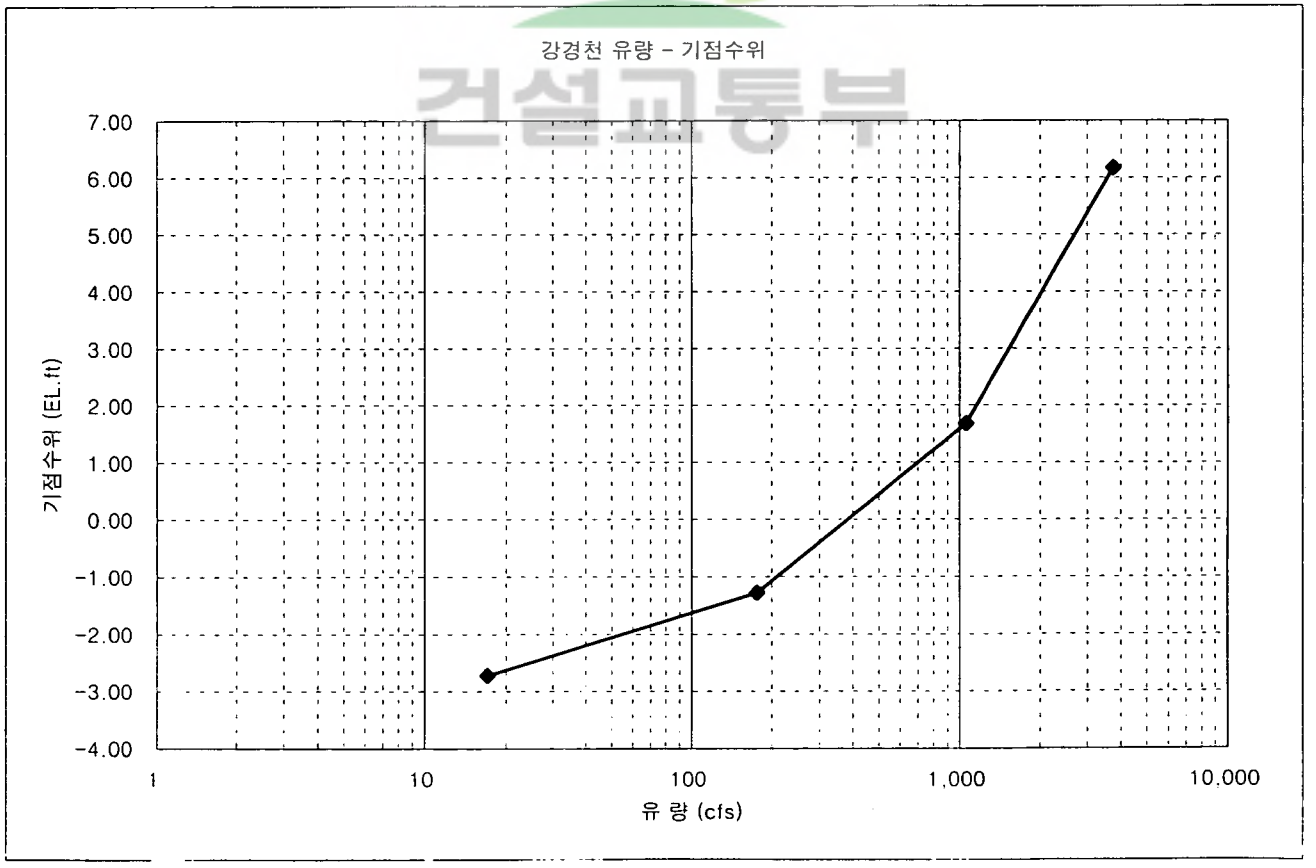

Yang 공식에 의한 안정계산간격 검토 Q = 176 (cfs)
BED CHANGE (ft)
2.00
1.50
1.00
0.50
0.00
-0.50
-1.00
-1.50
-2.00
-2.50
0
100
200
300
400
500
600
DAYS
0.290
1.115
1.375
1.440
6.765
7.170


Yang 공식에 의한 안정계산간격 검토 Q = 17 (cfs)
BED CHANGE (ft)
0.60
0.40
0.20
0.00
-0.20
-0.40
-0.60
-0.80
-1.00
-1.20
-1.40
0
100
200
300
400
500
600
DAYS
0.290
1.115
1.425
4.845
6.940
7.170

건설교통부



■ 강경천 유량 - 기점수위



건설교통부

■ 장기하상변동검토결과 (HEC-6 Yang 공식)

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	0+000	-7.48	-7.47	-7.47	-7.47	-7.47	-7.47	-7.47
	0+350	-14.68	-14.69	-14.69	-14.69	-14.69	-14.69	-14.69
	0+720	-10.08	-10.09	-10.09	-10.09	-10.09	-10.09	-10.09
	1+140	-7.77	-7.77	-7.77	-7.77	-7.77	-7.77	-7.77
	1+480	-11.06	-11.06	-11.06	-11.06	-11.06	-11.06	-11.06
	2+020	-9.56	-9.57	-9.57	-9.57	-9.57	-9.57	-9.57
	2+450	-7.16	-7.16	-7.16	-7.16	-7.16	-7.16	-7.16
	2+920	-6.76	-6.77	-6.77	-6.77	-6.77	-6.76	-6.76
	3+330	-7.25	-7.25	-7.25	-7.25	-7.25	-7.25	-7.25
	3+780	-9.05	-9.05	-9.05	-9.05	-9.05	-9.05	-9.05
	4+240	-11.04	-11.03	-11.03	-11.03	-11.04	-11.04	-11.04
	4+580	-12.24	-12.25	-12.25	-12.26	-12.26	-12.26	-12.26
	4+860	-9.74	-9.75	-9.75	-9.75	-9.76	-9.76	-9.76
	5+390	-8.34	-8.35	-8.35	-8.35	-8.35	-8.35	-8.35
	6+110	-6.13	-6.13	-6.13	-6.13	-6.13	-6.13	-6.13
	6+750	-8.73	-8.72	-8.72	-8.72	-8.72	-8.72	-8.72
	7+210	-8.22	-8.23	-8.23	-8.23	-8.23	-8.23	-8.23
	7+740	-7.42	-7.41	-7.41	-7.41	-7.41	-7.41	-7.41
	8+160	-11.52	-11.52	-11.52	-11.52	-11.52	-11.52	-11.52
	8+670	-5.01	-4.72	-4.72	-4.72	-4.72	-4.72	-4.72
	9+170	-6.71	-6.71	-6.71	-6.71	-6.71	-6.70	-6.70
	9+640	-6.70	-6.71	-6.71	-6.70	-6.70	-6.70	-6.70
	10+130	-4.20	-4.21	-4.21	-4.20	-4.20	-4.20	-4.20
	10+600	-4.50	-4.51	-4.51	-4.51	-4.52	-4.52	-4.52
	11+060	-7.69	-7.68	-7.68	-7.68	-7.68	-7.68	-7.69
	11+520	-24.99	-24.99	-24.99	-24.99	-24.99	-24.99	-24.98
	12+250	-6.28	-6.28	-6.28	-6.28	-6.27	-6.27	-6.27
	12+850	-10.98	-10.97	-10.98	-10.98	-10.98	-10.98	-10.98
	13+450	-5.88	-5.88	-5.88	-5.88	-5.88	-5.88	-5.89
	13+970	-4.97	-4.97	-4.97	-4.97	-4.96	-4.96	-4.95
	14+490	-5.87	-5.88	-5.87	-5.86	-5.85	-5.84	-5.82
	15+020	-6.66	-6.67	-6.66	-6.64	-6.62	-6.61	-6.57
	15+460	-7.76	-7.77	-7.75	-7.74	-7.73	-7.71	-7.69
	15+960	-7.86	-7.86	-7.85	-7.85	-7.85	-7.85	-7.86
	16+420	-8.05	-8.05	-8.05	-8.06	-8.07	-8.08	-8.08
	16+910	-12.95	-12.96	-12.97	-12.98	-12.99	-12.99	-13.00
	17+380	-10.84	-10.86	-10.87	-10.88	-10.88	-10.88	-10.88
	17+850	-7.54	-7.53	-7.53	-7.53	-7.53	-7.53	-7.53
	18+190	-5.34	-5.33	-5.32	-5.32	-5.31	-5.30	-5.28
	18+710	-4.93	-4.93	-4.92	-4.90	-4.87	-4.86	-4.81
	19+180	-6.03	-6.03	-6.00	-5.97	-5.95	-5.93	-5.89
	19+620	-5.72	-5.72	-5.71	-5.72	-5.72	-5.73	-5.73
	20+130	-5.92	-5.90	-5.92	-5.92	-5.92	-5.92	-5.92

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	20+580	-8.81	-8.82	-8.84	-8.84	-8.85	-8.86	-8.87
	21+000	-13.40	-13.43	-13.44	-13.46	-13.47	-13.48	-13.50
	21+400	-20.01	-20.01	-20.02	-20.02	-20.03	-20.03	-20.03
	21+660	-5.50	-5.49	-5.49	-5.49	-5.50	-5.50	-5.50
	22+110	-4.70	-4.69	-4.68	-4.67	-4.67	-4.67	-4.66
	22+550	-6.60	-6.61	-6.62	-6.62	-6.63	-6.63	-6.63
	23+250	-15.09	-15.09	-15.11	-15.12	-15.12	-15.12	-15.13
	23+550	-7.88	-7.89	-7.89	-7.88	-7.88	-7.87	-7.85
	24+050	-4.18	-4.17	-4.12	-4.06	-4.00	-3.94	-3.81
	24+680	-7.88	-7.89	-7.85	-7.81	-7.78	-7.74	-7.66
	25+330	-5.46	-5.45	-5.45	-5.44	-5.44	-5.43	-5.40
	25+810	-6.47	-6.46	-6.45	-6.44	-6.42	-6.40	-6.35
	26+140	-5.15	-5.15	-5.14	-5.12	-5.09	-5.06	-4.97
	26+600	-5.66	-5.66	-5.62	-5.58	-5.55	-5.51	-5.42
	26+990	-5.36	-5.33	-5.20	-5.07	-4.97	-4.88	-4.71
	27+400	-21.35	-21.27	-21.07	-20.94	-20.87	-20.80	-20.60
	27+890	-10.85	-10.85	-10.90	-11.01	-11.02	-11.02	-11.01
	28+290	-6.24	-6.29	-6.42	-6.49	-6.53	-6.57	-6.60
	28+630	-4.64	-4.68	-4.80	-4.86	-4.89	-4.89	-4.88
	29+030	-7.34	-7.37	-7.43	-7.44	-7.43	-7.39	-7.18
	29+570	-9.53	-9.55	-9.55	-9.52	9.44	-9.32	-8.86
	30+160	-6.43	-6.42	-6.34	-6.22	-6.09	-5.93	-5.61
	30+830	-2.92	-2.89	-2.68	-2.36	-2.03	-1.74	-1.27
	31+400	-7.22	-7.23	-7.22	-7.15	-7.03	-6.89	-6.59
	32+120	-13.72	-13.73	-13.75	-13.77	-13.78	-13.76	-13.66
	32+590	-12.21	-12.23	-12.26	-12.27	-12.21	-12.06	-11.59
	32+920	-13.90	-13.90	-13.83	-13.54	-13.09	-12.62	-12.16
	33+060	-11.71	-11.64	-11.27	-10.51	-9.60	-8.79	-7.99
	33+270	-14.31	-14.21	-13.84	-13.23	-12.69	-12.35	-12.32
	33+830	-5.50	-5.24	-4.59	-4.22	-4.10	-4.06	-3.90
	34+490	-3.30	-3.31	-3.35	-3.41	-3.47	-3.53	-3.64
	34+920	-5.20	-5.23	-5.25	-5.28	-5.29	-5.29	-5.29
	35+370	-6.89	-6.87	-6.76	-6.64	-6.53	-6.41	-6.18
	36+000	-6.29	-6.22	-6.00	-5.88	-5.80	-5.73	-5.64
	36+560	-3.28	-3.24	-3.29	-3.30	-3.30	-3.30	-3.30
	37+010	-3.08	-3.09	-3.15	-3.19	-3.24	-3.27	-3.33
	37+710	-3.08	-3.12	-3.17	-3.22	-3.27	-3.32	-3.40
	38+220	-4.07	-4.11	-4.17	-4.22	-4.25	-4.27	-4.30
	38+620	-8.17	-8.18	-8.24	-8.31	-8.38	-8.43	-8.48
	39+050	-5.76	-5.80	-5.88	-5.91	-5.92	-5.91	-5.91
	39+520	-6.26	-6.26	-6.28	-6.28	-6.27	-6.26	-6.22
	40+000	-9.06	-9.01	-8.83	-8.58	-8.32	-8.06	-7.53
	40+470	-7.45	-7.30	-6.89	-6.55	-6.35	-6.21	-6.01
	40+890	-2.55	-2.55	-2.57	-2.57	-2.58	-2.57	-2.57
	41+490	-9.64	-9.67	-9.77	-9.89	-9.95	-9.99	-10.13

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	41+990	-6.34	-6.38	-6.46	-6.55	-6.62	-6.70	-6.84
	42+540	-4.94	-4.95	-5.02	-5.09	-5.15	-5.22	-5.35
	43+290	-2.63	-2.63	-2.67	-2.72	-2.76	-2.80	-2.88
	43+850	-2.03	-2.05	-2.09	-2.13	-2.17	-2.20	-2.27
	44+450	-4.42	-4.43	-4.49	-4.55	-4.61	-4.66	-4.74
	45+060	-4.02	-4.03	-4.07	-4.11	-4.14	-4.16	-4.19
	45+650	-7.42	-7.39	-7.33	-7.25	-7.17	-7.07	-6.86
	46+200	-2.91	-2.85	-2.76	-2.67	-2.58	-2.47	-2.19
	46+670	-1.71	-1.62	-1.65	-1.68	-1.69	-1.69	-1.66
	47+270	-1.90	-1.91	-1.96	-1.98	-1.98	-1.99	-2.00
	47+800	-3.29	-3.30	-3.31	-3.31	-3.31	-3.31	-3.32
	48+100	-4.38	-4.33	-4.12	-3.87	-3.64	-3.44	-3.06
	48+500	-5.31	-5.29	-5.25	-5.20	-5.18	-5.16	-5.07
	48+970	-6.52	-6.56	-6.64	-6.78	-6.89	-7.00	-7.09
	49+400	-5.08	-5.09	-5.09	-5.11	-5.13	-5.11	-4.79
	49+820	-2.55	-2.59	-2.71	-2.82	-2.87	-2.91	-2.50
	50+300	-3.68	-3.70	-3.73	-3.72	-3.64	-3.46	-1.53
	50+800	-4.54	-4.51	-4.32	-3.93	-3.33	-2.34	-0.56
	51+220	-1.09	-1.07	-1.01	-1.05	-1.11	-1.12	-1.98
	51+540	-1.44	-1.34	-1.29	-1.19	-1.04	-0.73	-0.45
	52+090	-15.11	-15.13	-15.26	-15.39	-15.06	-12.80	-10.77
	52+160	-6.07	-6.29	-6.33	-6.32	-6.04	-5.00	-4.75
	52+180	-6.07	-6.21	-6.37	-6.62	-5.81	-4.91	-4.68
	52+540	-3.72	-3.81	-3.96	-3.93	-2.81	-2.33	-2.44
	52+910	-4.37	-4.39	-4.41	-3.66	-2.23	-2.22	-2.15
	53+350	-3.28	-3.23	-2.72	-1.33	-1.06	-1.18	-1.26
	53+760	-3.25	-3.00	-1.60	-0.44	-0.51	-0.49	-0.51
	54+270	-3.49	-3.30	-2.76	-2.96	-3.04	-3.03	-3.10
	54+730	-2.45	-1.97	-2.08	-1.81	-1.85	-1.85	-1.87
	55+320	-3.81	-3.85	-3.84	-3.84	-3.76	-3.77	-3.76
	55+940	0.29	0.05	0.05	-0.07	-0.25	-0.27	-0.31
	56+420	-3.91	-4.08	-4.39	-4.60	-4.62	-4.60	-4.52
	56+510	-2.81	-2.91	-3.03	-3.02	-3.02	-3.02	-2.97
	56+970	-0.72	-0.78	-0.81	-0.77	-0.73	-0.69	-0.62
	57+330	-3.01	-3.08	-2.97	-2.86	-2.58	-2.39	-2.05
	57+810	-0.51	-0.58	-0.50	-0.49	-0.56	-0.61	-0.66
	58+080	-3.11	-2.92	-1.82	-1.82	-1.87	-1.94	-1.79
	58+570	-1.11	-0.96	-0.94	-1.00	-0.96	-0.98	-0.73
	59+060	-1.81	-1.78	-1.80	-1.81	-1.79	-1.81	-1.60
	59+520	-0.30	-0.16	-0.04	-0.02	-0.06	-0.09	-0.02
	59+990	-0.92	-0.23	-0.63	-0.54	-0.53	-0.55	-0.25
	60+510	0.21	0.23	0.22	0.27	0.23	0.22	0.27
	60+950	1.00	0.59	0.20	0.03	-0.06	-0.14	-0.08
	61+430	0.03	-0.22	-0.22	-0.40	-0.60	-0.71	-0.63
	61+870	-1.09	-1.12	-1.12	-1.13	-1.13	-1.12	-0.96

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	61+900	-1.09	-1.44	-2.01	-2.31	-2.51	-2.65	-2.46
	62+320	0.80	0.58	0.24	0.19	0.14	0.16	0.39
	62+790	-0.87	-0.96	-0.87	-0.80	-0.84	-0.74	-0.30
	63+390	-3.04	-2.71	-1.93	-1.97	-2.06	-1.85	-1.04
	64+040	-1.35	-0.83	-0.98	-1.12	-1.05	-0.71	-0.46
	64+510	1.34	0.89	0.39	0.21	0.09	0.10	0.09
	65+040	0.08	-0.22	-0.65	-0.92	-1.01	-0.70	-0.39
	65+470	0.01	-0.11	-0.28	-0.41	-0.37	0.09	0.48
	66+110	-0.70	-0.69	-0.78	-0.86	-0.63	-0.11	0.27
	66+470	-0.72	-0.75	-0.79	-0.79	-0.31	0.19	0.58
	66+920	0.50	0.37	0.05	-0.22	0.03	0.02	0.16
	67+400	0.32	0.20	-0.07	-0.27	0.63	0.87	1.15
	67+910	-1.25	-1.34	-1.57	-1.49	-0.23	-0.25	-0.08
	68+370	-3.22	-3.26	-3.22	-1.30	-0.37	-0.19	0.12
	68+970	-1.48	-1.43	-0.84	0.78	0.43	0.40	0.54
	69+500	-1.42	-1.35	-0.57	-0.55	-0.24	-0.11	0.23
	70+100	-0.32	-0.27	0.09	0.21	0.20	0.20	0.44
	70+610	-1.92	-1.73	-0.70	0.02	0.12	0.35	0.79
	71+110	-1.02	-0.56	-0.09	0.11	0.25	0.39	0.64
	71+560	-0.48	-0.76	-1.10	-1.00	-0.99	-0.88	-0.60
	72+060	0.81	0.48	0.23	0.60	0.80	1.02	1.33
	72+570	-1.12	-0.69	0.65	0.91	0.92	0.99	1.23
	73+010	-1.73	-1.12	-0.11	0.41	0.66	0.94	1.30
	73+540	1.52	1.24	1.06	1.14	1.18	1.25	1.39
	74+180	1.19	0.97	0.94	1.19	1.34	1.56	1.89
	74+640	-1.30	-1.21	0.32	0.65	0.68	0.74	0.89
	75+120	-0.97	-0.80	0.23	0.33	0.47	0.76	1.05
	75+630	1.16	1.39	1.50	1.63	1.68	1.78	1.98
	76+270	0.30	0.73	0.98	1.09	1.26	1.45	1.61
	76+720	0.31	0.20	0.24	0.25	0.26	0.34	0.54
	77+320	2.21	1.95	1.81	1.84	1.89	1.99	2.07
	77+910	-0.40	-0.59	-0.53	-0.53	-0.43	-0.26	0.16
	78+320	1.33	1.17	1.18	1.07	1.09	1.12	1.13
	78+920	1.06	1.03	1.66	1.73	2.08	2.40	2.72
	79+490	0.89	1.28	1.83	1.72	1.84	1.79	1.75
	80+190	0.46	0.88	1.17	1.29	1.56	1.91	2.15
	80+480	0.19	0.24	0.29	0.23	0.45	0.41	0.35
	80+640	0.48	0.42	0.33	0.37	0.60	0.92	1.36
	81+120	1.79	2.25	2.40	2.37	2.58	2.68	2.69
	81+610	1.87	2.13	2.13	2.15	2.36	2.57	2.76
	81+980	2.26	2.59	2.67	2.68	2.83	2.91	2.92
	82+600	0.61	0.55	0.74	0.80	1.31	1.59	1.84
	82+980	3.77	3.46	3.31	3.31	3.38	3.47	3.51
	83+410	0.92	2.07	2.11	2.46	2.70	2.83	2.90
	83+830	2.22	2.76	3.03	3.06	3.19	3.31	3.29

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	84+300	4.34	3.21	3.11	3.16	3.20	3.21	3.21
	84+700	3.73	3.28	3.41	3.39	3.37	3.38	3.37
	84+790	3.66	3.75	3.71	3.68	3.61	3.63	3.64
	85+070	4.10	4.06	3.69	3.61	3.57	3.52	3.40
	85+220	5.07	4.56	4.31	4.17	3.92	3.80	3.68
	85+730	4.94	4.47	4.01	3.93	3.92	3.84	3.79
	86+240	5.19	5.07	4.59	4.29	4.15	4.11	4.12
	86+500	3.16	3.33	3.75	3.69	3.65	3.55	3.41
	86+780	6.99	6.66	5.33	5.27	5.06	5.04	5.05
	87+280	5.29	4.97	4.16	3.75	3.67	3.68	3.66
	87+680	7.82	7.56	6.55	5.88	5.80	5.77	5.75
	88+030	7.55	7.33	6.74	6.27	6.03	5.92	5.79
	88+250	7.11	7.05	6.92	6.57	6.39	6.33	6.25
	88+800	5.86	5.84	5.84	5.77	5.88	5.85	5.76
	89+280	5.90	5.90	5.91	5.91	5.97	5.95	5.88
	89+750	5.69	5.71	5.75	5.82	5.98	5.94	5.76
	90+230	5.48	5.75	5.88	5.92	5.93	5.89	5.79
	90+730	5.47	5.55	5.56	5.88	5.98	5.94	5.66
	91+190	6.18	6.07	5.70	5.49	5.50	5.48	5.47
	91+720	6.46	6.37	6.26	6.64	6.67	6.60	6.36
	92+160	5.01	5.30	5.36	5.84	5.88	5.84	5.57
	92+610	6.00	6.15	6.04	6.14	6.11	6.04	5.93
	93+060	6.35	6.09	5.56	5.82	5.99	5.95	5.57
	93+510	6.72	6.32	5.64	6.06	6.07	6.00	5.85
	93+590	5.01	4.65	4.44	5.24	5.30	5.25	5.00
	94+100	3.74	3.73	3.76	4.58	4.75	4.76	4.61
	94+790	5.46	5.45	5.49	6.16	6.27	6.21	5.94
	95+200	4.77	4.77	5.06	5.62	5.68	5.57	5.31
	95+390	5.28	5.29	5.82	6.42	6.60	6.52	6.31
	95+990	4.47	4.48	4.84	5.30	5.35	5.24	4.99
	96+340	5.00	5.00	5.96	6.66	6.75	6.61	6.38
	96+870	5.00	5.02	6.43	6.74	6.73	6.59	6.40
	97+390	4.66	4.66	6.41	6.50	6.60	6.39	6.03
	97+810	6.19	6.07	6.43	6.65	6.59	6.41	6.13
	98+360	6.05	5.89	6.84	7.04	7.00	6.72	6.39
	98+930	4.62	4.93	7.25	7.36	7.32	7.17	6.82
	99+730	7.02	7.56	7.55	7.65	7.52	7.21	7.03
	100+280	5.46	6.83	7.03	7.04	6.94	6.81	6.78
	100+710	6.13	7.85	7.98	8.07	7.84	7.59	7.56
	101+140	7.41	7.81	7.78	7.75	7.68	7.60	7.48
	101+620	7.34	7.97	8.24	8.29	7.97	7.70	7.57
	101+870	8.55	8.50	8.43	8.39	8.35	8.26	8.22
	102+030	10.01	8.63	8.59	8.62	8.48	8.27	8.12
	102+610	8.73	8.68	8.89	8.79	8.54	8.47	8.47
	103+160	9.91	9.10	9.03	8.96	8.82	8.74	8.69

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	103+720	10.21	9.49	9.34	9.29	8.97	8.94	8.95
	104+230	9.35	9.15	9.17	9.09	8.97	8.97	8.98
	104+740	9.61	9.60	9.78	9.69	9.54	9.50	9.51
	105+250	9.00	9.20	9.35	9.20	8.99	9.02	9.06
	105+750	8.91	9.21	9.43	9.30	8.98	9.10	9.20
	106+230	10.57	10.06	10.18	9.96	9.88	9.92	9.99
	106+750	10.81	10.46	10.35	10.21	10.19	10.20	10.27
	107+250	8.81	10.01	10.33	10.22	10.23	10.27	10.32
	107+700	9.67	10.34	10.19	10.02	10.10	10.29	10.68
	108+200	10.38	10.55	10.51	10.54	10.50	10.51	10.50
	108+750	10.98	11.22	11.38	11.44	11.47	11.61	11.89
	109+400	11.52	11.15	10.88	10.71	10.54	10.52	10.03
	109+900	11.11	10.84	10.68	10.71	10.72	10.77	10.96
	110+350	11.81	11.16	11.14	10.87	10.63	10.63	10.64
	110+900	13.40	12.68	12.41	12.41	12.42	12.43	12.46
	111+400	12.76	12.70	12.42	12.03	12.04	11.64	11.65
	111+900	12.57	12.46	12.23	12.06	12.12	12.08	12.06
	112+350	12.99	12.48	12.36	11.81	11.41	11.10	11.02
	112+510	13.31	13.40	13.20	13.09	13.01	12.73	12.83
	112+960	12.61	12.96	12.69	12.05	11.05	11.41	11.44
	113+360	14.15	13.74	13.55	13.27	13.16	12.90	12.98
	113+790	14.20	12.88	12.02	12.01	11.69	11.72	11.73
	114+290	14.45	13.88	13.77	13.38	13.40	13.18	13.21
	114+790	13.76	14.09	13.66	13.40	13.39	13.39	13.39
	115+390	13.73	13.72	13.71	13.61	13.61	13.61	13.62
	116+040	13.87	13.66	13.21	12.80	12.81	12.81	12.82
	116+540	13.80	13.76	13.74	13.77	13.80	13.81	13.81
	117+090	13.70	14.10	13.97	13.94	13.97	13.98	13.97
	117+620	14.21	14.23	14.31	14.37	14.40	14.41	14.41
	118+370	15.68	15.52	15.30	15.10	14.94	14.90	14.81
	118+800	15.90	15.85	15.83	15.84	15.83	15.82	15.83
	119+230	14.88	15.03	15.29	15.34	15.27	15.20	15.10
	119+770	16.78	16.86	16.87	16.68	16.59	16.54	16.47
	120+190	16.90	16.54	16.18	16.00	15.90	15.85	15.77
	120+700	17.23	17.11	16.93	16.71	16.67	16.63	16.60
	121+260	15.57	16.19	16.16	15.90	15.90	15.89	15.85
	121+770	17.35	17.50	17.32	17.10	17.08	17.08	17.07
	122+140	17.90	17.65	17.09	16.89	16.87	16.81	16.66
	122+490	18.65	18.09	17.47	17.27	17.23	17.23	17.25
	122+990	18.77	18.45	17.88	17.70	17.64	17.50	16.98
	123+470	18.81	18.69	18.36	18.38	18.39	18.41	18.45
	124+010	18.66	18.92	18.75	18.79	18.85	18.88	18.83
	124+460	18.10	18.98	18.81	18.71	18.75	18.76	18.62
	124+960	18.25	18.48	18.47	18.39	18.36	18.33	17.93
	125+660	19.57	19.50	19.32	18.71	18.73	18.71	18.57

건설기술연구

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	126+420	21.07	20.62	19.96	19.74	19.74	19.50	19.21
	126+750	21.98	21.71	20.82	20.22	20.12	20.04	20.04
	126+800	22.18	21.70	21.03	20.78	20.63	20.35	20.08
	126+960	22.58	22.16	21.05	20.65	20.53	20.54	20.54
	127+460	21.91	21.74	21.35	21.02	20.74	20.41	20.26
	127+720	21.02	21.00	20.79	20.63	20.65	20.57	20.33
	127+740	21.02	21.01	20.72	20.78	20.67	20.12	20.08
	127+890	19.96	19.87	19.44	19.36	19.22	18.66	18.61
	127+970	19.56	19.52	19.46	19.65	19.55	19.36	19.49
	128+370	19.46	19.42	19.35	19.37	19.13	18.71	18.71
	128+780	21.79	21.77	21.57	21.47	21.31	20.93	20.89
	129+230	18.26	18.26	18.29	18.31	18.29	18.26	16.79
	129+830	21.68	21.77	21.99	22.03	21.91	21.79	21.72
금 강 대청댐 상 류	130+330	22.00	21.60	20.09	19.23	19.23	19.23	19.23
	130+470	24.05	24.05	24.05	24.05	24.05	24.05	24.05
	222+040	72.97	74.98	76.46	76.54	76.48	76.16	77.82
	222+220	78.49	77.81	77.21	78.59	77.82	77.49	77.22
	222+530	75.20	75.12	75.27	75.89	75.80	75.36	78.13
	222+915	75.24	76.20	77.93	78.39	78.50	78.22	77.72
	223+570	77.15	77.29	77.26	77.12	77.48	78.34	79.67
	223+580	78.46	78.28	78.17	83.05	78.69	76.66	75.74
	223+615	78.02	77.91	77.64	75.13	77.55	77.54	81.26
	223+645	77.48	78.22	77.76	77.70	76.41	74.76	74.76
	224+125	77.29	77.98	78.05	78.81	80.12	80.36	81.55
	224+580	78.40	78.38	78.34	78.34	77.39	76.27	75.65
	224+955	78.01	78.33	78.30	79.86	82.65	82.77	83.25
	225+415	78.62	78.67	78.60	78.49	77.45	75.90	75.85
	225+590	78.95	78.94	78.79	80.25	83.84	83.90	84.53
	225+772	81.35	78.72	78.58	80.25	79.32	78.58	78.58
	225+775	82.20	80.76	79.44	80.03	84.02	83.99	84.06
	225+830	80.67	79.11	77.91	80.43	77.93	82.05	80.94
	226+275	80.32	80.51	80.78	80.75	82.57	84.23	83.86
	226+385	79.91	80.48	79.79	80.31	81.90	84.30	82.44
	226+950	80.63	80.58	80.65	81.21	82.14	83.98	83.97
	227+100	81.57	81.42	82.19	81.17	84.30	84.46	84.95
	227+425	80.03	80.04	79.96	80.71	82.01	82.84	83.74
	227+610	78.75	79.02	81.28	81.24	81.97	82.44	83.48
	227+745	80.23	80.19	81.42	81.31	82.01	83.30	83.66
	228+340	80.60	80.81	82.53	82.92	83.56	84.39	84.60
	229+100	81.08	81.14	82.56	82.91	83.50	83.98	84.51
	229+550	81.97	81.94	82.98	83.57	84.33	85.09	85.28
	229+925	81.81	81.74	83.02	83.45	83.83	84.05	84.88
	230+485	82.29	82.39	83.59	84.15	84.68	85.59	85.70
	230+895	83.27	83.20	83.43	83.76	83.95	83.28	84.60
	231+365	84.66	84.41	83.89	84.28	84.76	86.44	86.41

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 상 류	231+605	84.21	84.13	83.99	83.99	83.99	84.23	85.48
	231+925	83.98	84.25	84.49	85.19	85.19	85.59	86.15
	232+360	83.69	84.24	84.62	83.89	84.00	85.24	85.88
	232+905	84.40	85.02	85.18	85.69	85.58	86.47	86.36
	233+465	83.64	83.72	84.72	83.93	84.23	84.77	85.96
	234+130	85.32	85.27	85.56	85.99	85.89	87.02	86.62
	234+585	85.66	85.64	86.07	85.82	85.83	85.59	86.83
	235+060	86.35	85.98	86.37	86.01	85.96	87.55	86.94
	235+420	86.55	86.51	86.42	86.37	85.91	86.31	86.77
	235+450	86.55	86.57	86.41	85.32	85.57	85.33	82.23
	235+530	87.55	87.04	86.88	86.60	86.88	89.36	79.16
	235+570	87.79	86.88	86.88	86.85	85.29	84.12	73.35
	235+595	87.73	87.12	87.06	86.95	86.79	86.51	89.20
	235+710	87.18	87.18	87.16	87.15	87.30	87.51	87.29
	236+055	86.83	86.83	87.13	86.99	87.41	87.62	88.94
	236+505	87.71	87.62	87.62	87.61	87.68	88.15	88.93
	237+040	86.90	87.42	87.84	87.71	88.36	88.17	89.44
	237+455	87.95	87.89	88.30	88.15	88.63	88.79	89.50
	237+865	88.40	88.30	88.27	88.29	88.76	88.63	89.86
	238+335	88.56	88.63	89.03	88.72	89.29	89.30	89.97
	238+780	87.80	88.36	87.98	88.92	89.20	89.60	90.47
	239+170	89.73	89.36	89.32	89.24	89.73	90.15	91.02
	239+220	89.23	88.72	88.50	89.34	89.63	90.03	89.92
	239+635	89.13	90.17	89.57	89.40	89.70	90.25	91.50
	240+070	88.70	88.98	88.77	89.95	90.24	90.70	91.21
	240+295	87.63	90.08	89.92	90.05	90.32	90.97	91.63
	240+825	89.31	89.75	89.50	90.10	90.48	90.82	91.94
	241+055	90.42	90.65	90.60	90.77	91.01	91.70	92.35
	241+220	87.87	90.07	89.59	90.40	90.86	91.27	92.26
	241+765	90.98	90.99	90.97	90.98	91.21	91.92	92.51
	242+610	91.10	91.17	91.14	91.28	91.61	92.21	92.98
	243+355	91.92	91.32	91.34	91.37	91.45	91.94	92.48
	243+940	93.53	93.32	93.05	93.07	93.12	93.21	93.77
	244+360	91.75	92.02	92.05	92.23	92.38	93.18	93.65
	244+830	93.61	93.07	92.88	92.98	93.13	93.33	94.72
	244+870	93.19	92.18	91.98	92.57	92.70	93.36	93.85
	245+305	95.31	94.37	93.89	93.99	94.26	94.57	95.71
	245+840	95.77	95.76	95.85	95.99	96.09	96.29	95.96
갑 천	246+330	94.91	95.27	95.74	96.37	96.79	97.00	95.57
	246+365	95.65	93.74	93.84	93.91	93.99	94.56	93.21
	0+000	19.65	19.64	19.88	19.87	19.89	19.92	19.96
	0+160	19.75	19.63	19.49	19.49	19.28	19.32	19.32
	0+390	20.53	20.40	20.31	20.18	20.17	20.22	20.29
	0+570	19.91	20.41	20.17	20.19	20.11	20.14	20.17
	0+770	20.25	20.21	20.22	20.08	20.13	20.16	20.20

건설기술부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
갑 천	0+980	21.21	20.98	20.56	20.57	20.57	20.55	20.58
	1+015	20.76	20.61	20.36	20.19	20.24	20.27	20.31
	1+220	20.20	20.48	20.31	20.30	20.23	20.27	20.30
	1+450	19.64	20.86	20.41	20.35	20.35	20.37	20.38
	1+710	20.19	20.20	19.95	20.00	20.01	20.10	20.19
	1+950	21.81	21.81	21.22	21.21	21.20	21.20	21.20
	2+205	21.96	21.95	21.95	21.77	21.77	21.77	21.77
	2+455	22.83	22.33	22.35	22.14	22.16	22.16	22.15
	2+535	23.23	22.54	22.55	22.45	22.45	22.45	22.44
	2+640	22.71	22.33	22.28	22.24	22.12	22.12	22.11
	2+820	22.20	22.32	22.34	22.24	22.22	22.21	22.21
	2+985	22.03	22.14	22.37	22.21	22.18	22.18	22.16
	3+125	22.65	22.60	22.43	22.33	22.33	22.33	22.33
	3+335	22.86	22.77	22.77	22.67	22.68	22.68	22.70
	3+550	23.52	23.50	23.06	22.90	22.91	22.91	22.91
	3+755	23.60	23.59	23.38	23.29	23.29	23.28	23.28
	3+915	23.77	23.13	22.86	22.79	22.78	22.77	22.76
	3+975	23.39	23.35	23.13	23.09	23.11	23.09	23.09
	4+205	23.49	23.24	23.22	23.10	23.10	23.09	23.09
	4+395	23.74	23.51	23.13	23.05	23.08	23.04	23.00
	4+595	23.40	23.33	23.41	23.41	23.36	23.37	23.32
	4+775	21.34	24.07	23.80	23.78	23.77	23.77	23.74
	4+955	23.50	23.20	22.91	22.91	22.86	22.87	22.87
	5+003	23.70	24.78	23.99	24.15	24.16	24.17	24.18
	5+005	23.70	23.21	22.96	23.06	23.01	23.04	23.04
	5+165	24.43	24.90	24.45	24.46	24.48	24.48	24.47
	5+345	25.22	24.97	24.43	24.25	24.18	24.18	24.09
	5+465	24.01	25.24	24.96	24.63	24.61	24.61	24.49
	5+635	23.39	23.49	24.34	24.16	24.11	24.06	23.85
	5+815	25.80	25.61	24.94	24.63	24.55	24.55	24.51
	5+975	26.05	25.62	25.27	25.28	25.17	25.08	24.79
	6+145	26.47	26.05	25.64	25.64	25.51	25.41	25.31
	6+315	26.11	25.93	25.88	25.45	25.27	25.09	24.75
	6+515	25.29	25.38	25.53	25.51	25.44	25.34	24.97
	6+710	26.61	26.58	26.26	25.71	25.40	25.11	24.90
	6+880	27.20	26.98	27.00	26.35	26.00	25.82	25.58
	7+100	27.79	27.41	27.10	26.51	26.51	26.29	26.13
	7+130	27.80	27.36	27.27	26.60	26.42	26.24	26.12
	7+150	27.79	27.26	27.08	26.64	26.56	26.32	26.10
	7+160	27.84	27.49	27.36	26.60	26.33	26.15	26.06
	7+285	27.85	27.84	26.93	26.74	26.51	26.30	26.14
	7+505	27.92	28.14	27.48	26.65	26.22	26.21	26.21
	7+563	29.32	28.21	27.62	27.62	27.62	27.62	27.62
	7+565	30.32	28.63	28.63	28.63	28.63	28.63	28.63
	7+715	28.56	26.91	26.99	26.94	26.93	26.90	26.90

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
갑 천	7+905	29.02	28.53	28.25	28.24	28.27	28.11	28.11
	8+125	28.63	28.33	28.10	28.11	28.10	28.08	28.08
	8+365	28.00	28.33	27.85	27.90	28.10	28.09	28.15
	8+555	28.20	28.46	28.25	28.29	28.33	28.29	28.32
	8+775	28.13	28.51	28.32	28.37	28.46	28.41	28.46
	8+985	28.44	28.66	28.53	28.57	28.64	28.60	28.69
	9+190	28.56	28.72	28.61	28.64	28.72	28.71	28.81
	9+370	28.60	28.63	28.56	28.59	28.68	28.69	28.85
	9+550	28.61	28.66	28.60	28.62	28.71	28.73	28.92
	9+720	28.62	28.90	28.89	28.90	29.01	29.04	29.27
	9+905	28.83	28.95	28.92	29.04	29.21	29.27	29.39
	10+045	29.14	29.09	28.97	29.00	29.14	29.25	29.55
	10+105	30.55	29.47	29.24	29.25	29.36	29.39	29.55
	10+225	29.77	29.14	29.09	29.14	29.35	29.44	29.75
	10+415	29.58	29.51	29.45	29.50	29.65	29.70	29.82
	10+595	28.29	28.86	28.96	29.22	29.63	29.70	29.92
	10+765	27.85	29.53	29.40	29.49	29.75	29.80	29.77
	10+925	29.16	29.29	29.56	29.81	30.12	30.14	30.15
	11+105	30.89	30.50	30.15	30.23	30.31	30.26	30.04
	11+325	30.80	30.68	30.87	30.81	30.71	30.74	30.75
	11+415	31.04	30.81	30.75	30.57	30.33	30.27	29.93
	11+545	31.20	31.24	31.25	31.49	31.60	31.63	31.75
	11+655	31.40	31.58	30.56	29.89	29.89	29.89	29.89
	11+725	31.30	31.24	30.09	30.15	30.33	30.93	30.95
	11+785	31.60	31.70	30.00	29.16	29.20	29.18	29.18
	11+817	31.10	31.43	31.49	34.69	31.96	31.19	31.11
	11+820	32.50	31.70	31.35	31.27	31.22	31.27	31.22
	11+960	31.44	31.28	31.00	32.11	32.17	31.75	31.67
	12+060	31.66	31.84	31.67	31.22	30.92	30.48	30.35
	12+160	31.81	31.79	31.20	30.93	32.09	31.60	31.26
	12+210	31.92	31.02	30.60	29.99	29.85	29.84	29.85
	12+260	31.53	31.15	31.77	32.96	32.83	32.90	32.83
	12+355	31.71	31.72	31.47	30.62	30.50	29.98	29.98
	12+460	31.67	31.46	32.33	33.49	32.84	34.02	34.02
	12+560	31.60	31.58	31.11	31.06	30.91	30.48	29.76
	12+660	31.46	31.90	32.63	32.75	32.82	32.86	34.05
	12+760	31.71	31.69	31.80	30.74	30.20	30.08	30.07
	12+860	30.76	32.73	32.45	32.35	33.80	33.59	34.00
	12+916	32.71	31.46	31.99	30.63	30.73	30.76	30.57
	12+920	34.22	32.06	32.55	33.62	32.70	31.80	31.68
	12+960	33.50	32.22	32.85	32.25	33.44	29.77	29.76
	13+035	33.70	33.25	33.04	33.50	33.01	33.01	34.45
	13+165	33.64	33.24	32.68	33.03	34.02	34.13	33.55
	13+265	33.77	33.56	33.09	32.15	32.04	31.95	31.96
	13+355	33.80	33.68	33.23	34.55	33.52	35.54	35.15

건설기술

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
갑 천	13+460	33.62	33.97	32.67	31.80	31.73	31.72	31.74
	13+555	33.47	33.45	32.76	34.53	33.53	33.64	33.53
	13+673	35.29	34.21	33.31	33.33	33.37	33.31	33.38
	13+675	35.61	33.64	36.39	34.75	34.87	34.90	34.98
	13+755	34.10	34.30	32.09	32.13	32.10	32.40	32.14
	13+850	34.43	34.30	33.45	34.43	34.59	34.52	34.42
	13+955	34.65	34.59	34.00	34.81	34.00	33.83	34.13
	14+060	34.16	34.63	34.33	34.93	34.80	35.21	34.87
	14+150	34.27	34.42	34.50	34.22	33.89	33.55	33.36
	14+250	35.41	34.99	34.83	35.17	34.95	34.82	34.82
	14+345	35.47	35.01	34.98	34.63	34.13	33.93	33.88
	14+440	35.61	35.25	35.23	35.30	35.21	35.11	34.97
	14+540	35.84	35.59	35.71	34.34	34.90	34.65	34.51
	14+635	35.76	35.73	35.05	35.07	34.87	34.58	34.74
	14+720	35.83	35.36	35.00	34.83	34.81	34.85	34.38
	14+830	36.15	36.01	35.26	35.29	35.06	35.32	34.99
	14+943	36.86	35.41	35.52	35.69	35.41	35.53	34.53
	14+945	38.12	37.19	36.05	35.88	35.66	35.67	35.66
	15+045	35.88	35.66	35.69	36.00	36.01	35.46	34.64
	15+140	35.90	37.04	35.20	34.01	33.40	33.37	33.37
	15+235	36.04	36.27	36.37	36.06	36.05	36.01	35.99
	15+325	36.05	36.27	33.78	33.45	33.45	33.45	33.44
	15+375	36.27	38.04	37.18	37.16	37.14	37.13	37.12
	15+420	37.18	37.01	34.53	34.53	34.53	34.53	34.53
	15+525	37.20	38.15	39.23	39.21	39.21	39.21	39.20
	15+620	37.22	36.14	34.51	34.49	34.49	34.49	34.49
	15+720	38.56	38.97	39.78	39.89	39.89	39.89	39.83
	15+820	37.62	37.42	35.81	34.91	34.88	34.88	34.88
	15+925	37.74	38.68	39.79	39.81	39.79	39.76	39.75
	16+021	38.53	37.35	37.17	37.06	37.06	37.06	37.06
	16+025	40.03	38.95	41.25	41.21	41.21	41.22	41.20
	16+125	38.51	38.34	37.15	36.84	36.56	35.89	36.31
	16+225	39.45	39.29	39.31	39.29	39.29	39.29	39.28
	16+325	39.47	39.43	40.95	40.93	40.93	40.93	40.92
	16+435	39.70	39.54	39.40	38.35	37.56	37.23	37.20
	16+535	39.84	39.16	40.54	40.70	40.61	40.70	40.79
	16+635	39.32	39.22	38.78	38.88	38.77	38.83	39.31
	16+735	39.44	39.44	39.68	40.24	39.91	39.84	40.02
	16+835	39.78	39.64	39.48	40.31	39.72	40.27	40.03
	16+935	39.97	39.75	40.75	40.70	40.40	40.31	40.40
	17+035	38.83	39.31	39.69	40.83	40.67	40.60	40.74
	17+135	38.59	39.08	38.03	36.63	35.63	35.61	35.61
	17+240	39.08	39.70	40.69	38.99	40.06	39.88	37.23
	17+335	38.89	39.78	40.67	38.98	37.41	37.42	36.04
	17+435	39.30	39.60	40.43	40.93	42.06	41.99	42.31

한솔피앤씨

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
갑 천	17+535	40.12	39.69	40.65	39.86	37.30	37.16	37.16
	17+635	40.46	41.13	41.27	41.23	42.58	42.58	42.18
	17+735	40.27	40.06	40.01	38.79	38.29	38.29	38.29
	17+825	40.57	40.06	41.21	41.66	42.34	42.68	42.09
	17+925	40.97	40.18	39.74	39.07	39.07	39.07	39.07
	18+025	41.09	40.61	41.26	41.68	43.17	42.38	44.05
	18+130	40.42	39.96	39.79	38.60	38.60	38.60	38.69
	18+230	40.88	40.86	41.89	43.39	43.38	43.37	42.81
	18+330	40.86	40.86	39.83	39.14	39.14	39.14	39.14
	18+430	40.47	41.43	42.65	43.97	43.95	43.48	43.03
	18+530	41.72	41.20	40.67	40.39	40.07	40.07	40.07
	18+630	42.19	42.31	42.49	42.75	44.23	43.09	43.99
	18+720	42.06	41.97	40.48	39.99	39.40	39.40	39.40
	18+825	42.08	41.96	43.27	44.13	44.18	45.41	43.77
	18+925	41.99	41.99	41.72	41.32	41.63	40.92	40.88
	19+025	42.65	42.76	42.00	44.15	44.36	43.67	43.75
	19+125	42.16	42.11	42.19	41.38	42.18	42.81	42.49
	19+230	42.25	41.60	42.80	44.12	44.14	43.87	44.01
	19+335	43.09	43.21	42.27	42.32	42.93	43.05	42.39
	19+435	43.36	43.16	44.11	43.65	44.10	44.36	43.99
	19+535	42.94	42.55	41.97	41.92	42.29	42.37	42.08
	19+630	43.87	41.84	42.98	44.40	44.41	44.35	44.12
	19+740	43.21	42.46	42.47	43.20	43.91	44.06	43.69
	19+815	44.06	43.74	43.45	44.16	44.47	44.57	44.14
	19+925	44.21	44.00	44.16	44.08	44.35	44.41	44.35
	20+020	44.36	44.30	44.27	44.17	44.47	44.45	43.99
	20+115	44.36	44.41	44.35	44.05	44.50	44.48	44.63
	20+210	44.50	44.09	44.16	44.24	44.40	44.34	42.97
	20+315	44.70	44.58	44.53	44.48	44.71	44.72	45.65
	20+410	44.72	44.57	44.32	44.25	43.95	43.76	42.95
	20+510	44.33	44.22	44.06	44.87	44.63	44.57	45.38
	20+610	44.30	45.00	44.52	43.49	43.09	43.27	42.76
	20+690	44.77	45.23	44.34	45.38	44.80	44.82	42.93
	20+795	44.80	44.86	44.75	43.44	43.79	43.39	43.74
	20+895	44.15	45.52	46.08	45.71	44.58	44.38	44.38
	21+043	46.68	44.97	44.99	44.98	44.97	44.97	45.27
	21+045	47.48	45.78	44.92	45.23	44.94	44.93	44.92
	21+095	45.93	45.46	44.46	45.72	45.15	45.11	45.44
	21+200	46.05	45.94	46.07	45.56	44.99	44.85	44.81
	21+290	44.97	46.22	46.12	45.81	45.04	45.12	45.59
	21+390	45.60	45.97	45.62	44.79	43.83	43.78	43.76
	21+513	48.90	47.37	47.00	47.00	47.00	47.00	47.00
	21+515	49.60	47.70	47.70	46.55	46.25	46.25	46.25
	21+525	48.10	47.40	46.20	46.20	46.20	46.20	46.20
	21+585	48.55	48.10	47.30	47.29	47.28	47.29	47.29

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
갑 천	21+685	47.30	47.19	46.87	47.51	47.09	47.64	46.93
	21+745	47.37	47.43	47.20	45.45	46.62	46.56	46.66
	21+805	47.69	47.62	46.95	48.20	47.13	47.62	47.23
	21+850	47.61	48.39	48.70	47.23	47.10	47.01	47.13
	21+895	47.50	47.42	46.61	47.65	47.32	47.93	47.61
	21+900	47.97	47.71	47.56	47.42	46.96	44.20	45.79
	22+095	47.62	47.90	47.41	47.79	47.30	47.47	47.41
	22+290	49.04	48.84	48.46	48.20	47.55	48.09	47.37
	22+480	48.85	48.70	48.74	48.44	48.13	48.17	48.05
	22+670	49.28	49.16	48.66	48.21	47.35	48.32	47.84
	22+845	48.75	48.93	49.01	50.23	50.99	46.31	46.90
	22+885	49.32	49.36	49.15	49.08	50.09	49.73	48.42
	23+080	49.36	49.37	49.34	49.66	49.70	49.54	48.94
	23+280	49.40	49.79	49.82	49.97	50.16	49.95	49.58
	23+480	49.83	49.78	49.91	49.91	50.29	49.99	49.88
	23+670	50.69	50.38	50.41	50.44	50.53	50.47	50.52
	23+835	50.70	50.33	50.40	50.44	50.55	50.61	50.68
	23+880	50.94	50.82	50.85	50.87	50.92	50.97	50.97
	24+075	50.88	50.90	50.84	50.84	50.87	50.94	50.93
	24+265	51.05	51.16	51.10	51.09	51.10	51.14	51.10
	24+359	52.73	51.83	51.69	51.70	51.71	51.74	51.71
	24+365	54.03	51.31	51.55	51.63	51.68	51.76	51.77
	24+465	52.77	52.17	51.60	51.62	51.66	51.72	51.77
	24+665	52.20	52.12	51.88	51.90	51.90	51.94	51.98
	24+865	51.66	52.29	51.93	52.05	52.12	52.13	52.08
	25+060	51.79	51.97	52.23	52.21	52.20	52.23	52.29
	25+255	53.09	53.12	52.12	51.82	51.75	51.70	51.72
	25+445	53.36	53.56	52.65	52.19	52.20	52.27	52.29
	25+483	55.45	54.14	54.32	54.04	54.07	54.02	54.00
	25+485	56.45	54.86	53.69	53.72	53.78	53.85	53.96
	25+630	54.39	54.18	54.27	54.28	54.32	54.27	54.23
	25+850	53.65	53.96	53.96	53.82	53.75	53.78	53.77
	26+050	54.64	54.44	54.02	53.67	53.66	53.82	53.85
	26+095	55.70	55.69	54.61	54.63	54.46	54.47	54.32
	26+125	55.38	55.48	54.96	54.63	54.57	54.57	54.38
	26+175	55.64	55.61	54.54	54.42	54.34	54.26	54.08
	26+245	55.79	56.10	56.02	55.44	55.43	55.44	55.43
	26+301	57.16	54.67	54.42	54.40	54.39	54.38	54.38
	26+305	58.67	57.94	57.64	57.56	57.58	55.91	55.91
	26+455	54.40	54.24	53.35	52.40	51.68	51.64	51.64
	26+660	55.25	55.33	57.44	57.00	56.93	56.68	57.04
	26+865	57.00	57.20	57.32	57.09	57.06	56.60	56.24
	27+065	56.93	58.00	57.90	57.77	57.75	57.29	57.50
	27+270	55.97	57.03	56.38	56.31	56.54	56.49	56.31
	27+490	57.81	57.98	57.88	57.82	57.84	57.73	57.77

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
갑 천	27+675	57.91	57.96	58.12	57.93	57.98	58.09	58.05
	27+710	58.29	58.27	58.31	58.47	58.48	58.39	58.36
	27+885	58.44	58.44	58.49	58.47	58.45	58.45	58.44
	28+095	58.45	58.55	58.54	58.53	58.53	58.53	58.51
	28+295	58.90	58.91	58.92	58.92	58.91	58.92	58.91
	28+495	60.30	59.95	59.79	59.78	59.77	59.77	59.73
	28+605	60.02	60.08	59.86	59.86	59.80	59.80	59.81
	28+673	60.59	60.73	60.60	60.47	60.47	60.48	60.49
	28+675	61.89	59.74	59.31	59.31	59.31	59.33	59.32
	28+690	60.58	60.19	60.02	60.01	60.01	60.02	60.02
	28+895	60.30	60.48	60.62	60.49	60.50	60.51	60.51
	29+090	58.95	59.81	59.97	60.24	60.20	60.32	60.28
	29+285	60.76	60.73	60.81	60.52	60.52	60.50	60.48
	29+495	61.18	61.06	60.76	60.69	60.67	60.66	60.65
	29+680	61.25	61.25	61.27	60.96	60.91	60.76	60.71
	29+780	61.95	61.92	61.45	61.50	61.46	61.35	61.26
	29+895	62.12	62.09	61.70	61.52	61.41	61.40	61.25
	30+105	61.83	61.82	61.81	61.80	61.71	61.58	61.48
	30+290	63.57	63.55	62.26	61.57	61.53	61.57	61.54
	30+345	63.12	63.24	63.27	62.12	61.71	61.40	61.19
	30+388	64.64	63.64	62.27	62.26	62.26	62.26	62.26
	30+390	65.64	63.27	63.27	63.27	63.27	63.27	63.27
	30+480	63.90	63.46	61.54	61.51	61.51	61.51	61.51
	30+680	64.55	64.19	63.61	63.66	63.68	63.69	63.69
	30+880	64.00	64.23	63.53	63.22	63.16	63.10	62.95
	31+070	64.12	64.42	63.82	63.83	63.88	63.91	63.92
	31+290	65.08	64.57	63.93	63.68	63.70	63.69	63.47
	31+470	65.71	65.09	64.59	64.52	64.56	64.57	64.57
	31+675	65.15	65.09	65.11	64.39	64.45	64.45	64.39
	31+880	65.57	65.58	65.57	65.46	65.49	65.53	65.52
	32+085	65.86	65.63	65.63	65.50	65.46	65.08	64.74
	32+285	66.49	66.24	66.30	66.46	66.41	66.28	66.04
	32+485	66.68	66.69	66.61	66.64	66.58	65.99	65.61
	32+680	66.78	67.31	67.71	68.58	68.82	68.99	68.59
	32+698	68.87	66.80	67.18	67.60	67.46	67.40	67.01
	32+700	70.42	70.06	69.24	68.93	69.04	69.03	68.98
	32+885	67.53	67.45	67.41	66.13	65.61	65.24	65.04
	33+075	68.74	69.10	68.93	68.88	68.95	69.00	69.04
	33+270	69.18	69.54	69.22	68.95	68.84	68.76	68.64
유등천	33+315	69.77	69.86	69.62	69.32	69.17	69.10	69.04
	33+510	70.04	69.98	70.07	69.94	69.78	69.67	69.46
	0+000	31.10	28.08	30.69	30.74	30.68	30.70	30.75
	0+070	31.13	30.71	30.72	30.77	30.76	30.83	30.88
	0+280	32.51	32.34	32.31	31.42	31.45	31.45	31.52
	0+480	32.44	32.39	32.38	31.92	31.94	31.97	32.04

건설기술연구원

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
유등천	0+675	33.24	33.00	32.78	32.02	31.96	31.98	32.03
	0+895	33.39	32.88	32.86	32.35	32.35	32.42	32.48
	1+055	33.76	33.64	32.92	32.16	32.23	32.30	32.35
	1+245	34.09	33.84	33.49	32.79	32.80	32.85	32.88
	1+445	34.36	34.17	33.59	32.99	32.91	32.94	32.97
	1+635	34.28	34.13	33.87	33.45	33.22	33.27	33.31
	1+860	34.55	34.68	34.04	33.79	33.60	33.65	33.75
	1+880	34.56	34.55	34.21	34.02	33.77	33.87	33.96
	2+090	35.04	34.79	34.61	34.61	34.07	34.07	34.04
	2+300	34.90	34.84	34.96	34.88	34.86	34.65	34.64
	2+305	34.86	34.34	34.79	35.02	34.39	34.13	34.23
	2+480	35.28	34.98	35.08	35.09	35.07	35.10	35.11
	2+640	35.99	35.50	34.93	34.84	34.38	33.98	33.88
	2+790	35.28	35.24	35.26	35.03	35.08	35.17	35.17
	2+820	35.80	35.69	35.12	35.07	34.71	34.67	34.57
	3+015	35.73	35.70	35.26	35.17	35.02	35.09	35.18
	3+215	36.10	36.18	35.82	35.72	35.11	35.13	35.12
	3+255	36.16	35.90	35.93	35.70	35.21	35.27	35.29
	3+415	37.32	37.03	36.69	36.12	35.38	35.38	35.38
	3+615	36.70	36.71	36.87	36.77	36.71	35.78	35.67
	3+805	37.52	37.39	37.19	36.71	36.12	35.71	35.69
	4+005	37.86	37.82	37.86	37.39	36.97	36.08	36.09
	4+205	38.35	38.33	37.71	37.24	36.87	36.54	36.52
	4+400	38.96	39.29	39.50	39.68	39.85	39.83	39.80
	4+456	39.18	38.65	37.37	37.39	37.73	37.59	37.28
	4+460	41.48	39.58	39.58	39.58	39.72	39.65	39.59
	4+500	40.23	38.44	38.31	38.31	38.32	38.32	38.32
	4+600	41.07	40.66	39.94	40.08	40.15	40.16	40.24
	4+800	41.61	41.39	40.29	40.00	39.93	39.85	39.76
	5+000	41.51	41.59	40.79	40.54	40.54	40.56	40.50
	5+200	41.79	41.79	41.32	40.72	40.52	40.50	40.25
	5+395	42.24	42.14	41.81	41.35	41.09	41.11	40.81
	5+575	42.62	42.52	42.23	41.44	41.02	40.79	40.69
	5+790	42.84	42.82	42.77	42.33	42.17	42.14	41.33
	5+990	41.92	42.54	42.19	41.92	41.22	40.99	40.97
	6+130	43.04	43.04	42.93	42.93	42.53	42.29	41.61
	6+190	43.42	43.29	43.06	42.64	42.12	41.82	41.57
	6+400	43.55	43.67	43.74	43.70	43.69	43.59	43.14
	6+590	43.74	43.89	43.74	43.40	42.82	42.53	42.29
	6+780	44.50	44.77	44.48	44.36	44.32	44.33	44.31
	6+952	44.97	43.67	42.44	42.44	42.44	42.44	42.44
	6+960	45.57	44.59	44.00	43.35	43.97	43.80	43.39
	6+980	45.42	42.95	42.89	42.95	42.94	42.95	42.94
	7+010	45.26	45.38	46.63	46.74	46.94	47.16	47.23
	7+195	44.96	44.84	45.01	44.28	43.57	43.01	42.73

HS 건설

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
유등천	7+385	46.58	46.27	46.48	46.71	46.98	47.23	47.65
	7+575	46.38	46.34	46.61	46.72	46.72	46.60	46.20
	7+790	46.74	46.89	47.28	47.32	47.51	47.54	47.70
	7+820	47.30	47.45	47.57	47.63	47.65	47.61	47.50
	7+830	47.32	47.29	47.47	47.41	47.53	47.62	47.74
	7+980	48.02	47.94	48.10	48.20	48.21	48.27	48.34
	8+180	48.13	48.07	47.98	47.76	47.66	47.64	47.64
	8+390	49.68	50.04	50.69	49.44	50.87	50.83	50.82
	8+433	49.62	50.87	49.78	49.85	49.54	49.39	49.34
	8+440	52.54	50.00	50.05	49.80	49.86	49.90	49.82
	8+560	51.45	50.91	49.20	48.83	48.73	48.72	48.72
	8+780	51.88	51.79	51.38	51.43	51.56	51.60	51.68
	8+990	52.05	51.97	51.31	51.12	51.01	51.00	51.02
	9+010	52.25	52.15	51.50	51.25	51.33	51.36	51.60
	9+190	52.38	52.40	52.29	51.91	51.65	51.70	51.73
	9+395	52.65	52.78	52.95	52.96	52.91	52.92	52.77
	9+595	52.90	52.86	52.84	52.79	52.72	52.72	52.67
	9+795	52.93	52.85	52.79	52.79	52.80	52.79	52.59
	9+995	53.79	53.82	53.79	53.65	53.50	53.41	53.28
	10+195	54.00	54.04	54.08	54.10	54.04	53.79	53.43
	10+400	55.51	55.28	55.13	55.20	55.14	54.84	54.39
	10+585	55.98	55.79	55.53	55.54	55.25	55.02	54.67
	10+735	56.20	56.18	56.31	56.43	56.25	55.83	55.62
	10+785	56.40	56.34	56.39	56.14	55.84	55.65	55.36
	10+985	56.68	56.99	56.62	56.59	56.61	56.52	57.58
	11+043	56.76	57.32	56.90	55.89	55.48	55.44	55.41
	11+045	58.40	57.24	58.01	58.28	57.14	56.86	56.91
	11+195	55.56	55.39	53.94	52.98	52.85	52.86	52.86
	11+390	57.49	57.90	58.17	58.23	58.10	58.10	57.77
	11+515	58.03	57.67	56.19	56.30	56.19	55.71	55.32
	11+520	58.60	60.10	56.35	62.40	63.28	64.22	63.35
	11+528	58.60	55.55	55.55	55.55	46.96	41.53	41.53
	11+530	60.50	59.40	60.72	62.10	62.10	62.10	62.10
	11+790	57.63	58.56	56.71	55.33	55.35	55.35	55.36
	11+960	58.35	59.09	58.69	59.39	59.40	59.40	59.41
	12+180	60.30	60.31	60.39	60.49	60.55	60.57	60.71
	12+370	60.15	60.15	60.27	60.47	60.70	60.80	61.26
	12+575	60.34	60.45	60.56	60.69	60.85	61.01	61.16
	12+780	60.69	60.85	60.97	61.05	61.13	61.37	61.19
	12+970	61.85	61.84	61.91	61.94	62.09	62.28	62.28
	13+180	62.95	62.20	61.84	61.86	62.01	62.12	62.11
	13+230	63.23	62.88	62.55	62.56	62.91	62.90	62.89
	13+275	63.50	63.24	62.87	62.83	62.94	62.98	62.97
	13+370	63.80	63.76	63.46	63.39	63.39	63.47	63.47
	13+570	63.13	63.23	63.17	63.11	62.91	62.63	62.65

건설기술

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
유등천	13+750	64.13	64.22	64.33	64.29	64.18	63.90	63.91
	14+030	64.81	64.58	64.18	63.87	63.70	63.35	62.87
	14+190	65.91	66.13	66.04	65.56	64.47	63.89	63.98
	14+241	67.27	65.48	65.35	65.08	64.71	65.01	64.53
	14+245	67.77	66.42	66.05	65.04	65.02	65.01	65.01
	14+390	65.46	65.41	65.07	65.20	65.05	64.48	63.76
	14+555	66.50	66.60	66.03	64.82	64.16	63.88	63.76
	14+590	68.24	66.98	66.49	65.96	65.86	65.87	65.50
	14+800	68.37	67.95	67.22	65.83	65.64	65.61	65.61
	14+958	69.95	69.97	67.87	67.87	67.87	67.87	67.87
	14+960	69.95	68.88	68.87	68.87	68.87	68.87	68.87
	15+000	70.17	70.03	67.41	67.41	67.41	67.41	67.41
	15+200	68.65	68.78	68.65	68.63	68.60	68.58	68.55
미호천	15+400	70.27	69.58	68.22	67.58	67.53	67.52	67.52
	15+600	71.32	69.93	68.76	68.56	68.56	68.56	68.56
	0+000	11.52	11.60	11.54	11.54	12.23	11.58	11.91
	0+200	11.68	11.75	11.74	11.68	11.10	11.58	11.41
	0+235	13.26	13.16	12.78	12.72	12.83	11.64	11.30
	0+240	14.12	13.11	12.87	12.80	12.55	12.60	13.01
	0+390	10.86	10.96	11.13	11.38	11.04	11.34	11.38
	0+630	11.18	11.45	11.49	11.64	12.78	12.37	12.68
	0+890	13.65	13.26	12.97	12.67	12.68	12.67	12.64
	0+920	13.22	13.11	12.82	12.68	12.07	13.23	13.10
	1+130	13.88	13.66	13.18	12.90	12.90	12.93	11.76
	1+330	13.44	13.34	13.08	12.86	12.98	13.49	13.54
	1+560	12.81	12.71	12.32	12.40	12.04	10.82	10.22
	1+790	12.22	12.15	12.04	12.41	13.85	13.28	14.17
	2+010	11.53	11.51	12.20	12.79	11.49	9.83	9.00
	2+150	11.36	11.48	13.22	13.14	12.61	14.80	14.77
	2+430	12.41	12.45	12.99	13.03	12.70	11.65	10.52
	2+630	12.04	12.05	13.40	13.51	13.63	14.73	14.57
	2+850	12.98	13.01	13.22	13.18	13.04	12.62	12.28
	3+010	12.75	13.08	13.54	13.62	14.50	14.47	14.90
	3+200	12.97	13.70	13.66	13.67	13.26	12.83	11.33
	3+390	13.24	13.50	13.48	13.64	14.92	14.66	15.92
	3+620	12.93	13.49	13.67	13.74	12.93	12.32	10.60
	3+770	13.19	13.53	13.50	13.65	14.08	14.80	15.94
	3+950	13.12	13.17	13.40	13.54	13.04	12.55	11.44
	4+150	12.06	13.05	13.19	13.57	14.27	15.08	15.48
	4+310	12.69	13.44	13.67	13.80	12.63	12.62	12.71
	4+440	13.33	13.72	13.77	13.98	14.80	14.89	15.94
	4+610	13.77	13.95	14.14	14.32	13.89	13.99	13.81
	4+840	13.25	13.41	13.54	13.79	14.40	15.33	15.80
	5+020	13.15	13.04	13.37	13.64	13.03	12.99	12.95
	5+230	13.60	13.72	13.94	14.15	15.28	15.23	15.84

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
미호천	5+440	13.91	13.92	14.18	14.44	13.92	14.16	13.77
	5+660	13.97	13.88	14.15	14.37	14.93	15.87	16.28
	5+920	14.26	14.23	14.50	14.77	13.57	13.37	13.18
	6+100	13.99	14.12	14.41	14.61	15.44	15.59	15.91
	6+280	14.28	14.10	14.37	14.66	13.94	14.68	13.60
	6+480	14.34	14.22	14.42	14.61	15.83	16.18	15.81
	6+680	14.00	14.03	14.42	14.69	13.83	13.78	13.62
	6+900	15.01	14.98	15.18	15.53	15.76	15.60	15.25
	7+130	14.89	14.79	15.07	15.34	14.92	14.81	13.49
	7+390	14.34	14.37	14.83	15.00	15.03	15.58	17.00
	7+620	13.96	14.77	14.98	15.15	14.05	14.43	14.03
	7+860	13.34	14.86	15.44	15.45	16.60	16.38	17.07
	8+060	14.74	14.65	14.90	14.93	14.55	14.11	12.63
	8+240	15.59	15.44	15.66	15.74	16.32	16.14	17.95
	8+380	15.73	15.04	15.28	15.05	14.72	14.82	14.14
	8+560	15.84	15.48	15.68	15.65	15.74	15.81	15.66
	8+760	16.05	15.59	15.65	15.67	15.81	15.59	15.54
	8+890	15.83	15.23	15.28	15.36	15.59	16.08	15.85
	9+040	17.33	16.72	15.43	14.79	14.70	14.71	14.78
	9+045	18.53	15.83	15.81	15.77	15.78	15.77	16.90
	9+090	14.85	14.64	14.92	13.28	13.65	13.96	16.84
	9+120	16.49	16.43	15.82	15.79	15.81	15.87	16.40
	9+290	16.91	16.49	16.02	16.01	15.97	15.95	16.21
	9+490	16.79	16.71	16.48	16.48	16.53	16.36	16.56
	9+680	15.90	15.83	15.53	15.50	15.61	15.53	15.93
	9+840	17.91	16.97	16.75	16.71	16.69	16.66	17.00
	9+900	16.41	16.70	16.52	16.56	16.56	16.45	16.90
	10+080	16.30	16.21	16.00	16.06	16.22	16.08	16.41
	10+240	17.48	17.39	17.02	16.94	16.96	16.82	17.31
	10+480	17.79	17.71	17.32	17.30	17.27	17.16	17.56
	10+690	17.77	17.55	17.30	17.27	17.23	17.14	17.39
	10+890	17.82	17.64	17.51	17.44	17.41	17.22	17.44
	11+120	18.08	18.02	17.98	17.93	17.86	17.75	17.88
	11+310	17.91	17.94	17.97	17.92	17.87	17.76	17.97
	11+520	18.13	17.98	18.00	17.98	17.92	17.84	17.85
	11+710	18.23	18.18	18.25	18.21	18.18	18.12	18.17
	11+900	16.93	17.70	17.95	17.95	17.87	17.67	17.76
	12+140	17.55	17.84	17.98	18.00	17.95	17.88	17.96
	12+340	16.39	18.00	18.18	18.16	18.01	17.80	17.90
	12+560	16.36	17.84	17.99	17.99	17.93	17.84	17.91
	12+850	17.46	18.21	18.41	18.40	18.24	17.93	18.14
	13+110	18.33	18.36	18.51	18.50	18.39	18.26	18.33
	13+320	18.27	18.40	18.55	18.53	18.33	18.20	18.31
	13+530	17.63	18.26	18.50	18.45	18.30	18.19	18.37
	13+780	17.53	17.96	18.30	18.21	17.89	17.66	18.03

건설기술연구원

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
미호천	14+020	18.80	18.79	18.92	18.88	18.75	18.72	18.80
	14+160	18.70	18.75	18.82	18.74	18.69	18.38	18.44
	14+360	19.25	19.25	19.34	19.28	19.27	19.25	19.25
	14+550	18.48	18.64	18.67	18.55	18.48	18.42	18.18
	14+740	19.06	19.13	19.23	19.16	19.15	19.11	19.44
	14+930	19.55	19.51	19.54	19.51	19.22	18.95	18.64
	15+110	19.88	19.77	19.79	19.79	19.77	19.76	19.70
	15+270	19.78	19.69	19.69	19.45	19.06	18.77	18.60
	15+550	19.24	19.27	19.38	19.51	19.43	19.35	19.51
	15+730	19.54	19.28	19.08	18.16	17.36	17.00	16.99
	15+830	19.48	21.26	20.37	20.31	20.26	20.24	19.63
	15+940	19.30	19.11	17.64	16.55	16.52	16.52	16.54
	15+950	21.09	14.54	19.35	18.96	18.98	19.05	18.68
	15+960	19.53	19.53	17.39	16.89	16.79	16.82	17.09
	16+150	19.43	19.42	20.13	20.01	20.09	20.20	19.87
	16+360	21.04	20.60	20.29	20.10	19.86	19.84	19.37
	16+500	21.08	20.42	20.45	20.48	20.45	20.43	19.91
	16+680	20.53	20.11	19.99	19.50	19.17	19.17	18.78
	16+850	21.49	21.21	20.92	20.92	20.76	20.77	20.45
	16+970	20.35	20.35	20.14	19.59	19.45	19.46	19.24
	17+180	20.59	20.63	20.37	20.32	20.17	20.14	19.82
	17+380	21.29	20.93	20.78	20.33	20.27	20.28	20.17
	17+570	21.31	21.43	21.29	20.95	20.77	20.78	20.46
	17+760	20.95	20.94	20.95	20.67	20.68	20.69	20.62
	17+980	21.30	21.32	21.25	20.81	20.54	20.57	20.39
	18+170	21.02	20.93	21.01	20.85	20.85	20.88	20.78
	18+370	22.15	21.99	21.86	21.38	21.14	21.14	21.06
	18+570	21.27	21.42	21.38	21.12	21.06	21.17	21.10
	18+770	21.15	21.53	21.48	21.06	20.96	20.82	20.82
	18+960	21.68	21.82	21.77	21.47	21.45	21.46	21.46
	19+160	22.02	22.08	22.09	21.78	21.53	21.36	21.36
	19+360	21.76	21.91	21.95	21.70	21.58	21.57	21.56
	19+530	21.70	21.62	21.67	21.42	21.31	20.97	20.90
	19+580	22.34	22.36	21.97	21.74	21.67	21.60	21.59
	19+600	22.34	22.05	22.14	21.91	21.82	21.48	21.41
	19+790	22.81	22.40	22.27	22.11	21.83	21.83	21.83
	20+010	23.18	22.56	22.56	22.24	22.24	22.18	22.13
	20+230	23.09	22.68	22.59	22.47	22.25	22.21	22.21
	20+430	23.42	22.91	22.83	22.57	22.54	22.54	22.54
	20+650	23.53	23.25	22.94	22.71	22.47	22.47	22.46
	20+770	23.32	23.21	23.09	22.95	22.78	22.79	22.78
	20+840	23.35	23.07	22.75	22.34	22.12	22.12	22.12
	21+070	23.62	23.34	23.26	23.13	23.02	23.02	23.02
	21+280	24.17	23.94	23.63	23.22	23.04	23.01	23.02
	21+450	23.37	23.27	23.28	23.07	23.06	23.07	23.10

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
미호천	21+660	23.14	23.43	23.10	22.96	22.83	22.83	22.84
	21+880	24.04	24.00	23.87	23.60	23.60	23.61	23.62
	22+080	23.27	23.69	23.33	23.30	23.25	23.26	23.29
	22+280	23.90	24.33	24.15	23.91	23.88	23.91	23.94
	22+460	23.65	23.80	23.59	23.56	23.56	23.61	23.61
	22+640	23.92	24.08	23.92	23.54	23.55	23.58	23.61
	22+830	24.39	24.55	24.34	24.35	24.37	24.39	24.40
	23+020	24.26	24.36	24.18	23.77	23.76	23.78	23.79
	23+220	24.46	24.78	24.48	24.44	24.45	24.46	24.45
	23+420	24.27	24.37	24.09	23.77	23.77	23.78	23.77
	23+600	24.75	24.38	23.96	23.99	24.02	24.03	24.01
	23+810	24.35	24.83	24.19	24.00	24.02	24.03	24.04
	24+010	24.31	24.32	24.32	24.31	24.36	24.41	24.45
	24+150	25.51	25.32	24.73	24.44	24.44	24.46	24.47
	24+350	25.16	25.00	24.65	24.73	24.74	24.74	24.77
	24+530	25.75	25.57	24.95	24.93	24.92	24.91	24.85
	24+710	25.55	25.43	25.02	25.09	25.10	25.08	25.09
	24+920	25.62	25.62	25.06	25.08	25.06	25.06	24.71
	25+120	25.50	25.46	25.20	25.23	25.20	25.21	25.22
	25+320	25.76	25.74	25.14	25.15	25.12	25.07	24.16
	25+520	25.80	25.92	25.74	25.76	25.73	25.72	25.68
	25+690	25.64	25.63	25.24	25.09	24.94	24.92	24.01
	25+710	25.35	25.51	25.44	25.45	25.44	25.41	25.25
	25+930	26.05	25.96	25.73	25.43	25.17	24.77	24.47
	26+150	26.33	26.54	26.64	26.44	26.31	26.05	25.97
	26+360	25.54	25.58	25.45	24.52	24.32	24.36	24.33
	26+570	26.31	27.95	26.61	26.24	25.98	25.69	25.25
	26+615	28.37	26.90	26.20	26.20	26.20	26.20	26.20
	26+620	30.85	28.67	28.67	28.67	28.67	28.67	28.67
	26+800	29.45	27.63	27.34	27.35	27.35	27.35	27.34
	27+010	29.30	28.75	28.53	28.59	28.59	28.59	28.59
	27+230	28.18	27.56	26.93	26.92	26.87	26.87	26.86
	27+520	29.37	28.98	28.57	28.58	28.58	28.58	28.57
	27+760	28.95	28.81	28.49	28.49	28.49	28.49	28.48
	27+890	28.43	28.46	28.20	28.32	28.35	28.38	28.40
	28+210	28.95	28.98	28.68	28.73	28.73	28.71	28.68
	28+410	28.53	28.36	28.14	28.27	28.29	28.38	28.43
	28+630	29.26	29.32	28.84	28.86	28.86	28.86	28.86
	28+840	28.79	28.77	28.65	28.68	28.72	28.76	28.76
	29+000	28.37	28.36	29.01	29.06	29.06	29.07	29.07
	29+180	28.29	28.30	28.71	28.74	28.76	28.79	28.78
	29+370	28.32	28.89	29.13	29.20	29.20	29.21	29.21
	29+670	28.67	29.48	29.39	29.45	29.47	29.47	29.44
	29+870	29.00	29.13	29.54	29.64	29.64	29.63	29.56
	30+090	29.91	29.79	29.88	29.95	29.95	29.93	29.86

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
미호천	30+330	29.98	29.88	29.95	30.03	30.03	30.01	29.94
	30+390	30.07	29.99	30.02	30.11	30.11	30.10	30.02
	30+550	30.05	30.02	30.05	30.11	30.11	30.10	30.03
	30+730	28.52	29.07	29.74	30.11	30.17	30.16	30.04
	30+910	29.82	29.83	29.91	29.99	29.99	29.97	29.92
	31+120	29.68	29.69	29.86	30.03	30.04	30.03	29.91
	31+290	29.35	29.54	29.73	29.82	29.81	29.79	29.73
	31+450	29.50	29.54	29.64	29.84	29.88	29.87	29.75
	31+650	30.49	30.47	30.47	30.49	30.49	30.46	30.42
	31+680	30.46	30.26	30.27	30.32	30.33	30.32	30.25
	31+830	30.61	30.42	30.34	30.48	30.53	30.53	30.39
	32+060	30.56	30.52	30.43	30.47	30.45	30.42	30.37
	32+150	30.25	30.34	30.37	30.53	30.57	30.56	30.41
	32+220	30.71	30.74	30.67	30.73	30.73	30.69	30.62
	32+420	30.97	30.99	31.05	31.09	31.08	31.05	30.97
	32+610	30.54	30.64	30.84	31.00	30.98	30.92	30.78
	32+740	30.93	30.88	30.82	30.85	30.84	30.80	30.77
	32+910	30.72	30.68	30.66	30.74	30.71	30.64	30.54
	33+080	30.15	30.93	31.07	31.16	31.14	31.07	30.98
	33+270	30.93	31.26	31.28	31.33	31.29	31.23	31.15
	33+420	30.83	30.91	31.07	31.18	31.15	31.03	30.90
	33+630	30.49	31.40	31.45	31.50	31.45	31.40	31.37
	33+840	31.21	31.47	31.71	31.82	31.76	31.55	31.36
	34+030	31.61	31.59	31.68	31.73	31.65	31.57	31.51
	34+240	31.16	32.07	32.10	32.17	32.09	31.92	31.77
	34+390	31.25	31.95	32.01	32.03	31.91	31.74	31.67
	34+570	31.74	31.63	31.78	31.83	31.74	31.64	31.62
	34+750	31.98	32.35	32.24	32.27	32.07	31.94	31.89
	34+940	31.94	31.93	32.42	32.53	32.38	32.25	32.27
	35+130	31.78	32.67	32.58	32.56	32.22	31.88	31.91
	35+330	32.39	32.40	32.54	32.59	32.39	32.24	32.24
	35+530	32.33	32.21	32.31	32.28	31.98	31.74	31.49
	35+740	32.59	32.61	32.81	32.85	32.52	32.50	32.49
	35+880	32.52	32.48	32.50	32.46	32.31	32.28	31.89
	36+120	32.98	32.92	32.95	33.06	32.76	32.80	32.78
	36+300	33.12	32.72	33.10	32.95	32.70	32.79	32.70
	36+490	33.29	33.34	33.36	33.42	33.22	33.28	33.18
	36+680	32.85	32.99	33.31	33.13	32.98	32.95	32.86
	36+880	33.29	33.60	33.80	33.74	33.60	33.57	33.39
	37+080	33.09	33.63	33.60	33.38	33.17	33.06	33.04
	37+290	32.14	32.10	33.71	33.75	33.50	33.28	33.12
	37+490	35.74	34.62	33.70	33.05	33.04	33.05	33.05
	37+710	34.71	34.19	34.16	33.63	33.08	32.96	32.79
	37+930	35.57	34.90	34.18	32.90	33.46	33.60	33.53
	38+140	35.90	35.20	34.57	33.91	33.39	33.25	33.22

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
미호천	38+340	35.35	35.32	33.66	32.98	33.46	33.56	33.49
	38+510	35.50	35.62	34.82	34.01	33.52	33.43	33.43
	38+710	35.73	35.09	34.10	33.37	33.27	33.27	33.20
	38+900	36.24	36.47	35.00	33.46	33.46	33.46	33.46
	39+090	37.03	35.52	34.47	34.37	34.37	34.37	34.37
	39+110	37.16	35.33	34.94	34.50	34.50	34.50	34.50
논산천	39+330	36.46	36.07	35.11	33.81	33.81	33.81	33.81
	39+485	36.50	33.87	33.98	33.87	33.87	33.87	33.87
	0+000	-3.84	-4.11	-4.35	-4.58	-3.40	-3.99	-4.97
	0+165	-2.44	-3.60	-3.57	-3.58	-3.59	-3.60	-3.61
	0+170	-2.44	-3.61	-3.60	-3.60	-3.55	-1.69	0.54
	0+220	-4.16	-4.82	-5.15	-5.30	-4.48	-5.21	-5.42
	0+420	-2.12	-3.12	-3.28	-3.28	-3.04	-3.27	-2.57
	0+620	-2.47	-2.61	-3.59	-3.59	-3.58	-3.59	-3.49
	0+820	-1.59	-2.69	-2.69	-2.69	-2.69	-2.68	-2.69
	0+835	-1.64	-2.74	-2.75	-2.75	-2.75	-2.72	-2.75
	0+845	-3.29	-3.46	-4.38	-4.39	-4.39	-4.39	-4.39
	1+035	-1.86	-2.54	-2.79	-2.90	-2.85	-2.83	-2.71
	1+220	-2.08	-2.24	-2.82	-3.07	-3.01	-3.02	-2.86
	1+420	-1.78	-2.02	-2.40	-2.50	-2.51	-2.48	-2.26
	1+620	-1.32	-1.61	-2.08	-2.27	-2.28	-2.29	-1.93
	1+820	-2.18	-2.30	-2.46	-2.50	-2.51	-2.47	-2.47
	2+020	-1.64	-1.63	-1.95	-2.18	-2.37	-2.46	-1.79
	2+240	-1.86	-1.79	-1.88	-1.88	-1.89	-1.95	-1.92
	2+450	-1.36	-1.36	-1.39	-1.48	-1.48	-1.62	-1.87
	2+660	-1.40	-1.41	-1.64	-1.63	-1.63	-1.60	-1.44
	2+860	-0.70	-0.91	-1.22	-1.22	-1.23	-1.19	-0.69
	3+070	-0.97	-1.10	-1.30	-1.35	-1.37	-1.36	-1.14
	3+260	-0.65	-0.66	-0.82	-0.87	-1.01	-1.01	-0.82
	3+450	-0.75	-0.76	-0.75	-0.76	-0.76	-0.74	-0.56
	3+660	-0.70	-0.68	-0.70	-0.74	-0.75	-0.61	0.24
	3+830	-0.93	-0.97	-1.01	-0.95	-0.86	-0.93	-0.49
	4+040	-0.15	-0.35	-0.50	-1.19	-1.07	-0.42	0.35
	4+225	-3.02	-3.01	-2.23	-1.52	-1.31	-1.33	-2.85
	4+265	-2.63	-1.25	-0.62	-0.69	-0.80	-0.61	0.76
	4+435	-0.50	-0.44	-0.66	-0.73	-0.65	-0.60	-0.86
	4+625	0.23	-0.05	-0.32	-0.34	-0.34	-0.25	0.61
	4+845	-0.28	-0.43	-0.60	-0.64	-0.64	-0.52	0.08
	5+040	-0.46	-0.55	-0.58	-0.24	-0.25	-0.12	0.14
	5+235	0.15	0.08	0.05	0.01	0.02	-0.06	0.53
	5+425	-0.47	-0.12	-0.10	0.16	0.06	0.19	0.63
	5+640	-0.38	-0.34	0.02	0.11	0.17	0.04	0.08
	5+845	0.35	0.22	0.20	0.25	0.21	0.37	0.49
	6+055	0.05	0.01	0.33	0.42	0.39	0.32	0.02
	6+260	-0.23	0.10	-0.40	0.14	0.12	-0.18	0.41

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
논산천	6+470	-0.53	-0.23	-0.56	-0.43	-0.61	-0.68	-0.82
	6+670	-0.35	0.35	-0.20	0.40	0.69	0.84	2.37
	6+890	0.03	0.05	0.03	0.02	-0.25	-0.15	-0.37
	7+075	0.53	0.50	0.33	0.53	0.45	1.03	0.81
	7+285	-0.13	-0.16	-0.47	0.03	0.45	0.67	0.84
	7+505	-0.69	0.46	0.25	0.81	0.78	1.12	0.96
	7+705	0.61	0.25	-0.62	-0.08	-0.92	-0.95	-0.89
	7+735	0.99	0.21	0.41	0.09	0.68	-1.05	0.83
	7+895	0.38	0.39	0.35	0.80	-0.39	-0.30	-0.35
	8+095	0.83	0.66	0.61	0.71	1.61	1.63	2.48
	8+285	1.27	0.81	0.69	0.70	0.52	0.50	0.51
	8+465	0.91	0.86	1.79	2.04	1.05	1.02	1.58
	8+660	0.84	0.73	0.63	0.48	0.01	0.01	0.02
	8+855	0.82	1.38	1.62	1.74	3.42	3.41	3.44
	9+070	0.53	0.87	0.07	-0.07	-0.34	-0.36	-0.37
	9+245	0.66	1.33	4.45	4.60	5.63	5.48	6.68
	9+465	1.19	1.14	1.08	1.06	1.40	1.57	1.46
	9+670	0.72	1.13	1.41	2.26	2.64	3.30	3.72
	9+875	1.00	1.44	1.86	2.44	2.32	2.24	2.23
	10+065	1.65	1.51	2.11	2.50	2.74	2.73	2.65
	10+085	1.47	1.41	2.50	2.53	1.47	1.43	1.41
	10+275	0.57	1.14	2.06	2.32	3.20	3.14	3.15
	10+475	1.53	1.44	1.65	1.76	1.48	1.44	1.46
	10+585	2.13	1.92	2.01	2.22	2.01	1.94	1.95
	10+665	2.28	2.16	2.53	2.96	2.60	2.38	2.42
	10+875	2.45	2.59	3.36	3.43	3.07	2.98	3.04
	11+085	1.21	1.57	2.01	2.64	2.57	2.70	2.98
	11+205	2.35	2.94	3.44	2.73	3.04	3.04	3.04
	11+220	2.20	1.87	2.04	2.52	2.33	2.34	2.35
	11+280	2.77	2.52	3.61	3.49	3.42	3.61	3.67
	11+380	2.66	2.56	2.54	2.81	2.73	3.05	3.22
	11+430	3.11	2.89	4.10	3.97	3.90	3.91	4.02
	11+480	3.12	3.03	3.33	3.27	3.38	3.43	3.59
	11+680	3.22	3.28	3.88	3.83	3.69	3.73	3.83
	11+865	3.41	3.43	3.93	3.74	3.68	3.84	4.07
	12+080	3.72	3.68	4.08	4.00	4.09	4.56	4.83
	12+275	4.06	3.95	4.18	4.01	4.33	4.57	5.10
	12+475	4.00	3.99	4.23	4.17	4.75	4.82	5.69
	12+695	3.38	3.43	3.52	3.58	3.83	3.90	4.45
	12+885	4.61	4.59	4.64	4.68	4.83	4.90	5.16
	13+095	5.24	4.97	4.82	4.83	4.94	5.06	5.16
	13+280	5.57	5.37	5.20	5.21	5.22	5.28	5.38
	13+465	6.28	6.25	5.96	6.02	6.13	6.14	6.23
	13+470	6.82	6.22	5.95	5.91	6.08	6.17	6.37
	13+490	6.12	6.09	6.02	6.05	6.11	6.12	6.23

한국피복

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
논산천	13+680	6.32	6.29	6.11	6.11	6.07	6.12	6.22
	13+810	6.26	6.29	6.40	6.40	6.39	6.37	6.44
	13+855	7.22	6.99	6.19	6.60	6.61	7.05	6.89
	13+860	8.22	7.02	6.85	6.86	6.92	6.89	7.04
	13+875	5.94	6.19	6.13	5.99	6.12	6.09	6.23
	14+095	7.38	7.10	6.70	6.66	6.64	6.66	6.65
	14+285	7.31	7.32	7.36	7.30	7.01	7.02	7.01
	14+465	4.89	4.93	5.12	5.11	5.26	5.28	5.30
	14+645	7.92	7.90	7.55	7.31	7.07	7.02	6.85
	14+845	7.93	7.73	7.19	7.23	7.24	7.25	6.96
	15+045	8.22	7.87	7.36	7.21	6.97	6.85	6.78
	15+245	9.03	8.53	7.79	7.59	7.57	7.56	7.55
	15+445	8.21	8.10	7.63	7.52	7.29	6.92	6.72
	15+645	7.78	8.57	8.03	8.09	7.92	7.78	7.42
	15+835	6.21	6.21	6.59	6.23	6.19	5.84	5.82
	16+035	8.10	8.10	8.06	7.51	7.37	7.28	6.70
	16+320	6.85	7.00	5.64	5.32	5.32	5.32	5.32
	16+585	11.53	9.97	9.96	9.96	9.96	9.96	9.96
노성천	16+590	12.71	11.15	11.15	11.15	11.15	11.15	11.15
	16+670	11.23	9.65	9.65	9.65	9.65	9.65	9.65
	0+000	1.21	1.21	1.00	0.83	0.78	0.73	0.69
	0+130	1.51	1.47	1.40	1.21	1.10	1.00	0.95
	0+335	1.81	1.75	1.57	1.20	1.07	1.02	0.99
	0+525	1.98	1.95	1.98	1.79	1.65	1.55	1.52
	0+565	1.85	1.77	1.43	1.17	1.16	1.17	1.20
	0+725	1.90	1.74	1.84	1.54	1.35	1.26	1.27
	0+925	2.19	2.10	1.88	1.72	1.69	1.69	1.71
	1+035	1.43	1.68	1.85	1.55	1.50	1.49	1.54
	1+115	1.73	1.93	1.74	1.69	1.48	1.49	1.57
	1+325	2.02	2.04	1.93	1.62	1.53	1.61	1.73
	1+545	1.78	1.92	1.74	1.68	1.70	1.74	1.78
	1+750	1.84	2.19	1.89	1.81	1.94	2.00	2.00
	1+970	2.58	2.60	2.47	2.43	2.46	2.45	2.40
	2+175	2.44	2.75	2.48	2.65	2.64	2.57	2.44
	2+380	2.65	2.81	2.62	2.63	2.60	2.59	2.48
	2+585	1.27	2.93	2.73	2.74	2.69	2.66	2.26
	2+785	1.95	3.18	2.34	2.45	2.29	2.13	2.05
	2+985	2.63	3.19	2.97	2.82	2.74	2.74	2.59
	3+185	3.90	3.77	2.88	2.47	2.47	2.47	2.47
	3+190	5.56	4.12	4.11	4.11	4.11	4.11	4.11
	3+395	4.55	3.82	3.12	3.09	3.05	3.05	3.05
	3+605	4.98	4.00	3.84	3.83	3.77	3.76	3.52
	3+815	5.47	4.98	3.85	3.85	3.85	3.85	3.85
	4+020	5.63	5.39	4.90	4.36	4.36	4.19	4.06
	4+205	5.24	5.06	4.34	4.07	3.78	3.72	3.70

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
노성천	4+400	5.14	5.09	4.76	4.37	4.19	3.98	3.78
	4+530	5.06	5.07	5.04	4.58	4.29	4.29	4.29
	4+580	5.13	5.12	5.09	4.70	4.41	4.23	4.03
	4+750	5.85	5.76	5.40	4.94	4.61	4.51	4.40
	4+920	5.69	5.70	5.54	4.94	4.66	4.47	4.38
강경천	4+980	5.95	5.79	5.50	5.10	4.75	4.66	4.57
	5+130	6.03	5.98	5.66	5.29	4.98	4.84	4.72
	0+000	-1.10	-1.16	-1.17	-1.20	-1.34	-1.42	-1.55
	0+200	-0.55	-0.78	-0.86	-0.93	-0.97	-0.98	-0.98
	0+275	-2.41	-1.69	-2.02	-2.15	-1.88	-1.75	-1.75
	0+290	-2.74	-2.71	-2.62	-2.35	-2.15	-1.71	-1.44
	0+415	-0.24	-0.45	-0.66	-0.77	-0.80	-0.81	-0.82
	0+610	-0.15	-0.32	-0.56	-0.68	-0.73	-0.76	-0.78
	0+815	-0.15	-0.19	-0.28	-0.40	-0.47	-0.51	-0.53
	1+035	-0.85	-0.63	-0.65	-0.55	-0.55	-0.54	-0.57
	1+105	-0.61	-0.58	-0.56	-0.57	-0.57	-0.58	-0.59
	1+115	0.06	0.00	-0.14	-0.23	-0.30	-0.31	-0.35
	1+120	0.06	0.00	-0.16	-0.30	-0.40	-0.44	-0.49
	1+235	-0.03	-0.01	-0.03	-0.25	-0.32	-0.36	-0.42
	1+355	-0.94	-0.79	-0.80	-0.83	-0.84	-0.86	-0.88
	1+375	-0.09	-0.49	-0.53	-0.57	-0.61	-0.64	-0.66
	1+425	0.64	0.40	0.08	-0.04	-0.07	-0.08	-0.10
	1+440	0.82	0.68	0.40	0.23	0.18	0.16	0.14
	1+650	0.82	0.78	0.61	0.47	0.41	0.38	0.34
	1+840	0.98	0.94	0.83	0.73	0.71	0.67	0.62
	2+035	1.04	1.00	0.90	0.79	0.76	0.73	0.68
	2+240	0.91	0.89	0.85	0.80	0.77	0.73	0.67
	2+300	0.70	0.71	0.69	0.68	0.68	0.65	0.57
	2+455	1.04	1.02	1.00	0.95	0.94	0.92	0.87
	2+650	1.16	1.16	1.14	1.14	1.12	1.05	0.95
	2+840	1.22	1.23	1.22	1.22	1.22	1.22	1.22
	3+030	1.40	1.38	1.36	1.35	1.34	1.31	1.23
	3+235	1.13	1.11	1.08	1.05	1.03	1.02	1.00
	3+415	1.28	1.27	1.27	1.27	1.26	1.25	1.21
	3+435	1.22	1.24	1.26	1.25	1.23	1.22	1.18
	3+475	1.10	1.09	1.09	1.08	1.07	1.06	1.05
	3+645	1.62	1.60	1.60	1.59	1.59	1.56	1.50
	3+810	1.49	1.50	1.52	1.51	1.50	1.49	1.49
	3+985	1.52	1.53	1.54	1.55	1.54	1.53	1.52
	4+085	1.37	1.37	1.37	1.37	1.36	1.36	1.34
	4+220	1.68	1.68	1.68	1.68	1.68	1.67	1.66
	4+430	1.65	1.65	1.66	1.66	1.66	1.65	1.64
	4+630	1.71	1.75	1.75	1.76	1.75	1.73	1.73
	4+810	1.40	1.41	1.41	1.42	1.41	1.41	1.42
	4+845	1.95	1.87	1.86	1.85	1.86	1.82	1.82

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Yang's 1973) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
강경천	4+860	1.37	1.36	1.36	1.36	1.37	1.36	1.35
	5+030	1.98	1.98	1.97	1.97	1.94	1.93	1.92
	5+225	1.74	1.73	1.73	1.73	1.72	1.70	1.70
	5+385	1.71	1.70	1.71	1.71	1.69	1.69	1.66
	5+425	1.62	1.62	1.62	1.62	1.61	1.60	1.58
	5+600	1.74	1.73	1.74	1.74	1.72	1.71	1.69
	5+815	1.80	1.80	1.82	1.81	1.79	1.78	1.76
	6+015	1.74	1.75	1.79	1.76	1.73	1.73	1.72
	6+205	1.98	1.98	2.00	1.98	1.96	1.94	1.91
	6+265	1.52	1.52	1.52	1.49	1.44	1.41	1.34
	6+385	2.01	2.04	2.05	2.03	1.99	1.99	1.97
	6+565	1.71	1.80	1.76	1.73	1.69	1.69	1.69
	6+765	1.95	1.97	1.95	1.94	1.94	1.94	1.94
	6+940	1.80	1.88	1.80	1.79	1.78	1.78	1.77
	6+965	2.13	2.12	2.10	2.01	1.88	1.77	1.64
	7+170	2.29	2.09	1.90	1.70	1.65	1.54	1.41
	7+360	2.56	2.49	2.31	2.15	2.14	2.09	1.99
	7+565	1.95	1.86	1.63	1.49	1.37	1.28	1.16

건설교통부

■ 장기하상변동검토결과 (HEC-6 Toffaleti 공식)

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	0+000	-7.48	-7.47	-7.47	-7.47	-7.47	-7.47	-7.47
	0+350	-14.68	-14.69	-14.69	-14.69	-14.69	-14.69	-14.69
	0+720	-10.08	-10.09	-10.09	-10.09	-10.09	-10.09	-10.09
	1+140	-7.77	-7.77	-7.77	-7.77	-7.77	-7.77	-7.77
	1+480	-11.06	-11.06	-11.06	-11.06	-11.06	-11.06	-11.06
	2+020	-9.56	-9.57	-9.57	-9.57	-9.57	-9.57	-9.57
	2+450	-7.16	-7.16	-7.16	-7.16	-7.16	-7.16	-7.16
	2+920	-6.76	-6.76	-6.76	-6.76	-6.76	-6.76	-6.75
	3+330	-7.25	-7.25	-7.24	-7.24	-7.24	-7.24	-7.24
	3+780	-9.05	-9.05	-9.05	-9.06	-9.06	-9.06	-9.06
	4+240	-11.04	-11.04	-11.04	-11.04	-11.04	-11.04	-11.04
	4+580	-12.24	-12.26	-12.26	-12.26	-12.26	-12.26	-12.26
	4+860	-9.74	-9.76	-9.76	-9.76	-9.76	-9.76	-9.76
	5+390	-8.34	-8.35	-8.35	-8.35	-8.35	-8.35	-8.35
	6+110	-6.13	-6.13	-6.13	-6.13	-6.13	-6.13	-6.13
	6+750	-8.73	-8.72	-8.72	-8.72	-8.72	-8.72	-8.72
	7+210	-8.22	-8.23	-8.23	-8.23	-8.23	-8.23	-8.23
	7+740	-7.42	-7.41	-7.40	-7.40	-7.40	-7.40	-7.40
	8+160	-11.52	-11.52	-11.52	-11.52	-11.51	-11.51	-11.50
	8+670	-5.01	-4.72	-4.72	-4.72	-4.72	-4.72	-4.71
	9+170	-6.71	-6.70	-6.70	-6.70	-6.69	-6.69	-6.68
	9+640	-6.70	-6.70	-6.69	-6.69	-6.69	-6.68	-6.67
	10+130	-4.20	-4.20	-4.20	-4.20	-4.19	-4.18	-4.18
	10+600	-4.50	-4.52	-4.52	-4.53	-4.53	-4.54	-4.55
	11+060	-7.69	-7.69	-7.69	-7.69	-7.70	-7.70	-7.71
	11+520	-24.99	-24.98	-24.98	-24.97	-24.96	-24.95	-24.93
	12+250	-6.28	-6.27	-6.27	-6.27	-6.25	-6.25	-6.22
	12+850	-10.98	-10.98	-10.98	-10.98	-11.00	-11.00	-11.01
	13+450	-5.88	-5.88	-5.88	-5.87	-5.87	-5.86	-5.84
	13+970	-4.97	-4.95	-4.93	-4.90	-4.87	-4.83	-4.71
	14+490	-5.87	-5.83	-5.77	-5.67	-5.56	-5.43	-5.13
	15+020	-6.66	-6.66	-6.58	-6.46	-6.32	-6.19	-5.97
	15+460	-7.76	-7.77	-7.73	-7.68	-7.62	-7.57	-7.49
	15+960	-7.86	-7.87	-7.87	-7.87	-7.87	-7.87	-7.87
	16+420	-8.05	-8.05	-8.05	-8.06	-8.07	-8.09	-8.12
	16+910	-12.95	-12.96	-12.97	-12.97	-12.97	-12.97	-12.97
	17+380	-10.84	-10.85	-10.86	-10.86	-10.86	-10.86	-10.86
	17+850	-7.54	-7.53	-7.55	-7.57	-7.59	-7.60	-7.63
	18+190	-5.34	-5.33	-5.31	-5.27	-5.22	-5.17	-5.07
	18+710	-4.93	-4.94	-4.91	-4.87	-4.83	-4.80	-4.76
	19+180	-6.03	-6.04	-6.01	-5.99	-5.95	-5.92	-5.87
	19+620	-5.72	-5.73	-5.72	-5.71	-5.70	-5.69	-5.68
	20+130	-5.92	-5.92	-5.92	-5.93	-5.93	-5.94	-5.95

본 페이지

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	20+580	-8.81	-8.81	-8.83	-8.85	-8.86	-8.88	-8.90
	21+000	-13.40	-13.41	-13.42	-13.43	-13.43	-13.43	-13.43
	21+400	-20.01	-20.00	-20.00	-19.99	-19.99	-19.98	-19.97
	21+660	-5.50	-5.49	-5.50	-5.51	-5.51	-5.51	-5.50
	22+110	-4.70	-4.70	-4.69	-4.70	-4.71	-4.71	-4.72
	22+550	-6.60	-6.62	-6.62	-6.63	-6.64	-6.65	-6.65
	23+250	-15.09	-15.09	-15.11	-15.12	-15.14	-15.15	-15.16
	23+550	-7.88	-7.89	-7.88	-7.86	-7.83	-7.79	-7.71
	24+050	-4.18	-4.17	-4.05	-3.88	-3.72	-3.59	-3.41
	24+680	-7.88	-7.89	-7.83	-7.75	-7.69	-7.66	-7.63
	25+330	-5.46	-5.46	-5.46	-5.45	-5.44	-5.43	-5.43
	25+810	-6.47	-6.47	-6.46	-6.46	-6.45	-6.45	-6.44
	26+140	-5.15	-5.16	-5.15	-5.14	-5.13	-5.11	-5.07
	26+600	-5.66	-5.68	-5.67	-5.68	-5.68	-5.67	-5.66
	26+990	-5.36	-5.37	-5.32	-5.23	-5.16	-5.11	-5.04
	27+400	-21.35	-21.34	-21.31	-21.27	-21.22	-21.19	-21.13
	27+890	-10.85	-10.86	-10.86	-10.85	-10.85	-10.84	-10.84
	28+290	-6.24	-6.26	-6.27	-6.31	-6.34	-6.38	-6.45
	28+630	-4.64	-4.64	-4.68	-4.75	-4.81	-4.83	-4.83
	29+030	-7.34	-7.35	-7.35	-7.35	-7.35	-7.35	-7.35
	29+570	-9.53	-9.54	-9.54	-9.54	-9.54	-9.54	-9.54
	30+160	-6.43	-6.43	-6.37	-6.31	-6.25	-6.21	-6.12
	30+830	-2.92	-2.92	-2.90	-2.88	-2.87	-2.85	-2.82
	31+400	-7.22	-7.21	-7.22	-7.22	-7.22	-7.22	-7.23
	32+120	-13.72	-13.72	-13.76	-13.78	-13.81	-13.84	-13.87
	32+590	-12.21	-12.24	-12.28	-12.33	-12.37	-12.41	-12.49
	32+920	-13.90	-13.92	-13.92	-13.92	-13.92	-13.92	-13.92
	33+060	-11.71	-11.68	-11.64	-11.59	-11.55	-11.50	-11.41
	33+270	-14.31	-14.30	-14.28	-14.25	-14.24	-14.22	-14.20
	33+830	-5.50	-5.49	-5.49	-5.48	-5.49	-5.49	-5.49
	34+490	-3.30	-3.30	-3.30	-3.33	-3.32	-3.35	-3.38
	34+920	-5.20	-5.21	-5.21	-5.22	-5.23	-5.23	-5.24
	35+370	-6.89	-6.85	-6.75	-6.67	-6.60	-6.57	-6.47
	36+000	-6.29	-6.23	-6.18	-6.12	-6.07	-6.05	-5.96
	36+560	-3.28	-3.27	-3.26	-3.23	-3.20	-3.20	-3.18
	37+010	-3.08	-3.09	-3.09	-3.09	-3.08	-3.09	-3.09
	37+710	-3.08	-3.09	-3.09	-3.09	-3.13	-3.17	-3.27
	38+220	-4.07	-4.10	-4.17	-4.22	-4.30	-4.35	-4.47
	38+620	-8.17	-8.18	-8.24	-8.38	-8.50	-8.60	-8.76
	39+050	-5.76	-5.78	-5.85	-5.93	-6.00	-6.07	-6.19
	39+520	-6.26	-6.26	-6.32	-6.41	-6.46	-6.47	-6.47
	40+000	-9.06	-8.97	-8.82	-8.60	-8.49	-8.38	-8.09
	40+470	-7.45	-7.41	-7.35	-7.28	-7.21	-7.12	-6.93
	40+890	-2.55	-2.57	-2.57	-2.56	-2.55	-2.55	-2.55
	41+490	-9.64	-9.65	-9.65	-9.64	-9.64	-9.64	-9.64

건설기술연구원

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	41+990	-6.34	-6.35	-6.35	-6.34	-6.34	-6.34	-6.35
	42+540	-4.94	-4.94	-4.94	-4.93	-4.94	-4.95	-4.96
	43+290	-2.63	-2.63	-2.68	-2.74	-2.79	-2.83	-2.88
	43+850	-2.03	-2.05	-2.06	-2.10	-2.12	-2.14	-2.16
	44+450	-4.42	-4.43	-4.43	-4.45	-4.46	-4.47	-4.48
	45+060	-4.02	-4.03	-4.04	-4.06	-4.08	-4.09	-4.11
	45+650	-7.42	-7.39	-7.32	-7.26	-7.20	-7.08	-6.74
	46+200	-2.91	-2.87	-2.81	-2.69	-2.56	-2.37	-2.01
	46+670	-1.71	-1.63	-1.63	-1.65	-1.64	-1.63	-1.63
	47+270	-1.90	-1.91	-1.92	-1.93	-1.98	-2.01	-2.01
	47+800	-3.29	-3.30	-3.30	-3.30	-3.30	-3.31	-3.31
	48+100	-4.38	-4.39	-4.32	-4.23	-4.09	-3.79	-3.09
	48+500	-5.31	-5.28	-5.29	-5.29	-5.27	-5.22	-5.15
	48+970	-6.52	-6.53	-6.53	-6.53	-6.56	-6.61	-6.66
	49+400	-5.08	-5.12	-5.14	-5.14	-5.17	-5.17	-5.18
	49+820	-2.55	-2.57	-2.61	-2.65	-2.68	-2.69	-2.67
	50+300	-3.68	-3.69	-3.73	-3.77	-3.76	-3.64	-3.31
	50+800	-4.54	-4.40	-3.81	-3.32	-2.68	-2.04	-1.43
	51+220	-1.09	-1.21	-1.25	-1.31	-1.35	-1.41	-1.55
	51+540	-1.44	-1.43	-1.42	-1.39	-1.37	-1.39	-1.40
	52+090	-15.11	-15.13	-15.12	-15.11	-15.06	-15.02	-15.00
	52+160	-6.07	-6.09	-6.08	-6.07	-6.09	-6.10	-6.11
	52+180	-6.07	-6.08	-6.09	-6.21	-6.35	-6.51	-6.78
	52+540	-3.72	-3.74	-3.85	-3.95	-3.98	-3.99	-3.91
	52+910	-4.37	-4.37	-4.40	-4.38	-4.17	-3.90	-3.58
	53+350	-3.28	-3.20	-2.88	-2.33	-1.98	-1.98	-1.81
	53+760	-3.25	-3.08	-2.53	-1.96	-1.40	-1.02	-0.64
	54+270	-3.49	-3.43	-3.13	-2.90	-2.90	-2.98	-3.18
	54+730	-2.45	-2.20	-2.10	-2.13	-2.20	-2.30	-2.35
	55+320	-3.81	-3.78	-3.76	-3.71	-3.61	-3.51	-3.42
	55+940	0.29	0.02	-0.40	-0.46	-0.54	-0.54	-0.66
	56+420	-3.91	-3.99	-4.03	-4.02	-4.04	-4.24	-4.62
	56+510	-2.81	-2.86	-2.86	-2.87	-3.03	-3.35	-3.33
	56+970	-0.72	-0.78	-0.78	-0.98	-1.07	-1.00	-0.93
	57+330	-3.01	-3.06	-3.16	-3.14	-3.07	-2.97	-2.65
	57+810	-0.51	-0.54	-0.64	-0.71	-0.72	-0.72	-0.74
	58+080	-3.11	-3.08	-2.68	-2.33	-2.18	-2.10	-2.06
	58+570	-1.11	-1.07	-0.87	-0.70	-0.62	-0.58	-0.55
	59+060	-1.81	-1.80	-1.75	-1.72	-1.70	-1.70	-1.73
	59+520	-0.30	-0.27	-0.04	0.05	0.10	0.12	0.14
	59+990	-0.92	-0.63	-0.47	-0.45	-0.49	-0.56	-0.72
	60+510	0.21	0.49	0.60	0.52	0.48	0.41	0.35
	60+950	1.00	0.41	-0.18	-0.34	-0.48	-0.53	-0.61
	61+430	0.03	-0.02	-0.05	-0.09	-0.15	-0.22	-0.33
	61+870	-1.09	-1.09	-1.09	-1.09	-1.10	-1.10	-1.19

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	61+900	-1.09	-1.15	-1.17	-1.41	-1.52	-1.60	-1.65
	62+320	0.80	0.68	0.33	0.03	-0.19	-0.35	-0.61
	62+790	-0.87	-0.91	-0.93	-0.83	-0.73	-0.65	-0.49
	63+390	-3.04	-2.91	-2.57	-2.27	-2.17	-2.12	-2.07
	64+040	-1.35	-1.09	-0.61	-0.41	-0.38	-0.38	-0.34
	64+510	1.34	1.00	0.51	0.17	-0.06	-0.19	-0.52
	65+040	0.08	-0.07	-0.47	-0.66	-0.76	-0.79	-0.73
	65+470	0.01	-0.02	-0.07	-0.13	-0.15	-0.19	-0.28
	66+110	-0.70	-0.71	-0.69	-0.69	-0.73	-0.82	-0.98
	66+470	-0.72	-0.73	-0.66	-0.65	-0.64	-0.63	-0.62
	66+920	0.50	0.45	0.26	0.07	-0.07	-0.20	-0.42
	67+400	0.32	0.27	0.15	0.02	-0.10	-0.20	-0.23
	67+910	-1.25	-1.27	-1.39	-1.51	-1.60	-1.66	-1.59
	68+370	-3.22	-3.22	-3.18	-3.12	-3.10	-3.01	-1.96
	68+970	-1.48	-1.37	-0.84	-0.58	-0.57	-0.35	0.58
	69+500	-1.42	-1.31	-1.06	-0.99	-0.79	-0.47	-0.43
	70+100	-0.32	-0.25	-0.14	-0.02	0.15	0.25	0.12
	70+610	-1.92	-1.74	-1.42	-1.21	-0.90	-0.66	-0.35
	71+110	-1.02	-0.90	-0.41	-0.09	0.07	0.09	0.04
	71+560	-0.48	-0.54	-0.80	-1.06	-1.16	-1.16	-1.13
	72+060	0.81	0.72	0.36	0.16	0.22	0.27	0.34
	72+570	-1.12	-0.88	-0.41	0.09	0.63	0.72	0.83
	73+010	-1.73	-1.44	-0.71	-0.31	-0.36	-0.46	-0.24
	73+540	1.52	1.38	0.87	0.66	0.66	0.67	0.83
	74+180	1.19	1.03	0.65	0.81	0.87	0.85	1.04
	74+640	-1.30	-1.32	-1.01	-0.65	-0.52	-0.31	0.41
	75+120	-0.97	-0.98	-0.71	-0.37	0.00	0.28	0.67
	75+630	1.16	1.16	1.36	1.39	1.41	1.46	1.56
	76+270	0.30	0.34	0.59	0.60	0.70	0.87	1.15
	76+720	0.31	0.28	0.29	0.28	0.30	0.34	0.49
	77+320	2.21	2.14	1.72	1.68	1.63	1.64	1.74
	77+910	-0.40	-0.44	-0.49	-0.49	-0.45	-0.36	-0.10
	78+320	1.33	1.30	1.03	1.00	1.09	1.27	1.52
	78+920	1.06	1.02	1.05	1.32	1.66	1.88	2.26
	79+490	0.89	0.96	1.64	1.80	2.02	2.17	2.20
	80+190	0.46	0.61	1.06	1.59	1.80	1.84	2.69
	80+480	0.19	0.23	0.48	0.89	1.16	1.34	1.45
	80+640	0.48	0.17	0.87	1.73	2.02	2.30	2.66
	81+120	1.79	1.79	2.49	2.71	2.60	2.22	2.01
	81+610	1.87	2.02	2.89	3.05	2.69	2.54	2.70
	81+980	2.26	2.43	2.72	2.54	2.54	2.66	1.17
	82+600	0.61	1.14	2.80	2.73	2.66	2.56	2.63
	82+980	3.77	3.12	1.26	1.26	1.60	2.29	2.49
	83+410	0.92	2.70	3.24	3.14	3.11	3.08	2.93
	83+830	2.22	2.26	1.97	2.31	1.93	1.18	2.08

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	84+300	4.34	3.92	3.38	3.44	3.43	3.46	3.43
	84+700	3.73	3.02	2.61	2.75	2.68	2.72	1.54
	84+790	3.66	4.30	3.90	3.83	3.83	4.03	3.83
	85+070	4.10	4.18	4.05	2.90	2.60	1.39	1.38
	85+220	5.07	5.10	5.20	5.23	5.15	5.01	4.03
	85+730	4.94	4.47	3.09	2.21	2.21	2.22	2.22
	86+240	5.19	5.19	4.76	4.90	4.82	4.73	3.91
	86+500	3.16	3.00	2.86	2.96	3.10	3.22	3.29
	86+780	6.99	6.63	6.67	6.74	6.82	6.81	5.52
	87+280	5.29	5.27	4.93	3.84	3.10	2.72	2.61
	87+680	7.82	7.45	6.64	6.33	6.18	6.00	5.59
	88+030	7.55	7.19	6.50	6.08	5.93	6.46	6.01
	88+250	7.11	7.05	6.78	6.39	6.06	5.81	5.16
	88+800	5.86	5.84	5.92	6.10	6.39	6.62	6.21
	89+280	5.90	5.91	5.75	5.51	5.10	4.74	4.22
	89+750	5.69	5.71	5.73	5.77	5.90	6.07	5.85
	90+230	5.48	5.64	5.76	5.81	5.81	5.75	5.50
	90+730	5.47	5.47	5.48	5.50	5.47	5.54	5.45
	91+190	6.18	6.16	6.04	5.75	5.64	5.53	5.40
	91+720	6.46	6.41	6.25	6.07	6.06	6.13	6.06
	92+160	5.01	5.06	5.11	5.38	5.57	5.60	5.07
	92+610	6.00	5.97	5.82	5.64	5.65	5.63	5.54
	93+060	6.35	6.28	6.18	5.99	5.95	5.85	5.72
	93+510	6.72	6.61	6.28	5.97	5.69	5.65	5.61
	93+590	5.01	4.85	4.61	4.42	4.47	4.44	4.42
	94+100	3.74	3.71	3.67	3.74	3.83	3.78	3.74
	94+790	5.46	5.44	5.45	5.51	5.59	5.52	5.48
	95+200	4.77	4.75	4.76	4.84	4.97	4.86	4.80
	95+390	5.28	5.28	5.29	5.40	5.57	5.40	5.35
	95+990	4.47	4.46	4.48	4.57	4.66	4.54	4.56
	96+340	5.00	4.99	5.01	5.15	5.29	5.14	5.25
	96+870	5.00	4.98	5.07	5.36	5.58	5.43	5.79
	97+390	4.66	4.63	4.84	5.40	5.85	5.78	5.97
	97+810	6.19	6.12	6.12	6.22	6.15	6.23	6.23
	98+360	6.05	5.97	6.14	6.39	6.71	6.76	6.75
	98+930	4.62	4.62	6.30	6.75	6.66	6.77	6.78
	99+730	7.02	7.10	7.18	7.22	7.44	7.44	7.41
	100+280	5.46	6.08	6.27	6.58	6.24	5.87	5.50
	100+710	6.13	7.71	7.62	8.07	7.87	7.72	7.61
	101+140	7.41	7.47	7.50	6.51	5.48	5.18	5.28
	101+620	7.34	8.47	7.62	7.95	7.84	7.68	7.60
	101+870	8.55	8.15	7.92	7.75	7.18	7.55	7.47
	102+030	10.01	8.44	8.27	8.18	7.99	7.35	7.39
	102+610	8.73	8.95	8.71	8.56	8.42	8.41	8.40
	103+160	9.91	9.02	8.45	8.48	8.46	8.45	8.44

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	103+720	10.21	9.94	9.43	9.30	9.16	9.16	9.15
	104+230	9.35	9.34	9.32	8.80	8.74	8.74	8.73
	104+740	9.61	9.59	9.56	9.43	9.44	9.44	9.45
	105+250	9.00	9.07	9.05	9.04	9.02	9.02	9.03
	105+750	8.91	8.96	9.05	9.01	9.01	9.06	9.21
	106+230	10.57	10.33	9.98	9.88	9.90	9.91	9.95
	106+750	10.81	10.63	10.23	10.22	10.23	10.24	10.26
	107+250	8.81	9.10	9.95	9.80	9.96	10.07	10.19
	107+700	9.67	9.99	10.23	10.32	10.35	10.38	10.30
	108+200	10.38	10.71	10.59	10.53	10.49	10.49	10.54
	108+750	10.98	11.03	11.26	11.31	11.37	11.38	11.33
	109+400	11.52	10.92	10.79	10.77	10.78	10.77	10.66
	109+900	11.11	11.37	11.28	11.14	11.10	11.07	11.07
	110+350	11.81	11.34	11.16	11.12	11.15	11.13	11.09
	110+900	13.40	13.20	12.73	12.70	12.61	12.59	12.56
	111+400	12.76	12.75	12.76	12.65	12.67	12.64	12.63
	111+900	12.57	12.57	12.36	12.34	12.23	12.23	12.16
	112+350	12.99	12.84	12.64	12.65	12.61	12.62	12.62
	112+510	13.31	13.28	13.21	13.28	13.31	13.30	13.24
	112+960	12.61	13.24	13.04	13.01	13.00	12.98	13.08
	113+360	14.15	13.88	13.96	14.01	14.05	14.04	14.14
	113+790	14.20	13.47	12.32	11.80	11.66	11.66	11.69
	114+290	14.45	14.04	13.91	13.95	13.96	13.96	14.06
	114+790	13.76	13.95	13.76	13.77	13.81	13.77	13.73
	115+390	13.73	13.90	13.99	14.08	14.14	14.16	14.57
	116+040	13.87	13.30	12.88	13.28	13.66	13.45	13.73
	116+540	13.80	13.55	13.74	14.13	14.58	14.75	15.54
	117+090	13.70	13.90	14.79	15.56	15.87	15.33	14.23
	117+620	14.21	14.48	14.33	14.13	13.53	14.48	15.96
	118+370	15.68	15.51	15.24	15.83	15.99	15.81	15.26
	118+800	15.90	15.76	16.42	16.14	15.64	15.50	16.71
	119+230	14.88	15.24	15.63	15.63	15.90	15.91	15.45
	119+770	16.78	16.79	16.96	17.01	16.88	16.72	16.92
	120+190	16.90	16.65	15.85	15.65	15.94	16.43	15.25
	120+700	17.23	17.22	17.11	16.58	16.50	16.05	16.35
	121+260	15.57	15.86	16.71	16.94	17.19	16.94	16.69
	121+770	17.35	17.74	17.67	17.65	17.75	17.30	18.04
	122+140	17.90	17.82	17.88	17.19	16.75	17.49	16.02
	122+490	18.65	18.33	18.17	17.93	17.75	17.90	17.94
	122+990	18.77	18.32	17.11	17.43	17.34	17.60	17.24
	123+470	18.81	18.77	18.25	18.19	17.73	17.97	17.88
	124+010	18.66	18.70	18.77	18.77	18.99	18.68	18.67
	124+460	18.10	18.34	18.72	19.44	19.07	18.95	18.95
	124+960	18.25	18.66	19.05	18.46	18.51	18.54	18.62
	125+660	19.57	19.50	19.50	19.53	19.61	19.66	19.65

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 하 류	126+420	21.07	20.90	20.59	19.96	19.20	18.64	18.30
	126+750	21.98	21.92	21.76	20.76	20.31	20.28	20.30
	126+800	22.18	21.98	21.02	20.77	20.59	20.12	20.45
	126+960	22.58	22.28	21.67	21.04	20.61	20.48	20.22
	127+460	21.91	21.77	21.41	21.03	21.18	21.20	21.12
	127+720	21.02	21.00	20.85	20.61	20.82	20.86	19.49
	127+740	21.02	20.99	20.89	21.07	21.49	21.47	21.15
	127+890	19.96	19.84	19.32	18.74	19.07	18.06	17.19
	127+970	19.56	19.56	19.91	21.10	21.20	21.00	20.47
	128+370	19.46	19.45	20.13	19.96	18.75	18.05	17.14
	128+780	21.79	21.79	21.85	21.64	21.41	20.90	20.62
	129+230	18.26	18.26	18.33	18.36	18.32	18.29	18.11
	129+830	21.68	21.87	22.10	21.81	21.45	21.14	20.59
금 강 대청댐 상 류	130+330	22.00	21.58	19.76	19.23	19.23	19.23	19.23
	130+470	24.05	24.05	24.05	24.05	24.05	24.05	24.05
	222+040	72.97	73.88	76.49	76.73	77.14	78.46	77.45
	222+220	78.49	78.19	78.29	78.09	78.26	77.95	78.47
	222+530	75.20	75.08	75.52	76.77	77.75	77.69	76.45
	222+915	75.24	76.29	78.50	79.06	79.20	79.70	78.53
	223+570	77.15	77.07	76.45	75.78	74.43	75.01	74.77
	223+580	78.46	78.09	78.69	76.95	78.84	76.90	77.71
	223+615	78.02	77.80	75.39	77.03	79.18	75.34	78.55
	223+645	77.48	78.21	78.67	78.40	78.80	79.31	76.11
	224+125	77.29	77.83	78.22	78.43	79.08	80.29	80.26
	224+580	78.40	78.59	78.81	79.32	79.10	77.98	76.44
	224+955	78.01	78.21	78.81	79.25	78.98	80.60	81.21
	225+415	78.62	79.88	80.21	80.30	80.06	78.33	75.94
	225+590	78.95	79.05	77.21	79.07	78.47	80.35	80.23
	225+772	81.35	80.49	79.81	79.74	79.55	79.21	77.96
	225+775	82.20	79.56	79.59	79.51	80.01	79.85	84.18
	225+830	80.67	80.06	79.99	80.33	80.23	78.34	77.91
	226+275	80.32	79.98	80.04	79.31	79.65	81.24	82.72
	226+385	79.91	80.03	79.38	79.63	79.18	77.71	78.45
	226+950	80.63	80.83	80.80	80.65	80.99	81.72	83.22
	227+100	81.57	81.03	80.64	80.86	79.99	79.21	78.97
	227+425	80.03	79.82	79.84	80.14	81.13	81.77	82.20
	227+610	78.75	79.06	80.20	80.30	79.78	77.78	79.91
	227+745	80.23	80.28	80.36	80.38	80.92	81.39	82.35
	228+340	80.60	80.72	81.38	81.57	81.37	81.29	82.48
	229+100	81.08	81.13	81.80	81.92	82.14	81.75	81.68
	229+550	81.97	81.88	81.99	82.22	81.90	81.75	83.74
	229+925	81.81	81.81	82.14	82.19	83.14	82.49	83.54
	230+485	82.29	82.34	82.50	82.54	82.79	83.35	84.05
	230+895	83.27	83.23	83.24	83.23	83.14	83.21	83.44
	231+365	84.66	84.56	84.29	83.93	83.80	83.66	83.95

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
금 강 대청댐 상 류	231+605	84.21	84.15	83.82	83.89	83.80	83.68	83.87
	231+925	83.98	83.99	84.67	84.67	84.80	84.83	85.01
	232+360	83.69	84.42	84.36	84.22	84.30	84.18	84.01
	232+905	84.40	84.76	85.01	84.82	84.72	84.78	84.79
	233+465	83.64	83.71	83.96	83.94	83.69	83.78	83.84
	234+130	85.32	85.32	85.16	84.98	84.89	84.83	84.85
	234+585	85.66	85.65	85.46	85.30	85.23	84.94	84.79
	235+060	86.35	85.94	86.01	85.74	85.53	85.44	85.44
	235+420	86.55	86.41	86.19	86.06	86.01	86.01	85.74
	235+450	86.55	86.54	86.45	86.29	86.05	85.86	85.64
	235+530	87.55	86.62	86.60	86.60	86.60	86.60	86.60
	235+570	87.79	86.84	86.84	86.84	86.84	86.84	86.84
	235+595	87.73	86.82	86.78	86.77	86.77	86.80	86.79
	235+710	87.18	87.22	87.12	87.12	87.16	87.14	87.16
	236+055	86.83	86.82	86.72	86.69	86.68	86.67	86.66
	236+505	87.71	87.66	87.51	87.45	87.44	87.43	87.42
	237+040	86.90	86.92	87.10	87.11	87.12	87.21	87.14
	237+455	87.95	87.80	87.77	87.75	87.75	87.81	87.74
	237+865	88.40	87.98	87.89	87.81	87.81	87.81	87.80
	238+335	88.56	88.51	88.50	88.47	88.46	88.47	88.44
	238+780	87.80	88.33	88.54	88.57	88.55	88.49	88.28
	239+170	89.73	89.84	89.40	89.44	89.38	89.33	89.13
	239+220	89.23	88.57	89.04	89.19	89.15	89.08	88.84
	239+635	89.13	89.45	89.81	89.97	89.92	89.73	89.38
	240+070	88.70	89.11	89.40	89.74	89.77	89.71	89.47
	240+295	87.63	89.67	89.95	90.10	90.11	89.92	89.53
	240+825	89.31	89.38	89.57	89.66	89.66	89.99	89.86
	241+055	90.42	90.91	90.80	90.79	90.78	90.64	90.37
	241+220	87.87	88.92	89.12	89.46	89.44	90.74	90.12
	241+765	90.98	91.67	91.20	91.11	91.07	90.23	90.65
	242+610	91.10	90.48	90.95	91.33	91.05	90.85	90.60
	243+355	91.92	91.03	90.51	90.84	90.60	90.47	89.87
	243+940	93.53	93.41	92.13	92.46	92.08	91.92	91.28
	244+360	91.75	92.28	91.80	89.03	90.32	89.99	88.98
	244+830	93.61	92.72	92.23	91.79	91.02	90.84	90.84
	244+870	93.19	92.56	92.64	90.42	90.41	90.41	90.41
	245+305	95.31	94.32	92.92	92.70	92.55	92.55	92.55
	245+840	95.77	95.74	95.28	93.16	93.00	93.00	93.00
갑 천	246+330	94.91	94.40	92.15	92.22	92.17	92.24	92.23
	246+365	95.65	94.82	94.70	92.95	92.96	92.90	93.02
	0+000	19.65	19.61	19.77	19.81	19.21	19.21	19.21
	0+160	19.75	20.02	19.83	19.95	19.99	19.99	19.99
	0+390	20.53	20.22	20.37	20.53	20.42	20.42	20.42
	0+570	19.91	20.29	20.31	20.67	20.81	20.81	20.81
	0+770	20.25	20.87	20.58	20.67	20.67	20.67	20.67

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
갑 천	0+980	21.21	20.72	20.99	21.33	21.35	21.35	21.35
	1+015	20.76	20.47	20.99	21.00	20.97	20.97	20.97
	1+220	20.20	20.38	20.97	21.60	21.40	21.40	21.40
	1+450	19.64	20.71	20.99	20.16	20.86	20.86	20.86
	1+710	20.19	21.19	21.29	21.57	21.53	21.53	21.53
	1+950	21.81	21.87	21.70	21.75	21.77	21.77	21.77
	2+205	21.96	21.77	21.94	22.64	22.14	22.14	22.14
	2+455	22.83	22.24	22.45	22.00	22.15	22.15	22.15
	2+535	23.23	22.50	22.58	22.72	22.42	22.42	22.42
	2+640	22.71	22.36	22.58	21.95	22.14	22.14	22.14
	2+820	22.20	22.51	22.44	22.95	22.45	22.45	22.45
	2+985	22.03	22.41	22.98	22.06	22.24	22.24	22.24
	3+125	22.65	22.93	21.98	22.49	22.45	22.45	22.45
	3+335	22.86	22.98	23.03	22.09	22.57	22.57	22.57
	3+550	23.52	23.55	22.33	23.68	23.31	23.31	23.31
	3+755	23.60	23.27	23.51	22.90	23.22	23.22	23.22
	3+915	23.77	23.36	22.73	23.43	23.25	23.25	23.25
	3+975	23.39	23.51	23.43	23.29	23.26	23.26	23.26
	4+205	23.49	23.37	23.77	23.34	23.56	23.56	23.56
	4+395	23.74	23.31	23.42	23.42	23.31	23.31	23.31
	4+595	23.40	23.88	24.13	23.83	23.78	23.78	23.78
	4+775	21.34	23.02	22.27	23.84	23.54	23.54	23.54
	4+955	23.50	25.38	24.19	24.13	23.85	23.85	23.85
	5+003	23.70	22.32	23.04	23.74	23.16	23.16	23.16
	5+005	23.70	21.39	24.20	24.16	23.78	23.78	23.78
	5+165	24.43	24.44	24.65	24.49	24.19	24.19	24.19
	5+345	25.22	24.85	24.79	24.67	24.57	24.57	24.57
	5+465	24.01	24.77	25.11	24.84	24.59	24.59	24.59
	5+635	23.39	23.78	25.08	25.18	24.90	24.90	24.90
	5+815	25.80	25.55	25.76	25.44	25.22	25.22	25.22
	5+975	26.05	25.72	25.54	25.38	25.37	25.37	25.37
	6+145	26.47	26.05	25.86	25.63	25.09	25.09	25.09
	6+315	26.11	26.18	25.25	25.21	25.40	25.40	25.40
	6+515	25.29	25.94	25.43	25.10	24.22	24.22	24.22
	6+710	26.61	26.60	25.83	25.48	25.31	25.31	25.31
	6+880	27.20	26.91	26.17	25.55	25.32	25.32	25.32
	7+100	27.79	27.60	27.14	25.99	25.99	25.99	25.99
	7+130	27.80	26.91	27.97	25.59	25.59	25.59	25.59
	7+150	27.79	27.64	26.25	25.93	25.93	25.93	25.93
	7+160	27.84	27.66	26.04	26.03	26.03	26.03	26.03
	7+285	27.85	27.49	27.01	26.09	26.09	26.09	26.09
	7+505	27.92	28.22	26.63	26.21	26.21	26.21	26.21
	7+563	29.32	27.62	27.62	27.62	27.62	27.62	27.62
	7+565	30.32	28.63	28.63	28.63	28.63	28.63	28.63
	7+715	28.56	27.03	26.90	26.90	26.90	26.90	26.90

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
갑 천	7+905	29.02	28.37	28.26	28.21	28.19	28.19	28.19
	8+125	28.63	28.24	27.94	27.95	27.93	27.93	27.93
	8+365	28.00	28.24	27.74	27.77	27.76	27.76	27.76
	8+555	28.20	28.45	28.18	28.18	28.15	28.15	28.15
	8+775	28.13	28.43	28.26	28.26	28.22	28.22	28.22
	8+985	28.44	29.11	28.59	28.57	28.53	28.53	28.53
	9+190	28.56	28.65	28.86	28.82	28.73	28.73	28.73
	9+370	28.60	29.31	28.91	28.86	28.81	28.81	28.81
	9+550	28.61	28.53	29.07	29.01	28.95	28.95	28.95
	9+720	28.62	28.78	29.00	29.00	29.05	29.05	29.05
	9+905	28.83	28.79	29.07	29.22	29.24	29.24	29.24
	10+045	29.14	28.52	28.99	29.24	29.30	29.30	29.30
	10+105	30.55	29.64	29.32	29.47	29.55	29.55	29.55
	10+225	29.77	29.07	29.17	29.33	29.38	29.38	29.38
	10+415	29.58	29.63	29.62	29.81	29.89	29.89	29.89
	10+595	28.29	28.35	29.01	29.49	29.46	29.46	29.46
	10+765	27.85	29.90	29.64	30.07	30.08	30.08	30.08
	10+925	29.16	29.32	29.67	29.94	29.75	29.75	29.75
	11+105	30.89	30.36	30.23	30.51	30.40	30.40	30.40
	11+325	30.80	30.41	30.50	29.66	29.50	29.50	29.50
	11+415	31.04	30.32	30.06	29.93	29.77	29.77	29.77
	11+545	31.20	30.81	30.38	30.05	30.41	30.41	30.41
	11+655	31.40	31.31	31.08	30.68	30.62	30.62	30.62
	11+725	31.30	31.03	30.71	30.14	30.10	30.10	30.10
	11+785	31.60	31.47	30.39	30.42	30.15	30.15	30.15
	11+817	31.10	31.06	29.82	29.82	29.82	29.82	29.82
	11+820	32.50	31.34	31.22	31.21	31.22	31.22	31.22
	11+960	31.44	30.86	30.13	30.19	30.11	30.11	30.11
	12+060	31.66	33.02	31.04	31.05	30.93	30.93	30.93
	12+160	31.81	31.14	31.74	31.52	31.26	31.26	31.26
	12+210	31.92	31.42	31.38	30.85	30.50	30.50	30.50
	12+260	31.53	31.46	31.40	31.07	30.99	30.99	30.99
	12+355	31.71	31.97	31.62	31.70	31.20	31.20	31.20
	12+460	31.67	32.21	32.04	31.49	31.56	31.56	31.56
	12+560	31.60	32.03	32.27	31.55	30.65	30.65	30.65
	12+660	31.46	32.61	32.27	31.29	31.96	31.96	31.96
	12+760	31.71	31.64	32.84	31.28	30.37	30.37	30.37
	12+860	30.76	32.58	30.96	34.99	32.97	32.97	32.97
	12+916	32.71	31.02	33.24	29.01	29.01	29.01	29.01
	12+920	34.22	32.54	31.29	29.44	29.44	29.44	29.44
	12+960	33.50	31.81	32.80	30.60	30.76	30.76	30.76
	13+035	33.70	33.04	33.27	32.23	32.48	32.48	32.48
	13+165	33.64	33.15	33.44	33.01	33.92	33.92	33.92
	13+265	33.77	33.34	33.29	32.41	34.18	34.18	34.18
	13+355	33.80	33.80	33.87	33.76	34.44	34.44	34.44

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
갑 천	13+460	33.62	33.70	33.33	34.12	34.41	34.41	34.41
	13+555	33.47	34.34	33.97	34.44	33.22	33.22	33.22
	13+673	35.29	33.32	33.31	33.33	33.31	33.31	33.31
	13+675	35.61	33.62	33.65	34.24	33.67	33.67	33.67
	13+755	34.10	33.85	33.82	34.45	34.47	34.47	34.47
	13+850	34.43	34.45	34.12	35.42	34.82	34.82	34.82
	13+955	34.65	34.58	34.37	35.21	35.03	35.03	35.03
	14+060	34.16	34.85	34.69	35.43	35.44	35.44	35.44
	14+150	34.27	34.65	34.83	34.08	34.04	34.04	34.04
	14+250	35.41	35.17	35.26	35.70	35.47	35.47	35.47
	14+345	35.47	35.28	35.14	34.64	34.64	34.64	34.64
	14+440	35.61	35.75	35.38	35.65	35.36	35.36	35.36
	14+540	35.84	35.92	35.39	35.45	34.64	34.64	34.64
	14+635	35.76	35.92	35.66	35.81	35.89	35.89	35.89
	14+720	35.83	36.22	35.35	34.96	34.41	34.41	34.41
	14+830	36.15	37.59	35.81	35.85	34.90	34.90	34.90
	14+943	36.86	34.49	34.98	34.39	34.56	34.56	34.56
	14+945	38.12	35.66	35.66	35.69	35.87	35.87	35.87
	15+045	35.88	36.22	35.10	36.36	35.43	35.43	35.43
	15+140	35.90	36.98	36.27	35.26	36.20	36.20	36.20
	15+235	36.04	37.23	36.11	36.74	35.55	35.55	35.55
	15+325	36.05	35.91	36.50	35.26	32.39	32.39	32.39
	15+375	36.27	37.12	34.79	34.28	29.84	29.84	29.84
	15+420	37.18	36.99	35.50	34.30	35.20	35.20	35.20
	15+525	37.20	37.54	36.37	36.77	34.92	34.92	34.92
	15+620	37.22	36.92	36.32	35.87	35.72	35.72	35.72
	15+720	38.56	38.23	37.20	36.96	36.63	36.63	36.63
	15+820	37.62	37.26	37.01	36.76	36.59	36.59	36.59
	15+925	37.74	38.36	37.53	37.48	36.91	36.91	36.91
	16+021	38.53	35.88	35.88	35.88	35.88	35.88	35.88
	16+025	40.03	37.76	37.38	37.40	37.37	37.37	37.37
	16+125	38.51	35.91	35.89	35.90	35.89	35.89	35.89
	16+225	39.45	38.76	37.52	36.90	37.52	37.52	37.52
	16+325	39.47	39.31	38.24	37.74	37.57	37.57	37.57
	16+435	39.70	39.19	38.61	38.27	38.18	38.18	38.18
	16+535	39.84	39.62	38.95	37.79	37.61	37.61	37.61
	16+635	39.32	39.26	39.20	38.40	38.31	38.31	38.31
	16+735	39.44	39.60	38.97	38.28	38.32	38.32	38.32
	16+835	39.78	39.76	39.52	39.08	38.73	38.73	38.73
	16+935	39.97	40.01	39.51	38.93	38.92	38.92	38.92
	17+035	38.83	39.07	39.61	39.36	39.14	39.14	39.14
	17+135	38.59	39.65	39.43	38.83	38.79	38.79	38.79
	17+240	39.08	40.16	40.33	39.53	39.04	39.04	39.04
	17+335	38.89	38.93	38.65	39.14	39.38	39.38	39.38
	17+435	39.30	39.38	39.62	39.55	39.40	39.40	39.40

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
갑 천	17+535	40.12	39.93	39.80	39.69	39.62	39.62	39.62
	17+635	40.46	40.71	40.62	40.18	39.94	39.94	39.94
	17+735	40.27	40.52	40.00	39.93	40.02	40.02	40.02
	17+825	40.57	40.42	40.48	40.14	40.01	40.01	40.01
	17+925	40.97	40.59	40.52	40.24	40.37	40.37	40.37
	18+025	41.09	41.30	41.18	40.65	40.36	40.36	40.36
	18+130	40.42	40.89	40.39	39.96	40.94	40.94	40.94
	18+230	40.88	40.80	41.45	40.79	40.58	40.58	40.58
	18+330	40.86	41.17	40.79	40.74	41.36	41.36	41.36
	18+430	40.47	40.98	41.74	41.30	40.99	40.99	40.99
	18+530	41.72	41.54	41.53	41.29	41.38	41.38	41.38
	18+630	42.19	42.11	42.27	41.08	40.61	40.61	40.61
	18+720	42.06	41.91	41.78	41.73	41.42	41.42	41.42
	18+825	42.08	42.06	42.29	41.96	41.89	41.89	41.89
	18+925	41.99	42.07	42.30	42.19	42.23	42.23	42.23
	19+025	42.65	42.46	42.68	42.41	42.20	42.20	42.20
	19+125	42.16	42.09	42.35	42.46	42.95	42.95	42.95
	19+230	42.25	42.28	42.80	42.44	41.92	41.92	41.92
	19+335	43.09	42.16	42.10	42.80	43.20	43.20	43.20
	19+435	43.36	43.07	43.01	42.93	41.64	41.64	41.64
	19+535	42.94	42.60	42.66	43.31	43.28	43.28	43.28
	19+630	43.87	43.34	43.46	43.58	43.35	43.35	43.35
	19+740	43.21	42.59	43.14	43.66	43.55	43.55	43.55
	19+815	44.06	43.85	43.81	43.78	43.37	43.37	43.37
	19+925	44.21	44.14	43.87	43.93	44.03	44.03	44.03
	20+020	44.36	44.39	44.16	44.19	43.96	43.96	43.96
	20+115	44.36	44.89	44.32	44.37	44.20	44.20	44.20
	20+210	44.50	44.61	44.59	44.44	43.14	43.14	43.14
	20+315	44.70	44.78	44.75	44.81	44.38	44.38	44.38
	20+410	44.72	44.90	45.15	44.30	43.27	43.27	43.27
	20+510	44.33	44.93	44.74	45.31	44.22	44.22	44.22
	20+610	44.30	44.35	44.83	43.45	43.52	43.52	43.52
	20+690	44.77	45.07	45.17	45.12	44.42	44.42	44.42
	20+795	44.80	44.85	45.38	45.11	44.57	44.57	44.57
	20+895	44.15	45.50	45.48	45.42	43.52	43.52	43.52
	21+043	46.68	44.96	46.08	44.96	44.96	44.96	44.96
	21+045	47.48	45.78	45.79	45.78	45.78	45.78	45.78
	21+095	45.93	44.39	46.12	44.21	44.21	44.21	44.21
	21+200	46.05	45.78	45.96	45.30	45.68	45.68	45.68
	21+290	44.97	46.64	46.03	45.33	45.44	45.44	45.44
	21+390	45.60	45.81	43.76	43.76	43.76	43.76	43.76
	21+513	48.90	47.00	47.00	47.00	47.00	47.00	47.00
	21+515	49.60	47.70	47.70	47.70	47.70	47.70	47.70
	21+525	48.10	47.19	46.45	46.64	46.12	46.12	46.12
	21+585	48.55	47.58	46.36	47.19	47.23	47.23	47.23

건설기술

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
갑 천	21+685	47.30	47.65	47.29	47.55	47.18	47.18	47.18
	21+745	47.37	47.58	47.62	46.50	47.20	47.20	47.20
	21+805	47.69	47.60	47.78	44.67	46.05	46.05	46.05
	21+850	47.61	47.34	47.16	46.77	47.24	47.24	47.24
	21+895	47.50	46.74	47.21	44.76	47.31	47.31	47.31
	21+900	47.97	47.90	47.21	47.24	47.53	47.53	47.53
	22+095	47.62	47.76	48.04	48.28	48.27	48.27	48.27
	22+290	49.04	48.70	48.04	48.31	47.91	47.91	47.91
	22+480	48.85	48.80	48.90	49.05	48.89	48.89	48.89
	22+670	49.28	48.83	47.75	46.96	46.95	46.95	46.95
	22+845	48.75	48.89	49.54	49.35	49.14	49.14	49.14
	22+885	49.32	49.19	49.18	48.35	48.84	48.84	48.84
	23+080	49.36	49.41	50.05	49.97	49.94	49.94	49.94
	23+280	49.40	49.69	49.83	49.80	49.62	49.62	49.62
	23+480	49.83	50.17	51.01	50.62	50.70	50.70	50.70
	23+670	50.69	50.34	49.39	50.26	50.29	50.29	50.29
	23+835	50.70	51.11	50.87	51.25	50.94	50.94	50.94
	23+880	50.94	50.81	50.56	50.40	50.47	50.47	50.47
	24+075	50.88	51.63	51.72	51.77	51.56	51.56	51.56
	24+265	51.05	51.18	50.83	50.52	50.68	50.68	50.68
	24+359	52.73	52.12	51.93	51.88	50.75	50.75	50.75
	24+365	54.03	51.48	51.33	51.73	51.29	51.29	51.29
	24+465	52.77	52.42	52.08	52.15	52.06	52.06	52.06
	24+665	52.20	51.65	50.96	50.97	51.01	51.01	51.01
	24+865	51.66	52.94	52.68	53.20	53.25	53.25	53.25
	25+060	51.79	52.19	52.74	52.27	52.12	52.12	52.12
	25+255	53.09	53.17	53.34	53.32	53.67	53.67	53.67
	25+445	53.36	54.50	53.93	53.68	53.54	53.54	53.54
	25+483	55.45	54.26	54.18	53.55	53.49	53.49	53.49
	25+485	56.45	53.70	53.81	53.74	53.84	53.84	53.84
	25+630	54.39	54.03	54.15	53.71	53.79	53.79	53.79
	25+850	53.65	54.17	54.82	54.21	54.35	54.35	54.35
	26+050	54.64	54.63	54.94	55.17	54.89	54.89	54.89
	26+095	55.70	55.32	55.39	55.19	54.94	54.94	54.94
	26+125	55.38	55.14	55.63	55.62	55.28	55.28	55.28
	26+175	55.64	55.61	55.32	55.08	54.84	54.84	54.84
	26+245	55.79	55.87	55.92	55.93	55.96	55.96	55.96
	26+301	57.16	55.52	54.43	54.39	54.38	54.38	54.38
	26+305	58.67	55.91	55.97	55.91	55.91	55.91	55.91
	26+455	54.40	55.44	53.00	51.65	51.64	51.64	51.64
	26+660	55.25	55.89	56.06	56.09	56.03	56.03	56.03
	26+865	57.00	56.53	56.22	56.16	55.71	55.71	55.71
	27+065	56.93	57.25	56.81	56.72	56.62	56.62	56.62
	27+270	55.97	56.15	56.23	56.29	55.99	55.99	55.99
	27+490	57.81	57.77	58.02	58.22	58.21	58.21	58.21

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
갑 천	27+675	57.91	57.95	57.85	57.80	57.36	57.36	57.36
	27+710	58.29	58.23	58.59	58.34	58.44	58.44	58.44
	27+885	58.44	58.32	57.95	57.82	57.79	57.79	57.79
	28+095	58.45	58.70	58.66	58.54	58.44	58.44	58.44
	28+295	58.90	58.97	58.91	58.81	58.85	58.85	58.85
	28+495	60.30	60.18	59.57	59.34	59.26	59.26	59.26
	28+605	60.02	59.85	59.21	59.95	60.02	60.02	60.02
	28+673	60.59	60.36	59.69	58.00	57.97	57.97	57.97
	28+675	61.89	59.45	59.28	60.94	59.41	59.41	59.41
	28+690	60.58	60.04	59.41	58.77	58.17	58.17	58.17
	28+895	60.30	60.37	60.31	60.57	60.06	60.06	60.06
	29+090	58.95	60.07	60.60	60.01	59.27	59.27	59.27
	29+285	60.76	60.63	60.63	60.33	60.21	60.21	60.21
	29+495	61.18	61.06	60.99	61.10	60.85	60.85	60.85
	29+680	61.25	61.34	61.37	61.34	61.33	61.33	61.33
	29+780	61.95	61.76	61.81	61.80	61.77	61.77	61.77
	29+895	62.12	62.13	62.28	62.23	62.26	62.26	62.26
	30+105	61.83	61.92	62.23	62.32	62.25	62.25	62.25
	30+290	63.57	63.03	62.58	62.33	62.37	62.37	62.37
	30+345	63.12	63.29	63.05	62.90	62.78	62.78	62.78
	30+388	64.64	62.76	62.26	62.27	62.26	62.26	62.26
	30+390	65.64	63.32	63.27	63.27	63.27	63.27	63.27
	30+480	63.90	63.47	61.57	61.51	61.51	61.51	61.51
	30+680	64.55	64.10	63.35	63.44	63.41	63.41	63.41
	30+880	64.00	64.32	63.93	63.33	62.35	62.35	62.35
	31+070	64.12	64.57	64.16	63.68	63.74	63.74	63.74
	31+290	65.08	64.89	64.68	64.54	64.42	64.42	64.42
	31+470	65.71	65.11	64.94	64.56	64.43	64.43	64.43
	31+675	65.15	65.27	65.16	65.30	65.28	65.28	65.28
	31+880	65.57	65.64	65.70	65.32	64.34	64.34	64.34
	32+085	65.86	65.88	65.71	65.43	66.14	66.14	66.14
	32+285	66.49	66.52	66.73	67.17	66.63	66.63	66.63
	32+485	66.68	66.92	67.01	66.81	66.93	66.93	66.93
	32+680	66.78	68.03	68.26	68.01	67.90	67.90	67.90
	32+698	68.87	66.42	66.75	66.42	66.42	66.42	66.42
	32+700	70.42	67.95	67.94	67.95	67.94	67.94	67.94
	32+885	67.53	67.51	66.97	66.53	66.01	66.01	66.01
	33+075	68.74	68.57	68.06	67.81	67.81	67.81	67.81
	33+270	69.18	69.19	68.55	68.46	68.09	68.09	68.09
유등천	33+315	69.77	69.50	69.01	68.37	68.01	68.01	68.01
	33+510	70.04	69.84	69.37	68.80	68.43	68.43	68.43
	0+000	31.10	29.90	32.63	30.59	28.63	31.04	31.17
	0+070	31.13	31.11	29.76	31.03	30.53	31.06	30.96
	0+280	32.51	32.93	31.78	31.84	31.60	31.56	31.52
	0+480	32.44	32.54	31.88	32.19	32.17	32.12	31.99

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
유등천	0+675	33.24	32.26	32.56	32.45	32.56	32.56	32.43
	0+895	33.39	33.16	32.16	32.76	32.78	32.85	32.69
	1+055	33.76	33.66	32.87	32.87	33.19	33.12	33.01
	1+245	34.09	33.95	33.10	33.18	33.35	33.34	33.11
	1+445	34.36	34.17	33.60	33.80	34.03	33.54	33.23
	1+635	34.28	34.30	33.85	33.86	33.79	33.78	33.66
	1+860	34.55	34.72	34.45	34.66	34.57	34.52	34.09
	1+880	34.56	34.56	34.18	34.13	34.25	34.09	34.01
	2+090	35.04	35.16	34.78	34.99	34.71	34.53	34.42
	2+300	34.90	33.04	32.70	32.73	33.25	33.86	34.53
	2+305	34.86	34.97	33.45	33.03	33.67	34.16	34.50
	2+480	35.28	35.40	34.76	34.79	34.89	34.79	34.66
	2+640	35.99	35.36	34.80	34.74	34.31	34.34	34.52
	2+790	35.28	35.32	35.37	35.02	35.21	35.29	35.05
	2+820	35.80	35.15	35.51	34.90	34.92	34.95	34.95
	3+015	35.73	35.70	35.69	35.65	35.74	35.64	35.74
	3+215	36.10	36.06	36.21	35.97	35.75	35.75	35.69
	3+255	36.16	36.00	36.16	36.02	36.19	36.24	36.18
	3+415	37.32	37.11	37.20	37.14	35.93	35.94	35.97
	3+615	36.70	36.95	36.77	36.96	36.83	36.71	36.15
	3+805	37.52	37.50	37.57	37.52	37.60	36.97	36.64
	4+005	37.86	37.85	37.93	38.12	38.31	38.26	37.88
	4+205	38.35	38.34	38.44	38.57	38.44	38.20	37.80
	4+400	38.96	39.53	39.68	39.83	39.97	40.05	40.16
	4+456	39.18	37.26	37.26	37.26	37.26	37.26	37.26
	4+460	41.48	39.58	39.58	39.58	39.58	39.58	39.83
	4+500	40.23	38.32	38.32	38.34	38.39	38.36	38.37
	4+600	41.07	40.20	39.78	39.79	39.94	40.05	40.16
	4+800	41.61	41.14	40.25	40.06	39.67	39.74	39.67
	5+000	41.51	41.77	40.73	40.51	39.87	39.99	39.92
	5+200	41.79	41.78	41.38	41.14	40.30	40.21	40.65
	5+395	42.24	42.12	42.03	42.14	41.91	41.86	41.21
	5+575	42.62	42.40	42.33	42.25	42.18	41.83	41.70
	5+790	42.84	42.66	42.92	42.52	42.68	42.21	42.73
	5+990	41.92	42.84	42.80	42.60	42.47	42.73	42.34
	6+130	43.04	43.16	43.46	43.65	43.69	43.80	42.81
	6+190	43.42	43.20	43.52	43.35	43.14	43.19	42.60
	6+400	43.55	44.07	43.92	43.82	43.77	43.87	43.59
	6+590	43.74	43.99	43.77	43.31	43.28	43.18	42.70
	6+780	44.50	44.42	44.39	44.27	44.36	44.02	44.57
	6+952	44.97	44.55	44.30	44.30	44.38	44.56	44.75
	6+960	45.57	44.35	44.15	44.11	40.54	43.92	43.86
	6+980	45.42	44.07	45.02	43.70	43.63	44.40	44.57
	7+010	45.26	45.15	44.78	44.62	44.45	44.76	44.73
	7+195	44.96	44.97	45.02	44.82	44.90	44.67	45.13

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
유등천	7+385	46.58	46.25	45.49	45.25	45.03	45.80	45.36
	7+575	46.38	46.50	46.85	47.16	47.04	46.55	46.54
	7+790	46.74	46.96	46.90	46.66	46.49	46.66	45.99
	7+820	47.30	47.17	47.13	47.67	47.41	46.96	46.78
	7+830	47.32	47.25	47.07	47.22	46.99	46.73	46.08
	7+980	48.02	47.96	48.13	47.74	47.68	47.45	47.69
	8+180	48.13	48.16	48.17	47.72	47.53	46.97	46.45
	8+390	49.68	50.45	50.27	50.16	49.83	50.82	50.87
	8+433	49.62	47.65	46.86	46.87	46.87	46.86	46.86
	8+440	52.54	49.91	50.17	50.02	49.80	49.91	50.04
	8+560	51.45	50.60	50.22	49.80	49.56	49.75	49.76
	8+780	51.88	51.74	51.12	51.14	51.18	51.19	51.32
	8+990	52.05	52.01	51.58	50.89	50.82	50.77	50.27
	9+010	52.25	52.07	51.99	51.46	51.28	51.27	52.09
	9+190	52.38	52.52	52.20	51.80	51.76	51.86	51.42
	9+395	52.65	52.67	52.75	52.76	52.82	52.72	52.35
	9+595	52.90	52.80	52.88	52.82	52.65	52.88	52.97
	9+795	52.93	52.95	53.00	53.08	53.27	52.93	53.14
	9+995	53.79	53.84	54.29	53.86	53.61	53.76	53.98
	10+195	54.00	54.10	54.26	54.85	54.66	54.66	54.60
	10+400	55.51	55.48	55.44	55.31	55.15	55.18	55.12
	10+585	55.98	55.84	55.66	55.83	55.45	55.55	55.55
	10+735	56.20	56.23	56.45	56.10	56.13	56.03	56.14
	10+785	56.40	56.44	55.94	56.03	56.14	56.06	55.66
	10+985	56.68	56.94	56.84	56.26	56.41	56.54	56.23
	11+043	56.76	57.83	54.74	56.05	55.67	55.46	55.61
	11+045	58.40	56.52	56.01	56.19	56.22	56.43	56.08
	11+195	55.56	55.64	55.84	56.41	56.09	55.63	55.88
	11+390	57.49	58.96	58.71	58.46	58.24	58.24	58.40
	11+515	58.03	55.33	57.93	56.32	55.27	56.45	55.27
	11+520	58.60	50.65	49.12	56.90	53.53	48.58	49.82
	11+528	58.60	57.09	53.67	56.60	57.39	56.86	56.30
	11+530	60.50	58.52	57.79	57.99	58.11	57.79	58.07
	11+790	57.63	58.03	59.16	58.41	58.52	58.50	58.40
	11+960	58.35	58.38	58.52	58.52	58.96	59.04	58.91
	12+180	60.30	60.22	59.78	59.17	58.99	59.23	59.19
	12+370	60.15	60.12	60.15	60.11	59.86	59.61	59.54
	12+575	60.34	60.46	60.69	60.68	60.51	60.66	60.73
	12+780	60.69	60.86	61.29	61.31	61.69	61.23	61.27
	12+970	61.85	61.83	61.99	62.24	62.13	62.37	62.11
	13+180	62.95	62.63	62.04	62.13	62.27	61.87	62.07
	13+230	63.23	62.94	62.45	62.86	62.38	62.81	62.77
	13+275	63.50	63.27	62.43	62.31	62.50	62.19	62.20
	13+370	63.80	63.62	63.34	63.42	63.41	63.37	63.15
	13+570	63.13	64.00	63.22	63.04	62.61	62.53	61.81

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
유등천	13+750	64.13	64.31	64.31	64.28	64.18	64.43	64.36
	14+030	64.81	64.77	64.73	64.73	64.47	63.37	62.56
	14+190	65.91	66.00	65.25	64.66	64.29	64.07	63.34
	14+241	67.27	64.55	65.13	65.30	64.53	64.53	64.53
	14+245	67.77	66.04	65.21	65.03	65.01	65.01	65.01
	14+390	65.46	67.44	67.05	67.05	66.52	63.17	61.98
	14+555	66.50	67.19	67.12	64.26	63.84	63.85	63.76
	14+590	68.24	67.75	67.62	66.76	66.72	65.50	65.50
	14+800	68.37	67.65	67.08	65.71	65.62	65.61	65.61
	14+958	69.95	69.93	67.87	67.87	67.87	67.87	67.87
	14+960	69.95	68.88	68.87	68.87	68.87	68.87	68.87
	15+000	70.17	69.76	67.41	67.41	67.41	67.41	67.41
	15+200	68.65	68.58	68.57	68.54	68.50	68.11	67.29
미호천	15+400	70.27	69.57	67.72	67.50	67.49	67.49	67.49
	15+600	71.32	70.13	68.60	68.56	68.56	68.56	68.56
	0+000	11.52	11.46	11.46	11.58	12.08	11.80	11.97
	0+200	11.68	12.66	12.03	11.50	11.18	9.47	9.47
	0+235	13.26	13.00	12.12	11.58	9.84	9.83	11.16
	0+240	14.12	12.06	11.38	12.19	12.44	11.91	11.65
	0+390	10.86	10.90	11.94	12.23	11.70	11.50	11.44
	0+630	11.18	11.92	12.15	10.66	10.60	10.45	10.41
	0+890	13.65	13.31	11.42	12.19	12.82	12.77	12.31
	0+920	13.22	13.07	12.87	12.06	11.59	11.35	12.01
	1+130	13.88	13.44	12.19	12.54	12.73	12.64	12.30
	1+330	13.44	13.28	13.08	12.50	12.46	12.39	12.27
	1+560	12.81	12.75	12.20	11.85	11.96	12.14	12.06
	1+790	12.22	12.16	11.96	11.98	12.12	12.15	12.12
	2+010	11.53	11.49	11.40	12.41	12.45	12.40	12.23
	2+150	11.36	11.49	11.79	12.77	12.83	12.79	12.59
	2+430	12.41	12.42	12.91	12.71	12.73	12.64	12.46
	2+630	12.04	12.01	13.00	13.12	13.21	13.18	13.02
	2+850	12.98	12.94	13.12	12.97	12.96	12.91	12.80
	3+010	12.75	12.84	13.38	13.35	13.39	13.36	13.25
	3+200	12.97	13.20	13.51	13.52	13.51	13.45	13.33
	3+390	13.24	13.35	13.40	13.35	13.36	13.31	13.31
	3+620	12.93	13.17	13.45	13.57	13.57	13.49	13.41
	3+770	13.19	13.32	13.44	13.40	13.40	13.33	13.41
	3+950	13.12	13.02	13.21	13.33	13.36	13.28	13.24
	4+150	12.06	12.28	13.03	13.10	13.17	13.14	13.49
	4+310	12.69	13.31	13.54	13.62	13.65	13.57	13.55
	4+440	13.33	13.58	13.67	13.68	13.70	13.65	13.86
	4+610	13.77	13.80	14.04	14.11	14.14	14.06	14.15
	4+840	13.25	13.30	13.37	13.42	13.50	13.49	13.80
	5+020	13.15	13.08	13.20	13.30	13.42	13.40	13.63
	5+230	13.60	13.63	13.79	13.89	14.01	14.00	14.41

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
미호천	5+440	13.91	13.92	14.03	14.13	14.27	14.30	14.53
	5+660	13.97	13.80	14.02	14.18	14.37	14.44	14.84
	5+920	14.26	14.27	14.39	14.51	14.68	14.72	14.86
	6+100	13.99	13.97	14.36	14.55	14.78	14.84	15.07
	6+280	14.28	14.27	14.31	14.44	14.70	14.72	14.82
	6+480	14.34	13.93	14.34	14.61	14.87	14.90	15.00
	6+680	14.00	14.22	14.36	14.63	14.95	14.82	14.91
	6+900	15.01	15.04	15.19	15.48	15.77	15.60	15.68
	7+130	14.89	15.00	15.13	15.25	15.25	15.00	15.46
	7+390	14.34	14.12	14.86	15.23	14.47	14.20	14.89
	7+620	13.96	14.98	15.04	15.13	14.69	14.19	15.23
	7+860	13.34	14.67	15.43	15.56	15.32	14.96	16.28
	8+060	14.74	14.88	14.51	13.59	12.23	14.39	13.22
	8+240	15.59	15.69	15.65	15.81	15.32	15.29	16.13
	8+380	15.73	15.58	14.55	14.37	14.02	15.48	13.02
	8+560	15.84	15.17	15.53	15.64	15.28	16.02	16.59
	8+760	16.05	15.74	15.73	15.41	15.39	14.27	13.63
	8+890	15.83	15.83	15.06	15.17	14.96	15.75	14.95
	9+040	17.33	16.36	15.33	14.58	14.60	16.52	14.62
	9+045	18.53	15.81	16.32	16.90	16.02	15.83	15.77
	9+090	14.85	15.19	14.95	12.37	14.23	15.17	12.77
	9+120	16.49	16.10	15.90	15.20	15.64	13.85	15.91
	9+290	16.91	16.41	15.70	15.73	15.61	16.30	15.79
	9+490	16.79	16.75	16.12	15.96	15.98	15.96	16.11
	9+680	15.90	15.89	15.86	15.96	15.99	16.02	16.05
	9+840	17.91	17.00	16.66	16.53	16.47	16.49	16.66
	9+900	16.41	16.16	16.38	16.26	16.69	16.70	16.52
	10+080	16.30	16.55	16.40	16.29	16.16	16.22	16.22
	10+240	17.48	17.32	16.92	16.98	16.97	16.72	16.89
	10+480	17.79	17.61	17.16	17.16	16.42	16.89	17.07
	10+690	17.77	17.58	17.42	16.93	16.98	16.66	16.70
	10+890	17.82	17.54	16.96	17.34	16.79	17.18	17.14
	11+120	18.08	18.12	17.80	17.65	17.37	17.51	17.55
	11+310	17.91	17.69	17.22	17.98	17.43	17.86	16.84
	11+520	18.13	17.84	17.78	18.01	17.20	17.31	17.92
	11+710	18.23	18.26	17.57	16.93	17.86	18.24	17.45
	11+900	16.93	16.84	18.21	18.34	18.05	16.56	18.35
	12+140	17.55	17.43	16.61	15.57	17.92	17.90	17.18
	12+340	16.39	17.20	18.17	17.81	18.01	17.88	18.14
	12+560	16.36	17.45	17.04	17.86	18.57	18.06	17.68
	12+850	17.46	18.08	18.76	18.00	18.16	18.38	18.51
	13+110	18.33	18.07	16.81	18.50	19.48	18.81	18.15
	13+320	18.27	18.31	18.60	18.34	17.40	17.10	18.49
	13+530	17.63	18.18	18.64	18.69	19.02	18.57	18.17
	13+780	17.53	17.48	18.75	17.65	18.01	18.24	18.59

건설기술연구원

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
미호천	14+020	18.80	18.46	17.15	19.02	19.81	19.42	19.02
	14+160	18.70	18.75	19.05	18.65	17.73	17.43	19.03
	14+360	19.25	19.38	18.53	19.91	19.70	19.48	18.09
	14+550	18.48	18.07	18.65	18.69	17.76	17.53	19.18
	14+740	19.06	19.16	19.79	20.74	20.81	20.64	18.98
	14+930	19.55	19.57	19.63	19.02	16.77	16.77	19.34
	15+110	19.88	19.95	20.31	20.61	19.98	19.52	19.49
	15+270	19.78	19.85	19.89	18.86	18.32	18.96	18.46
	15+550	19.24	19.64	20.47	20.10	20.00	19.94	20.16
	15+730	19.54	19.78	18.33	17.39	17.06	16.84	16.77
	15+830	19.48	19.54	20.28	19.12	19.41	19.63	17.71
	15+940	19.30	17.24	19.71	17.79	17.67	19.11	18.12
	15+950	21.09	19.28	20.75	18.91	17.98	20.22	18.09
	15+960	19.53	20.06	19.32	18.70	19.49	19.65	18.22
	16+150	19.43	19.79	19.91	19.92	19.71	19.72	19.85
	16+360	21.04	20.80	20.78	20.56	20.53	20.52	19.81
	16+500	21.08	20.65	20.67	20.62	20.44	20.39	20.28
	16+680	20.53	20.41	20.45	20.27	20.18	20.14	19.58
	16+850	21.49	21.47	21.19	21.04	20.91	20.87	20.79
	16+970	20.35	20.32	20.40	20.37	20.45	20.41	19.82
	17+180	20.59	20.61	20.64	20.58	20.53	20.25	20.26
	17+380	21.29	21.09	20.94	20.80	20.67	20.79	20.67
	17+570	21.31	21.52	21.47	21.38	21.32	21.25	21.03
	17+760	20.95	21.15	21.03	20.95	20.99	21.00	21.01
	17+980	21.30	21.35	21.30	21.29	21.24	21.31	20.87
	18+170	21.02	21.20	21.03	21.02	21.03	20.85	21.04
	18+370	22.15	21.91	21.88	21.79	21.82	21.78	21.56
	18+570	21.27	21.37	21.33	21.42	21.23	21.18	21.31
	18+770	21.15	21.69	21.60	21.61	21.55	21.53	21.38
	18+960	21.68	21.70	21.68	21.78	21.46	21.53	21.69
	19+160	22.02	22.19	22.12	21.92	21.97	22.02	21.93
	19+360	21.76	21.77	21.89	21.62	21.85	21.98	22.00
	19+530	21.70	22.24	21.80	21.75	21.64	21.95	21.52
	19+580	22.34	22.07	22.14	22.22	22.23	22.31	22.18
	19+600	22.34	22.31	21.89	21.91	21.85	21.80	21.69
	19+790	22.81	22.44	22.21	22.31	22.29	22.61	22.30
	20+010	23.18	22.88	22.48	22.42	22.40	21.75	22.15
	20+230	23.09	22.98	22.81	22.69	22.70	22.69	22.38
	20+430	23.42	22.87	22.53	22.65	22.63	22.54	22.63
	20+650	23.53	23.46	23.06	23.07	23.06	23.04	22.82
	20+770	23.32	23.36	23.19	22.92	22.93	22.84	23.00
	20+840	23.35	23.08	22.69	22.77	22.73	22.73	22.67
	21+070	23.62	23.55	23.65	23.28	23.30	23.30	23.38
	21+280	24.17	23.94	23.07	23.43	23.47	23.47	23.19
	21+450	23.37	23.30	23.41	23.36	23.36	23.38	23.31

건설기술연구원

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
미호천	21+660	23.14	23.32	23.11	23.08	23.08	23.10	23.09
	21+880	24.04	24.01	23.82	23.84	23.84	23.88	23.87
	22+080	23.27	23.55	23.47	23.48	23.50	23.59	23.73
	22+280	23.90	24.29	24.17	24.21	24.20	24.29	24.38
	22+460	23.65	23.76	23.70	23.72	23.68	23.87	24.19
	22+640	23.92	24.02	23.97	23.98	23.98	24.14	24.36
	22+830	24.39	24.48	24.44	24.48	24.47	25.02	25.29
	23+020	24.26	24.41	24.33	24.34	24.31	24.53	24.82
	23+220	24.46	24.74	24.72	24.75	24.80	25.57	25.65
	23+420	24.27	24.70	24.60	24.61	24.61	24.80	24.89
	23+600	24.75	24.47	24.30	24.37	24.70	25.13	24.85
	23+810	24.35	24.72	25.48	25.34	25.39	24.94	24.83
	24+010	24.31	24.25	24.51	24.84	25.71	25.78	25.79
	24+150	25.51	25.48	25.47	25.51	25.58	24.95	22.76
	24+350	25.16	24.87	25.04	25.47	26.14	26.00	25.85
	24+530	25.75	25.66	25.84	25.90	25.50	24.55	23.09
	24+710	25.55	25.59	25.93	26.01	26.27	25.92	25.73
	24+920	25.62	25.68	26.17	26.10	25.45	24.62	23.71
	25+120	25.50	25.95	26.43	26.15	26.21	25.80	25.54
	25+320	25.76	25.77	25.80	25.56	24.05	23.70	23.28
	25+520	25.80	26.74	26.98	26.53	26.19	26.03	25.55
	25+690	25.64	25.39	25.07	23.63	24.42	23.86	23.28
	25+710	25.35	26.65	25.95	26.32	25.51	25.54	25.18
	25+930	26.05	26.13	25.43	25.65	25.30	25.23	25.14
	26+150	26.33	27.91	26.99	26.80	26.32	25.90	25.58
	26+360	25.54	25.59	24.13	24.10	24.23	24.51	24.47
	26+570	26.31	27.68	26.46	26.32	25.86	25.50	25.02
	26+615	28.37	26.20	26.20	26.20	26.20	26.20	26.20
	26+620	30.85	28.67	28.67	28.67	28.67	28.67	28.67
	26+800	29.45	27.32	27.31	27.31	27.31	27.31	27.31
	27+010	29.30	28.82	28.49	28.43	28.18	28.33	28.28
	27+230	28.18	27.69	27.35	27.06	26.80	26.73	26.71
	27+520	29.37	28.96	28.54	28.11	28.35	28.34	28.31
	27+760	28.95	28.85	28.27	28.33	28.16	28.12	28.09
	27+890	28.43	28.51	28.44	28.10	28.16	28.16	28.21
	28+210	28.95	28.96	28.21	28.21	28.22	28.21	28.29
	28+410	28.53	28.69	28.54	28.83	28.54	28.48	28.60
	28+630	29.26	29.07	28.08	28.14	28.50	28.50	28.86
	28+840	28.79	28.75	28.71	28.57	28.91	28.76	29.08
	29+000	28.37	28.36	28.38	28.36	28.88	28.92	29.48
	29+180	28.29	28.28	28.66	28.89	29.18	29.04	29.28
	29+370	28.32	28.53	28.86	28.96	29.17	29.44	29.51
	29+670	28.67	29.17	29.29	29.42	29.50	28.95	28.81
	29+870	29.00	29.29	29.48	28.48	28.21	29.52	29.58
	30+090	29.91	29.70	29.72	29.71	29.96	29.68	29.18

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
미호천	30+330	29.98	30.04	29.63	29.84	28.94	29.04	29.61
	30+390	30.07	29.70	29.81	29.55	29.66	29.71	29.73
	30+550	30.05	29.98	29.57	29.82	29.57	29.32	29.36
	30+730	28.52	28.62	29.96	29.98	29.50	29.60	29.92
	30+910	29.82	29.82	29.54	29.11	29.59	29.54	29.20
	31+120	29.68	29.78	29.77	29.82	29.38	29.05	30.04
	31+290	29.35	29.52	29.48	28.59	29.64	29.70	29.37
	31+450	29.50	29.53	29.57	29.80	29.55	29.44	29.21
	31+650	30.49	30.48	30.24	29.91	30.25	30.46	29.98
	31+680	30.46	30.28	30.10	30.00	29.94	29.83	29.65
	31+830	30.61	30.46	30.60	30.30	30.20	30.55	29.63
	32+060	30.56	30.30	30.43	30.19	30.11	29.79	30.41
	32+150	30.25	30.39	30.90	30.36	30.48	30.46	29.57
	32+220	30.71	30.69	29.84	30.64	29.86	30.23	30.34
	32+420	30.97	31.10	31.04	30.49	31.01	30.84	30.78
	32+610	30.54	30.52	30.76	30.85	30.84	30.83	30.56
	32+740	30.93	30.80	30.48	30.93	31.43	30.92	31.08
	32+910	30.72	30.57	30.86	30.52	30.10	30.24	30.01
	33+080	30.15	30.78	30.80	31.42	31.54	31.44	31.47
	33+270	30.93	31.13	31.42	31.01	30.16	30.41	29.42
	33+420	30.83	30.62	29.67	31.48	31.01	31.44	31.41
	33+630	30.49	31.44	31.51	31.37	31.48	31.15	30.66
	33+840	31.21	31.38	31.32	32.36	31.95	31.72	31.62
	34+030	31.61	31.62	31.63	30.69	31.05	31.66	31.46
	34+240	31.16	31.46	31.10	32.06	32.09	31.59	31.56
	34+390	31.25	31.79	31.60	30.28	30.14	32.07	32.11
	34+570	31.74	31.49	31.65	31.57	32.07	31.98	31.24
	34+750	31.98	31.68	31.23	30.71	31.93	32.52	31.92
	34+940	31.94	32.21	32.01	32.27	32.45	31.50	30.38
	35+130	31.78	31.81	31.85	31.94	31.97	32.91	32.26
	35+330	32.39	32.46	32.60	32.74	32.76	32.59	31.75
	35+530	32.33	32.36	32.34	32.33	30.03	30.24	32.09
	35+740	32.59	32.73	32.92	32.75	32.33	32.49	32.95
	35+880	32.52	32.25	31.94	30.13	30.21	30.38	31.39
	36+120	32.98	32.78	32.81	32.84	32.82	32.53	32.76
	36+300	33.12	33.07	33.20	33.15	32.92	32.51	32.45
	36+490	33.29	33.29	33.28	33.30	33.20	33.01	32.91
	36+680	32.85	33.55	33.80	33.75	33.58	33.23	32.94
	36+880	33.29	33.36	33.60	33.66	33.58	33.42	33.25
	37+080	33.09	34.48	34.39	34.44	34.21	34.02	33.76
	37+290	32.14	32.18	32.18	31.97	31.35	31.19	31.24
	37+490	35.74	34.30	34.27	34.20	34.23	33.85	33.59
	37+710	34.71	34.30	34.09	33.88	33.68	33.37	32.81
	37+930	35.57	34.85	34.83	34.68	34.52	34.29	34.05
	38+140	35.90	35.57	35.06	34.73	34.50	34.08	33.22

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
미호천	38+340	35.35	35.30	35.22	34.99	34.79	34.57	34.06
	38+510	35.50	35.77	35.45	34.99	34.73	34.36	33.53
	38+710	35.73	35.45	35.02	34.76	34.54	34.45	33.53
	38+900	36.24	36.34	35.96	35.40	35.07	34.66	33.57
	39+090	37.03	36.08	34.94	34.72	34.41	34.38	34.37
	39+110	37.16	36.61	35.94	35.47	35.14	34.63	34.50
논산천	39+330	36.46	36.49	35.91	35.48	35.11	34.77	34.23
	39+485	36.50	36.53	36.05	35.51	35.16	34.85	34.53
	0+000	-3.84	-3.93	-3.76	-4.00	-3.89	-3.99	-3.91
	0+165	-2.44	-3.60	-3.60	-3.42	-3.47	-3.45	-3.46
	0+170	-2.44	-3.60	-3.60	-3.48	-3.46	-3.52	-3.41
	0+220	-4.16	-4.50	-4.55	-4.54	-4.74	-4.73	-4.79
	0+420	-2.12	-3.17	-3.28	-3.28	-3.28	-3.28	-3.28
	0+620	-2.47	-2.62	-3.59	-3.59	-3.59	-3.59	-3.59
	0+820	-1.59	-2.69	-2.69	-2.69	-2.69	-2.69	-2.69
	0+835	-1.64	-2.70	-2.75	-2.75	-2.75	-2.75	-2.75
	0+845	-3.29	-3.22	-4.30	-4.33	-4.35	-4.38	-4.36
	1+035	-1.86	-2.89	-2.93	-2.94	-2.94	-2.94	-2.94
	1+220	-2.08	-2.33	-3.06	-3.10	-3.12	-3.12	-3.12
	1+420	-1.78	-1.94	-2.54	-2.58	-2.62	-2.64	-2.69
	1+620	-1.32	-1.65	-2.30	-2.33	-2.33	-2.34	-2.34
	1+820	-2.18	-2.12	-2.34	-2.50	-2.51	-2.55	-2.61
	2+020	-1.64	-1.53	-1.94	-2.14	-2.23	-2.26	-2.32
	2+240	-1.86	-1.74	-1.86	-1.94	-2.01	-2.01	-2.20
	2+450	-1.36	-1.24	-1.47	-1.79	-1.83	-1.89	-1.92
	2+660	-1.40	-1.40	-1.51	-1.56	-1.59	-1.62	-1.74
	2+860	-0.70	-0.83	-1.13	-1.39	-1.53	-1.58	-1.56
	3+070	-0.97	-1.23	-1.26	-1.33	-1.41	-1.47	-1.73
	3+260	-0.65	-0.77	-0.93	-1.12	-1.30	-1.43	-1.46
	3+450	-0.75	-0.79	-0.82	-0.91	-0.99	-1.06	-1.14
	3+660	-0.70	-0.65	-0.67	-0.77	-0.89	-0.94	-1.09
	3+830	-0.93	-0.93	-0.97	-1.03	-1.09	-1.12	-1.18
	4+040	-0.15	-0.41	-0.47	-0.54	-0.60	-0.63	-0.85
	4+225	-3.02	-3.05	-2.96	-3.00	-2.99	-2.85	-2.83
	4+265	-2.63	-0.77	-0.57	-0.62	-0.69	-0.92	-1.10
	4+435	-0.50	-0.39	-0.70	-0.75	-0.80	-0.98	-1.28
	4+625	0.23	-0.27	-0.45	-0.49	-0.55	-0.55	-0.55
	4+845	-0.28	-0.43	-0.62	-0.78	-0.87	-1.06	-1.06
	5+040	-0.46	-0.52	-0.74	-0.73	-0.72	-0.75	-0.75
	5+235	0.15	0.12	-0.08	-0.18	-0.28	-0.39	-0.47
	5+425	-0.47	-0.20	-0.24	-0.29	-0.32	-0.34	-0.42
	5+640	-0.38	-0.13	-0.21	-0.29	-0.31	-0.32	-0.37
	5+845	0.35	0.02	-0.16	-0.29	-0.40	-0.45	-0.45
	6+055	0.05	-0.02	-0.05	-0.10	-0.12	-0.13	-0.17
	6+260	-0.23	-0.21	-0.38	-0.49	-0.58	-0.63	-0.70

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
논산천	6+470	-0.53	-0.28	-0.55	-0.58	-0.56	-0.55	-0.55
	6+670	-0.35	0.22	-0.09	-0.22	-0.25	-0.27	-0.29
	6+890	0.03	0.00	0.03	0.00	0.01	0.01	-0.01
	7+075	0.53	0.13	-0.06	-0.20	-0.25	-0.24	-0.26
	7+285	-0.13	-0.12	0.03	-0.05	-0.06	-0.06	-0.09
	7+505	-0.69	-0.15	-0.26	-0.33	-0.24	-0.16	-0.20
	7+705	0.61	0.36	-0.15	-0.11	-0.07	-0.06	0.03
	7+735	0.99	0.39	0.33	0.24	0.25	0.29	0.29
	7+895	0.38	0.45	0.11	0.20	0.22	0.23	0.20
	8+095	0.83	0.61	0.13	0.05	0.08	0.15	0.16
	8+285	1.27	0.88	0.48	0.48	0.48	0.48	0.50
	8+465	0.91	0.61	0.36	0.20	0.28	0.36	0.39
	8+660	0.84	0.94	0.54	0.48	0.50	0.55	0.64
	8+855	0.82	0.78	0.77	0.70	0.75	0.79	0.91
	9+070	0.53	1.11	0.86	0.78	0.80	0.91	0.91
	9+245	0.66	0.95	1.01	0.91	1.04	1.07	1.03
	9+465	1.19	0.88	0.88	0.82	0.84	1.26	0.93
	9+670	0.72	1.00	1.23	1.36	1.50	1.04	0.94
	9+875	1.00	1.61	1.80	1.65	1.67	1.69	1.33
	10+065	1.65	1.30	1.29	1.10	1.25	1.06	1.25
	10+085	1.47	1.06	1.21	1.30	1.45	1.17	1.11
	10+275	0.57	1.31	1.66	1.85	1.85	1.73	1.91
	10+475	1.53	1.44	1.78	1.42	1.95	1.38	1.50
	10+585	2.13	1.95	1.88	1.66	1.45	1.60	1.95
	10+665	2.28	1.87	1.94	1.77	1.87	1.82	1.87
	10+875	2.45	2.43	2.27	2.16	2.19	2.28	2.47
	11+085	1.21	2.02	2.23	2.73	2.79	2.30	2.05
	11+205	2.35	2.24	1.86	1.42	0.39	2.56	2.63
	11+220	2.20	2.72	2.34	1.05	0.47	2.61	2.76
	11+280	2.77	2.46	2.42	1.70	2.17	2.67	2.47
	11+380	2.66	2.60	2.52	2.59	2.70	2.87	2.95
	11+430	3.11	2.72	2.57	2.78	2.62	3.22	3.20
	11+480	3.12	2.98	2.76	2.86	2.78	3.00	2.91
	11+680	3.22	3.28	3.35	3.28	3.31	3.59	3.40
	11+865	3.41	3.31	3.38	3.54	3.55	3.36	3.51
	12+080	3.72	3.70	3.88	4.00	4.07	3.91	3.94
	12+275	4.06	3.77	3.98	4.23	4.04	3.69	4.25
	12+475	4.00	4.15	4.36	4.39	4.13	4.01	4.58
	12+695	3.38	3.86	4.16	4.07	4.06	4.12	3.85
	12+885	4.61	4.66	5.03	4.96	5.30	5.31	4.82
	13+095	5.24	5.26	5.42	5.47	5.33	5.17	4.78
	13+280	5.57	5.32	5.52	5.47	5.86	5.51	4.97
	13+465	6.28	6.48	6.21	6.12	4.93	4.94	4.93
	13+470	6.82	5.77	5.93	5.76	5.35	5.45	5.35
	13+490	6.12	6.16	5.98	5.91	4.79	4.79	4.78

건설기술연구원

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
논산천	13+680	6.32	6.57	6.28	6.25	5.94	5.67	5.64
	13+810	6.26	6.46	6.27	6.18	6.10	4.89	4.88
	13+855	7.22	5.86	5.85	5.85	5.85	5.85	5.85
	13+860	8.22	6.85	6.85	6.85	6.85	6.85	6.85
	13+875	5.94	5.88	5.39	4.93	4.65	4.57	4.57
	14+095	7.38	7.04	6.56	6.51	6.55	6.26	6.15
	14+285	7.31	7.41	7.35	7.37	6.78	6.26	6.01
	14+465	4.89	4.92	5.08	5.12	5.21	5.26	5.02
	14+645	7.92	7.66	7.70	7.50	6.95	6.52	6.50
	14+845	7.93	7.63	6.83	6.53	6.48	6.48	6.48
	15+045	8.22	8.03	7.03	6.95	6.78	6.78	6.78
	15+245	9.03	8.24	7.90	7.55	7.55	7.55	7.55
	15+445	8.21	8.14	7.46	6.97	6.72	6.72	6.72
	15+645	7.78	8.07	7.89	7.21	6.99	6.99	7.01
	15+835	6.21	6.52	6.32	6.34	6.32	6.23	5.22
	16+035	8.10	8.23	7.78	6.83	6.59	6.58	6.58
	16+320	6.85	6.95	5.47	5.32	5.32	5.32	5.32
	16+585	11.53	9.96	9.96	9.96	9.96	9.96	9.96
노성천	16+590	12.71	11.15	11.15	11.15	11.15	11.15	11.15
	16+670	11.23	9.95	9.65	9.65	9.65	9.65	9.65
	0+000	1.21	1.23	1.14	1.18	1.17	1.16	1.15
	0+130	1.51	1.52	1.34	1.38	1.41	1.40	1.44
	0+335	1.81	1.82	1.77	1.75	1.75	1.76	1.92
	0+525	1.98	1.95	1.65	1.82	1.88	1.84	1.58
	0+565	1.85	1.92	1.76	1.78	1.80	1.80	1.90
	0+725	1.90	1.68	1.68	1.74	1.91	2.06	1.96
	0+925	2.19	2.08	2.02	2.04	2.16	2.25	2.22
	1+035	1.43	1.55	1.77	2.11	2.43	2.52	2.45
	1+115	1.73	1.86	1.92	2.01	2.17	2.19	2.21
	1+325	2.02	1.98	2.25	2.76	2.90	2.97	2.85
	1+545	1.78	1.73	2.25	2.38	2.54	2.58	2.42
	1+750	1.84	2.01	2.94	3.34	3.41	3.36	3.11
	1+970	2.58	2.56	2.99	2.88	2.75	2.26	2.24
	2+175	2.44	3.06	3.60	3.83	3.78	3.61	3.27
	2+380	2.65	3.06	1.99	1.44	1.44	1.44	1.45
	2+585	1.27	3.71	4.09	3.82	3.80	3.68	3.53
	2+785	1.95	2.05	1.25	1.66	1.81	1.56	1.20
	2+985	2.63	3.88	3.76	3.84	3.78	3.64	3.49
	3+185	3.90	2.47	2.47	2.47	2.47	2.47	2.47
	3+190	5.56	4.11	4.15	4.11	4.11	4.11	4.11
	3+395	4.55	3.58	3.59	3.05	3.05	3.05	3.05
	3+605	4.98	4.83	4.43	4.27	3.66	3.86	3.68
	3+815	5.47	4.78	4.25	3.85	4.05	3.91	3.85
	4+020	5.63	5.21	4.98	4.89	3.98	3.98	3.98
	4+205	5.24	5.19	4.27	3.86	4.39	4.08	3.58

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
노성천	4+400	5.14	5.13	5.40	4.87	3.68	3.59	3.77
	4+530	5.06	5.07	4.39	4.24	4.42	4.01	3.80
	4+580	5.13	5.13	5.17	4.74	3.54	3.93	3.57
	4+750	5.85	5.82	4.91	4.73	4.66	4.21	4.18
	4+920	5.69	5.81	5.47	4.84	4.03	4.21	4.03
강경천	4+980	5.95	5.78	5.18	4.87	4.61	4.28	4.27
	5+130	6.03	5.91	5.47	5.02	4.62	4.42	4.36
	0+000	-1.10	-0.83	-1.45	-1.17	-1.23	-1.26	-1.23
	0+200	-0.55	-1.00	-0.87	-0.94	-1.01	-1.02	-1.06
	0+275	-2.41	-1.06	-1.92	-1.47	-1.27	-1.36	-1.41
	0+290	-2.74	-2.22	-0.99	-0.94	-1.05	-1.16	-1.33
	0+415	-0.24	-0.67	-0.69	-0.89	-0.97	-0.99	-0.99
	0+610	-0.15	-0.50	-0.48	-0.87	-0.94	-0.94	-0.95
	0+815	-0.15	-0.26	-0.64	-0.87	-0.92	-0.93	-0.96
	1+035	-0.85	-0.24	-0.30	-0.69	-0.77	-0.94	-1.09
	1+105	-0.61	-0.64	-1.22	-1.52	-1.52	-1.52	-1.52
	1+115	0.06	0.02	-0.43	1.15	1.15	1.15	1.15
	1+120	0.06	-0.14	-0.19	-0.86	-0.86	-0.86	-0.86
	1+235	-0.03	0.11	-0.26	-0.49	-0.48	-0.47	-0.43
	1+355	-0.94	-0.78	-0.41	-0.35	-0.35	-0.32	-0.28
	1+375	-0.09	0.24	-0.03	-0.07	-0.07	-0.06	-0.07
	1+425	0.64	-0.32	0.03	0.03	0.02	0.04	0.05
	1+440	0.82	0.53	0.11	0.06	0.06	0.06	0.07
	1+650	0.82	0.71	0.54	0.52	0.53	0.54	0.55
	1+840	0.98	0.94	0.75	0.73	0.73	0.73	0.74
	2+035	1.04	1.00	0.85	0.84	0.84	0.84	0.84
	2+240	0.91	0.89	0.69	0.69	0.69	0.71	0.73
	2+300	0.70	0.74	0.91	0.78	0.77	0.78	0.78
	2+455	1.04	1.04	0.91	0.85	0.87	0.88	0.92
	2+650	1.16	1.13	0.99	0.91	0.89	0.93	0.95
	2+840	1.22	1.23	1.36	1.44	1.41	1.32	1.34
	3+030	1.40	1.39	1.30	1.26	1.20	1.15	1.09
	3+235	1.13	1.11	1.10	1.11	1.11	1.11	1.10
	3+415	1.28	1.27	1.28	1.30	1.28	1.29	1.28
	3+435	1.22	1.49	1.32	1.29	1.28	1.24	1.19
	3+475	1.10	1.14	1.13	1.15	1.14	1.13	1.33
	3+645	1.62	1.55	1.43	1.43	1.43	1.43	1.28
	3+810	1.49	1.51	1.60	1.53	1.41	1.49	1.34
	3+985	1.52	1.51	1.45	1.36	1.53	1.49	1.51
	4+085	1.37	1.35	1.32	1.33	1.48	1.74	1.63
	4+220	1.68	1.67	1.66	1.64	1.59	1.44	1.17
	4+430	1.65	1.62	1.54	1.51	1.82	1.71	1.80
	4+630	1.71	1.77	1.76	1.65	1.46	1.39	1.30
	4+810	1.40	1.53	1.69	1.94	1.75	1.72	1.52
	4+845	1.95	1.86	1.53	1.04	0.57	0.46	1.61

건설교통부

하천명	측점 (No.)	최심하상고 (EL.m)	HEC - 6 장기하상변동검토 (Toffaleti's) (EL.m)					
			1년후	5년후	10년후	15년후	20년후	30년후
강경천	4+860	1.37	1.33	1.71	1.87	1.66	1.62	1.44
	5+030	1.98	1.92	1.82	1.69	1.62	1.57	1.78
	5+225	1.74	1.70	1.65	1.62	1.59	1.57	1.50
	5+385	1.71	1.69	1.62	1.57	1.53	1.51	1.93
	5+425	1.62	1.60	1.48	1.37	1.28	1.21	0.84
	5+600	1.74	1.73	1.74	1.74	1.74	1.75	2.04
	5+815	1.80	1.80	1.80	1.80	1.80	1.80	1.26
	6+015	1.74	1.74	1.75	1.75	1.77	1.91	2.07
	6+205	1.98	1.98	1.99	2.00	2.01	1.76	1.40
	6+265	1.52	1.52	1.53	1.55	1.58	1.63	1.75
	6+385	2.01	2.01	2.02	2.02	2.01	2.01	2.02
	6+565	1.71	1.71	1.77	1.93	2.01	2.00	1.97
	6+765	1.95	2.04	2.11	2.13	2.21	2.26	2.28
	6+940	1.80	2.13	2.33	2.35	2.29	2.22	1.95
	6+965	2.13	2.27	1.91	1.22	0.73	0.66	0.87
	7+170	2.29	2.03	2.14	2.23	2.32	2.31	2.20
	7+360	2.56	2.48	2.17	2.02	1.82	1.62	1.41
	7+565	1.95	1.92	1.79	1.70	1.64	1.57	1.45

건설교통부

4. Kubo공식에 의한 평형하상고 검토

건설교통부

■ KUBO - MASASI 공식에 의한 평형하상고 검토

▶ 입 력 자 료

금강(대청댐하류) Keum-River (Down Stream) KUBO MASASI FORMUAL

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      1
************     Keum-River (Down Stream)   NO.0 - NO.130+470        ************
     283       34       22        2
   0.000    0.350    0.720    1.140    1.480    2.020    2.450    2.920    3.330    3.780
   4.240    4.580    4.860    5.390    6.110    6.750    7.210    7.740    8.160    8.670
   9.170    9.640   10.130   10.600   11.060   11.520   12.250   12.850   13.450   13.970
  14.490   15.020   15.460   15.960   16.420   16.910   17.380   17.850   18.190   18.710
  19.180   19.620   20.130   20.580   21.000   21.400   21.660   22.110   22.550   23.250
  23.550   24.050   24.680   25.330   25.810   26.140   26.600   26.990   27.400   27.890
  28.290   28.630   29.030   29.570   30.160   30.830   31.400   32.120   32.590   32.920
  33.060   33.270   33.830   34.490   34.920   35.370   36.000   36.560   37.010   37.710
  38.220   38.620   39.050   39.520   40.000   40.470   40.890   41.490   41.990   42.540
  43.290   43.850   44.450   45.060   45.650   46.200   46.670   47.270   47.800   48.100
  48.500   48.970   49.400   49.820   50.300   50.800   51.220   51.540   52.090   52.160
  52.180   52.540   52.910   53.350   53.760   54.270   54.730   55.320   55.940   56.420
  56.510   56.970   57.330   57.810   58.080   58.570   59.060   59.520   59.990   60.510
  60.950   61.430   61.870   61.900   62.320   62.790   63.390   64.040   64.510   65.040
  65.470   66.110   66.470   66.920   67.400   67.910   68.370   68.970   69.500   70.100
  70.610   71.110   71.560   72.060   72.570   73.010   73.540   74.180   74.640   75.120
  75.630   76.270   76.720   77.320   77.910   78.320   78.920   79.490   80.190   80.480
  80.640   81.120   81.610   81.980   82.600   82.980   83.410   83.830   84.300   84.700
  84.790   85.070   85.220   85.730   86.240   86.500   86.780   87.280   87.680   88.030
  88.250   88.800   89.280   89.750   90.230   90.730   91.190   91.720   92.160   92.610
  93.060   93.510   93.590   94.100   94.790   95.200   95.390   95.990   96.340   96.870
  97.390   97.810   98.360   98.930   99.730  100.280  100.710  101.140  101.620  101.870
 102.030  102.610  103.160  103.720  104.230  104.740  105.250  105.750  106.230  106.750
 107.250  107.700  108.200  108.750  109.400  109.900  110.350  110.900  111.400  111.900
 112.350  112.510  112.960  113.360  113.790  114.290  114.790  115.390  116.040  116.540
 117.090  117.620  118.370  118.800  119.230  119.770  120.190  120.700  121.260  121.770
 122.140  122.490  122.990  123.470  124.010  124.460  124.960  125.660  126.420  126.750
 126.800  126.960  127.460  127.720  127.740  127.890  127.970  128.370  128.780  129.230
 129.830  130.330  130.470                                                          (측점)
       0      350      370      420      340      540      430      470      410      450
     460      340      280      530      720      640      460      530      420      510
     500      470      490      470      460      460      730      600      600      520
     520      530      440      500      460      490      470      470      340      520
     470      440      510      450      420      400      260      450      440      700
     300      500      630      650      480      330      460      390      410      490
     400      340      400      540      590      670      570      720      470      330
     140      210      560      660      430      450      630      560      450      700
     510      400      430      470      480      470      420      600      500      550
     750      560      600      610      590      550      470      600      530      300
     400      470      430      420      480      500      420      320      550       70
      20      360      370      440      410      510      460      590      620      480
      90      460      360      480      270      490      490      460      470      520
     440      480      440       30      420      470      600      650      470      530
     430      640      360      450      480      510      460      600      530      600
     510      500      450      500      510      440      530      640      460      480
     510      640      450      600      590      410      600      570      700      290
     160      480      490      370      620      380      430      420      470      400
      90      280      150      510      510      260      280      500      400      350
     220      550      480      470      480      500      460      530      440      450
     450      450       80      510      690      410      190      600      350      530
     520      420      550      570      800      550      430      430      480      250
     160      580      550      560      510      510      510      500      480      520
     500      450      500      550      650      500      450      550      500      500
     450      160      450      400      430      500      500      600      650      500
     550      530      750      430      430      540      420      510      560      510
     370      350      500      480      540      450      500      700      760      330
      50      160      500      260       20      150       80      400      410      450
     600      500      140                                                          (구간거리)
     710     1620     1570     1350     1000     1250     1520     1480     1500     1380
    1350     1350     1410     1410     1140     1510     1680     1570     1410     1260
    1150     1120     1100      980      890      840     1050     1200     1450     1330
    1200      980      910      960     1060     1000     1160     1110     1030     1160
    1350     1170     1140     1070      990     1100     1100      980     1000     1010
    1100     1110     1360     1260     1240     1280     1190     1070      980      910
    1090     1300     1250     1110     1320     1280     1010     1040     1110     1040
    1080     1000     1260     1080     1010     1040      990      950     1090      940
     990      520      570      840      910      710      680      610      680      620
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790	870	970	900	920	1230	1210	1160	1010	920
910	1030	1590	1270	1240	1440	1370	1120	820	810
810	1020	700	640	890	590	580	920	910	720
740	620	750	850	710	720	950	860	760	650
900	870	710	680	580	410	480	560	700	670
520	340	350	460	490	640	670	850	710	660
600	550	580	630	610	580	630	490	530	500
450	350	340	430	460	410	520	660	510	530
840	510	440	420	430	390	510	510	590	630
720	510	510	500	490	470	420	490	710	560
400	360	400	390	350	350	440	410	380	390
330	430	520	310	350	430	370	420	420	430
320	430	620	380	670	670	640	770	750	630
660	720	660	770	730	880	690	1020	1150	1300
1140	1490	1600	1260	930	710	690	570	580	510
600	790	890	810	690	460	430	280	370	250
340	330	310	270	280	370	320	440	660	570
420	650	720	820	600	320	330	360	400	310
310	320	330	290	290	240	230	270	340	260
250	220	200							(하폭)

1	0.03000	0.05600	0.08900	
9	0.02300	0.05400	0.06700	
20	0.01400	0.03700	0.06300	
26	0.02000	0.06200	0.16100	
34	0.02000	0.04400	0.06700	
42	0.01100	0.02600	0.05000	
50	0.01000	0.02600	0.05400	
58	0.03100	0.05900	0.10100	
66	0.02200	0.04100	0.06100	
76	0.39700	0.59500	3.08100	
85	0.14900	0.19700	0.24900	
92	0.31300	0.48800	1.08000	
100	0.02200	0.06000	0.10100	
108	0.23500	0.35200	0.46300	
118	0.21500	0.33900	0.47800	
127	0.65300	1.16600	1.88900	
136	0.33400	0.45900	0.70100	
144	0.35400	0.49600	0.78000	
152	0.31100	0.39300	0.49400	
160	0.05600	0.18400	0.30100	
168	0.12300	0.24900	1.18000	
177	0.44600	0.78700	1.63500	
188	0.42400	1.02600	17.34300	
197	0.33300	0.42100	0.53400	
207	0.04200	0.14100	0.21600	
215	0.32100	0.41200	0.53100	
224	0.31500	0.39900	0.50600	
232	0.01200	0.04100	0.10400	
240	0.42000	0.70000	0.99900	
248	0.08500	0.30900	0.44700	
256	0.94200	10.25600	20.56700	
264	0.42700	0.75300	1.58000	
277	0.85800	1.57300	14.10000	
283	0.81400	1.61000	12.65800	(입도분석결과)

1	-7.480	-7.480	
12	-12.240	-12.240	
37	-10.840	-10.840	
70	-13.900	-13.900	
110	-6.070	-6.070	
111	-6.070	-6.070	
120	-3.910	-3.910	
134	-1.090	-1.090	
170	0.190	0.190	
180	3.730	3.730	
182	4.100	4.100	
186	3.160	3.160	
190	7.550	7.550	
202	6.720	6.720	
206	4.770	4.770	
220	8.550	8.550	
270	21.980	21.980	
271	22.180	22.180	
274	21.020	21.020	
275	21.020	21.020	
276	19.960	19.960	
283	24.050	24.050	(기준하상고)

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건설교통부

금강(대청댐상류) Keum-River (Up Stream) KUBO MASASI FORMUAL

1

********** Keum-River (Up Stream) NO.222+040 - NO.246+365 **********

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     69       7      17       2
222.040 222.220 222.530 222.915 223.570 223.580 223.615 223.645 224.125 224.580
224.955 225.415 225.590 225.775 225.830 226.275 226.385 226.950 227.100 227.425
227.610 227.745 228.340 229.100 229.550 229.925 230.485 230.895 231.365 231.605
231.925 232.360 232.905 233.465 234.130 234.585 235.060 235.420 235.450 235.530
235.570 235.595 235.710 236.055 236.505 237.040 237.455 237.865 238.335 238.780
239.170 239.220 239.635 240.070 240.295 240.825 241.055 241.220 241.765 242.610
243.355 243.940 244.360 244.830 244.870 245.305 245.840 246.330 246.365        (측점)
      0     180     310     385     655      10      35      30     480     455
    375     460     175     185      55     445     110     565     150     325
    185     135     595     760     450     375     560     410     470     240
    320     435     545     560     665     455     475     360      30      80
     40      25     115     345     450     535     415     410     470     445
    390      50     415     435     225     530     230     165     545     845
    745     585     420     470      40     435     535     490      35        (구간거리)
    240     260     240     240     190     220     220     220     210     210
    200     190     240     250     240     290     300     540     580     290
    240     250     220     230     200     190     340     240     220     230
    250     240     200     270     360     310     300     300     300     290
    300     280     290     260     310     330     330     390     360     320
    410     440     340     270     250     380     450     470     310     390
    380     400     650     850     620     540     360     210     200        (하폭)
      1         6.96100         19.20700         31.57500
     15         0.53900          0.77600          1.01600
     28         4.58800         17.60100         39.54000
     35         0.01100          0.03700          0.06400
     48         0.01000          0.04400          0.10300
     58         0.25300          0.38500          0.54300
     69         0.29000          0.41500          0.58000 (입도분석결과)
      1          72.790           72.790
      6          78.460           78.460
      7          78.020           78.020
      8          77.480           77.480
     13          78.950           78.950
     14          81.350           81.350
     16          80.320           80.320
     19          81.590           81.590
     38          86.550           86.550
     39          86.550           86.550
     40          87.550           87.550
     42          87.730           87.730
     43          87.180           87.180
     57          90.420           90.420
     65          93.190           93.190
     68          94.910           94.910
     69          96.650           96.650 (기준하상고)
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건설교통부

갑천 Gab - Chun KUBO MASASI FORMUAL

1

********** Gab - Chun NO. 0 ~ NO.33+510 **********

256	10	44	2						
0.000	0.160	0.390	0.570	0.770	0.980	1.015	1.220	1.450	1.710
1.950	2.205	2.455	2.535	2.640	2.820	2.985	3.125	3.335	3.550
3.755	3.915	3.975	4.205	4.395	4.595	4.775	4.955	5.005	5.165
5.345	5.465	5.635	5.815	5.975	6.145	6.315	6.515	6.710	6.880
7.100	7.130	7.150	7.160	7.285	7.505	7.565	7.715	7.905	8.125
8.365	8.555	8.775	8.985	9.190	9.370	9.550	9.720	9.905	10.045
10.105	10.225	10.415	10.595	10.765	10.925	11.105	11.325	11.415	11.545
11.655	11.715	11.765	11.855	11.960	12.060	12.160	12.210	12.260	12.355
12.460	12.560	12.660	12.760	12.860	12.920	12.960	13.035	13.165	13.265
13.355	13.460	13.555	13.675	13.755	13.850	13.955	14.060	14.150	14.250
14.345	14.440	14.540	14.635	14.720	14.830	14.945	15.045	15.140	15.235
15.325	15.375	15.420	15.525	15.620	15.720	15.820	15.925	16.025	16.125
16.225	16.325	16.435	16.535	16.635	16.735	16.835	16.935	17.035	17.135
17.240	17.335	17.435	17.535	17.635	17.735	17.825	17.925	18.025	18.130
18.230	18.330	18.430	18.530	18.630	18.720	18.825	18.925	19.025	19.125
19.230	19.335	19.435	19.535	19.630	19.740	19.815	19.925	20.020	20.115
20.210	20.315	20.410	20.510	20.610	20.690	20.795	20.895	21.045	21.095
21.200	21.290	21.390	21.515	21.525	21.585	21.685	21.745	21.805	21.850
21.895	21.901	22.095	22.290	22.480	22.670	22.845	22.885	23.080	23.280
23.480	23.670	23.835	23.880	24.075	24.265	24.365	24.465	24.665	24.865
25.060	25.255	25.445	25.485	25.630	25.850	26.050	26.095	26.125	26.175
26.245	26.305	26.455	26.660	26.865	27.065	27.270	27.490	27.675	27.710
27.885	28.095	28.295	28.495	28.605	28.675	28.690	28.895	29.090	29.285
29.495	29.680	29.780	29.895	30.105	30.290	30.345	30.390	30.480	30.680
30.880	31.070	31.290	31.470	31.675	31.880	32.085	32.285	32.485	32.680
32.700	32.885	33.075	33.270	33.315	33.510				

(측점)

0	160	230	180	200	210	35	205	230	260
240	255	250	80	105	180	165	140	210	215
205	160	60	230	190	200	180	180	50	160
180	120	170	180	160	170	170	200	195	170
220	30	20	10	125	220	60	150	190	220
240	190	220	210	205	180	180	170	185	140
60	120	190	180	170	160	180	220	90	130
110	60	50	90	105	100	100	50	50	95
105	100	100	100	100	60	40	75	130	100
90	105	95	120	80	95	105	105	90	100
95	95	100	95	85	110	115	100	95	95
90	50	45	105	95	100	100	105	100	100
100	100	110	100	100	100	100	100	100	100
105	95	100	100	100	100	90	100	100	105
100	100	100	100	100	90	105	100	100	100
105	105	100	100	95	110	75	110	95	95
95	105	95	100	100	80	105	100	150	50
105	90	100	125	10	60	100	60	60	45
45	6	194	195	190	190	175	40	195	200
200	190	165	45	195	190	100	100	200	200
195	195	190	40	145	220	200	45	30	50
70	60	150	205	205	200	205	220	185	35
175	210	200	200	110	70	15	205	195	195
210	185	100	115	210	185	55	45	90	200
200	190	220	180	205	205	205	200	200	195
20	185	190	195	45	195				

(구간거리)

480	380	370	370	420	430	410	400	420	430
370	410	340	320	320	320	340	350	370	380
340	310	310	300	280	330	330	330	330	330
340	340	350	390	350	360	360	370	370	340
340	340	340	340	340	300	300	290	290	260
270	260	250	250	230	210	210	270	230	250
250	230	220	200	200	210	270	380	390	430
480	350	320	310	320	330	340	330	320	310
310	270	310	310	330	340	350	320	270	250
230	210	200	200	210	220	240	250	260	260
270	270	270	280	290	290	300	140	140	150
170	160	190	190	190	190	190	190	200	200
190	200	200	200	200	200	200	220	270	200
190	190	190	190	190	190	210	200	200	200
200	190	180	180	180	180	210	220	240	260
270	260	260	260	280	300	290	300	280	240
230	180	230	240	230	240	240	210	170	190
190	190	200	270	260	280	250	140	140	130
150	160	160	150	160	160	160	150	140	130
170	190	150	150	120	120	190	130	160	110
140	120	180	140	130	110	200	210	160	170

건설교통부

220	170	150	220	200	120	100	150	120	130
120	160	200	250	280	190	170	170	90	170
110	140	160	110	120	160	100	150	130	120
140	120	120	220	140	110	90	150	200	170
180	120	190	130	130	230				(하폭)

1	0.32600	0.59600	0.93200	
24	0.13600	0.43800	1.60600	
49	0.03400	0.06600	0.12900	
73	0.01200	0.04100	0.13500	
116	0.32700	0.48100	0.74500	
156	0.00600	0.03000	0.11800	
192	0.22500	0.45400	0.83400	
219	0.80000	2.02200	8.61300	
245	0.05300	0.22200	0.44700	
256	4.29400	12.87600	29.88200	(입도분석결과)

1	19.650	19.650	
7	20.760	20.760	
14	23.230	23.230	
22	23.770	23.770	
29	23.700	26.180	
42	27.800	27.800	
43	27.790	27.790	
44	27.840	27.840	
47	29.320	30.320	
61	30.550	30.550	
72	31.300	31.300	
74	31.100	32.500	
78	31.920	31.920	
86	32.710	34.220	
87	33.500	33.500	
94	35.290	35.610	
107	36.860	38.120	
112	36.270	36.270	
119	38.530	40.030	
124	39.840	39.840	
169	46.680	47.480	
174	48.900	49.600	
178	47.370	47.370	
180	47.610	47.610	
182	47.970	47.970	
187	48.750	48.750	
193	50.700	50.700	
194	50.940	50.940	
197	52.730	54.030	
204	55.550	56.550	
208	55.700	55.700	
209	55.380	55.380	
210	55.640	55.640	
212	57.160	58.670	
220	58.290	58.290	
225	60.020	60.020	
226	60.730	62.030	
233	61.950	61.950	
237	63.120	63.120	
238	64.680	65.680	
244	65.710	65.710	
251	68.870	70.420	
255	69.770	69.770	
256	70.040	70.040	(기준하상고)

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건설교통부

유등천 You-Deung STREAM KUBO MASASI FORMUAL

1

********** You-Deung STREAM NO.0 - NO.15+600 **********

103	5	28	2						
0.000	0.005	0.070	0.280	0.480	0.675	0.895	1.055	1.245	1.445
1.635	1.860	1.880	2.090	2.300	2.305	2.480	2.640	2.790	2.820
3.015	3.215	3.255	3.415	3.615	3.805	4.005	4.205	4.400	4.460
4.500	4.600	4.800	5.000	5.200	5.395	5.575	5.790	5.990	6.130
6.190	6.400	6.590	6.780	6.960	6.980	7.010	7.195	7.385	7.575
7.790	7.820	7.830	7.980	8.180	8.390	8.440	8.560	8.780	8.990
9.010	9.190	9.395	9.595	9.795	9.995	10.195	10.400	10.585	10.735
10.785	10.985	11.045	11.195	11.390	11.515	11.520	11.530	11.790	11.960
12.180	12.370	12.575	12.780	12.970	13.180	13.230	13.275	13.370	13.570
13.750	14.030	14.190	14.245	14.390	14.555	14.590	14.800	14.960	15.000
15.200	15.400	15.600							(측점)
0	5	65	210	200	195	220	160	190	200
190	225	20	210	210	5	175	160	150	30
195	200	40	160	200	190	200	200	195	60
40	100	200	200	200	195	180	215	200	140
60	210	190	190	180	20	30	185	190	190
215	30	10	150	200	210	50	120	220	210
20	180	205	200	200	200	200	205	185	150
50	200	60	150	195	125	5	10	260	170
220	190	205	205	190	210	50	45	95	200
180	280	160	55	145	165	35	210	160	40
200	200	200							(구간거리)
630	630	470	270	320	330	330	290	310	290
270	290	270	260	260	260	250	220	160	160
200	220	230	200	170	160	160	150	160	170
170	160	150	160	160	160	200	170	200	200
200	180	170	150	160	160	160	190	170	170
150	150	160	160	170	140	140	140	210	160
150	140	130	130	130	80	90	140	150	130
120	110	90	70	80	100	110	130	70	110
160	170	110	180	180	90	100	140	110	120
80	150	230	150	140	150	100	120	150	110
70	80	100							(하폭)

1	0.11000	0.17000	0.24000
27	0.03000	0.09000	0.22000
54	0.45500	1.48000	8.65000
80	2.85000	12.47000	25.03500
103	0.32500	0.42000	0.56000 (입도분석결과)

1	31.100	31.100
2	31.100	31.100
12	34.550	34.550
16	34.860	34.860
19	35.280	35.280
23	36.160	36.160
30	39.340	41.480
31	40.230	40.230
37	42.620	42.620
40	43.040	43.040
45	44.970	46.870
47	45.260	45.260
50	46.380	46.380
52	47.300	47.300
53	47.320	47.320
56	49.680	49.680
57	49.620	52.540
61	52.250	52.250
70	56.200	56.200
73	56.760	58.400
77	58.600	58.600
78	59.490	61.290
87	63.230	63.230
88	63.500	63.500
94	67.270	67.980
97	68.240	68.240
99	70.620	71.650
103	71.320	71.320 (기준하상고)

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건설교통부

미호천 Mi Ho Chun KUBO MASASI FORMUAL

1

********** Mi Ho Chun NO. 0 ~ NO.39+485 **********

215	11	23	2						
0.000	0.200	0.240	0.390	0.630	0.890	0.920	1.130	1.330	1.560
1.790	2.010	2.150	2.430	2.630	2.850	3.010	3.200	3.390	3.620
3.770	3.950	4.150	4.310	4.440	4.610	4.840	5.020	5.230	5.440
5.660	5.920	6.100	6.280	6.480	6.680	6.900	7.130	7.390	7.620
7.860	8.060	8.240	8.380	8.560	8.760	8.890	9.045	9.090	9.120
9.290	9.490	9.680	9.840	9.900	10.080	10.240	10.480	10.690	10.890
11.120	11.310	11.520	11.710	11.900	12.140	12.340	12.560	12.850	13.110
13.320	13.530	13.780	14.020	14.160	14.360	14.550	14.740	14.930	15.110
15.270	15.550	15.730	15.830	15.940	15.950	15.960	16.150	16.360	16.500
16.680	16.850	16.970	17.180	17.380	17.570	17.760	17.980	18.170	18.370
18.570	18.770	18.960	19.160	19.360	19.530	19.580	19.600	19.790	20.010
20.230	20.430	20.650	20.770	20.840	21.070	21.280	21.450	21.660	21.880
22.080	22.280	22.460	22.640	22.830	23.020	23.220	23.420	23.600	23.810
24.010	24.150	24.350	24.530	24.710	24.920	25.120	25.320	25.520	25.690
25.710	25.930	26.150	26.360	26.570	26.620	26.800	27.010	27.230	27.520
27.760	27.890	28.210	28.410	28.630	28.840	29.000	29.180	29.370	29.670
29.870	30.090	30.330	30.390	30.550	30.730	30.910	31.120	31.290	31.450
31.650	31.680	31.830	32.060	32.150	32.220	32.420	32.610	32.740	32.910
33.080	33.270	33.420	33.630	33.840	34.030	34.240	34.390	34.570	34.750
34.940	35.130	35.330	35.530	35.740	35.880	36.120	36.300	36.490	36.680
36.880	37.080	37.290	37.490	37.710	37.930	38.140	38.340	38.510	38.710
38.900	39.090	39.110	39.330	39.485					(측점)
0	200	40	150	240	260	30	210	200	230
230	220	140	280	200	220	160	190	190	230
150	180	200	160	130	170	230	180	210	210
220	260	180	180	200	200	220	230	260	230
240	200	180	140	180	200	130	155	45	30
170	200	190	160	60	180	160	240	210	200
230	190	210	190	190	240	200	220	290	260
210	210	250	240	140	200	190	190	190	180
160	280	180	100	110	10	10	190	210	140
180	170	120	210	200	190	190	220	190	200
200	200	190	200	200	170	50	20	190	220
220	200	220	120	70	230	210	170	210	220
200	200	180	180	190	190	200	200	180	210
200	140	200	180	180	210	200	200	200	170
20	220	220	210	210	50	180	210	220	290
240	130	320	200	220	210	160	180	190	300
200	220	240	60	160	180	180	210	170	160
200	30	150	230	90	70	200	190	130	170
170	190	150	210	210	190	210	150	180	180
190	190	200	200	210	140	240	180	190	190
200	200	210	200	220	220	210	200	170	200
190	190	20	220	155					(구간거리)
272	222	222	167	204	276	281	251	268	242
239	223	297	322	200	565	652	626	709	661
582	443	437	503	643	649	523	507	508	506
519	515	506	514	519	519	521	562	604	613
623	624	724	735	834	596	547	490	439	438
472	468	464	432	443	483	556	556	454	408
447	425	635	664	626	484	495	643	687	684
672	665	683	768	832	742	722	747	848	806
731	466	422	360	363	355	358	439	588	600
338	329	306	327	324	347	341	345	346	347
345	345	346	346	346	346	345	346	346	343
345	343	354	363	384	449	342	336	334	334
333	334	341	327	349	350	344	337	337	359
453	429	407	417	432	441	454	462	462	478
480	492	502	498	495	493	492	483	531	608
480	494	498	537	576	504	504	499	498	501
492	495	493	490	490	488	479	476	469	465
459	460	451	447	464	466	527	498	471	511
600	462	453	453	455	476	576	600	598	492
481	472	463	450	460	521	425	425	427	428
429	425	427	362	331	418	457	482	448	342
395	340	251	231	328					(하폭)

1	1.388	2.278	3.692
23	0.061	0.143	0.228
43	0.233	0.386	0.561
66	0.353	0.906	18.273
89	0.481	0.723	0.965
111	0.103	0.213	0.377
132	0.273	0.509	0.989

건설교통부

154	0.023	0.082	0.182
177	1.012	2.338	16.215
197	0.177	0.279	0.414
215	0.293	0.619	1.089 (입도분석결과)
1	11.520	11.520	
3	13.260	13.920	
7	13.220	13.220	
48	17.330	18.530	
49	14.850	14.850	
50	16.490	16.490	
54	17.910	17.910	
72	17.630	17.630	
73	17.530	17.530	
74	18.800	18.800	
84	19.480	19.480	
86	21.090	21.090	
87	19.530	19.530	
106	21.700	21.700	
108	22.340	22.340	
114	23.320	23.320	
141	25.350	25.350	
146	28.370	30.850	
164	30.070	30.070	
172	30.460	30.460	
175	30.250	30.250	
212	37.030	37.030	
215	36.500	36.500	(기준하상고)

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건설교통부

논산천 Non San Chun KUBO MASASI FORMUAL

1

********** Non San Chun NO. 0 ~ NO.16+670 **********

98	5	18	2						
0.000	0.170	0.220	0.420	0.620	0.820	0.835	0.845	1.035	1.220
1.420	1.620	1.820	2.020	2.240	2.450	2.660	2.860	3.070	3.260
3.450	3.660	3.830	4.040	4.225	4.265	4.435	4.625	4.845	5.040
5.235	5.425	5.640	5.845	6.055	6.260	6.470	6.670	6.890	7.075
7.285	7.505	7.705	7.735	7.895	8.095	8.285	8.465	8.660	8.855
9.070	9.245	9.465	9.670	9.875	10.065	10.085	10.275	10.475	10.585
10.665	10.875	11.085	11.205	11.220	11.280	11.380	11.430	11.480	11.680
11.865	12.080	12.275	12.475	12.695	12.885	13.095	13.280	13.470	13.490
13.680	13.810	13.860	13.875	14.095	14.285	14.465	14.645	14.845	15.045
15.245	15.445	15.645	15.835	16.035	16.320	16.590	16.670		(측점)
0	170	50	200	200	200	15	10	190	185
200	200	200	200	220	210	210	200	210	190
190	210	170	210	185	40	170	190	220	195
195	190	215	205	210	205	210	200	220	185
210	220	200	30	160	200	190	180	195	195
215	175	220	205	205	190	20	190	200	110
80	210	210	120	15	60	100	50	50	200
185	215	195	200	220	190	210	185	190	20
190	130	50	15	220	190	180	180	200	200
200	200	200	190	200	285	270	80		(구간거리)
489	400	384	434	333	313	312	300	300	294
290	289	288	285	280	378	279	280	282	282
280	281	282	281	279	280	280	279	282	281
284	280	279	281	286	285	286	286	284	286
286	294	285	285	283	273	272	282	283	284
298	347	227	228	217	226	225	227	226	225
227	226	225	216	216	228	230	230	225	225
225	240	247	245	249	256	257	256	258	257
256	265	258	258	268	267	276	267	266	266
266	266	275	293	323	452	143	117		(하폭)

1	0.04300	0.11100	0.21800	
24	0.00600	0.03200	0.20600	
46	0.02300	0.05300	0.13300	
72	0.04000	0.19700	2.32500	
98	0.15700	0.35400	0.84700	(입도분석결과)
1	-3.840	-3.840		
2	-2.440	-2.440		
7	-1.640	-1.640		
8	-3.290	-3.290		
26	-2.630	-2.630		
44	0.990	0.990		
47	1.270	1.270		
56	1.650	1.650		
60	2.130	2.130		
64	2.350	2.350		
65	2.200	2.200		
67	2.660	2.660		
68	3.110	3.110		
79	6.280	6.820		
82	6.260	6.260		
83	7.220	8.220		
97	11.530	12.710		
98	11.230	11.230	(기준하상고)	

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건설교통부

노성천 No Sung Chun KUBO MASASI FORMUAL

1

********** No Sung Chun NO. 0 ~ NO.5+130 **********

31	3	7	2							
0.000	0.130	0.335	0.525	0.565	0.725	0.925	1.035	1.115	1.325	
1.545	1.750	1.970	2.175	2.380	2.585	2.785	2.985	3.190	3.395	
3.605	3.815	4.020	4.205	4.400	4.530	4.580	4.750	4.920	4.980	
5.130										(측점)
0	130	205	190	40	160	200	110	80	210	
220	205	220	205	205	205	200	200	205	205	
210	210	205	185	195	130	50	170	170	60	
150										(구간거리)
202	183	181	179	180	175	175	177	176	175	
175	175	175	173	173	173	171	172	172	172	
172	170	175	171	185	192	198	226	166	144	
122										(하폭)

1	0.008	0.026	0.085
23	0.352	0.505	0.851
31	0.603	1.351	2.406 (입도분석결과)
1	1.210	1.210	
5	1.850	1.850	
8	1.430	1.430	
19	3.900	5.560	
26	5.060	5.060	
29	5.690	5.690	
31	6.030	6.030 (기준하상고)	

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건설교통부

강경천 Kang Kyung Chun KUBO MASASI FORMUAL

1

********** Kang Kyung Chun NO. 0 ~ NO.7+565 **********

55	3	17	2							
0.000	0.200	0.275	0.290	0.415	0.610	0.815	1.035	1.105	1.115	
1.235	1.355	1.375	1.425	1.440	1.650	1.840	2.035	2.240	2.300	
2.455	2.650	2.840	3.030	3.235	3.415	3.435	3.475	3.645	3.810	
3.985	4.085	4.220	4.430	4.630	4.810	4.845	4.860	5.030	5.225	
5.385	5.425	5.600	5.815	6.015	6.205	6.265	6.385	6.565	6.765	
6.940	6.965	7.170	7.360	7.565						(측점)
0	200	75	15	125	195	205	220	70	10	
120	120	20	50	15	210	190	195	205	60	
155	195	190	190	205	180	20	40	170	165	
175	100	135	210	200	180	35	15	170	195	
160	40	175	215	200	190	60	120	180	200	
175	25	205	190	205						(구간거리)
231	152	154	150	153	150	152	151	140	150	
151	140	140	157	156	152	153	152	157	156	
152	152	150	151	152	152	154	178	165	206	
223	111	115	143	143	142	140	140	136	138	
127	135	140	140	139	140	144	155	106	101	
101	100	111	91	91						(하폭)

1	0.012	0.037	0.093	
31	0.902	6.717	24.513	
55	0.453	0.833	1.431	(입도분석결과)
1	-1.090	-1.090		
3	-2.410	-2.410		
4	-2.750	-2.750		
9	-0.620	-0.620		
10	0.070	0.070		
12	-0.940	-0.940		
13	-0.090	-0.090		
14	0.650	0.650		
20	0.710	0.710		
26	1.290	1.290		
28	1.100	1.100		
32	1.380	1.380		
37	1.940	1.940		
41	1.700	1.700		
47	1.510	1.510		
51	1.810	1.810		
55	1.940	1.940	(기준하상고)	

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건설교통부

▶ 출 력 자 료

금강(대청댐하류) Keum-River (Down Stream) KUBO MASASI FORMUAL

NUMBER OF REGION = 1

CASE = 1 ********** Keum-River (Down Stream) NO.0 - NO.130+470 **********

N = 283 ND = 34 NE = 22 OPTION = 2

K(1)=-.9676E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.000	.0	17.5	71.0	.1888E-04	.8201E-07	.5823E-05	.1019E-03	-.5634E-02	.0000E+00	.000	-7.480
.350	35.0	36.0	162.0	.1884E-04	.8178E-07	.1325E-04	.4769E-03	-.1282E-01	-.9227E-02	-.323	-7.803
.720	37.0	39.5	157.0	.1880E-04	.8153E-07	.1280E-04	.5056E-03	-.1239E-01	-.1260E-01	-.466	-8.269
1.140	42.0	38.0	135.0	.1876E-04	.8126E-07	.1097E-04	.4168E-03	-.1061E-01	-.1150E-01	-.483	-8.752
1.480	34.0	44.0	100.0	.1873E-04	.8103E-07	.8103E-05	.3565E-03	-.7841E-02	-.9228E-02	-.314	-9.066
2.020	54.0	48.5	125.0	.1867E-04	.8068E-07	.1008E-04	.4891E-03	-.9758E-02	-.8800E-02	-.475	-9.541
2.450	43.0	45.0	152.0	.1863E-04	.8039E-07	.1222E-04	.5499E-03	-.1182E-01	-.1079E-01	-.464	-10.005
2.920	47.0	44.0	148.0	.1858E-04	.8008E-07	.1185E-04	.5215E-03	-.1147E-01	-.1165E-01	-.547	-10.553
3.330	41.0	43.0	150.0	.1854E-04	.7981E-07	.1197E-04	.5148E-03	-.1158E-01	-.1153E-01	-.473	-11.025
3.780	45.0	45.5	138.0	.1767E-04	.7426E-07	.1025E-04	.4663E-03	-.9917E-02	-.1075E-01	-.484	-11.509
4.240	46.0	40.0	135.0	.1678E-04	.6873E-07	.9279E-05	.3712E-03	-.8979E-02	-.9448E-02	-.435	-11.944
4.580	34.0	17.0	135.0	.1612E-04	.6474E-07	.8740E-05	.1486E-03	-.8457E-02	-.8718E-02	-.296	-12.240

K(2)= .2578E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
4.580	.0	14.0	135.0	.1612E-04	.6474E-07	.8740E-05	.1224E-03	.2253E-02	.0000E+00	.000	-12.240
4.860	28.0	40.5	141.0	.1558E-04	.6151E-07	.8673E-05	.3512E-03	.2236E-02	.2244E-02	.063	-12.177
5.390	53.0	62.5	141.0	.1456E-04	.5555E-07	.7832E-05	.4895E-03	.2019E-02	.2127E-02	.113	-12.064
6.110	72.0	68.0	114.0	.1317E-04	.4778E-07	.5447E-05	.3704E-03	.1404E-02	.1712E-02	.123	-11.941
6.750	64.0	55.0	151.0	.1193E-04	.4121E-07	.6223E-05	.3423E-03	.1604E-02	.1504E-02	.096	-11.845
7.210	46.0	49.5	168.0	.1104E-04	.3669E-07	.6165E-05	.3051E-03	.1589E-02	.1597E-02	.073	-11.771
7.740	53.0	47.5	157.0	.1002E-04	.3171E-07	.4979E-05	.2365E-03	.1283E-02	.1436E-02	.076	-11.695
8.160	42.0	46.5	141.0	.9207E-05	.2794E-07	.3939E-05	.1832E-03	.1016E-02	.1150E-02	.048	-11.647
8.670	51.0	50.5	126.0	.8222E-05	.2358E-07	.2971E-05	.1500E-03	.7658E-03	.8907E-03	.045	-11.602
9.170	50.0	48.5	115.0	.8131E-05	.2319E-07	.2666E-05	.1293E-03	.6874E-03	.7266E-03	.036	-11.565
9.640	47.0	48.0	112.0	.8045E-05	.2282E-07	.2556E-05	.1227E-03	.6589E-03	.6731E-03	.032	-11.534
10.130	49.0	48.0	110.0	.7956E-05	.2244E-07	.2468E-05	.1185E-03	.6363E-03	.6476E-03	.032	-11.502
10.600	47.0	46.5	98.0	.7870E-05	.2208E-07	.2164E-05	.1006E-03	.5578E-03	.5970E-03	.028	-11.474
11.060	46.0	46.0	89.0	.7786E-05	.2172E-07	.1934E-05	.8894E-04	.4985E-03	.5281E-03	.024	-11.450
11.520	46.0	59.5	84.0	.7702E-05	.2137E-07	.1795E-05	.1068E-03	.4629E-03	.4807E-03	.022	-11.427
12.250	73.0	66.5	105.0	.8595E-05	.2520E-07	.2646E-05	.1759E-03	.6821E-03	.5725E-03	.042	-11.386
12.850	60.0	60.0	120.0	.9329E-05	.2849E-07	.3419E-05	.2052E-03	.8815E-03	.7818E-03	.047	-11.339
13.450	60.0	56.0	145.0	.1006E-04	.3192E-07	.4629E-05	.2592E-03	.1193E-02	.1037E-02	.062	-11.277
13.970	52.0	52.0	133.0	.1070E-04	.3500E-07	.4655E-05	.2420E-03	.1200E-02	.1197E-02	.062	-11.214
14.490	52.0	52.5	120.0	.1134E-04	.3817E-07	.4580E-05	.2404E-03	.1181E-02	.1190E-02	.062	-11.152
15.020	53.0	48.5	98.0	.1198E-04	.4149E-07	.4066E-05	.1972E-03	.1048E-02	.1114E-02	.059	-11.093
15.460	44.0	47.0	91.0	.1252E-04	.4431E-07	.4033E-05	.1895E-03	.1040E-02	.1044E-02	.046	-11.047
15.960	50.0	48.0	96.0	.1313E-04	.4760E-07	.4570E-05	.2193E-03	.1178E-02	.1109E-02	.055	-10.992
16.420	46.0	47.5	106.0	.1220E-04	.4263E-07	.4518E-05	.2146E-03	.1165E-02	.1171E-02	.054	-10.938
16.910	49.0	48.0	100.0	.1121E-04	.3753E-07	.3753E-05	.1802E-03	.9676E-03	.1066E-02	.052	-10.886
17.380	47.0	23.5	116.0	.1026E-04	.3285E-07	.3811E-05	.8956E-04	.9825E-03	.9750E-03	.046	-10.840

K(3)=-.3242E+03

건설교통부

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
17.380	.0	23.5	116.0	.1026E-04	.3285E-07	.3811E-05	.8956E-04	-.1235E-02	.0000E+00	.000	-10.840
17.850	47.0	40.5	111.0	.9306E-05	.2839E-07	.3151E-05	.1276E-03	-.1021E-02	-.1128E-02	-.053	-10.893
18.190	34.0	43.0	103.0	.8617E-05	.2529E-07	.2605E-05	.1120E-03	-.8445E-03	-.9330E-03	-.032	-10.925
18.710	52.0	49.5	116.0	.7563E-05	.2080E-07	.2413E-05	.1194E-03	-.7822E-03	-.8133E-03	-.042	-10.967
19.180	47.0	45.5	135.0	.6611E-05	.1700E-07	.2295E-05	.1044E-03	-.7439E-03	-.7630E-03	-.036	-11.003
19.620	44.0	47.5	117.0	.5720E-05	.1368E-07	.1601E-05	.7603E-04	-.5188E-03	-.6314E-03	-.028	-11.031
20.130	51.0	48.0	114.0	.5593E-05	.1323E-07	.1508E-05	.7238E-04	-.4888E-03	-.5038E-03	-.026	-11.056
20.580	45.0	43.5	107.0	.5481E-05	.1283E-07	.1373E-05	.5972E-04	-.4450E-03	-.4669E-03	-.021	-11.077
21.000	42.0	41.0	99.0	.5376E-05	.1246E-07	.1234E-05	.5059E-04	-.4000E-03	-.4225E-03	-.018	-11.095
21.400	40.0	33.0	110.0	.5276E-05	.1212E-07	.1333E-05	.4399E-04	-.4321E-03	-.4161E-03	-.017	-11.112
21.660	26.0	35.5	110.0	.5211E-05	.1190E-07	.1309E-05	.4646E-04	-.4242E-03	-.4282E-03	-.011	-11.123
22.110	45.0	44.5	98.0	.5099E-05	.1151E-07	.1128E-05	.5021E-04	-.3658E-03	-.3950E-03	-.018	-11.141
22.550	44.0	57.0	100.0	.4989E-05	.1114E-07	.1114E-05	.6352E-04	-.3613E-03	-.3635E-03	-.016	-11.157
23.250	70.0	50.0	101.0	.4815E-05	.1056E-07	.1067E-05	.5335E-04	-.3459E-03	-.3536E-03	-.025	-11.181
23.550	30.0	40.0	110.0	.5881E-05	.1426E-07	.1569E-05	.6276E-04	-.5086E-03	-.4272E-03	-.013	-11.194
24.050	50.0	56.5	111.0	.7658E-05	.2119E-07	.2353E-05	.1329E-03	-.7626E-03	-.6356E-03	-.032	-11.226
24.680	63.0	64.0	136.0	.9898E-05	.3114E-07	.4235E-05	.2710E-03	-.1373E-02	-.1068E-02	-.067	-11.293
25.330	65.0	56.5	126.0	.1221E-04	.4266E-07	.5375E-05	.3037E-03	-.1742E-02	-.1558E-02	-.101	-11.395
25.810	48.0	40.5	124.0	.1391E-04	.5190E-07	.6436E-05	.2607E-03	-.2086E-02	-.1914E-02	-.092	-11.486
26.140	33.0	39.5	128.0	.1509E-04	.5860E-07	.7501E-05	.2963E-03	-.2432E-02	-.2259E-02	-.075	-11.561
26.600	46.0	42.5	119.0	.1672E-04	.6838E-07	.8138E-05	.3459E-03	-.2638E-02	-.2535E-02	-.117	-11.678
26.990	39.0	40.0	107.0	.1811E-04	.7706E-07	.8246E-05	.3298E-03	-.2673E-02	-.2655E-02	-.104	-11.781
27.400	41.0	45.0	98.0	.1775E-04	.7481E-07	.7331E-05	.3299E-03	-.2376E-02	-.2525E-02	-.104	-11.885
27.890	49.0	44.5	91.0	.1733E-04	.7215E-07	.6565E-05	.2922E-03	-.2128E-02	-.2252E-02	-.110	-11.995
28.290	40.0	37.0	109.0	.1698E-04	.7000E-07	.7630E-05	.2823E-03	-.2473E-02	-.2301E-02	-.092	-12.087
28.630	34.0	37.0	130.0	.1669E-04	.6819E-07	.8864E-05	.3280E-03	-.2873E-02	-.2673E-02	-.091	-12.178
29.030	40.0	47.0	125.0	.1634E-04	.6608E-07	.8259E-05	.3882E-03	-.2677E-02	-.2775E-02	-.111	-12.289
29.570	54.0	56.5	111.0	.1588E-04	.6326E-07	.7022E-05	.3968E-03	-.2276E-02	-.2477E-02	-.134	-12.423
30.160	59.0	63.0	132.0	.1537E-04	.6024E-07	.7951E-05	.5009E-03	-.2577E-02	-.2427E-02	-.143	-12.566
30.830	67.0	62.0	128.0	.1479E-04	.5686E-07	.7278E-05	.4512E-03	-.2359E-02	-.2468E-02	-.165	-12.731
31.400	57.0	64.5	101.0	.2256E-04	.1071E-06	.1082E-04	.6979E-03	-.3507E-02	-.2933E-02	-.167	-12.898
32.120	72.0	59.5	104.0	.3237E-04	.1842E-06	.1915E-04	.1140E-02	-.6209E-02	-.4858E-02	-.350	-13.248
32.590	47.0	40.0	111.0	.3878E-04	.2415E-06	.2680E-04	.1072E-02	-.8688E-02	-.7448E-02	-.350	-13.598
32.920	33.0	16.5	104.0	.4327E-04	.2847E-06	.2961E-04	.4885E-03	-.9597E-02	-.9143E-02	-.302	-13.900

K(4)= .4269E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
32.920	.0	7.0	104.0	.4327E-04	.2847E-06	.2961E-04	.2072E-03	.1264E-02	.0000E+00	.000	-13.900
33.060	14.0	17.5	108.0	.4518E-04	.3037E-06	.3280E-04	.5740E-03	.1400E-02	.1332E-02	.019	-13.881
33.270	21.0	38.5	100.0	.4804E-04	.3330E-06	.3330E-04	.1282E-02	.1422E-02	.1411E-02	.030	-13.852
33.830	56.0	61.0	126.0	.5568E-04	.4155E-06	.5235E-04	.3193E-02	.2235E-02	.1828E-02	.102	-13.749
34.490	66.0	54.5	108.0	.6467E-04	.5201E-06	.5617E-04	.3061E-02	.2398E-02	.2316E-02	.153	-13.596
34.920	43.0	44.0	101.0	.7053E-04	.5924E-06	.5983E-04	.2633E-02	.2554E-02	.2476E-02	.106	-13.490
35.370	45.0	54.0	104.0	.7667E-04	.6713E-06	.6982E-04	.3770E-02	.2980E-02	.2767E-02	.125	-13.366
36.000	63.0	59.5	99.0	.8228E-04	.7463E-06	.7388E-04	.4396E-02	.3154E-02	.3067E-02	.193	-13.172
36.560	56.0	50.5	95.0	.8726E-04	.8151E-06	.7744E-04	.3911E-02	.3306E-02	.3230E-02	.181	-12.991
37.010	45.0	57.5	109.0	.9127E-04	.8719E-06	.9504E-04	.5465E-02	.4057E-02	.3681E-02	.166	-12.826
37.710	70.0	60.5	94.0	.9750E-04	.9627E-06	.9049E-04	.5475E-02	.3863E-02	.3960E-02	.277	-12.549
38.220	51.0	45.5	99.0	.1020E-03	.1031E-05	.1020E-03	.4643E-02	.4356E-02	.4109E-02	.210	-12.339
38.620	40.0	41.5	52.0	.1056E-03	.1085E-05	.5643E-04	.2342E-02	.2409E-02	.3382E-02	.135	-12.204
39.050	43.0	45.0	57.0	.1094E-03	.1145E-05	.6525E-04	.2936E-02	.2785E-02	.2597E-02	.112	-12.092
39.520	47.0	47.5	84.0	.1136E-03	.1211E-05	.1017E-03	.4832E-02	.4342E-02	.3564E-02	.167	-11.925
40.000	48.0	47.5	91.0	.1179E-03	.1280E-05	.1165E-03	.5532E-02	.4972E-02	.4657E-02	.224	-11.701
40.470	47.0	44.5	71.0	.1208E-03	.1327E-05	.9422E-04	.4193E-02	.4022E-02	.4497E-02	.211	-11.490
40.890	42.0	51.0	68.0	.1233E-03	.1370E-05	.9313E-04	.4750E-02	.3976E-02	.3999E-02	.168	-11.322
41.490	60.0	55.0	61.0	.1270E-03	.1431E-05	.8730E-04	.4802E-02	.3727E-02	.3851E-02	.231	-11.091
41.990	50.0	52.5	68.0	.1301E-03	.1483E-05	.1009E-03	.5295E-02	.4305E-02	.4016E-02	.201	-10.890
42.540	55.0	65.0	62.0	.1334E-03	.1541E-05	.9555E-04	.6210E-02	.4079E-02	.4192E-02	.231	-10.659
43.290	75.0	65.5	79.0	.1380E-03	.1621E-05	.1281E-03	.8389E-02	.5467E-02	.4773E-02	.358	-10.301
43.850	56.0	58.0	87.0	.1414E-03	.1682E-05	.1463E-03	.8487E-02	.6246E-02	.5857E-02	.328	-9.973
44.450	60.0	60.5	97.0	.1233E-03	.1369E-05	.1328E-03	.8036E-02	.5670E-02	.5958E-02	.357	-9.616
45.060	61.0	60.0	90.0	.1049E-03	.1074E-05	.9667E-04	.5800E-02	.4127E-02	.4898E-02	.299	-9.317
45.650	59.0	57.0	92.0	.8707E-04	.8124E-06	.7474E-04	.4260E-02	.3190E-02	.3659E-02	.216	-9.101
46.200	55.0	51.0	123.0	.7045E-04	.5914E-06	.7274E-04	.3710E-02	.3105E-02	.3148E-02	.173	-8.928
46.670	47.0	53.5	121.0	.5626E-04	.4220E-06	.5106E-04	.2732E-02	.2180E-02	.2642E-02	.124	-8.804
47.270	60.0	56.5	116.0	.3814E-04	.2355E-06	.2732E-04	.1544E-02	.1166E-02	.1673E-02	.100	-8.704
47.800	53.0	41.5	101.0	.2213E-04	.1041E-06	.1051E-04	.4364E-03	.4488E-03	.8075E-03	.043	-8.661
48.100	30.0	35.0	92.0	.1307E-04	.4725E-07	.4347E-05	.1521E-03	.1856E-03	.3172E-03	.010	-8.651
48.500	40.0	43.5	91.0	.3232E-04	.1838E-06	.1672E-04	.7275E-03	.7139E-03	.4497E-03	.018	-8.633

48.970	47.0	45.0	103.0	.5495E-04	.4073E-06	.4195E-04	.1888E-02	.1791E-02	.1252E-02	.059	-8.574
49.400	43.0	42.5	159.0	.7565E-04	.6579E-06	.1046E-03	.4446E-02	.4466E-02	.3128E-02	.135	-8.440
49.820	42.0	45.0	127.0	.9587E-04	.9386E-06	.1192E-03	.5364E-02	.5089E-02	.4777E-02	.201	-8.239
50.300	48.0	49.0	124.0	.1190E-03	.1298E-05	.1609E-03	.7885E-02	.6869E-02	.5979E-02	.287	-7.952
50.800	50.0	46.0	144.0	.1430E-03	.1711E-05	.2463E-03	.1133E-01	.1052E-01	.8692E-02	.435	-7.518
51.220	42.0	37.0	137.0	.1633E-03	.2086E-05	.2858E-03	.1057E-01	.1220E-01	.1136E-01	.477	-7.041
51.540	32.0	43.5	112.0	.1787E-03	.2388E-05	.2675E-03	.1163E-01	.1142E-01	.1181E-01	.378	-6.663
52.090	55.0	31.0	82.0	.1749E-03	.2312E-05	.1896E-03	.5877E-02	.8093E-02	.9755E-02	.537	-6.126
52.160	7.0	3.5	81.0	.1744E-03	.2302E-05	.1865E-03	.6528E-03	.7961E-02	.8027E-02	.056	-6.070

K(5)= .0000E+00

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
52.160	.0	1.0	81.0	.1744E-03	.2302E-05	.1865E-03	.1865E-03	.0000E+00	.0000E+00	.000	-6.070
52.180	2.0	1.0	81.0	.1742E-03	.2300E-05	.1863E-03	.1863E-03	.0000E+00	.0000E+00	.000	-6.070

K(6)= .2920E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
52.180	.0	18.0	81.0	.1742E-03	.2300E-05	.1863E-03	.3353E-02	.5440E-02	.0000E+00	.000	-6.070
52.540	36.0	36.5	102.0	.1717E-03	.2251E-05	.2296E-03	.8379E-02	.6704E-02	.6072E-02	.219	-5.851
52.910	37.0	40.5	70.0	.1692E-03	.2200E-05	.1540E-03	.6238E-02	.4498E-02	.5601E-02	.207	-5.644
53.350	44.0	42.5	64.0	.1661E-03	.2141E-05	.1370E-03	.5824E-02	.4002E-02	.4250E-02	.187	-5.457
53.760	41.0	46.0	89.0	.1633E-03	.2086E-05	.1857E-03	.8542E-02	.5423E-02	.4712E-02	.193	-5.264
54.270	51.0	48.5	59.0	.1598E-03	.2019E-05	.1191E-03	.5778E-02	.3479E-02	.4451E-02	.227	-5.037
54.730	46.0	52.5	58.0	.1566E-03	.1959E-05	.1136E-03	.5965E-02	.3318E-02	.3399E-02	.156	-4.881
55.320	59.0	60.5	92.0	.1525E-03	.1883E-05	.1732E-03	.1048E-01	.5059E-02	.4189E-02	.247	-4.633
55.940	62.0	55.0	91.0	.1940E-03	.2703E-05	.2459E-03	.1353E-01	.7182E-02	.6120E-02	.379	-4.254
56.420	48.0	24.0	72.0	.2262E-03	.3402E-05	.2449E-03	.5878E-02	.7153E-02	.7167E-02	.344	-3.910

K(7)= .1108E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
56.420	.0	4.5	72.0	.2262E-03	.3402E-05	.2449E-03	.1102E-02	.2715E-02	.0000E+00	.000	-3.910
56.510	9.0	27.5	74.0	.2322E-03	.3539E-05	.2619E-03	.7201E-02	.2903E-02	.2809E-02	.025	-3.885
56.970	46.0	41.0	62.0	.2630E-03	.4266E-05	.2645E-03	.1084E-01	.2932E-02	.2917E-02	.134	-3.751
57.330	36.0	42.0	75.0	.2872E-03	.4866E-05	.3650E-03	.1533E-01	.4045E-02	.3489E-02	.126	-3.625
57.810	48.0	37.5	85.0	.3193E-03	.5706E-05	.4850E-03	.1819E-01	.5376E-02	.4711E-02	.226	-3.399
58.080	27.0	38.0	71.0	.3374E-03	.6198E-05	.4400E-03	.1672E-01	.4878E-02	.5127E-02	.138	-3.260
58.570	49.0	49.0	72.0	.3702E-03	.7124E-05	.5129E-03	.2513E-01	.5686E-02	.5282E-02	.259	-3.002
59.060	49.0	47.5	95.0	.4031E-03	.8092E-05	.7688E-03	.3652E-01	.8521E-02	.7103E-02	.348	-2.654
59.520	46.0	46.5	86.0	.3803E-03	.7417E-05	.6379E-03	.2966E-01	.7071E-02	.7796E-02	.359	-2.295
59.990	47.0	49.5	76.0	.3571E-03	.6748E-05	.5129E-03	.2539E-01	.5685E-02	.6378E-02	.300	-1.995
60.510	52.0	48.0	65.0	.3314E-03	.6033E-05	.3921E-03	.1882E-01	.4347E-02	.5016E-02	.261	-1.734
60.950	44.0	46.0	90.0	.3096E-03	.5449E-05	.4904E-03	.2256E-01	.5436E-02	.4891E-02	.215	-1.519
61.430	48.0	46.0	87.0	.2859E-03	.4835E-05	.4206E-03	.1935E-01	.4662E-02	.5049E-02	.242	-1.277
61.870	44.0	23.5	71.0	.2642E-03	.4294E-05	.3049E-03	.7164E-02	.3379E-02	.4021E-02	.177	-1.100
61.900	3.0	1.5	68.0	.2627E-03	.4258E-05	.2895E-03	.4343E-03	.3209E-02	.3294E-02	.010	-1.090

K(8)= .5462E+01

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
61.900	.0	21.0	68.0	.2627E-03	.4258E-05	.2895E-03	.6080E-02	.1581E-02	.0000E+00	.000	-1.090
62.320	42.0	44.5	58.0	.2419E-03	.3763E-05	.2183E-03	.9712E-02	.1192E-02	.1387E-02	.058	-1.032
62.790	47.0	53.5	41.0	.2187E-03	.3234E-05	.1326E-03	.7094E-02	.7242E-03	.9581E-03	.045	-.987
63.390	60.0	62.5	48.0	.2196E-03	.3255E-05	.1562E-03	.9765E-02	.8533E-03	.7888E-03	.047	-.939
64.040	65.0	56.0	56.0	.2206E-03	.3277E-05	.1835E-03	.1028E-01	.1002E-02	.9278E-03	.060	-.879
64.510	47.0	50.0	70.0	.2214E-03	.3294E-05	.2306E-03	.1153E-01	.1259E-02	.1131E-02	.053	-.826
65.040	53.0	48.0	67.0	.2222E-03	.3312E-05	.2219E-03	.1065E-01	.1212E-02	.1236E-02	.065	-.760
65.470	43.0	53.5	52.0	.2229E-03	.3327E-05	.1730E-03	.9255E-02	.9449E-03	.1078E-02	.046	-.714
66.110	64.0	50.0	34.0	.2239E-03	.3349E-05	.1139E-03	.5694E-02	.6219E-03	.7834E-03	.050	-.664
66.470	36.0	40.5	35.0	.2244E-03	.3362E-05	.1177E-03	.4765E-02	.6426E-03	.6323E-03	.023	-.641
66.920	45.0	46.5	46.0	.2251E-03	.3377E-05	.1554E-03	.7224E-02	.8485E-03	.7456E-03	.034	-.608

67.400	48.0	49.5	49.0	.2277E-03	.3435E-05	.1683E-03	.8332E-02	.9193E-03	.8839E-03	.042	-.565
67.910	51.0	48.5	64.0	.2304E-03	.3497E-05	.2238E-03	.1085E-01	.1222E-02	.1071E-02	.055	-.511
68.370	46.0	53.0	67.0	.2328E-03	.3553E-05	.2380E-03	.1262E-01	.1300E-02	.1261E-02	.058	-.453
68.970	60.0	56.5	85.0	.2360E-03	.3626E-05	.3082E-03	.1741E-01	.1683E-02	.1492E-02	.090	-.363
69.500	53.0	56.5	71.0	.2388E-03	.3691E-05	.2621E-03	.1481E-01	.1431E-02	.1557E-02	.083	-.281
70.100	60.0	55.5	66.0	.2420E-03	.3766E-05	.2485E-03	.1379E-01	.1357E-02	.1394E-02	.084	-.197
70.610	51.0	50.5	60.0	.2448E-03	.3829E-05	.2297E-03	.1160E-01	.1255E-02	.1306E-02	.067	-.130
71.110	50.0	47.5	55.0	.2474E-03	.3892E-05	.2140E-03	.1017E-01	.1169E-02	.1212E-02	.061	-.070
71.560	45.0	47.5	58.0	.2235E-03	.3341E-05	.1938E-03	.9205E-02	.1058E-02	.1114E-02	.050	-.020
72.060	50.0	50.5	63.0	.1969E-03	.2763E-05	.1741E-03	.8791E-02	.9508E-03	.1005E-02	.050	.031
72.570	51.0	47.5	61.0	.1698E-03	.2213E-05	.1350E-03	.6411E-02	.7371E-03	.8440E-03	.043	.074
73.010	44.0	48.5	58.0	.1464E-03	.1771E-05	.1027E-03	.4983E-02	.5612E-03	.6492E-03	.029	.102
73.540	53.0	58.5	63.0	.1182E-03	.1286E-05	.8099E-04	.4738E-02	.4423E-03	.5018E-03	.027	.129
74.180	64.0	55.0	49.0	.8421E-04	.7727E-06	.3786E-04	.2082E-02	.2068E-03	.3246E-03	.021	.150
74.640	46.0	47.0	53.0	.5975E-04	.4619E-06	.2448E-04	.1151E-02	.1337E-03	.1702E-03	.008	.157
75.120	48.0	49.5	50.0	.3423E-04	.2003E-06	.1001E-04	.4957E-03	.5470E-04	.9420E-04	.005	.162
75.630	51.0	57.5	45.0	.3327E-04	.1919E-06	.8634E-05	.4965E-03	.4716E-04	.5093E-04	.003	.165
76.270	64.0	54.5	35.0	.3205E-04	.1815E-06	.6352E-05	.3462E-03	.3469E-04	.4092E-04	.003	.167
76.720	45.0	52.5	34.0	.3120E-04	.1743E-06	.5926E-05	.3111E-03	.3237E-04	.3353E-04	.002	.169
77.320	60.0	59.5	43.0	.3007E-04	.1649E-06	.7089E-05	.4218E-03	.3872E-04	.3554E-04	.002	.171
77.910	59.0	50.0	46.0	.2895E-04	.1557E-06	.7164E-05	.3582E-03	.3913E-04	.3892E-04	.002	.173
78.320	41.0	50.5	41.0	.2817E-04	.1495E-06	.6130E-05	.3096E-03	.3348E-04	.3631E-04	.001	.175
78.920	60.0	58.5	52.0	.2703E-04	.1406E-06	.7309E-05	.4276E-03	.3992E-04	.3670E-04	.002	.177
79.490	57.0	63.5	66.0	.2596E-04	.1322E-06	.8727E-05	.5542E-03	.4767E-04	.4379E-04	.002	.179
80.190	70.0	49.5	51.0	.5966E-04	.4608E-06	.2350E-04	.1163E-02	.1283E-03	.8800E-04	.006	.185
80.480	29.0	14.5	53.0	.7362E-04	.6316E-06	.3348E-04	.4854E-03	.1828E-03	.1556E-03	.005	.190

K(9)= .8509E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
80.480	.0	8.0	53.0	.7362E-04	.6316E-06	.3348E-04	.2678E-03	.2849E-02	.0000E+00	.000	.190
80.640	16.0	32.0	84.0	.8132E-04	.7333E-06	.6160E-04	.1971E-02	.5242E-02	.4045E-02	.065	.255
81.120	48.0	48.5	51.0	.1044E-03	.1067E-05	.5443E-04	.2640E-02	.4631E-02	.4937E-02	.237	.492
81.610	49.0	43.0	44.0	.1280E-03	.1449E-05	.6373E-04	.2741E-02	.5423E-02	.5027E-02	.246	.738
81.980	37.0	49.5	42.0	.1458E-03	.1761E-05	.7397E-04	.3661E-02	.6294E-02	.5859E-02	.217	.955
82.600	62.0	50.0	43.0	.1757E-03	.2329E-05	.1001E-03	.5007E-02	.8520E-02	.7407E-02	.459	1.414
82.980	38.0	40.5	39.0	.1940E-03	.2702E-05	.1054E-03	.4267E-02	.8966E-02	.8743E-02	.332	1.746
83.410	43.0	42.5	51.0	.2147E-03	.3145E-05	.1604E-03	.6818E-02	.1365E-01	.1131E-01	.486	2.233
83.830	42.0	44.5	51.0	.1941E-03	.2704E-05	.1379E-03	.6137E-02	.1174E-01	.1269E-01	.533	2.766
84.300	47.0	43.5	59.0	.1711E-03	.2238E-05	.1320E-03	.5743E-02	.1123E-01	.1148E-01	.540	3.305
84.700	40.0	20.0	63.0	.1515E-03	.1864E-05	.1175E-03	.2349E-02	.9995E-02	.1061E-01	.425	3.730

K(10)= .9241E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
84.700	.0	4.5	63.0	.1515E-03	.1864E-05	.1175E-03	.5286E-03	.1085E-01	.0000E+00	.000	3.730
84.790	9.0	18.5	72.0	.1471E-03	.1784E-05	.1284E-03	.2376E-02	.1187E-01	.1136E-01	.102	3.832
85.070	28.0	14.0	51.0	.1334E-03	.1540E-05	.7854E-04	.1100E-02	.7258E-02	.9563E-02	.268	4.100

K(11)=-.1321E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
85.070	.0	7.5	51.0	.1334E-03	.1540E-05	.7854E-04	.5890E-03	-.1037E-01	.0000E+00	.000	4.100
85.220	15.0	33.0	51.0	.1260E-03	.1414E-05	.7214E-04	.2381E-02	-.9528E-02	-.9950E-02	-.149	3.951
85.730	51.0	51.0	50.0	.1010E-03	.1015E-05	.5077E-04	.2589E-02	-.6705E-02	-.8116E-02	-.414	3.537
86.240	51.0	38.5	49.0	.7603E-04	.6630E-06	.3249E-04	.1251E-02	-.4291E-02	-.5498E-02	-.280	3.256
86.500	26.0	13.0	47.0	.6330E-04	.5036E-06	.2367E-04	.3077E-03	-.3126E-02	-.3708E-02	-.096	3.160

K(12)= .1635E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
86.500	.0	14.0	47.0	.6330E-04	.5036E-06	.2367E-04	.3314E-03	.3869E-01	.0000E+00	.000	3.160
86.780	28.0	39.0	42.0	.4958E-04	.3491E-06	.1466E-04	.5718E-03	.2397E-01	.3133E-01	.877	4.037

87.280	50.0	45.0	49.0	.2508E-04	.1256E-06	.6156E-05	.2770E-03	.1006E-01	.1701E-01	.851	4.888
87.680	40.0	37.5	71.0	.4938E-04	.3469E-06	.2463E-04	.9237E-03	.4027E-01	.2516E-01	1.007	5.894
88.030	35.0	17.5	56.0	.7063E-04	.5936E-06	.3324E-04	.5817E-03	.5434E-01	.4730E-01	1.656	7.550

K(13)=-.1572E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
88.030	.0	11.0	56.0	.7063E-04	.5936E-06	.3324E-04	.3657E-03	-.5226E-03	.0000E+00	.000	7.550
88.250	22.0	38.5	40.0	.8399E-04	.7697E-06	.3079E-04	.1185E-02	-.4840E-03	-.5033E-03	-.011	7.539
88.800	55.0	51.5	36.0	.1174E-03	.1272E-05	.4579E-04	.2358E-02	-.7198E-03	-.6019E-03	-.033	7.506
89.280	48.0	47.5	40.0	.1465E-03	.1774E-05	.7096E-04	.3370E-02	-.1116E-02	-.9177E-03	-.044	7.462
89.750	47.0	47.5	39.0	.1751E-03	.2317E-05	.9035E-04	.4292E-02	-.1420E-02	-.1268E-02	-.060	7.402
90.230	48.0	49.0	35.0	.2042E-03	.2919E-05	.1022E-03	.5006E-02	-.1606E-02	-.1513E-02	-.073	7.330
90.730	50.0	48.0	35.0	.2346E-03	.3593E-05	.1258E-03	.6037E-02	-.1977E-02	-.1792E-02	-.090	7.240
91.190	46.0	49.5	44.0	.2625E-03	.4254E-05	.1872E-03	.9265E-02	-.2942E-02	-.2460E-02	-.113	7.127
91.720	53.0	48.5	41.0	.2329E-03	.3553E-05	.1457E-03	.7066E-02	-.2290E-02	-.2616E-02	-.139	6.988
92.160	44.0	44.5	38.0	.2082E-03	.3005E-05	.1142E-03	.5081E-02	-.1795E-02	-.2043E-02	-.090	6.898
92.610	45.0	45.0	39.0	.1830E-03	.2476E-05	.9658E-04	.4346E-02	-.1518E-02	-.1657E-02	-.075	6.824
93.060	45.0	45.0	33.0	.1579E-03	.1983E-05	.6545E-04	.2945E-02	-.1029E-02	-.1274E-02	-.057	6.766
93.510	45.0	22.5	43.0	.1327E-03	.1528E-05	.6570E-04	.1478E-02	-.1033E-02	-.1031E-02	-.046	6.720

K(14)=-.3570E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
93.510	.0	4.0	43.0	.1327E-03	.1528E-05	.6570E-04	.2628E-03	-.2345E-01	.0000E+00	.000	6.720
93.590	8.0	29.5	52.0	.1282E-03	.1451E-05	.7546E-04	.2226E-02	-.2694E-01	-.2519E-01	-.202	6.518
94.100	51.0	60.0	31.0	.9963E-04	.9945E-06	.3083E-04	.1850E-02	-.1100E-01	-.1897E-01	-.968	5.551
94.790	69.0	55.0	35.0	.6100E-04	.4765E-06	.1668E-04	.9172E-03	-.5953E-02	-.8479E-02	-.585	4.966
95.200	41.0	20.5	43.0	.3805E-04	.2347E-06	.1009E-04	.2069E-03	-.3603E-02	-.4778E-02	-.196	4.770

K(15)= .3935E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
95.200	.0	9.5	43.0	.3805E-04	.2347E-06	.1009E-04	.9589E-04	.3972E-03	.0000E+00	.000	4.770
95.390	19.0	39.5	37.0	.2742E-04	.1436E-06	.5312E-05	.2098E-03	.2090E-03	.3031E-03	.006	4.776
95.990	60.0	47.5	42.0	.5806E-04	.4424E-06	.1858E-04	.8826E-03	.7311E-03	.4701E-03	.028	4.804
96.340	35.0	44.0	42.0	.7593E-04	.6617E-06	.2779E-04	.1223E-02	.1094E-02	.9124E-03	.032	4.836
96.870	53.0	52.5	43.0	.1030E-03	.1045E-05	.4495E-04	.2360E-02	.1769E-02	.1431E-02	.076	4.912
97.390	52.0	47.0	32.0	.1296E-03	.1475E-05	.4719E-04	.2218E-02	.1857E-02	.1813E-02	.094	5.006
97.810	42.0	48.5	43.0	.1510E-03	.1856E-05	.7979E-04	.3870E-02	.3140E-02	.2498E-02	.105	5.111
98.360	55.0	56.0	62.0	.1791E-03	.2397E-05	.1486E-03	.8322E-02	.5848E-02	.4494E-02	.247	5.358
98.930	57.0	68.5	38.0	.2082E-03	.3004E-05	.1142E-03	.7820E-02	.4492E-02	.5170E-02	.295	5.653
99.730	80.0	67.5	67.0	.2491E-03	.3931E-05	.2634E-03	.1778E-01	.1036E-01	.7428E-02	.594	6.247
100.280	55.0	49.0	67.0	.2490E-03	.3928E-05	.2632E-03	.1290E-01	.1036E-01	.1036E-01	.570	6.817
100.710	43.0	43.0	64.0	.2489E-03	.3927E-05	.2513E-03	.1081E-01	.9889E-02	.1012E-01	.435	7.252
101.140	43.0	45.5	77.0	.2488E-03	.3925E-05	.3022E-03	.1375E-01	.1189E-01	.1089E-01	.468	7.720
101.620	48.0	36.5	75.0	.2487E-03	.3923E-05	.2942E-03	.1074E-01	.1158E-01	.1174E-01	.563	8.284
101.870	25.0	12.5	63.0	.2487E-03	.3922E-05	.2471E-03	.3089E-02	.9723E-02	.1065E-01	.266	8.550

K(16)= .3092E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
101.870	.0	8.0	63.0	.2487E-03	.3922E-05	.2471E-03	.1977E-02	.7641E-02	.0000E+00	.000	8.550
102.030	16.0	37.0	66.0	.2487E-03	.3921E-05	.2588E-03	.9576E-02	.8004E-02	.7822E-02	.125	8.675
102.610	58.0	56.5	72.0	.2486E-03	.3919E-05	.2822E-03	.1594E-01	.8726E-02	.8365E-02	.485	9.160
103.160	55.0	55.5	66.0	.2485E-03	.3917E-05	.2585E-03	.1435E-01	.7995E-02	.8360E-02	.460	9.620
103.720	56.0	53.5	77.0	.2484E-03	.3915E-05	.3014E-03	.1613E-01	.9322E-02	.8658E-02	.485	10.105
104.230	51.0	51.0	73.0	.2172E-03	.3200E-05	.2336E-03	.1191E-01	.7225E-02	.8273E-02	.422	10.527
104.740	51.0	51.0	88.0	.1859E-03	.2536E-05	.2231E-03	.1138E-01	.6900E-02	.7062E-02	.360	10.887
105.250	51.0	50.5	69.0	.1547E-03	.1925E-05	.1328E-03	.6706E-02	.4107E-02	.5503E-02	.281	11.168
105.750	50.0	49.0	102.0	.1241E-03	.1383E-05	.1410E-03	.6911E-02	.4361E-02	.4234E-02	.212	11.379
106.230	48.0	50.0	115.0	.9473E-04	.9219E-06	.1060E-03	.5301E-02	.3279E-02	.3820E-02	.183	11.563
106.750	52.0	51.0	130.0	.6289E-04	.4987E-06	.6484E-04	.3307E-02	.2005E-02	.2642E-02	.137	11.700

107.250	50.0	47.5	114.0	.3228E-04	.1834E-06	.2091E-04	.9931E-03	.6466E-03	.1326E-02	.066	11.767
107.700	45.0	47.5	149.0	.4731E-05	.1029E-07	.1533E-05	.7282E-04	.4741E-04	.3470E-03	.016	11.782
108.200	50.0	52.5	160.0	.3920E-04	.2455E-06	.3927E-04	.2062E-02	.1214E-02	.6310E-03	.032	11.814
108.750	55.0	60.0	126.0	.7712E-04	.6773E-06	.8534E-04	.5120E-02	.2639E-02	.1927E-02	.106	11.920
109.400	65.0	57.5	93.0	.1219E-03	.1346E-05	.1252E-03	.7200E-02	.3872E-02	.3256E-02	.212	12.131
109.900	50.0	47.5	71.0	.1564E-03	.1956E-05	.1389E-03	.6597E-02	.4295E-02	.4084E-02	.204	12.335
110.350	45.0	50.0	69.0	.1874E-03	.2566E-05	.1771E-03	.8853E-02	.5475E-02	.4885E-02	.220	12.555
110.900	55.0	52.5	57.0	.2254E-03	.3383E-05	.1928E-03	.1012E-01	.5963E-02	.5719E-02	.315	12.870
111.400	50.0	50.0	58.0	.2598E-03	.4188E-05	.2429E-03	.1215E-01	.7512E-02	.6737E-02	.337	13.207
111.900	50.0	47.5	51.0	.2943E-03	.5049E-05	.2575E-03	.1223E-01	.7962E-02	.7737E-02	.387	13.594
112.350	45.0	30.5	60.0	.2639E-03	.4288E-05	.2573E-03	.7846E-02	.7956E-02	.7959E-02	.358	13.952
112.510	16.0	30.5	79.0	.2531E-03	.4027E-05	.3182E-03	.9704E-02	.9839E-02	.8897E-02	.142	14.094
112.960	45.0	42.5	89.0	.2228E-03	.3325E-05	.2959E-03	.1258E-01	.9150E-02	.9494E-02	.427	14.521
113.360	40.0	41.5	81.0	.1958E-03	.2739E-05	.2219E-03	.9207E-02	.6861E-02	.8006E-02	.320	14.842
113.790	43.0	46.5	69.0	.1667E-03	.2153E-05	.1486E-03	.6908E-02	.4594E-02	.5728E-02	.246	15.088
114.290	50.0	50.0	46.0	.1330E-03	.1534E-05	.7055E-04	.3528E-02	.2182E-02	.3388E-02	.169	15.257
114.790	50.0	55.0	43.0	.9925E-04	.9888E-06	.4252E-04	.2339E-02	.1315E-02	.1748E-02	.087	15.345
115.390	60.0	62.5	28.0	.5876E-04	.4504E-06	.1261E-04	.7882E-03	.3900E-03	.8524E-03	.051	15.396
116.040	65.0	57.5	37.0	.1197E-03	.1310E-05	.4849E-04	.2788E-02	.1499E-02	.9447E-03	.061	15.457
116.540	50.0	52.5	25.0	.1667E-03	.2152E-05	.5379E-04	.2824E-02	.1663E-02	.1581E-02	.079	15.536
117.090	55.0	54.0	34.0	.2183E-03	.3225E-05	.1096E-03	.5921E-02	.3391E-02	.2527E-02	.139	15.675
117.620	53.0	64.0	33.0	.2680E-03	.4387E-05	.1448E-03	.9266E-02	.4477E-02	.3934E-02	.209	15.884
118.370	75.0	59.0	31.0	.3384E-03	.6224E-05	.1930E-03	.1138E-01	.5967E-02	.5222E-02	.392	16.275
118.800	43.0	43.0	27.0	.3787E-03	.7370E-05	.1990E-03	.8557E-02	.6154E-02	.6060E-02	.261	16.536
119.230	43.0	48.5	28.0	.4191E-03	.8579E-05	.2402E-03	.1165E-01	.7428E-02	.6791E-02	.292	16.828
119.770	54.0	48.0	37.0	.4697E-03	.1018E-04	.3767E-03	.1808E-01	.1165E-01	.9539E-02	.515	17.343
120.190	42.0	46.5	32.0	.4395E-03	.9214E-05	.2949E-03	.1371E-01	.9118E-02	.1038E-01	.436	17.779
120.700	51.0	53.5	44.0	.4028E-03	.8085E-05	.3557E-03	.1903E-01	.1100E-01	.1006E-01	.513	18.292
121.260	56.0	53.5	66.0	.3625E-03	.6903E-05	.4556E-03	.2437E-01	.1409E-01	.1254E-01	.702	18.995
121.770	51.0	44.0	57.0	.3258E-03	.5881E-05	.3352E-03	.1475E-01	.1037E-01	.1223E-01	.624	19.618
122.140	37.0	36.0	42.0	.2992E-03	.5175E-05	.2174E-03	.7825E-02	.6722E-02	.8545E-02	.316	19.935
122.490	35.0	42.5	65.0	.2740E-03	.4536E-05	.2948E-03	.1253E-01	.9118E-02	.7920E-02	.277	20.212
122.990	50.0	49.0	72.0	.2380E-03	.3673E-05	.2644E-03	.1296E-01	.8177E-02	.8647E-02	.432	20.644
123.470	48.0	51.0	82.0	.2035E-03	.2903E-05	.2380E-03	.1214E-01	.7361E-02	.7769E-02	.373	21.017
124.010	54.0	49.5	60.0	.1906E-03	.2631E-05	.1578E-03	.7813E-02	.4881E-02	.6121E-02	.331	21.348
124.460	45.0	47.5	32.0	.1798E-03	.2411E-05	.7714E-04	.3664E-02	.2386E-02	.3633E-02	.164	21.511
124.960	50.0	60.0	33.0	.1678E-03	.2174E-05	.7174E-04	.4304E-02	.2218E-02	.2302E-02	.115	21.626
125.660	70.0	73.0	36.0	.1510E-03	.1856E-05	.6683E-04	.4879E-02	.2067E-02	.2143E-02	.150	21.776
126.420	76.0	54.5	40.0	.1328E-03	.1531E-05	.6125E-04	.3338E-02	.1894E-02	.1980E-02	.151	21.927
126.750	33.0	16.5	31.0	.1249E-03	.1397E-05	.4329E-04	.7143E-03	.1339E-02	.1616E-02	.053	21.980

K(17)= .9306E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
126.750	.0	2.5	31.0	.1249E-03	.1397E-05	.4329E-04	.1082E-03	.4029E-01	.0000E+00	.000	21.980
126.800	5.0	2.5	31.0	.1237E-03	.1376E-05	.4267E-04	.1067E-03	.3971E-01	.4000E-01	.200	22.180

K(18)=-.3295E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
126.800	.0	8.0	31.0	.1237E-03	.1376E-05	.4267E-04	.3414E-03	-.1406E-01	.0000E+00	.000	22.180
126.960	16.0	33.0	32.0	.1199E-03	.1313E-05	.4202E-04	.1387E-02	-.1384E-01	-.1395E-01	-.223	21.957
127.460	50.0	38.0	33.0	.1079E-03	.1121E-05	.3700E-04	.1406E-02	-.1219E-01	-.1302E-01	-.651	21.306
127.720	26.0	13.0	29.0	.1017E-03	.1026E-05	.2975E-04	.3867E-03	-.9800E-02	-.1100E-01	-.286	21.020

K(19)= .0000E+00

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
127.720	.0	1.0	29.0	.1017E-03	.1026E-05	.2975E-04	.2975E-04	.0000E+00	.0000E+00	.000	21.020
127.740	2.0	1.0	29.0	.1012E-03	.1018E-05	.2954E-04	.2954E-04	.0000E+00	.0000E+00	.000	21.020

K(20)=-.2682E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL

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127.740	.0	7.5	29.0	.1012E-03	.1018E-05	.2954E-04	.2215E-03	-.7923E-01	.0000E+00	.000	21.020
127.890	15.0	7.5	24.0	.9763E-04	.9647E-06	.2315E-04	.1737E-03	-.6211E-01	-.7067E-01	-1.060	19.960

K(21)= .6080E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
127.890	.0	4.0	24.0	.9763E-04	.9647E-06	.2315E-04	.9261E-04	.1408E-01	.0000E+00	.000	19.960
127.970	8.0	24.0	23.0	.9572E-04	.9365E-06	.2154E-04	.5169E-03	.1310E-01	.1359E-01	.109	20.069
128.370	40.0	40.5	27.0	.9697E-04	.9549E-06	.2578E-04	.1044E-02	.1568E-01	.1439E-01	.575	20.644
128.780	41.0	43.0	34.0	.9825E-04	.9739E-06	.3311E-04	.1424E-02	.2013E-01	.1790E-01	.734	21.378
129.230	45.0	52.5	26.0	.9966E-04	.9949E-06	.2587E-04	.1358E-02	.1573E-01	.1793E-01	.807	22.185
129.830	60.0	55.0	25.0	.1015E-03	.1023E-05	.2558E-04	.1407E-02	.1555E-01	.1564E-01	.938	23.123
130.330	50.0	32.0	22.0	.1031E-03	.1047E-05	.2303E-04	.7370E-03	.1400E-01	.1478E-01	.739	23.862
130.470	14.0	7.0	20.0	.1035E-03	.1053E-05	.2107E-04	.1475E-03	.1281E-01	.1341E-01	.188	24.050

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건설교통부

금강(대청댐상류) Keum-River (Up Stream) KUBO MASASI FORMUAL

NUMBER OF REGION = 1

CASE = 1 ********** Keum-River (Up Stream) NO.222+040 - NO.246+365 **********

N = 69 ND = 7 NE = 17 OPTION = 2

K(1)= .7595E+01

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
222.040	.0	9.0	24.0	.4234E-02	.2755E-03	.6613E-02	.5952E-01	.5023E-01	.0000E+00	.000	72.790
222.220	18.0	24.5	26.0	.4053E-02	.2580E-03	.6708E-02	.1644E+00	.5095E-01	.5059E-01	.911	73.701
222.530	31.0	34.8	24.0	.3740E-02	.2287E-03	.5490E-02	.1908E+00	.4169E-01	.4632E-01	1.436	75.137
222.915	38.5	52.0	24.0	.3352E-02	.1941E-03	.4657E-02	.2422E+00	.3537E-01	.3853E-01	1.484	76.620
223.570	65.5	33.3	19.0	.2691E-02	.1396E-03	.2653E-02	.8820E-01	.2015E-01	.2776E-01	1.818	78.438
223.580	1.0	.5	22.0	.2681E-02	.1388E-03	.3054E-02	.1527E-02	.2320E-01	.2167E-01	.022	78.460

K(2)=-.4157E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
223.580	.0	1.8	22.0	.2681E-02	.1388E-03	.3054E-02	.5345E-02	-.1270E+00	.0000E+00	.000	78.460
223.615	3.5	1.8	22.0	.2646E-02	.1361E-03	.2994E-02	.5240E-02	-.1245E+00	-.1257E+00	-.440	78.020

K(3)=-.6064E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
223.615	.0	1.5	22.0	.2646E-02	.1361E-03	.2994E-02	.4491E-02	-.1816E+00	.0000E+00	.000	78.020
223.645	3.0	1.5	22.0	.2616E-02	.1338E-03	.2943E-02	.4414E-02	-.1784E+00	-.1800E+00	-.540	77.480

K(4)= .5182E+01

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
223.645	.0	24.0	22.0	.2616E-02	.1338E-03	.2943E-02	.7063E-01	.1525E-01	.0000E+00	.000	77.480
224.125	48.0	46.8	21.0	.2131E-02	.9840E-04	.2066E-02	.9660E-01	.1071E-01	.1298E-01	.623	78.103
224.580	45.5	41.5	21.0	.1672E-02	.6840E-04	.1436E-02	.5961E-01	.7443E-02	.9076E-02	.413	78.516
224.955	37.5	41.8	20.0	.1294E-02	.4656E-04	.9312E-03	.3888E-01	.4826E-02	.6135E-02	.230	78.746
225.415	46.0	31.8	19.0	.8303E-03	.2392E-04	.4545E-03	.1443E-01	.2356E-02	.3591E-02	.165	78.911
225.590	17.5	8.8	24.0	.6537E-03	.1672E-04	.4012E-03	.3510E-02	.2079E-02	.2217E-02	.039	78.950

K(5)= .3970E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
225.590	.0	9.3	24.0	.6537E-03	.1672E-04	.4012E-03	.3711E-02	.1593E+00	.0000E+00	.000	78.950
225.775	18.5	9.3	25.0	.4672E-03	.1010E-04	.2524E-03	.2335E-02	.1002E+00	.1297E+00	2.400	81.350

K(6)=-.7284E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL

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225.775	.0	2.8	25.0	.4672E-03	.1010E-04	.2524E-03	.6942E-03	-.1839E-01	.0000E+00	.000	81.350
225.830	5.5	25.0	24.0	.4117E-03	.8353E-05	.2005E-03	.5012E-02	-.1460E-01	-.1649E-01	-.091	81.259
226.275	44.5	22.3	29.0	.5549E-03	.1307E-04	.3791E-03	.8435E-02	-.2761E-01	-.2111E-01	-.939	80.320

K(7)= .1860E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
226.275	.0	5.5	29.0	.5549E-03	.1307E-04	.3791E-03	.2085E-02	.7053E-02	.0000E+00	.000	80.320
226.385	11.0	33.8	30.0	.5904E-03	.1434E-04	.4303E-03	.1452E-01	.8006E-02	.7530E-02	.083	80.403
226.950	56.5	35.8	54.0	.7723E-03	.2146E-04	.1159E-02	.4143E-01	.2156E-01	.1478E-01	.835	81.238
227.100	15.0	7.5	58.0	.8205E-03	.2350E-04	.1363E-02	.1022E-01	.2536E-01	.2346E-01	.352	81.590

K(8)= .6135E+01

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
227.100	.0	16.3	58.0	.8205E-03	.2350E-04	.1363E-02	.2215E-01	.8363E-02	.0000E+00	.000	81.590
227.425	32.5	25.5	29.0	.9252E-03	.2814E-04	.8161E-03	.2081E-01	.5007E-02	.6685E-02	.217	81.807
227.610	18.5	16.0	24.0	.9847E-03	.3090E-04	.7416E-03	.1187E-01	.4550E-02	.4778E-02	.088	81.896
227.745	13.5	36.5	25.0	.1028E-02	.3297E-04	.8242E-03	.3008E-01	.5057E-02	.4803E-02	.065	81.960
228.340	59.5	67.8	22.0	.1220E-02	.4260E-04	.9372E-03	.6350E-01	.5750E-02	.5403E-02	.321	82.282
229.100	76.0	60.5	23.0	.1464E-02	.5604E-04	.1289E-02	.7798E-01	.7907E-02	.6829E-02	.519	82.801
229.550	45.0	41.3	20.0	.1609E-02	.6456E-04	.1291E-02	.5326E-01	.7921E-02	.7914E-02	.356	83.157
229.925	37.5	46.8	19.0	.1730E-02	.7196E-04	.1367E-02	.6392E-01	.8388E-02	.8154E-02	.306	83.463
230.485	56.0	48.5	34.0	.1910E-02	.8350E-04	.2839E-02	.1377E+00	.1742E-01	.1290E-01	.722	84.185
230.895	41.0	44.0	24.0	.2042E-02	.9230E-04	.2215E-02	.9747E-01	.1359E-01	.1550E-01	.636	84.821
231.365	47.0	35.5	22.0	.1747E-02	.7299E-04	.1606E-02	.5701E-01	.9851E-02	.1172E-01	.551	85.372
231.605	24.0	28.0	23.0	.1595E-02	.6373E-04	.1466E-02	.4104E-01	.8992E-02	.9422E-02	.226	85.598
231.925	32.0	37.8	25.0	.1394E-02	.5205E-04	.1301E-02	.4912E-01	.7983E-02	.8488E-02	.272	85.870
232.360	43.5	49.0	24.0	.1120E-02	.3750E-04	.9000E-03	.4410E-01	.5521E-02	.6752E-02	.294	86.163
232.905	54.5	55.3	20.0	.7773E-03	.2167E-04	.4334E-03	.2395E-01	.2659E-02	.4090E-02	.223	86.386
233.465	56.0	61.3	27.0	.4249E-03	.8758E-05	.2365E-03	.1448E-01	.1451E-02	.2055E-02	.115	86.501
234.130	66.5	56.0	36.0	.6359E-05	.1604E-07	.5773E-06	.3233E-04	.3542E-05	.7271E-03	.048	86.550
234.585	45.5	46.5	31.0	.6105E-05	.1508E-07	.4676E-06	.2174E-04	.2869E-05	.3205E-05	.000	86.550
235.060	47.5	41.8	30.0	.5840E-05	.1411E-07	.4233E-06	.1767E-04	.2597E-05	.2733E-05	.000	86.550
235.420	36.0	18.0	30.0	.5638E-05	.1339E-07	.4017E-06	.7230E-05	.2464E-05	.2531E-05	.000	86.550

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K(9)= .0000E+00

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
235.420	.0	1.5	30.0	.5638E-05	.1339E-07	.4017E-06	.6025E-06	.0000E+00	.0000E+00	.000	86.550
235.450	3.0	1.5	30.0	.5622E-05	.1333E-07	.3999E-06	.5998E-06	.0000E+00	.0000E+00	.000	86.550

K(10)= .3198E+06

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
235.450	.0	4.0	30.0	.5622E-05	.1333E-07	.3999E-06	.1599E-05	.1279E+00	.0000E+00	.000	86.550
235.530	8.0	4.0	29.0	.5577E-05	.1317E-07	.3819E-06	.1528E-05	.1221E+00	.1250E+00	1.000	87.550

K(11)= .7210E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
235.530	.0	2.0	29.0	.5577E-05	.1317E-07	.3819E-06	.7639E-06	.2754E-01	.0000E+00	.000	87.550
235.570	4.0	3.3	30.0	.5555E-05	.1309E-07	.3927E-06	.1276E-05	.2831E-01	.2792E-01	.112	87.662
235.595	2.5	1.3	28.0	.5541E-05	.1304E-07	.3652E-06	.4565E-06	.2633E-01	.2732E-01	.068	87.730

K(12)=-.1298E+06

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
235.595	.0	5.8	28.0	.5541E-05	.1304E-07	.3652E-06	.2100E-05	-.4741E-01	.0000E+00	.000	87.730
235.710	11.5	5.8	29.0	.5476E-05	.1282E-07	.3716E-06	.2137E-05	-.4825E-01	-.4783E-01	-.550	87.180

K(13)= .3223E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
235.710	.0	17.3	29.0	.5476E-05	.1282E-07	.3716E-06	.6411E-05	.1198E-03	.0000E+00	.000	87.180
236.055	34.5	39.8	26.0	.5283E-05	.1214E-07	.3158E-06	.1255E-04	.1018E-03	.1108E-03	.004	87.184
236.505	45.0	49.3	31.0	.5032E-05	.1129E-07	.3499E-06	.1723E-04	.1128E-03	.1073E-03	.005	87.189
237.040	53.5	47.5	33.0	.4733E-05	.1030E-07	.3398E-06	.1614E-04	.1095E-03	.1112E-03	.006	87.195
237.455	41.5	41.3	33.0	.4501E-05	.9549E-08	.3151E-06	.1300E-04	.1016E-03	.1056E-03	.004	87.199
237.865	41.0	44.0	39.0	.4272E-05	.8829E-08	.3443E-06	.1515E-04	.1110E-03	.1063E-03	.004	87.203
238.335	47.0	45.8	36.0	.2880E-04	.1546E-06	.5565E-05	.2546E-03	.1794E-02	.9524E-03	.045	87.248
238.780	44.5	41.8	32.0	.5203E-04	.3753E-06	.1201E-04	.5014E-03	.3871E-02	.2832E-02	.126	87.374
239.170	39.0	22.0	41.0	.7239E-04	.6158E-06	.2525E-04	.5555E-03	.8139E-02	.6005E-02	.234	87.608
239.220	5.0	23.3	44.0	.7499E-04	.6495E-06	.2858E-04	.6644E-03	.9211E-02	.8675E-02	.043	87.652
239.635	41.5	42.5	34.0	.9666E-04	.9503E-06	.3231E-04	.1373E-02	.1041E-01	.9813E-02	.407	88.059
240.070	43.5	33.0	27.0	.1194E-03	.1304E-05	.3521E-04	.1162E-02	.1135E-01	.1088E-01	.473	88.532
240.295	22.5	37.8	25.0	.1311E-03	.1501E-05	.3753E-04	.1417E-02	.1210E-01	.1172E-01	.264	88.796
240.825	53.0	38.0	38.0	.1588E-03	.2000E-05	.7602E-04	.2889E-02	.2450E-01	.1830E-01	.970	89.766
241.055	23.0	11.5	45.0	.1708E-03	.2232E-05	.1004E-03	.1155E-02	.3237E-01	.2844E-01	.654	90.420

K(14)= .6212E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
241.055	.0	8.3	45.0	.1708E-03	.2232E-05	.1004E-03	.8285E-03	.6238E-02	.0000E+00	.000	90.420
241.220	16.5	35.5	47.0	.1794E-03	.2403E-05	.1129E-03	.4009E-02	.7014E-02	.6626E-02	.109	90.529
241.765	54.5	69.5	31.0	.1824E-03	.2463E-05	.7634E-04	.5306E-02	.4742E-02	.5878E-02	.320	90.850
242.610	84.5	79.5	39.0	.1870E-03	.2557E-05	.9971E-04	.7927E-02	.6194E-02	.5468E-02	.462	91.312
243.355	74.5	66.5	38.0	.1911E-03	.2641E-05	.1003E-03	.6673E-02	.6233E-02	.6214E-02	.463	91.775
243.940	58.5	50.3	40.0	.1942E-03	.2707E-05	.1083E-03	.5442E-02	.6727E-02	.6480E-02	.379	92.154
244.360	42.0	44.5	65.0	.1965E-03	.2755E-05	.1791E-03	.7970E-02	.1113E-01	.8926E-02	.375	92.529
244.830	47.0	25.5	85.0	.1991E-03	.2810E-05	.2388E-03	.6090E-02	.1483E-01	.1298E-01	.610	93.139
244.870	4.0	2.0	62.0	.1993E-03	.2814E-05	.1745E-03	.3490E-03	.1084E-01	.1284E-01	.051	93.190

K(15)= .9433E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
244.870	.0	21.8	62.0	.1993E-03	.2814E-05	.1745E-03	.3795E-02	.1646E-01	.0000E+00	.000	93.190
245.305	43.5	48.5	54.0	.2017E-03	.2865E-05	.1547E-03	.7503E-02	.1459E-01	.1553E-01	.675	93.865
245.840	53.5	51.3	36.0	.2046E-03	.2927E-05	.1054E-03	.5401E-02	.9940E-02	.1227E-01	.656	94.522
246.330	49.0	24.5	21.0	.2073E-03	.2985E-05	.6268E-04	.1536E-02	.5913E-02	.7927E-02	.388	94.910

K(16)= .8119E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
246.330	.0	1.8	21.0	.2073E-03	.2985E-05	.6268E-04	.1097E-03	.5089E+00	.0000E+00	.000	94.910
246.365	3.5	1.8	20.0	.2075E-03	.2989E-05	.5978E-04	.1046E-03	.4854E+00	.4971E+00	1.740	96.650

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갑천 Gab - Chun KUBO MASASI FORMUAL

NUMBER OF REGION = 1

CASE = 1 ********** Gab - Chun NO. 0 ~ NO.33+510 **********

N = 256 ND = 10 NE = 44 OPTION = 2

K(1)= .1065E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.000	.0	8.0	48.0	.2085E-03	.3010E-05	.1445E-03	.1156E-02	.1539E-01	.0000E+00	.000	19.650
.160	16.0	19.5	38.0	.2020E-03	.2870E-05	.1091E-03	.2127E-02	.1162E-01	.1351E-01	.216	19.866
.390	23.0	20.5	37.0	.1926E-03	.2672E-05	.9888E-04	.2027E-02	.1053E-01	.1108E-01	.255	20.121
.570	18.0	19.0	37.0	.1852E-03	.2521E-05	.9328E-04	.1772E-02	.9939E-02	.1024E-01	.184	20.305
.770	20.0	20.5	42.0	.1771E-03	.2357E-05	.9898E-04	.2029E-02	.1055E-01	.1024E-01	.205	20.510
.980	21.0	12.3	43.0	.1685E-03	.2188E-05	.9408E-04	.1152E-02	.1002E-01	.1028E-01	.216	20.726
1.015	3.5	1.8	41.0	.1671E-03	.2160E-05	.8857E-04	.1550E-03	.9436E-02	.9730E-02	.034	20.760

K(2)= .2537E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
1.015	.0	10.3	41.0	.1671E-03	.2160E-05	.8857E-04	.9078E-03	.2247E-01	.0000E+00	.000	20.760
1.220	20.5	21.8	40.0	.1587E-03	.2000E-05	.8001E-04	.1740E-02	.2030E-01	.2139E-01	.438	21.198
1.450	23.0	24.5	42.0	.1494E-03	.1826E-05	.7668E-04	.1879E-02	.1946E-01	.1988E-01	.457	21.656
1.710	26.0	25.0	43.0	.1388E-03	.1635E-05	.7030E-04	.1757E-02	.1784E-01	.1865E-01	.485	22.140
1.950	24.0	24.8	37.0	.1290E-03	.1465E-05	.5421E-04	.1342E-02	.1376E-01	.1580E-01	.379	22.520
2.205	25.5	25.3	41.0	.1186E-03	.1292E-05	.5296E-04	.1337E-02	.1344E-01	.1360E-01	.347	22.866
2.455	25.0	16.5	34.0	.1084E-03	.1129E-05	.3838E-04	.6333E-03	.9739E-02	.1159E-01	.290	23.156
2.535	8.0	4.0	32.0	.1052E-03	.1078E-05	.3451E-04	.1380E-03	.8756E-02	.9247E-02	.074	23.230

K(3)= .1665E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
2.535	.0	5.3	32.0	.1052E-03	.1078E-05	.3451E-04	.1812E-03	.5746E-02	.0000E+00	.000	23.230
2.640	10.5	14.3	32.0	.1009E-03	.1013E-05	.3242E-04	.4620E-03	.5399E-02	.5573E-02	.059	23.289
2.820	18.0	17.3	32.0	.9354E-04	.9047E-06	.2895E-04	.4994E-03	.4821E-02	.5110E-02	.092	23.380
2.985	16.5	15.3	34.0	.8681E-04	.8089E-06	.2750E-04	.4194E-03	.4580E-02	.4700E-02	.078	23.458
3.125	14.0	17.5	35.0	.8111E-04	.7305E-06	.2557E-04	.4474E-03	.4258E-02	.4419E-02	.062	23.520
3.335	21.0	21.3	37.0	.7255E-04	.6179E-06	.2286E-04	.4859E-03	.3808E-02	.4033E-02	.085	23.605
3.550	21.5	21.0	38.0	.6379E-04	.5094E-06	.1936E-04	.4065E-03	.3224E-02	.3516E-02	.076	23.680
3.755	20.5	18.3	34.0	.5543E-04	.4127E-06	.1403E-04	.2561E-03	.2337E-02	.2780E-02	.057	23.737
3.915	16.0	8.0	31.0	.4891E-04	.3421E-06	.1060E-04	.8483E-04	.1766E-02	.2051E-02	.033	23.770

K(4)=-.9084E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
3.915	.0	3.0	31.0	.4891E-04	.3421E-06	.1060E-04	.3181E-04	-.9633E-03	.0000E+00	.000	23.770
3.975	6.0	14.5	31.0	.4646E-04	.3167E-06	.9819E-05	.1424E-03	-.8919E-03	-.9276E-03	-.006	23.764
4.205	23.0	21.0	30.0	.3709E-04	.2259E-06	.6777E-05	.1423E-03	-.6156E-03	-.7538E-03	-.017	23.747
4.395	19.0	19.5	28.0	.3608E-04	.2167E-06	.6068E-05	.1183E-03	-.5512E-03	-.5834E-03	-.011	23.736
4.595	20.0	19.0	33.0	.3501E-04	.2072E-06	.6837E-05	.1299E-03	-.6211E-03	-.5862E-03	-.012	23.724
4.775	18.0	18.0	33.0	.3406E-04	.1987E-06	.6559E-05	.1181E-03	-.5958E-03	-.6085E-03	-.011	23.713
4.955	18.0	11.5	33.0	.3310E-04	.1904E-06	.6284E-05	.7226E-04	-.5708E-03	-.5833E-03	-.010	23.703
5.005	5.0	2.5	33.0	.3283E-04	.1881E-06	.6208E-05	.1552E-04	-.5640E-03	-.5674E-03	-.003	23.700

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K(5)= .1520E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
5.005	.0	8.0	33.0	.3283E-04	.1881E-06	.6208E-05	.4967E-04	.9434E-02	.0000E+00	.000	26.180
5.165	16.0	17.0	33.0	.3198E-04	.1809E-06	.5968E-05	.1015E-03	.9070E-02	.9252E-02	.148	26.328
5.345	18.0	15.0	34.0	.3102E-04	.1728E-06	.5875E-05	.8812E-04	.8928E-02	.8999E-02	.162	26.490
5.465	12.0	14.5	34.0	.3038E-04	.1675E-06	.5694E-05	.8257E-04	.8653E-02	.8791E-02	.105	26.595
5.635	17.0	17.5	35.0	.2948E-04	.1601E-06	.5602E-05	.9803E-04	.8513E-02	.8583E-02	.146	26.741
5.815	18.0	17.0	39.0	.2852E-04	.1523E-06	.5940E-05	.1010E-03	.9027E-02	.8770E-02	.158	26.899
5.975	16.0	16.5	35.0	.2767E-04	.1455E-06	.5094E-05	.8405E-04	.7741E-02	.8384E-02	.134	27.033
6.145	17.0	17.0	36.0	.2676E-04	.1385E-06	.4985E-05	.8474E-04	.7575E-02	.7658E-02	.130	27.164
6.315	17.0	18.5	36.0	.2586E-04	.1315E-06	.4734E-05	.8758E-04	.7194E-02	.7384E-02	.126	27.289
6.515	20.0	19.8	37.0	.2479E-04	.1235E-06	.4568E-05	.9022E-04	.6942E-02	.7068E-02	.141	27.431
6.710	19.5	18.3	37.0	.2376E-04	.1158E-06	.4284E-05	.7819E-04	.6511E-02	.6726E-02	.131	27.562
6.880	17.0	19.5	34.0	.2285E-04	.1092E-06	.3714E-05	.7242E-04	.5644E-02	.6077E-02	.103	27.665
7.100	22.0	12.5	34.0	.2168E-04	.1009E-06	.3432E-05	.4290E-04	.5216E-02	.5430E-02	.119	27.784
7.130	3.0	1.5	34.0	.2152E-04	.9984E-07	.3394E-05	.5092E-05	.5158E-02	.5187E-02	.016	27.800

K(6)=-.1478E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
7.130	.0	1.0	34.0	.2152E-04	.9984E-07	.3394E-05	.3394E-05	-.5018E-02	.0000E+00	.000	27.800
7.150	2.0	1.0	34.0	.2141E-04	.9910E-07	.3369E-05	.3369E-05	-.4981E-02	-.4999E-02	-.010	27.790

K(7)= .1487E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
7.150	.0	.5	34.0	.2141E-04	.9910E-07	.3369E-05	.1685E-05	.5009E-01	.0000E+00	.000	27.790
7.160	1.0	.5	34.0	.2136E-04	.9873E-07	.3357E-05	.1678E-05	.4991E-01	.5000E-01	.050	27.840

K(8)= .1233E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
7.160	.0	6.3	34.0	.2136E-04	.9873E-07	.3357E-05	.2098E-04	.4140E-01	.0000E+00	.000	27.840
7.285	12.5	17.3	34.0	.2070E-04	.9415E-07	.3201E-05	.5522E-04	.3948E-01	.4044E-01	.505	28.345
7.505	22.0	14.0	30.0	.1952E-04	.8627E-07	.2588E-05	.3623E-04	.3192E-01	.3570E-01	.785	29.131
7.565	6.0	3.0	30.0	.1921E-04	.8416E-07	.2525E-05	.7575E-05	.3114E-01	.3153E-01	.189	29.320

K(9)= .6494E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
7.565	.0	7.5	30.0	.1921E-04	.8416E-07	.2525E-05	.1894E-04	.1640E-02	.0000E+00	.000	30.320
7.715	15.0	17.0	29.0	.1841E-04	.7897E-07	.2290E-05	.3893E-04	.1487E-02	.1563E-02	.023	30.343
7.905	19.0	20.5	29.0	.1740E-04	.7255E-07	.2104E-05	.4313E-04	.1366E-02	.1427E-02	.027	30.371
8.125	22.0	23.0	26.0	.1661E-04	.6770E-07	.1760E-05	.4049E-04	.1143E-02	.1255E-02	.028	30.398
8.365	24.0	21.5	27.0	.1576E-04	.6255E-07	.1689E-05	.3631E-04	.1097E-02	.1120E-02	.027	30.425
8.555	19.0	20.5	26.0	.1508E-04	.5856E-07	.1523E-05	.3121E-04	.9887E-03	.1043E-02	.020	30.445
8.775	22.0	21.5	25.0	.1430E-04	.5405E-07	.1351E-05	.2905E-04	.8775E-03	.9331E-03	.021	30.465
8.985	21.0	20.8	25.0	.1355E-04	.4987E-07	.1247E-05	.2587E-04	.8096E-03	.8436E-03	.018	30.483
9.190	20.5	19.3	23.0	.1282E-04	.4589E-07	.1055E-05	.2032E-04	.6854E-03	.7475E-03	.015	30.498
9.370	18.0	18.0	21.0	.1218E-04	.4249E-07	.8923E-06	.1606E-04	.5794E-03	.6324E-03	.011	30.510
9.550	18.0	17.5	21.0	.1154E-04	.3918E-07	.8227E-06	.1440E-04	.5343E-03	.5569E-03	.010	30.520
9.720	17.0	17.8	27.0	.1093E-04	.3613E-07	.9756E-06	.1732E-04	.6335E-03	.5839E-03	.010	30.530
9.905	18.5	16.3	23.0	.1027E-04	.3291E-07	.7570E-06	.1230E-04	.4916E-03	.5626E-03	.010	30.540
10.045	14.0	10.0	25.0	.9772E-05	.3055E-07	.7637E-06	.7637E-05	.4959E-03	.4938E-03	.007	30.547
10.105	6.0	3.0	25.0	.9558E-05	.2955E-07	.7387E-06	.2216E-05	.4797E-03	.4878E-03	.003	30.550

K(10)= .1029E+05

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SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
10.105	.0	6.0	25.0	.9558E-05	.2955E-07	.7387E-06	.4432E-05	.7602E-02	.0000E+00	.000	30.550
10.225	12.0	15.5	23.0	.9131E-05	.2759E-07	.6346E-06	.9836E-05	.6530E-02	.7066E-02	.085	30.635
10.415	19.0	18.5	22.0	.8454E-05	.2458E-07	.5407E-06	.1000E-04	.5565E-02	.6047E-02	.115	30.750
10.595	18.0	17.5	20.0	.7812E-05	.2184E-07	.4367E-06	.7643E-05	.4494E-02	.5029E-02	.091	30.840
10.765	17.0	16.5	20.0	.7207E-05	.1935E-07	.3869E-06	.6385E-05	.3982E-02	.4238E-02	.072	30.912
10.925	16.0	17.0	21.0	.6637E-05	.1710E-07	.3591E-06	.6104E-05	.3695E-02	.3838E-02	.061	30.974
11.105	18.0	20.0	27.0	.5996E-05	.1468E-07	.3964E-06	.7928E-05	.4079E-02	.3887E-02	.070	31.044
11.325	22.0	15.5	38.0	.5212E-05	.1190E-07	.4521E-06	.7008E-05	.4653E-02	.4366E-02	.096	31.140
11.415	9.0	11.0	39.0	.4891E-05	.1082E-07	.4219E-06	.4641E-05	.4342E-02	.4497E-02	.040	31.180
11.545	13.0	12.0	43.0	.4428E-05	.9318E-08	.4007E-06	.4808E-05	.4123E-02	.4232E-02	.055	31.235
11.655	11.0	8.5	48.0	.4036E-05	.8109E-08	.3892E-06	.3309E-05	.4006E-02	.4064E-02	.045	31.280
11.715	6.0	3.0	35.0	.3823E-05	.7474E-08	.2616E-06	.7847E-06	.2692E-02	.3349E-02	.020	31.300

K(11)=-.3579E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
11.715	.0	2.5	35.0	.3823E-05	.7474E-08	.2616E-06	.6539E-06	-.9362E-02	.0000E+00	.000	31.300
11.765	5.0	7.0	32.0	.3644E-05	.6957E-08	.2226E-06	.1558E-05	-.7968E-02	-.8665E-02	-.043	31.257
11.855	9.0	4.5	31.0	.8366E-05	.2420E-07	.7501E-06	.3376E-05	-.2685E-01	-.1741E-01	-.157	31.100

K(12)=-.6394E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
11.855	.0	5.3	31.0	.8366E-05	.2420E-07	.7501E-06	.3938E-05	-.4796E-02	.0000E+00	.000	32.500
11.960	10.5	10.3	32.0	.1387E-04	.5168E-07	.1654E-05	.1695E-04	-.1057E-01	-.7684E-02	-.081	32.419
12.060	10.0	10.0	33.0	.1912E-04	.8361E-07	.2759E-05	.2759E-04	-.1764E-01	-.1411E-01	-.141	32.278
12.160	10.0	7.5	34.0	.2437E-04	.1203E-06	.4089E-05	.3067E-04	-.2615E-01	-.2189E-01	-.219	32.059
12.210	5.0	2.5	33.0	.2699E-04	.1402E-06	.4627E-05	.1157E-04	-.2958E-01	-.2786E-01	-.139	31.920

K(13)= .1137E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
12.210	.0	2.5	33.0	.2699E-04	.1402E-06	.4627E-05	.1157E-04	.5262E-02	.0000E+00	.000	31.920
12.260	5.0	7.3	32.0	.2961E-04	.1611E-06	.5156E-05	.3738E-04	.5864E-02	.5563E-02	.028	31.948
12.355	9.5	10.0	31.0	.3460E-04	.2035E-06	.6308E-05	.6308E-04	.7174E-02	.6519E-02	.062	32.010
12.460	10.5	10.3	31.0	.4010E-04	.2540E-06	.7873E-05	.8070E-04	.8953E-02	.8064E-02	.085	32.094
12.560	10.0	10.0	27.0	.4535E-04	.3054E-06	.8246E-05	.8246E-04	.9377E-02	.9165E-02	.092	32.186
12.660	10.0	10.0	31.0	.5060E-04	.3599E-06	.1116E-04	.1116E-03	.1269E-01	.1103E-01	.110	32.296
12.760	10.0	10.0	31.0	.5584E-04	.4173E-06	.1294E-04	.1294E-03	.1471E-01	.1370E-01	.137	32.433
12.860	10.0	8.0	33.0	.6109E-04	.4775E-06	.1576E-04	.1260E-03	.1792E-01	.1631E-01	.163	32.597
12.920	6.0	3.0	34.0	.6424E-04	.5148E-06	.1750E-04	.5251E-04	.1991E-01	.1891E-01	.113	32.710

K(14)=-.9886E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
12.920	.0	2.0	34.0	.6424E-04	.5148E-06	.1750E-04	.3501E-04	-.1731E+00	.0000E+00	.000	34.220
12.960	4.0	2.0	35.0	.6633E-04	.5403E-06	.1891E-04	.3782E-04	-.1869E+00	-.1800E+00	-.720	33.500

K(15)= .1321E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
12.960	.0	3.8	35.0	.6633E-04	.5403E-06	.1891E-04	.7091E-04	.2498E-01	.0000E+00	.000	33.500
13.035	7.5	10.3	32.0	.7027E-04	.5890E-06	.1885E-04	.1932E-03	.2490E-01	.2494E-01	.187	33.687
13.165	13.0	11.5	27.0	.7709E-04	.6768E-06	.1827E-04	.2102E-03	.2414E-01	.2452E-01	.319	34.006
13.265	10.0	9.5	25.0	.8233E-04	.7471E-06	.1868E-04	.1774E-03	.2467E-01	.2441E-01	.244	34.250
13.355	9.0	9.8	23.0	.8706E-04	.8123E-06	.1868E-04	.1821E-03	.2468E-01	.2468E-01	.222	34.472
13.460	10.5	10.0	21.0	.9256E-04	.8906E-06	.1870E-04	.1870E-03	.2471E-01	.2469E-01	.259	34.731
13.555	9.5	10.8	20.0	.9755E-04	.9634E-06	.1927E-04	.2071E-03	.2545E-01	.2508E-01	.238	34.970

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13.675	12.0	6.0	20.0	.1038E-03	.1058E-05	.2116E-04	.1270E-03	.2796E-01	.2671E-01	.320	35.290

K(16)= .2295E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
13.675	.0	4.0	20.0	.1038E-03	.1058E-05	.2116E-04	.8466E-04	.4858E-02	.0000E+00	.000	35.610
13.755	8.0	8.8	21.0	.1080E-03	.1123E-05	.2358E-04	.2063E-03	.5413E-02	.5135E-02	.041	35.651
13.850	9.5	10.0	22.0	.1130E-03	.1202E-05	.2643E-04	.2643E-03	.6068E-02	.5740E-02	.055	35.706
13.955	10.5	10.5	24.0	.1185E-03	.1290E-05	.3097E-04	.3252E-03	.7109E-02	.6588E-02	.069	35.775
14.060	10.5	9.8	25.0	.1240E-03	.1381E-05	.3454E-04	.3367E-03	.7927E-02	.7518E-02	.079	35.854
14.150	9.0	9.5	26.0	.1288E-03	.1461E-05	.3799E-04	.3609E-03	.8720E-02	.8323E-02	.075	35.929
14.250	10.0	9.8	26.0	.1340E-03	.1551E-05	.4033E-04	.3933E-03	.9258E-02	.8989E-02	.090	36.019
14.345	9.5	9.5	27.0	.1390E-03	.1639E-05	.4424E-04	.4203E-03	.1016E-01	.9707E-02	.092	36.111
14.440	9.5	9.8	27.0	.1440E-03	.1728E-05	.4664E-04	.4548E-03	.1071E-01	.1043E-01	.099	36.210
14.540	10.0	9.8	27.0	.1492E-03	.1823E-05	.4922E-04	.4799E-03	.1130E-01	.1100E-01	.110	36.320
14.635	9.5	9.0	28.0	.1542E-03	.1915E-05	.5362E-04	.4826E-03	.1231E-01	.1180E-01	.112	36.432
14.720	8.5	9.8	29.0	.1587E-03	.1999E-05	.5796E-04	.5651E-03	.1330E-01	.1281E-01	.109	36.541
14.830	11.0	11.3	29.0	.1644E-03	.2109E-05	.6115E-04	.6879E-03	.1404E-01	.1367E-01	.150	36.691
14.945	11.5	5.8	30.0	.1705E-03	.2226E-05	.6677E-04	.3839E-03	.1533E-01	.1468E-01	.169	36.860

K(17)=-.1060E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
14.945	.0	5.0	30.0	.1705E-03	.2226E-05	.6677E-04	.3339E-03	-.7075E-01	.0000E+00	.000	38.120
15.045	10.0	9.8	14.0	.1757E-03	.2329E-05	.3261E-04	.3179E-03	-.3455E-01	-.5265E-01	-.527	37.593
15.140	9.5	9.5	14.0	.1807E-03	.2429E-05	.3401E-04	.3231E-03	-.3604E-01	-.3529E-01	-.335	37.258
15.235	9.5	9.3	15.0	.1857E-03	.2530E-05	.3795E-04	.3511E-03	-.4022E-01	-.3813E-01	-.362	36.896
15.325	9.0	7.0	17.0	.1904E-03	.2627E-05	.4466E-04	.3126E-03	-.4733E-01	-.4377E-01	-.394	36.502
15.375	5.0	2.5	16.0	.1930E-03	.2682E-05	.4291E-04	.1073E-03	-.4547E-01	-.4640E-01	-.232	36.270

K(18)= .6353E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
15.375	.0	2.3	16.0	.1930E-03	.2682E-05	.4291E-04	.9654E-04	.2726E-01	.0000E+00	.000	36.270
15.420	4.5	7.5	19.0	.1954E-03	.2731E-05	.5189E-04	.3892E-03	.3296E-01	.3011E-01	.135	36.405
15.525	10.5	10.0	19.0	.2009E-03	.2847E-05	.5410E-04	.5410E-03	.3437E-01	.3367E-01	.353	36.759
15.620	9.5	9.8	19.0	.2059E-03	.2954E-05	.5613E-04	.5472E-03	.3565E-01	.3501E-01	.333	37.092
15.720	10.0	10.0	19.0	.2111E-03	.3068E-05	.5829E-04	.5829E-03	.3703E-01	.3634E-01	.363	37.455
15.820	10.0	10.3	19.0	.2059E-03	.2955E-05	.5614E-04	.5754E-03	.3566E-01	.3634E-01	.363	37.818
15.925	10.5	10.3	19.0	.2004E-03	.2838E-05	.5392E-04	.5526E-03	.3425E-01	.3496E-01	.367	38.185
16.025	10.0	5.0	20.0	.1952E-03	.2728E-05	.5455E-04	.2728E-03	.3465E-01	.3445E-01	.345	38.530

K(19)=-.7663E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
16.025	.0	5.0	20.0	.1952E-03	.2728E-05	.5455E-04	.2728E-03	-.4180E-02	.0000E+00	.000	40.030
16.125	10.0	10.0	20.0	.1900E-03	.2619E-05	.5238E-04	.5238E-03	-.4014E-02	-.4097E-02	-.041	39.989
16.225	10.0	10.0	19.0	.1848E-03	.2512E-05	.4773E-04	.4773E-03	-.3657E-02	-.3836E-02	-.038	39.951
16.325	10.0	10.5	20.0	.1796E-03	.2406E-05	.4813E-04	.5054E-03	-.3688E-02	-.3673E-02	-.037	39.914
16.435	11.0	10.5	20.0	.1738E-03	.2292E-05	.4584E-04	.4813E-03	-.3513E-02	-.3600E-02	-.040	39.874
16.535	10.0	5.0	20.0	.1686E-03	.2190E-05	.4380E-04	.2190E-03	-.3356E-02	-.3434E-02	-.034	39.840

K(20)= .1123E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
16.535	.0	5.0	20.0	.1686E-03	.2190E-05	.4380E-04	.2190E-03	.4919E-01	.0000E+00	.000	39.840
16.635	10.0	10.0	20.0	.1634E-03	.2089E-05	.4178E-04	.4178E-03	.4693E-01	.4806E-01	.481	40.321
16.735	10.0	10.0	20.0	.1582E-03	.1990E-05	.3980E-04	.3980E-03	.4470E-01	.4581E-01	.458	40.779
16.835	10.0	10.0	20.0	.1530E-03	.1892E-05	.3785E-04	.3785E-03	.4251E-01	.4361E-01	.436	41.215
16.935	10.0	10.0	22.0	.1478E-03	.1796E-05	.3952E-04	.3952E-03	.4439E-01	.4345E-01	.434	41.649

17.035	10.0	10.0	27.0	.1426E-03	.1702E-05	.4596E-04	.4596E-03	.5162E-01	.4801E-01	.480	42.129
17.135	10.0	10.3	20.0	.1373E-03	.1610E-05	.3219E-04	.3300E-03	.3616E-01	.4389E-01	.439	42.568
17.240	10.5	10.0	19.0	.1319E-03	.1514E-05	.2877E-04	.2877E-03	.3232E-01	.3424E-01	.360	42.928
17.335	9.5	9.8	19.0	.1269E-03	.1430E-05	.2717E-04	.2649E-03	.3051E-01	.3142E-01	.298	43.226
17.435	10.0	10.0	19.0	.1217E-03	.1343E-05	.2551E-04	.2551E-03	.2865E-01	.2958E-01	.296	43.522
17.535	10.0	10.0	19.0	.1165E-03	.1257E-05	.2389E-04	.2389E-03	.2683E-01	.2774E-01	.277	43.800
17.635	10.0	10.0	19.0	.1113E-03	.1174E-05	.2230E-04	.2230E-03	.2505E-01	.2594E-01	.259	44.059
17.735	10.0	9.5	19.0	.1061E-03	.1092E-05	.2075E-04	.1972E-03	.2331E-01	.2418E-01	.242	44.301
17.825	9.0	9.5	21.0	.1014E-03	.1021E-05	.2143E-04	.2036E-03	.2407E-01	.2369E-01	.213	44.514
17.925	10.0	10.0	20.0	.9616E-04	.9429E-06	.1886E-04	.1886E-03	.2118E-01	.2263E-01	.226	44.740
18.025	10.0	10.3	20.0	.9094E-04	.8673E-06	.1735E-04	.1778E-03	.1948E-01	.2033E-01	.203	44.944
18.130	10.5	10.3	20.0	.8547E-04	.7902E-06	.1580E-04	.1620E-03	.1775E-01	.1862E-01	.195	45.139
18.230	10.0	10.0	20.0	.8026E-04	.7190E-06	.1438E-04	.1438E-03	.1615E-01	.1695E-01	.170	45.309
18.330	10.0	10.0	19.0	.7504E-04	.6501E-06	.1235E-04	.1235E-03	.1387E-01	.1501E-01	.150	45.459
18.430	10.0	10.0	18.0	.6983E-04	.5835E-06	.1050E-04	.1050E-03	.1180E-01	.1284E-01	.128	45.587
18.530	10.0	10.0	18.0	.6461E-04	.5194E-06	.9349E-05	.9349E-04	.1050E-01	.1115E-01	.111	45.699
18.630	10.0	9.5	18.0	.5940E-04	.4578E-06	.8240E-05	.7828E-04	.9256E-02	.9878E-02	.099	45.797
18.720	9.0	9.8	18.0	.5471E-04	.4046E-06	.7283E-05	.7101E-04	.8181E-02	.8718E-02	.078	45.876
18.825	10.5	10.3	21.0	.4923E-04	.3454E-06	.7254E-05	.7436E-04	.8148E-02	.8165E-02	.086	45.962
18.925	10.0	10.0	22.0	.4402E-04	.2920E-06	.6425E-05	.6425E-04	.7217E-02	.7683E-02	.077	46.038
19.025	10.0	10.0	24.0	.3880E-04	.2417E-06	.5801E-05	.5801E-04	.6516E-02	.6867E-02	.069	46.107
19.125	10.0	10.3	26.0	.3359E-04	.1947E-06	.5062E-05	.5188E-04	.5686E-02	.6101E-02	.061	46.168
19.230	10.5	10.5	27.0	.2812E-04	.1491E-06	.4025E-05	.4227E-04	.4521E-02	.5103E-02	.054	46.222
19.335	10.5	10.3	26.0	.2264E-04	.1077E-06	.2801E-05	.2871E-04	.3146E-02	.3834E-02	.040	46.262
19.435	10.0	10.0	26.0	.1743E-04	.7275E-07	.1892E-05	.1892E-04	.2125E-02	.2636E-02	.026	46.288
19.535	10.0	9.8	26.0	.1221E-04	.4269E-07	.1110E-05	.1082E-04	.1247E-02	.1686E-02	.017	46.305
19.630	9.5	10.3	28.0	.7261E-05	.1956E-07	.5478E-06	.5615E-05	.6153E-03	.9309E-03	.009	46.314
19.740	11.0	9.3	30.0	.1525E-05	.1884E-08	.5652E-07	.5228E-06	.6349E-04	.3394E-03	.004	46.318
19.815	7.5	9.3	29.0	.3834E-05	.7506E-08	.2177E-06	.2014E-05	.2445E-03	.1540E-03	.001	46.319
19.925	11.0	10.3	30.0	.7219E-05	.1940E-07	.5819E-06	.5965E-05	.6536E-03	.4491E-03	.005	46.324
20.020	9.5	9.5	28.0	.1014E-04	.3230E-07	.9045E-06	.8593E-05	.1016E-02	.8348E-03	.008	46.332
20.115	9.5	9.5	24.0	.1307E-04	.4724E-07	.1134E-05	.1077E-04	.1273E-02	.1145E-02	.011	46.343
20.210	9.5	10.0	23.0	.1599E-04	.6395E-07	.1471E-05	.1471E-04	.1652E-02	.1463E-02	.014	46.356
20.315	10.5	10.0	18.0	.1922E-04	.8428E-07	.1517E-05	.1517E-04	.1704E-02	.1678E-02	.018	46.374
20.410	9.5	9.8	23.0	.2215E-04	.1042E-06	.2397E-05	.2337E-04	.2692E-02	.2198E-02	.021	46.395
20.510	10.0	10.0	24.0	.2522E-04	.1267E-06	.3040E-05	.3040E-04	.3415E-02	.3054E-02	.031	46.425
20.610	10.0	9.0	23.0	.2830E-04	.1506E-06	.3463E-05	.3117E-04	.3890E-02	.3652E-02	.037	46.462
20.690	8.0	9.3	24.0	.3076E-04	.1706E-06	.4095E-05	.3788E-04	.4600E-02	.4245E-02	.034	46.496
20.795	10.5	10.3	24.0	.3400E-04	.1982E-06	.4757E-05	.4876E-04	.5343E-02	.4972E-02	.052	46.548
20.895	10.0	12.5	21.0	.3707E-04	.2257E-06	.4740E-05	.5926E-04	.5325E-02	.5334E-02	.053	46.602
21.045	15.0	7.5	17.0	.4169E-04	.2692E-06	.4576E-05	.3432E-04	.5140E-02	.5232E-02	.078	46.680

K(21)= .4297E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
21.045	.0	2.5	17.0	.4169E-04	.2692E-06	.4576E-05	.1144E-04	.1966E-01	.0000E+00	.000	47.480
21.095	5.0	7.8	19.0	.4323E-04	.2842E-06	.5400E-05	.4185E-04	.2321E-01	.2144E-01	.107	47.587
21.200	10.5	9.8	19.0	.4646E-04	.3167E-06	.6017E-05	.5867E-04	.2586E-01	.2453E-01	.258	47.845
21.290	9.0	9.5	19.0	.4923E-04	.3454E-06	.6563E-05	.6235E-04	.2820E-01	.2703E-01	.243	48.088
21.390	10.0	11.3	20.0	.5231E-04	.3783E-06	.7566E-05	.8512E-04	.3251E-01	.3036E-01	.304	48.392
21.515	12.5	6.3	27.0	.5616E-04	.4208E-06	.1136E-04	.7101E-04	.4883E-01	.4067E-01	.508	48.900

K(22)=-.8533E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
21.515	.0	.5	27.0	.5616E-04	.4208E-06	.1136E-04	.5681E-05	-.9695E-01	.0000E+00	.000	49.600
21.525	1.0	3.5	26.0	.5646E-04	.4243E-06	.1103E-04	.3861E-04	-.9413E-01	-.9554E-01	-.096	49.504
21.585	6.0	8.0	28.0	.5831E-04	.4453E-06	.1247E-04	.9974E-04	-.1064E+00	-.1003E+00	-.602	48.903
21.685	10.0	8.0	25.0	.6139E-04	.4810E-06	.1202E-04	.9620E-04	-.1026E+00	-.1045E+00	-1.045	47.858
21.745	6.0	3.0	14.0	.6323E-04	.5028E-06	.7040E-05	.2112E-04	-.6007E-01	-.8134E-01	-.488	47.370

K(23)= .3176E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
21.745	.0	3.0	14.0	.6323E-04	.5028E-06	.7040E-05	.2112E-04	.2236E-01	.0000E+00	.000	47.370
21.805	6.0	5.3	14.0	.6508E-04	.5250E-06	.7350E-05	.3859E-04	.2335E-01	.2285E-01	.137	47.507

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21.850	4.5	2.3	13.0	.6647E-04	.5419E-06	.7044E-05	.1585E-04	.2238E-01	.2286E-01	.103	47.610

K(24)= .9018E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
21.850	.0	2.3	13.0	.6647E-04	.5419E-06	.7044E-05	.1585E-04	.6352E-01	.0000E+00	.000	47.610
21.895	4.5	2.5	15.0	.6785E-04	.5589E-06	.8384E-05	.2138E-04	.7560E-01	.6956E-01	.313	47.923
21.901	.6	.3	16.0	.6804E-04	.5612E-06	.8979E-05	.2694E-05	.8097E-01	.7828E-01	.047	47.970

K(25)= .6939E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
21.901	.0	9.7	16.0	.6804E-04	.5612E-06	.8979E-05	.8710E-04	.6231E-02	.0000E+00	.000	47.970
22.095	19.4	19.5	16.0	.7401E-04	.6367E-06	.1019E-04	.1981E-03	.7068E-02	.6650E-02	.129	48.099
22.290	19.5	19.3	15.0	.8001E-04	.7157E-06	.1073E-04	.2066E-03	.7449E-02	.7259E-02	.142	48.241
22.480	19.0	19.0	16.0	.8586E-04	.7955E-06	.1273E-04	.2418E-03	.8832E-02	.8141E-02	.155	48.395
22.670	19.0	18.3	16.0	.9170E-04	.8782E-06	.1405E-04	.2564E-03	.9750E-02	.9291E-02	.177	48.572
22.845	17.5	8.8	16.0	.9709E-04	.9567E-06	.1531E-04	.1339E-03	.1062E-01	.1019E-01	.178	48.750

K(26)= .1056E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
22.845	.0	2.0	16.0	.9709E-04	.9567E-06	.1531E-04	.3061E-04	.1616E-01	.0000E+00	.000	48.750
22.885	4.0	11.8	15.0	.9832E-04	.9749E-06	.1462E-04	.1718E-03	.1544E-01	.1580E-01	.063	48.813
23.080	19.5	19.8	14.0	.1043E-03	.1066E-05	.1492E-04	.2946E-03	.1575E-01	.1559E-01	.304	49.117
23.280	20.0	20.0	13.0	.1105E-03	.1161E-05	.1510E-04	.3019E-03	.1594E-01	.1584E-01	.317	49.434
23.480	20.0	19.5	17.0	.1166E-03	.1260E-05	.2141E-04	.4176E-03	.2261E-01	.1927E-01	.385	49.820
23.670	19.0	17.8	19.0	.1225E-03	.1356E-05	.2576E-04	.4572E-03	.2719E-01	.2490E-01	.473	50.293
23.835	16.5	8.3	15.0	.1252E-03	.1400E-05	.2101E-04	.1733E-03	.2218E-01	.2468E-01	.407	50.700

K(27)= .2528E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
23.835	.0	2.3	15.0	.1252E-03	.1400E-05	.2101E-04	.4727E-04	.5310E-01	.0000E+00	.000	50.700
23.880	4.5	2.3	15.0	.1259E-03	.1413E-05	.2119E-04	.4768E-04	.5357E-01	.5333E-01	.240	50.940

K(28)= .1871E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
23.880	.0	9.8	15.0	.1259E-03	.1413E-05	.2119E-04	.2066E-03	.3964E-01	.0000E+00	.000	50.940
24.075	19.5	19.3	12.0	.1291E-03	.1467E-05	.1760E-04	.3388E-03	.3292E-01	.3628E-01	.707	51.647
24.265	19.0	14.5	12.0	.1322E-03	.1520E-05	.1824E-04	.2644E-03	.3411E-01	.3352E-01	.637	52.284
24.365	10.0	5.0	19.0	.1338E-03	.1548E-05	.2941E-04	.1471E-03	.5502E-01	.4457E-01	.446	52.730

K(29)= .5676E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
24.365	.0	5.0	19.0	.1338E-03	.1548E-05	.2941E-04	.1471E-03	.1670E-01	.0000E+00	.000	54.030
24.465	10.0	15.0	13.0	.1354E-03	.1576E-05	.2049E-04	.3074E-03	.1163E-01	.1416E-01	.142	54.172
24.665	20.0	20.0	16.0	.1387E-03	.1634E-05	.2614E-04	.5228E-03	.1484E-01	.1324E-01	.265	54.436
24.865	20.0	19.8	11.0	.1420E-03	.1692E-05	.1861E-04	.3675E-03	.1056E-01	.1270E-01	.254	54.690
25.060	19.5	19.5	14.0	.1452E-03	.1749E-05	.2448E-04	.4774E-03	.1390E-01	.1223E-01	.238	54.929
25.255	19.5	19.3	12.0	.1483E-03	.1807E-05	.2168E-04	.4173E-03	.1231E-01	.1310E-01	.255	55.184
25.445	19.0	11.5	18.0	.1514E-03	.1864E-05	.3354E-04	.3858E-03	.1904E-01	.1567E-01	.298	55.482
25.485	4.0	2.0	14.0	.1521E-03	.1876E-05	.2626E-04	.5252E-04	.1491E-01	.1697E-01	.068	55.550

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K(30)=-.4988E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
25.485	.0	7.3	14.0	.1521E-03	.1876E-05	.2626E-04	.1904E-03	-.1310E-01	.0000E+00	.000	56.550
25.630	14.5	18.3	13.0	.1545E-03	.1920E-05	.2495E-04	.4554E-03	-.1245E-01	-.1277E-01	-.185	56.365
25.850	22.0	21.0	11.0	.1580E-03	.1987E-05	.2185E-04	.4590E-03	-.1090E-01	-.1167E-01	-.257	56.108
26.050	20.0	12.3	20.0	.1613E-03	.2049E-05	.4097E-04	.5019E-03	-.2044E-01	-.1567E-01	-.313	55.795
26.095	4.5	2.3	21.0	.1620E-03	.2063E-05	.4332E-04	.9746E-04	-.2161E-01	-.2102E-01	-.095	55.700

K(31)=-.2790E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
26.095	.0	1.5	21.0	.1620E-03	.2063E-05	.4332E-04	.6497E-04	-.1208E+00	.0000E+00	.000	55.700
26.125	3.0	1.5	16.0	.1625E-03	.2072E-05	.3315E-04	.4973E-04	-.9249E-01	-.1067E+00	-.320	55.380

K(32)= .1515E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
26.125	.0	2.5	16.0	.1625E-03	.2072E-05	.3315E-04	.8288E-04	.5023E-01	.0000E+00	.000	55.380
26.175	5.0	2.5	17.0	.1633E-03	.2088E-05	.3549E-04	.8872E-04	.5377E-01	.5200E-01	.260	55.640

K(33)= .2844E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
26.175	.0	3.5	17.0	.1633E-03	.2088E-05	.3549E-04	.1242E-03	.1009E+00	.0000E+00	.000	55.640
26.245	7.0	6.5	22.0	.1645E-03	.2110E-05	.4641E-04	.3017E-03	.1320E+00	.1165E+00	.815	56.455
26.305	6.0	3.0	17.0	.1655E-03	.2128E-05	.3618E-04	.1085E-03	.1029E+00	.1175E+00	.705	57.160

K(34)=-.7523E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
26.305	.0	7.5	17.0	.1655E-03	.2128E-05	.3618E-04	.2714E-03	-.2722E-02	.0000E+00	.000	58.670
26.455	15.0	17.8	15.0	.1679E-03	.2176E-05	.3264E-04	.5793E-03	-.2455E-02	-.2589E-02	-.039	58.631
26.660	20.5	20.5	22.0	.1713E-03	.2241E-05	.4930E-04	.1011E-02	-.3709E-02	-.3082E-02	-.063	58.568
26.865	20.5	20.3	20.0	.1746E-03	.2307E-05	.4614E-04	.9344E-03	-.3471E-02	-.3590E-02	-.074	58.494
27.065	20.0	20.3	12.0	.1779E-03	.2372E-05	.2846E-04	.5764E-03	-.2141E-02	-.2806E-02	-.056	58.438
27.270	20.5	21.3	10.0	.1812E-03	.2439E-05	.2439E-04	.5183E-03	-.1835E-02	-.1988E-02	-.041	58.398
27.490	22.0	20.3	15.0	.1848E-03	.2512E-05	.3768E-04	.7630E-03	-.2835E-02	-.2335E-02	-.051	58.346
27.675	18.5	11.0	12.0	.1878E-03	.2574E-05	.3089E-04	.3397E-03	-.2324E-02	-.2579E-02	-.048	58.298
27.710	3.5	1.8	13.0	.1864E-03	.2545E-05	.3308E-04	.5789E-04	-.2489E-02	-.2406E-02	-.008	58.290

K(35)= .5034E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
27.710	.0	8.8	13.0	.1864E-03	.2545E-05	.3308E-04	.2895E-03	.1665E-01	.0000E+00	.000	58.290
27.885	17.5	19.3	12.0	.1793E-03	.2402E-05	.2882E-04	.5547E-03	.1451E-01	.1558E-01	.273	58.563
28.095	21.0	20.5	16.0	.1709E-03	.2233E-05	.3573E-04	.7325E-03	.1799E-01	.1625E-01	.341	58.904
28.295	20.0	20.0	20.0	.1628E-03	.2077E-05	.4154E-04	.8307E-03	.2091E-01	.1945E-01	.389	59.293
28.495	20.0	15.5	25.0	.1547E-03	.1924E-05	.4811E-04	.7456E-03	.2422E-01	.2256E-01	.451	59.744
28.605	11.0	5.5	28.0	.1503E-03	.1842E-05	.5157E-04	.2837E-03	.2596E-01	.2509E-01	.276	60.020

K(36)= .2370E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
28.605	.0	3.5	28.0	.1503E-03	.1842E-05	.5157E-04	.1805E-03	.1222E+00	.0000E+00	.000	60.020

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28.675	7.0	3.5	19.0	.1474E-03	.1790E-05	.3401E-04	.1191E-03	.8062E-01	.1014E+00	.710	60.730

K(37)=-.3615E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
28.675	.0	.8	19.0	.1474E-03	.1790E-05	.3401E-04	.2551E-04	-.1230E-02	.0000E+00	.000	62.030
28.690	1.5	11.0	17.0	.1468E-03	.1779E-05	.3025E-04	.3327E-03	-.1093E-02	-.1162E-02	-.002	62.028
28.895	20.5	20.0	17.0	.1386E-03	.1631E-05	.2773E-04	.5545E-03	-.1002E-02	-.1048E-02	-.021	62.007
29.090	19.5	19.5	9.0	.1307E-03	.1494E-05	.1345E-04	.2622E-03	-.4861E-03	-.7442E-03	-.015	61.992
29.285	19.5	20.3	17.0	.1228E-03	.1361E-05	.2314E-04	.4685E-03	-.8364E-03	-.6613E-03	-.013	61.979
29.495	21.0	19.8	11.0	.1143E-03	.1223E-05	.1345E-04	.2656E-03	-.4862E-03	-.6613E-03	-.014	61.965
29.680	18.5	14.3	14.0	.1069E-03	.1105E-05	.1547E-04	.2204E-03	-.5591E-03	-.5226E-03	-.010	61.956
29.780	10.0	5.0	16.0	.1028E-03	.1043E-05	.1668E-04	.8342E-04	-.6031E-03	-.5811E-03	-.006	61.950

K(38)= .1845E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
29.780	.0	5.8	16.0	.1028E-03	.1043E-05	.1668E-04	.9593E-04	.3078E-01	.0000E+00	.000	61.950
29.895	11.5	16.3	11.0	.9818E-04	.9729E-06	.1070E-04	.1739E-03	.1975E-01	.2527E-01	.291	62.241
30.105	21.0	19.8	12.0	.8971E-04	.8496E-06	.1020E-04	.2014E-03	.1881E-01	.1928E-01	.405	62.645
30.290	18.5	12.0	16.0	.8224E-04	.7458E-06	.1193E-04	.1432E-03	.2202E-01	.2042E-01	.378	63.023
30.345	5.5	2.8	10.0	.8002E-04	.7158E-06	.7158E-05	.1968E-04	.1321E-01	.1761E-01	.097	63.120

K(39)= .3955E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
30.345	.0	2.3	10.0	.8002E-04	.7158E-06	.7158E-05	.1610E-04	.2831E+00	.0000E+00	.000	63.120
30.390	4.5	2.3	15.0	.7820E-04	.6915E-06	.1037E-04	.2334E-04	.4102E+00	.3467E+00	1.560	64.680

K(40)= .4883E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
30.390	.0	4.5	15.0	.7820E-04	.6915E-06	.1037E-04	.4668E-04	.5065E-03	.0000E+00	.000	65.680
30.480	9.0	14.5	13.0	.7457E-04	.6439E-06	.8371E-05	.1214E-03	.4088E-03	.4577E-03	.004	65.684
30.680	20.0	20.0	12.0	.6649E-04	.5422E-06	.6506E-05	.1301E-03	.3177E-03	.3632E-03	.007	65.691
30.880	20.0	19.5	14.0	.5842E-04	.4465E-06	.6251E-05	.1219E-03	.3053E-03	.3115E-03	.006	65.698
31.070	19.0	20.5	12.0	.5075E-04	.3615E-06	.4338E-05	.8893E-04	.2118E-03	.2585E-03	.005	65.703
31.290	22.0	20.0	12.0	.4187E-04	.2709E-06	.3251E-05	.6501E-04	.1587E-03	.1853E-03	.004	65.707
31.470	18.0	9.0	22.0	.3460E-04	.2035E-06	.4477E-05	.4029E-04	.2186E-03	.1887E-03	.003	65.710

K(41)= .1352E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
31.470	.0	10.3	22.0	.3460E-04	.2035E-06	.4477E-05	.4589E-04	.6054E-03	.0000E+00	.000	65.710
31.675	20.5	20.5	14.0	.2632E-04	.1350E-06	.1891E-05	.3876E-04	.2556E-03	.4305E-03	.009	65.719
31.880	20.5	20.5	11.0	.2301E-03	.3490E-05	.3839E-04	.7870E-03	.5191E-02	.2723E-02	.056	65.775
32.085	20.5	20.3	9.0	.4339E-03	.9037E-05	.8133E-04	.1647E-02	.1100E-01	.8094E-02	.166	65.941
32.285	20.0	20.0	15.0	.6326E-03	.1591E-04	.2387E-03	.4774E-02	.3227E-01	.2164E-01	.433	66.373
32.485	20.0	19.8	20.0	.8314E-03	.2397E-04	.4795E-03	.9470E-02	.6483E-01	.4855E-01	.971	67.344
32.680	19.5	10.8	17.0	.1025E-02	.3283E-04	.5581E-03	.5999E-02	.7546E-01	.7015E-01	1.368	68.712
32.700	2.0	1.0	18.0	.1045E-02	.3379E-04	.6082E-03	.6082E-03	.8224E-01	.7885E-01	.158	68.870

K(42)=-.1386E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
32.700	.0	9.3	18.0	.1045E-02	.3379E-04	.6082E-03	.5626E-02	-.8427E-02	.0000E+00	.000	70.420
32.885	18.5	18.8	12.0	.1229E-02	.4309E-04	.5170E-03	.9695E-02	-.7164E-02	-.7795E-02	-.144	70.276

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33.075	19.0	19.3	19.0	.1418E-02	.5339E-04	.1014E-02	.1953E-01	-.1406E-01	-.1061E-01	-.202	70.074
33.270	19.5	12.0	13.0	.1612E-02	.6470E-04	.8411E-03	.1009E-01	-.1165E-01	-.1285E-01	-.251	69.824
33.315	4.5	2.3	13.0	.1656E-02	.6742E-04	.8764E-03	.1972E-02	-.1214E-01	-.1190E-01	-.054	69.770

K(43)= .1023E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
33.315	.0	9.8	13.0	.1656E-02	.6742E-04	.8764E-03	.8545E-02	.8966E-02	.0000E+00	.000	69.770
33.510	19.5	9.8	23.0	.1850E-02	.7959E-04	.1831E-02	.1785E-01	.1873E-01	.1385E-01	.270	70.040

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건설교통부

유등천 You-Deung STREAM KUBO MASASI FORMUAL

NUMBER OF REGION = 1

CASE = 1 ********** You-Deung STREAM NO.0 - NO.15+600 **********

N = 103 ND = 5 NE = 28 OPTION = 2

K(1)= .0000E+00

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.000	.0	.3	63.0	.7792E-04	.6878E-06	.4333E-04	.1083E-04	.0000E+00	.0000E+00	.000	31.100
.005	.5	.3	63.0	.7783E-04	.6867E-06	.4326E-04	.1082E-04	.0000E+00	.0000E+00	.000	31.100

K(2)= .1141E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.005	.0	3.3	63.0	.7783E-04	.6867E-06	.4326E-04	.1406E-03	.4937E-01	.0000E+00	.000	31.100
.070	6.5	13.8	47.0	.7677E-04	.6726E-06	.3161E-04	.4347E-03	.3607E-01	.4272E-01	.278	31.378
.280	21.0	20.5	27.0	.7333E-04	.6279E-06	.1695E-04	.3475E-03	.1935E-01	.2771E-01	.582	31.960
.480	20.0	19.8	32.0	.7005E-04	.5863E-06	.1876E-04	.3705E-03	.2141E-01	.2038E-01	.408	32.367
.675	19.5	20.8	33.0	.6685E-04	.5466E-06	.1804E-04	.3743E-03	.2058E-01	.2100E-01	.409	32.777
.895	22.0	19.0	33.0	.6325E-04	.5030E-06	.1660E-04	.3154E-03	.1894E-01	.1976E-01	.435	33.211
1.055	16.0	17.5	29.0	.6062E-04	.4720E-06	.1369E-04	.2396E-03	.1562E-01	.1728E-01	.276	33.488
1.245	19.0	19.5	31.0	.5751E-04	.4361E-06	.1352E-04	.2636E-03	.1543E-01	.1552E-01	.295	33.783
1.445	20.0	19.5	29.0	.5423E-04	.3994E-06	.1158E-04	.2259E-03	.1322E-01	.1432E-01	.286	34.069
1.635	19.0	20.8	27.0	.5112E-04	.3655E-06	.9868E-05	.2048E-03	.1126E-01	.1224E-01	.233	34.302
1.860	22.5	11.3	29.0	.4743E-04	.3267E-06	.9473E-05	.1066E-03	.1081E-01	.1103E-01	.248	34.550

K(3)= .9109E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
1.860	.0	1.0	29.0	.4743E-04	.3267E-06	.9473E-05	.9473E-05	.8629E-02	.0000E+00	.000	34.550
1.880	2.0	11.5	27.0	.4710E-04	.3233E-06	.8728E-05	.1004E-03	.7951E-02	.8290E-02	.017	34.567
2.090	21.0	21.0	26.0	.4366E-04	.2885E-06	.7501E-05	.1575E-03	.6833E-02	.7392E-02	.155	34.722
2.300	21.0	10.8	26.0	.4022E-04	.2551E-06	.6632E-05	.7129E-04	.6041E-02	.6437E-02	.135	34.857
2.305	.5	.3	26.0	.4014E-04	.2543E-06	.6611E-05	.1653E-05	.6023E-02	.6032E-02	.003	34.860

K(4)= .1717E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
2.305	.0	8.8	26.0	.4014E-04	.2543E-06	.6611E-05	.5785E-04	.1135E-01	.0000E+00	.000	34.860
2.480	17.5	16.8	25.0	.3727E-04	.2275E-06	.5688E-05	.9527E-04	.9768E-02	.1056E-01	.185	35.045
2.640	16.0	15.5	22.0	.3465E-04	.2039E-06	.4486E-05	.6954E-04	.7704E-02	.8736E-02	.140	35.185
2.790	15.0	7.5	16.0	.3219E-04	.1826E-06	.2922E-05	.2191E-04	.5017E-02	.6361E-02	.095	35.280

K(5)= .6488E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
2.790	.0	1.5	16.0	.3219E-04	.1826E-06	.2922E-05	.4383E-05	.1896E-01	.0000E+00	.000	35.280
2.820	3.0	11.3	16.0	.3170E-04	.1784E-06	.2855E-05	.3212E-04	.1852E-01	.1874E-01	.056	35.336

3.015	19.5	19.8	20.0	.2850E-04	.1521E-06	.3043E-05	.6010E-04	.1974E-01	.1913E-01	.373	35.709
3.215	20.0	12.0	22.0	.2522E-04	.1267E-06	.2787E-05	.3344E-04	.1808E-01	.1891E-01	.378	36.088
3.255	4.0	2.0	23.0	.2457E-04	.1218E-06	.2800E-05	.5601E-05	.1817E-01	.1812E-01	.072	36.160

K(6)= .2008E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
3.255	.0	8.0	23.0	.2457E-04	.1218E-06	.2800E-05	.2240E-04	.5624E-01	.0000E+00	.000	36.160
3.415	16.0	18.0	20.0	.2194E-04	.1028E-06	.2056E-05	.3700E-04	.4129E-01	.4877E-01	.780	36.940
3.615	20.0	19.5	17.0	.1867E-04	.8064E-07	.1371E-05	.2673E-04	.2753E-01	.3441E-01	.688	37.628
3.805	19.0	19.5	16.0	.1555E-04	.6132E-07	.9812E-06	.1913E-04	.1971E-01	.2362E-01	.449	38.077
4.005	20.0	20.0	16.0	.1227E-04	.4299E-07	.6879E-06	.1376E-04	.1382E-01	.1676E-01	.335	38.412
4.205	20.0	19.8	15.0	.1557E-04	.6145E-07	.9218E-06	.1820E-04	.1851E-01	.1616E-01	.323	38.736
4.400	19.5	12.8	16.0	.1879E-04	.8144E-07	.1303E-05	.1661E-04	.2617E-01	.2234E-01	.436	39.171
4.460	6.0	3.0	17.0	.1978E-04	.8796E-07	.1495E-05	.4486E-05	.3003E-01	.2810E-01	.169	39.340

K(7)=-.2038E+06

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
4.460	.0	2.0	17.0	.1978E-04	.8796E-07	.1495E-05	.2991E-05	-.3048E+00	.0000E+00	.000	41.480
4.500	4.0	2.0	17.0	.2044E-04	.9240E-07	.1571E-05	.3142E-05	-.3202E+00	-.3125E+00	-1.250	40.230

K(8)= .8457E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
4.500	.0	5.0	17.0	.2044E-04	.9240E-07	.1571E-05	.7854E-05	.1329E-01	.0000E+00	.000	40.230
4.600	10.0	15.0	16.0	.2209E-04	.1038E-06	.1661E-05	.2492E-04	.1405E-01	.1367E-01	.137	40.367
4.800	20.0	20.0	15.0	.2539E-04	.1279E-06	.1919E-05	.3838E-04	.1623E-01	.1514E-01	.303	40.669
5.000	20.0	20.0	16.0	.2869E-04	.1537E-06	.2458E-05	.4917E-04	.2079E-01	.1851E-01	.370	41.040
5.200	20.0	19.8	16.0	.3199E-04	.1809E-06	.2895E-05	.5717E-04	.2448E-01	.2264E-01	.453	41.492
5.395	19.5	18.8	16.0	.3520E-04	.2089E-06	.3342E-05	.6266E-04	.2826E-01	.2637E-01	.514	42.007
5.575	18.0	9.0	20.0	.3817E-04	.2359E-06	.4717E-05	.4245E-04	.3989E-01	.3408E-01	.613	42.620

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K(9)= .1428E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
5.575	.0	10.8	20.0	.3817E-04	.2359E-06	.4717E-05	.5071E-04	.6737E-02	.0000E+00	.000	42.620
5.790	21.5	20.8	17.0	.4172E-04	.2695E-06	.4581E-05	.9506E-04	.6543E-02	.6640E-02	.143	42.763
5.990	20.0	17.0	20.0	.4502E-04	.3021E-06	.6041E-05	.1027E-03	.8629E-02	.7586E-02	.152	42.914
6.130	14.0	7.0	20.0	.4733E-04	.3256E-06	.6512E-05	.4559E-04	.9301E-02	.8965E-02	.126	43.040

K(10)= .3403E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
6.130	.0	3.0	20.0	.4733E-04	.3256E-06	.6512E-05	.1954E-04	.2216E-01	.0000E+00	.000	43.040
6.190	6.0	13.5	20.0	.4832E-04	.3359E-06	.6718E-05	.9069E-04	.2286E-01	.2251E-01	.135	43.175
6.400	21.0	20.0	18.0	.5178E-04	.3726E-06	.6708E-05	.1342E-03	.2282E-01	.2284E-01	.480	43.655
6.590	19.0	19.0	17.0	.5492E-04	.4070E-06	.6919E-05	.1315E-03	.2354E-01	.2318E-01	.440	44.095
6.780	19.0	18.5	15.0	.5805E-04	.4423E-06	.6635E-05	.1227E-03	.2258E-01	.2306E-01	.438	44.533
6.960	18.0	9.0	16.0	.6102E-04	.4767E-06	.7627E-05	.6864E-04	.2595E-01	.2426E-01	.437	44.970

K(11)=-.4179E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
6.960	.0	1.0	16.0	.6102E-04	.4767E-06	.7627E-05	.7627E-05	-.3188E+00	.0000E+00	.000	46.870
6.980	2.0	2.5	16.0	.6135E-04	.4806E-06	.7689E-05	.1922E-04	-.3213E+00	-.3201E+00	-.640	46.230
7.010	3.0	1.5	16.0	.6185E-04	.4864E-06	.7782E-05	.1167E-04	-.3252E+00	-.3233E+00	-.970	45.260

K(12)= .2088E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
7.010	.0	9.3	16.0	.6185E-04	.4864E-06	.7782E-05	.7199E-04	.1625E-01	.0000E+00	.000	45.260
7.195	18.5	18.8	19.0	.6490E-04	.5228E-06	.9934E-05	.1863E-03	.2074E-01	.1849E-01	.342	45.602
7.385	19.0	19.0	17.0	.6803E-04	.5612E-06	.9540E-05	.1813E-03	.1992E-01	.2033E-01	.386	45.988
7.575	19.0	9.5	17.0	.7117E-04	.6004E-06	.1021E-04	.9696E-04	.2131E-01	.2061E-01	.392	46.380

K(13)= .3785E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
7.575	.0	10.8	17.0	.7117E-04	.6004E-06	.1021E-04	.1097E-03	.3863E-01	.0000E+00	.000	46.380
7.790	21.5	12.3	15.0	.7472E-04	.6458E-06	.9687E-05	.1187E-03	.3667E-01	.3765E-01	.809	47.189
7.820	3.0	1.5	15.0	.7521E-04	.6523E-06	.9784E-05	.1468E-04	.3703E-01	.3685E-01	.111	47.300

K(14)= .1975E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
7.820	.0	.5	15.0	.7521E-04	.6523E-06	.9784E-05	.4892E-05	.1932E-01	.0000E+00	.000	47.300
7.830	1.0	.5	16.0	.7538E-04	.6544E-06	.1047E-04	.5235E-05	.2068E-01	.2000E-01	.020	47.320

K(15)= .1751E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
7.830	.0	7.5	16.0	.7538E-04	.6544E-06	.1047E-04	.7853E-04	.1833E-01	.0000E+00	.000	47.320
7.980	15.0	17.5	16.0	.7785E-04	.6869E-06	.1099E-04	.1923E-03	.1924E-01	.1879E-01	.282	47.602
8.180	20.0	20.5	17.0	.1453E-03	.1751E-05	.2977E-04	.6102E-03	.5212E-01	.3568E-01	.714	48.315
8.390	21.0	10.5	14.0	.2161E-03	.3176E-05	.4446E-04	.4669E-03	.7785E-01	.6498E-01	1.365	49.680

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K(16)=-.2547E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
8.390	.0	2.5	14.0	.2161E-03	.3176E-05	.4446E-04	.1112E-03	-.1132E-01	.0000E+00	.000	49.680
8.440	5.0	2.5	14.0	.2329E-03	.3555E-05	.4977E-04	.1244E-03	-.1268E-01	-.1200E-01	-.060	49.620

K(17)=-.4829E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
8.440	.0	6.0	14.0	.2329E-03	.3555E-05	.4977E-04	.2986E-03	-.2403E-02	.0000E+00	.000	52.540
8.560	12.0	17.0	14.0	.2734E-03	.4520E-05	.6328E-04	.1076E-02	-.3056E-02	-.2730E-02	-.033	52.507
8.780	22.0	21.5	21.0	.3475E-03	.6479E-05	.1361E-03	.2925E-02	-.6570E-02	-.4813E-02	-.106	52.401
8.990	21.0	11.5	16.0	.4183E-03	.8557E-05	.1369E-03	.1574E-02	-.6611E-02	-.6591E-02	-.138	52.263
9.010	2.0	1.0	15.0	.4251E-03	.8764E-05	.1315E-03	.1315E-03	-.6348E-02	-.6480E-02	-.013	52.250

K(18)= .9464E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
9.010	.0	9.0	15.0	.4251E-03	.8764E-05	.1315E-03	.1183E-02	.1244E-01	.0000E+00	.000	52.250
9.190	18.0	19.3	14.0	.4858E-03	.1071E-04	.1499E-03	.2885E-02	.1418E-01	.1331E-01	.240	52.490
9.395	20.5	20.3	13.0	.5549E-03	.1307E-04	.1699E-03	.3441E-02	.1608E-01	.1513E-01	.310	52.800
9.595	20.0	20.0	13.0	.6223E-03	.1552E-04	.2018E-03	.4036E-02	.1910E-01	.1759E-01	.352	53.152
9.795	20.0	20.0	13.0	.6897E-03	.1811E-04	.2355E-03	.4710E-02	.2229E-01	.2069E-01	.414	53.565
9.995	20.0	20.0	8.0	.7571E-03	.2083E-04	.1667E-03	.3333E-02	.1577E-01	.1903E-01	.381	53.946

10.195	20.0	20.3	9.0	.8246E-03	.2368E-04	.2131E-03	.4315E-02	.2017E-01	.1797E-01	.359	54.305
10.400	20.5	19.5	14.0	.8937E-03	.2672E-04	.3740E-03	.7294E-02	.3540E-01	.2778E-01	.570	54.875
10.585	18.5	16.8	15.0	.9561E-03	.2956E-04	.4434E-03	.7427E-02	.4196E-01	.3868E-01	.716	55.591
10.735	15.0	7.5	13.0	.1007E-02	.3194E-04	.4152E-03	.3114E-02	.3929E-01	.4063E-01	.609	56.200

K(19)= .4627E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
10.735	.0	2.5	13.0	.1007E-02	.3194E-04	.4152E-03	.1038E-02	.1921E-01	.0000E+00	.000	56.200
10.785	5.0	12.5	12.0	.1023E-02	.3274E-04	.3929E-03	.4911E-02	.1818E-01	.1870E-01	.093	56.293
10.985	20.0	13.0	11.0	.1091E-02	.3603E-04	.3963E-03	.5152E-02	.1834E-01	.1826E-01	.365	56.659
11.045	6.0	3.0	9.0	.1111E-02	.3704E-04	.3333E-03	.1000E-02	.1542E-01	.1688E-01	.101	56.760

K(20)= .1262E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
11.045	.0	7.5	9.0	.1111E-02	.3704E-04	.3333E-03	.2500E-02	.4206E-02	.0000E+00	.000	58.400
11.195	15.0	17.3	7.0	.1162E-02	.3959E-04	.2772E-03	.4781E-02	.3497E-02	.3852E-02	.058	58.458
11.390	19.5	16.0	8.0	.1227E-02	.4300E-04	.3440E-03	.5504E-02	.4341E-02	.3919E-02	.076	58.534
11.515	12.5	6.5	10.0	.1270E-02	.4524E-04	.4524E-03	.2940E-02	.5708E-02	.5024E-02	.063	58.597
11.520	.5	.3	11.0	.1271E-02	.4533E-04	.4986E-03	.1246E-03	.6291E-02	.5999E-02	.003	58.600

K(21)= .1633E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
11.520	.0	.5	11.0	.1271E-02	.4533E-04	.4986E-03	.2493E-03	.8141E+00	.0000E+00	.000	58.600
11.530	1.0	.5	13.0	.1275E-02	.4551E-04	.5916E-03	.2958E-03	.9659E+00	.8900E+00	.890	59.490

K(22)= .1946E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
11.530	.0	13.0	13.0	.1275E-02	.4551E-04	.5916E-03	.7691E-02	.1151E-01	.0000E+00	.000	61.290
11.790	26.0	21.5	7.0	.1362E-02	.5028E-04	.3520E-03	.7567E-02	.6848E-02	.9179E-02	.239	61.529
11.960	17.0	19.5	11.0	.1420E-02	.5349E-04	.5884E-03	.1147E-01	.1145E-01	.9148E-02	.156	61.684
12.180	22.0	20.5	16.0	.1349E-02	.4952E-04	.7923E-03	.1624E-01	.1542E-01	.1343E-01	.296	61.980
12.370	19.0	19.8	17.0	.1287E-02	.4618E-04	.7850E-03	.1550E-01	.1527E-01	.1535E-01	.292	62.271
12.575	20.5	20.5	11.0	.1221E-02	.4266E-04	.4693E-03	.9620E-02	.9131E-02	.1220E-01	.250	62.521
12.780	20.5	19.8	18.0	.1155E-02	.3924E-04	.7063E-03	.1395E-01	.1374E-01	.1144E-01	.234	62.756
12.970	19.0	20.0	18.0	.1093E-02	.3615E-04	.6507E-03	.1301E-01	.1266E-01	.1320E-01	.251	63.007
13.180	21.0	13.0	9.0	.1025E-02	.3284E-04	.2956E-03	.3842E-02	.5751E-02	.9206E-02	.193	63.200
13.230	5.0	2.5	10.0	.1009E-02	.3207E-04	.3207E-03	.8017E-03	.6239E-02	.5995E-02	.030	63.230

K(23)= .1579E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
13.230	.0	2.3	10.0	.1009E-02	.3207E-04	.3207E-03	.7215E-03	.5064E-01	.0000E+00	.000	63.230
13.275	4.5	2.3	14.0	.9948E-03	.3138E-04	.4393E-03	.9884E-03	.6936E-01	.6000E-01	.270	63.500

K(24)= .1270E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
13.275	.0	4.8	14.0	.9948E-03	.3138E-04	.4393E-03	.2087E-02	.5580E-01	.0000E+00	.000	63.500
13.370	9.5	14.8	11.0	.9641E-03	.2994E-04	.3293E-03	.4857E-02	.4183E-01	.4881E-01	.464	63.964
13.570	20.0	19.0	12.0	.8995E-03	.2698E-04	.3237E-03	.6151E-02	.4112E-01	.4147E-01	.829	64.793
13.750	18.0	23.0	8.0	.8414E-03	.2440E-04	.1952E-03	.4490E-02	.2480E-01	.3296E-01	.593	65.386
14.030	28.0	22.0	15.0	.7509E-03	.2058E-04	.3087E-03	.6790E-02	.3920E-01	.3200E-01	.896	66.282
14.190	16.0	10.8	23.0	.6992E-03	.1849E-04	.4253E-03	.4572E-02	.5402E-01	.4661E-01	.746	67.028

14.245	5.5	2.8	15.0	.6815E-03	.1779E-04	.2668E-03	.7338E-03	.3389E-01	.4395E-01	.242	67.270

K(25)= .3357E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
14.245	.0	7.3	15.0	.6815E-03	.1779E-04	.2668E-03	.1935E-02	.8958E-02	.0000E+00	.000	67.980
14.390	14.5	15.5	14.0	.6346E-03	.1599E-04	.2238E-03	.3469E-02	.7514E-02	.8236E-02	.119	68.099
14.555	16.5	10.0	15.0	.5813E-03	.1402E-04	.2102E-03	.2102E-02	.7058E-02	.7286E-02	.120	68.220
14.590	3.5	1.8	10.0	.5700E-03	.1361E-04	.1361E-03	.2382E-03	.4569E-02	.5814E-02	.020	68.240

K(26)= .4690E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
14.590	.0	10.5	10.0	.5700E-03	.1361E-04	.1361E-03	.1429E-02	.6383E-01	.0000E+00	.000	68.240
14.800	21.0	18.5	12.0	.5022E-03	.1125E-04	.1350E-03	.2498E-02	.6333E-01	.6358E-01	1.335	69.575
14.960	16.0	8.0	15.0	.4505E-03	.9562E-05	.1434E-03	.1147E-02	.6727E-01	.6530E-01	1.045	70.620

K(27)=-.8799E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
14.960	.0	2.0	15.0	.4505E-03	.9562E-05	.1434E-03	.2868E-03	-.1262E-01	.0000E+00	.000	71.650
15.000	4.0	12.0	11.0	.4376E-03	.9153E-05	.1007E-03	.1208E-02	-.8859E-02	-.1074E-01	-.043	71.607
15.200	20.0	20.0	7.0	.3730E-03	.7203E-05	.5042E-04	.1008E-02	-.4436E-02	-.6648E-02	-.133	71.474
15.400	20.0	20.0	8.0	.3084E-03	.5415E-05	.4332E-04	.8664E-03	-.3812E-02	-.4124E-02	-.082	71.392
15.600	20.0	10.0	10.0	.2437E-03	.3806E-05	.3806E-04	.3806E-03	-.3349E-02	-.3580E-02	-.072	71.320

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미호천 Mi Ho Chun KUBO MASASI FORMUAL

NUMBER OF REGION = 1

CASE = 1 ********** Mi Ho Chun NO. 0 ~ NO.39+485 **********

N = 215 ND = 11 NE = 23 OPTION = 2

K(1)= .1238E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.000	.0	10.0	27.2	.8564E-03	.2506E-04	.6817E-03	.6817E-02	.8437E-01	.0000E+00	.000	11.520
.200	20.0	12.0	22.2	.8170E-03	.2335E-04	.5184E-03	.6221E-02	.6416E-01	.7426E-01	1.485	13.005
.240	4.0	2.0	22.2	.8091E-03	.2301E-04	.5109E-03	.1022E-02	.6323E-01	.6369E-01	.255	13.260

K(2)=-.2424E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.240	.0	7.5	22.2	.8091E-03	.2301E-04	.5109E-03	.3832E-02	-.1239E-01	.0000E+00	.000	13.920
.390	15.0	19.5	16.7	.7795E-03	.2176E-04	.3635E-03	.7088E-02	-.8811E-02	-.1060E-01	-.159	13.761
.630	24.0	25.0	20.4	.7322E-03	.1981E-04	.4042E-03	.1010E-01	-.9799E-02	-.9305E-02	-.223	13.538
.890	26.0	14.5	27.6	.6810E-03	.1777E-04	.4904E-03	.7111E-02	-.1189E-01	-.1084E-01	-.282	13.256
.920	3.0	1.5	28.1	.6750E-03	.1754E-04	.4928E-03	.7392E-03	-.1195E-01	-.1192E-01	-.036	13.220

K(3)= .3782E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.920	.0	10.5	28.1	.6750E-03	.1754E-04	.4928E-03	.5175E-02	.1864E-01	.0000E+00	.000	13.220
1.130	21.0	20.5	25.1	.6336E-03	.1595E-04	.4003E-03	.8207E-02	.1514E-01	.1689E-01	.355	13.575
1.330	20.0	21.5	26.8	.5942E-03	.1448E-04	.3882E-03	.8346E-02	.1468E-01	.1491E-01	.298	13.873
1.560	23.0	23.0	24.2	.5489E-03	.1286E-04	.3112E-03	.7157E-02	.1177E-01	.1322E-01	.304	14.177
1.790	23.0	22.5	23.9	.5035E-03	.1130E-04	.2700E-03	.6076E-02	.1021E-01	.1099E-01	.253	14.430
2.010	22.0	18.0	22.3	.4601E-03	.9871E-05	.2201E-03	.3962E-02	.8324E-02	.9268E-02	.204	14.634
2.150	14.0	21.0	29.7	.4325E-03	.8996E-05	.2672E-03	.5611E-02	.1010E-01	.9214E-02	.129	14.763
2.430	28.0	24.0	32.2	.3773E-03	.7330E-05	.2360E-03	.5665E-02	.8926E-02	.9515E-02	.266	15.029
2.630	20.0	21.0	20.0	.3379E-03	.6212E-05	.1242E-03	.2609E-02	.4698E-02	.6812E-02	.136	15.165
2.850	22.0	19.0	56.5	.2945E-03	.5055E-05	.2856E-03	.5427E-02	.1080E-01	.7749E-02	.170	15.336
3.010	16.0	17.5	65.2	.2630E-03	.4265E-05	.2781E-03	.4867E-02	.1052E-01	.1066E-01	.171	15.506
3.200	19.0	19.0	62.6	.2255E-03	.3387E-05	.2120E-03	.4029E-02	.8019E-02	.9268E-02	.176	15.682
3.390	19.0	21.0	70.9	.1881E-03	.2580E-05	.1829E-03	.3841E-02	.6916E-02	.7467E-02	.142	15.824
3.620	23.0	19.0	66.1	.1427E-03	.1705E-05	.1127E-03	.2142E-02	.4263E-02	.5590E-02	.129	15.953
3.770	15.0	16.5	58.2	.1132E-03	.1204E-05	.7007E-04	.1156E-02	.2650E-02	.3456E-02	.052	16.005
3.950	18.0	19.0	44.3	.7769E-04	.6847E-06	.3033E-04	.5763E-03	.1147E-02	.1898E-02	.034	16.039
4.150	20.0	18.0	43.7	.3826E-04	.2366E-06	.1034E-04	.1861E-03	.3911E-03	.7691E-03	.015	16.054
4.310	16.0	14.5	50.3	.4303E-04	.2823E-06	.1420E-04	.2059E-03	.5370E-03	.4640E-03	.007	16.062
4.440	13.0	15.0	64.3	.4691E-04	.3213E-06	.2066E-04	.3099E-03	.7813E-03	.6592E-03	.009	16.070
4.610	17.0	20.0	64.9	.5199E-04	.3748E-06	.2433E-04	.4865E-03	.9199E-03	.8506E-03	.014	16.085
4.840	23.0	20.5	52.3	.5885E-04	.4515E-06	.2361E-04	.4840E-03	.8929E-03	.9064E-03	.021	16.106
5.020	18.0	19.5	50.7	.6422E-04	.5147E-06	.2609E-04	.5088E-03	.9868E-03	.9398E-03	.017	16.122
5.230	21.0	21.0	50.8	.7049E-04	.5918E-06	.3006E-04	.6313E-03	.1137E-02	.1062E-02	.022	16.145
5.440	21.0	21.5	50.6	.7676E-04	.6725E-06	.3403E-04	.7316E-03	.1287E-02	.1212E-02	.025	16.170
5.660	22.0	24.0	51.9	.8332E-04	.7606E-06	.3947E-04	.9474E-03	.1493E-02	.1390E-02	.031	16.201
5.920	26.0	22.0	51.5	.9108E-04	.8692E-06	.4477E-04	.9849E-03	.1693E-02	.1593E-02	.041	16.242
6.100	18.0	18.0	50.6	.9645E-04	.9473E-06	.4793E-04	.8628E-03	.1813E-02	.1753E-02	.032	16.274
6.280	18.0	19.0	51.4	.1018E-03	.1027E-05	.5281E-04	.1003E-02	.1997E-02	.1905E-02	.034	16.308
6.480	20.0	20.0	51.9	.1078E-03	.1119E-05	.5808E-04	.1162E-02	.2197E-02	.2097E-02	.042	16.350
6.680	20.0	21.0	51.9	.1138E-03	.1213E-05	.6297E-04	.1322E-02	.2381E-02	.2289E-02	.046	16.396

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6.900	22.0	22.5	52.1	.1203E-03	.1320E-05	.6877E-04	.1547E-02	.2601E-02	.2491E-02	.055	16.451
7.130	23.0	24.5	56.2	.1272E-03	.1434E-05	.8062E-04	.1975E-02	.3049E-02	.2825E-02	.065	16.516
7.390	26.0	24.5	60.4	.1350E-03	.1568E-05	.9469E-04	.2320E-02	.3581E-02	.3315E-02	.086	16.602
7.620	23.0	23.5	61.3	.1418E-03	.1689E-05	.1035E-03	.2433E-02	.3915E-02	.3748E-02	.086	16.688
7.860	24.0	22.0	62.3	.1490E-03	.1818E-05	.1133E-03	.2492E-02	.4284E-02	.4099E-02	.098	16.786
8.060	20.0	19.0	62.4	.1549E-03	.1929E-05	.1204E-03	.2287E-02	.4551E-02	.4418E-02	.088	16.875
8.240	18.0	16.0	72.4	.1603E-03	.2030E-05	.1470E-03	.2351E-02	.5558E-02	.5054E-02	.091	16.966
8.380	14.0	16.0	73.5	.1552E-03	.1933E-05	.1421E-03	.2274E-02	.5374E-02	.5466E-02	.077	17.042
8.560	18.0	19.0	83.4	.1486E-03	.1811E-05	.1511E-03	.2870E-02	.5713E-02	.5543E-02	.100	17.142
8.760	20.0	16.5	59.6	.1413E-03	.1679E-05	.1001E-03	.1651E-02	.3785E-02	.4749E-02	.095	17.237
8.890	13.0	14.3	54.7	.1365E-03	.1595E-05	.8725E-04	.1243E-02	.3299E-02	.3542E-02	.046	17.283
9.045	15.5	7.8	49.0	.1308E-03	.1497E-05	.7333E-04	.5683E-03	.2773E-02	.3036E-02	.047	17.330

K(4)=-.1187E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
9.045	.0	2.3	49.0	.1308E-03	.1497E-05	.7333E-04	.1650E-03	-.8704E+00	.0000E+00	.000	18.530
9.090	4.5	2.3	43.9	.1292E-03	.1468E-05	.6446E-04	.1450E-03	-.7651E+00	-.8178E+00	-3.680	14.850

K(5)= .8544E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
9.090	.0	1.5	43.9	.1292E-03	.1468E-05	.6446E-04	.9669E-04	.5508E+00	.0000E+00	.000	14.850
9.120	3.0	1.5	43.8	.1281E-03	.1450E-05	.6350E-04	.9525E-04	.5425E+00	.5467E+00	1.640	16.490

K(6)= .3469E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
9.120	.0	8.5	43.8	.1281E-03	.1450E-05	.6350E-04	.5397E-03	.2202E-01	.0000E+00	.000	16.490
9.290	17.0	18.5	47.2	.1219E-03	.1345E-05	.6350E-04	.1175E-02	.2203E-01	.2202E-01	.374	16.864
9.490	20.0	19.5	46.8	.1145E-03	.1226E-05	.5737E-04	.1119E-02	.1990E-01	.2096E-01	.419	17.284
9.680	19.0	17.5	46.4	.1076E-03	.1116E-05	.5178E-04	.9061E-03	.1796E-01	.1893E-01	.360	17.643
9.840	16.0	8.0	43.2	.1017E-03	.1026E-05	.4432E-04	.3546E-03	.1537E-01	.1667E-01	.267	17.910

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K(7)=-.2342E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
9.840	.0	3.0	43.2	.1017E-03	.1026E-05	.4432E-04	.1330E-03	-.1038E-02	.0000E+00	.000	17.910
9.900	6.0	12.0	44.3	.9953E-04	.9929E-06	.4399E-04	.5279E-03	-.1030E-02	-.1034E-02	-.006	17.904
10.080	18.0	17.0	48.3	.9294E-04	.8960E-06	.4327E-04	.7357E-03	-.1014E-02	-.1022E-02	-.018	17.885
10.240	16.0	20.0	55.6	.8708E-04	.8126E-06	.4518E-04	.9036E-03	-.1058E-02	-.1036E-02	-.017	17.869
10.480	24.0	22.5	55.6	.7829E-04	.6927E-06	.3852E-04	.8666E-03	-.9020E-03	-.9801E-03	-.024	17.845
10.690	21.0	20.5	45.4	.7060E-04	.5932E-06	.2693E-04	.5521E-03	-.6307E-03	-.7664E-03	-.016	17.829
10.890	20.0	21.5	40.8	.6328E-04	.5033E-06	.2054E-04	.4415E-03	-.4810E-03	-.5559E-03	-.011	17.818
11.120	23.0	21.0	44.7	.5485E-04	.4063E-06	.1816E-04	.3814E-03	-.4253E-03	-.4531E-03	-.010	17.808
11.310	19.0	20.0	42.5	.4790E-04	.3315E-06	.1409E-04	.2818E-03	-.3299E-03	-.3776E-03	-.007	17.800
11.520	21.0	20.0	63.5	.4021E-04	.2549E-06	.1619E-04	.3238E-03	-.3791E-03	-.3545E-03	-.007	17.793
11.710	19.0	19.0	66.4	.3325E-04	.1917E-06	.1273E-04	.2419E-03	-.2981E-03	-.3386E-03	-.006	17.787
11.900	19.0	21.5	62.6	.2629E-04	.1348E-06	.8439E-05	.1814E-03	-.1976E-03	-.2479E-03	-.005	17.782
12.140	24.0	22.0	48.4	.1750E-04	.7322E-07	.3544E-05	.7797E-04	-.8300E-04	-.1403E-03	-.003	17.779
12.340	20.0	21.0	49.5	.3375E-04	.1961E-06	.9706E-05	.2038E-03	-.2273E-03	-.1552E-03	-.003	17.775
12.560	22.0	25.5	64.3	.5163E-04	.3710E-06	.2385E-04	.6082E-03	-.5586E-03	-.3930E-03	-.009	17.767
12.850	29.0	27.5	68.7	.7519E-04	.6520E-06	.4479E-04	.1232E-02	-.1049E-02	-.8038E-03	-.023	17.743
13.110	26.0	23.5	68.4	.9631E-04	.9452E-06	.6465E-04	.1519E-02	-.1514E-02	-.1282E-02	-.033	17.710
13.320	21.0	21.0	67.2	.1134E-03	.1207E-05	.8113E-04	.1704E-02	-.1900E-02	-.1707E-02	-.036	17.674
13.530	21.0	10.5	66.5	.1304E-03	.1490E-05	.9907E-04	.1040E-02	-.2320E-02	-.2110E-02	-.044	17.630

K(8)=-.3548E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL

13.530	.0	12.5	66.5	.1304E-03	.1490E-05	.9907E-04	.1238E-02	-.3515E-02	.0000E+00	.000	17.630
13.780	25.0	12.5	68.3	.1508E-03	.1851E-05	.1264E-03	.1580E-02	-.4485E-02	-.4000E-02	-.100	17.530

K(9)= .3563E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
13.780	.0	12.0	68.3	.1508E-03	.1851E-05	.1264E-03	.1517E-02	.4504E-01	.0000E+00	.000	17.530
14.020	24.0	12.0	76.8	.1703E-03	.2221E-05	.1706E-03	.2047E-02	.6079E-01	.5292E-01	1.270	18.800

K(10)= .1465E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
14.020	.0	7.0	76.8	.1703E-03	.2221E-05	.1706E-03	.1194E-02	.2500E-02	.0000E+00	.000	18.800
14.160	14.0	17.0	83.2	.1816E-03	.2448E-05	.2037E-03	.3462E-02	.2984E-02	.2742E-02	.038	18.838
14.360	20.0	19.5	74.2	.1979E-03	.2784E-05	.2065E-03	.4027E-02	.3026E-02	.3005E-02	.060	18.898
14.550	19.0	19.0	72.2	.2133E-03	.3116E-05	.2249E-03	.4274E-02	.3296E-02	.3161E-02	.060	18.959
14.740	19.0	19.0	74.7	.2288E-03	.3460E-05	.2584E-03	.4910E-02	.3786E-02	.3541E-02	.067	19.026
14.930	19.0	18.5	84.8	.2442E-03	.3816E-05	.3236E-03	.5986E-02	.4741E-02	.4264E-02	.081	19.107
15.110	18.0	17.0	80.6	.2588E-03	.4164E-05	.3356E-03	.5705E-02	.4917E-02	.4829E-02	.087	19.194
15.270	16.0	22.0	73.1	.2718E-03	.4481E-05	.3276E-03	.7207E-02	.4799E-02	.4858E-02	.078	19.271
15.550	28.0	23.0	46.6	.2946E-03	.5056E-05	.2356E-03	.5419E-02	.3452E-02	.4125E-02	.116	19.387
15.730	18.0	14.0	42.2	.3092E-03	.5437E-05	.2294E-03	.3212E-02	.3361E-02	.3406E-02	.061	19.448
15.830	10.0	5.0	36.0	.3173E-03	.5652E-05	.2035E-03	.1017E-02	.2981E-02	.3171E-02	.032	19.480

K(11)= .6420E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
15.830	.0	5.5	36.0	.3173E-03	.5652E-05	.2035E-03	.1119E-02	.1306E+00	.0000E+00	.000	19.480
15.940	11.0	6.0	36.3	.3263E-03	.5893E-05	.2139E-03	.1283E-02	.1373E+00	.1340E+00	1.474	20.954
15.950	1.0	.5	35.5	.3271E-03	.5915E-05	.2100E-03	.1050E-03	.1348E+00	.1361E+00	.136	21.090

K(12)=-.7384E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
15.950	.0	.5	35.5	.3271E-03	.5915E-05	.2100E-03	.1050E-03	-.1551E+01	.0000E+00	.000	21.090
15.960	1.0	.5	35.8	.3279E-03	.5937E-05	.2125E-03	.1063E-03	-.1569E+01	-.1560E+01	-1.560	19.530

K(13)= .3881E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
15.960	.0	9.5	35.8	.3279E-03	.5937E-05	.2125E-03	.2019E-02	.8249E-02	.0000E+00	.000	19.530
16.150	19.0	20.0	43.9	.3433E-03	.6361E-05	.2793E-03	.5585E-02	.1084E-01	.9543E-02	.181	19.711
16.360	21.0	17.5	58.8	.3604E-03	.6841E-05	.4023E-03	.7040E-02	.1561E-01	.1322E-01	.278	19.989
16.500	14.0	16.0	60.0	.3494E-03	.6532E-05	.3919E-03	.6271E-02	.1521E-01	.1541E-01	.216	20.205
16.680	18.0	17.5	33.8	.3354E-03	.6142E-05	.2076E-03	.3633E-02	.8057E-02	.1163E-01	.209	20.414
16.850	17.0	14.5	32.9	.3221E-03	.5781E-05	.1902E-03	.2758E-02	.7381E-02	.7719E-02	.131	20.545
16.970	12.0	16.5	30.6	.3127E-03	.5531E-05	.1692E-03	.2792E-02	.6568E-02	.6975E-02	.084	20.629
17.180	21.0	20.5	32.7	.2963E-03	.5102E-05	.1668E-03	.3420E-02	.6474E-02	.6521E-02	.137	20.766
17.380	20.0	19.5	32.4	.2807E-03	.4704E-05	.1524E-03	.2972E-02	.5914E-02	.6194E-02	.124	20.890
17.570	19.0	19.0	34.7	.2659E-03	.4336E-05	.1505E-03	.2859E-02	.5839E-02	.5877E-02	.112	21.002
17.760	19.0	20.5	34.1	.2511E-03	.3978E-05	.1356E-03	.2781E-02	.5264E-02	.5552E-02	.105	21.107
17.980	22.0	20.5	34.5	.2339E-03	.3577E-05	.1234E-03	.2530E-02	.4789E-02	.5027E-02	.111	21.218
18.170	19.0	19.5	34.6	.2190E-03	.3242E-05	.1122E-03	.2187E-02	.4353E-02	.4571E-02	.087	21.305
18.370	20.0	20.0	34.7	.2034E-03	.2901E-05	.1007E-03	.2014E-02	.3907E-02	.4130E-02	.083	21.387
18.570	20.0	20.0	34.5	.1878E-03	.2574E-05	.8880E-04	.1776E-02	.3446E-02	.3677E-02	.074	21.461
18.770	20.0	19.5	34.5	.1722E-03	.2260E-05	.7796E-04	.1520E-02	.3025E-02	.3236E-02	.065	21.525
18.960	19.0	19.5	34.6	.1574E-03	.1974E-05	.6830E-04	.1332E-02	.2651E-02	.2838E-02	.054	21.579
19.160	20.0	20.0	34.6	.1417E-03	.1688E-05	.5839E-04	.1168E-02	.2266E-02	.2458E-02	.049	21.628
19.360	20.0	18.5	34.6	.1261E-03	.1416E-05	.4901E-04	.9067E-03	.1902E-02	.2084E-02	.042	21.670
19.530	17.0	8.5	34.6	.1129E-03	.1199E-05	.4148E-04	.3526E-03	.1610E-02	.1756E-02	.030	21.700

건설교통부

K(14)= .2290E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
19.530	.0	2.5	34.6	.1129E-03	.1199E-05	.4148E-04	.1037E-03	.9498E-01	.0000E+00	.000	21.700
19.580	5.0	3.5	34.5	.1089E-03	.1137E-05	.3923E-04	.1373E-03	.8983E-01	.9240E-01	.462	22.162
19.600	2.0	1.0	34.6	.1074E-03	.1113E-05	.3850E-04	.3850E-04	.8816E-01	.8899E-01	.178	22.340

K(15)= .3735E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
19.600	.0	9.5	34.6	.1074E-03	.1113E-05	.3850E-04	.3658E-03	.1438E-01	.0000E+00	.000	22.340
19.790	19.0	20.5	34.6	.9255E-04	.8904E-06	.3081E-04	.6315E-03	.1150E-01	.1294E-01	.246	22.586
20.010	22.0	22.0	34.3	.7537E-04	.6544E-06	.2244E-04	.4938E-03	.8382E-02	.9944E-02	.219	22.805
20.230	22.0	21.0	34.5	.5819E-04	.4439E-06	.1532E-04	.3216E-03	.5720E-02	.7051E-02	.155	22.960
20.430	20.0	21.0	34.3	.6239E-04	.4928E-06	.1690E-04	.3550E-03	.6313E-02	.6016E-02	.120	23.080
20.650	22.0	17.0	35.4	.6701E-04	.5486E-06	.1942E-04	.3301E-03	.7252E-02	.6783E-02	.149	23.229
20.770	12.0	6.0	36.3	.6953E-04	.5798E-06	.2105E-04	.1263E-03	.7860E-02	.7556E-02	.091	23.320

K(16)= .9293E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
20.770	.0	3.5	36.3	.6953E-04	.5798E-06	.2105E-04	.7366E-04	.1956E-02	.0000E+00	.000	23.320
20.840	7.0	15.0	38.4	.7100E-04	.5983E-06	.2297E-04	.3446E-03	.2135E-02	.2045E-02	.014	23.334
21.070	23.0	22.0	44.9	.7583E-04	.6603E-06	.2965E-04	.6523E-03	.2755E-02	.2445E-02	.056	23.391
21.280	21.0	19.0	34.2	.8024E-04	.7188E-06	.2458E-04	.4671E-03	.2284E-02	.2520E-02	.053	23.443
21.450	17.0	19.0	33.6	.8381E-04	.7673E-06	.2578E-04	.4898E-03	.2396E-02	.2340E-02	.040	23.483
21.660	21.0	21.5	33.4	.8822E-04	.8286E-06	.2768E-04	.5950E-03	.2572E-02	.2484E-02	.052	23.535
21.880	22.0	21.0	33.4	.9284E-04	.8945E-06	.2988E-04	.6274E-03	.2777E-02	.2674E-02	.059	23.594
22.080	20.0	20.0	33.3	.9704E-04	.9559E-06	.3183E-04	.6366E-03	.2958E-02	.2867E-02	.057	23.652
22.280	20.0	19.0	33.4	.1012E-03	.1019E-05	.3402E-04	.6464E-03	.3162E-02	.3060E-02	.061	23.713
22.460	18.0	18.0	34.1	.1050E-03	.1076E-05	.3670E-04	.6606E-03	.3410E-02	.3286E-02	.059	23.772
22.640	18.0	18.5	32.7	.1088E-03	.1135E-05	.3711E-04	.6865E-03	.3449E-02	.3430E-02	.062	23.834
22.830	19.0	19.0	34.9	.1128E-03	.1198E-05	.4180E-04	.7943E-03	.3885E-02	.3667E-02	.070	23.903
23.020	19.0	19.5	35.0	.1168E-03	.1262E-05	.4417E-04	.8613E-03	.4105E-02	.3995E-02	.076	23.979
23.220	20.0	20.0	34.4	.1210E-03	.1331E-05	.4577E-04	.9154E-03	.4254E-02	.4179E-02	.084	24.063
23.420	20.0	19.0	33.7	.1252E-03	.1400E-05	.4720E-04	.8967E-03	.4386E-02	.4320E-02	.086	24.149
23.600	18.0	19.5	33.7	.1290E-03	.1464E-05	.4935E-04	.9623E-03	.4586E-02	.4486E-02	.081	24.230
23.810	21.0	20.5	35.9	.1334E-03	.1540E-05	.5529E-04	.1133E-02	.5138E-02	.4862E-02	.102	24.332
24.010	20.0	17.0	45.3	.1376E-03	.1613E-05	.7309E-04	.1243E-02	.6792E-02	.5965E-02	.119	24.451
24.150	14.0	17.0	42.9	.1405E-03	.1665E-05	.7145E-04	.1215E-02	.6640E-02	.6716E-02	.094	24.545
24.350	20.0	19.0	40.7	.1344E-03	.1558E-05	.6341E-04	.1205E-02	.5893E-02	.6266E-02	.125	24.671
24.530	18.0	18.0	41.7	.1289E-03	.1463E-05	.6102E-04	.1098E-02	.5671E-02	.5782E-02	.104	24.775
24.710	18.0	19.5	43.2	.1234E-03	.1371E-05	.5921E-04	.1155E-02	.5503E-02	.5587E-02	.101	24.875
24.920	21.0	20.5	44.1	.1170E-03	.1265E-05	.5580E-04	.1144E-02	.5185E-02	.5344E-02	.112	24.988
25.120	20.0	20.0	45.4	.1109E-03	.1167E-05	.5300E-04	.1060E-02	.4925E-02	.5055E-02	.101	25.089
25.320	20.0	20.0	46.2	.1048E-03	.1072E-05	.4954E-04	.9908E-03	.4604E-02	.4765E-02	.095	25.184
25.520	20.0	18.5	46.2	.9865E-04	.9798E-06	.4527E-04	.8375E-03	.4207E-02	.4405E-02	.088	25.272
25.690	17.0	9.5	47.8	.9346E-04	.9035E-06	.4319E-04	.4103E-03	.4013E-02	.4110E-02	.070	25.342
25.710	2.0	1.0	48.0	.9285E-04	.8946E-06	.4294E-04	.4294E-04	.3991E-02	.4002E-02	.008	25.350

K(17)= .9534E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
25.710	.0	11.0	48.0	.9285E-04	.8946E-06	.4294E-04	.4724E-03	.4094E-01	.0000E+00	.000	25.350
25.930	22.0	22.0	49.2	.8612E-04	.7993E-06	.3932E-04	.8651E-03	.3749E-01	.3922E-01	.863	26.213
26.150	22.0	21.5	50.2	.7940E-04	.7076E-06	.3552E-04	.7637E-03	.3387E-01	.3568E-01	.785	26.998
26.360	21.0	21.0	49.8	.7299E-04	.6236E-06	.3105E-04	.6521E-03	.2961E-01	.3174E-01	.666	27.664
26.570	21.0	13.0	49.5	.6657E-04	.5432E-06	.2689E-04	.3495E-03	.2564E-01	.2762E-01	.580	28.244
26.620	5.0	2.5	49.3	.6505E-04	.5246E-06	.2586E-04	.6466E-04	.2466E-01	.2515E-01	.126	28.370

K(18)=-.1455E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
26.620	.0	9.0	49.3	.6505E-04	.5246E-06	.2586E-04	.2328E-03	-.3763E-02	.0000E+00	.000	30.850
26.800	18.0	19.5	49.2	.5955E-04	.4595E-06	.2261E-04	.4408E-03	-.3289E-02	-.3526E-02	-.063	30.787
27.010	21.0	21.5	48.3	.5313E-04	.3873E-06	.1871E-04	.4022E-03	-.2722E-02	-.3006E-02	-.063	30.723
27.230	22.0	25.5	53.1	.4641E-04	.3162E-06	.1679E-04	.4281E-03	-.2443E-02	-.2582E-02	-.057	30.667
27.520	29.0	26.5	60.8	.3755E-04	.2301E-06	.1399E-04	.3708E-03	-.2036E-02	-.2239E-02	-.065	30.602
27.760	24.0	18.5	48.0	.3022E-04	.1661E-06	.7974E-05	.1475E-03	-.1160E-02	-.1598E-02	-.038	30.563
27.890	13.0	22.5	49.4	.2625E-04	.1345E-06	.6643E-05	.1495E-03	-.9666E-03	-.1063E-02	-.014	30.549
28.210	32.0	26.0	49.8	.1647E-04	.6686E-07	.3329E-05	.8656E-04	-.4844E-03	-.7255E-03	-.023	30.526
28.410	20.0	21.0	53.7	.1036E-04	.3336E-07	.1791E-05	.3762E-04	-.2606E-03	-.3725E-03	-.007	30.519
28.630	22.0	21.5	57.6	.1780E-04	.7510E-07	.4326E-05	.9300E-04	-.6294E-03	-.4450E-03	-.010	30.509
28.840	21.0	18.5	50.4	.2490E-04	.1242E-06	.6262E-05	.1158E-03	-.9111E-03	-.7702E-03	-.016	30.493
29.000	16.0	17.0	50.4	.3031E-04	.1668E-06	.8409E-05	.1430E-03	-.1224E-02	-.1067E-02	-.017	30.476
29.180	18.0	18.5	49.9	.3639E-04	.2195E-06	.1095E-04	.2027E-03	-.1594E-02	-.1409E-02	-.025	30.450
29.370	19.0	24.5	49.8	.4281E-04	.2801E-06	.1395E-04	.3418E-03	-.2030E-02	-.1812E-02	-.034	30.416
29.670	30.0	25.0	50.1	.5296E-04	.3854E-06	.1931E-04	.4827E-03	-.2809E-02	-.2420E-02	-.073	30.343
29.870	20.0	21.0	49.2	.5972E-04	.4615E-06	.2270E-04	.4768E-03	-.3303E-02	-.3056E-02	-.061	30.282
30.090	22.0	23.0	49.5	.6715E-04	.5503E-06	.2724E-04	.6265E-03	-.3963E-02	-.3633E-02	-.080	30.202
30.330	24.0	15.0	49.3	.7527E-04	.6530E-06	.3219E-04	.4829E-03	-.4684E-02	-.4324E-02	-.104	30.099
30.390	6.0	3.0	49.0	.7730E-04	.6796E-06	.3330E-04	.9990E-04	-.4845E-02	-.4764E-02	-.029	30.070

K(19)= .6415E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
30.390	.0	8.0	49.0	.7730E-04	.6796E-06	.3330E-04	.2664E-03	.2136E-02	.0000E+00	.000	30.070
30.550	16.0	17.0	49.0	.8270E-04	.7521E-06	.3685E-04	.6265E-03	.2364E-02	.2250E-02	.036	30.106
30.730	18.0	18.0	48.8	.8879E-04	.8366E-06	.4083E-04	.7349E-03	.2619E-02	.2492E-02	.045	30.151
30.910	18.0	19.5	47.9	.9487E-04	.9241E-06	.4426E-04	.8631E-03	.2840E-02	.2729E-02	.049	30.200
31.120	21.0	19.0	47.6	.1020E-03	.1030E-05	.4902E-04	.9313E-03	.3144E-02	.2992E-02	.063	30.263
31.290	17.0	16.5	46.9	.1077E-03	.1118E-05	.5243E-04	.8652E-03	.3364E-02	.3254E-02	.055	30.318
31.450	16.0	18.0	46.5	.1131E-03	.1203E-05	.5595E-04	.1007E-02	.3589E-02	.3477E-02	.056	30.374
31.650	20.0	11.5	45.9	.1199E-03	.1313E-05	.6025E-04	.6929E-03	.3865E-02	.3727E-02	.075	30.448
31.680	3.0	1.5	46.0	.1209E-03	.1329E-05	.6115E-04	.9173E-04	.3923E-02	.3894E-02	.012	30.460

K(20)=-.6751E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
31.680	.0	7.5	46.0	.1209E-03	.1329E-05	.6115E-04	.4586E-03	-.4129E-02	.0000E+00	.000	30.460
31.830	15.0	19.0	45.1	.1260E-03	.1414E-05	.6377E-04	.1212E-02	-.4305E-02	-.4217E-02	-.063	30.397
32.060	23.0	16.0	44.7	.1337E-03	.1547E-05	.6914E-04	.1106E-02	-.4668E-02	-.4486E-02	-.103	30.294
32.150	9.0	4.5	46.4	.1368E-03	.1600E-05	.7423E-04	.3341E-03	-.5012E-02	-.4840E-02	-.044	30.250

K(21)= .1340E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
32.150	.0	3.5	46.4	.1368E-03	.1600E-05	.7423E-04	.2598E-03	.9948E-02	.0000E+00	.000	30.250
32.220	7.0	13.5	46.6	.1392E-03	.1642E-05	.7650E-04	.1033E-02	.1025E-01	.1010E-01	.071	30.321
32.420	20.0	19.5	52.7	.1459E-03	.1763E-05	.9289E-04	.1811E-02	.1245E-01	.1135E-01	.227	30.548
32.610	19.0	16.0	49.8	.1445E-03	.1738E-05	.8655E-04	.1385E-02	.1160E-01	.1202E-01	.228	30.776
32.740	13.0	15.0	47.1	.1436E-03	.1721E-05	.8106E-04	.1216E-02	.1086E-01	.1123E-01	.146	30.922
32.910	17.0	17.0	51.1	.1424E-03	.1699E-05	.8682E-04	.1476E-02	.1164E-01	.1125E-01	.191	31.113
33.080	17.0	18.0	60.0	.1412E-03	.1677E-05	.1006E-03	.1811E-02	.1349E-01	.1256E-01	.214	31.327
33.270	19.0	17.0	46.2	.1398E-03	.1653E-05	.7637E-04	.1298E-02	.1023E-01	.1186E-01	.225	31.552
33.420	15.0	18.0	45.3	.1387E-03	.1634E-05	.7401E-04	.1332E-02	.9919E-02	.1008E-01	.151	31.703
33.630	21.0	21.0	45.3	.1372E-03	.1607E-05	.7281E-04	.1529E-02	.9757E-02	.9838E-02	.207	31.910
33.840	21.0	20.0	45.5	.1357E-03	.1581E-05	.7192E-04	.1438E-02	.9639E-02	.9698E-02	.204	32.114
34.030	19.0	20.0	47.6	.1343E-03	.1557E-05	.7411E-04	.1482E-02	.9931E-02	.9785E-02	.186	32.300
34.240	21.0	18.0	57.6	.1328E-03	.1531E-05	.8817E-04	.1587E-02	.1182E-01	.1087E-01	.228	32.528
34.390	15.0	16.5	60.0	.1317E-03	.1512E-05	.9072E-04	.1497E-02	.1216E-01	.1199E-01	.180	32.708
34.570	18.0	18.0	59.8	.1304E-03	.1490E-05	.8909E-04	.1604E-02	.1194E-01	.1205E-01	.217	32.925
34.750	18.0	18.5	49.2	.1291E-03	.1468E-05	.7221E-04	.1336E-02	.9677E-02	.1081E-01	.195	33.119
34.940	19.0	19.0	48.1	.1278E-03	.1444E-05	.6947E-04	.1320E-02	.9311E-02	.9494E-02	.180	33.300
35.130	19.0	19.5	47.2	.1264E-03	.1421E-05	6708E-04	.1308E-02	.8990E-02	.9150E-02	.174	33.473

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35.330	20.0	20.0	46.3	.1250E-03	.1397E-05	.6468E-04	.1294E-02	.8668E-02	.8829E-02	.177	33.650
35.530	20.0	20.5	45.0	.1235E-03	.1373E-05	.6178E-04	.1267E-02	.8280E-02	.8474E-02	.169	33.819
35.740	21.0	17.5	46.0	.1220E-03	.1348E-05	.6200E-04	.1085E-02	.8309E-02	.8294E-02	.174	33.994
35.880	14.0	19.0	52.1	.1210E-03	.1331E-05	.6935E-04	.1318E-02	.9294E-02	.8802E-02	.123	34.117
36.120	24.0	21.0	42.5	.1193E-03	.1303E-05	.5537E-04	.1163E-02	.7420E-02	.8357E-02	.201	34.317
36.300	18.0	18.5	42.5	.1218E-03	.1344E-05	.5714E-04	.1057E-02	.7657E-02	.7539E-02	.136	34.453
36.490	19.0	19.0	42.7	.1245E-03	.1389E-05	.5930E-04	.1127E-02	.7947E-02	.7802E-02	.148	34.601
36.680	19.0	19.5	42.8	.1271E-03	.1434E-05	.6136E-04	.1197E-02	.8224E-02	.8086E-02	.154	34.755
36.880	20.0	20.0	42.9	.1300E-03	.1481E-05	.6356E-04	.1271E-02	.8517E-02	.8371E-02	.167	34.922
37.080	20.0	20.5	42.5	.1328E-03	.1530E-05	.6502E-04	.1333E-02	.8713E-02	.8615E-02	.172	35.095
37.290	21.0	20.5	42.7	.1357E-03	.1581E-05	.6751E-04	.1384E-02	.9047E-02	.8880E-02	.186	35.281
37.490	20.0	21.0	36.2	.1385E-03	.1630E-05	.5902E-04	.1239E-02	.7910E-02	.8479E-02	.170	35.451
37.710	22.0	22.0	33.1	.1416E-03	.1685E-05	.5578E-04	.1227E-02	.7476E-02	.7693E-02	.169	35.620
37.930	22.0	21.5	41.8	.1447E-03	.1741E-05	.7276E-04	.1564E-02	.9751E-02	.8613E-02	.189	35.810
38.140	21.0	20.5	45.7	.1477E-03	.1794E-05	.8199E-04	.1681E-02	.1099E-01	.1037E-01	.218	36.027
38.340	20.0	18.5	48.2	.1505E-03	.1846E-05	.8896E-04	.1646E-02	.1192E-01	.1146E-01	.229	36.256
38.510	17.0	18.5	44.8	.1529E-03	.1890E-05	.8466E-04	.1566E-02	.1135E-01	.1163E-01	.198	36.454
38.710	20.0	19.5	34.2	.1557E-03	.1942E-05	.6642E-04	.1295E-02	.8901E-02	.1012E-01	.202	36.657
38.900	19.0	19.0	39.5	.1583E-03	.1992E-05	.7869E-04	.1495E-02	.1055E-01	.9724E-02	.185	36.841
39.090	19.0	9.5	34.0	.1610E-03	.2043E-05	.6946E-04	.6598E-03	.9308E-02	.9927E-02	.189	37.030

K(22)=-.2470E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
39.090	.0	1.0	34.0	.1610E-03	.2043E-05	.6946E-04	.6946E-04	-.1716E-01	.0000E+00	.000	37.030
39.110	2.0	12.0	25.1	.1613E-03	.2048E-05	.5141E-04	.6169E-03	-.1270E-01	-.1493E-01	-.030	37.000
39.330	22.0	18.8	23.1	.1644E-03	.2107E-05	.4868E-04	.9127E-03	-.1203E-01	-.1236E-01	-.272	36.728
39.485	15.5	7.8	32.8	.1665E-03	.2149E-05	.7050E-04	.5464E-03	-.1742E-01	-.1472E-01	-.228	36.500

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논산천 Non San Chun KUBO MASASI FORMUAL

NUMBER OF REGION = 1

CASE = 1 ********** Non San Chun NO. 0 ~ NO.16+670 **********

N = 98 ND = 5 NE = 18 OPTION = 2

K(1)= .1858E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.000	.0	8.5	48.9	.2189E-04	.1024E-06	.5010E-05	.4258E-04	.9310E-01	.0000E+00	.000	-3.840
.170	17.0	8.5	40.0	.2101E-04	.9632E-07	.3853E-05	.3275E-04	.7160E-01	.8235E-01	1.400	-2.440

K(2)= .3784E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.170	.0	2.5	40.0	.2101E-04	.9632E-07	.3853E-05	.9632E-05	.1458E-01	.0000E+00	.000	-2.440
.220	5.0	12.5	38.4	.2075E-04	.9454E-07	.3630E-05	.4538E-04	.1374E-01	.1416E-01	.071	-2.369
.420	20.0	20.0	43.4	.1972E-04	.8754E-07	.3799E-05	.7598E-04	.1438E-01	.1406E-01	.281	-2.088
.620	20.0	20.0	33.3	.1868E-04	.8072E-07	.2688E-05	.5376E-04	.1017E-01	.1227E-01	.245	-1.843
.820	20.0	10.8	31.3	.1764E-04	.7409E-07	.2319E-05	.2493E-04	.8775E-02	.9473E-02	.189	-1.653
.835	1.5	.8	31.2	.1756E-04	.7360E-07	.2296E-05	.1722E-05	.8689E-02	.8732E-02	.013	-1.640

K(3)=-.7343E+06

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.835	.0	.5	31.2	.1756E-04	.7360E-07	.2296E-05	.1148E-05	-.1686E+01	.0000E+00	.000	-1.640
.845	1.0	.5	30.0	.1751E-04	.7327E-07	.2198E-05	.1099E-05	-.1614E+01	-.1650E+01	-1.650	-3.290

K(4)= .2258E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.845	.0	9.5	30.0	.1751E-04	.7327E-07	.2198E-05	.2088E-04	.4964E-02	.0000E+00	.000	-3.290
1.035	19.0	18.8	30.0	.1652E-04	.6717E-07	.2015E-05	.3778E-04	.4551E-02	.4757E-02	.090	-3.200
1.220	18.5	19.3	29.4	.1556E-04	.6140E-07	.1805E-05	.3475E-04	.4077E-02	.4314E-02	.080	-3.120
1.420	20.0	20.0	29.0	.1453E-04	.5537E-07	.1606E-05	.3211E-04	.3626E-02	.3851E-02	.077	-3.043
1.620	20.0	20.0	28.9	.1349E-04	.4954E-07	.1432E-05	.2863E-04	.3233E-02	.3430E-02	.069	-2.974
1.820	20.0	20.0	28.8	.1245E-04	.4393E-07	.1265E-05	.2531E-04	.2857E-02	.3045E-02	.061	-2.913
2.020	20.0	21.0	28.5	.1141E-04	.3856E-07	.1099E-05	.2308E-04	.2482E-02	.2670E-02	.053	-2.860
2.240	22.0	21.5	28.0	.1027E-04	.3292E-07	.9218E-06	.1982E-04	.2082E-02	.2282E-02	.050	-2.810
2.450	21.0	21.0	37.8	.9182E-05	.2782E-07	.1052E-05	.2209E-04	.2375E-02	.2228E-02	.047	-2.763
2.660	21.0	20.5	27.9	.8092E-05	.2302E-07	.6423E-06	.1317E-04	.1450E-02	.1913E-02	.040	-2.723
2.860	20.0	20.5	28.0	.7055E-05	.1874E-07	.5247E-06	.1076E-04	.1185E-02	.1318E-02	.026	-2.696
3.070	21.0	20.0	28.2	.5965E-05	.1457E-07	.4108E-06	.8217E-05	.9278E-03	.1056E-02	.022	-2.674
3.260	19.0	19.0	28.2	.4979E-05	.1111E-07	.3133E-06	.5953E-05	.7076E-03	.8177E-03	.016	-2.659
3.450	19.0	20.0	28.0	.3993E-05	.7980E-08	.2234E-06	.4469E-05	.5046E-03	.6061E-03	.012	-2.647
3.660	21.0	19.0	28.1	.2904E-05	.4948E-08	.1390E-06	.2642E-05	.3140E-03	.4093E-03	.009	-2.639
3.830	17.0	19.0	28.2	.2022E-05	.2875E-08	.8106E-07	.1540E-05	.1831E-03	.2485E-03	.004	-2.634
4.040	21.0	19.8	28.1	.9320E-06	.8998E-09	.2528E-07	.4994E-06	.5710E-04	.1201E-03	.003	-2.632
4.225	18.5	11.3	27.9	.1308E-05	.1495E-08	.4172E-07	.4694E-06	.9422E-04	.7566E-04	.001	-2.630
4.265	4.0	2.0	28.0	.1389E-05	.1637E-08	.4583E-07	.9166E-07	.1035E-03	.9886E-04	.000	-2.630

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K(5)= .3150E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
4.265	.0	8.5	28.0	.1389E-05	.1637E-08	.4583E-07	.3896E-06	.1444E-02	.0000E+00	.000	-2.630
4.435	17.0	18.0	28.0	.1734E-05	.2283E-08	.6394E-07	.1151E-05	.2014E-02	.1729E-02	.029	-2.601
4.625	19.0	20.5	27.9	.2120E-05	.3086E-08	.8611E-07	.1765E-05	.2712E-02	.2363E-02	.045	-2.556
4.845	22.0	20.8	28.2	.2567E-05	.4112E-08	.1159E-06	.2406E-05	.3652E-02	.3182E-02	.070	-2.486
5.040	19.5	19.5	28.1	.2962E-05	.5099E-08	.1433E-06	.2794E-05	.4513E-02	.4083E-02	.080	-2.406
5.235	19.5	19.3	28.4	.3358E-05	.6155E-08	.1748E-06	.3365E-05	.5506E-02	.5009E-02	.098	-2.308
5.425	19.0	20.3	28.0	.3744E-05	.7245E-08	.2029E-06	.4108E-05	.6390E-02	.5948E-02	.113	-2.195
5.640	21.5	21.0	27.9	.4181E-05	.8548E-08	.2385E-06	.5008E-05	.7512E-02	.6951E-02	.149	-2.046
5.845	20.5	20.8	28.1	.4597E-05	.9856E-08	.2770E-06	.5747E-05	.8724E-02	.8118E-02	.166	-1.880
6.055	21.0	20.8	28.6	.5023E-05	.1126E-07	.3220E-06	.6681E-05	.1014E-01	.9433E-02	.198	-1.681
6.260	20.5	20.8	28.5	.5440E-05	.1269E-07	.3616E-06	.7503E-05	.1139E-01	.1077E-01	.221	-1.461
6.470	21.0	20.5	28.6	.5866E-05	.1421E-07	.4063E-06	.8330E-05	.1280E-01	.1209E-01	.254	-1.207
6.670	20.0	21.0	28.6	.6272E-05	.1571E-07	.4492E-06	.9434E-05	.1415E-01	.1347E-01	.269	-.937
6.890	22.0	20.3	28.4	.6719E-05	.1742E-07	.4946E-06	.1002E-04	.1558E-01	.1486E-01	.327	-.610
7.075	18.5	19.8	28.6	.7094E-05	.1890E-07	.5404E-06	.1067E-04	.1702E-01	.1630E-01	.302	-.309
7.285	21.0	21.5	28.6	.7521E-05	.2062E-07	.5899E-06	.1268E-04	.1858E-01	.1780E-01	.374	.065
7.505	22.0	21.0	29.4	.7967E-05	.2249E-07	.6612E-06	.1389E-04	.2083E-01	.1970E-01	.433	.499
7.705	20.0	11.5	28.5	.8374E-05	.2423E-07	.6906E-06	.7942E-05	.2175E-01	.2129E-01	.426	.924
7.735	3.0	1.5	28.5	.8434E-05	.2450E-07	.6981E-06	.1047E-05	.2199E-01	.2187E-01	.066	.990

K(6)= .6929E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
7.735	.0	8.0	28.5	.8434E-05	.2450E-07	.6981E-06	.5585E-05	.4837E-02	.0000E+00	.000	.990
7.895	16.0	18.0	28.3	.8759E-05	.2592E-07	.7337E-06	.1321E-04	.5083E-02	.4960E-02	.079	1.069
8.095	20.0	19.5	27.3	.9165E-05	.2775E-07	.7575E-06	.1477E-04	.5249E-02	.5166E-02	.103	1.173
8.285	19.0	9.5	27.2	.8890E-05	.2651E-07	.7210E-06	.6849E-05	.4995E-02	.5122E-02	.097	1.270

K(7)= .3743E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
8.285	.0	9.0	27.2	.8890E-05	.2651E-07	.7210E-06	.6489E-05	.2699E-02	.0000E+00	.000	1.270
8.465	18.0	18.8	28.2	.8629E-05	.2535E-07	.7148E-06	.1340E-04	.2676E-02	.2687E-02	.048	1.318
8.660	19.5	19.5	28.3	.8346E-05	.2411E-07	.6824E-06	.1331E-04	.2555E-02	.2615E-02	.051	1.369
8.855	19.5	20.5	28.4	.8064E-05	.2290E-07	.6503E-06	.1333E-04	.2434E-02	.2495E-02	.049	1.418
9.070	21.5	19.5	29.8	.7752E-05	.2158E-07	.6432E-06	.1254E-04	.2408E-02	.2421E-02	.052	1.470
9.245	17.5	19.8	34.7	.7499E-05	.2053E-07	.7125E-06	.1407E-04	.2667E-02	.2538E-02	.044	1.514
9.465	22.0	21.3	22.7	.7180E-05	.1924E-07	.4367E-06	.9280E-05	.1635E-02	.2151E-02	.047	1.562
9.670	20.5	20.5	22.8	.6882E-05	.1806E-07	.4117E-06	.8439E-05	.1541E-02	.1588E-02	.033	1.594
9.875	20.5	19.8	21.7	.6585E-05	.1690E-07	.3667E-06	.7243E-05	.1373E-02	.1457E-02	.030	1.624
10.065	19.0	9.5	22.6	.6310E-05	.1585E-07	.3582E-06	.3403E-05	.1341E-02	.1357E-02	.026	1.650

K(8)= .2824E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
10.065	.0	1.0	22.6	.6310E-05	.1585E-07	.3582E-06	.3582E-06	.1011E-01	.0000E+00	.000	1.650
10.085	2.0	10.5	22.5	.6281E-05	.1574E-07	.3542E-06	.3719E-05	.1000E-01	.1006E-01	.020	1.670
10.275	19.0	19.5	22.7	.6006E-05	.1472E-07	.3341E-06	.6515E-05	.9433E-02	.9717E-02	.185	1.855
10.475	20.0	15.5	22.6	.5716E-05	.1366E-07	.3088E-06	.4787E-05	.8720E-02	.9077E-02	.182	2.036
10.585	11.0	5.5	22.5	.5556E-05	.1310E-07	.2947E-06	.1621E-05	.8321E-02	.8520E-02	.094	2.130

K(9)= .1364E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
10.585	.0	4.0	22.5	.5556E-05	.1310E-07	.2947E-06	.1179E-05	.4021E-02	.0000E+00	.000	2.130
10.665	8.0	14.5	22.7	.5440E-05	.1269E-07	.2880E-06	.4177E-05	.3930E-02	.3975E-02	.032	2.162
10.875	21.0	21.0	22.6	.5136E-05	.1164E-07	.2630E-06	.5524E-05	.3589E-02	.3759E-02	.079	2.241
11.085	21.0	16.5	22.5	.4831E-05	.1062E-07	.2389E-06	.3943E-05	.3260E-02	.3425E-02	.072	2.313

11.205	12.0	6.0	21.6	.4658E-05	.1005E-07	.2171E-06	.1303E-05	.2962E-02	.3111E-02	.037	2.350

K(10)=-.4622E+06

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
11.205	.0	.8	21.6	.4658E-05	.1005E-07	.2171E-06	.1628E-06	-.1004E+00	.0000E+00	.000	2.350
11.220	1.5	.8	21.6	.4636E-05	.9981E-08	.2156E-06	.1617E-06	-.9965E-01	-.1000E+00	-.150	2.200

K(11)= .1322E+06

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
11.220	.0	3.0	21.6	.4636E-05	.9981E-08	.2156E-06	.6468E-06	.2851E-01	.0000E+00	.000	2.200
11.280	6.0	8.0	22.8	.4549E-05	.9702E-08	.2212E-06	.1770E-05	.2925E-01	.2888E-01	.173	2.373
11.380	10.0	5.0	23.0	.4404E-05	.9242E-08	.2126E-06	.1063E-05	.2810E-01	.2867E-01	.287	2.660

K(12)= .4287E+06

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
11.380	.0	2.5	23.0	.4404E-05	.9242E-08	.2126E-06	.5314E-06	.9112E-01	.0000E+00	.000	2.660
11.430	5.0	2.5	23.0	.4331E-05	.9015E-08	.2073E-06	.5183E-06	.8888E-01	.9000E-01	.450	3.110

K(13)= .1714E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
11.430	.0	2.5	23.0	.4331E-05	.9015E-08	.2073E-06	.5183E-06	.3553E-02	.0000E+00	.000	3.110
11.480	5.0	12.5	22.5	.4259E-05	.8789E-08	.1978E-06	.2472E-05	.3389E-02	.3471E-02	.017	3.127
11.680	20.0	19.3	22.5	.3969E-05	.7907E-08	.1779E-06	.3425E-05	.3049E-02	.3219E-02	.064	3.192
11.865	18.5	20.0	22.5	.3701E-05	.7120E-08	.1602E-06	.3204E-05	.2745E-02	.2897E-02	.054	3.245
12.080	21.5	20.5	24.0	.3389E-05	.6240E-08	.1497E-06	.3070E-05	.2566E-02	.2655E-02	.057	3.302
12.275	19.5	19.8	24.7	.6033E-05	.1482E-07	.3660E-06	.7229E-05	.6272E-02	.4419E-02	.086	3.389
12.475	20.0	21.0	24.5	.8744E-05	.2586E-07	.6335E-06	.1330E-04	.1086E-01	.8564E-02	.171	3.560
12.695	22.0	20.5	24.9	.1173E-04	.4016E-07	.1000E-05	.2050E-04	.1713E-01	.1400E-01	.308	3.868
12.885	19.0	20.0	25.6	.1430E-04	.5409E-07	.1385E-05	.2770E-04	.2373E-01	.2043E-01	.388	4.256
13.095	21.0	19.8	25.7	.1715E-04	.7102E-07	.1825E-05	.3605E-04	.3128E-01	.2750E-01	.578	4.833
13.280	18.5	18.8	25.6	.1966E-04	.8716E-07	.2231E-05	.4184E-04	.3823E-01	.3476E-01	.643	5.476
13.470	19.0	9.5	25.8	.2223E-04	.1048E-06	.2705E-05	.2570E-04	.4635E-01	.4229E-01	.804	6.280

K(14)=-.5238E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
13.470	.0	1.0	25.8	.2223E-04	.1048E-06	.2705E-05	.2705E-05	-.1417E-01	.0000E+00	.000	6.820
13.490	2.0	10.5	25.7	.2251E-04	.1068E-06	.2744E-05	.2881E-04	-.1437E-01	-.1427E-01	-.029	6.791
13.680	19.0	16.0	25.6	.2508E-04	.1256E-06	.3216E-05	.5145E-04	-.1684E-01	-.1561E-01	-.297	6.495
13.810	13.0	6.5	26.5	.2684E-04	.1391E-06	.3686E-05	.2396E-04	-.1930E-01	-.1807E-01	-.235	6.260

K(15)= .5182E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
13.810	.0	2.5	26.5	.2684E-04	.1391E-06	.3686E-05	.9214E-05	.1910E+00	.0000E+00	.000	6.260
13.860	5.0	2.5	25.8	.2752E-04	.1444E-06	.3725E-05	.9312E-05	.1930E+00	.1920E+00	.960	7.220

K(16)= .1291E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL

13.860	.0	.8	25.8	.2752E-04	.1444E-06	.3725E-05	.2794E-05	.4808E-02	.0000E+00	.000	8.220
13.875	1.5	11.8	25.8	.2772E-04	.1460E-06	.3766E-05	.4425E-04	.4862E-02	.4835E-02	.007	8.227
14.095	22.0	20.5	26.8	.3071E-04	.1702E-06	.4560E-05	.9349E-04	.5886E-02	.5374E-02	.118	8.345
14.285	19.0	18.5	26.7	.3328E-04	.1920E-06	.5127E-05	.9485E-04	.6618E-02	.6252E-02	.119	8.464
14.465	18.0	18.0	27.6	.3572E-04	.2135E-06	.5893E-05	.1061E-03	.7607E-02	.7112E-02	.128	8.592
14.645	18.0	19.0	26.7	.3816E-04	.2358E-06	.6295E-05	.1196E-03	.8125E-02	.7866E-02	.142	8.734
14.845	20.0	20.0	26.6	.4088E-04	.2613E-06	.6951E-05	.1390E-03	.8973E-02	.8549E-02	.171	8.905
15.045	20.0	20.0	26.6	.4359E-04	.2878E-06	.7654E-05	.1531E-03	.9880E-02	.9427E-02	.189	9.093
15.245	20.0	20.0	26.6	.4630E-04	.3150E-06	.8380E-05	.1676E-03	.1082E-01	.1035E-01	.207	9.300
15.445	20.0	20.0	26.6	.4901E-04	.3431E-06	.9127E-05	.1825E-03	.1178E-01	.1130E-01	.226	9.526
15.645	20.0	19.5	27.5	.5172E-04	.3720E-06	.1023E-04	.1995E-03	.1320E-01	.1249E-01	.250	9.776
15.835	19.0	19.5	29.3	.5430E-04	.4001E-06	.1172E-04	.2286E-03	.1513E-01	.1417E-01	.269	10.045
16.035	20.0	24.3	32.3	.5701E-04	.4304E-06	.1390E-04	.3372E-03	.1795E-01	.1654E-01	.331	10.376
16.320	28.5	27.8	45.2	.6087E-04	.4749E-06	.2147E-04	.5957E-03	.2771E-01	.2283E-01	.651	11.027
16.590	27.0	13.5	14.3	.6453E-04	.5184E-06	.7413E-05	.1001E-03	.9569E-02	.1864E-01	.503	11.530

K(17)=-.2714E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
16.590	.0	4.0	14.3	.6453E-04	.5184E-06	.7413E-05	.2965E-04	-.2012E+00	.0000E+00	.000	12.710
16.670	8.0	4.0	11.7	.6562E-04	.5315E-06	.6219E-05	.2488E-04	-.1688E+00	-.1850E+00	-1.480	11.230

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건설교통부

노성천 No Sung Chun KUBO MASASI FORMUAL

NUMBER OF REGION = 1

CASE = 1 ********** No Sung Chun NO. 0 ~ NO.5+130 **********

N = 31 ND = 3 NE = 7 OPTION = 2

K(1)= .8074E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.000	.0	6.5	20.2	.2447E-05	.3828E-08	.7732E-07	.5026E-06	.6243E-03	.0000E+00	.000	1.210
.130	13.0	16.8	18.3	.9123E-05	.2755E-07	.5043E-06	.8446E-05	.4071E-02	.2348E-02	.031	1.241
.335	20.5	19.8	18.1	.1965E-04	.8711E-07	.1577E-05	.3114E-04	.1273E-01	.8400E-02	.172	1.413
.525	19.0	11.5	17.9	.2941E-04	.1595E-06	.2855E-05	.3283E-04	.2305E-01	.1789E-01	.340	1.753
.565	4.0	2.0	18.0	.3146E-04	.1765E-06	.3176E-05	.6353E-05	.2565E-01	.2435E-01	.097	1.850

K(2)=-.1748E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.565	.0	8.0	18.0	.3146E-04	.1765E-06	.3176E-05	.2541E-04	-.5553E-02	.0000E+00	.000	1.850
.725	16.0	18.0	17.5	.3968E-04	.2499E-06	.4374E-05	.7873E-04	-.7646E-02	-.6600E-02	-.106	1.744
.925	20.0	15.5	17.5	.4995E-04	.3530E-06	.6178E-05	.9575E-04	-.1080E-01	-.9223E-02	-.184	1.560
1.035	11.0	5.5	17.7	.5560E-04	.4145E-06	.7337E-05	.4036E-04	-.1283E-01	-.1181E-01	-.130	1.430

K(3)= .5491E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
1.035	.0	4.0	17.7	.5560E-04	.4145E-06	.7337E-05	.2935E-04	.4029E-02	.0000E+00	.000	1.430
1.115	8.0	14.5	17.6	.5970E-04	.4613E-06	.8119E-05	.1177E-03	.4458E-02	.4243E-02	.034	1.464
1.325	21.0	21.5	17.5	.7049E-04	.5918E-06	.1036E-04	.2227E-03	.5687E-02	.5072E-02	.107	1.570
1.545	22.0	21.3	17.5	.8179E-04	.7396E-06	.1294E-04	.2751E-03	.7107E-02	.6397E-02	.141	1.711
1.750	20.5	21.3	17.5	.9231E-04	.8870E-06	.1552E-04	.3298E-03	.8522E-02	.7815E-02	.160	1.871
1.970	22.0	21.3	17.5	.1036E-03	.1055E-05	.1846E-04	.3922E-03	.1013E-01	.9328E-02	.205	2.077
2.175	20.5	20.5	17.3	.1141E-03	.1219E-05	.2110E-04	.4325E-03	.1158E-01	.1086E-01	.223	2.299
2.380	20.5	20.5	17.3	.1247E-03	.1392E-05	.2408E-04	.4937E-03	.1322E-01	.1240E-01	.254	2.553
2.585	20.5	20.3	17.3	.1352E-03	.1572E-05	.2719E-04	.5507E-03	.1493E-01	.1408E-01	.289	2.842
2.785	20.0	20.0	17.1	.1455E-03	.1754E-05	.3000E-04	.6000E-03	.1647E-01	.1570E-01	.314	3.156
2.985	20.0	20.3	17.2	.1557E-03	.1943E-05	.3343E-04	.6769E-03	.1835E-01	.1741E-01	.348	3.504
3.190	20.5	10.3	17.2	.1663E-03	.2144E-05	.3687E-04	.3780E-03	.2025E-01	.1930E-01	.396	3.900

K(4)=-.7084E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
3.190	.0	10.3	17.2	.1663E-03	.2144E-05	.3687E-04	.3780E-03	-.2612E-02	.0000E+00	.000	5.560
3.395	20.5	20.8	17.2	.1768E-03	.2351E-05	.4043E-04	.8389E-03	-.2864E-02	-.2738E-02	-.056	5.504
3.605	21.0	21.0	17.2	.1876E-03	.2569E-05	.4419E-04	.9279E-03	-.3130E-02	-.2997E-02	-.063	5.441
3.815	21.0	20.8	17.0	.1984E-03	.2794E-05	.4749E-04	.9855E-03	-.3364E-02	-.3247E-02	-.068	5.373
4.020	20.5	19.5	17.5	.2089E-03	.3019E-05	.5283E-04	.1030E-02	-.3743E-02	-.3553E-02	-.073	5.300
4.205	18.5	19.0	17.1	.2305E-03	.3500E-05	.5984E-04	.1137E-02	-.4239E-02	-.3991E-02	-.074	5.226
4.400	19.5	16.3	18.5	.2533E-03	.4031E-05	.7458E-04	.1212E-02	-.5283E-02	-.4761E-02	-.093	5.133
4.530	13.0	6.5	19.2	.2685E-03	.4399E-05	.8446E-04	.5490E-03	-.5983E-02	-.5633E-02	-.073	5.060

건설교통부

K(5)= .1605E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
4.530	.0	2.5	19.2	.2685E-03	.4399E-05	.8446E-04	.2112E-03	.1356E-01	.0000E+00	.000	5.060
4.580	5.0	11.0	19.8	.2743E-03	.4544E-05	.8996E-04	.9896E-03	.1444E-01	.1400E-01	.070	5.130
4.750	17.0	17.0	22.6	.2942E-03	.5046E-05	.1140E-03	.1939E-02	.1831E-01	.1637E-01	.278	5.408
4.920	17.0	8.5	16.6	.3141E-03	.5565E-05	.9239E-04	.7853E-03	.1483E-01	.1657E-01	.282	5.690

K(6)= .1980E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
4.920	.0	3.0	16.6	.3141E-03	.5565E-05	.9239E-04	.2772E-03	.1829E-01	.0000E+00	.000	5.690
4.980	6.0	10.5	14.4	.3211E-03	.5753E-05	.8284E-04	.8698E-03	.1640E-01	.1735E-01	.104	5.794
5.130	15.0	7.5	12.2	.3386E-03	.6230E-05	.7601E-04	.5701E-03	.1505E-01	.1573E-01	.236	6.030

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건설교통부

강경천 Kang Kyung Chun KUBO MASASI FORMUAL

NUMBER OF REGION = 1

CASE = 1 ********** Kang Kyung Chun NO. 0 ~ NO.7+565 **********

N = 55 ND = 3 NE = 17 OPTION = 2

K(1)=-.5805E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.000	.0	10.0	23.1	.4774E-05	.1043E-07	.2410E-06	.2410E-05	-.1399E-01	.0000E+00	.000	-1.090
.200	20.0	13.8	15.2	.1694E-04	.6972E-07	.1060E-05	.1457E-04	-.6152E-01	-.3775E-01	-.755	-1.845
.275	7.5	3.8	15.4	.2150E-04	.9970E-07	.1535E-05	.5758E-05	-.8913E-01	-.7532E-01	-.565	-2.410

K(2)=-.1450E+06

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.275	.0	.8	15.4	.2150E-04	.9970E-07	.1535E-05	.1152E-05	-.2226E+00	.0000E+00	.000	-2.410
.290	1.5	.8	15.0	.2241E-04	.1061E-06	.1592E-05	.1194E-05	-.2307E+00	-.2267E+00	-.340	-2.750

K(3)= .5159E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
.290	.0	6.3	15.0	.2241E-04	.1061E-06	.1592E-05	.9948E-05	.8211E-02	.0000E+00	.000	-2.750
.415	12.5	16.0	15.3	.3002E-04	.1645E-06	.2516E-05	.4026E-04	.1298E-01	.1060E-01	.132	-2.618
.610	19.5	20.0	15.0	.4188E-04	.2710E-06	.4065E-05	.8130E-04	.2097E-01	.1698E-01	.331	-2.287
.815	20.5	21.3	15.2	.5435E-04	.4006E-06	.6090E-05	.1294E-03	.3142E-01	.2619E-01	.537	-1.750
1.035	22.0	14.5	15.1	.6773E-04	.5574E-06	.8417E-05	.1220E-03	.4342E-01	.3742E-01	.823	-.926
1.105	7.0	3.5	14.0	.7199E-04	.6108E-06	.8551E-05	.2993E-04	.4411E-01	.4377E-01	.306	-.620

K(4)= .7740E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
1.105	.0	.5	14.0	.7199E-04	.6108E-06	.8551E-05	.4275E-05	.6619E+00	.0000E+00	.000	-.620
1.115	1.0	.5	15.0	.7259E-04	.6185E-06	.9278E-05	.4639E-05	.7181E+00	.6900E+00	.690	.070

K(5)=-.3985E+04

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
1.115	.0	6.0	15.0	.7259E-04	.6185E-06	.9278E-05	.5567E-04	-.3697E-01	.0000E+00	.000	.070
1.235	12.0	12.0	15.1	.7989E-04	.7141E-06	.1078E-04	.1294E-03	-.4297E-01	-.3997E-01	-.480	-.410
1.355	12.0	6.0	14.0	.8719E-04	.8142E-06	.1140E-04	.6839E-04	-.4542E-01	-.4420E-01	-.530	-.940

K(6)= .3690E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
1.355	.0	1.0	14.0	.8719E-04	.8142E-06	.1140E-04	.1140E-04	.4206E+00	.0000E+00	.000	-.940

1.375	2.0	1.0	14.0	.8841E-04	.8313E-06	.1164E-04	.1164E-04	.4294E+00	.4250E+00	.850	-.090

K(7)= .1167E+05

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
1.375	.0	2.5	14.0	.8841E-04	.8313E-06	.1164E-04	.2909E-04	.1358E+00	.0000E+00	.000	-.090
1.425	5.0	2.5	15.7	.9145E-04	.8745E-06	.1373E-04	.3433E-04	.1602E+00	.1480E+00	.740	.650

K(8)= .3452E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
1.425	.0	.8	15.7	.9145E-04	.8745E-06	.1373E-04	.1030E-04	.4740E-03	.0000E+00	.000	.650
1.440	1.5	11.3	15.6	.9236E-04	.8877E-06	.1385E-04	.1558E-03	.4781E-03	.4760E-03	.001	.651
1.650	21.0	20.0	15.2	.1051E-03	.1078E-05	.1639E-04	.3277E-03	.5657E-03	.5219E-03	.011	.662
1.840	19.0	19.3	15.3	.1167E-03	.1261E-05	.1929E-04	.3713E-03	.6658E-03	.6158E-03	.012	.673
2.035	19.5	20.0	15.2	.1286E-03	.1458E-05	.2216E-04	.4431E-03	.7649E-03	.7153E-03	.014	.687
2.240	20.5	13.3	15.7	.1410E-03	.1675E-05	.2629E-04	.3484E-03	.9077E-03	.8363E-03	.017	.704
2.300	6.0	3.0	15.6	.1447E-03	.1740E-05	.2715E-04	.8144E-04	.9372E-03	.9224E-03	.006	.710

K(9)= .1430E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
2.300	.0	7.8	15.6	.1447E-03	.1740E-05	.2715E-04	.2104E-03	.3883E-02	.0000E+00	.000	.710
2.455	15.5	17.5	15.2	.1541E-03	.1913E-05	.2908E-04	.5088E-03	.4159E-02	.4021E-02	.062	.772
2.650	19.5	19.3	15.2	.1660E-03	.2138E-05	.3250E-04	.6256E-03	.4648E-02	.4403E-02	.086	.858
2.840	19.0	19.0	15.0	.1775E-03	.2365E-05	.3548E-04	.6741E-03	.5074E-02	.4861E-02	.092	.951
3.030	19.0	19.8	15.1	.1891E-03	.2600E-05	.3926E-04	.7753E-03	.5615E-02	.5345E-02	.102	1.052
3.235	20.5	19.3	15.2	.2015E-03	.2861E-05	.4349E-04	.8372E-03	.6220E-02	.5918E-02	.121	1.173
3.415	18.0	9.0	15.2	.2125E-03	.3098E-05	.4708E-04	.4237E-03	.6734E-02	.6477E-02	.117	1.290

K(10)=-.6239E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
3.415	.0	1.0	15.2	.2125E-03	.3098E-05	.4708E-04	.4708E-04	-.2937E-01	.0000E+00	.000	1.290
3.435	2.0	3.0	15.4	.2137E-03	.3124E-05	.4811E-04	.1443E-03	-.3002E-01	-.2970E-01	-.059	1.231
3.475	4.0	2.0	17.8	.2161E-03	.3178E-05	.5656E-04	.1131E-03	-.3529E-01	-.3265E-01	-.131	1.100

K(11)= .6822E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
3.475	.0	8.5	17.8	.2161E-03	.3178E-05	.5656E-04	.4808E-03	.3859E-02	.0000E+00	.000	1.100
3.645	17.0	16.8	16.5	.2265E-03	.3408E-05	.5624E-04	.9420E-03	.3837E-02	.3848E-02	.065	1.165
3.810	16.5	17.0	20.6	.2365E-03	.3637E-05	.7493E-04	.1274E-02	.5112E-02	.4474E-02	.074	1.239
3.985	17.5	13.8	22.3	.2472E-03	.3886E-05	.8665E-04	.1191E-02	.5911E-02	.5512E-02	.096	1.336
4.085	10.0	5.0	11.1	.2476E-03	.3897E-05	.4325E-04	.2163E-03	.2951E-02	.4431E-02	.044	1.380

K(12)= .1400E+03

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
4.085	.0	6.8	11.1	.2476E-03	.3897E-05	.4325E-04	.2920E-03	.6055E-02	.0000E+00	.000	1.380
4.220	13.5	17.3	11.5	.2482E-03	.3911E-05	.4498E-04	.7759E-03	.6296E-02	.6175E-02	.083	1.463
4.430	21.0	20.5	14.3	.2492E-03	.3934E-05	.5626E-04	.1153E-02	.7875E-02	.7086E-02	.149	1.612
4.630	20.0	19.0	14.3	.2501E-03	.3956E-05	.5657E-04	.1075E-02	.7919E-02	.7897E-02	.158	1.770
4.810	18.0	10.8	14.2	.2510E-03	.3976E-05	.5646E-04	.6069E-03	.7903E-02	.7911E-02	.142	1.913
4.845	3.5	1.8	14.0	.2511E-03	.3980E-05	.5572E-04	.9751E-04	.7799E-02	.7851E-02	.027	1.940

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K(13)=-.8147E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
4.845	.0	.8	14.0	.2511E-03	.3980E-05	.5572E-04	.4179E-04	-.4540E-02	.0000E+00	.000	1.940
4.860	1.5	9.3	14.0	.2512E-03	.3981E-05	.5574E-04	.5156E-03	-.4541E-02	-.4540E-02	-.007	1.933
5.030	17.0	18.3	13.6	.2520E-03	.4000E-05	.5440E-04	.9928E-03	-.4432E-02	-.4487E-02	-.076	1.857
5.225	19.5	17.8	13.8	.2529E-03	.4022E-05	.5550E-04	.9851E-03	-.4522E-02	-.4477E-02	-.087	1.770
5.385	16.0	8.0	12.7	.2536E-03	.4039E-05	.5130E-04	.4104E-03	-.4180E-02	-.4351E-02	-.070	1.700

K(14)=-.3799E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
5.385	.0	2.0	12.7	.2536E-03	.4039E-05	.5130E-04	.1026E-03	-.1949E-02	.0000E+00	.000	1.700
5.425	4.0	10.8	13.5	.2538E-03	.4044E-05	.5459E-04	.5868E-03	-.2074E-02	-.2011E-02	-.008	1.692
5.600	17.5	19.5	14.0	.2546E-03	.4063E-05	.5688E-04	.1109E-02	-.2161E-02	-.2118E-02	-.037	1.655
5.815	21.5	20.8	14.0	.2556E-03	.4087E-05	.5721E-04	.1187E-02	-.2174E-02	-.2167E-02	-.047	1.608
6.015	20.0	19.5	13.9	.2565E-03	.4109E-05	.5711E-04	.1114E-02	-.2170E-02	-.2172E-02	-.043	1.565
6.205	19.0	12.5	14.0	.2574E-03	.4130E-05	.5782E-04	.7228E-03	-.2197E-02	-.2183E-02	-.041	1.523
6.265	6.0	3.0	14.4	.2577E-03	.4137E-05	.5957E-04	.1787E-03	-.2263E-02	-.2230E-02	-.013	1.510

K(15)= .9014E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
6.265	.0	6.0	14.4	.2577E-03	.4137E-05	.5957E-04	.3574E-03	.5369E-02	.0000E+00	.000	1.510
6.385	12.0	15.0	15.5	.2582E-03	.4150E-05	.6433E-04	.9649E-03	.5798E-02	.5584E-02	.067	1.577
6.565	18.0	19.0	10.6	.2591E-03	.4170E-05	.4420E-04	.8399E-03	.3984E-02	.4891E-02	.088	1.665
6.765	20.0	18.8	10.1	.2600E-03	.4192E-05	.4234E-04	.7939E-03	.3817E-02	.3900E-02	.078	1.743
6.940	17.5	8.8	10.1	.2608E-03	.4212E-05	.4254E-04	.3722E-03	.3834E-02	.3826E-02	.067	1.810

K(16)= .4940E+02

SEC.NO	LENGTH	AVE.LE.	WIDTH	DS	S	DB	BX	PO	PA	DY	HL
6.940	.0	1.3	10.1	.2608E-03	.4212E-05	.4254E-04	.5318E-04	.2101E-02	.0000E+00	.000	1.810
6.965	2.5	11.5	10.0	.2609E-03	.4215E-05	.4215E-04	.4847E-03	.2082E-02	.2092E-02	.005	1.815
7.170	20.5	19.8	11.1	.2619E-03	.4238E-05	.4704E-04	.9290E-03	.2324E-02	.2203E-02	.045	1.860
7.360	19.0	19.8	9.1	.2627E-03	.4259E-05	.3876E-04	.7655E-03	.1914E-02	.2119E-02	.040	1.901
7.565	20.5	10.3	9.1	.2637E-03	.4282E-05	.3897E-04	.3994E-03	.1925E-02	.1920E-02	.039	1.940

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5. 하상변동 양상

5.1 종단적 변화량

5.2 하천부산물(골재) 채취 실적

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5. 하상변동 양상

5.1 종단적 변화량

하천별 최심하상고 및 평균하상고

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비고
		'88	'02	'88	'02	
금 강 (대청댐하류)	0+000	-5.89	-7.48	-5.21	-6.61	
	0+350	-5.75	-14.68	-3.62	-5.46	
	0+720	-12.29	-10.08	-4.45	-4.77	
	1+140	-11.65	-7.77	-3.65	-3.98	
	1+480	-20.66	-11.06	-4.44	-5.92	
	2+020	-7.11	-9.56	-2.37	-4.24	
	2+450	-9.19	-7.16	-2.79	-3.24	
	2+920	-9.70	-6.76	-2.79	-2.96	
	3+330	-10.33	-7.25	-2.27	-2.70	
	3+780	-18.76	-9.05	-2.70	-1.45	
	4+240	-10.45	-11.04	-2.91	-1.59	
	4+580		-12.24		-1.94	
	4+860	-7.09	-9.74	-1.82	-1.57	
	5+390	-8.74	-8.34	-1.86	-3.28	
	6+110	-8.32	-6.13	-2.90	-3.48	
	6+750	-6.29	-8.73	-1.59	-1.74	
	7+210	-8.99	-8.22	-1.84	-1.66	
	7+740	-9.53	-7.42	-2.05	-2.10	
	8+160	-8.28	-11.52	-2.09	-2.36	
	8+670	-11.01	-5.01	-2.89	-1.90	
	9+170	-7.55	-6.71	-3.29	-2.51	
	9+640	-5.00	-6.70	-3.37	-2.56	
	10+130	-5.48	-4.20	-2.70	-2.02	
	10+600	-7.19	-4.50	-2.86	-2.28	
	11+060	-9.26	-7.69	-2.71	-2.42	
	11+520	-6.85	-24.99	-2.91	-6.80	
	12+250	-6.60	-6.28	-0.93	-2.14	
	12+850	-9.43	-10.98	-1.35	-0.94	
	13+450	-9.28	-5.88	-0.58	-1.35	
	13+970	-8.84	-4.97	-1.10	-1.14	

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하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비고
		'88	'02	'88	'02	
금 강 (대청댐하류)	14+490	-5.16	-5.87	-1.05	-1.59	
	15+020	-7.02	-6.66	-2.31	-1.92	
	15+460	-3.98	-7.76	-2.17	-1.60	
	15+960	-7.18	-7.86	-1.34	-0.91	
	16+420	-7.78	-8.05	-0.64	-0.44	
	16+910	-11.80	-12.95	0.07	-0.61	
	17+380	-5.72	-10.84	0.03	0.03	
	17+850	-5.17	-7.54	-0.35	-0.55	
	18+190	-4.62	-5.34	-0.37	-1.07	
	18+710	-6.64	-4.93	-0.93	-0.99	
	19+180	-6.54	-6.03	-0.47	-0.61	
	19+620	-5.83	-5.72	-0.19	0.00	
	20+130	-4.03	-5.92	0.01	0.08	
	20+580	-6.65	-8.81	0.32	0.43	
	21+000	-13.55	-13.40	0.95	0.86	
	21+400	-14.26	-20.01	0.59	0.30	
	21+660	-8.78	-5.50	0.62	0.40	
	22+110	-4.21	-4.70	-0.27	-0.85	
	22+550	-4.68	-6.60	-0.79	-0.18	
	23+250	-6.56	-15.09	-0.37	0.09	
	23+550	-15.47	-7.88	-0.14	-0.51	
	24+050	-3.63	-4.18	-0.19	-0.55	
	24+680	-8.00	-7.88	1.09	0.84	
	25+330	-5.73	-5.46	0.72	0.47	
	25+810	-4.98	-6.47	0.38	0.77	
	26+140	-8.80	-5.15	0.76	0.73	
	26+600	-5.79	-5.66	0.86	0.59	
	26+990	-2.74	-5.36	0.75	0.28	
	27+400	-7.56	-21.35	0.94	-0.61	
	27+890	-7.51	-10.85	0.92	0.60	
	28+290	-5.11	-6.24	1.26	0.74	
	28+630	-4.44	-4.64	1.18	1.52	

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하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비고
		'88	'02	'88	'02	
금 강 (대청댐하류)	29+030	-4.46	-7.34	1.33	1.13	
	29+570	-4.85	-9.53	1.20	0.97	
	30+160	-3.91	-6.43	1.34	1.12	
	30+830	-3.28	-2.92	1.09	0.84	
	31+400	-5.82	-7.22	2.20	1.13	
	32+120	-10.23	-13.72	2.93	1.78	
	32+590		-12.21		1.79	
	32+920	-10.05	-13.90		1.42	
	33+060	-6.57	-11.71	2.82	1.22	
	33+270	-10.29	-14.31		1.26	
	33+830	-4.50	-5.50	2.38	2.13	
	34+490	-2.31	-3.30	2.49	1.89	
	34+920	-3.62	-5.20	2.28	1.64	
	35+370	-2.94	-6.89	2.37	1.00	
	36+000	-1.86	-6.29	2.11	1.57	
	36+560	-1.97	-3.28	2.13	1.66	
	37+010	-0.32	-3.08	3.08	2.44	
	37+710	-1.83	-3.08	2.53	2.34	
	38+220	-2.67	-4.07	3.01	1.67	
	38+620	-10.50	-8.17	1.41	0.97	
	39+050	-3.87	-5.76	1.55	0.97	
	39+520	-1.65	-6.26	1.87	0.60	
	40+000	-1.82	-9.06	2.38	1.13	
	40+470	-0.89	-7.45	2.02	0.51	
	40+890	-1.67	-2.55	1.93	1.75	
	41+490	-0.55	-9.64	1.69	2.01	
	41+990	-1.93	-6.34	2.32	1.65	
	42+540	-2.71	-4.94	3.04	2.47	
	43+290	-3.50	-2.63	3.23	2.91	
	43+850	-0.67	-2.03	2.67	2.00	
	44+450	-0.56	-4.42	3.10	2.12	
	45+060	0.16	-4.02	3.59	2.74	

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하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비고
		'88	'02	'88	'02	
금 강 (대청댐하류)	45+650	-2.77	-7.42	3.51	1.47	
	46+200	-1.62	-2.91	3.69	2.63	
	46+670	-0.46	-1.71	4.03	3.10	
	47+270	-1.10	-1.90	4.39	3.22	
	47+800	-0.45	-3.29	4.75	3.42	
	48+100	-0.24	-4.38	4.99	2.91	
	48+500	-0.10	-5.31	5.24	3.26	
	48+970	-5.28	-6.52	5.04	5.11	
	49+400	0.32	-5.08	5.61	4.11	
	49+820	-0.65	-2.55	5.86	4.54	
	50+300	-1.01	-3.68	5.96	4.64	
	50+800	0.42	-4.54	5.79	4.21	
	51+220	0.26	-1.09	5.67	4.86	
	51+540	0.29	-1.44	5.78	5.21	
	52+090	-13.97	-15.11	4.32	3.88	
	52+160	-12.84	-6.07		4.04	
	52+180		-6.07		4.03	
	52+540	1.40	-3.72	5.82	4.33	
	52+910	0.03	-4.37	5.23	3.44	
	53+350	-0.83	-3.28	4.51	1.98	
	53+760	0.50	-3.25	5.71	2.34	
	54+270	0.04	-3.49	4.70	3.81	
	54+730	-4.78	-2.45	4.08	4.40	
	55+320	1.39	-3.81	5.03	3.96	
	55+940	1.45	0.29	5.81	5.46	
	56+420		-3.91		5.63	
	56+510	0.64	-2.81	6.60	6.12	
	56+970	0.10	-0.72	6.30	5.04	
	57+330	-0.25	-3.01	6.16	5.41	
	57+810	1.09	-0.51	6.03	4.96	
	58+080	2.79	-3.11	5.84	3.70	
	58+570	2.11	-1.11	5.61	5.25	

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하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비고
		'88	'02	'88	'02	
금 강 (대청댐하류)	59+060	2.25	-1.81	6.11	5.05	
	59+520	2.08	-0.30	6.79	5.05	
	59+990	2.46	-0.92	6.94	5.94	
	60+510	2.32	0.21	6.44	4.18	
	60+950	2.53	1.00	6.08	4.99	
	61+430	3.04	0.03	5.70	4.59	
	61+870	3.12	-1.09	6.26	5.12	
	61+900		-1.09		5.63	
	62+320	3.02	0.80	6.18	4.69	
	62+790	0.58	-0.87	4.55	3.65	
	63+390	1.35	-3.04	5.74	4.08	
	64+040	3.12	-1.35	6.01	4.15	
	64+510	3.62	1.34	6.89	6.16	
	65+040	3.74	0.08	7.14	5.67	
	65+470	4.16	0.01	7.46	4.79	
	66+110	2.19	-0.70	6.33	3.45	
	66+470	2.96	-0.72	5.26	2.89	
	66+920	3.70	0.50	7.12	5.27	
	67+400	4.73	0.32	6.82	4.65	
	67+910	3.35	-1.25	6.73	5.53	
	68+370	2.98	-3.22	7.23	4.70	
	68+970	4.39	-1.48	8.04	5.30	
	69+500	4.26	-1.42	7.41	5.81	
	70+100	4.65	-0.32	7.68	4.64	
	70+610	4.06	-1.92	8.19	5.66	
	71+110	4.77	-1.02	7.73	5.11	
	71+560	4.67	-0.48	8.75	5.56	
	72+060	5.09	0.81	7.62	4.91	
	72+570	6.05	-1.12	9.16	6.76	
	73+010	3.64	-1.73	9.18	6.86	
	73+540	6.19	1.52	9.21	7.46	
	74+180	6.12	1.19	9.50	8.06	

<계속>

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비고
		'88	'02	'88	'02	
금 강 (대청댐하류)	74+640	3.74	-1.30	9.68	7.67	
	75+120	2.33	-0.97	9.25	6.99	
	75+630	6.25	1.16	8.98	6.91	
	76+270	3.29	0.30	9.62	5.05	
	76+720	3.62	0.31	9.18	5.75	
	77+320	5.54	2.21	9.98	6.15	
	77+910	6.78	-0.40	10.21	5.80	
	78+320	6.00	1.33	9.16	5.86	
	78+920	6.44	1.06	9.12	8.04	
	79+490	5.55	0.89	9.12	7.94	
	80+190	6.45	0.46	9.67	6.72	
	80+480		0.19		9.67	
	80+640	6.06	0.48	10.34	8.53	
	81+120	5.98	1.79	10.72	8.08	
	81+610	7.76	1.87	10.38	7.37	
	81+980	5.86	2.26	10.55	7.65	
	82+600	2.26	0.61	9.34	9.70	
	82+980	3.91	3.77	10.31	7.81	
	83+410	7.83	0.92	10.38	7.04	
	83+830	8.17	2.22	11.18	8.59	
	84+300	6.51	4.34	10.80	9.36	
	84+700		3.73		8.94	
	84+790	8.25	3.66	10.44	9.11	
	85+070	8.01	4.10		8.72	
	85+220	7.68	5.07	10.72	9.74	
	85+730	8.38	4.94	10.70	9.14	
	86+240	8.89	5.19	10.74	9.08	
	86+500	8.55	3.16		8.62	
	86+780	9.04	6.99	10.36	8.69	
	87+280	7.39	5.29	11.08	10.25	
	87+680	8.90	7.82	12.25	11.29	
	88+030		7.55		10.29	

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<계속>

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비고
		'88	'02	'88	'02	
금 강 (대청댐하류)	88+250	8.95	7.11	10.89	9.21	
	88+800	8.40	5.86	11.33	8.52	
	89+280	8.55	5.90	12.06	9.19	
	89+750	8.60	5.69	10.88	9.64	
	90+230	8.37	5.48	10.84	9.06	
	90+730	7.94	5.47	11.32	8.95	
	91+190	5.32	6.18	11.69	11.60	
	91+720	9.24	6.46	12.26	10.86	
	92+160	8.42	5.01	12.47	10.31	
	92+610	7.39	6.00	12.89	11.44	
	93+060	8.12	6.35	12.87	9.99	
	93+510		6.72		11.63	
	93+590	9.04	5.01	12.68	11.06	
	94+100	4.79	3.74	12.71	10.69	
	94+790	6.90	5.46	11.95	9.45	
	95+200		4.77		12.11	
	95+390	9.60	5.28	12.71	10.88	
	95+990	8.92	4.47	13.06	11.82	
	96+340	9.89	5.00	13.14	11.25	
	96+870	8.01	5.00	13.64	10.78	
	97+390	9.84	4.66	12.34	9.95	
	97+810	10.25	6.19	13.64	11.14	
	98+360	4.64	6.05	12.30	13.72	
	98+930	10.77	4.62	12.65	10.34	
	99+730	10.68	7.02	13.93	12.40	
	100+280	11.04	5.46	14.75	12.94	
	100+710	10.59	6.13	14.36	13.25	
	101+140	10.88	7.41	15.01	13.34	
	101+620	11.60	7.34	15.25	13.43	
	101+870	11.44	8.55		14.04	
	102+030	11.71	10.01	14.92	14.47	
	102+610	11.90	8.73	14.36	13.25	

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<계속>

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비고
		'88	'02	'88	'02	
금 강 (대청댐하류)	103+160	10.72	9.91	14.75	13.85	
	103+720	11.24	10.21	14.21	13.67	
	104+230	8.14	9.35	14.71	14.38	
	104+740	12.22	9.61	16.00	14.36	
	105+250	12.85	9.00	15.96	14.36	
	105+750	13.41	8.91	16.01	14.59	
	106+230	12.29	10.57	16.71	15.35	
	106+750	12.38	10.81	17.41	15.94	
	107+250	8.97	8.81	16.72	13.84	
	107+700	12.84	9.67	18.33	14.34	
	108+200	13.67	10.38	17.10	14.97	
	108+750	13.54	10.98	16.51	12.89	
	109+400	14.10	11.52	19.70	19.28	
	109+900	11.76	11.11	18.84	18.58	
	110+350	13.94	11.81	18.33	16.95	
	110+900	15.15	13.40	18.22	17.40	
	111+400	13.30	12.76	19.36	18.34	
	111+900	10.37	12.57	19.99	16.46	
	112+350	13.03	12.99	19.60	17.32	
	112+510	15.05	13.31	20.10	17.77	
	112+960	15.39	12.61	20.18	17.05	
	113+360	15.04	14.15	19.93	17.24	
	113+790	15.69	14.20	19.29	18.27	
	114+290	16.85	14.45	19.88	18.82	
	114+790	13.65	13.76	20.33	19.83	
	115+390	13.19	13.73	18.58	17.69	
	116+040	16.92	13.87	20.41	19.07	
	116+540	15.08	13.80	18.49	17.51	
	117+090	14.37	13.70	19.12	19.77	
	117+620	16.70	14.21	18.77	17.94	
	118+370	15.26	15.68	19.38	19.57	
	118+800	15.81	15.90	19.60	18.66	

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<계속>

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비고
		'88	'02	'88	'02	
금 강 (대청댐하류)	119+230	16.05	14.88	19.40	18.57	
	119+770	16.96	16.78	20.59	20.56	
	120+190	17.16	16.90	20.26	20.30	
	120+700	17.55	17.23	20.88	20.64	
	121+260	13.08	15.57	20.52	20.16	
	121+770	16.45	17.35	22.06	21.04	
	122+140	17.66	17.90	22.10	20.68	
	122+490	18.63	18.65	23.40	23.02	
	122+990	19.07	18.77	22.71	22.60	
	123+470	19.26	18.81	23.07	21.88	
	124+010	19.03	18.66	21.24	21.38	
	124+460	17.86	18.10	21.30	21.48	
	124+960	18.16	18.25	21.60	22.14	
	125+660	18.19	19.57	22.69	22.72	
	126+420	21.25	21.07	23.71	23.96	
	126+750		21.98		23.81	
	126+800		22.18		23.84	
	126+960	22.46	22.58	23.92	24.27	
	127+460	20.76	21.91	23.40	24.28	
	127+720	20.08	21.02		23.94	
	127+740	20.18	21.02		23.94	
	127+890	18.09	19.96		24.27	
	127+970	19.20	19.56	23.40	23.62	
	128+370	18.81	19.46	22.87	23.30	
	128+780	21.42	21.79	24.44	24.62	
	129+230	17.19	18.26	24.01	23.77	
	129+830	21.12	21.68	23.88	24.15	
	130+330	21.63	22.00	23.99	23.70	
	130+470	23.07	24.05		25.42	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'75년	'02년	'75년	'02년	
금 강 (대청댐상류)	222+040	76.66	72.97	-	77.89	
	222+220	76.70	78.49	-	79.69	
	222+530	78.44	75.20	80.57	79.28	
	222+915	78.39	75.24	81.43	80.03	
	223+570	78.60	77.15	80.28	79.55	
	223+580	-	78.46	-	82.46	
	223+615	-	78.02	-	80.68	
	223+645	-	77.48	-	80.66	
	224+125	78.11	77.29	82.05	80.73	
	224+580	78.46	78.40	81.75	81.97	
	224+955	78.18	78.01	81.57	81.96	
	225+415	79.13	78.62	81.75	81.18	
	225+590	-	78.95	-	81.76	
	225+775	-	81.35	-	82.54	
	225+830	80.28	80.67	85.39	82.60	
	226+275	-	80.32	-	82.78	
	226+385	80.23	79.91	84.33	82.45	
	226+950	79.90	80.63	82.69	82.31	
	227+100	-	81.57	-	83.12	
	227+425	80.85	80.03	85.36	83.72	
	227+610	81.51	78.75	-	84.19	
	227+745	81.99	80.23	84.52	83.98	
	228+340	82.60	80.60	84.80	83.01	
	229+100	82.93	81.08	85.06	83.20	
	229+550	82.01	81.97	85.42	84.57	
	229+925	82.10	81.81	86.59	85.07	
	230+485	84.15	82.29	86.41	85.71	
	230+895	83.91	83.27	86.67	86.06	
	231+365	-	84.66	-	86.29	
	231+605	83.30	84.21	86.87	86.13	
	231+925	85.26	83.98	87.23	86.51	
	232+360	85.22	83.69	87.16	86.85	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'75년	'02년	'75년	'02년	
금 강 (대청댐상류)	232+905	84.83	84.40	87.69	87.41	
	233+465	85.52	83.64	89.29	88.10	
	234+130	87.60	85.32	89.24	87.08	
	234+585	87.60	85.66	90.96	88.18	
	235+060	88.43	86.35	91.06	89.39	
	235+420	-	86.55	-	90.67	
	235+450	-	86.55	-	90.78	
	235+530	-	87.55	-	89.73	
	235+570	87.92	87.79	90.88	90.58	
	235+595	-	87.73	-	89.22	
	235+710	-	87.18	-	89.14	
	236+055	88.20	86.83	90.94	89.83	
	236+505	87.55	87.71	92.34	91.08	
	237+040	88.00	86.90	92.78	90.16	
	237+455	89.50	87.95	93.46	91.22	
	237+865	88.96	88.40	93.35	92.76	
	238+335	88.92	88.56	92.25	91.61	
	238+780	88.70	87.80	92.82	91.33	
	239+170	-	89.73	-	93.06	
	239+220	90.47	89.23	93.61	91.72	
	239+635	90.80	89.13	93.23	91.05	
	240+070	91.09	88.70	92.98	91.43	
	240+295	90.08	87.63	93.00	90.81	
	240+825	90.34	89.31	94.16	92.05	
	241+055	-	90.42	-	93.44	
	241+220	92.76	87.87	94.50	91.76	
	241+765	91.18	90.98	94.21	92.83	
	242+610	91.10	91.10	96.22	93.57	
	243+355	93.94	91.92	96.26	94.83	
	243+940	94.65	93.53	97.03	95.54	
	244+360	95.71	91.75	99.17	98.21	
	244+830	95.20	93.61	99.89	99.49	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'75년	'02년	'75년	'02년	
금 강 (대청댐상류)	244+870	-	93.19	-	99.60	
	245+305	96.60	95.31	98.93	98.40	
	245+840	97.75	95.77	98.51	97.56	
	246+330	-	94.91	-	97.30	
	246+365	96.48	95.65	98.80	97.58	

계 속

하천명	측점 (No.)	최심하상고(EL.m)			평균하상고(EL.m)			비 고
		'85년	'88년	'02년	'85년	'88년	'02년	
갑 천	0+000	-	19.90	19.65	-	22.84	24.01	
	0+160	-	20.57	19.75	-	22.41	23.14	
	0+390	-	20.60	20.53	-	23.39	23.32	
	0+570	-	20.73	19.91	-	24.23	23.97	
	0+770	-	20.86	20.25	-	23.63	24.07	
	0+980	-	21.69	21.21	-	23.24	23.97	
	1+015	-	-	20.76	-	-	23.87	
	1+220	-	21.73	20.20	-	24.12	24.19	
	1+450	-	22.13	19.64	-	24.60	24.85	
	1+710	-	22.46	20.19	-	24.86	25.00	
	1+950	-	22.30	21.81	-	25.03	25.23	
	2+205	-	22.64	21.96	-	24.99	24.93	
	2+455	-	23.73	22.83	-	25.13	24.89	
	2+535	-	24.21	23.23	-	25.13	25.30	
	2+640	-	23.06	22.71	-	25.36	25.10	
	2+820	-	23.53	22.20	-	25.50	25.13	
	2+985	-	23.99	22.03	-	25.68	25.30	
	3+125	-	23.90	22.65	-	25.99	25.81	
	3+335	-	24.00	22.86	-	25.83	26.08	
	3+550	-	23.98	23.52	-	25.79	26.18	
	3+755	-	24.10	23.60	-	26.49	26.56	
	3+915	-	-	23.77	-	-	26.48	
	3+975	-	23.82	23.39	-	26.56	25.82	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)			평균하상고(EL.m)			비 고
		'85년	'88년	'02년	'85년	'88년	'02년	
갑 천	4+205	-	24.06	23.49	-	26.54	26.51	
	4+395	-	24.21	23.74	-	26.35	26.08	
	4+595	-	24.70	23.40	-	27.09	26.88	
	4+775	-	24.47	21.34	-	27.20	26.91	
	4+955	-	24.71	23.50	-	26.95	27.02	
	5+005	-	26.05	23.70	-	27.78	27.19	
	5+165	-	24.37	24.43	-	27.65	26.83	
	5+345	-	25.25	25.22	-	27.51	27.48	
	5+465	-	25.25	24.01	-	27.77	27.13	
	5+635	-	24.36	23.39	-	27.79	26.95	
	5+815	-	25.11	25.80	-	28.29	28.05	
	5+975	-	26.54	26.05	-	28.42	28.14	
	6+145	-	26.47	26.47	-	28.87	28.59	
	6+315	-	26.16	26.11	-	28.79	28.54	
	6+515	-	26.71	25.29	-	29.09	28.50	
	6+710	-	26.62	26.61	-	29.08	28.69	
	6+880	-	26.95	27.20	-	29.50	28.82	
	7+100	-	26.99	27.79	-	29.92	29.16	
	7+130	-	27.13	27.80	-	29.85	29.10	
	7+150	-	-	27.79	-	-	29.19	
	7+160	-	-	27.84	-	-	29.12	
	7+285	-	27.47	27.85	-	29.95	29.26	
	7+505	-	28.01	27.92	-	29.50	29.24	
	7+565	-	29.30	29.32	-	31.06	30.14	
	7+715	-	28.30	28.56	-	30.10	30.05	
	7+905	-	28.34	29.02	-	30.30	30.42	
	8+125	-	28.27	28.63	-	30.42	29.94	
	8+365	-	29.88	28.00	-	30.44	30.64	
	8+555	-	30.18	28.20	-	30.63	30.27	
	8+775	-	30.08	28.13	-	30.92	30.43	
	8+985	-	30.28	28.44	-	31.22	30.36	
	9+190	-	30.28	28.56	-	31.46	30.26	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)			평균하상고(EL.m)			비 고
		'85년	'88년	'02년	'85년	'88년	'02년	
갑 천	9+370	-	30.28	28.60	-	31.10	30.35	
	9+550	-	29.58	28.61	-	31.84	30.51	
	9+720	-	30.20	28.62	-	31.86	31.13	
	9+905	-	30.42	28.83	-	32.05	31.19	
	10+045	-	31.04	29.14	-	32.22	31.52	
	10+105	-	30.94	30.55	-	32.39	31.60	
	10+225	-	30.63	29.77	-	32.22	31.74	
	10+415	-	30.90	29.58	-	32.41	31.78	
	10+595	-	30.82	28.29	-	32.56	31.25	
	10+765	-	30.74	27.85	-	32.85	31.14	
	10+925	-	30.96	29.16	-	32.80	31.51	
	11+105	-	31.30	30.89	-	33.28	32.61	
	11+325	30.98	31.30	30.80	33.29	33.54	32.88	
	11+415	-	-	31.04	-	-	33.14	
	11+545	31.77	31.01	31.20	-	32.84	32.80	
	11+655	-	-	31.40	-	-	32.95	
	11+725	-	-	31.30	-	-	34.03	
	11+785	32.49	32.06	31.60	34.40	34.03	33.46	
	11+820	-	-	31.10	-	-	32.96	
	11+960	33.06	32.81	31.44	34.63	34.56	33.47	
	12+060	-	-	31.66	-	-	33.55	
	12+160	32.67	32.76	31.81	34.42	34.83	33.74	
	12+210	-	-	31.92	-	-	33.67	
	12+260	-	-	31.53	-	-	33.53	
	12+355	33.10	33.11	31.71	34.76	34.69	33.51	
	12+460	-	-	31.67	-	-	33.48	
	12+560	33.33	-	31.60	34.76	-	33.50	
	12+660	-	-	31.46	-	-	33.26	
	12+760	33.78	-	31.71	35.30	-	33.57	
	12+860	-	-	30.76	-	-	33.09	
	12+920	-	-	32.71	-	-	34.17	
	12+960	33.41	-	33.50	35.67	-	35.32	

건설교통부

계 속

하천명	측점 (No.)	최심하상고(EL.m)			평균하상고(EL.m)			비 고
		'85년	'88년	'02년	'85년	'88년	'02년	
갑 천	13+035	-	-	33.70	-	-	34.79	
	13+165	33.91	-	33.64	35.66	-	35.40	
	13+265	-	-	33.77	-	-	35.64	
	13+355	34.92	-	33.80	35.53	-	35.65	
	13+460	-	-	33.62	-	-	35.56	
	13+555	35.20	-	33.47	35.69	-	35.50	
	13+675	-	-	35.29	-	-	36.33	
	13+755	35.34	-	34.10	36.19	-	36.02	
	13+850	-	-	34.43	-	-	36.32	
	13+955	35.63	-	34.65	36.57	-	36.67	
	14+060	-	-	34.16	-	-	36.61	
	14+150	34.76	-	34.27	36.41	-	36.87	
	14+250	-	-	35.41	-	-	37.04	
	14+345	35.34	-	35.47	36.71	-	37.17	
	14+440	-	-	35.61	-	-	37.23	
	14+540	36.13	-	35.84	37.27	-	37.35	
	14+635	-	-	35.76	-	-	37.42	
	14+720	36.30	-	35.83	37.74	-	37.39	
	14+830	-	-	36.15	-	-	37.44	
	14+945	36.96	-	36.86	37.76	-	37.37	
	15+045	-	-	35.88	-	-	37.21	
	15+140	36.81	-	35.90	37.76	-	37.32	
	15+235	-	-	36.04	-	-	37.67	
	15+325	37.27	-	36.05	37.61	-	37.84	
	15+375	-	-	36.27	-	-	38.36	
	15+420	-	-	37.18	-	-	38.60	
	15+525	37.34	-	37.20	37.65	-	38.51	
	15+620	-	-	37.22	-	-	38.77	
	15+720	37.70	-	38.56	37.96	-	39.48	
	15+820	-	-	37.62	-	-	39.14	
	15+925	37.75	-	37.74	38.25	-	39.20	
	16+025	40.52	-	38.53	-	-	40.11	

건설교통부

계 속

하천명	측점 (No.)	최심하상고(EL.m)			평균하상고(EL.m)			비 고
		'85년	'88년	'02년	'85년	'88년	'02년	
갑 천	16+125	39.59	-	38.51	40.39	-	40.27	
	16+225	-	-	39.45	-	-	40.80	
	16+325	39.07	-	39.47	40.98	-	40.81	
	16+435	-	-	39.70	-	-	41.03	
	16+535	40.43	-	39.84	41.04	-	41.27	
	16+635	-	-	39.32	-	-	41.36	
	16+735	40.20	-	39.44	40.85	-	41.52	
	16+835	-	-	39.78	-	-	41.35	
	16+935	39.18	-	39.97	41.75	-	41.72	
	17+035	-	-	38.83	-	-	41.30	
	17+135	40.48	-	38.59	41.95	-	41.86	
	17+240	-	-	39.08	-	-	41.84	
	17+335	40.68	-	38.89	42.19	-	41.99	
	17+435	-	-	39.30	-	-	42.10	
	17+535	41.24	-	40.12	42.44	-	42.27	
	17+635	-	-	40.46	-	-	42.54	
	17+735	41.01	-	40.27	42.45	-	42.79	
	17+825	-	-	40.57	-	-	42.53	
	17+925	41.84	-	40.97	43.61	-	42.79	
	18+025	-	-	41.09	-	-	43.01	
	18+130	41.98	-	40.42	43.47	-	43.18	
	18+230	-	-	40.88	-	-	43.16	
	18+330	41.82	-	40.86	43.16	-	43.41	
	18+430	-	-	40.47	-	-	43.30	
	18+530	41.90	-	41.72	43.46	-	43.63	
	18+630	-	-	42.19	-	-	43.83	
	18+720	42.74	-	42.06	43.53	-	43.62	
	18+825	-	-	42.08	-	-	44.38	
	18+925	42.77	-	41.99	44.42	-	44.22	
	19+025	-	-	42.65	-	-	44.79	
	19+125	42.11	-	42.16	44.42	-	44.60	
	19+230	-	-	42.25	-	-	45.07	

건설교통부

계 속

하천명	측점 (No.)	최심하상고(EL.m)			평균하상고(EL.m)			비 고
		'85년	'88년	'02년	'85년	'88년	'02년	
갑 천	19+335	43.32	-	43.09	44.59	-	45.31	
	19+435	-	-	43.36	-	-	45.00	
	19+535	43.03	-	42.94	44.76	-	45.39	
	19+630	-	-	43.87	-	-	45.35	
	19+740	43.53	-	43.21	45.11	-	45.76	
	19+815	-	-	44.06	-	-	45.72	
	19+925	43.93	-	44.21	45.53	-	45.98	
	20+020	-	-	44.36	-	-	46.23	
	20+115	44.14	-	44.36	46.03	-	46.34	
	20+210	-	-	44.50	-	-	46.18	
	20+315	44.73	-	44.70	46.01	-	45.94	
	20+410	-	-	44.72	-	-	46.96	
	20+510	45.09	-	44.33	46.59	-	47.01	
	20+610	-	-	44.30	-	-	47.09	
	20+690	45.42	-	44.77	46.43	-	47.00	
	20+795	-	-	44.80	-	-	47.76	
	20+895	45.41	-	44.15	46.51	-	46.89	
	21+045	46.68	-	46.68	-	-	47.16	
	21+095	46.00	-	45.93	46.95	-	47.31	
	21+200	-	-	46.05	-	-	47.44	
	21+290	46.11	-	44.97	47.12	-	47.20	
	21+390	-	-	45.60	-	-	47.81	
	21+515	-	-	48.90	-	-	48.95	
	21+525	47.37	-	48.10	48.10	-	48.76	
	21+585	48.89	-	48.55	-	-	49.37	
	21+685	48.15	-	47.30	49.53	-	48.82	
	21+745	46.32	-	47.37	-	-	48.52	
	21+805	-	-	47.69	-	-	48.35	
	21+850	46.99	-	47.61	-	-	48.33	
	21+895	46.75	-	47.50	48.61	-	48.96	
	21+900	-	-	47.97	-	-	49.21	
	22+095	48.91	-	47.62	49.51	-	49.32	

건설교통부

계 속

하천명	측점 (No.)	최심하상고(EL.m)			평균하상고(EL.m)			비 고
		'85년	'88년	'02년	'85년	'88년	'02년	
갑 천	22+290	48.88	-	49.04	50.01	-	49.92	
	22+480	49.01	-	48.85	50.14	-	49.84	
	22+670	49.58	-	49.28	50.27	-	49.89	
	22+845	-	-	48.75	-	-	49.69	
	22+885	49.56	-	49.32	50.48	-	50.00	
	23+080	48.84	-	49.36	50.14	-	50.12	
	23+280	48.82	-	49.40	51.23	-	50.22	
	23+480	50.17	-	49.83	51.16	-	50.44	
	23+670	51.12	-	50.69	52.12	-	51.71	
	23+835	-	-	50.70	-	-	51.79	
	23+880	51.59	-	50.94	51.81	-	51.46	
	24+075	51.53	-	50.88	51.66	-	51.66	
	24+265	51.63	-	51.05	51.91	-	51.88	
	24+365	53.28	-	52.73	54.39	-	53.35	
	24+465	53.20	-	52.77	53.71	-	53.43	
	24+665	52.31	-	52.20	53.84	-	53.76	
	24+865	51.72	-	51.66	53.83	-	53.08	
	25+060	52.92	-	51.79	54.29	-	53.54	
	25+255	52.95	-	53.09	53.99	-	54.42	
	25+445	54.67	-	53.36	55.06	-	54.96	
	25+485	55.66	-	55.45	56.63	-	55.67	
	25+630	55.43	-	54.39	55.75	-	55.21	
	25+850	53.88	-	53.65	55.30	-	55.37	
	26+050	55.81	-	54.64	57.23	-	56.71	
	26+095	55.45	-	55.70	56.74	-	56.66	
	26+125	55.90	-	55.38	57.51	-	56.59	
	26+175	56.62	-	55.64	57.10	-	57.09	
	26+245	56.64	-	55.79	58.27	-	57.53	
	26+305	57.05	-	57.16	58.84	-	58.62	
	26+455	54.73	-	54.40	57.94	-	57.96	
	26+660	56.06	-	55.25	57.95	-	58.99	
	26+865	56.09	-	57.00	57.46	-	59.53	

건설교통부

계 속

하천명	측점 (No.)	최심하상고(EL.m)			평균하상고(EL.m)			비 고
		'85년	'88년	'02년	'85년	'88년	'02년	
갑 천	27+065	56.10	-	56.93	57.59	-	58.16	
	27+270	56.11	-	55.97	57.81	-	58.44	
	27+490	57.12	-	57.81	58.38	-	59.41	
	27+675	58.37	-	57.91	58.77	-	59.39	
	27+710	-	-	58.29	-	-	59.53	
	27+885	58.21	-	58.44	58.99	-	59.87	
	28+095	59.09	-	58.45	59.37	-	60.59	
	28+295	59.46	-	58.90	60.50	-	61.13	
	28+495	60.58	-	60.30	61.11	-	62.25	
	28+605	-	-	60.02	-	-	62.23	
	28+675	-	-	60.59	-	-	62.06	
	28+690	60.94	-	60.58	61.33	-	62.26	
	28+895	60.89	-	60.30	63.23	-	62.79	
	29+090	59.30	-	58.95	61.11	-	61.85	
	29+285	61.03	-	60.76	63.05	-	63.55	
	29+495	61.68	-	61.18	63.21	-	62.93	
	29+680	62.26	-	61.25	63.45	-	63.60	
	29+780	-	-	61.95	-	-	63.84	
	29+895	63.57	-	62.12	63.88	-	63.56	
	30+105	63.33	-	61.83	64.01	-	64.42	
	30+290	64.08	-	63.57	65.11	-	65.23	
	30+345	63.82	-	63.12	64.20	-	64.02	
	30+390	65.21	-	64.64	66.01	-	65.98	
	30+480	64.79	-	63.90	66.02	-	65.83	
	30+680	64.98	-	64.55	66.39	-	66.08	
	30+880	64.99	-	64.00	66.84	-	66.51	
	31+070	63.95	-	64.12	66.37	-	67.10	
	31+290	65.33	-	65.08	67.02	-	67.10	
	31+470	65.30	-	65.71	66.20	-	68.57	
	31+675	64.90	-	65.15	67.72	-	67.66	
	31+880	65.26	-	65.57	67.71	-	67.60	
	32+085	65.91	-	65.86	67.54	-	67.67	

건설교통부

계 속

하천명	측점 (No.)	최심하상고(EL.m)			평균하상고(EL.m)			비 고
		'85년	'88년	'02년	'85년	'88년	'02년	
갑 천	32+285	67.00	-	66.49	68.47	-	68.43	
	32+485	66.98	-	66.68	68.78	-	69.38	
	32+680	67.75	-	66.78	69.04	-	68.57	
	32+700	69.45	-	68.87	70.68	-	70.02	
	32+885	68.16	-	67.53	70.51	-	69.48	
	33+075	69.20	-	68.74	70.83	-	70.67	
	33+270	70.17	-	69.18	71.15	-	70.87	
	33+315	70.32	-	69.77	71.00	-	70.84	
	33+510	69.83	-	70.04	71.29	-	71.42	

계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'85년	'02년	'85년	'02년	
유등천	0+000	-	31.10	-	34.27	
	0+070	32.28	31.13	33.25	34.18	
	0+280	32.78	32.51	33.48	34.17	
	0+480	33.36	32.44	33.93	34.45	
	0+675	33.63	33.24	34.28	34.86	
	0+895	33.29	33.39	34.52	35.01	
	1+055	33.83	33.76	34.79	35.24	
	1+245	34.16	34.09	35.15	35.36	
	1+445	34.58	34.36	35.43	35.75	
	1+635	35.27	34.28	35.65	35.90	
	1+860	-	34.55	-	36.13	
	1+880	35.64	34.56	36.02	35.76	
	2+090	35.44	35.04	35.87	35.97	
	2+300	35.46	34.90	36.13	36.03	
	2+305	-	34.86	-	35.88	
	2+480	35.45	35.28	36.51	36.52	
	2+640	36.66	35.99	36.80	37.08	
	2+790	-	35.28	-	37.03	
	2+820	36.61	35.80	37.31	37.35	

건설교통부

계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'85년	'02년	'85년	'02년	
유등천	3+015	36.41	35.73	38.09	38.14	
	3+215	37.15	36.10	38.51	38.47	
	3+255	-	36.16	-	38.63	
	3+415	37.80	37.32	38.74	38.79	
	3+615	38.27	36.70	39.10	39.17	
	3+805	38.94	37.52	39.43	39.30	
	4+005	39.28	37.86	39.70	39.70	
	4+205	39.24	38.35	40.08	40.08	
	4+400	40.19	38.96	42.94	40.62	
	4+460	-	39.18	-	40.91	
	4+500	39.91	40.23	40.90	41.00	
	4+600	40.71	41.07	41.04	42.11	
	4+800	40.95	41.61	41.54	42.51	
	5+000	41.27	41.51	41.88	42.60	
	5+200	41.41	41.79	42.51	42.92	
	5+395	42.19	42.24	42.85	43.42	
	5+575	42.49	42.62	43.36	43.85	
	5+790	43.23	42.84	43.67	44.09	
	5+990	43.27	41.92	44.15	44.82	
	6+130	-	43.04	-	44.89	
	6+190	44.11	43.42	44.66	45.18	
	6+400	44.06	43.55	44.72	45.18	
	6+590	44.16	43.74	45.12	45.35	
	6+780	44.82	44.50	45.31	45.72	
	6+960	-	44.97	-	46.45	
	6+980	45.37	45.42	45.68	46.88	
	7+010	45.99	45.26	46.30	46.93	
	7+195	46.63	44.96	46.79	47.48	
	7+385	46.70	46.58	47.27	47.98	
	7+575	47.99	46.38	47.67	48.37	
	7+790	48.54	46.74	48.07	48.50	
	7+820	-	47.30	-	48.88	

건설교통부

계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'85년	'02년	'85년	'02년	
유등천	7+830	47.97	47.32	48.32	48.98	
	7+980	48.03	48.02	48.59	49.53	
	8+180	48.19	48.13	48.96	50.22	
	8+390	49.12	49.68	49.56	50.10	
	8+440	51.89	49.62	52.54	50.39	
	8+560	51.10	51.45	52.61	52.76	
	8+780	50.83	51.88	52.70	52.93	
	8+990	52.31	52.05	53.29	53.23	
	9+010	52.29	52.25	53.23	53.22	
	9+190	52.78	52.38	53.26	53.43	
	9+395	52.83	52.65	53.56	53.81	
	9+595	53.61	52.90	54.09	54.76	
	9+795	54.34	52.93	54.55	55.36	
	9+995	53.87	53.79	54.52	55.29	
	10+195	54.56	54.00	55.19	55.87	
	10+400	55.46	55.51	56.06	56.93	
	10+585	56.36	55.98	56.69	57.79	
	10+735	56.79	56.20	57.13	57.69	
	10+785	56.81	56.40	57.31	57.13	
	10+985	57.82	56.68	58.15	57.26	
	11+045	-	56.76	-	57.27	
	11+195	56.28	55.56	57.60	58.14	
	11+390	57.78	57.49	58.33	59.01	
	11+515	58.27	58.03	61.36	58.77	
	11+520	-	58.60	-	58.69	
	11+530	-	58.60	-	59.18	
	11+790	58.19	57.63	59.85	58.88	
	11+960	57.79	58.35	60.88	60.51	
	12+180	61.00	60.30	62.01	61.89	
	12+370	60.98	60.15	62.09	62.29	
	12+575	61.33	60.34	62.11	62.76	
	12+780	61.25	60.69	62.46	63.94	

건설교통부

계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'85년	'02년	'85년	'02년	
유등천	12+970	62.83	61.85	63.87	64.48	
	13+180	63.82	62.95	64.16	64.34	
	13+230	63.73	63.23	64.90	64.14	
	13+275	63.64	63.50	64.07	64.26	
	13+370	64.05	63.80	65.73	64.98	
	13+570	64.01	63.13	64.49	65.83	
	13+750	64.77	64.13	65.21	65.83	
	14+030	64.57	64.81	65.54	67.12	
	14+190	65.41	65.91	66.23	67.45	
	14+245	67.40	67.27	68.10	68.16	
	14+390	66.40	65.46	67.18	68.39	
	14+555	66.97	66.50	68.09	68.83	
	14+590	-	68.24	-	69.26	
	14+800	67.99	68.37	68.86	69.54	
	14+960	70.42	69.95	71.54	70.78	
	15+000	69.26	70.17	70.97	71.14	
	15+200	67.77	68.65	69.92	70.88	
	15+400	69.41	70.27	70.88	72.04	
	15+600	71.83	71.32	71.58	73.18	

계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
미호천	0+000	14.70	11.52	18.72	17.08	
	0+200	14.64	11.68	18.12	16.22	
	0+240	-	13.26	-	16.69	
	0+390	12.30	10.86	17.74	17.06	
	0+630	12.13	11.18	17.86	18.65	
	0+890	14.81	13.65	18.14	16.42	
	0+920	-	13.22	-	16.51	
	1+130	14.69	13.88	18.35	17.56	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
미호천	1+330	14.97	13.44	17.60	16.28	
	1+560	14.68	12.81	17.35	16.41	
	1+790	14.82	12.22	17.38	16.29	
	2+010	14.59	11.53	17.20	15.46	
	2+150	15.12	11.36	18.75	16.52	
	2+430	15.33	12.41	18.63	17.28	
	2+630	15.02	12.04	17.51	14.69	
	2+850	15.62	12.98	18.33	16.62	
	3+010	16.11	12.75	19.42	17.76	
	3+200	15.96	12.97	19.06	17.08	
	3+390	15.80	13.24	19.34	17.78	
	3+620	16.13	12.93	19.33	17.76	
	3+770	15.73	13.19	19.51	18.26	
	3+950	16.54	13.12	19.52	17.71	
	4+150	16.45	12.06	19.01	17.39	
	4+310	16.73	12.69	18.97	16.65	
	4+440	16.90	13.33	19.23	17.62	
	4+610	16.71	13.77	19.11	17.16	
	4+840	16.86	13.25	19.21	18.28	
	5+020	17.28	13.15	19.40	17.88	
	5+230	17.39	13.60	19.97	18.39	
	5+440	17.56	13.91	20.14	17.76	
	5+660	17.74	13.97	20.05	18.24	
	5+920	16.34	14.26	20.16	19.12	
	6+100	17.82	13.99	20.38	18.68	
	6+280	16.74	14.28	20.63	18.35	
	6+480	17.80	14.34	20.78	18.49	
	6+680	17.75	14.00	20.95	17.91	
	6+900	17.01	15.01	20.61	17.74	
	7+130	17.20	14.89	20.71	18.89	
	7+390	17.90	14.34	20.54	18.72	
	7+620	17.85	13.96	21.21	19.93	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
미호천	7+860	17.09	13.34	21.55	19.25	
	8+060	17.13	14.74	21.86	21.67	
	8+240	17.87	15.59	21.90	21.53	
	8+380	18.23	15.73	21.75	21.71	
	8+560	17.75	15.84	21.90	19.79	
	8+760	17.77	16.05	21.71	20.64	
	8+890	18.52	15.83	21.88	20.81	
	9+045	-	17.33	-	20.61	
	9+090	18.38	14.85	21.30	17.78	
	9+120	15.89	16.49	20.95	20.36	
	9+290	18.51	16.91	21.98	21.17	
	9+490	18.56	16.79	21.66	21.10	
	9+680	17.48	15.90	22.05	20.71	
	9+840	17.23	17.91	21.48	20.98	
	9+900	18.47	16.41	21.77	20.84	
	10+080	18.03	16.30	21.73	21.43	
	10+240	18.31	17.48	21.60	21.26	
	10+480	18.22	17.79	22.09	22.00	
	10+690	18.59	17.77	21.85	21.45	
	10+890	18.95	17.82	21.20	20.79	
	11+120	18.98	18.08	21.68	21.60	
	11+310	18.89	17.91	22.17	22.12	
	11+520	19.00	18.13	22.65	22.51	
	11+710	18.99	18.23	22.65	21.64	
	11+900	19.06	16.93	22.44	22.29	
	12+140	19.07	17.55	22.52	22.44	
	12+340	19.25	16.39	21.67	21.15	
	12+560	17.60	16.36	22.21	22.45	
	12+850	17.61	17.46	22.91	23.19	
	13+110	18.46	18.33	23.54	22.25	
	13+320	19.06	18.27	23.02	21.86	
	13+530	19.57	17.63	23.20	22.15	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
미호천	13+780	19.39	17.53	23.09	22.67	
	14+020	19.80	18.80	23.41	23.66	
	14+160	20.13	18.70	23.90	23.73	
	14+360	18.71	19.25	23.87	22.62	
	14+550	20.19	18.48	24.32	22.53	
	14+740	20.19	19.06	24.45	22.42	
	14+930	20.17	19.55	24.54	24.28	
	15+110	20.24	19.88	24.26	24.84	
	15+270	20.19	19.78	23.87	23.20	
	15+550	19.88	19.24	23.65	22.79	
	15+730	20.42	19.54	22.92	22.73	
	15+830	19.82	19.48	22.43	22.36	
	15+940	21.02	19.30	22.93	21.80	
	15+950	20.31	21.09	22.90	22.69	
	15+960	-	19.53	-	22.56	
	16+150	21.03	19.43	23.60	23.24	
	16+360	20.90	21.04	23.70	23.28	
	16+500	21.43	21.08	23.86	24.48	
	16+680	21.17	20.53	24.58	23.82	
	16+850	21.67	21.49	24.57	23.77	
	16+970	21.37	20.35	24.63	23.92	
	17+180	21.72	20.59	24.44	23.83	
	17+380	21.73	21.29	24.74	24.05	
	17+570	22.02	21.31	24.90	24.26	
	17+760	22.02	20.95	24.85	24.59	
	17+980	22.28	21.30	25.05	24.70	
	18+170	22.48	21.02	25.06	24.79	
	18+370	22.48	22.15	25.41	25.39	
	18+570	22.09	21.27	25.48	25.32	
	18+770	22.69	21.15	25.58	25.36	
	18+960	22.36	21.68	25.68	25.64	
	19+160	22.90	22.02	25.83	25.52	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
미호천	19+360	23.38	21.76	26.16	25.65	
	19+530	-	21.70	-	26.15	
	19+580	23.44	22.34	26.07	25.92	
	19+600	22.82	22.34	26.20	26.10	
	19+790	23.38	22.81	26.25	25.91	
	20+010	22.84	23.18	26.14	26.03	
	20+230	23.43	23.09	26.37	26.20	
	20+430	23.92	23.42	26.47	26.04	
	20+650	24.06	23.53	26.61	26.24	
	20+770	-	23.32	26.55	26.25	
	20+840	24.04	23.35	26.61	26.08	
	21+070	24.24	23.62	26.77	26.05	
	21+280	24.52	24.17	26.81	26.27	
	21+450	24.01	23.37	27.04	26.99	
	21+660	22.70	23.14	27.30	26.92	
	21+880	24.58	24.04	27.35	27.25	
	22+080	22.38	23.27	27.45	27.38	
	22+280	24.48	23.90	27.38	27.22	
	22+460	24.01	23.65	27.43	27.15	
	22+640	24.39	23.92	27.15	26.90	
	22+830	25.27	24.39	27.41	27.23	
	23+020	24.83	24.26	27.53	27.77	
	23+220	24.76	24.46	27.29	27.34	
	23+420	25.62	24.27	27.68	27.38	
	23+600	25.66	24.75	27.52	27.58	
	23+810	24.42	24.35	27.49	27.62	
	24+010	25.43	24.31	27.50	27.97	
	24+150	25.39	25.51	27.66	27.96	
	24+350	25.36	25.16	27.47	27.94	
	24+530	26.02	25.75	27.74	28.09	
	24+710	26.33	25.55	28.28	28.22	
	24+920	26.58	25.62	28.45	28.65	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
미호천	25+120	26.75	25.50	28.69	28.89	
	25+320	26.76	25.76	28.69	28.34	
	25+520	26.85	25.80	28.83	29.39	
	25+690	27.13	25.64	29.54	29.68	
	25+710	26.10	25.35	29.33	29.35	
	25+930	26.81	26.05	29.44	29.40	
	26+150	26.95	26.33	30.13	30.05	
	26+360	27.67	25.54	30.11	30.29	
	26+570	27.16	26.31	30.03	29.96	
	26+620	29.00	28.37	31.73	31.26	
	26+800	27.43	29.45	29.81	30.63	
	27+010	28.62	29.30	30.54	30.93	
	27+230	28.44	28.18	30.99	31.18	
	27+520	28.64	29.37	30.91	31.46	
	27+760	29.14	28.95	31.02	30.43	
	27+890	29.24	28.43	31.51	31.49	
	28+210	29.54	28.95	31.54	31.20	
	28+410	29.16	28.53	31.12	31.46	
	28+630	29.67	29.26	31.12	31.09	
	28+840	29.07	28.79	31.36	31.86	
	29+000	28.11	28.37	31.62	31.90	
	29+180	29.11	28.29	32.26	31.82	
	29+370	29.66	28.32	32.59	32.04	
	29+670	29.08	28.67	32.53	32.24	
	29+870	29.65	29.00	32.53	31.87	
	30+090	29.75	29.91	32.60	31.61	
	30+330	28.65	29.98	32.40	31.35	
	30+390	-	30.07	-	31.81	
	30+550	30.45	30.05	32.33	31.67	
	30+730	30.24	28.52	32.23	31.45	
	30+910	30.36	29.82	32.28	32.17	
	31+120	29.62	29.68	32.35	32.24	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
미호천	31+290	28.86	29.35	32.71	32.73	
	31+450	29.71	29.50	32.79	32.88	
	31+650	30.68	30.49	34.14	32.90	
	31+680	-	30.46	-	33.25	
	31+830	31.34	30.61	34.09	33.39	
	32+060	31.71	30.56	34.38	33.71	
	32+150	31.25	30.25	33.98	32.42	
	32+220	32.47	30.71	34.08	32.98	
	32+420	32.76	30.97	34.08	33.56	
	32+610	33.19	30.54	34.50	33.58	
	32+740	32.74	30.93	34.75	33.85	
	32+910	33.18	30.72	34.90	34.48	
	33+080	32.91	30.15	34.97	34.49	
	33+270	33.43	30.93	35.69	34.50	
	33+420	33.72	30.83	35.41	34.65	
	33+630	33.54	30.49	35.49	33.83	
	33+840	33.72	31.21	35.57	34.18	
	34+030	33.60	31.61	35.65	34.60	
	34+240	33.89	31.16	35.96	34.55	
	34+390	32.93	31.25	35.33	34.69	
	34+570	33.10	31.74	36.58	35.66	
	34+750	32.71	31.98	36.44	35.03	
	34+940	35.12	31.94	36.21	35.33	
	35+130	35.02	31.78	36.95	34.94	
	35+330	34.88	32.39	37.42	34.69	
	35+530	35.08	32.33	37.61	35.24	
	35+740	35.36	32.59	37.47	35.94	
	35+880	34.18	32.52	37.66	36.42	
	36+120	35.34	32.98	37.91	35.66	
	36+300	35.30	33.12	37.79	35.89	
	36+490	35.60	33.29	37.92	36.33	
	36+680	34.59	32.85	37.38	36.14	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
미호천	36+880	34.42	33.29	37.48	36.69	
	37+080	34.38	33.09	38.02	36.58	
	37+290	36.21	32.14	38.40	36.66	
	37+490	36.36	35.74	38.59	37.61	
	37+710	36.59	34.71	38.77	37.66	
	37+930	36.35	35.57	39.06	37.90	
	38+140	36.91	35.90	38.72	38.21	
	38+340	37.71	35.35	39.22	38.20	
	38+510	37.92	35.50	39.31	38.08	
	38+710	37.86	35.73	39.29	38.08	
	38+900	37.73	36.24	39.35	38.19	
	39+090	-	37.03	-	38.61	
	39+110	38.06	37.16	39.65	38.10	
	39+330	38.36	36.46	39.69	38.02	
	39+485	37.30	36.50	39.18	38.36	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
논산천	0+000	3.98	-3.84	3.18	3.45	
	0+170	2.84	-2.44	3.17	3.44	
	0+220	2.18	-4.16	2.66	2.30	
	0+420	2.21	-2.12	2.28	2.31	
	0+620	2.01	-2.47	3.06	2.68	
	0+820	-2.73	-1.59	2.62	2.71	
	0+835	-1.94	-1.64	2.20	2.47	
	0+845	-1.94	-3.29	2.13	2.50	
	1+035	-0.14	-1.86	2.44	2.56	
	1+220	-0.66	-2.08	2.41	2.37	
	1+420	-1.03	-1.78	2.40	2.56	
	1+620	-0.69	-1.32	2.41	2.72	
	1+820	-1.08	-2.18	2.51	2.49	

계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
논산천	2+020	-1.36	-1.64	2.56	2.65	
	2+240	-1.38	-1.86	2.50	2.50	
	2+450	-1.25	-1.36	2.54	2.52	
	2+660	-0.86	-1.40	2.56	2.38	
	2+860	-1.01	-0.70	2.34	2.12	
	3+070	-1.32	-0.97	2.41	2.57	
	3+260	-0.72	-0.65	2.67	2.56	
	3+450	-0.52	-0.75	2.68	2.60	
	3+660	-1.28	-0.70	2.73	2.74	
	3+830	-0.59	-0.93	2.76	2.63	
	4+040	-0.42	-0.15	2.90	2.76	
	4+225	-0.43	-3.02	2.74	2.80	
	4+265	-	-2.63	-	2.72	
	4+435	-0.56	-0.50	2.79	2.65	
	4+625	-0.13	0.23	2.86	2.98	
	4+845	0.00	-0.28	3.10	3.25	
	5+040	-1.07	-0.46	3.05	3.18	
	5+235	0.01	0.15	3.02	3.18	
	5+425	0.14	-0.47	3.09	3.23	
	5+640	0.48	-0.38	3.09	3.19	
	5+845	0.61	0.35	3.30	3.06	
	6+055	0.42	0.05	3.05	3.31	
	6+260	0.02	-0.23	3.35	3.72	
	6+470	0.55	-0.53	3.18	3.60	
	6+670	0.80	-0.35	3.36	3.77	
	6+890	0.63	0.03	3.61	4.23	
	7+075	0.84	0.53	3.54	3.95	
	7+285	1.30	-0.13	3.59	4.03	
	7+505	1.42	-0.69	3.53	4.14	
	7+705	1.30	0.61	3.63	3.89	
	7+735	-	0.99	-	3.90	
	7+895	1.20	0.38	3.88	4.22	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
논산천	8+095	1.63	0.83	3.95	4.21	
	8+285	1.90	1.27	3.90	4.04	
	8+465	1.03	0.91	4.09	4.60	
	8+660	0.94	0.84	4.19	4.65	
	8+855	0.85	0.82	4.27	4.77	
	9+070	1.23	0.53	4.21	4.87	
	9+245	0.56	0.66	4.09	4.69	
	9+465	0.72	1.19	4.14	4.53	
	9+670	0.80	0.72	4.06	4.65	
	9+875	0.96	1.00	4.45	4.62	
	10+065	1.00	1.65	5.08	5.37	
	10+085	1.34	1.47	4.96	5.02	
	10+275	1.59	0.57	4.71	4.89	
	10+475	1.67	1.53	4.66	5.26	
	10+585	2.58	2.13	5.15	5.37	
	10+665	2.35	2.28	5.35	5.39	
	10+875	2.08	2.45	5.27	5.44	
	11+085	1.81	1.21	5.14	5.16	
	11+205	2.30	2.35	5.27	5.33	
	11+220	1.82	2.20	5.37	5.38	
	11+280	2.60	2.77	5.19	5.51	
	11+380	3.11	2.66	4.98	5.22	
	11+430	2.78	3.11	5.25	5.40	
	11+480	3.04	3.12	5.18	5.50	
	11+680	3.19	3.22	5.77	5.72	
	11+865	3.33	3.41	5.70	5.75	
	12+080	3.76	3.72	5.42	5.54	
	12+275	4.30	4.06	5.48	5.63	
	12+475	4.24	4.00	5.72	5.85	
	12+695	4.33	3.38	5.64	5.86	
	12+885	4.47	4.61	5.94	6.38	
	13+095	5.40	5.24	6.96	6.86	

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계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
논산천	13+280	5.66	5.57	6.73	6.91	
	13+470	-	6.28	-	6.94	
	13+490	5.28	6.12	7.03	7.09	
	13+680	5.78	6.32	7.28	7.51	
	13+810	6.06	6.26	7.86	7.80	
	13+860	6.78	7.22	-	7.54	
	13+875	6.78	5.94	7.66	7.51	
	14+095	6.96	7.38	8.29	8.41	
	14+285	7.50	7.31	8.24	8.37	
	14+465	7.38	4.89	8.52	8.61	
	14+645	7.76	7.92	8.96	9.16	
	14+845	8.27	7.93	9.19	9.39	
	15+045	8.42	8.22	9.74	9.99	
	15+245	8.55	9.03	9.35	10.86	
	15+445	8.65	8.21	9.97	10.03	
	15+645	7.96	7.78	10.47	10.53	
	15+835	8.10	6.21	11.02	11.22	
	16+035	9.03	8.10	11.37	11.42	
	16+320	9.52	6.85	11.95	12.88	
	16+590	-	11.53	-	13.44	
	16+670	-	11.23	-	13.03	

계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
노성천	0+000	1.92	1.21	5.14	4.94	
	0+130	1.86	1.51	5.02	5.15	
	0+335	2.06	1.81	5.11	5.20	
	0+525	2.25	1.98	5.00	5.21	
	0+565	-	1.85	-	5.13	
	0+725	2.35	1.90	5.16	5.39	

건설교통부

계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
노성천	0+925	2.32	2.19	5.34	5.56	
	1+035	2.24	1.43	5.39	5.25	
	1+115	2.81	1.73	5.28	5.68	
	1+325	2.88	2.02	5.60	5.78	
	1+545	3.16	1.78	5.80	5.81	
	1+750	2.93	1.84	5.73	5.90	
	1+970	3.21	2.58	5.51	5.85	
	2+175	3.06	2.44	5.93	5.97	
	2+380	3.49	2.65	5.92	6.16	
	2+585	3.12	1.27	6.34	6.39	
	2+785	3.72	1.95	6.44	6.46	
	2+985	4.27	2.63	6.49	6.87	
	3+190	4.46	3.90	6.69	7.14	
	3+395	4.82	4.55	7.15	7.06	
	3+605	5.45	4.98	7.34	7.00	
	3+815	5.97	5.47	7.24	7.33	
	4+020	5.77	5.63	7.79	7.54	
	4+205	6.14	5.24	7.55	7.35	
	4+400	6.01	5.14	7.63	7.58	
	4+530	6.11	5.06	8.04	7.91	
	4+580	6.30	5.13	8.08	8.01	
	4+750	5.93	5.85	8.06	7.96	
	4+920	6.18	5.69	8.39	8.16	
	4+980	6.18	5.95	8.61	8.00	
	5+130	6.73	6.03	8.10	7.80	

계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
강경천	0+000	0.75	-1.09	3.50	3.33	
	0+200	0.52	-0.54	3.56	2.81	
	0+275	0.15	-2.41	2.70	2.81	

건설교통부

계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
강경천	0+290	0.36	-2.75	2.80	2.88	
	0+415	1.32	-0.23	3.43	3.08	
	0+610	0.81	-0.15	2.86	3.18	
	0+815	0.86	-0.15	3.32	3.00	
	1+035	1.10	-0.84	3.05	2.87	
	1+105	0.31	-0.62	3.19	2.83	
	1+115	0.23	0.07	3.31	3.55	
	1+235	0.14	-0.04	3.26	2.88	
	1+355	0.20	-0.94	2.94	2.80	
	1+375	-0.49	-0.09	3.15	3.09	
	1+425	0.00	0.65	-	3.34	
	1+440	0.80	0.83	2.85	3.14	
	1+650	0.62	0.81	2.84	3.09	
	1+840	0.70	0.97	3.11	3.07	
	2+035	-0.06	1.03	2.95	3.17	
	2+240	1.01	0.92	3.31	3.23	
	2+300	0.89	0.71	3.24	3.14	
	2+455	1.18	1.03	3.32	3.12	
	2+650	1.25	1.16	3.36	3.20	
	2+840	1.22	0.64	3.23	2.34	
	3+030	1.47	1.40	3.51	3.48	
	3+235	1.51	1.14	3.52	3.21	
	3+415	1.68	1.29	3.35	3.03	
	3+435	1.78	1.23	3.41	3.31	
	3+475	1.59	1.10	3.39	3.05	
	3+645	1.75	1.63	3.53	3.50	
	3+810	1.75	1.49	2.93	3.25	
	3+985	0.62	1.52	4.12	3.51	
	4+085	1.24	1.38	3.81	3.55	
	4+220	1.51	1.69	3.81	3.63	
	4+430	1.41	1.66	3.56	3.63	
	4+630	1.87	1.70	3.73	3.83	

건설교통부

계 속

하천명	측점 (No.)	최심하상고(EL.m)		평균하상고(EL.m)		비 고
		'88년	'02년	'88년	'02년	
강경천	4+810	2.11	1.41	4.10	3.95	
	4+845	0.00	1.94	-	3.74	
	4+860	1.96	1.37	4.29	4.19	
	5+030	1.99	1.98	4.16	3.82	
	5+225	1.92	1.74	4.16	3.89	
	5+385	2.01	1.70	4.25	3.92	
	5+425	1.70	1.62	4.14	4.16	
	5+600	2.06	1.73	4.26	4.23	
	5+815	1.42	1.79	4.47	4.28	
	6+015	2.09	1.74	4.46	4.20	
	6+205	2.16	1.98	4.31	4.53	
	6+265	1.92	1.51	4.55	4.61	
	6+385	1.77	2.02	4.42	4.50	
	6+565	2.05	1.70	4.94	4.76	
	6+765	-	1.96	-	4.83	
	6+940	-	1.81	-	5.37	
	6+965	-	2.12	-	5.33	
	7+170	-	2.28	-	5.18	
	7+360	-	2.57	-	5.12	
	7+565	-	1.94	-	5.21	

건설교통부

5.2 하천부산물(골재) 채취 실적

하천별 하상변동량 비교

하천명	구 간(비교연장)	세굴량 (㎥)	퇴적량 (㎥)	세굴-퇴적 (㎥)	비고
금 강	금강하구둑~역조정지댐 (130 km)	128,686,209	43,760,931	84,925,279	
갑 천	갑천하구~유등천합류부 (12 km)	2,492,809	1,308,393	1,184,417	
유등천	유등천하구~안영교 (11 km)	262,511	258,523	3,988	
미호천	미호천하구~보강천합류부 (39 km)	17,850,761	3,367,556	14,483,205	
논산천	논산천하구~탑정저수지 (16 km)	1,568,506	562,291	1,006,215	
노성천	노성천하구~연산천합류부 (5 km)	239,281	142,790	96,491	
강경천	강경천하구~마산천합류부 (6 km)	472,642	68,448	404,194	

주 1. '88년 금강수계 종합정비계획과 금회 성과 비교결과 임.
2. 유등천은 2000년 3대 하천시설물안정성검토 및 방재대책수립 보고서(대전광역시) 성과와 금회 성과 비교결과 임.

건설교통부

년도별 골재채취량 비교(금강)

년 도	채취량(㎥)	관 련 근 거	비 고
1988	3,057,750	관리청 골재채취 협의(공문)자료	
1989	3,769,045	〃	
1990	3,384,500	〃	
1991	8,369,200	〃	
1992	1,169,254	〃	
1993	6,645,171	〃	
1994	8,304,000	〃	
1995	353,000	"금강하상변동조사(2000.충청남도)"	금강종합개발
1996	6,664,000	〃	〃
1997	6,375,000	〃	〃
1998	5,885,000	〃	〃
1999	4,690,000	〃	〃
2000	6,000,000	〃	〃
평 균	4,974,302	-	
합 계	64,665,920	-	

제Ⅸ장 시설물 능력검토 및 개수계획

1. 기존 시설물 현황

2. 주요시설물 능력검토

3. 개수계획 및 지구현황

4. 고수부지 및 폐천부지

건설교통부

1. 기존 시설물 현황

1.1 제방 및 고수호안

1.2 저수호안

1.3 배수장, 양수장, 취수장 및 교량

건설교통부

1.1 제방 및 고수호안

건설교통부

1.1.1 제방 및 고수호안 (금강:대청댐하류)

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
금강본류	마서제	시	서천	마서	도삼	우	1986	00+870 ~ 00+000	800	2,075	1:2.0	1:2.0	9.0 ~10.0	6.52 ~ 6.82	1986	00+870 ~ 00+000	800	2,075	돌붙임	1:2.0	
		종	서천	마서	도삼		1987 ~1988	01+450 ~ 00+870	1,275				4.0	7.01 ~ 7.20	1987	01+450 ~ 00+870	1,275				
	화양제	시	서천	화양	옥포	우	1979 ~1980	01+920 ~ 01+590	370	2,832 (-478)	1:2.0	1:2.0	9.0 ~10.0	5.33 ~ 5.31	1977	03+330 ~03+210	160	2,857 (-503)	돌붙임	1:2.0	
															1979 ~1980	01+910 ~01+590	365				
							1980 ~1981	03+320 ~ 01+920	1,580						1980 ~1981	03+210 ~01+910	1,450				
		종	서천	화양	망월		1981	03+730 ~ 03+320	404				6.0	5.57	1981	03+730 ~03+320	404 (-25)		호안블럭		
							1997	03+730 ~ 03+480	278 (-278)					6.80 ~ 6.90	1997	03+730 ~ 03+480	278 (-278)				
							1997	01+740 ~ 01+590	200 (-200)						1997	01+740 ~ 01+590	200 (-200)				
	와초제	시	서천	화양	와초	우	1973	05+880 ~04+620	1,150	3,785 (-1,750)	1:2.0	1:2.0	5.0	4.84 ~4.89	1973	5+160 ~5+130	50	3,100 (-1,065)	호안블럭	1:2.0	
							1974	04+620 ~04+015	600					5.07	1974	5+050 ~4+015	1,015				
		종	서천	화양	옥포		1997	05+880 ~03+760	2,035 (-1,750)					7.20 ~ 7.50	1997	05+880 ~03+760	2,035 (-1,065)				

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시~종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	나포1제	시	옥구	나포	옥곤	좌	년대미상	9+660 ~4+990	5,060 (-5060)	16,687 (-11,642)	1:2.0	1:2.5	6.0	5.80 ~5.06	년대미상	7+150 ~7+100	120	10,162 (-4,872)	돈틈임	1:2.5	
		종	옥구	나포	서포		1965 ~1987	9+660 ~4+990	6,582 (-6,582)					7.10 ~6.30	년대미상	6+590 ~6+490	110				
							1998	9+660 ~4+990	5,045						1965 ~1987	9+940 ~4+990	8,052 (-2,992)		섬유대		
															1998	6,320 ~4,990	1,880 (-1,880)				
	완포제	시	서천	화양	와초	우	1974	7+030 ~6+560	450	924 (-450)	1:2.0	1:2.0	4.0	5.69	1974	7+030 ~6+560	446	920 (-446)	호안답럭	1:2.0	
		종	서천	화양	와초		1995	7+030 ~6+560	474 (-450)					7.30 ~7.10	1995	7+030 ~6+560	474 (-446)				
	죽산제	시	서천	화양	죽산	우	1974	8+970 ~8+670	300	5,408 (-2,634)	1:2.0	1:2.0 ~1:2.5	5.0	5.28	1974	8+845 ~8+670	175	3,977 (-1,203)	돈틈임	1:2.0 ~1:2.5	
		종	서천	화양	완포		1975	9+335 ~8+970	350					5.41	1975	9+335 ~8+845	475				
							1975	8+670 ~7+800	900					5.28 ~5.21	1975	8+670 ~7+800	900				
							1976 ~1977	9+750 ~9+335	500					5.28	1976 ~1977	9+750 ~9+335	500		섬유대		
							1976 ~1977	7+800 ~7+380	584					5.10 ~5.16	1976 ~1977	7+800 ~7+380	584				
							1995	9+750 ~7+290	2,774 (-2,634)					7.10 ~7.40	1994	8+340 ~7+290	1,343 (-1,203)				

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	나포2제	시	옥구	나포	나포	좌	1957	10+300 ~9+930	300	940 (-568)	1:1.5	1:1.5	3.5 ~4.0	6.83	1966	10+175 ~10+120	60	640 (-268)	돕붙임	1:1.5	
							1966	10+175 ~10+120	60 (-60)						1967	10+120 ~10+018	112				
		종	옥구	나포	나포		1967	10+120 ~10+018	112 (-112)					6.50 ~6.30	1968	10+300 ~10+175	96				
							1968	10+300 ~10+175	96 (-96)						1981	10+300 ~9+930	372 (-268)				
							1981	10+300 ~9+930	372 (-300)												
	나포3제	시	옥구	나포	나포	좌	1984	10+890 ~10+480	417	834 (-417)	1:2.0	1:1.5 ~1:2.5	6.0	7.30 ~7.20	1984	10+630 ~10+520	80	400	돕붙임	1:1.5	
		종	옥구	나포	나포		1998	10+890 ~10+480	417 (-417)						1985	10+820 ~10+630	240				
															1985	10+520 ~10+480	80				
	용산제	시	부여	양화	시음	우	1979	14+420 ~13+510	794	8,292 (4,146)	1:2.0	1:2.0	4.0 ~5.0	6.12	1979	14+420 ~13+510	794	8,388 (-4,242)	돕붙임 섬유대	1:2.0	
							1980	13+460 ~12+350	990					6.05 ~5.80	1980	13+450 ~12+350	918				
		종	서천	한산	용산		1981	12+350 ~11+310	662					5.70 ~5.77	1981	12+550 ~12+350	168 (-168)				
							1982	11+310 ~10+430	900					5.54 ~5.57	1982	12+350 ~10+430	1,562				
							1983	10+430 ~09+840	800					5.03	1983	10+430 ~09+840	800				
							1995	14+420 ~9+840	4,146 (-4,146)					8.60 ~7.30	1995	14+420 ~9+840	4,146 (-4,146)				

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	옥동제	시	군산	나포	나포	좌	1998	11+500 ~11+330	208	208	1:2.0	1:2.0	4.0	7.50 ~7.40	1998	-	-	-	-	-	
		종	군산	나포	나포																
	웅포제	시	익산	웅포	대붕	좌	년도미상	18+480 ~14+370	-	9,551 (-2,761)	1:2.0	1:2.5	5.0 ~6.0	4.10 ~4.87	년도미상	21+820 ~21+450	300	11,267 (-4,677)	둔턱임	1:2.5	
							1978 ~1982	13+980 ~11+880	2,761 (-2761)					6.16 ~5.52	년도미상	15+450 ~14+800	600				
		종	익산	웅포	웅포		1996	18+480 ~11+880	6,790					8.60 ~7.30	1970 ~1982	18+480 ~11+950	3,777 (-243)		호안달력		
															1996	11+880 ~18+480	6,590 (-4,434)				
	양화1제	시	부여	양화	시읍	우	1994	15+190 ~14+590	527	527	1:2.0	1:2.0	5.0 ~6.0	8.40 ~8.50	1994	15+140 ~14+590	420	420	호안달력	1:2.0	
		종	부여	양화	시읍																
	양화2제	시	부여	양화	내성	우	1989	17+680 ~17+100	620	620	1:2.5	1:2.0 ~1:2.5	6.0	8.10 ~7.50	1989	17+680 ~17+100	620	620	둔턱임	1:2.0	
		종	부여	양화	내성																
	양화제	시	부여	양화	암수	우	1985	18+450 ~18+240	250	660	1:2.0	1:2.5	5.0	7.90 ~8.30	1985	18+450 ~18+240	250	660	Pin Block	1:2.5	
							1986	18+240 ~18+120	250						1986	18+240 ~18+120	250				
		종	부여	양화	내성		1987	18+120 ~17+980	140						1987	18+120 ~17+980	140				
							1988	17+980 ~17+910	20						1988	17+980 ~17+910	20				
	입포제	시	부여	양화	입포	우	1984	20+620 ~19+830	740	1,519 (-740)	1:2.0	1:2.0	6.0	5.30 ~5.28	1984	20+620 ~19+830	320	1,099 (-320)	호안달력	1:2.0	
		종	부여	양화	암수		1994	20+620 ~19+830	779 (-740)					9.10 ~8.60	1994	20+610 ~19+820	779 (-320)				

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시~종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	임천1제	시	부여	임천	비정	우	1983	22+200 ~21+450	980	980	1:2.0	1:2.0	3.0	8.10 ~7.60	1983	22+200 ~21+450	980	980	돕붙임	1:2.0	
		종	부여	임천	탑산																
	임천2제	시	부여	임천	칠산	우	1986	24+810 ~24+250	427	2087	1:2.0	1:2.0	4.0	8.80	1991	22+900 ~22+390	713	713	돕붙임	1:2.0	
							1987	24+250 ~24+010	280					8.69							
		종	부여	임천	칠산		1988	24+010 ~23+560	250					9.30 ~8.90							
							1991	23+560 ~22+390	1,130												
	용안제	시	익산	용안	석동	좌	년대미상	24+330 ~24+050	600	10,628 (-5,306)	1:2.0	1:2.5	5.0	7.06 ~6.44	1969	25+945 ~25+730	161	5,373 (-262)	호안블럭	1:2.5	
							1936 ~1946	29+490 ~24+330	4,706					10.20 ~9.20	1969	26+046 ~25+945	101				
		종	익산	용안	석동		1996	29+490 ~24+330	5,322 (-5,306)						1996	29+490 ~24+330	5,111				
	간대1제	시	부여	임천	두곡	우	1986	25+980 ~25+770	258	2,050	1:2.0	1:2.0	4.0 ~5.0	9.30 ~9.20	1986	25+980 ~25+770	252	2,050	돕붙임	1:2.0	
							1987 ~1988	26+370 ~25+980	522						1987	26+370 ~25+980	522				
		종	부여	임천	두곡		1997	27+530 ~25+770	1,270						1997	27+530 ~25+770	1,270				
	간대2제	시	부여	세도	간대	우	1991	28+000 ~27+750	320	320	1:2.0	1:2.0	6.0	9.90 ~9.90	1991	28+000 ~27+750	320	320	돕붙임	1:2.0	
		종	부여	세도	간대																

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시~종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	청포제	시	부여	세도	청포	우	1958	29+580 ~28+930	688	1,938 (-897)	1:2.0	1:2.0	6.0	5.86 ~6.94	1992	29+580 ~28+510	1,041	1,041	호안갑럭	1:2.0	
							1958	28+725 ~28+670	65												
		종	부여	세도	청포		1958	28+610 ~28+510	144					11.40 ~10.50							
							1992	29+580 ~28+510	1,041 (-897)												
	세도제	시	부여	세도	가회	우	1957 ~1962	35+240 ~29+730	7,902 (-3,952)	11,854 (-7,902)	1:2.0	1:2.0	5.0 ~6.0	11.57 ~10.55	1987	32+940 ~32+890	36	1,746	Pin Block	1:2.0	
							1987	32+940 ~32+890	2,991 (-2,991)					11.03 ~10.55	1988	35+240 ~34+380	900				
		종	부여	세도	청포		1988	33+520 ~29+730	961 (-961)					11.70 ~10.40	1988	32+890 ~31+600	810				
	망성제	시	익산	망성	화산	좌	1933 ~1934	32+440 ~29+660	3,670	7,340 (-3,670)	1:2.0	1:2.5	4.0 ~5.0	8.27 ~7.79	1993	32+440 ~29+660	3,056	3,056	호안갑럭	1:2.5	
		종	익산	용안	용두		1993	32+440 ~29+660	3,670 (-3,670)					10.60 ~10.40							
	황산제	시	논산	강경	황산	좌	1928	33+090 ~32+440	860	1,720 (-860)	1:2.0	1:2.5	5.0	9.44	1987	33+040 ~32+880	200	766	돈뷤임	1:2.5	
		종	익산	망성	황산		1990	33+090 ~32+440	860 (-860)					11.30 ~10.40	1990	32+880 ~32+440	566		호안갑럭		
	서창제	시	논산	강경	황산	좌	1945	33+850 ~33+300	600	1,885 (-1,200)	1:2.0	1:2.0	6.0	9.31	1990	33+850 ~33+300	606	606	호안갑럭	1:2.0	
		종	논산	강경	황산		1978	33+850 ~33+300	600 (-600)												
							1990	33+850 ~33+300	685 (-600)					11.10 ~10.90							

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			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	개척제	시	논산	성동	개척	좌	1932	35+970 ~34+460	1,470	2,940 (-1,470)	1:2.0	1:2.0	5.0	8.87 ~8.46	1997	35+970 ~34+460	1,470	1,470	호안블럭	1:2.0	
		종	논산	성동	개척		1997	35+970 ~34+460	1,470 (-1,470)					11.90 ~10.80							
	장산제	시	부여	세도	장산	우	1999	36+240 ~35+760	394	394	1:2.0	1:2.0	6.0	11.80 ~11.70	1999	36+240 ~35+760	394	394	호안블럭	1:2.0	
		종	부여	세도	장산																
	우곤제	시	논산	성동	우곤	좌	1966	37+490 ~37+190	314	4,082 (-2,041)	1:2.0	1:2.0	5.0	9.06 ~8.74	1997	37+410 ~36+110	1,492	2,041	섬유대	1:2.0	
							1967 ~1969	37+900 ~37+490	556					9.05 ~8.92							
							1971 ~1972	37+190 ~36+180	960					8.70 ~9.13							
		종	논산	성동	우곤		1972	36+110 ~36+000	91					8.32		37+900 ~37+410	549		호안블럭		
							1973	36+180 ~36+110	120					8.67 ~8.50							
							1997	37+900 ~36+110	2,041 (-2,041)					11.90 ~11.80							
	반조원 1제	시	부여	세도	영조원	우	1978	38+030 ~37+930	145	353 (-145)	1:2.0	1:2.0	4.0	11.40 ~11.30	1999	38+030 ~37+880	208	208	호안블럭	1:2.0	
		종	부여	세도	영조원		1999	38+030 ~37+880	208 (-145)												

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			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	봉정제	시	부여	석성	봉정	좌									1972	40+920 ~78+185	283		돈틈임		
							1966 ~1974	41+400 ~39+920	1,590 (-90)					9.91 ~9.68	1974	41+120 ~40+920	267		돈틈임		
		종	부여	석성	봉정		1981 ~1984	40+430 ~38+410	1,943 (-533)	6,584 (-3,533)	1:2.0	1:2.5	6.0	9.68 ~9.26	1982	40+250 ~39+770	461	4,306 (-1,261)	돈틈임	1:2.5	
							1997	41+400 ~38+410	3,051 (-2,910)					12.50 ~11.60	1984	38+530 ~38+410	250		Pin Block		
															1997	41+400 ~38+410	3,045 (-1,261)		섬유대		
	반조원 2제	시	부여	세도	사산	우	년대미상	39+730 ~39+280	640					8.42							
		종	부여	세도	반조원		1987	39+390 ~39+280	60 (-60)	1,340 (-700)	1:2.0	1:2.0	5.0		1988이후	39+730 ~39+280	640	640	호안답력	1:2.0	
							1988이후	39+730 ~39+280	640 (-640)					12.10 ~11.30							
	장암제	시	부여	장암	장기	우	1967	45+550 ~45+310	130												
							1968	45+310 ~44+900	310					11.06							
		종	부여	장암	하황		1969	44+900 ~44+600	310	5,986 (-2,993)	1:2.0	1:2.0	5.0	8.86	1999	45+550 ~41+970	2,993	2,993	호안답력	1:2.0	
							1972	44+600 ~44+200	350												
							1973	44+200 ~41+970	1,893					12.20 ~12.00							
							1999	45+550 ~41+970	2,993 (-2,993)												

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			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 층	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 층	단면 구조(재료)	단면 구배	
	현북제	시	부여	부여	염창	좌	1967	45+600 ~45+550	65	4,405 (-2,346)	1:2.0	1:2.5	5.0	10.87 ~11.14	1968	45+400 ~45+140	250	3,169 (-1,110)	돕붙임	1:2.5	
		종	부여	부여	현북		1968	45+550 ~45+140	535						1969	45+090 ~45+140	50		돕붙임		
							1969	45+140 ~44+150	1,011						1970	45+770 ~87+20	104		돕붙임		
							1970	45+750 ~45+600	111						1970	45+090 ~44+980	141		돕붙임		
							1970	45+060 ~44+400	114					11.14	1974	45+120 ~45+000	120 (-120)		돕붙임		
							1972	44+484 ~44+430	65						1974	44+590 ~44+260	445		Pin Block +돕망태		
							1974	44+590 ~44+260	445 (-445)						1997	45+750 ~44+260	2,059 (-990)		호안블럭		
							1997	45+750 ~44+260	2,059 (-1,901)					13.00 ~12.80							
	군수제	시	부여	부여	군수	좌	1945 이전	50+550 ~46+100	3,880	8,173 (-4,057)	1:2.0	1:2.5	6.0	12.51 ~10.72	1997	50+800 ~56+070	4,116	4,116	호안블럭	1:2.5	
		종	부여	부여	중정			46+150 ~46+070	70 (-70)												
							1987	47+320 ~47+070	107 (-107)					11.16							
							1997	50+800 ~46+070	4,116 (-3,880)					13.70 ~13.20							
	정고1제	시	부여	장암	북고	우	2000	46+800 ~45+850	960	960	1:2.0	1:2.0	5.0	13.90 ~13.70	2000	46+800 ~45+850	960	960	호안블럭	1:2.0	
		종	부여	장암	북고																

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시~종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	정고2제	시 종	부여 부여	장암 장암	정암 북고	우	2000	48+940 ~47+260	1,977	1,977	1:2.0	1:2.0	5.0	14.10 ~12.90	2000	48+940 ~47+260	1,977	1,977	호안답력	1:2.0	
	금천제	시 종	부여 부여	장암 장암	석동 정암	우	2001	49+570 ~49+310	479	479	1:2.0	1:2.0	5.0	13.80	2001	49+570 ~49+310	479	479	호안답력	1:2.0	
	외리제	시 종	부여 부여	규암 규암	외 외	우	1945 이전	51+430 ~49+750	2,060	2,060	1:2.0	1:2.0	5.0	12.70 ~12.30	-	-	-	-	-	-	
	규암제	시 종	부여 부여	규암 규암	규암 외	우	년대미상 2000 (외리제 로시공)	51+990 ~51+430 52+030 ~51+430	825 870 (-825)	1,695 (-825)	1:2.0	1:0.3 ~1:2.0	5.0	11.31 12.70 ~11.50	년대미상 1987 1988 2000 (외리제 로시공)	52+030 ~51+470 51+970 ~51+470 51+470 ~51+430 52+030 ~51+430	650 825 (-650) 170 (-170) 870 (-825)	2,515 (-1,645)	석축, 돕붙임 석축, 돕붙임 Pin Block 호안답력	1:2.0	
	구교제	시 종	부여 부여	부여 부여	구교 구교	좌	1984 1984 1985 1985 1986	54+410 ~54+290 54+210 ~53+850 54+290 ~54+210 53+850 ~53+140 53+140 ~52+330	115 335 60 590 535	1,819	1:2.0	1:2.5	4.0 ~6.0	13.86 13.86 13.86 14.0 ~13.95 14.10 ~13.80	1984 1984 1985 1985	54+410 ~54+290 54+110 ~53+850 54+290 ~54+210 53+850 ~53+140	115 240 60 590	1,005	Pin Block	1:2.5	

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			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	라복제	시	부여	규암	진변	우	년대미상	52+580 ~52+470	85	1,340 (-670)	1:2.0	1:2.5	5.0 ~6.0	14.30 ~13.10	2000	52+760 ~52+180	670	670	섬유대	1:2.5	
		종	부여	규암	규암		년대미상	52+420 ~52+180	300												
							1955 ~1956	52+750 ~52+700	52												
							1966	52+700 ~52+650	165												
							1966	52+650 ~52+580	68												
							2000	52+750 ~52+180	670 (-670)												
	신리제	시	부여	규암	신	우	1965	53+990 ~53+480	600	1,263 (-600)	1:2.0	1:2.5	6.0	11.9	2000	54+030 ~53+470	663	663	잔디매트	1:2.5	
		종	부여	규암	신		2000	54+030 ~53+470	663 (-600)					14.50 ~14.40							
	정동제	시	부여	부여	정동	좌	-	58+260 ~55+390	2,810	2,810	1:2.0	1:2.0	4.0	14.30 ~13.90	-	-	-	-	-	-	
		종	부여	부여	쌍북																
	장수평제	시	청양	청남	왕진	우	1961	60+090 ~57+810	2,396	5,471 (-2,396)	1:2.0	1:2.5	6.0	14.08 ~13.79	2002	60+620 ~57+810	3,075	3,075	호안블럭	1:2.5	
		종	청양	청남	인량		2002	60+620 ~57+810	3,075 (-2,396)					13.90 ~13.80							

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	자왕제	시 종	부여 부여	부여 부여	저석 자왕	좌	- 1979 2001	62+590 ~61+660 61+620 ~59+190 62+590 ~62+520 62+360 ~62+340 62+590 ~59+060	1,080 2,545 55 (-55) 26 (-26) 3,644 (-3,625)	7,350 (-3,706)	1:2.0	1:2.0	5.0	14.27 ~14.78 14.54 ~13.81 14.80 ~13.30	2001	62+590 ~59+060	3,644	3,644	호안블럭	1:2.0	
	청남제	시 종	청양 청양	청양 청양	천내 왕진	우	1974 1976 ~1977 1977 ~1978	64+980 ~64+940 64+940 ~64+410 64+880 ~63+910 63+870 ~62+810 62+700 ~62+420 62+160 ~61+920 62+810 ~62+700 62+350 ~62+260	50 550 410 880 280 322 110 66	9,090 (-5,460)	1:2.0	1:2.0 ~1:2.5	5.0	15.35 15.35 ~15.40 15.40 ~15.03 15.03 ~14.49 14.80 ~13.96 14.15 ~14.13 14.49 ~14.80 13.96 ~14.15	1976 ~1977 1982 1999 2002	64+980 ~64+940 64+510 ~63+910 63+870 ~63+640 61+620 ~60+940 61+780 64+980	40 480 150 740 2,890 (670)	4,300 (-670)	돈붐입 Pin Block Pin Block 호안블럭	1:2.0 ~1:2.5	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	청남제	시	청양	청양	천내	우	1977 ~1978	61+920 ~61+810	150						-	-	-	-	-	-	
							1978	61+590 ~60+945	640 (-640)					14.17 ~14.25							
							1978 ~1979	62+420 ~62+350	72					14.49 ~14.77							
								61+620 ~60+940	740					13.96							
		종	청양	청양	왕진		1978 ~1979	61+620 ~60+940	740 (-740)					14.34 ~13.57							
							1982	61+620 ~61+890	450 (-450)					14.34 ~14.77							
							1987	61+620 ~60+940	740 (-740)					14.28 ~13.81							
							1999	63+800 ~61+780	1,880 (-1,880)					16.90 ~15.40							
							2002	64+980 ~63+900	1,010 (-1,010)												

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	견동제	시 종	공주 공주	탄천 탄천	견동 유하	좌	1954 1955 1956 1958 1987 1998	65+120 ~64+960 64+960 ~64+590 64+590 ~64+550 64+550 ~64+460 64+750 ~64+590 65+120 ~64+460	141 392 130 (-22) 80 (-80) 177 (-177) 641 (-641)	1,561 (-920)	1:2.0	1:2.5	백제큰길공사중	14.97 ~15.01 15.01 ~15.09 15.07 ~15.02 15.09 ~15.02 15.04 ~15.07 공사중	1998	65+120 ~64+460	641	641	호안돌럭	1:2.5	
	대평제	시 종	청양 청양	목면 목면	화양 화양	우	1982 2002	68+130 ~67+810 68+130 ~67+810	360 360 (-360)	720 (-360)	1:2.0	1:2.5	6.0	14.55 ~14.27 18.10 ~18.00	1982 2002	68+130 ~67+810 68+130 ~67+810	360 360 (-360)	720 (-360)	돈망태 호안돌럭	1:2.5	
	대학2제	시 종	공주 공주	탄천 탄천	대학 대학	좌	1988이후	68+310 ~68+085	272	272	1:2.0	1:2.5	백제큰길공사중	17.70 ~14.70 공사중	1988이후	68+310 ~68+085	272	272	호안돌럭	1:2.5	
	대학제	시 종	공주 공주	탄천 탄천	대학 대학	좌	1976 1988이후	69+360 ~68+970 69+255 ~69+225 69+360 ~68+970	400 30 (-30) 432 (-400)	862 (-430)	1:2.0	1:2.5	백제큰길공사중	14.2 공사중	1976 1988이후	69+255 ~69+225 69+360 ~68+970	30 432 (-30)	462 (-30)	호안돌럭	1:2.5	
	신흥제 (음전제)	시 종	청양 청양	목면 목면	신흥 신흥	우	1971 2000	69+070 ~68+950 69+090 ~68+940	134 167 (-134)	301 (-134)	1:2.0	1:2.0	6.0	15.60 ~15.80 18.30	1971 2000	69+070 ~68+950 69+090 ~68+940	120 167 (-120)	287 (-120)	돈틈임 호안돌럭	1:2.0	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	신흥제(반음제)	시	청양	목면	신흥	우	1965	69+650 ~69+610	34	278 (-110)	1:2.0	1:2.0	6.0	18.80 ~18.50	2000	69+740 ~69+580	168	168	호안블럭	1:2.0	
		종	청양	목면	신흥		1968	69+710 ~69+650	76												
							2000	69+740 ~69+580	168 (-110)												
	신흥제(장수제)	시	청양	목면	신흥	우	1964	70+240 ~70+020	242	526 (-255)	1:2.0	1:2.0	6.0	16.62 ~16.60	2000	70+010 ~70+240	271	271	호안블럭	1:2.0	
		종	청양	목면	신흥		1968	70+250 ~70+240	13					16.62							
							2000	70+010 ~70+240	271 (-255)					18.90 ~18.50							
	신흥제(임장제)	시	청양	목면	신흥	우	1967 ~1968	71+210 ~71+070	134	279 (-134)	1:2.0	1:2.0	6.0	16.32	2000	71+220 ~71+070	145	145	호안블럭	1:2.0	
		종	청양	목면	신흥		2000	71+220 ~71+070	145 (-134)					18.60 ~18.50							
	어천제	시	공주	우성	죽당	우	년대미상	72+320 ~72+160	190	380 (-190)	1:2.0	1:2.0	5.0	19.60 ~18.50	1986	72+530 ~72+140	452	1,126 (-190)	돈붙임	1:2.0	
		종	공주	우성	어천		1997	72+320 ~72+160	190 (-190)						1987	73+030 ~72+530	484		호안블럭		
															1997	72+320 ~72+160	190 (-190)				
	죽당제	시	공주	우성	죽당	우	1997	74+210 ~73+970	241	241	1:1.5	1:2.0	공사중	공사중	1997	74+210 ~73+970	241	241	호안블럭	1:2.0	
		종	공주	우성	죽당																

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시~종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	오동제	시 종	공주 공주	우성 우성	오동 오동	우	1978	76+630 ~76+410	221	221	1:2.0	1:2.0	4.5	18.70 ~18.00	1979 1980 1987 ~1988	76+630 ~76+550 76+610 ~76+530 76+630 ~76+555	126 140 (-126) 120 (-120)	386 (-246)	돈분임	1:2.0	
	보흥제	시 종	공주 공주	우성 우성	보흥 보흥	우	1988이후	77+970 ~77+690	320	320	1:2.0	1:2.0	3.0	18.20 ~18.00	-	-	-	-	-	-	
	옥성제	시 종	공주 공주	우성 우성	옥성 옥성	우	1978 1998	80+220 ~79+930 80+220 ~79+930	360 360 (-360)	720 (-360)	1:2.0	1:2.0	6.0	18.71 ~18.43 21.40 ~21.30	1998	80+220 ~79+930	360	360	호안블럭	1:2.0	
	검상제	시 종	공주 공주	반포 반포	검상 검상	좌	1998	78+490 ~75+940	2,329	2,329	1:2.0	1:2.0 ~1:2.5	백제큰길공사중	공사중	1998	78+490 ~75+940	2,329	2,329	호안블럭	1:2.0	
	금성제		공주 공주	-	금성 금성	좌	1936 1984 ~1985	85+080 ~84+840 85+080 ~84+830	290 260 (-260)	550 (-260)	1:2.0	1:2.0	7.0	18.46 21.40 ~19.10	1984 ~1985 1986	85+080 ~84+830 84+830 ~84+790 84+750 ~84+540	260 110 230	600	돈분임	1:0.5 1:1.0	
	신관제	시 종	공주 공주	-	신관 신관	우	1967 1972	85+710 ~85+330 85+330 ~85+050	400 250	650	1:1.5	1:2.0	도로	21.28 22.40 ~21.90	-	-	-	-	-	-	
	옥룡호안	시 종	공주 공주	-	소학 옥룡	좌	-	-	-	-	-	-	-	-	-	86+430 ~86+350 86+670 ~86+440	90 270	360	석 축 Pin Block	1:1.5 1:0.3	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	도남2제	시 종	공주 공주	반포 반포	도남 도남	좌	2002 공사중	95+360 ~95+210	197	197	1:2.0	1:2.0	6.0	25.00	2002 공사중	95+360 ~95+210	197	197	호안블럭	1:2.0	
	원봉1제	시 종	공주 공주	반포 반포	원봉 원봉	좌	2002 공사중	96+650 ~96+350	265	265	1:2.0	1:2.0	6	25.40	2002 공사중	96+650 ~96+350	265	265	호안블럭	1:2.0	
	원봉제	시 종	공주 공주	반포 반포	원봉 원봉	좌	1965 ~1966 1987 ~1988 2002 공사중	98+310 ~97+260 97+260 ~97+040 98+310 ~96+740	950 200 1,440 (-1,150)	2,590 (-1,150)	1:2.0	1:2.0	6	21.70 ~22.55 22.55 ~22.52 25.90 ~25.40	1965 ~1966 1987 ~1988 공사중	98+210 ~98+020 97+260 ~97+040 98+310 ~96+740	200 200 1,440 (-400)	1,840 (-400)	돕붙임 Pin Block 호안블럭	1:2.0	
	송원제	시 종	연기 연기	남 남	송원 송원	우	1961 1984	100+650 ~99+330 99+580 ~98+650	1,120 800 (-180)	1,920 (-180)	1:2.0	1:2.0	3.0	24.65 ~24.40 24.40 ~23.80	1984	99+580 ~98+600	800	800	호안블럭	1:2.0	
	영곡제	시 종	연기 연기	금남 금남	영곡 영곡	좌	2002 공사중	99+440 ~99+060	576	576	1:2.0	1:2.0	6	26.00 ~25.10	2002 공사중	99+440 ~99+060	576	576	호안블럭	1:2.0	
	용수제	시 종	연기 연기	금남 금남	대평 성덕	좌	2002 공사중	99+970 ~99+740	248	248	1:2.0	1:2.0	6.0	26.20	2002 공사중	99+970 ~99+740	248	248	호안블럭	1:2.0	
	대평제	시 종	연기 연기	금남 금남	대평 대평	좌	1931 ~1932	101+860 ~100+240	1,380	1,380	1:2.0	1:2.5	3.0	27.30 ~25.20	-	-	-	-	-	-	
	나성제	시 종	연기 연기	남 남	나성 나성	우	1956 ~1961	101+840 ~100+980	960	960	1:2.0	1:2.5	6.0	27.60 ~27.40	-	-	-	-	-	-	도로

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	금남제	시	연기	금남	석삼	좌	1935	104+480 ~101+880	2,960					27.14 ~26.91	-	-	-	-	-	-	
		종	연기	금남	대평		1966	104+350 ~103+730	700 (-700)	3,860 (-900)	1:2.0	1:2.5	5.0	27.14 ~26.74							
														26.74							
							1967	103+730 ~103+580	200 (-200)					27.20 ~26.20							
	남면제	시	연기	남	양화	우	1936	105+830 ~103+110	2,500					26.02 ~26.65	-	-	-	-	-	-	
							년대미상	103+110 ~102+360	760					26.65 ~26.46							
		종	연기	동	나성		1965	102+690 ~102+360	350 (-350)	3,910 (-650)	1:2.0	1:2.0	4.0 ~6.0	26.46							
							1967	103+000 ~102+690	300 (-300)					26.65 ~26.46							
														27.00 ~26.10							
	월산제	시	연기	남	월산	우	2002 공사중	108+560 ~107+670	982	982	1:2.0	1:2.0	6.0	27.20 ~27.10	2002 공사중	108+560 ~107+670	982	982	호안블럭	1:2.0	
		종	연기	남	월산																
	부강제	시	청원	부용	금호	우	2002 공사중	113+840 ~112+490	1,453	1,453	1:2.0	1:2.0	5.0	28.10 ~27.60	2002 공사중	113+840 ~112+490	1,453	1,453	호안블럭	1:2.0	
		종	연기	금남	부용																
	중척제	시	청원	현도	중척	우	2002 공사중	124+130 ~122+370	1,797	1,797	1:2.0	1:2.0	5.0	31.70 ~31.20	2002 공사중	124+130 ~122+370	1,797	1,797	잔디매트	1:2.0	
		종	청원	현도	중척																
	양지호안	시	청원	현도	양지	우	-	-	-	-	-	-	-	-	1988	126+770 ~125+910	270	270	돈망태	1:2.0	
		종	청원	현도	양지																
	반곡제	시	연기	금남	반곡	좌	2002 공사중	106+520 ~105+510	955	955	1:2.0	1:2.0	6.0	27.00 ~26.70	2002 공사중	106+520 ~105+510	991	991	호안블럭	1:2.0	
		종	연기	금남	반곡																
	봉기제	시	연기	금남	봉기	좌	2002 공사중	108+650 ~106+580	1,282	1,282	1:2.0	1:2.0	6.0	27.20 ~27.00	2002 공사중	108+650 ~106+580	1,282	1,282	호안블럭	1:2.0	
		종	연기	금남	봉기																

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 층	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시~종	준공년도	측점(NO)	연장(m) 구간	연장(m) 층	단면 구조(재료)	단면 구배	
	부용제	시 종	연기 연기	금남 금남	부용 부용	좌	2001	113+980 ~111+510	1,295	1,295	1:2.0	1:2.0	5.0	28.10 ~27.20	2001	113+310 ~111+510 113+980 ~113+310	935 360	1,295	잔디매트 호안블럭	1:2.0	
	문평제	시 종	대덕 대덕	-	석봉 문평	좌	2001(?)	126+830 ~125+660	1,225	1,225	1:2.0	1:2.0	4.0	34.10 ~33.50	-	-	-	-	-	-	
	풍한산업호안	시 종	대덕 대덕	-	석봉 석봉	좌	-	-	-	-	-	-	-	-	1974	127+440 ~126+860	533	533	돌붙임	1:2.0	
	노산호안	시 종	청원 청원	현도 현도	노산 노산	우	-	-	-	-	-	-	-	-	1980	130+430 ~130+200	160	160	돌망태	1:2.0	

1.1.2 제방 및 고수호안 (금강:대청댐상류)

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
							준공년도	측점(NO)	연장(m)		구배		천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m)		단면		
			시·군	읍·면	동·리				구간	총	제내	제외					구간	총	구조(재료)	구배	
금강상류	금암제	시 종	옥천 옥천	동이 동이	금암 금암	좌	?	226+240 ~225+650	649	649	1:2.0	1:2.0	5.0 ~6.0	93.50 ~91.20	?	226+240 ~225+650	649	649	호안블럭	1:2.0	
	지탄제	시 종	옥천 옥천	이원 이원	지탄 지탄	우	2002 공사중	235+450 ~234+020	1,560	1,560	1:2.0	1:2.5	5.0	100.10 ~99.40	2002 공사중	235+450 ~234+020	1,560	1,560	호안블럭	1:2.5	
	원동제	시 종	옥천 옥천	이원 이원	원동 용방	좌	2002 공사중	235+600 ~234+310	1,214	1,214	1:2.0	1:2.5	5.0	100.20 ~99.60	2002 공사중	235+600 ~234+310	1,214	1,214	호안블럭	1:2.5	
	장동제	시 종	영동 영동	심천 이원	장동 백지	우	2002 공사중	238+155 ~235+600	2,379	2,379	1:2.0	1:2.5	5.0	101.45 ~100.18	2002 공사중	238+155 ~235+600	2,379	2,379	호안블럭	1:2.5	
	동대제	시 종	옥천 옥천	심천 심천	구탄 장동	우	1975이전	241+420 ~238+410	2,110	2,110	1:2.0	1:2.0	4.0	103.20 ~101.70	-	-	-	-	-	-	
	고당제	시 종	옥천 옥천	심천 심천	고당 고당	좌	1975이전	243+580 ~241+510	1,450	1,450	1:2.0	1:2.0	4.0	103.30 ~101.80	-	-	-	-	-	-	
	심천1제	시 종	옥천 옥천	심천 심천	심천 심천	우	1975이전	244+050 ~242+830	1,520	1,520	1:2.0	1:2.0	4.0	104.90 ~104.70	1975이전	243+345 ~242+830	740	740	돕망태	1:2.0	
	심천2제	시 종	옥천 옥천	심천 심천	초강 초강	우	1975이전	245+970 ~244+230	1,640	1,640	1:2.0	1:2.0	4.0	106.20 ~105.70	1975이전	244+800 ~244+230	530	530	돕망태	1:2.0	
	심천3제	시 종	옥천 옥천	심천 심천	초강 초강	우	1975이전	246+250 ~246+070	220	220	1:2.0	1:2.0	4.0	106.20 ~104.20	-	-	-	-	-	-	

1.1.3 제방 및 고수호안 (갑천)

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시~종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
갑천	문평제	시 종	대덕 대덕	신탄진 신탄진	신대 문평	우	- 1958 1981 1983 1984 1985 1986 1987	3+700 ~3+135 4+310 ~3+700 4+035 ~3+975 3+135 ~2+240 2+240 ~1+205 1+205 ~0+770 0+770 ~0+240 0+240 ~0+080	565 600 (-60) 865 775 400 533 242	4,040 (-60)	1:2.0	1:2.0	4.0	34.07 ~34+19 33.91 ~34.07 34.12 34.19 ~33.76 33.76 ~33.58 33.58 ~33.52 33.52 ~33.29 33.29 33.90 ~33.20	1978 1983 1984 1986 1987	3+465 ~3+015 3+135 ~2+240 2+240 ~1+280 0+770 ~0+240 0+240 ~0+080	483 865 (-125) 750 533 242	2,873 (-125)	Pin Block	1:2.0	
	봉산제	시 종	대전 대전	유성 유성	봉산 봉산	좌	1988이후	2+110 ~0+980	1,315	1,315	1:2.0	1:2.0	5.0	32.30 ~31.80	1988이후	2+110 ~0+980	1,315	1,315	호안블럭	1:2.0	
	관평제	시 종	대덕 대덕	구즉 구즉	관평 송강	좌	1955	3+630 ~2+240	1,400	1,400	1:2.0	1:2.0	5.0	34.18 ~33.73 34.20 ~33.90	-	-	-	-	-	-	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 층	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시~종	준공년도	측점(NO)	연장(m) 구간	연장(m) 층	단면 구조(재료)	단면 구배	
	용산제	시 종	대전 대덕	중 구즉	문지 용산	좌	1955 1963 1988이후 (일부 도로포장)	8+195 ~4+395 4+395 ~3+705	3,670 750	4,420	1:1.5 ~1:2.0 1:2.0	1:1.5 ~1:2.0 1:2.0	5.0	36.19 ~33.41 33.41 ~33.30 36.30 ~33.20	-	-	-	-	-	-	
	와동제	시 종	대전 대전	동 동	신대 와	우	1955 1988이후 (도로포장)	7+415 ~5+730	1,800	1,800	1:1.0 ~1:1.5 1:2.0	1:1.0 ~1:2.0 1:2.0	5.0 ~6.0	35.27 ~34.21 35.30 ~33.20	1955 1988이후	5+955 ~5+765 7+415 ~6+865	200 530	730	돈분임 호안압력	1:2.0	
	신대제	시 종	대전 대전	동 동	신대 신대	우	1977 1987 1988이후 (도로포장)	8+130 ~7+450 8+130 ~7+955	750 160 (-160)	910 (-160)	1:2.0	1:2.0	도로	34.77 ~34.12 34.77 ~34.32 35.50 ~34.10	1977 1987 1988이후	8+130 ~7+450 8+130 ~7+955	750 160 (-160)	910 (-160)	Pin Block 호안압력	1:2.0	
	문지제	시 종	대전 대전	동 동	원촌 문지	좌	- 1975 1976	10+690 ~9+810 9+810 ~8+795 8+795 ~8+195	785 985 610	2,380	1:2.0	1:1.5 ~1:2.0	3.0	37.69 ~37.28 37.28 ~35.94 35.94 ~35.82 38.90 ~36.30	1975 1976 1985 1988이후	9+965 ~8+815 8+815 ~8+195 10+195 ~9+965 10+690 ~10+090	1,087 630 190 600 (-127)	2,507 (-127)	Pin Block 호안압력	1:2.0	

하천명	명칭	시·중점	소재지			좌우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장 구간	연장 총	단면 구조(재료)	단면 구배	
	대화제	시 종	대전 대전	동 동	대화 연축	우	- - 1958 1988이후 (도로포장)	10+845 ~10+145 10+115 ~9+905 11+325 ~10+865	780 300 500	1,580	1:2.0	1:2.0	5.0 ~6.0	38.31 ~37.45 37.48 ~36.85 39.50 ~39.46 42.20 ~39.50	- - 1958	10+845 ~10+145 10+115 ~9+905 11+325 ~10+865	780 300 500	1,580	돌망태 돌망태 돌붙임 호안블럭	1:2.0	
	도룡제	시 종	대전 대전	중 중	도룡 도룡	좌	1937 1976 1988	12+920 ~11+345 12+210 ~11+105 12+355 ~11+105	1450 910 (-910) 1240 (-1240)	3,600 (-2,150)	1:2.0	1:2.0	도로	39.98 ~39.61 39.90 ~38.77 39.98 ~38.77 42.20 ~39.90	1937 1970 1976 1988	12+590 ~12+240 12+920 ~12+590 11+615 ~11+105 11+925 ~11+105	450 240 370 (-370) 500	1560 (-370)	돌붙임 Pin Block 돌망태	1:2.0	
	삼천제	시 종	대전 대전	중 중	삼천 삼천	우	1955 1958 1972	13+175 ~12+280 12+280 ~11+755 11+960 ~11+815	830 550 170 (-170)	1,550 (-170)	1:2.0	1:2.0	도로	40.36 40.36 40.21 ~40.36 41.40 ~40.50	1955 1972	12+455 ~12+280 11+960 ~11+865	180 120	300	Pin Block 돕망태	1:2.0	

건설교통부

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	구성제	시 종	대전 대전	중 중	구성 도룡	좌	1936 1985이후 (도로포장)	15+235 ~12+980	2270	2270	1:1.5	1:2.0	도로	40.85 ~38.79 43.70 ~43.20	1964 1974 1985 1985이후	14+560 ~14+525 14+525 ~14+310 13+855 ~12+960 15+235 ~12+980	63 140 890 2,270 (-1,093)	3,363 (-1,093)	Pin Block 돈망태 호안급력	1:2.0	
	봉명제	시 종	대전 대전	유성 서	원신흥 도마	좌	1937 1973 1985이후 (도로포장)	17+035 ~15+385 15+385 ~15+235	1890 120	2,010	1:2.0	1:2.0 ~1:2.5	3.0 ~4.0	45.05 ~40.95 40.95 ~40.83 46.90 ~43.70	1937 1973 1985이후	16+545 ~15+345 17+135 ~16+577 15+385 ~15+055 16+025 ~15+235	1155 465 200 790 (-790)	2,610 (-790)	돈붐임 돈망태 돈망태 호안붙력	1:2.0 ~1:2.5	
	갑마제	시 종	대전 대전	서 중	월평 침산	우	1939 1985이후 (도로포장)	17+760 ~13+175	4,520	4,520	1:1.5 ~1:2.0	1:2.0	도로	'45.68 ~38.84 48.10 ~41.40	1939 1985이후	16+605 ~13+415 17+175 ~16+645 14+975 ~14+900	3100 465 42	3,607	돈붐임 호안붙력	1:2.0	
	원신흥제	시 종	대전 대전	서 유성	도안 원신흥	좌	1985이후	18+830 ~17+120	1,760	1,760	1:2.0	1:2.0	4.0	49.00 ~46.10	1985이후	18+830 ~17+120	1,760	1,760	돈붐임	1:2.0	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 층	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 층	단면 구조(재료)	단면 구배	
	도안제	시 종	대전 대전	서 서	도안 도안	좌	1948	20+770 ~18+830	2,020	2,020	1:2.0	1:2.0	4.0	56.39 ~47.10 52.00 ~49.00	1948	19+985 ~19+495 20+810 ~20+690	570 85	655	돌붙임 돌붙임	1:2.0	
	정림1제	시 종	대전 대전	서 서	정림 정림	우	1976 1985이후 (도로포장)	21+565 ~20+960	590	590	1:2.0	1:2.0	도로	51.07 ~40.96 51.70 ~50.90	1976 1985이후	21+565 ~20+965	590	590	Pin Block 호안블럭	1:2.0	
	가수원1제	시 종	대전 대전	서 서	가수원 가수원	좌	1947 1981	21+685 ~20+820 21+840 ~21+695	910 140	1,050	1:2.0	1:2.0	5.0	52.48 ~40.93 52.76 ~52.50 53.60 ~50.10	1947 1981	21+685 ~20+905 21+825 ~21+695 21+845 ~21+815	550 30 30	610	돌붙임 Pin Block	1:2.0	
	가수원호안	시 종	대전 대전	서 서	가수원 가수원	우	-	-	-	-	-	-	-	-	1970	22+125 ~21+915	250	250	돌붙임	1:2.0	
	가수원2제	시 종	대전 대전	서 서	가수원 가수원	좌	1947 2000	23+140 ~21+975 23+600 ~23+140	1220 460	1,680	1:2.0	1:2.0	4.0	54.32 ~52.88 52.90	1947 2000	22+650 ~21+955 22+945 ~22+810 23+230 ~22+975 23+600 ~23+140	600 120 170 460 (-100)	1350 (-100)	돌붙임 호안블럭	1:2.0	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 층	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 층	단면 구조(재료)	단면 구배	
	정림2제	시 종	대전 대전	서 서	괴곡 괴곡	우	1948 1973	23+710 ~23+160 23+160 ~22+560	585 700	1,285	1:1.5 ~1:2.0	1:2.0	4.0	54.84 ~54.13 54.84 ~53.38 56.00 ~55.80	1948 1973	23+480 ~23+160 23+160 ~22+480	320 700	1020	돈뷴임	1:2.0	
	괴곡3제	시 종	대전 대전	서 서	괴곡 괴곡	좌	1957 2000	24+360 ~23+610 24+360 ~23+600	780 780 (-780)	1560 (-780)	1:2.0 ~1:2.5	1:2.0	4.0 ~5.0	57.25 ~54.68 59.50 ~55.90	1957 2000	24+360 ~23+610 24+360 ~23+600	780 780 (-780)	1,560 (-780)	돈뷴임 호안댭력	1:2.0	
	괴곡우안제	시 종	대전 대전	서 서	괴곡 괴곡	우	1976 1985이후	24+505 ~24+145 24+145 ~23+975 24+600 ~24+505	360 205 115	680	1:2.0	1:2.0	4.0	58.14 ~55.45 59.47 ~56.18	1976 1985이후	24+505 ~24+285 24+255 ~24+145 24+600 ~24+265 24+240 ~23+975	216 100 325 (-216) 310 (-100)	951 (-316)	돈망태 호안댭력	1:2.0	
	괴곡2제	시 종	대전 대전	서 서	괴곡 괴곡	좌	1960 2000	25+480 ~25+140 25+480 ~24+360	310 1,020 (-310)	1,330 (-310)	1:2.0	1:2.0	4.0	59.12 ~58.61 60.30 ~59.60	1978 2000	25+480 ~25+345 25+480 ~24+360	140 1,020 (-140)	1,160 (-140)	돈망태 돈뷴임	1:2.0	
	괴곡1제	시 종	대전 대전	서 서	괴곡 괴곡	좌	1954 2000	25+940 ~25+650 26+120 ~25+480	250 573 (-250)	823 (-250)	1:2.0	1:2.0	5.0	62.52 ~60.24 61.50 ~60.80	2000	26+120 ~25+480	573	573	호안댭력	1:2.0	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
							준공년도	측점(NO)	연장(m)		구배		천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m)		단면		
			시·군	읍·면	동·리				구간	총	제내	제외					구간	총	구조(재료)	구배	
	유천제	시	대전	서	흑석	우	1961	27+920 ~27+320	470	735	1:2.0	1:2.0	3.0	63.06 ~62.56	-	-	-	-	-	-	
		종	대전	서	흑석		1985이후	27+320 ~27+065	265					65.30 ~64.00							
	흑석제	시	대전	서	흑석	좌	1980	28+805 ~28+465	360	360	1:2.0	1:2.0	4.0	65.58 ~63.93	1980	28+805 ~28+465	360	360	돕망태	1:2.0	
		종	대전	서	흑석									65.50 ~63.30							
	호안	시	대전	서	흑석	우	-	-	-	-	-	-	-	-	1979	30+540 ~30+175	340	340	돕망태	1:2.0	
		종	대전	서	흑석																
	흑석2제	시	대전	서	흑석	우	1985이후	31+140 ~30+460	655	655	1:2.0	1:2.0	4.0	71.50 ~69.90	1985이후	31+140 ~30+460	637	637	호안블럭	1:2.0	
		종	대전	서	흑석																
	봉곡우안1제	시	대전	서	봉곡	우	1935	32+515 ~31+870	440	440	1:2.0	1:2.0	3.0	73.70 ~72.60	1967	32+680 ~32+485	200	200	돕붙임	1:2.0	
		종	대전	서	봉곡																
	봉곡좌안제	시	대전	서	봉곡	좌	1978	33+400 ~32+995	390	1,141 (-390)	1:2.0	1:2.0	4.0	74.99 ~74.16	1974	33+400 ~33+330	120	1,062 (-120)	호안블럭	1:2.0	
		종	대전	서	봉곡		1985이후	33+400 ~32+480	751 (-390)					75.70 ~74.10	1985이후	33+400 ~32+480	942 (-120)				
	봉곡우안2제 (용촌제)	시	대전	서	용촌	우	1959	33+510 ~33+075	460	1,047 (-460)	1:2.0	1:2.0	3.0	74.99 ~74.31	1959	33+510 ~33+075	460	1,047 (-460)	돕붙임	1:2.0	
		종	대전	서	용촌		1998	33+690 ~33+075	587 (-460)					76.60 ~75.70	1998	33+690 ~33+075	587 (-460)		호안블럭		

1.1.4 제방 및 고수호안 (유등천)

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
							준공년도	측점(NO)	연장(m)		구배		천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m)		단면		
			시·군	읍·면	동·리				구간	층	제내	제외					구간	층	구조(재료)	구배	
유등천	대화제	시 종	대전 대전	대덕 대덕	대화 대화	우	1958	0+560 ~0+000	765	765	1:2.0	1:2.0	4.0	38.56 ~38.50 39.90 ~39.40	1958	0+560 ~0+000	765	765	호안갑럭	1:2.0	
	삼천제	시 종	대전 대전	서 서	삼천 삼천	좌	1953 1958 1972 1983 1985이후 (도로포장)	3+260 ~0+530 0+520 ~0+000 0+530 ~0+150 2+700 ~2+380	2780 430 70 (-70) 400 (-400)	3,680 (-470)	1:2.0	1:2.0	4.0	40.96 ~38.53 38.53 ~38.50 38.53 ~38.46 40.10 ~39.90 42.60 ~40.30	1953 1970 1972 1983 1985이 후	0+620 ~0+280 2+390 ~1+940 0+530 ~0+150 2+700 ~2+390	360 410 70 396	1,236	돈담임 돈담임 돈망태 돈망태 호안갑럭	1:2.0	
	구마니제	시 종	대전 대전	대덕 대덕	대화 대화	우	1952 1985이후	1+245 ~0+705 1+245 ~0+705	480 480 (-480)	960 (-480)	1:2.0	1:2.0	3.0 6.0	38.63 ~38.56 40.50 ~39.60	1985이 후	1+245 ~0+705	480	480	호안갑럭	1:2.0	
	오정제	시 종	대전 대전	대덕 대덕	오정 오정	우	1965 1975	2+640 ~2+010 2+010 ~1+480	666 614	1,280	1:2.0	1:2.0	5.0	39.99 ~39.78 39.78 ~38.70 41.90 ~39.70	1965 1975	2+480 ~2+010 2+010 ~1+480	516 614	1130	Pin Block	1:2.0	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	용문제	시	대전	서	가장	좌	1937	5+690 ~3+260	2440	2440	1:2.0	1:2.0 ~1:2.5	4.0 ~5.0	46.11 ~40.96	1937	4+005 ~3+655	310	1,766 (-387)			
																4+720 ~4+640	140				
																4+970 ~5+170	190				
															1964	4+520 ~4+385	140		돌붙임		
															1965	5+150 ~5+040	107 (-107)		돌망태		
															1969	4+335 ~4+075	224		돌붙임	1:2.0 ~1:2.5	
																5+150 ~5+030	107		돌망태		
		종	대전	서	용문		1985이후 (도로포장)					0.3 (옹벽)		48.90 ~43.60		3+925 ~3+805	140 (-140)		돌붙임	0.3 (옹벽)	
															1970	4+680 ~4+520	129				
															1971	4+520 ~4+410	100 (-100)		Pin Block		
															1981	5+270 ~5+200	60				
															1983	5+685 ~5+270	450				

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	중촌제	시 종	대전 대전	중 대덕	용두 오정	우	1939 1969 1980 1985이후 (도로포장)	3+775 ~2+820 4+550 ~3+805 3+805 ~3+095	800 967 650 (-650)	2,417 (-650)	1:2.0	1:2.0	4.5 6.0	41.84 ~40.31 43.66 ~41.91 41.91 ~40.75 46.50 ~45.20	1969 1980 1981 1985이 후	4+550 ~3+805 3+805 ~3+095 2+850 ~2+940	800 650 260	1,710	돈류임 Pin Block 돈망태 호안급력	1:2.0	
	도마제	시 종	대전 대전	서 서	도마 변	좌	1939 1985이후 (도로포장)	7+805 ~5+690	2,120	2,120	1:2.0	1:2.0	6.0	50.58 ~46.11 54.50 ~48.90	1939 1971	6+010 ~5+690 6+430 ~6+010 7+805 ~7+465 6+600 ~6+430	320 410 250 300	1,280	돈류임 돈망태	1:2.0	
	태평제	시 종	대전 대전	중 중	유천 유천	우	1942 1985이후 (도로포장)	7+040 ~4+550	2430	2430	1:2.0	1:2.0	5.0 ~ 6.0	48.68 ~43.66 54.10 ~46.50	1942 1985이 후	7+010 ~4+550	1,645	1,645	돈망태 Pin Block 돈류임	1:2.0	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	유천제	시 종	대전 대전	중 중	산성 산성	우	1942 1985이후 (도로포장)	8+720 ~7+040	1,705	1,705	1:2.0	1:2.0	6.0 ~6.5 15.0	55.91 ~48.68 57.00 ~54.10	1942 1968 1971 1972 1983	7+555 ~7+040 8+420 ~7+810 7+445 ~7+385 7+810 ~7+555 8+650 ~8+420 7+810 ~7+585	590 597 55 (-55) 250 180 208 (-208)	1,880 (-263)	돌붙임 돌망태 호안블럭	1:2.0	
	복수제	시 종	대전 대전	서 서	복수 복수	좌	1965 1972 1985이후 (도로포장)	9+630 ~8+300 8+860 ~8+540	1320 303 (-303)	1623 (-303)	1:2.0	1:2.0	'3.0 5.0	57.07 ~51.83 56.10 ~55.38 61.50 ~59.20	1965 1967 1972 - -	9+250 ~9+060 8+450 ~8+300 8+890 ~8+450 9+765 ~9+595 9+595 ~9+485	175 180 344 170 110	979	돌망태 Pin Block	1:2.0	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	안영우안제	시	대전	중	안영	우	1943	11+025 ~9+845	1,260	3,243 (-572)	1:2.0	1:2.0	4.0 ~3.5	60.86 ~57.39	1969	9+545 ~9+415	136	1,134 (-110)	돕망태	1:2.0	
		종	대전	중	안영		1968	9+845 ~8+855	990					57.39 ~56.15		9+845 ~9+665	184				
							1969	9+545 ~9+370	154 (-154)					56.93 ~56.66		11+490 ~11+245	225				
								9+845 ~9+635	184 (-184)					57.39 ~57.07	1972	9+465 ~9+210	269 (-70)		돕붑임		
								11+515 ~11+245	225 (-154)					64.21 ~61.77		9+765 ~9+625	124 (-40)				
								9+755 ~9+505	234 (-80)					57.26 ~56.86		11+245 ~11+025	196				
							1972	11+245 ~11+025	196					61.77 ~60.86							
							1985이후 (도로포장)							66.40 ~56.50	1985이후				호안댭력		
	안영좌안제	시	대전	중	안영	좌	1962	11+050 ~10+460	630	870	1:2.0	1:2.0	4.0	60.81 ~59.42	1962	11+050 ~10+460	630	870	돕붑임	1:2.0	
		종	대전	중	안영		1972	10+460 ~10+255	240					59.42 ~58.62	1972	10+460 ~10+255	240				
														62.30 ~60.40							
	침산2제	시	대전	중	침산	좌	1968	12+470 ~12+190	310	310	1:2.0	1.2	1.5	65.64 ~65.23	1972	12+470 ~12+180	310	310	돕망태	1:2.0	
		종	대전	중	침산									65.20 ~63.50							

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 층	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 층	단면 구조(재료)	단면 구배	
	침산1제	시 종	대전 대전	중 중	침산 침산	좌	1935	13+125 ~12+710	465	465	1:1.5	1:2.0	0.8	67.51 ~66.22 68.50 ~66.30	1935 1977	13+080 ~12+710 13+140 ~13+080	350 50	400	돌붙임 돌망태	1:2.0	
	침산제	시 종	대전 대전	중 중	침산 침산	좌	2002 공사중	14+915 ~13+555	904	904	1:2.0	1:2.0 ~1:3.0	4.0	73.91 ~69.66	2002 공사중	14+915 ~13+350	1,224	1,224	호안블럭	1:2.0	

1.1.5 제방 및 고수호안 (미호천)

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
미호천	월산제	시 종	연기 연기	남 남	월산 월산	우	2002 공사중	01+340 ~00+000	1,022	1,022	1:2.0	1:2.0	6.0	27.40 ~27.20	2002 공사중	01+340 ~00+000	1,022	1,022	호안답력	1:2.0	
	용호제	시 종	연기 연기	동 동	용호 용호	좌	2002 공사중	3+900 ~3+420	490	490	1:2.0	1:2.5	5.0	28.20 ~28.10	2002 공사중	3+900 ~3+420	490	490	호안답력	1:2.5	
	보룡제	시 종	연기 연기	남 남	보룡 보룡	우	1998	04+250 ~03+510	800	800	1:2.0	1:2.0	6.0	28.80 ~28.20	1998	04+250 ~03+510	800	800	호안답력	1:2.0	
	보룡제 (구)	시 종	연기 연기	남 남	보룡 보룡	우	1987	4+570 ~4+150	484	484	1:2.0	1:2.0	4.0	23.00 ~22.40	1987 1987	5+570 ~4+150 4+150 ~4+060	484 90	574	돈망태	1:1.0 ~1:2.0	
	미호제	시 종	연기 연기	동 동	예양 문주	좌	1932 1933	9+090 ~7+260 7+260 ~4+410	1,174 2,832.8	4,006.8	1:2.0	1:2.0	4.0	29.93 ~28.20 28.20 ~26.81 28.30 ~27.10	-	-	-	-	-	-	
	봉암제	시 종	연기 연기	서 동	봉암 문주	우	1934	5+770 ~4+760	1,050	1,050	1:2.5	1:2.5	5.0	27.39 ~27.16 27.50 ~27.00	1972 1972	5+020 ~4+950 4+950 ~4+760	132 156	288	돈망태	1:2.0	
	서면제	시 종	연기 연기	서 서	월하 월하	우	1932	7+770 ~5+890	1,750	1,750	1:2.0	1:2.0	3.0	28.45 ~27.48 28.90 ~28.80	1962 1972	7+200 ~7+130 7+300 ~7+130	50 156 (~50)	206 (~50)	돈뜸임	1:2.0	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	번암제	시 종	연기 연기	조치원 조치원	번암 번암	우	1980 1980 1982	8+460 ~8+430 8+310 ~8+200 8+610 ~8+200	56 (-56) 143 (-143) 455	654 (-199)	1:2.0	1:2.0	4.0 ~5.0	28.67 28.73 ~28.67 28.90	2002	8+610 ~8+200	455	455	돕붙임	1:2.0	
	예양제	시 종	연기 연기	동 동	예양 예양	좌	1932	10+290 ~9+140	1,174	1,174	1:2.0	1:2.0	5.0 ~6.0	28.31 ~30.02 28.30 ~28.20	-	-	-	-	-	-	
	강외제1	시 종	청원 연기	강외 동	서평 예양	우	2002	9+030 ~8+690	440	440	1:2.0	1:2.0	5.0 ~6.0	29.10	2002	9+030 ~8+690	440	440	호안블럭	1:2.0	
	강외제2	시 종	청원 청원	강외 강외	궁평 서평	우	1927년 이전 1929 1930년 이전	16+370 ~11+810 11+810 ~10+630 10+630 ~9+140	4,310 1,120 1,330	6,760	1:2.0	1:2.0	4.0 ~5.0	31.62 ~29.09 29.09 ~28.94 28.94 ~29.79 31.90 ~28.50	1985	16+050 ~15+620	440	440	Pin Block	1:2.0	
	황탄제	시 종	청원 청원	강내 강내	월탄 황탄	좌	1988 1990	13+890 ~13+430 13+430 ~12+810	500 737	1,237	1:2.0	1:2.0	5.0	30.40 ~30.30	1988	13+890 ~13+430	500	500	Pin Block	1:2.0	
	강내제1	시 종	청원 청원	강내 강내	석화 탑연	좌	1975	16+680 ~16+010	600	600	1:2.0	1:2.0	3.0 ~4.0	31.93 ~31.84 32.00 ~31.60	1985	16+080 ~15+790	320	320	Pin Block	1:2.0	
	석화제	시 종	청원 청원	강내 강내	석화 석화	좌	2000	17+580 ~17+060	518	518	1:2.0	1:2.0	6.0	31.70 ~31.40		17+250 ~16+910	331	331	돕망태	1:2.0	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	강내제2	시 종	청주 청원	- 강내	신촌 탑연	좌	1933 1934 1935 1935 1976	20+840 ~20+140 19+160 ~18+240 18+240 ~17+630 20+140 ~19+160 21+090 ~20+840	700 900 585 1,000 300	3,485	1:2.0	1:2.0	4.0	34.18 ~33.63 32.89 ~32.08 32.08 ~32.02 33.63 ~32.89 34.18 34.30 ~31.90	1977	21+090 ~20+750	370	370	Pin Block	1:2.0	
	옥산제	시 종	청원 청원	옥산 강내	가락 석화	우	1933 1934 1935	22+460 ~20+500 20+500 ~18+810 18+810 ~16+580	1,960 1,700 2,300	5,960	1:2.0	1:2.0	5.0	34.82 ~33.57 33.57 ~32.50 32.50 ~31.82 34.80 ~32.00	-	-	-	-	-	-	
	국사제	시 종	청원 청원	옥산 옥산	국사 국사	우	1988 이후	23+670 ~22+600	1,160	1,160	1:2.0	1:2.0	6.0	34.90 ~34.40	-	-	-	-	-	-	
	강서제	시 종	청주 청원	- 옥산	원평 가락	좌	1930년 이전 1934 1945년 이전 1977	25+730 ~23+040 23+040 ~21+330 27+320 ~25+730 21+330 ~21+180	2,500 1,700 1,750 130	6,080	1:2.0	1:2.0	3.5 ~ 4.0	37.18 ~35.83 35.83 ~34.32 39.03 ~37.18 34.32 ~34.22 38.40 ~34.60	1977	21+330 ~21+170	130	130	돕붙임	1:2.0	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	등·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	하오창제	시 종	청원 청원	오창 옥산	신평 소노	우	1930년 이전 1974 1974 1975 1988이후	28+610 ~26+360 24+340 ~23+870 26+360 ~25+980 25+980 ~24+340	2,100 515 350 1,645	4,610	1:2.0	1:2.0	4.0 ~5.0 6.0 (도로 포장)	39.11 ~38.25 36.56 ~36.63 38.25 ~37.86 37.86 ~36.56 39.40 ~35.60	1974	24+340 ~23+870	245	245	돌붙임	1:2.0	
	북일제	시 종	청원 청주	북일 -	외하 원평	좌	1945년 이전	32+480 ~27+530	4,900	4,900	1:2.0	1:2.0	3.0	40.95 ~39.03 41.90 ~39.40	-	-	-	-	-	-	
	상오창제	시 종	청원 청원	오창 오창	가곡 신평	우	1945년 이전 1988이후	34+290 ~28+610	5,460	5,460	1:2.0	1:2.0	3.0 ~5.0 6.0 (도로 포장)	42.70 ~39.11 42.60 ~39.40	- 1969 1971	33+460 ~32+150 28+790 ~28+610 29+350 ~28+790	1,060 274 525	1,859	돌망태 돌붙임 돌붙임	1:2.0	
	팔결제	시 종	청원 청원	북일 북일	외하 외하	좌	1982 1983	32+980 ~32+670 32+670 ~32+510	450 270	720	1:2.0	1:2.0	6.0	40.42 ~40.48 40.48 ~40.95 40.60 ~40.30	1982 1983	32+980 ~32+790 32+790 ~32+510	315 405	720	Pin Block	1:2.0	
	북이제	시 종	청원 청원	북이 북이	화상 화상	좌	1945년 이전	37+360 ~33+150	4,460	4,460	1:2.0	1:2.0	5.0	44.31 ~41.46 44.10 ~41.70	-	-	-	-	-	-	

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 총	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시~종	준공년도	측점(NO)	연장(m) 구간	연장(m) 총	단면 구조(재료)	단면 구배	
	학소제	시 종	청원 청원	오창 오창	학소 학소	우	1960년 이전	35+890 ~34+580	1,420	1,420	1:2.0	1:2.0	5.0	43.40 ~42.30 42.80 ~42.20	-	-	-	-	-	-	
	여천제	시 종	청원 청원	오창 오창	여천 화산	우	1945년 이전	38+470 ~35+990	2,590	2,590	1:2.0	1:2.0	6.0	45.57 ~43.40 44.60 ~43.90	-	-	-	-	-	-	
	여천제 (신)	시 종	청원 청원	오창 오창	일신 학소	우	1998	39+485 ~38+430	878	878	1:2.0	1:2.5	6.0	46.70 ~45.60	1998	39+485 ~38+430	878	878	호안압력	1:2.5	
	석성제	시 종	청원 청원	북이 북이	석성 석성	좌	1983	38+960 ~38+050	910	910	1:2.0	1:2.0	6.0	45.23 ~44.91 45.20 ~44.60	1983	38+960 ~38+030	910	910	Pin Block	1:2.0	
	진암제	시 종	진천 진천	초평 초평	진암 진암	좌	1982	39+485 ~39+110	360	360	1:1.0	1:1.5 ~1:2.0	5.0	46.70 ~44.66 45.10 ~44.20	-	-	-	-	-	-	

1.1.6 제방 및 고수호안 (논산천)

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
							준공년도	측점(NO)	연장(m)		구배		천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m)		단면		
			시·군	읍·면	동·리				구간	총	제내	제외					구간	총	구조(재료)	구배	
논산천	논산우1제	시 종	논산 논산	성동 성동	삼호 개척	우	1937 (논북1제) 1995	2+770 ~0+000 2+770 ~0+000	2,737 2,737 (-2,737)	5,474 (-2,737)	1:2.0	1:2.0	4.0	9.39 ~8.25 10.80 ~10.50	1995	2+770 ~0+000	2,737	2,737	호안블럭	1:2.0	
	논산좌1제	시 종	논산 논산	채운 채운	장화 장화	좌	1937 (논남제) 1995	2+770 ~0+620 2+770 ~0+620	2,087 2,087 (-2,087)	4,174 (-2,087)	1:2.0	1:2.0	4.0	9.17 ~8.74 10.40 ~9.90	1995	2+770 ~0+620	2,087	2,087	호안블럭	1:2.0	
	논산우2제	시 종	논산 논산	성동 성동	원호 삼호	우	1937 (논북1제) 1987 (논북1제) 1996	5+965 ~2+770 3+480 ~3+220 5+965 ~2+770	3,230 260 (-260) 3,230 (-3,230)	6,720 (-3,490)	1:2.0	1:2.0	3.0	9.93 ~9.39 10.07 ~10.05 11.00 ~10.50	1987 1996	3+250 ~3+060 5+965 ~2+770	560 3230 (-560)	3,790 (-560)	호안블럭	1:2.0	
	논산좌2제	시 종	논산 논산	논산 채운	부창 장화	좌	1937 (논남제) 1996	5+965 ~2+770 5+965 ~2+770	3,370 3,370 (-3,370)	6,740 (-3,370)	1:2.0	1:2.0	3.0	10.50 ~9.17 10.40 ~10.10	1985 1996	4+305 ~4+265 5+965 ~2+770	40 3,370 (-40)	3,410 (-40)	돕망태 호안블럭	1:2.0	
	논북1제	시 종	논산 논산	광석 성동	산동 개척	우	1937	9+245 ~5+965	3,373	3,373	1:2.0	1:2.0	4.0 ~8.0	11.10 ~9.93 11.10 ~11.00	-	-	-	-	-	-	
	논남제	시 종	논산 논산	은진 채운	성덕 장화	좌	1937	16+235 ~5+965	10,190	10,190	1:2.0	1:2.0 ~:2.5	3.0 ~10.0	18.50 ~10.50 18.10 ~10.10	1937 1937	16+235 ~13+830 13+560 ~12+605	2,630 940	3,570	돕붙임	1:2.0	
	논북2제	시 종	논산 논산	부적 부적	탑정 왕덕	우	1937	16+200 ~9+380	7,050	7,050	1:2.0	1:2.0 ~:2.5	3.0	18.70 ~10.95	1937	16+145 ~12+645	3,590	3,590	돕붙임 돕망태	1:2.0 1:2.5	

1.1.7 제방 및 고수호안 (노성천)

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
			시·군	읍·면	동·리		준공년도	측점(NO)	연장(m) 구간	연장(m) 층	구배 제내	구배 제외	천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m) 구간	연장(m) 층	단면 구조(재료)	단면 구배	
노성천	노남제	시	논산	부적	덕평	좌	1937	4+780	4,700	4,700	1:2.0	1:2.0	3.0	12.90		4+810	760	760	돕뭄임	1:2.0	
		종	논산	부적	왕덕			~0+0					~4.5	~10.82		~4+130					
	노북제	시	논산	광석	항월	우	1937	4+770	4,760					12.63	1937	4+770	320		돕뭄임	1:2.0	
								~0+000						~10.65		~4+440					
		종	논산	광석	산동		1987	1+810	300	5,060	1:2.0	1:2.0	3.0	11.73	1937	3+655	510	1,010	Pin Block	1:2.0	
								~1+515	(-300)	(-300)				~11.48		~3+165					
														13.10	1987	1+760	180				
														~11.10		~1+595					
	항월제	시	논산	광석	항월	우	1993	5+230	492	492	1:2.0	1:2.0	3.0	13.80	1993	5+230	492	492	호안갑력	1:2.0	
		종	논산	광석	항월			~4+910						~13.70		~4+910					

1.1.8 제방 및 고수호안 (강경천)

하천명	명칭	시·종점	소재지			좌·우안별	제방								고수호안						비고
							준공년도	측점(NO)	연장(m)		구배		천단폭(m)	천단표고(EL.m) 시 ~ 종	준공년도	측점(NO)	연장(m)		단면		
			시·군	읍·면	동·리				구간	총	제내	제외					구간	총	구조(재료)	구배	
강경천	강경우1제	시종	논산	채운	삼거	우	1935 (강경등제)	2+300 ~0+000	2,460	2,460	1:2.0	1:2.0	4.0	8.43 ~8.48	1996	2+300 ~0+000	2,460	2,460	호안블럭	1:2.0	
			논산	채운	장화		1996	2+300 ~0+000	2,460 (-2,460)					10.30 ~9.90							
	강경좌1제	시종	논산	강경	산양	좌	1935 (강경서제)	2+300 ~0+000	2,412	4,824 (-2,412)	1:2.0	1:2.0	4.0	8.37 ~8.73	1995	2+300 ~0+000	2,412	2,412	호안블럭	1:2.0	
			논산	강경	동흥		1995	2+300 ~0+000	2,412 (-2,412)					10.40							
	강경우2제	시종	익산	망성	무형	우	1935 (강경등제)	3+810 ~2+300	1,240	2,640 (-1,240)	1:2.0	1:2.0	4.0	8.19 ~8.43	1996	3+810 ~2+300	1,402	1,402	호안블럭	1:2.0	
			논산	채운	삼거		1996	3+810 ~2+300	1,400 (-1,240)					10.40 ~10.30							
	강경좌2제	시종	익산	망성	신작	좌	1935 (강경서제)	3+810 ~2+300	1,880	3,760 (-1,880)	1:2.0	1:2.0	3.0	8.54 ~8.37	1995	3+810 ~2+300	1,183	1,183	호안블럭	1:2.0	
			논산	강경	산양		1995	3+810 ~2+300	1,880 (-1,880)					8.70 ~10.40							
	무형우1제	시종	익산	망성	무형	우	1934 ~1938 (강경등제)	5+385 ~3+810	1,600	3,200 (-1,600)	1:2.0	1:2.0	4.0	9.61 ~8.19	1996이후	5+385 ~3+810	1,600	1,600	호안블럭	1:2.0	
			익산	망성	무형		1996이후	5+385 ~3+810	1,600 (-1,600)					10.50 ~10.40							
	무형좌1제	시종	익산	망성	무형	좌	1995이후	5+385 ~4+250	1,128	1,128	1:2.0	1:2.0	4.0	10.40 ~10.20	1995이후	5+385 ~4+250	1,126	1,126	호안블럭	1:2.0	
	무형우2제	시종	익산	망성	무형	우	1934 ~1938 (강경등제)	6+645 ~5+385	1,240	3,035 (-1,240)	1:2.0	1:2.0	4.0	8.35 ~9.61	1996이후	7+250 ~5+385	1,795	1,795	호안블럭	1:2.0	
			익산	망성	무형		1996이후	7+250 ~5+385	1,795 (-1,240)					10.50 ~10.20							
	무형좌2제	시종	익산	망성	무형	좌	1993 ~1995	7+250 ~5+385	1,840	1,840	1:2.0	1:2.0	3.0	10.10 ~10.40	1995이후	7+250 ~5+385	1,840	1,840	호안블럭	1:2.0	

1.2 저수호안

건설교통부

1.2.1 저수호안 (금강)

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장(m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
금강본류	마서제	시	서천	마서	도삼	1978	우	1+030 ~ 1+140	68	사석	1:2.0 ~ 1:2.5	14.5	
						1979		1+160 ~ 1+140	50				
						1979		1+220 ~ 1+160	90				
						1980		0+500 ~ 0+970	353				
						1981		0+550 ~ 0+500	50 (-50)				
		종	서천	마서	도삼	1982		0+350 ~ 0+280	171				
						1982		0+250 ~ 0+000	360				
						1982		1+450 ~ 1+290	200				
						1988		0+330 ~ 0+280	108				
						1988		0+480 ~ 0+330	192				

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장(m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
	화양제	시 종	서천 서천	화양 화양	옥포 망월	1973 ~1974	우	3+730 ~3+040	670	사석	1:2.5	15.0 ~ 15.5	
						1977		2+990 ~2+720	150				
						1977		3+100 ~2+850	140				
						1979		3+260 ~2+600	283				
						1983		2+550 ~2+190	240				
						1984		2+410 ~1+940	168				
						1985		2+990 ~1+800	305				
						1986		3+690 ~1+750	190				
						1987		3+730 ~1+590	222				
	항동	시 종	옥구 옥구	성산 성산	성덕 성덕	1987 ~1988	좌	3+940 ~3+410	517	돈붐임 사석	1:2.0	29.5	
	나포1제	시 종	옥구 옥구	나포 나포	옥곤 서포	1965	좌	9+730 ~9+374	340	돈붐임 사석	1:2.0	29.5	
						1966 ~1958		9+374 ~7+870	605				
						1959		9+582 ~7+510	1,169				
						1970		8+670 ~5+140	1,122				
						1971		8+176 ~4+880	449				

하천명	명칭	시·중점	소재지			준공년도	좌·우안별	측점 (NO)	연장(m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
	나포1제	시 종	옥구 옥구	나포 나포	옥곤 서포	1972 1973 1974 1975 1977 1978 ~1979 1980 1981 1983 1984 1985 1987	좌	5+185 ~5+010 5+250 ~5+410 8+660 ~5+420 6+691 ~6+485 8+740 ~8+500 14+160 ~7+200 8+310 ~7+410 14+30 ~7+240 17+300 ~14+160 15+230 ~14+220 16+170 ~14+20 16+90 ~14+160	167 614 704 206 280 315 409 524 413 315 237 313	돌붙임 사석	1:2.0	29.5	

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장(m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
	죽산제	시	서천	화양	죽산	1976 ~1977	우	9+760 ~8+680	1,095	사석	1:2.0 ~ 1:2.5	7.0 ~ 11.0	
						1978 ~1979		9+340 ~8+590	272				
		종	서천	화양	완포	1981		8+870 ~8+790	93				
						1983		9+020 ~8+870	146				
						1988		9+770 ~9+760	130				
	용산제 (신성제)	시	부여	양화	시음	1964	우	12+410 ~11+560	118	사석	1:2.0 ~ 1:2.5	7.0 ~ 11.0	
						1966		12+410 ~11+560	515				
						1967		12+990 ~10+480	1,071				
						1968		11+560 ~9+840	942				
		종	서천	한산	용산	1975 ~1976		13+450 ~12+650	609				
						1977		13+780 ~12+290	710				
						1978		14+330 ~13+510	722				
						1979		10+450 ~10+220	244				

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장(m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
	용산제 (신성제)	시 종	부여 서천	양화 한산	시읍 용산	1980 1981 1982 1983 1988	우	10+650 ~10+450 11+520 ~10+240 11+060 ~10+900 11+240 ~11+060 9+840 ~9+800	200 356 180 200 70	사 석	1:2.0 ~ 1:2.5	7.0 ~ 11.0	
	나포2제	시 종	옥구 옥구	나포 나포	나포 나포	1983 1985 1987	좌	10+080 ~9+940 10+260 ~10+080 10+020 ~9+940	159 209 80	사 석	1:2.0	10.0	
	나포3제	시 종	옥구 옥구	나포 나포	나포 나포	1984 1985	좌	10+730 ~10+430 10+820 ~10+430	263 285	사 석	1:2.0	10.0	
	웅포제	시 종	익산 익산	웅포 웅포	제성 웅포	년도미상 1970 1971 1972 1973	좌	19+620 ~18+350 17+240 ~16+920 17+510 ~17+190 17+945 ~17+414 18+340 ~10+520	1,280 230 316 174 476	사 석	1:2.0	9.0 ~13.0	

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장(m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
	웅포제	시	익산	웅포	제성	1976	좌	12+640 ~12+530	100	사석	1:2.0	9.0 ~13.0	
						1982		14+170 ~13+470	826				
						1983		13+470 ~13+410	102				
						1984		13+410 ~13+070	625				
		종	익산	웅포	웅포	1985		14+720 ~12+000	795				
						1986		14+720 ~12+020	411				
						1987		14+810 ~11+820	692				
						1988		15+120 ~14+270	344				
	양화제	시	부여	양화	암수	1985	우	18+490 ~18+240	250	사석	1:2.0	9.5	
						1986		18+340 ~18+010	265				
		종	부여	양화	내성	1987		18+060 ~17+980	115				
	임천제	시	부여	임천	비정	1976	우	22+240 ~21+790	473	사석	1:2.0	17.0	
						1985		22+210 ~21+500	850				
		종	부여	임천	탑산	1986		22+260 ~22+210	176				
	용안제	시	익산	용안	용두	1979	좌	28+410 ~28+290	120	사석	1:1.5	11.0	
		종	익산	용안	용두								

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장(m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
	간대제	시	부여	세도	간대	1971	우	26+888 ~26+670	250	사석	1:2.0	9.5	
						1972		26+971 ~26+600	133				
						1973		27+320 ~26+971	417				
						1974		27+450 ~	698				
		종	부여	세도	두곡	1982		26+700 ~25+990	225				
						1983		26+410 ~25+910	132				
						1984		26+480 ~25+880	92				
						1987		25+880 ~25+800	59				
						1988		25+800 ~25+740					
	망성제	시	익산	망성	화산	1956	좌	32+860 ~32+100	417	사석	1:1.5	11.0	
						1960		31+860 ~31+815	45				
						1966		32+100 ~32+006	185				
						1967		32+006 ~31+925	70				
		종	익산	용안	용두	1968		31+860 ~31+815	76				

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장(m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탄길이(m)	
	망성제	시	익산	망성	화산	1978	좌	32+100 ~31+610	300	사석	1:2.0	11.0	
						1979		32+980 ~31+950	553				
						1980		31+950 ~31+230	625				
		종	익산	용안	용두	1981		31+280 ~30+760	644				
						1982		30+810 ~30+320	653				
						1983		30+320 ~29+790	559		1:1.5		
	세도제	시	부여	세도	청포	1978	우	30+030 ~29+700	268	돈분임	1:2.0	13.5	
						1979		30+460 ~29+440	630				
		종	부여	세도	청포	1980		30+880 ~30+460	482	사석			
						1981		31+080 ~29+090	739				
	황산제	시	논산	강경	황산	년대미상	좌	33+190 ~32+980	950	사석	1:2.0	2.5 ~3.0	
		종	익산	망성	화산								
	봉정제	시	부여	석성	봉정	1975	좌	40+336 ~40+010	306	돈분임	1:1.5 ~1:2.0	4.0 ~7.0	
		종	부여	석성	봉정	1976		40+655 ~39+670	665	사석			
	반조원제	시	부여	세도	영조원	1987	우	38+790 ~38+710	84	사석	1:1.5 ~1:2.0	13.5	
		종	부여	세도	영조원	1988		38+840 ~38+790	48				

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장(m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
	군수제 (왕포제)	시 종	부여 부여	부여 부여	군수 중정	년대미상 1979 1981 1982 1983 1984 1985	좌	41+680 ~41+550 47+330 ~47+090 48+520 ~48+220 48+220 ~48+100 48+100 ~47+440 48+830 ~46+870 51+790 ~48+830	161 183 283 163 753 627 830	돌붙임 사 석	1:1.5	5.0 ~ 10.0	
	어천제	시 종	공주 공주	우성 우성	죽당 어천	1986 1987	우	72+530 ~72+110 73+030 ~72+530	452 484	돌붙임 사 석	1:1.5	12.5	
	오동제	시 종	공주 공주	우성 우성	오동 오동	1987 ~1988	우	76+480 ~76+450	25	돌붙임 사 석	1:1.5	6.0	
	금성제	시 종	공주 공주	-	금성 금성	1986 1986	좌	84+830 ~84+790 85+200 ~84+780	110 230	돌붙임 사 석	1:0.5	7.0	
	원봉제	시 종	공주 공주	반포 반포	원봉 원봉	1987	좌	97+260 ~97+180	70	돌망태	1:1.5	8.0	

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장(m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
	남면제	시	연기	남	양화	1961	우	103+060 ~102+960	100	돕붐임	1:1.5	2.0~5.0	
						1965		103+190 ~103+060	150	사석		2.0	
		종	연기	남	송룡	1970		103+290 ~103+190	95	돕붐임	1:1.0	6.0	
										사석	1:1.5	2.0	
						1972		104+100 ~103+290	593	돕붐임	1:1.0	5.0	
						1983		102+960 ~102+730	121	사석	1:1.5	2.0	
	금남제	시	연기	금남	석삼	1967	좌	104+340 ~104+270	75	석축	1:0.5	1.5	
						1978		104+480 ~104+340	133	돕붐임	1:2.0	8.0	
		종	연기	금남	석삼					사석	1:1.5	2.5	
						1979		104+970 ~104+880	87	돕붐임	1:1.5	6.5	
						1979		104+800 ~104+620	172	사석		2.5	

1.2.2 저수호안 (갑천)

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장 (m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
갑천	봉산제	시	대덕	구즉	봉산	1984 ~1985	좌	1+730 ~1+520	240	돌붙임 사석	1:2.0 1:1.5	10.0 2.5	
		종	대덕	구즉	봉산	1987		2+020 ~1+730	340	돌붙임 사석	1:2.0 1:1.5	6.0 2.5	
						1987		1+460 ~1+305	185				
	문평제	시	대덕	신탄진	신대	1978	우	4+325 ~1+370	601	돌붙임 사석	1:2.0	2.3 4.0	
		종	대덕	신탄진	신대	1981		4+275 ~4+215	62 (-62)				
								4+005 ~4+000	40 (-40)				
	용산제	시	대덕	중	문지	1988이후	좌	7+150 ~5+050	2,100	호안블럭	1:2.0	-	
		종	대덕	구즉	용산								
	와동제	시	대전	동	신대	1988이후	우	6+990 ~5+700	1,290	호안블럭	1:2.0	-	
		종	대전	동	와								
	신대제	시	대전	동	신대	1977	우	8+155 ~7+475	1,500 (~750)	사석	1:1.5	2.0	
		종	대전	동	신대	1988이후		8+155 ~7+475		호안블럭	1:2.0		
	문지제	시	대전	동	원촌	1975	좌	9+965 ~8+815	1,087	사석	1:1.5	2.0	
		종	대전	동	문지	1976		8+815 ~8+195	630				
						1988이후		10+700 ~7+570	4,543 (-1,413)	호안블럭	1:2.0		
	대화제	시	대전	동	대화	1988이후	우	11+325 ~10+870	455	호안블럭	1:2.0	-	
		종	대전	동	연축								

하천명	명칭	시·종점	소 재 지			준공년도	좌·우안별	측 점 (NO)	연 장 (m)	단 면			비 고
			시·군	읍·면	동·리					구조(재료)	구 배	비탈길이(m)	
	도룡제	시	대전	중	도룡	1988	좌	11+275 ~11+040	150	사 석	1:1.5	3.5	
		종	대전	중	도룡			12+920 ~11+105	1,965 (~150)	호안블럭	1:2.0		
	삼천제	시	대전	중	삼천	-	우	12+900 ~11+710	1,190	호안블럭	1:2.0	-	
		종	대전	중	삼천								
	구성제	시	대전	중	구성	-	좌	15+235 ~13+220	2,015	호안블럭	1:2.0	-	
		종	대전	중	도룡								
	봉명제	시	대전	유성	원신흥	-	좌	17+135 ~15+005	2,130	호안블럭	1:2.0	-	
		종	대전	서	도마								
	갈마제	시	대전	서	월평	-	우	17+760 ~17+095	665	사 석	1:2.0	-	
		종	대전	중	침산			17+095 ~13+200	3,895	호안블럭			
	가수원제	시	대전	서	가수원	-	좌	23+150 ~21+900	1,250	호안블럭	1:2.0	-	
		종	대전	서	가수원								
	정림2제	시	대전	서	괴곡	-	우	24+170 ~21+940	2,230	호안블럭	1:2.0	-	
		종	대전	서	괴곡								
	괴곡3제	시	대전	서	괴곡	-	좌	24+160 ~23+155	1,005	호안블럭	1:2.0	-	
		종	대전	서	괴곡								
	괴곡우안제	시	대전	서	괴곡	-	우	24+680 ~24+370	310	호안블럭	1:2.0	-	
		종	대전	서	괴곡								
	흑석2제	시	대전	서	흑석	-	우	31+200 ~30+400	800	돕망태	1:2.0	-	
		종	대전	서									
	봉곡우안2제	시	대전	서	용촌	-	우	33+690 ~33+075	615	돕망태 호안블럭	1:2.0	-	
		종	대전	서	용촌								
	봉곡좌안제	시	대전	서	봉곡	-	좌	33+400 ~32+480	935	돕망태	1:2.0	-	
		종	대전	서	봉곡								

1.2.3 저수호안 (유등천)

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장(m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
유등천	대화제	시	대전	대덕	대화	-	우	1+400	1,400	호안블럭	1:2.0	-	
		종	대전	대덕	대화			~0+000					
	삼천제	시	대전	서	삼천	-	좌	3+260	3,260	호안블럭	1:2.0	-	
		종	대전	서	삼천			~0+000					
	오정제	시	대전	대덕	오정	-	우	2+700	970	호안블럭	1:2.0	-	
		종	대전	대덕	오정			~1+730					
	용문제	시	대전	서	가장	-	좌	5+600	2,340	호안블럭	1:2.0	-	
		종	대전	서	용문			3+260					
	중촌제	시	대전	중	용두	-	우	4+550	1,730	호안블럭	1:2.0	-	
		종	대전	대덕	오정			~2+820					
	도마제	시	대전	서	도마	-	좌	8+230	2,540	호안블럭	1:2.0	-	
		종	대전	서	변			~5+690					
	태평제	시	대전	중	유천	-	우	7+040	2,490	호안블럭	1:2.0	-	
		종	대전	중	유천			~4+550					
	유천제	시	대전	중	산성	-	우	9+190	2,150	호안블럭	1:2.0	-	
		종	대전	중	산성			~7+040					
	복수제	시	대전	서	복수	-	좌	9+230	1,000	호안블럭	1:2.0	-	
		종	대전	서	복수			~8+230					
	안영우안제	시	대전	중	안영	-	우	11+490 ~11+090	400	호안블럭	1:2.0	-	
		종	대전	중	안영			10+890 ~10+480	410				
	안영좌안제	시	대전	중	안영	-	좌	10+910	560	호안블럭	1:2.0	-	
		종	대전	중	안영			~10+350					

1.2.4 저수호안 (미호천)

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장 (m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
미호천	봉암제	시	연기	동	문주	1976	우	5+760 ~5+560	220	돈쌓기	1:1.0	1.0	
		종	연기	동	문주			5+360 ~5+150	210				
	미호제	시	연기	서	월하	1980	좌	7+580 ~7+210	408	돈붐임	1:1.5	4.0	
		종	연기	동	예양					사 석	1:1.0	1.5	
	강외제	시	청원	강외	관평	1985	우	16+020 ~15+660	350	돈붐임 사 석	1:1.0	3.9 1.0	
		종	청원	강외	오송	1988		12+250 ~12+190	50	돈망태	1:1.0	8.0	
	강내제	시	청주	-	신촌	1978	좌	21+090 ~20+910	222.5	사 석	1:1.5	1.8	
		종	청원	강내	탑연	1985		16+080 ~15+770	350	돈붐임 사 석	1:1.0	3.9 1.0	
	옥산제	시	청원	옥산	신촌	1976	우	18+170 ~17+860	315	돈망태	1:2.0	8.0 ~9.0	
		종	청원	옥산	신촌								
	강서제	시	청주	-	원평	1976	좌	24+350 ~24+060	270	돈망태	1:2.0	8.0	
		종	청원	옥산	가락								
	북일제	시	청원	북일	외하	1977	좌	32+110 ~31+900	160	사 석	1:1.5	1.8	
		종	청주	북일	외평								
	북이제	시	청원	북이	화상	1977	좌	36+470 ~36+310	160	돈붐임	1:1.5	3.3 ~4.0	
		종	청원	북이	화상	1978		36+310 ~36+180	147	사 석		2.0	

1.2.5 저수호안 (논산천)

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장 (m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
논산천	논산우1제	시 종	논산 논산	성동 성동	삼호 개척	1995	우	2+850 ~0+780	2,070	사석	1:2.0	-	
	논산우2제	시 종	논산 논산	성동 성동	삼호 원봉	1996	우	4+240 ~2+870	1,370	사석	1:2.0	-	
	논북2제	시 종	논산 논산	부적 부적	신교 신교	1982이후	우	14+280 ~13+470	810	석축	-	-	
	논산좌1제	시 종	논산 논산	채운 채운	장화 장화	1995	좌	2+770 ~0+620	2,150	사석	1:2.0	-	
	논산좌1제	시 종	논산 논산	채운 채운	장화 장화	1996	좌	4+220 ~2+770	1,450	사석	1:2.0	-	
	논남제	시 종	논산 논산	은진 채운	성덕 장화	1976 1986 1987이후	좌	9+170 ~7+760 14+250 ~13+450 16+210 ~15+650	1,410 800 560	거석쌓기 석축 돌망태 사석	1:1.5 1:2.0	-	

1.2.6 저수호안 (노성천)

하천명	명칭	시·종점	소 재 지			준공년도	좌·우안별	측 점 (NO)	연 장 (m)	단 면			비 고
			시·군	읍·면	동·리					구조(재료)	구 배	비탈길이(m)	
노성천	노남제	시 종	논산 논산	부적 부적	덕평 왕덕	1980	좌	4+130 ~3+985	143	돈망태	1:1.5	6.0	
	노북제	시 종	논산 논산	광석 광석	항월 항월	1978	우	3+525 ~3+190	360	돈망태	1:2.0	3.0	

1.2.7 저수호안 (강경천)

하천명	명칭	시·종점	소재지			준공년도	좌·우안별	측점 (NO)	연장 (m)	단면			비고
			시·군	읍·면	동·리					구조(재료)	구배	비탈길이(m)	
강경천	강경우1제	시 종	논산 논산	채운 채운	삼거 장화	1996	우	2+300 ~0+000	2,460	호안블럭	1:2.0	-	
	강경좌1제	시 종	논산 논산	강경 강경	산양 동흥	1995	좌	2+300 ~0+000	2,412	호안블럭	1:2.0	-	
	강경우2제	시 종	익산 논산	망성 채운	무형 삼거	1996	우	3+810 ~2+300	1,402	호안블럭	1:2.0	-	
	강경좌2제	시 종	익산 논산	망성 강경	신작 산양	1995	좌	3+810 ~2+300	1,183	호안블럭	1:2.0	-	
	무형우1제	시 종	익산 익산	망성 망성	무형 무형	1996이후	우	5+385 ~3+810	1,600	호안블럭	1:2.0	-	
	무형좌1제	시 종	익산 익산	망성 망성	무형 무형	1996이후	좌	5+385 ~4+250	1,126	호안블럭	1:2.0	-	
	무형우2제	시 종	익산 익산	망성 망성	무형 무형	1996이후	우	5+915 ~5+385	530	호안블럭	1:2.0	-	

1.3 배수장, 양수장, 취수장 및 교량

건설교통부

▣ 배수장 현황

하천명	배수장명	소재지			준공연도	좌,우안 별	측점 (No.)	동력 및 Pump	관개면적 (ha)	배수량 (㎥/sec)	배수장 바닥표고 (EL.m)	관리기관	비고
		시,군	읍,면,구	동,리									
금강본류	신성배수장	서천	한산	용산	1990	우	011+050	전 Hp * mm * 대	3.5				
	고창배수장	익산	웅포	고창		좌	014+890	Hp * mm * 대				농업진흥공사	
	원당배수장	부여	양화	내성	1992	우	018+030	Hp * mm * 대	10.5				
	산수배수장	익산	웅포	맹산	1998	좌	018+510	Hp * mm * 대	2.833				
	입포배수장	부여	양화	암수	1995	우	020+040	375 Hp * 1,500 mm * 8 대	40			농업진흥공사	
	칠산1배수장	부여	임천	비정	1992	우	021+880	Hp * mm * 대	10.5				
	칠산2배수장	부여	임천	칠산	1995	우	023+000	125 Hp * 700 mm * 4 대	2			농업진흥공사	
	연동배수장	부여	임천	칠산		좌	024+040	Hp * mm * 대					
	성당배수장	익산	성당	성당	1996	좌	024+150	250 Hp * 1,200 mm * 4 대	155			농업진흥공사	
	석동배수장	익산	용안	난포	1996	좌	024+300	200 Hp * 1,200 mm * 4 대	262			농업진흥공사	
	간대배수장	부여	임천	간대		우	026+590	150 Hp * 1,000 mm * 2 대	79			부여농조	
	가회배수장	부여	세도	청포	1995	우	029+670	260 Hp * 900 mm * 4 대	6.5				
	창리양/배수장	익산	망성	화산	1980	좌	029+700	Hp * mm * 대	2.54				
	화산배수장	익산	망성	화산	1996	좌	030+650	Hp * 1,100 mm * 5 대			2.34	금강농조	
	낭청배수장	논산	강경	채산		좌	032+570	600 Hp * 350 mm * 3 대					
	서창배수장	논산	강경	서창	1983	좌	033+880	500 Hp * 1,200 mm * 3 대	130		5.83	강경읍건설계장	
	개척양/배수장	논산	성동	개척	1983	좌	034+980	275 Hp * 1,000 mm * 4 대	3975	8.00		논산농조	
	우곤배수장(구)	논산	성동	개척	1985	좌	036+250	125 Hp * 700 mm * 1 대	45	1.00	4.25	논산농조	
	우곤배수장(신)	논산	성동	우곤	1993	좌	036+270	Hp * 1,100 mm * 3 대	8.612				
	사산배수장	부여	세도	반조원	1995	우	039+570	Hp * 650 mm * 2 대 Hp * 1,100 mm * 3 대	2.4				
	서당2배수장	부여	석성	봉정		좌	041+340	Hp * mm * 대					
	봉두정배수장	부여	석성	봉정	1992	좌	041+340	Hp * 650 mm * 2 대	0.75				
	장하배수장	부여	장암	하항	1989	우	042+190	325 Hp * 1,100 mm * 3 대	120.7	6.00		부여농조	
	현북배수장	부여	부여	현북	1989	좌	044+450	175 Hp * 900 mm * 3 대	67			부여농조	
	군수1배수장	부여	부여	중정		좌	046+170	Hp * 1,500 mm * 3 대					
	군수2배수장	부여	부여	중정	1991	좌	046+210	175 Hp * 900 mm * 3 대 20 Hp * 250 mm * 1 대	175.2	4.98	8.36	부여농조	

하천명	배수장명	소재지			준공연도	좌,우안 별	측점 (No.)	동력 및 Pump	관개면적 (ha)	배수량 (㎥/sec)	배수장 바닥표고 (EL.m)	관리기관	비고
		시,군	읍,면,구	동,리									
금강본류	군수배수장	부여	부여	중정		좌	046+250	Hp * mm * 대	175.2		8.36		
	배수장(공사중)	부여	장암	북고		우	046+450	Hp * mm * 대					
	간이배수장	부여	규암	외		우	051+650	Hp * mm * 대					
	구교1배수장	부여	부여	구교		좌	052+240	Hp * 1,500 mm * 3 대					
	구교2배수장	부여	부여	구교		좌	052+280	Hp * 1,350 mm * 3 대					
	라복2배수장	부여	규암	진변	1989	우	052+540	375 Hp * 1,100 mm * 3 대	156	7.95			
	라복배수장	부여	규암	진변	1966	우	052+570	150 Hp * 750 mm * 2 대 150 Hp * 600 mm * 1 대	156	3.06		부여농조	
	정동1배수장	부여	부여	쌍북	1984	좌	055+420	300 Hp * 1,200 mm * 4 대	210	12.40		부여농조	
	정동2배수장	부여	부여	정동	1992	좌	055+470	Hp * 1,300 mm * 6 대	21.12				
	자왕배수장	부여	부여	자왕	1958	좌	059+070	200 Hp * 850 mm * 2 대	138	2.91		부여농조	
	중산배수장	청양	청남	중산	1986	우	061+170	150 Hp * 700 mm * 2 대	210	2.40		청양농조	
	동강배수장	청양	청남	동강	1980	우	062+400	175 Hp * 70 mm * 2 대	240	2.88		청양농조	
	서원배수장	부여	부여	저석	1988	좌	062+560	50 Hp * 500 mm * 1 대					
	어천배수장	공주	우성	어천	-	우	072+360	30 Hp * 250 mm * 1 대 30 Hp * 350 mm * 1 대 75 Hp * 550 mm * 1 대	12	0.63	11.24	공주농조	
	쌍신배수장	공주	장기	쌍신	1988	우	084+200	Hp * 800 mm * 3 대	73.2		14.49		
미호천	문주배수장	연기	동	문주	1941	좌	04+500	200 Hp * 750 mm * 2 대	540	2.60	22.22		
	예양배수장	연기	동	예양		좌	07+540	Hp * mm * 대					
	서평양/배수장	청원	강외	서평	1972	우	09+230	325 Hp * 1,200 mm * 4 대 50 Hp * 300 mm * 1 대	3.16		25.07	청원농조	
	동평양/배수장	청원	강외	동평	1953	우	10+860	Hp * mm * 대					
	석화2배수장	청원	강내	석화		좌	16+210	Hp * mm * 대					
	입상배수장	청주	상당	외하		좌	32+540	Hp * mm * 대					
	번암배수장	연기	조치원	번암		우	08+250	Hp * mm * 대					
	서평2배수장	청원	강외	서평	2002예정	우	11+870	325 Hp * 1,200 mm * 4 대		12.00			
	쌍청배수장	청원	강외	쌍청	1973	우	16+640	70 Hp * 500 mm * 2 대	1.6		27.22		
	석화1배수장	청원	강내	석화	1978	좌	17+720	200 Hp * 900 mm * 2 대	73.6	3.62	26.52	청원농조	
	강내배수장	청원	옥산	덕촌	1979	좌	17+820	100 Hp * 500 mm * 1 대	36	0.98		청원농조	

하천명	배수장명	소재지			준공연도	좌,우안 별	측점 (No.)	동력 및 Pump	관개면적 (ha)	배수량 (㎥/sec)	배수장 바닥표고 (EL.m)	관리기관	비고
		시,군	읍,면,구	동,리									
미호천	옥산양/배수장	청원	옥산	오산	2001	우	19+990	100 Hp * 450 ㎜ * 1 대 157 Hp * 800 ㎜ * 3 대	0.31		28.72		
	정북2배수장	청원	북일	정북	1975	좌	27+760	205 Hp * 900 ㎜ * 2 대	120	3.53	31.87	청원농조	
	신평양/배수장	청원	오창	신평	1983	우	28+690	75 Hp * ㎜ * 1 대	0.314		35	청원농조	
	정북1배수장	청주	상당	오동		좌	29+850	Hp * ㎜ * 대					
	가곡배수장 (공사중)	청원	오창	가곡		우	31+450	Hp * ㎜ * 대					
	화죽배수장	청원	북이	화상	1989	좌	33+230	175 Hp * ㎜ * 3 대 Hp * 1,000 ㎜ * 1 대 10 Hp * 200 ㎜ * 1 대	395.6	6.00		청원농조	
	학소배수장	청원	오창	학소	1986	우	34+750	50 Hp * 700 ㎜ * 3 대	58	2.69	40.02	청원농조	
	유리배수장	청원	오창	유	1986	우	35+990	65 Hp * 700 ㎜ * 3 대	57	3.20	40.47	청원농조	
	석성배수장	청원	북이	석성		좌	38+100	Hp * ㎜ * 대					
논산천	강경양/배수장	논산	강경	북옥	1973	좌	034+080	Hp * ㎜ * 대	3.055			금강농조	
	채운배수장	논산	채운	삼호	1985	좌	04+305	400 Hp * 1,400 ㎜ * 2 대 750 Hp * 2,000 ㎜ * 3 대	167	32.00	5.73	농업진흥공사	
	원봉배수장	논산	채운	삼호	1982	우	04+435	200 Hp * 1,300 ㎜ * 4 대	619	15.00	0.7	농업진흥공사	
	봉화배수장	논산	논산	등화	1982	좌	05+845	225 Hp * 1,300 ㎜ * 5 대	221	21.00	5.53	농업진흥공사	
	산동지구배수 시설공사중	논산	성동	원봉		우	06+605	Hp * ㎜ * 대					
	등화배수장	논산	논산	부창	2001	좌	06+780	Hp * ㎜ * 대					
	부인배수장	논산	부적	왕덕	1986	우	09+860	350 Hp * 1,300 ㎜ * 3 대 150 Hp * 850 ㎜ * 1 대	345.3	13.00	6.36	논산농조	
	지산배수장	논산	논산	지산		좌	11+840	Hp * ㎜ * 대					
	아호배수장	논산	부적	아호	1987	우	12+090	125 Hp * 1,000 ㎜ * 1 대	60	8.00	8.65	논산농조	
노성천	숙진배수장	논산	상월	숙진	1987	좌	04+980	100 Hp * 850 ㎜ * 3 대	180	4.50		논산농조	
강경천	동흥배수장	논산	강경	북옥		좌	0+000	Hp * ㎜ * 대					
	사포배수장	논산	채운	삼거	1991	우	2+515	Hp * ㎜ * 대	5.05				
	강경배수장	논산	강경	산양	1984	좌	2+840	75 Hp * 600 ㎜ * 1 대 125 Hp * 1,000 ㎜ * 3 대	610	7.00	6.11	농업진흥공사	

▣ 취수장 현황

하천명	수원공명칭	위치	준공연도	안별	측점	펌프(mm)			원동기(Hp-대)						허가량 (m³/s)	용도	관리기관	비 고
						구경1	구경2	구경3	마력1	마력2	마력3	대수1	대수2	대수3				
금	성산	전북 군산시 성산면 성덕리 산7-2	1995	좌	003+330				315	160		3	1		1.5	생활	한국수자원공사	1대 예비
	홍삼종합공장	충남 부여군 규암면 신리 114-26	1975	우	054+220	150			75			3			0.0093	공업	-	
강	부여광역상수도	충남 부여군 부여읍 쌍북리 449-1	1985	좌	055+200	1500			1125			7			0.7639	생활	한국수자원공사	2대 예비
	부여조폐창	충남 부여군 부여읍 쌍북리 451	1982	좌	055+380	350			150			2			0.081	공업	-	
	옥룡중계펌프장	충남 공주시 옥룡동		좌	086+490										0.1666	생활	공주시	
	옥룡상수도	충남 공주시 옥룡동	1983	좌	086+620										0.1666	생활	공주시	
	동성집수암거	충남 연기군 남면 송원리	1984	우	100+390	200			75			2			0.347		-	1대 예비
	한일시멘트	충남 연기군 금남면 봉기리	1979	좌	108+350	150			30			1			0.0174	공업	한일시멘트	
	한양화학	충남 연기군 금남면 부용리 1-4	1981	우	113+110	150			50			4			0.0405	공업	한양화학	
	금호레미콘	충남 연기군 금남면 부용리 571	1985	우	113+170	75			7.5			2			0.0093	공업	금호레미콘	
	한국레미콘	충북 청원군 부용면 금호리	1986	우	115+000	75			10			2			0.0039	공업	-	
	부용공단	충북 청원군 부용면 금호리	1988	우	116+740	300			75			2			0.086	공업	-	
	아세아제지	충북 청원군 부용면 금호리 501		우	117+270										0.1157	공업	아세아제지	
	범양식품	대전광역시 대덕구 문평동	-	좌	125+910										0.0319	공업	-	
	남한제지	대전광역시 대덕구 석봉동 100-1	1959	좌	127+980	200			100			1			0.0625	공업	남한제지	
	풍한산업	대전광역시 대덕구 석봉동 555	1954	좌	129+220	900			50			2			0.0752	공업	풍한산업	
	대덕용수펌프장	충남 대덕 신탄진 석봉	1977	좌	129+430				150	75		2	2		0.075	공업	한국수자원공사	

하천명	수원공명칭	위치	준공연도	안별	측점	펌프(mm)			원동기(Hp-대)						허가량(㎥/s)	용도	관리기관	비 고
						구경1	구경2	구경3	마력1	마력2	마력3	대수1	대수2	대수3				
금	신탄진상수도	대전광역시 대덕구 석봉동	1978	좌	129+710				150	75	75	2	1	1	0.0579	생활	한국수자원공사	
강	진로㈜	충북 청원군 현도면 노산리		우	130+170										0.2	공업	-	
	현도공단	충북 청원군 현도면 노산리		우	130+170										0.204	공업	현도공단	
	옥천	충북 옥천군 이원면 용방리	1992	좌	233+180				50			4			0.2315	생활	옥천군	
갑	선양주조	대전광역시 서구 가수원동 172-1		좌	021+865										0.0081	공업	선양주조㈜	
천	부원공업	대전광역시 서구 가수원동		좌	021+865										0.004	공업	부원공업㈜	
	충남방적	대전광역시 대덕구 흑석동 785		좌	031+265										0.0578	공업	충남방적㈜	
미	간이	충남 연기군 서면 월하리		우	07+750											농업	-	
호	쌍용제지	충남 연기군 동면 예양리	1981	우	08+360	100	100		15	7.5		3	1		0.081	공업	쌍용제지㈜	
천	한솔제지	충북 청원군 강내면 사곡리 산 1		좌	11+040	150						2			0.0578	공업	한솔제지㈜	1대 예비
	대한펄프	충북 청원군 강내면 황탄리 304-1	-	좌	12+610	200			75			3			0.0578	공업	대한펄프㈜	
	공군	충북 청원군 북이면 화상리		좌	33+630											-	-	
	풍만제지	충남 연기군 동면 문주리		우	04+750	350			75			2			0.167	공업	풍만제지㈜	
논산천	논산성평	충남 논산시 은진면 성평리	1997	좌	13+860	200			100			4			0.2685	농업	논산시	

▣ 양수장 현황

하천명	수원공명칭	위치	준공연도	안별	측점	몽리면적(ha)	관개면적(ha)	펌프(mm)			원동기(Hp-대)						허가량(㎥/s)	용도	관리기관	비 고
								구경1	구경2	구경3	마력1	마력2	마력3	대수1	대수2	대수3				
금	도삼	충남 서천군 마서면 도삼리	-	우	000+470	-											-	농업	-	
	화양(서천)	충남 서천군 화양면 옥포리 516	1997	우	003+460	4,036	8742	850	1000		1075	650		2	3		8.878	농업	농진공금강사업단장	
강	강정	전북 군산시 나포면 옥곤리	-	좌	008+310	160											-	농업	-	
	간이	전북 군산시 나포면 나포리	-	좌	009+890	-											-	농업	-	
	나포	전북 군산시 나포면 나포리	1990	좌	011+550	91	12346	1100			1000			8			19.82	농업	전북농조	
	간이	전북 익산시 웅포면 웅포리	-	좌	014+270	-		350						1			-	농업	-	
	암수	충남 부여군 양화면 암수리 94	1988	우	018+380	13	30	150			40			1			0.955	농업	부여농조	
	양화(부여)	충남 부여군 양화면 암수리	-	우	019+185	13	415	500			275			2			0.955	농업	부여농조	
	간이	충남 부여군 임천면 칠산리	-	우	022+680	-											-	농업	-	
	두곡	충남 부여군 임천면 두곡리 250	-	우	025+910	496	496	500	500		460	200		2	2		1.923	농업	부여농조	
	용두	전북 익산시 용안면 용두리	1959	좌	029+660	897	767.4	600	800		200	125		2	1		3.194	농업	금강농조	
	창리(양/배)	전북 익산시 망성면 화산리		좌	029+700		2.54	1000	1000		250	125		1	4			농업	금강농조	
	개척(양/배)	충남 논산시 성동면 개척리	1983	좌	034+980	2,944	3975	1000			275			4			8.298	농업	논산농조	
	인세	충남 부여군 세도면 반조원리	1973	우	038+650	304	304	550			125			2			1.16	농업	부여농조	
	반조원	충남 부여군 세도면 반조원리	1945	우	038+650	483	526.2	600	550		125	125		1	1		1.182	농업	부여농조	
	봉정	충남 부여군 석성면 봉정리	1973	좌	042+740	2,842	2842	1000			400			5			12	농업	논산농조	
	현북1단	충남 부여군 부여읍 현북리 산86	1989	좌	043+540	277	277.1	450			150			2			0.654	농업	부여농조	

하천명	수원공명칭	위치	준공연도	안별	측점	몽리면적(ha)	관개면적(ha)	펌프(mm)			원동기(Hp-대)						허가량(㎥/s)	용도	관리기관	비 고
								구경1	구경2	구경3	마력1	마력2	마력3	대수1	대수2	대수3				
금	장하	충남 부여군 장암면 장하리 산1-2	1982	우	045+700	158	259.9	400			100			2			0.517	농업	부여농조	
	간이	충남 부여군 장암면 정암리	-	우	048+630	-	-										-	농업	-	
강	정암	충남 부여군 장암면 정암리	1982	우	048+970	1,353	251.2	750	450		200	100		2	1		2.55	농업	부여농조	
	외리	충남 부여군 규암면 규암리	1979	우	052+360	6	6.3	150			40			1			0.0134	농업	부여군	
	진변	충남 부여군 규암면 진변리	1970	우	052+910	5	4.8	150			25			1			0.012	농업	부여군	
	라복	충남 부여군 규암면 신리 산19-1	1959	우	053+390	266	292.8	600			200			2			0.784	농업	부여농조	
	군수	충남 부여군 부여읍 구교리	1958	좌	054+460	261	346.5	500	400		150	100		1	1		0.834	농업	부여농조	
	호암	충남 부여군 규암면 호암리 산1	1982	우	056+930	112	128	300			100			2			0.27	농업	부여농조	
	정동	충남 부여군 부여읍 정동리 14-1	1958	좌	058+530	173	173	450			125			1			0.35	농업	부여농조	
	자왕	충남 부여군 부여읍 정동리 14-1	1969	좌	058+530	253	351.6	600			275			2			1.126	농업	부여농조	
	왕진	충남 청양군 청남면 왕진리 31-2	1963	우	060+710	431	705.9	850	500		400	150		1	1		1.5345	농업	청양농조	
	중산	충남 청양군 청남면 왕진리 865	1985	우	060+810	43	62	200			150			1			0.003	농업	-	
	서원	충남 공주시 부여읍 저석리	-	좌	062+590	15		150			40			1			-	농업	-	
	천내	충남 청양군 청남면 천내리	1988	우	066+090	56	56	300			50			2			0.15	농업	청양농조	
	화양(청양)	충남 청양군 목면 화양리	1993	우	067+470	30	45	150			30			1			1.375	농업	청양농조	
	신흥	충남 청양군 목면 신흥리	1990	우	070+240	30	37				50			2			0.0345	농업	윤종신	
	죽당	충남 공주시 우성면 죽당리	1988	우	075+530	26	36	200			30			2			0.15	농업	공주농조	
	옥성	충남 곤주시 우성면 옥성리	-	우	078+520	-											-	농업	-	

하천명	수원공명칭	위치	준공연도	안별	측점	몽리면적(ha)	관개면적(ha)	펌프(mm)			원동기(Hp-대)						허가량(㎥/s)	용도	관리기관	비 고
								구경1	구경2	구경3	마력1	마력2	마력3	대수1	대수2	대수3				
금	심정	충남 공주시 우성면 옥성리	-	우	080+250	-												농업	-	
	소학	충남 공주시 소학동 16-2	1978	좌	088+490	87	87.1	300			60			2			0.2733	농업	공주농조	
강	상왕동	충남 공주시 반포면 상왕동	-	좌	089+300	-	0.019							1			-	농업	-	
	장기	충남 공주시 장기면 장암리 475	-	우	090+050	158		400			100			2			1.05	농업	공주농조	
	원봉	충남 공주시 반포면 원봉리	1981	좌	098+810	76	75	300			75			2			0.326	농업	공주농조	
	송원	충남 연기군 남면 송원리	1977	우	100+640	24	24	200			20			1			0.045	농업	연기군	
	대평	충남 연기군 금남면 대평리 36-1	1997	좌	102+430	576	245.4	500			150			3			0.9	농업	연기농조	
	괴화	충남 연기군 금남면 석삼리 247	1979	좌	105+040	61	62.3	250	250		100	75		1	1		0.12	농업	연기농조	
	양화(연기)	충남 연기군 남면 양화리 7-1	1992	우	106+100	521	519	600	500		200	150		2	1		1.32	농업	연기농조	
	부용	충남 연기군 금남면 부용리	1982	좌	111+140	15		60			20			1			-	농업	-	
	합강	충남 연기군 동면 명학리 644	1997	우	112+220	557	59.8	500	350		475	200		2	1		1.292	농업	연기농조	
	원부용	충남 연기군 금남면 부용리	-	좌	114+240	17	17.06	200			25			1			0.0025	농업	김태진	
	초오개	충남 연기군 금남면 부용리	1980	좌	115+610	16	20	150			40			1			0.0408	농업	허현	
	양수장 (공사중)	충남 연기군 금남면 부용리		좌	115+710			250						2			-	농업	-	
	금호1	충북 청원군 부용면 금호리	1959	우	116+510	26	27	250			50			1			0.0675	농업	청원농조	
	금동	충남 연기군 금남면 박산리 583	1997	좌	116+840	400	80.4	450			450			3			1.185	농업	연기농조	
	신동	대전광역시 유성구 신동	1982	좌	117+490	59	42.5	200			150			2			0.0785	농업	대금농조	
	금호2	충북 청원군 부용면 금호리	1970	우	118+270	17	18	200			50			1			0.045	농업	청원농조	

하천명	수원공명칭	위치	준공연도	안별	측점	몽리면적(ha)	관개면적(ha)	펌프(mm)			원동기(Hp-대)						허가량(㎥/s)	용도	관리기관	비 고
								구경1	구경2	구경3	마력1	마력2	마력3	대수1	대수2	대수3				
금강	금탄2	대전광역시 유성구 금탄동	-	좌	119+850	7	7.28	150			40			1			0.0182	농업	성인경	
	금탄1	대전광역시 유성구 금탄동	-	좌	120+630	2	10	125			40			1			0.0054	농업	성낙희	
	시목1단	충북 청원군 현도면 중척리	1972	우	121+890	72	73	350			125			1			0.205	농업	청원농조	
	대동1	대전광역시 대덕구 구즉동 대동리		좌	122+890	66	65.92	300			75			1			0.1648	농업	심원정	
	간이	충북 청원군 현도면 중척리	-	우	123+010	-		100						1			-	농업		
	노산	충북 청원군 현도면 노산리 462	1979	우	130+420	37	35.4	250			50			2			0.0885	농업	청원농조	
금강상류	원동	충북 옥천군 이원면 원동리	1955	좌	235+740	144	136	500	350		350	200		1	1		0.644	농업	옥천농조	
	군량	충북 영동군 심천면 장동리	1995	우	238+380	23	43	300			75			1			0.183	농업	옥천농조	
	구탄	충북 영동군 심천면 구탄리 산29	1974	우	241+590	29	28.6	300			30			1			0.1125	농업	영동농조	
	동대	충북 영동군 심천면 구탄리	1955	우	242+160	121	121	500	350		350	200		1	1		0.644	농업	옥천농조	
	고당	충남 영동군 심천면 고당리 8	1982	좌	243+600	5					15			1			0.0837	농업	영동농조	
갑천	송강	대전광역시 유성구 관평동 313	1980	좌	002+605	34	0.068	900			50			1			0.0686	농업	김대복	
	검제	대전광역시 대덕구 구즉동 관평리 22-1	1982	좌	003+175	30	30	200			50			1			0.054	농업	대덕구청장	
	신대	대전광역시 대덕구 상서동	1920	우	005+020	196	193	500			75			1			0.407	농업	대금농조	
	와동	대전광역시 대덕구 와동 424	1965	우	006+585	31	31.2	300			30			1			0.078	농업	박중근	
	전민	대전광역시 유성구 전민동	1956	좌	007+585	82	82	500			75			2			0.247	농업	대금농조	
	문지	대전광역시 유성구 문지동 613	-	좌	008+765	20	20.3	900			50			1			0.0506	농업	양우환	
	도안	대전광역시 서구 도안동 11-1	1989	좌	018+810			1000						1			-	농업	대전광역시 서구	

하천명	수원공명칭	위치	준공연도	안별	측점	몽리면적(ha)	관개면적(ha)	펌프(mm)			원동기(Hp-대)						허가량(㎥/s)	용도	관리기관	비 고
								구경1	구경2	구경3	마력1	마력2	마력3	대수1	대수2	대수3				
갑	가수원	대전광역시 서구 가수원동 285-1	1992	좌	020+800	46	0.014										0.3844	농업	대전광역시 서구	
	순평	대전광역시 서구 괴곡동 350	1979	우	023+640												0.011	농업	대전광역시 서구	
천	가진개	대전광역시 서구 괴곡동 312	-	우	024+185	6	0.006										0.006	농업	대전광역시 서구	
	반지리	대전광역시 서구 괴곡동 629-1	1993	우	024+705	-											0.03	농업	대전광역시 서구	
	장평	대전광역시 서구 흑석동	-	우	028+205	-	0.058										0.058	농업	대전광역시 서구	
유등천	안영(상)	대전광역시 중구 안영동 73	-	좌	010+855	6	0.009	300			75						0.056	농업	김상건	
	안영(하)	대전광역시 중구 안영동 638	-	좌	011+085	10	0.007	600			60						0.0389	농업	박태병	
미	월산	충남 연기군 남면 월산리	1990	우	02+020	29	35.1	250			30			1			0.0681	농업	연기군농조	
호	용호	충남 연기군 동면 용호리 790-5	1970	좌	03+340	10	16.04	250			30			1			0.0441	농업	장동순	
천	서평(양/배)	충북 청원군 강외면 서평리	1972	우	09+230	182	3.16	1200	300		325	50		4	1		0.317	농업	청원농조	
	연동	충남 연기군 동면 예양리 387-1	1998	좌	10+030	450		600			125			2			0.7125	농업	연기농조	
	동평(양/배)	충북 청원군 강외면 동평리	1953	우	10+860	50					30			1				농업		
	농장	충북 청원군 강외면 오송리 355	1988	우	12+180	130	0.79	350			75			2			0.25	농업	청원농조	
	부탄	충북 청원군 강내면 월탄리	1972	좌	15+280	108	0.155	300			150			2			0.295	농업	청원농조	
	궁평	충북 청원군 강외면 궁평리	1971	우	16+040	100	160	450			75			1			0.23	농업	청원농조	
	석화	충북 청원군 강내면 석화리	1972	좌	17+480	88	214.7	450			275			1			0.404	농업	청원농조	
	옥산(양/배)	충북 청원군 옥산면 오산리	2001	우	19+990	175		450	800		100	157		1	3			농업	청원농조	
	정봉	충북 청주시 신촌	1968	좌	20+830	160	160	500			100			1			0.368	농업	청원농조	

하천명	수원공명칭	위치	준공연도	안별	측점	몽리면적(ha)	관개면적(ha)	펌프(mm)			원동기(Hp-대)						허가량(㎥/s)	용도	관리기관	비 고
								구경1	구경2	구경3	마력1	마력2	마력3	대수1	대수2	대수3				
미	국사	충북 청원군 옥산면 국사리	1974	우	23+560	120	120	400			105			1			0.276	농업	청원농조	
호	신평(양/배)	충북 청원군 오창면 신평리	1983	우	28+690	128	0.314				75			1			0.314	농업	청원농조	
천	화상간이	충북 청원군 북이면 화상리	-	좌	33+160	-												농업		
논	강경(양/배)	충남 논산시 강경읍 북옥동	1973	좌	00+220	9,870	3.055	1200	900	1200	710	425	800	5	1	2	6.8	농업	금강농조	
산	하신	충남 논산시 채운면 장화리 422-3	1996	좌	01+660	886	886	600						2			1.2	농업	논산농조	
천	아호개인	충남 논산시 부적면 마구평	-	우	0	4	4	150			13			1			0.01	농업		
	탑정	충남 논산시 가야곡면 종연리	1984	우	16+700	1,297	3995	900	400		1000	250		5	3		8.62	농업	논산농조	
노성천	항월	충남 논산시 광석면 항월리 710	1988	우	04+520	97	97	350	250		40	20		1	1		0.2425	농업	논산농조	
강	남교개인	충남 논산시 강경읍 남교동	-	좌	01+210	8	8	300			5			1			0.016	농업	백성기	
경	강경1단	충남 논산시 강경읍 산양리	1973	좌	02+895	377	390	700			100			1			1.07	농업	논산농조	
천	입석	충남 논산시 망성면 무형리	1989	우	05+215	60	60	50	250		2	25		5	1		0.033	농업	논산농조	
	두화	전북 익산시 망성면 무형리	1987	우	06+435	20	10	200			25			1			0.025	농업	논산농조	

▣ 교량 현황

하천명	교량명	소재지			준공년도	관리청	측점(No.)	구분	교폭(m)		교량총연장(m)	상부	하부	교각수	Ab.표고(EL.m)	비 고
		시·군	읍·면	동·리					총폭	순폭						
금강	금강대교	서천 군산	화양 나포	옥포 서포	-	-	004+580	-	24.5	23.9	1,650.00	-	-	32	10.60	
	웅포대교	부여 익산	양화 웅포	내성 맹산	-	-	017+380	-	11.5	8.1	1,226.00	-	-	17	9.91	
	황산대교	논산	강경	황산	1987	충청남도	032+920	국도교	12.0	8.5	1,050.00	연속P.C BOX Girder	중력식	20	10.45	
	백제교(구)	부여 부여	부여 규암	구교 규암	1968	건설부 중부국도건설국	052+160	국도교	12.5	8.5	812.72	PC-Beam I-Beam	중력식 구주식	25	13.63	
	백제교(신)	부여 부여	부여 규암	구교 규암	1997	대전지방 국토관리청	052+180		20.5	16.5	830.00	-	-	15	13.79	
	백마강교	부여 부여	부여 규암	호암 정동	-	-	056+420	-	12.5	11.5	725.00	-	-	12	15.14	
	왕진교	청양 부여	청남 부여	중산 저석	2001	-	061+900	-	12~19	-	777.00	Steel Box교	-	13	17.05	
	웅진대교	공주 공주	우성 반포	평목 봉정	-	-	080+480	-	-	-	1,200.00	-	-	19	-	공사중
	백제큰길금강교	공주 공주	장기 반포	신관 금성	-	-	084+700	-	25.6	21.6	740.00	-	-	16	20.94	
	금강교	공주	장기 반포	신관 금성	1956	대전지방 국토관리청	085+070	국도교	10.0	8.0	513.00	I-형 Steel-Beam	중력식	13	20.07	
	공주대교	공주	장기 반포	신관 옥용	1986	대전지방 국토관리청	086+500	국도교	22.0	17.0	480.00	Box Girder	반중력식	7	22.03	
	신공주대교	공주 공주	장기 반포	월송 소학	2000	대전지방 국토관리청	088+030	-	19.5	18.5	680.00	-	-	10	25.90	
	청벽대교	공주 공주	장기 반포	금암 마암	1995	대전지방 국토관리청	093+510	-	19.5	18.7	700.00	-	-	13	23.87	
	불티교공사중	공주 공주	장기 반포	금암 도남	2003예정	공주시 (도로교통과)	095+200	-	-	-	435.00	Steel Box교	라멘식	8	25.09	
	금남교	연기	남 금남	나성 대평	1997	대전지방 국토관리청	101+870	국도교	21.0	17.0	650.00	Box Girder	반중력식	11	26.11	

하천명	교량명	소재지			준공년도	관리청	측점(No.)	구분	교폭(m)		교량총연장(m)	상부	하부	교각수	Ab.표고(EL.m)	비 고
		시·군	읍·면	동·리					총폭	순폭						
금강	고속철도	청원 대전	현도 대덕	양지 석봉	-	-	126+750	-	14.0	-		-	-	-	45.10	
	금강1교	청원 대전	현도 대덕	양지 석봉	1969	도로공사	126+800	고속도로교	47.0	47.0	320.00	구형 Beam	반중력식	7	33.83	
	금강철교(상행)	청원 대전	현도 대덕	양지 석봉	1909	철도청	127+720	철교	8.0	6.0	282.00	I-Beam	중력식	5	38.64	
	금강철교(하행)	청원 대전	현도 대덕	양지 석봉	1909	철도청	127+740	철교	8.0	6.0	282.00	I-Beam	중력식	5	37.84	
	현도교	청원 대전	현도 대덕	양지 석봉	1960	대전지방 국토관리청	127+890	국도교	20.0		300.00	I-Beam	반중력식	5	36.95	
금강상류	고속도로신설교량(상행)	옥천 옥천	동이 동이	우산 조령	-	-	223+580	-	13.0		400.00	-	-	7	92.80	공사중
	고속도로신설교량(하행)	옥천 옥천	동이 동이	우산 조령	-	-	223+615	-	13.0		-	-	-		93.10	공사중
	금강3교	옥천 옥천	동이 동이	우산 조령	-	-	223+645	-	24.0		263.50	-	-	6	92.84	
	금강2교	옥천 옥천	동이 동이	적하 금암	-	-	225+590	-	20.0	19.4	300.00	-	-	9	93.91	
	고속도로신설교량	옥천 옥천	동이 동이	적하 금암	-	-	226+275	-	13.0	-	475.50	-	-	9	-	공사중
	경부선철도신설교	옥천 옥천	이원 이원	지탄 원동	-	-	235+420	-	-	-	-	-	-	-	-	공사중
	고속철도신설교	옥천 옥천	이원 이원	지탄 원동	-	-	235+450	-	-	-	-	-	-	-	-	공사중
	이원대교	옥천 옥천	이원 이원	백지 원동	-	-	235+710	-	10.0	9.2	300.00	-	-	9	99.02	
	고속전철교	영동 영동	심천 심천	구탄 고당	-	-	241+055	-	-	-	-	-	-	-	97.30	공사중
	고속전철교	영동 영동	심천 심천	고당 초강	-	-	244+870	-	7.5		880.00	-	-	21	111.74	공사중
	양강교	영동 영동	심천 심천	고당 약목	-	-	246+330	-	7.6	7.0	215.50	-	-	14	107.18	

하천명	교량명	소재지			준공년도	관리청	측점(No.)	구분	교폭(m)		교량총연장(m)	상부	하부	교각수	Ab.표고(EL.m)	비 고
		시·군	읍·면	동·리					총폭	순폭						
갑	불무교	대전 대전	유성 대덕	봉산 문평	1996	대전시	001+015	-	10.0	9.1	435.00	Steel Box교	-	10	31.46	
	신구교(신)	대전 대전	유성 대덕	봉산 문평	1989	충청남도	002+535	지방도교	12.5	9.5	330.00	구형 Beam	중력식	5	31.18	
천	용신교	대전 대전	유성 대덕	용산 신일	-	대전광역시 종합건설본부	003+915	-	32.0	31.4	321.50	-	-	5	31.91	
	호남고속도로교	대전 대전	유성 대덕	전민 신대	-	-	007+130	-	16.0	15.4	395.00	-	-	9	36.61	
	갑천교(폐교량)	대전 대전	유성 대덕	전민 신대	-	도로공사	007+150	고속도로교	10.0	9.4	324.50	I-Beam	중력식	7	37.23	
	호남고속도로교	대전 대전	유성 대덕	전민 신대	-	-	007+160	-	16.0	15.4	395.00	-	-	9	36.84	
	원촌교	대전 대전	유성 대덕	원촌 읍내	-	대전시	010+105	잠수교	25.0	19.0	256.00	연속 Slab	중력식	7	37.67	
	둔산대교	대전 대전	유성 대덕	도룡 대화	1993	대전지방 국토관리청	011+725	-	30.0	24.0	396.00	-	-	16	39.89	
	엑스포다리	대전 대전	유성 서구	도룡 만년	1993	대전세계박람회 조직위원회	012+210	-	22.0	18.0	330.00	-	-	6	38.99	
	대덕대교	대전 대전	유성 서구	도룡 만년	-	-	012+960	-	40.0	36.0	360.00	-	-	17	40.56	
	갑천대교	대전 대전	유성 서구	봉명 월평	-	-	015+375	-	46.0	40.0	222.00	-	-	5	42.10	
	만년교	대전 대전	유성 서구	봉명 월평	1993	대전시	016+535	-	46.0	40.0	207.50	P.C-Beam Slab교	반중력식 라멘식	6	44.94	
	신가수원교	대전 대전	서구 서구	가수원 정림	1992	대전지방 국토관리청	021+745	-	32.0	26.0	180.50	-	-	4	53.01	
	구가수원교	대전 대전	서구 서구	가수원 정림	-	-	021+850	-	4.0	4.0	143.90	-	-	11	53.12	
	가수원철교	대전 대전	서구 서구	가수원 정림	-	-	021+895	-	-	-		-	-	-	53.90	
	모세골교(하류)	대전	서구	괴곡	-	-	023+835	-	9.0	8.4	자료없음	-	-	-	62.82	

하천명	교량명	소재지			준공년도	관리청	측점(No.)	구분	교폭(m)		교량총연장(m)	상부	하부	교각수	Ab.표고(EL.m)	비 고
		시·군	읍·면	동·리					총폭	순폭						
갑천	모세굽교(상류)	대전	서구	괴곡	-	-	023+880	-	9.0	8.4	자료없음	-	-	-	62.82	
	괴곡철교	대전	서구	괴곡 흑석	-	-	026+125	-	8.0	8.0	160.00	-	-	9	64.12	
	괴곡교	대전	서구	괴곡 흑석	1984	충청남도	026+175	-	7.5	6.9	175.00	-	-	6	61.47	
	뭄안리다리	대전	서구	흑석	-	-	030+345	-	7.0	6.4	101.00	-	-	6	69.15	
	봉곡교	대전	서구	봉곡	-	-	031+470	-	7.0	6.0	104.00	-	-	7	69.85	
	봉곡2교	대전	서구	봉곡 용촌	1995	대전광역시 서구청	033+315	-	6.0	5.0	135.00	-	-	8	75.27	
유등천	천변고속화도로교	대전 대전	서구 대덕	만년 대화	-	-	000+000	-	-	-	765.00	-	-	17	39.30	공사중
	한밭대교	대전 대전	서구 대덕	삼천 오정	1993	대전시	001+860	-	46.0	40.0	342.00	-	-	8	41.00	
	삼천교	대전 대전	서구 중구	탄방 중촌	1993	대전직할시 종합건설본부	002+790	-	25.0	19.0	164.00	Preflex Beam	확대기초	3	41.10	
	용문교	대전 대전	서구 중구	용문 중촌	1993	대전직할시 종합건설본부	003+255	-	25.0	19.0	228.00	Preflex Beam	Steel pile ,확대기초	7	42.26	
	수침교	대전 대전	서구 중구	용문 태평	1993	대전직할시 종합건설본부	004+500	-	35.0	29.0	168.00	-	-	5	45.92	
	가장교	대전 대전	서구 중구	가장 태평	-	-	005+575	-	25.0	19.0	200.00	-	-	7	47.92	
	태평교	대전	서구	변 태평	1991	대전시	006+130	-	25.0	19.0	206.00	-	-	9	48.74	
	유등교	대전	서구	도마 유천	-	-	007+010	-	28.0	22.0	168.00	-	-	5	52.91	
	도마교	대전	서구	도마 유천	-	-	007+575	-	25.0	19.0	175.00	-	-	6	52.78	
	유등철도교 (하류)	대전	서구	복수 산성	-	-	007+820	-	5.0	4.0	160.80	-	-	11	53.32	

하천명	교량명	소재지			준공년도	관리청	측점(No.)	구분	교폭(m)		교량총연장(m)	상부	하부	교각수	Ab.표고(EL.m)	비 고
		시·군	읍·면	동·리					총폭	순폭						
유등천	유등철도교(상류)	대전	서구	복수산성	-	-	007+830	-	5.0	4.0	160.80	-	-	11	53.40	
	버드내다리	대전	서구	복수산성	-	-	008+390	-	34.0	19.0	150.00	-	-	2	54.78	
	복수교	대전	서구 중구	복수사정	1995	대전광역시 서구청	009+010	-	15.0	11.0	154.00	-	-	6	56.70	
	안영교	대전	서구	안영	-	-	010+735	-	25.0	21.0	135.00	-	-	3	62.33	
	만성교	대전	중구 서구	침산 안영	-	-	011+520	-	2.0	2.0	110.00	-	-	2	64.16	
	침산교	대전	중구	침산	-	-	013+230	-	10.0	8.0	100.00	-	-	3	69.69	
	무수1교	대전	중구	침산 무수	-	-	013+275	-	24.0	23.0		-	-	5	76.10	
	수련교	대전	중구	침산	1996	대전광역시 종합건설본부	014+590	-	10.0	8.0	120.00	-	-	3	72.76	
	남면-동면도로교	연기 연기	남 동	월산 용호	-	-	00+920	-	18.7	-	390.00	-	-	7	27.41	
미호천	수몰두강다리(하행)	청원 연기	강외 서	서평 예양	-	철도청	09+090	철교	3.2	3.2	438.00	I-Beam	중력식	21	27.88	
	수몰두강다리(상행)	청원 연기	강외 서	서평 예양	-	철도청	09+120	철교	3.2	3.2	439.20	I-Beam	중력식	21	28.00	
	신미호교	청원 연기	강외 서	서평 예양	1969	충청북도	09+840	지방도로	9.0	-	432.00	T-Beam	중력식	27	27.24	
	고속철도교	청원	강외	오송 월탄	-	-	13+780	-	14.0	-		-	-		43.40	
	미호천교	청원	강외 강내	궁평 탑연	1984	대전청	15+830	국도교	20.5	19.1	360.00	I-Beam	중력식	11	30.37	
	미호철교(충북상행)	청원	강외 강내	궁평 탑연	-	철도청	15+950	철교	3.1	3.1	352.30	I-Beam	중력식	25	30.15	
	미호철교(충북하행)	청원	강외 강내	궁평 탑연	-	철도청	15+960	철교	3.1	3.1	353.00	I-Beam	중력식	13	30.07	

하천명	교량명	소재지			준공년도	관리청	측점(No.)	구분	교폭(m)		교량총연장(m)	상부	하부	교각수	Ab.표고(EL.m)	비 고
		시·군	읍·면	동·리					총폭	순폭						
미호천	미호천교(경부)	청원	옥산	덕촌 오산	-	-	19+530	-	33.4	32.0	430.00	-	-	8	32.59	
	폐교량(구경부선)	청원	옥산	덕촌 오산	-	도로공사	19+600	고속도교	22.0	-	401.00	I-Beam	반중력식	15	32.48	
	옥산교	청주	흥덕	신촌	1988	충청북도	20+770	지방도교	10.0	8.6	360.00	I-beam	중력식	11	33.00	
	남촌교(중부)	청원 청주	옥산 흥덕	남촌 상신	1987	도로공사	25+710	고속도교	24.0	23.6	480.00	연속Slab	중력식	9	37.71	
	공항대교	청원 청주	오창 흥덕	탑 외남	1999	한국토지공사	30+390	-	35.0	-	524.00	-	-	10	39.95	
	오창-청주도로교	청원	오창	가곡	-	-	31+680	-	27.5	-	660.00	-	-	10	41.15	
	팔결교	청원	상당	외하	1983	대전청	32+150	국도교	11.0	8.6	463.35	구형-Beam	반중력식	23	39.16	
	신여암교	청원 진천	오창 초평	여천 진암	2000	충청북도	39+090	-	19.6	18.8	342.50	-	-	5	44.54	
	(구)여암교	청원 진천	오창 초평	여천 진암	1984	진천군	39+485	지방도	8.5	7.0	220.00	구형-Beam	중력식	10	44.77	
논산천	강경대교(구)	논산	채운	장화	1933	대전지방 국토관리청	00+835	국도교	7.2	6.2	303.60	I-Beam	반중력식	22	8.22	
	강경대교(신)	논산	채운	장화	1985	충청남도	00+845	국도교	12.0	8.5	300.00	단형Beam	중력식	9	9.34	
	천안~논산간고속도로교	논산	채운	장화	-	-	04+265	-	-	-	550.00	-	-	10	11.00	
	논산신대교	논산	논산	부창	-	-	07+735	-	20.8	19.6	480.00	-	-	9	10.94	
	논산대교	논산	논산	대교	1983	대전지방 국토관리청	08+285	국도교	20.0	16.2	272.00	P.C-Beam	반중력식	11	9.99	
	논산철교(상행)	논산	논산	덕지	1937	철도청	11+205	철도교	4.2	4.2	216.00	I-Beam	중력식	15	10.46	
	논산철교(하행)	논산	논산	덕지	1937	철도청	11+220	철도교	3.0	3.0	216.00	I-Beam	중력식	15	10.98	

하천명	교량명	소재지			준공년도	관리청	측점 (No.)	구분	교폭(m)		교량 총연장 (m)	상부	하부	교각수	Ab.표고 (EL.m)	비 고
		시·군	읍·면	동·리					총폭	순폭						
논산천	아호교	논산	논산	덕지	1983	대전지방 국토관리청	11+380	국도교	10.0	8.7	236.00	P.C-Beam	중력식	7	10.15	
	계백교	논산	논산	덕지	1997	대전지방 국토관리청	11+430	-	22.0	17.0	280.00	-	-	6	11.53	
노성천	노성대교	논산	광석 부적	산동 왕덕	2001	대전지방 국토관리청	00+565	-	22.8	22.0	300.60	-	-	5	13.46	
강경천	하강경교(구)	논산	강경	동흥	1966	대전지방 국토관리청	0+275	국도교	5.9	5.3	143.00	I-Beam	반중력식	10	9.35	
	하강경교(신)	논산	강경	동흥	1985	대전지방 국토관리청	0+290	국도교	12.0	8.5	150.00	I-Beam	중력식	5	9.38	
	상강경교(신)	논산	강경	동흥	1986	대전지방 국토관리청	1+105	국도교	13.6	13.6	140.00	I-Beam	중력식	6	8.63	
	상강경교(구)	논산	강경	동흥	1935	대전지방 국토관리청	1+115	국도교	5.9	5.1	150.00	I-Beam	반중력식	13	8.33	
	강경철교(상행)	논산	강경	남교	-	철도청	1+355	철도교	1.8	1.8	126.42	I-Beam	중력식	23	8.64	
	강경철교(하행)	논산	강경	남교	-	철도청	1+375	철도교	1.8	1.8	123.27	I-Beam	중력식	23	8.32	
	강경대교	논산 논산	채운 강경	삼거 산양	1996	대전지방 국토관리청	1+425	-	11.0	-	500.00	-	-	5	10.60	
	제내교(구)	논산	강경	채운	1971	논산군	3+415	공도교	7.8	7.5	148.00	I형 철강Beam I형 Con'c Beam	반중력식	9	7.64	
	제내교(신)	논산	강경	채운	1982	논산군	3+475	공도교	8.1	6.7	178.00	P.C-Beam	반중력식	9	6.98	
	신용교	익산	망성	무형	1938	-	4+085	공도교	3.0	2.7	111.20	T-Beam	반중력식	9	8.70	
	선리교	익산	망성	무형	2001	익산시청	4+845	-	10.5	-	140.00	-	-	6	10.10	
	작산교	익산	망성	무형	1938	-	5+385	공도교	3.0	2.7	126.50	T-Beam	반중력식	10	9.05	

2. 주요시설물 능력검토

2.1 기성제 능력검토

2.2 배수구조물 능력검토

2.3 교량의 홍수여유고 및 경간장 검토

건설교통부

2.1 기성제 능력검토

건설교통부

◇ 기성제 검토

금강(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
나포1제	5+390	5.04	6.81	1.77	6.0	2.0	7.0	-0.23	-1.0	
	6+110	5.08	6.99	1.91		2.0		-0.09		
	6+750	5.13	7.29	2.16		2.0		0.16		
	7+210	5.19	7.07	1.88		2.0		-0.12		
	7+740	5.23	7.27	2.04		2.0		0.04		
	8+160	5.27	7.25	1.98		2.0		-0.02		
	8+670	5.29	7.41	2.12		2.0		0.12		
	9+170	5.33	7.29	1.96		2.0		-0.04		
	9+640	5.38	6.68	1.30		2.0		-0.70		
나포2제	10+130	5.42	6.83	1.41	4.0	2.0	7.0	-0.59	-3.0	
나포3제	10+600	5.47	7.21	1.74	6.0	2.0	7.0	-0.26	-1.0	7.2~7.7
옥동제		5.65	7.45	1.80	4.0	2.0	7.0	-0.20	-3 0	
웅포제	12+250	5.67	7.62	1.95	6.0	2.0	7.0	-0.05	-1.0	
	12+850	5.75	7.63	1.88		2.0		-0.12		
	13+450	5.89	7.00	1.11		2.0		-0.89		
	13+970	5.93	7.29	1.36		2.0		-0.64		
	14+490	5.97	8.04	2.07		2.0		0.07		
	15+020	6.01	8.28	2.27		2.0		0.27		
	15+460	6.04	8.31	2.27		2.0		0.27		
	15+960	6.13	8.28	2.15		2.0		0.15		
	16+420	6.23	8.33	2.10		2.0		0.10		
	16+910	6.33	8.67	2.34		2.0		0.34		
	17+380	6.47	8.55	2.08		2.0		0.08		
	17+850	6.57	8.84	2.27		2.0		0.27		
	18+190	6.62	8.71	2.09		2.0		0.09		
용안제	24+680	7.75	8.96	1.21	5.0	2.0	7.0	-0.79	-2.0	
	25+330	7.81	9.74	1.93		2.0		-0.07		
	25+810	7.88	9.69	1.81		2.0		-0.19		
	26+140	7.93	9.85	1.92		2.0		-0.08		
	26+600	7.98	9.79	1.81		2.0		-0.19		
	26+990	8.02	10.02	2.00		2.0		0.00		
	27+400	8.06	10.00	1.94		2.0		-0.06		
	27+890	8.09	10.17	2.08		2.0		0.08		
	28+290	8.21	10.11	1.90		2.0		-0.10		
	28+630	8.34	10.36	2.02		2.0		0.02		

건설교통부

금강(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	29+030	8.39	10.24	1.85		2.0		-0.15		
망성제	30+160	8.55	10.59	2.04	5.0	2.0	7.0	0.04	-2.0	
	30+830	8.61	10.76	2.15		2.0		0.15		
	31+400	8.62	10.73	2.11		2.0		0.11		
	32+120	8.72	11.02	2.30		2.0		0.30		
황산제	32+590	8.83	10.44	1.61	5.0	2.0	7.0	-0.39	-2.0	
	32+920	8.89	13.63	4.74		2.0		2.74		
	33+060	8.92	8.68	-0.24		2.0		-2.24		
서창제	33+830	9.05	10.99	1.94	6.0	2.0	7.0	-0.06	-1.0	
개척제	34+490	9.13	10.90	1.77	5.0	2.0	7.0	-0.23	-2.0	
	34+920	9.19	11.30	2.11		2.0		0.11		
	35+370	9.27	11.56	2.29		2.0		0.29		
우곤제	36+560	9.39	11.65	2.26	5.0	2.0	7.0	0.26	-2.0	
	37+010	9.45	12.11	2.66		2.0		0.66		
	37+710	9.58	12.02	2.44		2.0		0.44		
봉정제	38+620	9.67	12.10	2.43	6.0	2.0	7.0	0.43	-1.0	
	39+050	9.89	12.18	2.29		2.0		0.29		
	39+520	10.17	12.10	1.93		2.0		-0.07		
	40+000	10.25	12.54	2.29		2.0		0.29		
	40+470	10.26	12.51	2.25		2.0		0.25		
	40+890	10.30	12.39	2.09		2.0		0.09		
현북제	44+450	11.22	12.95	1.73	5.0	2.0	7.0	-0.27	-2.0	
	45+060	11.25	13.23	1.98		2.0		-0.02		
	45+650	11.35	13.05	1.70		2.0		-0.30		
군수제	46+200	11.49	12.74	1.25	6.0	2.0	7.0	-0.75	-1.0	
	46+670	11.52	13.26	1.74		2.0		-0.26		
	47+270	11.54	13.30	1.76		2.0		-0.24		
	47+800	11.58	13.38	1.80		2.0		-0.20		
	48+100	11.60	13.48	1.88		2.0		-0.12		
	48+500	11.68	13.48	1.80		2.0		-0.20		
	48+970	11.83	13.74	1.91		2.0		-0.09		
	49+400	11.98	13.72	1.74		2.0		-0.26		
	49+820	12.04	14.01	1.97		2.0		-0.03		
	50+300	12.11	13.86	1.75		2.0		-0.25		
	50+800	12.23	13.77	1.54		2.0		-0.46		
구교제	52+540	12.41	13.81	1.40	6.0	2.0	7.0	-0.60	-1.0	

건설교통부

금강(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	52+910	12.45	13.74	1.29	6.0	2.0	7.0	-0.71	-1.0	
	53+350	12.51	13.62	1.11	6.0	2.0	7.0	-0.89	-1.0	
	53+760	12.70	14.01	1.31	6.0	2.0	7.0	-0.69	-1.0	
	54+270	12.72	13.78	1.06	4.0	2.0	7.0	-0.94	-3.0	
정동제	55+940	13.23	13.62	0.39	4.0	2.0	7.0	-1.61	-3.0	
	56+420	13.37	18.01	4.64		2.0		2.64		
	56+510	13.40	14.39	0.99		2.0		-1.01		
	56+970	13.56	14.48	0.92		2.0		-1.08		
	57+330	13.68	14.41	0.73		2.0		-1.27		
	57+810	13.88	14.38	0.50		2.0		-1.50		
	58+080	13.90	14.21	0.31		2.0		-1.69		
자왕제	59+060	14.11	15.91	1.80	5.0	2.0	7.0	-0.20	-2.0	
	59+520	14.22	16.02	1.80		2.0		-0.20		
	59+990	14.27	16.71	2.44		2.0		0.44		
	60+510	14.34	16.85	2.51		2.0		0.51		
	60+950	14.60	16.96	2.36		2.0		0.36		
	61+430	14.64	17.07	2.43		2.0		0.43		
	61+870	14.67	16.47	1.80		2.0		-0.20		
	61+900	14.67	16.47	1.80		2.0		-0.20		
	62+320	14.69	16.49	1.80		2.0		-0.20		
견동제	64+510	15.42				2.0				백제큰길
	65+040	15.49				2.0				공사중
대학제	68+970	16.53				2.0				공사중
운암제	72+570	17.10				2.0				공사중
검상제	76+270	17.92				2.0				공사중
	76+720	18.14				2.0				
	77+320	18.64				2.0				
	77+910	18.77				2.0				
	78+320	18.79				2.0				
금성제		20.53	19.50	-1.03	7.0	2.0	7.0	-3.03	0.0	
	85+070	20.55	22.13	1.58		2.0		-0.42		금강교
도남2제		23.25	25.05	1.80	6.0	2.0	7.0	-0.20	-1.0	
원봉1제		23.56	25.36	1.80	6.0	2.0	7.0	-0.20	-1.0	
원봉제	96+870	23.57	25.37	1.80	6.0	2.0	7.0	-0.20	-1.0	
	97+390	23.63	25.43	1.80		2.0		-0.20		
	97+810	24.00	25.80	1.80		2.0		-0.20		

건설교통부

금강(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
영곡제		24.35	26.15	1.80	6.0	2.0	7.0	-0.20	-1.0	
용수제		24.42	26.22	1.80	6.0	2.0	7.0	-0.20	-1.0	
대평제	100+280	24.44	25.64	1.20	3.0	2.0	7.0	-0.80	-4.0	
	100+710	24.52	26.20	1.68		2.0		-0.32		
	101+140	24.56	27.33	2.77		2.0		0.77		
	101+620	24.59	27.88	3.29		2.0		1.29		
금남제	102+030	24.61	26.82	2.21	5.0	2.0	7.0	0.21	-2.0	
	102+610	24.72	26.06	1.34	4.0	2.0	7.0	-0.66	-3.0	
	103+160	24.74	26.04	1.30	4.0	2.0	7.0	-0.70	-3.0	
	103+720	24.83	26.96	2.13	4.0	2.0	7.0	0.13	-3.0	
	104+230	24.86	27.20	2.34	4.0	2.0	7.0	0.34	-3.0	
반곡제	105+750	25.02	26.82	1.80	6.0	2.0	7.0	-0.20	-1.0	
	106+230	25.11	26.91	1.80		2.0		-0.20		
봉기제	106+750	25.21	27.01	1.80	6.0	2.0	7.0	-0.20	-1.0	
	107+250	25.31	27.11	1.80		2.0		-0.20		
	107+700	25.34	27.14	1.80		2.0		-0.20		
	108+200	25.40	27.20	1.80		2.0		-0.20		
부용제	111+900	25.78	27.28	1.50	5.0	1.5	6.0	0.00	-1.0	
	112+350	25.97	27.47	1.50		1.5		0.00		
	112+510	26.09	27.59	1.50		1.5		0.00		
	112+960	26.18	27.68	1.50		1.5		0.00		
	113+360	26.19	27.69	1.50		1.5		0.00		
	113+790	26.31	27.81	1.50		1.5		0.00		
문평제	125+660	30.70	34.27	3.57	4.0	1.5	6.0	2.07	-2.0	
	126+420	30.91	35.41	4.50		1.5		3.00		
금암제	225+775	91.91	92.71	0.80	6.0	1.5		-0.70	6.0	
	225+830	91.99	92.71	0.72		1.5		-0.78		
원동제	234+585	97.76	99.70	1.94	5.0	1.5	6.0	0.44	-1.0	
	235+060	97.96	99.89	1.93		1.5		0.43		
	235+420	98.18	100.13	1.95		1.5		0.45		
	235+450	98.20	100.14	1.94		1.5		0.44		
고당제	241+765	101.54	103.48	1.94	4.0	1.5	6.0	0.44	-2.0	
	242+610	102.18	103.74	1.56		1.5		0.06		
	243+355	102.70	103.47	0.77		1.5		-0.73		

건설교통부

금강(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
마서제	0+000	4.62	9.12	4.50	도로	2.0		2.50		
	0+350	4.62	6.79	2.17		2.0		0.17		
	0+720	4.63	7.95	3.32		2.0		1.32		
	1+140	4.63	6.72	2.09	시점부 4.0	2.0		0.09		
화양제	2+020	4.67	6.42	1.75	종점부 4.0	2.0		-0.25		
	2+450	4.70	6.71	2.01	도로	2.0		0.01		
	2+920	4.73	6.82	2.09		2.0		0.09		
	3+330	4.76	6.58	1.82		2.0		-0.18		
와초제	3+780	4.77	7.23	2.46	5.0	2.0	7.0	0.46	-2.0	
	4+240	4.84	7.29	2.45		2.0		0.45		
	4+580	4.93	7.05	2.12		2.0		0.12		
	4+860	4.96	7.34	2.38		2.0		0.38		
	5+390	5.04	7.16	2.12		2.0		0.12		
완포제	6+750	5.13	7.32	2.19	4.0	2.0	7.0	0.19	-3.0	
죽산제	7+740	5.23	7.52	2.29	5.0	2.0	7.0	0.29	-2.0	
	8+160	5.27	7.44	2.17		2.0		0.17		
	8+670	5.29	7.40	2.11		2.0		0.11		
	9+170	5.33	7.59	2.26		2.0		0.26		
	9+640	5.38	7.67	2.29		2.0		0.29		
용산제	10+130	5.42	7.53	2.11	5.0	2.0	7.0	0.11	-2.0	
	10+600	5.47	7.60	2.13		2.0		0.13		
	11+060	5.51	7.83	2.32		2.0		0.32		
	11+520	5.67	7.97	2.30		2.0		0.30		
	12+250	5.67	7.89	2.22		2.0		0.22		
	12+850	5.75	8.17	2.42		2.0		0.42		
	13+450	5.89	8.04	2.15		2.0		0.15		
	13+970	5.93	8.35	2.42		2.0		0.42		
양화1제	15+020	6.01	8.36	2.35	6.0	2.0	7.0	0.35	-1.0	
양화2제	17+380	6.47	7.59	1.12	6.0	2.0	7.0	-0.88	-1.0	웅포대교
양화제	18+190	6.62	7.83	1.21	5.0	2.0	7.0	-0.79	-2.0	
입포제	20+130	6.90	8.70	1.80	6.0	2.0	7.0	-0.20	-1.0	
	20+580	6.97	9.16	2.19		2.0		0.19		
임천1제	21+660	7.28	7.75	0.47	3.0	2.0	7.0	-1.53	-4.0	
	22+110	7.36	7.77	0.41		2.0		-1.59		
임천2제	22+550	7.42	8.34	0.92	4.0	2.0	7.0	-1.08	-3.0	
	23+250	7.53	8.96	1.43		2.0		-0 57		

금강(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	23+550	7.63	8.90	1.27		2.0		-0.73		
	24+050	7.68	9.12	1.44		2.0		-0.56		
	24+680	7.75	8.97	1.22		2.0		-0.78		
간대1제	25+810	7.88	8.87	0.99	5.0	2.0	7.0	-1.01	-2.0	
	26+140	7.93	9.49	1.56		2.0		-0.44		
	26+600	7.98	9.04	1.06		2.0		-0.94		
	26+990	8.02	8.55	0.53		2.0		-1.47		
	27+400	8.06	8.75	0.69		2.0		-1.31		
간대2제	27+890	8.09	9.23	1.14	6.0	2.0	7.0	-0.86	-1.0	9.2~9.9
청포제	28+630	8.34	11.00	2.66	6.0	2.0	7.0	0.66	-1.0	
	29+030	8.39	11.07	2.68		2.0		0.68		
	29+570	8.44	11.40	2.96		2.0		0.96		
세도제	30+160	8.55	10.41	1.86	6.0	2.0	7.0	-0.14	-1.0	
	30+830	8.61	10.63	2.02		2.0		0.02		
	31+400	8.62	10.79	2.17		2.0		0.17		
	32+120	8.72	10.83	2.11		2.0		0.11		
	32+590	8.83	10.72	1.89		2.0		-0.11		
	32+920	8.89	13.66	4.77		2.0		2.77		
	33+060	8.92	10.76	1.84		2.0		-0.16		
	33+270	8.94	11.01	2.07		2.0		0.07		
	33+830	9.05	10.81	1.76		2.0		-0.24		
	34+490	9.13	11.16	2.03		2.0		0.03		
	34+920	9.19	10.81	1.62		2.0		-0.38		
장산제	36+000	9.33	11.37	2.04	6.0	2.0	7.0	0.04	-1.0	
반조원1제		9.58	11.40	1.82	4.0	2.0	7.0	-0.18	-3.0	11.4~11.8
반조원2제	39+520	10.17	11.34	1.17	5.0	2.0	7.0	-0.83	-2.0	11.2~11.9
장암제	41+990	10.58	12.47	1.89	5.0	2.0	7.0	-0.11	-2.0	
	42+540	10.62	12.73	2.11		2.0		0.11		
	43+290	10.95	13.13	2.18		2.0		0.18		
	43+850	11.12	13.23	2.11		2.0		0.11		
	44+450	11.22	15.24	4.02		2.0		2.02		
	45+060	11.25	13.69	2.44		2.0		0.44		
정고1제	46+200	11.49	13.78	2.29	5.0	2.0	7.0	0.29	-2.0	
	46+670	11.52	13.83	2.31		2.0		0.31		
정고2제	47+270	11.54	15.36	3.82	5.0	2.0	7.0	1.82	-2.0	
	47+800	11.58	14.04	2.46		2.0		0.46		

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금강(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	48+100	11.60	14.03	2.43		2.0		0.43		
	48+500	11.68	13.98	2.30		2.0		0.30		
금천제	49+400	11.98			5.0	2.0	7.0		-2.0	
외리제	49+820	12.04	12.70	0.66	5.0	2.0	7.0	-1.34	-2.0	
	50+300	12.11	12.91	0.80		2.0		-1.20		
	50+800	12.23	12.93	0.70		2.0		-1.30		
	51+220	12.27	12.52	0.25		2.0		-1.75		
규암제	51+540	12.29	13.51	1.22	5.0	2.0	7.0	-0.78	-2.0	
라복제		12.38	9.70	-2.68	5.0	2.0	7.0	-4.68	-2.0	
	52+540	12.41	14.06	1.65	6.0	2.0	7.0	-0.35	-1.0	
신리제	53+760	12.70	14.36	1.66	6.0	2.0	7.0	-0.34	-1.0	
장수평제	57+810	13.88	15.68	1.80	6.0	2.0	7.0	-0.20	-1.0	
	58+080	13.90	15.70	1.80		2.0		-0.20		
	58+570	13.93	15.73	1.80		2.0		-0.20		
	59+060	14.11	15.91	1.80		2.0		-0.20		
	59+520	14.22	16.02	1.80		2.0		-0.20		
	59+990	14.27	16.07	1.80		2.0		-0.20		
	60+510	14.34	16.14	1.80		2.0		-0.20		
청남제	60+950	14.60	16.96	2.36	5.0	2.0	7.0	0.36	-2.0	
	61+430	14.64	16.44	1.80		2.0		-0.20		
	61+870	14.67	16.47	1.80		2.0		-0.20		
	61+900	14.67	16.47	1.80		2.0		-0.20		
	62+320	14.69	16.49	1.80		2.0		-0.20		
	62+790	14.72	16.52	1.80		2.0		-0.20		
	63+390	14.85	16.65	1.80		2.0		-0.20		
	64+040	15.18	16.98	1.80		2.0		-0.20		
	64+510	15.42	17.22	1.80		2.0		-0.20		
대평제	67+910	16.32	18.12	1.80	6.0	2.0	7.0	-0.20	-1.0	
음전제	68+970	16.53	18.65	2.12	6.0	2.0	7.0	0.12	-1.0	
반음제		16.58	18.80	2.22	6.0	2.0	7.0	0.22	-1.0	
장수제	70+100	16.60	19.01	2.41	6.0	2.0	7.0	0.41	-1.0	
임장제	71+110	16.76	19.16	2.40	6.0	2.0	7.0	0.40	-1.0	
어천제		17.09	18.50	1.41	5.0	2.0	7.0	-0.59	-2.0	18.5~19.5
죽당제	74+180	17.51							도로	공사중
오동제		18.00	18.50	0.50	4.5	2.0	7.0	-1.50	-2.5	
보흥제	77+910	18.77	18.01	-0.76	3.0	2.0	7.0	-2.76	-4.0	

건설교통부

금강(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
옥성제	80+190	19.34	21.20	1.86	6.0	2.0	7.0	-0.14	-1.0	21.3~21.6
신관제	85+220	20.57	21.54	0.97	도로	2.0		-1.03		21.0~22.0
	85+730	20.64	22.05	1.41		2.0		-0.59		
송원제	98+930	24.23	23.91	-0.32	3.0	2.0	7.0	-2.32	-4.0	
	99+730	24.40	24.25	-0.15		2.0		-2.15		
	100+280	24.44	24.49	0.05		2.0		-1.95		
나성제	101+140	24.56	26.79	2.23	6.0	2.0	7.0	0.23	-1.0	
	101+620	24.59	27.13	2.54		2.0		0.54		
남면제	102+610	24.72	26.41	1.69	4.0	2.0	7.0	-0.31	-3.0	제내측
	103+160	24.74	26.50	1.76	4.0	2.0	7.0	-0.24	-3.0	도로공사
	103+720	24.83	25.54	0.71	4.0	2.0	7.0	-1.29	-3.0	
	104+230	24.86	26.15	1.29	4.0	2.0	7.0	-0.71	-3.0	
	104+740	24.89	26.36	1.47	4.0	2.0	7.0	-0.53	-3.0	
	105+250	24.92	27.10	2.18	6.0	2.0	7.0	0.18	-1.0	
	105+750	25.02	26.45	1.43	6.0	2.0	7.0	-0.57	-1.0	
월산제	107+700	25.34	27.14	1.80	6.0	2.0	7.0	-0.20	-1.0	
	108+200	25.40	27.20	1.80		2.0		-0.20		
부강제	112+510	26.09	27.59	1.50	5.0	1.5	6.0	0.00	-1.0	
	112+960	26.18	27.68	1.50		1.5		0.00		
	113+360	26.19	27.69	1.50		1.5		0.00		
	113+790	26.31	27.81	1.50		1.5		0.00		
중척제	122+490	29.60	31.10	1.50	5.0	1.5	6.0	0.00	-1.0	
	122+990	29.88	31.38	1.50		1.5		0.00		
	123+470	30.01	31.51	1.50		1.5		0.00		
	124+010	30.16	31.66	1.50		1.5		0.00		
지탄제	234+130	97.57	99.43	1.86	5.0	1.5	6.0	0.36	-1.0	
	234+585	97.76	99.66	1.90		1.5		0.40		
	235+060	97.96	99.91	1.95		1.5		0.45		
장동제	236+055	98.44	100.38	1.94	5.0	1.5	6.0	0.44	-1.0	
	236+505	98.88	100.64	1.76		1.5		0.26		
	237+040	99.08	100.90	1.82		1.5		0.32		
	237+455	99.41	101.11	1.70		1.5		0.20		
	237+865	99.58	101.31	1.73		1.5		0.23		
동대제	238+780	99.80	102.61	2.81	4.0	1.5	6.0	1.31	-2.0	
	239+170	100.25	103.05	2.80		1.5		1.30		
	239+220	100.31	103.01	2.70		1.5		1.20		

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금강(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	239+635	100.33	102.44	2.11		1.5		0.61		
	240+070	100.35	102.80	2.45		1.5		0.95		
	240+295	100.56	103.64	3.08		1.5		1.58		
	240+825	101.14	101.92	0.78		1.5		-0.72		
	241+055	101.37				1.5			교량	공사중
	241+220	101.53				1.5			교량	공사중
심천1제	243+355	102.70	105.60	2.90	4.0	1.5	6.0	1.40	-2.0	
	243+940	103.08	105.05	1.97		1.5		0.47		
심천2제	244+360	103.35	105.62	2.27	4.0	1.5	6.0	0.77	-2.0	
	244+830	103.55	105.61	2.06		1.5		0.56		
	244+870	103.57	105.24	1.67		1.5		0.17		
	245+305	103.83	105.76	1.93		1.5		0.43		
	245+840	104.09	106.12	2.03		1.5		0.53		
심천3제		104.35	105.60	1.25	4.0	1.5	6.0	-0.25	-2.0	

건설교통부

갑천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
봉산제	1+220	30.72	31.91	1.19	5.0	1.20	5.0	-0.01	0.0	
	1+450	30.75	32.41	1.66		1.20		0.46		
	1+710	30.78	31.78	1.00		1.20		-0.20		
	1+950	30.80	31.81	1.01		1.20		-0.19		
관평제	2+455	30.92	34.34	3.42	도로	1.20		2.22		
	2+535	30.94	34.79	3.85	도로	1.20		2.65		
	2+640	30.97	34.24	3.27	5.0	1.20	5.0	2.07	0.0	
	2+820	31.03	34.54	3.51		1.20		2.31		
	2+985	31.08	34.13	3.05		1.20		1.85		
	3+125	31.12	34.22	3.10		1.20		1.90		
	3+335	31.20	34.08	2.88		1.20		1.68		
	3+550	31.28	34.10	2.82		1.20		1.62		
용산제	3+755	31.30	33.22	1.92	5.0	1.20	5.0	0.72	0.0	
	3+915	31.40	34.73	3.33		1.20		2.13		
	3+975	31.50	33.22	1.72		1.20		0.52		
	4+205	31.53	33.14	1.61		1.20		0.41		
	4+395	31.65	32.63	0.98		1.20		-0.22		
	4+595	31.77	33.22	1.45		1.20		0.25		
	4+775	31.86	33.45	1.59		1.20		0.39		
	4+955	31.95	33.31	1.36		1.20		0.16		
	5+005	32.06	33.47	1.41		1.20		0.21		
	5+165	32.18	33.22	1.04		1.20		-0.16		
	5+345	32.27	33.29	1.02		1.20		-0.18		
	5+465	32.38	33.46	1.08		1.20		-0.12		
	5+635	32.45	34.69	2.24		1.20		1.04		
	5+815	32.49	34.40	1.91		1.20		0.71		
	5+975	32.52	34.68	2.16		1.20		0.96		
	6+145	32.60	34.27	1.67		1.20		0.47		
	6+315	32.78	34.52	1.74		1.20		0.54		
	6+515	32.96	34.68	1.72		1.20		0.52		
	6+710	33.12	34.51	1.39		1.20		0.19		
	6+880	33.25	35.10	1.85		1.20		0.65		
	7+100	33.44	35.17	1.73		1.20		0.53		
	7+130	33.51	-			1.20				
	7+150	33.53	-			1.20				
	7+160	33.60	-			1.20				

건설교통부

갑천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	7+285	33.67	35.33	1.66		1.20		0.46		
	7+505	33.78	34.52	0.74		1.20		-0.46		
	7+565	34.10	34.51	0.41		1.20		-0.79		
	7+715	34.29	34.86	0.57		1.20		-0.63		
	7+905	34.47	36.05	1.58		1.20		0.38		
	8+125	34.77	36.12	1.35		1.20		0.15		
문지제	8+365	35.56	36.04	0.48	3.0	1.20	5.0	-0.72	-2.0	
	8+555	35.60	36.21	0.61		1.20		-0.59		
	8+775	35.64	36.57	0.93		1.20		-0.27		
	8+985	35.69	37.48	1.79		1.20		0.59		
	9+190	35.73	36.69	0.96		1.20		-0.24		
	9+370	35.79	36.90	1.11		1.20		-0.09		
	9+550	35.91	37.45	1.54		1.20		0.34		
	9+720	36.26	37.58	1.32		1.20		0.12		
	9+905	36.31	37.94	1.63		1.20		0.43		
	10+045	36.44	38.02	1.58		1.20		0.38		
	10+105	36.58	39.00	2.42		1.20		1.22		
	10+225	36.65	37.89	1.24		1.20		0.04		
	10+415	36.76	37.48	0.72		1.20		-0.48		
	10+595	36.98	38.26	1.28		1.20		0.08		
도룡제	11+105	38.08	39.85	1.77	도로	1.20		0.57		
	11+325	38.10	39.97	1.87		1.20		0.67		
	11+415	38.12	40.01	1.89		1.20		0.69		
	11+545	38.14	40.00	1.86		1.20		0.66		
	11+655	38.23	40.46	2.23		1.00		1.23		
	11+725	38.25	41.11	2.86		1.00		1.86		
	11+785	38.27	40.51	2.24		1.00		1.24		
	11+820	38.32	40.08	1.76		1.00		0.76		
	11+960	38.34	40.21	1.87		1.00		0.87		
	12+060	38.36	40.22	1.86		1.00		0.86		
	12+160	38.37	40.21	1.84		1.00		0.84		
	12+210	38.39	40.70	2.31		1.00		1.31		
	12+260	38.41	40.58	2.17		1.00		1.17		
	12+355	38.42	40.31	1.89		1.00		0.89		
	12+460	38.43	40.36	1.93		1.00		0.93		
	12+560	38.44	40.36	1.92		1.00		0.92		

건설교통부

갑천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	12+660	38.46	40.61	2.15		1.00		1.15		
	12+760	38.48	41.46	2.98		1.00		1.98		
	12+860	38.51	42.26	3.75		1.00		2.75		
구성제	13+035	38.60	43.26	4.66	도로	1.00		3.66		
	13+165	38.61	42.87	4.26		1.00		3.26		
	13+265	38.62	42.47	3.85		1.00		2.85		
	13+355	38.74	42.27	3.53		1.00		2.53		
	13+460	38.87	41.74	2.87		1.00		1.87		
	13+555	39.00	42.09	3.09		1.00		2.09		
	13+675	39.22	42.40	3.18		1.00		2.18		
	13+755	39.58	42.40	2.82		1.00		1.82		
	13+850	39.70	42.86	3.16		1.00		2.16		
	13+955	39.82	42.57	2.75		1.00		1.75		
	14+060	40.02	42.01	1.99		1.00		0.99		
	14+150	40.09	41.97	1.88		1.00		0.88		
	14+250	40.19	42.01	1.82		1.00		0.82		
	14+345	40.28	42.86	2.58		1.00		1.58		
	14+440	40.38	42.24	1.86		1.00		0.86		
	14+540	40.57	42.32	1.75		1.00		0.75		
	14+635	40.67	42.41	1.74		1.00		0.74		
	14+720	40.71	42.53	1.82		1.00		0.82		
	14+830	40.74	42.44	1.70		1.00		0.70		
	14+945	41.10	42.84	1.74		1.00		0.74		
봉명제	15+235	41.43	43.46	2.03	도로	1.00		1.03		
	15+325	41.62	43.83	2.21	도로	1.00		1.21		
	15+375	41.80	44.31	2.51	도로	1.00		1.51		
	15+420	41.98	44.31	2.33	도로	1.00		1.33		
	15+525	42.16	44.44	2.28	도로	1.00		1.28		
	15+620	42.25	44.60	2.35	도로	1.00		1.35		
	15+720	42.29	44.85	2.56	도로	1.00		1.56		
	15+820	42.67	44.96	2.29	도로	1.00		1.29		
	15+925	42.80	45.14	2.34	도로	1.00		1.34		
	16+025	43.65	45.36	1.71	도로	1.00		0.71		
	16+125	43.71	45.46	1.75	도로	1.00		0.75		
	16+225	43.79	45.56	1.77	도로	1.00		0.77		
	16+325	43.88	45.83	1.95	도로	1.00		0.95		

건설교통부

갑천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	16+435	44.06	46.02	1.96	도로	1.00		0.96		
	16+535	44.40	47.52	3.12	도로	1.00		2.12		
	16+635	44.51	46.29	1.78	4.0	1.00	4.0	0.78	0.0	
	16+735	44.68	46.72	2.04		1.00		1.04		
	16+835	44.90	46.69	1.79		1.00		0.79		
	16+935	44.99	46.89	1.90		1.00		0.90		
	17+035	45.20	46.78	1.58		1.00		0.58		
원신흥제	17+135	45.20	46.15	0.95	4.0	1.00	4.0	-0.05	0.0	
	17+240	45.32	46.55	1.23		1.00		0.23		
	17+335	45.41	46.69	1.28		1.00		0.28		
	17+435	45.50	46.85	1.35		1.00		0.35		
	17+535	45.60	46.89	1.29		1.00		0.29		
	17+635	45.69	47.10	1.41		1.00		0.41		
	17+735	45.80	47.25	1.45		1.00		0.45		
	17+825	46.05	47.43	1.38		1.00		0.38		
	17+925	46.10	47.49	1.39		1.00		0.39		
	18+025	46.19	47.74	1.55		1.00		0.55		
	18+130	46.30	47.81	1.51		1.00		0.51		
	18+230	46.43	47.88	1.45		1.00		0.45		
	18+330	46.52	47.91	1.39		1.00		0.39		
	18+430	46.65	47.97	1.32		1.00		0.32		
	18+530	46.78	48.06	1.28		1.00		0.28		
	18+630	46.91	48.20	1.29		1.00		0.29		
	18+720	47.12	48.44	1.32		1.00		0.32		
	18+825	47.23	49.17	1.94		1.00		0.94		
도안제	18+925	47.47	49.79	2.32	4.0	1.00	4.0	1.32	0.0	
	19+025	47.56	50.31	2.75		1.00		1.75		
	19+125	47.75	50.76	3.01		1.00		2.01		
	19+230	47.81	50.93	3.12		1.00		2.12		
	19+335	47.91	50.89	2.98		1.00		1.98		
	19+435	48.10	50.52	2.42		1.00		1.42		
	19+535	48.15	50.59	2.44		1.00		1.44		
	19+630	48.31	50.66	2.35		1.00		1.35		
	19+740	48.40	51.17	2.77		1.00		1.77		
	19+815	48.49	51.23	2.74		1.00		1.74		
	19+925	48.57	50.55	1.98		1.00		0.98		

건설교통부

갑천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	20+020	48.66	50.17	1.51		1.00		0.51		
	20+115	48.74	50.26	1.52		1.00		0.52		
	20+210	48.98	50.12	1.14		1.00		0.14		
	20+315	49.07	50.48	1.41		1.00		0.41		
	20+410	49.25	50.32	1.07		1.00		0.07		
	20+510	49.61	50.48	0.87		1.00		-0.13		
	20+610	49.76	51.89	2.13		1.00		1.13		
	20+690	49.96	52.03	2.07		1.00		1.07		
가수원1제	20+895	50.39	52.33	1.94	5.0	1.00	4.0	0.94	1.0	
	21+045	50.55	52.68	2.13	5.0	1.00	4.0	1.13	1.0	
	21+095	50.82	52.69	1.87	5.0	1.00	4.0	0.87	1.0	
	21+200	50.92	52.98	2.06	5.0	1.00	4.0	1.06	1.0	
	21+290	51.06	53.32	2.26	5.0	1.00	4.0	1.26	1.0	
	21+390	51.11	53.39	2.28	5.0	1.00	4.0	1.28	1.0	
	21+515	51.70	53.55	1.85	5.0	1.00	4.0	0.85	1.0	
	21+525	51.72	53.77	2.05	5.0	1.00	4.0	1.05	1.0	
	21+585	51.74	53.93	2.19	5.0	1.00	4.0	1.19	1.0	
	21+685	51.86	54.13	2.27	5.0	1.00	4.0	1.27	1.0	
	21+745	51.99	55.99	4.00	5.0	1.00	4.0	3.00	1.0	
	21+805	52.10	52.99	0.89	3.5	1.00	4.0	-0.11	-0.5	
가수원2제	22+095	52.82	54.82	2.00	4.0	1.00	4.0	1.00	0.0	
	22+290	53.02	55.21	2.19		1.00		1.19		
	22+480	53.61	55.45	1.84		1.00		0.84		
	22+670	53.80	55.79	1.99		1.00		0.99		
	22+845	54.02	55.96	1.94		1.00		0.94		
	22+885	54.05	56.29	2.24		1.00		1.24		
	23+080	54.18	56.40	2.22		1.00		1.22		
괴곡3제	23+280	54.38	55.58	1.20	4.0	1.00	4.0	0.20	0.0	
	23+480	54.70	55.94	1.24		1.00		0.24		
	23+670	54.97	55.76	0.79		1.00		-0.21		
	23+835	55.28	55.49	0.21		1.00		-0.79		
	23+880	55.51	55.79	0.28		1.00		-0.72		
	24+075	55.82	56.59	0.77		1.00		-0.23		
	24+265	56.16	56.97	0.81		1.00		-0.19		
	24+365	57.52	56.98	-0.54		1.00		-1.54		
괴곡2제	24+465	58.08	58.94	0.86	5.0	1.00	4.0	-0.14	1.0	

건설피동부

갑천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	24+665	58.36	59.22	0.86	5.0	1.00	4.0	-0.14	1.0	
	24+865	58.42	59.59	1.17	4.0	1.00	4.0	0.17	0.0	
	25+060	58.59	59.67	1.08	4.0	1.00	4.0	0.08	0.0	
	25+255	58.63	59.84	1.21	4.0	1.00	4.0	0.21	0.0	
	25+445	59.04	60.11	1.07	4.0	1.00	4.0	0.07	0.0	
	25+485	59.63	60.10	0.47	4.0	1.00	4.0	-0.53	0.0	
괴곡1제	25+630	60.22	60.58	0.36	5.0	1.00	4.0	-0.64	1.0	
	25+850	60.39	61.18	0.79		1.00		-0.21		
	26+050	60.68	61.68	1.00		1.00		0.00		
	26+095	60.92	61.90	0.98		1.00		-0.02		
흑석제	28+495	64.70	65.09	0.39	4.0	1.00	4.0	-0.61	0.0	
	28+605	64.97	64.65	-0.32		1.00		-1.32		
	28+675	65.12	65.20	0.08		1.00		-0.92		
	28+690	65.15	66.29	1.14		1.00		0.14		
봉곡	32+485	72.62	74.04	1.42	4.0	1.00	4.0	0.42	0.0	
좌안제	32+680	72.77	74.89	2.12		1.00		1.12		
	32+700	72.88	74.74	1.86		1.00		0.86		
	32+885	73.95	75.10	1.15		1.00		0.15		
	33+075	74.31	75.66	1.35		1.00		0.35		
	33+270	74.35	75.60	1.25		1.00		0.25		
	33+315	74.62	75.95	1.33		1.00		0.33		

한국교통부

갑천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
문평제	0+000	30.60	34.27	3.67	4.0	1.20	5.0	2.47	-1.0	
	0+160	30.60	33.25	2.65	4.0	1.20	5.0	1.45	-1.0	
	0+390	30.61	33.53	2.92	4.0	1.20	5.0	1.72	-1.0	
	0+570	30.62	33.40	2.78	4.0	1.20	5.0	1.58	-1.0	
	0+770	30.67	33.62	2.95	4.0	1.20	5.0	1.75	-1.0	
	0+980	30.71	33.66	2.95	4.0	1.20	5.0	1.75	-1.0	
	1+015	30.72	33.96	3.24	도로	1.20		2.04		
	1+220	30.72	33.40	2.68	도로	1.20		1.48		
	1+450	30.75	34.38	3.63	도로	1.20		2.43		
	1+710	30.78	34.49	3.71	도로	1.20		2.51		
	1+950	30.80	34.11	3.31	도로	1.20		2.11		
	2+205	30.91	34.26	3.35	도로	1.20		2.15		
	2+455	30.92	34.05	3.13	도로	1.20		1.93		
	2+535	30.94	34.81	3.87	도로	1.20		2.67		
	2+640	30.97	34.19	3.22	5.0	1.20	5.0	2.02	0.0	
	2+820	31.03	34.45	3.42	5.0	1.20	5.0	2.22	0.0	
	2+985	31.08	34.49	3.41	5.0	1.20	5.0	2.21	0.0	
	3+125	31.12	34.89	3.77	5.0	1.20	5.0	2.57	0.0	
	3+335	31.20	34.62	3.42	5.0	1.20	5.0	2.22	0.0	
	3+550	31.28	34.41	3.13	5.0	1.20	5.0	1.93	0.0	
	3+755	31.30	34.31	3.01	5.0	1.20	5.0	1.81	0.0	
	3+915	31.40	35.45	4.05	5.0	1.20	5.0	2.85	0.0	
	3+975	31.50	34.59	3.09	5.0	1.20	5.0	1.89	0.0	
	4+205	31.53	34.45	2.92	5.0	1.20	5.0	1.72	0.0	
와동제	5+815	32.49	34.22	1.73	5.0	1.20	5.0	0.53	0.0	
	5+975	32.52	34.32	1.80		1.20		0.60		
	6+145	32.60	33.88	1.28		1.20		0.08		
	6+315	32.78	34.32	1.54		1.20		0.34		
	6+515	32.96	33.93	0.97		1.20		-0.23		
	6+710	33.12	33.83	0.71		1.20		-0.49		
	6+880	33.25	34.31	1.06		1.20		-0.14		
	7+100	33.44	34.71	1.27		1.20		0.07		
	7+130	33.51	34.70	1.19		1.20		-0.01		
	7+150	33.53	34.72	1.19		1.20		-0.01		
	7+160	33.60	34.67	1.07		1.20		-0.13		
	7+285	33.67	35.13	1.46		1.20		0.26		

건설교통부

갑천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
신대제	7+505	33.78	35.30	1.52	도로	1.20		0.32		
	7+565	34.10	34.87	0.77		1.20		-0.43		
	7+715	34.29	34.93	0.64		1.20		-0.56		
	7+905	34.47	35.32	0.85		1.20		-0.35		
	8+125	34.77	35.48	0.71		1.20		-0.49		
대화제	9+905	36.31	40.66	4.35	5.0	1.20	5.0	3.15	0.0	
	10+045	36.44	40.86	4.42		1.20		3.22		
	10+105	36.58	38.99	2.41		1.20		1.21		
	10+225	36.65	37.60	0.95		1.20		-0.25		
	10+415	36.76	37.75	0.99		1.20		-0.21		
	10+595	36.98	39.05	2.07		1.20		0.87		
	10+765	37.22	38.55	1.33		1.20		0.13		
	10+925	38.05	39.18	1.13		1.20		-0.07		
	11+105	38.08	39.21	1.13		1.20		-0.07		
	11+325	38.10	39.27	1.17		1.20		-0.03		
삼천제	11+785	38.27	40.21	1.94	도로	1.00		0.94		
	11+820	38.32	39.90	1.58		1.00		0.58		
	11+960	38.34	40.48	2.14		1.00		1.14		
	12+060	38.36	40.02	1.66		1.00		0.66		
	12+160	38.37	40.71	2.34		1.00		1.34		
	12+210	38.39	40.69	2.30		1.00		1.30		
	12+260	38.41	40.83	2.42		1.00		1.42		
	12+355	38.42	40.72	2.30		1.00		1.30		
	12+460	38.43	40.66	2.23		1.00		1.23		
	12+560	38.44	40.56	2.12		1.00		1.12		
	12+660	38.46	41.31	2.85		1.00		1.85		
	12+760	38.48	41.02	2.54		1.00		1.54		
	12+860	38.51	41.71	3.20		1.00		2.20		
	12+920	38.54	42.57	4.03		1.00		3.03		
	12+960	38.56	43.31	4.75		1.00		3.75		
	13+035	38.60	43.40	4.80		1.00		3.80		
	13+165	38.61	41.84	3.23		1.00		2.23		
갈마제	13+265	38.62	40.86	2.24	도로	1.00		1.24		
	13+355	38.74	40.48	1.74		1.00		0.74		
	13+460	38.87	40.89	2.02		1.00		1.02		
	13+555	39.00	41.18	2.18		1.00		1.18		

한국건설교통부

갑천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	13+675	39.22	41.76	2.54		1.00		1.54		
	13+755	39.58	41.68	2.10		1.00		1.10		
	13+850	39.70	41.59	1.89		1.00		0.89		
	13+955	39.82	41.95	2.13		1.00		1.13		
	14+060	40.02	41.86	1.84		1.00		0.84		
	14+150	40.09	42.08	1.99		1.00		0.99		
	14+250	40.19	42.61	2.42		1.00		1.42		
	14+345	40.28	43.58	3.30		1.00		2.30		
	14+440	40.38	43.02	2.64		1.00		1.64		
	14+540	40.57	43.00	2.43		1.00		1.43		
	14+635	40.67	42.91	2.24		1.00		1.24		
	14+720	40.71	43.15	2.44		1.00		1.44		
	14+830	40.74	43.33	2.59		1.00		1.59		
	14+945	41.10	43.54	2.44		1.00		1.44		
	15+045	41.11	43.52	2.41		1.00		1.41		
	15+140	41.25	43.71	2.46		1.00		1.46		
	15+235	41.43	43.85	2.42		1.00		1.42		
	15+325	41.62	43.84	2.22		1.00		1.22		
	15+375	41.80	43.65	1.85		1.00		0.85		
	15+420	41.98	44.23	2.25		1.00		1.25		
	15+525	42.16	43.68	1.52		1.00		0.52		
	15+620	42.25	44.56	2.31		1.00		1.31		
	15+720	42.29	44.72	2.43		1.00		1.43		
	15+820	42.67	44.93	2.26		1.00		1.26		
	15+925	42.80	45.34	2.54		1.00		1.54		
	16+025	43.65	45.44	1.79		1.00		0.79		
	16+125	43.71	45.34	1.63		1.00		0.63		
	16+225	43.80	45.83	2.03		1.00		1.03		
	16+325	43.88	46.50	2.62		1.00		1.62		
	16+435	44.06	47.08	3.02		1.00		2.02		
	16+535	44.40	47.50	3.10		1.00		2.10		
	16+635	44.51	46.76	2.25	6.0	1.00	4.0	1.25	2.0	
	16+735	44.68	46.41	1.73	6.0	1.00	4.0	0.73	2.0	
	16+835	44.90	45.34	0.44	6.0	1.00	4.0	-0.56	2.0	
	16+935	44.99	45.18	0.19	6.0	1.00	4.0	-0.81	2.0	
	17+035	45.20	45.93	0.73	6.0	1.00	4.0	-0.27	2.0	

건설교통부

갑천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	17+135	45.20	46.62	1.42	6.0	1.00	4.0	0.42	2.0	
	17+240	45.32	47.17	1.85	6.0	1.00	4.0	0.85	2.0	
	17+335	45.41	47.09	1.68	6.0	1.00	4.0	0.68	2.0	
	17+435	45.50	47.12	1.62	6.0	1.00	4.0	0.62	2.0	
	17+535	45.60	47.24	1.64	6.0	1.00	4.0	0.64	2.0	
	17+635	45.69	47.60	1.91	6.0	1.00	4.0	0.91	2.0	
	17+735	45.80	47.92	2.12	6.0	1.00	4.0	1.12	2.0	
정림1제	21+045	50.55	51.18	0.63	도로	1.00		-0.37		
	21+095	50.82	51.16	0.34		1.00		-0.66		
	21+200	50.92	51.89	0.97		1.00		-0.03		
	21+290	51.06	51.99	0.93		1.00		-0.07		
	21+390	51.11	52.10	0.99		1.00		-0.01		
	21+515	51.70	51.91	0.21		1.00		-0.79		
	21+525	51.72	51.80	0.08		1.00		-0.92		
정림2제	22+670	53.80	56.37	2.57	4.0	1.00	4.0	1.57	0.0	
	22+845	54.02	56.58	2.56		1.00		1.56		
	22+885	54.05	56.91	2.86		1.00		1.86		
	23+080	54.18	56.75	2.57		1.00		1.57		
	23+280	54.38	55.87	1.49		1.00		0.49		
	23+480	54.70	56.22	1.52		1.00		0.52		
	23+670	54.97	56.10	1.13		1.00		0.13		
괴곡	24+075	55.82	56.07	0.25	4.0	1.00	4.0	-0.75	0.0	
우안제	24+265	56.16	57.66	1.50		1.00		0.50		
	24+365	57.52	58.13	0.61		1.00		-0.39		
	24+465	58.08	58.80	0.72		1.00		-0.28		
유천제	27+065	62.58	63.50	0.92	3.0	1.00	4.0	-0.08	-1.0	
	27+270	62.71	64.15	1.44		1.00		0.44		
	27+490	63.27	65.15	1.88		1.00		0.88		
	27+675	63.38	65.73	2.35		1.00		1.35		
	27+710	63.54	66.08	2.54		1.00		1.54		
	27+885	63.67	66.06	2.39		1.00		1.39		
흑석2제	30+480	70.54	72.12	1.58	4.0	1.00	4.0	0.58	0.0	
	30+680	70.75	72.02	1.27		1.00		0.27		
	30+880	70.85	72.27	1.42		1.00		0.42		
	31+070	70.96	71.26	0.30		1.00		-0.70		
봉곡	32+085	71.97	73.57	1.60	3.0	1.00	4.0	0.60	-1.0	

건설교통부

갑천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
우안1제	32+285	72.46	73.49	1.03		1.00		0.03		
	32+485	72.62	73.61	0.99		1.00		-0.01		
봉곡	33+270	74.35	76.03	1.68	3.0	1.00	4.0	0.68	-1.0	
우안2제	33+315	74.62	76.25	1.63		1.00		0.63		
	33+510	74.99	76.15	1.16		1.00		0.16		

건설교통부

유등천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
삼천제	0+000	38.14	40.22	2.08	도로	1.00		1.08		
	0+070	38.16	40.42	2.26		1.00		1.26		
	0+280	38.20	40.22	2.02		1.00		1.02		
	0+480	38.31	40.36	2.05		1.00		1.05		
	0+675	38.38	40.46	2.08		1.00		1.08		
	0+895	38.47	41.11	2.64		1.00		1.64		
	1+055	38.52	41.14	2.62		1.00		1.62		
	1+245	38.67	41.30	2.63		1.00		1.63		
	1+445	38.78	41.15	2.37		1.00		1.37		
	1+635	38.94	41.99	3.05		1.00		2.05		
	1+860	39.25	42.50	3.25		1.00		2.25		
	1+880	39.28	40.80	1.52		1.00		0.52		
	2+090	39.41	41.94	2.53		1.00		1.53		
	2+300	39.58	41.87	2.29		1.00		1.29		
	2+305	39.64	41.90	2.26		1.00		1.26		
	2+480	39.70	41.84	2.14		1.00		1.14		
	2+640	39.80	42.19	2.39		1.00		1.39		
	2+790	40.28	42.56	2.28		1.00		1.28		
	2+820	40.34	42.91	2.57		1.00		1.57		
	3+015	40.75	42.98	2.23		1.00		1.23		
	3+215	41.14	43.03	1.89		1.00		0.89		
	3+255	41.25	43.40	2.15		1.00		1.15		
용문제	3+415	41.41	44.55	3.14	도로	1.00		2.14		
	3+615	41.76	45.26	3.50		1.00		2.50		
	3+805	42.26	45.10	2.84		1.00		1.84		
	4+005	42.63	45.35	2.72		1.00		1.72		
	4+205	43.04	46.06	3.02		1.00		2.02		
	4+400	43.48	46.84	3.36		1.00		2.36		
	4+460	44.51	46.94	2.43		1.00		1.43		
	4+500	44.60	46.93	2.33		1.00		1.33		
	4+600	44.78	47.17	2.39		1.00		1.39		
	4+800	45.15	47.08	1.93		1.00		0.93		
	5+000	45.73	47.68	1.95		1.00		0.95		
	5+200	46.04	48.13	2.09		1.00		1.09		
	5+395	46.35	48.66	2.31		1.00		1.31		
	5+575	46.80	49.41	2.61		1.00		1.61		

건설교통부

유등천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
도마제	5+790	47.02	50.29	3.27	도로	1.00		2.27		
	5+990	47.38	50.89	3.51		1.00		2.51		
	6+130	47.73	50.09	2.36		1.00		1.36		
	6+190	47.76	50.92	3.16		1.00		2.16		
	6+400	48.12	50.62	2.50		1.00		1.50		
	6+590	48.39	51.52	3.13		1.00		2.13		
	6+780	48.66	51.82	3.16		1.00		2.16		
	6+960	49.18	52.70	3.52		1.00		2.52		
	6+980	49.43	53.04	3.61		1.00		2.61		
	7+010	49.81	54.52	4.71		1.00		3.71		
	7+195	50.08	53.64	3.56		1.00		2.56		
	7+385	50.35	54.27	3.92		1.00		2.92		
	7+575	50.93	54.58	3.65		1.00		2.65		
	7+790	51.28	54.58	3.30		1.00		2.30		
복수제	8+390	53.28	59.31	6.03	5.0	1.00	4.0	5.03	1.0	
	8+440	55.63	57.61	1.98		1.00		0.98		
	8+560	55.79	56.51	0.72		1.00		-0.28		
	8+780	56.09	56.51	0.42		1.00		-0.58		
	8+990	56.30	57.18	0.88		1.00		-0.12		
	9+010	56.37	58.02	1.65		1.00		0.65		
	9+190	56.60	57.67	1.07		1.00		0.07		
	9+395	56.89	58.78	1.89		1.00		0.89		
	9+595	57.35	59.15	1.80		1.00		0.80		
안영 좌안제	10+400	60.29	61.07	0.78	4.0	1.00	4.0	-0.22	0.0	
	10+585	60.53	61.86	1.33		1.00		0.33		
	10+735	60.94	63.30	2.36		1.00		1.36		
	10+785	60.94	64.52	3.58		1.00		2.58		
침산2제	12+370	65.29	64.77	-0.52	1.5	1.00	4.0	-1.52	-2.5	
침산1제	12+780	66.39	66.69	0.30	0.8	1.00	4.0	-0.70	-3.2	
	12+970	66.83	67.80	0.97		1.00		-0.03		
침산제	13+570	68.72	69.72	1.00	4.0	1.00	4.0	0.00	0.0	
	13+750	69.23	69.80	0.57		1.00		-0.43		
	14+030	70.12	70.10	-0.02		1.00		-1.02		
	14+190	70.63	70.31	-0.32		1.00		-1.32		
	14+245	70.80	71.87	1.07		1.00		0.07		
	14+390	71.67	72.67	1.00		1.00		0.00		

건설교통부

유등천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	14+555	71.75	72.74	0.99		1.00		-0.01		

건설교통부

유등천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
대화제	0+000	38.14	39.11	0.97	4.0	1.00	4.0	-0.03	0.0	
	0+070	38.16	39.18	1.02		1.00		0.02		
	0+280	38.20	39.64	1.44		1.00		0.44		
	0+480	38.31	40.14	1.83		1.00		0.83		
구마니제	0+675	38.38	39.91	1.53	6.0	1.00	4.0	0.53	2.0	
	0+895	38.47	39.60	1.13		1.00		0.13		
	1+055	38.52	39.90	1.38		1.00		0.38		
	1+245	38.67	41.44	2.77		1.00		1.77		
오정제	1+635	38.94	40.49	1.55	도로	1.00		0.55		
	1+860	39.25	42.50	3.25		1.00		2.25		
	1+880	39.28	40.95	1.67		1.00		0.67		
	2+090	39.41	41.91	2.50		1.00		1.50		
	2+300	39.58	42.10	2.52		1.00		1.52		
	2+305	39.64	42.31	2.67		1.00		1.67		
	2+480	39.70	42.12	2.42		1.00		1.42		
	2+640	39.80	42.34	2.54		1.00		1.54		
중촌제	2+820	40.34	42.65	2.31	6.0	1.00	4.0	1.31	2.0	
	3+015	40.75	44.38	3.63		1.00		2.63		
	3+215	41.14	44.37	3.23		1.00		2.23		
	3+255	41.25	44.96	3.71		1.00		2.71		
	3+415	41.41	45.22	3.81		1.00		2.81		
	3+615	41.76	45.79	4.03		1.00		3.03		
	3+805	42.26	45.56	3.30		1.00		2.30		
	4+005	42.63	46.12	3.49		1.00		2.49		
	4+205	43.04	46.58	3.54		1.00		2.54		
	4+400	43.48	46.50	3.02		1.00		2.02		
	4+460	44.51	46.83	2.32		1.00		1.32		
	4+500	44.60	46.98	2.38		1.00		1.38		
태평제	4+600	44.78	46.87	2.09	5.0	1.00	4.0	1.09	1.0	
	4+800	45.15	46.99	1.84		1.00		0.84		
	5+000	45.73	47.57	1.84		1.00		0.84		
	5+200	46.04	48.09	2.05		1.00		1.05		
	5+395	46.35	48.62	2.27		1.00		1.27		
	5+575	46.80	49.46	2.66		1.00		1.66		
	5+790	47.02	49.73	2.71		1.00		1.71		
	5+990	47.38	50.15	2.77		1.00		1.77		

관심교통부

유등천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	6+130	47.73	50.63	2.90		1.00		1.90		
	6+190	47.76	50.73	2.97		1.00		1.97		
	6+400	48.12	51.39	3.27		1.00		2.27		
	6+590	48.39	51.88	3.49		1.00		2.49		
	6+780	48.66	52.40	3.74		1.00		2.74		
	6+960	49.18	52.01	2.83		1.00		1.83		
	6+980	49.43	53.47	4.04		1.00		3.04		
	7+010	49.81	54.52	4.71		1.00		3.71		
유천제	7+195	50.08	52.93	2.85	도로	1.00		1.85		
	7+385	50.35	54.13	3.78		1.00		2.78		
	7+575	50.93	54.60	3.67		1.00		2.67		
	7+790	51.28	54.60	3.32		1.00		2.32		
	7+820	51.87	55.20	3.33		1.00		2.33		
	7+830	52.00	56.11	4.11		1.00		3.11		
	7+980	52.25	55.98	3.73		1.00		2.73		
	8+180	52.70	56.41	3.71		1.00		2.71		
	8+390	53.28	57.21	3.93		1.00		2.93		
	8+440	55.63	57.02	1.39		1.00		0.39		
	8+560	55.79	57.14	1.35		1.00		0.35		
안영	8+990	56.30	56.53	0.23		1.00		-0.77		5.80
우안제	9+010	56.37	58.05	1.68		1.00		0.68		
	9+190	56.60	57.76	1.16		1.00		0.16		
	9+395	56.89	57.89	1.00		1.00		0.00		
	9+595	57.35	58.42	1.07		1.00		0.07		
	9+795	58.08	59.18	1.10		1.00		0.10		
	9+995	58.55	60.15	1.60		1.00		0.60		
	10+195	59.55	61.01	1.46		1.00		0.46		
	10+400	60.29	61.59	1.30		1.00		0.30		
	10+585	60.53	62.02	1.49		1.00		0.49		
	10+735	60.94	63.30	2.36		1.00		1.36		
	10+785	60.94	62.57	1.63		1.00		0.63		
	10+985	61.00	62.81	1.81		1.00		0.81		
	11+045	61.63	63.02	1.39		1.00		0.39		
	11+195	61.98	64.18	2.20		1.00		1.20		
	11+390	62.44	64.75	2.31		1.00		1.31		

건설교통부

미호천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
용호제	3+390	26.60	28.10	1.50	5.0	1.50	6.0	0.00	-1.0	
	3+620	26.64	28.14	1.50		1.50		0.00		
	3+770	26.66	28.16	1.50		1.50		0.00		
미호제	4+610	26.83	27.54	0.71	4.0	1.50	6.0	-0.79	-2.0	
	4+840	26.83	27.46	0.63		1.50		-0.87		
	5+020	26.83	27.59	0.76		1.50		-0.74		
	5+230	26.84	27.63	0.79		1.50		-0.71		
	5+440	26.88	28.08	1.20		1.50		-0.30		
	5+660	26.94	27.90	0.96		1.50		-0.54		
	5+920	26.98	28.09	1.11		1.50		-0.39		
	6+100	27.01	28.19	1.18		1.50		-0.32		
	6+280	27.06	27.99	0.93		1.50		-0.57		
	6+480	27.10	28.11	1.01		1.50		-0.49		
	6+680	27.14	28.24	1.10		1.50		-0.40		
	6+900	27.22	28.23	1.01		1.50		-0.49		
	7+130	27.28	28.63	1.35		1.50		-0.15		
	7+390	27.36	28.69	1.33		1.50		-0.17		
	7+620	27.37	28.55	1.18		1.50		-0.32		
	7+860	27.41	28.72	1.31		1.50		-0.19		
	8+060	27.44	28.14	0.70		1.50		-0.80		
	8+240	27.55	28.69	1.14		1.50		-0.36		
	8+380	27.58	28.57	0.99		1.50		-0.51		
	8+560	27.59	28.57	0.98		1.50		-0.52		
	8+760	27.61	28.57	0.96		1.50		-0.54		
	8+890	27.62	28.57	0.95		1.50		-0.55		
	9+045	27.63	29.56	1.93		1.50		0.43		
예양제	9+290	27.63	28.58	0.95	5.0	1.50	6.0	-0.55	-1.0	
	9+490	27.74	28.63	0.89	5.0	1.50	6.0	-0.61	-1.0	
	9+680	27.78	28.88	1.10	5.0	1.50	6.0	-0.40	-1.0	
	9+840	27.86	29.03	1.17	6.0	1.50	6.0	-0.33	0.0	
	9+900	27.89	28.53	0.64	6.0	1.50	6.0	-0.86	0.0	
	10+080	27.97	28.17	0.20	6.0	1.50	6.0	-1.30	0.0	
	10+240	28.08	28.49	0.41	6.0	1.50	6.0	-1.09	0.0	
황탄제	12+850	28.73	30.37	1.64	5.0	1.50	6.0	0.14	-1.0	
	13+110	28.76	30.45	1.69		1.50		0.19		
	13+320	28.81	30.38	1.57		1.50		0.07		

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미호천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	13+530	28.84	30.69	1.85		1.50		0.35		
	13+780	28.89	30.42	1.53		1.50		0.03		
강내제(下)	16+150	29.66	31.88	2.22	4.0	1.50	5.0	0.72	-1.0	
	16+360	29.84	31.77	1.93		1.50		0.43		
	16+500	29.85	31.87	2.02		1.50		0.52		
	16+680	29.87	31.98	2.11		1.50		0.61		
석화제	17+180	30.17	31.52	1.35	6.0	1.50	5.0	-0.15	1.0	
	17+380	30.24	31.77	1.53		1.50		0.03		
	17+570	30.35	31.59	1.24		1.50		-0.26		
강내제(上)	17+760	30.43	32.20	1.77	4.0	1.50	5.0	0.27	-1.0	
	17+980	30.57	32.15	1.58		1.50		0.08		
	18+170	30.67	32.27	1.60		1.50		0.10		
	18+370	30.74	32.43	1.69		1.50		0.19		
	18+570	30.90	32.28	1.38		1.50		-0.12		
	18+770	31.03	32.79	1.76		1.50		0.26		
	18+960	31.13	33.17	2.04		1.50		0.54		
	19+160	31.29	33.02	1.73		1.50		0.23		
	19+360	31.39	32.93	1.54		1.50		0.04		
	19+530	31.56	36.09	4.53		1.50		3.03		
	19+580	31.61	33.26	1.65		1.50		0.15		
	19+600	31.71	34.97	3.26		1.50		1.76		
	19+790	31.82	33.49	1.67		1.50		0.17		
	20+010	31.93	33.88	1.95		1.50		0.45		
	20+230	32.04	33.62	1.58		1.50		0.08		
	20+430	32.18	33.56	1.38		1.50		-0.12		
	20+650	32.28	33.84	1.56		1.50		0.06		
	20+770	32.38	35.17	2.79		1.50		1.29		
	20+840	32.45	34.42	1.97		1.50		0.47		
	21+070	32.59	34.53	1.94		1.50		0.44		
강서제	21+280	32.64	34.57	1.93	4.0	1.50	5.0	0.43	-1.0	
	21+450	32.68	34.71	2.03		1.50		0.53		
	21+660	32.73	34.72	1.99		1.50		0.49		
	21+880	32.84	34.87	2.03		1.50		0.53		
	22+080	32.96	35.10	2.14		1.50		0.64		
	22+280	33.13	35.22	2.09		1.50		0.59		
	22+460	33.25	35.34	2.09		1.50		0.59		

건설교통부

미호천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	22+640	33.34	35.69	2.35		1.50		0.85		
	22+830	33.43	35.68	2.25		1.50		0.75		
	23+020	33.45	36.16	2.71		1.50		1.21		
	23+220	33.65	36.03	2.38		1.50		0.88		
	23+420	33.73	35.46	1.73		1.50		0.23		
	23+600	33.79	35.72	1.93		1.50		0.43		
	23+810	33.92	35.78	1.86		1.50		0.36		
	24+010	34.08	36.05	1.97		1.50		0.47		
	24+150	34.10	36.15	2.05		1.50		0.55		
	24+350	34.15	36.23	2.08		1.50		0.58		
	24+530	34.20	36.14	1.94		1.50		0.44		
	24+710	34.26	36.45	2.19		1.50		0.69		
	24+920	34.32	36.73	2.41		1.50		0.91		
	25+120	34.39	36.72	2.33		1.50		0.83		
	25+320	34.50	37.21	2.71		1.50		1.21		
	25+520	34.51	36.68	2.17		1.50		0.67		
	25+690	34.58	39.79	5.21		1.50		3.71		
	25+710	34.67	39.89	5.22		1.50		3.72		
	25+930	34.75	37.48	2.73		1.50		1.23		
	26+150	34.81	37.55	2.74		1.50		1.24		
	26+360	34.90	38.07	3.17		1.50		1.67		
	26+570	35.05	37.85	2.80		1.50		1.30		
	26+620	35.08	37.89	2.81		1.50		1.31		
	26+800	35.34	37.89	2.55		1.50		1.05		
	27+010	35.43	38.15	2.72		1.50		1.22		
	27+230	35.61	38.42	2.81		1.50		1.31		
북일제	27+520	35.83	38.92	3.09	5.0	1.50	5.0	1.59	0.0	
	27+760	35.90	39.16	3.26	5.0	1.50	5.0	1.76	0.0	
	27+890	35.90	38.74	2.84	5.0	1.50	5.0	1.34	0.0	
	28+210	36.06	39.07	3.01	5.0	1.50	5.0	1.51	0.0	
	28+410	36.14	39.41	3.27	5.0	1.50	5.0	1.77	0.0	
	28+630	36.23	39.42	3.19	5.0	1.50	5.0	1.69	0.0	
	28+840	36.24	39.26	3.02	5.0	1.50	5.0	1.52	0.0	
	29+000	36.31	39.97	3.66	5.0	1.50	5.0	2.16	0.0	
	29+180	36.39	39.33	2.94	5.0	1.50	5.0	1.44	0.0	
	29+370	36.46	39.67	3.21	5.0	1.50	5.0	1.71	0.0	

건설교통부

미호천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	29+670	36.59	39.22	2.63	5.0	1.50	5.0	1.13	0.0	
	29+870	36.71	39.17	2.46	5.0	1.50	5.0	0.96	0.0	
	30+090	36.79	39.36	2.57	5.0	1.50	5.0	1.07	0.0	
	30+330	36.87	39.25	2.38	5.0	1.50	5.0	0.88	0.0	
	30+390	36.89	43.25	6.36	6.0	1.50	5.0	4.86	1.0	
	30+550	36.93	42.95	6.02	6.0	1.50	5.0	4.52	1.0	
	30+730	37.00	39.62	2.62	6.0	1.50	5.0	1.12	1.0	
	30+910	37.01	39.87	2.86	6.0	1.50	5.0	1.36	1.0	
	31+120	37.09	40.12	3.03	6.0	1.50	5.0	1.53	1.0	
	31+290	37.13	40.41	3.28	6.0	1.50	5.0	1.78	1.0	
	31+450	37.20	40.54	3.34	6.0	1.50	5.0	1.84	1.0	
	31+650	37.31	40.66	3.35	6.0	1.50	5.0	1.85	1.0	
	31+680	37.37	40.52	3.15	6.0	1.50	5.0	1.65	1.0	
	31+830	37.43	40.74	3.31	6.0	1.50	5.0	1.81	1.0	
	32+060	37.64	40.21	2.57	6.0	1.50	5.0	1.07	1.0	
	32+150	37.85	41.46	3.61	6.0	1.50	5.0	2.11	1.0	
	32+220	37.92	41.61	3.69	6.0	1.50	5.0	2.19	1.0	
	32+420	38.13	41.08	2.95	6.0	1.50	5.0	1.45	1.0	
팔결제	32+610	38.13	40.38	2.25	6.0	1.50	5.0	0.75	1.0	
	32+740	38.19	40.44	2.25		1.50		0.75		
	32+910	38.35	40.72	2.37		1.50		0.87		
북이제	33+270	38.65	41.94	3.29	5.0	1.50	5.0	1.79	0.0	
	33+420	38.94	41.81	2.87	5.0	1.50	5.0	1.37	0.0	
	33+630	39.13	42.13	3.00	4.0	1.50	5.0	1.50	-1.0	
	33+840	39.29	42.65	3.36	4.0	1.50	5.0	1.86	-1.0	
	34+030	39.45	42.62	3.17	4.0	1.50	5.0	1.67	-1.0	
	34+240	39.63	42.48	2.85	4.0	1.50	5.0	1.35	-1.0	
	34+390	39.73	42.78	3.05	4.0	1.50	5.0	1.55	-1.0	
	34+570	39.73	42.73	3.00	4.0	1.50	5.0	1.50	-1.0	
	34+750	39.83	42.77	2.94	4.0	1.50	5.0	1.44	-1.0	
	34+940	39.99	43.21	3.22	4.0	1.50	5.0	1.72	-1.0	
	35+130	40.03	43.25	3.22	4.0	1.50	5.0	1.72	-1.0	
	35+330	40.22	43.26	3.04	4.0	1.50	5.0	1.54	-1.0	
	35+530	40.54	43.52	2.98	4.0	1.50	5.0	1.48	-1.0	
	35+740	40.87	43.62	2.75	4.0	1.50	5.0	1.25	-1.0	
	35+880	41.08	43.97	2.89	4.0	1.50	5.0	1.39	-1.0	

건설교통부

미호천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	36+120	41.12	44.03	2.91	4.0	1.50	5.0	1.41	-1.0	
	36+300	41.40	43.99	2.59	4.0	1.50	5.0	1.09	-1.0	
	36+490	41.56	44.49	2.93	4.0	1.50	5.0	1.43	-1.0	
	36+680	41.76	44.37	2.61	4.0	1.50	5.0	1.11	-1.0	
	36+880	41.85	44.51	2.66	4.0	1.50	5.0	1.16	-1.0	
	37+080	41.90	44.34	2.44	4.0	1.50	5.0	0.94	-1.0	
	37+290	42.01	44.47	2.46	4.0	1.50	5.0	0.96	-1.0	
석성제	38+140	42.82	44.98	2.16	6.0	1.50	5.0	0.66	1.0	
	38+340	42.90	44.96	2.06		1.50		0.56		
	38+510	42.92	44.96	2.04		1.50		0.54		
	38+710	43.06	45.15	2.09		1.50		0.59		
	38+900	43.38	45.20	1.82		1.50		0.32		
진암제	39+090	43.42	47.79	4.37	5.0	1.50	5.0	2.87	0.0	
	39+110	43.42	44.60	1.18		1.50		-0.32		
	39+330	43.46	44.92	1.46		1.50		-0.04		
	39+485	43.92	46.88	2.96		1.50		1.46		

건설교통부

미호천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
월산제	0+000	25.42	27.22	1.80	6.0	1.5	6.0	0.30	0.0	
	0+200	25.44	27.23	1.79		1.5		0.29		
	0+240	25.44	27.24	1.80		1.5		0.30		
	0+390	25.46	27.25	1.79		1.5		0.29		
	0+630	25.57	27.30	1.73		1.5		0.23		
	0+890	25.63	27.38	1.75		1.5		0.25		
	0+920	25.65	27.38	1.73		1.5		0.23		
	1+130	25.65	27.41	1.76		1.5		0.26		
	1+330	25.66	27.42	1.76		1.5		0.26		
보통제	3+620	26.64	28.51	1.87	5.0	1.5	6.0	0.37	-1.0	
	3+770	26.66	28.86	2.20		1.5		0.70		
	3+950	26.68	28.71	2.03		1.5		0.53		
	4+150	26.71	28.97	2.26		1.5		0.76		
보통제(좌)	4+310	26.77	22.41	-4.36	5.0	1.5	6.0	-5.86	-1.0	
	4+440	26.82	22.35	-4.47		1.5		-5.97		
봉암제	4+840	26.83	27.54	0.71	5.0	1.5	6.0	-0.79	-1.0	
	5+020	26.83	27.30	0.47		1.5		-1.03		
	5+230	26.84	27.30	0.46		1.5		-1.04		
	5+440	26.88	27.33	0.45		1.5		-1.05		
	5+660	26.94	27.62	0.68		1.5		-0.82		
서면제	5+920	26.98	27.52	0.54	3.0	1.5	6.0	-0.96	-3.0	
	6+100	27.01	27.79	0.78		1.5		-0.72		
	6+280	27.06	27.19	0.13		1.5		-1.37		
	6+480	27.10	27.90	0.80		1.5		-0.70		
	6+680	27.14	28.09	0.95		1.5		-0.55		
	6+900	27.22	28.29	1.07		1.5		-0.43		
	7+130	27.28	28.14	0.86		1.5		-0.64		
	7+390	27.36	28.08	0.72		1.5		-0.78		
	7+620	27.37	28.58	1.21		1.5		-0.29		
번암제	8+240	27.55	28.88	1.33	5.0	1.5	6.0	-0.17	-1.0	
	8+380	27.58	28.85	1.27		1.5	6.0			
	8+560	27.59	29.01	1.42		1.5		-0.08		
강외1제	8+760	27.61	29.11	1.50	5.0	1.5	6.0	0.00	-1.0	
	8+890	27.62	29.12	1.50		1.5		0.00	0.0	
	9+045	27.63	29.12	1.49		1.5		-0.01		
강외제	9+290	27.63	28.87	1.24	6.0	1.5	6.0	-0.26	0.0	

건설교통부

미호천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	9+490	27.74	28.98	1.24		1.5		-0.26		
	9+680	27.78	28.95	1.17		1.5		-0.33		
	9+840	27.86	29.02	1.16		1.5		-0.34		
	9+900	27.89	28.92	1.03		1.5		-0.47		
	10+080	27.97	28.83	0.86		1.5		-0.64		
	10+240	28.08	28.88	0.80		1.5		-0.70		
	10+480	28.14	29.00	0.86		1.5		-0.64		
	10+690	28.14	29.08	0.94		1.5		-0.56		
	10+890	28.17	29.08	0.91		1.5		-0.59		
	11+120	28.25	29.15	0.90		1.5		-0.60		
	11+310	28.31	29.24	0.93		1.5		-0.57		
	11+520	28.35	29.53	1.18		1.5		-0.32		
	11+710	28.39	29.40	1.01		1.5		-0.49		
	11+900	28.43	28.95	0.52		1.5		-0.98		
	12+140	28.52	29.47	0.95		1.5		-0.55		
	12+340	28.62	29.75	1.13		1.5		-0.37		
	12+560	28.70	29.92	1.22		1.5		-0.28		
	12+850	28.73	29.93	1.20		1.5		-0.30		
	13+110	28.76	30.04	1.28		1.5		-0.22		
	13+320	28.81	29.98	1.17		1.5		-0.33		
	13+530	28.84	30.09	1.25		1.5		-0.25		
	13+780	28.89	30.15	1.26		1.5		-0.24		
	14+020	28.93	30.25	1.32		1.5		-0.18		
	14+160	28.97	30.15	1.18		1.5		-0.32		
	14+360	29.02	30.34	1.32		1.5		-0.18		
	14+550	29.04	30.41	1.37		1.5		-0.13		
	14+740	29.07	30.52	1.45		1.5		-0.05		
	14+930	29.11	31.07	1.96		1.5		0.46		
	15+110	29.13	31.52	2.39		1.5		0.89		
	15+270	29.16	31.65	2.49		1.5		0.99		
	15+550	29.19	31.64	2.45		1.5		0.95		
	15+730	29.23	32.16	2.93		1.5		1.43		
	15+830	29.32	32.60	3.28		1.5		1.78		
	15+940	29.40	31.96	2.56		1.5		1.06		
	15+950	29.42	31.85	2.43		1.5		0.93		
	15+960	29.50	31.79	2.29		1.5		0.79		

건설교통부

미호천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	16+150	29.66	31.99	2.33		1.5		0.83		
	16+360	29.84	31.95	2.11		1.5		0.61		
옥산제	16+680	29.87	31.65	1.78	5.0	1.5	5.0	0.28	0.0	
	16+850	29.94	31.89	1.95		1.5		0.45		
	16+970	29.95	32.03	2.08		1.5		0.58		
	17+180	30.17	31.76	1.59		1.5		0.09		
	17+380	30.24	32.06	1.82		1.5		0.32		
	17+570	30.35	31.99	1.64		1.5		0.14		
	17+760	30.43	31.76	1.33		1.5		-0.17		
	17+980	30.57	32.17	1.60		1.5		0.10		
	18+170	30.67	32.10	1.43		1.5		-0.07		
	18+370	30.74	32.21	1.47		1.5		-0.03		
	18+570	30.90	32.47	1.57		1.5		0.07		
	18+770	31.03	32.47	1.44		1.5		-0.06		
	18+960	31.13	32.60	1.47		1.5		-0.03		
	19+160	31.29	32.68	1.39		1.5		-0.11		
	19+360	31.39	32.73	1.34		1.5		-0.16		
	19+530	31.56	36.09	4.53		1.5		3.03		
	19+580	31.61	33.26	1.65		1.5		0.15		
	19+600	31.71	34.94	3.23		1.5		1.73		
	19+790	31.82	33.69	1.87		1.5		0.37		
	20+010	31.93	33.71	1.78		1.5		0.28		
	20+230	32.04	33.66	1.62		1.5		0.12		
	20+430	32.18	33.77	1.59		1.5		0.09		
	20+650	32.28	34.06	1.78		1.5		0.28		
	20+770	32.38	35.37	2.99		1.5		1.49		
	20+840	32.45	34.95	2.50		1.5		1.00		
	21+070	32.59	34.45	1.86		1.5		0.36		
	21+280	32.64	34.52	1.88		1.5		0.38		
	21+450	32.68	34.57	1.89		1.5		0.39		
	21+660	32.73	34.27	1.54		1.5		0.04		
	21+880	32.84	34.44	1.60		1.5		0.10		
	22+080	32.96	34.69	1.73		1.5		0.23		
	22+280	33.13	34.71	1.58		1.5		0.08		
	22+460	33.25	34.72	1.47		1.5		-0.03		
국사제	22+640	33.34	34.67	1.33	6.0	1.5	5.0	-0.17	1.0	

국토교통부

미호천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	22+830	33.43	34.91	1.48		1.5		-0.02		
	23+020	33.45	35.29	1.84		1.5		0.34		
	23+220	33.65	35.51	1.86		1.5		0.36		
	23+420	33.73	34.98	1.25		1.5		-0.25		
	23+600	33.79	35.05	1.26		1.5		-0.24		
하오창제	24+010	34.08	36.82	2.74	6.0	1.5	5.0	1.24	1.0	
	24+150	34.10	37.18	3.08		1.5		1.58		
	24+350	34.15	36.58	2.43		1.5		0.93		
	24+530	34.20	37.10	2.90		1.5		1.40		
	24+710	34.26	36.92	2.66		1.5		1.16		
	24+920	34.32	37.10	2.78		1.5		1.28		
	25+120	34.39	36.96	2.57		1.5		1.07		
	25+320	34.50	37.50	3.00		1.5		1.50		
	25+520	34.51	38.00	3.49		1.5		1.99		
	25+690	34.58	37.75	3.17		1.5		1.67		
	25+710	34.67	39.98	5.31		1.5		3.81		
	25+930	34.75	37.92	3.17		1.5		1.67		
	26+150	34.81	38.23	3.42		1.5		1.92		
	26+360	34.90	38.22	3.32		1.5		1.82		
	26+570	35.05	38.51	3.46		1.5		1.96		
	26+620	35.08	38.52	3.44		1.5		1.94		
	26+800	35.34	38.82	3.48		1.5		1.98		
	27+010	35.43	38.79	3.36		1.5		1.86		
	27+230	35.61	39.08	3.47		1.5		1.97		
	27+520	35.83	39.34	3.51		1.5		2.01		
	27+760	35.90	38.74	2.84		1.5		1.34		
	27+890	35.90	39.30	3.40		1.5		1.90		
	28+210	36.06	39.03	2.97		1.5		1.47		
	28+410	36.14	38.96	2.82		1.5		1.32		
상오창제	28+630	36.23	38.46	2.23	6.0	1.5	5.0	0.73	1.0	
	28+840	36.24	37.83	1.59		1.5		0.09		
	29+000	36.31	38.43	2.12		1.5		0.62		
	29+180	36.39	38.64	2.25		1.5		0.75		
	29+370	36.46	38.75	2.29		1.5		0.79		
	29+670	36.59	39.08	2.49		1.5		0.99		
	29+870	36.71	39.19	2.48		1.5		0.98		

건설교통부

미호천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	30+090	36.79	39.30	2.51		1.5		1.01		
	30+330	36.87	39.28	2.41		1.5		0.91		
	30+390	36.89	43.00	6.11		1.5		4.61		
	30+550	36.93	39.40	2.47		1.5		0.97		
	30+730	37.00	39.65	2.65		1.5		1.15		
	30+910	37.01	39.66	2.65		1.5		1.15		
	31+120	37.09	39.67	2.58		1.5		1.08		
	31+290	37.13	40.01	2.88		1.5		1.38		
	31+450	37.20	41.05	3.85		1.5		2.35		
	31+650	37.31	40.92	3.61		1.5		2.11		
	31+680	37.37	41.08	3.71		1.5		2.21		
	31+830	37.43	40.95	3.52		1.5		2.02		
	32+060	37.64	41.47	3.83		1.5		2.33		
	32+150	37.85	41.55	3.70		1.5		2.20		
	32+220	37.92	41.27	3.35		1.5		1.85		
	32+420	38.13	41.43	3.30		1.5		1.80		
	32+610	38.13	41.32	3.19		1.5		1.69		
	32+740	38.19	41.39	3.20		1.5		1.70		
	32+910	38.35	41.51	3.16		1.5		1.66		
	33+080	38.54	41.68	3.14		1.5		1.64		
	33+270	38.65	41.67	3.02		1.5		1.52		
	33+420	38.94	41.72	2.78		1.5		1.28		
	33+630	39.13	42.00	2.87		1.5		1.37		
	33+840	39.29	42.16	2.87		1.5		1.37		
	34+030	39.45	42.40	2.95		1.5		1.45		
	34+240	39.63	42.47	2.84		1.5		1.34		
학소제	34+570	39.73	42.35	2.62	5.0	1.5	5.0	1.12	0.0	
	34+750	39.83	42.16	2.33		1.5		0.83		
	34+940	39.99	42.77	2.78		1.5		1.28		
	35+130	40.03	42.53	2.50		1.5		1.00		
	35+330	40.22	43.18	2.96		1.5		1.46		
	35+530	40.54	43.39	2.85		1.5		1.35		
	35+740	40.87	43.23	2.36		1.5		0.86		
	35+880	41.08	43.28	2.20		1.5		0.70		
여천제	36+120	41.12	43.79	2.67	6.0	1.5	5.0	1.17	1.0	
	36+300	41.40	43.54	2.14		1.5		0.64		

건설교통부

미호천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	36+490	41.56	43.80	2.24		1.5		0.74		
	36+680	41.76	44.22	2.46		1.5		0.96		
	36+880	41.85	44.38	2.53		1.5		1.03		
	37+080	41.90	44.73	2.83		1.5		1.33		
	37+290	42.01	44.94	2.93		1.5		1.43		
	37+490	42.22	45.22	3.00		1.5		1.50		
	37+710	42.25	45.81	3.56		1.5		2.06		
	37+930	42.59	45.71	3.12		1.5		1.62		
	38+140	42.82	45.95	3.13		1.5		1.63		
	38+340	42.90	45.41	2.51		1.5		1.01		
여천제(新)	38+510	42.92	44.36	1.44	5.0	1.5	5.0	-0.06	0.0	
	38+710	43.06	44.37	1.31		1.5		-0.19		
	38+900	43.38	44.58	1.20		1.5		-0.30		
	39+090	43.42	48.16	4.74		1.5		3.24		
	39+110	43.42	45.17	1.75		1.5		0.25		
	39+330	43.46	45.00	1.54		1.5		0.04		
	39+485	43.92	46.90	2.98		1.5		1.48		

건설교통부

논산천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
논산1제	0+620	9.14	10.03	0.89	4.0	1.20	5.0	-0.31	-1.0	
	0+820	9.15	9.91	0.76		1.20		-0.44		
	0+835	9.19	10.01	0.82		1.20		-0.38		
	0+845	9.19	11.44	2.25		1.20		1.05		
	1+035	9.21	10.49	1.28		1.20		0.08		
	1+220	9.22	10.32	1.10		1.20		-0.10		
	1+420	9.24	10.37	1.13		1.20		-0.07		
	1+620	9.25	10.48	1.23		1.20		0.03		
	1+820	9.28	10.57	1.29		1.20		0.09		
	2+020	9.30	10.56	1.26		1.20		0.06		
	2+240	9.32	10.34	1.02		1.20		-0.18		
	2+450	9.34	10.39	1.05		1.20		-0.15		
	2+660	9.37	10.40	1.03		1.20		-0.17		
논산2제	2+860	9.39	10.30	0.91	3.0	1.20	5.0	-0.29	-2.0	
	3+070	9.41	10.38	0.97		1.20		-0.23		
	3+260	9.42	10.35	0.93		1.20		-0.27		
	3+450	9.44	10.40	0.96		1.20		-0.24		
	3+660	9.46	10.35	0.89		1.20		-0.31		
	3+830	9.48	10.47	0.99		1.20		-0.21		
	4+040	9.50	10.55	1.05		1.20		-0.15		
	4+225	9.52	10.63	1.11		1.20		-0.09		
	4+265	9.54	10.37	0.83		1.20		-0.37		
	4+435	9.57	10.55	0.98		1.20		-0.22		
	4+625	9.58	10.43	0.85		1.20		-0.35		
	4+845	9.60	10.57	0.97		1.20		-0.23		
	5+040	9.62	10.64	1.02		1.20		-0.18		
	5+235	9.64	10.60	0.96		1.20		-0.24		
	5+425	9.66	10.63	0.97		1.20		-0.23		
	5+640	9.68	10.62	0.94		1.20		-0.26		
	5+845	9.70	10.50	0.80		1.20		-0.40		
논남제	6+055	9.72	10.05	0.33	4.0	1.20	5.0	-0.87	-1.0	
	6+260	9.74	10.07	0.33	4.0	1.20	5.0	-0.87	-1.0	
	6+470	9.77	10.27	0.50	4.0	1.20	5.0	-0.70	-1.0	
	6+670	9.79	10.50	0.71	4.0	1.20	5.0	-0.49	-1.0	
	6+890	9.81	10.53	0.72	4.0	1.20	5.0	-0.48	-1.0	
	7+075	9.85	10.93	1.08	4.0	1.20	5.0	-0.12	-1.0	

건설교통부

논산천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	7+285	9.88	10.67	0.79	4.0	1.20	5.0	-0.41	-1.0	
	7+505	9.91	12.21	2.30	도로	1.20		1.10		
	7+705	9.94	11.16	1.22	도로	1.20		0.02		
	7+735	9.95	13.59	3.64	도로	1.20		2.44		
	7+895	9.96	11.08	1.12	도로	1.20		-0.08		
	8+095	9.99	10.78	0.79	도로	1.20		-0.41		
	8+285	10.03	11.22	1.19	도로	1.20		-0.01		
	8+465	10.04	10.96	0.92	도로	1.20		-0.28		
	8+660	10.08	11.04	0.96	도로	1.20		-0.24		
	8+855	10.11	11.12	1.01	도로	1.20		-0.19		
	9+070	10.16	10.98	0.82	도로	1.20		-0.38		
	9+245	10.22	11.31	1.09	도로	1.20		-0.11		
	9+465	10.24	11.24	1.00	도로	1.00		0.00		
	9+670	10.26	11.67	1.41	3.0	1.00	4.0	0.41	-1.0	
	9+875	10.29	11.50	1.21	3.0	1.00	4.0	0.21	-1.0	
	10+065	10.31	11.75	1.44	3.0	1.00	4.0	0.44	-1.0	
	10+085	10.32	11.87	1.55	3.0	1.00	4.0	0.55	-1.0	
	10+275	10.36	11.72	1.36	3.0	1.00	4.0	0.36	-1.0	
	10+475	10.38	12.03	1.65	3.0	1.00	4.0	0.65	-1.0	
	10+585	10.43	11.93	1.50	3.0	1.00	4.0	0.50	-1.0	
	10+665	10.44	12.03	1.59	3.0	1.00	4.0	0.59	-1.0	
	10+875	10.48	11.70	1.22	3.0	1.00	4.0	0.22	-1.0	
	11+085	10.53	12.11	1.58	3.0	1.00	4.0	0.58	-1.0	
	11+205	10.56	12.59	2.03	3.0	1.00	4.0	1.03	-1.0	
	11+220	10.58	12.81	2.23	3.0	1.00	4.0	1.23	-1.0	
	11+280	10.59	11.82	1.23	4.0	1.00	4.0	0.23	0.0	
	11+380	10.64	11.96	1.32	4.0	1.00	4.0	0.32	0.0	
	11+430	10.65	13.93	3.28	4.0	1.00	4.0	2.28	0.0	
	11+480	10.66	12.02	1.36	4.0	1.00	4.0	0.36	0.0	
	11+680	10.69	11.92	1.23	4.0	1.00	4.0	0.23	0.0	
	11+865	10.72	12.26	1.54	4.0	1.00	4.0	0.54	0.0	
	12+080	10.78	12.22	1.44	4.0	1.00	4.0	0.44	0.0	
	12+275	10.81	12.36	1.55	4.0	1.00	4.0	0.55	0.0	
	12+475	10.83	12.55	1.72	4.0	1.00	4.0	0.72	0.0	
	12+695	10.87	12.73	1.86	4.0	1.00	4.0	0.86	0.0	
	12+885	10.90	13.01	2.11	4.0	1.00	4.0	1.11	0.0	

설계도서

논산천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	13+095	10.93	13.39	2.46	4.0	1.00	4.0	1.46	0.0	
	13+280	10.98	13.32	2.34	4.0	1.00	4.0	1.34	0.0	
	13+470	11.08	13.32	2.24	4.0	1.00	4.0	1.24	0.0	
	13+490	11.08	13.82	2.74	4.0	1.00	4.0	1.74	0.0	
	13+680	11.13	12.84	1.71	4.0	1.00	4.0	0.71	0.0	
	13+810	11.23	13.26	2.03	4.0	1.00	4.0	1.03	0.0	
	13+860	11.35	13.54	2.19	4.0	1.00	4.0	1.19	0.0	
	13+875	11.36	13.69	2.33	4.0	1.00	4.0	1.33	0.0	
	14+095	11.41	14.08	2.67	4.0	1.00	4.0	1.67	0.0	
	14+285	11.56	14.36	2.80	4.0	1.00	4.0	1.80	0.0	
	14+465	11.67	14.79	3.12	4.0	1.00	4.0	2.12	0.0	
	14+645	11.76	15.32	3.56	4.0	1.00	4.0	2.56	0.0	
	14+845	12.00	15.78	3.78	4.0	1.00	4.0	2.78	0.0	
	15+045	12.26	16.42	4.16	4.0	1.00	4.0	3.16	0.0	
	15+245	12.64	16.83	4.19	4.0	1.00	4.0	3.19	0.0	
	15+445	13.44	17.41	3.97	4.0	1.00	4.0	2.97	0.0	
	15+645	13.49	17.78	4.29	4.0	1.00	4.0	3.29	0.0	
	15+835	13.72	18.06	4.34	4.0	1.00	4.0	3.34	0.0	
	16+035	13.97	18.50	4.53	4.0	1.00	4.0	3.53	0.0	

건설교통부

논산천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
논산1제	0+000	9.09	10.74	1.65	4.0	1.20	5.0	0.45	-1.0	
	0+170	9.11	10.67	1.56		1.20		0.36		
	0+220	9.13	10.52	1.39		1.20		0.19		
	0+420	9.14	10.27	1.13		1.20		-0.07		
	0+620	9.14	10.27	1.13		1.20		-0.07		
	0+820	9.15	10.04	0.89		1.20		-0.31		
	0+835	9.19	9.99	0.80		1.20		-0.40		
	0+845	9.19	11.44	2.25		1.20		1.05		
	1+035	9.21	10.37	1.16		1.20		-0.04		
	1+220	9.22	10.26	1.04		1.20		-0.16		
	1+420	9.24	10.32	1.08		1.20		-0.12		
	1+620	9.25	10.41	1.16		1.20		-0.04		
	1+820	9.28	10.37	1.09		1.20		-0.11		
	2+020	9.30	10.50	1.20		1.20		0.00		
	2+240	9.32	10.50	1.18		1.20		-0.02		
	2+450	9.34	10.49	1.15		1.20		-0.05		
	2+660	9.37	10.63	1.26		1.20		0.06		
논산2제	2+860	9.39	9.99	0.60	3.0	1.20	5.0	-0.60	-2.0	
	3+070	9.41	10.54	1.13		1.20		-0.07		
	3+260	9.42	10.31	0.89		1.20		-0.31		
	3+450	9.44	10.50	1.06		1.20		-0.14		
	3+660	9.46	10.55	1.09		1.20		-0.11		
	3+830	9.48	10.49	1.01		1.20		-0.19		
	4+040	9.50	10.64	1.14		1.20		-0.06		
	4+225	9.52	10.59	1.07		1.20		-0.13		
	4+265	9.54	10.61	1.07		1.20		-0.13		
	4+435	9.57	10.54	0.97		1.20		-0.23		
	4+625	9.58	10.62	1.04		1.20		-0.16		
	4+845	9.60	10.61	1.01		1.20		-0.19		
	5+040	9.62	10.75	1.13		1.20		-0.07		
	5+235	9.64	10.58	0.94		1.20		-0.26		
	5+425	9.66	10.51	0.85		1.20		-0.35		
	5+640	9.68	10.76	1.08		1.20		-0.12		
	5+845	9.70	10.93	1.23		1.20		0.03		
논북1제	6+055	9.72	10.19	0.47	4.0	1.20	5.0	-0.73	-1.0	
	6+260	9.74	10.18	0.44		1.20		-0.76		

건설교통부

논산천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	6+470	9.77	10.07	0.30		1.20		-0.90		
	6+670	9.79	10.12	0.33		1.20		-0.87		
	6+890	9.81	10.35	0.54		1.20		-0.66		
	7+075	9.85	10.02	0.17		1.20		-1.03		
	7+285	9.88	10.03	0.15		1.20		-1.05		
	7+505	9.91	10.67	0.76		1.20		-0.44		
	7+705	9.94	10.50	0.56		1.20		-0.64		
	7+735	9.95	10.63	0.68		1.20		-0.52		
	7+895	9.96	10.46	0.50		1.20		-0.70		
	8+095	9.99	10.84	0.85		1.20		-0.35		
	8+285	10.03	11.08	1.05		1.20		-0.15		
	8+465	10.04	10.94	0.90		1.20		-0.30		
	8+660	10.08	11.04	0.96		1.20		-0.24		
	8+855	10.11	10.97	0.86		1.20		-0.34		
	9+070	10.16	11.16	1.00		1.20		-0.20		
	9+245	10.22	11.11	0.89		1.20		-0.31		
논북2제	9+465	10.24	10.72	0.48	4.0	1.00	4.0	-0.52	0.0	
	9+670	10.26	10.67	0.41	4.0	1.00	4.0	-0.59	0.0	
	9+875	10.29	10.85	0.56	4.0	1.00	4.0	-0.44	0.0	
	10+065	10.31	11.32	1.01	4.0	1.00	4.0	0.01	0.0	
	10+085	10.32	11.35	1.03	4.0	1.00	4.0	0.03	0.0	
	10+275	10.36	11.28	0.92	4.0	1.00	4.0	-0.08	0.0	
	10+475	10.38	11.48	1.10	4.0	1.00	4.0	0.10	0.0	
	10+585	10.43	11.37	0.94	4.0	1.00	4.0	-0.06	0.0	
	10+665	10.44	11.62	1.18	4.0	1.00	4.0	0.18	0.0	
	10+875	10.48	11.45	0.97	4.0	1.00	4.0	-0.03	0.0	
	11+085	10.53	11.64	1.11	4.0	1.00	4.0	0.11	0.0	
	11+205	10.56	12.59	2.03	4.0	1.00	4.0	1.03	0.0	
	11+220	10.58	12.81	2.23	4.0	1.00	4.0	1.23	0.0	
	11+280	10.59	11.91	1.32	4.0	1.00	4.0	0.32	0.0	
	11+380	10.64	12.13	1.49	4.0	1.00	4.0	0.49	0.0	
	11+430	10.65	14.00	3.35	4.0	1.00	4.0	2.35	0.0	
	11+480	10.66	12.04	1.38	4.0	1.00	4.0	0.38	0.0	
	11+680	10.69	12.00	1.31	4.0	1.00	4.0	0.31	0.0	
	11+865	10.72	11.98	1.26	4.0	1.00	4.0	0.26	0.0	
	12+080	10.78	12.40	1.62	3.0	1.00	4.0	0.62	-1.0	

논산천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	12+275	10.81	12.34	1.53	3.0	1.00	4.0	0.53	-1.0	
	12+475	10.83	12.06	1.23	3.0	1.00	4.0	0.23	-1.0	
	12+695	10.87	12.49	1.62	3.0	1.00	4.0	0.62	-1.0	
	12+885	10.90	12.32	1.42	3.0	1.00	4.0	0.42	-1.0	
	13+095	10.93	12.89	1.96	3.0	1.00	4.0	0.96	-1.0	
	13+280	10.98	12.94	1.96	3.0	1.00	4.0	0.96	-1.0	
	13+470	11.08	12.94	1.86	3.0	1.00	4.0	0.86	-1.0	
	13+490	11.08	13.32	2.24	3.0	1.00	4.0	1.24	-1.0	
	13+680	11.13	13.33	2.20	3.0	1.00	4.0	1.20	-1.0	
	13+810	11.23	13.66	2.43	3.0	1.00	4.0	1.43	-1.0	
	13+860	11.35	13.04	1.69	3.0	1.00	4.0	0.69	-1.0	
	13+875	11.36	13.03	1.67	3.0	1.00	4.0	0.67	-1.0	
	14+095	11.41	13.87	2.46	3.0	1.00	4.0	1.46	-1.0	
	14+285	11.56	14.18	2.62	3.0	1.00	4.0	1.62	-1.0	
	14+465	11.67	14.90	3.23	3.0	1.00	4.0	2.23	-1.0	
	14+645	11.76	15.09	3.33	3.0	1.00	4.0	2.33	-1.0	
	14+845	12.00	15.17	3.17	3.0	1.00	4.0	2.17	-1.0	
	15+045	12.26	15.88	3.62	3.0	1.00	4.0	2.62	-1.0	
	15+245	12.64	16.45	3.81	3.0	1.00	4.0	2.81	-1.0	
	15+445	13.44	16.77	3.33	3.0	1.00	4.0	2.33	-1.0	
	15+645	13.49	17.29	3.80	3.0	1.00	4.0	2.80	-1.0	
	15+835	13.72	17.81	4.09	3.0	1.00	4.0	3.09	-1.0	
	16+035	13.97	18.81	4.84	3.0	1.00	4.0	3.84	-1.0	

노성천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
노남제	0+000	10.22	10.71	0.49	4.0	1.00	4.0	-0.51	0.0	
	0+130	10.23	10.81	0.58		1.00		-0.42		
	0+335	10.30	11.01	0.71		1.00		-0.29		
	0+525	10.37	10.98	0.61		1.00		-0.39		
	0+565	10.42	10.40	-0.02		1.00		-1.02		교량공사중
	0+725	10.45	10.55	0.10		1.00		-0.90		
	0+925	10.52	11.04	0.52		1.00		-0.48		
	1+035	10.62	11.08	0.46		1.00		-0.54		
	1+115	10.62	10.98	0.36		1.00		-0.64		
	1+325	10.71	11.07	0.36		1.00		-0.64		
	1+545	10.81	11.23	0.42		1.00		-0.58		
	1+750	10.89	11.34	0.45		1.00		-0.55		
	1+970	10.99	11.93	0.94		1.00		-0.06		
	2+175	11.07	11.54	0.47		1.00		-0.53		
	2+380	11.15	11.50	0.35		1.00		-0.65		
	2+585	11.22	11.42	0.20		1.00		-0.80		
	2+785	11.32	11.29	-0.03		1.00		-1 03		
	2+985	11.39	11.53	0.14		1.00		-0.86		
	3+190	11.59	11.66	0.07		1.00		-0.93		
	3+395	11.73	12.12	0.39		1.00		-0.61		
	3+605	11.86	12.21	0.35		1.00		-0.65		
	3+815	11.95	12.02	0.07		1.00		-0.93		
	4+020	12.06	12.08	0.02		1.00		-0.98		
	4+205	12.18	12.44	0.26		1.00		-0.74		
	4+400	12.30	12.49	0.19		1.00		-0.81		
	4+530	12.38	12.41	0.03		1.00		-0.97		
	4+580	12.41	12.63	0.22		1.00		-0.78		
	4+750	12.55	12.65	0.10		1.00		-0.90		

건설교통부

노성천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
노북제	0+000	10.22	11.08	0.86	3.0	1.00	4.0	-0.14	-1.0	
	0+130	10.23	10.64	0.41		1.00		-0.59		
	0+335	10.30	10.99	0.69		1.00		-0.31		
	0+525	10.37	10.96	0.59		1.00		-0.41		
	0+565	10.42	11.12	0.70		1.00		-0.30		
	0+725	10.45	10.93	0.48		1.00		-0.52		
	0+925	10.52	11.17	0.65		1.00		-0.35		
	1+035	10.62	11.29	0.67		1.00		-0.33		
	1+115	10.62	11.21	0.59		1.00		-0.41		
	1+325	10.71	11.27	0.56		1.00		-0.44		
	1+545	10.81	11.36	0.55		1.00		-0.45		
	1+750	10.89	11.76	0.87		1.00		-0.13		
	1+970	10.99	11.81	0.82		1.00		-0.18		
	2+175	11.07	11.39	0.32		1.00		-0.68		
	2+380	11.15	11.32	0.17		1.00		-0.83		
	2+585	11.22	11.46	0.24		1.00		-0.76		
	2+785	11.32	11.39	0.07		1.00		-0.93		
	2+985	11.39	11.79	0.40		1.00		-0.60		
	3+190	11.59	11.79	0.20		1.00		-0.80		
	3+395	11.73	11.93	0.20		1.00		-0.80		
	3+605	11.86	12.17	0.31		1.00		-0.69		
	3+815	11.95	12.14	0.19		1.00		-0.81		
	4+020	12.06	12.47	0.41		1.00		-0.59		
	4+205	12.18	12.69	0.51		1.00		-0.49		
	4+400	12.30	12.82	0.52		1.00		-0.48		
	4+530	12.38	12.56	0.18		1.00		-0.82		
	4+580	12.41	12.93	0.52		1.00		-0.48		
	4+750	12.55	12.90	0.35		1.00		-0.65		
항월제	4+920	12.67	13.55	0.88	4.0	1.00	4.0	-0.12	0.0	
	4+980	12.67	13.73	1.06		1.00		0.06		
	5+130	12.68	13.83	1.15		1.00		0.15		

건설교통부

강경천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
강경1제	0+000	9.14	10.26	1.12	4.0	1.00	4.0	0.12	0.0	
	0+200	9.15	10.14	0.99		1.00		-0.01		
	0+275	9.15	10.24	1.09		1.00		0.09		
	0+290	9.16	11.15	1.99		1.00		0.99		
	0+415	9.17	10.25	1.08		1.00		0.08		
	0+610	9.19	10.40	1.21		1.00		0.21		
	0+815	9.21	10.25	1.04		1.00		0.04		
	1+035	9.24	10.24	1.00		1.00		0.00		
	1+105	9.26	10.63	1.37		1.00		0.37		
	1+115	9.28	10.62	1.34		1.00		0.34		
	1+235	9.31	10.26	0.95		1.00		-0.05		
	1+355	9.34	9.96	0.62		1.00		-0.38		
	1+375	9.37	9.98	0.61		1.00		-0.39		
	1+425	9.39	12.31	2.92		1.00		1.92		
	1+440	9.39	9.98	0.59		1.00		-0.41		
	1+650	9.41	10.01	0.60		1.00		-0.40		
	1+840	9.42	9.90	0.48		1.00		-0.52		
	2+035	9.44	10.18	0.74		1.00		-0.26		
	2+240	9.45	10.11	0.66		1.00		-0.34		
	2+300	9.50	10.11	0.61		1.00		-0.39		
강경2제	2+455	9.51	9.93	0.42	4.0	1.00	4.0	-0.58	0.0	
	2+650	9.52	9.93	0.41		1.00		-0.59		
	2+840	9.55	9.97	0.42		1.00		-0.58		
	3+030	9.55	10.30	0.75		1.00		-0.25		
	3+235	9.57	10.14	0.57		1.00		-0.43		
	3+415	9.61	9.94	0.33		1.00		-0.67		
	3+435	9.61	9.38	-0.23		1.00		-1.23		
	3+475	9.66	8.97	-0.69		1.00		-1.69		
	3+645	9.68	10.48	0.80		1.00		-0.20		
	3+810	9.72	10.22	0.50		1.00		-0.50		
무형1제	4+430	9.79	10.41	0.62	4.0	1.00	4.0	-0.38	0.0	
	4+630	9.81	10.00	0.19		1.00		-0.81		
	4+810	9.82	10.36	0.54		1.00		-0.46		
	4+845	9.83	12.00	2.17		1.00		1.17		
	4+860	9.83	11.57	1.74		1.00		0.74		
	5+030	9.84	10.43	0.59		1.00		-0.41		

건설교통부

강경천(좌안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	5+225	9.86	10.59	0.73		1.00		-0.27		
	5+385	9.89	10.10	0.21		1.00		-0.79		
무형2제	5+425	9.90	10.17	0.27	4.0	1.00	4.0	-0.73	0.0	
	5+600	9.92	10.13	0.21		1.00		-0.79		
	5+815	9.94	10.44	0.50		1.00		-0.50		
	6+015	9.96	10.54	0.58		1.00		-0.42		
	6+205	9.98	10.43	0.45		1.00		-0.55		
	6+265	10.00	10.46	0.46		1.00		-0.54		
	6+385	10.02	10.62	0.60		1.00		-0.40		
	6+565	10.06	10.30	0.24		1.00		-0.76		
	6+765	10.07	10.46	0.39		1.00		-0.61		
	6+940	10.08	10.61	0.53		1.00		-0.47		
	6+965	10.09	10.17	0.08		1.00		-0.92		
	7+170	10.12	11.03	0.91		1.00		-0.09		

건설교통부

강경천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
강경1제	0+000	9.14	10.01	0.87	4.0	1.00	4.0	-0.13	0.0	
	0+200	9.15	10.01	0.86		1.00		-0.14		
	0+275	9.15	10.08	0.93		1.00		-0.07		
	0+290	9.16	11.12	1.96		1.00		0.96		
	0+415	9.17	10.04	0.87		1.00		-0.13		
	0+610	9.19	10.09	0.90		1.00		-0.10		
	0+815	9.21	10.17	0.96		1.00		-0.04		
	1+035	9.24	10.06	0.82		1.00		-0.18		
	1+105	9.26	10.60	1.34		1.00		0.34		
	1+115	9.28	10.48	1.20		1.00		0.20		
	1+235	9.31	9.92	0.61		1.00		-0.39		
	1+355	9.34	9.92	0.58		1.00		-0.42		
	1+375	9.37	9.87	0.50		1.00		-0.50		
	1+425	9.39	9.91	0.52		1.00		-0.48		
	1+440	9.39	9.90	0.51		1.00		-0.49		
	1+650	9.41	10.09	0.68		1.00		-0.32		
	1+840	9.42	9.99	0.57		1.00		-0.43		
	2+035	9.44	10.07	0.63		1.00		-0.37		
	2+240	9.45	10.03	0.58		1.00		-0.42		
	2+300	9.50	10.21	0.71		1.00		-0.29		
강경2제	2+455	9.51	10.02	0.51	4.0	1.00	4.0	-0.49	0.0	
	2+650	9.52	10.16	0.64	4.0	1.00	4.0	-0.36	0.0	
	2+840	9.55	10.21	0.66	4.0	1.00	4.0	-0.34	0.0	
	3+030	9.55	10.38	0.83	4.0	1.00	4.0	-0.17	0.0	
	3+235	9.57	10.28	0.71	4.0	1.00	4.0	-0.29	0.0	
	3+415	9.61	9.95	0.34	6.0	1.00	4.0	-0.66	2.0	
	3+435	9.61	10.34	0.73	6.0	1.00	4.0	-0.27	2.0	
	3+475	9.66	9.31	-0.35	6.0	1.00	4.0	-1.35	2.0	
	3+645	9.68	10.15	0.47	6.0	1.00	4.0	-0.53	2.0	
	3+810	9.72	10.09	0.37	6.0	1.00	4.0	-0.63	2.0	
무형1제	3+985	9.72	10.17	0.45	6.0	1.00	4.0	-0.55	2.0	
	4+085	9.72	9.59	-0.13	6.0	1.00	4.0	-1.13	2.0	
	4+220	9.74	10.14	0.40	6.0	1.00	4.0	-0.60	2.0	
	4+430	9.79	10.11	0.32	6.0	1.00	4.0	-0.68	2.0	
	4+630	9.81	10.16	0.35	6.0	1.00	4.0	-0.65	2.0	
	4+810	9.82	9.81	-0.01	6.0	1.00	4.0	-1.01	2.0	

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강경천(우안)		현 상 태 ①				기 준 ②		과부족 ① - ②		비고
제방명	측 점 (No.)	홍수위 (EL.m)	제방고 (EL.m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	여유고 (m)	정단폭 (m)	
	4+845	9.83	11.96	2.13	6.0	1.00	4.0	1.13	2.0	
	4+860	9.83	11.22	1.39	4.0	1.00	4.0	0.39	0.0	
	5+030	9.84	10.52	0.68	4.0	1.00	4.0	-0.32	0.0	
	5+225	9.86	10.64	0.78	4.0	1.00	4.0	-0.22	0.0	
	5+385	9.89	10.00	0.11	4.0	1.00	4.0	-0.89	0.0	
무형2제	5+425	9.90	10.54	0.64	4.0	1.00	4.0	-0.36	0.0	
	5+600	9.92	10.67	0.75		1.00		-0.25		
	5+815	9.94	10.58	0.64		1.00		-0.36		
	6+015	9.96	10.61	0.65		1.00		-0.35		
	6+205	9.98	10.61	0.63		1.00		-0.37		
	6+265	10.00	10.72	0.72		1.00		-0.28		
	6+385	10.02	10.60	0.58		1.00		-0.42		
	6+565	10.06	10.56	0.50		1.00		-0.50		
	6+765	10.07	10.55	0.48		1.00		-0.52		
	6+940	10.08	10.56	0.48		1.00		-0.52		
	6+965	10.09	10.52	0.43		1.00		-0.57		
	7+170	10.12	10.64	0.52		1.00		-0.48		

건설교통부

□ 기성제 능력검토 결과

기성제방의 단면을 검토한 결과 정단폭, 홍수여유고 등이 하천설계기준(2001,건설교통부)에 제시된 설치기준에는 다소 부족한 것으로 조사되었으나 기성제 보강지구에서 제외된 제방현황 및 사유는 다음 표와 같다.

제 외 사 유	관 련 제 방	비 고
1.제방상태가 비교적 양호하고, 여유고 및 단면부족한 부분이 일부분으로 향후 유지관리 필요	금 강 : 나포3제, 옥동제, 용안제, 서창제, 개척제, 우곤제, 봉정제, 현북제, 군수제, 자왕제, 문평제, 와초제, 완포제, 죽산제, 용산제, 양화1제, 입포제, 간대2제, 청포제, 세도제, 장산제, 반조원1제, 반조원2제, 장암제, 정고1제, 정고2제, 금천제, 신리제, 음전제, 반음제, 장수제, 임장제, 옥성제, 나성제, 상류:금암제, 동대제, 심천2제, 심천3제 갑 천 : 봉산제, 용산제, 문평제, 와동제, 대화제, 흑석2제, 봉곡1우안제 유등천 : 안영좌안제, 대화제 미호천 : 황탄제, 강내제(하), 석화제, 강내제(상), 북이제, 석성제, 진암제, 보통제, 번암제, 강외1제, 옥산제, 국사제, 여천제(신) 논산천 : 논산좌1제, 논산좌2제, 논산우1제, 논북1제, 논북2제 노성천 : 항월제	
2.제방을 따라 도로 공사(계획)중인 제방	금 강 : 견동제, 대학제, 운암제, 검상제(백제큰길), 어천제, 죽당제(어천-공주간 도로), 남면제(배후지에 도로 공사중)	
3.현재 발주되어 시공중인 제방으로 일부제방은 설계변경 등이 필요	금 강 : 반곡제, 봉기제, 부용제, 장수평제, 청남제, 대평제, 월산제, 부강제, 중척제, 지탄제, 장동제, 원동제 유등천 : 침산제 미호천 : 용호제, 월산제	
4.제내지가 택지개발(복토)중으로 보강이 필요없는 제방	유등천 : 복수제	
5.배후면적이 협소하여 보강의 필요성이 없는 제방	갑 천 : 흑석제 유등천 : 침산2제, 침산1제	
6.신설제방이 배후지에 있음	미호천 : 보통제(구)	

건설교통부

2.2 배수구조물 능력검토

건설교통부

▣ 금강수계 기존배수시설물 능력검토 결과 집계표

	충분 개수	부족 개수	증설요개수	기존시설 연계개수	총 개수
금강본류	355	39	21	18	394
금강상류	9	3	3	0	12
갑 천	151	9	8	1	160
유 등 천	84	18	18	0	102
미 호 천	55	6	2	4	61
논 산 천	17	3	0	3	20
노 성 천	5	2	1	1	7
강 경 천	21	0	0	0	21
합계	697	80	53	27	777

*기존시설 연계 : 인근의 배수장과 연계된 구조물이거나, 자연배제 가능지역으로 증설을 필요로 하지 않는 배수구조물

건설교통부

▣ 주요 기존 배수시설물 능력검토

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경(D)	폭(B)	높이(H)	소요단면(㎡)	현 단면(㎡)	과·부족(㎡)	
금강본류	성덕배수통관	002+650	좌	1	0.6	-	-	0.29	0.28	-0.01	1.0*1
	성덕배수문	002+700	좌	1	-	2.0	1.5	2.98	3.00	0.02	충분
	황동배수문	002+850	좌	2	-	2.0	1.5	12.58	6.00	-6.58	3.0*2.5*2(금회반영)
	서포갑문	004+960	좌	3	-	3.5	3.0	45.53	31.50	-14.03	4.0*3.0*4(금회반영)
	나포갑문	005+010	좌	2	-	1.8	1.8	7.72	6.48	-1.24	2.0*2.0*2(금회반영)
	옥곤배수통문	008+310	좌	2	-	2.0	2.0	11.59	8.00	-3.59	2.5*2.5*2
	나포배수문	009+940	좌	4	-	2.0	1.7	24.75	13.60	-11.15	3.0*3.0*3(금회반영)
	나포1배수통관	010+180	좌	1	0.6	-	-	0.56	0.28	-0.28	1.0*1(금회반영)
	나포2배수통관	010+430	좌	1	0.6	-	-	0.29	0.28	-0.01	1.0*1
	나포3배수통관	010+820	좌	1	0.6	-	-	0.29	0.28	-0.01	1.0*1
	옥동배수통문	011+440	좌	1	-	1.5	1.5	1.03	2.25	1.22	충분
	옥동배수통관	011+485	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	웅포1배수통관	011+820	좌	1	0.6	-	-	0.17	0.28	0.12	충분
	웅포2배수통관	011+970	좌	1	0.6	-	-	0.26	0.28	0.02	충분
	해창1배수통문	012+370	좌	3	-	2.0	2.0	7.65	12.00	4.35	충분
	웅포2배수통문	012+670	좌	1	-	2.0	2.0	3.15	4.00	0.85	충분
	웅포3배수통관	012+700	좌	1	0.6	-	-	0.19	0.28	0.10	충분
	웅포4배수통관	013+200	좌	1	0.8	-	-	0.05	0.50	0.45	충분
	웅포5배수통관	013+250	좌	1	1.0	-	-	0.30	0.79	0.48	충분
	웅포6배수통관	013+300	좌	1	0.8	-	-	0.41	0.50	0.09	충분
	웅포7배수통관	013+550	좌	1	0.6	-	-	0.24	0.28	0.04	충분
	웅포8배수통관	013+700	좌	1	0.9	-	-	0.44	0.64	0.20	충분
	웅포9배수통관	013+750	좌	1	1.0	-	-	0.05	0.79	0.73	충분
	웅포10배수통관	013+850	좌	1	0.6	-	-	0.28	0.28	0.00	충분
	고창배수통문	014+270	좌	3	-	2.5	2.6	16.50	19.50	3.00	충분
	제성1배수통문	016+720	좌	2	-	2.0	2.0	10.34	8.00	-2.34	2.5*2.5*2
	제성2배수통문	018+500	좌	3	-	2.0	2.0	22.97	12.00	-10.97	산수배수장(기)
	성당배수문	024+120	좌	3	-	2.3	2.2	15.66	15.18	-0.48	2.5*2.5*3(금회반영)
	등탁배수통문	024+250	좌	4	-	1.8	2.0	12.96	14.40	1.44	성당배수장(기)
	석동배수통문	025+720	좌	1	-	2.0	1.5	2.58	3.00	0.42	석동배수장(기)
	용두배수문	029+670	좌	4	-	5.0	4.5	8.25	90.00	81.75	창리양배수장(기)
	중포배수통문	030+850	좌	2	-	3.0	3.0	14.31	18.00	3.69	화산배수장(기)
	상포배수통문	032+520	좌	4	-	2.0	2.0	3.94	16.00	12.06	낭청배수장(기)
	황산방수문	033+100	좌	2	-	2.0	2.0	4.04	8.00	3.96	충분
	강경배수문	033+860	좌	2	-	3.0	3.0	7.26	18.00	10.74	서창배수장(기)
	개척(금성)배수통문	034+940	좌	2	-	2.0	2.0	13.18	8.00	-5.18	개척양배수장(기)
	서당배수통문	036+160	좌	2	-	2.0	2.0	5.97	8.00	2.03	우곤배수장(기)
	창리배수통문	038+420	좌	3	-	3.0	3.0	15.80	27.00	11.20	충분
	석성1배수통문	038+430	좌	1	-	2.0	2.0	2.34	4.00	1.66	충분
	석성2배수통문	039+770	좌	1	-	1.5	1.5	1.32	2.25	0.93	충분
	봉정배수통문	041+340	좌	3	-	3.0	3.0	14.06	27.00	12.94	서당2배수장(기)

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
금강본류	봉정배수통관	041+370	좌	1	1.0	-	-	0.45	0.79	0.34	봉두정배수장(기)
	현북배수통문	044+450	좌	2	-	2.0	2.0	3.54	8.00	4.46	현북배수장(기)
	하염배수통문	045+740	좌	3	-	2.0	2.0	5.49	12.00	6.51	충분
	군수배수통문	046+050	좌	4	-	3.0	3.0	30.64	36.00	5.36	군수1배수장(기)
	구교배수통문	052+200	좌	4	-	2.5	2.5	28.41	25.00	-3.41	구교1배수장(기)
	구교1배수통관	053+580	좌	1	1.0	-	-	0.30	0.79	0.49	충분
	구교2배수통관	054+310	좌	1	1.0	-	-	0.71	0.79	0.08	충분
	정동1배수통문	055+130	좌	1	-	2.5	2.0	3.32	5.00	1.68	충분
	정동2배수통문	055+400	좌	1	-	2.3	2.3	21.56	5.29	-16.27	정동1배수장(기)
	정동3배수통문	055+420	좌	4	-	1.8	2.0	58.57	14.40	-44.17	정동2배수장(기)
	자왕배수통문	059+060	좌	4	-	2.2	2.9	23.60	25.52	1.92	자왕배수장(기)
	자왕2배수통문	062+570	좌	1	-	2.0	2.0	3.19	4.00	0.81	충분
	운곡배수통문	064+520	좌	2	-	3.0	3.0	15.99	18.00	2.01	충분
	견동제배수통문	064+630	좌	2	-	2.8	2.5	4.68	14.00	9.32	충분
	백제큰길1배수통문	065+520	좌	1	-	2.5	2.5	1.52	6.25	4.73	충분
	백제큰길2배수통문	065+720	좌	1	-	2.0	2.0	1.20	4.00	2.80	충분
	백제큰길3배수통문	066+150	좌	2	-	2.0	2.0	0.89	8.00	7.11	충분
	백제큰길1배수통관	066+330	좌	1	1.0	-	-	0.11	0.79	0.67	충분
	백제큰길4배수통문	066+470	좌	1	-	3.0	3.0	2.16	9.00	6.84	충분
	백제큰길5배수통문	066+720	좌	1	-	2.5	2.5	1.51	6.25	4.74	충분
	백제큰길2배수통관	066+930	좌	1	1.0	-	-	0.11	0.79	0.67	충분
	백제큰길3배수통관	067+170	좌	1	0.8	-	-	0.11	0.50	0.39	충분
	백제큰길6배수통문	067+170	좌	1	-	3.0	3.0	2.16	9.00	6.84	충분
	백제큰길4배수통관	067+450	좌	1	1.0	-	-	0.11	0.79	0.67	충분
	백제큰길5배수통관	067+650	좌	1	0.8	-	-	0.22	0.50	0.28	충분
	백제큰길6배수통관	067+800	좌	1	0.8	-	-	0.22	0.50	0.28	충분
	백제큰길7배수통문	067+810	좌	1	-	2.5	2.5	3.04	6.25	3.21	충분
	백제큰길8배수통문	068+260	좌	2	-	3.5	3.5	13.88	24.50	10.62	충분
	백제큰길8배수통관	068+770	좌	1	0.8	-	-	0.32	0.50	0.19	충분
	백제큰길9배수통문	068+860	좌	1	-	2.5	2.5	4.25	6.25	2.00	충분
	대학제배수통문	069+200	좌	3	-	3.5	3.0	21.53	31.50	9.97	충분
	백제큰길9배수통관	069+990	좌	1	1.2	-	-	0.97	1.13	0.16	충분
	백제큰길10배수통관	070+450	좌	1	1.0	-	-	0.66	0.79	0.12	충분
	백제큰길10배수통문	070+680	좌	1	-	1.5	1.5	2.07	2.25	0.18	충분
	백제큰길11배수통관	070+860	좌	1	0.8	-	-	0.44	0.50	0.06	충분
	백제큰길12배수통관	071+060	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	백제큰길13배수통관	071+410	좌	1	1.0	-	-	0.66	0.79	0.12	충분
	백제큰길14배수통관	071+660	좌	1	0.8	-	-	0.44	0.50	0.06	충분
	백제큰길15배수통관	072+010	좌	1	1.0	-	-	0.66	0.79	0.12	충분
	백제큰길16배수통관	072+260	좌	1	0.8	-	-	0.44	0.50	0.06	충분
	백제큰길17배수통관	072+310	좌	1	0.8	-	-	0.44	0.50	0.06	충분
	백제큰길11배수통문	072+890	좌	2	-	2.5	2.5	10.70	12.50	1.80	충분
	백제큰길18배수통관	073+460	좌	1	0.8	-	-	0.34	0.50	0.17	충분

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
금강본류	백제큰길13배수통문	073+690	좌	1	-	1.5	2.0	2.72	3.00	0.28	충분
	백제큰길19배수통관	075+090	좌	1	0.8	-	-	0.44	0.50	0.07	충분
	백제큰길20배수통관	075+370	좌	1	1.0	-	-	0.66	0.79	0.13	충분
	백제큰길21배수통관	075+520	좌	1	0.8	-	-	0.44	0.50	0.07	충분
	백제큰길22배수통관	075+570	좌	1	0.8	-	-	0.44	0.50	0.07	충분
	백제큰길23배수통관	077+320	좌	1	1.0	-	-	0.48	0.79	0.30	충분
	백제큰길24배수통관	077+570	좌	1	1.2	-	-	0.69	1.13	0.44	충분
	백제큰길14배수통문	078+110	좌	2	-	2.5	2.5	5.43	12.50	7.07	충분
	백제큰길25배수통관	078+520	좌	1	1.0	-	-	0.33	0.79	0.45	충분
	백제큰길15배수통문	080+680	좌	2	-	2.5	3.0	10.62	15.00	4.38	충분
	백제큰길16배수통문	081+050	좌	1	-	3.0	3.0	7.86	9.00	1.14	충분
	백제큰길17배수통문	081+490	좌	2	-	3.5	3.0	6.63	21.00	14.37	충분
	백제큰길26배수통관	082+060	좌	1	0.8	-	-	0.11	0.50	0.39	충분
	백제큰길27배수통관	082+380	좌	1	0.8	-	-	0.04	0.50	0.46	충분
	백제큰길18배수통문	082+510	좌	1	-	1.5	1.5	0.88	2.25	1.37	충분
	백제큰길19배수통문	082+560	좌	1	-	1.5	1.5	0.88	2.25	1.37	충분
	백제큰길28배수통관	083+860	좌	1	1.2	-	-	0.16	1.13	0.97	충분
	금성배수통관	084+700	좌	1	0.8	-	-	0.33	0.50	0.18	충분
	성안배수통관	085+270	좌	1	1.2	-	-	0.87	1.13	0.26	충분
	옥룡배수통문	086+440	좌	2	-	3.5	4.5	23.05	31.50	8.45	충분
	소학1배수통문	087+030	좌	1	-	1.5	2.0	2.58	3.00	0.42	충분
	소학1배수통관	087+330	좌	1	0.8	-	-	0.33	0.50	0.18	충분
	소학2배수통관	087+380	좌	1	1.4	-	-	1.30	1.54	0.24	충분
	소학3배수통관	087+680	좌	1	1.0	-	-	0.64	0.79	0.14	충분
	소학2배수통문	087+690	좌	1	-	1.8	1.8	2.80	3.24	0.44	충분
	소학3배수통문	088+480	좌	1	-	1.0	1.0	0.88	1.00	0.12	충분
	소학4배수통관	089+000	좌	1	1.0	-	-	0.66	0.79	0.12	충분
	상왕1배수통관	089+800	좌	1	0.6	-	-	0.44	0.28	-0.15	1.0*1
	상왕1배수통문	090+540	좌	1	-	2.0	1.5	2.78	3.00	0.22	충분
	상왕2배수통관	090+930	좌	1	0.6	-	-	0.23	0.28	0.06	충분
	상왕3배수통관	091+030	좌	1	0.8	-	-	0.33	0.50	0.18	충분
	상왕2배수통문	091+620	좌	1	-	1.5	2.0	5.07	3.00	-2.07	2.5*2.5*1
	상왕3배수통문	092+170	좌	1	-	1.8	1.8	5.47	3.24	-2.23	2.5*2.5*1
	대평배수통문	101+680	좌	1	-	2.0	2.0	2.23	4.00	1.77	충분
	신촌배수통관	102+260	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	호탄배수통관	103+250	좌	1	0.6	-	-	0.25	0.28	0.03	충분
	석삼배수통문	103+560	좌	1	-	2.0	2.0	0.64	4.00	3.36	충분
	반곡배수통문	105+600	좌	1	-	1.5	1.2	1.50	1.80	0.30	충분
	부용배수통관	110+350	좌	1	1.4	-	-	0.59	1.54	0.95	충분
	부용2배수통문	111+750	좌	1	-	1.5	1.5	1.07	2.25	1.18	충분
	부용1배수통문	112+350	좌	1	-	1.5	1.5	1.43	2.25	0.82	충분
	부용1배수통관	113+460	좌	1	0.8	-	-	0.11	0.50	0.40	충분
	부용2배수통관	113+810	좌	1	0.8	-	-	0.11	0.50	0.40	충분

건설교통부

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
금강본류	부용3배수통관	114+340	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	부용4배수통관	114+640	좌	1	1.0	-	-	0.66	0.79	0.12	충분
	부용5배수통관	115+040	좌	2	1.2	-	-	0.96	2.26	1.30	충분
	부용6배수통관	115+390	좌	1	0.6	-	-	0.13	0.28	0.15	충분
	금동배수통관	116+850	좌	2	1.0	-	-	2.43	1.57	-0.86	2.0*1.5*1
	금탄1배수통관	118+620	좌	2	1.0	-	-	0.70	1.57	0.87	충분
	금탄2배수통관	119+000	좌	1	1.2	-	-	0.48	1.13	0.65	충분
	대동1배수통관	120+900	좌	1	1.0	-	-	0.52	0.79	0.27	충분
	대동2배수통관	121+310	좌	1	0.8	-	-	0.20	0.50	0.30	충분
	대동1배수통문	121+560	좌	2	-	1.5	1.5	4.08	4.50	0.42	충분
	대동2배수통문	122+070	좌	1	-	1.1	1.5	1.35	1.65	0.30	충분
	석봉배수통문	127+860	좌	1	-	2.5	2.0	1.46	5.00	3.54	충분
	석봉배수통관	127+860	좌	1	0.6	-	-	0.08	0.28	0.20	충분
	용호배수통관	130+230	좌	1	1.2	-	-	0.45	1.13	0.68	충분
	도삼1배수통관	000+125	우	1	0.6	-	-	0.15	0.28	0.13	충분
	도삼2배수통관	000+375	우	2	1.0	-	-	1.64	1.57	-0.07	1.5*1.5*1
	도삼3배수통관	000+740	우	2	1.0	-	-	0.37	1.57	1.21	충분
	망월배수통문	001+605	우	1	-	1.5	1.5	1.62	2.25	0.63	충분
	봉명배수통문	002+420	우	2	-	2.0	2.5	7.14	10.00	2.86	충분
	옥포배수통문	003+730	우	3	-	3.2	3.0	14.60	28.80	14.20	충분
	옥포1배수통관	003+800	우	1	0.8	-	-	0.19	0.50	0.31	충분
	옥포2배수통관	003+880	우	1	0.8	-	-	0.42	0.50	0.09	충분
	옥포1배수통문	003+920	우	2	-	1.2	1.2	2.68	2.88	0.20	충분
	옥포3배수통관	004+860	우	1	0.6	-	-	0.15	0.28	0.14	충분
	옥포4배수통관	005+670	우	1	0.8	-	-	0.17	0.50	0.33	충분
	와초배수통문	005+680	우	2	-	2.0	2.0	5.54	8.00	2.46	충분
	완포배수통문	006+750	우	3	-	1.5	1.5	2.76	6.75	3.99	충분
	죽산1배수통문	007+360	우	10	-	3.0	3.0	31.42	90.00	58.58	충분
	죽산1배수통관	007+790	우	1	0.6	-	-	0.24	0.28	0.04	충분
	죽산2배수통관	008+160	우	1	0.6	-	-	0.11	0.28	0.17	충분
	죽산3배수통관	008+410	우	1	0.6	-	-	0.17	0.28	0.12	충분
	죽산4배수통관	008+680	우	1	0.6	-	-	0.07	0.28	0.21	충분
	죽산5배수통관	009+020	우	1	0.6	-	-	0.06	0.28	0.23	충분
	죽산2배수통문	009+420	우	1	-	1.5	1.5	0.72	2.25	1.53	충분
	신용산배수통문	011+000	우	2	-	2.0	2.0	2.78	8.00	5.22	신성배수장(기)
	용산1배수통관	011+990	우	1	0.8	-	-	0.21	0.50	0.30	충분
	용산2배수통관	012+400	우	1	1.0	-	-	0.21	0.79	0.58	충분
	용산3배수통관	012+490	우	1	0.8	-	-	0.22	0.50	0.28	충분
	용산4배수통관	012+940	우	1	1.0	-	-	0.21	0.79	0.58	충분
	용산5배수통관	013+700	우	1	0.9	-	-	0.63	0.64	0.00	충분
	용산6배수통관	014+170	우	1	0.8	-	-	0.52	0.50	-0.02	1.0*1
	용산7배수통관	014+250	우	1	0.8	-	-	0.52	0.50	-0.02	1.0*1
	양희1배수통관	014+740	우	1	0.6	-	-	0.25	0.28	0.03	충분

설계공동

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경(D)	폭(B)	높이(H)	소요단면(㎡)	현 단면(㎡)	과·부족(㎡)	
금강본류	양화2배수통관	014+900	우	1	0.8	-	-	0.44	0.50	0.07	충분
	양화1제배수통문	015+180	우	2	-	2.0	2.0	7.35	8.00	0.65	충분
	양화2제배수통문	017+130	우	2	-	1.5	1.5	1.98	4.50	2.52	충분
	양화3배수통관	017+260	우	1	1.0	-	-	0.34	0.79	0.45	충분
	양화4배수통관	017+410	우	1	0.7	-	-	0.15	0.38	0.23	충분
	양화5배수통관	017+430	우	1	1.0	-	-	0.34	0.79	0.45	충분
	양화6배수통관	017+480	우	1	1.0	-	-	0.34	0.79	0.45	충분
	양화7배수통관	017+970	우	1	-	1.5	1.5	4.00	2.25	-1.75	원당배수장(기)
	양화배수통문	018+050	우	3	-	1.5	1.5	12.03	6.75	-5.28	원당배수장(기)
	암수배수통관	019+380	우	1	0.6	-	-	0.39	0.28	-0.11	양화배수장(기)
	입포1배수통관	019+820	우	1	0.8	-	-	0.64	0.50	-0.14	입포배수장(기)
	입포1배수통문	020+150	우	7	-	2.0	2.5	19.37	35.00	15.63	충분
	입포2배수통관	020+390	우	1	0.8	-	-	0.25	0.50	0.25	충분
	입포2배수통문	020+530	우	1	-	1.5	1.5	1.42	2.25	0.83	충분
	비정1배수통문	021+650	우	2	-	2.0	2.0	6.07	8.00	1.93	충분
	비정2배수통문	021+820	우	1	-	1.5	3.0	5.25	4.50	-0.75	칠산1배수장(기)
	임천1배수통관	022+550	우	1	0.6	-	-	0.12	0.28	0.17	충분
	칠산1배수통문	022+930	우	1	-	1.5	1.5	0.88	2.25	1.37	칠산2배수장(기)
	임천2배수통관	024+080	우	1	0.8	-	-	0.10	0.50	0.41	충분
	두곡배수통문	024+930	우	1	-	1.0	1.0	0.75	1.00	0.25	충분
	간대1배수통관	025+790	우	1	0.6	-	-	0.20	0.28	0.08	충분
	간대2배수통관	025+960	우	1	0.6	-	-	0.20	0.28	0.08	충분
	간대3배수통관	026+160	우	1	0.6	-	-	0.20	0.28	0.08	충분
	간대4배수통관	026+200	우	1	0.6	-	-	0.06	0.28	0.22	충분
	간대5배수통관	026+440	우	1	0.7	-	-	0.08	0.38	0.30	충분
	간대1배수통문	026+570	우	1	-	3.0	3.0	2.70	9.00	6.30	간대배수장(기)
	간대6배수통관	026+710	우	1	1.0	-	-	0.25	0.79	0.54	충분
	간대7배수통관	026+830	우	1	1.0	-	-	0.25	0.79	0.54	충분
	간대8배수통관	027+030	우	1	0.7	-	-	0.12	0.38	0.27	충분
	간대2배수통문	027+180	우	1	-	1.2	1.2	0.43	1.44	1.01	충분
	간대9배수통관	027+290	우	1	0.6	-	-	0.06	0.28	0.22	충분
	간대3배수통문	027+410	우	5	-	2.5	2.0	4.10	25.00	20.90	충분
	토정배수통문	028+610	우	5	-	2.0	2.0	8.09	20.00	11.91	충분
	닭뫼배수통문	028+850	우	4	-	2.0	2.5	7.16	20.00	12.84	충분
	청포배수통문	029+900	우	1	-	2.0	2.0	5.19	4.00	-1.19	가회배수장(기)
	가회배수통문	035+130	우	1	-	2.0	2.0	3.14	4.00	0.86	충분
	가회1배수통문	035+770	우	1	-	2.0	2.0	2.39	4.00	1.61	충분
	장산배수통문	036+210	우	1	-	2.0	2.0	3.16	4.00	0.84	충분
	갯말배수통문	036+690	우	1	-	1.3	1.3	1.30	1.69	0.39	충분
	반조원배수통문	037+930	우	1	-	2.0	2.0	3.14	4.00	0.86	충분
	반조원1배수통문	038+790	우	1	-	1.2	1.2	3.00	1.44	-1.56	사산배수장(기)
	사산1배수통문	039+300	우	1	-	1.2	1.2	3.00	1.44	-1.56	사산배수장(기)
	사산2배수통문	039+720	우	1	-	1.8	1.8	6.72	3.24	-3.48	사산배수장(기)

관심지역 설계제외 목록

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
금	사산3배수통문	039+780	우	1	-	3.0	1.4	2.92	4.20	1.28	충분
강	사산1배수통관	039+820	우	1	0.8	-	-	0.15	0.50	0.36	충분
본	사산2배수통관	039+830	우	1	0.8	-	-	0.15	0.50	0.36	충분
류	사산3배수통관	039+920	우	1	0.8	-	-	0.15	0.50	0.36	충분
	사산4배수통관	039+970	우	1	0.8	-	-	0.15	0.50	0.36	충분
	사산5배수통관	040+000	우	1	0.8	-	-	0.15	0.50	0.36	충분
	사산6배수통관	040+030	우	1	0.8	-	-	0.25	0.50	0.26	충분
	사산7배수통관	040+130	우	1	0.8	-	-	0.25	0.50	0.26	충분
	사산8배수통관	040+170	우	1	0.8	-	-	0.25	0.50	0.26	충분
	사산9배수통관	040+210	우	1	0.8	-	-	0.25	0.50	0.26	충분
	사산4배수통문	040+660	우	1	-	3.0	2.5	2.15	7.50	5.35	충분
	사산5배수통문	040+960	우	1	-	2.5	1.5	2.56	3.75	1.19	충분
	사산10배수통관	041+100	우	1	1.0	-	-	0.61	0.79	0.17	충분
	사산6배수통문	041+500	우	1	-	2.0	1.5	2.31	3.00	0.69	충분
	사산11배수통관	041+730	우	1	0.8	-	-	0.37	0.50	0.14	충분
	하황배수통문	042+250	우	3	-	3.0	3.0	19.40	27.00	7.60	장(기)하배수장(기)
	장암1배수통문	046+000	우	1	-	2.0	2.0	1.64	4.00	2.36	충분
	장암2배수통문	046+360	우	4	-	3.0	3.0	14.52	36.00	21.48	충분
	장암1배수통관	046+770	우	1	0.6	-	-	0.22	0.28	0.06	충분
	장암3배수통문	047+340	우	2	-	2.5	2.5	5.91	12.50	6.59	충분
	장암4배수통문	048+300	우	1	-	2.0	2.0	1.94	4.00	2.06	충분
	장암2배수통관	048+630	우	1	0.8	-	-	0.22	0.50	0.28	충분
	금천1배수통문	049+400	우	1	-	1.5	1.5	1.56	2.25	0.69	충분
	금천2배수통문	049+405	우	6	-	3.0	3.0	37.10	54.00	16.90	충분
	금천3배수통문	049+700	우	1	-	1.5	1.5	1.56	2.25	0.69	충분
	동부배수통문	051+470	우	1	-	1.2	1.4	1.06	1.68	0.62	충분
	규암1배수통관	051+480	우	1	0.6	-	-	0.18	0.28	0.10	간이배수장(기)
	규암2배수통관	051+700	우	1	0.6	-	-	0.18	0.28	0.10	충분
	규암3배수통관	051+760	우	1	1.0	-	-	0.46	0.79	0.33	충분
	규암4배수통관	051+840	우	1	1.0	-	-	0.46	0.79	0.33	충분
	외리배수통관	052+210	우	1	0.8	-	-	0.28	0.50	0.23	충분
	라복배수통문	052+550	우	2	-	2.3	2.5	17.71	11.50	-6.21	나복배수장(기)
	왕진배수통문	061+020	우	2	-	1.3	1.7	2.69	4.42	1.73	중산배수장(기)
	중산배수통문	061+200	우	3	-	2.5	2.5	10.22	18.75	8.53	충분
	동강배수통문	062+350	우	4	-	1.5	1.5	7.29	9.00	1.71	동강배수장(기)
	천내1배수통문	063+840	우	1	-	1.5	1.5	1.17	2.25	1.08	충분
	천내1배수통관	064+260	우	1	0.8	-	-	0.08	0.50	0.42	충분
	천내2배수통문	064+710	우	2	-	2.0	2.0	1.63	8.00	6.37	충분
	천내2배수통관	065+160	우	1	0.8	-	-	0.08	0.50	0.42	충분
	천내3배수통문	065+480	우	1	-	3.5	3.5	6.42	12.25	5.83	충분
	천내3배수통관	065+820	우	1	0.8	-	-	0.11	0.50	0.39	충분
	천내4배수통관	065+880	우	1	0.6	-	-	0.11	0.28	0.17	충분
	천내4배수통문	066+230	우	1	-	2.0	2.0	0.89	4.00	3.11	충분

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
금강본류	천내5배수통관	066+420	우	1	0.8	-	-	0.11	0.50	0.39	충분
	천내5배수통문	066+570	우	2	-	3.5	3.5	21.06	24.50	3.44	충분
	천내6배수통관	066+670	우	1	1.0	-	-	0.22	0.79	0.56	충분
	천내7배수통관	066+890	우	1	1.0	-	-	0.22	0.79	0.56	충분
	천내8배수통관	067+000	우	1	1.0	-	-	0.22	0.79	0.56	충분
	화양1배수통문	067+450	우	1	-	3.5	3.5	5.11	12.25	7.14	충분
	화양2배수통문	067+760	우	1	-	2.0	2.0	1.63	4.00	2.37	충분
	화양3배수통문	067+820	우	1	-	2.0	2.0	1.63	4.00	2.37	충분
	대평제배수통문	068+030	우	1	-	1.5	1.7	0.98	2.55	1.57	충분
	음전배수통문	068+865	우	1	-	1.5	1.5	1.88	2.25	0.37	충분
	음전배수통관	069+030	우	1	0.8	-	-	0.42	0.50	0.09	충분
	반음배수통문	069+600	우	1	-	1.5	1.5	1.55	2.25	0.70	충분
	반음배수통관	069+830	우	1	1.0	-	-	0.55	0.79	0.24	충분
	장수배수통문	069+980	우	2	-	1.8	1.8	7.84	6.48	-1.36	2.0*2.0*2
	장수배수통관	070+560	우	1	1.0	-	-	0.38	0.79	0.41	충분
	임장1배수통관	070+970	우	1	1.0	-	-	0.33	0.79	0.45	충분
	임장배수통문	071+090	우	1	-	1.5	1.5	1.35	2.25	0.90	충분
	임장2배수통관	071+940	우	1	1.0	-	-	2.64	0.79	-1.86	2.0*1.5*1
	어천1배수통문	072+150	우	3	-	2.5	2.0	10.62	15.00	4.38	충분
	어천2배수통문	072+340	우	1	-	2.0	2.0	1.77	4.00	2.23	어천배수장(기)
	어천3배수통문	072+620	우	1	-	1.5	1.5	1.20	2.25	1.05	충분
	어천4배수통문	073+060	우	2	-	3.0	3.0	3.49	18.00	14.51	충분
	죽당배수통관	073+900	우	1	0.8	-	-	0.64	0.50	-0.14	1.0*1
	죽당배수통문	073+960	우	2	-	2.5	2.5	11.21	12.50	1.29	충분
	오동배수통문	076+560	우	2	-	2.0	2.0	7.44	8.00	0.56	충분
	옥성2배수통문	079+910	우	1	-	1.5	1.5	1.68	2.25	0.57	충분
	평목배수통문	081+590	우	1	-	2.0	1.6	2.05	3.20	1.15	충분
	평목1배수통관	081+750	우	1	1.5	-	-	1.19	1.77	0.57	충분
	평목2배수통관	081+890	우	1	1.0	-	-	0.53	0.79	0.25	충분
	평목3배수통관	082+170	우	1	1.0	-	-	0.44	0.79	0.35	충분
	쌍신1배수통관	083+450	우	1	0.6	-	-	0.39	0.28	-0.11	쌍신배수장(기)
	쌍신2배수통관	083+680	우	1	1.2	-	-	1.40	1.13	-0.27	쌍신배수장(기)
	쌍신1배수통문	084+250	우	1	-	2.5	2.5	7.97	6.25	-1.72	쌍신배수장(기)
	신관1배수통관	085+395	우	1	0.8	-	-	0.33	0.50	0.17	충분
	신관1배수통문	085+770	우	2	-	1.5	1.5	2.69	4.50	1.81	충분
	신관2배수통문	086+390	우	2	-	1.5	1.5	2.69	4.50	1.81	충분
	신관2배수통관	086+690	우	1	1.0	-	-	0.66	0.79	0.12	충분
	신관3배수통관	086+715	우	2	0.8	-	-	0.89	1.01	0.12	충분
	신관4배수통관	086+880	우	1	1.0	-	-	0.67	0.79	0.12	충분
	신관3배수통문	086+905	우	1	-	1.5	1.0	1.32	1.50	0.18	충분
	신관5배수통관	086+980	우	1	0.8	-	-	0.44	0.50	0.07	충분
	월송1배수통관	087+230	우	1	0.8	-	-	0.44	0.50	0.07	충분
	월송1배수통문	087+410	우	2	-	3.5	3.0	13.37	21.00	7.63	충분

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경(D)	폭(B)	높이(H)	소요단면(㎡)	현 단면(㎡)	과·부족(㎡)	
금강본류	월송2배수통관	087+550	우	1	0.8	-	-	0.32	0.50	0.19	충분
	월송3배수통관	087+840	우	1	0.8	-	-	0.32	0.50	0.19	충분
	월송2배수통문	087+960	우	1	-	1.0	1.0	0.64	1.00	0.36	충분
	월송3배수통문	088+030	우	1	-	1.0	1.0	0.64	1.00	0.36	충분
	월송4배수통관	088+150	우	1	0.8	-	-	0.32	0.50	0.19	충분
	월송5배수통관	088+400	우	1	0.8	-	-	0.32	0.50	0.19	충분
	무릉1배수통관	088+560	우	1	0.8	-	-	0.32	0.50	0.19	충분
	무릉1배수통문	088+880	우	1	-	2.0	2.0	3.58	4.00	0.42	충분
	무릉2배수통문	089+000	우	2	-	2.5	2.0	8.96	10.00	1.04	충분
	무릉3배수통문	089+500	우	1	-	1.5	1.5	1.84	2.25	0.41	충분
	무릉2배수통관	089+820	우	1	1.0	-	-	0.66	0.79	0.13	충분
	무릉3배수통관	089+980	우	1	0.8	-	-	0.44	0.50	0.07	충분
	장암1배수통관	090+190	우	1	0.8	-	-	0.44	0.50	0.07	충분
	장암1배수통문	090+420	우	1	-	2.5	2.5	5.32	6.25	0.93	충분
	장암2배수통관	090+570	우	1	0.8	-	-	0.44	0.50	0.07	충분
	장암2배수통문	091+100	우	3	-	3.5	3.0	13.67	31.50	17.83	충분
	장암3배수통관	091+440	우	1	0.8	-	-	0.33	0.50	0.18	충분
	장암4배수통관	091+660	우	1	0.8	-	-	0.33	0.50	0.18	충분
	장암5배수통관	091+720	우	1	0.6	-	-	0.22	0.28	0.06	충분
	장암3배수통문	091+860	우	1	-	2.0	1.5	1.88	3.00	1.12	충분
	장암6배수통관	091+970	우	1	0.8	-	-	0.30	0.50	0.20	충분
	장암7배수통관	092+100	우	1	0.8	-	-	0.30	0.50	0.20	충분
	장암4배수통문	092+190	우	1	-	1.5	1.0	1.00	1.50	0.50	충분
	장암5배수통문	092+490	우	1	-	2.0	2.0	2.65	4.00	1.35	충분
	장암8배수통관	092+820	우	1	1.0	-	-	0.54	0.79	0.25	충분
	금암1배수통관	093+610	우	1	0.6	-	-	0.20	0.28	0.08	충분
	금암1배수통문	093+740	우	1	-	1.5	1.5	1.78	2.25	0.47	충분
	금암2배수통관	093+750	우	1	0.6	-	-	0.20	0.28	0.08	충분
	금암2배수통문	094+250	우	1	-	1.5	1.5	1.78	2.25	0.47	충분
	금암3배수통문	094+410	우	1	-	3.0	2.0	4.57	6.00	1.43	충분
	금암3배수통관	094+790	우	1	-	1.0	1.0	0.79	1.00	0.21	충분
	금암4배수통관	095+240	우	1	1.0	-	-	0.59	0.79	0.20	충분
	금암4배수통문	095+610	우	2	-	1.5	1.5	3.48	4.50	1.02	충분
	금암5배수통문	096+590	우	1	-	5.0	4.5	10.39	22.50	12.11	충분
	금암6배수통문	096+790	우	1	-	5.0	4.5	14.85	22.50	7.65	충분
	금암5배수통관	097+170	우	1	1.0	-	-	0.50	0.79	0.28	충분
	금암6배수통관	097+390	우	1	1.0	-	-	0.50	0.79	0.28	충분
	금암7배수통관	097+540	우	1	1.0	-	-	0.50	0.79	0.28	충분
	금암8배수통관	097+770	우	1	1.0	-	-	0.50	0.79	0.28	충분
	금암7배수통문	097+890	우	1	-	1.5	1.0	0.99	1.50	0.51	충분
	금암8배수통문	098+060	우	1	-	3.0	3.5	6.46	10.50	4.04	충분
	송원제배수통문	098+560	우	1	-	2.0	2.0	3.00	4.00	1.00	충분
	동성배수통문	099+880	우	1	-	1.0	0.9	0.72	0.90	0.18	충분

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
금강본류	나성배수통문	101+080	우	2	-	2.0	2.0	6.04	8.00	1.96	충분
	나성배수통관	101+770	우	1	1.2	-	-	0.86	1.13	0.27	충분
	남면배수통문	105+730	우	1	-	1.5	1.5	0.25	2.25	2.00	충분
	양화1배수통문	105+950	우	1	-	1.2	1.8	0.74	2.16	1.42	충분
	양화2배수통문	106+750	우	3	-	2.5	2.0	5.22	15.00	9.78	충분
	월산1배수통관	106+890	우	1	1.2	-	-	0.37	1.13	0.76	충분
	월산2배수통관	106+950	우	1	0.8	-	-	0.15	0.50	0.36	충분
	월산3배수통관	107+500	우	1	0.8	-	-	0.15	0.50	0.36	충분
	월산4배수통관	107+600	우	1	1.0	-	-	0.29	0.79	0.50	충분
	월산1배수통문	107+730	우	1	-	2.5	1.5	1.50	3.75	2.25	충분
	월산2배수통문	107+770	우	2	-	2.5	1.0	2.07	5.00	2.93	충분
	월산5배수통관	107+850	우	1	0.8	-	-	0.21	0.50	0.29	충분
	월산6배수통관	107+950	우	1	0.8	-	-	0.21	0.50	0.29	충분
	월산7배수통관	108+050	우	1	0.8	-	-	0.21	0.50	0.29	충분
	월산3배수통문	108+160	우	1	-	2.0	2.5	2.07	5.00	2.93	충분
	월산8배수통관	108+250	우	1	0.8	-	-	0.21	0.50	0.29	충분
	합강1배수통문	110+500	우	1	-	0.6	0.5	0.07	0.30	0.23	충분
	합강1배수통관	110+510	우	1	1.2	-	-	0.29	1.13	0.85	충분
	합강2배수통문	110+840	우	1	-	1.5	1.5	0.57	2.25	1.68	충분
	합강2배수통관	111+000	우	1	1.0	-	-	0.21	0.79	0.57	충분
	합강3배수통문	111+250	우	1	-	3.5	2.5	2.13	8.75	6.62	충분
	합강4배수통문	111+410	우	1	-	3.5	2.5	2.13	8.75	6.62	충분
	합강3배수통관	111+470	우	1	0.8	-	-	0.07	0.50	0.43	충분
	합강4배수통관	111+700	우	1	0.8	-	-	0.15	0.50	0.36	충분
	명학1배수통관	111+800	우	1	0.8	-	-	0.15	0.50	0.36	충분
	명학2배수통관	111+890	우	1	0.6	-	-	0.07	0.28	0.21	충분
	명학3배수통관	111+950	우	1	0.8	-	-	0.15	0.50	0.36	충분
	명학4배수통관	112+000	우	1	0.8	-	-	0.15	0.50	0.36	충분
	부강배수통관	113+560	우	1	1.5	-	-	1.44	1.77	0.33	충분
	부강배수통문	113+990	우	1	-	1.5	1.5	1.82	2.25	0.43	충분
	금호1배수통관	114+690	우	1	1.5	-	-	0.85	1.77	0.92	충분
	금호1배수통문	114+780	우	1	-	4.0	2.0	3.81	8.00	4.19	충분
	금호2배수통관	115+140	우	1	1.2	-	-	0.57	1.13	0.57	충분
	금호3배수통관	115+150	우	1	1.2	-	-	0.57	1.13	0.57	충분
	금호4배수통관	115+440	우	1	0.6	-	-	0.06	0.28	0.22	충분
	금호5배수통관	116+110	우	1	0.5	-	-	0.12	0.20	0.08	충분
	금호6배수통관	116+340	우	1	0.5	-	-	0.12	0.20	0.08	충분
	금호7배수통관	116+410	우	1	0.5	-	-	0.12	0.20	0.08	충분
	금호2배수통관	116+680	우	1	1.2	-	-	0.74	1.13	0.39	충분
	금호3배수통문	116+770	우	1	-	1.5	1.5	1.47	2.25	0.78	충분
	금호4배수통문	116+910	우	1	-	1.0	1.5	0.95	1.50	0.55	충분
	금호8배수통관	117+020	우	1	0.6	-	-	0.15	0.28	0.13	충분
	금호9배수통관	117+140	우	1	1.0	-	-	0.52	0.79	0.26	충분

건설교통부

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
금강본류	매포1배수통문	119+780	우	1	-	2.0	1.5	2.45	3.00	0.55	충분
	매포1배수통관	120+220	우	1	0.8	-	-	0.29	0.50	0.22	충분
	매포2배수통문	120+220	우	1	-	2.5	3.0	4.65	7.50	2.85	충분
	매포3배수통문	121+100	우	1	-	2.5	2.0	2.89	5.00	2.11	충분
	중척배수통문	124+210	우	1	-	2.0	1.0	0.98	2.00	1.02	충분
	중척배수통관	124+460	우	1	0.8	-	-	0.21	0.50	0.29	충분
	양지배수통관	127+160	우	1	0.6	-	-	0.07	0.28	0.21	충분
	노산1배수통관	129+850	우	1	0.6	-	-	0.07	0.28	0.21	충분
	노산2배수통관	130+020	우	1	0.6	-	-	0.07	0.28	0.21	충분
금강상류	금암배수통문	225+770	좌	2	-	2.0	2.5	15.87	10.00	-5.87	3.0*3.0*2
	원동배수통문	236+320	좌	1	-	2.0	1.5	2.72	3.00	0.28	충분
	고당1배수통문	241+570	좌	1	-	1.6	1.6	0.83	2.56	1.73	충분
	지탄배수통문	233+960	우	2	-	3.1	2.5	4.52	15.50	10.98	충분
	백지배수통문	236+130	우	1	-	2.0	1.5	2.43	3.00	0.57	충분
	구탄1배수통문(아치)	242+230	우	1	-	3.6	3.3	11.02	11.88	0.86	충분
	구탄2배수통문(아치)	242+560	우	1	-	3.6	3.9	8.28	14.04	5.76	충분
	심천1배수통문	242+820	우	4	-	1.5	1.5	9.87	9.00	-0.87	2.0*2.0*1(추가설치) (금회반영)
	심천2배수통문	243+560	우	1	-	1.5	1.5	3.73	2.25	-1.48	2.0*2.0*1(금회반영)
	심천배수통관	243+900	우	1	0.9	-	-	0.51	0.64	0.13	충분
	초강배수통관	245+060	우	1	1.0	-	-	0.71	0.79	0.07	충분
	초강배수통문	246+200	우	4	-	1.5	1.5	4.31	9.00	4.69	충분
갑천	봉산3배수통관	000+820	좌	1	0.8	-	-	0.37	0.50	0.13	충분
	봉산2배수통관	000+960	좌	1	0.8	-	-	0.37	0.50	0.13	충분
	봉산5배수통문	001+020	좌	2	-	2.0	2.0	3.44	8.00	4.56	충분
	봉산4배수통문	001+220	좌	1	-	2.0	1.5	1.80	3.00	1.20	충분
	봉산3배수통문	001+490	좌	1	-	2.0	2.0	3.30	4.00	0.70	충분
	봉산2배수통문	001+620	좌	1	-	2.0	1.5	2.29	3.00	0.71	충분
	봉산1배수통문	001+700	좌	1	-	2.0	1.5	2.38	3.00	0.62	충분
	봉산1배수통관	002+100	좌	1	0.8	-	-	0.31	0.50	0.19	충분
	관평3배수통문	002+110	좌	3	-	3.0	2.5	9.63	22.50	12.87	충분
	관평2배수통문	002+340	좌	2	-	2.3	2.0	3.95	9.20	5.25	충분
	관평1배수통문	002+635	좌	1	-	1.5	1.5	0.95	2.25	1.30	충분
	용산배수통문	004+405	좌	2	-	1.1	1.2	2.44	2.64	0.20	충분
	용산1배수통관	005+380	좌	1	1.0	-	-	0.72	0.79	0.07	충분
	용산2배수통관	005+895	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	탑립배수통문	006+010	좌	2	-	1.0	1.0	1.85	2.00	0.15	충분
	용산1배수통문	006+450	좌	1	-	1.5	1.5	2.07	2.25	0.18	충분
	전민1배수통문	006+735	좌	2	-	1.0	1.0	1.34	2.00	0.66	충분
	전민2배수통문	007+475	좌	1	-	2.0	2.0	2.59	4.00	1.41	충분
	문지배수통문	008+025	좌	2	-	3.0	3.0	11.78	18.00	6.22	충분
	문지2배수통문	008+785	좌	2	-	3.5	3.0	18.54	21.00	2.46	충분
	문지1배수통문	009+020	좌	2	-	1.5	1.5	3.61	4.50	0.89	충분

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하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
갑	원촌1배수통문	009+090	좌	2	-	2.5	2.0	8.15	10.00	1.85	충분
	문지3배수통관	009+410	좌	1	1.2	-	-	0.42	1.13	0.71	하수종말처리장(기)
천	문지2배수통관	009+490	좌	1	1.1	-	-	0.31	0.95	0.64	하수종말처리장(기)
	원촌2배수통문	009+500	좌	2	-	2.0	2.0	2.29	8.00	5.71	하수종말처리장(기)
	문지1배수통관	009+530	좌	1	1.0	-	-	0.21	0.79	0.58	하수종말처리장(기)
	원촌3배수통문	010+090	좌	1	-	2.5	2.5	1.88	6.25	4.37	하수종말처리장(기)
	원촌4배수통관	010+128	좌	1	0.6	-	-	0.10	0.28	0.18	하수종말처리장(기)
	원촌3배수통관	010+615	좌	1	1.0	-	-	0.71	0.79	0.08	충분
	원촌2배수통관	010+665	좌	1	0.8	-	-	0.41	0.50	0.09	충분
	원촌1배수통관	010+770	좌	1	0.8	-	-	0.41	0.50	0.09	충분
	도룡2배수통문	011+115	좌	1	-	2.0	2.0	3.70	4.00	0.30	충분
	도룡1배수통문	011+230	좌	1	-	2.0	2.0	3.70	4.00	0.30	충분
	도룡배수통문	012+135	좌	2	-	2.5	2.0	9.26	10.00	0.74	충분
	구성3배수통문	012+930	좌	2	-	2.5	2.5	11.62	12.50	0.88	충분
	구성6배수통관	013+010	좌	1	0.6	-	-	0.21	0.28	0.07	충분
	구성5배수통관	013+030	좌	1	0.6	-	-	0.21	0.28	0.07	충분
	구성4배수통관	013+215	좌	1	0.6	-	-	0.11	0.28	0.17	충분
	구성3배수통관	013+455	좌	1	0.5	-	-	0.10	0.20	0.09	충분
	구성2배수통관	013+640	좌	1	0.6	-	-	0.11	0.28	0.17	충분
	구성2배수통문	013+875	좌	4	-	3.5	3.0	14.36	42.00	27.64	충분
	구성1배수통관	014+395	좌	1	1.2	-	-	0.32	1.13	0.81	충분
	구성1배수통문	014+820	좌	1	-	3.0	2.5	2.46	7.50	5.04	충분
	봉명1호배수통관	015+505	좌	1	0.5	-	-	0.08	0.20	0.12	충분
	봉명2호배수통관	016+005	좌	1	0.8	-	-	0.31	0.50	0.20	충분
	봉명제1호배수통문	016+495	좌	1	-	1.5	1.5	1.31	2.25	0.94	충분
	봉명제2호배수통문	016+615	좌	1	-	1.8	1.8	0.27	3.24	2.97	충분
	봉명제3호배수통문	016+625	좌	2	-	2.0	2.0	1.55	8.00	6.45	충분
	원신흥1배수통문	017+115	좌	1	-	1.5	1.5	0.79	2.25	1.46	충분
	원신흥15배수통관	017+135	좌	1	0.8	-	-	0.10	0.50	0.40	충분
	원신흥14배수통관	017+225	좌	1	0.8	-	-	0.10	0.50	0.40	충분
	원신흥13배수통관	017+345	좌	1	0.8	-	-	0.10	0.50	0.40	충분
	원신흥12배수통관	017+455	좌	1	0.8	-	-	0.10	0.50	0.40	충분
	원신흥11배수통관	017+555	좌	1	0.8	-	-	0.10	0.50	0.40	충분
	원신흥10배수통관	017+665	좌	1	0.8	-	-	0.10	0.50	0.40	충분
	원신흥9배수통관	017+785	좌	1	0.8	-	-	0.08	0.50	0.42	충분
	원신흥8배수통관	017+895	좌	1	0.8	-	-	0.08	0.50	0.42	충분
	원신흥2배수통문	017+995	좌	1	-	2.0	1.5	0.19	3.00	2.81	충분
	원신흥7배수통관	018+065	좌	1	0.8	-	-	0.06	0.50	0.44	충분
	원신흥6배수통관	018+180	좌	1	0.8	-	-	0.06	0.50	0.44	충분
	원신흥5배수통관	018+280	좌	1	0.8	-	-	0.06	0.50	0.44	충분
	원신흥4배수통관	018+390	좌	1	0.8	-	-	0.06	0.50	0.44	충분
	원신흥3배수통관	018+500	좌	1	0.8	-	-	0.06	0.50	0.44	충분
	원신흥2배수통관	018+600	좌	1	0.8	-	-	0.06	0.50	0.44	충분

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하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
갑	원신흥1배수통관	018+710	좌	1	0.8	-	-	0.06	0.50	0.44	충분
	원신흥3배수통문	018+820	좌	1	-	2.5	2.0	1.84	5.00	3.16	충분
천	도안배수통문	018+830	좌	1	-	2.5	2.0	3.84	5.00	1.16	충분
	가수원1호배수통문	021+695	좌	1	-	3.0	2.0	0.70	6.00	5.30	충분
	가수원2호배수통문	021+855	좌	1	-	2.0	1.0	1.42	2.00	0.58	충분
	가수원3호배수통문	021+905	좌	1	-	1.5	1.5	0.63	2.25	1.62	충분
	가수원4호배수통문	023+130	좌	2	-	3.0	3.0	10.82	18.00	7.18	충분
	괴곡4배수통문	023+520	좌	1	-	1.5	1.5	1.62	2.25	0.63	충분
	괴곡3배수통문	024+395	좌	2	-	2.0	2.0	6.41	8.00	1.59	충분
	가수원배수통관	024+445	좌	1	0.8	-	-	0.40	0.50	0.11	충분
	괴곡2배수통문	024+715	좌	1	-	2.0	1.5	2.50	3.00	0.50	충분
	괴곡1배수통문	025+930	좌	2	-	4.0	1.2	7.40	9.60	2.20	충분
	흑석배수통관	028+905	좌	1	0.8	-	-	0.26	0.50	0.24	충분
	봉곡좌안배수통문	032+675	좌	1	-	1.5	1.5	0.56	2.25	1.69	충분
	봉곡좌안배수통관	032+945	좌	1	1.0	-	-	0.19	0.79	0.60	충분
	문평1배수통문	000+440	우	2	-	3.0	3.0	3.67	18.00	14.33	충분
	문평2배수통문	002+570	우	1	-	1.0	1.0	0.52	1.00	0.48	충분
	문평배수통관	003+490	우	1	0.9	-	-	0.30	0.64	0.34	충분
	문평3배수통문	004+015	우	2	-	2.0	2.0	3.92	8.00	4.08	충분
	문평4배수통문	004+275	우	2	-	2.5	2.5	6.11	12.50	6.39	충분
	상서1배수통관	005+010	우	1	0.8	-	-				
	상서2배수통관	005+225	우	1	1.0	-	-	1.85	2.07	0.22	충분
	상서3배수통관	005+350	우	1	1.0	-	-				
	와동배수통문1	005+815	우	1	-	2.0	1.5	2.67	3.00	0.33	충분
	와동배수통문2	0	우	1	-	1.8	1.4	2.22	2.52	0.30	충분
	와동1배수통관	006+405	우	1	0.6	-	-	0.19	0.28	0.09	충분
	와동2배수통관	006+685	우	1	0.6	-	-	0.19	0.28	0.09	충분
	와동3배수통관	007+100	우	1	0.8	-	-	0.38	0.50	0.12	충분
	와동4배수통관	007+150	우	1	0.8	-	-	0.38	0.50	0.12	충분
	신대1배수통관	007+675	우	1	0.8	-	-	0.21	0.50	0.30	충분
	신대2배수통관	007+985	우	1	1.0	-	-	0.71	0.79	0.08	충분
	연축1배수통관	008+185	우	1	1.0	-	-	0.71	0.79	0.08	충분
	연축2배수통관	008+415	우	1	1.0	-	-	0.71	0.79	0.07	충분
	연축3배수통관	008+845	우	1	0.6	-	-	0.21	0.28	0.08	충분
	연축배수통문	009+005	우	1	-	2.0	2.0	3.68	4.00	0.32	충분
	연축4배수통관	009+320	우	1	1.2	-	-	1.02	1.13	0.11	충분
	연축5배수통관	009+370	우	1	1.2	-	-	1.02	1.13	0.11	충분
	연축6배수통관	009+620	우	1	1.2	-	-	1.86	1.13	-0.72	2.0*2.0*1(금회반영)
	연축7배수통관	009+730	우	1	0.8	-	-	0.72	0.50	-0.22	0
	연축8배수통관	009+770	우	1	0.6	-	-	0.41	0.28	-0.13	0
	연축9배수통관	009+870	우	1	0.6	-	-	0.41	0.28	-0.13	0
	대화1배수통관	010+085	우	1	0.8	-	-	0.44	0.50	0.06	충분
	대화1배수통문	010+145	우	3	-	4.5	3.5	43.99	47.25	3.26	충분

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
갑	대화2배수통관	010+195	우	1	0.6	-	-	0.22	0.28	0.06	충분
	대화3배수통관	010+225	우	1	0.6	-	-	0.22	0.28	0.06	충분
천	대화4배수통관	010+505	우	1	0.6	-	-	0.22	0.28	0.06	충분
	대화5배수통관	010+575	우	1	0.6	-	-	0.22	0.28	0.06	충분
	대화6배수통관	010+760	우	1	0.6	-	-	0.22	0.28	0.06	충분
	대화2배수통문	010+865	우	2	-	2.5	2.5	11.58	12.50	0.92	충분
	대화7배수통관	011+065	우	1	1.0	-	-	0.73	0.79	0.06	충분
	삼천배수통문	012+700	우	3	-	3.5	2.0	6.88	21.00	14.12	충분
	갈마1배수통문	014+480	우	4	-	3.5	2.0	48.89	52.50	3.61	충분
	갈마2배수통문	014+965	우	2	-	2.0	1.5				
	월평1배수통문	015+435	우	2	-	4.5	2.0				
	월평1배수통관	016+005	우	1	0.8	-	-				
	월평2배수통관	016+615	우	1	0.6	-	-	8.35	9.05	0.70	충분
	월평2배수통문	017+085	우	1	-	2.0	2.0				
	월평3배수통관	017+475	우	1	1.5	-	-				
	월평3배수통문	017+785	우	1	-	2.0	1.5				
	도마1배수통관	020+925	우	1	1.0	-	-	0.72	0.79	0.07	충분
	도마배수통문	020+965	우	1	-	1.5	1.5	2.06	2.25	0.19	충분
	도마2배수통관	021+085	우	1	0.8	-	-	0.41	0.50	0.09	충분
	도마3배수통관	021+145	우	1	0.6	-	-	1.56	1.77	0.21	충분
	도마4배수통관	021+290	우	1	0.6	-	-				
	도마5배수통관	021+340	우	1	0.9	-	-				
	도마6배수통관	021+390	우	1	0.6	-	-				
	도마7배수통관	021+545	우	1	0.6	-	-				
	복수제1호배수통문	021+925	우	1	-	3.5	3.5	11.39	12.25	0.86	충분
	복수제1호배수통관	022+155	우	2	1.0	-	-	1.31	1.57	0.26	충분
	복수제2호배수통문	022+175	우	1	-	2.0	0.8	2.61	1.60	-1.01	2.0*1.5*1
	복수제3호배수통문	022+670	우	2	-	1.5	1.5	5.59	4.50	-1.09	2.5*2.5*1
	복수제2호배수통관	023+050	우	1	1.1	-	-	0.85	0.95	0.10	충분
	복수제4호배수통문	023+310	우	1	-	1.5	1.0	1.35	1.50	0.15	충분
	복수제3호배수통관	023+810	우	1	1.0	-	-	0.70	0.79	0.09	충분
	복수제4호배수통관	023+880	우	1	1.0	-	-	0.50	0.79	0.29	충분
	복수제5호배수통문	023+965	우	1	-	1.5	1.5	1.59	2.25	0.66	충분
	복수제5호배수통관	024+010	우	1	0.8	-	-	0.40	0.50	0.11	충분
	복수제6호배수통관	024+115	우	1	0.8	-	-	0.40	0.50	0.11	충분
	복수제7호배수통관	024+205	우	2	0.9	-	-	0.40	1.27	0.88	충분
	복수제8호배수통관	024+480	우	1	0.8	-	-	0.14	0.50	0.36	충분
	괴곡1배수통관	026+145	우	3	0.8	-	-	16.45	1.51	-14.94	자연배제가능
	괴곡2배수통관	027+095	우	1	1.0	-	-	0.25	0.79	0.53	충분
	괴곡3배수통관	027+145	우	1	0.6	-	-	0.11	0.28	0.17	충분
	괴곡4배수통관	028+405	우	1	0.6	-	-	0.41	0.28	-0.13	1.0*1
	괴곡5배수통관	028+850	우	1	0.6	-	-	0.21	0.28	0.08	충분
	괴곡6배수통관	029+015	우	1	0.6	-	-	0.21	0.28	0.08	충분

건설교통부

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
갑천	괴곡7배수통관	029+110	우	1	0.6	-	-	0.10	0.28	0.18	충분
	괴곡8배수통관	030+340	우	1	1.0	-	-	2.49	0.79	-1.70	2.0*1.5*1
	흑석2배수통관	030+530	우	1	1.2	-	-	0.64	1.13	0.50	충분
	흑석1배수통관	030+830	우	1	0.8	-	-	0.26	0.50	0.24	충분
	봉곡우안3배수통문	031+865	우	1	-	0.8	0.8	0.53	0.64	0.11	충분
	봉곡우안3배수통관	031+950	우	1	0.8	-	-	0.46	0.50	0.05	충분
	봉곡우안2배수통관	032+435	우	1	0.8	-	-	0.40	0.50	0.10	충분
	봉곡우안1배수통관	032+445	우	1	0.8	-	-	0.40	0.50	0.10	충분
	봉곡우안2배수통문	033+075	우	1	-	2.0	2.0	0.66	4.00	3.34	충분
	봉곡우안1배수통문	033+105	우	1	-	2.5	2.0	0.85	5.00	4.15	충분
유등천	삼천1배수통문	000+510	좌	1	-	2.5	2.0	4.66	5.00	0.34	충분
	삼천2배수통문	000+735	좌	3	-	3.5	2.0	19.57	21.00	1.43	충분
	삼천3배수통문	001+085	좌	1	-	2.0	1.5	2.75	3.00	0.25	충분
	삼천4배수통문	001+475	좌	1	-	4.5	2.0	8.35	9.00	0.65	충분
	삼천5배수통문	002+040	좌	1	-	2.5	1.5	3.49	3.75	0.26	충분
	용문1배수통문	002+970	좌	1	-	1.5	1.0	1.38	1.50	0.12	충분
	용문2배수통문1	003+240	좌	2	-	4.0	2.5	18.28	20.00	1.72	충분
	용문2배수통문2	003+240	0	1	-	2.5	2.0	7.25	5.00	-2.25	4.0*2.0*1(금회반영)
	용문1배수통관	003+515	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	용문2배수통관	004+035	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	용문3배수통관	004+135	좌	1	0.5	-	-	0.11	0.20	0.09	충분
	용문4배수통관	004+255	좌	1	0.5	-	-	0.11	0.20	0.09	충분
	가장1배수통관	004+345	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	가장2배수통관	004+555	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	가장3배수통관	004+580	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	가장4배수통관	004+650	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	가장5배수통관	005+053	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	가장1배수통문	005+130	좌	1	-	2.5	1.2	2.70	3.00	0.30	충분
	가장6배수통관	005+395	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	가장2배수통문	005+580	좌	1	-	1.5	1.5	1.99	2.25	0.26	충분
	가장3배수통문	005+655	좌	4	-	2.5	2.0	18.48	20.00	1.52	충분
	가장7배수통관	005+865	좌	1	1.0	-	-	0.64	0.79	0.15	충분
	가장4배수통문	006+020	좌	1	-	2.0	1.5	2.75	3.00	0.25	충분
	가장5배수통문	006+120	좌	1	-	2.0	1.5	2.75	3.00	0.25	충분
	가장6배수통문	006+265	좌	1	-	1.5	1.5	2.05	2.25	0.20	충분
	가장7배수통문	006+405	좌	1	-	2.5	2.0	4.65	5.00	0.35	충분
	가장8배수통관	006+540	좌	1	1.0	-	-	0.65	0.79	0.14	충분
	가장8배수통문	006+590	좌	2	-	2.0	2.0	7.46	8.00	0.54	충분
	가장9배수통관	006+750	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	가장9배수통문	006+930	좌	2	-	2.0	2.0	7.46	8.00	0.54	충분
	정림1배수통관	007+055	좌	1	0.9	-	-	0.54	0.64	0.10	충분
	정림2배수통관	007+155	좌	1	1.2	-	-	0.97	1.13	0.16	충분
	정림1배수통문	007+405	좌	1	-	1.5	1.0	1.29	1.50	0.21	충분

건설교통부

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경(D)	폭(B)	높이(H)	소요단면(㎡)	현 단면(㎡)	과·부족(㎡)	
유등천	정림2배수통문	007+570	좌	1	-	2.0	1.3	2.38	2.60	0.22	충분
	정림3배수통관	007+790	좌	1	0.6	-	-	0.22	0.28	0.06	충분
	정림4배수통관	008+160	좌	1	0.8	-	-	0.41	0.50	0.09	충분
	정림5배수통관	008+305	좌	1	0.8	-	-	0.41	0.50	0.09	충분
	정림6배수통관	008+310	좌	1	1.5	-	-	1.55	1.77	0.22	충분
	정림7배수통관	008+370	좌	1	0.6	-	-	0.15	0.28	0.13	충분
	정림8배수통관	008+425	좌	1	1.2	-	-	1.03	1.13	0.10	충분
	복수1배수통관	009+485	좌	1	0.6	-	-	0.15	0.28	0.13	충분
	복수1배수통문	009+635	좌	1	-	2.0	2.0	9.05	4.00	-5.05	2.5*2.0*2
	복수2배수통관	009+770	좌	1	0.6	-	-	0.15	0.28	0.13	충분
	복수2배수통문	010+345	좌	1	-	1.0	1.0	0.89	1.00	0.11	충분
	안영좌1배수통관	010+865	좌	1	1.5	-	-	0.70	1.77	1.07	충분
	안영좌2배수통관	010+980	좌	1	1.0	-	-	0.70	0.79	0.09	충분
	안영좌3배수통관	011+000	좌	1	0.8	-	-	0.40	0.50	0.11	충분
	안영좌1배수통문	011+003	좌	2	-	2.5	2.5	11.57	12.50	0.93	충분
	안영좌4배수통관	011+165	좌	1	0.5	-	-	0.07	0.20	0.12	충분
	안영좌5배수통관	011+445	좌	1	0.5	-	-	0.07	0.20	0.12	충분
	침산좌1배수통관	012+470	좌	1	1.2	-	-	0.62	1.13	0.51	충분
	침산좌2배수통관	012+565	좌	1	1.2	-	-	0.62	1.13	0.51	충분
	침산좌3배수통관	012+650	좌	1	1.0	-	-	0.41	0.79	0.37	충분
	침산좌4배수통관	012+830	좌	1	1.0	-	-	0.41	0.79	0.37	충분
	침산좌1배수통문	012+975	좌	1	-	2.0	2.0	2.14	4.00	1.86	충분
	침산좌2배수통문	013+325	좌	1	-	1.5	1.0	0.72	1.50	0.78	충분
	대화1배수통관	000+490	우	1	1.0	-	-	0.38	0.79	0.40	충분
	대화2배수통관	001+255	우	1	0.6	-	-	0.21	0.28	0.07	충분
	대화1배수통문	001+445	우	1	-	5.0	1.7	5.31	8.50	3.19	충분
	대화2배수통문	001+755	우	4	-	4.5	2.5	41.88	45.00	3.12	충분
	대화3배수통문	001+910	우	1	-	2.0	1.5	2.19	3.00	0.81	충분
	대화4배수통문	002+010	우	2	-	2.5	2.0	7.34	10.00	2.66	충분
	오정1배수통관	002+380	우	1	0.6	-	-	0.22	0.28	0.06	충분
	오정2배수통관	002+650	우	1	0.6	-	-	0.22	0.28	0.06	충분
	오정3배수통관	002+790	우	1	0.8	-	-	0.66	0.50	-0.15	1.0*1
	용두1배수통문	002+970	우	1	-	1.5	1.5	2.74	2.25	-0.49	2.0*1.5*1
	용두1배수통관	003+525	우	1	0.8	-	-	0.66	0.50	-0.15	1.0*1
	용두2배수통문	003+885	우	1	-	2.0	1.5	3.72	3.00	-0.72	2.0*2.0*1
	용두3배수통문	004+375	우	1	-	1.5	1.5	2.08	2.25	0.17	충분
	용두4배수통문	004+560	우	1	-	3.0	3.0	8.32	9.00	0.68	충분
	용두5배수통문	004+880	우	2	-	6.0	3.0	33.57	36.00	2.43	충분
	용두2배수통관	005+200	우	1	0.6	-	-	0.21	0.28	0.07	충분
	용두6배수통문	005+280	우	1	-	1.0	1.0	0.86	1.00	0.14	충분
	태평1배수통관	005+685	우	1	0.6	-	-	1.18	0.28	-0.90	1.5*1.5*1
	태평2배수통관	005+830	우	1	0.7	-	-	1.62	0.38	-1.23	1.5*1.5*1
	태평3배수통관	005+940	우	1	0.6	-	-	1.18	0.28	-0.90	1.5*1.5*1

관계자 외 열람

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
유등천	태평4배수통관	005+980	우	1	0.8	-	-	2.05	0.50	-1.54	1.5*1.5*1
	태평5배수통관	006+050	우	1	0.6	-	-	1.18	0.28	-0.90	1.5*1.5*1
	태평1배수통문	006+150	우	1	-	2.0	1.5	11.62	3.00	-8.62	2.5*2.5*2
	태평2배수통문	006+608	우	1	-	1.5	1.5	4.45	2.25	-2.20	2.5*2.0*1
	태평3배수통문	006+905	우	1	-	1.5	1.5	4.45	2.25	-2.20	2.5*2.0*1
	유천1배수통관	007+110	우	1	1.0	-	-	1.52	0.79	-0.73	1.5*1.5*1
	유천1배수통문	007+150	우	1	-	1.0	1.0	2.06	1.00	-1.06	1.5*1.5*1
	유천2배수통관	007+575	우	1	1.0	-	-	1.52	0.79	-0.73	1.5*1.5*1
	유천2배수통문	007+705	우	1	-	2.5	1.5	3.01	3.75	0.74	충분
	유천3배수통문	007+870	우	1	-	2.6	2.1	4.40	5.46	1.06	충분
	유천4배수통문-1	008+360	우	1	-	1.0	1.0	0.75	1.00	0.25	충분
	유천4배수통문-2	008+360	우	1	-	1.4	1.5	1.72	2.10	0.38	충분
	산성1배수통관	008+880	우	1	1.0	-	-	0.64	0.79	0.15	충분
	산성1배수통문	008+970	우	1	-	1.6	1.0	1.48	1.60	0.12	충분
	산성2배수통문	009+210	우	2	-	2.5	2.5	12.74	12.50	-0.24	3.0*2.5*2
	산성3배수통문	009+850	우	1	-	1.2	1.2	1.27	1.44	0.17	충분
	안영우1배수통관	009+865	우	1	1.2	-	-	0.96	1.13	0.17	충분
	안영우2배수통관	010+335	우	1	0.6	-	-	0.21	0.28	0.07	충분
	안영우3배수통관	010+715	우	1	1.2	-	-	0.95	1.13	0.18	충분
	안영우4배수통관	010+755	우	1	0.5	-	-	0.11	0.20	0.09	충분
	안영우1배수통문	011+540	우	1	-	2.0	1.5	2.55	3.00	0.45	충분
	침산우1배수통관	012+740	우	1	1.0	-	-	0.41	0.79	0.37	충분
	침산우2배수통관	013+050	우	1	0.6	-	-	0.21	0.28	0.08	충분
	침산우3배수통관	013+235	우	1	0.6	-	-	0.21	0.28	0.08	충분
	침산우4배수통관	014+590	우	1	1.2	-	-	0.82	1.13	0.31	충분
	침산우5배수통관	014+610	우	1	0.6	-	-	0.21	0.28	0.08	충분
미호천	문주배수통문	04+490	좌	2	-	2.5	2.0	6.58	10.00	3.42	문주배수장(기)
	예양1배수통문	07+560	좌	1	-	2.5	2.0	1.75	5.00	3.25	충분
	대한펄프배수통관	12+480	좌	1	1.0	-	-	0.62	0.79	0.17	충분
	황탄제1배수통관	12+690	좌	1	0.6	-	-	0.23	0.28	0.05	충분
	황탄제2배수통관	12+730	좌	1	1.2	-	-	0.85	1.13	0.28	충분
	황탄제3배수통관	12+740	좌	1	1.0	-	-	0.18	0.79	0.61	충분
	황탄제4배수통관	12+780	좌	1	1.0	-	-	0.18	0.79	0.61	충분
	황탄제5배수통관	12+830	좌	1	0.6	-	-	0.18	0.28	0.10	충분
	황탄3배수통문	13+110	좌	1	-	2.0	2.0	1.39	4.00	2.61	충분
	황탄2배수통문	13+800	좌	3	-	2.0	2.0	9.59	12.00	2.41	충분
	월탄배수통관	14+780	좌	1	0.6	-	-	0.12	0.28	0.16	충분
	석화2배수통문	16+120	좌	9	-	2.0	2.0	55.56	36.00	-19.56	석화2배수장(기)
	석화배수통관	17+050	좌	1	0.8	-	-	0.45	0.50	0.06	충분
	석화1배수통문	17+630	좌	3	-	2.0	2.0	3.67	12.00	8.33	석화1배수장(기)
	하신대배수통관	23+690	좌	1	0.6	-	-	0.42	0.28	-0.13	1.0*1
	상신대배수통관	24+540	좌	1	0.6	-	-	0.42	0.28	-0.13	1.0*1
	정북배수통문(아치)	27+900	좌	2	-	2.0	1.9	4.20	7.60	3.40	정북2배수장(기)

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하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
미호천	오동배수통문(아치)	29+930	좌	2	-	2.0	2.0	4.15	8.00	3.85	정북1배수장(기)
	입상배수통문	32+530	좌	2	-	2.0	2.0	1.46	8.00	6.54	입상배수장(기)
	화죽배수통문	33+200	좌	3	-	2.0	2.0	5.55	12.00	6.45	화죽배수장(기)
	석성1배수통문	38+050	좌	1	-	2.0	2.0	3.20	4.00	0.80	석성배수장(기)
	진암배수통문	39+110	좌	1	-	2.0	1.7	0.86	3.40	2.54	충분
	월산배수통관	00+210	우	1	0.6	-	-	0.09	0.28	0.19	충분
	월산배수통문	02+700	우	2	-	3.0	3.0	15.27	18.00	2.73	충분
	보통배수통문	04+150	우	1	-	2.0	2.0	2.48	4.00	1.52	충분
	번암배수통문	08+210	우	2	-	1.5	1.5	6.80	4.50	-2.30	번암배수장(기)
	강외2배수통관	08+630	우	1	0.8	-	-	0.10	0.50	0.40	충분
	강외3배수통관	08+710	우	1	0.8	-	-	0.10	0.50	0.40	충분
	강외1배수통관	09+060	우	1	0.8	-	-	0.10	0.50	0.40	충분
	서평배수통문	09+130	우	4	-	2.0	2.0	10.61	16.00	5.39	서평배수장(기)
	황탄배수통문	11+880	우	2	-	3.0	3.0	19.32	18.00	-1.32	서평2배수장(기)
	쌍청배수통문	16+630	우	5	-	2.0	2.0	20.63	20.00	-0.63	쌍청배수장(기)
	옥산배수통문	19+970	우	1	-	2.5	2.0	3.36	5.00	1.64	옥산양배수장(기)
	가락2배수통문	21+430	우	1	-	3.0	2.5	4.43	7.50	3.07	충분
	가락배수통문	22+500	우	1	-	3.0	2.5	3.67	7.50	3.83	충분
	국사배수통관1	22+620	우	1	1.2	-	-	0.06	1.13	1.07	충분
	국사배수통관2	0	0	1	0.8	-	-	0.04	0.50	0.46	충분
	국사1배수통문	23+020	우	1	-	2.5	2.5	2.10	6.25	4.15	충분
	국사2배수통문	23+220	우	3	-	3.0	2.5	6.76	22.50	15.74	충분
	소로3배수통문	23+945	우	1	-	1.5	1.5	2.07	2.25	0.18	충분
	소로배수통관	23+970	우	1	0.6	-	-	0.26	0.28	0.03	충분
	소로2배수통문	24+310	우	2	-	2.0	2.0	7.43	8.00	0.57	충분
	소로1배수통문	24+630	우	2	-	2.0	2.0	2.91	8.00	5.09	충분
	남촌4배수통문	24+840	우	6	-	3.0	2.5	16.69	45.00	28.31	충분
	남촌,남촌2배수통문1	25+320	우	6	-	3.0	2.0	17.29	36.00	18.71	충분
	남촌,남촌2배수통문2	0	우	3	-	2.0	2.0	6.30	12.00	5.70	충분
	남촌1배수통문	25+630	우	1	-	2.2	2.2	1.60	4.84	3.24	충분
	남촌3배수통문	26+040	우	1	-	3.0	2.5	3.84	7.50	3.66	충분
	신평배수통문	28+620	우	5	-	2.0	2.0	8.90	20.00	11.10	신평양배수장(기)
	탑리배수통문(아치)	31+070	우	1	-	2.0	2.0	1.49	4.00	2.51	충분
	가곡배수통문	31+230	우	1	-	2.5	2.0	1.08	5.00	3.92	충분
	석우배수통문	31+360	우	4	-	2.0	2.0	9.33	16.00	6.67	가곡배수장공사중(기)
	괴정배수통문	33+010	우	1	-	1.5	1.5	1.68	2.25	0.57	충분
	학소1배수통문	34+760	우	2	-	2.0	1.8	0.92	7.20	6.28	학소배수장(기)
	학소2배수통문	35+180	우	1	-	3.0	2.5	1.18	7.50	6.32	충분
	유리배수통문	36+000	우	2	-	1.5	1.5	1.05	4.50	3.45	유리배수장(기)
	화산배수통문	36+980	우	1	-	3.0	2.5	1.48	7.50	6.02	충분
	여천2배수통문	38+440	우	3	-	2.5	2.5	17.33	18.75	1.42	충분
	여천1배수통관	38+700	우	1	0.6	-	-	0.02	0.28	0.27	충분
	여천2배수통관	38+840	우	1	0.8	-	-	0.02	0.50	0.49	충분

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경(D)	폭(B)	높이(H)	소요단면(㎡)	현 단면(㎡)	과·부족(㎡)	
	여천3배수통관	39+040	우	1	0.8	-	-	0.43	0.50	0.07	충분
논산천	북옥배수통문	00+360	좌	2	-	1.5	1.5	3.75	4.50	0.75	동흥배수장(기)
	하신배수통문	01+595	좌	2	-	2.5	2.5	4.48	12.50	8.02	충분
	장화(상신)배수통문	02+545	좌	1	-	1.2	1.2	0.67	1.44	0.77	충분
	채운배수통문	04+345	좌	4	-	4.0	4.0	287.47	64.00	-223.47	채운배수장(기)
	해창배수통문	05+140	좌	2	-	2.5	2.5	19.75	12.50	-7.25	봉화배수장(기)
	논산배수통문	06+825	좌	2	-	3.2	3.2	22.68	20.48	-2.20	등화배수장(기)
	종포배수통문	11+610	좌	1	-	3.0	3.0	7.24	9.00	1.76	지산배수장(기)
	성덕배수통문	14+505	좌	2	-	1.5	1.5	3.62	4.50	0.88	지산배수장(기)
	개척배수통문	00+800	우	2	-	2.5	2.5	3.02	12.50	9.48	충분
	불암배수통문	01+440	우	1	-	2.0	2.0	2.50	4.00	1.50	충분
	대장배수통문	02+860	우	1	-	1.5	1.7	1.79	2.55	0.76	충분
	삼호배수통문	04+295	우	3	-	3.0	3.0	8.89	27.00	18.11	원봉배수장(기)
	오산배수통문	05+515	우	1	-	2.0	2.0	1.93	4.00	2.07	충분
	원봉배수통문	07+375	우	2	-	2.1	2.1	3.39	8.82	5.43	충분
	산동배수통문	08+810	우	1	-	1.2	1.5	1.17	1.80	0.63	충분
	왕덕배수통문	09+480	우	1	-	3.0	3.0	0.52	9.00	8.48	부인배수장(기)
	아호2배수통문	11+730	우	1	-	1.5	1.5	0.65	2.25	1.60	아호배수장(기)
	아호1배수통문	12+120	우	1	-	2.8	2.3	2.53	6.44	3.91	아호배수장(기)
	신교배수통문	13+265	우	1	-	2.3	2.0	2.35	4.60	2.25	충분
	탑정배수통문	14+435	우	1	-	1.3	1.3	1.06	1.69	0.63	충분
노성천	계전배수통문	02+350	좌	1	-	1.2	1.2	3.87	1.44	-2.43	부인배수장(기)
	숙진배수통문	04+920	좌	2	-	1.8	1.8	2.28	6.48	4.20	숙진배수장(기)
	천동배수통문	01+715	우	2	-	1.0	1.0	3.03	2.00	-1.03	2.0*2.0*1(금회반영)
	거교배수통문	03+375	우	2	-	1.0	1.0	1.82	2.00	0.18	충분
	마두배수통문	03+510	우	1	-	2.3	2.0	1.09	4.60	3.51	충분
	항월배수통문	04+850	우	2	-	3.1	3.1	12.21	19.22	7.01	충분
	항월배수통관	04+865	우	2	1.0	-	-	0.17	1.57	1.41	충분
강경천	남교배수통관	01+210	좌	1	0.6	-	-	0.17	0.28	0.11	충분
	해경(남교)배수통문	01+460	좌	2	-	2.0	2.0	4.17	8.00	3.83	충분
	산양배수통문	01+685	좌	1	-	2.0	2.0	2.04	4.00	1.96	충분
	제내배수통문	02+890	좌	2	-	0.8	2.0	1.62	3.20	1.58	강경배수장(기)
	무형1배수통관	04+370	좌	1	0.8	-	-	0.13	0.50	0.37	충분
	무형1배수통문	04+610	좌	1	-	1.2	1.2	0.16	1.44	1.28	충분
	무형2배수통관	04+805	좌	1	0.8	-	-	0.19	0.50	0.31	충분
	무형3배수통관	04+970	좌	1	0.6	-	-	0.17	0.28	0.11	충분
	무형4배수통관	05+060	좌	1	0.6	-	-	0.09	0.28	0.20	충분
	무형5배수통관	05+170	좌	1	0.8	-	-	0.26	0.50	0.25	충분
	무형2배수통문	05+285	좌	1	-	1.2	1.2	0.22	1.44	1.22	충분
	무형6배수통관	05+515	좌	1	0.6	-	-	0.16	0.28	0.12	충분
	무형7배수통관	05+630	좌	1	1.0	-	-	0.19	0.79	0.59	충분
	무형8배수통관	05+915	좌	1	0.8	-	-	0.19	0.50	0.31	충분
	무형9배수통관	06+140	좌	1	0.8	-	-	0.20	0.50	0.30	충분

하천	배수시설명	측 점	안별	기존배수시설(m)				단 면 검 토			요증설규모 B(m)*H(m)*련 D(m)*련
				련수	직경 (D)	폭 (B)	높이 (H)	소요단면 (㎡)	현 단면 (㎡)	과·부족 (㎡)	
강	무형10배수통관	06+450	좌	1	0.8	-	-	0.13	0.50	0.37	충분
경	채운배수통관	01+160	우	1	0.6	-	-	0.13	0.28	0.15	충분
천	삼거배수통문	01+790	우	1	-	2.0	2.0	3.91	4.00	0.09	사포배수장(기)
	사포배수통문	02+990	우	3	-	2.0	2.0	11.72	12.00	0.28	사포배수장(기)
	입석배수통문	04+900	우	2	-	2.0	2.0	7.82	8.00	0.18	사포배수장(기)
	포변배수통문	06+570	우	1	-	2.0	2.0	1.62	4.00	2.38	충분

주) "요증설규모"란에 배수장이 명시된 것은 배수장 부속 배수시설로 별도의 증설계획이 불필요한 시설임

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2.3 교량의 홍수여유고 및 경간장 검토

건설교통부

▣ 교량 능력 검토

Clearance 및 경간장 검토

하천명	교량명	측점 (No.)	Clearance 검토							경간장 검토			교량 총연장 (m)	비고
			계획홍수량 (m^3/sec)	H.W.L. (EL.m)	여유고 (m)	H.W.L. +여유고 (EL.m)	BEAM 하단표고 (EL.m)	과부족 (m)	검토	기준 경간장 (m)	경간장	검토		
금	금강대교	004+580	14,230	4.93	2.0	6.93	10.60	3.67	OK	70	50	NG	1,650.00	
	웅포대교	017+380	14,160	6.47	2.0	8.47	9.91	1.44	OK	70	68	NG	1,226.00	
강	황산대교	032+920	14,000	8.89	2.0	10.89	10.45	-0.44	NG	70	50	NG	1,050.00	
	백제교(구)	052+160	12,920	12.34	2.0	14.34	13.63	-0.71	NG	70	30~50.2	NG	812.72	
	백제교(신)	052+180	12,920	12.34	2.0	14.34	13.79	-0.55	NG	70	50~60	NG	830.00	
	백마강교	056+420	12,920	13.37	2.0	15.37	15.14	-0.23	NG	70	50~75	NG	725.00	
	왕진교	061+900	12,450	14.67	2.0	16.67	17.05	0.38	OK	70	55~60	NG	777.00	
	웅진대교	080+480	11,800	19.40	2.0	21.40	-	-	-	70	55~60	NG	1,200.00	공사중
	백제큰길금강교	084+700	11,800	20.50	2.0	22.50	20.94	-1.56	NG	70	17~70	OK	740.00	
	금강교	085+070	11,600	20.55	2.0	22.55	20.07	-2.48	NG	70	24~67	NG	513.00	
	공주대교	086+500	11,600	20.74	2.0	22.74	22.03	-0.71	NG	70	60	NG	480.00	
	신공주대교	088+030	11,600	20.13	2.0	22.13	25.90	3.77	OK	70	62~67	NG	680.00	
	청벽대교	093+510	11,530	22.47	2.0	24.47	23.87	-0.60	NG	70	50	NG	700.00	

하천명	교량명	측점 (No.)	Clearance 검토							경간장 검토			교량 총연장 (m)	비고
			계획홍수량 (m^3/sec)	H.W.L. (EL.m)	여유고 (m)	H.W.L. +여유고 (EL.m)	BEAM 하단표고 (EL.m)	과부족 (m)	검토	기준 경간장 (m)	경간장	검토		
금	불티교공사중	095+200	11,530	23.19	2.0	25.19	25.09	-0.10	NG	70	45.8~90	NG	435.00	
	금남교	101+870	11,360	24.59	2.0	26.59	26.11	-0.48	NG	70	55	NG	650.00	
강	고속철도	126+750	5,920	31.13	1.5	32.63	45.10	12.47	OK	49.6	40	NG	-	
	금강1교	126+800	5,920	31.16	1.5	32.66	33.83	1.17	OK	49.6	40	NG	320.00	
	금강철교(상행)	127+720	5,920	31.51	1.5	33.01	38.64	5.63	OK	49.6	20~62	OK	282.00	
	금강철교(하행)	127+740	5,920	31.52	1.5	33.02	37.84	4.82	OK	49.6	20~62	OK	282.00	
	현도교	127+890	5,920	31.58	1.5	33.08	36.95	3.87	OK	49.6	50	OK	300.00	
금	고속도로신설교량 (상행)-공사중	223+580	6,100	90.37	1.5	91.87	92.80	0.93	OK	50.5	50	NG	400.00	
강	고속도로신설교량 (하행)-공사중	223+615	6,100	90.39	1.5	91.89	93.10	1.21	OK	50.5	50	NG	-	
상	금강3교	223+645	6,100	90.42	1.5	91.92	92.84	0.92	OK	50.5	48.5	NG	263.50	
류	금강2교	225+590	6,100	91.65	1.5	93.15	93.91	0.76	OK	50.5	30	NG	300.00	
	고속도로신설교량	226+275	6,100	92.33	1.5	93.83	-	-	-	50.5	45~50	NG	475.50	공사중
	경부선철도신설교	235+420	6,100	98.18	1.5	99.68	-	-	-	50.5	-	-	-	공사중
	고속철도신설교	235+450	6,100	98.20	1.5	99.70	-	-	-	50.5	-	-	-	공사중
	이원대교	235+710	6,060	98.32	1.5	99.82	99.02	-0.80	NG	50.3	30	NG	300.00	

하천명	교량명	측점 (No.)	Clearance 검토							경간장 검토			교량 총연장 (m)	비고
			계획홍수량 (m^3/sec)	H.W.L. (EL.m)	여유고 (m)	H.W.L. +여유고 (EL.m)	BEAM 하단표고 (EL.m)	과부족 (m)	검토	기준 경간장 (m)	경간장	검토		
금강상류	고속전철교(공사중)	241+055	6,060	101.37	1.5	102.87	-	-	-	50.3	-	-	-	공사중
	고속전철교(공사중)	244+870	4,670	103.57	1.2	104.77	-	-	-	43.35	40	NG	880.00	공사중
	앙강교	246+330	4,520	104.38	1.2	105.58	107.18	1.60	OK	42.6	12~48	NG	215.50	
갑천	불무교	001+015	3,860	30.72	1.2	31.92	31.46	-0.76	NG	39.3	50	OK	435.00	
	신구교(신)	002+535	3,860	30.94	1.2	32.14	31.18	-0.96	NG	39.3	55	OK	330.00	
	용신교	003+915	3,790	31.40	1.2	32.60	31.91	-0.69	NG	38.95	55	OK	321.50	
	호남고속도로교	007+130	3,790	33.52	1.2	34.72	36.61	1.89	OK	38.95	40	OK	395.00	
	갑천교(폐교량)	007+150	3,790	33.54	1.2	34.74	37.23	2.49	OK	38.95	25	NG	324.50	
	호남고속도로교	007+160	3,790	33.62	1.2	34.82	36.84	2.02	OK	38.95	40	OK	395.00	
	원촌교	010+105	3,770	36.60	1.2	37.80	37.67	-0.13	NG	38.85	32	NG	256.00	
	둔산대교	011+725	1,910	38.26	1.0	39.26	39.89	0.63	OK	29.55	13~30	OK	396.00	
	엑스포다리	012+210	1,910	38.40	1.0	39.40	38.99	-0.41	NG	29.55	40~100	OK	330.00	
	대덕대교	012+960	1,910	38.56	1.0	39.56	40.56	1.00	OK	29.55	20	NG	360.00	
	갑천대교	015+375	1,730	41.80	1.0	42.80	42.10	-0.70	NG	28.65	37	OK	222.00	
	만년교	016+535	1,730	44.40	1.0	45.40	44.94	-0.46	NG	28.65	30	OK	207.50	

하천명	교량명	측점 (No.)	Clearance 검토							경간장 검토			교량 총연장 (m)	비고
			계획홍수량 (m^3/sec)	H.W.L. (EL.m)	여유고 (m)	H.W.L. +여유고 (EL.m)	BEAM 하단표고 (EL.m)	과부족 (m)	검토	기준 경간장 (m)	경간장	검토		
갑천	신가수원교	021+745	1,530	52.28	1.0	53.28	53.01	-0.27	NG	27.65	36	OK	180.50	
	구가수원교	021+850	1,530	52.28	1.0	53.28	53.12	-0.16	NG	27.65	12	NG	143.90	
	가수원철교	021+895	1,530	52.53	1.0	53.53	53.90	0.37	OK	27.65	-	NG	160.00	
	모세골교(하류)	023+835	1,530	55.28	1.0	56.28	62.82	6.54	OK	27.65	30	OK	-	
	모세골교(상류)	023+880	1,530	55.51	1.0	56.51	62.82	6.31	OK	27.65	30	OK	-	
	괴곡철교	026+125	1,350	61.01	1.0	62.01	64.12	2.11	OK	26.75	16	NG	160.00	
	괴곡교	026+175	1,350	61.23	1.0	62.23	61.47	-0.76	NG	26.75	25	NG	175.00	
	물안리다리	030+345	1,250	68.65	1.0	69.65	69.15	-0.50	NG	26.25	15	NG	101.00	
	봉곡교	031+470	1,150	71.36	1.0	72.36	69.85	-2.51	NG	25.75	13	NG	104.00	
	봉곡2교	033+315	1,150	74.62	1.0	75.62	75.27	-0.35	NG	25.75	14.9	NG	135.00	
유등천	천변고속화도로교 (공사중)	000+000	1,920	38.14	1.0	39.14	39.30	0.16	OK	29.6	45	OK	765.00	
	한밭대교	001+860	1,920	39.25	1.0	40.25	41.00	0.75	OK	29.6	36~38	OK	342.00	
	상천교	002+790	1,310	40.28	1.0	41.28	41.10	-0.18	NG	26.55	40	OK	164.00	
	용문교	003+255	1,310	41.25	1.0	42.25	42.26	0.01	OK	26.55	30	OK	228.00	
	수침교	004+500	1,310	44.60	1.0	45.60	45.92	0.32	OK	26.55	36	OK	168.00	

하천명	교량명	측점 (No.)	Clearance 검토							경간장 검토			교량 총연장 (m)	비고
			계획홍수량 (m^3/sec)	H.W.L. (EL.m)	여유고 (m)	H.W.L. +여유고 (EL.m)	BEAM 하단표고 (EL.m)	과부족 (m)	검토	기준 경간장 (m)	경간장	검토		
유등천	가장교	005+575	1,310	46.80	1.0	47.80	47.92	0.12	OK	26.55	25	NG	200.00	
	태평교	006+130	1,310	47.73	1.0	48.73	48.74	0.01	OK	26.55	20~23	NG	206.00	
	유등교	007+010	1,150	49.81	1.0	50.81	52.91	2.10	OK	25.75	24~32	OK	168.00	
	도마교	007+575	1,150	50.93	1.0	51.93	52.78	0.85	OK	25.75	25	NG	175.00	
	유등철도교(하류)	007+820	1,150	51.87	1.0	52.87	53.32	0.45	OK	25.75	13~14	NG	160.80	
	유등철도교(상류)	007+830	1,150	52.00	1.0	53.00	53.40	0.40	OK	25.75	13~14	NG	160.80	
	버드내다리	008+390	1,150	53.28	1.0	54.28	54.78	0.50	OK	25.75	50	OK	150.00	
	복수교	009+010	1,150	56.37	1.0	57.37	56.70	-0.67	NG	25.75	22	NG	154.00	
	안영교	010+735	1,150	60.94	1.0	61.94	62.33	0.39	OK	25.75	30	OK	135.00	
	만성교	011+520	1,000	64.69	1.0	65.69	64.16	-1.53	NG	25	60	OK	110.00	
	칭산교	013+230	1,000	67.84	1.0	68.84	69.69	0.85	OK	25	25	OK	100.00	
	무수1교	013+275	1,000	68.05	1.0	69.05	76.10	7.05	OK	25	42.8~49.7	OK	-	
	수련교	014+590	880	71.96	1.0	72.96	72.76	-0.20	NG	24.4	30	OK	120.00	
미호천	남면-동면도로교	00+920	6,820	25.65	1.5	27.15	27.41	0.26	OK	54.1	50	NG	390.00	
	수몰두강다리(하행)	09+090	6,230	27.63	1.5	29.13	27.88	-1.25	NG	51.15	19.9	NG	438.00	

하천명	교량명	측점 (No.)	Clearance 검토							경간장 검토			교량 총연장 (m)	비고
			계획홍수량 (m^3/sec)	H.W.L. (EL.m)	여유고 (m)	H.W.L. +여유고 (EL.m)	BEAM 하단표고 (EL.m)	과부족 (m)	검토	기준 경간장 (m)	경간장	검토		
미호천	수몰두강다리(상행)	09+120	6,230	27.63	1.5	29.13	28.00	-1.13	NG	51.15	20	NG	439.20	
	신미호교	09+840	6,230	27.86	1.5	29.36	27.24	-2.12	NG	51.15	9~18	NG	432.00	
	고속철도교	13+780	6,230	28.97	1.5	30.47	43.40	12.93	OK	51.15	40	NG		
	미호천교	15+830	6,190	29.38	1.5	30.88	30.37	-0.51	NG	50.95	30	NG	360.00	
	미호철교(충북상행)	15+950	6,190	29.48	1.5	30.98	30.15	-0.83	NG	50.95	13.55	NG	352.30	
	미호철교(충북하행)	15+960	6,190	29.56	1.5	31.06	30.07	-0.99	NG	50.95	27	NG	353.00	
	미호천교(경부)	19+530	4,990	31.58	1.5	33.08	32.59	-0.49	NG	44.95	50	OK	430.00	
	폐교량(구경부선)	19+600	4,990	31.72	1.5	33.22	32.48	-0.74	NG	44.95	25	NG	401.00	
	옥산교	20+770	4,990	32.39	1.5	33.89	33.00	-0.89	NG	44.95	30	NG	360.00	
	남촌교(중부)	25+710	4,880	34.67	1.5	36.17	37.71	1.54	OK	44.4	50	OK	480.00	
	공항대교	30+390	4,140	36.89	1.5	38.39	39.95	1.56	OK	40.7	48	OK	524.00	
	오창-청주도로교	31+680	4,140	37.37	1.5	38.87	41.15	2.28	OK	40.7	60	OK	660.00	
	팔결교	32+150	4,140	37.85	1.5	39.35	39.16	-0.19	NG	40.7	18~21.92	NG	463.35	
	신여암교	39+090	3,310	43.42	1.5	44.92	44.54	-0.38	NG	70	57.1	NG	342.50	
	(구)여암교	39+485	3,310	43.92	1.5	45.42	44.77	-0.65	NG	70	20	NG	220.00	

하천명	교량명	측점 (No.)	Clearance 검토							경간장 검토			교량 총연장 (m)	비고
			계획홍수량 (m^3/sec)	H.W.L. (EL.m)	여유고 (m)	H.W.L. +여유고 (EL.m)	BEAM 하단표고 (EL.m)	과부족 (m)	검토	기준 경간장 (m)	경간장	검토		
논산천	강경대교(구)	00+835	2,830	9.21	1.2	10.41	8.22	-2.20	NG	34.15	13.2	NG	303.60	
	강경대교(신)	00+845	2,830	9.22	1.2	10.42	9.34	-1.08	NG	34.15	30	NG	300.00	
	천안~논산간고속도로교	04+265	2,830	9.65	1.2	10.85	11.00	0.15	OK	34.15	50	OK	550.00	공사중
	논산신대교	07+735	2,620	10.15	1.2	11.35	10.94	-0.41	NG	33.1	45~50	OK	480.00	
	논산대교	08+285	2,620	10.25	1.2	11.45	9.99	-1.47	NG	33.1	15~30.5	NG	272.00	
	논산철교(상행)	11+205	1,620	10.80	1.0	11.80	10.46	-1.34	NG	28.1	13.5	NG	216.00	
	논산철교(하행)	11+220	1,620	10.82	1.0	11.82	10.98	-0.84	NG	28.1	13.5	NG	216.00	
	아호교	11+380	1,620	10.88	1.0	11.88	10.15	-1.73	NG	28.1	30.5	OK	236.00	
	계백교	11+430	1,620	10.89	1.0	11.89	11.53	-0.36	NG	28.1	40	OK	280.00	
노성천	노성대교	00+565	1,800	10.67	1.0	11.67	13.46	1.79	OK	29	50	OK	300.60	
강경천	하강경교(구)	0+275	980	9.16	1.0	10.16	9.35	-0.81	NG	24.9	13	NG	143.00	
	하강경교(신)	0+290	980	9.17	1.0	10.17	9.38	-0.79	NG	24.9	25	OK	150.00	
	상강경교(신)	1+105	980	9.26	1.0	10.26	8.63	-1.64	NG	24.9	20	NG	140.00	
	상강경교(구)	1+115	980	9.28	1.0	10.28	8.33	-1.95	NG	24.9	6~12	NG	150.00	
	강경철교(상행)	1+355	980	9.33	1.0	10.33	8.64	-1.69	NG	24.9	8.96~12.11	NG	126.42	

하천명	교량명	측점 (No.)	Clearance 검토							경간장 검토			교량 총연장 (m)	비고
			계획홍수량 (m^3/sec)	H.W.L. (EL.m)	여유고 (m)	H.W.L. +여유고 (EL.m)	BEAM 하단표고 (EL.m)	과부족 (m)	검토	기준 경간장 (m)	경간장	검토		
강	강경철교(하행)	1+375	980	9.35	1.0	10.35	8.32	-2.03	NG	24.9	8.96~12.11	NG	123.27	
경	강경대교	1+425	980	9.36	1.0	10.36	10.60	0.24	OK	24.9	28	NG	500.00	
천	제내교(구)	3+415	980	9.56	1.0	10.56	7.64	-2.93	NG	24.9	14.5~15	NG	148.00	
	제내교(신)	3+475	980	9.61	1.0	10.61	6.98	-3.63	NG	24.9	29	OK	178.00	
	신용교	4+085	950	9.66	1.0	10.66	8.70	-1.96	NG	24.75	11.5	NG	111.20	
	선리교	4+845	950	9.78	1.0	10.78	10.10	-0.68	NG	24.75	23	NG	140.00	
	작산교	5+385	950	9.85	1.0	10.85	9.05	-1.80	NG	24.75	11.5	NG	126.50	

3. 개수계획 및 지구현황

3.1 지구별 개수계획

3.2 축제지구 현황

3.3 보축지구 현황

건설교통부

3.1 지구별 개수계획 (총괄표)

하천	부도 번호	지구명	좌·우 안별	구 분	제 방		고수호안		저수호안		구조물		개략사업비 (백만원)	비 고
					측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	규 모		
금강	K008	마 서	우	축 제	1+430 ~ 1+470	60	1+430 ~ 1+470	60					708	
	K008	망 월	우	보 축	1+480 ~ 1+680	140							65	
	K006 K009	성 덕	좌	축 제	1+510 ~ 2+700	1,140	1+510 ~ 2+700	1,140			1+700 (배수문) 2+680 (배수문)	1.5×1.5×1련 2.5×2.5×2련	3,005	
	K009	항 동	좌	배수문							2+850 (배수문)	3.0×2.5×2련		
	K014	나 포	좌	보 축	4+990 ~ 5+040	165	4+990 ~ 5+040	60			4+960 (배수문) 5+010 (배수문)	4.0×3.0×4련 2.0×2.0×2련	57	도로 150m
	K022 K025	나포2	좌	보 축	9+640 ~ 10+310	680	9+930 ~ 10+310	370			9+940 (배수문) 10+180 (배수관)	3.0×3.0×3련 D=1,000×1련	840	도로 (285m)

<계속>

하천	부도 번호	지구명	좌·우안별	구 분	제 방		고수호안		저수호안		구조물		개략사업비 (백만원)	비 고
					측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	규 모		
금강	K030 K032 K034	응 포	좌	보 축 및 저 호	13+000 ~ 14+300	1,710	13+000 ~ 14+300	1,710	14+000 ~ 14+270 15+120 ~ 15+840	360 650			654 989	
	K035 K037	양화2	우	보 축	17+100 ~ 17+680	630	17+100 ~ 17+680	630					691	
	K037 K039	양 화	우	보 축	17+910 ~ 18+450	710	17+910 ~ 18+450	710					852	
	K040 K043 K044	제 성	좌	축 제	18+470 ~ 22+280	2,860	18+470 ~ 22+280	2,860			18+645 (배수문) 18+820 (배수관) 19+080 (배수관) 19+335 (배수관) 19+535 (배수관) 19+730 (배수관) 19+990 (배수관) 20+230 (배수관)	3.0×3.0×3련 D=1,000×1련 D=1,000×1련 D=1,000×1련 D=1,000×1련 D=1,000×1련 D=1,000×1련 D=1,000×1련	30,613	

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하천	부도 번호	지구명	좌·우 안별	구 분	제 방		고수호안		저수호안		구조물		개략사업비 (백만원)	비 고
					측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	규 모		
금강	K040 K043 K044	제 성	좌	축 제							20+440 (배수관) 20+740 (배수관) 21+045 (배수관) 21+535 (배수관) 21+905 (배수문) 21+910 (배수관)	D=1,000×1련 D=1,000×1련 D=1,000×1련 D=1,000×1련 2.5×2.0×1련 D=1,000×1련		
	K039 K041	유 왕	우	축 제	19+170 ~ 19+500	350	19+170 ~ 19+500	350			19+175 (배수관) 19+380 (배수관)	D=1,000×1련 D=1,000×1련	1,118	
	K044 K045	임 천	우	보 축	21+450 ~ 22+200	1,140	21+450 ~ 22+200	1,140					1,733	
	K045 K048 K051	임천2	우	보 축 및 저 호	22+390 ~ 24+810	2,060	22+390 ~ 24+810	2,060	22+330 ~ 23+130	900			3,734 974	
	K046 K049	성 당	좌	보 축	24+090 ~ 24+240	430	24+090 ~ 24+240	430			24+120 (배수문)	2.5×2.5×3련	995	

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하천	부도 번호	지구명	좌·우안별	구 분	제 방		고수호안		저수호안		구조물		개략사업비 (백만원)	비 고
					측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	규 모		
금강	K051 K052 K055	간 대	우	축 제 및 보 축	25+770 ~ 27+530 27+580 ~ 27+630	2,930 (보축) 60 (축제)	25+770 ~ 27+530 27+580 ~ 27+630	2,930 60					751 6,568	
	K058,K059 K061,K062 K064	망 성	좌	저 호					29+820 ~ 32+410	3,540			4,341	
	K062 K063 K065	청 포	우	저 호 (하도정비)					31+090 ~ 33+820	2,620			12,340	
	K065	황 산	좌	보 축	33+010 ~ 33+350	450	33+010 ~ 33+350	450					995	
	K087	정고2	우	축 제	48+880 ~ 49+000	240	48+880 ~ 49+000	240					682	
	K089 K090 K092	외 리	우	보 축	49+730 ~ 51+410	2,645	49+730 ~ 51+410	2,645					4,240	
	K092 K093	규 암	우	보 축	51+410 ~ 52+070	840	51+410 ~ 52+070	840					3,042	
	K094 K095 K097	구 교	좌	보 축	52+190 ~ 54+410	1,830	52+190 ~ 54+410	1,830					3,396	

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하천	부도 번호	지구명	좌·우 안별	구 분	제 방		고수호안		저수호안		구조물		개략사업비 (백만원)	비 고
					측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	규 모		
금강	K093	라 복	우	보 축	52+190 ~ 52+400	330	52+190 ~ 52+400	330					1,201	
	K098,K100 K101,K102	정 동	좌	보 축	55+360 ~ 58+270	2,875	55+360 ~ 58+270	2,875					6,205	
	K130 K132	오 동	우	보 축	76+410 ~ 76+630	240	76+410 ~ 76+630	240					803	
	K134	보 흥	우	보 축	77+650 ~ 78+100	590	77+650 ~ 78+100	590					2,378	
	K144 K145	신 관	우	보 축 (친환경)	84+200 ~ 86+650	2,320	84+200 ~ 86+650	2,320					8,309	
	K144	금 성	좌	보 축	84+700 ~ 85+060	230	84+700 ~ 85+060	230			84+740 (교량)	B=18.0m L=150.0m	584 6,683	
	K147	옥 룡	좌	축 제	86+300 ~ 86+490	240	86+300 ~ 86+490	240			86+440 (배수문)	3.5×4.5×1련	665	
	K146 K147 K149	소 학	좌	축제	87+320 ~ 88+530	2,220	87+320 ~ 88+530	2,220			87+935 (배수문) 87+965 (배수문) 97+900 (교량)	2.0×2.0×1련 1.5×1.5×1련 B=11m L=40m	9,434	도로 (1,300m)

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하천	부도 번호	지구명	좌·우안별	구 분	제 방		고수호안		저수호안		구조물		개략사업비 (백만원)	비 고
					측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	규 모		
금강	K156	마 암	좌	축 제	93+460 ~ 93+810	360	93+460 ~ 93+810	360			93+625 (배수문)	4.0×3.0×5련	1,588	도로 (150m)
	K160 K162	원 봉	좌	축 제	98+080 ~ 98+750	650	98+080 ~ 98+750	650			98+700 (배수문)	2.0×2.0×1련	1,792	
	K160,K161 K162,K163	송 원	우	보 축	98+640 ~ 100+630	2,490	98+640 ~ 100+630	2,490					8,076	
	K165 K167	대 평	좌	보 축	100+240 ~ 101+860	1,880	100+240 ~ 101+860	1,880					4,080	
	K167 K168 K170	금 남	좌	보 축	102+420 ~ 104+260	1,985	102+420 ~ 104+260	1,985					2,480	
	K170 K171	석 삼	좌	축 제	104+260 ~ 105+080	820	104+260 ~ 105+080	820			104+590 (배수문) 104+825 (배수관) 105+025 (배수문)	3.0×2.5×3련 D=1,000×1련 1.5×1.5×1련	4,160	
	K193 K194	대 동	좌	축 제	121+260 ~ 122+890	1,560	121+260 ~ 122+890	1,560			121+360 (배수관) 121+605 (배수문) 121+840 (배수관) 122+025 (배수관) 122+680 (배수관)	D=1,000×1련 2.0×2.0×1련 D=1,000×1련 D=1,000×1련 D=1,000×1련	4,888	

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하천	부도 번호	지구명	좌·우안별	구 분	제 방		고수호안		저수호안		구조물		개략사업비 (백만원)	비 고
					측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	규 모		
금강	K196 K199	양 지	우	축 제	126+220 ~ 126+750	1,430	126+220 ~ 126+750	1,430			126+255 (배수관) 126+505 (배수관) 126+625 (배수문)	D=1,200×1련 D=1,000×1련 1.5×1.5×1련	7,073	
	K221 K223 K224	동 대	우	보 축	238+400 ~ 241+410	2,650	238+400 ~ 241+410	2,650					2,899	
	K224 K225 K226 K227	고 당	좌	축 제 및 보 축	241+020 ~ 241+510 241+510 ~ 243+685	540 (축제) 1,490 (보축)	241+020 ~ 243+685	2,030			241+035 (배수문)	1.5×1.5×1련	861 1,712	
	K227	심천1	우	배수시설							242+820 (배수문) 243+560 (배수문)	2.0×2.0×1련 2.0×2.0×1련		
갑천	GA11	신 대	우	보 축	7+625 ~ 8+235	590							878	
	GA11 GA12	문 지	좌	보 축	8+200 ~ 9+500	1,310	8+200 ~ 9+500	1,310					1,692	

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하천	부도 번호	지구명	좌·우 안별	구 분	제 방		고수호안		저수호안		구조물		개략사업비 (백만원)	비 고
					측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	규 모		
갑천	GA13	신대1	우	축 제	9+600 ~ 9+900	330	9+600 ~ 9+900	330			9+690	2.0×2.0×1련	3,058	
	GA15,GA16 GA17,GA18	삼 천	우	보 축 (친환경)	11+715 ~ 14+500	2,685	11+715 ~ 14+500	2,685					1,262	
	GA18 GA19	갈 마		보							14+540 (돌보)	L=130m	493	
	GA23,GA24 GA25	도 안	좌	보 축 (친환경)	18+815 ~ 20+785	2,035	18+815 ~ 20+785	2,035					510	
	GA25	정림1	우	축 제	20+835 ~ 20+950	135 (축제)	20+835 ~ 21+745	935			20+845 (배수관)	D=1,000×1련	314	
				및 보 축	20+950 ~ 21+745	800 (보축)							1,036	
	GA26	가수원1	좌	보 축	21+745 ~ 21+895	170					21+875 (배수관)	D=1,000×1련	72	
	GA27,GA28 GA29,GA30	괴 곡 좌 안	좌	보 축	23+600 ~ 26+125	2,500	23+600 ~ 26+125	2,500					3,426	
	GA27 GA28	괴 곡 우 안	우	축 제	23+750 ~ 23+975	230 (축제)	23+750 ~ 23+975	230			24+250 (배수문)	4.0×3.0×3련	122	
				및 보 축	23+975 ~ 24+600	680 (보축)	23+975 ~ 24+600	680					1,190	

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하천	부도 번호	지구명	좌·우 안별	구 분	제 방		고수호안		저수호안		구조물		개략사업비 (백만원)	비 고
					측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	규 모		
유등천	YD03 YD04 YD05	용 문	좌	보 축 (친환경)	2+815 ~ 4+400	1,500	2+815 ~ 4+400	1,500			003+240	4.0×2.0×1련	582	
	YD09	안 영 우 안	우	보 축	8+650 ~ 9+010	430	8+650 ~ 9+010	430					677	
미호천	MH09,MH11 MH14,MH16 MH17	미 호	좌	보 축	4+410 ~ 9+090	3,940	4+410 ~ 9+090	3,940					4,307	
	MH10 MH12 MH13	봉 암	우	보 축	4+760 ~ 5+770	1,640	4+760 ~ 5+770	1,640					2,687	
	MH13 MH14 MH15	서 면	우	보 축	5+890 ~ 7+770	2,060	5+890 ~ 7+770	2,060					2,967	
	MH14	송 용	좌	저 호					6+205 ~ 6+980	780			711	
	MH17 MH18	예 양	좌	보 축	9+140 ~ 10+290	1,350	9+140 ~ 10+290	1,350					1,837	
	MH17,MH18 MH20,MH22 MH24,MH25	강 외	우	보 축	9+140 ~ 14+930	5,400	9+140 ~ 14+930	5,400					6,465	
	MH20 MH21 MH22	동 평	우	저 호					10+815 ~ 12+330	1,520			1,482	

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하천	부도 번호	지구명	좌·우 안별	구 분	제 방		고수호안		저수호안		구조물		개략사업비 (백만원)	비 고
					측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	규 모		
미호천	MH39	남 촌	우	저 호					25+815 ~ 26+950	1,090			1,161	
	MH42 MH43	신 평	우	저 호					27+705 ~ 28+620	890			910	
	MH43	탑 리	우	저 호					28+630 ~ 28+970	530			474	
	MH43 MH44	정 북	좌	저 호					29+180 ~ 29+670	560			716	
	MH48	괴 정	우	저 호					32+420 ~ 33+000	440			432	
논산천	NS03	동 흥	좌	축 제	0+300 ~ 0+365	75	0+300 ~ 0+365	75			0+360 (배수관)	D=1,000×1련	1,190	
	NS11 NS12	논북1	우	보 축 및 저 호	5+965 ~ 8+130	2,160	5+965 ~ 8+130	2,160	6+190 ~ 8+285	2,220			3,323 2,428	
	NS15,NS17 NS18,NS19	논 남	좌	보 축 (친환경)	11+380 ~ 13+810	2,400	11+380 ~ 13+810	2,400					2,957	
노성천	NO02,NO03 NO04,NO05	노 북	우	보 축	0+000 ~ 4+770	4,760	0+000 ~ 4+770	4,760			001+715	2.0×2.0×1련	6,796	

<계속>

하천	부도 번호	지구명	좌·우 안별	구 분	제 방		고수호안		저수호안		구조물		개략사업비 (백만원)	비 고
					측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	연 장 (m)	측 점 (No.)	규 모		
노성천	NO02	탑 정	좌	저 호					0+130 ~ 0+525	400			447	
	NO02,NO03 NO04,NO05	노 남	좌	보 축	0+565 ~ 4+820	4,430	0+565 ~ 4+820	4,430					6,250	
	NO03	부 인	좌	저 호					1+970 ~ 2+380	420			433	
	NO04	왕 전	우	저 호					3+195 ~ 3+605	440			412	
	NO04 NO05	덕 평	좌	저 호					3+605 ~ 4+310	700			628	
강경천	KK02,KK03 KK04	강 경 좌 안	좌	보 축	1+115 ~ 3+900	3,060	1+115 ~ 3+900	3,060					4,142	
	KK02,KK03 KK04,KK05 KK06	강 경 우 안	우	보 축	1+115 ~ 6+560	5,505	1+115 ~ 6+560	5,505					5,973	
	KK04,KK05 KK06,KK08	무 형 좌 안	좌	보 축	4+250 ~ 7+565	3,300	4+250 ~ 7+565	3,300			5+630 (배수 펌프장)	200㎥/min ×1,350㎜ ×2대	4,652 1,800	
	KK06,KK08	무 형 우 안	우	보 축	6+560 ~ 7+565	1,095	6+560 ~ 7+565	1,095					1,358	

3.2 축제지구 현황

하천명	지구명	측 점 (No.)	연장 (m)	안별	지 구 현 황	개수계획	제방고 (EL.m)	계획홍수위 (EL.m)
금 강	성덕	1+510 ~ 2+700	1,140	좌	금강하구둑 직상류의 무제부 구간으로 '88년 계획지구이며, 농업기반공사에서 장래 금강호 준설토 적치장으로 활용할 계획임. 제내지반고는 EL. 3.10m~6.40m로 계획홍수위 이하이거나 여유고가 부족한 실정임.	축제 및 고호	3.1 ~ 6.4 (지반고)	4.63 ~ 4.72
	제성	18+470 ~ 22+280	2,860	좌	웅포대교 상류 산수배수장 직상 무제부 구간으로 배후에 농경지 및 취락지가 형성되어 있음. 민간제 및 수로둑이 제방역할을 하고 있으나(EL. 4.10m~5.50m) 계획홍수위(EL. 6.67 m~7.50m) 이하로 계획홍수량 도래시 침수피해가 발생될 것으로 예측되므로 축제 필요.	축제	4.1 ~ 5.5	6.67 ~ 7.50
	옥룡	86+300 ~ 86+540	240	좌	공주대교 하류 구간으로 배후에는 밀집시가지가 형성되어 있으며 무제부임. 공주대교 하류부의 지반고는 EL. 15.6m~19.4m로 계획홍수위 EL. 20.72m~20.74m 이하인 실정으로 축제 필요.	축제	15.6 ~ 19.4 (지반고)	20.72 ~ 20.74
	소학	87+320 ~ 88+530	2,220	좌	공주대교(신) 상하류 구간으로 지류인 혈저천이 합류하고 있으며, 도로외측 고수부지에는 자동차검사소 및 가옥이 위치하고 있음. 도로(국도32호선) 표고는 EL. 18.10m~19.90m로 계획홍수위(EL. 20.94m~21.18m) 이하인 실정이므로 축제 필요. 향후 도로개선사업과 병행하여 시행함이 바람직함.	축제	18.1 ~ 19.9 (도로고)	20.94 ~ 21.18
	마암	93+460 ~ 93+810	360	좌	청벽대교 하류 구간으로 지류인 마암천이 합류하고 있으며, 도로에 인접하여 가옥이 위치하고 있음. 도로(국도32호선) 표고는 EL. 19.40m~19.90m로 계획홍수위(EL. 22.47m~22.67m) 이하인 실정임.	축제	19.4 ~ 19.9 (도로고)	22.47 ~ 22.66

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하천명	지구명	측 점 (No.)	연장 (m)	안 별	지 구 현 황	개수 계획	제방고 (EL.m)	계획홍수위 (EL.m)
금 강	원봉	98+100 ~ 98+760	650	좌	원봉제의 상류구간으로 제내지는 농경지이며, 지반고(EL. 20.5m~22.1m)가 계획홍수위(EL. 24.10m~24.20m) 이하인 실정이므로 축제 필요. 원봉제와 병행하여 시행함이 바람직할 것으로 사료.	축제	20.5 ~ 22.1	24.10 ~ 24.20
	석삼	104+260 ~ 105+080	820	좌	금남지구 직상구간으로 '88년 축제계획지구이나 미개수 상태임. 도로표고는 EL. 21.7m~22.2m로 계획홍수위(EL. 24.87m~24.91m) 이하인 상태이며 금남지구와 병행하여 도로겸용 제방으로 계획. 배수로 통과지점은 배수문 설치 필요	축제	21.7 ~ 22.2 (도로고)	24.87 ~ 24.91
	대동	121+260 ~ 122+890	1,560	좌	현재 개수공사중인 중척제 대안측의 무제부로 비교적 넓은 농경지가 형성되어 있으며, 2개의 배수로 주변 농경지 표고는 EL. 25.70m~29.70m로 계획홍수위(EL. 29.25m~29.81m) 이하이거나 여유고가 부족한 실정임. 대청댐 건설이후 큰 침수피해는 발생치 않았으나 댐 계획방류량 유하시 침수피해가 예상됨.	축제	25.7 ~ 29.7 (지반고)	29.25 ~ 29.81
	고당	241+020 ~ 241+510	540	좌	대청댐상류 고당제 종점부 무제부 구간이며, 주변 농경지 표고는 EL. 94.70m~96.90m로 계획홍수위(EL. 101.37m~101.54m) 이하인 지구임. 기성제(고당제)에서 하류 경부고속철도 통과지점 소로까지 축제 필요.(기성제 구간 보축 병행)	축제	94.7 ~ 96.9	101.37 ~ 101.54
	마서	1+430 ~ 1+470	60	우	마서제 시점부로 제내외측에 가옥이 위치하고 있으며 제방을 산지부에 접속하지 않은 상태임. 지반고는 EL. 3.90m~4.70m로 계획홍수위(EL. 4.63m) 이하이며 계획홍수량 도래시 침수피해가 예상되므로 축제 필요	축제	3.9 ~ 4.7 (지반고)	4.63

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하천명	지구명	측 점 (No.)	연장 (m)	안 별	지 구 현 황	개수 계획	제방고 (EL.m)	계획홍수위 (EL.m)
금 강	유왕	19+170 ~ 19+400	350	우	입포수위표 하류구간으로 무제부이며 천변으로 Con'c 도로가 개설되어 있음. 부여군에서 백제문화권 관광개발과 관련하여 도로공사 예정으로 현 도로표고(EL. 4.60m~4.90m)는 계획홍수위 (EL. 6.76m~6.80m) 이하임. 과거 주민들의 제방축조 반대가 있었음.	축제	4.6 ~ 4.9 (도로고)	6.76 ~ 6.80
	간대	27+580 ~ 27+630	60	우	간대제 시점부 직상구간 야산사이의 능선구간은 현재 대나무가 자생하여 방수림 역할을 하고 있으나 지반고(EL. 7.7m)가 계획홍수위(EL. 8.08m) 이하인 실정으로 축제 필요.	축제	7.7 (지반고)	8.08 ~ 8.08
	청포	31+090 ~ 33+820	2,620	우	황산대교 상·하류 구간으로 고수부지는 농경지 경작중이고 상류 좌안측에서 논산천이 합류되며, 저수로 폭이 200m에도 미치지 못하는 구간이 있는 등 홍수소통에 지장을 초래할 수 있으므로 치수적인 차원에서 하도굴착을 통해 홍수소통능력을 제고할 필요가 있음.	하도정비 (하도굴착)	3.2 ~ 4.7 (고수부)	
	정고2	48+880 ~ 49+000	240	우	정고2제와 금천합류부 사이의 구간으로 도로고(EL. 9.5m~13.5m)가 계획홍수위(EL. 11.83m)보다 낮아 홍수시 도로를 타고 들어온 유수에 의해 제내측이 침수될 위험이 있으므로 축제(도로숭상) 필요.	축제	9.5 ~ 13.5 (도로고)	11.83
	양지	126+220 ~ 126+750	1,430	우	경부고속도로 통과교량(금강1교) 직하 구간으로 소하천이 유입되고 있으며, 주변 농경지 표고(EL. 25.5m~30.1m)는 계획홍수위(EL. 30.86m~31.12m) 이하임. 청원군 소하천정비 종합계획 및 도로개설계획과 연계하여 사업을 실시하여야 할 것임.	축제	25.5 ~ 30.1 (지반고)	30.86 ~ 31.12

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하천명	지구명	측 점 (No.)	연장 (m)	안 별	지 구 현 황	개수 계획	제방고 (EL.m)	계획홍수위 (EL.m)
갑 천	신대1	9+600 ~ 9+900	330	우	원촌교 하류구간으로 제내도로(EL. 36.2m~36.3m)가 계획홍수위(EL. 36.20m~36.30m)에 여유고를 확보하지 못한 상태이며. 홍수시 도로를 타고 흐른 물이 제내지(시가지)를 침수시킬 수 있으므로 축제 필요.	축제	36.2 ~ 36.3	36.20 ~ 36.30
	정림1	20+835 ~ 20+950	135	우	가수원교 하류 장묘사업소 진입로 직하구간으로 가옥이 위치하고 있음. 현재 하류측 산지부로 통행하는 도로표고는 EL. 48.8m~49.3m로 계획홍수위(EL. 50.18m~50.45m) 이하인 실정이므로 축제 필요.	축제 및 보축	48.8 ~ 49.3	50.18 ~ 50.45
	갈마	14+945 14+710	130		갈마보는 상류 갑천대교의 치수적 안정성 확보 및 수질개선을 위해 철거하고 하류 약 400m 지점에 거석보 형태로 재설치(수위유지시설)	보철거 및 보설치		
	괴곡 우안	23+750 ~ 23+975	230	우	신갑천대교(대전남부순환고속도로 갑천 통과교량)~중보 구간으로 하류부 구간(무제부, EL. 54.9m~55.4m)은 축제 필요.	축제	56.0 ~ 58.8 (무제부)	54.97 ~ 58.36
미호천	송용	6+205 ~ 6+980	780	좌	미호제 예양배수문 하류 구간으로 '88년 계획저호(32) 지구이며, 현재 직상류 지역에서 골재채취 시행중임. 고수부지폭이 5~10m 정도로 협소하고 골재채취로 인한 하상변동으로 하안포락이 발생될 것으로 예측되는 바 제체보호를 위한 저호 설치 필요	저호		
	정북	29+180 ~ 29+670	560	좌	북일제 정북배수장 하류 구간으로 '88년 계획저호(41) 지구이며, 현재 고수부지 포락 진행중임. 고수부지폭이 5~30m 정도로 협소하고 저수로 만곡부 외측으로 하안포락이 지속될 것으로 예측되는 바 제체보호를 위한 저호 필요	저호		

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하천명	지구명	측 점 (No.)	연장 (m)	안 별	지 구 현 황	개수 계획	제방고 (EL.m)	계획홍수위 (EL.m)
미호천	동평	10+815 ~ 12+330	1,520	우	강외제 미호교 상류 구간으로 '88년 계획저호(34) 지구이며, 현재 고수부지 포락은 진행되고 있지 않으나 고수부지폭이 10~20m 정도로 협소한 상태이고 홍수시 하안포락이 발생될 우려가 크므로 제체보호를 위한 저호 설치 필요	저호		
	남촌	25+815 ~ 26+950	1,090	우	중부고속도로교~작천보 구간으로 고수부지 폭은 10~20m 정도로 협소한 상태이고 '88년 계획저호(38) 지구이며, 고수부지 사면에는 버드나무등이 자생하고 있음. 작천보 직하에 생성된 사주의 영향으로 저수로가 사주 양방향으로 형성되어 홍수시 하안포락이 발생될 것으로 예측되므로 제체보호를 위하여 저호 설치 필요.	저호		
	신평	27+705 ~ 28+620	890	우	작천보 상류 구간으로 '88년 계획저호(39) 지구이며 고수부지 폭은 약 10m 정도로 협소한 실정임. 현재는 미호천 사용제한의 영향으로 포락은 진행되고 있지 않으나 홍수시 본류 유량 및 신평배수장 방류수에 의해 하안포락이 발생될 우려가 크므로 제체보호를 위한 저호 설치 필요	저호		
	탑리	28+630 ~ 28+970	530	우	상오창제 종점부(신평배수장) 구간으로 '88년 계획저호(40) 지구이며 고수부지 폭은 약 10m ~ 20m 정도로 협소한 실정임. 현재 하도내 경작을 위하여 설치된 가도로 인하여 하류측 흐름(평상시)이 차단된 상태이나 홍수시 유수에 의한 하안포락이 발생될 우려가 크므로 제체보호를 위한 저호 설치 필요	저호		

건설미래

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하천명	지구명	측 점 (No.)	연장 (m)	안 별	지 구 현 황	개수 계획	제방고 (EL.m)	계획홍수위 (EL.m)
	괴정	32+420 ~ 33+000	440	우	팔결교(국도17호선 미호천 통과교량) 상류 석화천 합류부 대안측으로 '88년 계획저호(43) 지구이며 고수부지 폭이 약 5m 미만으로 매우 협소한 실정임. 기 돌망태 호안이 설치되어 있으나, 동 구간은 대안측에서 석화천이 유입되고 있고 석화천 자체유역에 홍수발생시 수충되는 구간임. 홍수시 유수에 의한 기존 돌망태 호안만으로 치수적 안정성을 도모키 곤란할 것으로 판단되므로 제체보호를 위한 저호 설치 필요	저호		
논산천	동홍	0+300 ~ 0+365	75	좌	강경양·배수장~강경제 구간으로 배후에는 밀집시가지가 형성되어 있으며 무제부임. 강경제에서 서창제로 이어지는 도로표고는(EL. 7.40m~9.40m) 계획홍수위(EL. 9.14m) 이하이거나 여유고가 거의 없는 실정이므로 축제 필요	축제	7.4 ~ 9.4 (지반고)	9.14
노성천	탑정	0+130 ~ 0+525	400	좌	국도 우회도로 통과교량 직하구간으로 고수부지 폭이 5~10m 정도이고 포락중임.	저호		
	부인	1+970 ~ 2+380	420	좌	국도 우회도로 통과교량 상류구간으로 고수부지 폭이 5~10m 정도이고 포락중임.	저호		
	덕평	3+605 ~ 4+310	700	좌	광석면 항월리 새마을교 하류구간(연산천 합류부 하류)으로 고수부지 폭이 5~10m 정도이고 포락중임.	저호		
	왕전	3+195 ~ 3+605	440	우	거교보 직상 구간으로 다소 만곡을 이루는 외측에 해당되며 고수부지 폭이 5~10m 정도임. 포락은 진행되지 않으나 홍수시 포락이 발생되어 제체 안전에 영향을 미칠 것으로 예상되므로 저호 계획 필요.	저호		

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3.3 보축지구 현황

하천명	지구명	측 점 (No.)	연 장 (m)	안별	지 구 현 황	개 수 계 획	제 방 고 (EL.m)	계획홍수위 (EL.m)
금 강	항동	2+870	-	좌	항동 배수문은 하도내에 위치하고 있으며, 도로에 설치된 배수암거는 문비가 미 설치된 상태이고 단면도 부족한 것으로 나타난 바 재설치 필요	배수문 1개소		
	나포	4+990 ~ 5+040	165	좌	나포교 상류구간으로 제방고가 EL. 5.10m~6.60m로 계획홍수위에 여유고가 부족한 실정이며, 서포배수문과 나포교도 상태가 불량하여 철거후 재설치가 필요함. 제내측 도로고가 낮아 도로 승상이 필요함.	보축 (제내측)	5.1 ~ 6.6	4.98 ~ 4.99
	나포2	9+640 ~ 10+310	680	좌	제내측에 밀집가옥이 위치하고 있고, 정단폭이 약 4m~6m 정도이고 고수호안(돌붙임) 및 저수호안(사석)이 설치되어 있으나 제방규모 및 여유고(제방고 EL. 6.50m~6.90m, 계획홍수위 EL. 5.38m~5.42m)가 부족한 실정임. 제내측에 밀집가옥이 위치하고 있으므로 제방의 홍수방어 능력을 제고하고 치수안정성을 증대하는 측면에서 보축이 필요한 것으로 판단되며, 하류측 나포1제 시점부에서 나포2제 종점부 교량직하 구간까지는 흉벽 설치	보축 (제외측)	6.5 ~ 6.9	5.38 ~ 5.42
	웅포	13+980 ~ 15+840	보축 : 1,710 저호 : 1,010	좌	웅포제 고창배수문 상하류 구간으로 고수부지 폭이 5~20m로 협소하고 사석이 기 설치(농진공)되어 있음. 사석 정단 폭은 약 2m 정도로 규모가 부족하며, 사면경사가 1: 2 이상으로 급한 것으로 보아 수심부의 사석이 유실되고 있는 것으로 사료되므로 보강이 필요하고, 고창배수문 하류구간은 여유고가 부족한 실정이므로 치수안정성 측면에서 보축이 필요.	보축 및 저호 (제내측)	7.0 ~ 8.9	5.67 ~ 6.62
	성당	24+090 ~ 24+240	430	좌	금강 좌안측 산북천 합류부로 제내측은 주거지역이며, 제방고가 EL.6.30m~9.40m로 계획홍수위에 비해 낮거나 여유고가 부족한 실정이므로 보축 및 제방신설 필요	보축 (제내측)	6.3 ~ 9.4	7.68 ~ 7.70

<계속>

하천명	지구명	측 점 (No.)	연 장 (m)	안별	지 구 현 황	개 수 계 획	제 방 고 (EL.m)	계획홍수위 (EL.m)
금 강	망성	29+820 ~ 32+410	3,540	좌	황산대교 하류 망성제 구간으로 고수부지 폭은 10~100m 를 유지하고 있고, 상류 일부구간은 저호가 기 설치되어 있음. 동 구간은 심한 만곡부의 외측에 해당되며 홍수시 수충이 발생될 것으로 예측되는 바 고수부지 포락방지 및 제체의 치수안정성 증대를 위하여 저호 신설 및 보강 필요	저호		
	황산	33+010 ~ 33+350	450	좌	황산대교~서창제 구간으로 배후에는 밀집시가지가 형성되어 있고 고수부지는 초지 및 산책로 등을 조성하여 이용되고 있으며, 제방은 도로로 이용되고 있음. 도로표고(EL. 8.10m~10.60m)는 황산대교에서 서창제 방향으로 점차 낮아지며, 계획홍수위(EL. 8.89m~8.94m) 이하이거나 여유고가 부족한 실정이므로 보축 필요	보축 (제외측)	8.1 ~ 10.6 (도로고)	8.89 ~ 8.94
	구교	52+330 ~ 54+410	1,830	좌	백제대교 상류 구간으로 제내측은 농경지 및 공원이 조성되어 있고, 고수부지는 구드레고수부지 개발사업이 진행중에 있으며, 정단폭은 4.0~6.0m, 제방고는 EL. 13.60m~14.10m, 계획홍수위 EL. 12.41m~12.72m로 여유고 및 제체단면이 부족한 실정으로 보축이 필요.	보축 (제외측)	13.6 ~ 14.1	12.41 ~ 12.72
	정동	55+360 ~ 58+270	2,880	좌	백마강교 상하류 구간으로 제내외측 농경지는 B/H 경작중이며, 정단폭은 4m 정도이고 제방고는 EL. 13.6m~14.5m, 계획홍수위는 EL. 13.05m~13.91m로 제체단면 및 여유고가 부족한 실정임. 장래 도로개설 예정으로 도로공사시기와 연계하여 치수사업시행이 필요함.	보축 (제외측)	13.6 ~ 14.5	13.05 ~ 13.91
	금성	84+740 ~ 85+060	230	좌	제민천 합류부 구간으로 현재 2차선 도로로 이용되고 있으며, 도로표고는 EL. 17.50m~19.50m로 계획홍수위 EL. 20.53m~20.55m 보다 낮은 실정임. 지류 하구부의 고수부지는 성토하여 게이트볼장으로 이용되고 있어 홍수시 지류하천의 홍수소통에 지장을 초래할 것으로 판단됨.	보축 (제외측, 제방겸도로)	17.5 ~ 19.5 (지반고)	20.53 ~ 20.55

<계속>

하천명	지구명	측 점 (No.)	연 장 (m)	안별	지 구 현 황	개 수 계 획	제 방 고 (EL.m)	계획홍수위 (EL.m)
금 강	대평	100+240 ~ 101+860	1,880	좌	용수천 합류부에서 금남교 구간으로 제내지 및 제외지가 농경지이며, 정단폭이 3.0m이고 제방고는 EL. 25.5m~27.9m, 계획홍수위는 EL. 24.44m~24.59m로 여유고 및 제체단면이 부족한 실정으로 보축 필요.	보축 (제외측)	25.5 ~ 27.9	24.44 ~ 24.59
	금남	102+420 ~ 104+260	1,990	좌	금남교 상류구간으로 제내측은 소단형태의 도로로 이용되고 있으며 골재운반차량등의 통행량이 많음. 제방고는 EL. 26.0m~27.2m, 계획홍수위 EL. 24.69m~24.87m로 여유고는 일부구간만 부족하나 정단폭이 3~5m 정도이고 제체가 부실한 실정이므로 보축을 시행하되 차량통행이 많은 점을 감안하여 도로겸용제방으로 계획	보축 (제내측)	26.0 ~ 27.2	24.69 ~ 24.87
	고당	241+510 ~ 243+685	1,490	좌	대청댐상류 고당제 구간이며, 기존 제방의 정단폭 4.0m, 제방고 EL. 102.0m~103.8m, 계획홍수위 EL. 101.54m~103.00m로 여유고 및 제체단면이 부족한 지구로 보축 필요	보축 (제외측)	102.0 ~ 103.8	101.54 ~ 103.00
	망월	1+480 ~ 1+680	140	우	화산천 하구부로 망월방조수문이 설치되어 있으며, 방조수문 도교상단(EL. 5.30m)은 계획홍수위(EL. 4.63m)보다 다소 높으나 여유고가 부족하고, 수문양안 접속부 표고(EL. 4.5m~4.7m)는 계획홍수위 이하인 실정임. 망월방조수문은 콘크리트 구조물로써 여유고만 부족하므로 기존 시설을 존치토록 하고, 양안 접속도로는 유지관리 측면에서 도교 높이 이상으로 성토하고 Con'c 포장	보축 (제내측)	4.5 ~ 4.7	4.63 ~ 4.64
	양화2	17+100 ~ 17+680	630	우	웅포대교 상·하류구간으로 제내지는 농경지 및 주거지역이며, 제방고가 EL. 7.4m~7.6m로 계획홍수위(EL. 6.40m~6.55m)에 여유고가 부족한 실정으로 보축 필요	보축 (제외측)	7.4 ~ 7.6	6.40 ~ 6.55
	양화	17+910 ~ 18+450	710	우	웅포대교 상류 양화제 구간으로 제방고가 EL. 6.4m~8.0m로 계획홍수위(EL. 6.60m~6.65m) 이상이나 여유고가 부족하며, 특히 시점부 도로 넘을목의 도로고(EL. 6.40m)는 계획홍수위보다 낮은 실정으로 보축 필요	보축 (제외측)	6.4 ~ 8.0	6.60 ~ 6.65

<계속>

하천명	지구명	측 점 (No.)	연 장 (m)	안별	지 구 현 황	개 수 계 획	제 방 고 (EL.m)	계획홍수위 (EL.m)
금 강	임천	21+450 ~ 22+200	1,140	우	칠산천 합류부 하류구간으로 제내지는 농경지이며, 제방고 EL. 7.7m~7.8m로 계획홍수위 EL. 7.28m~7.38m에 여유고가 부족하고, 정단폭이 약 5.0m로 제체단면도 부족한 실정으로 보축 필요.	보축 (제외측)	7.7 ~ 7.8	7.28 ~ 7.38
	임천2	22+330 ~ 24+810	보축: 2,060 저호: 900	우	칠산천 합류부 상류구간으로 제내지는 농경지 및 주거지역이며, 제방정단은 일부 포장되어 있음. 제방고 EL. 8.9m~9.2m로 계획홍수위 EL. 7.42m~7.75m에 여유고가 부족한 실정으로 보축 필요. 현 고수부지 폭이 약 10m 정도임. 현재 고수부지는 포락은 진행되고 있지 않으나 하도내 사주발달의 영향으로 수리적 특성 변화가 예상되므로 제체 보호를 위해 저호 설치 필요	보축 및 저호 (제외측)	8.9 ~ 9.2	7.42 ~ 7.75
	간대	25+770 ~ 27+530	2,930	우	사동천 합류부 상·하류 구간으로 제내지는 농경지이며, 제방고가 EL. 8.5m~9.5m로 계획홍수위 EL. 7.88m~8.06m에 여유고가 부족한 실정으로 보축 필요.	보축 (제외측)	8.5 ~ 9.5	7.88 ~ 8.08
	외리	49+730 ~ 51+410	2,650	우	백제대교 하류구간으로 외리제는 국도 29호선의 도로 표고가 EL. 12.5m~13.0m로 계획홍수위(EL. 12.00m~12.28m)에 여유고가 부족한 실정으로 보축 필요	보축 (제외측)	12.50 ~ 13.00 (도로고)	12.00 ~ 12.28
	규암	51+430 ~ 52+110	840	우	백제대교 하류구간으로 제내지는 주거 밀집지역이며, 현재 제방정단에 옹벽이 설치되어 있으나 표고(EL. 11.8m~14.0m)가 계획홍수위(EL. 12.28m~12.32m)에 여유고가 부족한 실정으로 보축 필요.	보축 (제외측)	11.8 ~ 14.0	12.28 ~ 12.32
	라복	52+190 ~ 52+400	330	우	백제대교 직상 구간으로 은산천이 유입되고 있으며 도로 내측에는 건물이 위치하고 있음. 도로표고 (EL. 8.6m~12.2m)가 계획홍수위 (EL. 12.34m~12.38m) 이하이거나 여유고가 부족한 실정이므로 라복교에서 국도4호선 지점까지 보축 필요	보축 (제외측)	8.6 ~ 12.2 (도로고)	12.34 ~ 12.38

<계속>

하천명	지구명	측 점 (No.)	연 장 (m)	안별	지 구 현 황	개 수 계 획	제 방 고 (EL.m)	계획홍수위 (EL.m)
금 강	오동	76+410 ~ 76+630	240	우	제내측은 농경지이며, 정단폭은 3.5m, 제방고는 EL. 18.5m로 계획홍수위 EL. 18.00m에 여유고 및 제체단면이 부족한 실정으로 보축 필요.	보축 (제외측)	18.5	18.00
	보흥	77+650 ~ 77+960	520	우	과거 농업기반공사에서 경지정리와 병행하여 축조한 제방으로 정단폭은 3~4m로 제체단면이 부족하고, 제방고는 EL. 17.8m~18.5m로 계획홍수위 EL. 18.73m~18.79m에 여유고가 부족한 실정임. 또한 지류하구부 구간은 과거 제방축조시 하류 산지부쪽으로 직강화 하였으나, 금강 하상저하로 인해 고수부지 포락 및 고수호안 기초부가 세굴된 상태로 밑다짐 사석 설치 필요.	보축 (제내측)	17.8 ~ 18.5	18.73 ~ 18.79
	신관	84+200 ~ 86+650	2,320	우	정안천 합류부 상·하류 구간으로 제내지는 시가지(공주시)이고 고수부지는 초지 및 체육시설 등으로 이용되고 있으며, 도로고는 EL. 19.5 m~23.2m로 계획홍수위(EL. 20.455m~20.77m) 이하거나 여유고가 부족하며, 고수부지 이용측면을 고려하여 비탈경사를 1:3정도로 하고 친환경호안재료 등을 사용하여 제방보강을 할 필요성이 있음.	제방보강 (친환경계획)	19.5 ~ 23.2	20.45 ~ 20.77
	송원	98+640 ~ 100+630	2,490	우	대교천 합류후 직상구간으로 정단폭은 4~5m이며, 제방고는 EL. 23.5 m~23.8m로 계획홍수위 EL. 24.17m~24.55m에 여유고가 부족한 실정임.	보축 (제내측)	23.5 ~ 23.8	24.17 ~ 24.55
	동대	238+400 ~ 241+410	2,650	우	이원대교 상류구간으로 2002년 태풍(루사) 내습시 발생한 홍수로 인하여 제방 일부구간이 유실되는 등 제체가 불량하므로 보축 필요.	보축 (제내측)	101.70 ~ 103.20	99.80 ~ 101.53
	심천1	242+800 243+560	-	우	기존 배수통문 능력검토결과 기존 2개의 배수문이 단면부족으로 나타났음. 심천1배수통문은 1@2.0×2.0규모의 통문을 추가로 설치하고, 심천2배수통문은 기존의 1@1.5×1.5를 1@2.0×2.0으로 증설 계획.	배수문2개소	-	-

<계속>

하천명	지구명	측 점 (No.)	연 장 (m)	안별	지 구 현 황	개 수 계 획	제 방 고 (EL.m)	계획홍수위 (EL.m)
갑 천	문지	8+200 ~ 9+500	1,310	좌	원촌교 하류구간으로 제내측은 농경지 및 하수종말처리장이 위치하고 있으며, 정단폭은 4.0m 정도이고 제방고는 EL. 36.0m~37.5m로 계획홍수위 EL. 35.56m~35.90m에 여유고 및 제방단면이 부족한 실정으로 보축이 필요. 보축후 현재와 같이 정단은 콘크리트로 포장할 필요성이 있음.	보축 (제외측)	36.0 ~ 37.5	35.56 ~ 35.90
	도안	18+815 ~ 20+785	2,030	좌	가수원교 하류구간(원신흥제 상류)으로 정단폭이 3~4m 이고, 제방고는 EL. 49.1m~52.0m로 계획홍수위 EL. 47.23m~50.15m에 여유고를 확보하고 있으며, 고수호안이 기 설치되어 있으나 매우 불량한 상태임. 제외측 비탈사면에는 아카시아 등 관목이 자생하고 있으며, 특히 시점~중간지점(No. 20+400~20+720)까지 고수부지에는 화훼단지를 조성하여 경작중으로 제체를 손괴한 상태임(배수로로 이용). 한편 동 구간 배후지는 도시개발예정지역이고, 대안측은 산지부로 대도시에서 자연을 접할 수 있는 좋은 공간이므로 친환경적 개수 필요.(정단폭을 충분히 확보:기준폭+산책로, 고수호안:친환경재료)	제방보강 (친환경계획)	49.1 ~ 51.7	47.23 ~ 50.15
	가수원1	21+745 ~ 21+895	170	좌	가수원교(신)에서 가수원철교 구간으로 가수원교(신)~가수원교(구) 구간은 제방고(EL. 53.0m)가 계획홍수위에 여유고 부족하며, 가수원교(구)~가수원철교 구간은 현재 철교밑 고수부지를 콘크리트 포장하여 도로로 이용하고 있으며, 도로 및 지반고(EL. 52.0m)가 계획홍수위 이하인 지역으로 가옥침수피해가 예상되므로 보축 필요.	보축 (옹벽)	53.0 (제방고) 52.0 (지반고)	52.28 ~ 52.53
	괴곡좌안	23+600 ~ 26+125	2,500	좌	괴곡철교 하류구간으로 제내측은 농경지이며, 제방고는 EL. 55.5m~61.9m로 계획홍수위 EL. 54.80m~61.01m에 일부구간 여유고가 부족하고, 제방단면의 상태도 부실한 실정으로 보축 필요.	보축 (제외측)	55.5 ~ 61.9	54.80 ~ 61.01
	신대	7+635 ~ 8+240	590	우	제방정단이 대전도시고속도로로 이용되고 있으며, 도로고(EL. 34.8m~35.5m)가 계획홍수위(EL. 34.20m~35.00m)에 여유고가 부족한 실정으로 보축 필요.	보축 (옹벽)	34.8 ~ 35.5	34.20 ~ 35.00

<계속>

하천명	지구명	측 점 (No.)	연 장 (m)	안별	지 구 현 황	개 수 계 획	제 방 고 (EL.m)	계획홍수위 (EL.m)
갑 천	삼천	11+715 ~ 14+500	2,680	우	유등천 합류부~유성천 합류부 직하(둔산대교~갈마보) 구간으로 제방은 도로로 이용되고 있고 고수부지는 초지 및 체육시설등으로 활용되고 있음. 현재 제방비탈면은 호안블록이 기 설치되어 있으나 고수부지 활용측면을 고려할 때 조화롭지 못하고 이용주민들의 정서적인 측면에서도 바람직하지 않은 것으로 사료되므로, 비탈면을 1 : 3 이하로 완만하게 하고 평떼 및 친자연호안 재료를 사용하여 시범적 개선사업 시행 필요.	제방보강 (친환경계획)	39.9 ~ 43.6	38.27 ~ 40.57
	정림1	20+950 ~ 21+745	800	우	가수원교 하류의 정림1제 구간으로 제내측은 공장지역이고 제방정단이 도로로 이용중임. 도로표고는 EL. 49.0m~52.8m로 계획홍수위(EL. 50.45m~52.28m)에 여유고가 부족하므로 보축 필요.	보축 (제외측)	49.0 ~ 52.8	51.06 ~ 52.28
	괴곡우안	23+975 ~ 24+600	680	우	신갑천대교(대전남부순환고속도로 갑천 통과교량)~중보 구간으로 제방정단면 상태가 불량하며, 기설제방고(EL. 56.0m~58.8m)는 계획홍수위(EL. 54.97m~58.36m)에 여유고가 부족하고, 제방정단 및 교량 밑 고수부지를 통한 차량통행이 잦은 것으로 보이므로, 재해예방차원에서 제방을 교대부에 접속하고 정단부는 포장 필요	보축 (제외측)	56.0 ~ 58.8 (무제부 : 54.9)	54.97 ~ 58.36
유등천	용문	2+815 ~ 4+400	1,500	좌	대전천 합류부(삼천교)~수침교 구간으로 제방은 도로로 이용되고 있고, 고수부지는 초지 및 체육시설등으로 개발되어 있으나 제방사면이 옹벽으로 되어 있어 접근이 곤란하여 이용 빈도는 많지 않음. 지역주민들의 고수부지 활용 및 정서함양을 위해 비탈면을 1 : 3 이하로 완만하게 하고 평떼 및 친자연호안 재료를 사용하여 개선사업 시행 필요	제방보강 (친환경계획)	42.9 ~ 46.9	40.34 ~ 43.48
	안영우안	8+650 ~ 9+010	430	우	복수교 하류구간으로 제내측은 주거 밀집지역이고, 일부 가옥은 담을 사이에 두고 하천과 접하고 있으며, 제방고 및 지반고가 EL. 56.5m~57.8m로 계획홍수위 EL. 55.80m~56.37m에 여유고가 부족한 실정으로 보축 필요.	보축 (제외측)	56.5 ~ 57.8	55.80 ~ 56.37

<계속>

하천명	지구명	측 점 (No.)	연 장 (m)	안별	지 구 현 황	개 수 계 획	제 방 고 (EL.m)	계획홍수위 (EL.m)
미호천	미호	4+410 ~ 9+090	3,940	좌	수몰두강다리 하류구간으로 제내측은 농경지이며 정단폭은 5.0m이고 제방고는 EL. 27.4m~28.8m로 계획홍수위 EL. 26.83m~27.63m에 여유고 및 제방단면이 부족한 실정으로 보축 필요.	보축 (제외측)	27.4 ~ 28.8	26.83 ~ 27.63
	예양	9+140 ~ 10+290	1,350	좌	수몰두강다리 상류구간으로 제내측은 농경지이며 정단폭은 5.0m~6.0m이고 제방고는 EL. 28.5m~29.1m로 계획홍수위 EL. 27.63m~28.08m에 여유고 및 제방단면이 부족한 실정으로 보축 필요.	보축 (제외측)	28.5 ~ 29.1	27.63 ~ 28.08
	봉암	4+760 ~ 5+770	1,640	우	봉암천 합류부에서 월하천 합류부 사이의 구간으로 '88년 기본계획시 보축지구였으나 미시행 구간으로 제내측은 농경지이며, 정단폭은 5.0m이고 제방고는 EL. 27.3m~27.7m로 계획홍수위 EL. 26.83m~26.94m에 여유고 및 제방단면이 부족한 실정으로 보축 필요.	보축 (제외측)	27.3 ~ 27.7	26.83 ~ 26.94
	서면	5+890 ~ 7+770	2,060	우	월하천 합류부 상류구간으로 '88년 기본계획시 보축지구였으나 미시행 구간으로 제내측은 농경지이며, 정단폭은 5.0m이고 제방고는 EL. 27.2m~28.6m로 계획홍수위 EL. 26.98m~27.37m에 여유고 및 제방단면이 부족한 실정으로 보축 필요.	보축 (제외측)	27.2 ~ 28.6	26.98 ~ 27.37
	강외	9+140 ~ 14+930	5,400	우	수몰두강다리 상류구간으로 일부구간은 '88년 기본계획시 보축지구였으나 미시행 구간으로 제내측은 농경지이며, 제방고는 EL. 28.8m~30.5m로 계획홍수위 EL. 27.63m~29.07m에 여유고가 부족한 실정으로 보축 필요.	보축 (제외측)	28.8 ~ 30.5	27.63 ~ 29.07
	논남	11+380 ~ 13+810	2,400	좌	논산시 지산동 가구단지앞 구간으로 '88년 계획저호(48) 지구임. 고수부지폭이 5~10m 정도로 협소한 상태이며 저호가 설치되어 있지 않음. 홍수시 유수에 의한 하안포락이 발생될 우려가 크므로 제체보호를 위해 유지관리에 철저를 기해야 할 필요가 있으며, 하도내 식생이 잘 발달되어 있는 구간이므로 친환경적 계획 필요	제방보강 (친환경계획)	11.9 ~ 13.9	10.64 ~ 11.23

<계속>

하천명	지구명	측 점 (No.)	연 장 (m)	안별	지 구 현 황	개 수 계 획	제 방 고 (EL.m)	계획홍수위 (EL.m)
논산천	논북1	5+965 ~ 8+130	보축 : 2,160 저호 : 2,220	우	동 구간은 제체는 양호하나 정단상태가 불량하고 여유고가 다소 부족하며, 논산대교(신) 하류부 저수로는 사행이 심하여 고수부지 포락이 진행되어 논산시에서 저호공사를 실시하였으나 설치규모 및 공법(사각돌망태)에 다소 문제가 있는 것으로 사료됨. 향후 유지관리에 철저를 기하여야 할 것으로 사료됨.	보축 및 저호 (제외측)	10.0 ~ 10.9	9.72 ~ 10.00
노성천	노남	0+565 ~ 4+820	4,430	좌	노성대교에서 연산천 합류부 구간으로 제내측은 농경지이며, 제방단면은 양호한 상태이나 제방고가 EL. 10.5m~12.7m로 계획홍수위 EL. 10.42m~12.55m에 여유고가 부족한 실정으로 보축 필요.	보축 (제외측)	10.5 ~ 12.7	10.42 ~ 12.55
	노북	0+000 ~ 4+780	4,760	우	노성대교에서 연산천 합류부 구간으로 제내측은 농경지이며, 제방단면은 양호한 상태이나 제방고가 EL. 10.6m~13.0m로 계획홍수위 EL. 10.22m~12.55m에 여유고가 부족한 실정으로 보축 필요..	보축 (제외측)	10.6 ~ 13.0	10.22 ~ 12.55
강경천	강경좌안	1+115 ~ 3+900	3,060	좌	상강경교에서 어량천 합류부 사이의 구간으로 제내측은 농경지 및 주거지역이며, 제방단면은 양호한 상태이나 제방고(EL. 9.9m~10.5m)가 계획홍수위(EL. 9.28m~9.72m)에 여유고가 부족한 실정으로 보축필요.	보축 (제외측)	9.9 ~ 10.5	9.28 ~ 9.72
	무형좌안	4+250 ~ 7+565	3,300	좌	어량천 합류부 상류구간으로 제내측은 농경지 및 주거지역이며 제방단면은 양호한 상태이나 제방고(EL. 10.0m~11.15m)가 계획홍수위(EL. 9.75m~10.14m)에 여유고가 부족한 실정으로 보축 필요.	보축 (제외측)	10.0 ~ 11.1	9.75 ~ 10.14
	강경우안	1+115 ~ 3+810	5,505	우	상강경교에서 어량천 합류부 사이의 구간으로 제내측은 농경지 및 주거지역이며, 제방단면은 양호한 상태이나 제방고(EL. 9.9m~10.4m)가 계획홍수위(EL. 9.28m~9.72m)에 여유고가 부족한 실정으로 보축필요.	보축 (제외측)	9.9 ~ 10.4	9.28 ~ 9.72
	무형우안	3+810 ~ 7+565	1,095	우	어량천 합류부 상류구간으로 제내측은 농경지 및 주거지역이며 제방단면은 양호한 상태이나 제방고(EL. 9.7m~10.8m)가 계획홍수위(EL. 9.72m~10.14m)에 여유고가 부족한 실정으로 보축 필요.	보축 (제외측)	9.7 ~ 10.8	9.72 ~ 10.14

4. 고수부지 및 폐천부지

4.1 고수부지 이용현황

4.2 기존 및 신생폐천부지

건설교통부

4.1 고수부지 이용현황

하천명	지구명	안별	위치(No.)	면적(㎡)	농경지	친수공간	기타	비고
금강	고1	우	0+000 ~ 0+240	24,170		24,170		
	고2	우	0+260 ~ 0+760	45,570			45,570	
	고3	우	0+860 ~ 1+440	45,640	45,640			
	고4	좌	1+480 ~ 2+660	58,880			58,880	
	고5	우	1+740 ~ 3+670	68,720	51,110		17,610	
	고6	좌	3+910 ~ 5+080	33,170		20,710	12,460	
	고7	우	3+980 ~ 6+060	258,750	258,750			
	고8	좌	5+080 ~ 8+340	45,250			45,250	
	고9	우	6+110 ~ 7+320	106,020	27,900		78,120	
	고10	우	7+380 ~ 9+780	98,160	27,480		70,680	
	고11	우	9+820 ~ 13+500	245,260	19,210		226,050	
	고12	좌	9+930 ~ 10+280	8,790	3,810		4,980	
	고13	좌	10+760 ~ 11+510	30,590	1,890		28,700	
	고14	좌	11+870 ~ 12+900	21,640	17,060		4,580	
	고15	좌	13+020 ~ 13+790	9,570	4,020		5,550	
	고16	우	13+510 ~ 15+390	217,960	216,890		1,070	
	고17	좌	14+000 ~ 18+480	899,180	896,190		2,990	
	고18	우	17+080 ~ 17+650	6,640			6,640	
	고19	우	17+900 ~ 18+400	8,530			8,530	
	고20	좌	18+500 ~ 22+650	1,678,200	1,678,200			
	고21	우	19+800 ~ 20+620	3,280			3,280	
	고22	우	21+430 ~ 22+270	19,840	19,840			
	고23	우	22+330 ~ 25+220	202,740	198,510		4,230	
	고24	섬	22+430 ~ 24+520	399,350	348,930		50,420	
	고25	좌	23+850 ~ 24+080	18,200	16,970		1,230	
	고26	좌	24+100 ~ 29+670	2,376,230	2,196,100		180,130	
	고27	우	25+730 ~ 26+140	3,020			3,020	

건설교통부

하천명	지구명	안별	위치(No.)	면적(㎡)	농경지	친수공간	기타	비고
금강	고28	우	26+220 ~ 27+600	125,050	118,750		6,300	
	고29	우	27+680 ~ 28+020	13,530	11,700		1,830	
	고30	우	28+150 ~ 38+380	4,482,270	4,146,100		336,170	
	고31	좌	29+800 ~ 30+800	101,870	96,980		4,890	
	고32	섬	29+870 ~ 30+470	71,480	49,310		22,170	
	고33	좌	30+830 ~ 33+220	184,110	139,560		44,550	
	고34	좌	33+270 ~ 34+000	111,810		111,810		
	고35	좌	34+040 ~ 37+900	815,550	787,400		28,150	
	고36	좌	37+900 ~ 41+350	537,410	501,520		35,890	
	고37	우	39+050 ~ 45+580	1,400,450	1,218,810		181,640	
	고38	좌	41+350 ~ 42+750	24,070	20,670		3,400	
	고39	좌	43+550 ~ 54+420	4,168,710	3,672,460	57,800	438,450	
	고40	우	45+850 ~ 48+800	799,650	598,520		201,130	
	고41	우	49+570 ~ 51+530	162,530	132,950		29,580	
	고42	우	52+180 ~ 52+850	149,150	133,000		16,150	
	고43	우	53+450 ~ 56+770	803,900	597,970		205,930	
	고44	좌	55+300 ~ 58+380	661,380	625,760		35,620	
	고45	우	57+620 ~ 60+600	459,500	435,630		23,870	
	고46	좌	59+000 ~ 61+530	380,240	264,400		115,840	
	고47	우	60+780 ~ 61+700	85,360	57,580		27,780	
	고48	좌	61+550 ~ 62+550	149,800	106,600		43,200	
	고49	우	61+750 ~ 65+540	317,000	205,000		112,000	
	고50	좌	64+100 ~ 64+400	40,280	38,180		2,100	
	고51	좌	64+420 ~ 65+430	163,650	137,350		26,300	
	고52	좌	65+500 ~ 68+220	242,720	118,390		124,330	
	고53	우	67+600 ~ 69+850	544,280	308,000		236,280	
	고54	좌	68+240 ~ 69+200	75,790	7,090		68,700	
	고55	좌	69+220 ~ 72+600	320,050	168,080		151,970	

건설교통부

하천명	지구명	안별	위치(No.)	면적(㎡)	농경지	친수공간	기타	비고
금강	고56	우	69+950 ~ 70+770	60,780	48,130		12,650	
	고57	우	72+100 ~ 75+720	705,770	556,970		148,800	
	고58	좌	72+750 ~ 74+080	57,370			57,370	
	고59	좌	74+120 ~ 75+900	119,710	26,460		93,250	
	고60	좌	75+920 ~ 79+270	295,960	72,960		223,000	
	고61	우	76+370 ~ 76+640	4,350	910		3,440	
	고62	우	77+500 ~ 77+850	13,940	3,150		10,790	
	고63	우	78+650 ~ 80+200	161,770	127,620		34,150	
	고64	우	80+250 ~ 82+570	126,000	36,120		89,880	
	고65	좌	80+900 ~ 83+880	206,820	151,300		55,520	
	고66	우	83+400 ~ 84+820	175,610	140,200		35,410	
	고67	좌	84+550 ~ 85+050	29,750	4,680	6,510	18,560	
	고68	우	84+900 ~ 86+870	177,620	1,930	169,900	5,790	
	고69	좌	86+300 ~ 86+780	15,330	10,600		4,730	
	고70	좌	86+950 ~ 88+700	97,850	91,000		6,850	
	고71	우	87+270 ~ 87+950	31,470	29,200		2,270	
	고72	좌	89+100 ~ 90+150	38,910	24,200		14,710	
	고73	좌	90+160 ~ 92+150	83,070	19,000		64,070	
	고74	우	91+020 ~ 93+200	218,650	138,110		80,540	
	고75	우	93+200 ~ 95+100	141,060	89,660		51,400	
	고76	좌	93+540 ~ 93+800	11,500			11,500	
	고77	좌	94+840 ~ 98+820	442,100	211,580		230,520	
	고78	우	96+500 ~ 96+800	62,160			62,160	
	고79	우	97+500 ~ 98+500	106,120	49,770		56,350	
	고80	우	98+550 ~ 100+640	210,900	90,640		120,260	
	고81	좌	99+000 ~ 99+950	210,900	91,840		119,060	
	고82	좌	100+020 ~ 105+500	772,370	578,300		194,070	
	고83	우	100+750 ~ 101+850	151,100	98,350		52,750	

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하천명	지구명	안별	위치(No.)	면적(㎡)	농경지	친수공간	기타	비고
금강	고84	우	101+950 ~ 105+900	627,100	443,230		183,870	
	고85	좌	105+500 ~ 109+350	373,650	206,440		167,210	
	고86	우	107+400 ~ 108+750	56,150	15,770		40,380	
	고87	우	108+000 ~ 111+700	715,950	618,810		97,140	
	고88	좌	110+000 ~ 110+300	8,120	3,770		4,350	
	고89	좌	110+600 ~ 114+400	435,800	193,500		242,300	
	고90	우	112+500 ~ 112+730	8,320	4,970		3,350	
	고91	우	113+100 ~ 113+960	56,060	28,140		27,920	
	고92	우	113+980 ~ 118+300	268,950	141,060		127,890	
	고93	좌	115+520 ~ 115+950	45,060	26,460		18,600	
	고94	좌	117+850 ~ 119+430	127,770	62,460		65,310	
	고95	우	119+350 ~ 120+800	100,500	91,450		9,050	
	고96	좌	120+400 ~ 123+500	316,210	210,130		106,080	
	고97	우	120+850 ~ 121+280	30,760	29,850		910	
	고98	우	122+200 ~ 125+450	256,180	225,440		30,740	
	고99	좌	125+400 ~ 126+650	111,310	76,470		34,840	
	고100	우	125+900 ~ 127+700	91,000	67,930		23,070	
	고101	좌	126+700 ~ 128+930	69,280	39,630	3,280	26,370	
	고102	우	128+700 ~ 130+170	56,150	44,920		11,230	
	고103	우	223+860 ~ 225+370	33,800			33,800	
	고104	좌	226+050 ~ 227+740	152,940	72,420		80,520	
	고105	섬	227+000 ~ 227+200	15,740	6,940		8,800	
	고106	좌	227+780 ~ 229+150	56,470	4,760		51,710	
	고107	우	228+880 ~ 229+950	23,660			23,660	
	고108	좌	230+300 ~ 230+650	29,260	9,820		19,440	
	고109	좌	230+680 ~ 233+630	72,630	13,160		59,470	
	고110	우	233+800 ~ 235+750	108,010	33,460		74,550	
	고111	좌	234+260 ~ 236+030	78,650	24,530		54,120	

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하천명	지구명	안별	위치(No.)	면적(㎡)	농경지	친수공간	기타	비고
금강	고112	우	235+760 ~ 241+580	365,080	99,600		265,480	
	고113	좌	236+200 ~ 237+040	37,870	27,050		10,820	
	고114	좌	237+350 ~ 238+500	121,860	20,310		101,550	
	고115	좌	239+000 ~ 239+570	52,450	24,320		28,130	
	고116	좌	240+600 ~ 240+780	5,780	4,070		1,710	
	고117	좌	240+810 ~ 244+300	133,270	16,850		116,420	
	고118	우	242+730 ~ 244+030	50,310			50,310	
	고119	섬	244+030 ~ 245+340	421,080	311,560		109,520	
	고120	좌	244+930 ~ 245+200	6,040			6,040	
갑천	고1	좌	0+000 ~ 0+570	12,800	2,480		10,320	
	고2	우	0+000 ~ 4+320	347,770	275,450		72,320	
	고3	좌	0+740 ~ 1+050	12,640	5,860		6,780	
	고4	좌	1+650 ~ 2+100	20,770	7,890		12,880	
	고5	좌	2+150 ~ 3+630	70,710	61,290		9,420	
	고6	좌	3+650 ~ 10+090	374,030	52,360	144,600	177,070	
	고7	우	4+375 ~ 5+000	69,700	19,130		50,570	
	고8	우	5+250 ~ 7+380	187,340	13,520	167,080	6,740	
	고9	우	7+430 ~ 10+090	53,630	3,220		50,410	
	고10	좌	10+100 ~ 13+030	133,800		133,800		
	고11	우	10+120 ~ 11+540	40,210			40,210	
	고12	우	11+660 ~ 14+450	180,850		180,850		
	고13	좌	13+070 ~ 13+860	42,100		42,100		
	고14	좌	13,880 ~ 15+000	85,700		85,700		
	고15	우	14+470 ~ 17+070	104,540		104,540		
	고16	좌	15+000 ~ 17+040	91,120		91,120		
	고17	좌	17+060 ~ 20+700	368,030	49,960		318,070	
	고18	우	17+090 ~ 18+630	54,330	7,460		46,870	
	고19	우	19+180 ~ 21+740	81,400	11,030		70,370	

건설공동

하천명	지구명	안별	위치(No.)	면적(㎡)	농경지	친수공간	기타	비고
갑천	고20	좌	20+700 ~ 21+740	55,670	15,340		40,330	
	고21	좌	21+850 ~ 23+130	27,030	8,060		18,970	
	고22	우	21+930 ~ 24+360	52,760	11,260	28,700	12,800	
	고23	좌	23+450 ~ 24+350	12,280			12,280	
	고24	우	25+980 ~ 28+670	118,130	60,290		57,840	
	고25	좌	29+660 ~ 30+300	13,240	3,350		9,890	
	고26	우	30+120 ~ 32+670	93,350	18,180		75,170	
	고27	좌	31+160 ~ 31+780	30,680	10,610		20,070	
	고28	좌	32+170 ~ 32+670	23,550	3,950		19,600	
유등천	고1	좌	0+000 ~ 0+700	33,220		33,220		
	고2	우	0+000 ~ 1+730	138,980			138,980	
	고3	좌	0+730 ~ 3+200	176,750	20,680	156,070		
	고4	우	1+750 ~ 2+680	46,990		46,990		
	고5	우	2+770 ~ 4+830	101,050		101,050		
	고6	좌	3+210 ~ 5+640	99,840		99,840		
	고7	우	4+870 ~ 8+750	178,030		166,870	11,160	
	고8	좌	5+650 ~ 9+950	173,150	2,180	144,140	26,830	
	고9	우	8+780 ~ 9+210	14,030		14,030		
	고10	우	9+430 ~ 11+510	45,270			45,270	
	고11	좌	10+180 ~ 10+850	32,350	4,030		28,320	
	고12	좌	11+530 ~ 11+960	13,940		13,940		
	고13	좌	12+180 ~ 13+180	46,510	42,200		4,310	
	고14	우	12+480 ~ 12+650	4,650	4,650			
	고15	좌	13+320 ~ 14+610	53,850	31,230		22,620	
	고16	우	13+320 ~ 13+540	5,130	5,130			
	고17	우	14+130 ~ 13+280	4,900	3,190		1,710	
	고18	우	14+960 ~ 15+600	12,220	9,910		2,310	
	고19	좌	15+520 ~ 15+600	1,000	1,000			

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하천명	지구명	안별	위치(No.)	면적(㎡)	농경지	친수공간	기타	비고
미호천	고1	좌	0+000 ~ 0+160	5,360	5,080		280	
	고2	우	0+000 ~ 1+700	107,590	98,750		8,840	
	고3	좌	1+790 ~ 2+700	50,730	29,920		20,810	
	고4	우	2+160 ~ 2+530	8,250	4,680		3,570	
	고5	우	2+700 ~ 3+400	201,060	175,490		25,570	
	고6	좌	2+800 ~ 4+300	89,240	71,810		17,430	
	고7	우	3+400 ~ 4+590	217,600	104,480		113,120	
	고8	좌	4+310 ~ 6+380	200,790	197,200		3,590	
	고9	우	5+370 ~ 7+780	252,460	230,500		21,960	
	고10	좌	6+930 ~ 10+240	586,520	392,950		193,570	
	고11	우	8+200 ~ 8+500	10,600			10,600	
	고12	우	8+560 ~ 9+000	22,400	20,380		2,020	
	고13	우	8+060 ~ 11+880	200,850	186,920		13,930	
	고14	좌	10+250 ~ 12+750	447,200	390,440		56,760	
	고15	우	11+910 ~ 15+760	845,020	750,640		94,380	
	고16	좌	12+970 ~ 14+670	181,640	154,500		27,140	
	고17	좌	14+720 ~ 15+530	119,770	108,800		10,970	
	고18	좌	15+570 ~ 16+980	77,810	49,590		28,220	
	고19	우	16+450 ~ 23+550	511,600	442,260		69,340	
	고20	좌	17+250 ~ 21+000	282,500	268,420		14,080	
	고21	좌	21+120 ~ 27+400	513,650	303,290		210,360	
	고22	우	23+900 ~ 25+620	95,380	80,460		14,920	
	고23	우	26+050 ~ 28+600	93,950	87,350		6,600	
	고24	좌	27+450 ~ 29+520	289,140	269,800		19,340	
	고25	섬	28+300 ~ 29+100	78,430	76,400		2,030	
	고26	우	28+600 ~ 30+380	191,940	173,670		18,270	
	고27	좌	29+580 ~ 30+450	56,130	52,830		3,300	
	고28	우	30+400 ~ 32+250	152,800	135,680		17,120	

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하천명	지구명	안별	위치(No.)	면적(㎡)	농경지	친수공간	기타	비고
미호천	고29	좌	30+600 ~ 31+830	55,410	45,200		10,210	
	고30	좌	32+000 ~ 33+000	193,470	178,450		15,020	
	고31	좌	33+050 ~ 33+900	103,130	90,400		12,730	
	고32	우	33+250 ~ 34+400	112,650	101,000		11,650	
	고33	좌	34+070 ~ 37+670	237,600	212,670		24,930	
	고34	우	34+400 ~ 35+950	191,500	175,220		16,280	
	고35	우	35+970 ~ 38+600	203,650	183,400		20,250	
	고36	좌	37+840 ~ 38+830	51,900	47,020		4,880	
	고37	좌	39+000 ~ 39+440	10,360	4,880		5,480	
논산천	고1	좌	0+000 ~ 0+450	34,610	17,940		16,670	
	고2	우	0+000 ~ 0+770	149,370	136,300		13,070	
	고3	좌	1+000 ~ 1+570	70,390	70,390			
	고4	우	0+800 ~ 1+400	59,920	59,920			
	고5	우	1+420 ~ 2+850	145,680	145,680			
	고6	좌	1+590 ~ 2+500	34,790	34,790			
	고7	좌	2+530 ~ 4+260	152,660	146,920		5,740	
	고8	우	2+870 ~ 4+350	92,860	86,980		5,880	
	고9	좌	4+300 ~ 5+120	80,570	80,570			
	고10	우	4+380 ~ 5+500	56,470	52,900		3,570	
	고11	좌	5+150 ~ 5+850	64,630	64,630			
	고12	우	5+520 ~ 7+350	149,690	141,930		7,760	
	고13	좌	5+950 ~ 6+800	99,610	99,610			
	고14	좌	6+820 ~ 7+730	82,450	64,270		18,180	
	고15	우	7+360 ~ 9+240	229,220	229,220			
	고16	좌	7+730 ~ 11+330	266,910	136,250	130,660		
	고17	우	9+240 ~ 12+060	195,320	178,250		17,070	
	고18	좌	11+400 ~ 12+690	38,190	36,340		1,850	
	고19	우	12+080 ~ 13+320	105,750	84,840		20,910	

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하천명	지구명	안별	위치(No.)	면적(㎡)	농경지	친수공간	기타	비고
논산천	고20	좌	12+740 ~ 13+810	66,550	27,220	23,270	16,060	
	고21	우	13+330 ~ 14+340	56,870		56,870		
	고22	좌	13+900 ~ 16+250	150,280	140,180	10,100		
	고23	우	15+330 ~ 16+570	258,950	236,500		22,450	
	고24	좌	16+300 ~ 16+650	13,080			13,080	
노성천	고1	좌	0+000 ~ 1+250	93,460	91,680		1,780	
	고2	우	0+000 ~ 1+700	72,260	68,170		4,090	
	고3	우	1+720 ~ 3+810	88,090	86,200		1,890	
	고4	좌	2+350 ~ 3+800	72,630	70,200		2,430	
	고5	우	3+830 ~ 4+800	36,340	36,340			
	고6	좌	3+900 ~ 4+850	38,830	38,830			
	고7	좌	4+870 ~ 5+130	10,380	10,380			
	고8	우	4+900 ~ 4+990	1,270	1,030		240	
강경천	고1	좌	0+000 ~ 1+450	49,870	49,870			
	고2	우	0+000 ~ 1+780	56,520	56,520			
	고3	좌	1+470 ~ 2+830	46,300	46,300			
	고4	우	1+800 ~ 2+970	35,660	34,300		1,360	
	고5	좌	2+850 ~ 3+850	36,070	34,100		1,970	
	고6	우	3+000 ~ 4+910	60,130	60,130			
	고7	좌	3+850 ~ 4+800	28,650	28,650			
	고8	좌	4+810 ~ 7+220	78,260	75,700		2,560	
	고9	우	4+930 ~ 6+500	49,840	49,840			
	고10	우	6+500 ~ 7+565	23,040	23,040			
	고11	좌	7+250 ~ 7+565	7,320	7,320			

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4.2 기존 및 신생폐천부지

4.2.1 기존폐천부지 이용현황

하천명	필지수	편입면적	농경지	대지	도로	잡종지	유수지	비 고
금강(하류)	257	496,443	150,120	6,520	119,659	100,495	119,649	
금강(상류)	69	60,596	18,928	-	660	12,565	28,443	
갑 천	90	140,654	13,254	31,737	26,951	62,637	6,075	
유등천	95	42,574	1,912	28,827	5,560	6,275	-	
미호천	66	113,935	60,004	630	-	767	52,534	
논산천	48	45,100	4,843	19,376	1,110	321	19,450	
강경천	15	22,493	14,273	46	156	287	7,731	
계	640	921,795	263,334	87,136	154,096	183,347	233,882	

주) 폐천부지 이용현황중 유수지에 해당되는 부지들은 폐천부지 대상지역으로 설정하였지만 지속적으로 관리해야 되는 부지임.

4.2.2 신생폐천부지 이용현황

하천명	필지수	편입면적	농경지	대지	도로	잡종지	유수지	비 고
금강(하류)	12	13,501	9,996	-	-	3,505	-	성덕,양지지구
갑 천	4	3,125	-	1,078	2,047	-	-	신대,정림지구
계	16	16,626	9,996	1,078	2,047	3,505	-	

제X장 경제성 분석

1. 공사비 산정

2. 자산조사 및 홍수피해액 산정

3. 간편법에 의한 홍수 피해액 및 B/C산정

4. 치수경제성 분석 결과

건설교통부

1. 공사비 산정

1.1 축제 지구별 공사비

1.2 보축 지구별 공사비

1.3 배수구조물 및 기타구조물 공사비

한밭교육연구

1.1 축제 지구별 공사비

건설교통부

□ . 경제성분석 대상지구 빈도별 공사비 산정 총괄표

하천명	지구명	안별	위치(측점)	연장(m)	빈도별총공사비(천원)					비고
					50년	80년	100년	200년	계획	
금강	성덕지구	좌	No.1+490~No.2+700	1,140	2,891,457	2,965,267	3,004,881	3,087,231	3,004,881	
	제성지구	좌	No.18+600~No.22+850	2,860	29,686,511	30,289,316	30,612,756	31,551,554	30,612,756	
	옥룡지구	좌	No.86+310~No.86+500	240	482,202	518,420	540,058	615,440	665,174	
	소학지구	좌	No.87+310~No.88+330	2,220	6,072,644	6,683,925	7,030,005	8,557,550	9,433,703	
	마암지구	좌	No.93+470~No.93+820	360	1,070,105	1,185,822	1,252,653	1,497,571	1,588,132	
	원봉지구	좌	No.98+080~No.98+750	650	1,535,077	1,700,666	1,791,786	2,152,481	1,791,786	
	석삼지구	좌	No.104+260~No.105+60	820	2,745,210	3,069,998	3,252,788	3,984,342	4,160,462	
	대동지구	좌	No.121+320~No.122+820	1,560	3,779,440	4,180,160	4,400,366	5,742,166	4,888,473	
	고당지구	좌	No.241+15~No.241+855	540	445,531	505,941	553,520	684,773	861,218	
	마서지구	우	No.1+430~No.1+480	60	705,263	707,643	708,511	711,453	708,469	
	유왕지구	우	No.19+170~No.19+400	350	1,016,465	1,085,754	1,118,163	1,230,833	1,118,163	
	간대지구	우	No.27+600~No.27+630	60	670,010	719,684	750,786	828,168	750,786	
	정고2지구	우	No.44+880~No.49+000	240	600,346	651,663	682,096	768,060	682,096	
	양지지구	우	No.126+220~No.126+750	1,430	6,167,239	6,683,096	6,941,910	8,768,069	7,073,263	
갑천	신대1지구	우	No.9+600~No.9+900	330	1,828,564	2,637,047	2,745,914	3,057,840	3,057,840	
	정림지구	우	No.20+835~No.20+955	135	298,612	308,435	313,730	331,665	313,730	
	괴곡지구	우	No.23+750~No.23+975	230	109,174	117,607	122,358	159,652	122,358	
논산천	동흥지구	좌	No.0+265~No.0+365	75	1,053,323	1,189,848	1,189,848	1,193,950	1,189,848	

□ . 성덕지구 빈도별 공사수량 및 공사비 L= 1140 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	1002.31	1039.92	1056.80	1099.59	1056.80	
2.호안공	334.88	342.00	349.13	356.25	349.13	
3.구조물공	140.00	140.00	140.00	140.00	140.00	
4.용지보상비	454.10	454.10	454.10	454.10	454.10	
5.기타	960.17	989.25	1004.85	1037.29	1004.85	

□ . 제성지구 빈도별 공사수량 및 공사비 L= 2860 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	3694.61	4006.32	4166.59	4664.06	4166.59	
2.호안공	1108.25	1161.88	1197.63	1269.13	1197.63	
3.구조물공	292.00	292.00	292.00	292.00	292.00	
4.용지보상비	21280.00	21280.00	21280.00	21280.00	21280.00	
5.기타	3311.66	3549.12	3676.54	4046.37	3676.54	

□ . 옥룡지구 빈도별 공사수량 및 공사비 L= 240 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	68.03	79.06	85.57	107.62	122.76	
2.호안공	98.88	109.80	116.40	140.04	155.04	
3.구조물공	100.00	100.00	100.00	100.00	100.00	
4.용지보상비	41.80	41.80	41.80	41.80	41.80	
5.기타	173.49	187.76	196.28	225.98	245.57	

□ . 소학지구 빈도별 공사수량 및 공사비 L= 2220 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	1464.53	1751.76	1919.88	2693.04	3140.79	
2.호안공	749.25	832.50	874.13	1026.75	1110.00	
3.구조물공	1120.00	1120.00	1120.00	1120.00	1120.00	
4.용지보상비	571.90	571.90	571.90	571.90	571.90	
5.기타	2166.96	2407.77	2544.10	3145.86	3491.01	

□ . 마암지구 빈도별 공사수량 및 공사비 L= 360 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	238.01	294.64	328.40	452.08	497.97	
2.호안공	87.75	101.25	108.00	132.75	141.75	
3.구조물공	180.00	180.00	180.00	180.00	180.00	
4.용지보상비	235.60	235.60	235.60	235.60	235.60	
5.기타	328.74	374.33	400.66	497.14	532.82	

□ . 원봉지구 빈도별 공사수량 및 공사비 L= 650 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	556.65	642.87	691.35	882.95	691.35	
2.호안공	152.37	166.50	173.25	200.25	173.25	
3.구조물공	120.00	120.00	120.00	120.00	120.00	
4.용지보상비	167.20	167.20	167.20	167.20	167.20	
5.기타	538.86	604.09	639.99	782.08	639.99	

□ . 석삼지구 빈도별 공사수량 및 공사비 L= 820 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	806.20	972.29	1067.70	1449.56	1540.93	
2.호안공	271.63	302.38	317.75	379.25	394.63	
3.구조물공	252.00	252.00	252.00	252.00	252.00	
4.용지보상비	551.00	551.00	551.00	551.00	551.00	
5.기타	864.39	992.33	1064.34	1352.53	1421.91	

건설교통부

□ . 대동지구 빈도별 공사수량 및 공사비 L= 1560 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	1145.01	1339.12	1453.08	2129.79	1700.15	
2.호안공	565.50	614.25	633.75	770.25	682.50	
3.구조물공	192.00	192.00	192.00	192.00	192.00	
4.용지보상비	640.30	640.30	640.30	640.30	640.30	
5.기타	1236.63	1394.49	1481.24	2009.83	1673.52	

□ . 고당지구 빈도별 공사수량 및 공사비 L= 540 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	59.59	96.21	125.04	187.71	271.03	
2.호안공	0.00	0.00	0.00	16.88	40.50	
3.구조물공	40.00	40.00	40.00	40.00	40.00	
4.용지보상비	281.20	281.20	281.20	281.20	281.20	
5.기타	64.74	88.53	107.28	158.98	228.49	

□ . 마서지구 빈도별 공사수량 및 공사비 L= 60 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	22.82	23.89	24.42	25.82	24.39	
2.호안공	1.50	1.88	1.88	2.25	1.88	
3.구조물공	400.00	400.00	400.00	400.00	400.00	
4.용지보상비	5.13	5.13	5.13	5.13	5.13	
5.기타	275.81	276.75	277.09	278.25	277.07	

□ . 유왕지구 빈도별 공사수량 및 공사비 L= 350 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	433.03	468.46	485.92	543.27	485.92	
2.호안공	107.19	113.75	115.94	126.88	115.94	
3.구조물공	24.00	24.00	24.00	24.00	24.00	
4.용지보상비	85.50	85.50	85.50	85.50	85.50	
5.기타	366.74	394.04	406.81	451.19	406.81	

□ . 간대지구 빈도별 공사수량 및 공사비 L= 60 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	142.20	167.81	183.66	223.05	183.66	
2.호안공	84.00	88.50	91.50	99.00	91.50	
3.구조물공	0.00	0.00	0.00	0.00	0.00	
4.용지보상비	296.78	296.78	296.78	296.78	296.78	
5.기타	147.03	166.60	178.85	209.33	178.85	

□ . 정고2지구 빈도별 공사수량 및 공사비 L= 240 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	132.20	156.40	171.12	213.62	171.12	
2.호안공	51.78	58.68	62.40	72.00	62.40	
3.구조물공	0.00	0.00	0.00	0.00	0.00	
4.용지보상비	296.78	296.78	296.78	296.78	296.78	
5.기타	119.59	139.80	151.79	185.66	151.79	

□ . 양지지구 빈도별 공사수량 및 공사비 L= 1430 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	2565.91	2833.86	2972.84	3945.54	3043.51	
2.호안공	732.88	777.56	795.44	929.50	804.38	
3.구조물공	67.00	67.00	67.00	67.00	67.00	
4.용지보상비	613.70	613.70	613.70	613.70	613.70	
5.기타	2187.76	2390.97	2492.93	3212.33	2544.68	

건설e통부

□ . 신대1지구 빈도별 공사수량 및 공사비 L= 330 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	387.40	757.27	806.81	962.25	962.25	
2.호안공	308.88	429.00	445.45	479.05	479.05	
3.구조물공	40.00	40.00	40.00	40.00	40.00	
4.용지보상비	613.70	613.70	613.70	613.70	613.70	
5.기타	478.58	797.08	839.96	962.84	962.84	

□ . 정림지구 빈도별 공사수량 및 공사비 L= 135 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	78.94	84.05	86.42	95.60	86.42	
2.호안공	64.13	64.97	65.81	67.50	65.81	
3.구조물공	12.00	12.00	12.00	12.00	12.00	
4.용지보상비	42.75	42.75	42.75	42.75	42.75	
5.기타	100.79	104.66	106.75	113.82	106.75	

□ . 괴곡지구 빈도별 공사수량 및 공사비 L= 230 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	20.75	25.86	28.74	42.72	28.74	
2.호안공	0.00	0.00	0.00	8.63	0.00	
3.구조물공	0.00	0.00	0.00	0.00	0.00	
4.용지보상비	74.94	74.94	74.94	74.94	74.94	
5.기타	13.49	16.81	18.68	33.37	18.68	

□ . 동흥지구 빈도별 공사수량 및 공사비 L= 75 m

구 분	20년	80년	100년	200년	계획	비고
1.축제공	134.66	203.03	203.03	205.51	203.03	
2.호안공	93.44	107.81	107.81	107.81	107.81	
3.구조물공	405.10	405.10	405.10	405.10	405.10	
4.용지보상비	8.55	8.55	8.55	8.55	8.55	
5.기타	411.58	465.36	465.36	466.98	465.36	

건설교통부

□ . 성덕지구 빈도별 공사수량 및 공사비 L= 1,140 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	56.34	58.59	59.60	62.16	59.60	64,228	66,793	67,944	70,862	67,944	
면고르기	㎡	19.16	19.65	19.87	20.41	19.87	21,842	22,401	22,652	23,267	22,652	
줄 떼	㎡	14.26	14.46	14.55	14.78	14.55	16,256	16,484	16,587	16,849	16,587	
호안블럭	㎡	4.75	5.00	5.25	5.50	5.25	5,415	5,700	5,985	6,270	5,985	
돌 망 태	㎡	5.00	5.00	5.00	5.00	5.00	5,700	5,700	5,700	5,700	5,700	
배수통관	EA						0	0	0	0	0	
배 수 문	EA						2	2	2	2	2	
편입용지	㎡						23900	23900	23900	23900	23900	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				1,002,311	1,039,919	1,056,803	1,099,587	1,056,803	
성 토	토사(운반포함)	m3	14,000	899,186	935,096	951,216	992,074	951,216	
면고르기	토사	m3	1,000	21,842	22,401	22,652	23,267	22,652	
떼붙임	줄떼	m2	5,000	81,282	82,422	82,935	84,246	82,935	
2.호안공				334,875	342,000	349,125	356,250	349,125	
호안블록	게다형 40X25X12	m2	25,000	135,375	142,500	149,625	156,750	149,625	
돌망태	타원형(운반포함)		35,000	199,500	199,500	199,500	199,500	199,500	
3.구조물공				140,000	140,000	140,000	140,000	140,000	
배수관	문비포함	개소	15,000,000	0	0	0	0	0	
배수문	문비포함	개소	70,000,000	140,000	140,000	140,000	140,000	140,000	
4.부대공	순공사비의 10%	식		147,719	152,192	154,593	159,584	154,593	
5.잡 비	(1+2+3+4)*50%	식		812,452	837,056	850,260	877,710	850,260	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	454,100	454,100	454,100	454,100	454,100	
총공사비				2,891,457	2,965,267	3,004,881	3,087,231	3,004,881	

□ . 제성지구 빈도별 공사수량 및 공사비 L= 2,860 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	85.66	93.16	97.02	109.02	97.02	244,988	266,438	277,477	311,797	277,477	
면고르기	㎡	22.63	23.92	24.57	26.51	24.57	64,722	68,411	70,270	75,819	70,270	
줄 떼	㎡	13.99	14.53	14.80	15.60	14.80	40,011	41,556	42,328	44,616	42,328	
호안블럭	㎡	8.50	9.25	9.75	10.75	9.75	24,310	26,455	27,885	30,745	27,885	
돌 망 태	㎡	5.00	5.00	5.00	5.00	5.00	14,300	14,300	14,300	14,300	14,300	
배수통관	EA						11	11	11	11	11	
배 수 문	EA						2	2	2	2	2	
편입용지	㎡						1120000	1120000	1120000	1120000	1120000	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				3,694,605	4,006,317	4,166,591	4,664,059	4,166,591	
성 토	토사(운반포함)	m3	14,000	3,429,826	3,730,126	3,884,681	4,365,161	3,884,681	
면고르기	토사	m3	1,000	64,722	68,411	70,270	75,819	70,270	
떼붙임	줄떼	m2	5,000	200,057	207,779	211,640	223,080	211,640	
2.호안공				1,108,250	1,161,875	1,197,625	1,269,125	1,197,625	
호안블록	게다형 40X25X12	m2	25,000	607,750	661,375	697,125	768,625	697,125	
돌망태	타원형(운반포함)		35,000	500,500	500,500	500,500	500,500	500,500	
3.구조물공				292,000	292,000	292,000	292,000	292,000	
배수관	문비포함	개소	12,000,000	132,000	132,000	132,000	132,000	132,000	
배수문	문비포함	개소	80,000,000	160,000	160,000	160,000	160,000	160,000	
4.부대공	순공사비의 10%	식		509,486	546,019	565,622	622,518	565,622	
5.잡 비	(1+2+3+4)*50%	식		2,802,170	3,003,105	3,110,919	3,423,851	3,110,919	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	21,280,000	21,280,000	21,280,000	21,280,000	21,280,000	
총공사비				29,686,511	30,289,316	30,612,756	31,551,554	30,612,756	

□ . 옥룡지구 빈도별 공사수량 및 공사비 L= 240 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	19.80	23.05	24.97	31.47	35.94	4,752	5,532	5,993	7,553	8,626	
면고르기	㎡	6.26	6.72	6.98	7.84	8.35	1,502	1,613	1,675	1,882	2,004	
줄 떼	㎡	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0	
석 축	㎡	6.26	6.72	6.98	7.84	8.35	1,502	1,613	1,675	1,882	2,004	
Con'c옹벽	㎡	1.98	2.43	2.72	3.83	4.57	475	583	653	919	1,097	
배수통관	EA						0	0	0	0	0	
배 수 문	EA						1	1	1	1	1	
편입용지	㎡						2200	2200	2200	2200	2200	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				68,030	79,061	85,574	107,621	122,762	
성 토	토사(운반포함)	m3	14,000	66,528	77,448	83,899	105,739	120,758	
면고르기	토사	m3	1,000	1,502	1,613	1,675	1,882	2,004	
떼붙임	줄떼	m2	5,000	0	0	0	0	0	
2.호안공				98,880	109,800	116,400	140,040	155,040	
석축		m2	50,000	75,120	80,640	83,760	94,080	100,200	
옹벽		m2	50,000	23,760	29,160	32,640	45,960	54,840	
3.구조물공				100,000	100,000	100,000	100,000	100,000	
배수관	문비포함	개소	12,000,000	0	0	0	0	0	
배수문	문비포함	개소	100,000,000	100,000	100,000	100,000	100,000	100,000	
4.부대공	순공사비의 10%	식		26,691	28,886	30,197	34,766	37,780	
5.잡 비	(1+2+3+4)*50%	식		146,801	158,873	166,086	191,213	207,791	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	41,800	41,800	41,800	41,800	41,800	
총공사비				482,202	518,420	540,058	615,440	665,174	

□ . **소학지구** 빈도별 공사수량 및 공사비 L= 2,220 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	41.83	50.43	55.65	79.52	93.37	92,863	111,955	123,543	176,534	207,281	
면고르기	㎡	17.88	20.31	21.66	26.25	28.79	39,694	45,088	48,085	58,275	63,914	
줄 떼	㎡	11.24	12.55	12.81	14.71	15.76	24,953	27,861	28,438	32,656	34,987	
호안블럭	㎡	6.50	8.00	8.75	11.50	13.00	14,430	17,760	19,425	25,530	28,860	
돌 망 태	㎡	5.00	5.00	5.00	5.00	5.00	11,100	11,100	11,100	11,100	11,100	
교량	EA						1	1	1	1	1	
배 수 문	EA						2	2	2	2	2	
편입용지	㎡						30100	30100	30100	30100	30100	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				1,464,534	1,751,758	1,919,878	2,693,038	3,140,789	
성 토	토사(운반포함)	m3	14,000	1,300,076	1,567,364	1,729,602	2,471,482	2,901,940	
면고르기	토사	m3	1,000	39,694	45,088	48,085	58,275	63,914	
떼붙임	줄떼	m2	5,000	124,764	139,305	142,191	163,281	174,936	
2.호안공				749,250	832,500	874,125	1,026,750	1,110,000	
호안블록	게다형 40X25X12	m2	25,000	360,750	444,000	485,625	638,250	721,500	
돌망태	타원형(운반포함)	m2	35,000	388,500	388,500	388,500	388,500	388,500	
3.구조물공				1,120,000	1,120,000	1,120,000	1,120,000	1,120,000	
교량		개소	1,000,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	
배수문	문비포함	개소	60,000,000	120,000	120,000	120,000	120,000	120,000	
4.부대공	순공사비의 10%	식		333,378	370,426	391,400	483,979	537,079	
5.잡 비	(1+2+3+4)*50%	식		1,833,581	2,037,342	2,152,702	2,661,883	2,953,934	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	571,900	571,900	571,900	571,900	571,900	
총공사비				6,072,644	6,683,925	7,030,005	8,557,550	9,433,703	

□ . 마암지구 빈도별 공사수량 및 공사비 L= 360 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	41.52	52.20	58.59	82.11	90.87	14,947	18,792	21,092	29,560	32,713	
면고르기	㎡	15.71	18.25	19.65	24.29	25.86	5,656	6,570	7,074	8,744	9,310	
줄 떼	㎡	12.83	13.88	14.46	16.39	17.04	4,619	4,997	5,206	5,900	6,134	
호안블럭	㎡	2.75	4.25	5.00	7.75	8.75	990	1,530	1,800	2,790	3,150	
돕 망 태	㎡	5.00	5.00	5.00	5.00	5.00	1,800	1,800	1,800	1,800	1,800	
배수통관	EA						0	0	0	0	0	
배 수 문	EA						1	1	1	1	1	
편입용지	㎡						12400	12400	12400	12400	12400	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				238,010	294,642	328,396	452,081	497,966	
성 토	토사(운반포함)	m3	14,000	209,261	263,088	295,294	413,834	457,985	
면고르기	토사	m3	1,000	5,656	6,570	7,074	8,744	9,310	
떼붙임	줄떼	m2	5,000	23,094	24,984	26,028	29,502	30,672	
2.호안공				87,750	101,250	108,000	132,750	141,750	
호안블록	게다형 40X25X12	m2	25,000	24,750	38,250	45,000	69,750	78,750	
돌망태	타원형(운반포함)		35,000	63,000	63,000	63,000	63,000	63,000	
3.구조물공				180,000	180,000	180,000	180,000	180,000	
배수관	문비포함	개소	15,000,000	0	0	0	0	0	
배수문	문비포함	개소	180,000,000	180,000	180,000	180,000	180,000	180,000	
4.부대공	순공사비의 10%	식		50,576	57,589	61,640	76,483	81,972	
5.잡 비	(1+2+3+4)*50%	식		278,168	316,741	339,018	420,657	450,844	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	235,600	235,600	235,600	235,600	235,600	
총공사비				1,070,105	1,185,822	1,252,653	1,497,571	1,588,132	

□ . **원봉지구** 빈도별 공사수량 및 공사비 L= **650** m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	102.01	118.63	127.94	164.83	127.94	36,724	42,707	46,058	59,339	46,058	
면고르기	㎡	27.75	30.39	31.80	36.92	31.80	9,990	10,940	11,448	13,291	11,448	
줄 떼	㎡	18.07	18.91	19.49	21.62	19.49	6,505	6,808	7,016	7,783	7,016	
호안블럭	㎡	9.93	11.50	12.25	15.25	12.25	3,575	4,140	4,410	5,490	4,410	
돌 망 태	㎡	5.00	5.00	5.00	5.00	5.00	1,800	1,800	1,800	1,800	1,800	
배수통관	EA						0	0	0	0	0	
배 수 문	EA						1	1	1	1	1	
편입용지	㎡						8800	8800	8800	8800	8800	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				556,646	642,874	691,348	882,950	691,348	
성 토	토사(운반포함)	m3	14,000	514,130	597,895	644,818	830,743	644,818	
면고르기	토사	m3	1,000	9,990	10,940	11,448	13,291	11,448	
떼붙임	줄떼	m2	5,000	32,526	34,038	35,082	38,916	35,082	
2.호안공				152,370	166,500	173,250	200,250	173,250	
호안블록	게다형 40X25X12	m2	25,000	89,370	103,500	110,250	137,250	110,250	
돌망태	타원형(운반포함)		35,000	63,000	63,000	63,000	63,000	63,000	
3.구조물공				120,000	120,000	120,000	120,000	120,000	
배수관	문비포함	개소	15,000,000	0	0	0	0	0	
배수문	문비포함	개소	120,000,000	120,000	120,000	120,000	120,000	120,000	
4.부대공	순공사비의 10%	식		82,902	92,937	98,460	120,320	98,460	
5.잡 비	(1+2+3+4)*50%	식		455,959	511,155	541,529	661,760	541,529	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	167,200	167,200	167,200	167,200	167,200	
총공사비				1,535,077	1,700,666	1,791,786	2,152,481	1,791,786	

□ . 석삼지구 빈도별 공사수량 및 공사비 L= 820 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	62.86	76.76	84.76	116.90	124.61	51,545	62,943	69,503	95,858	102,180	
면고르기	㎡	22.43	25.03	26.43	31.56	32.69	18,393	20,525	21,673	25,879	26,806	
줄 떼	㎡	16.14	17.21	17.80	19.92	20.39	13,235	14,112	14,596	16,334	16,720	
호안블럭	㎡	6.25	7.75	8.50	11.50	12.25	5,125	6,355	6,970	9,430	10,045	
돌 망 태	㎡	5.00	5.00	5.00	5.00	5.00	4,100	4,100	4,100	4,100	4,100	
배수통관	EA						1	1	1	1	1	
배 수 문	EA						2	2	2	2	2	
편입용지	㎡						29000	29000	29000	29000	29000	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				806,199	972,290	1,067,697	1,449,563	1,540,928	
성 토	토사(운반포함)	m3	14,000	721,633	881,205	973,045	1,342,012	1,430,523	
면고르기	토사	m3	1,000	18,393	20,525	21,673	25,879	26,806	
떼붙임	줄떼	m2	5,000	66,174	70,561	72,980	81,672	83,599	
2.호안공				271,625	302,375	317,750	379,250	394,625	
호안블록	게다형 40X25X12	m2	25,000	128,125	158,875	174,250	235,750	251,125	
돌망태	타원형(운반포함)		35,000	143,500	143,500	143,500	143,500	143,500	
3.구조물공				252,000	252,000	252,000	252,000	252,000	
배수관	문비포함	개소	12,000,000	12,000	12,000	12,000	12,000	12,000	
배수문	문비포함	개소	120,000,000	240,000	240,000	240,000	240,000	240,000	
4.부대공	순공사비의 10%	식		132,982	152,667	163,745	208,081	218,755	
5.잡 비	(1+2+3+4)*50%	식		731,403	839,666	900,596	1,144,447	1,203,154	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	551,000	551,000	551,000	551,000	551,000	
총공사비				2,745,210	3,069,998	3,252,788	3,984,342	4,160,462	

□ . 대동지구 빈도별 공사수량 및 공사비 L= 1,560 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	47.53	55.99	60.97	90.70	71.80	74,147	87,344	95,113	141,492	112,008	
면고르기	㎡	17.81	19.75	20.83	26.55	23.04	27,784	30,810	32,495	41,418	35,942	
줄 떼	㎡	10.15	10.96	11.41	13.78	12.32	15,834	17,098	17,800	21,497	19,219	
호안블럭	㎡	7.50	8.75	9.25	12.75	10.50	11,700	13,650	14,430	19,890	16,380	
돌 망 태	㎡	5.00	5.00	5.00	5.00	5.00	7,800	7,800	7,800	7,800	7,800	
배수통관	EA						6	6	6	6	6	
배 수 문	EA						2	2	2	2	2	
편입용지	㎡						33700	33700	33700	33700	33700	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				1,145,009	1,339,120	1,453,078	2,129,790	1,700,150	
성 토	토사(운반포함)	m3	14,000	1,038,055	1,222,822	1,331,585	1,980,888	1,568,112	
면고르기	토사	m3	1,000	27,784	30,810	32,495	41,418	35,942	
떼붙임	줄떼	m2	5,000	79,170	85,488	88,998	107,484	96,096	
2.호안공				565,500	614,250	633,750	770,250	682,500	
호안블록	게다형 40X25X12	m2	25,000	292,500	341,250	360,750	497,250	409,500	
돌망태	타원형(운반포함)		35,000	273,000	273,000	273,000	273,000	273,000	
3.구조물공				192,000	192,000	192,000	192,000	192,000	
배수관	문비포함	개소	12,000,000	72,000	72,000	72,000	72,000	72,000	
배수문	문비포함	개소	60,000,000	120,000	120,000	120,000	120,000	120,000	
4.부대공	순공사비의 10%	식		190,251	214,537	227,883	309,204	257,465	
5.잡 비	(1+2+3+4)*50%	식		1,046,380	1,179,953	1,253,355	1,700,622	1,416,058	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	640,300	640,300	640,300	640,300	640,300	
총공사비				3,779,440	4,180,160	4,400,366	5,742,166	4,888,473	

□ . 고당지구 빈도별 공사수량 및 공사비 L= 540 m

1. 공사물량

공 종	단위	빈도별 공사수량				빈도별 전체공사수량						비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	6.10	10.09	13.30	20.85	31.16	3,294	5,449	7,182	11,259	16,826	
면고르기	㎡	4.16	6.15	7.56	10.42	13.66	2,246	3,321	4,082	5,627	7,376	
줄 떼	㎡	4.16	6.15	7.56	9.06	10.40	2,246	3,321	4,082	4,892	5,616	
호안블럭	㎡	0.00	0.00	0.00	1.25	3.00	0	0	0	675	1,620	
돕 망 태	㎡	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0	
배수통관	EA						0	0	0	0	0	
배 수 문	EA						1	1	1	1	1	
편입용지	㎡						14800	14800	14800	14800	14800	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				59,594	96,206	125,042	187,715	271,026	
성 토	토사(운반포함)	m3	14,000	46,116	76,280	100,548	157,626	235,570	
면고르기	토사	m3	1,000	2,246	3,321	4,082	5,627	7,376	
떼붙임	줄떼	m2	5,000	11,232	16,605	20,412	24,462	28,080	
2.호안공				0	0	0	16,875	40,500	
호안블록	게다형 40X25X12	m2	25,000	0	0	0	16,875	40,500	
돌망태	타원형(운반포함)		35,000	0	0	0	0	0	
3.구조물공				40,000	40,000	40,000	40,000	40,000	
배수관	문비포함	개소	15,000,000	0	0	0	0	0	
배수문	문비포함	개소	40,000,000	40,000	40,000	40,000	40,000	40,000	
4.부대공	순공사비의 10%	식		9,959	13,621	16,504	24,459	35,153	
5.잡 비	(1+2+3+4)*50%	식		54,777	74,914	90,773	134,524	193,339	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	281,200	281,200	281,200	281,200	281,200	
총공사비				445,531	505,941	553,520	684,773	861,218	

□ . 마서지구 빈도별 공사수량 및 공사비 L= 60 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	22.63	23.82	24.41	25.98	24.38	1,358	1,429	1,465	1,559	1,463	
면고르기	㎡	11.46	11.84	12.00	12.49	12.00	688	710	720	749	720	
줄 떼	㎡	10.42	10.57	10.64	10.84	10.64	625	634	638	650	638	
호안블럭	㎡	1.00	1.25	1.25	1.50	1.25	60	75	75	90	75	
돌 망 태	㎡	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0	
배수룡관	EA						0	0	0	0	0	
배 수 문	EA						1	1	1	1	1	
편입용지	㎡						270	270	270	270	270	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				22,823	23,890	24,416	25,825	24,391	
성 토	토사(운반포함)	m3	14,000	19,009	20,009	20,504	21,823	20,479	
면고르기	토사	m3	1,000	688	710	720	749	720	
떼붙임	줄떼	m2	5,000	3,126	3,171	3,192	3,252	3,192	
2.호안공				1,500	1,875	1,875	2,250	1,875	
호안블록	게다형 40X25X12	m2	25,000	1,500	1,875	1,875	2,250	1,875	
돌망태	타원형(운반포함)		35,000	0	0	0	0	0	
3.구조물공				400,000	400,000	400,000	400,000	400,000	
배수관	문비포함	개소	12,000,000	0	0	0	0	0	
배수문(개량)	망월방조수문 개량	개소	400,000,000	400,000	400,000	400,000	400,000	400,000	
4.부대공	순공사비의 10%	식		42,432	42,577	42,629	42,807	42,627	
5.잡 비	(1+2+3+4)*50%	식		233,378	234,171	234,460	235,441	234,446	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	5,130	5,130	5,130	5,130	5,130	
총공사비				705,263	707,643	708,511	711,453	708,469	

□ . 유왕지구 빈도별 공사수량 및 공사비 L= 350 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	80.93	87.89	91.32	102.61	91.32	28,326	30,762	31,962	35,914	31,962	
면고르기	㎡	21.82	23.06	23.66	25.55	23.66	7,637	8,071	8,281	8,943	8,281	
줄 떼	㎡	16.48	16.99	17.24	18.02	17.24	5,768	5,947	6,034	6,307	6,034	
호안블럭	㎡	5.25	6.00	6.25	7.50	6.25	1,838	2,100	2,188	2,625	2,188	
돕 망 태	㎡	5.00	5.00	5.00	5.00	5.00	1,750	1,750	1,750	1,750	1,750	
배수통관	EA						2	2	2	2	2	
배 수 문	EA						0	0	0	0	0	
편입용지	㎡						4500	4500	4500	4500	4500	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				433,034	468,465	485,919	543,267	485,919	
성 토	토사(운반포함)	m3	14,000	396,557	430,661	447,468	502,789	447,468	
면고르기	토사	m3	1,000	7,637	8,071	8,281	8,943	8,281	
떼붙임	줄떼	m2	5,000	28,840	29,733	30,170	31,535	30,170	
2.호안공				107,188	113,750	115,938	126,875	115,938	
호안블록	게다형 40X25X12	m2	25,000	45,938	52,500	54,688	65,625	54,688	
돕망태	타원형(운반포함)		35,000	61,250	61,250	61,250	61,250	61,250	
3.구조물공				24,000	24,000	24,000	24,000	24,000	
배수관	문비포함	개소	12,000,000	24,000	24,000	24,000	24,000	24,000	
배수문	문비포함	개소	40,000,000	0	0	0	0	0	
4.부대공	순공사비의 10%	식		56,422	60,621	62,586	69,414	62,586	
5.잡 비	(1+2+3+4)*50%	식		310,322	333,418	344,221	381,778	344,221	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	85,500	85,500	85,500	85,500	85,500	
총공사비				1,016,465	1,085,754	1,118,163	1,230,833	1,118,163	

□ . 간대지구 빈도별 공사수량 및 공사비 L= 60 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	36.15	43.35	47.82	59.01	47.82	8,676	10,404	11,477	14,162	11,477	
면고르기	㎡	20.30	21.99	23.00	25.25	23.00	4,872	5,278	5,520	6,060	5,520	
줄 떼	㎡	13.22	14.06	14.55	15.60	14.55	3,173	3,374	3,492	3,744	3,492	
호안블럭	㎡	7.00	7.75	8.25	9.50	8.25	1,680	1,860	1,980	2,280	1,980	
돌 망 태	㎡	5.00	5.00	5.00	5.00	5.00	1,200	1,200	1,200	1,200	1,200	
배수통관	EA						0	0	0	0	0	
배 수 문	EA						0	0	0	0	0	
편입용지	㎡						15620	15620	15620	15620	15620	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				142,200	167,806	183,655	223,054	183,655	
성 토	토사(운반포함)	m3	14,000	121,464	145,656	160,675	198,274	160,675	
면고르기	토사	m3	1,000	4,872	5,278	5,520	6,060	5,520	
떼붙임	줄떼	m2	5,000	15,864	16,872	17,460	18,720	17,460	
2.호안공				84,000	88,500	91,500	99,000	91,500	
호안블록	게다형 40X25X12	m2	25,000	42,000	46,500	49,500	57,000	49,500	
돌망태	타원형(운반포함)		35,000	42,000	42,000	42,000	42,000	42,000	
3.구조물공				0	0	0	0	0	
배수관	문비포함	개소	12,000,000	0	0	0	0	0	
배수문	문비포함	개소	40,000,000	0	0	0	0	0	
4.부대공	순공사비의 10%	식		22,620	25,631	27,516	32,205	27,516	
5.잡 비	(1+2+3+4)*50%	식		124,410	140,968	151,335	177,129	151,335	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	296,780	296,780	296,780	296,780	296,780	
총공사비				670,010	719,684	750,786	828,168	750,786	

□ . 정고2지구 빈도별 공사수량 및 공사비 L= 240 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	34.09	40.88	45.03	57.08	45.03	8,182	9,811	10,807	13,699	10,807	
면고르기	㎡	13.77	15.55	16.60	19.33	16.60	3,305	3,732	3,984	4,639	3,984	
줄 떼	㎡	11.96	12.76	13.20	14.33	13.20	2,870	3,062	3,168	3,439	3,168	
호안블럭	㎡	1.63	2.78	3.40	5.00	3.40	391	667	816	1,200	816	
돌 망 태	㎡	5.00	5.00	5.00	5.00	5.00	1,200	1,200	1,200	1,200	1,200	
배수통관	EA						0	0	0	0	0	
배 수 문	EA						0	0	0	0	0	
편입용지	㎡						15620	15620	15620	15620	15620	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				132,199	156,401	171,125	213,624	171,125	
성 토	토사(운반포함)	m3	14,000	114,542	137,357	151,301	191,789	151,301	
면고르기	토사	m3	1,000	3,305	3,732	3,984	4,639	3,984	
떼붙임	줄떼	m2	5,000	14,352	15,312	15,840	17,196	15,840	
2.호안공				51,780	58,680	62,400	72,000	62,400	
호안블록	게다형 40X25X12	m2	25,000	9,780	16,680	20,400	30,000	20,400	
돌망태	타원형(운반포함)		35,000	42,000	42,000	42,000	42,000	42,000	
3.구조물공				0	0	0	0	0	
배수관	문비포함	개소	12,000,000	0	0	0	0	0	
배수문	문비포함	개소	40,000,000	0	0	0	0	0	
4.부대공	순공사비의 10%	식		18,398	21,508	23,352	28,562	23,352	
5.잡 비	(1+2+3+4)*50%	식		101,189	118,294	128,439	157,093	128,439	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	296,780	296,780	296,780	296,780	296,780	
총공사비				600,346	651,663	682,096	768,060	682,096	

□ . **양지지구** 빈도별 공사수량 및 공사비 L= 1,430 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	119.58	132.54	139.27	186.48	142.69	170,999	189,532	199,156	266,666	204,047	
면고르기	㎡	31.42	33.36	34.33	40.60	34.82	44,931	47,705	49,092	58,058	49,793	
줄 떼	㎡	17.76	18.56	18.96	21.56	19.17	25,397	26,541	27,113	30,831	27,413	
호안블럭	㎡	13.50	14.75	15.25	19.00	15.50	19,305	21,093	21,808	27,170	22,165	
돌 망 태	㎡	5.00	5.00	5.00	5.00	5.00	7,150	7,150	7,150	7,150	7,150	
배수통관	EA						2	2	2	2	2	
배 수 문	EA						1	1	1	1	1	
편입용지	㎡						32300	32300	32300	32300	32300	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				2,565,906	2,833,860	2,972,841	3,945,542	3,043,512	
성 토	토사(운반포함)	m3	14,000	2,393,992	2,653,451	2,788,185	3,733,330	2,856,654	
면고르기	토사	m3	1,000	44,931	47,705	49,092	58,058	49,793	
떼붙임	줄떼	m2	5,000	126,984	132,704	135,564	154,154	137,066	
2.호안공				732,875	777,563	795,438	929,500	804,375	
호안블록	게다형 40X25X12	m2	25,000	482,625	527,313	545,188	679,250	554,125	
돌망태	타원형(운반포함)		35,000	250,250	250,250	250,250	250,250	250,250	
3.구조물공				67,000	67,000	67,000	67,000	67,000	
배수관	문비포함	개소	13,500,000	27,000	27,000	27,000	27,000	27,000	
배수문	문비포함	개소	40,000,000	40,000	40,000	40,000	40,000	40,000	
4.부대공	순공사비의 10%	식		336,578	367,842	383,528	494,204	391,489	
5.잡 비	(1+2+3+4)*50%	식		1,851,180	2,023,132	2,109,403	2,718,123	2,153,188	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	613,700	613,700	613,700	613,700	613,700	
총공사비				6,167,239	6,683,096	6,941,910	8,768,069	7,073,263	

□ . 신대1지구 빈도별 공사수량 및 공사비 L= 330 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	15.98	33.20	35.51	42.85	42.85	22,851	47,476	50,779	61,276	61,276	
면고르기	㎡	9.29	15.01	15.66	17.60	17.60	13,285	21,464	22,394	25,168	25,168	
줄 떼	㎡	7.58	9.95	10.28	11.08	11.08	10,839	14,229	14,700	15,844	15,844	
호안블럭	㎡	1.64	5.00	5.46	6.40	6.40	2,345	7,150	7,808	9,152	9,152	
돌 망 태	㎡	5.00	5.00	5.00	5.00	5.00	7,150	7,150	7,150	7,150	7,150	
배수통관	EA						0	0	0	0	0	
배 수 문	EA						1	1	1	1	1	
편입용지	㎡						32300	32300	32300	32300	32300	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				387,401	757,271	806,806	962,247	962,247	
성 토	토사(운반포함)	m3	14,000	319,920	664,664	710,910	857,857	857,857	
면고르기	토사	m3	1,000	13,285	21,464	22,394	25,168	25,168	
떼붙임	줄떼	m2	5,000	54,197	71,143	73,502	79,222	79,222	
2.호안공				308,880	429,000	445,445	479,050	479,050	
호안블록	게다형 40X25X12	m2	25,000	58,630	178,750	195,195	228,800	228,800	
돌망태	타원형(운반포함)		35,000	250,250	250,250	250,250	250,250	250,250	
3.구조물공				40,000	40,000	40,000	40,000	40,000	
배수관	문비포함	개소	13,500,000	0	0	0	0	0	
배수문	문비포함	개소	40,000,000	40,000	40,000	40,000	40,000	40,000	
4.부대공	순공사비의 10%	식		73,628	122,627	129,225	148,130	148,130	
5.잡 비	(1+2+3+4)*50%	식		404,955	674,449	710,738	814,713	814,713	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	613,700	613,700	613,700	613,700	613,700	
총공사비				1,828,564	2,637,047	2,745,914	3,057,840	3,057,840	

□ . 정림지구 빈도별 공사수량 및 공사비 L= 135 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	37.46	40.01	41.19	45.80	41.19	5,057	5,401	5,561	6,183	5,561	
면고르기	㎡	20.17	20.82	21.12	22.20	21.12	2,723	2,811	2,851	2,997	2,851	
줄 떼	㎡	8.03	8.33	8.47	8.95	8.47	1,084	1,125	1,143	1,208	1,143	
호안블럭	㎡	12.00	12.25	12.50	13.00	12.50	1,620	1,654	1,688	1,755	1,688	
돌 망 태	㎡	5.00	5.00	5.00	5.00	5.00	675	675	675	675	675	
배수통관	EA						1	1	1	1	1	
배 수 문	EA						0	0	0	0	0	
편입용지	㎡						2250	2250	2250	2250	2250	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				78,943	84,052	86,418	95,600	86,418	
성 토	토사(운반포함)	m3	14,000	70,799	75,619	77,849	86,562	77,849	
면고르기	토사	m3	1,000	2,723	2,811	2,851	2,997	2,851	
떼붙임	줄떼	m2	5,000	5,420	5,623	5,717	6,041	5,717	
2.호안공				64,125	64,969	65,813	67,500	65,813	
호안블록	게다형 40X25X12	m2	25,000	40,500	41,344	42,188	43,875	42,188	
돌망태	타원형(운반포함)		35,000	23,625	23,625	23,625	23,625	23,625	
3.구조물공				12,000	12,000	12,000	12,000	12,000	
배수관	문비포함	개소	12,000,000	12,000	12,000	12,000	12,000	12,000	
배수문	문비포함	개소	40,000,000	0	0	0	0	0	
4.부대공	순공사비의 10%	식		15,507	16,102	16,423	17,510	16,423	
5.잡 비	(1+2+3+4)*50%	식		85,287	88,562	90,327	96,305	90,327	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	42,750	42,750	42,750	42,750	42,750	
총공사비				298,612	308,435	313,730	331,665	313,730	

□ . 괴곡지구 빈도별 공사수량 및 공사비 L= 230 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	4.64	5.88	6.59	10.48	6.59	1,067	1,352	1,516	2,410	1,516	
면고르기	㎡	4.21	5.02	5.45	7.56	5.45	968	1,155	1,254	1,739	1,254	
줄 떼	㎡	4.21	5.02	5.45	6.29	5.45	968	1,155	1,254	1,447	1,254	
호안블럭	㎡	0.00	0.00	0.00	1.50	0.00	0	0	0	345	0	
돌 망 태	㎡	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0	
배수시설	EA						0	0	0	0	0	
배 수 장	EA						0	0	0	0	0	
편입용지	㎡						3944	3944	3944	3944	3944	

2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				20,751	25,861	28,741	42,718	28,741	
성 토	토사(운반포함)	m3	14,000	14,941	18,934	21,220	33,746	21,220	
면고르기	토사	m3	1,000	968	1,155	1,254	1,739	1,254	
떼붙임	줄떼	m2	5,000	4,842	5,773	6,268	7,234	6,268	
2.호안공				0	0	0	8,625	0	
호안블록	게다형 40X25X12	m2	25,000	0	0	0	8,625	0	
돌망태	타원형(운반포함)		35,000	0	0	0	0	0	
3.구조물공				0	0	0	0	0	
배수관	문비포함	개소	12,000,000	0	0	0	0	0	
배수문	문비포함	개소	40,000,000	0	0	0	0	0	
4.부대공	순공사비의 10%	식		2,075	2,586	2,874	5,134	2,874	
5.잡 비	(1+2+3+4)*50%	식		11,413	14,224	15,807	28,239	15,807	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	74,936	74,936	74,936	74,936	74,936	
총공사비				109,174	117,607	122,358	159,652	122,358	

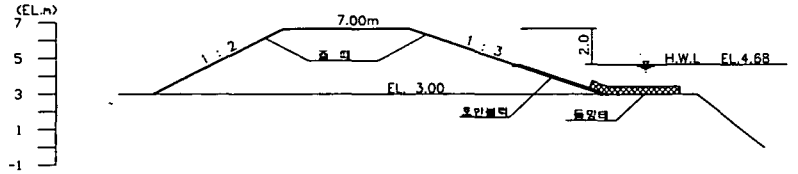
□ . 동흥지구 빈도별 공사수량 및 공사비 L= 75 m

1. 공사물량

공 종	단위	1m당 빈도별 공사수량					빈도별 전체공사수량					비고
		50년	80년	100년	200년	계획	50년	80년	100년	200년	계획	
성 토	㎥	37.30	57.57	57.57	58.32	57.57	8,579	13,241	13,241	13,414	13,241	
면고르기	㎡	18.27	22.64	22.64	22.75	22.64	4,202	5,207	5,207	5,233	5,207	
줄 떼	㎡	9.00	10.82	10.82	10.86	10.82	2,070	2,489	2,489	2,498	2,489	
호안블럭	㎡	9.25	11.75	11.75	11.75	11.75	2,128	2,703	2,703	2,703	2,703	
돌 망 태	㎡	5.00	5.00	5.00	5.00	5.00	1,150	1,150	1,150	1,150	1,150	
배수시설	EA						1	1	1	1	1	
배 수 장	EA						1	1	1	1	1	
편입용지	㎡						450	450	450	450	450	

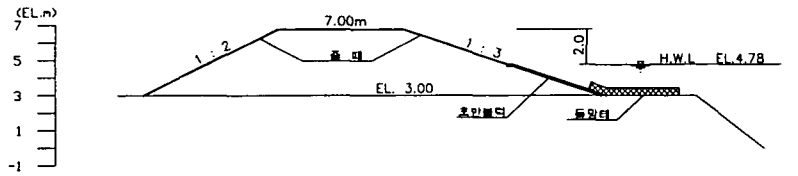
2. 공사비(보상비포함)

공 종	규 격	단위	단가(원)	빈도별 공사비(천원)					비고
				50년	80년	100년	200년	계획	
1.축제공				134,658	203,026	203,026	205,512	203,026	
성 토	토사(운반포함)	m3	14,000	120,106	185,375	185,375	187,790	185,375	
면고르기	토사	m3	1,000	4,202	5,207	5,207	5,233	5,207	
떼붙임	줄떼	m2	5,000	10,350	12,443	12,443	12,489	12,443	
2.호안공				93,438	107,813	107,813	107,813	107,813	
호안블록	게다형 40X25X12	m2	25,000	53,188	67,563	67,563	67,563	67,563	
돌망태	타원형(운반포함)		35,000	40,250	40,250	40,250	40,250	40,250	
3.구조물공				405,100	405,100	405,100	405,100	405,100	
배수관(문)	문비포함	개소	40,000,000	40,000	40,000	40,000	40,000	40,000	
배수장	펌프장이설	개소	365,100,000	365,100	365,100	365,100	365,100	365,100	
4.부대공	순공사비의 10%	식		63,320	71,594	71,594	71,842	71,594	
5.잡 비	(1+2+3+4)*50%	식		348,258	393,766	393,766	395,133	393,766	
6.보상비									
용지보상비	제방부지 및 제외지	m2	19,000	8,550	8,550	8,550	8,550	8,550	
총공사비				1,053,323	1,189,848	1,189,848	1,193,950	1,189,848	



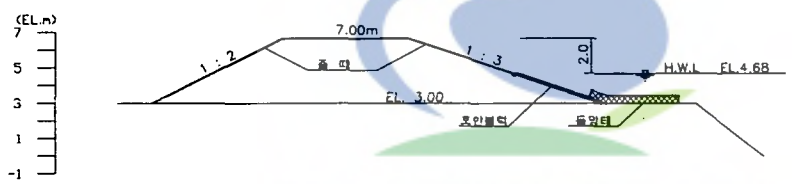
계 획
연장=1,140m

공 종	단위	수 량
상 토	m^3	59.60
연고르기	m	19.87
흙 대	m	14.55
호안블럭	m	5.25
돌망태	m	5.00



200yr
연장=1,140m

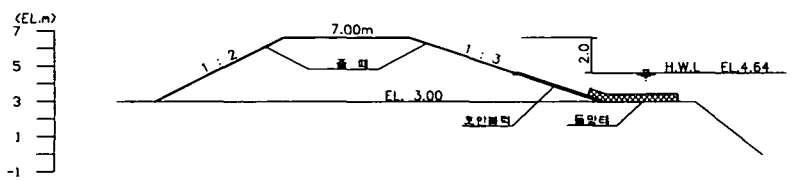
공 종	단위	수 량
상 토	m^3	62.16
연고르기	m	20.41
흙 대	m	14.78
호안블럭	m	5.50
돌망태	m	5.00



100yr
연장=1,140m

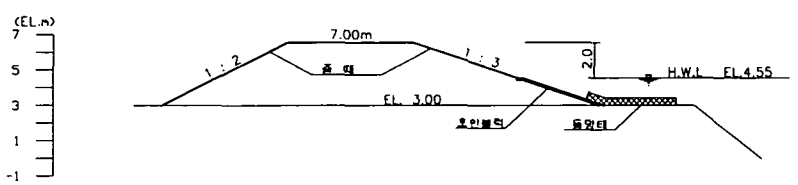
공 종	단위	수 량
상 토	m^3	59.60
연고르기	m	19.87
흙 대	m	14.55
호안블럭	m	5.25
돌망태	m	5.00

건설교통부



80yr
연장=1,140m

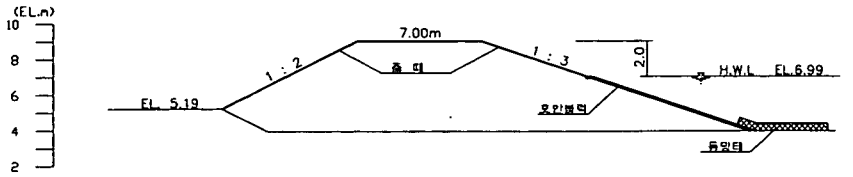
공 종	단위	수 량
상 토	m^3	58.59
연고르기	m	19.65
흙 대	m	14.46
호안블럭	m	5.00
돌망태	m	5.00



50yr
연장=1,140m

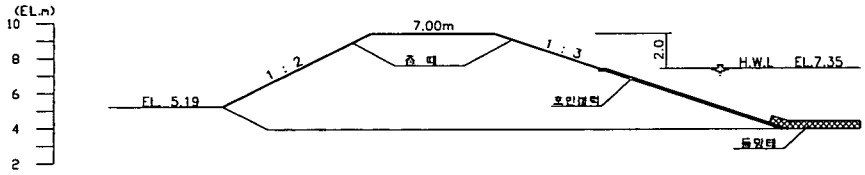
공 종	단위	수 량
상 토	m^3	56.34
연고르기	m	19.16
흙 대	m	14.26
호안블럭	m	4.75
돌망태	m	5.00

성덕지구



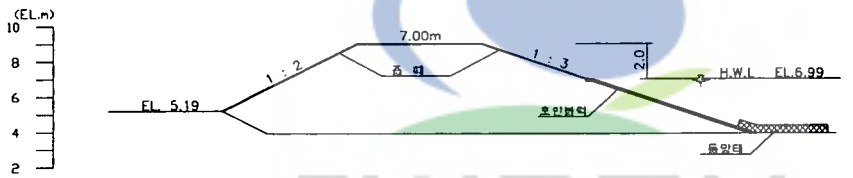
계 획
연장=2,860m

공 종	단위	수 량
성 토	m³	97.02
연고르기	m	24.57
층 대	m	14.80
호안법덕	m	9.75
둠압테	m	5.00



200yr
연장=2,860m

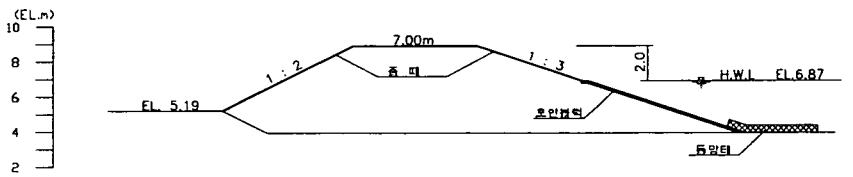
공 종	단위	수 량
성 토	m³	109.02
연고르기	m	26.51
층 대	m	15.60
호안법덕	m	10.75
둠압테	m	5.00



100yr
연장=2,860m

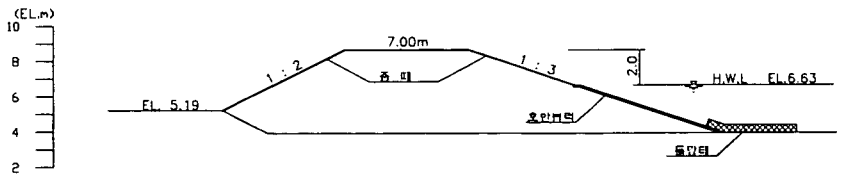
공 종	단위	수 량
성 토	m³	97.02
연고르기	m	24.57
층 대	m	14.80
호안법덕	m	9.75
둠압테	m	5.00

건설교통부



80yr
연장=2,860m

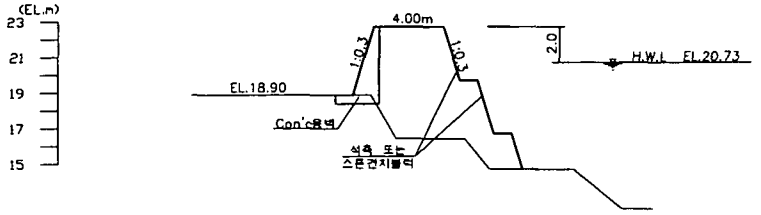
공 종	단위	수 량
성 토	m³	93.16
연고르기	m	23.92
층 대	m	14.53
호안법덕	m	9.25
둠압테	m	5.00



50yr
연장=2,860m

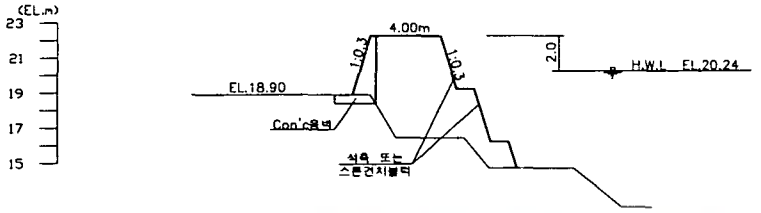
공 종	단위	수 량
성 토	m³	85.66
연고르기	m	22.63
층 대	m	13.99
호안법덕	m	8.50
둠압테	m	5.00

제성지구



계 획
연장=240m

공 종	단위	수 량
심 토	m³	35.94
연고르기	m	8.35
줄 떼	m	0.00
석 축	m	8.35
Con'c용벽	m³	4.57

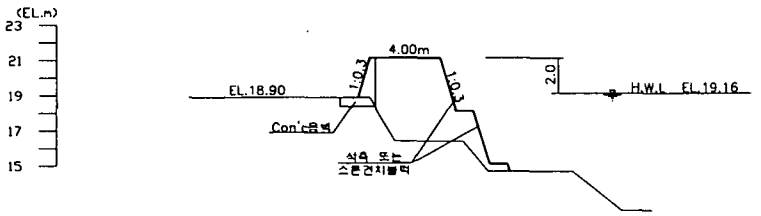


200yr
연장=240m

공 종	단위	수 량
심 토	m³	31.47
연고르기	m	7.84
줄 떼	m	0.00
석 축	m	7.84
Con'c용벽	m³	3.83

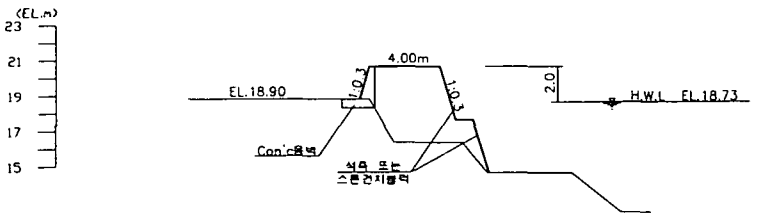
100yr
연장=240m

공 종	단위	수 량
심 토	m³	24.97
연고르기	m	6.98
줄 떼	m	0.00
석 축	m	6.98
Con'c용벽	m³	2.72



80yr
연장=240m

공 종	단위	수 량
심 토	m³	23.05
연고르기	m	6.72
줄 떼	m	0.00
석 축	m	6.72
Con'c용벽	m³	2.43

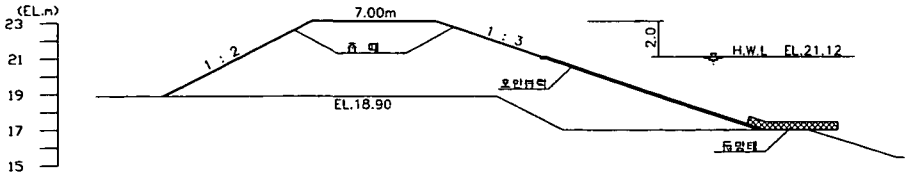


50yr
연장=240m

공 종	단위	수 량
심 토	m³	19.80
연고르기	m	6.26
줄 떼	m	0.00
석 축	m	6.26
Con'c용벽	m³	1.98

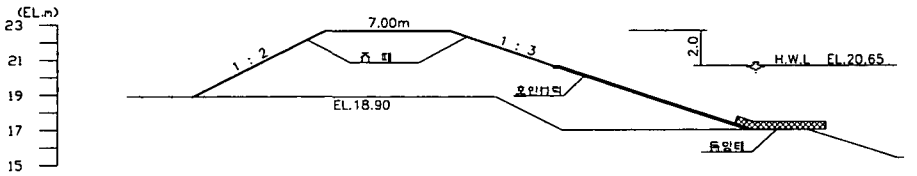
옥룡지구

건설교통부



계 획
연장=2,220m

공 종	단위	수 량
심 오	m³	93.37
연고르기	m	28.79
둔 덕	m	15.76
호안법덕	m	13.00
듬망태	m	5.00



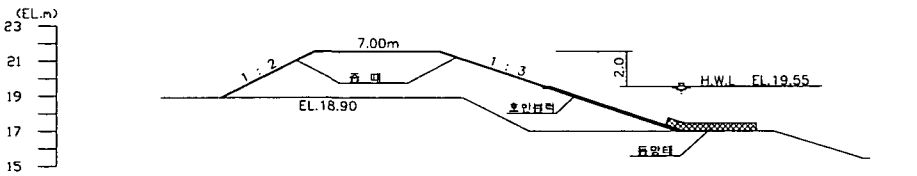
200yr
연장=2,220m

공 종	단위	수 량
심 오	m³	79.52
연고르기	m	26.25
둔 덕	m	14.71
호안법덕	m	11.50
듬망태	m	5.00

100yr
연장=2,220m

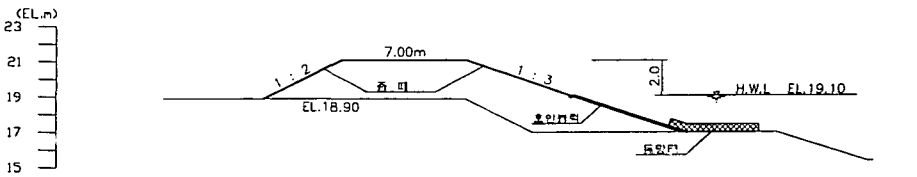
공 종	단위	수 량
심 오	m³	55.65
연고르기	m	21.66
둔 덕	m	12.81
호안법덕	m	8.75
듬망태	m	5.00

건설교통부



80yr
연장=2,220m

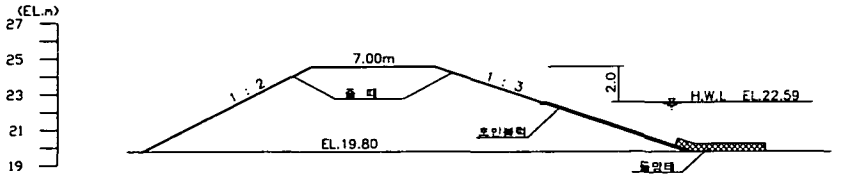
공 종	단위	수 량
심 오	m³	50.43
연고르기	m	20.31
둔 덕	m	12.25
호안법덕	m	8.00
듬망태	m	5.00



50yr
연장=2,220m

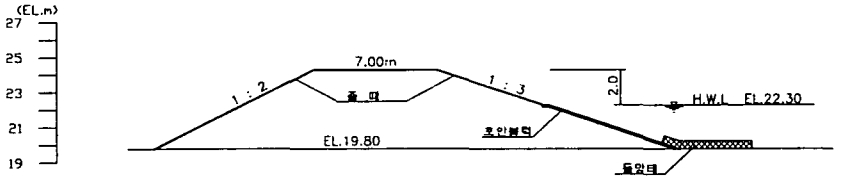
공 종	단위	수 량
심 오	m³	41.83
연고르기	m	17.88
둔 덕	m	11.24
호안법덕	m	6.50
듬망태	m	5.00

소학지구



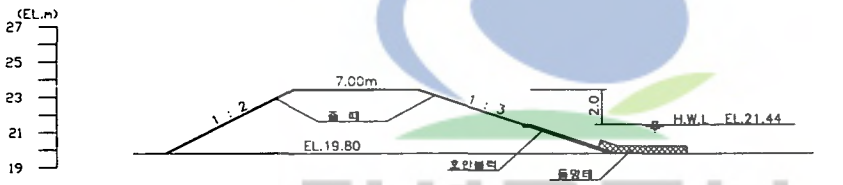
계 획
연장=360m

공 종	단위	수 량
성 토	m^3	90.87
면고르기	m	25.86
흙 띠	m	17.04
호안블럭	m	8.75
돌망태	m	5.00



200yr
연장=360m

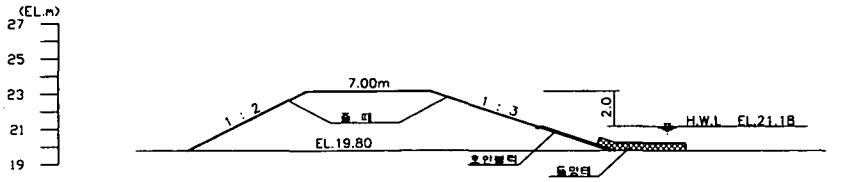
공 종	단위	수 량
성 토	m^3	82.11
면고르기	m	24.29
흙 띠	m	16.39
호안블럭	m	7.75
돌망태	m	5.00



100yr
연장=360m

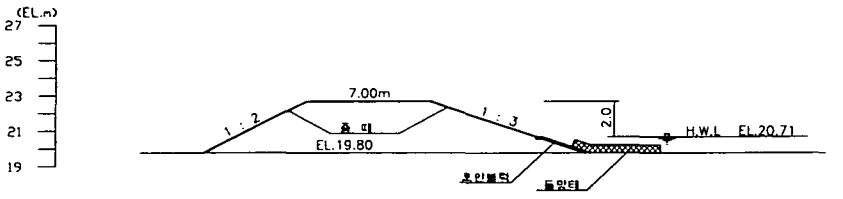
공 종	단위	수 량
성 토	m^3	58.59
면고르기	m	19.65
흙 띠	m	14.46
호안블럭	m	5.00
돌망태	m	5.00

건설교통부



80yr
연장=360m

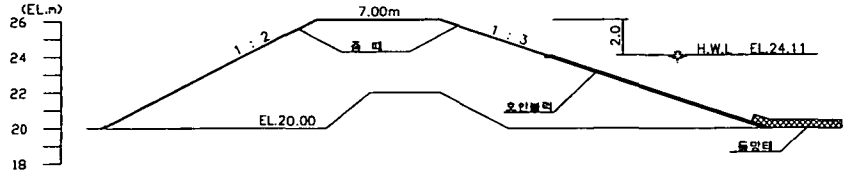
공 종	단위	수 량
성 토	m^3	52.20
면고르기	m	18.25
흙 띠	m	13.88
호안블럭	m	4.25
돌망태	m	5.00



50yr
연장=360m

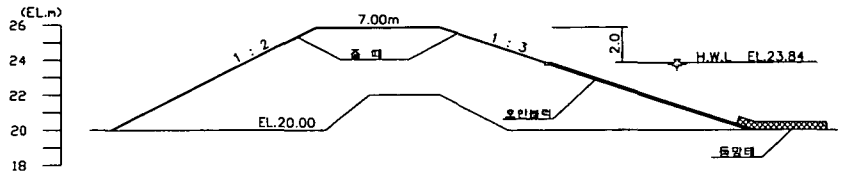
공 종	단위	수 량
성 토	m^3	41.52
면고르기	m	15.71
흙 띠	m	12.83
호안블럭	m	2.75
돌망태	m	5.00

마암지구



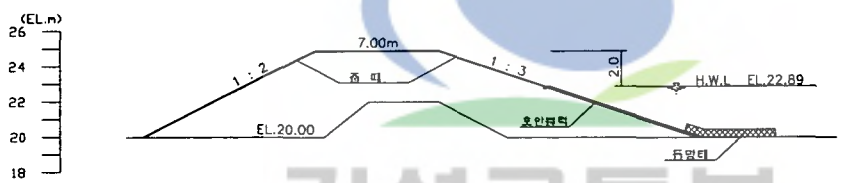
계 획
연장=360m

공 종	단위	수 량
성 토	m³	121.74
연고르기	m	32.98
줍 떼	m	19.99
호안블럭	m	12.75
듬망태	m	5.00



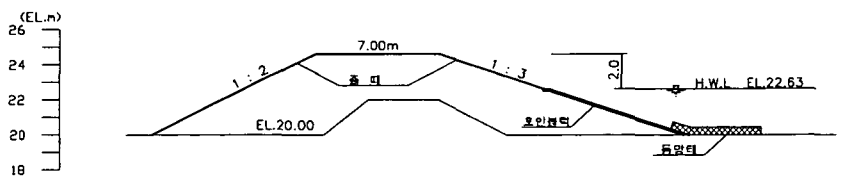
200yr
연장=360m

공 종	단위	수 량
성 토	m³	111.79
연고르기	m	31.53
줍 떼	m	19.38
호안블럭	m	12.00
듬망태	m	5.00



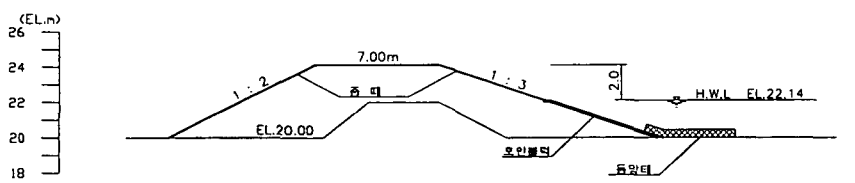
100yr
연장=360m

공 종	단위	수 량
성 토	m³	79.65
연고르기	m	26.4
줍 떼	m	17.26
호안블럭	m	9.00
듬망태	m	5.00



80yr
연장=360m

공 종	단위	수 량
성 토	m³	71.64
연고르기	m	24.99
줍 떼	m	16.68
호안블럭	m	8.25
듬망태	m	5.00

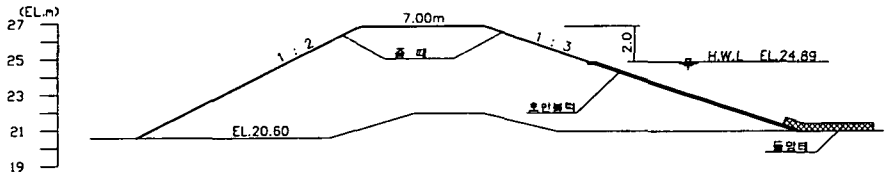


50yr
연장=360m

공 종	단위	수 량
성 토	m³	57.47
연고르기	m	22.35
줍 떼	m	15.58
호안블럭	m	6.75
듬망태	m	5.00

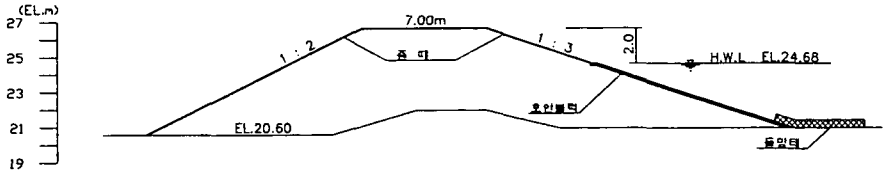
건설교통부

원봉지구



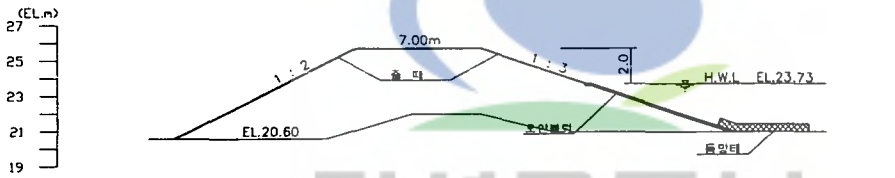
계 획
연장=820m

공 종	단위	수 량
성 토	m^3	124.61
면고르기	m	32.69
줄 떼	m	20.39
호안블럭	m	12.25
돌망태	m	5.00



200yr
연장=820m

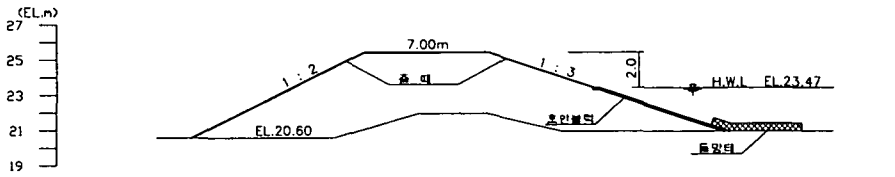
공 종	단위	수 량
성 토	m^3	116.90
면고르기	m	31.56
줄 떼	m	19.92
호안블럭	m	11.50
돌망태	m	5.00



100yr
연장=820m

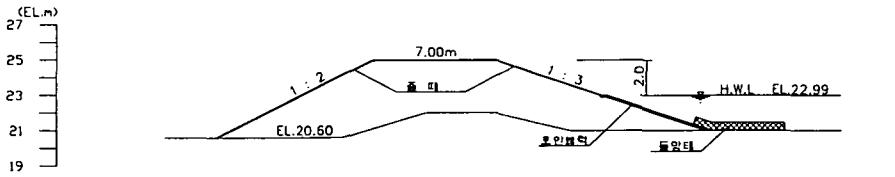
공 종	단위	수 량
성 토	m^3	84.76
면고르기	m	26.43
줄 떼	m	17.80
호안블럭	m	8.50
돌망태	m	5.00

건설교통부



80yr
연장=820m

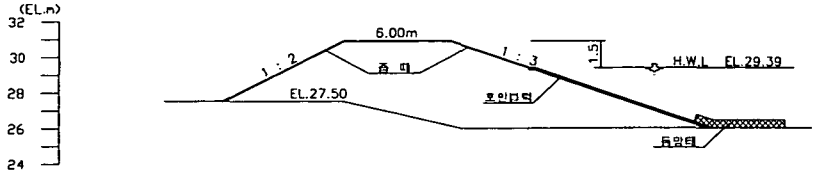
공 종	단위	수 량
성 토	m^3	76.76
면고르기	m	25.03
줄 떼	m	17.21
호안블럭	m	7.75
돌망태	m	5.00



50yr
연장=820m

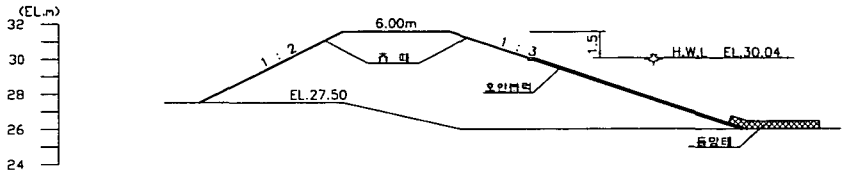
공 종	단위	수 량
성 토	m^3	62.86
면고르기	m	22.43
줄 떼	m	16.14
호안블럭	m	6.25
돌망태	m	5.00

석삼지구



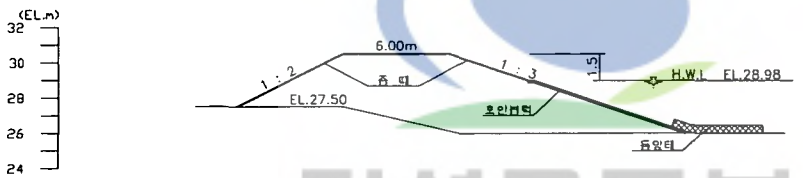
계획
연장=1,560m

공 종	단위	수 량
성 토	m³	71.80
연고르기	m	23.04
흉 대	m	12.32
호안법덕	m	10.50
둠망태	m	5.00



200yr
연장=1,560m

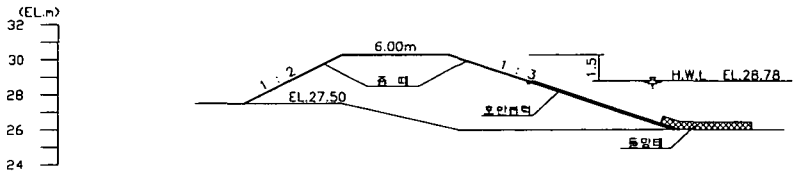
공 종	단위	수 량
성 토	m³	90.70
연고르기	m	26.55
흉 대	m	13.78
호안법덕	m	12.75
둠망태	m	5.00



100yr
연장=1,560m

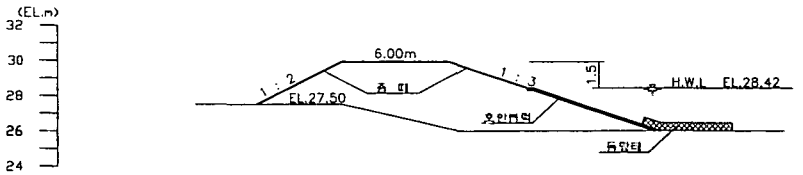
공 종	단위	수 량
성 토	m³	60.97
연고르기	m	20.83
흉 대	m	11.41
호안법덕	m	9.25
둠망태	m	5.00

건설교통부



80yr
연장=1,560m

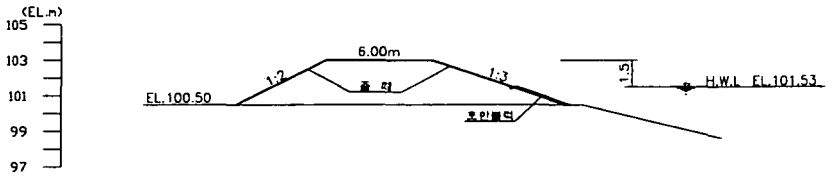
공 종	단위	수 량
성 토	m³	55.99
연고르기	m	19.75
흉 대	m	10.96
호안법덕	m	8.75
둠망태	m	5.00



50yr
연장=1,560m

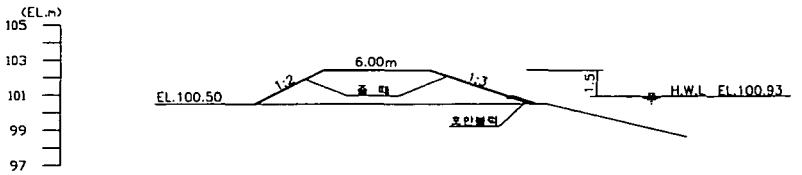
공 종	단위	수 량
성 토	m³	47.53
연고르기	m	17.81
흉 대	m	10.15
호안법덕	m	7.50
둠망태	m	5.00

대동지구



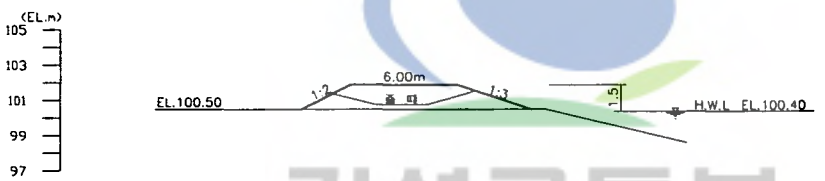
계 획
연장=540m

공 종	단위	수 량
성 토	m³	31.16
연고르기	m	13.66
줄 떼	m	10.40
호안블럭	m	3.00
돌망태	m	0.00



200yr
연장=540m

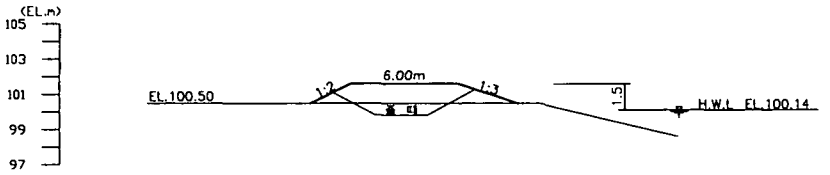
공 종	단위	수 량
성 토	m³	20.85
연고르기	m	10.42
줄 떼	m	9.06
호안블럭	m	1.25
돌망태	m	0.00



100yr
연장=540m

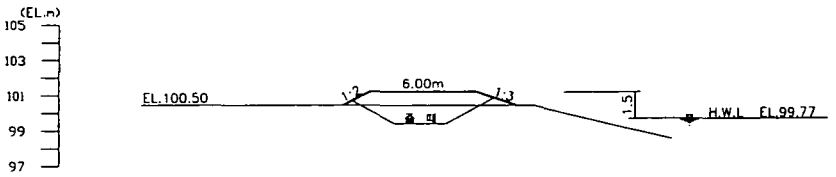
공 종	단위	수 량
성 토	m³	13.30
연고르기	m	7.56
줄 떼	m	7.56
호안블럭	m	0.00
돌망태	m	0.00

건설교통부



80yr
연장=540m

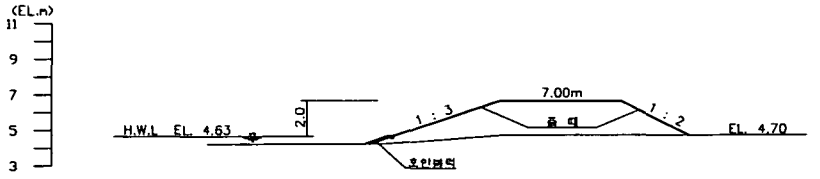
공 종	단위	수 량
성 토	m³	10.09
연고르기	m	6.15
줄 떼	m	6.15
호안블럭	m	0.00
돌망태	m	0.00



50yr
연장=540m

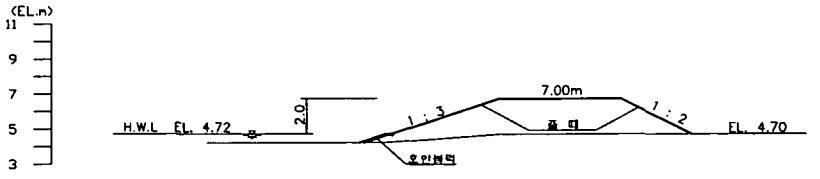
공 종	단위	수 량
성 토	m³	6.10
연고르기	m	4.16
줄 떼	m	4.16
호안블럭	m	0.00
돌망태	m	0.00

고당지구



계 획
연장=60m

공 종	단위	수 량
성 토	m^3	24.41
연고르기	m	12.00
둑 마	m	10.64
호안법덕	m	1.25
등망태	m	0.00



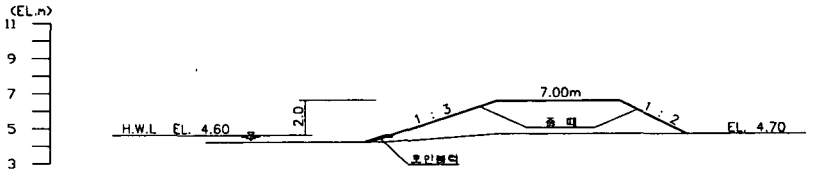
200yr
연장=60m

공 종	단위	수 량
성 토	m^3	25.98
연고르기	m	12.49
둑 마	m	10.84
호안법덕	m	1.50
등망태	m	0.00

100yr
연장=60m

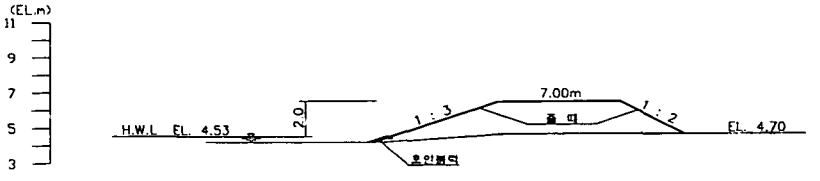
공 종	단위	수 량
성 토	m^3	24.41
연고르기	m	12.00
둑 마	m	10.64
호안법덕	m	1.25
등망태	m	0.00

건설교통부



80yr
연장=60m

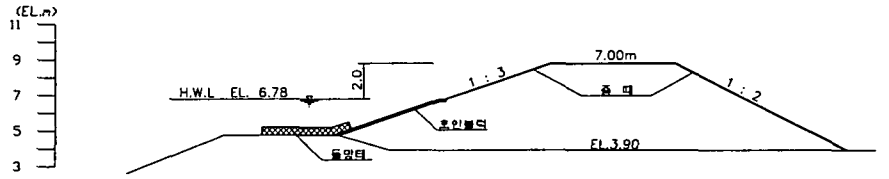
공 종	단위	수 량
성 토	m^3	23.82
연고르기	m	11.84
둑 마	m	10.57
호안법덕	m	1.25
등망태	m	0.00



50yr
연장=60m

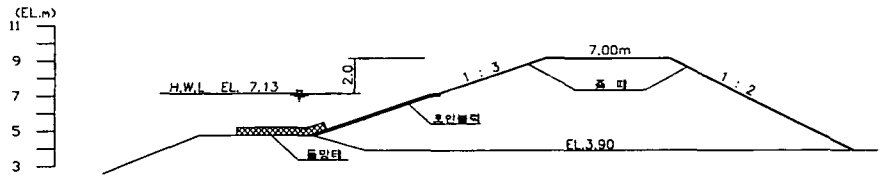
공 종	단위	수 량
성 토	m^3	22.63
연고르기	m	11.46
둑 마	m	10.42
호안법덕	m	1.00
등망태	m	0.00

마서지구



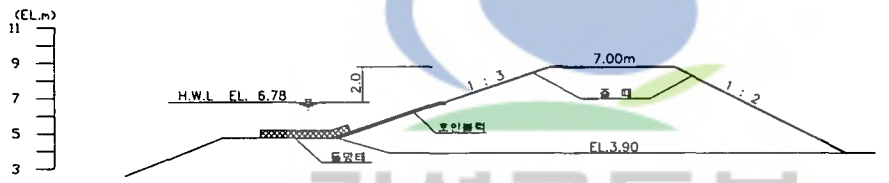
계 획
연장=345m

공 종	단위	수 량
실 호	m³	91.32
연고르기	m	23.66
흙 띠	m	17.24
호안블럭	m	6.25
돌망태	m	5.00



200yr
연장=345m

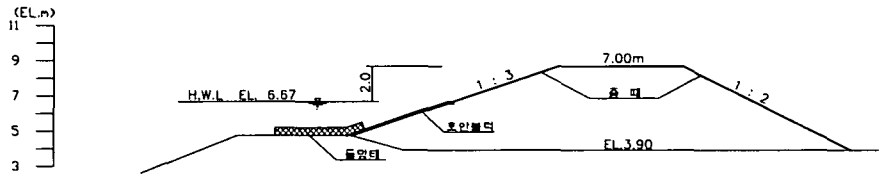
공 종	단위	수 량
실 호	m³	102.61
연고르기	m	25.55
흙 띠	m	18.02
호안블럭	m	7.50
돌망태	m	5.00



100yr
연장=345m

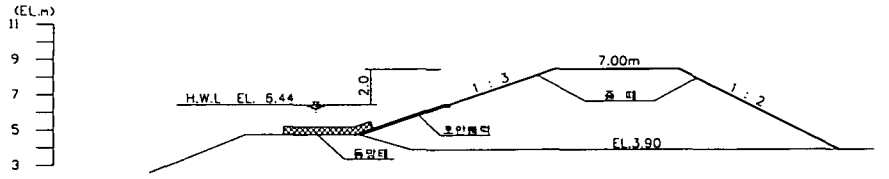
공 종	단위	수 량
실 호	m³	91.32
연고르기	m	23.66
흙 띠	m	17.24
호안블럭	m	6.25
돌망태	m	5.00

건설교통부



80yr
연장=345m

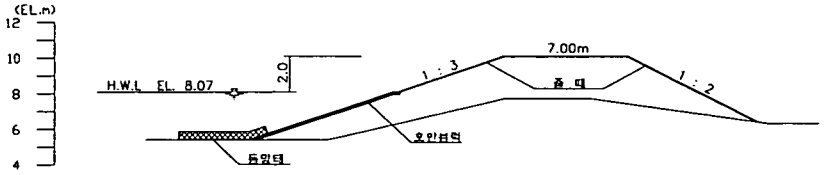
공 종	단위	수 량
실 호	m³	87.89
연고르기	m	23.06
흙 띠	m	16.99
호안블럭	m	6.00
돌망태	m	5.00



50yr
연장=345m

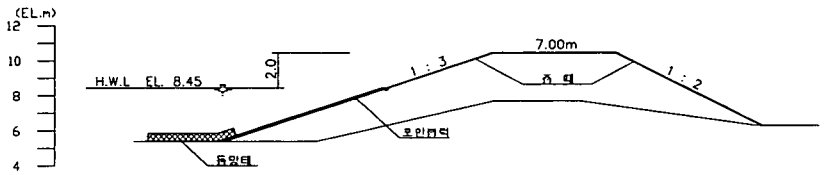
공 종	단위	수 량
실 호	m³	80.93
연고르기	m	21.82
흙 띠	m	16.48
호안블럭	m	5.25
돌망태	m	5.00

유왕치구



계 획
연장=60m

공 종	단위	수 량
성 토	m³	47.82
면고르기	m	23.00
줍 떼	m	14.55
호안법덕	m	8.25
돌망태	m	5.00



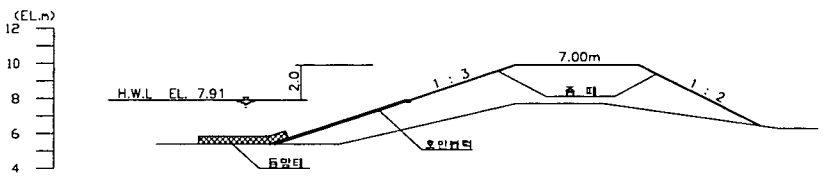
200yr
연장=60m

공 종	단위	수 량
성 토	m³	59.01
면고르기	m	25.25
줍 떼	m	15.60
호안법덕	m	9.50
돌망태	m	5.00

100yr
연장=60m

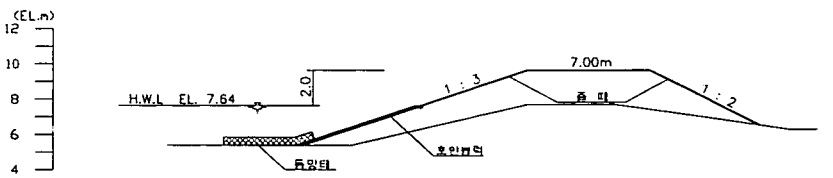
공 종	단위	수 량
성 토	m³	47.82
면고르기	m	23.00
줍 떼	m	14.55
호안법덕	m	8.25
돌망태	m	5.00

건설교통부



80yr
연장=60m

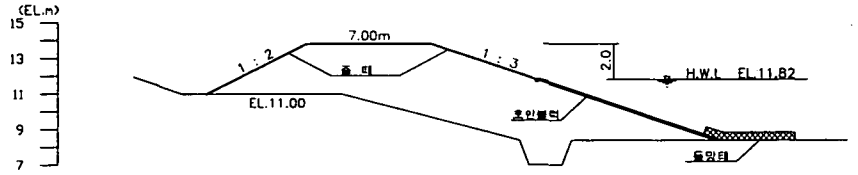
공 종	단위	수 량
성 토	m³	43.35
면고르기	m	21.99
줍 떼	m	14.06
호안법덕	m	7.75
돌망태	m	5.00



50yr
연장=60m

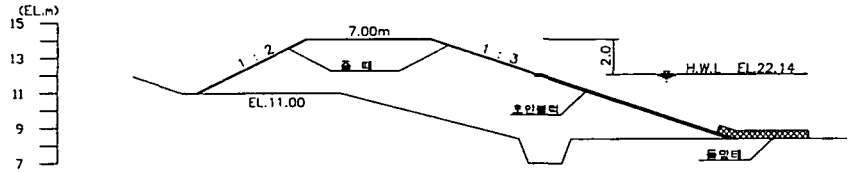
공 종	단위	수 량
성 토	m³	36.15
면고르기	m	20.30
줍 떼	m	13.22
호안법덕	m	7.00
돌망태	m	5.00

간대지구



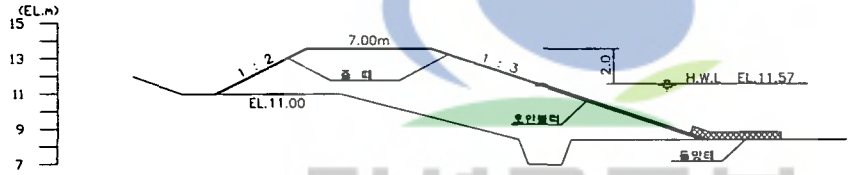
계 획
연장=360m

공 종	단위	수 량
성 토	m³	75.17
연고르기	m	23.45
줄 떼	m	12.63
호안블럭	m	10.75
돌망태	m	5.00



200yr
연장=360m

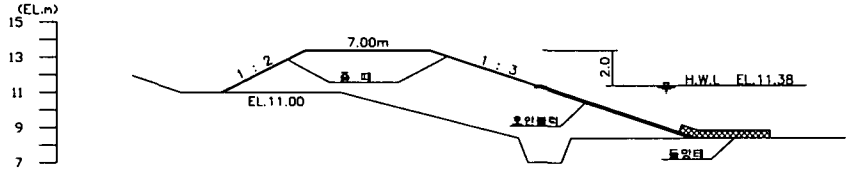
공 종	단위	수 량
성 토	m³	82.86
연고르기	m	24.85
줄 떼	m	13.21
호안블럭	m	11.50
돌망태	m	5.00



100yr
연장=360m

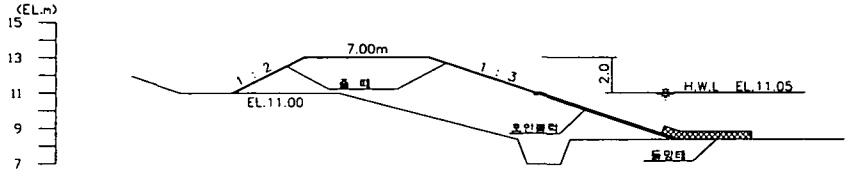
공 종	단위	수 량
성 토	m³	68.11
연고르기	m	22.10
줄 떼	m	12.07
호안블럭	m	10.00
돌망태	m	5.00

건설교통부



80yr
연장=360m

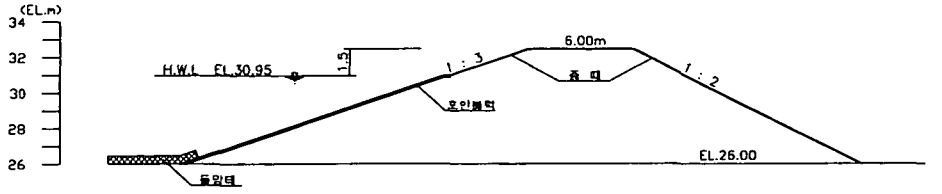
공 종	단위	수 량
성 토	m³	62.94
연고르기	m	21.07
줄 떼	m	11.65
호안블럭	m	9.25
돌망태	m	5.00



50yr
연장=360m

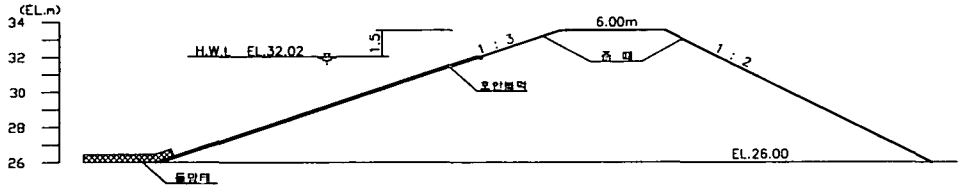
공 종	단위	수 량
성 토	m³	54.4
연고르기	m	19.29
줄 떼	m	10.91
호안블럭	m	8.25
돌망태	m	5.00

정고2지구



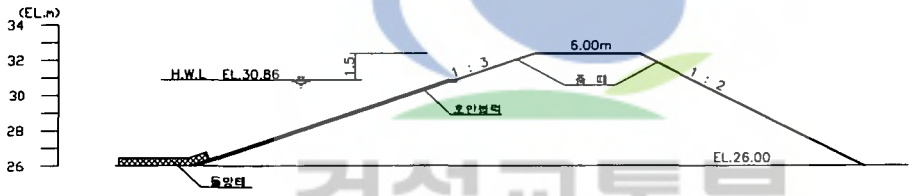
계 획
연장=1,430m

공 종	단위	수 량
성 토	m³	142.69
연고르기	m	34.82
폭 대	m	19.17
호안블럭	m	15.50
돌망태	m	5.00



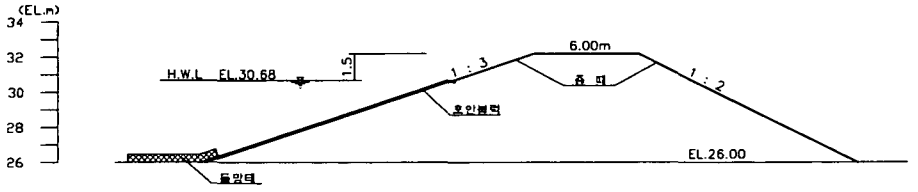
200yr
연장=1,430m

공 종	단위	수 량
성 토	m³	186.48
연고르기	m	40.60
폭 대	m	21.56
호안블럭	m	19.00
돌망태	m	5.00



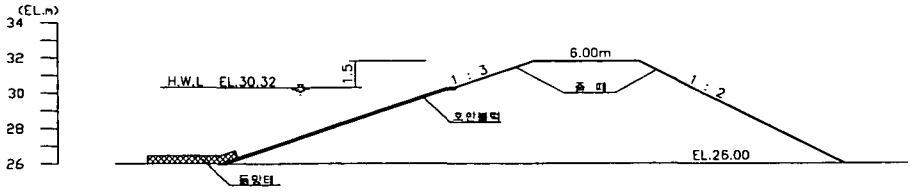
100yr
연장=1,430m

공 종	단위	수 량
성 토	m³	139.27
연고르기	m	34.33
폭 대	m	18.96
호안블럭	m	15.25
돌망태	m	5.00



80yr
연장=1,430m

공 종	단위	수 량
성 토	m³	132.54
연고르기	m	33.36
폭 대	m	18.56
호안블럭	m	14.75
돌망태	m	5.00

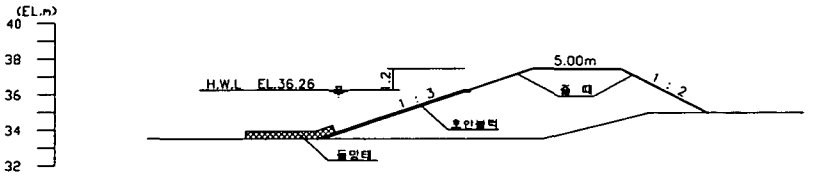


50yr
연장=1,430m

공 종	단위	수 량
성 토	m³	119.58
연고르기	m	31.42
폭 대	m	17.76
호안블럭	m	13.50
돌망태	m	5.00

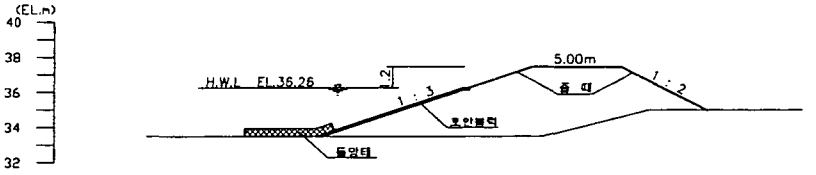
건설교통부

양지지구



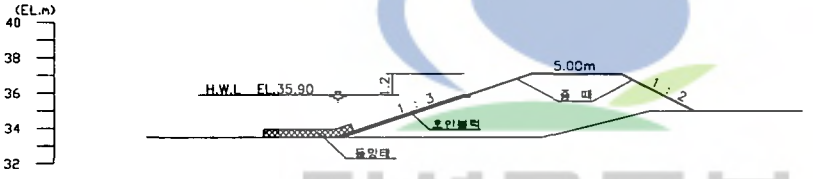
계 획
연장=360m

구 분	단위	수 량
상 호	m²	47.15
연고높기	m	18.02
폭 때	m	9.30
호안블럭	m	8.50
돌망태	m	5.00



200yr
연장=360m

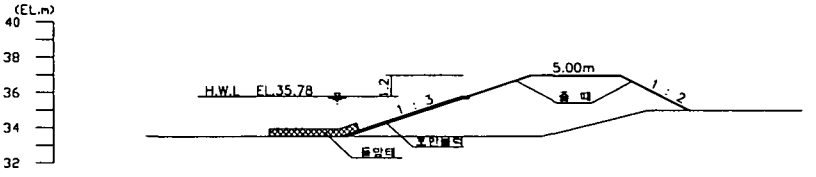
구 분	단위	수 량
상 호	m²	47.15
연고높기	m	18.02
폭 때	m	9.30
호안블럭	m	8.50
돌망태	m	5.00



100yr
연장=360m

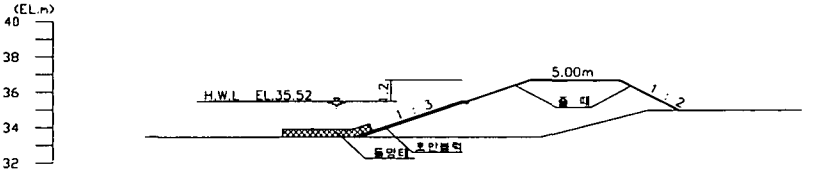
구 분	단위	수 량
상 호	m²	39.63
연고높기	m	16.08
폭 때	m	8.49
호안블럭	m	7.50
돌망태	m	5.00

건설교통부



80yr
연장=360m

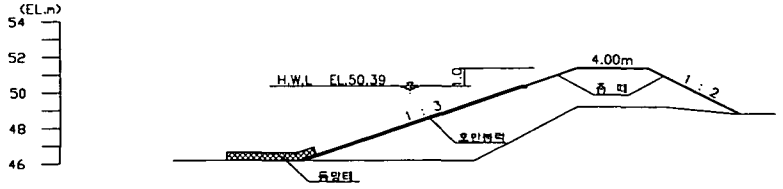
구 분	단위	수 량
상 호	m²	37.27
연고높기	m	15.43
폭 때	m	8.22
호안블럭	m	7.00
돌망태	m	5.00



50yr
연장=360m

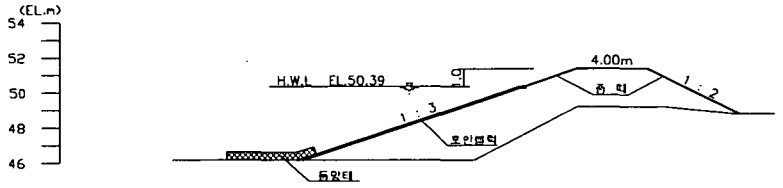
구 분	단위	수 량
상 호	m²	32.39
연고높기	m	14.03
폭 때	m	7.64
호안블럭	m	6.25
돌망태	m	5.00

신대 1지구



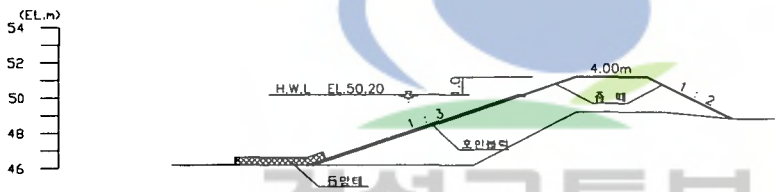
계 획
연장=135m

공 종	단위	수 량
상 도	m²	45.80
연고르기	m	22.20
잡 떼	m	8.95
호안법덕	m	13.00
둠알터	m	5.00



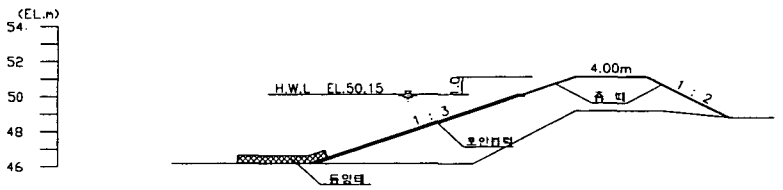
200yr
연장=135m

공 종	단위	수 량
상 도	m²	45.80
연고르기	m	22.20
잡 떼	m	8.95
호안법덕	m	13.00
둠알터	m	5.00



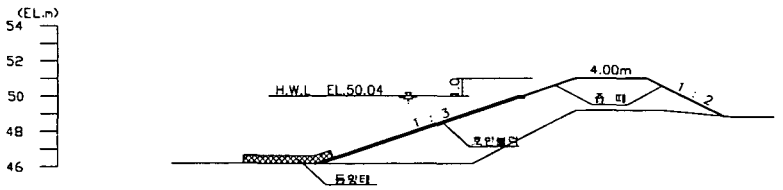
100yr
연장=135m

공 종	단위	수 량
상 도	m²	41.19
연고르기	m	21.12
잡 떼	m	8.47
호안법덕	m	12.50
둠알터	m	5.00



80yr
연장=135m

공 종	단위	수 량
상 도	m²	40.01
연고르기	m	20.82
잡 떼	m	8.33
호안법덕	m	12.25
둠알터	m	5.00

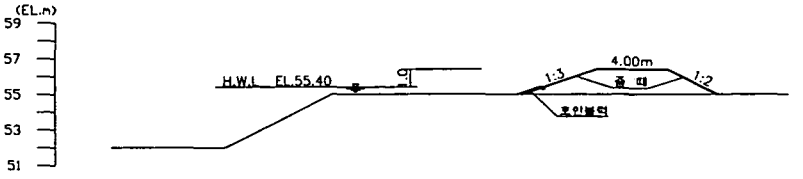


50yr
연장=135m

공 종	단위	수 량
상 도	m²	37.46
연고르기	m	20.17
잡 떼	m	8.03
호안법덕	m	12.00
둠알터	m	5.00

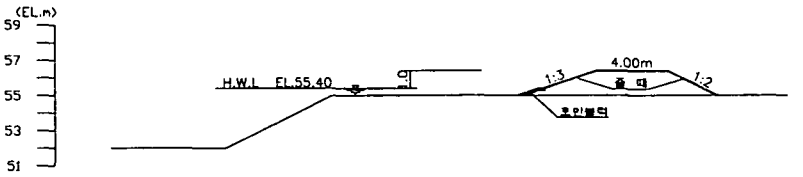
건설교통부

정림 1지구



계 획
연장=230m

공 종	단위	수 량
성 토	m³	10.48
연고르기	m	7.56
줄 떼	m	6.29
호안블럭	m	1.50
돌망태	m	0.00

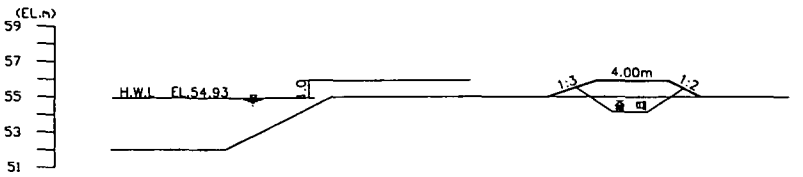


200yr
연장=230m

공 종	단위	수 량
성 토	m³	10.48
연고르기	m	7.56
줄 떼	m	6.29
호안블럭	m	1.50
돌망태	m	0.00

100yr
연장=230m

공 종	단위	수 량
성 토	m³	6.59
연고르기	m	5.45
줄 떼	m	5.45
호안블럭	m	0.00
돌망태	m	0.00



80yr
연장=230m

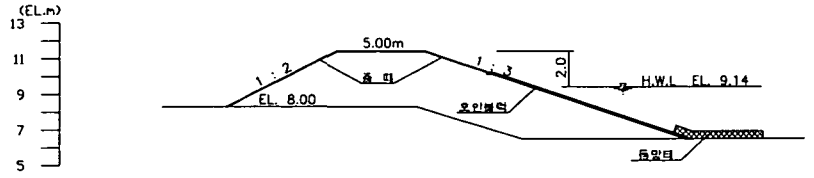
공 종	단위	수 량
성 토	m³	5.88
연고르기	m	5.02
줄 떼	m	5.02
호안블럭	m	0.00
돌망태	m	0.00

50yr
연장=230m

공 종	단위	수 량
성 토	m³	4.64
연고르기	m	4.21
줄 떼	m	4.21
호안블럭	m	0.00
돌망태	m	0.00

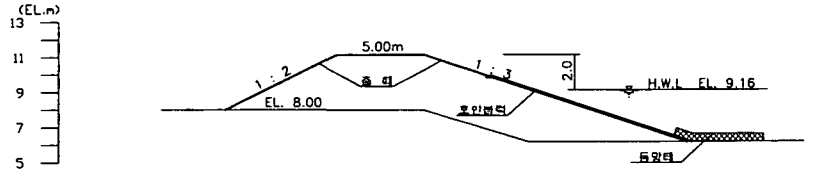
건설교통부

괴곡지구



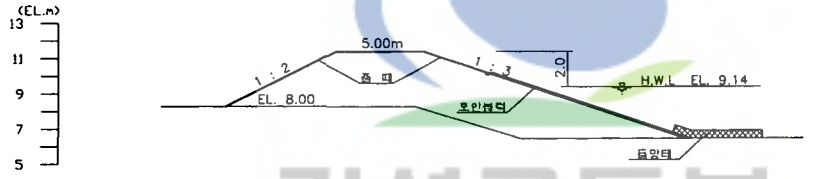
계 획
연장=75m

공 종	단위	수 량
성 토	m³	57.57
면고르기	m	22.64
줍 띠	m	10.82
호안블럭	m	11.75
둠방터	m	5.00



200yr
연장=75m

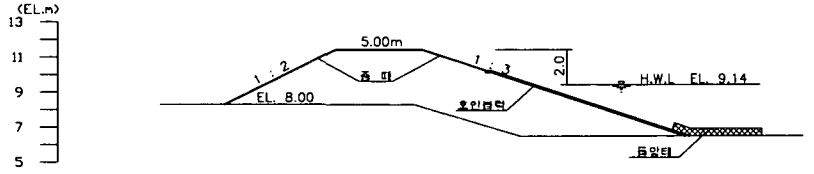
공 종	단위	수 량
성 토	m³	57.32
면고르기	m	22.75
줍 띠	m	10.86
호안블럭	m	11.75
둠방터	m	5.00



100yr
연장=75m

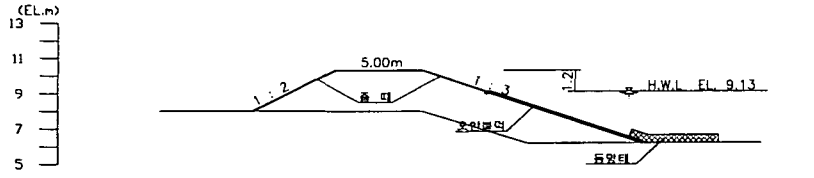
공 종	단위	수 량
성 토	m³	57.57
면고르기	m	22.64
줍 띠	m	10.82
호안블럭	m	11.75
둠방터	m	5.00

건설교통부



80yr
연장=75m

공 종	단위	수 량
성 토	m³	57.57
면고르기	m	22.64
줍 띠	m	10.82
호안블럭	m	11.75
둠방터	m	5.00



50yr
연장=75m

공 종	단위	수 량
성 토	m³	37.30
면고르기	m	18.27
줍 띠	m	9.00
호안블럭	m	9.25
둠방터	m	5.00

동흥지구

1.2 보축 지구별 공사비

건설교통부

■ 보축지구 공사비 산정

지구명	연장 (m)	순공사비 (천원)	부대공사비 (천원)	잡 비 (천원)	보상비 (천원)	총공사비 (천원)	비고
나포	165	34,674	3,467	19,070		57,211	
나포2	680	509,190	50,919	280,054		840,163	
웅포	1,710	396,292	39,629	217,960		653,881	
성당	430	602,752	60,275	331,513		994,540	
황산	450	602,896	60,289	331,592		994,777	
구교	1,830	2,057,963	205,796	1,131,879		3,395,638	
정동	2,875	3,760,701	376,070	2,068,385		6,205,156	
금성	230	353,834	35,383	194,608		583,825	
대평	1,880	2,472,989	247,298	1,360,143		4,080,430	
금남	1,985	1,502,962	150,296	826,629		2,479,887	
고당	1,490	1,037,338	103,733	570,535		1,711,606	
망월	140	39,515	3,951	21,733		65,199	
양화2	630	418,660	41,866	230,263		690,789	
양화	710	516,248	51,624	283,936		851,808	
임천	1,140	1,050,407	105,040	577,723		1,733,170	
임천2	2,060	2,262,971	226,297	1,244,634		3,733,902	
간대	2,930	3,677,413	367,741	2,022,577	500,000	6,567,731	
외리	2,645	2,569,432	256,943	1,413,187		4,239,562	
규암	840	1,843,808	184,380	1,014,094		3,042,282	
라복	330	727,640	72,764	400,202		1,200,606	
오동	240	486,698	48,669	267,683		803,050	
보흥	590	1,441,417	144,141	792,779		2,378,337	
신관	2,320	5,035,977	503,597	2,769,787		8,309,361	
송원	2,490	4,894,543	489,454	2,691,998		8,075,995	
동대	2,650	1,757,003	175,700	966,351		2,899,054	
문지	1,310	1,025,337	102,533	563,935		1,691,805	
도안	2,035	308,790	30,879	169,834		509,503	
가수원1	170	43,511	4,351	23,931		71,793	
괴곡좌안	2,500	2,076,300	207,630	1,141,965		3,425,895	
신대	590	532,274	53,227	292,750		878,251	
삼천	2,685	764,983	76,498	420,740		1,262,221	
정림1	800	627,984	62,798	345,391		1,036,173	
괴곡우안	680	720,929	72,092	396,510		1,189,531	
용문	1,500	352,440	35,244	193,842		581,526	

건설기술부

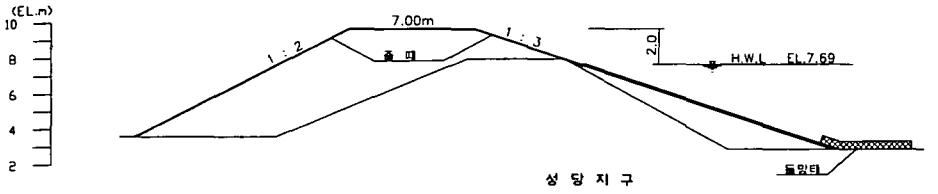
지구명	연장 (m)	순공사비 (천원)	부대공사비 (천원)	잡 비 (천원)	보상비 (천원)	총공사비 (천원)	비고
안영우안	430	410,056	41,005	225,530		676,591	
미호	3,940	2,610,486	261,048	1,435,767		4,307,301	
예양	1,350	1,113,453	111,345	612,399		1,837,197	
봉암	1,640	1,628,241	162,824	895,532		2,686,597	
서면	2,060	1,798,441	179,844	989,142		2,967,427	
강외	5,400	3,918,240	391,824	2,155,032		6,465,096	
논남	2,400	1,792,344	179,234	985,789		2,957,367	
논북1	2,160	2,013,984	201,398	1,107,691		3,323,073	
노남	4,430	3,788,181	378,818	2,083,499		6,250,498	
노북	4,760	4,118,923	411,892	2,265,407		6,796,222	
강경좌안	3,060	2,510,424	251,042	1,380,733		4,142,199	
무형좌안	3,300	2,819,157	281,915	1,550,536		4,651,608	
강경우안	5,505	3,619,702	361,970	1,990,836		5,972,508	
무형우안	1,095	823,286	82,328	452,807		1,358,421	
(소계)	87,240					131,626,763	

■ 저호지구 공사비 산정

지구명	연장 (m)	순공사비 (천원)	부대공사비 (천원)	잡 비 (천원)	보상비 (천원)	총공사비 (천원)	비고
웅포	1,010	599,366	59,936	329,651		988,953	
망성	3,540	2,630,871	263,087	1,446,979		4,340,937	
임천2	900	590,126	59,012	324,569		973,707	
청포	2,620	6,872,438	687,243	3,779,840	1,000,000	12,339,521	
송용	780	431,073	43,107	237,090		711,270	
정북	560	433,896	43,389	238,642		715,927	
동평	1,520	898,362	89,836	494,099		1,482,297	
남촌	1,090	703,366	70,336	386,851		1,160,553	
신평	890	551,743	55,174	303,458		910,375	
탑리	530	287,543	28,754	158,148		474,445	
괴정	440	261,712	26,171	143,941		431,824	
논북1	2,220	1,471,273	147,127	809,200		2,427,600	
탑정	400	270,670	27,067	148,868		446,605	
부인	420	262,702	26,270	144,486		433,458	
덕평	700	380,676	38,067	209,371		628,114	
왕전	440	249,480	24,948	137,214		411,642	
(소계)	18,060					28,877,228	

건설교통부

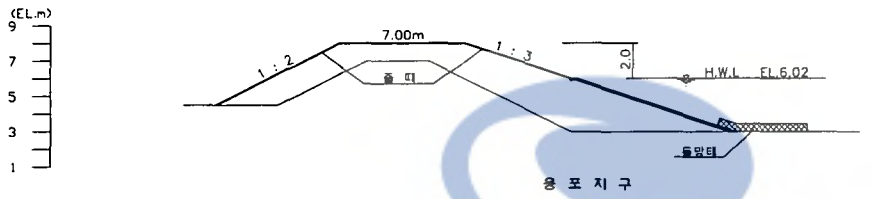
보 축 계 획 표 준 단 면 도 (1)



성 당 지 구

연장=430m

공 종	단위	수 량
성 토	m^3	73.69
연고성토	m	35.09
므기성토	m	0.00
줌 대	m	19.94
호안블럭	m	15.00
돌망태	m	5.00

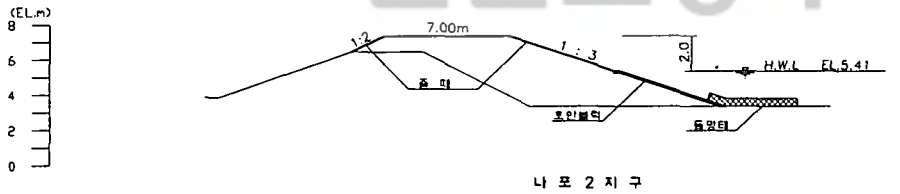


용 포 지 구

연장=1,710m

공 종	단위	수 량
성 토	m^3	46.81
연고성토	m	23.75
므기성토	m	0.00
줌 대	m	14.20
호안블럭	m	9.75
돌망태	m	5.00

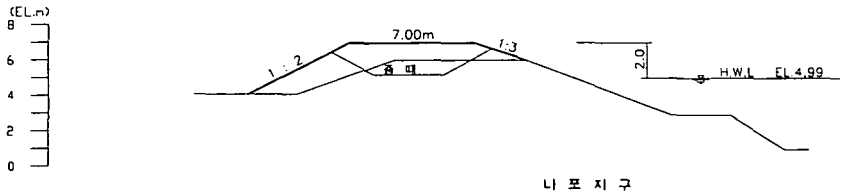
건설교통부



나 포 2 지 구

연장=680m

공 종	단위	수 량
성 토	m^3	36.94
연고성토	m	14.72
므기성토	m	0.00
줌 대	m	8.36
호안블럭	m	6.25
돌망태	m	5.00

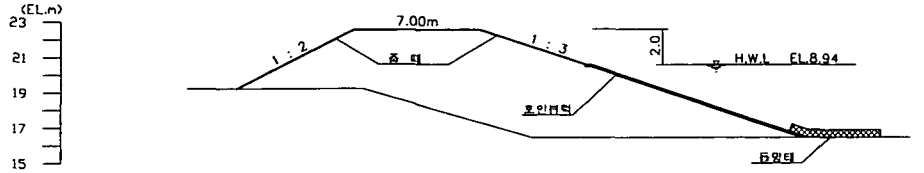


나 포 지 구

연장=165m

공 종	단위	수 량
성 토	m^3	16.22
연고성토	m	9.59
므기성토	m	0.00
줌 대	m	9.59
호안블럭	m	0.00
돌망태	m	0.00

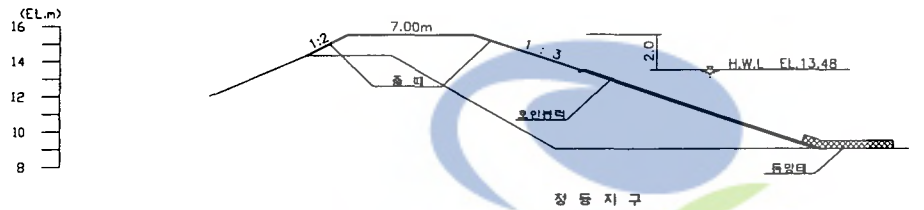
보 축 계 획 표 준 단 면 도 (2)



금 성 지 구

연장=230m

공 종		단위	수 량
성 토		m²	95.65
면고르기	성토	m	26.83
	절토	m	0.00
흙 띠		m	13.77
호안블럭		m	13.00
듬망태		m	5.00

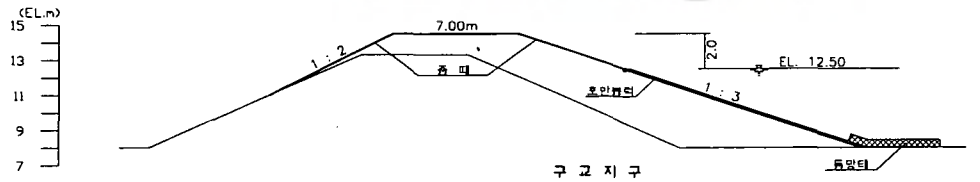


장 등 지 구

연장=2,875m

공 종		단위	수 량
성 토		m²	72.41
면고르기	성토	m	23.13
	절토	m	0.00
흙 띠		m	8.96
호안블럭		m	14.00
듬망태		m	5.00

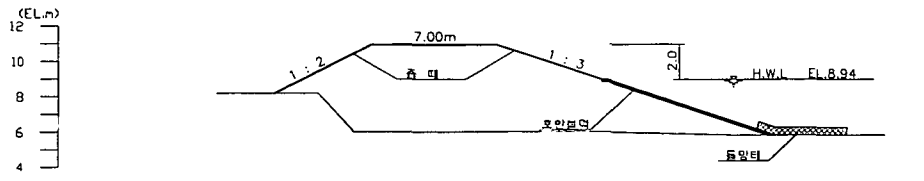
건설교통부



구 교 지 구

연장=1,830m

공 종		단위	수 량
성 토		m²	56.92
면고르기	성토	m	28.32
	절토	m	0.00
흙 띠		m	14.09
호안블럭		m	14.23
듬망태		m	5.00

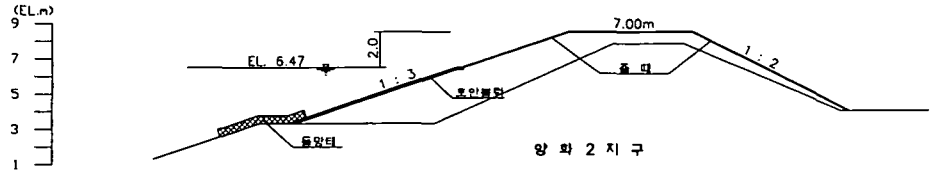


황 산 지 구

연장=450m

공 종		단위	수 량
성 토		m²	84.25
면고르기	성토	m	22.47
	절토	m	0.00
흙 띠		m	12.45
호안블럭		m	10.00
듬망태		m	5.00

보 축 계 획 표 준 단 면 도 (3)



양 화 2 지 구

연장=630m

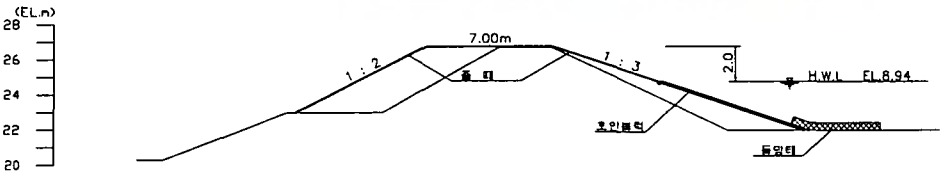
공 종		단위	수 량
성 토		m³	38.30
연고	상토	m	26.34
르기	잡토	m	0.00
흙 때		m	16.32
호안블럭		m	10.03
돌망태		m	5.00

망 월 지 구

연장=140m

공 종		단위	수 량
성 토		m³	22.99
연고	상토	m	10.47
르기	잡토	m	0.00
흙 때		m	10.47
호안블럭		m	0.00
돌망태		m	0.00

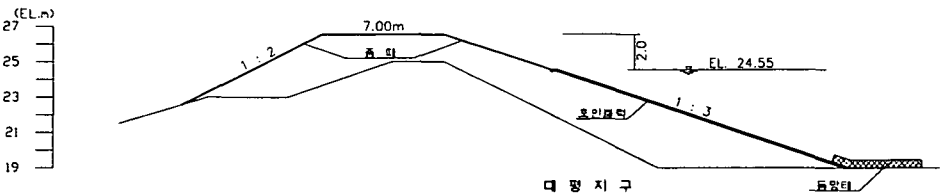
건설교통부



금 남 지 구

연장=1,985m

공 종		단위	수 량
성 토		m³	28.09
연고	상토	m	23.51
르기	잡토	m	0.00
흙 때		m	14.75
호안블럭		m	8.75
돌망태		m	5.00

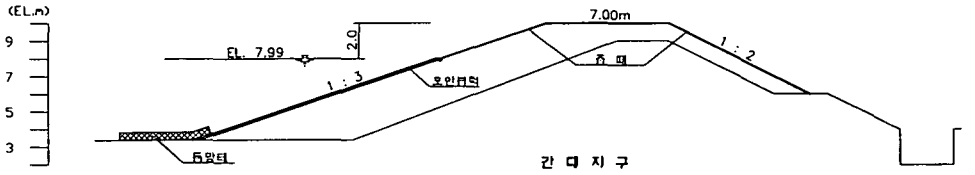


대 평 지 구

연장=1,880m

공 종		단위	수 량
성 토		m³	75.07
연고	상토	m	32.82
르기	잡토	m	0.00
흙 때		m	15.27
호안블럭		m	17.55
돌망태		m	5.00

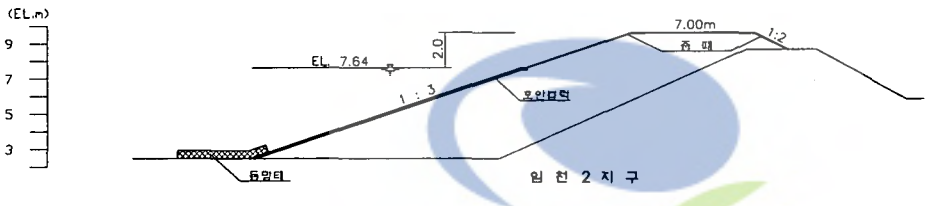
보 축 계 획 표 준 단 면 도 (4)



간 대 지 구

연장=2,930m

공 종		단위	수 량
성 토		m³	59.37
면고	성토	m	29.76
르기	절토	m	0.00
흉 대		m	15.25
호안법면		m	14.50
돌망태		m	5.00

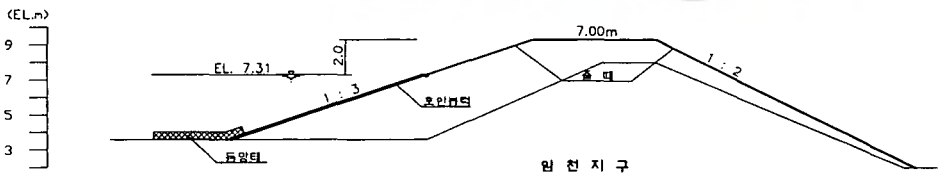


임 천 2 지 구

연장=2,060m

공 종		단위	수 량
성 토		m³	80.81
면고	성토	m	24.68
르기	절토	m	0.00
흉 대		m	8.43
호안법면		m	16.26
돌망태		m	5.00

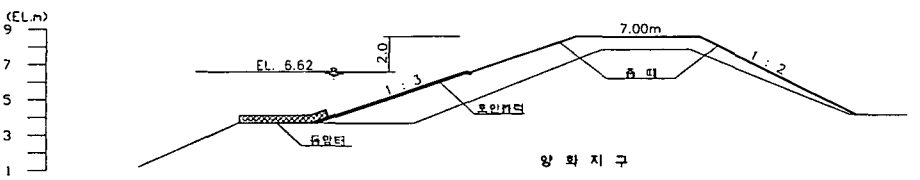
건설교통부



임 천 지 구

연장=1,140m

공 종		단위	수 량
성 토		m³	65.09
면고	성토	m	34.40
르기	절토	m	0.00
흉 대		m	22.67
호안법면		m	11.73
돌망태		m	5.00

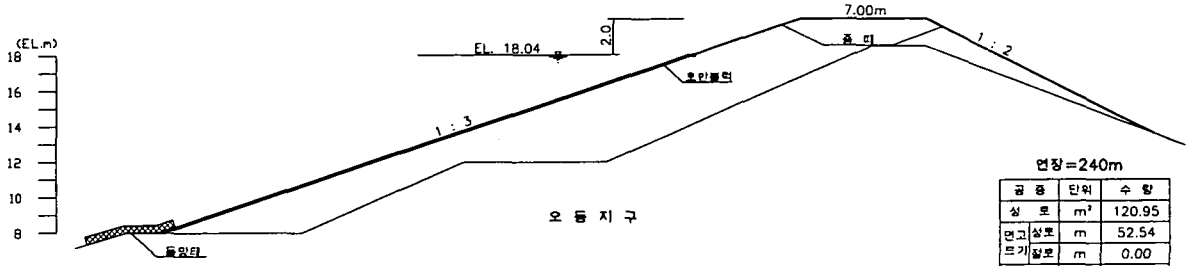


양 화 지 구

연장=710m

공 종		단위	수 량
성 토		m³	29.83
면고	성토	m	25.44
르기	절토	m	0.00
흉 대		m	16.21
호안법면		m	9.23
돌망태		m	5.00

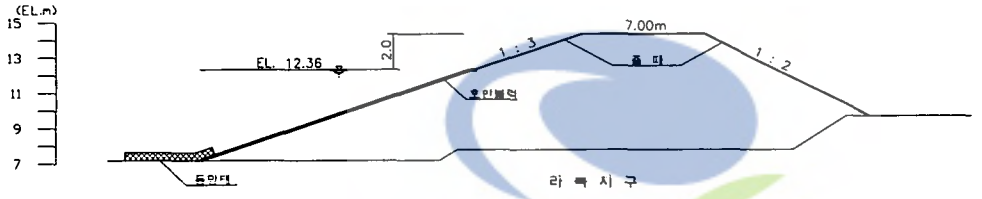
보 축 계 획 표 준 단 면 도 (5)



오 등 지 구

연장=240m

공 종	단위	수 량
성 토	m^3	120.95
연고성토	m	52.54
모기성토	m	0.00
흙 띠	m	20.79
호안블럭	m	31.75
돌망태	m	5.00

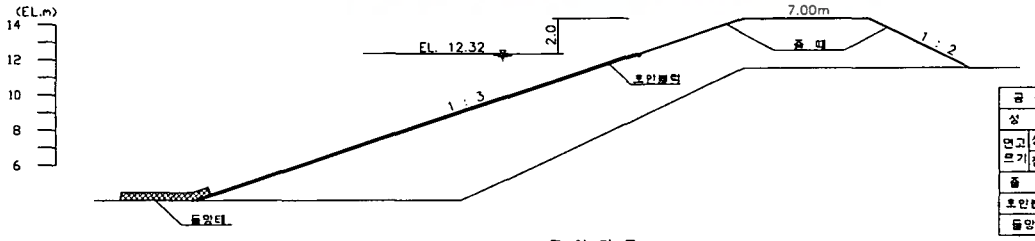


라 득 지 구

연장=330m

공 종	단위	수 량
성 토	m^3	152.37
연고성토	m	33.06
모기성토	m	0.00
흙 띠	m	16.74
호안블럭	m	16.25
돌망태	m	5.00

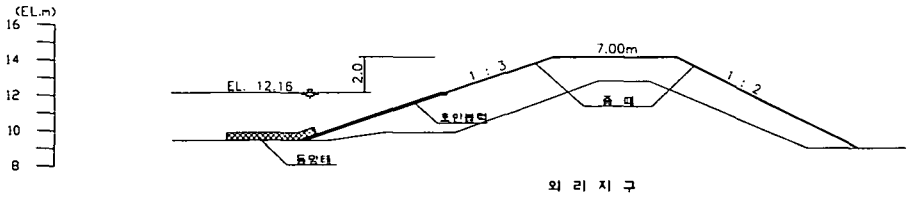
건설교통부



규 암 지 구

연장=840m

공 종	단위	수 량
성 토	m^3	127.43
연고성토	m	38.94
모기성토	m	0.00
흙 띠	m	12.63
호안블럭	m	26.25
돌망태	m	5.00

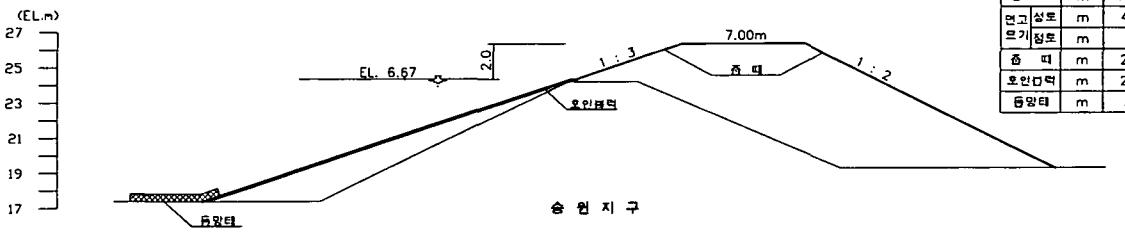


외 리 지 구

연장=2,645m

공 종	단위	수 량
성 토	m^3	48.61
연고성토	m	26.39
모기성토	m	0.00
흙 띠	m	17.86
호안블럭	m	8.50
돌망태	m	5.00

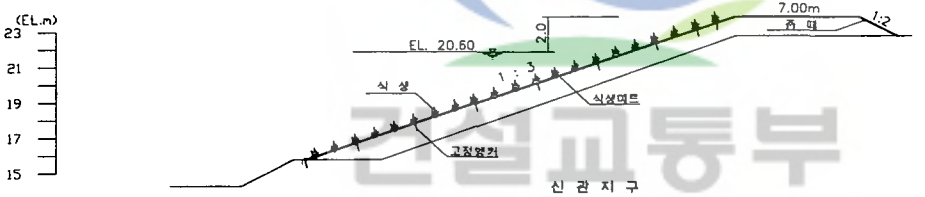
보 축 계 획 표 준 단 면 도 (6)



승 원 지 구

연장=2,490m

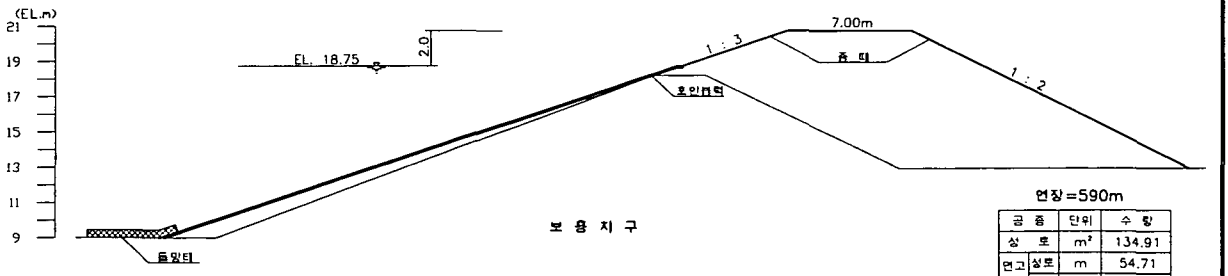
공 종		단위	수 량
성 토		m^3	111.45
연고 높이	성토	m	44.07
	절토	m	0.00
줌 떼		m	22.09
호안블럭		m	21.75
듬망태		m	5.00



신 관 지 구

연장=2,320m

공 종		단위	수 량
성 토		m^3	37.32
연고 높이	성토	m	28.07
	절토	m	0.00
줌 떼		m	2.46
앵커매트		m	25.61
식 생		m	25.61



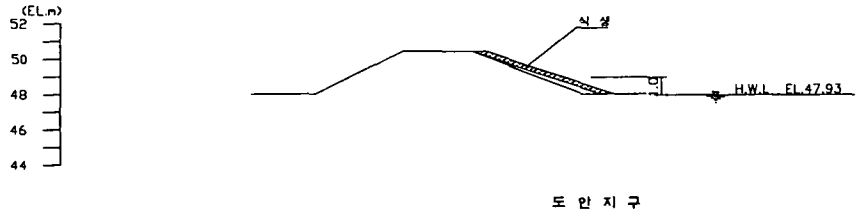
보 용 지 구

연장=590m

공 종		단위	수 량
성 토		m^3	134.91
연고 높이	성토	m	54.71
	절토	m	0.00
줌 떼		m	23.88
호안블럭		m	30.75
듬망태		m	5.00

건설교통부

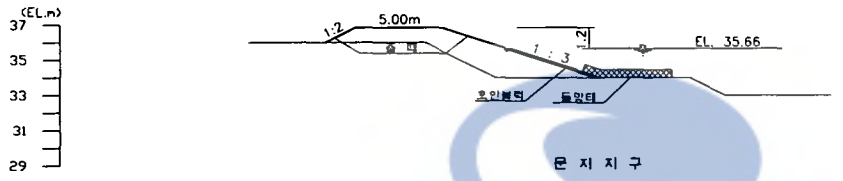
보 축 계 획 표 준 단 면 도 (7)



도 안 지 구

연장=2,035m

공 종	단위	수 량
성 토	m³	1.23
연고성토	m	7.59
모기절토	m	0.00
지연석	m	0.00
암석부설	m³	0.00
식 생	m	7.59
Con'c기초	식	0

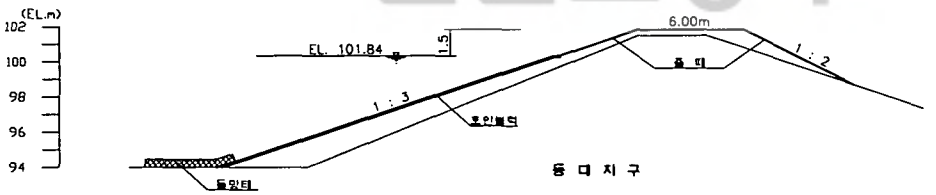


문 지 지 구

연장=1,310m

공 종	단위	수 량
성 토	m³	15.29
연고성토	m	10.97
모기절토	m	0.00
줄 떼	m	5.72
호안블럭	m	5.25
돌망태	m	5.00

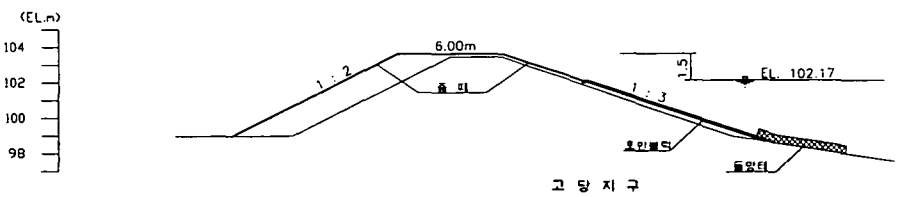
건설교통부



용 대 지 구

연장=2,650m

공 종	단위	수 량
성 토	m³	27.76
연고성토	m	31.78
모기절토	m	0.00
줄 떼	m	11.74
호안블럭	m	20.05
돌망태	m	5.00

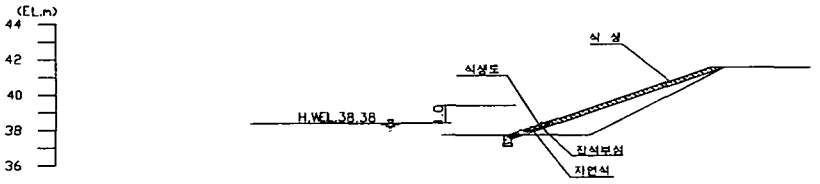


고 당 지 구

연장=1,490m

공 종	단위	수 량
성 토	m³	19.67
연고성토	m	26.12
모기절토	m	0.00
줄 떼	m	15.19
호안블럭	m	11.19
돌망태	m	5.00

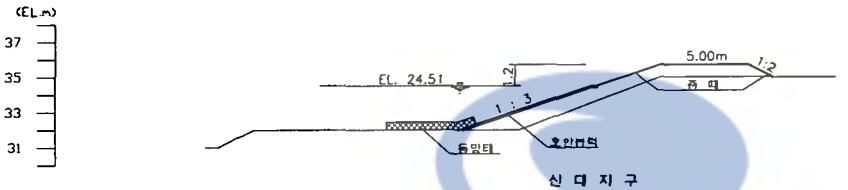
보 축 계 획 표 준 단 면 도 (8)



삼 현 지 구

연장=2,685m

공 종		단위	수 량
성 토		m^3	7.22
연고 및 흙	성토	m	12.02
	절토	m	0.00
자연석		m	2.85
잡석부심		m^3	0.57
식 생		m	9.87
Con'c기초		식	1

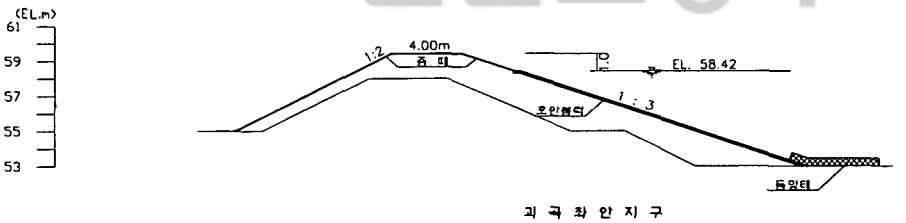


신 대 지 구

연장=590m

공 종		단위	수 량
성 토		m^3	12.68
연고 및 흙	성토	m	13.32
	절토	m	0.00
흙 띠		m	5.38
호안블럭		m	8.00
듬망태		m	5.00

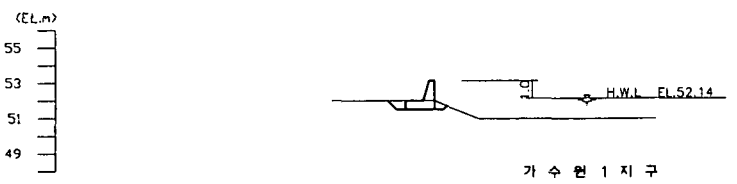
건설교통부



괴 곡 화 안 지 구

연장=2,500m

공 종		단위	수 량
성 토		m^3	43.64
연고 및 흙	성토	m	30.19
	절토	m	0.00
흙 띠		m	13.05
호안블럭		m	17.25
듬망태		m	5.00

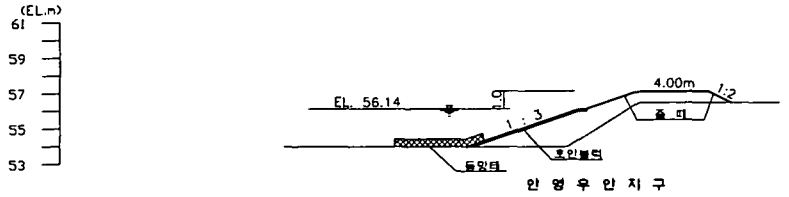


가 수 원 1 지 구

연장=170m

공 종		단위	수 량
성 토		m^3	0.00
연고 및 흙	성토	m	0.00
	절토	m	0.00
Con'c옹벽		m^3	1.36
터파기		m^3	1.43

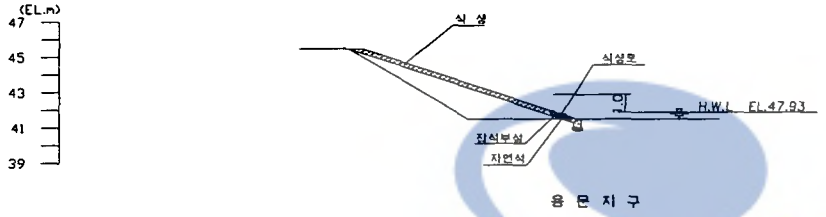
보 축 계 획 표 준 단 면 도 (9)



안 영 우 안 지 구

연장=430m

공 종		단위	수 량
상 토		m^2	12.74
면고르기	상토	m	11.36
	절토	m	0.00
흉 대		m	4.59
호안블럭		m	6.77
돌망태		m	5.00

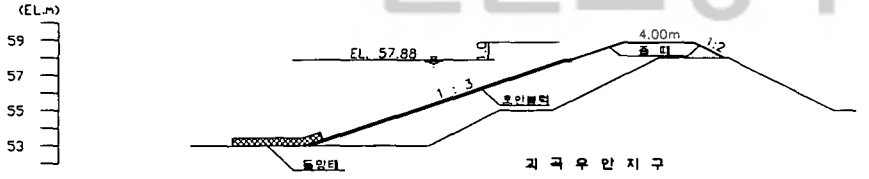


용 문 지 구

연장=1,500m

공 종		단위	수 량
상 토		m^2	10.60
면고르기	상토	m	12.65
	절토	m	0.00
자연석		m	1.90
잡석부설		m^2	0.38
식 생		m	11.45
Con'c기초		식	1

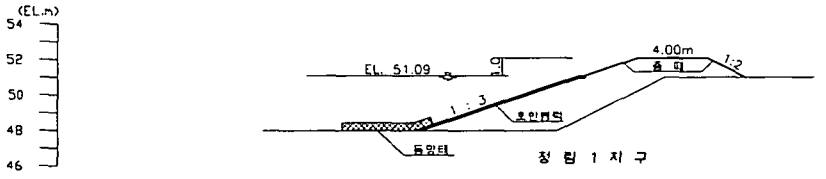
건설교통부



괴 국 우 안 지 구

연장=680m

공 종		단위	수 량
상 토		m^2	35.14
면고르기	상토	m	20.56
	절토	m	0.00
흉 대		m	5.13
호안블럭		m	15.43
돌망태		m	5.00

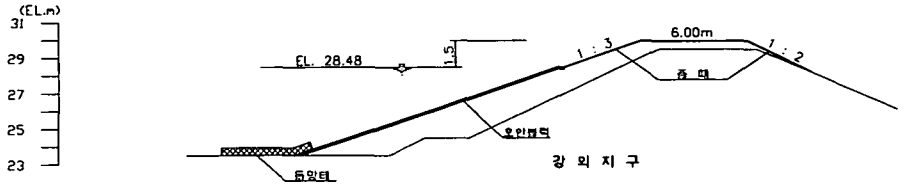


장 림 1 지 구

연장=800m

공 종		단위	수 량
상 토		m^2	26.12
면고르기	상토	m	15.37
	절토	m	0.00
흉 대		m	5.60
호안블럭		m	9.77
돌망태		m	5.00

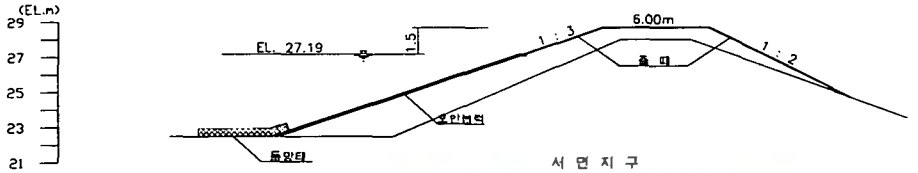
보 축 계 획 표 준 단 면 도 (10)



강 외 지 구

연장=5,400m

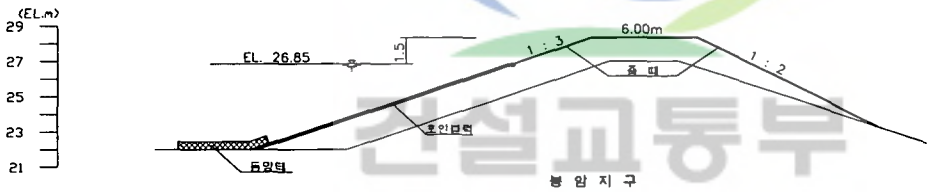
공 종		단위	수 량
성 토		m³	30.69
연고	성토	m	24.39
므기	절토	m	0.00
흙 때		m	8.65
호안법덕		m	15.75
돌망태		m	5.00



서 면 지 구

연장=2,060m

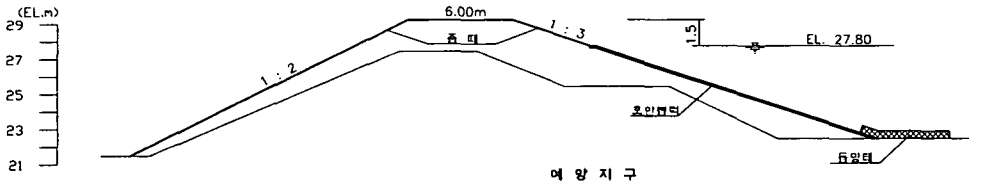
공 종		단위	수 량
성 토		m³	35.72
연고	성토	m	28.43
므기	절토	m	0.00
흙 때		m	13.60
호안법덕		m	15.00
돌망태		m	5.00



봉 암 지 구

연장=1,640m

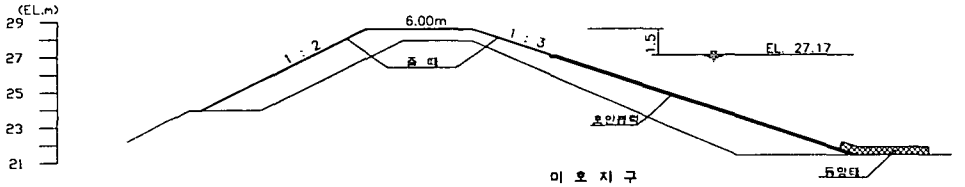
공 종		단위	수 량
성 토		m³	44.73
연고	성토	m	31.37
므기	절토	m	0.00
흙 때		m	16.04
호안법덕		m	15.50
돌망태		m	5.00



여 양 지 구

연장=1,350m

공 종		단위	수 량
성 토		m³	58.98
연고	성토	m	38.94
므기	절토	m	0.00
흙 때		m	22.18
호안법덕		m	16.75
돌망태		m	5.00



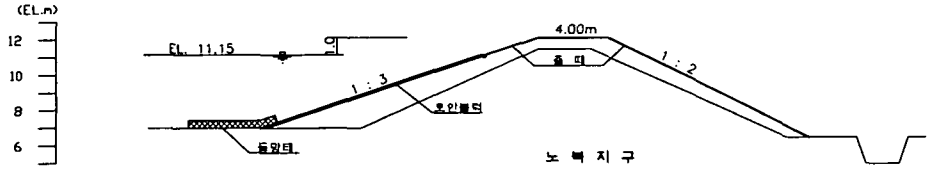
미 호 지 구

연장=3,940m

공 종		단위	수 량
성 토		m³	46.17
연고	성토	m	33.12
므기	절토	m	0.00
흙 때		m	15.19
호안법덕		m	18.00
돌망태		m	5.00

건설교통부

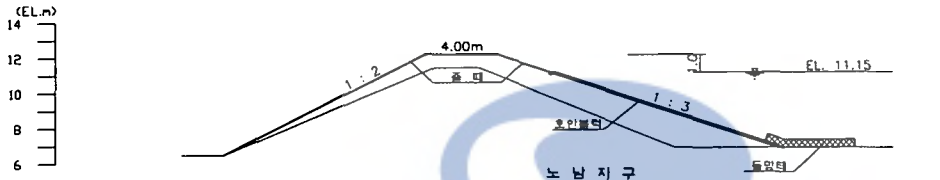
보 축 계 획 표 준 단 면 도 (11)



노 북 지 구

연장=4,760m

공 종		단위	수 량
성 토		m^3	29.29
연고	성토	m	28.92
트기	절토	m	0.00
폭 떼		m	15.80
호안블럭		m	13.25
돌망태		m	5.00

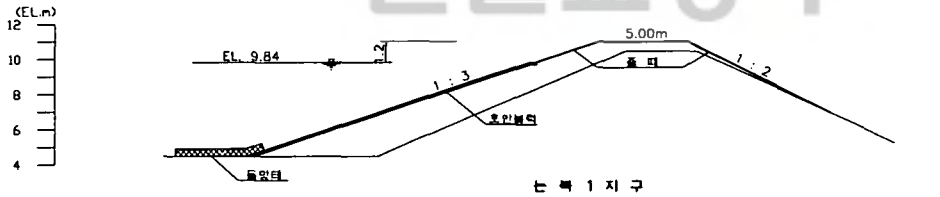


노 남 지 구

연장=4,430m

공 종		단위	수 량
성 토		m^3	30.26
연고	성토	m	29.57
트기	절토	m	0.00
폭 떼		m	16.06
호안블럭		m	13.50
돌망태		m	5.00

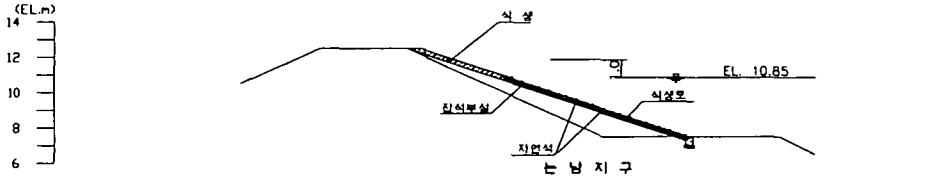
건설교통부



노 북 1 지 구

연장=2,160m

공 종		단위	수 량
성 토		m^3	35.14
연고	성토	m	29.94
트기	절토	m	0.00
폭 떼		m	12.78
호안블럭		m	17.00
돌망태		m	5.00

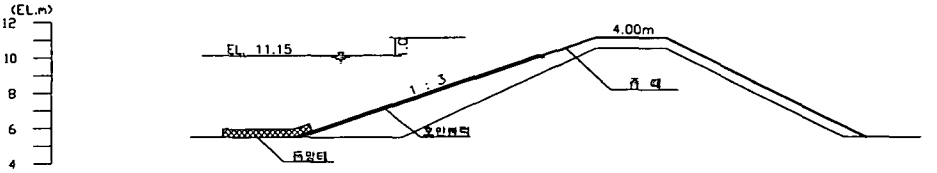


논 남 지 구

연장=2,400m

공 종		단위	수 량
성 토		m^3	10.00
연고	성토	m	15.81
트기	절토	m	0.00
자연석		m	11.29
잡석부설		m^3	2.26
식 생		m	5.22
Con'c기초		식	1

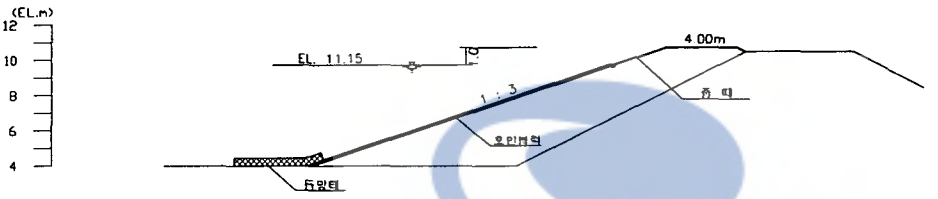
보 축 계 획 표 준 단 면 도 (12)



무 형 우 안 지 구

연장=1,095m

공 종		단위	수 량
성 토		m²	28.28
연고	상토	m	30.23
므기	잡토	m	0.00
흙 때		m	15.68
호안블럭		m	14.75
등망태		m	5.00

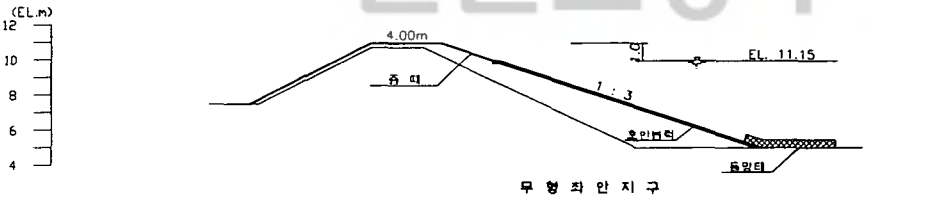


강 경 우 안 지 구

연장=5,505m

공 종		단위	수 량
선 드		m²	55.65
연고	상토	m	21.78
므기	잡토	m	0.00
흙 때		m	3.69
호안블럭		m	18.25
등망태		m	5.00

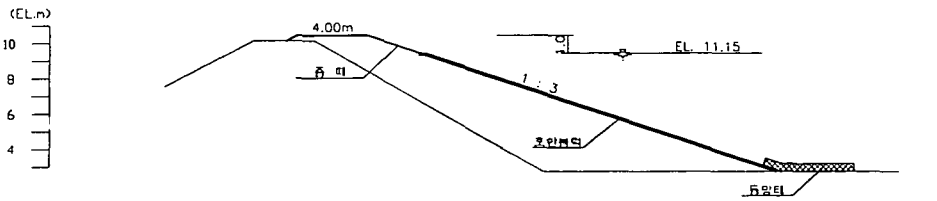
건설교통부



무 형 좌 안 지 구

연장=3,300m

공 종		단위	수 량
성 토		m²	27.25
연고	상토	m	26.53
므기	잡토	m	0.00
흙 때		m	10.88
호안블럭		m	15.75
등망태		m	5.00



강 경 좌 안 지 구

연장=3,060m

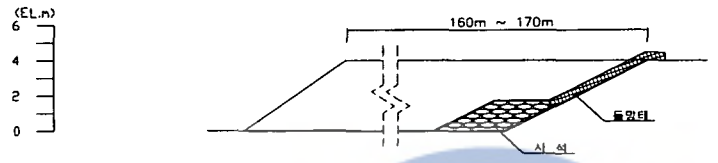
공 종		단위	수 량
성 토		m²	64.58
연고	상토	m	25.07
므기	잡토	m	0.00
흙 때		m	3.86
호안블럭		m	21.25
등망태		m	5.00

저 호 계 획 표 준 단 면 도 (1)

송 용 지 구

연장=780m

공 종		단위	수 량
성 토		m^3	0.00
절 토		m^3	2.50
연고 높이	성토	m	0.00
	절토	m	5.59
돌망태		m	4.00
사 석		m^3	6.13



청 포 지 구

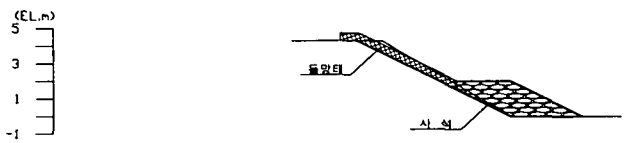
연장=2,620m

공 종		단위	수 량
성 토		m^3	0.00
절 토		m^3	655.83
연고 높이	성토	m	0.00
	절토	m	8.94
돌망태		m	6.00
사 석		m^3	6.69

임 천 2 지 구

연장=900m

공 종		단위	수 량
성 토		m^3	0.00
절 토		m^3	5.25
연고 높이	성토	m	0.00
	절토	m	7.83
돌망태		m	6.00
사 석		m^3	6.47



망 상 지 구

연장=3,540m

공 종		단위	수 량
성 토		m^3	0.00
절 토		m^3	2.93
연고 높이	성토	m	0.00
	절토	m	9.62
돌망태		m	6.00
사 석		m^3	7.89

용 포 지 구

연장=1,010m

공 종		단위	수 량
성 토		m^3	0.00
절 토		m^3	1.16
연고 높이	성토	m	0.00
	절토	m	6.71
돌망태		m	5.00
사 석		m^3	6.26

건설교통부

저 호 계 획 표 준 단 면 도 (2)

압 리 지 구

연장=530m

공 종		단위	수 량
성 토		m³	0.00
절 토		m³	0.66
연고	성토	m	0.00
흐기	절토	m	4.92
등맘태		m	3.00
사 석		m³	6.61

신 평 지 구

연장=890m

공 종		단위	수 량
성 토		m³	0.00
절 토		m³	1.24
연고	성토	m	0.00
흐기	절토	m	6.93
등맘태		m	5.00
사 석		m³	6.66

남 촌 지 구

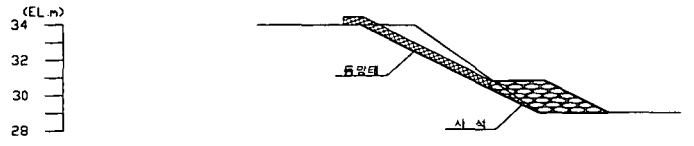
연장=1,090m

공 종		단위	수 량
성 토		m³	0.00
절 토		m³	10.54
연고	성토	m	0.00
흐기	절토	m	7.60
등맘태		m	6.00
사 석		m³	6.07

등 평 지 구

연장=1,520m

공 종		단위	수 량
성 토		m³	0.00
절 토		m³	0.81
연고	성토	m	0.00
흐기	절토	m	6.04
등맘태		m	4.00
사 석		m³	6.79



정 혁 지 구

연장=560m

공 종		단위	수 량
성 모		m³	0.00
절 모		m³	7.50
연고	성토	m	0.00
흐기	절토	m	11.18
등맘태		m	8.00
사 석		m³	7.06

건설교통부

저 호 계 획 표 준 단 면 도 (3)

왕 전 지 구

연장=440m

공 종		단위	수 량
상 토		m²	0.00
잡 토		m²	0.26
면고	상토	m	0.00
므기	잡토	m	5.81
돌망태		m	4.00
사 석		m³	6.45

덕 평 지 구

연장=700m

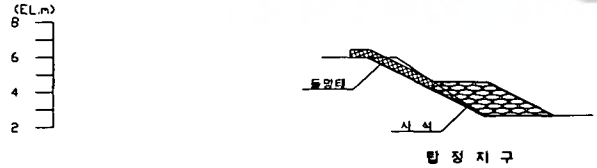
공 종		단위	수 량
상 토		m²	0.00
잡 토		m²	0.44
면고	상토	m	0.00
므기	잡토	m	4.92
돌망태		m	3.00
사 석		m³	6.64

부 인 지 구

연장=420m

공 종		단위	수 량
상 토		m²	0.00
잡 토		m²	2.24
면고	상토	m	0.00
므기	잡토	m	6.26
돌망태		m	4.00
사 석		m³	7.25

건설교통부



합 정 지 구

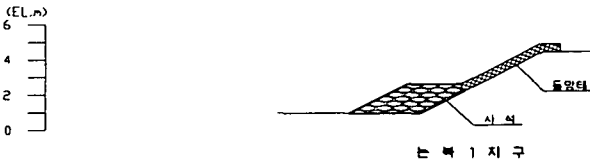
연장=400m

공 종		단위	수 량
상 토		m²	0.00
잡 토		m²	2.64
면고	상토	m	0.00
므기	잡토	m	7.38
돌망태		m	5.00
사 석		m³	7.46

괴 정 지 구

연장=440m

공 종		단위	수 량
상 토		m²	3.57
잡 토		m²	0.00
면고	상토	m	6.45
므기	잡토	m	0.00
돌망태		m	5.00
사 석		m³	5.81



논 북 1 지 구

연장=2,220m

공 종		단위	수 량
상 토		m²	0.00
잡 토		m²	0.00
면고	상토	m	0.00
므기	잡토	m	0.00
돌망태		m	5.00
사 석		m³	6.47

1.3 배수구조물 및 기타구조물 공사비

건설교통부

□ 배수구조물 및 기타 구조물 공사비

1) 교량 개수

하 천 명	시설물명 (지구명)	측 점 (No.)	형 식	연 장 (m)	폭 (m)	단 가 (m2당)	공사비 (천 원)	잡비/부대비 (천 원)	총공사비 (천 원)	비고
금강	소학지구	No.97+900	슬라브교	40	11	1,500,000	660,000	429,000	1,089,000	축제지구
	금성지구	No.84+790	슬라브교	150	18	1,500,000	4,050,000	2,632,500	6,682,500	보축지구
계									**7,771,500**	

주) 소학지구 교량공사비는 축제공사비에 반영

2) 낙차공 신설(돌보) 및 철거(톤크리트보)

하 천 명	시설물명	측 점 (No.)	연 장 (m)	단 가 (m당)	공사비 (천 원)	잡 비 (천 원)	부대공 (천 원)	총공사비 (천 원)
갑 천	갈마지구(보)	No.14+540	130	2,300,000	299,000	29,900	164,450	**493,350**

3) 배수시설물 보강

하 천 명	시설물명	측 점 (No.)	수량 (개소)	단 가 (개소)	공사비 (천 원)	잡 비 (천 원)	부대공 (천 원)	총공사비 (천 원)
전체	배수시설물 보강	-	39	15,000,000	585,000	58,500	321,750	**965,250**

주) 신설되는 38개 배수시설은 축제공사비에 반영, 금회 보강대상39개소는 총 53개 중 보축 및 축제지구에 연계된 14개소를 제외한 수치임.

4) 배수펌프장 신설

시설물명	공사내용	규격(구경) (mm)	배제량 (㎥/분)	공사비(미개발지,혼합지역,2000년 물가 기준적용) (천원)	총공사비 (천 원)
무형배수장	배수펌프장 신설	1,350 × 2대	200	1,800,000	**1,800,000**

주) 하수도 기본계획 재정비 보고서(1995.서울시) , 방재종합대책 중장기계획조사 보ㅅ고서(1988.건설부) 자료 및 통계청 물가인상률 인용

5) 보축지구 배수시설물 보강(12개소)

하 천 명	공사내용	지구명	수량 (개소)	단 가 (개소)	공사비 (천 원)	잡 비 (천 원)	부대공 (천 원)	총공사비 (천 원)
금강(하류)	배수시설물 보강	향동,나포,나포1,성당	6	25,000,000	150,000	15,000	82,500	**247,500**
금강(상류)	배수시설물 보강	심천	2	15,000,000	30,000	3,000	16,500	**49,500**
갑 천	배수시설물 보강	가수원1,괴곡우	2	15,000,000	30,000	3,000	16,500	**49,500**
유등천	배수시설물 보강	용문	1	15,000,000	15,000	1,500	8,250	**24,750**
노성천	배수시설물 보강	노북	1	15,000,000	15,000	1,500	8,250	**24,750**
계	배수시설물 보강	-	12					**396,000**

2. 자산조사 및 홍수피해액 산정

2.1 홍수피해주기 및 경제지표

2.2 자산조사 내역

2.2 홍수규모별 피해액 및 피해곡선

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2. 자산조사 및 홍수피해액 산정

2.1 홍수피해주기 및 경제지표

□. 경제성분석 대상지구 도시유형 및 평균 홍수피해주기

도 시 명		주기(년)	도시유형	홍수빈도율 (회/년)	적용지구명	적용유형	비 고
대전	유성구	1.8	대도시	0.56	대동지구	농촌지역	
	〃	〃	〃	0.56	정림지구	중소도시	
	대덕구	〃	〃	0.56	신대1지구	중소도시	
	서구	〃	〃	0.56	괴곡지구	농촌지역	
전북	군산시	1.5	중소도시	0.67	성덕지구	농촌지역	
	익산시	1.4	중소도시	0.71	제성지구	농촌지역	
충남	공주시	1.7	중소도시	0.59	옥룡지구	중소도시	
	〃	〃	〃	0.59	소학지구	농촌지역	
	〃	〃	〃	0.59	마암지구	농촌지역	
	〃	〃	〃	0.59	원봉지구	농촌지역	
	서천군	1.5	전원도시	0.67	마서지구	농촌지역	
	논산시	1.6	중소도시	0.63	동흥지구	중소도시	
	부여군	1.6	농촌지역	0.63	유왕지구	농촌지역	
	〃	〃	〃	0.63	간대지구	농촌지역	
	〃	〃	〃	0.63	정고2지구	농촌지역	
	연기군	1.6	농촌지역	0.63	석삼지구	농촌지역	
충북	영동군	2.2	농촌지역	0.45	고당지구	농촌지역	
	청원군	1.5	농촌지역	0.67	양지지구	농촌지역	

자료 : 재해연보, 1971-1999, 행정자치부(30년 평균)

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□. 시군별 도시유형 및 평균 홍수피해주기

단위 : 년/회

도 시 명		주기	도시유형	도 시 명		주기	도시유형
서울	서울시	1.8	대도시		광주군	2.6	농촌지역
부산	부산시	1.2	대도시		안성군	2.2	농촌지역
대구	대구시	1.4	대도시		양주군	1.9	농촌지역
인천	인천시	1.2	대도시		양평군	1.9	농촌지역
광주	광주시	1.5	대도시		여주군	1.4	농촌지역
대전	대전시	1.8	대도시		연천군	2.1	농촌지역
울산	울산시	1.5	대도시		포천군	3.2	농촌지역
경기	고양시	1.6	중소도시		화성군	1.3	농촌지역
	과천시	2.2	중소도시	강원	강릉시	1.9	중소도시
	광명시	1.7	중소도시		동해시	1.9	중소도시
	구리시	2.2	중소도시		삼척시	1.8	중소도시
	군포시	1.9	중소도시		속초시	3.6	중소도시
	김포시	1.6	전원도시		원주시	1.9	중소도시
	남양주시	1.9	전원도시		춘천시	2.1	중소도시
	동두천	2.1	중소도시		태백시	3.6	중소도시
	부천시	1.6	중소도시		고성군	2.9	산간지역
	성남시	3.6	중소도시		양구군	3.2	산간지역
	수원시	2.2	중소도시		양양군	2.9	산간지역
	시흥시	1.5	전원도시		영월군	1.9	산간지역
	안산시	1.5	중소도시		인제군	2.4	산간지역
	안양시	3.6	중소도시		정선군	1.9	산간지역
	오산시	1.5	중소도시		철원군	3.6	농촌지역
	용인시	1.6	전원도시		평창군	2.1	산간지역
	의왕시	1.8	중소도시		홍천군	2.6	산간지역
	의정부시	2.9	중소도시		화천군	3.6	산간지역
	이천시	1.5	전원도시		횡성군	2.2	농촌지역
	파주시	1.3	전원도시	경남	거제시	2.2	전원도시
	평택시	1.5	전원도시		김해시	1.3	전원도시
	하남시	2.2	중소도시		마산시	1.5	중소도시
	가평군	2.2	농촌지역		밀양시	1.2	전원도시

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도 시 명		주기	도시유형	도 시 명		주기	도시유형
	사천시	1.3	전원도시		청송군	3.2	농촌지역
	양산시	1.4	전원도시		칠곡군	1.5	농촌지역
	진주시	1.4	중소도시	전남	광양시	1.7	전원도시
	진해시	1.9	중소도시		나주시	1.3	중소도시
	창원시	1.3	중소도시		목포시	1.8	중소도시
	통영시	1.6	중소도시		순천시	1.5	중소도시
	거창군	3.6	농촌지역		여수시	3.6	중소도시
	고성군	1.4	농촌지역		여천시	1.4	중소도시
	남해군	2.1	농촌지역		강진군	1.5	농촌지역
	산청군	1.5	산간지역		고흥군	1.5	농촌지역
	의령군	1.3	농촌지역		곡성군	1.8	농촌지역
	창녕군	1.2	농촌지역		구례군	1.9	농촌지역
	하동군	1.4	농촌지역		담양군	1.7	농촌지역
	함안군	1.3	농촌지역		무안군	1.4	농촌지역
	함양군	4.1	산간지역		보성군	1.5	농촌지역
	합천군	1.2	농촌지역		신안군	1.5	농촌지역
경북	경산시	2.4	중소도시		여천군	1.4	농촌지역
	경주시	1.8	중소도시		영광군	1.5	농촌지역
	구미시	1.3	중소도시		영암군	1.4	농촌지역
	김천시	1.9	중소도시		완도군	1.7	농촌지역
	문경시	1.8	중소도시		장성군	2.4	농촌지역
	상주시	1.7	전원도시		장흥군	1.4	농촌지역
	안동시	1.5	전원도시		진도군	1.5	농촌지역
	영주시	1.9	전원도시		함평군	1.5	농촌지역
	영천시	2.9	중소도시		해남군	1.4	농촌지역
	포항시	2.4	중소도시		화순군	2.2	농촌지역
	고령군	1.7	농촌지역	전북	군산시	1.5	중소도시
	군위군	3.2	농촌지역		김제시	1.5	전원도시
	봉화군	2.9	농촌지역		남원시	2.2	전원도시
	성주군	2.2	농촌지역		익산시	1.4	중소도시
	영덕군	2.9	농촌지역		전주시	1.5	중소도시
	영양군	2.6	농촌지역		정읍시	1.4	전원도시
	예천군	1.7	농촌지역		고창군	1.5	농촌지역
	울진군	3.6	농촌지역		무주군	2.1	산간지역
	의성군	1.8	농촌지역		부안군	1.5	농촌지역
	청도군	2.9	농촌지역		순창군	2.4	농촌지역

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도 시 명		주기	도시유형	도 시 명		주기	도시유형
	완주군	1.4	농촌지역		예산군	1.8	농촌지역
	임실군	1.8	농촌지역		청양군	1.5	농촌지역
	장수군	4.1	산간지역		태안군	1.5	농촌지역
	진안군	1.9	산간지역		홍성군	1.8	농촌지역
충남	공주시	1.7	중소도시	충북	제천시	1.7	전원도시
	논산시	1.6	중소도시		청주시	2.9	중소도시
	보령시	1.5	전원도시		충주시	1.6	중소도시
	서산시	1.5	전원도시		괴산군	1.7	농촌지역
	아산시	1.7	전원도시		단양군	1.8	농촌지역
	천안시	2.1	중소도시		보은군	2.4	농촌지역
	금산군	1.8	농촌지역		영동군	2.2	농촌지역
	당진군	1.5	농촌지역		옥천군	1.8	농촌지역
	부여군	1.6	농촌지역		음성군	1.8	농촌지역
	서천군	1.7	농촌지역		진천군	1.7	농촌지역
	연기군	1.6	농촌지역		청원군	1.5	농촌지역

자료 : 재해연보, 1971-1999, 행정자치부(30년 평균)

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□. 편익산정 기준가격 보정을 위한 경제지표

1. 국민소득

구 분	국내총생산 (10 억원)	국민총소득 (10 억원)	국민소득 증가율 (%), 1998년 기준	1인당국민총소득 (만 원)
1991년	216,510.9	216,303.3	-50.46	500.0
1992년	245,699.6	245,387.7	-43.80	561.0
1993년	277,496.5	277,107.5	-36.54	627.0
1994년	323,407.1	322,811.5	-26.07	723.0
1995년	377,349.8	376,316.4	-13.82	835.0
1996년	418,479.0	417,108.4	-4.47	916.0
1997년	453,276.4	450,853.3	3.25	980.0
1998년	444,366.5	436,641.8	0.00	940.0
1999년	482,744.2	476,597.6	9.15	1,017.0
2000년	517,096.6	514,635.4	17.86	1,089.0

주] 한국은행 경제통계국 국민소득통계팀 작성

2. 소비자 물가지수

시점	전도시	서울특별시	대전광역시	청주시	충청남도	충청북도	물가상승율
1991	80.9	81.9	76.8	82.1	79.8	82.1	-99.98
1992	85.9	86.5	82.3	86.7	85.1	86.8	-99.98
1993	90.1	90.8	87.6	90.3	89.0	90.4	-99.98
1994	95.7	96.3	94.7	96.1	95.4	96.0	-99.98
1995	100.0	100.0	100.0	100.0	100.0	100.0	-99.98
1996	104.9	104.2	104.9	105.2	106.7	105.1	-99.97
1997	109.6	108.6	109.5	110.2	111.5	110.1	-99.97
1998	117.8	116.7	117.7	117.9	119.5	118.3	0.00
1999	118.8	117.7	118.3	118.7	120.3	119.2	-99.97
2000	121.5	120.7	120.9	121.0	121.4	121.6	-99.97

주] 통계청 경제통계국 물가통계과 작성

물가상승율은 1998년 기준임.

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2.2 지구별 자산조사 내역

□ 경제성분석 대상지구별 자산조사 내역(내측 지형 고려 침수면적 조정)

하천	지구명	구분	50년		80년		100년		200년		계획		비고
			㎡	10ar	㎡	10ar	㎡	10ar	㎡	10ar	㎡	10ar	
금강	성덕	답	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		전	30,000	30.00	30,000	30.00	30,000	30.00	30,000	30.00	30,000	30.00	
		기타	34,300	34.30	39,600	39.60	45,600	45.60	61,000	61.00	45,600	45.60	
		소계	64,300	64.30	69,600	69.60	75,600	75.60	91,000	91.00	75,600	75.60	
		가옥	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
	제성	답	349,600	349.60	352,200	352.20	360,400	360.40	366,400	366.40	360,400	360.40	
		전	22,300	22.30	26,300	26.30	28,300	28.30	32,700	32.70	28,300	28.30	
		기타	45,900	45.90	48,000	48.00	50,200	50.20	53,800	53.80	50,200	50.20	
		소계	417,800	417.80	426,500	426.50	438,900	438.90	452,900	452.90	438,900	438.90	
		가옥	20	20.00	39	39.00	53	53.00	75	75.00	53	53.00	
	옥용	답	3,800	3.80	4,500	4.50	5,900	5.90	6,800	6.80	6,800	6.80	
		전	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		기타	2,800	2.80	4,200	4.20	4,500	4.50	9,000	9.00	9,000	9.00	
		소계	6,600	6.60	8,700	8.70	10,400	10.40	15,800	15.80	15,800	15.80	
		가옥	1	1.00	26	26.00	34	34.00	45	45.00	45	45.00	
	소학	답	634,500	634.50	670,000	670.00	688,200	688.20	765,300	765.30	765,300	765.30	
		전	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		기타	16,750	16.75	17,140	17.14	17,530	17.53	18,660	18.66	18,660	18.66	
		소계	651,250	651.25	687,140	687.14	705,730	705.73	783,960	783.96	783,960	783.96	
		가옥	17	17.00	18	18.00	20	20.00	30	30.00	30	30.00	
	마앙	답	67,700	67.70	79,100	79.10	90,700	90.70	150,500	150.50	150,500	150.50	
		전	6,000	6.00	6,300	6.30	7,000	7.00	8,100	8.10	8,100	8.10	
		기타	38,700	38.70	42,400	42.40	43,700	43.70	54,900	54.90	54,900	54.90	
		소계	112,400	112.40	127,800	127.80	141,400	141.40	213,500	213.50	213,500	213.50	
		가옥	26	26.00	29	29.00	35	35.00	61	61.00	61	61.00	
	원봉	답	73,500	73.50	75,700	75.70	78,100	78.10	82,600	82.60	78,100	78.10	
		전	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		기타	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		소계	73,500	73.50	75,700	75.70	78,100	78.10	82,600	82.60	78,100	78.10	
		가옥	2	2.00	2	2.00	2	2.00	2	2.00	2	2.00	
	석삼	답	100,200	100.20	101,400	101.40	119,700	119.70	135,500	135.50	135,500	135.50	
		전	1,100	1.10	1,500	1.50	1,500	1.50	1,500	1.50	1,500	1.50	
		기타	17,600	17.60	18,400	18.40	26,000	26.00	27,000	27.00	27,000	27.00	
		소계	118,900	118.90	121,300	121.30	147,200	147.20	164,000	164.00	164,000	164.00	
		가옥	4	4.00	6	6.00	6	6.00	6	6.00	6	6.00	

하천	지구명	구분	50년		80년		100년		200년		계획		비고
			㎡	10ar	㎡	10ar	㎡	10ar	㎡	10ar	㎡	10ar	
금강	대동	답	169,000	169.00	205,200	205.20	213,000	213.00	312,300	312.30	268,500	268.50	
		전	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		기타	100	0.10	200	0.20	200	0.20	300	0.30	300	0.30	
		소계	169,100	169.10	205,400	205.40	213,200	213.20	312,600	312.60	268,800	268.80	
		가옥	-	0.00	-	0.00	-	0.00	4	4.00	-	0.00	
	고당	답	48,200	48.20	73,100	73.10	114,600	114.60	130,000	130.00	130,000	130.00	
		전	2,000	2.00	6,000	6.00	8,700	8.70	10,200	10.20	10,200	10.20	
		기타	5,100	5.10	7,300	7.30	13,800	13.80	15,300	15.30	15,300	15.30	
		소계	55,300	55.30	86,400	86.40	137,100	137.10	155,500	155.50	155,500	155.50	
		가옥	3	3.00	3	3.00	3	3.00	3	3.00	3	3.00	
	마서	답	6,000	6.00	7,000	7.00	7,500	7.50	7,600	7.60	7,500	7.50	
		전	800	0.80	900	0.90	1,000	1.00	1,000	1.00	1,000	1.00	
		기타	500	0.50	510	0.51	520	0.52	530	0.53	520	0.52	
		소계	7,300	7.30	8,410	8.41	9,020	9.02	9,130	9.13	9,020	9.02	
		가옥	120	120.00	120	120.00	120	120.00	120	120.00	120	120.00	
	유왕	답	14,600	14.60	14,600	14.60	14,600	14.60	14,600	14.60	14,600	14.60	
		전	1,000	1.00	1,300	1.30	2,500	2.50	4,800	4.80	2,500	2.50	
		기타	2,100	2.10	3,500	3.50	3,900	3.90	5,800	5.80	3,900	3.90	
		소계	17,700	17.70	19,400	19.40	21,000	21.00	25,200	25.20	21,000	21.00	
		가옥	3	3.00	3	3.00	5	5.00	8	8.00	5	5.00	
	간대	답	-	0.00	17,500	17.50	17,500	17.50	17,500	17.50	17,500	17.50	
		전	-	0.00	70,000	70.00	70,000	70.00	70,000	70.00	70,000	70.00	
		기타	-	0.00	30,000	30.00	30,000	30.00	30,000	30.00	30,000	30.00	
		소계	-	0.00	117,500	117.50	117,500	117.50	117,500	117.50	117,500	117.50	
		가옥	-	0.00	50	50.00	50	50.00	50	50.00	50	50.00	
	정고2	답	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		전	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		기타	2,300	2.30	3,500	3.50	4,000	4.00	4,500	4.50	4,000	4.00	
		소계	2,300	2.30	3,500	3.50	4,000	4.00	4,500	4.50	4,000	4.00	
		가옥	-	0.00	3	3.00	3	3.00	3	3.00	3	3.00	
	양지	답	46,100	46.10	46,100	46.10	46,100	46.10	46,100	46.10	46,100	46.10	
		전	72,400	72.40	75,100	75.10	76,800	76.80	82,000	82.00	76,800	76.80	
		기타	22,000	22.00	22,500	22.50	24,000	24.00	32,000	32.00	24,000	24.00	
		소계	140,500	140.50	143,700	143.70	146,900	146.90	160,100	160.10	146,900	146.90	
		가옥	5	5.00	5	5.00	5	5.00	5	5.00	5	5.00	

건설교통부

하천	지구명	구분	50년		80년		100년		200년		계획		비고
			㎡	10ar	㎡	10ar	㎡	10ar	㎡	10ar	㎡	10ar	
갑천	신대1	답	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		전	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		기타	6,700	6.70	8,700	8.70	11,300	11.30	13,800	13.80	11,300	11.30	
		소계	6,700	6.70	8,700	8.70	11,300	11.30	13,800	13.80	11,300	11.30	
		가옥	1	1.00	1	1.00	11	11.00	11	11.00	11	11.00	
	정림	답	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		전	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		기타	120	0.12	120	0.12	125	0.12	125	0.12	125	0.12	
		소계	120	0.12	120	0.12	125	0.12	125	0.12	125	0.12	
		가옥	18	18.00	18	18.00	18	18.00	18	18.00	18	18.00	
	괴곡	답	10,500	10.50	12,800	12.80	15,200	15.20	15,600	15.60	15,200	15.20	
		전	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
		기타		0.00		0.00		0.00		0.00		0.00	
		소계	10,500	10.50	12,800	12.80	15,200	15.20	15,600	15.60	15,200	15.20	
		가옥	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	
논산천	동흥	답	241,000	241.00	243,000	243.00	245,000	245.00	248,000	248.00	245,000	245.00	
		전	61,000	61.00	64,000	64.00	64,000	64.00	65,000	65.00	64,000	64.00	
		기타	271,000	271.00	272,000	272.00	276,000	276.00	281,000	281.00	276,000	276.00	
		소계	573,000	573.00	579,000	579.00	585,000	585.00	594,000	594.00	585,000	585.00	
		가옥	500	500.00	550	550.00	650	650.00	720	720.00	650	650.00	
	계	답	1,764,700	1764.70	1,902,200	1902.20	248,000	272.80	2,298,800	2298.80	2,241,000	2241.00	
		전	196,600	196.60	281,400	281.40	65,000	71.50	305,300	305.30	292,400	292.40	
		기타	465,970	465.97	518,070	518.07	778,000	855.80	607,715	607.71	570,805	570.80	
		소계	2,427,270	2427.27	2,701,670	2701.67	1,091,000	1200.10	3,211,815	3211.81	3,104,205	3104.20	
		가옥	720	720.00	873	873.00	700	700.00	1,161	1161.00	1,062	1062.00	

건설교통부

2.3 홍수규모별 피해액 및 피해곡선

하천	지구	초과확률	피해액	피해액	구 간	개수 규모별 구간 피해액(백만원)						
		빈 도	백만원	평 균	빈 도	개수전	30년	50년	80년	100년	150년	200년
	성덕	99.99	0.000	0.00								
		70.00	0.066	0.03	0.2999	0.010						
		40.00	0.219	0.14	0.3000	0.043						
		30.00	0.730	0.47	0.1000	0.047						
		20.00	2.434	1.58	0.1000	0.158						
		10.00	8.112	5.27	0.1000	0.527						
		5.00	16.225	12.17	0.0500	0.608						
		3.33	32.450	24.34	0.0167	0.406	0.406					
		2.00	40.562	36.51	0.0133	0.486	0.486	0.486				
		1.25	42.240	41.40	0.0075	0.311	0.311	0.311	0.311			
		1.00	44.139	43.19	0.0025	0.108	0.108	0.108	0.108	0.108		
		0.67	47.390	45.76	0.0033	0.151	0.151	0.151	0.151	0.151	0.151	
		0.50	49.015	48.20	0.0017	0.082	0.082	0.082	0.082	0.082	0.082	0.082
		합 계				2.937	1.543	1.137	0.651	0.341	0.233	0.082
	피해경감기대액						1.394	1.800	2.286	2.596	2.704	2.855
	제성	99.99	0.000	0.00								
		70.00	5.959	2.98	0.2999	0.893						
		40.00	11.917	8.94	0.3000	2.681						
		30.00	23.835	17.88	0.1000	1.788						
		20.00	119.173	71.50	0.1000	7.150						
		10.00	238.346	178.76	0.1000	17.876						
		5.00	476.692	357.52	0.0500	17.876						
		3.33	595.865	536.28	0.0167	8.956	8.956					
		2.00	668.071	631.97	0.0133	8.405	8.405	8.405				
		1.25	749.027	708.55	0.0075	5.314	5.314	5.314	5.314			
		1.00	817.933	783.48	0.0025	1.959	1.959	1.959	1.959	1.959		
		0.67	867.247	842.59	0.0033	2.781	2.781	2.781	2.781	2.781	2.781	
		0.50	916.562	891.90	0.0017	1.516	1.516	1.516	1.516	1.516	1.516	1.516
		합 계				77.195	28.931	19.975	11.570	6.255	4.297	1.516
	피해경감기대액						48.265	57.221	65.626	70.940	72.899	75.679
	옥룡	99.99	0.000	0.00								
		70.00	0.386	0.19	0.2999	0.058						
		40.00	0.483	0.43	0.3000	0.130						
		30.00	0.603	0.54	0.1000	0.054						
		20.00	1.206	0.90	0.1000	0.090						
		10.00	2.413	1.81	0.1000	0.181						
		5.00	4.826	3.62	0.0500	0.181						
		3.33	9.651	7.24	0.0167	0.121	0.121					
		2.00	10.724	10.19	0.0133	0.135	0.135	0.135				
		1.25	107.279	59.00	0.0075	0.443	0.443	0.443	0.443			
		1.00	139.999	123.64	0.0025	0.309	0.309	0.309	0.309	0.309		
		0.67	162.326	151.16	0.0033	0.499	0.499	0.499	0.499	0.499	0.499	
		0.50	184.652	173.49	0.0017	0.295	0.295	0.295	0.295	0.295	0.295	0.295
		합 계				2.497	1.802	1.681	1.545	1.103	0.794	0.295
	피해경감기대액						0.695	0.816	0.951	1.394	1.703	2.202

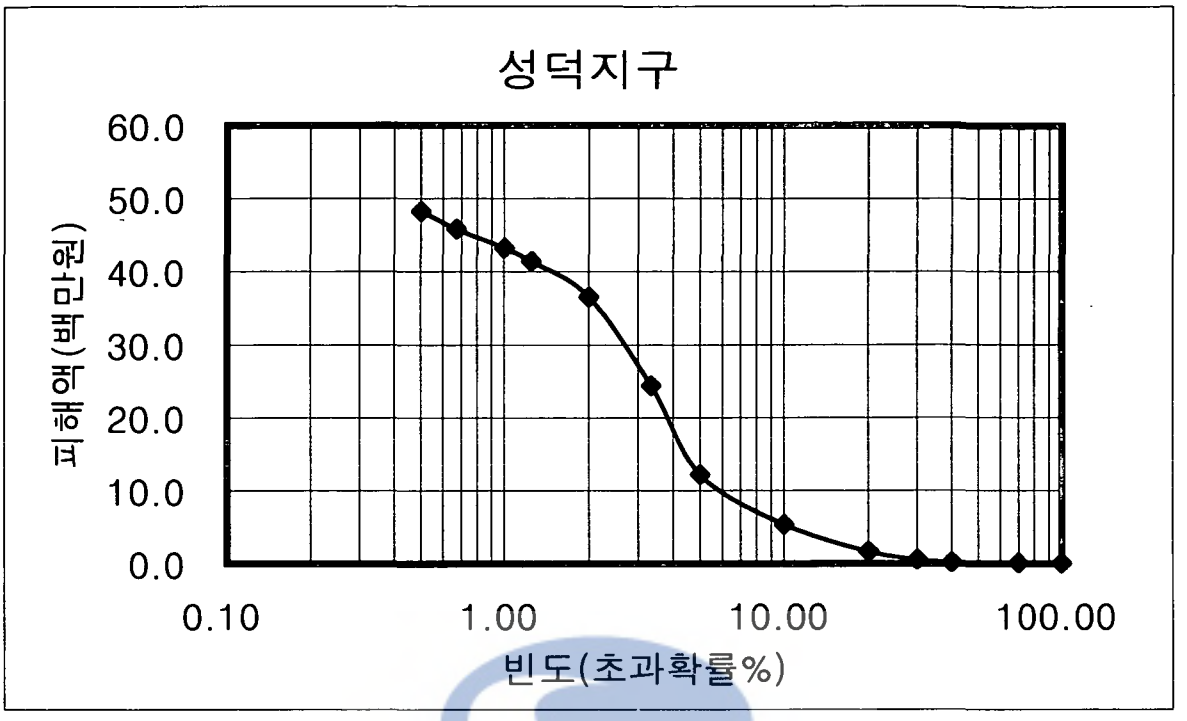
하천	지구	초과확률	피해액	피해액	구 간	개수 규모별 구간 피해액(백만원)						
		빈 도	백만원	평 균	빈 도	개수전	30년	50년	80년	100년	150년	200년
	소학	99.99	0.000	0.00								
		70.00	40.836	20.42	0.2999	6.123						
		40.00	51.045	45.94	0.3000	13.782						
		30.00	63.806	57.43	0.1000	5.743						
		20.00	127.612	95.71	0.1000	9.571						
		10.00	255.223	191.42	0.1000	19.142						
		5.00	510.446	382.83	0.0500	19.142						
		3.33	1020.893	765.67	0.0167	12.787	12.787					
		2.00	1078.023	1049.46	0.0133	13.958	13.958	13.958				
		1.25	1138.350	1108.19	0.0075	8.311	8.311	8.311	8.311			
		1.00	1174.991	1156.67	0.0025	2.892	2.892	2.892	2.892	2.892		
		0.67	1255.420	1215.21	0.0033	4.010	4.010	4.010	4.010	4.010	4.010	
		0.50	1335.849	1295.63	0.0017	2.203	2.203	2.203	2.203	2.203	2.203	2.203
		합 계				117.663	44.160	31.374	17.416	9.104	6.213	2.203
	피해경감기대액						73.502	86.289	100.247	108.558	111.450	115.460
	마암	99.99	0.000	0.00								
		70.00	7.893	3.95	0.2999	1.184						
		40.00	9.867	8.88	0.3000	2.664						
		30.00	12.333	11.10	0.1000	1.110						
		20.00	24.666	18.50	0.1000	1.850						
		10.00	49.333	37.00	0.1000	3.700						
		5.00	98.666	74.00	0.0500	3.700						
		3.33	197.332	148.00	0.0167	2.472	2.472					
		2.00	224.556	210.94	0.0133	2.806	2.806	2.806				
		1.25	255.537	240.05	0.0075	1.800	1.800	1.800	1.800			
		1.00	297.874	276.71	0.0025	0.692	0.692	0.692	0.692	0.692		
		0.67	397.098	347.49	0.0033	1.147	1.147	1.147	1.147	1.147	1.147	
		0.50	496.321	446.71	0.0017	0.759	0.759	0.759	0.759	0.759	0.759	0.759
		합 계				23.883	9.675	7.204	4.398	2.598	1.906	0.759
	피해경감기대액						14.207	16.679	19.485	21.285	21.977	23.123
	원봉	99.99	0.000	0.00								
		70.00	2.488	1.24	0.2999	0.373						
		40.00	3.109	2.80	0.3000	0.840						
		30.00	3.887	3.50	0.1000	0.350						
		20.00	7.774	5.83	0.1000	0.583						
		10.00	15.547	11.66	0.1000	1.166						
		5.00	31.095	23.32	0.0500	1.166						
		3.33	62.190	46.64	0.0167	0.779	0.779					
		2.00	124.380	93.28	0.0133	1.241	1.241	1.241				
		1.25	127.874	126.13	0.0075	0.946	0.946	0.946	0.946			
		1.00	131.687	129.78	0.0025	0.324	0.324	0.324	0.324	0.324		
		0.67	135.261	133.47	0.0033	0.440	0.440	0.440	0.440	0.440	0.440	
		0.50	138.836	137.05	0.0017	0.233	0.233	0.233	0.233	0.233	0.233	0.233
		합 계				8.441	3.963	3.185	1.944	0.998	0.673	0.233
	피해경감기대액						4.478	5.256	6.497	7.443	7.768	8.208

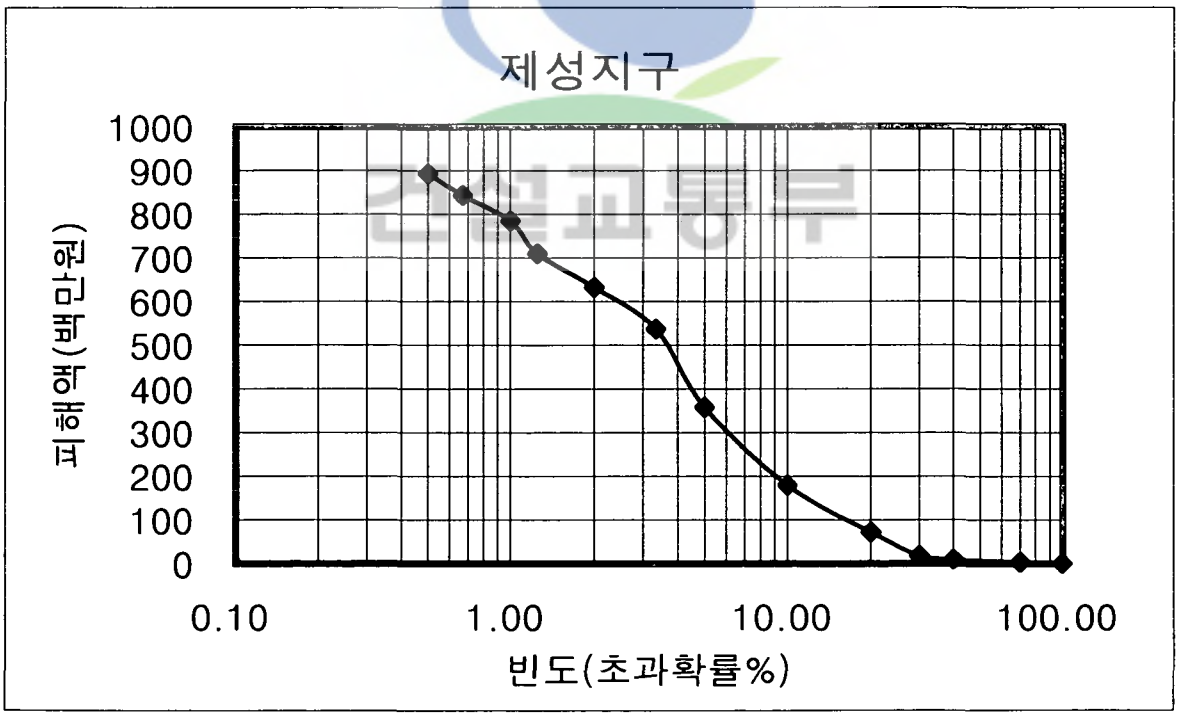
하천	지구	초과확률	피해액	피해액	구 간	개수 규모별 구간 피해액(백만원)						
		빈 도	백만원	평 균	빈 도	개수전	30년	50년	80년	100년	150년	200년
	석삼	99.99	0.000	0.00								
		70.00	10.973	5.49	0.2999	1.645						
		40.00	13.716	12.34	0.3000	3.703						
		30.00	17.145	15.43	0.1000	1.543						
		20.00	34.289	25.72	0.1000	2.572						
		10.00	68.579	51.43	0.1000	5.143						
		5.00	137.158	102.87	0.0500	5.143						
		3.33	171.447	154.30	0.0167	2.577	2.577					
		2.00	181.063	176.26	0.0133	2.344	2.344	2.344				
		1.25	191.218	186.14	0.0075	1.396	1.396	1.396	1.396			
		1.00	222.701	206.96	0.0025	0.517	0.517	0.517	0.517	0.517		
		0.67	235.411	229.06	0.0033	0.756	0.756	0.756	0.756	0.756	0.756	
		0.50	248.120	241.77	0.0017	0.411	0.411	0.411	0.411	0.411	0.411	0.411
		합 계				27.752	8.001	5.425	3.080	1.684	1.167	0.411
	피해경감기대액						19.750	22.327	24.671	26.067	26.585	27.341
	대동	99.99	0.000	0.00								
		70.00	14.154	7.08	0.2999	2.122						
		40.00	17.692	15.92	0.3000	4.777						
		30.00	22.115	19.90	0.1000	1.990						
		20.00	44.231	33.17	0.1000	3.317						
		10.00	88.462	66.35	0.1000	6.635						
		5.00	176.923	132.69	0.0500	6.635						
		3.33	221.154	199.04	0.0167	3.324	3.324					
		2.00	268.546	244.85	0.0133	3.257	3.257	3.257				
		1.25	326.093	297.32	0.0075	2.230	2.230	2.230	2.230			
		1.00	338.485	332.29	0.0025	0.831	0.831	0.831	0.831	0.831		
		0.67	424.987	381.74	0.0033	1.260	1.260	1.260	1.260	1.260	1.260	
		0.50	511.489	468.24	0.0017	0.796	0.796	0.796	0.796	0.796	0.796	0.796
		합 계				37.173	11.697	8.373	5.116	2.886	2.056	0.796
	피해경감기대액						25.476	28.800	32.057	34.287	35.117	36.377
	고당	99.99	0.000	0.00								
		70.00	3.952	1.98	0.2999	0.593						
		40.00	4.941	4.45	0.3000	1.334						
		30.00	6.176	5.56	0.1000	0.556						
		20.00	12.351	9.26	0.1000	0.926						
		10.00	24.703	18.53	0.1000	1.853						
		5.00	49.406	37.05	0.0500	1.853						
		3.33	61.757	55.58	0.0167	0.928	0.928					
		2.00	91.577	76.67	0.0133	1.020	1.020	1.020				
		1.25	135.796	113.69	0.0075	0.853	0.853	0.853	0.853			
		1.00	206.464	171.13	0.0025	0.428	0.428	0.428	0.428	0.428		
		0.67	219.678	213.07	0.0033	0.703	0.703	0.703	0.703	0.703	0.703	
		0.50	232.892	226.28	0.0017	0.385	0.385	0.385	0.385	0.385	0.385	0.385
		합 계				11.430	4.316	3.388	2.368	1.516	1.088	0.385
	피해경감기대액						7.114	8.042	9.062	9.915	10.343	11.046

하천	지구	초과확률	피해액	피해액	구 간	개수 규모별 구간 피해액(백만원)						
		빈 도	백만원	평 균	빈 도	개수전	30년	50년	80년	100년	150년	200년
	마서	99.99	0.000	0.00								
		70.00	18.592	9.30	0.2999	2.788						
		40.00	23.240	20.92	0.3000	6.275						
		30.00	29.050	26.14	0.1000	2.614						
		20.00	58.100	43.57	0.1000	4.357						
		10.00	116.199	87.15	0.1000	8.715						
		5.00	232.399	174.30	0.0500	8.715						
		3.33	464.798	348.60	0.0167	5.822	5.822					
		2.00	466.482	465.64	0.0133	6.193	6.193	6.193				
		1.25	468.173	467.33	0.0075	3.505	3.505	3.505	3.505			
		1.00	469.071	468.62	0.0025	1.172	1.172	1.172	1.172	1.172		
		0.67	469.151	469.11	0.0033	1.548	1.548	1.548	1.548	1.548	1.548	
		0.50	469.231	469.19	0.0017	0.798	0.798	0.798	0.798	0.798	0.798	0.798
		합 계				52.501	19.037	13.215	7.022	3.517	2.346	0.798
	피해경감기대액						33.464	39.286	45.479	48.984	50.156	51.704
	유왕	99.99	0.000	0.00								
		70.00	2.274	1.14	0.2999	0.341						
		40.00	2.842	2.56	0.3000	0.767						
		30.00	3.552	3.20	0.1000	0.320						
		20.00	7.105	5.33	0.1000	0.533						
		10.00	14.210	10.66	0.1000	1.066						
		5.00	28.420	21.31	0.0500	1.066						
		3.33	35.525	31.97	0.0167	0.534	0.534					
		2.00	36.250	35.89	0.0133	0.477	0.477	0.477				
		1.25	36.991	36.62	0.0075	0.275	0.275	0.275	0.275			
		1.00	45.907	41.45	0.0025	0.104	0.104	0.104	0.104	0.104		
		0.67	53.046	49.48	0.0033	0.163	0.163	0.163	0.163	0.163	0.163	
		0.50	60.185	56.62	0.0017	0.096	0.096	0.096	0.096	0.096	0.096	0.096
		합 계				5.741	1.649	1.115	0.638	0.363	0.260	0.096
	피해경감기대액						4.092	4.626	5.104	5.378	5.482	5.645
	간대	99.99	0.000	0.00								
		70.00	0.380	0.19	0.2999	0.057						
		40.00	0.475	0.43	0.3000	0.128						
		30.00	0.593	0.53	0.1000	0.053						
		20.00	1.186	0.89	0.1000	0.089						
		10.00	2.373	1.78	0.1000	0.178						
		5.00	4.746	3.56	0.0500	0.178						
		3.33	23.729	14.24	0.0167	0.238	0.238					
		2.00	118.644	71.19	0.0133	0.947	0.947	0.947				
		1.25	296.611	207.63	0.0075	1.557	1.557	1.557	1.557			
		1.00	296.611	296.61	0.0025	0.742	0.742	0.742	0.742	0.742		
		0.67	296.611	296.61	0.0033	0.979	0.979	0.979	0.979	0.979	0.979	
		0.50	296.611	296.61	0.0017	0.504	0.504	0.504	0.504	0.504	0.504	0.504
		합 계				5.650	4.966	4.729	3.782	2.225	1.483	0.504
	피해경감기대액						0.683	0.921	1.868	3.425	4.167	5.145

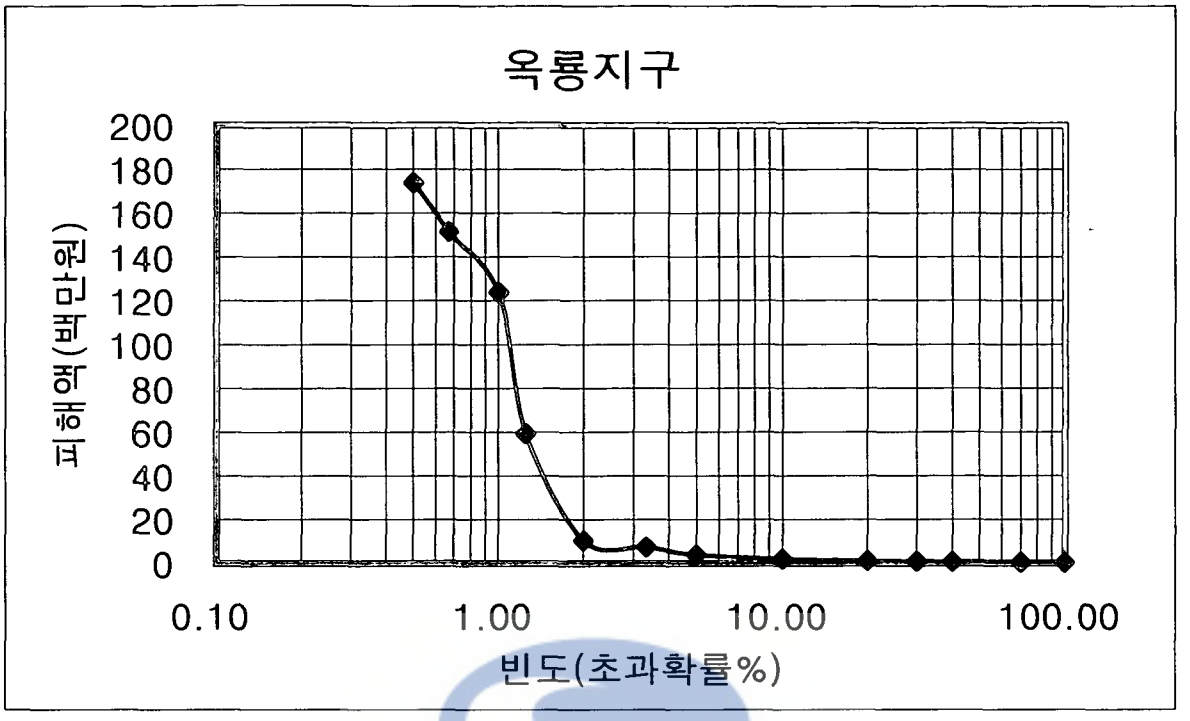
하천	지구	초과확률	피해액	피해액	구 간	개수 규모별 구간 피해액(백만원)						
		빈 도	백만원	평 균	빈 도	개수전	30년	50년	80년	100년	150년	200년
	정고2	99.99	0.000	0.00								
		70.00	0.040	0.02	0.2999	0.006						
		40.00	0.050	0.05	0.3000	0.014						
		30.00	0.063	0.06	0.1000	0.006						
		20.00	0.125	0.09	0.1000	0.009						
		10.00	0.250	0.19	0.1000	0.019						
		5.00	0.500	0.38	0.0500	0.019						
		3.33	5.003	2.75	0.0167	0.046	0.046					
		2.00	10.006	7.50	0.0133	0.100	0.100	0.100				
		1.25	12.508	11.26	0.0075	0.084	0.084	0.084	0.084			
		1.00	12.666	12.59	0.0025	0.031	0.031	0.031	0.031	0.031		
		0.67	12.746	12.71	0.0033	0.042	0.042	0.042	0.042	0.042	0.042	
		0.50	12.825	12.79	0.0017	0.022	0.022	0.022	0.022	0.022	0.022	0.022
		합 계				0.397	0.325	0.279	0.180	0.095	0.064	0.022
	피해경감기대액						0.072	0.118	0.218	0.302	0.334	0.376
	양지	99.99	0.000	0.00								
		70.00	10.759	5.38	0.2999	1.613						
		40.00	13.449	12.10	0.3000	3.631						
		30.00	16.811	15.13	0.1000	1.513						
		20.00	33.622	25.22	0.1000	2.522						
		10.00	67.244	50.43	0.1000	5.043						
		5.00	134.488	100.87	0.0500	5.043						
		3.33	168.110	151.30	0.0167	2.527	2.527					
		2.00	170.895	169.50	0.0133	2.254	2.254	2.254				
		1.25	173.726	172.31	0.0075	1.292	1.292	1.292	1.292			
		1.00	175.886	174.81	0.0025	0.437	0.437	0.437	0.437	0.437		
		0.67	179.726	177.81	0.0033	0.587	0.587	0.587	0.587	0.587	0.587	
		0.50	183.567	181.65	0.0017	0.309	0.309	0.309	0.309	0.309	0.309	0.309
		합 계				26.772	7.406	4.879	2.625	1.333	0.896	0.309
	피해경감기대액						19.366	21.892	24.147	25.439	25.876	26.463
	신대1	99.99	0.000	0.00								
		70.00	0.303	0.15	0.2999	0.045						
		40.00	0.379	0.34	0.3000	0.102						
		30.00	0.474	0.43	0.1000	0.043						
		20.00	0.947	0.71	0.1000	0.071						
		10.00	1.895	1.42	0.1000	0.142						
		5.00	3.790	2.84	0.0500	0.142						
		3.33	4.737	4.26	0.0167	0.071	0.071					
		2.00	5.921	5.33	0.0133	0.071	0.071	0.071				
		1.25	6.554	6.24	0.0075	0.047	0.047	0.047	0.047			
		1.00	45.378	25.97	0.0025	0.065	0.065	0.065	0.065	0.065		
		0.67	45.773	45.58	0.0033	0.150	0.150	0.150	0.150	0.150	0.150	
		0.50	46.169	45.97	0.0017	0.078	0.078	0.078	0.078	0.078	0.078	0.078
		합 계				1.028	0.482	0.411	0.340	0.293	0.229	0.078
	피해경감기대액						0.546	0.617	0.688	0.735	0.799	0.950

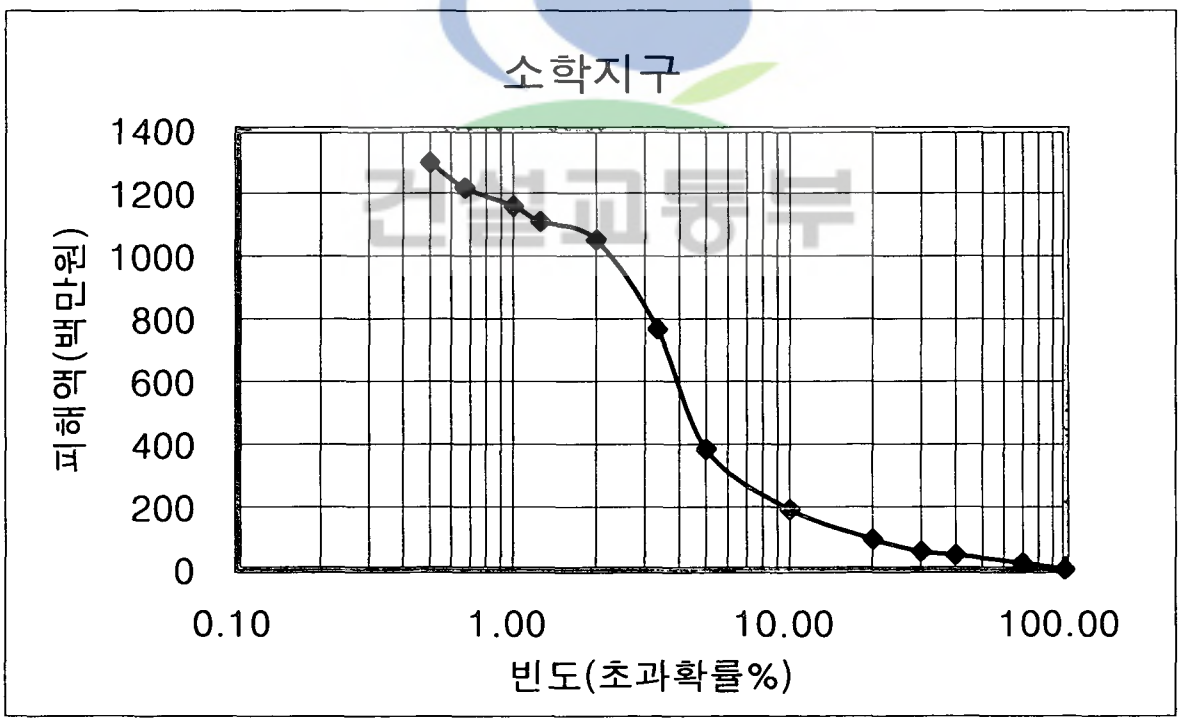
하천	지구	초과확률	피해액	피해액	구 간	개수 규모별 구간 피해액(백만원)						
		빈 도	백만원	평 균	빈 도	개수전	30년	50년	80년	100년	150년	200년
	정림	99.99	0.000	0.00								
		70.00	1.369	0.68	0.2999	0.205						
		40.00	1.711	1.54	0.3000	0.462						
		30.00	2.139	1.92	0.1000	0.192						
		20.00	4.277	3.21	0.1000	0.321						
		10.00	8.555	6.42	0.1000	0.642						
		5.00	17.109	12.83	0.0500	0.642						
		3.33	34.219	25.66	0.0167	0.429	0.429					
		2.00	68.438	51.33	0.0133	0.683	0.683	0.683				
		1.25	68.438	68.44	0.0075	0.513	0.513	0.513	0.513			
		1.00	68.438	68.44	0.0025	0.171	0.171	0.171	0.171	0.171		
		0.67	68.438	68.44	0.0033	0.226	0.226	0.226	0.226	0.226	0.226	
		0.50	68.438	68.44	0.0017	0.116	0.116	0.116	0.116	0.116	0.116	0.116
		합 계				4.602	2.138	1.709	1.027	0.513	0.342	0.116
	피해경감기대액						2.464	2.892	3.575	4.088	4.259	4.485
	괴곡	99.99	0.000	0.00								
		70.00	0.876	0.44	0.2999	0.131						
		40.00	1.095	0.99	0.3000	0.296						
		30.00	1.368	1.23	0.1000	0.123						
		20.00	2.736	2.05	0.1000	0.205						
		10.00	5.473	4.10	0.1000	0.410						
		5.00	10.946	8.21	0.0500	0.410						
		3.33	13.682	12.31	0.0167	0.206	0.206					
		2.00	16.681	15.18	0.0133	0.202	0.202	0.202				
		1.25	20.337	18.51	0.0075	0.139	0.139	0.139	0.139			
		1.00	24.150	22.24	0.0025	0.056	0.056	0.056	0.056	0.056		
		0.67	24.467	24.31	0.0033	0.080	0.080	0.080	0.080	0.080	0.080	
		0.50	24.785	24.63	0.0017	0.042	0.042	0.042	0.042	0.042	0.042	0.042
		합 계				2.300	0.724	0.518	0.317	0.178	0.122	0.042
	피해경감기대액						1.576	1.782	1.984	2.123	2.178	2.258
	동흥	99.99	0.000	0.00								
		70.00	48.582	24.29	0.2999	7.285						
		40.00	60.728	54.65	0.3000	16.396						
		30.00	75.910	68.32	0.1000	6.832						
		20.00	151.819	113.86	0.1000	11.386						
		10.00	303.638	227.73	0.1000	22.773						
		5.00	607.277	455.46	0.0500	22.773						
		3.33	1214.553	910.92	0.0167	15.212	15.212					
		2.00	2429.107	1821.83	0.0133	24.230	24.230	24.230				
		1.25	2625.571	2527.34	0.0075	18.955	18.955	18.955	18.955			
		1.00	3010.017	2817.79	0.0025	7.044	7.044	7.044	7.044	7.044		
		0.67	3146.687	3078.35	0.0033	10.159	10.159	10.159	10.159	10.159	10.159	
		0.50	3283.356	3215.02	0.0017	5.466	5.466	5.466	5.466	5.466	5.466	5.466
		합 계				168.512	81.066	65.854	41.624	22.669	15.624	5.466
	피해경감기대액						87.445	102.658	126.888	145.843	152.888	163.046


성덕지구
60.0
50.0
40.0
30.0
20.0
10.0
0.0
피해율(백분율)
0.10
1.00
10.00
100.00
빈도(초과확률%)


제성지구
1000
900
800
700
600
500
400
300
200
100
0
피해율(백분율)
0.10
1.00
10.00
100.00
빈도(초과확률%)

건설교통부


옥룡지구
200
180
160
140
120
100
80
60
40
20
0
0.10
1.00
10.00
100.00
빈도(초과확률%)


소학지구
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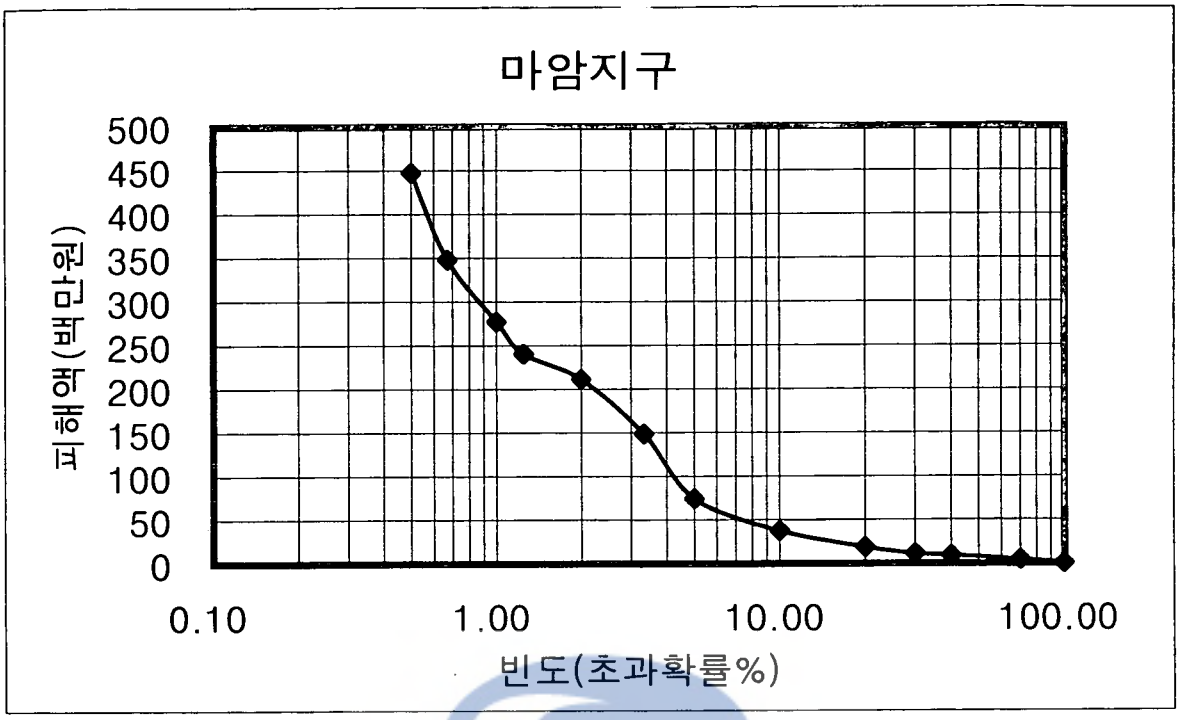
1200
1000
800
600
400
200
0
0.10
1.00
10.00
100.00
빈도(초과확률%)


마암지구
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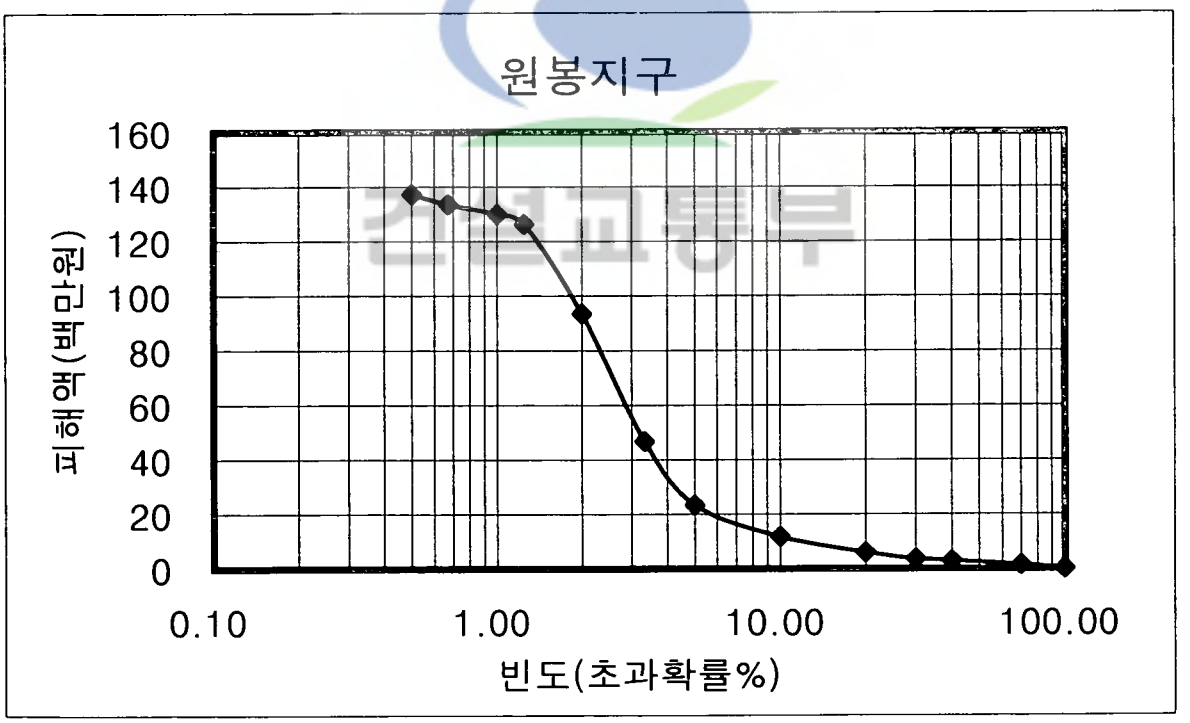
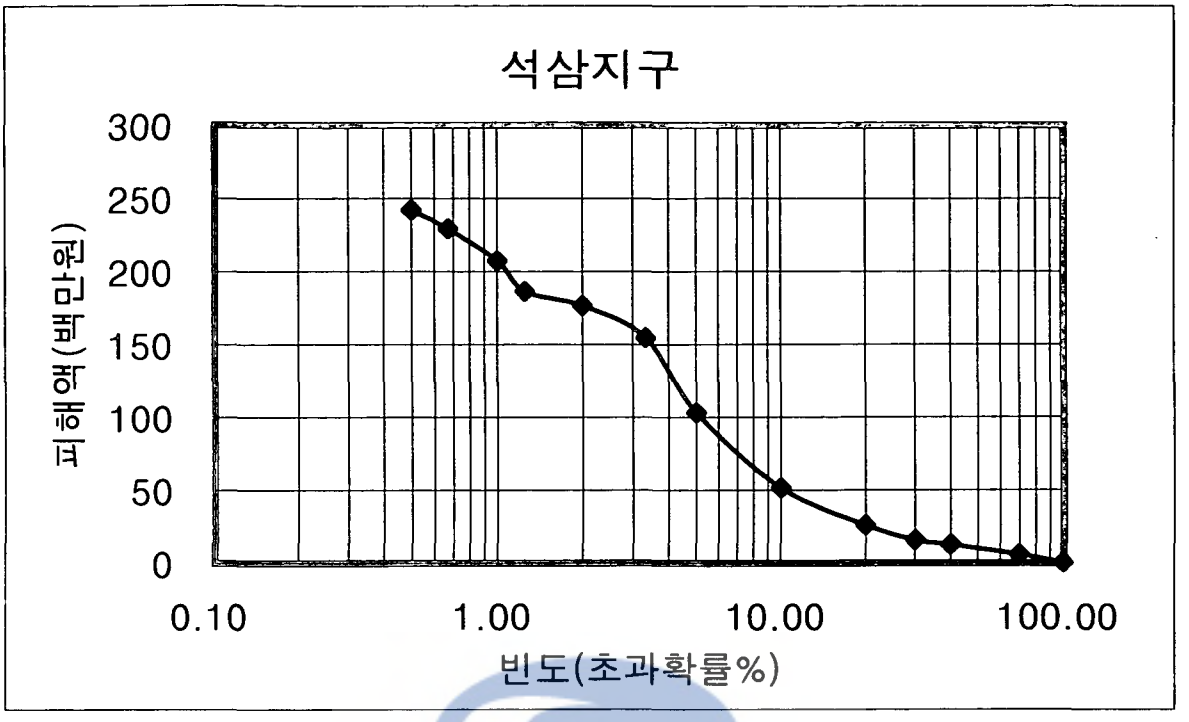
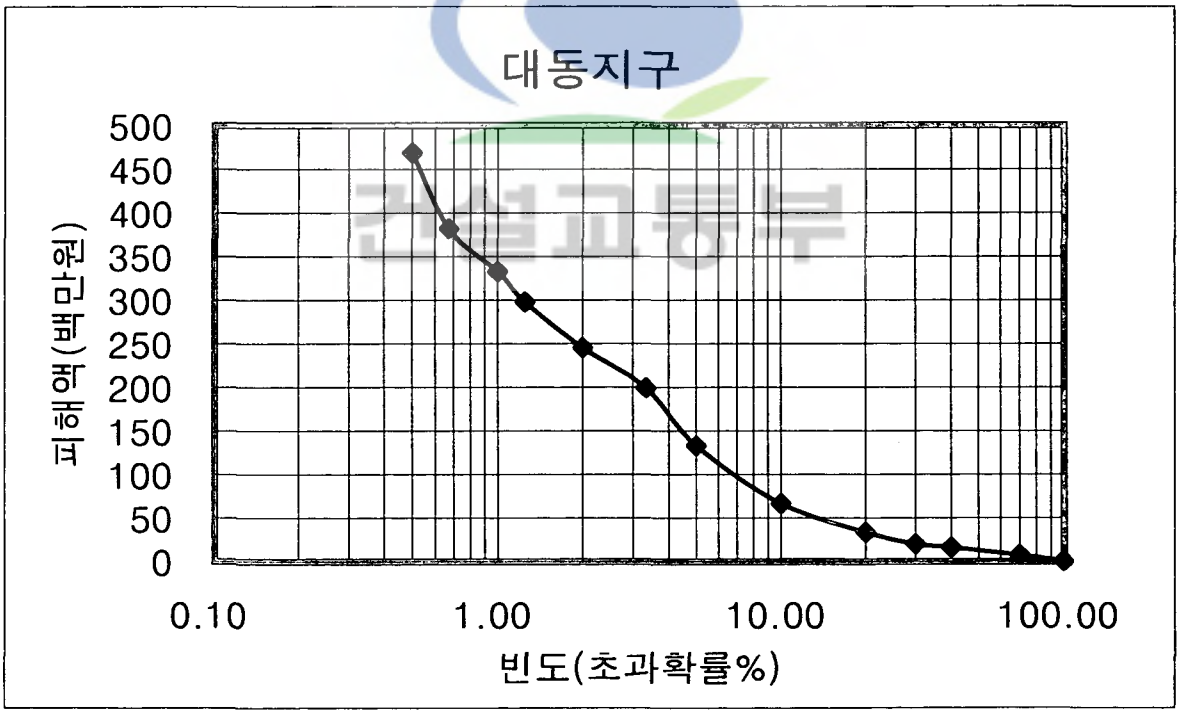
450
400
350
300
250
200
150
100
50
0
피해액(백만원)
0.10
1.00
10.00
100.00
빈도(초과확률%)

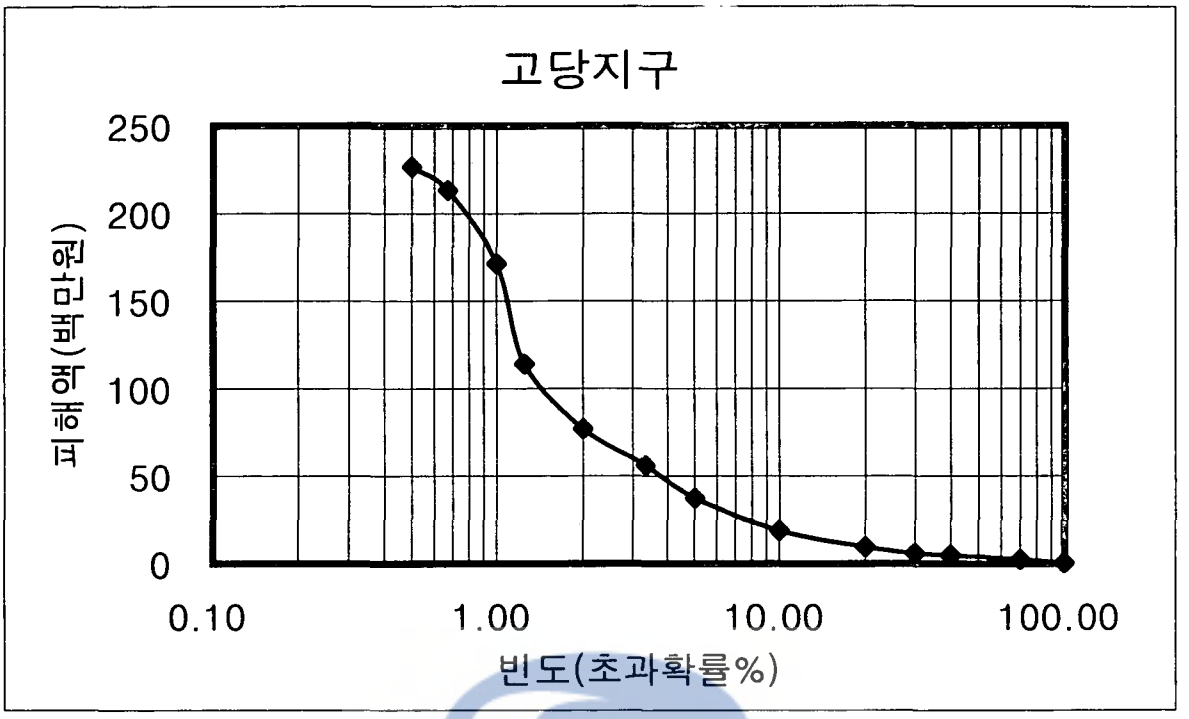

원봉지구
160
140
120
100
80
60
40
20
0
피해액(백만원)
0.10
1.00
10.00
100.00
빈도(초과확률%)

건설교통부


석삼지구
300
250
200
150
100
50
0
피해액(백만원)
0.10
1.00
10.00
100.00
빈도(초과확률%)


대동지구
500
450
400
350
300
250
200
150
100
50
0
피해액(백만원)
0.10
1.00
10.00
100.00
빈도(초과확률%)

건설교통부


고당지구
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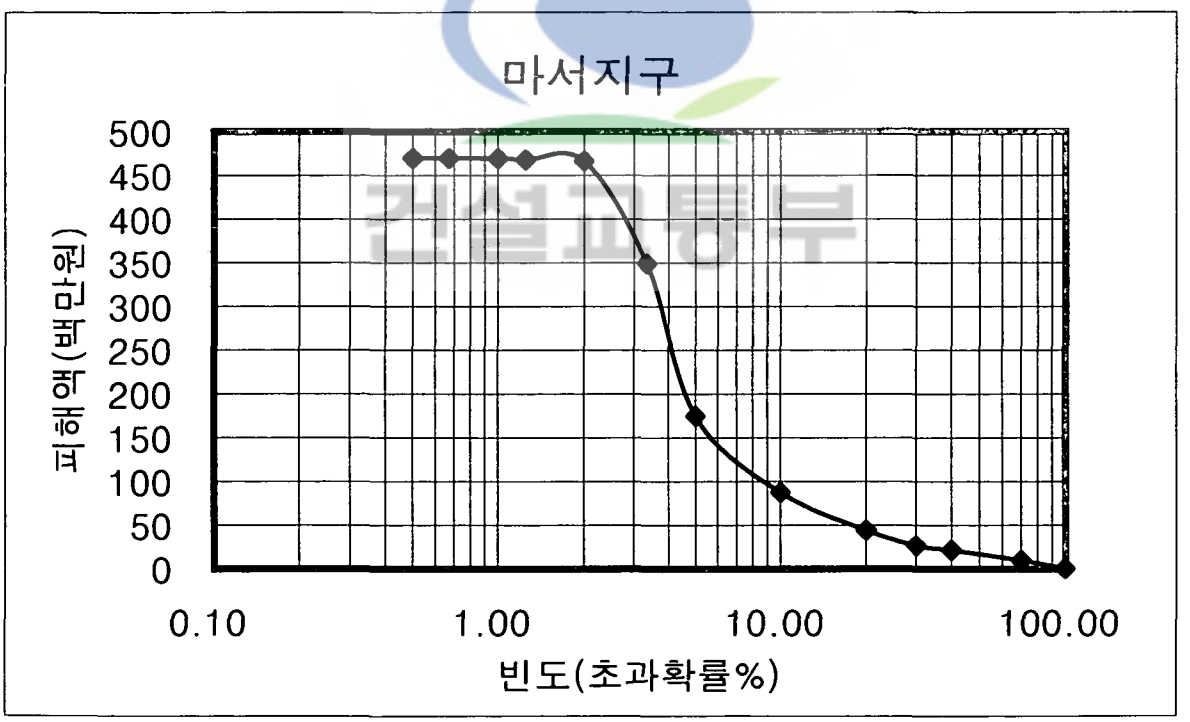
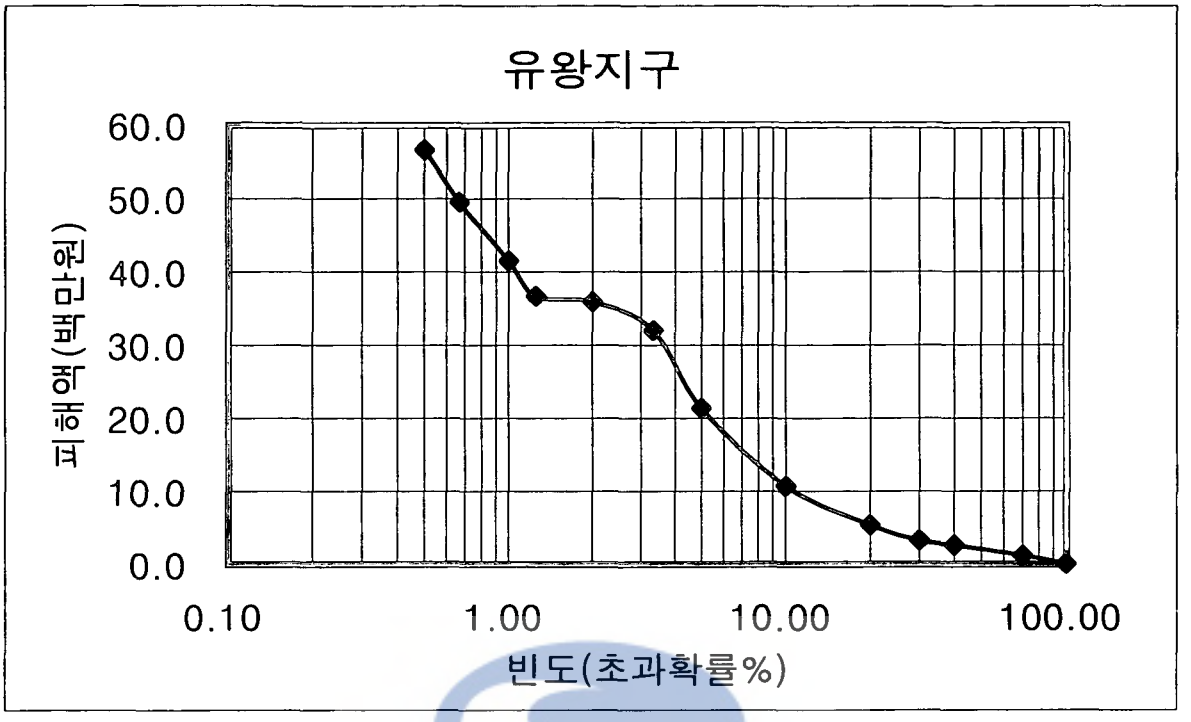
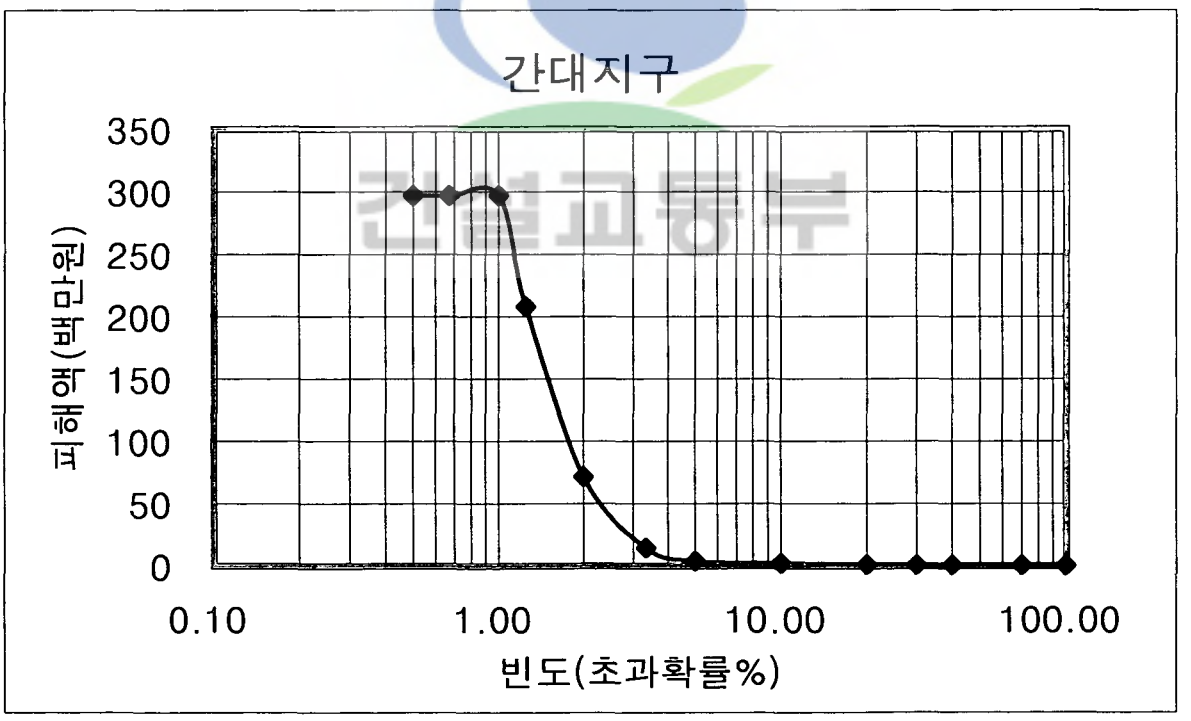
200
150
100
50
0
0.10
1.00
10.00
100.00
빈도(초과확률%)

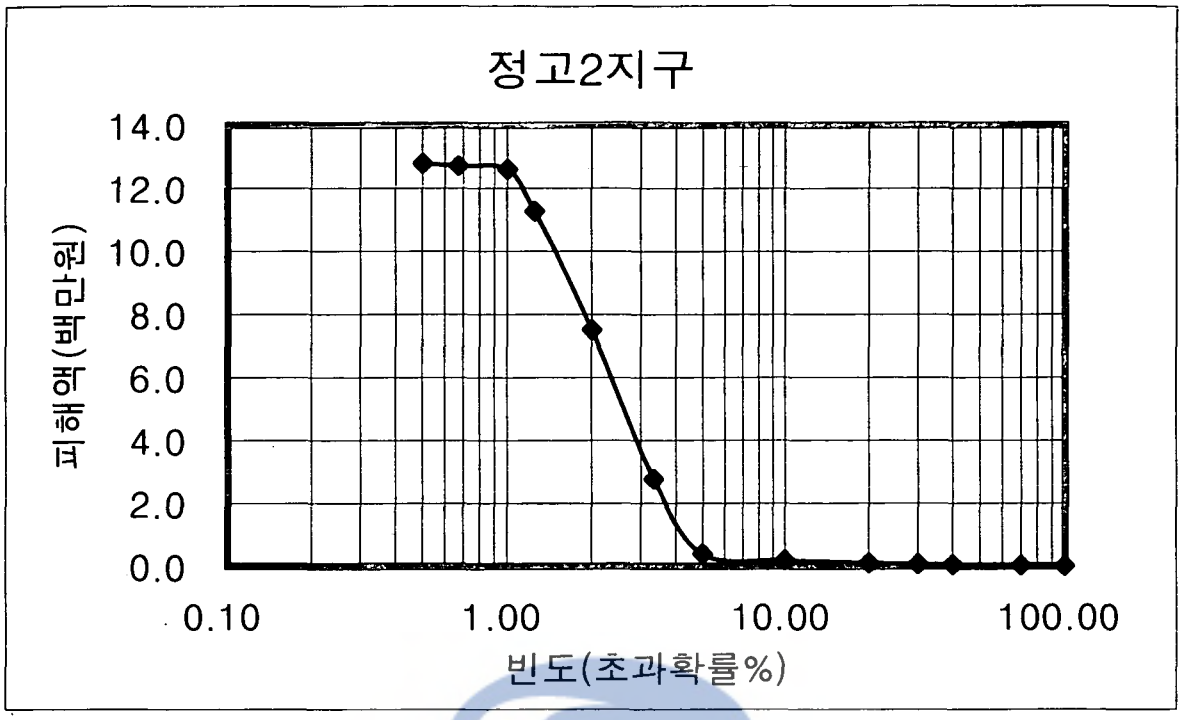

마서지구
500
450
400
350
300
250
200
150
100
50
0
0.10
1.00
10.00
100.00
빈도(초과확률%)

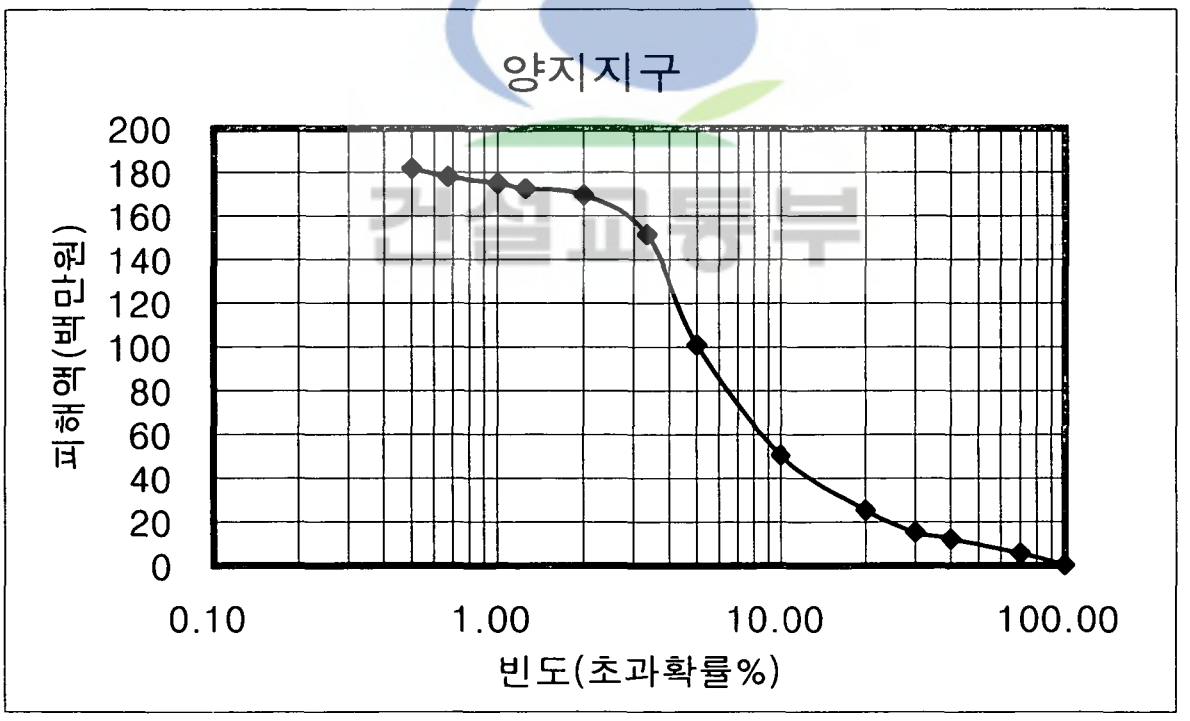
건설교통부


유왕지구
60.0
50.0
40.0
30.0
20.0
10.0
0.0
피해액(백만원)
0.10
1.00
10.00
100.00
빈도(초과확률%)

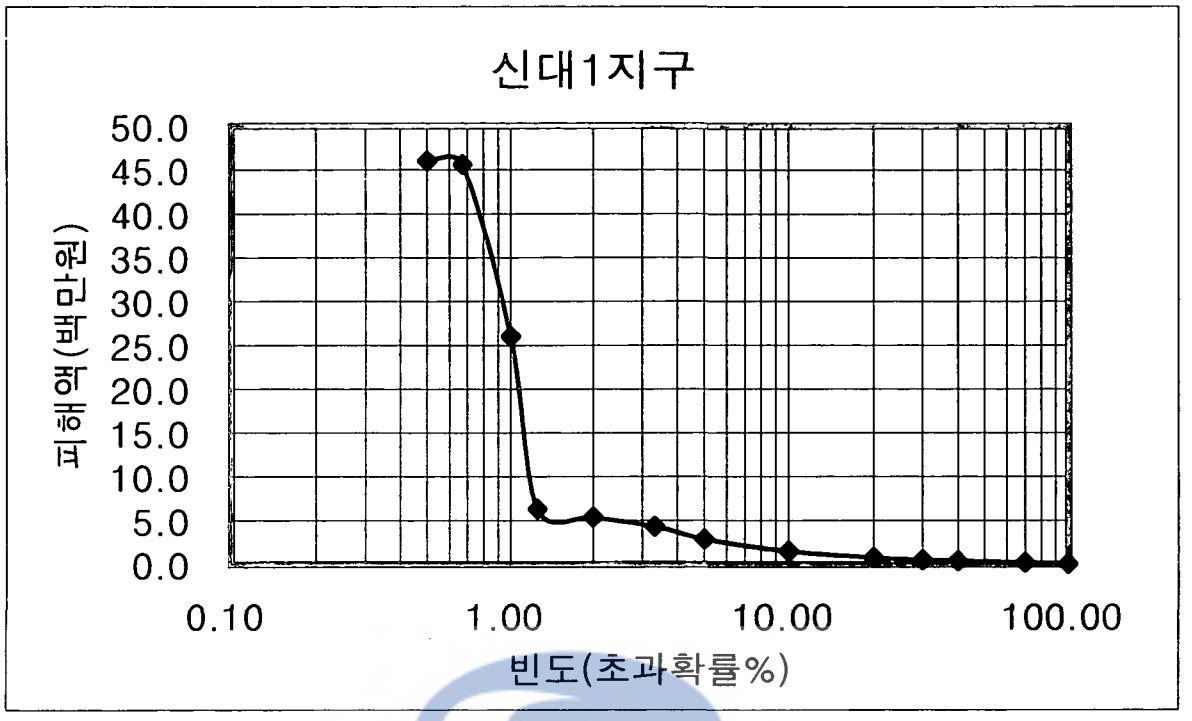

간대지구
350
300
250
200
150
100
50
0
피해액(백만원)
0.10
1.00
10.00
100.00
빈도(초과확률%)

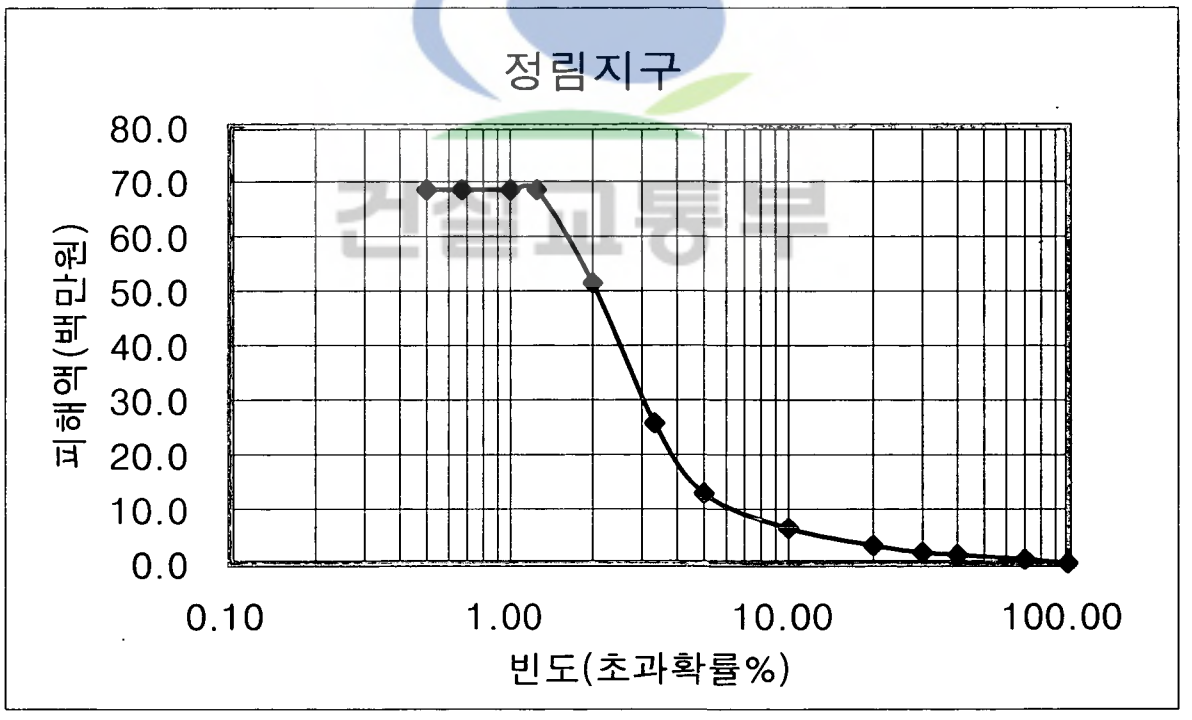
건설교통부


정고2지구
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
피해율(면적률)
0.10
1.00
10.00
100.00
빈도(초과확률%)

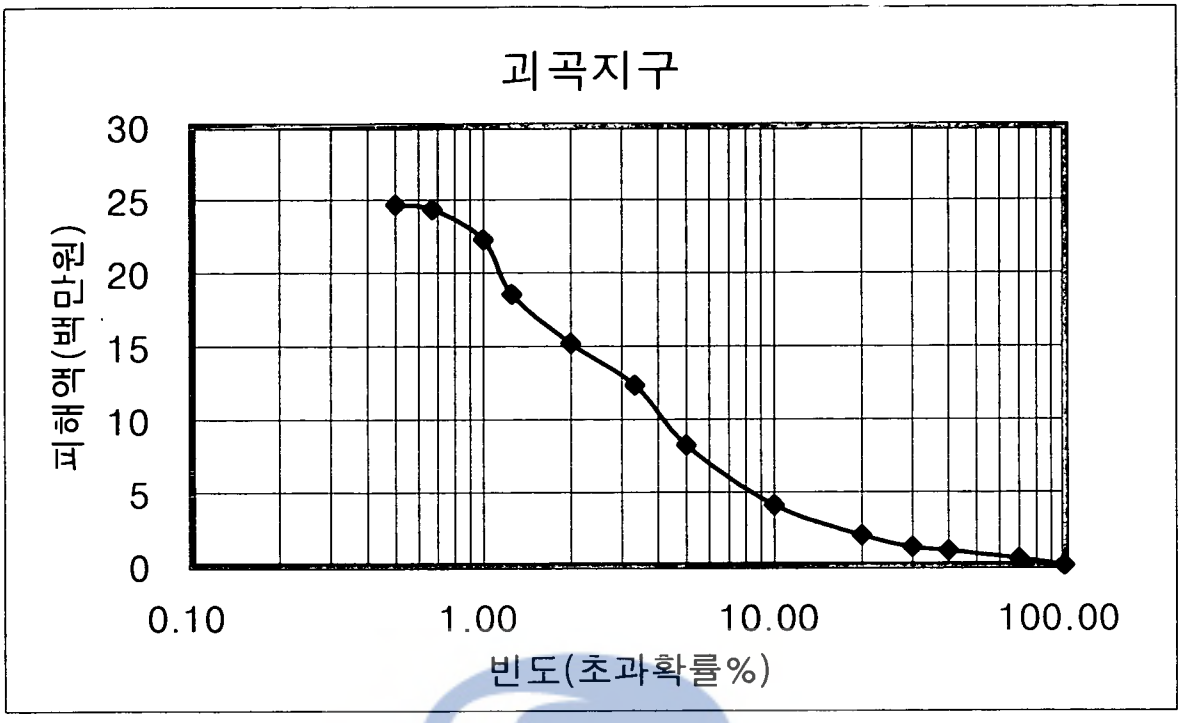

양지지구
200
180
160
140
120
100
80
60
40
20
0
피해율(면적률)
0.10
1.00
10.00
100.00
빈도(초과확률%)

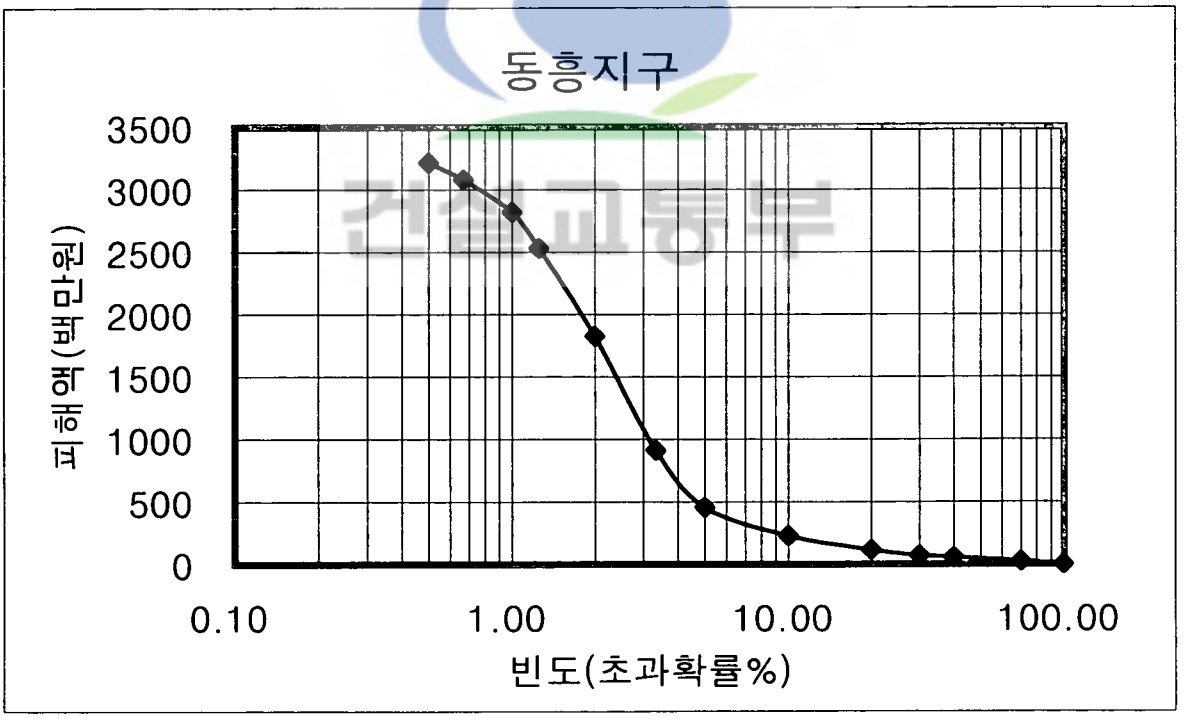
건설교통부


신대1지구
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
피용량(백만톤)
0.10
1.00
10.00
100.00
빈도(초과확률%)


정림지구
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
피용량(백만톤)
0.10
1.00
10.00
100.00
빈도(초과확률%)

건설교통부


괴곡지구
30
25
20
15
10
5
0
0.10
1.00
10.00
100.00
빈도(초과확률%)


동흥지구
3500
3000
2500
2000
1500
1000
500
0
0.10
1.00
10.00
100.00
빈도(초과확률%)

건설교통부

3. 간편법에 의한 홍수 피해액 및 B/C산정

건설교통부

□ 간편법의 피해액 산정공식 및 적용계수

1) P = Pi * A * Qi	[사망]	Pi :	0.0010	Qi :	295,000		
	[부상]	Pi :	0.0009	Qi :	24,000	di(밭) :	0.51
2) H' = A * Qi * Pi * di		Qi :	536	Pi :	2,002	di(논) :	0.27
3) D' = Ni * P * di		P :	9,500	di :	0.4000	(단위: 천원)	
4) S = H' * s		s :	91.59				
5) F = H' * f		f :	34.67				
6) T = H' * t		t :	2.55				
7) E = H' * e		e :	3.72				

□ 농작물피해액 산정을 위한 수매가격 및 단위생산량

년도	2등급수매가(원)		단위면적당 생산량(kg/10a)										
	80kg기준	1kg기준	군산	익산	서천	논산	부여	청양	공주	연기	청원	옥천	계(평균)
1996	131,770	1,647	530	552	588	526	522	490	532	523	515	492	527
1997	131,770	1,647	550	548	577	557	538	551	549	552	524	515	546
1998	139,020	1,738	511	516	536	512	525	478	504	499	498	479	506
1999	145,970	1,825	517	525	584	537	509	503	548	540	527	508	530
2000	154,000	1,925	516	521	565	553	530	506	547	540	545	503	533
2001	160,160	2,002	538	554	579	556	535	540	542	551	539	518	545
적용		2,002											536

□ 경제성분석 대상지구별 년평균 홍수피해액 산정결과(간편법적용시)

하천명	지구명	유 량 규 모	범람 면적 10a	피해 가옥 동	현 상태에서의 년평균 홍수피해액								
					인명피해	P	농작물	가옥피해	농경지	공공시설	기타	간접	계
					사 망	부 상	H'	D'	S	F	T	E	(천원)
금강	성덕	50년	64.30	0	18,969	1,389	8,689	-	7,958	3,012	222	323	40,562
		80년	69.60	0	20,532	1,503	8,689	-	7,958	3,012	222	323	42,240
		100년	75.60	0	22,302	1,633	8,689	-	7,958	3,012	222	323	44,139
		200년	91.00	0	26,845	1,966	8,689	-	7,958	3,012	222	323	49,015
		계획	75.60	0	22,302	1,633	8,689	-	7,958	3,012	222	323	44,139
	제성	50년	417.80	20	123,251	9,024	197,736	76,000	181,106	68,555	5,042	7,356	668,071
		80년	426.50	39	125,818	9,212	200,317	148,200	183,470	69,450	5,108	7,452	749,027
		100년	438.90	53	129,476	9,480	205,383	201,400	188,110	71,206	5,237	7,640	817,933
		200년	452.90	75	133,606	9,783	209,940	285,000	192,284	72,786	5,353	7,810	916,562
		계획	438.90	53	129,476	9,480	205,383	201,400	188,110	71,206	5,237	7,640	817,933
	옥룡	50년	6.60	1	1,947	143	2,079	3,800	1,904	721	53	77	10,724
		80년	8.70	26	2,567	188	2,462	98,800	2,255	854	63	92	107,279
		100년	10.40	34	3,068	225	3,228	129,200	2,957	1,119	82	120	139,999
		200년	15.80	45	4,661	341	3,720	171,000	3,407	1,290	95	138	184,652
		계획	15.80	45	4,661	341	3,720	171,000	3,407	1,290	95	138	184,652

하천명	지구명	유 량 규 모	범람 면적 10a	피해 가옥 동	현 상태에서의 년평균 홍수피해액								
					인명피해	P	농작물	가옥피해	농경지	공공시설	기타	간접	계
					사 망	부 상	H'	D'	S	F	T	E	(천원)
금강	소학	50년	651.25	17	192,119	14,067	347,154	64,600	317,958	120,358	8,852	12,914	1,078,023
		80년	687.14	18	202,706	14,842	366,577	68,400	335,748	127,092	9,348	13,637	1,138,350
		100년	705.73	20	208,190	15,244	376,535	76,000	344,868	130,545	9,602	14,007	1,174,991
		200년	783.96	30	231,268	16,934	418,719	114,000	383,505	145,170	10,677	15,576	1,335,849
		계획	783.96	30	231,268	16,934	418,719	114,000	383,505	145,170	10,677	15,576	1,335,849
	마암	50년	112.40	26	33,158	2,428	38,778	98,800	35,517	13,444	989	1,443	224,556
		80년	127.80	29	37,701	2,760	45,102	110,200	41,309	15,637	1,150	1,678	255,537
		100년	141.40	35	41,713	3,054	51,652	133,000	47,308	17,908	1,317	1,921	297,874
		200년	213.50	61	62,983	4,612	84,689	231,800	77,567	29,362	2,160	3,150	496,321
		계획	213.50	61	62,983	4,612	84,689	231,800	77,567	29,362	2,160	3,150	496,321
	원봉	50년	73.50	2	21,683	1,588	40,214	7,600	36,832	13,942	1,025	1,496	124,380
		80년	75.70	2	22,332	1,635	41,417	7,600	37,934	14,359	1,056	1,541	127,874
		100년	78.10	2	23,040	1,687	42,730	7,600	39,136	14,814	1,090	1,590	131,687
		200년	82.60	2	24,367	1,784	45,192	7,600	41,391	15,668	1,152	1,681	138,836
		계획	78.10	2	23,040	1,687	42,730	7,600	39,136	14,814	1,090	1,590	131,687

하천명	지구명	유 량 규 모	범람 면적 10a	피해 가옥 동	현 상태에서의 년평균 홍수피해액								
					인명피해	P	농작물	가옥피해	농경지	공공시설	기타	간접	계
					사 망	부 상	H'	D'	S	F	T	E	(천원)
금강	석삼	50년	118.90	4	35,076	2,568	55,141	15,200	50,504	19,117	1,406	2,051	181,063
		80년	121.30	6	35,784	2,620	55,913	22,800	51,211	19,385	1,426	2,080	191,218
		100년	147.20	6	43,424	3,180	65,926	22,800	60,382	22,857	1,681	2,452	222,701
		200년	164.00	6	48,380	3,542	74,570	22,800	68,299	25,853	1,902	2,774	248,120
		계획	164.00	6	48,380	3,542	74,570	22,800	68,299	25,853	1,902	2,774	248,120
	대동	50년	169.10	0	49,885	3,653	92,465	-	84,689	32,058	2,358	3,440	268,546
		80년	205.40	0	60,593	4,437	112,271	-	102,829	38,924	2,863	4,176	326,093
		100년	213.20	0	62,894	4,605	116,538	-	106,737	40,404	2,972	4,335	338,485
		200년	312.60	4	92,217	6,752	170,868	15,200	156,498	59,240	4,357	6,356	511,489
		계획	268.80	0	79,296	5,806	146,904	-	134,549	50,932	3,746	5,465	426,698
	고당	50년	55.30	3	16,314	1,194	26,951	11,400	24,684	9,344	687	1,003	91,577
		80년	86.40	3	25,488	1,866	41,733	11,400	38,223	14,469	1,064	1,552	135,796
		100년	137.10	3	40,445	2,961	65,221	11,400	59,736	22,612	1,663	2,426	206,464
		200년	155.50	3	45,873	3,359	74,081	11,400	67,851	25,684	1,889	2,756	232,892
		계획	155.50	3	45,873	3,359	74,081	11,400	67,851	25,684	1,889	2,756	232,892

하천명	지구명	유 량 규 모	범람 면적 10a	피해 가옥 동	현 상태에서의 년평균 홍수피해액								
					인명피해	P	농작물	가옥피해	농경지	공공시설	기타	간접	계
					사 망	부 상	H'	D'	S	F	T	E	(천원)
금강	마서	50년	7.30	120	2,154	158	3,514	456,000	3,218	1,218	90	131	466,482
		80년	8.41	120	2,481	182	4,090	456,000	3,746	1,418	104	152	468,173
		100년	9.02	120	2,661	195	4,393	456,000	4,024	1,523	112	163	469,071
		200년	9.13	120	2,693	197	4,447	456,000	4,073	1,542	113	165	469,231
		계획	9.02	120	2,661	195	4,393	456,000	4,024	1,523	112	163	469,071
	유왕	50년	17.70	3	5,222	382	8,277	11,400	7,581	2,870	211	308	36,250
		80년	19.40	3	5,723	419	8,364	11,400	7,661	2,900	213	311	36,991
		100년	21.00	5	6,195	454	8,712	19,000	7,979	3,020	222	324	45,907
		200년	25.20	8	7,434	544	9,378	30,400	8,589	3,251	239	349	60,185
		계획	21.00	5	6,195	454	8,712	19,000	7,979	3,020	222	324	45,907
	간대	50년	0.00	0	-	-	-	-	-	-	-	-	-
		80년	117.50	50	34,663	2,538	29,850	190,000	27,340	10,349	761	1,110	296,611
		100년	117.50	50	34,663	2,538	29,850	190,000	27,340	10,349	761	1,110	296,611
		200년	117.50	50	34,663	2,538	29,850	190,000	27,340	10,349	761	1,110	296,611
		계획	117.50	50	34,663	2,538	29,850	190,000	27,340	10,349	761	1,110	296,611

하천명	지구명	유 량 규 모	범람 면적 10a	피해 가옥 동	현 상태에서의 년평균 홍수피해액								
					인명피해	P	농작물	가옥피해	농경지	공공시설	기타	간접	계
					사 망	부 상	H'	D'	S	F	T	E	(천원)
금강	정고2	50년	2.30	0	679	50	-	-	-	-	-	-	728
		80년	3.50	3	1,033	76	-	11,400	-	-	-	-	12,508
		100년	4.00	3	1,180	86	-	11,400	-	-	-	-	12,666
		200년	4.50	3	1,328	97	-	11,400	-	-	-	-	12,825
		계획	4.00	3	1,180	86	-	11,400	-	-	-	-	12,666
	양지	50년	140.50	5	41,448	3,035	46,193	19,000	42,308	16,015	1,178	1,718	170,895
		80년	143.70	5	42,392	3,104	46,975	19,000	43,024	16,286	1,198	1,747	173,726
		100년	146.90	5	43,336	3,173	47,468	19,000	43,476	16,457	1,210	1,766	175,886
		200년	160.10	5	47,230	3,458	48,974	19,000	44,855	16,979	1,249	1,822	183,567
		계획	146.90	5	43,336	3,173	47,468	19,000	43,476	16,457	1,210	1,766	175,886
갑천	신대1	50년	6.70	1	1,977	145	-	3,800	-	-	-	-	5,921
		80년	8.70	1	2,567	188	-	3,800	-	-	-	-	6,554
		100년	11.30	11	3,334	244	-	41,800	-	-	-	-	45,378
		200년	13.80	11	4,071	298	-	41,800	-	-	-	-	46,169
		계획	11.30	11	3,334	244	-	41,800	-	-	-	-	45,378

하천명	지구명	유 량 규 모	범람 면적 10a	피해 가옥 동	현 상태에서의 년평균 홍수피해액								
					인명피해	P	농작물	가옥피해	농경지	공공시설	기타	간접	계
					사 망	부 상	H'	D'	S	F	T	E	(천원)
갑천	정림	50년	0.12	18	35	3	-	68,400	-	-	-	-	68,438
		80년	0.12	18	35	3	-	68,400	-	-	-	-	68,438
		100년	0.12	18	35	3	-	68,400	-	-	-	-	68,438
		200년	0.12	18	35	3	-	68,400	-	-	-	-	68,438
		계획	0.12	18	35	3	-	68,400	-	-	-	-	68,438
	괴곡	50년	10.50	0	3,098	227	5,744	-	5,261	1,991	146	214	16,681
		80년	12.80	0	3,776	276	7,003	-	6,414	2,428	179	261	20,337
		100년	15.20	0	4,484	328	8,316	-	7,617	2,883	212	309	24,150
		200년	15.60	0	4,602	337	8,535	-	7,817	2,959	218	318	24,785
		계획	15.20	0	4,484	328	8,316	-	7,617	2,883	212	309	24,150
논산천	동흥	50년	573.00	500	169,035	12,377	149,527	1,900,000	136,952	51,841	3,813	5,562	2,429,107
		80년	579.00	550	170,805	12,506	151,490	2,090,000	138,750	52,522	3,863	5,635	2,625,571
		100년	585.00	650	172,575	12,636	152,585	2,470,000	139,753	52,901	3,891	5,676	3,010,017
		200년	594.00	720	175,230	12,830	154,516	2,736,000	141,521	53,571	3,940	5,748	3,283,356
		계획	585.00	650	172,575	12,636	152,585	2,470,000	139,753	52,901	3,891	5,676	3,010,017

□ 제방부지 편입에 의한 년편균 농작물 경작 감소액

	유 량	B	L	Ai	Qi	Wi	M
	규 모	(m)	(m)	(10a)	(kg/10a)	(원/kg)	(천원)
성덕	50년	20.0	1,140	22.8	0	2002	-
	80년	21.0	1,140	23.9	0	2002	-
	100년	22.0	1,140	25.1	0	2002	-
	200년	23.0	1,140	26.2	0	2002	-
	계획	22.0	2,860	62.9	0	2002	-
제성	50년	35.0	2,860	100.1	536	2002	64,433
	80년	36.0	2,860	103.0	536	2002	66,274
	100년	37.0	2,860	105.8	536	2002	68,115
	200년	38.0	2,860	108.7	536	2002	69,955
	계획	37.0	2,860	105.8	536	2002	68,115
옥룡	50년	7.0	240	1.7	0	2002	-
	80년	7.5	240	1.8	0	2002	-
	100년	8.0	240	1.9	0	2002	-
	200년	8.5	240	2.0	0	2002	-
	계획	8.5	240	2.0	0	2002	-
소학	50년	20.0	2,220	44.4	536	2002	28,580
	80년	21.0	2,220	46.6	536	2002	30,009
	100년	22.0	2,220	48.8	536	2002	31,437
	200년	23.0	2,220	51.1	536	2002	32,866
	계획	22.0	2,220	48.8	536	2002	31,437
마암	50년	20.0	360	7.2	536	2002	4,635
	80년	21.0	360	7.6	536	2002	4,866
	100년	22.0	360	7.9	536	2002	5,098
	200년	23.0	360	8.3	536	2002	5,330
	계획	22.0	360	7.9	536	2002	5,098
원봉	50년	28.0	650	18.2	536	2002	11,715
	80년	29.0	650	18.9	536	2002	12,133
	100년	30.0	650	19.5	536	2002	12,552
	200년	31.0	650	20.2	536	2002	12,970
	계획	31.0	650	20.2	536	2002	12,970
석삼	50년	20.0	820	16.4	536	2002	10,556
	80년	21.0	820	17.2	536	2002	11,084
	100년	22.0	820	18.0	536	2002	11,612
	200년	23.0	820	18.9	536	2002	12,140
	계획	22.0	820	18.0	536	2002	11,612
대동	50년	30.0	1,560	46.8	536	2002	30,124
	80년	31.0	1,560	48.4	536	2002	31,129
	100년	32.0	1,560	49.9	536	2002	32,133
	200년	33.0	1,560	51.5	536	2002	33,137
	계획	33.0	1,560	51.5	536	2002	33,137
고당	50년	20.0	540	10.8	536	2002	6,952
	80년	21.0	540	11.3	536	2002	7,299
	100년	22.0	540	11.9	536	2002	7,647
	200년	23.0	540	12.4	536	2002	7,995
	계획	22.0	540	11.9	536	2002	7,647

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	유 량	B	L	Ai	Qi	Wi	M
	규 모	(m)	(m)	(10a)	(kg/10a)	(원/kg)	(천원)
마서	50년	10.0	60	0.6	536	2002	386
	80년	10.5	60	0.6	536	2002	406
	100년	11.0	60	0.7	536	2002	425
	200년	11.5	60	0.7	536	2002	444
	계획	11.0	60	0.7	536	2002	425
유왕	50년	20.0	350	7.0	536	2002	4,506
	80년	21.0	350	7.4	536	2002	4,731
	100년	22.0	350	7.7	536	2002	4,956
	200년	23.0	350	8.1	536	2002	5,182
	계획	22.0	350	7.7	536	2002	4,956
간대	50년	20.0	60	1.2	0	2002	-
	80년	21.0	60	1.3	0	2002	-
	100년	22.0	60	1.3	0	2002	-
	200년	23.0	60	1.4	0	2002	-
	계획	22.0	60	1.3	0	2002	-
정고2	50년	20.0	240	4.8	0	2002	-
	80년	21.0	240	5.0	0	2002	-
	100년	22.0	240	5.3	0	2002	-
	200년	23.0	240	5.5	0	2002	-
	계획	22.0	240	5.3	0	2002	-
양지	50년	20.0	1,430	28.6	536	2002	18,409
	80년	21.0	1,430	30.0	536	2002	19,330
	100년	22.0	1,430	31.5	536	2002	20,250
	200년	23.0	1,430	32.9	536	2002	21,171
	계획	22.0	1,430	31.5	536	2002	20,250
신대1	50년	6.0	330	2.0	0	2002	-
	80년	6.0	330	2.0	0	2002	-
	100년	6.0	330	2.0	0	2002	-
	200년	6.0	330	2.0	0	2002	-
	계획	6.0	330	2.0	0	2002	-
정림	50년	20.0	135	2.7	536	2002	1,738
	80년	21.0	135	2.8	536	2002	1,825
	100년	22.0	135	3.0	536	2002	1,912
	200년	23.0	135	3.1	536	2002	1,999
	계획	22.0	135	3.0	536	2002	1,912
괴곡	50년	7.0	230	1.6	536	2002	1,036
	80년	8.0	230	1.8	536	2002	1,184
	100년	9.0	230	2.1	536	2002	1,332
	200년	10.0	230	2.3	536	2002	1,480
	계획	10.0	230	2.3	536	2002	1,480
동흥	50년	20.0	75	1.5	0	2002	-
	80년	21.0	75	1.6	0	2002	-
	100년	22.0	75	1.7	0	2002	-
	200년	23.0	75	1.7	0	2002	-
	계획	22.0	75	1.7	0	2002	-

건설교통부

<간편법에 의한 지구별 B/C 산정>

(단위 : 백만원)

하천명	지구명	유량규모	총공사비	년평균 경감 기대액			년평균 총비용의 현재가치 (C)				비용/편익	비 고
			Io	R	M	R-M	Io*(C)	K	O	K+O	B/C	
금강	성덕지구	50년	2,891	6.70	-	6.70	3,217	263	1	264	0.025	공사기간 C = 3 년
		80년	2,965	8.50	-	8.50	3,299	270	1	271	0.031	이자율 i = 7.5 %
		100년	3,005	9.66	-	9.66	3,343	273	1	274	0.035	I = Io*((C*i)/2+1)
		200년	3,087	10.62	-	10.62	3,435	281	1	282	0.038	= 총 투자액의 현재가치
		계획	3,005	9.66	-	9.66	3,343	273	1	274	0.035	K=I*MD
	제성지구	50년	29,687	212.86	64.43	148.43	33,026	2,698	13	2,712	0.055	MD = 0.0817
		80년	30,289	244.13	66.27	177.85	33,697	2,753	14	2,767	0.064	
		100년	30,613	263.90	68.11	195.78	34,057	2,782	14	2,796	0.070	
		200년	31,552	281.53	69.96	211.57	35,101	2,868	14	2,882	0.073	
		계획	30,613	263.90	68.11	195.78	34,057	2,782	14	2,796	0.070	
	옥룡지구	50년	482	3.03	-	3.03	536	44	0	44	0.069	
		80년	518	3.54	-	3.54	577	47	0	47	0.075	
		100년	540	5.18	-	5.18	601	49	0	49	0.105	
		200년	615	8.19	-	8.19	685	56	0	56	0.146	
		계획	665	5.18	-	5.18	740	60	0	61	0.085	
	소학지구	50년	6,073	320.99	28.58	292.42	6,756	552	3	555	0.527	
		80년	6,684	372.92	30.01	342.91	7,436	608	3	611	0.562	
		100년	7,030	403.84	31.44	372.40	7,821	639	3	642	0.580	
		200년	8,558	429.51	32.87	396.64	9,520	778	4	782	0.507	
		계획	9,434	403.84	31.44	372.40	10,495	857	4	862	0.432	

하천명	지구명	유량규모	총공사비	년평균 경감 기대액			년평균 총비용의 현재가치 (C)				비용/편익	비 고
			Io	R	M	R-M	Io*(C)	K	O	K+O	B/C	
금강	마암지구	50년	1,070	62.05	4.63	57.41	1,190	97	0	98	0.587	
		80년	1,186	72.48	4.87	67.62	1,319	108	1	108	0.624	
		100년	1,253	79.18	5.10	74.08	1,394	114	1	114	0.647	
		200년	1,498	86.02	5.33	80.69	1,666	136	1	137	0.590	
		계획	1,588	79.18	5.10	74.08	1,767	144	1	145	0.511	
	원봉지구	50년	1,535	19.55	11.72	7.84	1,708	140	1	140	0.056	
		80년	1,701	24.17	12.13	12.04	1,892	155	1	155	0.077	
		100년	1,792	27.69	12.55	15.14	1,993	163	1	164	0.092	
		200년	2,152	30.53	12.97	17.56	2,395	196	1	197	0.089	
		계획	1,792	27.69	12.97	14.72	1,993	163	1	164	0.090	
	석삼지구	50년	2,745	83.06	10.56	72.50	3,054	250	1	251	0.289	
		80년	3,070	91.78	11.08	80.69	3,415	279	1	280	0.288	
		100년	3,253	96.97	11.61	85.36	3,619	296	1	297	0.287	
		200년	3,984	101.71	12.14	89.57	4,433	362	2	364	0.246	
		계획	4,160	96.97	11.61	85.36	4,629	378	2	380	0.225	
	대동지구	50년	3,779	107.14	30.12	77.01	4,205	344	2	345	0.223	
		80년	4,180	119.25	31.13	88.12	4,650	380	2	382	0.231	
		100년	4,400	127.55	32.13	95.41	4,895	400	2	402	0.237	
		200년	5,742	135.32	33.14	102.19	6,388	522	3	525	0.195	
		계획	4,888	127.55	33.14	94.41	5,438	444	2	447	0.211	

하천명	지구명	유량규모	총공사비	년평균 경감 기대액			년평균 총비용의 현재가치 (C)				비용/편익	비 고
			Io	R	M	R-M	Io*(C)	K	O	K+O	B/C	
금강	고당지구	50년	446	29.92	6.95	22.97	496	40	0	41	0.564	
		80년	506	33.71	7.30	26.41	563	46	0	46	0.571	
		100년	554	36.88	7.65	29.24	616	50	0	51	0.578	
		200년	685	41.09	7.99	33.10	762	62	0	63	0.529	
		계획	861	36.88	7.65	29.24	958	78	0	79	0.372	
	마서지구	50년	705	146.14	0.39	145.76	785	64	0	64	2.263	
		80년	708	169.18	0.41	168.78	787	64	0	65	2.611	
		100년	709	182.22	0.42	181.80	788	64	0	65	2.809	
		200년	711	192.34	0.44	191.89	791	65	0	65	2.953	
		계획	708	182.22	0.42	181.80	788	64	0	65	2.809	
	유왕지구	50년	1,016	17.21	4.51	12.70	1,131	92	0	93	0.137	
		80년	1,086	18.99	4.73	14.25	1,208	99	0	99	0.144	
		100년	1,118	20.01	4.96	15.05	1,244	102	1	102	0.147	
		200년	1,231	21.00	5.18	15.82	1,369	112	1	112	0.141	
		계획	1,118	20.01	4.96	15.05	1,244	102	1	102	0.147	
	간대지구	50년	670	3.43	-	3.43	745	61	0	61	0.056	
		80년	720	6.95	-	6.95	801	65	0	66	0.106	
		100년	751	12.74	-	12.74	835	68	0	69	0.186	
		200년	828	19.14	-	19.14	921	75	0	76	0.253	
		계획	751	12.74	-	12.74	835	68	0	69	0.186	

하천명	지구명	유량규모	총공사비	년평균 경감 기대액			년평균 총비용의 현재가치 (C)				비용/편익	비 고
			Io	R	M	R-M	Io*(C)	K	O	K+O	B/C	
금강	정고2지구	50년	600	0.44	-	0.44	668	55	0	55	0.008	
		80년	652	0.81	-	0.81	725	59	0	60	0.014	
		100년	682	1.12	-	1.12	759	62	0	62	0.018	
		200년	768	1.40	-	1.40	854	70	0	70	0.020	
		계획	682	1.12	-	1.12	759	62	0	62	0.018	
	양지지구	50년	6,167	81.44	18.41	63.03	6,861	561	3	563	0.112	
		80년	6,683	89.83	19.33	70.50	7,435	607	3	610	0.115	
		100년	6,942	94.63	20.25	74.38	7,723	631	3	634	0.117	
		200년	8,768	98.44	21.17	77.27	9,754	797	4	801	0.096	
		계획	7,073	94.63	20.25	74.38	7,869	643	3	646	0.115	
갑천	신대1지구	50년	1,829	2.29	-	2.29	2,034	166	1	167	0.014	
		80년	2,637	2.56	-	2.56	2,934	240	1	241	0.011	
		100년	2,746	2.73	-	2.73	3,055	250	1	251	0.011	
		200년	3,058	3.53	-	3.53	3,402	278	1	279	0.013	
		계획	3,058	3.53	-	3.53	3,402	278	1	279	0.013	
	정림지구	50년	299	10.76	1.74	9.02	332	27	0	27	0.331	
		80년	308	13.30	1.82	11.47	343	28	0	28	0.407	
		100년	314	15.21	1.91	13.30	349	29	0	29	0.464	
		200년	332	16.68	2.00	14.69	369	30	0	30	0.485	
		계획	314	15.21	1.91	13.30	349	29	0	29	0.464	

하천명	지구명	유량규모	총공사비	년평균 경감 기대액			년평균 총비용의 현재가치 (C)			비용/편익		비 고
			Io	R	M	R-M	Io*(C)	K	O	K+O	B/C	
갑천	괴곡지구	50년	109	6.63	1.04	5.59	121	10	0	10	0.561	
		80년	118	7.38	1.18	6.20	131	11	0	11	0.577	
		100년	122	7.90	1.33	6.56	136	11	0	11	0.587	
		200년	160	8.40	1.48	6.92	178	15	0	15	0.475	
		계획	122	7.90	1.48	6.42	136	11	0	11	0.574	
논산천	동흥지구	50년	1,053	381.89	-	381.89	1,172	96	0	96	3.969	
		80년	1,190	472.02	-	472.02	1,324	108	1	109	4.343	
		100년	1,190	542.54	-	542.54	1,324	108	1	109	4.992	
		200년	1,194	606.53	-	606.53	1,328	109	1	109	5.561	
		계획	1,190	542.54	-	542.54	1,324	108	1	109	4.992	

4. 치수경제성 분석 결과

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□ . 유량규모별 경제성분석 결과

하천명	지구명	유량규모	비용 (현제가치, 백만원)	편익 (현제가치, 백만원)	경제성분석 결과			비고 (간편법 b/c)
					B/C	NPV(백만원)	IRR(%)	
금강	성덕지구	50년	2,792	16,960	6.07	14,168	39.80	0.025
		80년	2,863	16,963	5.92	14,099	39.10	0.031
		100년	2,902	16,966	5.85	14,064	38.70	0.035
		200년	2,981	16,974	5.69	13,993	37.90	0.038
		계획	2,902	16,966	5.85	14,064	38.70	0.035
	제성지구	50년	27,121	19,680	0.73	-7,441	5.40	0.055
		80년	27,702	19,705	0.71	-7,997	5.30	0.064
		100년	28,015	19,751	0.71	-8,264	5.30	0.070
		200년	28,919	19,794	0.68	-9,124	5.10	0.073
		계획	28,015	19,751	0.71	-8,264	5.30	0.070
	옥룡지구	50년	486	14,586	30.02	14,100	131.60	0.069
		80년	522	14,590	27.96	14,068	126.20	0.075
		100년	543	14,597	26.86	14,053	123.20	0.105
		200년	618	14,605	23.62	13,987	114.00	0.146
		계획	668	14,605	21.87	13,937	108.60	0.085
	소학지구	50년	6,027	17,410	2.89	11,384	22.10	0.527
		80년	6,620	17,552	2.65	10,932	20.40	0.562
		100년	6,955	17,625	2.53	10,670	19.60	0.580
		200년	8,430	17,935	2.13	9,505	16.50	0.507
		계획	9,275	17,935	1.93	8,660	15.10	0.432
	마암지구	50년	1,045	15,217	14.57	14,173	74.80	0.587
		80년	1,157	15,264	13.20	14,107	70.40	0.624
		100년	1,221	15,311	12.54	14,089	68.20	0.647
		200년	1,458	15,550	10.67	14,092	61.30	0.590
		계획	1,545	15,550	10.06	14,004	58.90	0.511
	원봉지구	50년	1,491	15,208	10.20	13,717	60.10	0.056
		80년	1,650	15,216	9.22	13,566	55.90	0.077
		100년	1,738	15,226	8.76	13,488	53.80	0.092
		200년	2,085	15,243	7.31	13,158	47.00	0.089
		계획	1,738	15,226	8.76	13,488	53.80	0.090
	석삼지구	50년	2,656	16,360	6.16	13,704	40.00	0.289
		80년	2,969	16,366	5.51	13,397	36.80	0.288
		100년	3,146	16,446	5.23	13,300	35.30	0.287
		200년	3,850	16,511	4.29	12,661	30.10	0.246
		계획	4,020	16,511	4.11	12,491	29.10	0.225
	대동지구	50년	3,666	14,784	4.03	11,118	28.60	0.223
		80년	4,054	14,916	3.68	10,863	26.50	0.231
		100년	4,266	14,945	3.50	10,679	25.40	0.237
		200년	5,562	15,311	2.75	9,749	20.60	0.195
		계획	4,737	15,149	3.20	10,412	23.50	0.211
	고당지구	50년	413	11,531	27.93	11,118	93.10	0.564
		80년	470	11,611	24.69	11,141	88.80	0.571
		100년	516	11,740	22.77	11,224	86.00	0.578
		200년	643	11,788	18.34	11,145	78.10	0.529
		계획	814	11,788	14.48	10,974	69.40	0.372

하천명	지구명	유량규모	비용 (현제가치, 백만원)	편익 (현제가치, 백만원)	경제성분석 결과			비고 (간편법 b/c)
					B/C	NPV(백만원)	IRR(%)	
	마서지구	50년	735	16,979	23.09	16,244	122.90	2.263
		80년	738	16,984	23.03	16,246	122.60	2.611
		100년	738	16,986	23.00	16,248	122.50	2.809
		200년	741	16,986	22.92	16,245	122.20	2.953
		계획	738	16,986	23.00	16,248	122.50	2.809
	유왕지구	50년	981	16,002	16.32	15,021	83.40	0.137
		80년	1,048	16,003	15.28	14,955	80.00	0.144
		100년	1,079	16,006	14.84	14,927	78.40	0.147
		200년	1,187	16,012	13.48	14,825	73.60	0.141
		계획	1,079	16,006	14.84	14,927	78.40	0.147
	간대지구	50년	631	0	0.00	-631	0.00	0.056
		80년	679	16,193	23.86	15,514	92.20	0.106
		100년	709	16,193	22.85	15,484	90.40	0.186
		200년	783	16,193	20.67	15,410	86.20	0.253
		계획	709	16,193	22.85	15,484	90.40	0.186
	정고2지구	50년	560	15,940	28.47	15,380	98.50	0.008
		80년	610	15,940	26.14	15,331	95.20	0.014
		100년	639	15,941	24.94	15,301	93.30	0.018
		200년	722	15,941	22.07	15,218	88.40	0.020
		계획	639	15,941	24.94	15,301	93.30	0.018
	양지지구	50년	5,943	17,348	2.92	11,405	21.70	0.112
		80년	6,440	17,269	2.68	10,829	20.10	0.115
		100년	6,689	17,274	2.58	10,585	19.40	0.117
		200년	8,445	17,292	2.05	8,846	15.70	0.096
		계획	6,815	17,274	2.53	10,459	19.10	0.115
갑천	신대1지구	50년	1,751	13,832	7.90	12,081	46.30	0.014
		80년	2,537	13,834	5.45	11,297	35.90	0.011
		100년	2,643	13,837	5.24	11,194	34.80	0.011
		200년	2,944	13,839	4.70	10,895	32.10	0.013
		계획	2,944	13,837	4.70	10,892	32.10	0.013
	정림지구	50년	292	13,826	47.31	13,534	159.50	0.331
		80년	302	13,826	45.82	13,524	157.00	0.407
		100년	307	13,826	45.05	13,519	155.70	0.464
		200년	324	13,826	42.65	13,502	151.30	0.485
		계획	307	13,826	45.05	13,519	155.70	0.464
	괴곡지구	50년	99	2,305	23.22	2,205	81.10	0.561
		80년	107	2,313	21.57	2,206	78.10	0.577
		100년	112	2,322	20.77	2,210	77.70	0.587
		200년	148	2,323	15.65	2,175	69.00	0.475
		계획	112	2,322	20.77	2,210	77.70	0.574
논산천	동흥지구	50년	1,080	17,246	15.97	16,166	93.10	3.969
		80년	1,212	17,267	14.25	16,055	85.00	4.343
		100년	1,212	17,283	14.26	16,071	85.10	4.992
		200년	1,216	17,309	14.24	16,093	84.90	5.561
		계획	1,212	17,283	14.26	16,071	85.10	4.992

1.1 성덕지구 : 홍수빈도 50년

1) 사업비 산정

가. **사업비**

합계	2,891.5	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,002.3	-	701.6	300.7	-	-
호 안 공	334.9	-	100.5	234.4	-	-
구조물공	140.0	-	42.0	98.0	-	-
보 상 비	454.1	317.9	136.2	-	-	-
기 타	960.2	192.0	576.1	192.0	-	-
계	2,891.5	509.9	1,556.4	825.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	17.6%	53.8%	28.5%	0.0%	0.0%	100.0%

건설교통부

나. **유지관리비**

32.0	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1623.9	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	6.43	0.00

*흉수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익 — 소계 2.6 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	2.53	0.00	2.53
부상	0.00	0.00	0.00	0.10	0.00	0.10

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.47 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.47	0.00	0.47

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 5.8 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
8.7	0.0	0.0	0.0	5.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1615.0 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.4	0.0	75.4
공공시설물	0.0	0.0	0.0	1428.0	0.0	1428.0
기 타	0.0	0.0	0.0	110.0	0.0	110.0

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 6.07
NPV 14,168
IRR 39.8%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	200	301	140	-	960	1,602		3,204	2,792	81,193	16,960	
1	-	-	-	318	192	510		510	474			-510
2	702	100	42	136	576	1,556		1,556	1,347			-1556
3	301	234	98	-	192	825		825	664			-825
4							32	32	24	1,624	1,216	1,592
5							32	32	22	1,624	1,131	1,592
6							32	32	21	1,624	1,052	1,592
7							32	32	19	1,624	979	1,592
8							32	32	18	1,624	911	1,592
9							32	32	17	1,624	847	1,592
10							32	32	16	1,624	788	1,592
11							32	32	14	1,624	733	1,592
12							32	32	13	1,624	682	1,592
13							32	32	13	1,624	634	1,592
14							32	32	12	1,624	590	1,592
15							32	32	11	1,624	549	1,592
16							32	32	10	1,624	511	1,592
17							32	32	9	1,624	475	1,592
18							32	32	9	1,624	442	1,592
19							32	32	8	1,624	411	1,592
20							32	32	8	1,624	382	1,592
21							32	32	7	1,624	356	1,592
22							32	32	7	1,624	331	1,592
23							32	32	6	1,624	308	1,592
24							32	32	6	1,624	286	1,592
25							32	32	5	1,624	266	1,592
26							32	32	5	1,624	248	1,592
27							32	32	5	1,624	230	1,592
28							32	32	4	1,624	214	1,592
29							32	32	4	1,624	199	1,592
30							32	32	4	1,624	185	1,592
31							32	32	3	1,624	173	1,592
32							32	32	3	1,624	161	1,592
33							32	32	3	1,624	149	1,592
34							32	32	3	1,624	139	1,592
35							32	32	3	1,624	129	1,592
36							32	32	2	1,624	120	1,592
37							32	32	2	1,624	112	1,592
38							32	32	2	1,624	104	1,592
39							32	32	2	1,624	97	1,592
40							32	32	2	1,624	90	1,592
41							32	32	2	1,624	84	1,592
42							32	32	2	1,624	78	1,592
43							32	32	1	1,624	72	1,592
44							32	32	1	1,624	67	1,592
45							32	32	1	1,624	63	1,592
46							32	32	1	1,624	58	1,592
47							32	32	1	1,624	54	1,592
48							32	32	1	1,624	50	1,592
49							32	32	1	1,624	47	1,592
50							32	32	1	1,624	44	1,592
51							32	32	1	1,624	41	1,592
52							32	32	1	1,624	38	1,592
53	-802	-33	0	-454	0	-1289	32	-1257	-27	1,624	35	2,881

건설교통부

1.2 성덕지구 : 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	2,965.3	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,039.9	-	727.9	312.0	-	-
호 안 공	342.0	-	102.6	239.4	-	-
구조물공	140.0	-	42.0	98.0	-	-
보 상 비	454.1	317.9	136.2	-	-	-
기 타	989.3	197.9	593.6	197.9	-	-
계	2,965.3	515.7	1,602.3	847.2	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	17.4%	54.0%	28.6%	0.0%	0.0%	100.0%

나. 유지관리비

32.9	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1624.1	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	6.96	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

0.00

A. 인명보호 편익

소계	2.8	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	2.74	0.00	2.74
부상	0.00	0.00	0.00	0.11	0.00	0.11

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.51	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.51	0.00	0.51

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	5.8	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
8.7	0.0	0.0	0.0	5.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1615.0	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.4	0.0	75.4
공공시설물	0.0	0.0	0.0	1428.0	0.0	1428.0
기 타	0.0	0.0	0.0	110.0	0.0	110.0

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 5.92
NPV 14,099
IRR 39.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균 유지비	3. 연평균 비용		4. 연평균 편익		5. 순현금 유 입
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계		1 + 2	현재가치	연간편익	현재가치	
합 계	208	308	140	-	989	1,645		3,290	2,863	81,206	16,963	
1	-	-	-	318	198	516		516	480			-516
2	728	103	42	136	594	1,602		1,602	1,387			-1602
3	312	239	98	-	198	847		847	682			-847
4							33	33	25	1,624	1,216	1,591
5							33	33	23	1,624	1,131	1,591
6							33	33	21	1,624	1,052	1,591
7							33	33	20	1,624	979	1,591
8							33	33	18	1,624	911	1,591
9							33	33	17	1,624	847	1,591
10							33	33	16	1,624	788	1,591
11							33	33	15	1,624	733	1,591
12							33	33	14	1,624	682	1,591
13							33	33	13	1,624	634	1,591
14							33	33	12	1,624	590	1,591
15							33	33	11	1,624	549	1,591
16							33	33	10	1,624	511	1,591
17							33	33	10	1,624	475	1,591
18							33	33	9	1,624	442	1,591
19							33	33	8	1,624	411	1,591
20							33	33	8	1,624	382	1,591
21							33	33	7	1,624	356	1,591
22							33	33	7	1,624	331	1,591
23							33	33	6	1,624	308	1,591
24							33	33	6	1,624	286	1,591
25							33	33	5	1,624	266	1,591
26							33	33	5	1,624	248	1,591
27							33	33	5	1,624	230	1,591
28							33	33	4	1,624	214	1,591
29							33	33	4	1,624	199	1,591
30							33	33	4	1,624	186	1,591
31							33	33	3	1,624	173	1,591
32							33	33	3	1,624	161	1,591
33							33	33	3	1,624	149	1,591
34							33	33	3	1,624	139	1,591
35							33	33	3	1,624	129	1,591
36							33	33	2	1,624	120	1,591
37							33	33	2	1,624	112	1,591
38							33	33	2	1,624	104	1,591
39							33	33	2	1,624	97	1,591
40							33	33	2	1,624	90	1,591
41							33	33	2	1,624	84	1,591
42							33	33	2	1,624	78	1,591
43							33	33	1	1,624	72	1,591
44							33	33	1	1,624	67	1,591
45							33	33	1	1,624	63	1,591
46							33	33	1	1,624	58	1.591
47							33	33	1	1,624	54	1,591
48							33	33	1	1,624	50	1,591
49							33	33	1	1,624	47	1,591
50							33	33	1	1,624	44	1,591
51							33	33	1	1,624	41	1,591
52							33	33	1	1,624	38	1,591
53	-832	-34	0	-454	0	-1320	33	-1287	-28	1,624	35	2,911

건설교통부

1.3 성덕지구 : 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	3,004.9	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,056.8	-	739.8	317.0	-	-
호 안 공	349.1	-	104.7	244.4	-	-
구조물공	140.0	-	42.0	98.0	-	-
보 상 비	454.1	317.9	136.2	-	-	-
기 타	1,004.9	201.0	602.9	201.0	-	-
계	3,004.9	518.8	1,625.6	860.4	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	17.3%	54.1%	28.6%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

33.4	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1624.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	7.56	0.00

*용수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익 — 소계 3.1 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	2.97	0.00	2.97
부상	0.00	0.00	0.00	0.12	0.00	0.12

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.56 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.56	0.00	0.56

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 5.8 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
8.7	0.0	0.0	0.0	5.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1615.0 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.4	0.0	75.4
공공시설물	0.0	0.0	0.0	1428.0	0.0	1428.0
기 타	0.0	0.0	0.0	110.0	0.0	110.0

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 5.85
NPV 14,064
IRR 38.7%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년)

공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균 유지비	3. 연평균 비용		4. 연평균 편익		5. 순현금 유 입
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계		1 + 2	현재가치	연간편익	현재가치	
합 계	211	314	140	-	1,005	1,670		3,341	2,902	81,221	16,966	
1	-	-	-	318	201	519		519	483			-519
2	740	105	42	136	603	1,626		1,626	1,407			-1626
3	317	244	98	-	201	860		860	693			-860
4							33	33	25	1,624	1,216	1,591
5							33	33	23	1,624	1,132	1,591
6							33	33	22	1,624	1,053	1,591
7							33	33	20	1,624	979	1,591
8							33	33	19	1,624	911	1,591
9							33	33	17	1,624	847	1,591
10							33	33	16	1,624	788	1,591
11							33	33	15	1,624	733	1,591
12							33	33	14	1,624	682	1,591
13							33	33	13	1,624	634	1,591
14							33	33	12	1,624	590	1,591
15							33	33	11	1,624	549	1,591
16							33	33	11	1,624	511	1,591
17							33	33	10	1,624	475	1,591
18							33	33	9	1,624	442	1,591
19							33	33	8	1,624	411	1,591
20							33	33	8	1,624	382	1,591
21							33	33	7	1,624	356	1,591
22							33	33	7	1,624	331	1,591
23							33	33	6	1,624	308	1,591
24							33	33	6	1,624	286	1,591
25							33	33	5	1,624	266	1,591
26							33	33	5	1,624	248	1,591
27							33	33	5	1,624	231	1,591
28							33	33	4	1,624	214	1,591
29							33	33	4	1,624	199	1,591
30							33	33	4	1,624	186	1,591
31							33	33	4	1,624	173	1,591
32							33	33	3	1,624	161	1,591
33							33	33	3	1,624	149	1,591
34							33	33	3	1,624	139	1,591
35							33	33	3	1,624	129	1,591
36							33	33	2	1,624	120	1,591
37							33	33	2	1,624	112	1,591
38							33	33	2	1,624	104	1,591
39							33	33	2	1,624	97	1,591
40							33	33	2	1,624	90	1,591
41							33	33	2	1,624	84	1,591
42							33	33	2	1,624	78	1,591
43							33	33	1	1,624	72	1,591
44							33	33	1	1,624	67	1,591
45							33	33	1	1,624	63	1,591
46							33	33	1	1,624	58	1,591
47							33	33	1	1,624	54	1,591
48							33	33	1	1,624	50	1,591
49							33	33	1	1,624	47	1,591
50							33	33	1	1,624	44	1,591
51							33	33	1	1,624	41	1,591
52							33	33	1	1,624	38	1,591
53	-845	-35	0	-454	0	-1334	33	-1301	-28	1,624	35	2,925

건설교통부

1.4 성덕지구 : 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	3,087.2	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,099.6	-	769.7	329.9	-	-
호 안 공	356.3	-	106.9	249.4	-	-
구조물 공	140.0	-	42.0	98.0	-	-
보 상 비	454.1	317.9	136.2	-	-	-
기 타	1,037.3	207.5	622.4	207.5	-	-
계	3,087.2	525.3	1,677.2	884.7	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	17.0%	54.3%	28.7%	0.0%	0.0%	100.0%

나. 유지관리비

34.4	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1625.2	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	9.10	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익

소계	3.7	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	3.58	0.00	3.58
부상	0.00	0.00	0.00	0.15	0.00	0.15

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.67	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.67	0.00	0.67

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	5.8	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
8.7	0.0	0.0	0.0	5.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1615.0	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.4	0.0	75.4
공공시설물	0.0	0.0	0.0	1428.0	0.0	1428.0
기 타	0.0	0.0	0.0	110.0	0.0	110.0

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 5.69
NPV 13,993
IRR 37.9%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	220	321	140	-	1,037	1,718		3,436	2,981	81,260	16,974	
1	-	-	-	318	207	525		525	489			-525
2	770	107	42	136	622	1,677		1,677	1,451			-1677
3	330	249	98	-	207	885		885	712			-885
4							34	34	26	1,625	1,217	1,591
5							34	34	24	1,625	1,132	1,591
6							34	34	22	1,625	1,053	1,591
7							34	34	21	1,625	980	1,591
8							34	34	19	1,625	911	1,591
9							34	34	18	1,625	848	1,591
10							34	34	17	1,625	789	1,591
11							34	34	16	1,625	734	1,591
12							34	34	14	1,625	682	1,591
13							34	34	13	1,625	635	1,591
14							34	34	12	1,625	590	1,591
15							34	34	12	1,625	549	1,591
16							34	34	11	1,625	511	1,591
17							34	34	10	1,625	475	1,591
18							34	34	9	1,625	442	1,591
19							34	34	9	1,625	411	1,591
20							34	34	8	1,625	383	1,591
21							34	34	8	1,625	356	1,591
22							34	34	7	1,625	331	1,591
23							34	34	7	1,625	308	1,591
24							34	34	6	1,625	286	1,591
25							34	34	6	1,625	266	1,591
26							34	34	5	1,625	248	1,591
27							34	34	5	1,625	231	1,591
28							34	34	5	1,625	215	1,591
29							34	34	4	1,625	200	1,591
30							34	34	4	1,625	186	1,591
31							34	34	4	1,625	173	1,591
32							34	34	3	1,625	161	1,591
33							34	34	3	1,625	149	1,591
34							34	34	3	1,625	139	1,591
35							34	34	3	1,625	129	1,591
36							34	34	3	1,625	120	1,591
37							34	34	2	1,625	112	1,591
38							34	34	2	1,625	104	1,591
39							34	34	2	1,625	97	1,591
40							34	34	2	1,625	90	1,591
41							34	34	2	1,625	84	1,591
42							34	34	2	1,625	78	1,591
43							34	34	2	1,625	73	1,591
44							34	34	1	1,625	67	1,591
45							34	34	1	1,625	63	1,591
46							34	34	1	1,625	58	1,591
47							34	34	1	1,625	54	1,591
48							34	34	1	1,625	51	1,591
49							34	34	1	1,625	47	1,591
50							34	34	1	1,625	44	1,591
51							34	34	1	1,625	41	1,591
52							34	34	1	1,625	38	1,591
53	-880	-36	0	-454	0	-1369	34	-1335	-29	1,625	35	2,960

건설교통부

1.5 성덕지구 : 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	3,004.9	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,056.8	-	739.8	317.0	-	-
호 안 공	349.1	-	104.7	244.4	-	-
구조물 공	140.0	-	42.0	98.0	-	-
보 상 비	454.1	317.9	136.2	-	-	-
기 타	1,004.9	201.0	602.9	201.0	-	-
계	3,004.9	518.8	1,625.6	860.4	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	17.3%	54.1%	28.6%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

33.4	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1624.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	7.56	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익

소계	3.1	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	2.97	0.00	2.97
부상	0.00	0.00	0.00	0.12	0.00	0.12

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.56	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.56	0.00	0.56

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	5.8	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
8.7	0.0	0.0	0.0	5.8	0.0

0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1615.0	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.4	0.0	75.4
공공시설물	0.0	0.0	0.0	1428.0	0.0	1428.0
기 타	0.0	0.0	0.0	110.0	0.0	110.0

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 5.85
NPV 14,064
IRR 38.7%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	가 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	211	314	140	-	1,005	1,670		3,341	2,902	81,221	16,966	
1	-	-	-	318	201	519		519	483			-519
2	740	105	42	136	603	1,626		1,626	1,407			-1626
3	317	244	98	-	201	860		860	693			-860
4							33	33	25	1,624	1,216	1,591
5							33	33	23	1,624	1,132	1,591
6							33	33	22	1,624	1,053	1,591
7							33	33	20	1,624	979	1,591
8							33	33	19	1,624	911	1,591
9							33	33	17	1,624	847	1,591
10							33	33	16	1,624	788	1,591
11							33	33	15	1,624	733	1,591
12							33	33	14	1,624	682	1,591
13							33	33	13	1,624	634	1,591
14							33	33	12	1,624	590	1,591
15							33	33	11	1,624	549	1,591
16							33	33	11	1,624	511	1,591
17							33	33	10	1,624	475	1,591
18							33	33	9	1,624	442	1,591
19							33	33	8	1,624	411	1,591
20							33	33	8	1,624	382	1,591
21							33	33	7	1,624	356	1,591
22							33	33	7	1,624	331	1,591
23							33	33	6	1,624	308	1,591
24							33	33	6	1,624	286	1,591
25							33	33	5	1,624	266	1,591
26							33	33	5	1,624	248	1,591
27							33	33	5	1,624	231	1,591
28							33	33	4	1,624	214	1,591
29							33	33	4	1,624	199	1,591
30							33	33	4	1,624	186	1,591
31							33	33	4	1,624	173	1,591
32							33	33	3	1,624	161	1,591
33							33	33	3	1,624	149	1,591
34							33	33	3	1,624	139	1,591
35							33	33	3	1,624	129	1,591
36							33	33	2	1,624	120	1,591
37							33	33	2	1,624	112	1,591
38							33	33	2	1,624	104	1,591
39							33	33	2	1,624	97	1,591
40							33	33	2	1,624	90	1,591
41							33	33	2	1,624	84	1,591
42							33	33	2	1,624	78	1,591
43							33	33	1	1,624	72	1,591
44							33	33	1	1,624	67	1,591
45							33	33	1	1,624	63	1,591
46							33	33	1	1,624	58	1,591
47							33	33	1	1,624	54	1,591
48							33	33	1	1,624	50	1,591
49							33	33	1	1,624	47	1,591
50							33	33	1	1,624	44	1,591
51							33	33	1	1,624	41	1,591
52							33	33	1	1,624	38	1,591
53	-845	-35	0	-454	0	-1334	33	-1301	-28	1,624	35	2,925

건설교통부

2.1 제성지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	29,686.5	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	3,694.6	-	2,586.2	1,108.4	-	-
호 안 공	1,108.3	-	332.5	775.8	-	-
구조물 공	292.0	-	87.6	204.4	-	-
보 상 비	21,280.0	14,896.0	6,384.0	-	-	-
기 타	3,311.7	662.3	1,987.0	662.3	-	-
계	29,686.5	15,558.3	11,377.3	2,750.9	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	52.4%	38.3%	9.3%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

106.8	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1884.3	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	41.78	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.71	0.00

A. 인명보호 편익 — 소계 18.2 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	17.50	0.00	17.50
부상	0.00	0.00	0.00	0.71	0.00	0.71

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 3.28 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	3.28	0.00	3.28

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 140.4 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
197.7	0.0	0.0	0.0	140.4	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1722.4 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.9	0.0	1.9
농 경 지	0.0	0.0	0.0	80.7	0.0	80.7
공공시설물	0.0	0.0	0.0	1522.6	0.0	1522.6
기 타	0.0	0.0	0.0	117.2	0.0	117.2

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 0.73
NPV -7,441
IRR 5.4%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	739	997	292	-	3,312	5,340		10,680	27,121	94,215	19,680	
1	-	-	-	14,896	662	15,558		15,558	14,473			-15558
2	2,586	332	88	6,384	1,987	11,377		11,377	9,845			-11377
3	1,108	776	204	-	662	2,751		2,751	2,214			-2751
4							107	107	80	1,884	1,411	1,777
5							107	107	74	1,884	1,313	1,777
6							107	107	69	1,884	1,221	1,777
7							107	107	64	1,884	1,136	1,777
8							107	107	60	1,884	1,057	1,777
9							107	107	56	1,884	983	1,777
10							107	107	52	1,884	914	1,777
11							107	107	48	1,884	850	1,777
12							107	107	45	1,884	791	1,777
13							107	107	42	1,884	736	1,777
14							107	107	39	1,884	685	1,777
15							107	107	36	1,884	637	1,777
16							107	107	34	1,884	592	1,777
17							107	107	31	1,884	551	1,777
18							107	107	29	1,884	513	1,777
19							107	107	27	1,884	477	1,777
20							107	107	25	1,884	444	1,777
21							107	107	23	1,884	413	1,777
22							107	107	22	1,884	384	1,777
23							107	107	20	1,884	357	1,777
24							107	107	19	1,884	332	1,777
25							107	107	18	1,884	309	1,777
26							107	107	16	1,884	287	1,777
27							107	107	15	1,884	267	1,777
28							107	107	14	1,884	249	1,777
29							107	107	13	1,884	231	1,777
30							107	107	12	1,884	215	1,777
31							107	107	11	1,884	200	1,777
32							107	107	11	1,884	186	1,777
33							107	107	10	1,884	173	1,777
34							107	107	9	1,884	161	1,777
35							107	107	8	1,884	150	1,777
36							107	107	8	1,884	139	1,777
37							107	107	7	1,884	130	1,777
38							107	107	7	1,884	121	1,777
39							107	107	6	1,884	112	1,777
40							107	107	6	1,884	104	1,777
41							107	107	6	1,884	97	1,777
42							107	107	5	1,884	90	1,777
43							107	107	5	1,884	84	1,777
44							107	107	4	1,884	78	1,777
45							107	107	4	1,884	73	1,777
46							107	107	4	1,884	68	1,777
47							107	107	4	1,884	63	1,777
48							107	107	3	1,884	59	1,777
49							107	107	3	1,884	54	1,777
50							107	107	3	1,884	51	1,777
51							107	107	3	1,884	47	1,777
52							107	107	2	1,884	44	1,777
53	-2956	-111	0	-21280	0	-24347	107	-24240	-525	1,884	41	26,124

건설교통부

2.2 제성지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	30,289.3	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	4,006.3	-	2,804.4	1,201.9	-	-
호 안 공	1,161.9	-	348.6	813.3	-	-
구조물 공	292.0	-	87.6	204.4	-	-
보 상 비	21,280.0	14,896.0	6,384.0	-	-	-
기 타	3,549.1	709.8	2,129.5	709.8	-	-
계	30,289.3	15,605.8	11,754.1	2,929.4	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	51.5%	38.8%	9.7%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

113.8	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1886.7	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	42.65	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.71	0.00

A. 인명보호 편익 — 소계 18.6 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	17.87	0.00	17.87
부상	0.00	0.00	0.00	0.73	0.00	0.73

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 3.34 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	3.34	0.00	3.34

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익 — 소계 142.2 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
200.3	0.0	0.0	0.0	142.2	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1722.5 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.9	0.0	1.9
농 경 지	0.0	0.0	0.0	80.7	0.0	80.7
공공시설물	0.0	0.0	0.0	1522.7	0.0	1522.7
기 타	0.0	0.0	0.0	117.2	0.0	117.2

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 0.71
NPV -7,997
IRR 5.3%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	801	1,046	292	-	3,549	5,688		11,376	27,702	94,334	19,705	
1	-	-	-	14,896	710	15,606		15,606	14,517			-15606
2	2,804	349	88	6,384	2,129	11,754		11,754	10,171			-11754
3	1,202	813	204	-	710	2,929		2,929	2,358			-2929
4							114	114	85	1,887	1,413	1,773
5							114	114	79	1,887	1,314	1,773
6							114	114	74	1,887	1,222	1,773
7							114	114	69	1,887	1,137	1,773
8							114	114	64	1,887	1,058	1,773
9							114	114	59	1,887	984	1,773
10							114	114	55	1,887	915	1,773
11							114	114	51	1,887	852	1,773
12							114	114	48	1,887	792	1,773
13							114	114	44	1,887	737	1,773
14							114	114	41	1,887	685	1,773
15							114	114	38	1,887	638	1,773
16							114	114	36	1,887	593	1,773
17							114	114	33	1,887	552	1,773
18							114	114	31	1,887	513	1,773
19							114	114	29	1,887	477	1,773
20							114	114	27	1,887	444	1,773
21							114	114	25	1,887	413	1,773
22							114	114	23	1,887	384	1,773
23							114	114	22	1,887	358	1,773
24							114	114	20	1,887	333	1,773
25							114	114	19	1,887	309	1,773
26							114	114	17	1,887	288	1,773
27							114	114	16	1,887	268	1,773
28							114	114	15	1,887	249	1,773
29							114	114	14	1,887	232	1,773
30							114	114	13	1,887	215	1,773
31							114	114	12	1,887	200	1,773
32							114	114	11	1,887	186	1,773
33							114	114	10	1,887	173	1,773
34							114	114	10	1,887	161	1,773
35							114	114	9	1,887	150	1,773
36							114	114	8	1,887	140	1,773
37							114	114	8	1,887	130	1,773
38							114	114	7	1,887	121	1,773
39							114	114	7	1,887	112	1,773
40							114	114	6	1,887	105	1,773
41							114	114	6	1,887	97	1,773
42							114	114	5	1,887	90	1,773
43							114	114	5	1,887	84	1,773
44							114	114	5	1,887	78	1,773
45							114	114	4	1,887	73	1,773
46							114	114	4	1,887	68	1,773
47							114	114	4	1,887	63	1,773
48							114	114	4	1,887	59	1,773
49							114	114	3	1,887	55	1,773
50							114	114	3	1,887	51	1,773
51							114	114	3	1,887	47	1,773
52							114	114	3	1,887	44	1,773
53	-3205	-116	0	-21280	0	-24601	114	-24487	-530	1,887	41	26,374

건설교통부

2.3 제성지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	30,612.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	4,166.6	-	2,916.6	1,250.0	-	-
호 안 공	1,197.6	-	359.3	838.3	-	-
구조물공	292.0	-	87.6	204.4	-	-
보 상 비	21,280.0	14,896.0	6,384.0	-	-	-
기 타	3,676.5	735.3	2,205.9	735.3	-	-
계	30,612.8	15,631.3	11,953.4	3,028.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	51.1%	39.0%	9.9%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

117.6	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1891.1	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	43.89	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.71	0.00

A. 인명보호 편익 — 소계 19.1 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	18.39	0.00	18.39
부상	0.00	0.00	0.00	0.75	0.00	0.75

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 3.44 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	3.44	0.00	3.44

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 145.8 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
205.4	0.0	0.0	0.0	145.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1722.7 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.9	0.0	1.9
농 경 지	0.0	0.0	0.0	80.8	0.0	80.8
공공시설물	0.0	0.0	0.0	1522.8	0.0	1522.8
기 타	0.0	0.0	0.0	117.2	0.0	117.2

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 0.71
NPV -8,264
IRR 5.3%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	833	1,078	292	-	3,677	5,880		11,759	28,015	94,554	19,751	
1	-	-	-	14,896	735	15,631		15,631	14,541			-15631
2	2,917	359	88	6,384	2,206	11,953		11,953	10,344			-11953
3	1,250	838	204	-	735	3,028		3,028	2,437			-3028
4							118	118	88	1,891	1,416	1,773
5							118	118	82	1,891	1,317	1,773
6							118	118	76	1,891	1,225	1,773
7							118	118	71	1,891	1,140	1,773
8							118	118	66	1,891	1,060	1,773
9							118	118	61	1,891	986	1,773
10							118	118	57	1,891	918	1,773
11							118	118	53	1,891	854	1,773
12							118	118	49	1,891	794	1,773
13							118	118	46	1,891	739	1,773
14							118	118	43	1,891	687	1,773
15							118	118	40	1,891	639	1,773
16							118	118	37	1,891	595	1,773
17							118	118	34	1,891	553	1,773
18							118	118	32	1,891	514	1,773
19							118	118	30	1,891	479	1,773
20							118	118	28	1,891	445	1,773
21							118	118	26	1,891	414	1,773
22							118	118	24	1,891	385	1,773
23							118	118	22	1,891	358	1,773
24							118	118	21	1,891	333	1,773
25							118	118	19	1,891	310	1,773
26							118	118	18	1,891	288	1,773
27							118	118	17	1,891	268	1,773
28							118	118	16	1,891	250	1,773
29							118	118	14	1,891	232	1,773
30							118	118	13	1,891	216	1,773
31							118	118	12	1,891	201	1,773
32							118	118	12	1,891	187	1,773
33							118	118	11	1,891	174	1,773
34							118	118	10	1,891	162	1,773
35							118	118	9	1,891	150	1,773
36							118	118	9	1,891	140	1,773
37							118	118	8	1,891	130	1,773
38							118	118	8	1,891	121	1,773
39							118	118	7	1,891	113	1,773
40							118	118	7	1,891	105	1,773
41							118	118	6	1,891	97	1,773
42							118	118	6	1,891	91	1,773
43							118	118	5	1,891	84	1,773
44							118	118	5	1,891	78	1,773
45							118	118	5	1,891	73	1,773
46							118	118	4	1,891	68	1,773
47							118	118	4	1,891	63	1,773
48							118	118	4	1,891	59	1,773
49							118	118	3	1,891	55	1,773
50							118	118	3	1,891	51	1,773
51							118	118	3	1,891	47	1,773
52							118	118	3	1,891	44	1,773
53	-3333	-120	0	-21280	0	-24733	118	-24615	-533	1,891	41	26,507

건설교통부

2.4 제성지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	31,551.6	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	4,664.1	-	3,264.8	1,399.2	-	-
호 안 공	1,269.1	-	380.7	888.4	-	-
구조물 공	292.0	-	87.6	204.4	-	-
보 상 비	21,280.0	14,896.0	6,384.0	-	-	-
기 타	4,046.4	809.3	2,427.8	809.3	-	-
계	31,551.6	15,705.3	12,545.0	3,301.3	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	49.8%	39.8%	10.5%	0.0%	0.0%	100.0%

나. 유지관리비

128.3	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1895.2	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	45.29	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.71	0.00

A. 인명보호 편익 — 소계 19.7 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	18.97	0.00	18.97
부상	0.00	0.00	0.00	0.77	0.00	0.77

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 3.55 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	3.55	0.00	3.55

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 149.1 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
209.9	0.0	0.0	0.0	149.1	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1722.9 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.9	0.0	1.9
농 경 지	0.0	0.0	0.0	80.8	0.0	80.8
공공시설물	0.0	0.0	0.0	1522.9	0.0	1522.9
기 타	0.0	0.0	0.0	117.2	0.0	117.2

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 0.68
NPV -9,124
IRR 5.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균 유지비	3. 연평균 비용		4. 연평균 편익		5. 순현금 유 입
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계		1 + 2	현재가치	연간편익	현재가치	
합 계	933	1,142	292	-	4,046	6,413		12,827	28,918	94,761	19,794	
1	-	-	-	14,896	809	15,705		15,705	14,610			-15705
2	3,265	381	88	6,384	2,428	12,545		12,545	10,856			-12545
3	1,399	888	204	-	809	3,301		3,301	2,657			-3301
4							128	128	96	1,895	1,419	1,767
5							128	128	89	1,895	1,320	1,767
6							128	128	83	1,895	1,228	1,767
7							128	128	77	1,895	1,142	1,767
8							128	128	72	1,895	1,063	1,767
9							128	128	67	1,895	989	1,767
10							128	128	62	1,895	920	1,767
11							128	128	58	1,895	855	1,767
12							128	128	54	1,895	796	1,767
13							128	128	50	1,895	740	1,767
14							128	128	47	1,895	689	1,767
15							128	128	43	1,895	641	1,767
16							128	128	40	1,895	596	1,767
17							128	128	38	1,895	554	1,767
18							128	128	35	1,895	516	1,767
19							128	128	32	1,895	480	1,767
20							128	128	30	1,895	446	1,767
21							128	128	28	1,895	415	1,767
22							128	128	26	1,895	386	1,767
23							128	128	24	1,895	359	1,767
24							128	128	23	1,895	334	1,767
25							128	128	21	1,895	311	1,767
26							128	128	20	1,895	289	1,767
27							128	128	18	1,895	269	1,767
28							128	128	17	1,895	250	1,767
29							128	128	16	1,895	233	1,767
30							128	128	15	1,895	216	1,767
31							128	128	14	1,895	201	1,767
32							128	128	13	1,895	187	1,767
33							128	128	12	1,895	174	1,767
34							128	128	11	1,895	162	1,767
35							128	128	10	1,895	151	1,767
36							128	128	9	1,895	140	1,767
37							128	128	9	1,895	130	1,767
38							128	128	8	1,895	121	1,767
39							128	128	8	1,895	113	1,767
40							128	128	7	1,895	105	1,767
41							128	128	7	1,895	98	1,767
42							128	128	6	1,895	91	1,767
43							128	128	6	1,895	85	1,767
44							128	128	5	1,895	79	1,767
45							128	128	5	1,895	73	1,767
46							128	128	5	1,895	68	1,767
47							128	128	4	1,895	63	1,767
48							128	128	4	1,895	59	1,767
49							128	128	4	1,895	55	1,767
50							128	128	3	1,895	51	1,767
51							128	128	3	1,895	47	1,767
52							128	128	3	1,895	44	1,767
53	-3731	-127	0	-21280	0	-25138	128	-25010	-541	1,895	41	26,905

건설교통부

2.5 제성지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	30,612.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	4,166.6	-	2,916.6	1,250.0	-	-
호 안 공	1,197.6	-	359.3	838.3	-	-
구조물공	292.0	-	87.6	204.4	-	-
보 상 비	21,280.0	14,896.0	6,384.0	-	-	-
기 타	3,676.5	735.3	2,205.9	735.3	-	-
계	30,612.8	15,631.3	11,953.4	3,028.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	51.1%	39.0%	9.9%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

117.6	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1891.1	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	43.89	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.71	0.00

A. 인명보호 편익 — 소계 19.1 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	18.39	0.00	18.39
부상	0.00	0.00	0.00	0.75	0.00	0.75

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 3.44 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	3.44	0.00	3.44

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 145.8 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
205.4	0.0	0.0	0.0	145.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1722.7 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.9	0.0	1.9
농 경 지	0.0	0.0	0.0	80.8	0.0	80.8
공공시설물	0.0	0.0	0.0	1522.8	0.0	1522.8
기 타	0.0	0.0	0.0	117.2	0.0	117.2

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 0.71
NPV -8,264
IRR 5.3%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	833	1,078	292	-	3,677	5,880		11,759	28,015	94,554	19,751	
1	-	-	-	14,896	735	15,631		15,631	14,541			-15631
2	2,917	359	88	6,384	2,206	11,953		11,953	10,344			-11953
3	1,250	838	204	-	735	3,028		3,028	2,437			-3028
4							118	118	88	1,891	1,416	1,773
5							118	118	82	1,891	1,317	1,773
6							118	118	76	1,891	1,225	1,773
7							118	118	71	1,891	1,140	1,773
8							118	118	66	1,891	1,060	1,773
9							118	118	61	1,891	986	1,773
10							118	118	57	1,891	918	1,773
11							118	118	53	1,891	854	1,773
12							118	118	49	1,891	794	1,773
13							118	118	46	1,891	739	1,773
14							118	118	43	1,891	687	1,773
15							118	118	40	1,891	639	1,773
16							118	118	37	1,891	595	1,773
17							118	118	34	1,891	553	1,773
18							118	118	32	1,891	514	1,773
19							118	118	30	1,891	479	1,773
20							118	118	28	1,891	445	1,773
21							118	118	26	1,891	414	1,773
22							118	118	24	1,891	385	1,773
23							118	118	22	1,891	358	1,773
24							118	118	21	1,891	333	1,773
25							118	118	19	1,891	310	1,773
26							118	118	18	1,891	288	1,773
27							118	118	17	1,891	268	1,773
28							118	118	16	1,891	250	1,773
29							118	118	14	1,891	232	1,773
30							118	118	13	1,891	216	1,773
31							118	118	12	1,891	201	1,773
32							118	118	12	1,891	187	1,773
33							118	118	11	1,891	174	1,773
34							118	118	10	1,891	162	1,773
35							118	118	9	1,891	150	1,773
36							118	118	9	1,891	140	1,773
37							118	118	8	1,891	130	1,773
38							118	118	8	1,891	121	1,773
39							118	118	7	1,891	113	1,773
40							118	118	7	1,891	105	1,773
41							118	118	6	1,891	97	1,773
42							118	118	6	1,891	91	1,773
43							118	118	5	1,891	84	1,773
44							118	118	5	1,891	78	1,773
45							118	118	5	1,891	73	1,773
46							118	118	4	1,891	68	1,773
47							118	118	4	1,891	63	1,773
48							118	118	4	1,891	59	1,773
49							118	118	3	1,891	55	1,773
50							118	118	3	1,891	51	1,773
51							118	118	3	1,891	47	1,773
52							118	118	3	1,891	44	1,773
53	-3333	-120	0	-21280	0	-24733	118	-24615	-533	1,891	41	26,507

건설교통부

3.1 옥룡지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	482.2	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	68.0	-	47.6	20.4	-	-
호 안 공	98.9	-	29.7	69.2	-	-
구조물공	100.0	-	30.0	70.0	-	-
보 상 비	41.8	29.3	12.5	-	-	-
기 타	173.5	34.7	104.1	34.7	-	-
계	482.2	64.0	223.9	194.3	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	13.3%	46.4%	40.3%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

7.5	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1396.6	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.66	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.59	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.5 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.46	0.00	0.00	0.00	0.46
부상	0.00	0.02	0.00	0.00	0.00	0.02

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.14 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.14	0.00	0.00	0.00	0.14

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 1.2 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
2.1	0.0	1.2	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1394.7 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	20.0	0.0	0.0	0.0	20.0
농 경 지	0.0	84.9	0.0	0.0	0.0	84.9
공공시설물	0.0	1230.4	0.0	0.0	0.0	1230.4
기 타	0.0	59.4	0.0	0.0	0.0	59.4

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 30.02
NPV 14,100
IRR 131.6%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	14	89	100	-	173	376		752	486	69,828	14,586	
1	-	-	-	29	35	64		64	59			-64
2	48	30	30	13	104	224		224	194			-224
3	20	69	70	-	35	194		194	156			-194
4							8	8	6	1,397	1,046	1,389
5							8	8	5	1,397	973	1,389
6							8	8	5	1,397	905	1,389
7							8	8	5	1,397	842	1,389
8							8	8	4	1,397	783	1,389
9							8	8	4	1,397	728	1,389
10							8	8	4	1,397	678	1,389
11							8	8	3	1,397	630	1,389
12							8	8	3	1,397	586	1,389
13							8	8	3	1,397	545	1,389
14							8	8	3	1,397	507	1,389
15							8	8	3	1,397	472	1,389
16							8	8	2	1,397	439	1,389
17							8	8	2	1,397	408	1,389
18							8	8	2	1,397	380	1,389
19							8	8	2	1,397	353	1,389
20							8	8	2	1,397	329	1,389
21							8	8	2	1,397	306	1,389
22							8	8	2	1,397	284	1,389
23							8	8	1	1,397	265	1,389
24							8	8	1	1,397	246	1,389
25							8	8	1	1,397	229	1,389
26							8	8	1	1,397	213	1,389
27							8	8	1	1,397	198	1,389
28							8	8	1	1,397	184	1,389
29							8	8	1	1,397	171	1,389
30							8	8	1	1,397	160	1,389
31							8	8	1	1,397	148	1,389
32							8	8	1	1,397	138	1,389
33							8	8	1	1,397	128	1,389
34							8	8	1	1,397	119	1,389
35							8	8	1	1,397	111	1,389
36							8	8	1	1,397	103	1,389
37							8	8	1	1,397	96	1,389
38							8	8	0	1,397	89	1,389
39							8	8	0	1,397	83	1,389
40							8	8	0	1,397	77	1,389
41							8	8	0	1,397	72	1,389
42							8	8	0	1,397	67	1,389
43							8	8	0	1,397	62	1,389
44							8	8	0	1,397	58	1,389
45							8	8	0	1,397	54	1,389
46							8	8	0	1,397	50	1,389
47							8	8	0	1,397	47	1,389
48							8	8	0	1,397	43	1,389
49							8	8	0	1,397	40	1,389
50							8	8	0	1,397	38	1,389
51							8	8	0	1,397	35	1,389
52							8	8	0	1,397	32	1,389
53	-54	-10	0	-42	0	-106	8	-99	-2	1,397	30	1,495

건설교통부

3.2 옥룡지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	518.4	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	79.1	-	55.3	23.7	-	-
호 안 공	109.8	-	32.9	76.9	-	-
구조물공	100.0	-	30.0	70.0	-	-
보 상 비	41.8	29.3	12.5	-	-	-
기 타	187.8	37.6	112.7	37.6	-	-
계	518.4	66.8	243.5	208.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	12.9%	47.0%	40.1%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

8.0	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1397.0	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.87	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.59	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.6 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.61	0.00	0.00	0.00	0.61
부상	0.00	0.02	0.00	0.00	0.00	0.02

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.18 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.18	0.00	0.00	0.00	0.18

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 1.5 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
2.5	0.0	1.5	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1394.7 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	20.0	0.0	0.0	0.0	20.0
농 경 지	0.0	84.9	0.0	0.0	0.0	84.9
공공시설물	0.0	1230.4	0.0	0.0	0.0	1230.4
기 타	0.0	59.4	0.0	0.0	0.0	59.4

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 27.96
NPV 14,068
IRR 126.2%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연평균 사업비						2. 연평균 유지비	3. 연평균 비용		4. 연평균 편익		5. 순현금 유입
	축제공	호안공	구조물공	보상비	기타	계		1+2	현재가치	연간편익	현재가치	
합계	16	99	100	-	188	402		805	522	69,849	14,590	
1	-	-	-	29	38	67		67	62			-67
2	55	33	30	13	113	243		243	211			-243
3	24	77	70	-	38	208		208	168			-208
4							8	8	6	1,397	1,046	1,389
5							8	8	6	1,397	973	1,389
6							8	8	5	1,397	905	1,389
7							8	8	5	1,397	842	1,389
8							8	8	5	1,397	783	1,389
9							8	8	4	1,397	729	1,389
10							8	8	4	1,397	678	1,389
11							8	8	4	1,397	631	1,389
12							8	8	3	1,397	587	1,389
13							8	8	3	1,397	546	1,389
14							8	8	3	1,397	508	1,389
15							8	8	3	1,397	472	1,389
16							8	8	3	1,397	439	1,389
17							8	8	2	1,397	409	1,389
18							8	8	2	1,397	380	1,389
19							8	8	2	1,397	354	1,389
20							8	8	2	1,397	329	1,389
21							8	8	2	1,397	306	1,389
22							8	8	2	1,397	285	1,389
23							8	8	2	1,397	265	1,389
24							8	8	1	1,397	246	1,389
25							8	8	1	1,397	229	1,389
26							8	8	1	1,397	213	1,389
27							8	8	1	1,397	198	1,389
28							8	8	1	1,397	184	1,389
29							8	8	1	1,397	172	1,389
30							8	8	1	1,397	160	1,389
31							8	8	1	1,397	148	1,389
32							8	8	1	1,397	138	1,389
33							8	8	1	1,397	128	1,389
34							8	8	1	1,397	119	1,389
35							8	8	1	1,397	111	1,389
36							8	8	1	1,397	103	1,389
37							8	8	1	1,397	96	1,389
38							8	8	1	1,397	89	1,389
39							8	8	0	1,397	83	1,389
40							8	8	0	1,397	77	1,389
41							8	8	0	1,397	72	1,389
42							8	8	0	1,397	67	1,389
43							8	8	0	1,397	62	1,389
44							8	8	0	1,397	58	1,389
45							8	8	0	1,397	54	1,389
46							8	8	0	1,397	50	1,389
47							8	8	0	1,397	47	1,389
48							8	8	0	1,397	43	1,389
49							8	8	0	1,397	40	1,389
50							8	8	0	1,397	38	1,389
51							8	8	0	1,397	35	1,389
52							8	8	0	1,397	33	1,389
53	-63	-11	0	-42	0	-116	8	-108	-2	1,397	30	1,505

건설교통부

3.3 옥룡지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	540.1	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	85.6	-	59.9	25.7	-	-
호 안 공	116.4	-	34.9	81.5	-	-
구조물 공	100.0	-	30.0	70.0	-	-
보 상 비	41.8	29.3	12.5	-	-	-
기 타	196.3	39.3	117.8	39.3	-	-
계	540.1	68.5	255.1	216.4	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	12.7%	47.2%	40.1%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

8.4	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1397.6	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	1.04	0.00	0.00	0.00

*흉수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.59	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.8 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.72	0.00	0.00	0.00	0.72
부상	0.00	0.03	0.00	0.00	0.00	0.03

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.21 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.21	0.00	0.00	0.00	0.21

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익 — 소계 1.9 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
3.2	0.0	1.9	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1394.7 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	20.0	0.0	0.0	0.0	20.0
농 경 지	0.0	84.9	0.0	0.0	0.0	84.9
공공시설물	0.0	1230.4	0.0	0.0	0.0	1230.4
기 타	0.0	59.4	0.0	0.0	0.0	59.4

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 26.86
NPV 14,053
IRR 123.2%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	17	105	100	-	196	418		836	543	69,880	14,597	
1	-	-	-	29	39	69		69	64			-69
2	60	35	30	13	118	255		255	221			-255
3	26	81	70	-	39	216		216	174			-216
4							8	8	6	1,398	1,047	1,389
5							8	8	6	1,398	974	1,389
6							8	8	5	1,398	906	1,389
7							8	8	5	1,398	842	1,389
8							8	8	5	1,398	784	1,389
9							8	8	4	1,398	729	1,389
10							8	8	4	1,398	678	1,389
11							8	8	4	1,398	631	1,389
12							8	8	4	1,398	587	1,389
13							8	8	3	1,398	546	1,389
14							8	8	3	1,398	508	1,389
15							8	8	3	1,398	472	1,389
16							8	8	3	1,398	439	1,389
17							8	8	2	1,398	409	1,389
18							8	8	2	1,398	380	1,389
19							8	8	2	1,398	354	1,389
20							8	8	2	1,398	329	1,389
21							8	8	2	1,398	306	1,389
22							8	8	2	1,398	285	1,389
23							8	8	2	1,398	265	1,389
24							8	8	1	1,398	246	1,389
25							8	8	1	1,398	229	1,389
26							8	8	1	1,398	213	1,389
27							8	8	1	1,398	198	1,389
28							8	8	1	1,398	184	1,389
29							8	8	1	1,398	172	1,389
30							8	8	1	1,398	160	1,389
31							8	8	1	1,398	148	1,389
32							8	8	1	1,398	138	1,389
33							8	8	1	1,398	128	1,389
34							8	8	1	1,398	120	1,389
35							8	8	1	1,398	111	1,389
36							8	8	1	1,398	103	1,389
37							8	8	1	1,398	96	1,389
38							8	8	1	1,398	90	1,389
39							8	8	0	1,398	83	1,389
40							8	8	0	1,398	77	1,389
41							8	8	0	1,398	72	1,389
42							8	8	0	1,398	67	1,389
43							8	8	0	1,398	62	1,389
44							8	8	0	1,398	58	1,389
45							8	8	0	1,398	54	1,389
46							8	8	0	1,398	50	1,389
47							8	8	0	1,398	47	1,389
48							8	8	0	1,398	43	1,389
49							8	8	0	1,398	40	1,389
50							8	8	0	1,398	38	1,389
51							8	8	0	1,398	35	1,389
52							8	8	0	1,398	33	1,389
53	-68	-12	0	-42	0	-122	8	-114	-2	1,398	30	1,511

건설교통부

3.4 옥룡지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	615.4	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	107.6	-	75.3	32.3	-	-
호 안 공	140.0	-	42.0	98.0	-	-
구조물공	100.0	-	30.0	70.0	-	-
보 상 비	41.8	29.3	12.5	-	-	-
기 타	226.0	45.2	135.6	45.2	-	-
계	615.4	74.5	295.5	245.5	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	12.1%	48.0%	39.9%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

9.5	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1398.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	1.58	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.59	0.00	0.00	0.00

A. 인명보호 편익 — 소계 1.1 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	1.10	0.00	0.00	0.00	1.10
부상	0.00	0.04	0.00	0.00	0.00	0.04

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.33 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.33	0.00	0.00	0.00	0.33

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익 — 소계 2.2 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
3.7	0.0	2.2	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1394.7 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	20.0	0.0	0.0	0.0	20.0
농 경 지	0.0	84.9	0.0	0.0	0.0	84.9
공공시설물	0.0	1230.4	0.0	0.0	0.0	1230.4
기 타	0.0	59.4	0.0	0.0	0.0	59.4

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 23.62
NPV 13,987
IRR 114.0%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	22	126	100	-	226	474		947	618	69,920	14,605	
1	-	-	-	29	45	74		74	69			-74
2	75	42	30	13	136	295		295	256			-295
3	32	98	70	-	45	246		246	198			-246
4							9	9	7	1,398	1,047	1,389
5							9	9	7	1,398	974	1,389
6							9	9	6	1,398	906	1,389
7							9	9	6	1,398	843	1,389
8							9	9	5	1,398	784	1,389
9							9	9	5	1,398	729	1,389
10							9	9	5	1,398	678	1,389
11							9	9	4	1,398	631	1,389
12							9	9	4	1,398	587	1,389
13							9	9	4	1,398	546	1,389
14							9	9	3	1,398	508	1,389
15							9	9	3	1,398	473	1,389
16							9	9	3	1,398	440	1,389
17							9	9	3	1,398	409	1,389
18							9	9	3	1,398	380	1,389
19							9	9	2	1,398	354	1,389
20							9	9	2	1,398	329	1,389
21							9	9	2	1,398	306	1,389
22							9	9	2	1,398	285	1,389
23							9	9	2	1,398	265	1,389
24							9	9	2	1,398	247	1,389
25							9	9	2	1,398	229	1,389
26							9	9	1	1,398	213	1,389
27							9	9	1	1,398	198	1,389
28							9	9	1	1,398	185	1,389
29							9	9	1	1,398	172	1,389
30							9	9	1	1,398	160	1,389
31							9	9	1	1,398	149	1,389
32							9	9	1	1,398	138	1,389
33							9	9	1	1,398	129	1,389
34							9	9	1	1,398	120	1,389
35							9	9	1	1,398	111	1,389
36							9	9	1	1,398	103	1,389
37							9	9	1	1,398	96	1,389
38							9	9	1	1,398	90	1,389
39							9	9	1	1,398	83	1,389
40							9	9	1	1,398	77	1,389
41							9	9	0	1,398	72	1,389
42							9	9	0	1,398	67	1,389
43							9	9	0	1,398	62	1,389
44							9	9	0	1,398	58	1,389
45							9	9	0	1,398	54	1,389
46							9	9	0	1,398	50	1,389
47							9	9	0	1,398	47	1,389
48							9	9	0	1,398	43	1,389
49							9	9	0	1,398	40	1,389
50							9	9	0	1,398	38	1,389
51							9	9	0	1,398	35	1,389
52							9	9	0	1,398	33	1,389
53	-86	-14	0	-42	0	-142	9	-132	-3	1,398	30	1,531

건설교통부

3.5 옥룡지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	665.2	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	122.8	-	85.9	36.8	-	-
호 안 공	155.0	-	46.5	108.5	-	-
구조물 공	100.0	-	30.0	70.0	-	-
보 상 비	41.8	29.3	12.5	-	-	-
기 타	245.6	49.1	147.3	49.1	-	-
계	665.2	78.4	322.3	264.5	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	11.8%	48.5%	39.8%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

10.2	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1398.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	1.58	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.59	0.00	0.00	0.00

A. 인명보호 편익

소계	1.1	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	1.10	0.00	0.00	0.00	1.10
부상	0.00	0.04	0.00	0.00	0.00	0.04

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.33	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.33	0.00	0.00	0.00	0.33

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	2.2	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
3.7	0.0	2.2	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1394.7	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	20.0	0.0	0.0	0.0	20.0
농 경 지	0.0	84.9	0.0	0.0	0.0	84.9
공공시설물	0.0	1230.4	0.0	0.0	0.0	1230.4
기 타	0.0	59.4	0.0	0.0	0.0	59.4

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 21.87
NPV 13,937
IRR 108.6%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	25	140	100	-	246	510		1,019	668	69,920	14,605	
1	-	-	-	29	49	78		78	73			-78
2	86	47	30	13	147	322		322	279			-322
3	37	109	70	-	49	264		264	213			-264
4							10	10	8	1,398	1,047	1,388
5							10	10	7	1,398	974	1,388
6							10	10	7	1,398	906	1,388
7							10	10	6	1,398	843	1,388
8							10	10	6	1,398	784	1,388
9							10	10	5	1,398	729	1,388
10							10	10	5	1,398	678	1,388
11							10	10	5	1,398	631	1,388
12							10	10	4	1,398	587	1,388
13							10	10	4	1,398	546	1,388
14							10	10	4	1,398	508	1,388
15							10	10	3	1,398	473	1,388
16							10	10	3	1,398	440	1,388
17							10	10	3	1,398	409	1,388
18							10	10	3	1,398	380	1,388
19							10	10	3	1,398	354	1,388
20							10	10	2	1,398	329	1,388
21							10	10	2	1,398	306	1,388
22							10	10	2	1,398	285	1,388
23							10	10	2	1,398	265	1,388
24							10	10	2	1,398	247	1,388
25							10	10	2	1,398	229	1,388
26							10	10	2	1,398	213	1,388
27							10	10	1	1,398	198	1,388
28							10	10	1	1,398	185	1,388
29							10	10	1	1,398	172	1,388
30							10	10	1	1,398	160	1,388
31							10	10	1	1,398	149	1,388
32							10	10	1	1,398	138	1,388
33							10	10	1	1,398	129	1,388
34							10	10	1	1,398	120	1,388
35							10	10	1	1,398	111	1,388
36							10	10	1	1,398	103	1,388
37							10	10	1	1,398	96	1,388
38							10	10	1	1,398	90	1,388
39							10	10	1	1,398	83	1,388
40							10	10	1	1,398	77	1,388
41							10	10	1	1,398	72	1,388
42							10	10	0	1,398	67	1,388
43							10	10	0	1,398	62	1,388
44							10	10	0	1,398	58	1,388
45							10	10	0	1,398	54	1,388
46							10	10	0	1,398	50	1,388
47							10	10	0	1,398	47	1,388
48							10	10	0	1,398	43	1,388
49							10	10	0	1,398	40	1,388
50							10	10	0	1,398	38	1,388
51							10	10	0	1,398	35	1,388
52							10	10	0	1,398	33	1,388
53	-98	-16	0	-42	0	-156	10	-145	-3	1,398	30	1,544

건설교통부

4.1 소학지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	6,072.6	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,464.5	-	1,025.2	439.4	-	-
호 안 공	749.3	-	224.8	524.5	-	-
구조물 공	1,120.0	-	336.0	784.0	-	-
보 상 비	571.9	400.3	171.6	-	-	-
기 타	2,167.0	433.4	1,300.2	433.4	-	-
계	6,072.6	833.7	3,057.7	2,181.2	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	13.7%	50.4%	35.9%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

85.1	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1667.0	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	65.13	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 23.6 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	22.67	0.00	22.67
부상	0.00	0.00	0.00	0.92	0.00	0.92

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 4.24 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	4.24	0.00	4.24

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 204.8 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
347.2	0.0	0.0	0.0	204.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1434.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	67.6	0.0	67.6
공공시설물	0.0	0.0	0.0	1267.5	0.0	1267.5
기 타	0.0	0.0	0.0	97.5	0.0	97.5

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 2.89
NPV 11,384
IRR 22.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	293	674	1,120	-	2,167	4,254		8,508	6,027	83,349	17,410	
1	-	-	-	400	433	834		834	776			-834
2	1,025	225	336	172	1,300	3,058		3,058	2,646			-3058
3	439	524	784	-	433	2,181		2,181	1,756			-2181
4							85	85	64	1,667	1,248	1,582
5							85	85	59	1,667	1,161	1,582
6							85	85	55	1,667	1,080	1,582
7							85	85	51	1,667	1,005	1,582
8							85	85	48	1,667	935	1,582
9							85	85	44	1,667	869	1,582
10							85	85	41	1,667	809	1,582
11							85	85	38	1,667	752	1,582
12							85	85	36	1,667	700	1,582
13							85	85	33	1,667	651	1,582
14							85	85	31	1,667	606	1,582
15							85	85	29	1,667	563	1,582
16							85	85	27	1,667	524	1,582
17							85	85	25	1,667	488	1,582
18							85	85	23	1,667	454	1,582
19							85	85	22	1,667	422	1,582
20							85	85	20	1,667	392	1,582
21							85	85	19	1,667	365	1,582
22							85	85	17	1,667	340	1,582
23							85	85	16	1,667	316	1,582
24							85	85	15	1,667	294	1,582
25							85	85	14	1,667	273	1,582
26							85	85	13	1,667	254	1,582
27							85	85	12	1,667	237	1,582
28							85	85	11	1,667	220	1,582
29							85	85	10	1,667	205	1,582
30							85	85	10	1,667	190	1,582
31							85	85	9	1,667	177	1,582
32							85	85	8	1,667	165	1,582
33							85	85	8	1,667	153	1,582
34							85	85	7	1,667	143	1,582
35							85	85	7	1,667	133	1,582
36							85	85	6	1,667	123	1,582
37							85	85	6	1,667	115	1,582
38							85	85	5	1,667	107	1,582
39							85	85	5	1,667	99	1,582
40							85	85	5	1,667	92	1,582
41							85	85	4	1,667	86	1,582
42							85	85	4	1,667	80	1,582
43							85	85	4	1,667	74	1,582
44							85	85	4	1,667	69	1,582
45							85	85	3	1,667	64	1,582
46							85	85	3	1,667	60	1,582
47							85	85	3	1,667	56	1,582
48							85	85	3	1,667	52	1,582
49							85	85	2	1,667	48	1,582
50							85	85	2	1,667	45	1,582
51							85	85	2	1,667	42	1,582
52							85	85	2	1,667	39	1,582
53	-1172	-75	0	-572	0	-1818	85	-1733	-38	1,667	36	3,400

건설교통부

4.2 소학지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	6,683.9	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,751.8	-	1,226.2	525.5	-	-
호 안 공	832.5	-	249.8	582.8	-	-
구조물공	1,120.0	-	336.0	784.0	-	-
보 상 비	571.9	400.3	171.6	-	-	-
기 타	2,407.8	481.6	1,444.7	481.6	-	-
계	6,683.9	881.9	3,428.2	2,373.8	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	13.2%	51.3%	35.5%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

92.5	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1680.6	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	68.71	0.00

*흉수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 24.9 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	23.92	0.00	23.92
부상	0.00	0.00	0.00	0.97	0.00	0.97

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 4.48 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	4.48	0.00	4.48

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 216.3 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
366.6	0.0	0.0	0.0	216.3	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1434.9 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.8	0.0	1.8
농 경 지	0.0	0.0	0.0	67.7	0.0	67.7
공공시설물	0.0	0.0	0.0	1267.9	0.0	1267.9
기 타	0.0	0.0	0.0	97.5	0.0	97.5

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 2.65
NPV 10,932
IRR 20.4%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년)

공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	350	749	1,120	-	2,408	4,627		9,255	6,620	84,028	17,552	
1	-	-	-	400	482	882		882	820			-882
2	1,226	250	336	172	1,445	3,428		3,428	2,967			-3428
3	526	583	784	-	482	2,374		2,374	1,911			-2374
4							93	93	69	1,681	1,258	1,588
5							93	93	64	1,681	1,171	1,588
6							93	93	60	1,681	1,089	1,588
7							93	93	56	1,681	1,013	1,588
8							93	93	52	1,681	942	1,588
9							93	93	48	1,681	877	1,588
10							93	93	45	1,681	815	1,588
11							93	93	42	1,681	759	1,588
12							93	93	39	1,681	706	1,588
13							93	93	36	1,681	656	1,588
14							93	93	34	1,681	611	1,588
15							93	93	31	1,681	568	1,588
16							93	93	29	1,681	528	1,588
17							93	93	27	1,681	491	1,588
18							93	93	25	1,681	457	1,588
19							93	93	23	1,681	425	1,588
20							93	93	22	1,681	396	1,588
21							93	93	20	1,681	368	1,588
22							93	93	19	1,681	342	1,588
23							93	93	18	1,681	318	1,588
24							93	93	16	1,681	296	1,588
25							93	93	15	1,681	276	1,588
26							93	93	14	1,681	256	1,588
27							93	93	13	1,681	238	1,588
28							93	93	12	1,681	222	1,588
29							93	93	11	1,681	206	1,588
30							93	93	11	1,681	192	1,588
31							93	93	10	1,681	179	1,588
32							93	93	9	1,681	166	1,588
33							93	93	9	1,681	155	1,588
34							93	93	8	1,681	144	1,588
35							93	93	7	1,681	134	1,588
36							93	93	7	1,681	124	1,588
37							93	93	6	1,681	116	1,588
38							93	93	6	1,681	108	1,588
39							93	93	6	1,681	100	1,588
40							93	93	5	1,681	93	1,588
41							93	93	5	1,681	87	1,588
42							93	93	4	1,681	81	1,588
43							93	93	4	1,681	75	1,588
44							93	93	4	1,681	70	1,588
45							93	93	4	1,681	65	1,588
46							93	93	3	1,681	60	1,588
47							93	93	3	1,681	56	1,588
48							93	93	3	1,681	52	1,588
49							93	93	3	1,681	49	1,588
50							93	93	2	1,681	45	1,588
51							93	93	2	1,681	42	1,588
52							93	93	2	1,681	39	1,588
53	-1401	-83	0	-572	0	-2057	93	-1964	-43	1,681	36	3,645

건설교통부

4.3 소학지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	7,030.0	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,919.9	-	1,343.9	576.0	-	-
호 안 공	874.1	-	262.2	611.9	-	-
구조물 공	1,120.0	-	336.0	784.0	-	-
보 상 비	571.9	400.3	171.6	-	-	-
기 타	2,544.1	508.8	1,526.5	508.8	-	-
계	7,030.0	909.2	3,640.2	2,480.7	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	12.9%	51.8%	35.3%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

96.7	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1687.5	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	70.57	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 25.6 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	24.57	0.00	24.57
부상	0.00	0.00	0.00	1.00	0.00	1.00

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 4.60 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	4.60	0.00	4.60

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 222.2 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
376.5	0.0	0.0	0.0	222.2	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1435.2 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.8	0.0	1.8
농 경 지	0.0	0.0	0.0	67.8	0.0	67.8
공공시설물	0.0	0.0	0.0	1268.1	0.0	1268.1
기 타	0.0	0.0	0.0	97.5	0.0	97.5

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 2.53
NPV 10,670
IRR 19.6%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	384	787	1,120	-	2,544	4,835		9,670	6,955	84,377	17,625	
1	-	-	-	400	509	909		909	846			-909
2	1,344	262	336	172	1,526	3,640		3,640	3,150			-3640
3	576	612	784	-	509	2,481		2,481	1,997			-2481
4							97	97	72	1,688	1,264	1,591
5							97	97	67	1,688	1,175	1,591
6							97	97	63	1,688	1,093	1,591
7							97	97	58	1,688	1,017	1,591
8							97	97	54	1,688	946	1,591
9							97	97	50	1,688	880	1,591
10							97	97	47	1,688	819	1,591
11							97	97	44	1,688	762	1,591
12							97	97	41	1,688	709	1,591
13							97	97	38	1,688	659	1,591
14							97	97	35	1,688	613	1,591
15							97	97	33	1,688	570	1,591
16							97	97	30	1,688	531	1,591
17							97	97	28	1,688	494	1,591
18							97	97	26	1,688	459	1,591
19							97	97	24	1,688	427	1,591
20							97	97	23	1,688	397	1,591
21							97	97	21	1,688	370	1,591
22							97	97	20	1,688	344	1,591
23							97	97	18	1,688	320	1,591
24							97	97	17	1,688	297	1,591
25							97	97	16	1,688	277	1,591
26							97	97	15	1,688	257	1,591
27							97	97	14	1,688	239	1,591
28							97	97	13	1,688	223	1,591
29							97	97	12	1,688	207	1,591
30							97	97	11	1,688	193	1,591
31							97	97	10	1,688	179	1,591
32							97	97	10	1,688	167	1,591
33							97	97	9	1,688	155	1,591
34							97	97	8	1,688	144	1,591
35							97	97	8	1,688	134	1,591
36							97	97	7	1,688	125	1,591
37							97	97	7	1,688	116	1,591
38							97	97	6	1,688	108	1,591
39							97	97	6	1,688	101	1,591
40							97	97	5	1,688	94	1,591
41							97	97	5	1,688	87	1,591
42							97	97	5	1,688	81	1,591
43							97	97	4	1,688	75	1,591
44							97	97	4	1,688	70	1,591
45							97	97	4	1,688	65	1,591
46							97	97	3	1,688	61	1,591
47							97	97	3	1,688	56	1,591
48							97	97	3	1,688	52	1,591
49							97	97	3	1,688	49	1,591
50							97	97	3	1,688	45	1,591
51							97	97	2	1,688	42	1,591
52							97	97	2	1,688	39	1,591
53	-1536	-87	0	-572	0	-2195	97	-2099	-45	1,688	37	3,786

건설교통부

4.4 소학지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	8,557.6	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	2,693.0	-	1,885.1	807.9	-	-
호 안 공	1,026.8	-	308.0	718.7	-	-
구조물공	1,120.0	-	336.0	784.0	-	-
보 상 비	571.9	400.3	171.6	-	-	-
기 타	3,145.9	629.2	1,887.5	629.2	-	-
계	8,557.6	1,029.5	4,588.2	2,939.8	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	12.0%	53.6%	34.4%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

114.6	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1717.2	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	78.40	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 28.4 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	27.29	0.00	27.29
부상	0.00	0.00	0.00	1.11	0.00	1.11

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 5.11 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	5.11	0.00	5.11

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익 — 소계 247.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
418.7	0.0	0.0	0.0	247.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1436.6 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.8	0.0	1.8
농 경 지	0.0	0.0	0.0	68.0	0.0	68.0
공공시설물	0.0	0.0	0.0	1269.2	0.0	1269.2
기 타	0.0	0.0	0.0	97.6	0.0	97.6

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 2.13
NPV 9,505
IRR 16.5%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	측 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	539	924	1,120	-	3,146	5,729		11,457	8,430	85,860	17,935	
1	-	-	-	400	629	1,030		1,030	958			-1030
2	1,885	308	336	172	1,888	4,588		4,588	3,970			-4588
3	808	719	784	-	629	2,940		2,940	2,366			-2940
4							115	115	86	1,717	1,286	1,603
5							115	115	80	1,717	1,196	1,603
6							115	115	74	1,717	1,113	1,603
7							115	115	69	1,717	1,035	1,603
8							115	115	64	1,717	963	1,603
9							115	115	60	1,717	896	1,603
10							115	115	56	1,717	833	1,603
11							115	115	52	1,717	775	1,603
12							115	115	48	1,717	721	1,603
13							115	115	45	1,717	671	1,603
14							115	115	42	1,717	624	1,603
15							115	115	39	1,717	580	1,603
16							115	115	36	1,717	540	1,603
17							115	115	34	1,717	502	1,603
18							115	115	31	1,717	467	1,603
19							115	115	29	1,717	435	1,603
20							115	115	27	1,717	404	1,603
21							115	115	25	1,717	376	1,603
22							115	115	23	1,717	350	1,603
23							115	115	22	1,717	325	1,603
24							115	115	20	1,717	303	1,603
25							115	115	19	1,717	282	1,603
26							115	115	17	1,717	262	1,603
27							115	115	16	1,717	244	1,603
28							115	115	15	1,717	227	1,603
29							115	115	14	1,717	211	1,603
30							115	115	13	1,717	196	1,603
31							115	115	12	1,717	182	1,603
32							115	115	11	1,717	170	1,603
33							115	115	11	1,717	158	1,603
34							115	115	10	1,717	147	1,603
35							115	115	9	1,717	137	1,603
36							115	115	8	1,717	127	1,603
37							115	115	8	1,717	118	1,603
38							115	115	7	1,717	110	1,603
39							115	115	7	1,717	102	1,603
40							115	115	6	1,717	95	1,603
41							115	115	6	1,717	89	1,603
42							115	115	5	1,717	82	1,603
43							115	115	5	1,717	77	1,603
44							115	115	5	1,717	71	1,603
45							115	115	4	1,717	66	1,603
46							115	115	4	1,717	62	1,603
47							115	115	4	1,717	57	1,603
48							115	115	4	1,717	53	1,603
49							115	115	3	1,717	50	1,603
50							115	115	3	1,717	46	1,603
51							115	115	3	1,717	43	1,603
52							115	115	3	1,717	40	1,603
53	-2154	-103	0	-572	0	-2829	115	-2714	-59	1,717	37	1,432

건설교통부

4.5 소학지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	9,433.7	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	3,140.8	-	2,198.6	942.2	-	-
호 안 공	1,110.0	-	333.0	777.0	-	-
구조물 공	1,120.0	-	336.0	784.0	-	-
보 상 비	571.9	400.3	171.6	-	-	-
기 타	3,491.0	698.2	2,094.6	698.2	-	-
계	9,433.7	1,098.5	5,133.7	3,201.4	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	11.6%	54.4%	33.9%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

124.8	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1717.2	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	78.40	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 28.4 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	27.29	0.00	27.29
부상	0.00	0.00	0.00	1.11	0.00	1.11

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 5.11 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	5.11	0.00	5.11

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 247.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
418.7	0.0	0.0	0.0	247.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1436.6 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.8	0.0	1.8
농 경 지	0.0	0.0	0.0	68.0	0.0	68.0
공공시설물	0.0	0.0	0.0	1269.2	0.0	1269.2
기 타	0.0	0.0	0.0	97.6	0.0	97.6

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 1.93
NPV 8,660
IRR 15.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	628	999	1,120	-	3,491	6,238		12,476	9,275	85,860	17,935	
1	-	-	-	400	698	1,099		1,099	1,022			-1099
2	2,199	333	336	172	2,095	5,134		5,134	4,442			-5134
3	942	777	784	-	698	3,201		3,201	2,577			-3201
4							125	125	93	1,717	1,286	1,592
5							125	125	87	1,717	1,196	1,592
6							125	125	81	1,717	1,113	1,592
7							125	125	75	1,717	1,035	1,592
8							125	125	70	1,717	963	1,592
9							125	125	65	1,717	896	1,592
10							125	125	61	1,717	833	1,592
11							125	125	56	1,717	775	1,592
12							125	125	52	1,717	721	1,592
13							125	125	49	1,717	671	1,592
14							125	125	45	1,717	624	1,592
15							125	125	42	1,717	580	1,592
16							125	125	39	1,717	540	1,592
17							125	125	36	1,717	502	1,592
18							125	125	34	1,717	467	1,592
19							125	125	32	1,717	435	1,592
20							125	125	29	1,717	404	1,592
21							125	125	27	1,717	376	1,592
22							125	125	25	1,717	350	1,592
23							125	125	24	1,717	325	1,592
24							125	125	22	1,717	303	1,592
25							125	125	20	1,717	282	1,592
26							125	125	19	1,717	262	1,592
27							125	125	18	1,717	244	1,592
28							125	125	16	1,717	227	1,592
29							125	125	15	1,717	211	1,592
30							125	125	14	1,717	196	1,592
31							125	125	13	1,717	182	1,592
32							125	125	12	1,717	170	1,592
33							125	125	11	1,717	158	1,592
34							125	125	11	1,717	147	1,592
35							125	125	10	1,717	137	1,592
36							125	125	9	1,717	127	1,592
37							125	125	9	1,717	118	1,592
38							125	125	8	1,717	110	1,592
39							125	125	7	1,717	102	1,592
40							125	125	7	1,717	95	1,592
41							125	125	6	1,717	89	1,592
42							125	125	6	1,717	82	1,592
43							125	125	6	1,717	77	1,592
44							125	125	5	1,717	71	1,592
45							125	125	5	1,717	66	1,592
46							125	125	4	1,717	62	1,592
47							125	125	4	1,717	57	1,592
48							125	125	4	1,717	53	1,592
49							125	125	4	1,717	50	1,592
50							125	125	3	1,717	46	1,592
51							125	125	3	1,717	43	1,592
52							125	125	3	1,717	40	1,592
53	-2513	-111	0	-572	0	-3196	125	-3071	-66	1,717	37	4,788

건설교통부

5.1 마암지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	1,070.1	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	238.0	-	166.6	71.4	-	-
호 안 공	87.8	-	26.3	61.4	-	-
구조물 공	180.0	-	54.0	126.0	-	-
보 상 비	235.6	164.9	70.7	-	-	-
기 타	328.7	65.7	197.2	65.7	-	-
계	1,070.1	230.7	514.9	324.6	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	21.6%	48.1%	30.3%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

12.7	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1457.0	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	11.24	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 4.1 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	3.91	0.00	3.91
부상	0.00	0.00	0.00	0.16	0.00	0.16

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.73 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.73	0.00	0.73

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 22.9 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
38.8	0.0	0.0	0.0	22.9	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1429.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.5	0.0	1.5
농 경 지	0.0	0.0	0.0	66.7	0.0	66.7
공공시설물	0.0	0.0	0.0	1263.8	0.0	1263.8
기 타	0.0	0.0	0.0	97.3	0.0	97.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 14.57
NPV 14,173
IRR 74.8%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	48	79	180	-	329	635		1,271	1,045	72,851	15,217	
1	-	-	-	165	66	231		231	215			-231
2	167	26	54	71	197	515		515	446			-515
3	71	61	126	-	66	325		325	261			-325
4							13	13	10	1,457	1,091	1,444
5							13	13	9	1,457	1,015	1,444
6							13	13	8	1,457	944	1,444
7							13	13	8	1,457	878	1,444
8							13	13	7	1,457	817	1,444
9							13	13	7	1,457	760	1,444
10							13	13	6	1,457	707	1,444
11							13	13	6	1,457	658	1,444
12							13	13	5	1,457	612	1,444
13							13	13	5	1,457	569	1,444
14							13	13	5	1,457	529	1,444
15							13	13	4	1,457	492	1,444
16							13	13	4	1,457	458	1,444
17							13	13	4	1,457	426	1,444
18							13	13	3	1,457	396	1,444
19							13	13	3	1,457	369	1,444
20							13	13	3	1,457	343	1,444
21							13	13	3	1,457	319	1,444
22							13	13	3	1,457	297	1,444
23							13	13	2	1,457	276	1,444
24							13	13	2	1,457	257	1,444
25							13	13	2	1,457	239	1,444
26							13	13	2	1,457	222	1,444
27							13	13	2	1,457	207	1,444
28							13	13	2	1,457	192	1,444
29							13	13	2	1,457	179	1,444
30							13	13	1	1,457	166	1,444
31							13	13	1	1,457	155	1,444
32							13	13	1	1,457	144	1,444
33							13	13	1	1,457	134	1,444
34							13	13	1	1,457	125	1,444
35							13	13	1	1,457	116	1,444
36							13	13	1	1,457	108	1,444
37							13	13	1	1,457	100	1,444
38							13	13	1	1,457	93	1,444
39							13	13	1	1,457	87	1,444
40							13	13	1	1,457	81	1,444
41							13	13	1	1,457	75	1,444
42							13	13	1	1,457	70	1,444
43							13	13	1	1,457	65	1,444
44							13	13	1	1,457	60	1,444
45							13	13	0	1,457	56	1,444
46							13	13	0	1,457	52	1,444
47							13	13	0	1,457	49	1,444
48							13	13	0	1,457	45	1,444
49							13	13	0	1,457	42	1,444
50							13	13	0	1,457	39	1,444
51							13	13	0	1,457	36	1,444
52							13	13	0	1,457	34	1,444
53	-190	-9	0	-236	0	-435	13	-422	-9	1,457	32	1,879

건설교통부

5.2 마암지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	1,185.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	294.6	-	206.2	88.4	-	-
호 안 공	101.3	-	30.4	70.9	-	-
구조물 공	180.0	-	54.0	126.0	-	-
보 상 비	235.6	164.9	70.7	-	-	-
기 타	374.3	74.9	224.6	74.9	-	-
계	1,185.8	239.8	585.9	360.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	20.2%	49.4%	30.4%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

14.1	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1461.5	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	12.78	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익

소계	4.6	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	4.45	0.00	4.45
부상	0.00	0.00	0.00	0.18	0.00	0.18

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.83	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.83	0.00	0.83

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	26.6	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
45.1	0.0	0.0	0.0	26.6	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1429.4	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.5	0.0	1.5
농 경 지	0.0	0.0	0.0	66.7	0.0	66.7
공공시설물	0.0	0.0	0.0	1263.9	0.0	1263.9
기 타	0.0	0.0	0.0	97.3	0.0	97.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 13.20
NPV 14,107
IRR 70.4%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	59	91	180	-	374	704		1,409	1,157	73,073	15,264	
1	-	-	-	165	75	240		240	223			-240
2	206	30	54	71	225	586		586	507			-586
3	88	71	126	-	75	360		360	290			-360
4							14	14	11	1,461	1,094	1,447
5							14	14	10	1,461	1,018	1,447
6							14	14	9	1,461	947	1,447
7							14	14	8	1,461	881	1,447
8							14	14	8	1,461	819	1,447
9							14	14	7	1,461	762	1,447
10							14	14	7	1,461	709	1,447
11							14	14	6	1,461	660	1,447
12							14	14	6	1,461	614	1,447
13							14	14	6	1,461	571	1,447
14							14	14	5	1,461	531	1,447
15							14	14	5	1,461	494	1,447
16							14	14	4	1,461	459	1,447
17							14	14	4	1,461	427	1,447
18							14	14	4	1,461	398	1,447
19							14	14	4	1,461	370	1,447
20							14	14	3	1,461	344	1,447
21							14	14	3	1,461	320	1,447
22							14	14	3	1,461	298	1,447
23							14	14	3	1,461	277	1,447
24							14	14	2	1,461	258	1,447
25							14	14	2	1,461	240	1,447
26							14	14	2	1,461	223	1,447
27							14	14	2	1,461	207	1,447
28							14	14	2	1,461	193	1,447
29							14	14	2	1,461	179	1,447
30							14	14	2	1,461	167	1,447
31							14	14	1	1,461	155	1,447
32							14	14	1	1,461	144	1,447
33							14	14	1	1,461	134	1,447
34							14	14	1	1,461	125	1,447
35							14	14	1	1,461	116	1,447
36							14	14	1	1,461	108	1,447
37							14	14	1	1,461	101	1,447
38							14	14	1	1,461	94	1,447
39							14	14	1	1,461	87	1,447
40							14	14	1	1,461	81	1,447
41							14	14	1	1,461	75	1,447
42							14	14	1	1,461	70	1,447
43							14	14	1	1,461	65	1,447
44							14	14	1	1,461	61	1,447
45							14	14	1	1,461	56	1,447
46							14	14	1	1,461	52	1,447
47							14	14	0	1,461	49	1,447
48							14	14	0	1,461	45	1,447
49							14	14	0	1,461	42	1,447
50							14	14	0	1,461	39	1,447
51							14	14	0	1,461	37	1,447
52							14	14	0	1,461	34	1,447
53	-236	-10	0	-236	0	-481	14	-467	-10	1,461	32	1,929

건설교통부

5.3 마암지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	1,252.7	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	328.4	-	229.9	98.5	-	-
호 안 공	108.0	-	32.4	75.6	-	-
구조물 공	180.0	-	54.0	126.0	-	-
보 상 비	235.6	164.9	70.7	-	-	-
기 타	400.7	80.1	240.4	80.1	-	-
계	1,252.7	245.1	627.4	380.3	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	19.6%	50.1%	30.4%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

14.9	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1465.9	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	14.14	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 5.1 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	4.92	0.00	4.92
부상	0.00	0.00	0.00	0.20	0.00	0.20

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.92 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.92	0.00	0.92

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 30.5 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
51.7	0.0	0.0	0.0	30.5	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1429.4 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.5	0.0	1.5
농 경 지	0.0	0.0	0.0	66.7	0.0	66.7
공공시설물	0.0	0.0	0.0	1263.9	0.0	1263.9
기 타	0.0	0.0	0.0	97.3	0.0	97.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 12.54
NPV 14,089
IRR 68.2%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	66	97	180	-	401	744		1,487	1,221	73,297	15,311	
1	-	-	-	165	80	245		245	228			-245
2	230	32	54	71	240	627		627	543			-627
3	99	76	126	-	80	380		380	306			-380
4							15	15	11	1,466	1,098	1,451
5							15	15	10	1,466	1,021	1,451
6							15	15	10	1,466	950	1,451
7							15	15	9	1,466	884	1,451
8							15	15	8	1,466	822	1,451
9							15	15	8	1,466	765	1,451
10							15	15	7	1,466	711	1,451
11							15	15	7	1,466	662	1,451
12							15	15	6	1,466	615	1,451
13							15	15	6	1,466	573	1,451
14							15	15	5	1,466	533	1,451
15							15	15	5	1,466	495	1,451
16							15	15	5	1,466	461	1,451
17							15	15	4	1,466	429	1,451
18							15	15	4	1,466	399	1,451
19							15	15	4	1,466	371	1,451
20							15	15	4	1,466	345	1,451
21							15	15	3	1,466	321	1,451
22							15	15	3	1,466	299	1,451
23							15	15	3	1,466	278	1,451
24							15	15	3	1,466	258	1,451
25							15	15	2	1,466	240	1,451
26							15	15	2	1,466	224	1,451
27							15	15	2	1,466	208	1,451
28							15	15	2	1,466	193	1,451
29							15	15	2	1,466	180	1,451
30							15	15	2	1,466	167	1,451
31							15	15	2	1,466	156	1,451
32							15	15	1	1,466	145	1,451
33							15	15	1	1,466	135	1,451
34							15	15	1	1,466	125	1,451
35							15	15	1	1,466	117	1,451
36							15	15	1	1,466	108	1,451
37							15	15	1	1,466	101	1,451
38							15	15	1	1,466	94	1,451
39							15	15	1	1,466	87	1,451
40							15	15	1	1,466	81	1,451
41							15	15	1	1,466	76	1,451
42							15	15	1	1,466	70	1,451
43							15	15	1	1,466	65	1,451
44							15	15	1	1,466	61	1,451
45							15	15	1	1,466	57	1,451
46							15	15	1	1,466	53	1,451
47							15	15	0	1,466	49	1,451
48							15	15	0	1,466	46	1,451
49							15	15	0	1,466	42	1,451
50							15	15	0	1,466	39	1,451
51							15	15	0	1,466	37	1,451
52							15	15	0	1,466	34	1,451
53	-263	-11	0	-236	0	-509	15	-494	-11	1,466	32	1,960

건설교통부

5.4 마암지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	1,497.6	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	452.1	-	316.5	135.6	-	-
호 안 공	132.8	-	39.8	92.9	-	-
구조물 공	180.0	-	54.0	126.0	-	-
보 상 비	235.6	164.9	70.7	-	-	-
기 타	497.1	99.4	298.3	99.4	-	-
계	1,497.6	264.3	779.2	454.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	17.7%	52.0%	30.3%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

17.7	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1488.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	21.35	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 7.7 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	7.43	0.00	7.43
부상	0.00	0.00	0.00	0.30	0.00	0.30

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 1.39 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.39	0.00	1.39

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 50.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
84.7	0.0	0.0	0.0	50.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1429.7 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.5	0.0	1.5
농 경 지	0.0	0.0	0.0	66.8	0.0	66.8
공공시설물	0.0	0.0	0.0	1264.1	0.0	1264.1
기 타	0.0	0.0	0.0	97.3	0.0	97.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 10.67
NPV 14,092
IRR 61.3%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	90	119	180	-	497	887		1,774	1,458	74,441	15,550	
1	-	-	-	165	99	264		264	246			-264
2	316	40	54	71	298	779		779	674			-779
3	136	93	126	-	99	454		454	365			-454
4							18	18	13	1,489	1,115	1,471
5							18	18	12	1,489	1,037	1,471
6							18	18	11	1,489	965	1,471
7							18	18	11	1,489	897	1,471
8							18	18	10	1,489	835	1,471
9							18	18	9	1,489	777	1,471
10							18	18	9	1,489	722	1,471
11							18	18	8	1,489	672	1,471
12							18	18	7	1,489	625	1,471
13							18	18	7	1,489	581	1,471
14							18	18	6	1,489	541	1,471
15							18	18	6	1,489	503	1,471
16							18	18	6	1,489	468	1,471
17							18	18	5	1,489	435	1,471
18							18	18	5	1,489	405	1,471
19							18	18	4	1,489	377	1,471
20							18	18	4	1,489	350	1,471
21							18	18	4	1,489	326	1,471
22							18	18	4	1,489	303	1,471
23							18	18	3	1,489	282	1,471
24							18	18	3	1,489	262	1,471
25							18	18	3	1,489	244	1,471
26							18	18	3	1,489	227	1,471
27							18	18	3	1,489	211	1,471
28							18	18	2	1,489	197	1,471
29							18	18	2	1,489	183	1,471
30							18	18	2	1,489	170	1,471
31							18	18	2	1,489	158	1,471
32							18	18	2	1,489	147	1,471
33							18	18	2	1,489	137	1,471
34							18	18	2	1,489	127	1,471
35							18	18	1	1,489	118	1,471
36							18	18	1	1,489	110	1,471
37							18	18	1	1,489	103	1,471
38							18	18	1	1,489	95	1,471
39							18	18	1	1,489	89	1,471
40							18	18	1	1,489	83	1,471
41							18	18	1	1,489	77	1,471
42							18	18	1	1,489	71	1,471
43							18	18	1	1,489	66	1,471
44							18	18	1	1,489	62	1,471
45							18	18	1	1,489	57	1,471
46							18	18	1	1,489	53	1,471
47							18	18	1	1,489	50	1,471
48							18	18	1	1,489	46	1,471
49							18	18	1	1,489	43	1,471
50							18	18	0	1,489	40	1,471
51							18	18	0	1,489	37	1,471
52							18	18	0	1,489	35	1,471
53	-362	-13	0	-236	0	-611	18	-593	-13	1,489	32	2,082

건설교통부

5.5 마암지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	1,588.1	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	498.0	-	348.6	149.4	-	-
호 안 공	141.8	-	42.5	99.2	-	-
구조물 공	180.0	-	54.0	126.0	-	-
보 상 비	235.6	164.9	70.7	-	-	-
기 타	532.8	106.6	319.7	106.6	-	-
계	1,588.1	271.5	835.5	481.2	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	17.1%	52.6%	30.3%	0.0%	0.0%	100.0%

나. 유지관리비

18.8	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1488.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	21.35	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 7.7 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	7.43	0.00	7.43
부상	0.00	0.00	0.00	0.30	0.00	0.30

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 1.39 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.39	0.00	1.39

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 50.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
84.7	0.0	0.0	0.0	50.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1429.7 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.5	0.0	1.5
농 경 지	0.0	0.0	0.0	66.8	0.0	66.8
공공시설물	0.0	0.0	0.0	1264.1	0.0	1264.1
기 타	0.0	0.0	0.0	97.3	0.0	97.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 10.06
NPV 14,004
IRR 58.9%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	100	128	180	-	533	940		1,880	1,545	74,441	15,550	
1	-	-	-	165	107	271		271	253			-271
2	349	43	54	71	320	835		835	723			-835
3	149	99	126	-	107	481		481	387			-481
4							19	19	14	1,489	1,115	1,470
5							19	19	13	1,489	1,037	1,470
6							19	19	12	1,489	965	1,470
7							19	19	11	1,489	897	1,470
8							19	19	11	1,489	835	1,470
9							19	19	10	1,489	777	1,470
10							19	19	9	1,489	722	1,470
11							19	19	8	1,489	672	1,470
12							19	19	8	1,489	625	1,470
13							19	19	7	1,489	581	1,470
14							19	19	7	1,489	541	1,470
15							19	19	6	1,489	503	1,470
16							19	19	6	1,489	468	1,470
17							19	19	5	1,489	435	1,470
18							19	19	5	1,489	405	1,470
19							19	19	5	1,489	377	1,470
20							19	19	4	1,489	350	1,470
21							19	19	4	1,489	326	1,470
22							19	19	4	1,489	303	1,470
23							19	19	4	1,489	282	1,470
24							19	19	3	1,489	262	1,470
25							19	19	3	1,489	244	1,470
26							19	19	3	1,489	227	1,470
27							19	19	3	1,489	211	1,470
28							19	19	2	1,489	197	1,470
29							19	19	2	1,489	183	1,470
30							19	19	2	1,489	170	1,470
31							19	19	2	1,489	158	1,470
32							19	19	2	1,489	147	1,470
33							19	19	2	1,489	137	1,470
34							19	19	2	1,489	127	1,470
35							19	19	1	1,489	118	1,470
36							19	19	1	1,489	110	1,470
37							19	19	1	1,489	103	1,470
38							19	19	1	1,489	95	1,470
39							19	19	1	1,489	89	1,470
40							19	19	1	1,489	83	1,470
41							19	19	1	1,489	77	1,470
42							19	19	1	1,489	71	1,470
43							19	19	1	1,489	66	1,470
44							19	19	1	1,489	62	1,470
45							19	19	1	1,489	57	1,470
46							19	19	1	1,489	53	1,470
47							19	19	1	1,489	50	1,470
48							19	19	1	1,489	46	1,470
49							19	19	1	1,489	43	1,470
50							19	19	1	1,489	40	1,470
51							19	19	0	1,489	37	1,470
52							19	19	0	1,489	35	1,470
53	-398	-14	0	-236	0	-648	19	-629	-14	1,489	32	2,118

건설교통부

6.1 원봉지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	1,535.1	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	556.7	-	389.7	167.0	-	-
호 안 공	152.4	-	45.7	106.7	-	-
구조물 공	120.0	-	36.0	84.0	-	-
보 상 비	167.2	117.0	50.2	-	-	-
기 타	538.9	107.8	323.3	107.8	-	-
계	1,535.1	224.8	844.8	465.4	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	14.6%	55.0%	30.3%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

18.1	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1456.1	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	7.35	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 2.7 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	2.56	0.00	2.56
부상	0.00	0.00	0.00	0.10	0.00	0.10

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.48 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.48	0.00	0.48

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 23.7 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
40.2	0.0	0.0	0.0	23.7	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1429.2 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.5	0.0	1.5
농 경 지	0.0	0.0	0.0	66.7	0.0	66.7
공공시설물	0.0	0.0	0.0	1263.8	0.0	1263.8
기 타	0.0	0.0	0.0	97.3	0.0	97.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 10.20
NPV 13,717
IRR 60.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	111	137	120	-	539	907		1,815	1,491	72,806	15,208	
1	-	-	-	117	108	225		225	209			-225
2	390	46	36	50	323	845		845	731			-845
3	167	107	84	-	108	465		465	375			-465
4							18	18	14	1,456	1,090	1,438
5							18	18	13	1,456	1,014	1,438
6							18	18	12	1,456	944	1,438
7							18	18	11	1,456	878	1,438
8							18	18	10	1,456	816	1,438
9							18	18	9	1,456	759	1,438
10							18	18	9	1,456	706	1,438
11							18	18	8	1,456	657	1,438
12							18	18	8	1,456	611	1,438
13							18	18	7	1,456	569	1,438
14							18	18	7	1,456	529	1,438
15							18	18	6	1,456	492	1,438
16							18	18	6	1,456	458	1,438
17							18	18	5	1,456	426	1,438
18							18	18	5	1,456	396	1,438
19							18	18	5	1,456	368	1,438
20							18	18	4	1,456	343	1,438
21							18	18	4	1,456	319	1,438
22							18	18	4	1,456	297	1,438
23							18	18	3	1,456	276	1,438
24							18	18	3	1,456	257	1,438
25							18	18	3	1,456	239	1,438
26							18	18	3	1,456	222	1,438
27							18	18	3	1,456	207	1,438
28							18	18	2	1,456	192	1,438
29							18	18	2	1,456	179	1,438
30							18	18	2	1,456	166	1,438
31							18	18	2	1,456	155	1,438
32							18	18	2	1,456	144	1,438
33							18	18	2	1,456	134	1,438
34							18	18	2	1,456	125	1,438
35							18	18	1	1,456	116	1,438
36							18	18	1	1,456	108	1,438
37							18	18	1	1,456	100	1,438
38							18	18	1	1,456	93	1,438
39							18	18	1	1,456	87	1,438
40							18	18	1	1,456	81	1,438
41							18	18	1	1,456	75	1,438
42							18	18	1	1,456	70	1,438
43							18	18	1	1,456	65	1,438
44							18	18	1	1,456	60	1,438
45							18	18	1	1,456	56	1,438
46							18	18	1	1,456	52	1,438
47							18	18	1	1,456	49	1,438
48							18	18	1	1,456	45	1,438
49							18	18	1	1,456	42	1,438
50							18	18	0	1,456	39	1,438
51							18	18	0	1,456	36	1,438
52							18	18	0	1,456	34	1,438
53	-445	-15	0	-167	0	-628	18	-610	-13	1,456	32	2,066

건설교통부

6.2 원봉지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	1,700.7	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	642.9	-	450.0	192.9	-	-
호 안 공	166.5	-	50.0	116.6	-	-
구조물공	120.0	-	36.0	84.0	-	-
보 상 비	167.2	117.0	50.2	-	-	-
기 타	604.1	120.8	362.5	120.8	-	-
계	1,700.7	237.9	948.6	514.2	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	14.0%	55.8%	30.2%	0.0%	0.0%	100.0%

나. 유지관리비

20.1	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1456.9	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	7.57	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 2.7 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	2.64	0.00	2.64
부상	0.00	0.00	0.00	0.11	0.00	0.11

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.49 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.49	0.00	0.49

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 24.4 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
41.4	0.0	0.0	0.0	24.4	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1429.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.5	0.0	1.5
농 경 지	0.0	0.0	0.0	66.7	0.0	66.7
공공시설물	0.0	0.0	0.0	1263.8	0.0	1263.8
기 타	0.0	0.0	0.0	97.3	0.0	97.3

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 9.22
NPV 13,566
IRR 55.9%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년)

공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	129	150	120	-	604	1,003		2,005	1,650	72,846	15,216	
1	-	-	-	117	121	238		238	221			-238
2	450	50	36	50	362	949		949	821			-949
3	193	117	84	-	121	514		514	414			-514
4							20	20	15	1,457	1,091	1,437
5							20	20	14	1,457	1,015	1,437
6							20	20	13	1,457	944	1,437
7							20	20	12	1,457	878	1,437
8							20	20	11	1,457	817	1,437
9							20	20	10	1,457	760	1,437
10							20	20	10	1,457	707	1,437
11							20	20	9	1,457	658	1,437
12							20	20	8	1,457	612	1,437
13							20	20	8	1,457	569	1,437
14							20	20	7	1,457	529	1,437
15							20	20	7	1,457	492	1,437
16							20	20	6	1,457	458	1,437
17							20	20	6	1,457	426	1,437
18							20	20	5	1,457	396	1,437
19							20	20	5	1,457	369	1,437
20							20	20	5	1,457	343	1,437
21							20	20	4	1,457	319	1,437
22							20	20	4	1,457	297	1,437
23							20	20	4	1,457	276	1,437
24							20	20	4	1,457	257	1,437
25							20	20	3	1,457	239	1,437
26							20	20	3	1,457	222	1,437
27							20	20	3	1,457	207	1,437
28							20	20	3	1,457	192	1,437
29							20	20	2	1,457	179	1,437
30							20	20	2	1,457	166	1,437
31							20	20	2	1,457	155	1,437
32							20	20	2	1,457	144	1,437
33							20	20	2	1,457	134	1,437
34							20	20	2	1,457	125	1,437
35							20	20	2	1,457	116	1,437
36							20	20	1	1,457	108	1,437
37							20	20	1	1,457	100	1,437
38							20	20	1	1,457	93	1,437
39							20	20	1	1,457	87	1,437
40							20	20	1	1,457	81	1,437
41							20	20	1	1,457	75	1,437
42							20	20	1	1,457	70	1,437
43							20	20	1	1,457	65	1,437
44							20	20	1	1,457	60	1,437
45							20	20	1	1,457	56	1,437
46							20	20	1	1,457	52	1,437
47							20	20	1	1,457	49	1,437
48							20	20	1	1,457	45	1,437
49							20	20	1	1,457	42	1,437
50							20	20	1	1,457	39	1,437
51							20	20	1	1,457	36	1,437
52							20	20	0	1,457	34	1,437
53	-514	-17	0	-167	0	-698	20	-678	-15	1,457	32	2,135

건설교통부

6.3 원봉지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	1,791.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	691.4	-	483.9	207.4	-	-
호 안 공	173.3	-	52.0	121.3	-	-
구조물 공	120.0	-	36.0	84.0	-	-
보 상 비	167.2	117.0	50.2	-	-	-
기 타	640.0	128.0	384.0	128.0	-	-
계	1,791.8	245.0	1,006.1	540.7	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	13.7%	56.1%	30.2%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

21.1	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1457.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	7.81	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 2.8 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	2.72	0.00	2.72
부상	0.00	0.00	0.00	0.11	0.00	0.11

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.51 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.51	0.00	0.51

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 25.2 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
42.7	0.0	0.0	0.0	25.2	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1429.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.5	0.0	1.5
농 경 지	0.0	0.0	0.0	66.7	0.0	66.7
공공시설물	0.0	0.0	0.0	1263.8	0.0	1263.8
기 타	0.0	0.0	0.0	97.3	0.0	97.3

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 8.76
NPV 13,488
IRR 53.8%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	138	156	120	-	640	1,054		2,108	1,738	72,890	15,226	
1	-	-	-	117	128	245		245	228			-245
2	484	52	36	50	384	1,006		1,006	871			-1006
3	207	121	84	-	128	541		541	435			-541
4							21	21	16	1,458	1,092	1,437
5							21	21	15	1,458	1,015	1,437
6							21	21	14	1,458	945	1,437
7							21	21	13	1,458	879	1,437
8							21	21	12	1,458	817	1,437
9							21	21	11	1,458	760	1,437
10							21	21	10	1,458	707	1,437
11							21	21	10	1,458	658	1,437
12							21	21	9	1,458	612	1,437
13							21	21	8	1,458	569	1,437
14							21	21	8	1,458	530	1,437
15							21	21	7	1,458	493	1,437
16							21	21	7	1,458	458	1,437
17							21	21	6	1,458	426	1,437
18							21	21	6	1,458	397	1,437
19							21	21	5	1,458	369	1,437
20							21	21	5	1,458	343	1,437
21							21	21	5	1,458	319	1,437
22							21	21	4	1,458	297	1,437
23							21	21	4	1,458	276	1,437
24							21	21	4	1,458	257	1,437
25							21	21	3	1,458	239	1,437
26							21	21	3	1,458	222	1,437
27							21	21	3	1,458	207	1,437
28							21	21	3	1,458	192	1,437
29							21	21	3	1,458	179	1,437
30							21	21	2	1,458	167	1,437
31							21	21	2	1,458	155	1,437
32							21	21	2	1,458	144	1,437
33							21	21	2	1,458	134	1,437
34							21	21	2	1,458	125	1,437
35							21	21	2	1,458	116	1,437
36							21	21	2	1,458	108	1,437
37							21	21	1	1,458	100	1,437
38							21	21	1	1,458	93	1,437
39							21	21	1	1,458	87	1,437
40							21	21	1	1,458	81	1,437
41							21	21	1	1,458	75	1,437
42							21	21	1	1,458	70	1,437
43							21	21	1	1,458	65	1,437
44							21	21	1	1,458	60	1,437
45							21	21	1	1,458	56	1,437
46							21	21	1	1,458	52	1,437
47							21	21	1	1,458	49	1,437
48							21	21	1	1,458	45	1,437
49							21	21	1	1,458	42	1,437
50							21	21	1	1,458	39	1,437
51							21	21	1	1,458	36	1,437
52							21	21	0	1,458	34	1,437
53	-553	-17	0	-167	0	-738	21	-717	-16	1,458	32	2,174

건설교통부

6.4 원봉지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	2,152.5	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	883.0	-	618.1	264.9	-	-
호 안 공	200.3	-	60.1	140.2	-	-
구조물 공	120.0	-	36.0	84.0	-	-
보 상 비	167.2	117.0	50.2	-	-	-
기 타	782.1	156.4	469.2	156.4	-	-
계	2,152.5	273.5	1,233.5	645.5	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	12.7%	57.3%	30.0%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

25.2	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1459.5	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	8.26	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 3.0 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	2.88	0.00	2.88
부상	0.00	0.00	0.00	0.12	0.00	0.12

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.54 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.54	0.00	0.54

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 26.7 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
45.2	0.0	0.0	0.0	26.7	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1429.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.5	0.0	1.5
농 경 지	0.0	0.0	0.0	66.7	0.0	66.7
공공시설물	0.0	0.0	0.0	1263.8	0.0	1263.8
기 타	0.0	0.0	0.0	97.3	0.0	97.3

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 7.31
NPV 13,158
IRR 47.0%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년)

공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	177	180	120	-	782	1,259		2,518	2,085	72,973	15,243	
1	-	-	-	117	156	273		273	254			-273
2	618	60	36	50	469	1,234		1,234	1,067			-1234
3	265	140	84	-	156	645		645	520			-645
4							25	25	19	1,459	1,093	1,434
5							25	25	18	1,459	1,017	1,434
6							25	25	16	1,459	946	1,434
7							25	25	15	1,459	880	1,434
8							25	25	14	1,459	818	1,434
9							25	25	13	1,459	761	1,434
10							25	25	12	1,459	708	1,434
11							25	25	11	1,459	659	1,434
12							25	25	11	1,459	613	1,434
13							25	25	10	1,459	570	1,434
14							25	25	9	1,459	530	1,434
15							25	25	9	1,459	493	1,434
16							25	25	8	1,459	459	1,434
17							25	25	7	1,459	427	1,434
18							25	25	7	1,459	397	1,434
19							25	25	6	1,459	369	1,434
20							25	25	6	1,459	344	1,434
21							25	25	6	1,459	320	1,434
22							25	25	5	1,459	297	1,434
23							25	25	5	1,459	277	1,434
24							25	25	4	1,459	257	1,434
25							25	25	4	1,459	239	1,434
26							25	25	4	1,459	223	1,434
27							25	25	4	1,459	207	1,434
28							25	25	3	1,459	193	1,434
29							25	25	3	1,459	179	1,434
30							25	25	3	1,459	167	1,434
31							25	25	3	1,459	155	1,434
32							25	25	2	1,459	144	1,434
33							25	25	2	1,459	134	1,434
34							25	25	2	1,459	125	1,434
35							25	25	2	1,459	116	1,434
36							25	25	2	1,459	108	1,434
37							25	25	2	1,459	100	1,434
38							25	25	2	1,459	93	1,434
39							25	25	1	1,459	87	1,434
40							25	25	1	1,459	81	1,434
41							25	25	1	1,459	75	1,434
42							25	25	1	1,459	70	1,434
43							25	25	1	1,459	65	1,434
44							25	25	1	1,459	61	1,434
45							25	25	1	1,459	56	1,434
46							25	25	1	1,459	52	1,434
47							25	25	1	1,459	49	1,434
48							25	25	1	1,459	45	1,434
49							25	25	1	1,459	42	1,434
50							25	25	1	1,459	39	1,434
51							25	25	1	1,459	37	1,434
52							25	25	1	1,459	34	1,434
53	-706	-20	0	-167	0	-894	25	-868	-19	1,459	32	2,328

건설교통부

6.5 원봉지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	1,791.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	691.4	-	483.9	207.4	-	-
호 안 공	173.3	-	52.0	121.3	-	-
구조물공	120.0	-	36.0	84.0	-	-
보 상 비	167.2	117.0	50.2	-	-	-
기 타	640.0	128.0	384.0	128.0	-	-
계	1,791.8	245.0	1,006.1	540.7	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	13.7%	56.1%	30.2%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

21.1	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1457.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	7.81	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.59	0.00

A. 인명보호 편익 — 소계 2.8 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	2.72	0.00	2.72
부상	0.00	0.00	0.00	0.11	0.00	0.11

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.51 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.51	0.00	0.51

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익 — 소계 25.2 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
42.8	0.0	0.0	0.0	25.2	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1429.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.5	0.0	1.5
농 경 지	0.0	0.0	0.0	66.7	0.0	66.7
공공시설물	0.0	0.0	0.0	1263.8	0.0	1263.8
기 타	0.0	0.0	0.0	97.3	0.0	97.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 8.76
NPV 13,488
IRR 53.8%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	138	156	120	-	640	1,054		2,108	1,738	72,892	15,226	
1	-	-	-	117	128	245		245	228			-245
2	484	52	36	50	384	1,006		1,006	871			-1006
3	207	121	84	-	128	541		541	435			-541
4							21	21	16	1,458	1,092	1,437
5							21	21	15	1,458	1,015	1,437
6							21	21	14	1,458	945	1,437
7							21	21	13	1,458	879	1,437
8							21	21	12	1,458	817	1,437
9							21	21	11	1,458	760	1,437
10							21	21	10	1,458	707	1,437
11							21	21	10	1,458	658	1,437
12							21	21	9	1,458	612	1,437
13							21	21	8	1,458	569	1,437
14							21	21	8	1,458	530	1,437
15							21	21	7	1,458	493	1,437
16							21	21	7	1,458	458	1,437
17							21	21	6	1,458	426	1,437
18							21	21	6	1,458	397	1,437
19							21	21	5	1,458	369	1,437
20							21	21	5	1,458	343	1,437
21							21	21	5	1,458	319	1,437
22							21	21	4	1,458	297	1,437
23							21	21	4	1,458	276	1,437
24							21	21	4	1,458	257	1,437
25							21	21	3	1,458	239	1,437
26							21	21	3	1,458	222	1,437
27							21	21	3	1,458	207	1,437
28							21	21	3	1,458	192	1,437
29							21	21	3	1,458	179	1,437
30							21	21	2	1,458	167	1,437
31							21	21	2	1,458	155	1,437
32							21	21	2	1,458	144	1,437
33							21	21	2	1,458	134	1,437
34							21	21	2	1,458	125	1,437
35							21	21	2	1,458	116	1,437
36							21	21	2	1,458	108	1,437
37							21	21	1	1,458	100	1,437
38							21	21	1	1,458	93	1,437
39							21	21	1	1,458	87	1,437
40							21	21	1	1,458	81	1,437
41							21	21	1	1,458	75	1,437
42							21	21	1	1,458	70	1,437
43							21	21	1	1,458	65	1,437
44							21	21	1	1,458	60	1,437
45							21	21	1	1,458	56	1,437
46							21	21	1	1,458	52	1,437
47							21	21	1	1,458	49	1,437
48							21	21	1	1,458	45	1,437
49							21	21	1	1,458	42	1,437
50							21	21	1	1,458	39	1,437
51							21	21	1	1,458	36	1,437
52							21	21	0	1,458	34	1,437
53	-553	-17	0	-167	0	-738	21	-717	-16	1,458	32	2,174

건설교통부

7.1 석삼지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	2,745.2	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	806.2	-	564.3	241.9	-	-
호 안 공	271.6	-	81.5	190.1	-	-
구조물 공	252.0	-	75.6	176.4	-	-
보 상 비	551.0	385.7	165.3	-	-	-
기 타	864.4	172.9	518.6	172.9	-	-
계	2,745.2	558.6	1,405.4	781.3	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	20.3%	51.2%	28.5%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

30.4	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1566.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	11.89	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 4.6 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	4.42	0.00	4.42
부상	0.00	0.00	0.00	0.18	0.00	0.18

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.83 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.83	0.00	0.83

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 34.7 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
55.1	0.0	0.0	0.0	34.7	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.5	0.0	1349.5
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 6.16
NPV 13,704
IRR 40.0%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	161	244	252	-	864	1,522		3,044	2,656	78,321	16,360	
1	-	-	-	386	173	559		559	520			-559
2	564	81	76	165	519	1,405		1,405	1,216			-1405
3	242	190	176	-	173	781		781	629			-781
4							30	30	23	1,566	1,173	1,536
5							30	30	21	1,566	1,091	1,536
6							30	30	20	1,566	1,015	1,536
7							30	30	18	1,566	944	1,536
8							30	30	17	1,566	878	1,536
9							30	30	16	1,566	817	1,536
10							30	30	15	1,566	760	1,536
11							30	30	14	1,566	707	1,536
12							30	30	13	1,566	658	1,536
13							30	30	12	1,566	612	1,536
14							30	30	11	1,566	569	1,536
15							30	30	10	1,566	529	1,536
16							30	30	10	1,566	492	1,536
17							30	30	9	1,566	458	1,536
18							30	30	8	1,566	426	1,536
19							30	30	8	1,566	396	1,536
20							30	30	7	1,566	369	1,536
21							30	30	7	1,566	343	1,536
22							30	30	6	1,566	319	1,536
23							30	30	6	1,566	297	1,536
24							30	30	5	1,566	276	1,536
25							30	30	5	1,566	257	1,536
26							30	30	5	1,566	239	1,536
27							30	30	4	1,566	222	1,536
28							30	30	4	1,566	207	1,536
29							30	30	4	1,566	192	1,536
30							30	30	3	1,566	179	1,536
31							30	30	3	1,566	166	1,536
32							30	30	3	1,566	155	1,536
33							30	30	3	1,566	144	1,536
34							30	30	3	1,566	134	1,536
35							30	30	2	1,566	125	1,536
36							30	30	2	1,566	116	1,536
37							30	30	2	1,566	108	1,536
38							30	30	2	1,566	100	1,536
39							30	30	2	1,566	93	1,536
40							30	30	2	1,566	87	1,536
41							30	30	2	1,566	81	1,536
42							30	30	1	1,566	75	1,536
43							30	30	1	1,566	70	1,536
44							30	30	1	1,566	65	1,536
45							30	30	1	1,566	60	1,536
46							30	30	1	1,566	56	1,536
47							30	30	1	1,566	52	1,536
48							30	30	1	1,566	49	1,536
49							30	30	1	1,566	45	1,536
50							30	30	1	1,566	42	1,536
51							30	30	1	1,566	39	1,536
52							30	30	1	1,566	36	1,536
53	-645	-27	0	-551	0	-1223	30	-1193	-26	1,566	34	2,759

건설교통부

7.2 석삼지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	3,070.0	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	972.3	-	680.6	291.7	-	-
호 안 공	302.4	-	90.7	211.7	-	-
구조물 공	252.0	-	75.6	176.4	-	-
보 상 비	551.0	385.7	165.3	-	-	-
기 타	992.3	198.5	595.4	198.5	-	-
계	3,070.0	584.2	1,607.6	878.2	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	19.0%	52.4%	28.6%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

34.2	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1567.0	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	12.13	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 4.7 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	4.51	0.00	4.51
부상	0.00	0.00	0.00	0.18	0.00	0.18

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.84 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.84	0.00	0.84

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 35.2 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
55.9	0.0	0.0	0.0	35.2	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.5	0.0	1349.5
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C	5.51
NPV	13,397
IRR	36.8%
실질할인율	7.5% : 민감도분석지표

(단위 : 백만원/년)

공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	194	272	252	-	992	1,711		3,422	2,969	78,351	16,366	
1	-	-	-	386	198	584		584	543			-584
2	681	91	76	165	595	1,608		1,608	1,391			-1608
3	292	212	176	-	198	878		878	707			-878
4							34	34	26	1,567	1,173	1,533
5							34	34	24	1,567	1,092	1,533
6							34	34	22	1,567	1,015	1,533
7							34	34	21	1,567	945	1,533
8							34	34	19	1,567	879	1,533
9							34	34	18	1,567	817	1,533
10							34	34	17	1,567	760	1,533
11							34	34	15	1,567	707	1,533
12							34	34	14	1,567	658	1,533
13							34	34	13	1,567	612	1,533
14							34	34	12	1,567	569	1,533
15							34	34	12	1,567	530	1,533
16							34	34	11	1,567	493	1,533
17							34	34	10	1,567	458	1,533
18							34	34	9	1,567	426	1,533
19							34	34	9	1,567	397	1,533
20							34	34	8	1,567	369	1,533
21							34	34	7	1,567	343	1,533
22							34	34	7	1,567	319	1,533
23							34	34	6	1,567	297	1,533
24							34	34	6	1,567	276	1,533
25							34	34	6	1,567	257	1,533
26							34	34	5	1,567	239	1,533
27							34	34	5	1,567	222	1,533
28							34	34	5	1,567	207	1,533
29							34	34	4	1,567	192	1,533
30							34	34	4	1,567	179	1,533
31							34	34	4	1,567	166	1,533
32							34	34	3	1,567	155	1,533
33							34	34	3	1,567	144	1,533
34							34	34	3	1,567	134	1,533
35							34	34	3	1,567	125	1,533
36							34	34	3	1,567	116	1,533
37							34	34	2	1,567	108	1,533
38							34	34	2	1,567	100	1,533
39							34	34	2	1,567	93	1,533
40							34	34	2	1,567	87	1,533
41							34	34	2	1,567	81	1,533
42							34	34	2	1,567	75	1,533
43							34	34	2	1,567	70	1,533
44							34	34	1	1,567	65	1,533
45							34	34	1	1,567	60	1,533
46							34	34	1	1,567	56	1,533
47							34	34	1	1,567	52	1,533
48							34	34	1	1,567	49	1,533
49							34	34	1	1,567	45	1,533
50							34	34	1	1,567	42	1,533
51							34	34	1	1,567	39	1,533
52							34	34	1	1,567	36	1,533
53	-778	-30	0	-551	0	-1359	34	-1325	-29	1,567	34	2,892

건설교통부

7.3 석삼지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	3,252.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,067.7	-	747.4	320.3	-	-
호 안 공	317.8	-	95.3	222.4	-	-
구조물공	252.0	-	75.6	176.4	-	-
보 상 비	551.0	385.7	165.3	-	-	-
기 타	1,064.3	212.9	638.6	212.9	-	-
계	3,252.8	598.6	1,722.2	932.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	18.4%	52.9%	28.7%	0.0%	0.0%	100.0%

나. 유지관리비

36.3	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1574.6	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	14.72	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 5.7 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	5.47	0.00	5.47
부상	0.00	0.00	0.00	0.22	0.00	0.22

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 1.02 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.02	0.00	1.02

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 41.5 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
65.9	0.0	0.0	0.0	41.5	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.4 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.6	0.0	1349.6
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

3) 경제성 분석 결과

B/C 5.23
NPV 13,300
IRR 35.3%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	214	286	252	-	1,064	1,816		3,632	3,146	78,731	16,446	
1	-	-	-	386	213	599		599	557			-599
2	747	95	76	165	639	1,722		1,722	1,490			-1722
3	320	222	176	-	213	932		932	750			-932
4							36	36	27	1,575	1,179	1,538
5							36	36	25	1,575	1,097	1,538
6							36	36	24	1,575	1,020	1,538
7							36	36	22	1,575	949	1,538
8							36	36	20	1,575	883	1,538
9							36	36	19	1,575	821	1,538
10							36	36	18	1,575	764	1,538
11							36	36	16	1,575	711	1,538
12							36	36	15	1,575	661	1,538
13							36	36	14	1,575	615	1,538
14							36	36	13	1,575	572	1,538
15							36	36	12	1,575	532	1,538
16							36	36	11	1,575	495	1,538
17							36	36	11	1,575	460	1,538
18							36	36	10	1,575	428	1,538
19							36	36	9	1,575	398	1,538
20							36	36	9	1,575	371	1,538
21							36	36	8	1,575	345	1,538
22							36	36	7	1,575	321	1,538
23							36	36	7	1,575	298	1,538
24							36	36	6	1,575	278	1,538
25							36	36	6	1,575	258	1,538
26							36	36	6	1,575	240	1,538
27							36	36	5	1,575	223	1,538
28							36	36	5	1,575	208	1,538
29							36	36	4	1,575	193	1,538
30							36	36	4	1,575	180	1,538
31							36	36	4	1,575	167	1,538
32							36	36	4	1,575	156	1,538
33							36	36	3	1,575	145	1,538
34							36	36	3	1,575	135	1,538
35							36	36	3	1,575	125	1,538
36							36	36	3	1,575	117	1,538
37							36	36	3	1,575	108	1,538
38							36	36	2	1,575	101	1,538
39							36	36	2	1,575	94	1,538
40							36	36	2	1,575	87	1,538
41							36	36	2	1,575	81	1,538
42							36	36	2	1,575	76	1,538
43							36	36	2	1,575	70	1,538
44							36	36	2	1,575	65	1,538
45							36	36	1	1,575	61	1,538
46							36	36	1	1,575	57	1,538
47							36	36	1	1,575	53	1,538
48							36	36	1	1,575	49	1,538
49							36	36	1	1,575	46	1,538
50							36	36	1	1,575	42	1,538
51							36	36	1	1,575	39	1,538
52							36	36	1	1,575	37	1,538
53	-854	-32	0	-551	0	-1437	36	-1401	-30	1,575	34	2,975

건설교통부

7.4 석삼지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	3,984.3	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,449.6	-	1,014.7	434.9	-	-
호 안 공	379.3	-	113.8	265.5	-	-
구조물 공	252.0	-	75.6	176.4	-	-
보 상 비	551.0	385.7	165.3	-	-	-
기 타	1,352.5	270.5	811.5	270.5	-	-
계	3,984.3	656.2	2,180.9	1,147.2	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	16.5%	54.7%	28.8%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

44.7	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1580.9	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	16.40	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 6.3 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	6.10	0.00	6.10
부상	0.00	0.00	0.00	0.25	0.00	0.25

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 1.14 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.14	0.00	1.14

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익 — 소계 47.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
74.6	0.0	0.0	0.0	47.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.4 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.3	0.0	71.3
공공시설물	0.0	0.0	0.0	1349.7	0.0	1349.7
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 4.29
NPV 12,661
IRR 30.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	290	341	252	-	1,353	2,236		4,472	3,850	79,044	16,511	
1	-	-	-	386	271	656		656	610			-656
2	1,015	114	76	165	812	2,181		2,181	1,887			-2181
3	435	265	176	-	271	1,147		1,147	923			-1147
4							45	45	33	1,581	1,184	1,536
5							45	45	31	1,581	1,101	1,536
6							45	45	29	1,581	1,024	1,536
7							45	45	27	1,581	953	1,536
8							45	45	25	1,581	886	1,536
9							45	45	23	1,581	825	1,536
10							45	45	22	1,581	767	1,536
11							45	45	20	1,581	714	1,536
12							45	45	19	1,581	664	1,536
13							45	45	17	1,581	617	1,536
14							45	45	16	1,581	574	1,536
15							45	45	15	1,581	534	1,536
16							45	45	14	1,581	497	1,536
17							45	45	13	1,581	462	1,536
18							45	45	12	1,581	430	1,536
19							45	45	11	1,581	400	1,536
20							45	45	11	1,581	372	1,536
21							45	45	10	1,581	346	1,536
22							45	45	9	1,581	322	1,536
23							45	45	8	1,581	300	1,536
24							45	45	8	1,581	279	1,536
25							45	45	7	1,581	259	1,536
26							45	45	7	1,581	241	1,536
27							45	45	6	1,581	224	1,536
28							45	45	6	1,581	209	1,536
29							45	45	5	1,581	194	1,536
30							45	45	5	1,581	181	1,536
31							45	45	5	1,581	168	1,536
32							45	45	4	1,581	156	1,536
33							45	45	4	1,581	145	1,536
34							45	45	4	1,581	135	1,536
35							45	45	4	1,581	126	1,536
36							45	45	3	1,581	117	1,536
37							45	45	3	1,581	109	1,536
38							45	45	3	1,581	101	1,536
39							45	45	3	1,581	94	1,536
40							45	45	2	1,581	88	1,536
41							45	45	2	1,581	81	1,536
42							45	45	2	1,581	76	1,536
43							45	45	2	1,581	71	1,536
44							45	45	2	1,581	66	1,536
45							45	45	2	1,581	61	1,536
46							45	45	2	1,581	57	1,536
47							45	45	1	1,581	53	1,536
48							45	45	1	1,581	49	1,536
49							45	45	1	1,581	46	1,536
50							45	45	1	1,581	43	1,536
51							45	45	1	1,581	40	1,536
52							45	45	1	1,581	37	1,536
53	-1160	-38	0	-551	0	-1749	45	-1704	-37	1,581	34	3,285

건설교통부

7.5 석삼지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	4,160.5	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,540.9	-	1,078.7	462.3	-	-
호 안 공	394.6	-	118.4	276.2	-	-
구조물공	252.0	-	75.6	176.4	-	-
보 상 비	551.0	385.7	165.3	-	-	-
기 타	1,421.9	284.4	853.1	284.4	-	-
계	4,160.5	670.1	2,291.1	1,199.3	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	16.1%	55.1%	28.8%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

46.7	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1580.9	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	16.40	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 6.3 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	6.10	0.00	6.10
부상	0.00	0.00	0.00	0.25	0.00	0.25

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 1.14 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.14	0.00	1.14

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 47.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
74.6	0.0	0.0	0.0	47.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.4 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.3	0.0	71.3
공공시설물	0.0	0.0	0.0	1349.7	0.0	1349.7
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 4.11
NPV 12,491
IRR 29.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	308	355	252	-	1,422	2,337		4,675	4,020	79,044	16,511	
1	-	-	-	386	284	670		670	623			-670
2	1,079	118	76	165	853	2,291		2,291	1,983			-2291
3	462	276	176	-	284	1,199		1,199	965			-1199
4							47	47	35	1,581	1,184	1,534
5							47	47	33	1,581	1,101	1,534
6							47	47	30	1,581	1,024	1,534
7							47	47	28	1,581	953	1,534
8							47	47	26	1,581	886	1,534
9							47	47	24	1,581	825	1,534
10							47	47	23	1,581	767	1,534
11							47	47	21	1,581	714	1,534
12							47	47	20	1,581	664	1,534
13							47	47	18	1,581	617	1,534
14							47	47	17	1,581	574	1,534
15							47	47	16	1,581	534	1,534
16							47	47	15	1,581	497	1,534
17							47	47	14	1,581	462	1,534
18							47	47	13	1,581	430	1,534
19							47	47	12	1,581	400	1,534
20							47	47	11	1,581	372	1,534
21							47	47	10	1,581	346	1,534
22							47	47	10	1,581	322	1,534
23							47	47	9	1,581	300	1,534
24							47	47	8	1,581	279	1,534
25							47	47	8	1,581	259	1,534
26							47	47	7	1,581	241	1,534
27							47	47	7	1,581	224	1,534
28							47	47	6	1,581	209	1,534
29							47	47	6	1,581	194	1,534
30							47	47	5	1,581	181	1,534
31							47	47	5	1,581	168	1,534
32							47	47	5	1,581	156	1,534
33							47	47	4	1,581	145	1,534
34							47	47	4	1,581	135	1,534
35							47	47	4	1,581	126	1,534
36							47	47	3	1,581	117	1,534
37							47	47	3	1,581	109	1,534
38							47	47	3	1,581	101	1,534
39							47	47	3	1,581	94	1,534
40							47	47	3	1,581	88	1,534
41							47	47	2	1,581	81	1,534
42							47	47	2	1,581	76	1,534
43							47	47	2	1,581	71	1,534
44							47	47	2	1,581	66	1,534
45							47	47	2	1,581	61	1,534
46							47	47	2	1,581	57	1,534
47							47	47	2	1,581	53	1,534
48							47	47	1	1,581	49	1,534
49							47	47	1	1,581	46	1,534
50							47	47	1	1,581	43	1,534
51							47	47	1	1,581	40	1,534
52							47	47	1	1,581	37	1,534
53	-1233	-39	0	-551	0	-1823	47	-1776	-38	1,581	34	3,357

건설교통부

8.1 대동지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	3,779.4	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,145.0	-	801.5	343.5	-	-
호 안 공	565.5	-	169.7	395.9	-	-
구조물공	192.0	-	57.6	134.4	-	-
보 상 비	640.3	448.2	192.1	-	-	-
기 타	1,236.6	247.3	742.0	247.3	-	-
계	3,779.4	695.5	1,962.8	1,121.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	18.4%	51.9%	29.7%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

43.3	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1415.5	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	16.91	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.56	0.00

A. 인명보호 편익 — 소계 5.8 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	5.59	0.00	5.59
부상	0.00	0.00	0.00	0.23	0.00	0.23

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 1.05 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.05	0.00	1.05

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 51.8 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
92.5	0.0	0.0	0.0	51.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1356.8 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.4	0.0	1.4
농 경 지	0.0	0.0	0.0	63.3	0.0	63.3
공공시설물	0.0	0.0	0.0	1199.7	0.0	1199.7
기 타	0.0	0.0	0.0	92.4	0.0	92.4

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 4.03
NPV 11,118
IRR 28.6%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	229	509	192	-	1,237	2,167		4,333	3,666	70,774	14,784	
1	-	-	-	448	247	696		696	647			-696
2	802	170	58	192	742	1,963		1,963	1,698			-1963
3	344	396	134	-	247	1,121		1,121	902			-1121
4							43	43	32	1,415	1,060	1,372
5							43	43	30	1,415	986	1,372
6							43	43	28	1,415	917	1,372
7							43	43	26	1,415	853	1,372
8							43	43	24	1,415	794	1,372
9							43	43	23	1,415	738	1,372
10							43	43	21	1,415	687	1,372
11							43	43	20	1,415	639	1,372
12							43	43	18	1,415	594	1,372
13							43	43	17	1,415	553	1,372
14							43	43	16	1,415	514	1,372
15							43	43	15	1,415	478	1,372
16							43	43	14	1,415	445	1,372
17							43	43	13	1,415	414	1,372
18							43	43	12	1,415	385	1,372
19							43	43	11	1,415	358	1,372
20							43	43	10	1,415	333	1,372
21							43	43	9	1,415	310	1,372
22							43	43	9	1,415	288	1,372
23							43	43	8	1,415	268	1,372
24							43	43	8	1,415	250	1,372
25							43	43	7	1,415	232	1,372
26							43	43	7	1,415	216	1,372
27							43	43	6	1,415	201	1,372
28							43	43	6	1,415	187	1,372
29							43	43	5	1,415	174	1,372
30							43	43	5	1,415	162	1,372
31							43	43	5	1,415	150	1,372
32							43	43	4	1,415	140	1,372
33							43	43	4	1,415	130	1,372
34							43	43	4	1,415	121	1,372
35							43	43	3	1,415	113	1,372
36							43	43	3	1,415	105	1,372
37							43	43	3	1,415	97	1,372
38							43	43	3	1,415	91	1,372
39							43	43	3	1,415	84	1,372
40							43	43	2	1,415	78	1,372
41							43	43	2	1,415	73	1,372
42							43	43	2	1,415	68	1,372
43							43	43	2	1,415	63	1,372
44							43	43	2	1,415	59	1,372
45							43	43	2	1,415	55	1,372
46							43	43	2	1,415	51	1,372
47							43	43	1	1,415	47	1,372
48							43	43	1	1,415	44	1,372
49							43	43	1	1,415	41	1,372
50							43	43	1	1,415	38	1,372
51							43	43	1	1,415	35	1,372
52							43	43	1	1,415	33	1,372
53	-916	-57	0	-640	0	-1613	43	-1570	-34	1,415	31	2,985

건설교통부

8.2 대동지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	4,180.2	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,339.1	-	937.4	401.7	-	-
호 안 공	614.3	-	184.3	430.0	-	-
구조물 공	192.0	-	57.6	134.4	-	-
보 상 비	640.3	448.2	192.1	-	-	-
기 타	1,394.5	278.9	836.7	278.9	-	-
계	4,180.2	727.1	2,208.0	1,245.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	17.4%	52.8%	29.8%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

48.1	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1428.2	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	20.54	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.56	0.00

A. 인명보호 편익 — 소계 7.1 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	6.79	0.00	6.79
부상	0.00	0.00	0.00	0.28	0.00	0.28

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 1.27 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.27	0.00	1.27

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 62.9 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
112.3	0.0	0.0	0.0	62.9	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1357.0 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.4	0.0	1.4
농 경 지	0.0	0.0	0.0	63.4	0.0	63.4
공공시설물	0.0	0.0	0.0	1199.8	0.0	1199.8
기 타	0.0	0.0	0.0	92.4	0.0	92.4

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 3.68
NPV 10,863
IRR 26.5%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	268	553	192	-	1,394	2,407		4,814	4,054	71,410	14,916	
1	-	-	-	448	279	727		727	676			-727
2	937	184	58	192	837	2,208		2,208	1,911			-2208
3	402	430	134	-	279	1,245		1,245	1,002			-1245
4							48	48	36	1,428	1,069	1,380
5							48	48	34	1,428	995	1,380
6							48	48	31	1,428	925	1,380
7							48	48	29	1,428	861	1,380
8							48	48	27	1,428	801	1,380
9							48	48	25	1,428	745	1,380
10							48	48	23	1,428	693	1,380
11							48	48	22	1,428	645	1,380
12							48	48	20	1,428	600	1,380
13							48	48	19	1,428	558	1,380
14							48	48	17	1,428	519	1,380
15							48	48	16	1,428	483	1,380
16							48	48	15	1,428	449	1,380
17							48	48	14	1,428	418	1,380
18							48	48	13	1,428	389	1,380
19							48	48	12	1,428	361	1,380
20							48	48	11	1,428	336	1,380
21							48	48	11	1,428	313	1,380
22							48	48	10	1,428	291	1,380
23							48	48	9	1,428	271	1,380
24							48	48	8	1,428	252	1,380
25							48	48	8	1,428	234	1,380
26							48	48	7	1,428	218	1,380
27							48	48	7	1,428	203	1,380
28							48	48	6	1,428	189	1,380
29							48	48	6	1,428	175	1,380
30							48	48	5	1,428	163	1,380
31							48	48	5	1,428	152	1,380
32							48	48	5	1,428	141	1,380
33							48	48	4	1,428	131	1,380
34							48	48	4	1,428	122	1,380
35							48	48	4	1,428	114	1,380
36							48	48	4	1,428	106	1,380
37							48	48	3	1,428	98	1,380
38							48	48	3	1,428	91	1,380
39							48	48	3	1,428	85	1,380
40							48	48	3	1,428	79	1,380
41							48	48	2	1,428	74	1,380
42							48	48	2	1,428	68	1,380
43							48	48	2	1,428	64	1,380
44							48	48	2	1,428	59	1,380
45							48	48	2	1,428	55	1,380
46							48	48	2	1,428	51	1,380
47							48	48	2	1,428	48	1,380
48							48	48	1	1,428	44	1,380
49							48	48	1	1,428	41	1,380
50							48	48	1	1,428	38	1,380
51							48	48	1	1,428	36	1,380
52							48	48	1	1,428	33	1,380
53	-1071	-61	0	-640	0	-1773	48	-1725	-37	1,428	31	3,153

건설교통부

8.3 대동지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	4,400.4	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,453.1	-	1,017.2	435.9	-	-
호 안 공	633.8	-	190.1	443.6	-	-
구조물공	192.0	-	57.6	134.4	-	-
보 상 비	640.3	448.2	192.1	-	-	-
기 타	1,481.2	296.2	888.7	296.2	-	-
계	4,400.4	744.5	2,345.7	1,310.2	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	16.9%	53.3%	29.8%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

50.7	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1430.9	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	21.32	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.56	0.00

A. 인명보호 편익 — 소계 7.3 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	7.04	0.00	7.04
부상	0.00	0.00	0.00	0.29	0.00	0.29

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 1.32 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.32	0.00	1.32

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 65.3 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
116.5	0.0	0.0	0.0	65.3	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1357.0 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.4	0.0	1.4
농 경 지	0.0	0.0	0.0	63.4	0.0	63.4
공공시설물	0.0	0.0	0.0	1199.9	0.0	1199.9
기 타	0.0	0.0	0.0	92.4	0.0	92.4

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 3.50
NPV 10,679
IRR 25.4%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	291	570	192	-	1,481	2,534		5,068	4,266	71,547	14,945	
1	-	-	-	448	296	744		744	693			-744
2	1,017	190	58	192	889	2,346		2,346	2,030			-2346
3	436	444	134	-	296	1,310		1,310	1,055			-1310
4							51	51	38	1,431	1,071	1,380
5							51	51	35	1,431	997	1,380
6							51	51	33	1,431	927	1,380
7							51	51	31	1,431	863	1,380
8							51	51	28	1,431	802	1,380
9							51	51	26	1,431	746	1,380
10							51	51	25	1,431	694	1,380
11							51	51	23	1,431	646	1,380
12							51	51	21	1,431	601	1,380
13							51	51	20	1,431	559	1,380
14							51	51	18	1,431	520	1,380
15							51	51	17	1,431	484	1,380
16							51	51	16	1,431	450	1,380
17							51	51	15	1,431	418	1,380
18							51	51	14	1,431	389	1,380
19							51	51	13	1,431	362	1,380
20							51	51	12	1,431	337	1,380
21							51	51	11	1,431	313	1,380
22							51	51	10	1,431	291	1,380
23							51	51	10	1,431	271	1,380
24							51	51	9	1,431	252	1,380
25							51	51	8	1,431	235	1,380
26							51	51	8	1,431	218	1,380
27							51	51	7	1,431	203	1,380
28							51	51	7	1,431	189	1,380
29							51	51	6	1,431	176	1,380
30							51	51	6	1,431	163	1,380
31							51	51	5	1,431	152	1,380
32							51	51	5	1,431	141	1,380
33							51	51	5	1,431	132	1,380
34							51	51	4	1,431	122	1,380
35							51	51	4	1,431	114	1,380
36							51	51	4	1,431	106	1,380
37							51	51	3	1,431	99	1,380
38							51	51	3	1,431	92	1,380
39							51	51	3	1,431	85	1,380
40							51	51	3	1,431	79	1,380
41							51	51	3	1,431	74	1,380
42							51	51	2	1,431	69	1,380
43							51	51	2	1,431	64	1,380
44							51	51	2	1,431	59	1,380
45							51	51	2	1,431	55	1,380
46							51	51	2	1,431	51	1,380
47							51	51	2	1,431	48	1,380
48							51	51	2	1,431	44	1,380
49							51	51	1	1,431	41	1,380
50							51	51	1	1,431	38	1,380
51							51	51	1	1,431	36	1,380
52							51	51	1	1,431	33	1,380
53	-1162	-63	0	-640	0	-1866	51	-1815	-39	1,431	31	3,246

건설교통부

8.4 대동지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	5,742.2	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	2,129.8	-	1,490.9	638.9	-	-
호 안 공	770.3	-	231.1	539.2	-	-
구조물공	192.0	-	57.6	134.4	-	-
보 상 비	640.3	448.2	192.1	-	-	-
기 타	2,009.8	402.0	1,205.9	402.0	-	-
계	5,742.2	850.2	3,177.5	1,714.5	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	14.8%	55.3%	29.9%	0.0%	0.0%	100.0%

나. 유지관리비

66.4	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1466.0	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	31.26	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.56	0.00

A. 인명보호 편익 — 소계 10.7 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	10.33	0.00	10.33
부상	0.00	0.00	0.00	0.42	0.00	0.42

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 1.93 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.93	0.00	1.93

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 95.7 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
170.9	0.0	0.0	0.0	95.7	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1357.6 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.4	0.0	1.4
농 경 지	0.0	0.0	0.0	63.5	0.0	63.5
공공시설물	0.0	0.0	0.0	1200.3	0.0	1200.3
기 타	0.0	0.0	0.0	92.4	0.0	92.4

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 2.75
NPV 9,749
IRR 20.6%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연평균 사업비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축재공	호안공	구조물공	보상비	기타	계	유지비	1+2	현재가치	연간편익	현재가치	유입
합계	426	693	192	-	2,010	3,321		6,642	5,562	73,300	15,311	
1	-	-	-	448	402	850		850	791			-850
2	1,491	231	58	192	1,206	3,178		3,178	2,750			-3178
3	639	539	134	-	402	1,714		1,714	1,380			-1714
4							66	66	50	1,466	1,098	1,400
5							66	66	46	1,466	1,021	1,400
6							66	66	43	1,466	950	1,400
7							66	66	40	1,466	884	1,400
8							66	66	37	1,466	822	1,400
9							66	66	35	1,466	765	1,400
10							66	66	32	1,466	711	1,400
11							66	66	30	1,466	662	1,400
12							66	66	28	1,466	616	1,400
13							66	66	26	1,466	573	1,400
14							66	66	24	1,466	533	1,400
15							66	66	22	1,466	495	1,400
16							66	66	21	1,466	461	1,400
17							66	66	19	1,466	429	1,400
18							66	66	18	1,466	399	1,400
19							66	66	17	1,466	371	1,400
20							66	66	16	1,466	345	1,400
21							66	66	15	1,466	321	1,400
22							66	66	14	1,466	299	1,400
23							66	66	13	1,466	278	1,400
24							66	66	12	1,466	258	1,400
25							66	66	11	1,466	240	1,400
26							66	66	10	1,466	224	1,400
27							66	66	9	1,466	208	1,400
28							66	66	9	1,466	194	1,400
29							66	66	8	1,466	180	1,400
30							66	66	8	1,466	167	1,400
31							66	66	7	1,466	156	1,400
32							66	66	7	1,466	145	1,400
33							66	66	6	1,466	135	1,400
34							66	66	6	1,466	125	1,400
35							66	66	5	1,466	117	1,400
36							66	66	5	1,466	109	1,400
37							66	66	5	1,466	101	1,400
38							66	66	4	1,466	94	1,400
39							66	66	4	1,466	87	1,400
40							66	66	4	1,466	81	1,400
41							66	66	3	1,466	76	1,400
42							66	66	3	1,466	70	1,400
43							66	66	3	1,466	65	1,400
44							66	66	3	1,466	61	1,400
45							66	66	3	1,466	57	1,400
46							66	66	2	1,466	53	1,400
47							66	66	2	1,466	49	1,400
48							66	66	2	1,466	46	1,400
49							66	66	2	1,466	42	1,400
50							66	66	2	1,466	39	1,400
51							66	66	2	1,466	37	1,400
52							66	66	2	1,466	34	1,400
53	-1704	-77	0	-640	0	-2421	66	-2355	-51	1,466	32	3,821

건설교통부

8.5 대동지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	4,888.5	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	1,700.2	-	1,190.1	510.0	-	-
호 안 공	682.5	-	204.8	477.8	-	-
구조물 공	192.0	-	57.6	134.4	-	-
보 상 비	640.3	448.2	192.1	-	-	-
기 타	1,673.5	334.7	1,004.1	334.7	-	-
계	4,888.5	782.9	2,648.7	1,456.9	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	16.0%	54.2%	29.8%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

56.4	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1450.5	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	26.88	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.56	0.00

A. 인명보호 편익 — 소계 9.2 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	8.88	0.00	8.88
부상	0.00	0.00	0.00	0.36	0.00	0.36

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 1.66 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.66	0.00	1.66

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 82.3 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
146.9	0.0	0.0	0.0	82.3	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1357.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.4	0.0	1.4
농 경 지	0.0	0.0	0.0	63.4	0.0	63.4
공공시설물	0.0	0.0	0.0	1200.1	0.0	1200.1
기 타	0.0	0.0	0.0	92.4	0.0	92.4

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 3.20
NPV 10,412
IRR 23.5%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4-53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	340	614	192	-	1,674	2,820		5,640	4,737	72,526	15,149	
1	-	-	-	448	335	783		783	728			-783
2	1,190	205	58	192	1,004	2,649		2,649	2,292			-2649
3	510	478	134	-	335	1,457		1,457	1,173			-1457
4							56	56	42	1,451	1,086	1,394
5							56	56	39	1,451	1,010	1,394
6							56	56	37	1,451	940	1,394
7							56	56	34	1,451	874	1,394
8							56	56	32	1,451	813	1,394
9							56	56	29	1,451	757	1,394
10							56	56	27	1,451	704	1,394
11							56	56	25	1,451	655	1,394
12							56	56	24	1,451	609	1,394
13							56	56	22	1,451	567	1,394
14							56	56	20	1,451	527	1,394
15							56	56	19	1,451	490	1,394
16							56	56	18	1,451	456	1,394
17							56	56	16	1,451	424	1,394
18							56	56	15	1,451	395	1,394
19							56	56	14	1,451	367	1,394
20							56	56	13	1,451	341	1,394
21							56	56	12	1,451	318	1,394
22							56	56	11	1,451	295	1,394
23							56	56	11	1,451	275	1,394
24							56	56	10	1,451	256	1,394
25							56	56	9	1,451	238	1,394
26							56	56	9	1,451	221	1,394
27							56	56	8	1,451	206	1,394
28							56	56	7	1,451	191	1,394
29							56	56	7	1,451	178	1,394
30							56	56	6	1,451	166	1,394
31							56	56	6	1,451	154	1,394
32							56	56	6	1,451	143	1,394
33							56	56	5	1,451	133	1,394
34							56	56	5	1,451	124	1,394
35							56	56	4	1,451	115	1,394
36							56	56	4	1,451	107	1,394
37							56	56	4	1,451	100	1,394
38							56	56	4	1,451	93	1,394
39							56	56	3	1,451	86	1,394
40							56	56	3	1,451	80	1,394
41							56	56	3	1,451	75	1,394
42							56	56	3	1,451	70	1,394
43							56	56	3	1,451	65	1,394
44							56	56	2	1,451	60	1,394
45							56	56	2	1,451	56	1,394
46							56	56	2	1,451	52	1,394
47							56	56	2	1,451	48	1,394
48							56	56	2	1,451	45	1,394
49							56	56	2	1,451	42	1,394
50							56	56	2	1,451	39	1,394
51							56	56	1	1,451	36	1,394
52							56	56	1	1,451	34	1,394
53	-1360	-68	0	-640	0	-2069	56	-2012	-44	1,451	31	3,463

건설교통부

9.1 고당지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	445.5	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	59.6	-	41.7	17.9	-	-
호 안 공	-	-	-	-	-	-
구조물 공	40.0	-	12.0	28.0	-	-
보 상 비	281.2	196.8	84.4	-	-	-
기 타	64.7	12.9	38.8	12.9	-	-
계	445.5	209.8	176.9	58.8	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	47.1%	39.7%	13.2%	0.0%	0.0%	100.0%

나. 유지관리비

2.3	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1104.0	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	5.53	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.45	0.00

A. 인명보호 편익 — 소계 1.5 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	1.47	0.00	1.47
부상	0.00	0.00	0.00	0.06	0.00	0.06

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.27 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.27	0.00	0.27

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 12.1 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
27.0	0.0	0.0	0.0	12.1	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1090.1 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.1	0.0	1.1
농 경 지	0.0	0.0	0.0	50.9	0.0	50.9
공공시설물	0.0	0.0	0.0	963.9	0.0	963.9
기 타	0.0	0.0	0.0	74.2	0.0	74.2

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 27.93
NPV 11,118
IRR 93.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	12	-	40	-	65	117		233	413	55,201	11,531	
1	-	-	-	197	13	210		210	195			-210
2	42	-	12	84	39	177		177	153			-177
3	18	-	28	-	13	59		59	47			-59
4							2	2	2	1,104	827	1,102
5							2	2	2	1,104	769	1,102
6							2	2	2	1,104	715	1,102
7							2	2	1	1,104	665	1,102
8							2	2	1	1,104	619	1,102
9							2	2	1	1,104	576	1,102
10							2	2	1	1,104	536	1,102
11							2	2	1	1,104	498	1,102
12							2	2	1	1,104	464	1,102
13							2	2	1	1,104	431	1,102
14							2	2	1	1,104	401	1,102
15							2	2	1	1,104	373	1,102
16							2	2	1	1,104	347	1,102
17							2	2	1	1,104	323	1,102
18							2	2	1	1,104	300	1,102
19							2	2	1	1,104	279	1,102
20							2	2	1	1,104	260	1,102
21							2	2	1	1,104	242	1,102
22							2	2	0	1,104	225	1,102
23							2	2	0	1,104	209	1,102
24							2	2	0	1,104	195	1,102
25							2	2	0	1,104	181	1,102
26							2	2	0	1,104	168	1,102
27							2	2	0	1,104	157	1,102
28							2	2	0	1,104	146	1,102
29							2	2	0	1,104	136	1,102
30							2	2	0	1,104	126	1,102
31							2	2	0	1,104	117	1,102
32							2	2	0	1,104	109	1,102
33							2	2	0	1,104	102	1,102
34							2	2	0	1,104	94	1,102
35							2	2	0	1,104	88	1,102
36							2	2	0	1,104	82	1,102
37							2	2	0	1,104	76	1,102
38							2	2	0	1,104	71	1,102
39							2	2	0	1,104	66	1,102
40							2	2	0	1,104	61	1,102
41							2	2	0	1,104	57	1,102
42							2	2	0	1,104	53	1,102
43							2	2	0	1,104	49	1,102
44							2	2	0	1,104	46	1,102
45							2	2	0	1,104	43	1,102
46							2	2	0	1,104	40	1,102
47							2	2	0	1,104	37	1,102
48							2	2	0	1,104	34	1,102
49							2	2	0	1,104	32	1,102
50							2	2	0	1,104	30	1,102
51							2	2	0	1,104	28	1,102
52							2	2	0	1,104	26	1,102
53	-48	0	0	-281	0	-329	2	-327	-7	1,104	24	1,431

건설교통부

9.2 고당지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	505.9	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	96.2	-	67.3	28.9	-	-
호 안 공	-	-	-	-	-	-
구조물공	40.0	-	12.0	28.0	-	-
보 상 비	281.2	196.8	84.4	-	-	-
기 타	88.5	17.7	53.1	17.7	-	-
계	505.9	214.5	216.8	74.6	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	42.4%	42.9%	14.7%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

3.0	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1111.7	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	8.64	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.45	0.00

A. 인명보호 편익 — 소계 2.4 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	2.29	0.00	2.29
부상	0.00	0.00	0.00	0.09	0.00	0.09

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.43 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.43	0.00	0.43

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 18.8 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
41.7	0.0	0.0	0.0	18.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1090.1 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.1	0.0	1.1
농 경 지	0.0	0.0	0.0	50.9	0.0	50.9
공공시설물	0.0	0.0	0.0	963.9	0.0	963.9
기 타	0.0	0.0	0.0	74.2	0.0	74.2

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 24.69
NPV 11,141
IRR 88.8%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	19	-	40	-	89	148		296	470	55,586	11,611	
1	-	-	-	197	18	215		215	200			-215
2	67	-	12	84	53	217		217	188			-217
3	29	-	28	-	18	75		75	60			-75
4							3	3	2	1,112	832	1,109
5							3	3	2	1,112	774	1,109
6							3	3	2	1,112	720	1,109
7							3	3	2	1,112	670	1,109
8							3	3	2	1,112	623	1,109
9							3	3	2	1,112	580	1,109
10							3	3	1	1,112	539	1,109
11							3	3	1	1,112	502	1,109
12							3	3	1	1,112	467	1,109
13							3	3	1	1,112	434	1,109
14							3	3	1	1,112	404	1,109
15							3	3	1	1,112	376	1,109
16							3	3	1	1,112	350	1,109
17							3	3	1	1,112	325	1,109
18							3	3	1	1,112	302	1,109
19							3	3	1	1,112	281	1,109
20							3	3	1	1,112	262	1,109
21							3	3	1	1,112	243	1,109
22							3	3	1	1,112	226	1,109
23							3	3	1	1,112	211	1,109
24							3	3	1	1,112	196	1,109
25							3	3	0	1,112	182	1,109
26							3	3	0	1,112	170	1,109
27							3	3	0	1,112	158	1,109
28							3	3	0	1,112	147	1,109
29							3	3	0	1,112	137	1,109
30							3	3	0	1,112	127	1,109
31							3	3	0	1,112	118	1,109
32							3	3	0	1,112	110	1,109
33							3	3	0	1,112	102	1,109
34							3	3	0	1,112	95	1,109
35							3	3	0	1,112	88	1,109
36							3	3	0	1,112	82	1,109
37							3	3	0	1,112	77	1,109
38							3	3	0	1,112	71	1,109
39							3	3	0	1,112	66	1,109
40							3	3	0	1,112	62	1,109
41							3	3	0	1,112	57	1,109
42							3	3	0	1,112	53	1,109
43							3	3	0	1,112	50	1,109
44							3	3	0	1,112	46	1,109
45							3	3	0	1,112	43	1,109
46							3	3	0	1,112	40	1,109
47							3	3	0	1,112	37	1,109
48							3	3	0	1,112	35	1,109
49							3	3	0	1,112	32	1,109
50							3	3	0	1,112	30	1,109
51							3	3	0	1,112	28	1,109
52							3	3	0	1,112	26	1,109
53	-77	0	0	-281	0	-358	3	-355	-6	1,112	24	1,467

건설교통부

9.3 고당지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	553.5	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	125.0	-	87.5	37.5	-	-
호 안 공	-	-	-	-	-	-
구조물공	40.0	-	12.0	28.0	-	-
보 상 비	281.2	196.8	84.4	-	-	-
기 타	107.3	21.5	64.4	21.5	-	-
계	553.5	218.3	248.3	87.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	39.4%	44.9%	15.7%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

3.4	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1124.0	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	13.71	0.00

*흉수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.45	0.00

A. 인명보호 편익 — 소계 3.8 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	3.64	0.00	3.64
부상	0.00	0.00	0.00	0.15	0.00	0.15

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.68 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.68	0.00	0.68

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 29.3 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
65.2	0.0	0.0	0.0	29.3	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1090.2 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.1	0.0	1.1
농 경 지	0.0	0.0	0.0	50.9	0.0	50.9
공공시설물	0.0	0.0	0.0	964.0	0.0	964.0
기 타	0.0	0.0	0.0	74.2	0.0	74.2

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 22.77
NPV 11,224
IRR 86.0%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연평균 사업비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축제공	호안공	구조물공	보상비	기타	계	유지비	1+2	현재가치	연간편익	현재가치	유입
합계	25	-	40	-	107	172		345	516	56,202	11,740	
1	-	-	-	197	21	218		218	203			-218
2	88	-	12	84	64	248		248	215			-248
3	38	-	28	-	21	87		87	70			-87
4							3	3	3	1,124	842	1,121
5							3	3	2	1,124	783	1,121
6							3	3	2	1,124	728	1,121
7							3	3	2	1,124	678	1,121
8							3	3	2	1,124	630	1,121
9							3	3	2	1,124	586	1,121
10							3	3	2	1,124	545	1,121
11							3	3	2	1,124	507	1,121
12							3	3	1	1,124	472	1,121
13							3	3	1	1,124	439	1,121
14							3	3	1	1,124	408	1,121
15							3	3	1	1,124	380	1,121
16							3	3	1	1,124	353	1,121
17							3	3	1	1,124	329	1,121
18							3	3	1	1,124	306	1,121
19							3	3	1	1,124	284	1,121
20							3	3	1	1,124	265	1,121
21							3	3	1	1,124	246	1,121
22							3	3	1	1,124	229	1,121
23							3	3	1	1,124	213	1,121
24							3	3	1	1,124	198	1,121
25							3	3	1	1,124	184	1,121
26							3	3	1	1,124	171	1,121
27							3	3	0	1,124	159	1,121
28							3	3	0	1,124	148	1,121
29							3	3	0	1,124	138	1,121
30							3	3	0	1,124	128	1,121
31							3	3	0	1,124	119	1,121
32							3	3	0	1,124	111	1,121
33							3	3	0	1,124	103	1,121
34							3	3	0	1,124	96	1,121
35							3	3	0	1,124	89	1,121
36							3	3	0	1,124	83	1,121
37							3	3	0	1,124	77	1,121
38							3	3	0	1,124	72	1,121
39							3	3	0	1,124	67	1,121
40							3	3	0	1,124	62	1,121
41							3	3	0	1,124	58	1,121
42							3	3	0	1,124	54	1,121
43							3	3	0	1,124	50	1,121
44							3	3	0	1,124	47	1,121
45							3	3	0	1,124	43	1,121
46							3	3	0	1,124	40	1,121
47							3	3	0	1,124	38	1,121
48							3	3	0	1,124	35	1,121
49							3	3	0	1,124	32	1,121
50							3	3	0	1,124	30	1,121
51							3	3	0	1,124	28	1,121
52							3	3	0	1,124	26	1,121
53	-100	0	0	-281	0	-381	3	-378	-8	1,124	24	1,502

건설교통부

9.4 고당지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	684.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	187.7	-	131.4	56.3	-	-
호 안 공	16.9	-	5.1	11.8	-	-
구조물 공	40.0	-	12.0	28.0	-	-
보 상 비	281.2	196.8	84.4	-	-	-
기 타	159.0	31.8	95.4	31.8	-	-
계	684.8	228.6	328.2	127.9	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	33.4%	47.9%	18.7%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

5.0	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1128.7	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	15.55	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.45	0.00

A. 인명보호 편익 — 소계 4.3 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	4.13	0.00	4.13
부상	0.00	0.00	0.00	0.17	0.00	0.17

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.77 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.77	0.00	0.77

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 33.3 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
74.1	0.0	0.0	0.0	33.3	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1090.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.1	0.0	1.1
농 경 지	0.0	0.0	0.0	50.9	0.0	50.9
공공시설물	0.0	0.0	0.0	964.0	0.0	964.0
기 타	0.0	0.0	0.0	74.2	0.0	74.2

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 18.34
NPV 11,145
IRR 78.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	38	15	40	-	159	252		503	643	56,434	11,788	
1	-	-	-	197	32	229		229	213			-229
2	131	5	12	84	95	328		328	284			-328
3	56	12	28	-	32	128		128	103			-128
4							5	5	4	1,129	845	1,124
5							5	5	4	1,129	786	1,124
6							5	5	3	1,129	731	1,124
7							5	5	3	1,129	680	1,124
8							5	5	3	1,129	633	1,124
9							5	5	3	1,129	589	1,124
10							5	5	2	1,129	548	1,124
11							5	5	2	1,129	509	1,124
12							5	5	2	1,129	474	1,124
13							5	5	2	1,129	441	1,124
14							5	5	2	1,129	410	1,124
15							5	5	2	1,129	381	1,124
16							5	5	2	1,129	355	1,124
17							5	5	1	1,129	330	1,124
18							5	5	1	1,129	307	1,124
19							5	5	1	1,129	286	1,124
20							5	5	1	1,129	266	1,124
21							5	5	1	1,129	247	1,124
22							5	5	1	1,129	230	1,124
23							5	5	1	1,129	214	1,124
24							5	5	1	1,129	199	1,124
25							5	5	1	1,129	185	1,124
26							5	5	1	1,129	172	1,124
27							5	5	1	1,129	160	1,124
28							5	5	1	1,129	149	1,124
29							5	5	1	1,129	139	1,124
30							5	5	1	1,129	129	1,124
31							5	5	1	1,129	120	1,124
32							5	5	0	1,129	112	1,124
33							5	5	0	1,129	104	1,124
34							5	5	0	1,129	97	1,124
35							5	5	0	1,129	90	1,124
36							5	5	0	1,129	84	1,124
37							5	5	0	1,129	78	1,124
38							5	5	0	1,129	72	1,124
39							5	5	0	1,129	67	1,124
40							5	5	0	1,129	63	1,124
41							5	5	0	1,129	58	1,124
42							5	5	0	1,129	54	1,124
43							5	5	0	1,129	50	1,124
44							5	5	0	1,129	47	1,124
45							5	5	0	1,129	44	1,124
46							5	5	0	1,129	41	1,124
47							5	5	0	1,129	38	1,124
48							5	5	0	1,129	35	1,124
49							5	5	0	1,129	33	1,124
50							5	5	0	1,129	30	1,124
51							5	5	0	1,129	28	1,124
52							5	5	0	1,129	26	1,124
53	-150	-2	0	-281	0	-433	5	-428	-9	1,129	24	1,557

건설교통부

9.5 고당지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	861.2	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	271.0	-	189.7	81.3	-	-
호 안 공	40.5	-	12.2	28.4	-	-
구조물 공	40.0	-	12.0	28.0	-	-
보 상 비	281.2	196.8	84.4	-	-	-
기 타	228.5	45.7	137.1	45.7	-	-
계	861.2	242.5	435.3	183.4	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	28.2%	50.5%	21.3%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

7.2	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1128.7	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	15.55	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.45	0.00

A. 인명보호 편익 — 소계 4.3 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	4.13	0.00	4.13
부상	0.00	0.00	0.00	0.17	0.00	0.17

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.77 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.77	0.00	0.77

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 33.3 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
74.1	0.0	0.0	0.0	33.3	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1090.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.1	0.0	1.1
농 경 지	0.0	0.0	0.0	50.9	0.0	50.9
공공시설물	0.0	0.0	0.0	964.0	0.0	964.0
기 타	0.0	0.0	0.0	74.2	0.0	74.2

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 14.48
NPV 10,974
IRR 69.4%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	54	36	40	-	228	359		718	814	56,434	11,788	
1	-	-	-	197	46	243		243	226			-243
2	190	12	12	84	137	435		435	377			-435
3	81	28	28	-	46	183		183	148			-183
4							7	7	5	1,129	845	1,122
5							7	7	5	1,129	786	1,122
6							7	7	5	1,129	731	1,122
7							7	7	4	1,129	680	1,122
8							7	7	4	1,129	633	1,122
9							7	7	4	1,129	589	1,122
10							7	7	3	1,129	548	1,122
11							7	7	3	1,129	509	1,122
12							7	7	3	1,129	474	1,122
13							7	7	3	1,129	441	1,122
14							7	7	3	1,129	410	1,122
15							7	7	2	1,129	381	1,122
16							7	7	2	1,129	355	1,122
17							7	7	2	1,129	330	1,122
18							7	7	2	1,129	307	1,122
19							7	7	2	1,129	286	1,122
20							7	7	2	1,129	266	1,122
21							7	7	2	1,129	247	1,122
22							7	7	1	1,129	230	1,122
23							7	7	1	1,129	214	1,122
24							7	7	1	1,129	199	1,122
25							7	7	1	1,129	185	1,122
26							7	7	1	1,129	172	1,122
27							7	7	1	1,129	160	1,122
28							7	7	1	1,129	149	1,122
29							7	7	1	1,129	139	1,122
30							7	7	1	1,129	129	1,122
31							7	7	1	1,129	120	1,122
32							7	7	1	1,129	112	1,122
33							7	7	1	1,129	104	1,122
34							7	7	1	1,129	97	1,122
35							7	7	1	1,129	90	1,122
36							7	7	1	1,129	84	1,122
37							7	7	0	1,129	78	1,122
38							7	7	0	1,129	72	1,122
39							7	7	0	1,129	67	1,122
40							7	7	0	1,129	63	1,122
41							7	7	0	1,129	58	1,122
42							7	7	0	1,129	54	1,122
43							7	7	0	1,129	50	1,122
44							7	7	0	1,129	47	1,122
45							7	7	0	1,129	44	1,122
46							7	7	0	1,129	41	1,122
47							7	7	0	1,129	38	1,122
48							7	7	0	1,129	35	1,122
49							7	7	0	1,129	33	1,122
50							7	7	0	1,129	30	1,122
51							7	7	0	1,129	28	1,122
52							7	7	0	1,129	26	1,122
53	-217	-4	0	-281	0	-502	7	-495	-11	1,129	24	1,624

건설교통부

10.1 마서지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	705.3	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	22.8	-	16.0	6.8	-	-
호 안 공	1.5	-	0.5	1.1	-	-
구조물 공	400.0	-	120.0	280.0	-	-
보 상 비	5.1	3.6	1.5	-	-	-
기 타	275.8	55.2	165.5	55.2	-	-
계	705.3	58.8	303.4	343.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	8.3%	43.0%	48.6%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

13.6	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1625.7	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.73	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익 — 소계 0.3 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.29	0.00	0.29
부상	0.00	0.00	0.00	0.01	0.00	0.01

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.05 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.05	0.00	0.05

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 2.4 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
3.5	0.0	0.0	0.0	2.4	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1623.0 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.7	0.0	75.7
공공시설물	0.0	0.0	0.0	1435.1	0.0	1435.1
기 타	0.0	0.0	0.0	110.5	0.0	110.5

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 23.09
NPV 16,244
IRR 122.9%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	5	1	400	-	276	682		1,363	735	81,284	16,979	
1	-	-	-	4	55	59		59	55			-59
2	16	0	120	2	165	303		303	263			-303
3	7	1	280	-	55	343		343	276			-343
4							14	14	10	1,626	1,217	1,612
5							14	14	9	1,626	1,132	1,612
6							14	14	9	1,626	1,053	1,612
7							14	14	8	1,626	980	1,612
8							14	14	8	1,626	912	1,612
9							14	14	7	1,626	848	1,612
10							14	14	7	1,626	789	1,612
11							14	14	6	1,626	734	1,612
12							14	14	6	1,626	683	1,612
13							14	14	5	1,626	635	1,612
14							14	14	5	1,626	591	1,612
15							14	14	5	1,626	549	1,612
16							14	14	4	1,626	511	1,612
17							14	14	4	1,626	475	1,612
18							14	14	4	1,626	442	1,612
19							14	14	3	1,626	411	1,612
20							14	14	3	1,626	383	1,612
21							14	14	3	1,626	356	1,612
22							14	14	3	1,626	331	1,612
23							14	14	3	1,626	308	1,612
24							14	14	2	1,626	287	1,612
25							14	14	2	1,626	267	1,612
26							14	14	2	1,626	248	1,612
27							14	14	2	1,626	231	1,612
28							14	14	2	1,626	215	1,612
29							14	14	2	1,626	200	1,612
30							14	14	2	1,626	186	1,612
31							14	14	1	1,626	173	1,612
32							14	14	1	1,626	161	1,612
33							14	14	1	1,626	149	1,612
34							14	14	1	1,626	139	1,612
35							14	14	1	1,626	129	1,612
36							14	14	1	1,626	120	1,612
37							14	14	1	1,626	112	1,612
38							14	14	1	1,626	104	1,612
39							14	14	1	1,626	97	1,612
40							14	14	1	1,626	90	1,612
41							14	14	1	1,626	84	1,612
42							14	14	1	1,626	78	1,612
43							14	14	1	1,626	73	1,612
44							14	14	1	1,626	67	1,612
45							14	14	1	1,626	63	1,612
46							14	14	0	1,626	58	1,612
47							14	14	0	1,626	54	1,612
48							14	14	0	1,626	51	1,612
49							14	14	0	1,626	47	1,612
50							14	14	0	1,626	44	1,612
51							14	14	0	1,626	41	1,612
52							14	14	0	1,626	38	1,612
53	-18	0	0	-5	0	-24	14	-10	0	1,626	35	1,636

건설교통부

10.2 마서지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	707.7	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	23.9	-	16.7	7.2	-	-
호 안 공	1.9	-	0.6	1.3	-	-
구조물 공	400.0	-	120.0	280.0	-	-
보 상 비	5.1	3.6	1.5	-	-	-
기 타	276.8	55.4	166.1	55.4	-	-
계	707.7	58.9	304.9	343.8	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	8.3%	43.1%	48.6%	0.0%	0.0%	100.0%

나. 유지관리비

13.7	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1626.1	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.84	0.00

*흥수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익 — 소계 0.3 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.33	0.00	0.33
부상	0.00	0.00	0.00	0.01	0.00	0.01

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.06 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.06	0.00	0.06

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 2.7 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
4.1	0.0	0.0	0.0	2.7	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1623.0 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.7	0.0	75.7
공공시설물	0.0	0.0	0.0	1435.1	0.0	1435.1
기 타	0.0	0.0	0.0	110.5	0.0	110.5

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 23.03
NPV 16,246
IRR 122.6%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연평균 사업비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축제공	호안공	구조물공	보상비	기타	계	유지비	1+2	현재가치	연간편익	현재가치	유입
합계	5	2	400	-	277	683		1,366	738	81,306	16,984	
1	-	-	-	4	55	59		59	55			-59
2	17	1	120	2	166	305		305	264			-305
3	7	1	280	-	55	344		344	277			-344
4							14	14	10	1,626	1,218	1,612
5							14	14	10	1,626	1,133	1,612
6							14	14	9	1,626	1,054	1,612
7							14	14	8	1,626	980	1,612
8							14	14	8	1,626	912	1,612
9							14	14	7	1,626	848	1,612
10							14	14	7	1,626	789	1,612
11							14	14	6	1,626	734	1,612
12							14	14	6	1,626	683	1,612
13							14	14	5	1,626	635	1,612
14							14	14	5	1,626	591	1,612
15							14	14	5	1,626	550	1,612
16							14	14	4	1,626	511	1,612
17							14	14	4	1,626	476	1,612
18							14	14	4	1,626	442	1,612
19							14	14	3	1,626	412	1,612
20							14	14	3	1,626	383	1,612
21							14	14	3	1,626	356	1,612
22							14	14	3	1,626	331	1,612
23							14	14	3	1,626	308	1,612
24							14	14	2	1,626	287	1,612
25							14	14	2	1,626	267	1,612
26							14	14	2	1,626	248	1,612
27							14	14	2	1,626	231	1,612
28							14	14	2	1,626	215	1,612
29							14	14	2	1,626	200	1,612
30							14	14	2	1,626	186	1,612
31							14	14	1	1,626	173	1,612
32							14	14	1	1,626	161	1,612
33							14	14	1	1,626	150	1,612
34							14	14	1	1,626	139	1,612
35							14	14	1	1,626	129	1,612
36							14	14	1	1,626	120	1,612
37							14	14	1	1,626	112	1,612
38							14	14	1	1,626	104	1,612
39							14	14	1	1,626	97	1,612
40							14	14	1	1,626	90	1,612
41							14	14	1	1,626	84	1,612
42							14	14	1	1,626	78	1,612
43							14	14	1	1,626	73	1,612
44							14	14	1	1,626	67	1,612
45							14	14	1	1,626	63	1,612
46							14	14	0	1,626	58	1,612
47							14	14	0	1,626	54	1,612
48							14	14	0	1,626	51	1,612
49							14	14	0	1,626	47	1,612
50							14	14	0	1,626	44	1,612
51							14	14	0	1,626	41	1,612
52							14	14	0	1,626	38	1,612
53	-19	0	0	-5	0	-24	14	-11	0	1,626	35	1,637

건설교통부

10.3 마서지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	708.5	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	24.4	-	17.1	7.3	-	-
호 안 공	1.9	-	0.6	1.3	-	-
구조물 공	400.0	-	120.0	280.0	-	-
보 상 비	5.1	3.6	1.5	-	-	-
기 타	277.1	55.4	166.3	55.4	-	-
계	708.5	59.0	305.5	344.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	8.3%	43.1%	48.6%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

13.7	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1626.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.90	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익 — 소계 0.4 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.36	0.00	0.36
부상	0.00	0.00	0.00	0.01	0.00	0.01

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.07 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.07	0.00	0.07

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 2.9 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
4.4	0.0	0.0	0.0	2.9	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1623.0 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.7	0.0	75.7
공공시설물	0.0	0.0	0.0	1435.1	0.0	1435.1
기 타	0.0	0.0	0.0	110.5	0.0	110.5

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 23.00
NPV 16,248
IRR 122.5%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	5	2	400	-	277	684		1,367	738	81,318	16,986	
1	-	-	-	4	55	59		59	55			-59
2	17	1	120	2	166	305		305	264			-305
3	7	1	280	-	55	344		344	277			-344
4							14	14	10	1,626	1,218	1,613
5							14	14	10	1,626	1,133	1,613
6							14	14	9	1,626	1,054	1,613
7							14	14	8	1,626	980	1,613
8							14	14	8	1,626	912	1,613
9							14	14	7	1,626	848	1,613
10							14	14	7	1,626	789	1,613
11							14	14	6	1,626	734	1,613
12							14	14	6	1,626	683	1,613
13							14	14	5	1,626	635	1,613
14							14	14	5	1,626	591	1,613
15							14	14	5	1,626	550	1,613
16							14	14	4	1,626	511	1,613
17							14	14	4	1,626	476	1,613
18							14	14	4	1,626	442	1,613
19							14	14	3	1,626	412	1,613
20							14	14	3	1,626	383	1,613
21							14	14	3	1,626	356	1,613
22							14	14	3	1,626	331	1,613
23							14	14	3	1,626	308	1,613
24							14	14	2	1,626	287	1,613
25							14	14	2	1,626	267	1,613
26							14	14	2	1,626	248	1,613
27							14	14	2	1,626	231	1,613
28							14	14	2	1,626	215	1,613
29							14	14	2	1,626	200	1,613
30							14	14	2	1,626	186	1,613
31							14	14	1	1,626	173	1,613
32							14	14	1	1,626	161	1,613
33							14	14	1	1,626	150	1,613
34							14	14	1	1,626	139	1,613
35							14	14	1	1,626	129	1,613
36							14	14	1	1,626	120	1,613
37							14	14	1	1,626	112	1,613
38							14	14	1	1,626	104	1,613
39							14	14	1	1,626	97	1,613
40							14	14	1	1,626	90	1,613
41							14	14	1	1,626	84	1,613
42							14	14	1	1,626	78	1,613
43							14	14	1	1,626	73	1,613
44							14	14	1	1,626	67	1,613
45							14	14	1	1,626	63	1,613
46							14	14	0	1,626	58	1,613
47							14	14	0	1,626	54	1,613
48							14	14	0	1,626	51	1,613
49							14	14	0	1,626	47	1,613
50							14	14	0	1,626	44	1,613
51							14	14	0	1,626	41	1,613
52							14	14	0	1,626	38	1,613
53	-20	0	0	-5	0	-25	14	-11	0	1,626	35	1,638

건설교통부

10.4 마서지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	711.5	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	25.8	-	18.1	7.7	-	-
호 안 공	2.3	-	0.7	1.6	-	-
구조물공	400.0	-	120.0	280.0	-	-
보 상 비	5.1	3.6	1.5	-	-	-
기 타	278.3	55.7	167.0	55.7	-	-
계	711.5	59.2	307.2	345.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	8.3%	43.2%	48.5%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

13.7	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1626.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.91	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익 — 소계 0.4 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.36	0.00	0.36
부상	0.00	0.00	0.00	0.01	0.00	0.01

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.07 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.07	0.00	0.07

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 3.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
4.5	0.0	0.0	0.0	3.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1623.0 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.7	0.0	75.7
공공시설물	0.0	0.0	0.0	1435.1	0.0	1435.1
기 타	0.0	0.0	0.0	110.5	0.0	110.5

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 22.92
NPV 16,245
IRR 122.2%
실질할인율 7.5% : 민감도분석저표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4-53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	5	2	400	-	278	685		1,371	741	81,320	16,986	
1	-	-	-	4	56	59		59	55			-59
2	18	1	120	2	167	307		307	266			-307
3	8	2	280	-	56	345		345	278			-345
4							14	14	10	1,626	1,218	1,613
5							14	14	10	1,626	1,133	1,613
6							14	14	9	1,626	1,054	1,613
7							14	14	8	1,626	980	1,613
8							14	14	8	1,626	912	1,613
9							14	14	7	1,626	848	1,613
10							14	14	7	1,626	789	1,613
11							14	14	6	1,626	734	1,613
12							14	14	6	1,626	683	1,613
13							14	14	5	1,626	635	1,613
14							14	14	5	1,626	591	1,613
15							14	14	5	1,626	550	1,613
16							14	14	4	1,626	511	1,613
17							14	14	4	1,626	476	1,613
18							14	14	4	1,626	442	1,613
19							14	14	3	1,626	412	1,613
20							14	14	3	1,626	383	1,613
21							14	14	3	1,626	356	1,613
22							14	14	3	1,626	331	1,613
23							14	14	3	1,626	308	1,613
24							14	14	2	1,626	287	1,613
25							14	14	2	1,626	267	1,613
26							14	14	2	1,626	248	1,613
27							14	14	2	1,626	231	1,613
28							14	14	2	1,626	215	1,613
29							14	14	2	1,626	200	1,613
30							14	14	2	1,626	186	1,613
31							14	14	1	1,626	173	1,613
32							14	14	1	1,626	161	1,613
33							14	14	1	1,626	150	1,613
34							14	14	1	1,626	139	1,613
35							14	14	1	1,626	129	1,613
36							14	14	1	1,626	120	1,613
37							14	14	1	1,626	112	1,613
38							14	14	1	1,626	104	1,613
39							14	14	1	1,626	97	1,613
40							14	14	1	1,626	90	1,613
41							14	14	1	1,626	84	1,613
42							14	14	1	1,626	78	1,613
43							14	14	1	1,626	73	1,613
44							14	14	1	1,626	67	1,613
45							14	14	1	1,626	63	1,613
46							14	14	0	1,626	58	1,613
47							14	14	0	1,626	54	1,613
48							14	14	0	1,626	51	1,613
49							14	14	0	1,626	47	1,613
50							14	14	0	1,626	44	1,613
51							14	14	0	1,626	41	1,613
52							14	14	0	1,626	38	1,613
53	-21	0	0	-5	0	-26	14	-12	0	1,626	35	1,639

건설교통부

10.5 마서지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	708.5	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	24.4	-	17.1	7.3	-	-
호 안 공	1.9	-	0.6	1.3	-	-
구조물 공	400.0	-	120.0	280.0	-	-
보 상 비	5.1	3.6	1.5	-	-	-
기 타	277.1	55.4	166.2	55.4	-	-
계	708.5	59.0	305.4	344.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	8.3%	43.1%	48.6%	0.0%	0.0%	100.0%

나. 유지관리비

13.7	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1626.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.90	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익 — 소계 0.4 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.36	0.00	0.36
부상	0.00	0.00	0.00	0.01	0.00	0.01

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.07 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.07	0.00	0.07

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 2.9 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
4.4	0.0	0.0	0.0	2.9	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1623.0 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.7	0.0	75.7
공공시설물	0.0	0.0	0.0	1435.1	0.0	1435.1
기 타	0.0	0.0	0.0	110.5	0.0	110.5

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 23.00
NPV 16,248
IRR 122.5%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	5	2	400	-	277	684		1,367	738	81,318	16,986	
1	-	-	-	4	55	59		59	55			-59
2	17	1	120	2	166	305		305	264			-305
3	7	1	280	-	55	344		344	277			-344
4							14	14	10	1,626	1,218	1,613
5							14	14	10	1,626	1,133	1,613
6							14	14	9	1,626	1,054	1,613
7							14	14	8	1,626	980	1,613
8							14	14	8	1,626	912	1,613
9							14	14	7	1,626	848	1,613
10							14	14	7	1,626	789	1,613
11							14	14	6	1,626	734	1,613
12							14	14	6	1,626	683	1,613
13							14	14	5	1,626	635	1,613
14							14	14	5	1,626	591	1,613
15							14	14	5	1,626	550	1,613
16							14	14	4	1,626	511	1,613
17							14	14	4	1,626	476	1,613
18							14	14	4	1,626	442	1,613
19							14	14	3	1,626	412	1,613
20							14	14	3	1,626	383	1,613
21							14	14	3	1,626	356	1,613
22							14	14	3	1,626	331	1,613
23							14	14	3	1,626	308	1,613
24							14	14	2	1,626	287	1,613
25							14	14	2	1,626	267	1,613
26							14	14	2	1,626	248	1,613
27							14	14	2	1,626	231	1,613
28							14	14	2	1,626	215	1,613
29							14	14	2	1,626	200	1,613
30							14	14	2	1,626	186	1,613
31							14	14	1	1,626	173	1,613
32							14	14	1	1,626	161	1,613
33							14	14	1	1,626	150	1,613
34							14	14	1	1,626	139	1,613
35							14	14	1	1,626	129	1,613
36							14	14	1	1,626	120	1,613
37							14	14	1	1,626	112	1,613
38							14	14	1	1,626	104	1,613
39							14	14	1	1,626	97	1,613
40							14	14	1	1,626	90	1,613
41							14	14	1	1,626	84	1,613
42							14	14	1	1,626	78	1,613
43							14	14	1	1,626	73	1,613
44							14	14	1	1,626	67	1,613
45							14	14	1	1,626	63	1,613
46							14	14	0	1,626	58	1,613
47							14	14	0	1,626	54	1,613
48							14	14	0	1,626	51	1,613
49							14	14	0	1,626	47	1,613
50							14	14	0	1,626	44	1,613
51							14	14	0	1,626	41	1,613
52							14	14	0	1,626	38	1,613
53	-20	0	0	-5	0	-25	14	-11	0	1,626	35	1,638

건설교통부

11.1 유왕지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	1,016.5	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	433.0	-	303.1	129.9	-	-
호 안 공	107.2	-	32.2	75.0	-	-
구조물 공	24.0	-	7.2	16.8	-	-
보 상 비	85.5	59.9	25.7	-	-	-
기 타	366.7	73.3	220.0	73.3	-	-
계	1,016.5	133.2	588.2	295.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	13.1%	57.9%	29.0%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

11.5	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1532.1	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	1.77	0.00

*흉수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 0.7 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.66	0.00	0.66
부상	0.00	0.00	0.00	0.03	0.00	0.03

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.12 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.12	0.00	0.12

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 5.2 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
8.3	0.0	0.0	0.0	5.2	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.1 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.4	0.0	1349.4
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 16.32
NPV 15,021
IRR 83.4%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연평균 사업비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축제공	호안공	구조물공	보상비	기타	계	유지비	1+2	현재가치	연간편익	현재가치	유입
합계	87	96	24	-	367	574		1,148	981	76,605	16,002	
1	-	-	-	60	73	133		133	124			-133
2	303	32	7	26	220	588		588	509			-588
3	130	75	17	-	73	295		295	238			-295
4							11	11	9	1,532	1,147	1,521
5							11	11	8	1,532	1,067	1,521
6							11	11	7	1,532	993	1,521
7							11	11	7	1,532	923	1,521
8							11	11	6	1,532	859	1,521
9							11	11	6	1,532	799	1,521
10							11	11	6	1,532	743	1,521
11							11	11	5	1,532	692	1,521
12							11	11	5	1,532	643	1,521
13							11	11	4	1,532	598	1,521
14							11	11	4	1,532	557	1,521
15							11	11	4	1,532	518	1,521
16							11	11	4	1,532	482	1,521
17							11	11	3	1,532	448	1,521
18							11	11	3	1,532	417	1,521
19							11	11	3	1,532	388	1,521
20							11	11	3	1,532	361	1,521
21							11	11	3	1,532	336	1,521
22							11	11	2	1,532	312	1,521
23							11	11	2	1,532	290	1,521
24							11	11	2	1,532	270	1,521
25							11	11	2	1,532	251	1,521
26							11	11	2	1,532	234	1,521
27							11	11	2	1,532	217	1,521
28							11	11	2	1,532	202	1,521
29							11	11	1	1,532	188	1,521
30							11	11	1	1,532	175	1,521
31							11	11	1	1,532	163	1,521
32							11	11	1	1,532	151	1,521
33							11	11	1	1,532	141	1,521
34							11	11	1	1,532	131	1,521
35							11	11	1	1,532	122	1,521
36							11	11	1	1,532	113	1,521
37							11	11	1	1,532	105	1,521
38							11	11	1	1,532	98	1,521
39							11	11	1	1,532	91	1,521
40							11	11	1	1,532	85	1,521
41							11	11	1	1,532	79	1,521
42							11	11	1	1,532	73	1,521
43							11	11	1	1,532	68	1,521
44							11	11	0	1,532	64	1,521
45							11	11	0	1,532	59	1,521
46							11	11	0	1,532	55	1,521
47							11	11	0	1,532	51	1,521
48							11	11	0	1,532	48	1,521
49							11	11	0	1,532	44	1,521
50							11	11	0	1,532	41	1,521
51							11	11	0	1,532	38	1,521
52							11	11	0	1,532	36	1,521
53	-346	-11	0	-86	0	-443	11	-431	-9	1,532	33	1,963

건설교통부

11.2 유왕지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	1,085.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	468.5	-	327.9	140.5	-	-
호 안 공	113.8	-	34.1	79.6	-	-
구조물 공	24.0	-	7.2	16.8	-	-
보 상 비	85.5	59.9	25.7	-	-	-
기 타	394.0	78.8	236.4	78.8	-	-
계	1,085.8	138.7	631.3	315.8	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	12.8%	58.1%	29.1%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

12.3	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1532.2	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	1.94	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 0.8 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.72	0.00	0.72
부상	0.00	0.00	0.00	0.03	0.00	0.03

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.13 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.13	0.00	0.13

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 5.3 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
8.4	0.0	0.0	0.0	5.3	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.1 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.4	0.0	1349.4
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 15.28
NPV 14,955
IRR 80.0%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	94	102	24	-	394	614		1,228	1,048	76,612	16,003	
1	-	-	-	60	79	139		139	129			-139
2	328	34	7	26	236	631		631	546			-631
3	141	80	17	-	79	316		316	254			-316
4							12	12	9	1,532	1,147	1,520
5							12	12	9	1,532	1,067	1,520
6							12	12	8	1,532	993	1,520
7							12	12	7	1,532	924	1,520
8							12	12	7	1,532	859	1,520
9							12	12	6	1,532	799	1,520
10							12	12	6	1,532	743	1,520
11							12	12	6	1,532	692	1,520
12							12	12	5	1,532	643	1,520
13							12	12	5	1,532	598	1,520
14							12	12	4	1,532	557	1,520
15							12	12	4	1,532	518	1,520
16							12	12	4	1,532	482	1,520
17							12	12	4	1,532	448	1,520
18							12	12	3	1,532	417	1,520
19							12	12	3	1,532	388	1,520
20							12	12	3	1,532	361	1,520
21							12	12	3	1,532	336	1,520
22							12	12	3	1,532	312	1,520
23							12	12	2	1,532	290	1,520
24							12	12	2	1,532	270	1,520
25							12	12	2	1,532	251	1,520
26							12	12	2	1,532	234	1,520
27							12	12	2	1,532	217	1,520
28							12	12	2	1,532	202	1,520
29							12	12	2	1,532	188	1,520
30							12	12	1	1,532	175	1,520
31							12	12	1	1,532	163	1,520
32							12	12	1	1,532	151	1,520
33							12	12	1	1,532	141	1,520
34							12	12	1	1,532	131	1,520
35							12	12	1	1,532	122	1,520
36							12	12	1	1,532	113	1,520
37							12	12	1	1,532	105	1,520
38							12	12	1	1,532	98	1,520
39							12	12	1	1,532	91	1,520
40							12	12	1	1,532	85	1,520
41							12	12	1	1,532	79	1,520
42							12	12	1	1,532	73	1,520
43							12	12	1	1,532	68	1,520
44							12	12	1	1,532	64	1,520
45							12	12	0	1,532	59	1,520
46							12	12	0	1,532	55	1,520
47							12	12	0	1,532	51	1,520
48							12	12	0	1,532	48	1,520
49							12	12	0	1,532	44	1,520
50							12	12	0	1,532	41	1,520
51							12	12	0	1,532	38	1,520
52							12	12	0	1,532	36	1,520
53	-375	-11	0	-86	0	-472	12	-459	-10	1,532	33	1,992

건설교통부

11.3 유왕지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	1,118.2	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	485.9	-	340.1	145.8	-	-
호 안 공	115.9	-	34.8	81.2	-	-
구조물 공	24.0	-	7.2	16.8	-	-
보 상 비	85.5	59.9	25.7	-	-	-
기 타	406.8	81.4	244.1	81.4	-	-
계	1,118.2	141.2	651.9	325.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	12.6%	58.3%	29.1%	0.0%	0.0%	100.0%

나. 유지관리비

12.6	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1532.5	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	2.10	0.00

*용수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 0.8 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.78	0.00	0.78
부상	0.00	0.00	0.00	0.03	0.00	0.03

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.15 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.15	0.00	0.15

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 5.5 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
8.7	0.0	0.0	0.0	5.5	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.1 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.4	0.0	1349.4
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 14.84
NPV 14,927
IRR 78.4%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연평균 사업비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축제공	호안공	구조물공	보상비	기타	계	유지비	1+2	현재가치	연간편익	현재가치	유입
합계	97	104	24	-	407	632		1,265	1,079	76,626	16,006	
1	-	-	-	60	81	141		141	131			-141
2	340	35	7	26	244	652		652	564			-652
3	146	81	17	-	81	325		325	262			-325
4							13	13	9	1,533	1,148	1,520
5							13	13	9	1,533	1,067	1,520
6							13	13	8	1,533	993	1,520
7							13	13	8	1,533	924	1,520
8							13	13	7	1,533	859	1,520
9							13	13	7	1,533	799	1,520
10							13	13	6	1,533	744	1,520
11							13	13	6	1,533	692	1,520
12							13	13	5	1,533	643	1,520
13							13	13	5	1,533	599	1,520
14							13	13	5	1,533	557	1,520
15							13	13	4	1,533	518	1,520
16							13	13	4	1,533	482	1,520
17							13	13	4	1,533	448	1,520
18							13	13	3	1,533	417	1,520
19							13	13	3	1,533	388	1,520
20							13	13	3	1,533	361	1,520
21							13	13	3	1,533	336	1,520
22							13	13	3	1,533	312	1,520
23							13	13	2	1,533	290	1,520
24							13	13	2	1,533	270	1,520
25							13	13	2	1,533	251	1,520
26							13	13	2	1,533	234	1,520
27							13	13	2	1,533	217	1,520
28							13	13	2	1,533	202	1,520
29							13	13	2	1,533	188	1,520
30							13	13	1	1,533	175	1,520
31							13	13	1	1,533	163	1,520
32							13	13	1	1,533	151	1,520
33							13	13	1	1,533	141	1,520
34							13	13	1	1,533	131	1,520
35							13	13	1	1,533	122	1,520
36							13	13	1	1,533	113	1,520
37							13	13	1	1,533	106	1,520
38							13	13	1	1,533	98	1,520
39							13	13	1	1,533	91	1,520
40							13	13	1	1,533	85	1,520
41							13	13	1	1,533	79	1,520
42							13	13	1	1,533	73	1,520
43							13	13	1	1,533	68	1,520
44							13	13	1	1,533	64	1,520
45							13	13	0	1,533	59	1,520
46							13	13	0	1,533	55	1,520
47							13	13	0	1,533	51	1,520
48							13	13	0	1,533	48	1,520
49							13	13	0	1,533	44	1,520
50							13	13	0	1,533	41	1,520
51							13	13	0	1,533	38	1,520
52							13	13	0	1,533	36	1,520
53	-389	-12	0	-86	0	-486	13	-473	-10	1,533	33	2,006

건설교통부

11.4 유왕지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	1,230.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	543.3	-	380.3	163.0	-	-
호 안 공	126.9	-	38.1	88.8	-	-
구조물 공	24.0	-	7.2	16.8	-	-
보 상 비	85.5	59.9	25.7	-	-	-
기 타	451.2	90.2	270.7	90.2	-	-
계	1,230.8	150.1	721.9	358.8	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	12.2%	58.7%	29.2%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

14.0	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1533.1	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	2.52	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 1.0 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.94	0.00	0.94
부상	0.00	0.00	0.00	0.04	0.00	0.04

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.18 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.18	0.00	0.18

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 5.9 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
9.4	0.0	0.0	0.0	5.9	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.1 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.4	0.0	1349.4
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 13.48
NPV 14,825
IRR 73.6%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	109	114	24	-	451	698		1,396	1,187	76,657	16,012	
1	-	-	-	60	90	150		150	140			-150
2	380	38	7	26	271	722		722	625			-722
3	163	89	17	-	90	359		359	289			-359
4							14	14	10	1,533	1,148	1,519
5							14	14	10	1,533	1,068	1,519
6							14	14	9	1,533	993	1,519
7							14	14	8	1,533	924	1,519
8							14	14	8	1,533	860	1,519
9							14	14	7	1,533	800	1,519
10							14	14	7	1,533	744	1,519
11							14	14	6	1,533	692	1,519
12							14	14	6	1,533	644	1,519
13							14	14	5	1,533	599	1,519
14							14	14	5	1,533	557	1,519
15							14	14	5	1,533	518	1,519
16							14	14	4	1,533	482	1,519
17							14	14	4	1,533	448	1,519
18							14	14	4	1,533	417	1,519
19							14	14	4	1,533	388	1,519
20							14	14	3	1,533	361	1,519
21							14	14	3	1,533	336	1,519
22							14	14	3	1,533	312	1,519
23							14	14	3	1,533	291	1,519
24							14	14	2	1,533	270	1,519
25							14	14	2	1,533	251	1,519
26							14	14	2	1,533	234	1,519
27							14	14	2	1,533	218	1,519
28							14	14	2	1,533	202	1,519
29							14	14	2	1,533	188	1,519
30							14	14	2	1,533	175	1,519
31							14	14	1	1,533	163	1,519
32							14	14	1	1,533	152	1,519
33							14	14	1	1,533	141	1,519
34							14	14	1	1,533	131	1,519
35							14	14	1	1,533	122	1,519
36							14	14	1	1,533	113	1,519
37							14	14	1	1,533	106	1,519
38							14	14	1	1,533	98	1,519
39							14	14	1	1,533	91	1,519
40							14	14	1	1,533	85	1,519
41							14	14	1	1,533	79	1,519
42							14	14	1	1,533	74	1,519
43							14	14	1	1,533	68	1,519
44							14	14	1	1,533	64	1,519
45							14	14	1	1,533	59	1,519
46							14	14	1	1,533	55	1,519
47							14	14	0	1,533	51	1,519
48							14	14	0	1,533	48	1,519
49							14	14	0	1,533	44	1,519
50							14	14	0	1,533	41	1,519
51							14	14	0	1,533	38	1,519
52							14	14	0	1,533	36	1,519
53	-435	-13	0	-86	0	-533	14	-519	-11	1,533	33	2,052

건설교통부

11.5 유왕지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	1,118.2	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	485.9	-	340.1	145.8	-	-
호 안 공	115.9	-	34.8	81.2	-	-
구조물 공	24.0	-	7.2	16.8	-	-
보 상 비	85.5	59.9	25.7	-	-	-
기 타	406.8	81.4	244.1	81.4	-	-
계	1,118.2	141.2	651.9	325.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	12.6%	58.3%	29.1%	0.0%	0.0%	100.0%

나. 유지관리비

12.6	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1532.5	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	2.10	0.00

*흥수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 0.8 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.78	0.00	0.78
부상	0.00	0.00	0.00	0.03	0.00	0.03

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.15 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.15	0.00	0.15

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 5.5 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
8.7	0.0	0.0	0.0	5.5	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.1 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.4	0.0	1349.4
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 14.84
NPV 14,927
IRR 78.4%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	97	104	24	-	407	632		1,265	1,079	76,626	16,006	
1	-	-	-	60	81	141		141	131			-141
2	340	35	7	26	244	652		652	564			-652
3	146	81	17	-	81	325		325	262			-325
4							13	13	9	1,533	1,148	1,520
5							13	13	9	1,533	1,067	1,520
6							13	13	8	1,533	993	1,520
7							13	13	8	1,533	924	1,520
8							13	13	7	1,533	859	1,520
9							13	13	7	1,533	799	1,520
10							13	13	6	1,533	744	1,520
11							13	13	6	1,533	692	1,520
12							13	13	5	1,533	643	1,520
13							13	13	5	1,533	599	1,520
14							13	13	5	1,533	557	1,520
15							13	13	4	1,533	518	1,520
16							13	13	4	1,533	482	1,520
17							13	13	4	1,533	448	1,520
18							13	13	3	1,533	417	1,520
19							13	13	3	1,533	388	1,520
20							13	13	3	1,533	361	1,520
21							13	13	3	1,533	336	1,520
22							13	13	3	1,533	312	1,520
23							13	13	2	1,533	290	1,520
24							13	13	2	1,533	270	1,520
25							13	13	2	1,533	251	1,520
26							13	13	2	1,533	234	1,520
27							13	13	2	1,533	217	1,520
28							13	13	2	1,533	202	1,520
29							13	13	2	1,533	188	1,520
30							13	13	1	1,533	175	1,520
31							13	13	1	1,533	163	1,520
32							13	13	1	1,533	151	1,520
33							13	13	1	1,533	141	1,520
34							13	13	1	1,533	131	1,520
35							13	13	1	1,533	122	1,520
36							13	13	1	1,533	113	1,520
37							13	13	1	1,533	106	1,520
38							13	13	1	1,533	98	1,520
39							13	13	1	1,533	91	1,520
40							13	13	1	1,533	85	1,520
41							13	13	1	1,533	79	1,520
42							13	13	1	1,533	73	1,520
43							13	13	1	1,533	68	1,520
44							13	13	1	1,533	64	1,520
45							13	13	0	1,533	59	1,520
46							13	13	0	1,533	55	1,520
47							13	13	0	1,533	51	1,520
48							13	13	0	1,533	48	1,520
49							13	13	0	1,533	44	1,520
50							13	13	0	1,533	41	1,520
51							13	13	0	1,533	38	1,520
52							13	13	0	1,533	36	1,520
53	-389	-12	0	-86	0	-486	13	-473	-10	1,533	33	2,006

건설교통부

12.1 간대지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	670.0	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	142.2	-	99.5	42.7	-	-
호 안 공	84.0	-	25.2	58.8	-	-
구조물공	-	-	-	-	-	-
보 상 비	296.8	207.7	89.0	-	-	-
기 타	147.0	29.4	88.2	29.4	-	-
계	670.0	237.2	302.0	130.9	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	35.4%	45.1%	19.5%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

5.0	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	0.0	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 0.0 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.00	0.00	0.00
부상	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.00 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 0.0 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	0.0	0.0	0.0
농 경 지	0.0	0.0	0.0	0.0	0.0	0.0
공공시설물	0.0	0.0	0.0	0.0	0.0	0.0
기 타	0.0	0.0	0.0	0.0	0.0	0.0

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C -
NPV -631
IRR 0.0
실질합인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	28	76	-	-	147	251		502	631	-	-	
1	-	-	-	208	29	237		237	221			-237
2	100	25	-	89	88	302		302	261			-302
3	43	59	-	-	29	131		131	105			-131
4							5	5	4	-	-	-
5							5	5	3	-	-	-
6							5	5	3	-	-	-
7							5	5	3	-	-	-
8							5	5	3	-	-	-
9							5	5	3	-	-	-
10							5	5	2	-	-	-
11							5	5	2	-	-	-
12							5	5	2	-	-	-
13							5	5	2	-	-	-
14							5	5	2	-	-	-
15							5	5	2	-	-	-
16							5	5	2	-	-	-
17							5	5	1	-	-	-
18							5	5	1	-	-	-
19							5	5	1	-	-	-
20							5	5	1	-	-	-
21							5	5	1	-	-	-
22							5	5	1	-	-	-
23							5	5	1	-	-	-
24							5	5	1	-	-	-
25							5	5	1	-	-	-
26							5	5	1	-	-	-
27							5	5	1	-	-	-
28							5	5	1	-	-	-
29							5	5	1	-	-	-
30							5	5	1	-	-	-
31							5	5	1	-	-	-
32							5	5	0	-	-	-
33							5	5	0	-	-	-
34							5	5	0	-	-	-
35							5	5	0	-	-	-
36							5	5	0	-	-	-
37							5	5	0	-	-	-
38							5	5	0	-	-	-
39							5	5	0	-	-	-
40							5	5	0	-	-	-
41							5	5	0	-	-	-
42							5	5	0	-	-	-
43							5	5	0	-	-	-
44							5	5	0	-	-	-
45							5	5	0	-	-	-
46							5	5	0	-	-	-
47							5	5	0	-	-	-
48							5	5	0	-	-	-
49							5	5	0	-	-	-
50							5	5	0	-	-	-
51							5	5	0	-	-	-
52							5	5	0	-	-	-
53	-114	-8	0	-297	0	-419	5	-414	-9	-	-	414

건설교통부

12.2 간대지구 홍수빈도 80년

1) 사업비 산정

가. **사업비**

합계	719.7	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	167.8	-	117.5	50.3	-	-
호 안 공	88.5	-	26.6	62.0	-	-
구조물공	-	-	-	-	-	-
보 상 비	296.8	207.7	89.0	-	-	-
기 타	166.6	33.3	100.0	33.3	-	-
계	719.7	241.1	333.0	145.6	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	33.5%	46.3%	20.2%	0.0%	0.0%	100.0%

건설교통부

나. **유지관리비**

5.6	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1550.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	11.75	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익

소계	4.5	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	4.37	0.00	4.37
부상	0.00	0.00	0.00	0.18	0.00	0.18

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.82	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.82	0.00	0.82

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	18.8	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
29.9	0.0	0.0	0.0	18.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1526.3	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.5	0.0	1349.5
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 23.86
NPV 15,514
IRR 92.2%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연평균 사업비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축제공	호안공	구조물공	보상비	기타	계	유지비	1+2	현재가치	연간편익	현재가치	유입
합계	34	80	-	-	167	280		560	679	77,521	16,193	
1	-	-	-	208	33	241		241	224			-241
2	117	27	-	89	100	333		333	288			-333
3	50	62	-	-	33	146		146	117			-146
4							6	6	4	1,550	1,161	1,545
5							6	6	4	1,550	1,080	1,545
6							6	6	4	1,550	1,005	1,545
7							6	6	3	1,550	935	1,545
8							6	6	3	1,550	869	1,545
9							6	6	3	1,550	809	1,545
10							6	6	3	1,550	752	1,545
11							6	6	3	1,550	700	1,545
12							6	6	2	1,550	651	1,545
13							6	6	2	1,550	606	1,545
14							6	6	2	1,550	563	1,545
15							6	6	2	1,550	524	1,545
16							6	6	2	1,550	487	1,545
17							6	6	2	1,550	453	1,545
18							6	6	2	1,550	422	1,545
19							6	6	1	1,550	392	1,545
20							6	6	1	1,550	365	1,545
21							6	6	1	1,550	340	1,545
22							6	6	1	1,550	316	1,545
23							6	6	1	1,550	294	1,545
24							6	6	1	1,550	273	1,545
25							6	6	1	1,550	254	1,545
26							6	6	1	1,550	236	1,545
27							6	6	1	1,550	220	1,545
28							6	6	1	1,550	205	1,545
29							6	6	1	1,550	190	1,545
30							6	6	1	1,550	177	1,545
31							6	6	1	1,550	165	1,545
32							6	6	1	1,550	153	1,545
33							6	6	1	1,550	143	1,545
34							6	6	0	1,550	133	1,545
35							6	6	0	1,550	123	1,545
36							6	6	0	1,550	115	1,545
37							6	6	0	1,550	107	1,545
38							6	6	0	1,550	99	1,545
39							6	6	0	1,550	92	1,545
40							6	6	0	1,550	86	1,545
41							6	6	0	1,550	80	1,545
42							6	6	0	1,550	74	1,545
43							6	6	0	1,550	69	1,545
44							6	6	0	1,550	64	1,545
45							6	6	0	1,550	60	1,545
46							6	6	0	1,550	56	1,545
47							6	6	0	1,550	52	1,545
48							6	6	0	1,550	48	1,545
49							6	6	0	1,550	45	1,545
50							6	6	0	1,550	42	1,545
51							6	6	0	1,550	39	1,545
52							6	6	0	1,550	36	1,545
53	-134	-9	0	-297	0	-440	6	-434	-9	1,550	34	1,985

건설교통부

12.3 간대지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	750.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	183.7	-	128.6	55.1	-	-
호 안 공	91.5	-	27.5	64.1	-	-
구조물 공	-	-	-	-	-	-
보 상 비	296.8	207.7	89.0	-	-	-
기 타	178.9	35.8	107.3	35.8	-	-
계	750.8	243.5	352.4	154.9	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	32.4%	46.9%	20.6%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

6.0	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1550.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	11.75	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익

소계	4.5	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	4.37	0.00	4.37
부상	0.00	0.00	0.00	0.18	0.00	0.18

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.82	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.82	0.00	0.82

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	18.8	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
29.9	0.0	0.0	0.0	18.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1526.3	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.5	0.0	1349.5
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 22.85
NPV 15,484
IRR 90.4%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연평균 사업비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축제공	호안공	구조물공	보상비	기타	계	유지비	1+2	현재가치	연간편익	현재가치	유입
합계	37	82	-	-	179	298		596	709	77,521	16,193	
1	-	-	-	208	36	244		244	227			-244
2	129	27	-	89	107	352		352	305			-352
3	55	64	-	-	36	155		155	125			-155
4							6	6	4	1,550	1,161	1,544
5							6	6	4	1,550	1,080	1,544
6							6	6	4	1,550	1,005	1,544
7							6	6	4	1,550	935	1,544
8							6	6	3	1,550	869	1,544
9							6	6	3	1,550	809	1,544
10							6	6	3	1,550	752	1,544
11							6	6	3	1,550	700	1,544
12							6	6	3	1,550	651	1,544
13							6	6	2	1,550	606	1,544
14							6	6	2	1,550	563	1,544
15							6	6	2	1,550	524	1,544
16							6	6	2	1,550	487	1,544
17							6	6	2	1,550	453	1,544
18							6	6	2	1,550	422	1,544
19							6	6	2	1,550	392	1,544
20							6	6	1	1,550	365	1,544
21							6	6	1	1,550	340	1,544
22							6	6	1	1,550	316	1,544
23							6	6	1	1,550	294	1,544
24							6	6	1	1,550	273	1,544
25							6	6	1	1,550	254	1,544
26							6	6	1	1,550	236	1,544
27							6	6	1	1,550	220	1,544
28							6	6	1	1,550	205	1,544
29							6	6	1	1,550	190	1,544
30							6	6	1	1,550	177	1,544
31							6	6	1	1,550	165	1,544
32							6	6	1	1,550	153	1,544
33							6	6	1	1,550	143	1,544
34							6	6	1	1,550	133	1,544
35							6	6	0	1,550	123	1,544
36							6	6	0	1,550	115	1,544
37							6	6	0	1,550	107	1,544
38							6	6	0	1,550	99	1,544
39							6	6	0	1,550	92	1,544
40							6	6	0	1,550	86	1,544
41							6	6	0	1,550	80	1,544
42							6	6	0	1,550	74	1,544
43							6	6	0	1,550	69	1,544
44							6	6	0	1,550	64	1,544
45							6	6	0	1,550	60	1,544
46							6	6	0	1,550	56	1,544
47							6	6	0	1,550	52	1,544
48							6	6	0	1,550	48	1,544
49							6	6	0	1,550	45	1,544
50							6	6	0	1,550	42	1,544
51							6	6	0	1,550	39	1,544
52							6	6	0	1,550	36	1,544
53	-147	-9	0	-297	0	-453	6	-447	-10	1,550	34	1,997

건설교통부

12.4 간대지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	828.2	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	223.1	-	156.1	66.9	-	-
호 안 공	99.0	-	29.7	69.3	-	-
구조물공	-	-	-	-	-	-
보 상 비	296.8	207.7	89.0	-	-	-
기 타	209.3	41.9	125.6	41.9	-	-
계	828.2	249.6	400.5	178.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	30.1%	48.4%	21.5%	0.0%	0.0%	100.0%

나. 유지관리비

6.9	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1550.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	11.75	0.00

*용수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 4.5 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	4.37	0.00	4.37
부상	0.00	0.00	0.00	0.18	0.00	0.18

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.82 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.82	0.00	0.82

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 18.8 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
29.9	0.0	0.0	0.0	18.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.5	0.0	1349.5
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 20.67
NPV 15,410
IRR 86.2%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	45	89	-	-	209	343		686	783	77,521	16,193	
1	-	-	-	208	42	250		250	232			-250
2	156	30	-	89	126	400		400	347			-400
3	67	69	-	-	42	178		178	143			-178
4							7	7	5	1,550	1,161	1,544
5							7	7	5	1,550	1,080	1,544
6							7	7	4	1,550	1,005	1,544
7							7	7	4	1,550	935	1,544
8							7	7	4	1,550	869	1,544
9							7	7	4	1,550	809	1,544
10							7	7	3	1,550	752	1,544
11							7	7	3	1,550	700	1,544
12							7	7	3	1,550	651	1,544
13							7	7	3	1,550	606	1,544
14							7	7	2	1,550	563	1,544
15							7	7	2	1,550	524	1,544
16							7	7	2	1,550	487	1,544
17							7	7	2	1,550	453	1,544
18							7	7	2	1,550	422	1,544
19							7	7	2	1,550	392	1,544
20							7	7	2	1,550	365	1,544
21							7	7	2	1,550	340	1,544
22							7	7	1	1,550	316	1,544
23							7	7	1	1,550	294	1,544
24							7	7	1	1,550	273	1,544
25							7	7	1	1,550	254	1,544
26							7	7	1	1,550	236	1,544
27							7	7	1	1,550	220	1,544
28							7	7	1	1,550	205	1,544
29							7	7	1	1,550	190	1,544
30							7	7	1	1,550	177	1,544
31							7	7	1	1,550	165	1,544
32							7	7	1	1,550	153	1,544
33							7	7	1	1,550	143	1,544
34							7	7	1	1,550	133	1,544
35							7	7	1	1,550	123	1,544
36							7	7	1	1,550	115	1,544
37							7	7	0	1,550	107	1,544
38							7	7	0	1,550	99	1,544
39							7	7	0	1,550	92	1,544
40							7	7	0	1,550	86	1,544
41							7	7	0	1,550	80	1,544
42							7	7	0	1,550	74	1,544
43							7	7	0	1,550	69	1,544
44							7	7	0	1,550	64	1,544
45							7	7	0	1,550	60	1,544
46							7	7	0	1,550	56	1,544
47							7	7	0	1,550	52	1,544
48							7	7	0	1,550	48	1,544
49							7	7	0	1,550	45	1,544
50							7	7	0	1,550	42	1,544
51							7	7	0	1,550	39	1,544
52							7	7	0	1,550	36	1,544
53	-178	-10	0	-297	0	-485	7	-478	-10	1,550	34	2,029

건설교통부

12.5 간대지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	750.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	183.7	-	128.6	55.1	-	-
호 안 공	91.5	-	27.5	64.1	-	-
구조물공	-	-	-	-	-	-
보 상 비	296.8	207.7	89.0	-	-	-
기 타	178.9	35.8	107.3	35.8	-	-
계	750.8	243.5	352.4	154.9	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	32.4%	46.9%	20.6%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

6.0	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1550.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	11.75	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익

소계	4.5	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	4.37	0.00	4.37
부상	0.00	0.00	0.00	0.18	0.00	0.18

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.82	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.82	0.00	0.82

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	18.8	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
29.9	0.0	0.0	0.0	18.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1526.3	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.5	0.0	1349.5
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 22.85
NPV 15,484
IRR 90.4%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연평균 사업비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축제공	호안공	구조물공	보상비	기타	계	유지비	1+2	현재가치	연간편익	현재가치	유입
합계	37	82	-	-	179	298		596	709	77,521	16,193	
1	-	-	-	208	36	244		244	227			-244
2	129	27	-	89	107	352		352	305			-352
3	55	64	-	-	36	155		155	125			-155
4							6	6	4	1,550	1,161	1,544
5							6	6	4	1,550	1,080	1,544
6							6	6	4	1,550	1,005	1,544
7							6	6	4	1,550	935	1,544
8							6	6	3	1,550	869	1,544
9							6	6	3	1,550	809	1,544
10							6	6	3	1,550	752	1,544
11							6	6	3	1,550	700	1,544
12							6	6	3	1,550	651	1,544
13							6	6	2	1,550	606	1,544
14							6	6	2	1,550	563	1,544
15							6	6	2	1,550	524	1,544
16							6	6	2	1,550	487	1,544
17							6	6	2	1,550	453	1,544
18							6	6	2	1,550	422	1,544
19							6	6	2	1,550	392	1,544
20							6	6	1	1,550	365	1,544
21							6	6	1	1,550	340	1,544
22							6	6	1	1,550	316	1,544
23							6	6	1	1,550	294	1,544
24							6	6	1	1,550	273	1,544
25							6	6	1	1,550	254	1,544
26							6	6	1	1,550	236	1,544
27							6	6	1	1,550	220	1,544
28							6	6	1	1,550	205	1,544
29							6	6	1	1,550	190	1,544
30							6	6	1	1,550	177	1,544
31							6	6	1	1,550	165	1,544
32							6	6	1	1,550	153	1,544
33							6	6	1	1,550	143	1,544
34							6	6	1	1,550	133	1,544
35							6	6	0	1,550	123	1,544
36							6	6	0	1,550	115	1,544
37							6	6	0	1,550	107	1,544
38							6	6	0	1,550	99	1,544
39							6	6	0	1,550	92	1,544
40							6	6	0	1,550	86	1,544
41							6	6	0	1,550	80	1,544
42							6	6	0	1,550	74	1,544
43							6	6	0	1,550	69	1,544
44							6	6	0	1,550	64	1,544
45							6	6	0	1,550	60	1,544
46							6	6	0	1,550	56	1,544
47							6	6	0	1,550	52	1,544
48							6	6	0	1,550	48	1,544
49							6	6	0	1,550	45	1,544
50							6	6	0	1,550	42	1,544
51							6	6	0	1,550	39	1,544
52							6	6	0	1,550	36	1,544
53	-147	-9	0	-297	0	-453	6	-447	-10	1,550	34	1,997

건설교통부

13.1 정고2지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	600.4	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	132.2	-	92.5	39.7	-	-
호 안 공	51.8	-	15.5	36.2	-	-
구조물공	-	-	-	-	-	-
보 상 비	296.8	207.7	89.0	-	-	-
기 타	119.6	23.9	71.8	23.9	-	-
계	600.4	231.7	268.9	99.8	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	38.6%	44.8%	16.6%	0.0%	0.0%	100.0%

나. 유지관리비

3.9	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1526.2	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.23	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익

소계	0.1	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.09	0.00	0.09
부상	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.02	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.02	0.00	0.02

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	0.0	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1526.1	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.4	0.0	1349.4
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

3) 경제성 분석 결과

B/C 28.47
NPV 15,380
IRR 98.5%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	26	47	-	-	120	193		385	560	76,309	15,940	
1	-	-	-	208	24	232		232	216			-232
2	93	16	-	89	72	269		269	233			-269
3	40	36	-	-	24	100		100	80			-100
4							4	4	3	1,526	1,143	1,522
5							4	4	3	1,526	1,063	1,522
6							4	4	2	1,526	989	1,522
7							4	4	2	1,526	920	1,522
8							4	4	2	1,526	856	1,522
9							4	4	2	1,526	796	1,522
10							4	4	2	1,526	740	1,522
11							4	4	2	1,526	689	1,522
12							4	4	2	1,526	641	1,522
13							4	4	2	1,526	596	1,522
14							4	4	1	1,526	554	1,522
15							4	4	1	1,526	516	1,522
16							4	4	1	1,526	480	1,522
17							4	4	1	1,526	446	1,522
18							4	4	1	1,526	415	1,522
19							4	4	1	1,526	386	1,522
20							4	4	1	1,526	359	1,522
21							4	4	1	1,526	334	1,522
22							4	4	1	1,526	311	1,522
23							4	4	1	1,526	289	1,522
24							4	4	1	1,526	269	1,522
25							4	4	1	1,526	250	1,522
26							4	4	1	1,526	233	1,522
27							4	4	1	1,526	217	1,522
28							4	4	1	1,526	201	1,522
29							4	4	0	1,526	187	1,522
30							4	4	0	1,526	174	1,522
31							4	4	0	1,526	162	1,522
32							4	4	0	1,526	151	1,522
33							4	4	0	1,526	140	1,522
34							4	4	0	1,526	131	1,522
35							4	4	0	1,526	121	1,522
36							4	4	0	1,526	113	1,522
37							4	4	0	1,526	105	1,522
38							4	4	0	1,526	98	1,522
39							4	4	0	1,526	91	1,522
40							4	4	0	1,526	85	1,522
41							4	4	0	1,526	79	1,522
42							4	4	0	1,526	73	1,522
43							4	4	0	1,526	68	1,522
44							4	4	0	1,526	63	1,522
45							4	4	0	1,526	59	1,522
46							4	4	0	1,526	55	1,522
47							4	4	0	1,526	51	1,522
48							4	4	0	1,526	47	1,522
49							4	4	0	1,526	44	1,522
50							4	4	0	1,526	41	1,522
51							4	4	0	1,526	38	1,522
52							4	4	0	1,526	36	1,522
53	-106	-5	0	-297	0	-408	4	-404	-9	1,526	33	1,930

건설교통부

13.2 정고2지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	651.7	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	156.4	-	109.5	46.9	-	-
호 안 공	58.7	-	17.6	41.1	-	-
구조물 공	-	-	-	-	-	-
보 상 비	296.8	207.7	89.0	-	-	-
기 타	139.8	28.0	83.9	28.0	-	-
계	651.7	235.7	300.0	116.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	36.2%	46.0%	17.8%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

4.5	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1526.2	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.35	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 0.1 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.13	0.00	0.13
부상	0.00	0.00	0.00	0.01	0.00	0.01

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.02 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.02	0.00	0.02

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.1 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.4	0.0	1349.4
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 26.14
NPV 15,331
IRR 95.2%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연평균 사업비						2. 연평균 유지비	3. 연평균 비용		4. 연평균 편익		5. 순현금 유입
	축제공	호안공	구조물공	보상비	기타	계		1+2	현재가치	연간편익	현재가치	
합계	31	53	-	-	140	224		448	610	76,312	15,940	
1	-	-	-	208	28	236		236	219			-236
2	109	18	-	89	84	300		300	260			-300
3	47	41	-	-	28	116		116	93			-116
4							4	4	3	1,526	1,143	1,522
5							4	4	3	1,526	1,063	1,522
6							4	4	3	1,526	989	1,522
7							4	4	3	1,526	920	1,522
8							4	4	3	1,526	856	1,522
9							4	4	2	1,526	796	1,522
10							4	4	2	1,526	741	1,522
11							4	4	2	1,526	689	1,522
12							4	4	2	1,526	641	1,522
13							4	4	2	1,526	596	1,522
14							4	4	2	1,526	555	1,522
15							4	4	2	1,526	516	1,522
16							4	4	1	1,526	480	1,522
17							4	4	1	1,526	446	1,522
18							4	4	1	1,526	415	1,522
19							4	4	1	1,526	386	1,522
20							4	4	1	1,526	359	1,522
21							4	4	1	1,526	334	1,522
22							4	4	1	1,526	311	1,522
23							4	4	1	1,526	289	1,522
24							4	4	1	1,526	269	1,522
25							4	4	1	1,526	250	1,522
26							4	4	1	1,526	233	1,522
27							4	4	1	1,526	217	1,522
28							4	4	1	1,526	201	1,522
29							4	4	1	1,526	187	1,522
30							4	4	1	1,526	174	1,522
31							4	4	0	1,526	162	1,522
32							4	4	0	1,526	151	1,522
33							4	4	0	1,526	140	1,522
34							4	4	0	1,526	131	1,522
35							4	4	0	1,526	121	1,522
36							4	4	0	1,526	113	1,522
37							4	4	0	1,526	105	1,522
38							4	4	0	1,526	98	1,522
39							4	4	0	1,526	91	1,522
40							4	4	0	1,526	85	1,522
41							4	4	0	1,526	79	1,522
42							4	4	0	1,526	73	1,522
43							4	4	0	1,526	68	1,522
44							4	4	0	1,526	63	1,522
45							4	4	0	1,526	59	1,522
46							4	4	0	1,526	55	1,522
47							4	4	0	1,526	51	1,522
48							4	4	0	1,526	47	1,522
49							4	4	0	1,526	44	1,522
50							4	4	0	1,526	41	1,522
51							4	4	0	1,526	38	1,522
52							4	4	0	1,526	36	1,522
53	-125	-6	0	-297	0	-428	4	-423	-9	1,526	33	1,950

건설교통부

13.3 정고2지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	682.1	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	171.1	-	119.8	51.3	-	-
호 안 공	62.4	-	18.7	43.7	-	-
구조물공	-	-	-	-	-	-
보 상 비	296.8	207.7	89.0	-	-	-
기 타	151.8	30.4	91.1	30.4	-	-
계	682.1	238.1	318.6	125.4	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	34.9%	46.7%	18.4%	0.0%	0.0%	100.0%

나. 유지관리비

4.8	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1526.3	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.40	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 0.2 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.15	0.00	0.15
부상	0.00	0.00	0.00	0.01	0.00	0.01

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.03 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.03	0.00	0.03

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.1 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.4	0.0	1349.4
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 24.94
NPV 15,301
IRR 93.3%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연평균 사업비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축제공	호안공	구조물공	보상비	기타	계	유지비	1+2	현재가치	연간편익	현재가치	유입
합계	34	56	-	-	152	242		484	639	76,313	15,941	
1	-	-	-	208	30	238		238	221			-238
2	120	19	-	89	91	319		319	276			-319
3	51	44	-	-	30	125		125	101			-125
4							5	5	4	1,526	1,143	1,521
5							5	5	3	1,526	1,063	1,521
6							5	5	3	1,526	989	1,521
7							5	5	3	1,526	920	1,521
8							5	5	3	1,526	856	1,521
9							5	5	3	1,526	796	1,521
10							5	5	2	1,526	741	1,521
11							5	5	2	1,526	689	1,521
12							5	5	2	1,526	641	1,521
13							5	5	2	1,526	596	1,521
14							5	5	2	1,526	555	1,521
15							5	5	2	1,526	516	1,521
16							5	5	2	1,526	480	1,521
17							5	5	1	1,526	446	1,521
18							5	5	1	1,526	415	1,521
19							5	5	1	1,526	386	1,521
20							5	5	1	1,526	359	1,521
21							5	5	1	1,526	334	1,521
22							5	5	1	1,526	311	1,521
23							5	5	1	1,526	289	1,521
24							5	5	1	1,526	269	1,521
25							5	5	1	1,526	250	1,521
26							5	5	1	1,526	233	1,521
27							5	5	1	1,526	217	1,521
28							5	5	1	1,526	201	1,521
29							5	5	1	1,526	187	1,521
30							5	5	1	1,526	174	1,521
31							5	5	1	1,526	162	1,521
32							5	5	0	1,526	151	1,521
33							5	5	0	1,526	140	1,521
34							5	5	0	1,526	131	1,521
35							5	5	0	1,526	121	1,521
36							5	5	0	1,526	113	1,521
37							5	5	0	1,526	105	1,521
38							5	5	0	1,526	98	1,521
39							5	5	0	1,526	91	1,521
40							5	5	0	1,526	85	1,521
41							5	5	0	1,526	79	1,521
42							5	5	0	1,526	73	1,521
43							5	5	0	1,526	68	1,521
44							5	5	0	1,526	63	1,521
45							5	5	0	1,526	59	1,521
46							5	5	0	1,526	55	1,521
47							5	5	0	1,526	51	1,521
48							5	5	0	1,526	47	1,521
49							5	5	0	1,526	44	1,521
50							5	5	0	1,526	41	1,521
51							5	5	0	1,526	38	1,521
52							5	5	0	1,526	36	1,521
53	-137	-6	0	-297	0	-440	5	-435	-9	1,526	33	1,961

건설교통부

13.4 정고2지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	768.1	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	213.6	-	149.5	64.1	-	-
호 안 공	72.0	-	21.6	50.4	-	-
구조물공	-	-	-	-	-	-
보 상 비	296.8	207.7	89.0	-	-	-
기 타	185.7	37.1	111.4	37.1	-	-
계	768.1	244.9	371.6	151.6	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	31.9%	48.4%	19.7%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

5.9	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1526.3	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.45	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익 — 소계 0.2 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.17	0.00	0.17
부상	0.00	0.00	0.00	0.01	0.00	0.01

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.03 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.03	0.00	0.03

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1526.1 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.4	0.0	1349.4
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 22.07
NPV 15,218
IRR 88.4%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	43	65	-	-	186	293		586	722	76,314	15,941	
1	-	-	-	208	37	245		245	228			-245
2	150	22	-	89	111	372		372	322			-372
3	64	50	-	-	37	152		152	122			-152
4							6	6	4	1,526	1,143	1,520
5							6	6	4	1,526	1,063	1,520
6							6	6	4	1,526	989	1,520
7							6	6	4	1,526	920	1,520
8							6	6	3	1,526	856	1,520
9							6	6	3	1,526	796	1,520
10							6	6	3	1,526	741	1,520
11							6	6	3	1,526	689	1,520
12							6	6	2	1,526	641	1,520
13							6	6	2	1,526	596	1,520
14							6	6	2	1,526	555	1,520
15							6	6	2	1,526	516	1,520
16							6	6	2	1,526	480	1,520
17							6	6	2	1,526	446	1,520
18							6	6	2	1,526	415	1,520
19							6	6	1	1,526	386	1,520
20							6	6	1	1,526	359	1,520
21							6	6	1	1,526	334	1,520
22							6	6	1	1,526	311	1,520
23							6	6	1	1,526	289	1,520
24							6	6	1	1,526	269	1,520
25							6	6	1	1,526	250	1,520
26							6	6	1	1,526	233	1,520
27							6	6	1	1,526	217	1,520
28							6	6	1	1,526	201	1,520
29							6	6	1	1,526	187	1,520
30							6	6	1	1,526	174	1,520
31							6	6	1	1,526	162	1,520
32							6	6	1	1,526	151	1,520
33							6	6	1	1,526	140	1,520
34							6	6	1	1,526	131	1,520
35							6	6	0	1,526	121	1,520
36							6	6	0	1,526	113	1,520
37							6	6	0	1,526	105	1,520
38							6	6	0	1,526	98	1,520
39							6	6	0	1,526	91	1,520
40							6	6	0	1,526	85	1,520
41							6	6	0	1,526	79	1,520
42							6	6	0	1,526	73	1,520
43							6	6	0	1,526	68	1,520
44							6	6	0	1,526	63	1,520
45							6	6	0	1,526	59	1,520
46							6	6	0	1,526	55	1,520
47							6	6	0	1,526	51	1,520
48							6	6	0	1,526	47	1,520
49							6	6	0	1,526	44	1,520
50							6	6	0	1,526	41	1,520
51							6	6	0	1,526	38	1,520
52							6	6	0	1,526	36	1,520
53	-171	-7	0	-297	0	-475	6	-469	-10	1,526	33	1,995

건설교통부

13.5 정고2지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	682.1	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	171.1	-	119.8	51.3	-	-
호 안 공	62.4	-	18.7	43.7	-	-
구조물 공	-	-	-	-	-	-
보 상 비	296.8	207.7	89.0	-	-	-
기 타	151.8	30.4	91.1	30.4	-	-
계	682.1	238.1	318.6	125.4	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	34.9%	46.7%	18.4%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

4.8	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1526.3	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.40	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.63	0.00

A. 인명보호 편익

소계	0.2	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.15	0.00	0.15
부상	0.00	0.00	0.00	0.01	0.00	0.01

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.03	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.03	0.00	0.03

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	0.0	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1526.1	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.6	0.0	1.6
농 경 지	0.0	0.0	0.0	71.2	0.0	71.2
공공시설물	0.0	0.0	0.0	1349.4	0.0	1349.4
기 타	0.0	0.0	0.0	103.9	0.0	103.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 24.94
NPV 15,301
IRR 93.3%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	측 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	34	56	-	-	152	242		484	639	76,313	15,941	
1	-	-	-	208	30	238		238	221			-238
2	120	19	-	89	91	319		319	276			-319
3	51	44	-	-	30	125		125	101			-125
4							5	5	4	1,526	1,143	1,521
5							5	5	3	1,526	1,063	1,521
6							5	5	3	1,526	989	1,521
7							5	5	3	1,526	920	1,521
8							5	5	3	1,526	856	1,521
9							5	5	3	1,526	796	1,521
10							5	5	2	1,526	741	1,521
11							5	5	2	1,526	689	1,521
12							5	5	2	1,526	641	1,521
13							5	5	2	1,526	596	1,521
14							5	5	2	1,526	555	1,521
15							5	5	2	1,526	516	1,521
16							5	5	2	1,526	480	1,521
17							5	5	1	1,526	446	1,521
18							5	5	1	1,526	415	1,521
19							5	5	1	1,526	386	1,521
20							5	5	1	1,526	359	1,521
21							5	5	1	1,526	334	1,521
22							5	5	1	1,526	311	1,521
23							5	5	1	1,526	289	1,521
24							5	5	1	1,526	269	1,521
25							5	5	1	1,526	250	1,521
26							5	5	1	1,526	233	1,521
27							5	5	1	1,526	217	1,521
28							5	5	1	1,526	201	1,521
29							5	5	1	1,526	187	1,521
30							5	5	1	1,526	174	1,521
31							5	5	1	1,526	162	1,521
32							5	5	0	1,526	151	1,521
33							5	5	0	1,526	140	1,521
34							5	5	0	1,526	131	1,521
35							5	5	0	1,526	121	1,521
36							5	5	0	1,526	113	1,521
37							5	5	0	1,526	105	1,521
38							5	5	0	1,526	98	1,521
39							5	5	0	1,526	91	1,521
40							5	5	0	1,526	85	1,521
41							5	5	0	1,526	79	1,521
42							5	5	0	1,526	73	1,521
43							5	5	0	1,526	68	1,521
44							5	5	0	1,526	63	1,521
45							5	5	0	1,526	59	1,521
46							5	5	0	1,526	55	1,521
47							5	5	0	1,526	51	1,521
48							5	5	0	1,526	47	1,521
49							5	5	0	1,526	44	1,521
50							5	5	0	1,526	41	1,521
51							5	5	0	1,526	38	1,521
52							5	5	0	1,526	36	1,521
53	-137	-6	0	-297	0	-440	5	-435	-9	1,526	33	1,961

건설교통부

14.1 양지지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	6,167.3	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	2,565.9	-	1,796.1	769.8	-	-
호 안 공	732.9	-	219.9	513.0	-	-
구조물공	67.0	-	20.1	46.9	-	-
보 상 비	613.7	429.6	184.1	-	-	-
기 타	2,187.8	437.6	1,312.7	437.6	-	-
계	6,167.3	867.1	3,532.9	1,767.2	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	14.1%	57.3%	28.7%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

68.6	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1661.0	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	14.05	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익

소계	5.8	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	5.55	0.00	5.55
부상	0.00	0.00	0.00	0.23	0.00	0.23

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	1.04	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.04	0.00	1.04

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	30.9	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
46.2	0.0	0.0	0.0	30.9	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1623.2	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.8	0.0	75.8
공공시설물	0.0	0.0	0.0	1435.3	0.0	1435.3
기 타	0.0	0.0	0.0	110.5	0.0	110.5

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 2.92
NPV 11,405
IRR 21.7%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	513	660	67	-	2,188	3,428		6,855	5,943	83,050	17,348	
1	-	-	-	430	438	867		867	807			-867
2	1,796	220	20	184	1,313	3,533		3,533	3,057			-3533
3	770	513	47	-	438	1,767		1,767	1,423			-1767
4							69	69	51	1,661	1,244	1,592
5							69	69	48	1,661	1,157	1,592
6							69	69	44	1,661	1,076	1,592
7							69	69	41	1,661	1,001	1,592
8							69	69	38	1,661	931	1,592
9							69	69	36	1,661	866	1,592
10							69	69	33	1,661	806	1,592
11							69	69	31	1,661	750	1,592
12							69	69	29	1,661	697	1,592
13							69	69	27	1,661	649	1,592
14							69	69	25	1,661	603	1,592
15							69	69	23	1,661	561	1,592
16							69	69	22	1,661	522	1,592
17							69	69	20	1,661	486	1,592
18							69	69	19	1,661	452	1,592
19							69	69	17	1,661	420	1,592
20							69	69	16	1,661	391	1,592
21							69	69	15	1,661	364	1,592
22							69	69	14	1,661	338	1,592
23							69	69	13	1,661	315	1,592
24							69	69	12	1,661	293	1,592
25							69	69	11	1,661	272	1,592
26							69	69	10	1,661	253	1,592
27							69	69	10	1,661	236	1,592
28							69	69	9	1,661	219	1,592
29							69	69	8	1,661	204	1,592
30							69	69	8	1,661	190	1,592
31							69	69	7	1,661	176	1,592
32							69	69	7	1,661	164	1,592
33							69	69	6	1,661	153	1,592
34							69	69	6	1,661	142	1,592
35							69	69	5	1,661	132	1,592
36							69	69	5	1,661	123	1,592
37							69	69	5	1,661	114	1,592
38							69	69	4	1,661	106	1,592
39							69	69	4	1,661	99	1,592
40							69	69	4	1,661	92	1,592
41							69	69	4	1,661	86	1,592
42							69	69	3	1,661	80	1,592
43							69	69	3	1,661	74	1,592
44							69	69	3	1,661	69	1,592
45							69	69	3	1,661	64	1,592
46							69	69	2	1,661	60	1,592
47							69	69	2	1,661	55	1,592
48							69	69	2	1,661	52	1,592
49							69	69	2	1,661	48	1,592
50							69	69	2	1,661	45	1,592
51							69	69	2	1,661	42	1,592
52							69	69	2	1,661	39	1,592
53	-2053	-73	0	-614	0	-2740	69	-2671	-58	1,661	36	4,332

건설교통부

14.2 양지지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	6,683.1	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	2,833.9	-	1,983.7	850.2	-	-
호 안 공	777.6	-	233.3	544.3	-	-
구조물 공	67.0	-	20.1	46.9	-	-
보 상 비	613.7	429.6	184.1	-	-	-
기 타	2,391.0	478.2	1,434.6	478.2	-	-
계	6,683.1	907.8	3,855.8	1,919.5	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	13.6%	57.7%	28.7%	0.0%	0.0%	100.0%

나. 유지관리비

74.5	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1653.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	14.37	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익 — 소계 5.9 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	5.65	0.00	5.65
부상	0.00	0.00	0.00	0.23	0.00	0.23

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 1.06 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.06	0.00	1.06

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익 — 소계 31.3 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
47.0	0.0	0.0	0.0	31.3	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1615.2 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.4	0.0	75.4
공공시설물	0.0	0.0	0.0	1428.2	0.0	1428.2
기 타	0.0	0.0	0.0	110.0	0.0	110.0

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 2.68
NPV 10,829
IRR 20.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년)

공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	567	700	67	-	2,391	3,725		7,449	6,440	82,672	17,269	
1	-	-	-	430	478	908		908	844			-908
2	1,984	233	20	184	1,435	3,856		3,856	3,337			-3856
3	850	544	47	-	478	1,920		1,920	1,545			-1920
4							74	74	56	1,653	1,238	1,579
5							74	74	52	1,653	1,152	1,579
6							74	74	48	1,653	1,071	1,579
7							74	74	45	1,653	997	1,579
8							74	74	42	1,653	927	1,579
9							74	74	39	1,653	862	1,579
10							74	74	36	1,653	802	1,579
11							74	74	34	1,653	746	1,579
12							74	74	31	1,653	694	1,579
13							74	74	29	1,653	646	1,579
14							74	74	27	1,653	601	1,579
15							74	74	25	1,653	559	1,579
16							74	74	23	1,653	520	1,579
17							74	74	22	1,653	484	1,579
18							74	74	20	1,653	450	1,579
19							74	74	19	1,653	418	1,579
20							74	74	18	1,653	389	1,579
21							74	74	16	1,653	362	1,579
22							74	74	15	1,653	337	1,579
23							74	74	14	1,653	313	1,579
24							74	74	13	1,653	291	1,579
25							74	74	12	1,653	271	1,579
26							74	74	11	1,653	252	1,579
27							74	74	11	1,653	235	1,579
28							74	74	10	1,653	218	1,579
29							74	74	9	1,653	203	1,579
30							74	74	9	1,653	189	1,579
31							74	74	8	1,653	176	1,579
32							74	74	7	1,653	163	1,579
33							74	74	7	1,653	152	1,579
34							74	74	6	1,653	141	1,579
35							74	74	6	1,653	132	1,579
36							74	74	6	1,653	122	1,579
37							74	74	5	1,653	114	1,579
38							74	74	5	1,653	106	1,579
39							74	74	4	1,653	99	1,579
40							74	74	4	1,653	92	1,579
41							74	74	4	1,653	85	1,579
42							74	74	4	1,653	79	1,579
43							74	74	3	1,653	74	1,579
44							74	74	3	1,653	69	1,579
45							74	74	3	1,653	64	1,579
46							74	74	3	1,653	59	1,579
47							74	74	2	1,653	55	1,579
48							74	74	2	1,653	51	1,579
49							74	74	2	1,653	48	1,579
50							74	74	2	1,653	44	1,579
51							74	74	2	1,653	41	1,579
52							74	74	2	1,653	38	1,579
53	-2267	-78	0	-614	0	-2959	74	-2884	-62	1,653	36	1,535

건설교통부

14.3 양지지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	6,941.9	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	2,972.8	-	2,081.0	891.9	-	-
호 안 공	795.4	-	238.6	556.8	-	-
구조물 공	67.0	-	20.1	46.9	-	-
보 상 비	613.7	429.6	184.1	-	-	-
기 타	2,492.9	498.6	1,495.8	498.6	-	-
계	6,941.9	928.2	4,019.6	1,994.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	13.4%	57.9%	28.7%	0.0%	0.0%	100.0%

나. 유지관리비

77.4	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1653.9	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	14.69	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익

소계	6.0	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	5.78	0.00	5.78
부상	0.00	0.00	0.00	0.24	0.00	0.24

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	1.08	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.08	0.00	1.08

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	31.6	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
47.5	0.0	0.0	0.0	31.6	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1615.2	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.4	0.0	75.4
공공시설물	0.0	0.0	0.0	1428.2	0.0	1428.2
기 타	0.0	0.0	0.0	110.0	0.0	110.0

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

3) 경제성 분석 결과

B/C 2.58
NPV 10,585
IRR 19.4%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	595	716	67	-	2,493	3,870		7,741	6,689	82,697	17,274	
1	-	-	-	430	499	928		928	863			-928
2	2,081	239	20	184	1,496	4,020		4,020	3,478			-4020
3	892	557	47	-	499	1,994		1,994	1,605			-1994
4							77	77	58	1,654	1,238	1,577
5							77	77	54	1,654	1,152	1,577
6							77	77	50	1,654	1,072	1,577
7							77	77	47	1,654	997	1,577
8							77	77	43	1,654	927	1,577
9							77	77	40	1,654	863	1,577
10							77	77	38	1,654	802	1,577
11							77	77	35	1,654	746	1,577
12							77	77	33	1,654	694	1,577
13							77	77	30	1,654	646	1,577
14							77	77	28	1,654	601	1,577
15							77	77	26	1,654	559	1,577
16							77	77	24	1,654	520	1,577
17							77	77	23	1,654	484	1,577
18							77	77	21	1,654	450	1,577
19							77	77	20	1,654	419	1,577
20							77	77	18	1,654	389	1,577
21							77	77	17	1,654	362	1,577
22							77	77	16	1,654	337	1,577
23							77	77	15	1,654	313	1,577
24							77	77	14	1,654	292	1,577
25							77	77	13	1,654	271	1,577
26							77	77	12	1,654	252	1,577
27							77	77	11	1,654	235	1,577
28							77	77	10	1,654	218	1,577
29							77	77	10	1,654	203	1,577
30							77	77	9	1,654	189	1,577
31							77	77	8	1,654	176	1,577
32							77	77	8	1,654	163	1,577
33							77	77	7	1,654	152	1,577
34							77	77	7	1,654	141	1,577
35							77	77	6	1,654	132	1,577
36							77	77	6	1,654	122	1,577
37							77	77	5	1,654	114	1,577
38							77	77	5	1,654	106	1,577
39							77	77	5	1,654	99	1,577
40							77	77	4	1,654	92	1,577
41							77	77	4	1,654	85	1,577
42							77	77	4	1,654	79	1,577
43							77	77	3	1,654	74	1,577
44							77	77	3	1,654	69	1,577
45							77	77	3	1,654	64	1,577
46							77	77	3	1,654	59	1,577
47							77	77	3	1,654	55	1,577
48							77	77	2	1,654	51	1,577
49							77	77	2	1,654	48	1,577
50							77	77	2	1,654	44	1,577
51							77	77	2	1,654	41	1,577
52							77	77	2	1,654	38	1,577
53	-2378	-80	0	-614	0	-3072	77	-2994	-65	1,654	36	4,648

건설교통부

14.4 양지지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	8,768.1	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	3,945.5	-	2,761.9	1,183.7	-	-
호 안 공	929.5	-	278.9	650.7	-	-
구조물공	67.0	-	20.1	46.9	-	-
보 상 비	613.7	429.6	184.1	-	-	-
기 타	3,212.3	642.5	1,927.4	642.5	-	-
계	8,768.1	1,072.1	5,172.3	2,523.7	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	12.2%	59.0%	28.8%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

98.1	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1655.6	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	16.01	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익

소계	6.6	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	6.30	0.00	6.30
부상	0.00	0.00	0.00	0.26	0.00	0.26

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	1.18	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.18	0.00	1.18

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	32.6	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
49.0	0.0	0.0	0.0	32.6	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1615.3	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.4	0.0	75.4
공공시설물	0.0	0.0	0.0	1428.2	0.0	1428.2
기 타	0.0	0.0	0.0	110.0	0.0	110.0

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 2.05
NPV 8,846
IRR 15.7%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	789	837	67	-	3,212	4,905		9,810	8,445	82,782	17,292	
1	-	-	-	430	642	1,072		1,072	997			-1072
2	2,762	279	20	184	1,927	5,172		5,172	4,476			-5172
3	1,184	651	47	-	642	2,524		2,524	2,031			-2524
4							98	98	73	1,656	1,240	1,558
5							98	98	68	1,656	1,153	1,558
6							98	98	64	1,656	1,073	1,558
7							98	98	59	1,656	998	1,558
8							98	98	55	1,656	928	1,558
9							98	98	51	1,656	864	1,558
10							98	98	48	1,656	803	1,558
11							98	98	44	1,656	747	1,558
12							98	98	41	1,656	695	1,558
13							98	98	38	1,656	647	1,558
14							98	98	36	1,656	602	1,558
15							98	98	33	1,656	560	1,558
16							98	98	31	1,656	521	1,558
17							98	98	29	1,656	484	1,558
18							98	98	27	1,656	450	1,558
19							98	98	25	1,656	419	1,558
20							98	98	23	1,656	390	1,558
21							98	98	21	1,656	363	1,558
22							98	98	20	1,656	337	1,558
23							98	98	19	1,656	314	1,558
24							98	98	17	1,656	292	1,558
25							98	98	16	1,656	271	1,558
26							98	98	15	1,656	253	1,558
27							98	98	14	1,656	235	1,558
28							98	98	13	1,656	219	1,558
29							98	98	12	1,656	203	1,558
30							98	98	11	1,656	189	1,558
31							98	98	10	1,656	176	1,558
32							98	98	10	1,656	164	1,558
33							98	98	9	1,656	152	1,558
34							98	98	8	1,656	142	1,558
35							98	98	8	1,656	132	1,558
36							98	98	7	1,656	123	1,558
37							98	98	7	1,656	114	1,558
38							98	98	6	1,656	106	1,558
39							98	98	6	1,656	99	1,558
40							98	98	5	1,656	92	1,558
41							98	98	5	1,656	85	1,558
42							98	98	5	1,656	79	1,558
43							98	98	4	1,656	74	1,558
44							98	98	4	1,656	69	1,558
45							98	98	4	1,656	64	1,558
46							98	98	4	1,656	59	1,558
47							98	98	3	1,656	55	1,558
48							98	98	3	1,656	51	1,558
49							98	98	3	1,656	48	1,558
50							98	98	3	1,656	45	1,558
51							98	98	2	1,656	41	1,558
52							98	98	2	1,656	39	1,558
53	-3156	-93	0	-614	0	-3863	98	-3765	-31	1,656	36	5,421

건설교통부

14.5 양지지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	7,073.3	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	3,043.5	-	2,130.5	913.1	-	-
호 안 공	804.4	-	241.3	563.1	-	-
구조물 공	67.0	-	20.1	46.9	-	-
보 상 비	613.7	429.6	184.1	-	-	-
기 타	2,544.7	508.9	1,526.8	508.9	-	-
계	7,073.3	938.5	4,102.8	2,032.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	13.3%	58.0%	28.7%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

78.9	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1653.9	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	14.69	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.67	0.00

A. 인명보호 편익 — 소계 6.0 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	5.78	0.00	5.78
부상	0.00	0.00	0.00	0.24	0.00	0.24

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 1.08 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	1.08	0.00	1.08

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 31.6 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
47.5	0.0	0.0	0.0	31.6	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1615.2 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.7	0.0	1.7
농 경 지	0.0	0.0	0.0	75.4	0.0	75.4
공공시설물	0.0	0.0	0.0	1428.2	0.0	1428.2
기 타	0.0	0.0	0.0	110.0	0.0	110.0

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 2.53
NPV 10,459
IRR 19.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	609	724	67	-	2,545	3,944		7,889	6,815	82,697	17,274	
1	-	-	-	430	509	939		939	873			-939
2	2,130	241	20	184	1,527	4,103		4,103	3,550			-4103
3	913	563	47	-	509	2,032		2,032	1,636			-2032
4							79	79	59	1,654	1,238	1,575
5							79	79	55	1,654	1,152	1,575
6							79	79	51	1,654	1,072	1,575
7							79	79	48	1,654	997	1,575
8							79	79	44	1,654	927	1,575
9							79	79	41	1,654	863	1,575
10							79	79	38	1,654	802	1,575
11							79	79	36	1,654	746	1,575
12							79	79	33	1,654	694	1,575
13							79	79	31	1,654	646	1,575
14							79	79	29	1,654	601	1,575
15							79	79	27	1,654	559	1,575
16							79	79	25	1,654	520	1,575
17							79	79	23	1,654	484	1,575
18							79	79	21	1,654	450	1,575
19							79	79	20	1,654	419	1,575
20							79	79	19	1,654	389	1,575
21							79	79	17	1,654	362	1,575
22							79	79	16	1,654	337	1,575
23							79	79	15	1,654	313	1,575
24							79	79	14	1,654	292	1,575
25							79	79	13	1,654	271	1,575
26							79	79	12	1,654	252	1,575
27							79	79	11	1,654	235	1,575
28							79	79	10	1,654	218	1,575
29							79	79	10	1,654	203	1,575
30							79	79	9	1,654	189	1,575
31							79	79	8	1,654	176	1,575
32							79	79	8	1,654	163	1,575
33							79	79	7	1,654	152	1,575
34							79	79	7	1,654	141	1,575
35							79	79	6	1,654	132	1,575
36							79	79	6	1,654	122	1,575
37							79	79	5	1,654	114	1,575
38							79	79	5	1,654	106	1,575
39							79	79	5	1,654	99	1,575
40							79	79	4	1,654	92	1,575
41							79	79	4	1,654	85	1,575
42							79	79	4	1,654	79	1,575
43							79	79	4	1,654	74	1,575
44							79	79	3	1,654	69	1,575
45							79	79	3	1,654	64	1,575
46							79	79	3	1,654	59	1,575
47							79	79	3	1,654	55	1,575
48							79	79	2	1,654	51	1,575
49							79	79	2	1,654	48	1,575
50							79	79	2	1,654	44	1,575
51							79	79	2	1,654	41	1,575
52							79	79	2	1,654	38	1,575
53	-2435	-80	0	-614	0	-3129	79	-3050	-66	1,654	36	4,704

건설교통부

15.1 신대1지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	1,828.6	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	387.4	-	271.2	116.2	-	-
호 안 공	308.9	-	92.7	216.2	-	-
구조물 공	40.0	-	12.0	28.0	-	-
보 상 비	613.7	429.6	184.1	-	-	-
기 타	478.6	95.7	287.1	95.7	-	-
계	1,828.6	525.3	847.1	456.2	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	28.7%	46.3%	24.9%	0.0%	0.0%	100.0%

나. 유지관리비

17.5	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1324.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.67	0.00	0.00	0.00

*흉수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.56	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.5 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.44	0.00	0.00	0.00	0.44
부상	0.00	0.02	0.00	0.00	0.00	0.02

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.13 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.13	0.00	0.00	0.00	0.13

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1323.8 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	19.0	0.0	0.0	0.0	19.0
농 경 지	0.0	80.6	0.0	0.0	0.0	80.6
공공시설물	0.0	1167.9	0.0	0.0	0.0	1167.9
기 타	0.0	56.3	0.0	0.0	0.0	56.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

3) 경제성 분석 결과

B/C 7.90
NPV 12,081
IRR 46.3%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	77	278	40	-	479	874		1,748	1,751	66,220	13,832	
1	-	-	-	430	96	525		525	489			-525
2	271	93	12	184	287	847		847	733			-847
3	116	216	28	-	96	456		456	367			-456
4							17	17	13	1,324	992	1,307
5							17	17	12	1,324	923	1,307
6							17	17	11	1,324	858	1,307
7							17	17	11	1,324	798	1,307
8							17	17	10	1,324	743	1,307
9							17	17	9	1,324	691	1,307
10							17	17	8	1,324	643	1,307
11							17	17	8	1,324	598	1,307
12							17	17	7	1,324	556	1,307
13							17	17	7	1,324	517	1,307
14							17	17	6	1,324	481	1,307
15							17	17	6	1,324	448	1,307
16							17	17	5	1,324	416	1,307
17							17	17	5	1,324	387	1,307
18							17	17	5	1,324	360	1,307
19							17	17	4	1,324	335	1,307
20							17	17	4	1,324	312	1,307
21							17	17	4	1,324	290	1,307
22							17	17	4	1,324	270	1,307
23							17	17	3	1,324	251	1,307
24							17	17	3	1,324	233	1,307
25							17	17	3	1,324	217	1,307
26							17	17	3	1,324	202	1,307
27							17	17	2	1,324	188	1,307
28							17	17	2	1,324	175	1,307
29							17	17	2	1,324	163	1,307
30							17	17	2	1,324	151	1,307
31							17	17	2	1,324	141	1,307
32							17	17	2	1,324	131	1,307
33							17	17	2	1,324	122	1,307
34							17	17	1	1,324	113	1,307
35							17	17	1	1,324	105	1,307
36							17	17	1	1,324	98	1,307
37							17	17	1	1,324	91	1,307
38							17	17	1	1,324	85	1,307
39							17	17	1	1,324	79	1,307
40							17	17	1	1,324	73	1,307
41							17	17	1	1,324	68	1,307
42							17	17	1	1,324	64	1,307
43							17	17	1	1,324	59	1,307
44							17	17	1	1,324	55	1,307
45							17	17	1	1,324	51	1,307
46							17	17	1	1,324	48	1,307
47							17	17	1	1,324	44	1,307
48							17	17	1	1,324	41	1,307
49							17	17	1	1,324	38	1,307
50							17	17	0	1,324	36	1,307
51							17	17	0	1,324	33	1,307
52							17	17	0	1,324	31	1,307
53	-310	-31	0	-614	0	-955	17	-937	-20	1,324	29	2,261

건설교통부

15.2 신대1지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	2,637.1	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	757.3	-	530.1	227.2	-	-
호 안 공	429.0	-	128.7	300.3	-	-
구조물 공	40.0	-	12.0	28.0	-	-
보 상 비	613.7	429.6	184.1	-	-	-
기 타	797.1	159.4	478.2	159.4	-	-
계	2,637.1	589.0	1,333.1	714.9	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	22.3%	50.6%	27.1%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

27.5	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1324.6	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.87	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.56	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.6 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.57	0.00	0.00	0.00	0.57
부상	0.00	0.02	0.00	0.00	0.00	0.02

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.17 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.17	0.00	0.00	0.00	0.17

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1323.8 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	19.0	0.0	0.0	0.0	19.0
농 경 지	0.0	80.6	0.0	0.0	0.0	80.6
공공시설물	0.0	1167.9	0.0	0.0	0.0	1167.9
기 타	0.0	56.3	0.0	0.0	0.0	56.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 5.45
NPV 11,297
IRR 35.9%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	151	386	40	-	797	1,375		2,749	2,537	66,229	13,834	
1	-	-	-	430	159	589		589	548			-589
2	530	129	12	184	478	1,333		1,333	1,154			-1333
3	227	300	28	-	159	715		715	575			-715
4							27	27	21	1,325	992	1,297
5							27	27	19	1,325	923	1,297
6							27	27	18	1,325	858	1,297
7							27	27	17	1,325	798	1,297
8							27	27	15	1,325	743	1,297
9							27	27	14	1,325	691	1,297
10							27	27	13	1,325	643	1,297
11							27	27	12	1,325	598	1,297
12							27	27	12	1,325	556	1,297
13							27	27	11	1,325	517	1,297
14							27	27	10	1,325	481	1,297
15							27	27	9	1,325	448	1,297
16							27	27	9	1,325	416	1,297
17							27	27	8	1,325	387	1,297
18							27	27	7	1,325	360	1,297
19							27	27	7	1,325	335	1,297
20							27	27	6	1,325	312	1,297
21							27	27	6	1,325	290	1,297
22							27	27	6	1,325	270	1,297
23							27	27	5	1,325	251	1,297
24							27	27	5	1,325	233	1,297
25							27	27	5	1,325	217	1,297
26							27	27	4	1,325	202	1,297
27							27	27	4	1,325	188	1,297
28							27	27	4	1,325	175	1,297
29							27	27	3	1,325	163	1,297
30							27	27	3	1,325	151	1,297
31							27	27	3	1,325	141	1,297
32							27	27	3	1,325	131	1,297
33							27	27	3	1,325	122	1,297
34							27	27	2	1,325	113	1,297
35							27	27	2	1,325	105	1,297
36							27	27	2	1,325	98	1,297
37							27	27	2	1,325	91	1,297
38							27	27	2	1,325	85	1,297
39							27	27	2	1,325	79	1,297
40							27	27	2	1,325	73	1,297
41							27	27	1	1,325	68	1,297
42							27	27	1	1,325	64	1,297
43							27	27	1	1,325	59	1,297
44							27	27	1	1,325	55	1,297
45							27	27	1	1,325	51	1,297
46							27	27	1	1,325	48	1,297
47							27	27	1	1,325	44	1,297
48							27	27	1	1,325	41	1,297
49							27	27	1	1,325	38	1,297
50							27	27	1	1,325	36	1,297
51							27	27	1	1,325	33	1,297
52							27	27	1	1,325	31	1,297
53	-606	-43	0	-614	0	-1262	27	-1235	-27	1,325	29	2,559

건설교통부

15.3 신대1지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	2,745.9	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	806.8	-	564.8	242.0	-	-
호 안 공	445.5	-	133.6	311.8	-	-
구조물 공	40.0	-	12.0	28.0	-	-
보 상 비	613.7	429.6	184.1	-	-	-
기 타	840.0	168.0	504.0	168.0	-	-
계	2,745.9	597.6	1,398.5	749.9	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	21.8%	50.9%	27.3%	0.0%	0.0%	100.0%

나. 유지관리비

28.8	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1324.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	1.13	0.00	0.00	0.00

*용수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.56	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.8 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.75	0.00	0.00	0.00	0.75
부상	0.00	0.03	0.00	0.00	0.00	0.03

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.22 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.22	0.00	0.00	0.00	0.22

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1323.8 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	19.0	0.0	0.0	0.0	19.0
농 경 지	0.0	80.6	0.0	0.0	0.0	80.6
공공시설물	0.0	1167.9	0.0	0.0	0.0	1167.9
기 타	0.0	56.3	0.0	0.0	0.0	56.3

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 5.24
NPV 11,194
IRR 34.8%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균 유지비	3. 연평균 비용		4. 연평균 편익		5. 순현금 유 입
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계		1 + 2	현재가치	연간편익	현재가치	
합 계	161	401	40	-	840	1,442		2,884	2,643	66,240	13,837	
1	-	-	-	430	168	598		598	556			-598
2	565	134	12	184	504	1,398		1,398	1,210			-1398
3	242	312	28	-	168	750		750	604			-750
4							29	29	22	1,325	992	1,296
5							29	29	20	1,325	923	1,296
6							29	29	19	1,325	858	1,296
7							29	29	17	1,325	799	1,296
8							29	29	16	1,325	743	1,296
9							29	29	15	1,325	691	1,296
10							29	29	14	1,325	643	1,296
11							29	29	13	1,325	598	1,296
12							29	29	12	1,325	556	1,296
13							29	29	11	1,325	517	1,296
14							29	29	10	1,325	481	1,296
15							29	29	10	1,325	448	1,296
16							29	29	9	1,325	417	1,296
17							29	29	8	1,325	387	1,296
18							29	29	8	1,325	360	1,296
19							29	29	7	1,325	335	1,296
20							29	29	7	1,325	312	1,296
21							29	29	6	1,325	290	1,296
22							29	29	6	1,325	270	1,296
23							29	29	5	1,325	251	1,296
24							29	29	5	1,325	234	1,296
25							29	29	5	1,325	217	1,296
26							29	29	4	1,325	202	1,296
27							29	29	4	1,325	188	1,296
28							29	29	4	1,325	175	1,296
29							29	29	4	1,325	163	1,296
30							29	29	3	1,325	151	1,296
31							29	29	3	1,325	141	1,296
32							29	29	3	1,325	131	1,296
33							29	29	3	1,325	122	1,296
34							29	29	2	1,325	113	1,296
35							29	29	2	1,325	105	1,296
36							29	29	2	1,325	98	1,296
37							29	29	2	1,325	91	1,296
38							29	29	2	1,325	85	1,296
39							29	29	2	1,325	79	1,296
40							29	29	2	1,325	73	1,296
41							29	29	1	1,325	68	1,296
42							29	29	1	1,325	64	1,296
43							29	29	1	1,325	59	1,296
44							29	29	1	1,325	55	1,296
45							29	29	1	1,325	51	1,296
46							29	29	1	1,325	48	1,296
47							29	29	1	1,325	44	1,296
48							29	29	1	1,325	41	1,296
49							29	29	1	1,325	38	1,296
50							29	29	1	1,325	36	1,296
51							29	29	1	1,325	33	1,296
52							29	29	1	1,325	31	1,296
53	-645	-45	0	-614	0	-1304	29	-1275	-28	1,325	29	2,600

건설교통부

15.4 신대1지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	3,057.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	962.3	-	673.6	288.7	-	-
호 안 공	479.1	-	143.7	335.3	-	-
구조물 공	40.0	-	12.0	28.0	-	-
보 상 비	613.7	429.6	184.1	-	-	-
기 타	962.8	192.6	577.7	192.6	-	-
계	3,057.8	622.2	1,591.1	844.6	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	20.3%	52.0%	27.6%	0.0%	0.0%	100.0%

나. 유지관리비

32.5	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1325.0	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	1.38	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.56	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.9 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.91	0.00	0.00	0.00	0.91
부상	0.00	0.04	0.00	0.00	0.00	0.04

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.27 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.27	0.00	0.00	0.00	0.27

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1323.8 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	19.0	0.0	0.0	0.0	19.0
농 경 지	0.0	80.6	0.0	0.0	0.0	80.6
공공시설물	0.0	1167.9	0.0	0.0	0.0	1167.9
기 타	0.0	56.4	0.0	0.0	0.0	56.4

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 4.70
NPV 10,895
IRR 32.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	192	431	40	-	963	1,626		3,253	2,944	66,251	13,839	
1	-	-	-	430	193	622		622	579			-622
2	674	144	12	184	578	1,591		1,591	1,377			-1591
3	289	335	28	-	193	845		845	680			-845
4							33	33	24	1,325	992	1,292
5							33	33	23	1,325	923	1,292
6							33	33	21	1,325	859	1,292
7							33	33	20	1,325	799	1,292
8							33	33	18	1,325	743	1,292
9							33	33	17	1,325	691	1,292
10							33	33	16	1,325	643	1,292
11							33	33	15	1,325	598	1,292
12							33	33	14	1,325	556	1,292
13							33	33	13	1,325	518	1,292
14							33	33	12	1,325	481	1,292
15							33	33	11	1,325	448	1,292
16							33	33	10	1,325	417	1,292
17							33	33	10	1,325	388	1,292
18							33	33	9	1,325	360	1,292
19							33	33	8	1,325	335	1,292
20							33	33	8	1,325	312	1,292
21							33	33	7	1,325	290	1,292
22							33	33	7	1,325	270	1,292
23							33	33	6	1,325	251	1,292
24							33	33	6	1,325	234	1,292
25							33	33	5	1,325	217	1,292
26							33	33	5	1,325	202	1,292
27							33	33	5	1,325	188	1,292
28							33	33	4	1,325	175	1,292
29							33	33	4	1,325	163	1,292
30							33	33	4	1,325	151	1,292
31							33	33	3	1,325	141	1,292
32							33	33	3	1,325	131	1,292
33							33	33	3	1,325	122	1,292
34							33	33	3	1,325	113	1,292
35							33	33	3	1,325	105	1,292
36							33	33	2	1,325	98	1,292
37							33	33	2	1,325	91	1,292
38							33	33	2	1,325	85	1,292
39							33	33	2	1,325	79	1,292
40							33	33	2	1,325	73	1,292
41							33	33	2	1,325	68	1,292
42							33	33	2	1,325	64	1,292
43							33	33	1	1,325	59	1,292
44							33	33	1	1,325	55	1,292
45							33	33	1	1,325	51	1,292
46							33	33	1	1,325	48	1,292
47							33	33	1	1,325	44	1,292
48							33	33	1	1,325	41	1,292
49							33	33	1	1,325	38	1,292
50							33	33	1	1,325	36	1,292
51							33	33	1	1,325	33	1,292
52							33	33	1	1,325	31	1,292
53	-770	-48	0	-614	0	-1431	33	-1399	-30	1,325	29	2,724

건설교통부

15.5 신대1지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	3,057.8	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	962.3	-	673.6	288.7	-	-
호 안 공	479.1	-	143.7	335.3	-	-
구조물 공	40.0	-	12.0	28.0	-	-
보 상 비	613.7	429.6	184.1	-	-	-
기 타	962.8	192.6	577.7	192.6	-	-
계	3,057.8	622.2	1,591.1	844.6	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	20.3%	52.0%	27.6%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

32.5	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1324.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	1.13	0.00	0.00	0.00

*용수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.56	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.8 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.75	0.00	0.00	0.00	0.75
부상	0.00	0.03	0.00	0.00	0.00	0.03

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.22 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.22	0.00	0.00	0.00	0.22

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1323.8 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	19.0	0.0	0.0	0.0	19.0
농 경 지	0.0	80.6	0.0	0.0	0.0	80.6
공공시설물	0.0	1167.9	0.0	0.0	0.0	1167.9
기 타	0.0	56.3	0.0	0.0	0.0	56.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 4.70
NPV 10,892
IRR 32.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년)

공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	192	431	40	-	963	1,626		3,253	2,944	66,240	13,837	
1	-	-	-	430	193	622		622	579			-622
2	674	144	12	184	578	1,591		1,591	1,377			-1591
3	289	335	28	-	193	845		845	680			-845
4							33	33	24	1,325	992	1,292
5							33	33	23	1,325	923	1,292
6							33	33	21	1,325	858	1,292
7							33	33	20	1,325	799	1,292
8							33	33	18	1,325	743	1,292
9							33	33	17	1,325	691	1,292
10							33	33	16	1,325	643	1,292
11							33	33	15	1,325	598	1,292
12							33	33	14	1,325	556	1,292
13							33	33	13	1,325	517	1,292
14							33	33	12	1,325	481	1,292
15							33	33	11	1,325	448	1,292
16							33	33	10	1,325	417	1,292
17							33	33	10	1,325	387	1,292
18							33	33	9	1,325	360	1,292
19							33	33	8	1,325	335	1,292
20							33	33	8	1,325	312	1,292
21							33	33	7	1,325	290	1,292
22							33	33	7	1,325	270	1,292
23							33	33	6	1,325	251	1,292
24							33	33	6	1,325	234	1,292
25							33	33	5	1,325	217	1,292
26							33	33	5	1,325	202	1,292
27							33	33	5	1,325	188	1,292
28							33	33	4	1,325	175	1,292
29							33	33	4	1,325	163	1,292
30							33	33	4	1,325	151	1,292
31							33	33	3	1,325	141	1,292
32							33	33	3	1,325	131	1,292
33							33	33	3	1,325	122	1,292
34							33	33	3	1,325	113	1,292
35							33	33	3	1,325	105	1,292
36							33	33	2	1,325	98	1,292
37							33	33	2	1,325	91	1,292
38							33	33	2	1,325	85	1,292
39							33	33	2	1,325	79	1,292
40							33	33	2	1,325	73	1,292
41							33	33	2	1,325	68	1,292
42							33	33	2	1,325	64	1,292
43							33	33	1	1,325	59	1,292
44							33	33	1	1,325	55	1,292
45							33	33	1	1,325	51	1,292
46							33	33	1	1,325	48	1,292
47							33	33	1	1,325	44	1,292
48							33	33	1	1,325	41	1,292
49							33	33	1	1,325	38	1,292
50							33	33	1	1,325	36	1,292
51							33	33	1	1,325	33	1,292
52							33	33	1	1,325	31	1,292
53	-770	-48	0	-614	0	-1431	33	-1399	-30	1,325	29	2,724

건설교통부

16.1 정림지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	298.6	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	78.9	-	55.3	23.7	-	-
호 안 공	64.1	-	19.2	44.9	-	-
구조물공	12.0	-	3.6	8.4	-	-
보 상 비	42.8	29.9	12.8	-	-	-
기 타	100.8	20.2	60.5	20.2	-	-
계	298.6	50.1	151.4	97.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	16.8%	50.7%	32.5%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

3.7	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1323.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.01	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.56	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.0 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.01	0.00	0.00	0.00	0.01
부상	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.00 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1323.8 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	19.0	0.0	0.0	0.0	19.0
농 경 지	0.0	80.6	0.0	0.0	0.0	80.6
공공시설물	0.0	1167.9	0.0	0.0	0.0	1167.9
기 타	0.0	56.3	0.0	0.0	0.0	56.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 47.31
NPV 13,534
IRR 159.5%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	16	58	12	-	101	186		373	292	66,190	13,826	
1	-	-	-	30	20	50		50	47			-50
2	55	19	4	13	60	151		151	131			-151
3	24	45	8	-	20	97		97	78			-97
4							4	4	3	1,324	991	1,320
5							4	4	3	1,324	922	1,320
6							4	4	2	1,324	858	1,320
7							4	4	2	1,324	798	1,320
8							4	4	2	1,324	742	1,320
9							4	4	2	1,324	690	1,320
10							4	4	2	1,324	642	1,320
11							4	4	2	1,324	597	1,320
12							4	4	2	1,324	556	1,320
13							4	4	1	1,324	517	1,320
14							4	4	1	1,324	481	1,320
15							4	4	1	1,324	447	1,320
16							4	4	1	1,324	416	1,320
17							4	4	1	1,324	387	1,320
18							4	4	1	1,324	360	1,320
19							4	4	1	1,324	335	1,320
20							4	4	1	1,324	312	1,320
21							4	4	1	1,324	290	1,320
22							4	4	1	1,324	270	1,320
23							4	4	1	1,324	251	1,320
24							4	4	1	1,324	233	1,320
25							4	4	1	1,324	217	1,320
26							4	4	1	1,324	202	1,320
27							4	4	1	1,324	188	1,320
28							4	4	0	1,324	175	1,320
29							4	4	0	1,324	163	1,320
30							4	4	0	1,324	151	1,320
31							4	4	0	1,324	141	1,320
32							4	4	0	1,324	131	1,320
33							4	4	0	1,324	122	1,320
34							4	4	0	1,324	113	1,320
35							4	4	0	1,324	105	1,320
36							4	4	0	1,324	98	1,320
37							4	4	0	1,324	91	1,320
38							4	4	0	1,324	85	1,320
39							4	4	0	1,324	79	1,320
40							4	4	0	1,324	73	1,320
41							4	4	0	1,324	68	1,320
42							4	4	0	1,324	63	1,320
43							4	4	0	1,324	59	1,320
44							4	4	0	1,324	55	1,320
45							4	4	0	1,324	51	1,320
46							4	4	0	1,324	48	1,320
47							4	4	0	1,324	44	1,320
48							4	4	0	1,324	41	1,320
49							4	4	0	1,324	38	1,320
50							4	4	0	1,324	36	1,320
51							4	4	0	1,324	33	1,320
52							4	4	0	1,324	31	1,320
53	-63	-6	0	-43	0	-112	4	-109	-2	1,324	29	1,432

건설교통부

16.2 정림지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	308.4	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	84.1	-	58.8	25.2	-	-
호 안 공	65.0	-	19.5	45.5	-	-
구조물공	12.0	-	3.6	8.4	-	-
보 상 비	42.8	29.9	12.8	-	-	-
기 타	104.7	20.9	62.8	20.9	-	-
계	308.4	50.9	157.5	100.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	16.5%	51.1%	32.4%	0.0%	0.0%	100.0%

나. 유지관리비

3.8	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1323.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.01	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.56	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.0 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.01	0.00	0.00	0.00	0.01
부상	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.00 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1323.8 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	19.0	0.0	0.0	0.0	19.0
농 경 지	0.0	80.6	0.0	0.0	0.0	80.6
공공시설물	0.0	1167.9	0.0	0.0	0.0	1167.9
기 타	0.0	56.3	0.0	0.0	0.0	56.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 45.82
NPV 13,524
IRR 157.0%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	17	58	12	-	105	192		384	302	66,190	13,826	
1	-	-	-	30	21	51		51	47			-51
2	59	19	4	13	63	158		158	136			-158
3	25	45	8	-	21	100		100	81			-100
4							4	4	3	1,324	991	1,320
5							4	4	3	1,324	922	1,320
6							4	4	2	1,324	858	1,320
7							4	4	2	1,324	798	1,320
8							4	4	2	1,324	742	1,320
9							4	4	2	1,324	690	1,320
10							4	4	2	1,324	642	1,320
11							4	4	2	1,324	597	1,320
12							4	4	2	1,324	556	1,320
13							4	4	1	1,324	517	1,320
14							4	4	1	1,324	481	1,320
15							4	4	1	1,324	447	1,320
16							4	4	1	1,324	416	1,320
17							4	4	1	1,324	387	1,320
18							4	4	1	1,324	360	1,320
19							4	4	1	1,324	335	1,320
20							4	4	1	1,324	312	1,320
21							4	4	1	1,324	290	1,320
22							4	4	1	1,324	270	1,320
23							4	4	1	1,324	251	1,320
24							4	4	1	1,324	233	1,320
25							4	4	1	1,324	217	1,320
26							4	4	1	1,324	202	1,320
27							4	4	1	1,324	188	1,320
28							4	4	1	1,324	175	1,320
29							4	4	0	1,324	163	1,320
30							4	4	0	1,324	151	1,320
31							4	4	0	1,324	141	1,320
32							4	4	0	1,324	131	1,320
33							4	4	0	1,324	122	1,320
34							4	4	0	1,324	113	1,320
35							4	4	0	1,324	105	1,320
36							4	4	0	1,324	98	1,320
37							4	4	0	1,324	91	1,320
38							4	4	0	1,324	85	1,320
39							4	4	0	1,324	79	1,320
40							4	4	0	1,324	73	1,320
41							4	4	0	1,324	68	1,320
42							4	4	0	1,324	63	1,320
43							4	4	0	1,324	59	1,320
44							4	4	0	1,324	55	1,320
45							4	4	0	1,324	51	1,320
46							4	4	0	1,324	48	1,320
47							4	4	0	1,324	44	1,320
48							4	4	0	1,324	41	1,320
49							4	4	0	1,324	38	1,320
50							4	4	0	1,324	36	1,320
51							4	4	0	1,324	33	1,320
52							4	4	0	1,324	31	1,320
53	-67	-6	0	-43	0	-116	4	-113	-2	1,324	29	1,436

건설교통부

16.3 정림지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	313.7	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	86.4	-	60.5	25.9	-	-
호 안 공	65.8	-	19.7	46.1	-	-
구조물공	12.0	-	3.6	8.4	-	-
보 상 비	42.8	29.9	12.8	-	-	-
기 타	106.8	21.4	64.1	21.4	-	-
계	313.7	51.3	160.7	101.7	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	16.3%	51.2%	32.4%	0.0%	0.0%	100.0%

나. 유지관리비

3.9	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1323.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.01	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.56	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.0 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.01	0.00	0.00	0.00	0.01
부상	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.00 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1323.8 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	19.0	0.0	0.0	0.0	19.0
농 경 지	0.0	80.6	0.0	0.0	0.0	80.6
공공시설물	0.0	1167.9	0.0	0.0	0.0	1167.9
기 타	0.0	56.3	0.0	0.0	0.0	56.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 45.05
NPV 13,519
IRR 155.7%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	17	59	12	-	107	195		391	307	66,190	13,826	
1	-	-	-	30	21	51		51	48			-51
2	60	20	4	13	64	161		161	139			-161
3	26	46	8	-	21	102		102	82			-102
4							4	4	3	1,324	991	1,320
5							4	4	3	1,324	922	1,320
6							4	4	3	1,324	858	1,320
7							4	4	2	1,324	798	1,320
8							4	4	2	1,324	742	1,320
9							4	4	2	1,324	690	1,320
10							4	4	2	1,324	642	1,320
11							4	4	2	1,324	597	1,320
12							4	4	2	1,324	556	1,320
13							4	4	2	1,324	517	1,320
14							4	4	1	1,324	481	1,320
15							4	4	1	1,324	447	1,320
16							4	4	1	1,324	416	1,320
17							4	4	1	1,324	387	1,320
18							4	4	1	1,324	360	1,320
19							4	4	1	1,324	335	1,320
20							4	4	1	1,324	312	1,320
21							4	4	1	1,324	290	1,320
22							4	4	1	1,324	270	1,320
23							4	4	1	1,324	251	1,320
24							4	4	1	1,324	233	1,320
25							4	4	1	1,324	217	1,320
26							4	4	1	1,324	202	1,320
27							4	4	1	1,324	188	1,320
28							4	4	1	1,324	175	1,320
29							4	4	0	1,324	163	1,320
30							4	4	0	1,324	151	1,320
31							4	4	0	1,324	141	1,320
32							4	4	0	1,324	131	1,320
33							4	4	0	1,324	122	1,320
34							4	4	0	1,324	113	1,320
35							4	4	0	1,324	105	1,320
36							4	4	0	1,324	98	1,320
37							4	4	0	1,324	91	1,320
38							4	4	0	1,324	85	1,320
39							4	4	0	1,324	79	1,320
40							4	4	0	1,324	73	1,320
41							4	4	0	1,324	68	1,320
42							4	4	0	1,324	63	1,320
43							4	4	0	1,324	59	1,320
44							4	4	0	1,324	55	1,320
45							4	4	0	1,324	51	1,320
46							4	4	0	1,324	48	1,320
47							4	4	0	1,324	44	1,320
48							4	4	0	1,324	41	1,320
49							4	4	0	1,324	38	1,320
50							4	4	0	1,324	36	1,320
51							4	4	0	1,324	33	1,320
52							4	4	0	1,324	31	1,320
53	-69	-7	0	-43	0	-118	4	-115	-2	1,324	29	1,438

건설교통부

16.4 정림지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	331.7	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	95.6	-	66.9	28.7	-	-
호 안 공	67.5	-	20.3	47.3	-	-
구조물공	12.0	-	3.6	8.4	-	-
보 상 비	42.8	29.9	12.8	-	-	-
기 타	113.8	22.8	68.3	22.8	-	-
계	331.7	52.7	171.9	107.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	15.9%	51.8%	32.3%	0.0%	0.0%	100.0%

나. 유지관리비

4.1	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1323.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.01	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.56	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.0 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.01	0.00	0.00	0.00	0.01
부상	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.00 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1323.8 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	19.0	0.0	0.0	0.0	19.0
농 경 지	0.0	80.6	0.0	0.0	0.0	80.6
공공시설물	0.0	1167.9	0.0	0.0	0.0	1167.9
기 타	0.0	56.3	0.0	0.0	0.0	56.3

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 42.65
NPV 13,502
IRR 151.3%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	19	61	12	-	114	206		411	324	66,190	13,826	
1	-	-	-	30	23	53		53	49			-53
2	67	20	4	13	68	172		172	149			-172
3	29	47	8	-	23	107		107	86			-107
4							4	4	3	1,324	991	1,320
5							4	4	3	1,324	922	1,320
6							4	4	3	1,324	858	1,320
7							4	4	2	1,324	798	1,320
8							4	4	2	1,324	742	1,320
9							4	4	2	1,324	690	1,320
10							4	4	2	1,324	642	1,320
11							4	4	2	1,324	597	1,320
12							4	4	2	1,324	556	1,320
13							4	4	2	1,324	517	1,320
14							4	4	1	1,324	481	1,320
15							4	4	1	1,324	447	1,320
16							4	4	1	1,324	416	1,320
17							4	4	1	1,324	387	1,320
18							4	4	1	1,324	360	1,320
19							4	4	1	1,324	335	1,320
20							4	4	1	1,324	312	1,320
21							4	4	1	1,324	290	1,320
22							4	4	1	1,324	270	1,320
23							4	4	1	1,324	251	1,320
24							4	4	1	1,324	233	1,320
25							4	4	1	1,324	217	1,320
26							4	4	1	1,324	202	1,320
27							4	4	1	1,324	188	1,320
28							4	4	1	1,324	175	1,320
29							4	4	1	1,324	163	1,320
30							4	4	0	1,324	151	1,320
31							4	4	0	1,324	141	1,320
32							4	4	0	1,324	131	1,320
33							4	4	0	1,324	122	1,320
34							4	4	0	1,324	113	1,320
35							4	4	0	1,324	105	1,320
36							4	4	0	1,324	98	1,320
37							4	4	0	1,324	91	1,320
38							4	4	0	1,324	85	1,320
39							4	4	0	1,324	79	1,320
40							4	4	0	1,324	73	1,320
41							4	4	0	1,324	68	1,320
42							4	4	0	1,324	63	1,320
43							4	4	0	1,324	59	1,320
44							4	4	0	1,324	55	1,320
45							4	4	0	1,324	51	1,320
46							4	4	0	1,324	48	1,320
47							4	4	0	1,324	44	1,320
48							4	4	0	1,324	41	1,320
49							4	4	0	1,324	38	1,320
50							4	4	0	1,324	36	1,320
51							4	4	0	1,324	33	1,320
52							4	4	0	1,324	31	1,320
53	-76	-7	0	-43	0	-126	4	-122	-3	1,324	29	1,446

건설교통부

16.5 정림지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	313.7	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	86.4	-	60.5	25.9	-	-
호 안 공	65.8	-	19.7	46.1	-	-
구조물 공	12.0	-	3.6	8.4	-	-
보 상 비	42.8	29.9	12.8	-	-	-
기 타	106.8	21.4	64.1	21.4	-	-
계	313.7	51.3	160.7	101.7	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	16.3%	51.2%	32.4%	0.0%	0.0%	100.0%

나. 유지관리비

3.9	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1323.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.01	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.56	0.00	0.00	0.00

A. 인명보호 편익 — 소계 0.0 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.01	0.00	0.00	0.00	0.01
부상	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.00 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.00	0.00	0.00

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익 — 소계 0.0 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
0.0	0.0	0.0	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1323.8 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	19.0	0.0	0.0	0.0	19.0
농 경 지	0.0	80.6	0.0	0.0	0.0	80.6
공공시설물	0.0	1167.9	0.0	0.0	0.0	1167.9
기 타	0.0	56.3	0.0	0.0	0.0	56.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 45.05
NPV 13,519
IRR 155.7%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	17	59	12	-	107	195		391	307	66,190	13,826	
1	-	-	-	30	21	51		51	48			-51
2	60	20	4	13	64	161		161	139			-161
3	26	46	8	-	21	102		102	82			-102
4							4	4	3	1,324	991	1,320
5							4	4	3	1,324	922	1,320
6							4	4	3	1,324	858	1,320
7							4	4	2	1,324	798	1,320
8							4	4	2	1,324	742	1,320
9							4	4	2	1,324	690	1,320
10							4	4	2	1,324	642	1,320
11							4	4	2	1,324	597	1,320
12							4	4	2	1,324	556	1,320
13							4	4	2	1,324	517	1,320
14							4	4	1	1,324	481	1,320
15							4	4	1	1,324	447	1,320
16							4	4	1	1,324	416	1,320
17							4	4	1	1,324	387	1,320
18							4	4	1	1,324	360	1,320
19							4	4	1	1,324	335	1,320
20							4	4	1	1,324	312	1,320
21							4	4	1	1,324	290	1,320
22							4	4	1	1,324	270	1,320
23							4	4	1	1,324	251	1,320
24							4	4	1	1,324	233	1,320
25							4	4	1	1,324	217	1,320
26							4	4	1	1,324	202	1,320
27							4	4	1	1,324	188	1,320
28							4	4	1	1,324	175	1,320
29							4	4	0	1,324	163	1,320
30							4	4	0	1,324	151	1,320
31							4	4	0	1,324	141	1,320
32							4	4	0	1,324	131	1,320
33							4	4	0	1,324	122	1,320
34							4	4	0	1,324	113	1,320
35							4	4	0	1,324	105	1,320
36							4	4	0	1,324	98	1,320
37							4	4	0	1,324	91	1,320
38							4	4	0	1,324	85	1,320
39							4	4	0	1,324	79	1,320
40							4	4	0	1,324	73	1,320
41							4	4	0	1,324	68	1,320
42							4	4	0	1,324	63	1,320
43							4	4	0	1,324	59	1,320
44							4	4	0	1,324	55	1,320
45							4	4	0	1,324	51	1,320
46							4	4	0	1,324	48	1,320
47							4	4	0	1,324	44	1,320
48							4	4	0	1,324	41	1,320
49							4	4	0	1,324	38	1,320
50							4	4	0	1,324	36	1,320
51							4	4	0	1,324	33	1,320
52							4	4	0	1,324	31	1,320
53	-69	-7	0	-43	0	-118	4	-115	-2	1,324	29	1,438

건설교통부

17.1 괴곡지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	109.2	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	20.8	-	14.5	6.2	-	-
호 안 공	-	-	-	-	-	-
구조물공	-	-	-	-	-	-
보 상 비	74.9	52.5	22.5	-	-	-
기 타	13.5	2.7	8.1	2.7	-	-
계	109.2	55.2	45.1	8.9	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	50.5%	41.3%	8.2%	0.0%	0.0%	100.0%

나. 유지관리비

0.4	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	220.7	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	1.05	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.56	0.00

A. 인명보호 편익 — 소계 0.4 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.35	0.00	0.35
부상	0.00	0.00	0.00	0.01	0.00	0.01

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.06 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.06	0.00	0.06

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익 — 소계 3.2 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
5.7	0.0	0.0	0.0	3.2	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 217.0 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.4	0.0	1.4
농 경 지	0.0	0.0	0.0	63.3	0.0	63.3
공공시설물	0.0	0.0	0.0	60.0	0.0	60.0
기 타	0.0	0.0	0.0	92.4	0.0	92.4

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 23.23
NPV 2,205
IRR 81.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	4	-	-	-	13	18	-	35	99	11,033	2,305	-
1	-	-	-	52	3	55		55	51			-55
2	15	-	-	22	8	45		45	39			-45
3	6	-	-	-	3	9		9	7			-9
4							0	0	0	221	165	220
5							0	0	0	221	154	220
6							0	0	0	221	143	220
7							0	0	0	221	133	220
8							0	0	0	221	124	220
9							0	0	0	221	115	220
10							0	0	0	221	107	220
11							0	0	0	221	100	220
12							0	0	0	221	93	220
13							0	0	0	221	86	220
14							0	0	0	221	80	220
15							0	0	0	221	75	220
16							0	0	0	221	69	220
17							0	0	0	221	65	220
18							0	0	0	221	60	220
19							0	0	0	221	56	220
20							0	0	0	221	52	220
21							0	0	0	221	48	220
22							0	0	0	221	45	220
23							0	0	0	221	42	220
24							0	0	0	221	39	220
25							0	0	0	221	36	220
26							0	0	0	221	34	220
27							0	0	0	221	31	220
28							0	0	0	221	29	220
29							0	0	0	221	27	220
30							0	0	0	221	25	220
31							0	0	0	221	23	220
32							0	0	0	221	22	220
33							0	0	0	221	20	220
34							0	0	0	221	19	220
35							0	0	0	221	18	220
36							0	0	0	221	16	220
37							0	0	0	221	15	220
38							0	0	0	221	14	220
39							0	0	0	221	13	220
40							0	0	0	221	12	220
41							0	0	0	221	11	220
42							0	0	0	221	11	220
43							0	0	0	221	10	220
44							0	0	0	221	9	220
45							0	0	0	221	9	220
46							0	0	0	221	8	220
47							0	0	0	221	7	220
48							0	0	0	221	7	220
49							0	0	0	221	6	220
50							0	0	0	221	6	220
51							0	0	0	221	6	220
52							0	0	0	221	5	220
53	-17	0	0	-75	0	-92	0	-91	-2	221	5	312

건설교통부

17.2 괴곡지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	117.6	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	25.9	-	18.1	7.8	-	-
호 안 공	-	-	-	-	-	-
구조물 공	-	-	-	-	-	-
보 상 비	74.9	52.5	22.5	-	-	-
기 타	16.8	3.4	10.1	3.4	-	-
계	117.6	55.8	50.7	11.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	47.5%	43.1%	9.5%	0.0%	0.0%	100.0%

나. 유지관리비

0.4	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	221.5	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	1.28	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.56	0.00

A. 인명보호 편익 — 소계 0.4 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.42	0.00	0.42
부상	0.00	0.00	0.00	0.02	0.00	0.02

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 0.08 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.08	0.00	0.08

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 3.9 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
7.0	0.0	0.0	0.0	3.9	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 217.0 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.4	0.0	1.4
농 경 지	0.0	0.0	0.0	63.3	0.0	63.3
공공시설물	0.0	0.0	0.0	60.0	0.0	60.0
기 타	0.0	0.0	0.0	92.4	0.0	92.4

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 21.57
NPV 2,206
IRR 78.8%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	측 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	5	-	-	-	17	22		44	107	11,073	2,313	
1	-	-	-	52	3	56		56	52			-56
2	18	-	-	22	10	51		51	44			-51
3	8	-	-	-	3	11		11	9			-11
4							0	0	0	221	166	221
5							0	0	0	221	154	221
6							0	0	0	221	143	221
7							0	0	0	221	133	221
8							0	0	0	221	124	221
9							0	0	0	221	116	221
10							0	0	0	221	107	221
11							0	0	0	221	100	221
12							0	0	0	221	93	221
13							0	0	0	221	86	221
14							0	0	0	221	80	221
15							0	0	0	221	75	221
16							0	0	0	221	70	221
17							0	0	0	221	65	221
18							0	0	0	221	60	221
19							0	0	0	221	56	221
20							0	0	0	221	52	221
21							0	0	0	221	48	221
22							0	0	0	221	45	221
23							0	0	0	221	42	221
24							0	0	0	221	39	221
25							0	0	0	221	36	221
26							0	0	0	221	34	221
27							0	0	0	221	31	221
28							0	0	0	221	29	221
29							0	0	0	221	27	221
30							0	0	0	221	25	221
31							0	0	0	221	24	221
32							0	0	0	221	22	221
33							0	0	0	221	20	221
34							0	0	0	221	19	221
35							0	0	0	221	18	221
36							0	0	0	221	16	221
37							0	0	0	221	15	221
38							0	0	0	221	14	221
39							0	0	0	221	13	221
40							0	0	0	221	12	221
41							0	0	0	221	11	221
42							0	0	0	221	11	221
43							0	0	0	221	10	221
44							0	0	0	221	9	221
45							0	0	0	221	9	221
46							0	0	0	221	8	221
47							0	0	0	221	7	221
48							0	0	0	221	7	221
49							0	0	0	221	6	221
50							0	0	0	221	6	221
51							0	0	0	221	6	221
52							0	0	0	221	5	221
53	-21	0	0	-75	0	-96	0	-95	-2	221	5	317

건설교통부

17.3 괴곡지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	122.4	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	28.7	-	20.1	8.6	-	-
호 안 공	-	-	-	-	-	-
구조물공	-	-	-	-	-	-
보 상 비	74.9	52.5	22.5	-	-	-
기 타	18.7	3.7	11.2	3.7	-	-
계	122.4	56.2	53.8	12.4	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	45.9%	44.0%	10.1%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

0.5	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	222.3	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	1.52	0.00

*흉수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.56	0.00

A. 인명보호 편익

소계	0.5	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.50	0.00	0.50
부상	0.00	0.00	0.00	0.02	0.00	0.02

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.09	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.09	0.00	0.09

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	4.7	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
8.3	0.0	0.0	0.0	4.7	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	217.0	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.4	0.0	1.4
농 경 지	0.0	0.0	0.0	63.3	0.0	63.3
공공시설물	0.0	0.0	0.0	60.0	0.0	60.0
기 타	0.0	0.0	0.0	92.4	0.0	92.4

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 20.77
NPV 2,210
IRR 77.7%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구분	1. 연평균 사업비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축제공	호안공	구조물공	보상비	기타	계	유지비	1+2	현재가치	연간편익	현재가치	유입
합계	6	-	-	-	19	24		49	112	11,114	2,322	
1	-	-	-	52	4	56		56	52			-56
2	20	-	-	22	11	54		54	47			-54
3	9	-	-	-	4	12		12	10			-12
4							0	0	0	222	166	222
5							0	0	0	222	155	222
6							0	0	0	222	144	222
7							0	0	0	222	134	222
8							0	0	0	222	125	222
9							0	0	0	222	116	222
10							0	0	0	222	108	222
11							0	0	0	222	100	222
12							0	0	0	222	93	222
13							0	0	0	222	87	222
14							0	0	0	222	81	222
15							0	0	0	222	75	222
16							0	0	0	222	70	222
17							0	0	0	222	65	222
18							0	0	0	222	60	222
19							0	0	0	222	56	222
20							0	0	0	222	52	222
21							0	0	0	222	49	222
22							0	0	0	222	45	222
23							0	0	0	222	42	222
24							0	0	0	222	39	222
25							0	0	0	222	36	222
26							0	0	0	222	34	222
27							0	0	0	222	32	222
28							0	0	0	222	29	222
29							0	0	0	222	27	222
30							0	0	0	222	25	222
31							0	0	0	222	24	222
32							0	0	0	222	22	222
33							0	0	0	222	20	222
34							0	0	0	222	19	222
35							0	0	0	222	18	222
36							0	0	0	222	16	222
37							0	0	0	222	15	222
38							0	0	0	222	14	222
39							0	0	0	222	13	222
40							0	0	0	222	12	222
41							0	0	0	222	11	222
42							0	0	0	222	11	222
43							0	0	0	222	10	222
44							0	0	0	222	9	222
45							0	0	0	222	9	222
46							0	0	0	222	8	222
47							0	0	0	222	7	222
48							0	0	0	222	7	222
49							0	0	0	222	6	222
50							0	0	0	222	6	222
51							0	0	0	222	6	222
52							0	0	0	222	5	222
53	-23	0	0	-75	0	-98	0	-97	-2	222	5	320

건설교통부

17.4 괴곡지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	159.7	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	42.7	-	29.9	12.8	-	-
호 안 공	8.6	-	2.6	6.0	-	-
구조물공	-	-	-	-	-	-
보 상 비	74.9	52.5	22.5	-	-	-
기 타	33.4	6.7	20.0	6.7	-	-
계	159.7	59.1	75.0	25.5	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	37.0%	47.0%	16.0%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

1.0	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	222.4	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	1.56	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.56	0.00

A. 인명보호 편익

소계	0.5	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.52	0.00	0.52
부상	0.00	0.00	0.00	0.02	0.00	0.02

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.10	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.10	0.00	0.10

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	4.8	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
8.5	0.0	0.0	0.0	4.8	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	217.0	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.4	0.0	1.4
농 경 지	0.0	0.0	0.0	63.3	0.0	63.3
공공시설물	0.0	0.0	0.0	60.0	0.0	60.0
기 타	0.0	0.0	0.0	92.4	0.0	92.4

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 15.65
NPV 2,175
IRR 69.0%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	9	8	-	-	33	50		99	148	11,121	2,323	
1	-	-	-	52	7	59		59	55			-59
2	30	3	-	22	20	75		75	65			-75
3	13	6	-	-	7	26		26	21			-26
4							1	1	1	222	167	221
5							1	1	1	222	155	221
6							1	1	1	222	144	221
7							1	1	1	222	134	221
8							1	1	1	222	125	221
9							1	1	1	222	116	221
10							1	1	0	222	108	221
11							1	1	0	222	100	221
12							1	1	0	222	93	221
13							1	1	0	222	87	221
14							1	1	0	222	81	221
15							1	1	0	222	75	221
16							1	1	0	222	70	221
17							1	1	0	222	65	221
18							1	1	0	222	61	221
19							1	1	0	222	56	221
20							1	1	0	222	52	221
21							1	1	0	222	49	221
22							1	1	0	222	45	221
23							1	1	0	222	42	221
24							1	1	0	222	39	221
25							1	1	0	222	36	221
26							1	1	0	222	34	221
27							1	1	0	222	32	221
28							1	1	0	222	29	221
29							1	1	0	222	27	221
30							1	1	0	222	25	221
31							1	1	0	222	24	221
32							1	1	0	222	22	221
33							1	1	0	222	20	221
34							1	1	0	222	19	221
35							1	1	0	222	18	221
36							1	1	0	222	16	221
37							1	1	0	222	15	221
38							1	1	0	222	14	221
39							1	1	0	222	13	221
40							1	1	0	222	12	221
41							1	1	0	222	11	221
42							1	1	0	222	11	221
43							1	1	0	222	10	221
44							1	1	0	222	9	221
45							1	1	0	222	9	221
46							1	1	0	222	8	221
47							1	1	0	222	7	221
48							1	1	0	222	7	221
49							1	1	0	222	6	221
50							1	1	0	222	6	221
51							1	1	0	222	6	221
52							1	1	0	222	5	221
53	-34	-1	0	-75	0	-110	1	-109	-2	222	5	331

건설교통부

17.5 괴곡지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	122.4	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	28.7	-	20.1	8.6	-	-
호 안 공	-	-	-	-	-	-
구조물 공	-	-	-	-	-	-
보 상 비	74.9	52.5	22.5	-	-	-
기 타	18.7	3.7	11.2	3.7	-	-
계	122.4	56.2	53.8	12.4	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	45.9%	44.0%	10.1%	0.0%	0.0%	100.0%

나. 유지관리비

0.5	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	222.3	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	1.52	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.00	0.00	0.56	0.00

A. 인명보호 편익

소계	0.5	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	0.00	0.00	0.50	0.00	0.50
부상	0.00	0.00	0.00	0.02	0.00	0.02

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	0.09	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	0.00	0.00	0.09	0.00	0.09

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	4.7	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
8.3	0.0	0.0	0.0	4.7	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	217.0	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	0.0	0.0	1.4	0.0	1.4
농 경 지	0.0	0.0	0.0	63.3	0.0	63.3
공공시설물	0.0	0.0	0.0	60.0	0.0	60.0
기 타	0.0	0.0	0.0	92.4	0.0	92.4

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 20.77
NPV 2,210
IRR 77.7%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	6	-	-	-	19	24		49	112	11,114	2,322	
1	-	-	-	52	4	56		56	52			-56
2	20	-	-	22	11	54		54	47			-54
3	9	-	-	-	4	12		12	10			-12
4							0	0	0	222	166	222
5							0	0	0	222	155	222
6							0	0	0	222	144	222
7							0	0	0	222	134	222
8							0	0	0	222	125	222
9							0	0	0	222	116	222
10							0	0	0	222	108	222
11							0	0	0	222	100	222
12							0	0	0	222	93	222
13							0	0	0	222	87	222
14							0	0	0	222	81	222
15							0	0	0	222	75	222
16							0	0	0	222	70	222
17							0	0	0	222	65	222
18							0	0	0	222	60	222
19							0	0	0	222	56	222
20							0	0	0	222	52	222
21							0	0	0	222	49	222
22							0	0	0	222	45	222
23							0	0	0	222	42	222
24							0	0	0	222	39	222
25							0	0	0	222	36	222
26							0	0	0	222	34	222
27							0	0	0	222	32	222
28							0	0	0	222	29	222
29							0	0	0	222	27	222
30							0	0	0	222	25	222
31							0	0	0	222	24	222
32							0	0	0	222	22	222
33							0	0	0	222	20	222
34							0	0	0	222	19	222
35							0	0	0	222	18	222
36							0	0	0	222	16	222
37							0	0	0	222	15	222
38							0	0	0	222	14	222
39							0	0	0	222	13	222
40							0	0	0	222	12	222
41							0	0	0	222	11	222
42							0	0	0	222	11	222
43							0	0	0	222	10	222
44							0	0	0	222	9	222
45							0	0	0	222	9	222
46							0	0	0	222	8	222
47							0	0	0	222	7	222
48							0	0	0	222	7	222
49							0	0	0	222	6	222
50							0	0	0	222	6	222
51							0	0	0	222	6	222
52							0	0	0	222	5	222
53	-23	0	0	-75	0	-98	0	-97	-2	222	5	320

건설교통부

18.1 동흥지구 홍수빈도 50년

1) 사업비 산정

가. 사업비

합계	1,053.3	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	134.7	-	94.3	40.4	-	-
호 안 공	93.4	-	28.0	65.4	-	-
구조물공	405.1	-	121.5	283.6	-	-
보 상 비	8.6	6.0	2.6	-	-	-
기 타	411.6	82.3	246.9	82.3	-	-
계	1,053.3	88.3	493.3	471.7	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	8.4%	46.8%	44.8%	0.0%	0.0%	100.0%

나. 유지관리비

18.6	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1651.2	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	57.30	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.63	0.00	0.00	0.00

A. 인명보호 편익

소계	44.3	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	42.60	0.00	0.00	0.00	42.60
부상	0.00	1.73	0.00	0.00	0.00	1.73

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	12.60	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	12.60	0.00	0.00	0.00	12.60

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	94.2	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
149.5	0.0	94.2	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1500.1	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	21.6	0.0	0.0	0.0	21.6
농 경 지	0.0	91.4	0.0	0.0	0.0	91.4
공공시설물	0.0	1317.1	0.0	0.0	0.0	1317.1
기 타	0.0	69.9	0.0	0.0	0.0	69.9

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 15.97
NPV 16,166
IRR 93.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	27	84	405	-	412	928		1,855	1,080	82,560	17,246	
1	-	-	-	6	82	88		88	82			-88
2	94	28	122	3	247	493		493	427			-493
3	40	65	284	-	82	472		472	380			-472
4							19	19	14	1,651	1,236	1,633
5							19	19	13	1,651	1,150	1,633
6							19	19	12	1,651	1,070	1,633
7							19	19	11	1,651	995	1,633
8							19	19	10	1,651	926	1,633
9							19	19	10	1,651	861	1,633
10							19	19	9	1,651	801	1,633
11							19	19	8	1,651	745	1,633
12							19	19	8	1,651	693	1,633
13							19	19	7	1,651	645	1,633
14							19	19	7	1,651	600	1,633
15							19	19	6	1,651	558	1,633
16							19	19	6	1,651	519	1,633
17							19	19	5	1,651	483	1,633
18							19	19	5	1,651	449	1,633
19							19	19	5	1,651	418	1,633
20							19	19	4	1,651	389	1,633
21							19	19	4	1,651	362	1,633
22							19	19	4	1,651	336	1,633
23							19	19	4	1,651	313	1,633
24							19	19	3	1,651	291	1,633
25							19	19	3	1,651	271	1,633
26							19	19	3	1,651	252	1,633
27							19	19	3	1,651	234	1,633
28							19	19	2	1,651	218	1,633
29							19	19	2	1,651	203	1,633
30							19	19	2	1,651	189	1,633
31							19	19	2	1,651	175	1,633
32							19	19	2	1,651	163	1,633
33							19	19	2	1,651	152	1,633
34							19	19	2	1,651	141	1,633
35							19	19	1	1,651	131	1,633
36							19	19	1	1,651	122	1,633
37							19	19	1	1,651	114	1,633
38							19	19	1	1,651	106	1,633
39							19	19	1	1,651	98	1,633
40							19	19	1	1,651	92	1,633
41							19	19	1	1,651	85	1,633
42							19	19	1	1,651	79	1,633
43							19	19	1	1,651	74	1,633
44							19	19	1	1,651	69	1,633
45							19	19	1	1,651	64	1,633
46							19	19	1	1,651	59	1,633
47							19	19	1	1,651	55	1,633
48							19	19	1	1,651	51	1,633
49							19	19	1	1,651	48	1,633
50							19	19	0	1,651	44	1,633
51							19	19	0	1,651	41	1,633
52							19	19	0	1,651	38	1,633
53	-108	-9	0	-9	0	-126	19	-107	-2	1,651	36	1,758

건설교통부

18.2 동흥지구 홍수빈도 80년

1) 사업비 산정

가. 사업비

합계	1,190.2	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	203.3	-	142.3	61.0	-	-
호 안 공	107.8	-	32.3	75.5	-	-
구조물 공	405.1	-	121.5	283.6	-	-
보 상 비	8.6	6.0	2.6	-	-	-
기 타	465.4	93.1	279.2	93.1	-	-
계	1,190.2	99.1	578.0	513.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	8.3%	48.6%	43.1%	0.0%	0.0%	100.0%

나. 유지관리비

20.2	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1653.3	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	57.90	0.00	0.00	0.00

*흥수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.63	0.00	0.00	0.00

A. 인명보호 편익 — 소계 44.8 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	43.04	0.00	0.00	0.00	43.04
부상	0.00	1.75	0.00	0.00	0.00	1.75

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익 — 소계 12.74 백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	12.74	0.00	0.00	0.00	12.74

*기준가격 (만원/일인) 일평균소득 2.984

C. 농작물 피해 방지 편익 — 소계 95.4 백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
151.5	0.0	95.4	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익 — 소계 1500.3 백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	21.6	0.0	0.0	0.0	21.6
농 경 지	0.0	91.5	0.0	0.0	0.0	91.5
공공시설물	0.0	1317.2	0.0	0.0	0.0	1317.2
기 타	0.0	70.0	0.0	0.0	0.0	70.0

*기준가격('00') 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 14.25
NPV 16,055
IRR 85.0%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	41	97	405	-	465	1,008		2,016	1,212	82,663	17,267	
1	-	-	-	6	93	99		99	92			-99
2	142	32	122	3	279	578		578	500			-578
3	61	75	284	-	93	513		513	413			-513
4							20	20	15	1,653	1,238	1,633
5							20	20	14	1,653	1,152	1,633
6							20	20	13	1,653	1,071	1,633
7							20	20	12	1,653	997	1,633
8							20	20	11	1,653	927	1,633
9							20	20	11	1,653	862	1,633
10							20	20	10	1,653	802	1,633
11							20	20	9	1,653	746	1,633
12							20	20	8	1,653	694	1,633
13							20	20	8	1,653	646	1,633
14							20	20	7	1,653	601	1,633
15							20	20	7	1,653	559	1,633
16							20	20	6	1,653	520	1,633
17							20	20	6	1,653	484	1,633
18							20	20	5	1,653	450	1,633
19							20	20	5	1,653	418	1,633
20							20	20	5	1,653	389	1,633
21							20	20	4	1,653	362	1,633
22							20	20	4	1,653	337	1,633
23							20	20	4	1,653	313	1,633
24							20	20	4	1,653	291	1,633
25							20	20	3	1,653	271	1,633
26							20	20	3	1,653	252	1,633
27							20	20	3	1,653	235	1,633
28							20	20	3	1,653	218	1,633
29							20	20	2	1,653	203	1,633
30							20	20	2	1,653	189	1,633
31							20	20	2	1,653	176	1,633
32							20	20	2	1,653	163	1,633
33							20	20	2	1,653	152	1,633
34							20	20	2	1,653	141	1,633
35							20	20	2	1,653	132	1,633
36							20	20	1	1,653	122	1,633
37							20	20	1	1,653	114	1,633
38							20	20	1	1,653	106	1,633
39							20	20	1	1,653	98	1,633
40							20	20	1	1,653	92	1,633
41							20	20	1	1,653	85	1,633
42							20	20	1	1,653	79	1,633
43							20	20	1	1,653	74	1,633
44							20	20	1	1,653	69	1,633
45							20	20	1	1,653	64	1,633
46							20	20	1	1,653	59	1,633
47							20	20	1	1,653	55	1,633
48							20	20	1	1,653	51	1,633
49							20	20	1	1,653	48	1,633
50							20	20	1	1,653	44	1,633
51							20	20	1	1,653	41	1,633
52							20	20	0	1,653	38	1,633
53	-163	-11	0	-9	0	-182	20	-162	-4	1,653	36	1,815

건설교통부

18.3 동흥지구 홍수빈도 100년

1) 사업비 산정

가. 사업비

합계	1,189.9	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	203.0	-	142.1	60.9	-	-
호 안 공	107.8	-	32.3	75.5	-	-
구조물공	405.1	-	121.5	283.6	-	-
보 상 비	8.6	6.0	2.6	-	-	-
기 타	465.4	93.1	279.2	93.1	-	-
계	1,189.9	99.1	577.8	513.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	8.3%	48.6%	43.1%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

20.2	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1654.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	58.50	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.63	0.00	0.00	0.00

A. 인명보호 편익

소계	45.3	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	43.49	0.00	0.00	0.00	43.49
부상	0.00	1.77	0.00	0.00	0.00	1.77

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	12.87	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	12.87	0.00	0.00	0.00	12.87

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	96.1	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
152.6	0.0	96.1	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1500.5	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	21.6	0.0	0.0	0.0	21.6
농 경 지	0.0	91.5	0.0	0.0	0.0	91.5
공공시설물	0.0	1317.3	0.0	0.0	0.0	1317.3
기 타	0.0	70.1	0.0	0.0	0.0	70.1

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 14.26
NPV 16,071
IRR 85.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	41	97	405	-	465	1,008		2,016	1,212	82,739	17,283	
1	-	-	-	6	93	99		99	92			-99
2	142	32	122	3	279	578		578	500			-578
3	61	75	284	-	93	513		513	413			-513
4							20	20	15	1,655	1,239	1,635
5							20	20	14	1,655	1,153	1,635
6							20	20	13	1,655	1,072	1,635
7							20	20	12	1,655	997	1,635
8							20	20	11	1,655	928	1,635
9							20	20	11	1,655	863	1,635
10							20	20	10	1,655	803	1,635
11							20	20	9	1,655	747	1,635
12							20	20	8	1,655	695	1,635
13							20	20	8	1,655	646	1,635
14							20	20	7	1,655	601	1,635
15							20	20	7	1,655	559	1,635
16							20	20	6	1,655	520	1,635
17							20	20	6	1,655	484	1,635
18							20	20	5	1,655	450	1,635
19							20	20	5	1,655	419	1,635
20							20	20	5	1,655	390	1,635
21							20	20	4	1,655	362	1,635
22							20	20	4	1,655	337	1,635
23							20	20	4	1,655	314	1,635
24							20	20	4	1,655	292	1,635
25							20	20	3	1,655	271	1,635
26							20	20	3	1,655	252	1,635
27							20	20	3	1,655	235	1,635
28							20	20	3	1,655	218	1,635
29							20	20	2	1,655	203	1,635
30							20	20	2	1,655	189	1,635
31							20	20	2	1,655	176	1,635
32							20	20	2	1,655	164	1,635
33							20	20	2	1,655	152	1,635
34							20	20	2	1,655	142	1,635
35							20	20	2	1,655	132	1,635
36							20	20	1	1,655	122	1,635
37							20	20	1	1,655	114	1,635
38							20	20	1	1,655	106	1,635
39							20	20	1	1,655	99	1,635
40							20	20	1	1,655	92	1,635
41							20	20	1	1,655	85	1,635
42							20	20	1	1,655	79	1,635
43							20	20	1	1,655	74	1,635
44							20	20	1	1,655	69	1,635
45							20	20	1	1,655	64	1,635
46							20	20	1	1,655	59	1,635
47							20	20	1	1,655	55	1,635
48							20	20	1	1,655	51	1,635
49							20	20	1	1,655	48	1,635
50							20	20	1	1,655	44	1,635
51							20	20	1	1,655	41	1,635
52							20	20	0	1,655	39	1,635
53	-162	-11	0	-9	0	-182	20	-162	3	1,655	36	1,816

건설교통부

18.4 동흥지구 홍수빈도 200년

1) 사업비 산정

가. 사업비

합계	1,194.0	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	205.5	-	143.9	61.7	-	-
호 안 공	107.8	-	32.3	75.5	-	-
구조물 공	405.1	-	121.5	283.6	-	-
보 상 비	8.6	6.0	2.6	-	-	-
기 타	467.0	93.4	280.2	93.4	-	-
계	1,194.0	99.4	580.5	514.1	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물 공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	8.3%	48.6%	43.1%	0.0%	0.0%	100.0%

나. 유지관리비

20.2	백만원/년

건설교통부

2) 편 익 산 정

가. 년평균 편익

합계	1657.2	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	59.40	0.00	0.00	0.00

*용수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.63	0.00	0.00	0.00

A. 인명보호 편익

소계	46.0	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	44.16	0.00	0.00	0.00	44.16
부상	0.00	1.80	0.00	0.00	0.00	1.80

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	13.07	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	13.07	0.00	0.00	0.00	13.07

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	97.3	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
154.5	0.0	97.3	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1500.9	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	21.6	0.0	0.0	0.0	21.6
농 경 지	0.0	91.5	0.0	0.0	0.0	91.5
공공시설물	0.0	1317.4	0.0	0.0	0.0	1317.4
기 타	0.0	70.3	0.0	0.0	0.0	70.3

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 14.24
NPV 16,093
IRR 84.9%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4~53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	41	97	405	-	467	1,010		2,020	1,216	82,862	17,309	
1	-	-	-	6	93	99		99	92			-99
2	144	32	122	3	280	580		580	502			-580
3	62	75	284	-	93	514		514	414			-514
4							20	20	15	1,657	1,241	1,637
5							20	20	14	1,657	1,154	1,637
6							20	20	13	1,657	1,074	1,637
7							20	20	12	1,657	999	1,637
8							20	20	11	1,657	929	1,637
9							20	20	11	1,657	864	1,637
10							20	20	10	1,657	804	1,637
11							20	20	9	1,657	748	1,637
12							20	20	8	1,657	696	1,637
13							20	20	8	1,657	647	1,637
14							20	20	7	1,657	602	1,637
15							20	20	7	1,657	560	1,637
16							20	20	6	1,657	521	1,637
17							20	20	6	1,657	485	1,637
18							20	20	5	1,657	451	1,637
19							20	20	5	1,657	419	1,637
20							20	20	5	1,657	390	1,637
21							20	20	4	1,657	363	1,637
22							20	20	4	1,657	338	1,637
23							20	20	4	1,657	314	1,637
24							20	20	4	1,657	292	1,637
25							20	20	3	1,657	272	1,637
26							20	20	3	1,657	253	1,637
27							20	20	3	1,657	235	1,637
28							20	20	3	1,657	219	1,637
29							20	20	2	1,657	203	1,637
30							20	20	2	1,657	189	1,637
31							20	20	2	1,657	176	1,637
32							20	20	2	1,657	164	1,637
33							20	20	2	1,657	152	1,637
34							20	20	2	1,657	142	1,637
35							20	20	2	1,657	132	1,637
36							20	20	1	1,657	123	1,637
37							20	20	1	1,657	114	1,637
38							20	20	1	1,657	106	1,637
39							20	20	1	1,657	99	1,637
40							20	20	1	1,657	92	1,637
41							20	20	1	1,657	85	1,637
42							20	20	1	1,657	79	1,637
43							20	20	1	1,657	74	1,637
44							20	20	1	1,657	69	1,637
45							20	20	1	1,657	64	1,637
46							20	20	1	1,657	60	1,637
47							20	20	1	1,657	55	1,637
48							20	20	1	1,657	51	1,637
49							20	20	1	1,657	48	1,637
50							20	20	1	1,657	45	1,637
51							20	20	1	1,657	41	1,637
52							20	20	0	1,657	39	1,637
53	-164	-11	0	-9	0	-184	20	-164	-4	1,657	36	1,621

건설교통부

18.5 동흥지구 홍수빈도 계획

1) 사업비 산정

가. 사업비

합계	1,189.9	백만원

단위 : 백만원

구 분	합계	1차년도	2차년도	3차년도	4차년도	5차년도
축 제 공	203.0	-	142.1	60.9	-	-
호 안 공	107.8	-	32.3	75.5	-	-
구조물공	405.1	-	121.5	283.6	-	-
보 상 비	8.6	6.0	2.6	-	-	-
기 타	465.4	93.1	279.2	93.1	-	-
계	1,189.9	99.1	577.8	513.0	-	-

*년차별 사업비 투입비율

단위 : %

구 분	1차년도	2차년도	3차년도	4차년도	5차년도	합계
축 제 공	-	70.0	30.0	-	-	100.0
호 안 공	-	30.0	70.0	-	-	100.0
구조물공	-	30.0	70.0	-	-	100.0
보 상 비	70.0	30.0	-	-	-	100.0
기 타	20.0	60.0	20.0	-	-	100.0
계	8.3%	48.6%	43.1%	0.0%	0.0%	100.0%

건설교통부

나. 유지관리비

20.2	백만원/년

2) 편 익 산 정

가. 년평균 편익

합계	1654.8	백만원

* 침수면적 단위 : ha

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	58.50	0.00	0.00	0.00

*홍수빈도율 단위 : 회/년

대도시	중소도시	전원도시	농촌지역	산간지역
0.00	0.63	0.00	0.00	0.00

A. 인명보호 편익

소계	45.3	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
사망	0.00	43.49	0.00	0.00	0.00	43.49
부상	0.00	1.77	0.00	0.00	0.00	1.77

*기준가격

사망	295	백만원/인
부상	24	백만원/인

B. 이재민 발생 방지 편익

소계	12.87	백만원

구분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
이재민피해	0.00	12.87	0.00	0.00	0.00	12.87

*기준가격 (만원/일인)

일평균소득	2.984

C. 농작물 피해 방지 편익

소계	96.1	백만원

피해액	대도시	중소도시	전원도시	농촌지역	산간지역
152.6	0.0	96.1	0.0	0.0	0.0

D. 건물, 농경지, 공공시설, 기타 피해 방지 편익

소계	1500.5	백만원

구 분	대도시	중소도시	전원도시	농촌지역	산간지역	합계
건 물	0.0	21.6	0.0	0.0	0.0	21.6
농 경 지	0.0	91.5	0.0	0.0	0.0	91.5
공공시설물	0.0	1317.3	0.0	0.0	0.0	1317.3
기 타	0.0	70.1	0.0	0.0	0.0	70.1

*기준가격('00) 단위 : 백만원/ha

구 분	대도시	중소도시	전원도시	농촌지역	산간지역
건 물 피해액	213.3	61.4	158.0	213.1	241.9
농 경 지 피해액	253.6	227.6	426.2	962.3	764.4
공공시설물 피해액	3783.8	2444.5	3652.6	5539.0	7613.4
기 타 피해액	1522.4	806.8	1035.9	335.3	631.1

건설교통부

3) 경제성 분석 결과

B/C 14.26
NPV 16,071
IRR 85.1%
실질할인율 7.5% : 민감도분석지표

(단위 : 백만원/년) 공사기간 (3년) 편익발생 (50년, 4-53)

구 분	1. 연 평 균 사 업 비						2. 연평균	3. 연평균 비용		4. 연평균 편익		5. 순현금
	축 제 공	호 안 공	구조물공	보 상 비	기 타	계	유지비	1 + 2	현재가치	연간편익	현재가치	유 입
합 계	41	97	405	-	465	1,008		2,016	1,212	82,739	17,283	
1	-	-	-	6	93	99		99	92			-99
2	142	32	122	3	279	578		578	500			-578
3	61	75	284	-	93	513		513	413			-513
4							20	20	15	1,655	1,239	1,635
5							20	20	14	1,655	1,153	1,635
6							20	20	13	1,655	1,072	1,635
7							20	20	12	1,655	997	1,635
8							20	20	11	1,655	928	1,635
9							20	20	11	1,655	863	1,635
10							20	20	10	1,655	803	1,635
11							20	20	9	1,655	747	1,635
12							20	20	8	1,655	695	1,635
13							20	20	8	1,655	646	1,635
14							20	20	7	1,655	601	1,635
15							20	20	7	1,655	559	1,635
16							20	20	6	1,655	520	1,635
17							20	20	6	1,655	484	1,635
18							20	20	5	1,655	450	1,635
19							20	20	5	1,655	419	1,635
20							20	20	5	1,655	390	1,635
21							20	20	4	1,655	362	1,635
22							20	20	4	1,655	337	1,635
23							20	20	4	1,655	314	1,635
24							20	20	4	1,655	292	1,635
25							20	20	3	1,655	271	1,635
26							20	20	3	1,655	252	1,635
27							20	20	3	1,655	235	1,635
28							20	20	3	1,655	218	1,635
29							20	20	2	1,655	203	1,635
30							20	20	2	1,655	189	1,635
31							20	20	2	1,655	176	1,635
32							20	20	2	1,655	164	1,635
33							20	20	2	1,655	152	1,635
34							20	20	2	1,655	142	1,635
35							20	20	2	1,655	132	1,635
36							20	20	1	1,655	122	1,635
37							20	20	1	1,655	114	1,635
38							20	20	1	1,655	106	1,635
39							20	20	1	1,655	99	1,635
40							20	20	1	1,655	92	1,635
41							20	20	1	1,655	85	1,635
42							20	20	1	1,655	79	1,635
43							20	20	1	1,655	74	1,635
44							20	20	1	1,655	69	1,635
45							20	20	1	1,655	64	1,635
46							20	20	1	1,655	59	1,635
47							20	20	1	1,655	55	1,635
48							20	20	1	1,655	51	1,635
49							20	20	1	1,655	48	1,635
50							20	20	1	1,655	44	1,635
51							20	20	1	1,655	41	1,635
52							20	20	0	1,655	39	1,635
53	-162	-11	0	-9	0	-182	20	-162	-3	1,655	36	1,816

건설교통부

제XI장 기타 참고자료

1. 연도별 재해 현황

2. 2002년 금강상류 홍수피해조사

3. 홍수피해 잠재능 산정결과

4. 문화재,민속자료,기념물 현황

건설교통부

1. 연도별 재해 현황

건설교통부

⊙재해 상황 총괄표(1988년-2000년)

(당해년도 화폐가치기준)

구분		단위	대전	충남	충북	전북	금강수계
이재민	주택	세대/인	167	3,868	6,940	1,800	3,872
	기타	"	273	38,356	2,479	12,281	24,087
	계	"	440	42,224	9,419	14,081	27,959
인명	사망	인	3	63	52	41	60
	실종	"	0	15	9	18	14
	부상	"	12	76	202	19	37
	계	"	15	154	263	78	111
침수면적	농경지	ha	578.75	146,347.30	264,494.77	943,492.08	94,489.14
	기타	"	8.71	2.00	1.40	32.50	16.91
	계	"	587.46	146,349.30	264,496.17	943,524.58	94,506.05
건물	주택	유실,전파	동	29	601	851	444
	건물	반파	"	43	915	724	271
		소파	"	16	34	186	33
		침수	"	2,071	12,804	3,867	1,744
	부속건물		"	46	101	614	40
	계		"	2,205	14,455	6,242	2,532
	피해액		천원	430,123	7,623,856	1,984,481	2,379,611
선박	동력선	전파	척	0	1,135	7	1,664
		반파	"	0	1,618	5	2,070
	무동력선	전파	"	0	618	5	283
		반파	"	0	145	0	157
	계		"	0	3,516	17	4,174
	피해액		천원	0	4,376,650	108,055	5,714,627
농경지	전(유실,매몰)		ha	50.33	177.33	2,457.15	91.99
	답(유실,매몰)		"	153.19	6,947.33	4,460.63	1,191.21
	계		"	203.52	7,124.66	6,917.78	1,283.20
	피해액		천원	1,432,076	50,587,883	55,584,944	4,186,527
농작물	전작		ha	288.64	23,860.00	10,649.77	7,277.76
	답작		"	901.45	94,212.53	17,717.82	48,463.13
	기타		"	302.73	15,210.40	1,355.51	2,844.97
	계		"	1,492.82	133,282.93	29,723.10	58,585.86
	피해액		천원	1,330,540	15,916,908	16,886,804	2,828,060
공시설	도로	도로	개소/m	10,349	321,373	368,951	38,428
		교량	개소/m	27	1,007	1,357	584
		피해액	천원	3,897,468	57,051,082	70,479,033	9,755,180
	하천	제방,기타	개소/m	49,428	468,763	554,637	158,324
		피해액	천원	8,126,136	71,637,344	69,239,181	29,117,111
	하천	제방,기타	개소/m	26,545	243,830	308,742	24,381
		피해액	천원	5,120,834	20,705,439	42,684,440	2,578,944
	수도	상,하수도	개소	89	226	270	50
		피해액	천원	1,257,880	4,610,277	2,691,320	591,090
	항만	항만시설	개소	0	4	0	3
		피해액	천원	0	167,646	0	107,051
	어항	어항시설	개소	0	79	0	49
		피해액	천원	0	5,213,873	0	1,836,455
	학교	교실	교실	8	131	32	28
		부속건물	동	14	11	38	8
		피해액	천원	89,280	1,490,871	770,099	375,997
	철도	철도	개소/m	3752	12613	6046	462
		피해액	천원	159,312	2,128,396	970,119	172,115
	수리	수리시설	개소	46	5,116	1,616	583
		방조제	"	0	232	0	53
		피해액	천원	1,269,845	90,572,408	41,404,902	21,124,496
	사방	사방	개소/ha	4	1,141	12,130	134
		조림기타	개소/m	7,319	27,335	56,560	1,337
		피해액	천원	420,735	15,702,602	12,729,464	1,602,464
	용신	시설	개소	1	12	19	43
		피해액	천원	600	27,566	655,132	11,710
	군사	시설	개소	12	21	13	10
		피해액	천원	366,160	2,284,345	1,220,196	365,707
	소규모	시설	개소	616	8,113	7,334	1,036
		피해액	천원	5,840,401	105,176,577	123,412,813	11,586,506
	기타	시설	개소	322	711	497	1,795
		피해액	천원	1,732,767	24,260,913	11,940,756	10,050,227
	피해액 소계		"	28,277,418	401,029,339	378,397,455	89,275,053
기타	축대,담장		개소/천원	135,304	430,423	499,966	318,491
	수산시설(종,양식)		"	18,000	8,788,586	1,359,637	10,510,354
	산업시설		"	0	0	0	0
	가축생물		두/천원	4,800	113,137	111,333	9,360
	축사,잠사		개소/천원	199,239	4,471,172	2,427,331	7,794,823
	비닐하우스		ha/천원	541.144	47,112,101	3,038,193	29,602,986
	어구		통/천원	0	7,949,742	0	280,784
	기타		개소/천원	2,768,937	21,523,860	49,100,457	28,841,666
	피해액		천원	3,667,424	90,389,021	56,536,917	77,358,464
총피해액				35,137,581	569,923,657	509,498,656	181,742,342

건설교통부

⊙재해 상황 총괄표(1988년-2000년)

(2000년 화폐가치기준)

구 분			단위	대전	충남	충북	전북	금강수계
이재민	주 택		세대/인	167	3,868	6,940	1,800	3,872
	기 타		"	273	38,356	2,479	12,281	24,087
	계		"	440	42,224	9,419	14,081	27,959
인명	사 망		인	3	63	52	41	60
	실 종		"	0	15	9	18	14
	부 상		"	12	76	202	19	37
	계		"	15	154	263	78	111
침수면적	농경지		ha	578.75	146,347.30	264,494.77	943,492.08	94,489.14
	기 타		"	8.71	2.00	1.40	32.50	16.91
	계		"	587.46	146,349.30	264,496.17	943,524.58	94,506.05
건물	주	유실, 전파	동	29	601	851	444	794
	건	반 파	"	43	915	724	271	864
		소 파	"	16	34	186	33	126
	물	침 수	"	2,071	12,804	3,867	1,744	8,832
	부속건물		"	46	101	614	40	177
	계		"	2,205	14,455	6,242	2,532	10,793
	피 해 액		천 원	485,026	8,154,302	2,606,294	2,485,958	4,567,530
선박	동력	전 파	척	0	1,135	7	1,664	1,040
	선	반 파	"	0	1,618	5	2,070	751
	무동	전 파	"	0	618	5	283	545
	력선	반 파	"	0	145	0	157	88
	계		"	0	3,516	17	4,174	2,424
	피 해 액		천 원	0	5,922,183	137,218	7,111,625	5,051,565
농경지	전 (유실, 매몰)		ha	50.33	177.33	2,457.15	91.99	837.09
	답 (유실, 매몰)		"	153.19	6,947.33	4,460.63	1,191.21	6,620.21
	계		"	203.52	7,124.66	6,917.78	1,283.20	7,457.30
	피 해 액		천 원	1,786,280	58,411,096	67,187,975	5,157,088	70,940,227
농작물	전 작		ha	288.64	23,860.00	10,649.77	7,277.76	18,463.53
	답 작		"	901.45	94,212.53	17,717.82	48,463.13	70,747.64
	기 타		"	302.73	15,210.40	1,355.51	2,844.97	5,462.88
	계		"	1,492.82	133,282.93	29,723.10	58,585.86	94,674.05
	피 해 액		천 원	1,944,533	23,305,491	24,287,524	4,110,517	17,350,744
공시설	도	도 로	개소/m	10,349	321,373	368,951	38,428	380,954
	교	교 량	개소/m	27	1,007	1,357	584	1,424
	로	피 해 액	천 원	4,363,644	63,921,658	81,230,925	10,654,638	76,195,349
	하	제방, 기타	개소/m	49,428	468,763	554,637	158,324	628,637
	천	피 해 액	천 원	9,129,249	79,638,913	82,662,976	32,166,166	97,900,521
	하	제방, 기타	개소/m	26,545	243,830	308,742	24,381	405,703
	천	피 해 액	천 원	5,458,901	21,312,897	44,128,611	2,671,063	51,038,888
	수	상, 하수도	개 소	89	226	270	50	400
	도	피 해 액	천 원	1,470,956	5,221,570	3,137,379	662,405	4,963,149
	항	항만시설	개 소	0	4	0	3	5
	만	피 해 액	천 원	0	242,387	0	121,744	278,016
	어	어항시설	개 소	0	79	0	49	4
	항	피 해 액	천 원	0	5,801,944	0	2,569,070	191,037
	학	교 실	교 실	8	131	32	28	79
		부속건물	동	14	11	38	8	24
	교	피 해 액	천 원	111,617	1,674,318	942,586	404,661	1,366,410
	철	철 도	개소/m	3,752	12,613	6,046	462	10,743
	도	피 해 액	천 원	180,765	2,329,785	1,252,035	176,250	1,053,909
	수	수리시설	개 소	46	5,116	1,616	583	4,568
		방 조 제	"	0	232	0	53	29
	리	피 해 액	천 원	1,418,578	107,147,585	48,775,889	25,374,649	72,532,703
	사방	사 방	개소/ha	4	1,141	12,130	134	12,794
		조림기타	개소/m	7,319	27,335	56,560	1,337	69,140
		피 해 액	천 원	474,425	17,298,531	13,960,965	1,793,774	15,066,823
	용	시 설	개 소	1	12	19	43	65
	신	피 해 액	천 원	878	37,202	848,188	17,129	54,416
	군	시 설	개 소	12	21	13	10	29
	사	피 해 액	천 원	372,313	2,315,089	1,322,768	371,837	1,956,775
	소	시 설	개 소	616	8,113	7,334	1,036	9,262
	규모	피 해 액	천 원	6,824,718	123,300,509	151,408,563	14,414,295	144,675,277
	기	시 설	개 소	322	711	497	1,795	1,730
	타	피 해 액	천 원	1,963,285	26,243,407	14,482,043	10,375,331	27,132,037
	피 해 액 소 계		"	31,769,328	456,485,794	444,152,929	101,773,013	494,405,310
기타	축 대, 담 장		개소/천원	135,304	430,423	499,966	318,491	772,738
	수산시설(증,양식)		"	18,000	8,788,586	1,359,637	10,510,354	11,013,396
	산 업 시 설		"	0	0	0	0	0
	가 축 생 물		두/천원	4,800	113,137	111,333	9,360	112,918
	축사, 잠사		개소/천원	199,239	4,471,172	2,427,331	7,794,823	4,827,214
	비닐하우스		ha/천원	541,144	47,112,101	3,038,193	29,602,986	40,728,837
	어 구		통/천원	0	7,949,742	0	280,784	2,842,093
	기 타		개소/천원	2,768,937	21,523,860	49,100,457	28,841,666	38,949,565
	피 해 액		천 원	4,883,489	103,805,505	73,986,817	89,105,900	115,899,969
총 피 해 액				40,868,657	656,084,370	612,358,757	209,744,101	708,215,346

건설교통부

⊙금강수계 재해 상황 총괄표(당해년 가치)

구 분			단위	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	합계	13개년 평균
이재민	주 택		세대/인	122	429	109 417	86 322	15 52	39 147	12 47	329 1,053	11 32	36 81	321 849	50 125	73 196	3,872	298
	기 타		"	31	2,108	675 3,233		2 10	238 1,084	1078 4,917	2050 8,175	289 1,314	50 206	352 1,241	299 1,103	167 665	24,087	1,853
	계		"	153	2,537	3,650	322	62	1,231	4,964	9,228	1,346	287	2,090	1,228	861	27,959	2,151
인명	사 망		인		7	6	4	2			24		9	4	1	3	60	5
	실 종		"		3	1		1				9					14	1
	부 상		"		3	1			1		16		2	1	6	7	37	3
	계		"		13	8	4	3	1		40	9	11	5	7	10	111	9
침수면적	농 경 지		ha	465.70	9,574.20	3,056.60	343.60	1,508.60	4,360.90	636.20	33,200.06	6,008.81	8,303.31	8,860.96	4,756.20	13,414.00	94,489	7,268
	기 타		"								15.51			1.40			17	1
	계		"	465.70	9,574.20	3,056.60	343.60	1,508.60	4,360.90	636.20	33,215.57	6,008.81	8,303.31	8,862.36	4,756.20	13,414.00	94,506	7,270
건물	유실, 전파		동	18	76	102	36	14	27	7	126	6	35	288	23	36	794	61
	주 반파		"	13	68	96	51	11	33	12	220	8	29	233	44	46	864	66
	건 소파		"	4	19	6	49	1	35		12						126	10
	물 침수		"	123	1,607	51	16	8	5		3,224		1,223	1,556	774	245	8,832	679
	부 속 건 물		"	18	47	10	12	2	25		62	1					177	14
	계		"	176	1,817	265	164	36	125	19	3,644	15	1,287	2,077	841	327	10,793	830
	피 해 액		천 원	12,839	165,086	93,858	46,665	38,820	89,463	6,496	665,704	13,011	274,834	855,628	805,529	1,137,508	4,205,441	323,495
선박	동력선	전 파	척		191 598	17 38			3 19	1 10	16 52	2 71	6 3	3 8	15 18	114 224	1,040	80
	선	반 파	"		95 471	15 90		2 3	6 12	1 4	7 30		6 1	10 6	23 70	24 65	751	58
	무동력선	전 파	"		408 290	476 239			29 16		1 1		1 0				545	42
		반 파	"		97 71	13 7			19 11								88	7
	계		"		1,430	372		3	58	13	82	71	4	13	88	289	2,424	186
	피 해 액		천 원		1,490,687	768,004		1,767	19,191	28,558	140,514	101,901	22,573	30,628	208,246	1,173,500	3,985,569	306,582
농경지	전 (유실, 매몰)		ha	36.42	66.75	1.70	1.08	1.75	1.70	2.11	161.57	8.62	135.91	406.45	5.03	8.00	837	64
	답 (유실, 매몰)		"	94.01	610.69	60.10	15.27	60.74	2.71	10.04	3,298.16	43.64	480.82	1,286.74	569.29	88.00	6,620	509
	계		"	130.43	677.44	61.80	16.35	62.49	4.41	12.15	3,459.73	52.26	616.73	1,693.19	574.32	96.00	7,457	574
	피 해 액		천 원	458,499	1,833,734	346,130	70,393	413,784	51,994	75,047	32,045,947	435,737	5,325,455	18,183,931	2,306,664	771,129	62,318,444	4,793,726
농작물	전 작		ha	157.86	874.33	124.78	30.85	1,324.70	650.80	41.81	7,052.44	942.55	23.30	172.50	6,758.61	309.00	18,464	1,420
	답 작		"	516.57	3,678.63	387.30	1,190.26	3,591.80	3,618.20	488.87	32,264.32	4,992.86	213.47	220.64	11,891.72	7,693.00	70,748	5,442
	기 타		"		845.50		16.50	127.60	133.50	23.53	13.13	68.20		120.14	191.78	3,923.00	5,463	420
	계		"	674.43	5,398.46	512.08	1,237.61	5,044.10	4,402.50	554.21	39,329.89	6,003.61	236.77	513.28	18,842.11	11,925.00	94,674	7,283
	피 해 액		천 원	935,731	9,894,918	1,059,493											11,890,142	914,626
공	도로	도 로	개소/m	26 1,929	50 5,289	5 140	8 1,640	28 1,696	8 570	14 711	794 132,993	35 2,079	234 38,887	401 172,233	75 11,329	110 11,458	380,954	29,304
		교 량	개소/m		2	4		2		2	24		13 209	15 581	7 190	3 410	1,424	110
		피 해 액	천 원	106,843	785,118	280,227	85,868	370,934	77,089	448,314	24,500,612	246,257	6,244,241	29,204,578	3,090,283	4,156,372	69,596,736	5,353,595
공	하천	제방, 기타	개소/m	44 8,958	125 33,479	41 7,033	13 1,140	59 4,273	27 3,077	5 760	786 232,289	138 15,939	334 107,292	429 166,277	104 29,876	66 18,244	628,637	48,357
		피 해 액	천 원	538,342	2,184,072	475,644	147,364	735,886	399,816	123,944	28,728,756	1,810,788	8,818,170	32,282,793	5,583,081	6,920,206	88,748,862	6,826,836
공	하천	세방, 기타	개소/m										609 132,964	764 197,381	142 52,079	193 23,279	405,703	31,208
		피 해 액	천 원										14,173,318	27,155,325	4,473,971	3,447,506	49,250,120	3,788,471
공	수도	상, 하수도	개 소	1	37		3	1			145	3	67	113	5	25	400	31
		피 해 액	천 원	7,099	252,047		10,189	2,000			1,914,954	7,967	420,455	1,221,106	129,040	433,330	4,398,187	338,322
공	항만	항만시설	개 소		3	1							1				5	0
		피 해 액	천 원		84,880	48,566							76,391				209,837	16,141
공	어항	어항시설	개 소			1									1	2	4	0
		피 해 액	천 원			53,000									15,000	101,308	169,308	13,024
시설물	학교	교 실	교 실				1		5		39		6	5	14	9	79	6
		부속건물	동	6	14		2				2						24	2
		피 해 액	천 원	19,108	83,885		3,925		4,000		692,931		31,199	154,088	80,757	100,660	1,170,553	90,043
시설물	철도	철 도	개소/m		1 15	1 350		2 105			28 3187		11 3880	9 631	3 2015	6 560	10,743	826
		피 해 액	천 원	5	86	3,612		20,050			200,931		146,861	214,765	113,547	285,743	985,600	75,815
시설물	수리시설	수리시설	개 소	2,238	121	37	29	62	16	3	788	73	284	496	174	247	4,568	351
		방조제	"		13				1				12			3	29	2
		피 해 액	천 원	420,487	2,842,197	773,241	170,066	966,862	626,554	307,654	22,644,156	604,799	8,369,331	14,462,580	5,292,368	6,813,110	64,293,405	4,945,647
시설물	사방	사 방	개소/ha	7 1	15 7.16		11 1		3 3	268 554.60	3 670	26 8.85	76 11,532.88	20 12	82 4		12,794	984
		조림기타	개소/m	2 0	1 0.10				1			20 38,818.00	40 22,539.00	4 1,376	21 6,407		69,140	5,318
		피 해 액	천 원	13,234	84,312			30,840		295,332	4,361,115	32,870	1,058,806	6,111,530	654,957	1,269,136	13,912,132	1,070,164
시설물	용신	시 설	개 소	1	53			10			1						65	5
		피 해 액	천 원	3,000	15,100			21,150			102						39,352	3,027
시설물	군사	시 설	개 소											4	16	9	29	2
		피 해 액	천 원											160,244	1,510,450	255,396	1,926,090	148,161
시설물	소규모	시 설	개 소	251	793	282	34	351	42	52	3,779	268	1,124	1,591	294	401	9,262	712
		피 해 액	천 원	1,667,757	5,359,789	1,308,329	189,045	1,310,396	252,840	448,136	64,093,661	1,892,344	13,233,845	27,599,035	4,148,468	3,765,306	125,268,951	9,636,073
시설물	기타	시 설	개 소	12	271	6	3	2	4	11	263	6	67	86	30	969	1,730	133
		피 해 액	천 원	284,374	622,412	97,627	83,367	6,680	51,402	48,724	4,197,253	41,072	2,131,042	2,975,677	8,303,337	6,485,713	25,328,680	1,948,360
피해액 소계			"	3,060,249	12,313,898	3,040,246	689,824	3,464,798	1,411,701	1,672,104	151,334,471	4,636,097	54,703,659	141,541,721	33,395,259	34,033,786	445,297,813	34,253,678
기타	축대,담장		개소/천원	3	84	9 20,447		6 81,088	3 29,058	3 40,286	110 323,588	4 3,514	29 161,074	17 38,641		4 75,042	772,738	59,441
	수산시설(종,양식)		"		16283	150 5,459,689	1 3,700	3333 414,566	15 18,374	29 2,136,469	279 732,585	354 1,589,381	140 233,270	12 215,962	12 53,840	10 155,560	11,013,396	847,184
	산업시설		"		3270												0	0
	가축생매		두/천원		20791	22064 63,076	1213	33520 49,842	43379	36800	3E+06	23526	84250	283625	222115	#####	112,918	8,686
	축사,잡사		개소/천원	1	438	478 257,669	5 82,070		138 243,302	28 97,478	79 748,447	100 967,747	18 137,920	134 1,566,681	72 699,184	3 26,716	4,827,214	371,324
기타	비닐하우스		ha/천원			242 1,472,951	16 135,897	1 2,352	427 1,515,380	178 1,303,148	197 7,128,070	150.49 4,563,087	6.65 291,142	22.82 1,049,271	408.97 22,111,697	12 1,155,842	40,728,837	3,132,987
기타	어구		통/천원			286 243,635			12 991,485	44 524,430	45 67,315	3403 619,766	12 55,685	1 1,000	1705 30,250	162 308,527	2,842,093	218,623
기타	기타		개소/천원	24,253	11,740,981	7526 819,686	3 46,215	6 50,661	1 10,000	5 40,346	178 1,810,691	3229 7,824,625	642 2,702,977	6161 12,167,381	637 1,479,621	39 232,128	38,949,565	2,996,120
피 해 액			천 원	24,253	11,740,981	8,337,153	267,882	598,509	2,807,599	4,142,157	10,810,696	15,568,120	3,582,068	15,038,936	24,374,592	1,953,815	99,246,761	7,634,366
총 피 해 액			천 원	4491571	37,439,304	13,644,884	1074764	4517678	4,379,948	5924362	194,997,332	20,754,866	63,908,589	175,650,844	61,090,290	39,069,738	626,944,170	48,226,475

건설교통부

⊙금강수계 재해 상황 총괄표(2000년 현가치)

구 분		단위	1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000		합계	13개년 평균
이재민	주 택	세대/인	-	122	-	429	109	417	86	322	15	52	39	147	12	47	329	1,053	11	32	36	81	321	849	50	125	73	196	3,872	298
	기 타	"	-	31	-	2,108	675	3,233	-	-	2	10	238	1,084	####	4,917	####	8,175	289	1,314	50	206	352	1,241	299	1,103	167	665	24,087	1,853
	계	"	-	153	-	2,537	-	3,650	-	322	-	62	-	1,231	-	4,964	-	9,228	-	1,346	-	287	-	2,090	-	1,228	-	861	27,959	2,151
인명	사 망	인	-	-	-	7	-	6	-	4	-	2	-	-	-	-	-	24	-	-	-	9	-	4	-	1	-	3	60	5
	실 종	"	-	-	-	3	-	1	-	-	-	1	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-	14	1
	부 상	"	-	-	-	3	-	1	-	-	-	-	-	1	-	-	-	16	-	-	-	2	-	1	-	6	-	7	37	3
	계	"	-	-	-	13	-	8	-	4	-	3	-	1	-	-	-	40	-	9	-	11	-	5	-	7	-	10	111	9
침수면적	농 경 지	ha	-	466	-	9,574	-	3,057	-	344	-	1,509	-	4,361	-	636	-	33,200	-	6,009	-	8,303	-	8,861	-	4,756	-	13,414	94,489	7,268
	기 타	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-	-	1	-	-	-	-	17	1
	계	"	-	466	-	9,574	-	3,057	-	344	-	1,509	-	4,361	-	636	-	33,216	-	6,009	-	8,303	-	8,862	-	4,756	-	13,414	94,506	7,270
건물	주택 유실, 전파	동	-	18	-	76	-	102	-	36	-	14	-	27	-	7	-	126	-	6	-	35	-	288	-	23	-	36	794	61
	주택 반파	"	-	13	-	68	-	96	-	51	-	11	-	33	-	12	-	220	-	8	-	29	-	233	-	44	-	46	864	66
	건물 소파	"	-	4	-	19	-	6	-	49	-	1	-	35	-	-	-	12	-	-	-	-	-	-	-	-	-	-	126	10
	건물 침수	"	-	123	-	1,607	-	51	-	16	-	8	-	5	-	-	-	3,224	-	-	-	1,223	-	1,556	-	774	-	245	8,832	679
	부속건물	"	-	18	-	47	-	10	-	12	-	2	-	25	-	-	-	62	-	1	-	-	-	-	-	-	-	-	177	14
	계	"	-	176	-	1,817	-	265	-	164	-	36	-	125	-	19	-	3,644	-	15	-	1,287	-	2,077	-	841	-	327	10,793	830
	피해액	천 원	-	19,054	-	241,488	-	131,795	-	62,531	-	50,940	-	115,631	-	8,176	-	800,176	-	15,154	-	308,171	-	854,943	-	821,962	-	1,137,508	4,567,530	351,348
선박	동력선 전파	척	-	-	191	598	17	38	-	-	-	-	3	19	1	10	16	52	2	71	6	3	3	8	15	18	114	224	1,040	80
	동력선 반파	"	-	-	95	471	15	90	-	-	2	3	6	12	1	4	7	30	-	-	6	1	10	6	23	70	24	65	751	58
	무동력선 전파	"	-	-	408	290	476	239	-	-	-	-	29	16	-	-	1	1	-	-	1	0	-	-	-	-	-	-	545	42
	무동력선 반파	"	-	-	97	71	13	7	-	-	-	-	19	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88	7
	계	"	-	-	-	1,430	-	372	-	-	-	3	-	58	-	13	-	82	-	71	-	4	-	13	-	88	-	289	2,424	186
	피해액	천 원	-	-	-	2,180,577	-	1,078,431	-	-	-	2,319	-	24,804	-	35,943	-	168,898	-	118,684	-	25,311	-	30,603	-	212,494	-	1,173,500	5,051,565	388,582
농경지	전 (유실, 매몰)	ha	-	36	-	67	-	2	-	1	-	2	-	2	-	2	-	162	-	9	-	136	-	406	-	5	-	8	837	64
	답 (유실, 매몰)	"	-	94	-	611	-	60	-	15	-	61	-	3	-	10	-	3,298	-	44	-	481	-	1,287	-	569	-	88	6,620	509
	계	"	-	130	-	677	-	62	-	16	-	62	-	4	-	12	-	3,460	-	52	-	617	-	1,693	-	574	-	96	7,457	574
	피해액	천 원	-	680,458	-	2,682,386	-	486,036	-	94,327	-	542,967	-	67,202	-	94,454	-	38,519,228	-	507,503	-	5,971,433	-	18,169,384	-	2,353,720	-	771,129	70,940,227	5,456,941
농작물	전 작	ha	-	158	-	874	-	125	-	31	-	1,325	-	651	-	42	-	7,052	-	943	-	23	-	173	-	6,759	-	309	18,464	1,420
	답 작	"	-	517	-	3,679	-	387	-	1,190	-	3,592	-	3,618	-	489	-	32,264	-	4,993	-	213	-	221	-	11,892	-	7,693	70,748	5,442
	기 타	"	-	-	-	846	-	-	-	17	-	128	-	134	-	24	-	13	-	68	-	-	-	120	-	192	-	3,923	5,463	420
	계	"	-	674	-	5,398	-	512	-	1,238	-	5,044	-	4,403	-	554	-	39,330	-	6,004	-	237	-	513	-	18,842	-	11,925	94,674	7,283
	피해액	천 원	-	1,388,718	-	14,474,286	-	1,487,740	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17,350,744	1,334,673
공시설	도로 도 로	개소/m	26	1,929	50	5,289	5	140	8	1,640	28	1,696	8	570	14	711	794	132,993	35	2,079	234	38,887	401	172,233	75	11,329	110	11,458	380,954	29,304
	교 량	개소/m	-	-	-	2	-	4	-	-	-	2	-	-	-	2	-	24	-	-	13	209	15	581	7	190	3	410	1,424	110
	피해액	천 원	-	158,566	-	1,148,471	-	393,495	-	115,063	-	486,740	-	99,638	-	564,248	-	29,449,736	-	286,816	-	7,001,667	-	29,181,214	-	3,153,325	-	4,156,372	76,195,349	5,861,181
	하천 제방, 기타	개소/m	44	8,956	125	33,479	41	7,033	13	1,140	59	4,273	27	3,077	5	760	786	232,289	138	15,939	334	107,292	429	166,277	104	29,876	66	18,244	628,637	48,357
	피해액	천 원	-	798,953	-	3,194,861	-	667,899	-	197,468	-	965,630	-	516,762	-	155,996	-	34,531,965	-	2,109,025	-	9,887,814	-	32,256,967	-	5,696,976	-	6,920,206	97,900,521	7,530,809
	하천 제방, 기타	개소/m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	609	132,964	764	197,381	142	52,079	193	23,279	405,703	31,208
	피해액	천 원	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15,892,541	-	27,133,601	-	4,565,240	-	3,447,506	51,038,888	3,926,068
	수 상, 하수도	개 소	-	1	-	37	-	-	-	3	-	1	-	-	-	-	-	145	-	3	-	67	-	113	-	5	-	25	400	31
	도 피해액	천 원	-	10,536	-	368,694	-	-	-	13,653	-	2,624	-	-	-	-	-	2,301,775	-	9,279	-	471,456	-	1,220,129	-	131,672	-	433,330	4,963,149	381,781
	항 만 시 설	개 소	-	-	-	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	5	0
	만 피 해 액	천 원	-	-	-	124,162	-	68,196	-	-	-	-	-	-	-	-	-	-	-	-	-	85,657	-	-	-	-	-	-	278,016	21,386
	어 항 시 설	개 소	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	4	0
	항 피 해 액	천 원	-	-	-	-	-	74,423	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15,306	-	101,308	191,037	14,695
	학 교 실	교 실	-	-	-	-	-	-	-	1	-	-	-	5	-	-	-	39	-	-	-	6	-	5	-	14	-	9	79	6
	부속건물	동	-	6	-	14	-	-	-	2	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	24	2
	교 피 해 액	천 원	-	28,358	-	122,707	-	-	-	5,260	-	-	-	5,170	-	-	-	832,903	-	-	-	34,983	-	153,965	-	82,404	-	100,660	1,366,410	105,108
	철 도	개소/m	-	-	1	15	1	350	-	-	2	105	-	-	-	-	28	3,187	-	-	11	3,880	9	631	3	2,015	6	560	10,743	826
	도 피 해 액	천 원	-	7	-	126	-	5,072	-	-	-	26,310	-	-	-	-	-	241,519	-	-	-	164,675	-	214,593	-	115,863	-	285,743	1,053,909	81,070
시설	수 수리시설	개 소	-	2,238	-	121	-	37	-	29	-	62	-	16	-	3	-	788	-	73	-	284	-	496	-	174	-	247	4,568	351
	방 조 제	"	-	-	-	13	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	12	-	-	-	-	-	3	29	2
	리 피 해 액	천 원	-	624,045	-	4,157,566	-	1,085,785	-	227,888	-	1,268,716	-	809,821	-	387,213	-	27,218,276	-	704,409	-	9,384,531	-	14,451,010	-	5,400,332	-	6,813,110	72,532,703	5,579,439
	사방 시 방	개소/ha	7	1	15	7	-	-	-	-	11	1	-	-	3	3	268	555	3	670	26	9	76	11,533	20	12	82	4	12,794	984
	조림기타	개소/m	2	0	1	0	-	-	-	-	-	-	-	-	1	-	-	-	-	-	20	38,818	40	22,539	4	1,376	21	6,407	69,140	5,318
	방 피 해 액	천 원	-	19,641	-	123,332	-	-	-	-	-	40,468	-	-	-	371,705	-	5,242,060	-	38,284	-	1,187,239	-	6,106,641	-	668,318	-	1,269,136	15,066,823	1,158,986
	용 시 설	개 소	-	1	-	53	-	-	-	-	-	10	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	65	5
	신 피 해 액	천 원	-	4,452	-	22,088	-	-	-	-	-	27,753	-	-	-	-	-	123	-	-	-	-	-	-	-	-	-	-	54,416	4,186
	군 시 설	개 소	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	16	-	9	29	2
	사 피 해 액	천 원	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	160,116	-	1,541,263	-	255,396	1,956,775	150,521
	소 시 설	개 소	-	251	-	793	-	282	-	34	-	351	-	42	-	52	-	3,779	-	268	-	1,124	-	1,591	-	294	-	401	9,262	712
	규모 피 해 액	천 원	-	2,475,118	-	7,840,299	-	1,837,156	-	253,320	-	1,719,502	-	326,796	-	564,024	-	77,040,581	-	2,204,013	-	14,839,110	-	27,576,956	-	4,233,097	-	3,765,306	144,675,277	11,128,867
	기 시 설	개 소	-	12	-	271	-	6	-	3	-	2	-	4	-	11	-	263	-	6	-	67	-	86	-	30	-	969	1,730	133
	타 피 해 액	천 원	-	422,039	-	910,464	-	137,088	-	111,712	-	8,765	-	66,437	-	61,324	-	5,045,098	-	47,837	-	2,389,537	-	2,973,296	-	8,472,725	-	6,485,713	27,132,037	2,087,080
	피해액 소계	"	-	4,541,716	-	18,012,770	-	4,269,113	-	924,364	-	4,546,508	-	1,824,624	-	2,104,510	-	181,904,034	-	5,399,662	-	61,339,213	-	141,428,488	-	34,076,522	-	34,033,786	494,405,310	38,031,178
기타	축 대, 담 장	개소/천원	3	-	84	-	9	20,447	-	-	6	81,088	3	29,058	3	40,286	110	323,588	4	3,514	29	161,074	17	38,641	-	-	4	75,042	772,738	59,441
	수산시설(종,양식)	"	-	-	####	-	150	5,459,689	1	3,700	####	414,566	15	18,374	29	2,136,469	279	732,585	354	1,589,381	140	233,270	12	215,962	12	53,840	10	155,560	11,013,396	847,184
	산 업 시 설	"	-	-	####	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	가 축 생 몰	두/천원	-	-	####	-	####	63,076	####	-	####	49,842	####	-	####	-	####	-	####	-	####	-	####	-	####	-	####	-	112,918	8,686
	축 사, 잠 사	개소/천원	1	-	438	-	478	257,669	5	82,070	-	-	138	243,302	28	97,478	79	748,447	100	967,747	18	137,920	134	1,566,681	72	699,184	3	26,716	4,827,214	371,324
	비닐하우스	ha/천원	-	-	-	-	242	1,472,951	16	135,897	1	2,352	427	1,515,380	178	1,303,148	197	7,128,070	150	4,563,087	7	291,142	23	1,049,271	409	22,111,697	12	1,155,842	40,728,837	3,132,987
	어 구	통/천원	-	-	-	-	286	243,635	-	-	-	-	12	991,485	44	524,430	45	67,315	####	619,766	12	55,685	1	1,000	####	30,250	162	308,527	2,842,093	218,623
	기 타	개소/천원	-	24,253	-	11,740,981	####	819,686	3	46,215	6	50,661	1	10,000	5	40,346	178	1,810,691	####	7,824,625	642	2,702,977	####	12,167,381	637	1,479,621	39	232,128	38,949,565	2,996,120
	피 해 액	천 원	-	35,994	-	17,174,707	-	11,707,030	-	358,962	-	785,364	-	3,628,822	-	5,213,319	-	12,994,457	-	18,132,189	-	4,016,573	-	15,026,905	-	24,871,834	-	1,953,815	115,899,969	8,915,382
총 피 해 액		천 원	-	6,665,941	-	54,766,214	-	19,160,146	-	1,440,184	-	5,928,097	-	5,661,083	-	7,456,402	-	234,386,793	-	24,173,192	-	71,660,701	-	175,510,323	-	62,336,532	-	39,069,738	708,215,346	54,478,104

건설교통부

⊙충청남도 재해 상황 총괄표(당해년 가치)

구 분		단위	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	합계	13개년 평균
이재민	주 택	세대/인	51	392	80 298	21 42	25 79	14 57	10 38	535 1,774	6 18	14 31	221 584	80 200	99 304	3,868	298
	기 타	"		10,000	2 14		21 92	426 2,079	1222 5,482	2992 15,816	344 1,559	108 453	266 990	310 1,156	180 715	38,356	2,950
	계	"	51	10,392	312	42	171	2,136	5,520	17,590	1,577	484	1,574	1,356	1,019	42,224	3,248
인명	사 망	인		8	3		3		5	28		1	12	3		63	5
	실 종	"		10	2	1	1	1								15	1
	부 상	"							31	29			10	3	3	76	6
	계	"		18	5	1	4	1	36	57		1	22	6	3	154	12
침수면적	농경지	ha	177.50	12,237.40	8,158.70	9,303.00	6,309.20	572.10	1,067.40	46,581.80	2,479.20	14,167.10	16,792.70	19,097.20	9,404.00	146,347	11,257
	기 타	"							2.00							2	0
	계	"	177.50	12,237.40	8,158.70	9,303.00	6,309.20	572.10	1,069.40	46,581.80	2,479.20	14,167.10	16,792.70	19,097.20	9,404.00	146,349	11,258
건물	유실, 전파	동	9	72	116	8	20	20	5	215	3	22	60	31	20	601	46
	주 반파	"	4	95	109	8	15	30	8	322	12	15	162	46	89	915	70
	건 소파	"	9	13				12								34	3
	물 침수	"		355	38		233		12	7,475		499	3,286	720	186	12,804	985
	부속건물	"	6	60	14			21								101	8
	계	"	28	595	277	16	268	83	25	8,012	15	536	3,508	797	295	14,455	1,112
	피 해 액	천 원	23,880	227,943	124,776	4,299	29,077	56,520	5,067	1,455,222	17,882	100,191	2,520,149	1,350,000	1,708,850	7,623,856	586,450
선박	동력 전 파	척	19 40	364 843	25 47		4 4	8 29	3 12	12 18	6 7	3 19	1 0	3 4	37 112	1,135	87
	선 반 파	"	38 107	286 883	55 188		4 7	35 100	27 110	11 16	10 43	5 43		8 9	46 112	1,618	124
	무동 전 파	"	19 13	469 338	495 251			29 16		1 1			1 0			618	48
	력선 반 파	"	27 25	121 92	24 15			19 11						3 2		145	11
	계	"	184	2,156	502		11	156	122	35	49	62	1	15	224	3,516	270
	피 해 액	천 원	137,275	2,137,176	856,390		16,309	180,254	188,953	73,494	75,346	75,662	1,242	35,711	598,838	4,376,650	336,665
농경지	전 (유실, 매몰)	ha	0.16	8.15			2.03	0.50	0.10	20.56	1.70	6.58	113.93	18.62	5.00	177	14
	답 (유실, 매몰)	"	10.27	1,063.65	76.90	12.67	134.96	0.70	10.24	3,758.33	18.76	420.71	657.20	658.94	124.00	6,947	534
	계	"	10.43	1,071.80	76.90	12.67	136.99	1.20	10.34	3,778.89	20.46	427.29	771.13	677.56	129.00	7,125	548
	피 해 액	천 원	25,570	647,778	305,221	85,121	892,706	31,200	218,491	33,428,638	188,179	1,518,726	9,689,419	2,664,376	892,458	50,587,883	3,891,376
농작물	전 작	ha	55.90	806.23	30.00		1,734.60	943.80		10,762.70	658.00	22.17	191.00	8,642.60	13.00	23,860	1,835
	답 작	"	1,688.33	4,536.20	25.00	85.60	12,185.20	5,489.50		45,405.60	1,904.00	115.90	647.30	21,737.90	392.00	94,213	7,247
	기 타	"		2,196.50	40.00		110.00	228.90	34.11		40.80		189.56	45.53	12,325.00	15,210	1,170
	계	"	1,744.23	7,538.93	95.00	85.60	14,029.80	6,662.20	34.11	56,168.30	2,602.80	138.07	1,027.86	30,426.03	12,730.00	133,283	10,253
	피 해 액	천 원	1,584,773	14,135,580	196,555											15,916,908	1,224,378
어항시설	도 로	개소/m	1 10	27 3,110	7 2,035		59 6,050	1 30	12 261	992 176,528	10 400	130 16,336	306 73,938	182 33,766	76 8,909	321,373	24,721
	교 량	개소/m		1	1		4		3			4 78	13 257	26 612	2 51	1,007	77
	로 피 해 액	천 원	110	430,035	195,500		1,030,729	1,400	13,226	28,281,110	88,737	2,698,596	10,645,970	10,815,493	2,850,176	57,051,082	4,388,545
	하 제방, 기타	개소/m	8 377	74 11,348	33 3,398	8 868	122 12,764		11 2,540	748 241,072	65 5,030	212 31,348	252 91,786	163 50,287	87 17,945	468,763	36,059
	천 피 해 액	천 원	32,125	682,784	346,783	28,240	1,166,775		251,749	31,737,569	431,380	3,804,611	21,763,459	8,076,367	3,315,502	71,637,344	5,510,565
	하 제방, 기타	개소/m										355 46,541	402 86,733	234 76,544	221 34,012	243,830	18,756
	천 피 해 액	천 원										4,026,051	6,511,595	5,093,501	4,074,292	20,705,439	1,592,726
	수 상, 하수도	개 소					4	1		166		7	22	9	17	226	17
	도 피 해 액	천 원					4,196	1,200		2,993,091		15,960	1,029,405	191,909	374,516	4,610,277	354,637
	항 항만시설	개 소		3	1											4	0
	만 피 해 액	천 원		119,080	48,566											167,646	12,896
	어 어항시설	개 소	4	8	8		1	2	5	3	2	3		3	40	79	6
	항 피 해 액	천 원	20,346	378,569	273,284		25,349	115,965	440,614	185,365	70,766	712,739		60,181	2,930,695	5,213,873	401,067
	학 교 실	교 실					8			51		3	18	19	32	131	10
	부속건물	동	4	5			1		1							11	1
	교 피 해 액	천 원	11,799	51,655			20,300		1,832	714,161		4,113	287,019	121,980	278,012	1,490,871	114,682
	철 철 도	개소/m			4 409		6 646			67 6633		2 135	10 610	3 2013	20 2,167	12,613	970
	도 피 해 액	천 원	5		4,059		37,318			874,054		81,980	265,484	88,441	777,055	2,128,396	163,723
시설	수 수리시설	개 소	2,198	72	24		564	1	1	1,006	33	248	421	303	245	5,116	394
	방 조 제	"	11	108	2		11	1				61		3	35	232	18
	리 피 해 액	천 원	611,697	16,177,035	280,729		2,238,553	80,651	25,000	33,161,473	171,882	8,673,953	11,905,350	8,841,549	8,404,536	90,572,408	6,967,108
	사 방	개소/ha	4 0	3 0.36	4 1		18 1			364 122.19	3 670	34 236.25	153 78.29	55 21	54 11	1,141	88
	사 조림기타	개소/m										4,139.00	19 10,660.00	12 3,486	22 9,050	27,335	2,103
	방 피 해 액	천 원	1,495	6,008	7,129		38,235			7,173,075	32,870	805,897	4,701,699	1,433,194	1,503,000	15,702,602	1,207,892
	용 시 설	개 소	1	1			10									12	1
	신 피 해 액	천 원	3,000	3,416			21,150									27,566	2,120
	군 시 설	개 소											1	10	10	21	2
	사 피 해 액	천 원											126,096	1,512,003	646,246	2,284,345	175,719
	소 시 설	개 소	78	437	239	1	794	18	85	4,119	91	565	833	470	383	8,113	624
	규모 피 해 액	천 원	205,118	2,964,443	839,443	16,520	2,868,935	103,835	373,976	72,761,197	505,132	3,054,365	9,721,210	6,928,063	4,834,340	105,176,577	8,090,506
	기 시 설	개 소	5	58	20		22	1	5	238	4	41	69	49	199	711	55
	타 피 해 액	천 원	54,680	1,069,457	113,368		420,044	1,092	22,504	4,917,148	54,963	832,772	1,830,772	8,632,919	6,311,194	24,260,913	1,866,224
피해액소계		"	940,375	21,882,482	2,108,861	44,760	7,871,584	304,143	1,128,901	182,798,243	1,355,730	24,711,037	68,788,059	52,795,600	36,299,564	401,029,339	30,848,411
기타	축 대.담 장	개소/천원	2	3 7,121		17 114,319		1 38,225	4 4,720	1 600	30 104,132	18 161,306				430,423	33,109
	수산시설(증.양식)	"	97	17699	125 4,921,880		3 7,028			19 248,498	847 1,988,241	206 379,787	3 80,289	16 454,583	34 708,280	8,788,586	676,045
	산 업 시 설	"		2327												0	0
	가 축 생 물	두/천원		31835	22155 53,150	9000 10,145	69207 49,842	32004	49800	4E+06	24614	68665	483009	196676	78,699	113,137	8,703
	축사,잡사	개소/천원	1	110	308 123,038	1 1,365	3 12,350	50 150,522	1 1,500	126 1,304,790	71 937,622	8 75,009	33 1,078,993	59 585,170	26 200,813	4,471,172	343,936
	비닐하우스	ha/천원			90 1,011,306	8 41,200		372 907,189	180 1,077,261	271 9,271,910	192.88 5,647,265	6.01 230,379	7.03 294,877	358.88 21,615,490	82 7,015,224	47,112,101	3,624,008
	어 구	통/천원			344 579,719			23 1,774,240	48 582,370	150 741,110	57127 2,086,944	142 620,167	5 275,585	14451 415,921	160 873,686	7,949,742	611,519
	기 타	개소/천원	190,126	8,300,190	10211 333,031	4 32,342	29 96,186	3 16,000	14 28,787	12 91,934	2131 2,191,906	42 1,073,373	4082 8,471,847	127 463,498	46 234,640	21,523,860	1,655,682
피 해 액		천 원	190,126	8,300,190	7,029,245		85,052	279,725	2,847,951	1,728,143	11,662,962	12,852,578	2,482,847	10,362,897	23,534,662	9,032,643	90,389,021	6,953,002
총 피 해 액		천 원	2901999	47,331,149	10,621,048	219232	9089401	3,420,068	3269555	229,418,559	14,489,715	28,888,463	91,361,766	80,380,349	48,532,353	569,923,657	43,840,281

건설교통부

⊙충청남도 재해 상황 총괄표(2000년 현가치)

구 분		단위	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	합계	13개년 평균
이재민	주 택	세대/인	- 51	- 392	80 298	21 42	25 79	14 57	10 38	535 1,774	6 18	14 31	221 584	80 200	99 304	3,868	298
	기 타	"	- -	- 10,000	2 14	- -	21 92	426 2,079	#### 5,482	#### 15,816	344 1,559	108 453	266 990	310 1,156	180 715	38,356	2,950
	계	"	- 51	- 10,392	- 312	- 42	- 171	- 2,136	- 5,520	- 17,590	- 1,577	- 484	- 1,574	- 1,356	- 1,019	42,224	3,248
인명	사 망	인	- -	- 8	- 3	- -	- 3	- -	- 5	- 28	- -	- 1	- 12	- 3	- -	63	5
	실 종	"	- -	- 10	- 2	- 1	- 1	- 1	- -	- -	- -	- -	- -	- -	- -	15	1
	무 상	"	- -	- -	- -	- -	- -	- -	- 31	- 29	- -	- -	- 10	- 3	- 3	76	6
	계	"	- -	- 18	- 5	- 1	- 4	- 1	- 36	- 57	- -	- 1	- 22	- 6	- 3	154	12
침수면적	농경지	ha	- 178	- 12,237	- 8,159	- 9,303	- 6,309	- 572	- 1,067	- 46,582	- 2,479	- 14,167	- 16,793	- 19,097	- 9,404	146,347	11,257
	기 타	"	- -	- -	- -	- -	- -	- -	- 2	- -	- -	- -	- -	- -	- -	2	0
	계	"	- 178	- 12,237	- 8,159	- 9,303	- 6,309	- 572	- 1,069	- 46,582	- 2,479	- 14,167	- 16,793	- 19,097	- 9,404	146,349	11,258
건물	유실, 전파	동	- 9	- 72	- 116	- 8	- 20	- 20	- 5	- 215	- 3	- 22	- 60	- 31	- 20	601	46
	주 반 파	"	- 4	- 95	- 109	- 8	- 15	- 30	- 8	- 322	- 12	- 15	- 162	- 46	- 89	915	70
	건 소 파	"	- 9	- 13	- -	- -	- -	- 12	- -	- -	- -	- -	- -	- -	- -	34	3
	물 침 수	"	- -	- 355	- 38	- -	- 233	- -	- 12	- 7,475	- -	- 499	- 3,286	- 720	- 186	12,804	985
	부 속 건 물	"	- 6	- 60	- 14	- -	- -	- 21	- -	- -	- -	- -	- -	- -	- -	101	8
	계	"	- 28	- 595	- 277	- 16	- 268	- 83	- 25	- 8,012	- 15	- 536	- 3,508	- 797	- 295	14,455	1,112
	피 해 액	천 원	- 35,440	- 333,435	- 175,210	- 5,761	- 38,155	- 73,052	- 6,377	- 1,749,177	- 20,827	- 112,344	- 2,518,133	- 1,377,540	- 1,708,850	8,154,302	627,254
선박	동력 전 파	척	19 40	364 843	25 47	- -	4 4	8 29	3 12	12 18	6 7	3 19	1 0	3 4	37 112	1,135	87
	선 반 파	"	38 107	286 883	55 188	- -	4 7	35 100	27 110	11 16	10 43	5 43	- -	8 9	46 112	1,618	124
	무동 전 파	"	19 13	469 338	495 251	- -	- -	29 16	- -	1 1	- -	- -	1 0	- -	- -	618	48
	력선 반 파	"	27 25	121 92	24 15	- -	- -	19 11	- -	- -	- -	- -	- -	3 2	- -	145	11
	계	"	- 184	- 2,156	- 502	- -	- 11	- 156	- 122	- 35	- 49	- 62	- 1	- 15	- 224	3,516	270
	피 해 액	천 원	- 203,730	- 3,126,261	- 1,202,543	- -	- 21,401	- 232,978	- 237,816	- 88,340	- 87,755	- 84,840	- 1,241	- 36,440	- 598,838	5,922,183	455,553
농경지	전 (유실, 매몰)	ha	- 0	- 8	- -	- -	- 2	- 1	- 0	- 21	- 2	- 7	- 114	- 19	- 5	177	14
	답 (유실, 매몰)	"	- 10	- 1,064	- 77	- 13	- 135	- 1	- 10	- 3,758	- 19	- 421	- 657	- 659	- 124	6,947	534
	계	"	- 10	- 1,072	- 77	- 13	- 137	- 1	- 10	- 3,779	- 20	- 427	- 771	- 678	- 129	7,125	548
	피 해 액	천 원	- 37,948	- 947,570	- 428,591	- 114,062	- 1,171,409	- 40,326	- 274,993	- 40,181,223	- 219,172	- 1,702,947	- 9,681,667	- 2,718,729	- 892,458	58,411,096	4,493,161
농작물	전 작	ha	- 56	- 806	- 30	- -	- 1,735	- 944	- -	- 10,763	- 658	- 22	- 191	- 8,643	- 13	23,860	1,835
	답 작	"	- 1,688	- 4,536	- 25	- 86	- 12,185	- 5,490	- -	- 45,406	- 1,904	- 116	- 647	- 21,738	- 392	94,213	7,247
	기 타	"	- -	- 2,197	- 40	- -	- 110	- 229	- 34	- -	- 41	- -	- 190	- 46	- 12,325	15,210	1,170
	계	"	- 1,744	- 7,539	- 95	- 86	- 14,030	- 6,662	- 34	- 56,168	- 2,603	- 138	- 1,028	- 30,426	- 12,730	133,283	10,253
	피 해 액	천 원	- 2,351,962	- 20,677,526	- 276,003	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	23,305,491	1,792,730
공공시설	도 도 로	개소/m	1 10	27 3,110	7 2,035	- -	59 6,050	1 30	12 261	992 176,528	10 400	130 16,336	306 73,938	182 33,766	76 8,909	321,373	24,721
	교 량	개소/m	- -	- 1	- 1	- -	- 4	- -	- -	- 3	- -	4 78	13 257	26 612	2 51	1,007	77
	로 피 해 액	천 원	- 163	- 629,055	- 274,521	- -	- 1,352,523	- 1,810	- 16,646	- 33,993,894	- 103,352	- 3,025,936	- 10,637,453	- 11,036,129	- 2,850,176	63,921,658	4,917,051
	하 제방, 기타	개소/m	8 377	74 11,348	33 3,398	8 868	122 12,764	- -	11 2,540	748 241,072	65 5,030	212 31,348	252 91,786	163 50,287	87 17,945	468,763	36,059
	천 피 해 액	천 원	- 47,677	- 998,776	- 486,953	- 37,842	- 1,531,042	- -	- 316,851	- 38,148,558	- 502,428	- 4,266,110	- 21,746,048	- 8,241,125	- 3,315,502	79,638,913	6,126,070
	하 제방, 기타	개소/m	- -	- -	- -	- -	- -	- -	- -	- -	- -	355 46,541	402 86,733	234 76,544	221 34,012	243,830	18,756
	천 피 해 액	천 원	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 4,514,411	- 6,506,386	- 6,217,808	- 4,074,292	21,312,897	1,639,454
	수 상, 하수도	개 소	- -	- -	- -	- -	- 4	- 1	- -	- 166	- -	- 7	- 22	- 9	- 17	226	17
	도 피 해 액	천 원	- -	- -	- -	- -	- 5,506	- 1,551	- -	- 3,597,695	- -	- 17,896	- 1,028,581	- 195,824	- 374,516	5,221,570	401,659
	항 항만시설	개 소	- -	- 3	- 1	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	4	0
	만 피 해 액	천 원	- -	- 174,190	- 68,196	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	242,387	18,645
	어 어항시설	개 소	- 4	- 8	- 8	- -	- 1	- 2	- 5	- 3	- 2	- 3	- -	- 3	- 40	79	6
	항 피 해 액	천 원	- 30,195	- 553,771	- 383,745	- -	- 33,263	- 149,885	- 554,557	- 222,809	- 82,421	- 799,194	- -	- 61,409	- 2,930,695	5,801,944	446,303
공공시설	학 교 실	교 실	- -	- -	- -	- -	- 8	- -	- -	- 51	- -	- 3	- 18	- 19	- 32	131	10
	부속건물	동	- 4	- 5	- -	- -	- 1	- -	- 1	- -	- -	- -	- -	- -	- -	11	1
	교 피 해 액	천 원	- 17,511	- 75,561	- -	- -	- 26,638	- -	- 2,306	- 858,422	- -	- 4,612	- 286,789	- 124,468	- 278,012	1,674,318	128,794
	철 도	개소/m	- -	- -	4 409	- -	6 646	- -	- -	67 6,633	- -	2 135	10 610	3 2,013	20 2,167	12,613	970
	도 피 해 액	천 원	- 7	- -	- 5,700	- -	- 48,969	- -	- -	- 1,050,613	- -	- 91,924	- 265,272	- 90,245	- 777,055	2,329,785	179,214
시설	수 수리시설	개 소	- 2,198	- 72	- 24	- -	- 564	- 1	- 1	- 1,006	- 33	- 248	- 421	- 303	- 245	5,116	394
	방 조 제	"	- 11	- 108	- 2	- -	- 11	- 1	- -	- -	- -	- 61	- -	- 3	- 35	232	18
	리 피 해 액	천 원	- 907,820	- 23,663,767	- 394,200	- -	- 2,937,429	- 104,241	- 31,465	- 39,860,091	- 200,191	- 9,726,103	- 11,895,826	- 9,021,917	- 8,404,536	107,147,585	8,242,122
	사 방	개소/ha	4 0	3 0	4 1	- -	18 1	- -	- -	364 122	3 670	34 236	153 78	55 21	54 11	1,141	88
	사 조림기타	개소/m	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 4,139	19 10,660	12 3,486	22 9,050	27,335	2,103
	방 피 해 액	천 원	- 2,219	- 8,789	- 10,011	- -	- 50,172	- -	- -	- 8,622,036	- 38,284	- 903,652	- 4,697,938	- 1,462,431	- 1,503,000	17,298,531	1,330,656
	통 시 설	개 소	- 1	- 1	- -	- -	- 10	- -	- -	- -	- -	- -	- -	- -	- -	12	1
	신 피 해 액	천 원	- 4,452	- 4,997	- -	- -	- 27,753	- -	- -	- -	- -	- -	- -	- -	- -	37,202	2,862
	군 시 설	개 소	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 1	- 10	- 10	21	2
	사 피 해 액	천 원	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 125,995	- 1,542,848	- 646,246	2,315,089	178,084
	소 시 설	개 소	- 78	- 437	- 239	- 1	- 794	- 18	- 65	- 4,119	- 91	- 666	- 633	- 470	- 383	8,113	624
	규모 피 해 액	천 원	- 304,416	- 4,336,387	- 1,178,746	- 22,137	- 3,764,617	- 134,207	- 470,686	- 87,458,959	- 588,327	- 3,424,859	- 9,713,433	- 7,069,395	- 4,834,340	123,300,509	9,484,655
	기 시 설	개 소	- 5	- 58	- 20	- -	- 22	- 1	- 5	- 238	- 4	- 41	- 69	- 49	- 199	711	55
	타 피 해 액	천 원	- 81,151	- 1,564,402	- 159,191	- -	- 551,182	- 1,411	- 28,324	- 5,910,412	- 64,015	- 933,787	- 1,829,307	- 8,809,031	- 6,311,194	26,243,407	2,018,724
	피 해 액 소 계	"	- 1,395,611	- 32,009,695	- 2,961,263	- 59,978	- 10,329,093	- 393,105	- 1,420,835	- 219,723,488	- 1,579,019	- 27,708,486	- 68,733,029	- 53,872,630	- 36,299,564	456,485,794	35,114,292
기타	축 대, 담 장	개소/천원	2 -	- -	3 7,121	- -	17 114,319	- -	1 38,225	4 4,720	1 600	30 104,132	18 161,306	- -	- -	430,423	33,109
	수산시설(종,양식)	"	97 -	#### -	125 4,921,880	- -	3 7,028	- -	- -	19 248,498	847 1,988,241	206 379,787	3 80,289	16 454,583	34 708,280	8,788,586	676,045
	산 업 시 설	"	- -	#### -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-	0
	가 축 생 물	두/천원	- -	#### -	#### 53,150	#### 10,145	#### 49,842	#### -	#### -	#### -	#### -	#### -	#### -	#### -	#### -	113,137	8,703
	축 사, 잠 사	개소/천원	1 -	110 -	308 123,038	1 1,365	3 12,350	50 150,522	1 1,500	126 1,304,790	71 937,622	8 75,009	33 1,078,993	59 585,170	26 200,813	4,471,172	343,936
	비닐하우스	ha/천원	- -	- -	90 1,011,306	8 41,200	- -	372 907,189	180 1,077,261	271 9,271,910	193 5,647,265	6 230,379	7 294,877	359 21,615,490	82 7,015,224	47,112,101	3,624,008
	어 구	통/천원	- -	- -	344 579,719	- -	- -	23 1,774,240	48 582,370	150 741,110	#### 2,086,944	142 620,167	5 275,585	#### 415,921	160 873,686	7,949,742	611,519
	기 타	개소/천원	- 190,126	- 8,300,190	#### 333,031	4 32,342	29 96,186	3 16,000	14 28,787	12 91,934	#### 2,191,906	42 1,073,373	#### 8,471,847	127 463,498	46 234,640	21,523,860	1,655,682
	피 해 액	천 원	- 282,166	- 12,141,518	- 9,870,466	- 113,970	- 367,055	- 3,680,977	- 2,175,041	- 14,018,880	- 14,969,398	- 2,784,016	- 10,354,607	- 24,014,769	- 9,032,643	103,805,505	7,985,039
총 피 해 액		천 원	- 4,306,857	- 69,236,005	- 14,914,076	- 293,771	- 11,927,112	- 4,420,438	- 4,115,062	- 275,761,108	- 16,876,171	- 32,392,634	- 91,288,677	- 82,020,108	- 48,532,353	656,084,370	50,468,028

건설교통부

⊙충청북도 재해 상황 총괄표(당해년 가치)

구 분		단위	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	합계	13개년 평균
이재민	주 택	세대/인	1,409	73	882 3,783	103 395	6 26	13 37	56 177	96 301	5 14	27 57	241 644	4 10	7 14	6,940	534
	기 타	"	895						53 185	233 987		5 21	121 382	3 9		2,479	191
	계	"	2,304	73	3,783	395	26	37	362	1,288	14	78	1,026	19	14	9,419	725
인명	사 망	인	13	5	15	3			1	5		8	2			52	4
	실 종	"	6	1						1	1					9	1
	부 상	"	5						3	189		2	1	1	1	202	16
	계	"	24	6	15	3			4	195	1	10	3	1	1	263	20
침수면적	농경지	ha	3,044.60	923.40	2,995.10	308.90	74.40	280.20	1,454.30	7,713.96	719.00	243,443.00	3,265.80	133.11	139.00	264,495	20,346
	기 타	"											1.40			1	0
	계	"	3,044.60	923.40	2,995.10	308.90	74.40	280.20	1,454.30	7,713.96	719.00	243,443.00	3,267.20	133.11	139.00	264,496	20,346
건물	주 유실, 전파	동	225	10	215	40	3	10	35	31	2	18	252	3	7	851	65
	주 반 파	"	63	8	264	62	5	7	39	73	3	14	156	15	15	724	56
	주 소 파	"	49	2	4	55	4	55	6	11						186	14
	용 침 수	"	1,435	8	294	16	1	5	160	284		286	1,349	10	19	3,867	297
	부 속 건 물	"	394	4	4	25	2	58	65	61	1					614	47
	계	"	2,166	32	781	198	15	135	305	460	6	318	1,757	28	41	6,242	480
	피 해 액	천 원	255,090	12,080	887,396	59,254	26,801	86,251	178,755	95,458	1,625	115,455	228,659	34,711	2,946	1,984,481	152,652
선박	동력선 전 파	척			1 4					7 2		4 1	1 0		1	7	1
	선 반 파	"							8 2			7 2				5	0
	무동력선 전 파	"	1 0							1 0		6 5		1 0		5	0
	반 파	"														0	0
	계	"	0		4				2	2		9	0	0	1 0	17	1
	피 해 액	천 원	470		37,500				33,708	12,405		20,897	1,578	1,080	417	108,055	8,312
농경지	전 (유실, 매몰)	ha	595.08	127.90	469.30	2.51	0.20	0.70	263.94	466.00	5.85	118.81	399.86	3.00	4.00	2,457	189
	답 (유실, 매몰)	"	911.58	107.90	534.30	19.06	1.20		490.02	914.63	22.80	280.68	1,137.23	14.23	27.00	4,461	343
	계	"	1,506.66	235.80	1,003.60	21.57	1.40	0.70	753.96	1,380.63	28.65	399.49	1,537.09	17.23	31.00	6,918	532
	피 해 액	천 원	5,876,150	759,767	9,011,475	100,828	14,072	2,275	6,493,269	12,710,104	225,364	3,729,006	16,419,964	101,852	140,818	55,584,944	4,275,765
농작물	전 작	ha	1,181.70	321.00	1,939.70	80.05	1,529.20	182.40	537.61	2,135.49	132.90	2.90	5.64	2,591.18	10.00	10,650	819
	답 작	"	3,354.90	831.10	2,464.20	480.66	298.70	172.40	1,732.10	6,388.95	593.40	56.62	81.70	1,114.09	149.00	17,718	1,363
	기 타	"				468.30	20.00	8.30	1.43	1.88	25.10		0.50		830.00	1,356	104
	계	"	4,536.60	1,152.10	4,403.90	1,029.01	1,847.90	363.10	2,271.14	8,526.32	751.40	59.52	87.84	3,705.27	989.00	29,723	2,286
	피 해 액	천 원	5,608,039	2,167,096	9,111,669											16,886,804	1,298,985
공공시설	도 도 로	개소/m	130 43,525	29 3,144	46 21,034	8 1,640		5 1,150	112 40,045	264 57,442	9 1,024	150 29,888	282 153,473	36 10,097	65 6,489	368,951	28,381
	교 량	개소/m	13		10		1	3	15	27		12 229	12 479	4	6 580	1,357	104
	로 피 해 액	천 원	4,953,538	417,923	5,699,326	85,868	59,557	225,353	12,772,313	9,427,019	79,591	3,932,194	25,796,666	3,258,461	3,771,224	70,479,033	5,421,464
	하 제방, 기타	개소/m	272 185,639	57 25,585	108 39,207	14 1,170	2 90	6 735	63 37,125	264 63,945	27 4,350	112 73,499	159 109,858	65 6,800	25 6,634	554,637	42,664
	천 피 해 액	천 원	11,785,071	1,620,149	4,883,900	149,878	13,091	68,973	9,527,543	9,960,464	494,722	2,858,221	24,212,582	1,710,580	1,954,007	69,239,181	5,326,091
	하 제방, 기타	개소/m										384 92,227	488 170,720	159 16,088	157 29,707	308,742	23,749
	천 피 해 액	천 원										9,934,040	25,171,254	2,907,319	4,871,827	42,884,440	3,298,803
	수 상, 하수도	개 소	20	3	11	3			35	50		51	89	6	2	270	21
	도 피 해 액	천 원	248,722	27,510	160,956	10,189			320,810	529,635		436,968	826,425	103,313	26,792	2,691,320	207,025
	항 항만시설	개 소														0	0
	만 피 해 액	천 원														0	0
	어 어항시설	개 소														0	0
	항 피 해 액	천 원														0	0
	학 교 실	교 실				1				20		3	3	5		32	2
	부속건물	동	23	6	6	2			1							38	3
	교 피 해 액	천 원	127,617	6,895	51,826	3,925			15,466	387,853		19,944	128,546	28,027		770,099	59,238
	철 도	개소/m	17 640	3 290	21 2686	3 80	1 100			17 1613		3 300	3 337			6,046	465
	도 피 해 액	천 원	72,357	8,348	413,681	7,200	16,209			330,384		13,650	108,290			970,119	74,625
	수 수리시설	개 소	332	38	184	31	1	3	157	306	27	137	285	61	54	1,616	124
	방 조 제	"														0	0
	리 피 해 액	천 원	4,088,296	502,195	3,642,687	198,550	54,984	82,380	6,054,373	6,446,928	223,833	5,135,561	9,882,014	2,864,732	2,228,369	41,404,902	3,184,992
	사 봉	개소/ha	31 22	1 1.00	30 15				55 41	80 498.82		16 8.09	60 11,528.60	21 10	7 6	12,130	933
	사 조림기타	개소/m	25 22	1 0.40	4 1			2	13 8			16 32,068.00	35 20,250.00	18 2,900	4 1,310	56,560	4,351
	방 피 해 액	천 원	198,020	15,000	318,600			12,508	2,158,016	1,647,835		694,725	5,694,090	1,255,893	734,777	12,729,464	979,190
	용 시 설	개 소	7	9					2	1						19	1
	신 피 해 액	천 원	103,203	1,824					550,003	102						655,132	50,395
	군 시 설	개 소										1	1	10	1	13	1
	사 피 해 액	천 원										806,194	134,811	239,642	39,549	1,220,196	93,861
	소 시 설	개 소	1,224	598	719	33	10	26	658	1,826	147	638	1,140	130	185	7,334	564
	규모 피 해 액	천 원	12,553,786	6,766,398	13,340,879	188,162	50,130	388,947	23,699,872	27,726,640	988,397	10,552,305	23,281,732	2,326,993	1,548,572	123,412,813	9,493,293
	기 시 설	개 소	94	53	70	8		3	37	76		31	58	34	33	497	38
	타 피 해 액	천 원	682,343	379,547	3,108,742	98,190		52,718	1,102,375	1,576,642		956,645	2,063,943	588,534	1,331,077	11,940,756	918,520
피해액 소계		"	34,812,953	9,745,789	31,620,597	741,962	193,971	830,879	56,200,771	58,033,502	1,786,543	35,340,447	117,300,353	15,283,494	16,506,194	378,397,455	29,107,497
기타	축 대, 담 장	개소/천원		5	11 172,960		2 31,917	3 7,097	7 77,114	58 191,752	4 3,514	1 15,612				499,966	38,459
	수산시설(증,양식)	"			22 1,042,185	1 3,700		3 13,651	10 40,575	20 79,498		3 760	9 170,633	1 8,635		1,359,637	104,587
	산 업 시 설	"		325												0	0
	가 축 생 매 몰	두/천원		1500	75528 111,333	4463		19570	39501	357101	4000	21000	307048	50081	46,035	111,333	8,564
	축 사, 잠 사	개소/천원		268	183 335,033	20 92,449	3 31,120	49 168,791	23 124,329	33 269,828	2 12,947	5 56,688	119 1,285,479	9 50,767		2,427,331	186,718
	비닐하우스	ha/천원			385 524,468	15 143,642	1 2,352	26 228,068	23,962	7 247,805	2.25 125,841	1.01 94,876	16.5 779,399	19.79 844,781	22,999	3,038,193	233,707
	어 구	통/천원														0	0
	기 타	개소/천원	3,160,492	1,440,085	93 32,516,355	2 15,904	1 3,000		13 265,363	167 2,894,259		5 438,615	1775 7,939,504	150 373,197	11 53,683	49,100,457	3,776,958
	피 해 액	천 원	3,160,492	1,440,085	34,702,334	255,695	68,389	417,607	531,343	3,683,142	142,202	606,551	10,175,015	1,277,380	76,682	56,536,917	4,348,994
총 피 해 액		천 원	49713194	14,124,817	85,370,971	1157739	303233	1,337,012	63437846	74,534,611	2,155,734	39,812,356	144,125,569	16,698,517	16,727,057	509,498,656	39,192,204

건설교통부

⊙충청북도 재해 상황 총괄표(2000년 현가치)

구 분		단위	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	합계	13개년 평균
이재민	주 택	세대/인	- 1,409	- 73	882 3,783	103 395	6 26	13 37	56 177	96 301	5 14	27 57	241 644	4 10	7 14	6,940	534
	기 타	"	- 895	- -	- -	- -	- -	- -	53 185	233 987	- -	5 21	121 382	3 9	- -	2,479	191
	계	"	- 2,304	- 73	- 3,783	- 395	- 26	- 37	- 362	- 1,288	- 14	- 78	- 1,026	- 19	- 14	9,419	725
인명	사 망	인	- 13	- 5	- 15	- 3	- -	- -	- 1	- 5	- -	- 8	- 2	- -	- -	52	4
	실 종	"	- 6	- 1	- -	- -	- -	- -	- -	- 1	- 1	- -	- -	- -	- -	9	1
	부 상	"	- 5	- -	- -	- -	- -	- -	- 3	- 189	- -	- 2	- 1	- 1	- 1	202	16
	계	"	- 24	- 6	- 15	- 3	- -	- -	- 4	- 195	- 1	- 10	- 3	- 1	- 1	263	20
침수면적	농 경 지	ha	- 3,045	- 923	- 2,995	- 309	- 74	- 280	- 1,454	- 7,714	- 719	- 243,443	- 3,266	- 133	- 139	264,495	20,346
	기 타	"	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 1	- -	- -	1	0
	계	"	- 3,045	- 923	- 2,995	- 309	- 74	- 280	- 1,454	- 7,714	- 719	- 243,443	- 3,267	- 133	- 139	264,496	20,346
건물	유실, 전파	동	- 225	- 10	- 215	- 40	- 3	- 10	- 35	- 31	- 2	- 18	- 252	- 3	- 7	851	65
	주 반 파	"	- 63	- 8	- 264	- 62	- 5	- 7	- 39	- 73	- 3	- 14	- 156	- 15	- 15	724	56
	건 소 파	"	- 49	- 2	- 4	- 55	- 4	- 55	- 6	- 11	- -	- -	- -	- -	- -	186	14
	물 침 수	"	- 1,435	- 8	- 294	- 16	- 1	- 5	- 160	- 284	- -	- 286	- 1,349	- 10	- 19	3,867	297
	부 속 건 물	"	- 394	- 4	- 4	- 25	- 2	- 58	- 65	- 61	- 1	- -	- -	- -	- -	614	47
	계	"	- 2,166	- 32	- 781	- 198	- 15	- 135	- 305	- 460	- 6	- 318	- 1,757	- 28	- 41	6,242	480
	피 해 액	천 원	- 378,579	- 17,671	- 1,246,081	- 79,400	- 35,168	- 111,479	- 224,981	- 114,741	- 1,893	- 129,460	- 228,476	- 35,419	- 2,946	2,606,294	200,484
선박	동력선 전 파	척	- -	- -	1 4	- -	- -	- -	- -	7 2	- -	4 1	1 0	- -	1 -	7	1
	선 반 파	"	- -	- -	- -	- -	- -	- -	8 2	- -	- -	7 2	- -	- -	- -	5	0
	무동력선 전 파	"	1 0	- -	- -	- -	- -	- -	- -	1 0	- -	6 5	- -	1 0	- -	5	0
	반 파	"	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-	0
	계	"	- 0	- -	- 4	- -	- -	- -	- 2	- 2	- -	- 9	- 0	- 0	1 -	17	1
	피 해 액	천 원	- 698	- -	- 52,658	- -	- -	- -	- 42,425	- 14,911	- -	- 23,432	- 1,577	- 1,102	- 417	137,218	10,555
농경지	전 (유실, 매몰)	ha	- 595	- 128	- 469	- 3	- 0	- 1	- 264	- 466	- 6	- 119	- 400	- 3	- 4	2,457	189
	답 (유실, 매몰)	"	- 912	- 108	- 534	- 19	- 1	- -	- 490	- 915	- 23	- 281	- 1,137	- 14	- 27	4,461	343
	계	"	- 1,507	- 236	- 1,004	- 22	- 1	- 1	- 754	- 1,381	- 29	- 399	- 1,537	- 17	- 31	6,918	532
	피 해 액	천 원	- 8,720,794	- 1,111,387	- 12,653,913	- 135,110	- 18,465	- 2,940	- 8,172,428	- 15,277,545	- 262,481	- 4,181,334	- 16,406,828	- 103,930	- 140,818	67,187,975	5,168,306
농작물	전 작	ha	- 1,182	- 321	- 1,940	- 80	- 1,529	- 182	- 538	- 2,135	- 133	- 3	- 6	- 2,591	- 10	10,650	819
	답 작	"	- 3,355	- 831	- 2,464	- 481	- 299	- 172	- 1,732	- 6,389	- 593	- 57	- 82	- 1,114	- 149	17,718	1,363
	기 타	"	- -	- -	- -	- 468	- 20	- 8	- 1	- 2	- 25	- -	- 1	- -	- 830	1,356	104
	계	"	- 4,537	- 1,152	- 4,404	- 1,029	- 1,848	- 363	- 2,271	- 8,526	- 751	- 60	- 88	- 3,705	- 989	29,723	2,286
	피 해 액	천 원	- 8,322,891	- 3,170,028	- 12,794,606	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	24,287,524	1,868,271
공공시설	도 로	개소/m	130 43,525	29 3,144	46 21,034	8 1,640	- -	5 1,150	112 40,045	264 57,442	9 1,024	150 29,888	282 153,473	36 10,097	65 6,489	368,951	28,381
	교 량	개소/m	- 13	- -	- 10	- -	- 1	- 3	- 15	- 27	- -	12 229	12 479	4 -	6 580	1,357	104
	로 피 해 액	천 원	- 7,351,546	- 611,338	- 8,002,994	- 115,063	- 78,151	- 291,269	- 16,075,233	- 11,331,277	- 92,700	- 4,409,169	- 25,776,029	- 3,324,934	- 3,771,224	81,230,925	6,248,533
	하 천 제방, 기타	개소/m	272 185,639	57 25,585	108 39,207	14 1,170	2 90	6 735	63 37,125	264 63,945	27 4,350	112 73,499	159 109,858	65 6,800	25 6,634	554,637	42,664
	피 해 액	천 원	- 17,490,224	- 2,369,954	- 6,857,972	- 200,837	- 17,178	- 89,148	- 11,991,366	- 11,972,478	- 576,203	- 3,204,923	- 24,193,212	- 1,745,476	- 1,954,007	82,662,976	6,358,690
	하 천 제방, 기타	개소/m	- -	- -	- -	- -	- -	- -	- -	- -	- -	384 92,227	488 170,720	159 16,088	157 29,707	308,742	23,749
	피 해 액	천 원	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 11,139,039	- 25,151,117	- 2,966,628	- 4,871,827	44,128,611	3,394,509
	수 상, 하수도	개 소	- 20	- 3	- 11	- 3	- -	- -	- 35	- 50	- -	- 51	- 89	- 6	- 2	270	21
	도 피 해 액	천 원	- 369,128	- 40,242	- 226,014	- 13,653	- -	- -	- 403,771	- 636,621	- -	- 489,972	- 825,764	- 105,421	- 26,792	3,137,379	241,337
	항 항만시설	개 소	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-	0
	만 피 해 액	천 원	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-	0
	어 어항시설	개 소	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-	0
	항 피 해 액	천 원	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-	0
	학 교 실	교 실	- -	- -	- -	- 1	- -	- -	- -	- 20	- -	- 3	- 3	- 5	- -	32	2
	교 부속건물	동	- 23	- 6	- 6	- 2	- -	- -	- 1	- -	- -	- -	- -	- -	- -	38	3
	교 피 해 액	천 원	- 189,396	- 10,086	- 72,774	- 5,260	- -	- -	- 19,466	- 466,199	- -	- 22,363	- 128,443	- 28,599	- -	942,586	72,507
	철 철 도	개소/m	17 640	3 290	21 2,686	3 80	1 100	- -	- -	17 1,613	- -	3 300	3 337	- -	- -	6,046	465
	도 피 해 액	천 원	- 107,385	- 12,211	- 580,891	- 9,648	- 21,269	- -	- -	- 397,122	- -	- 15,306	- 108,203	- -	- -	1,252,035	96,310
	수 수리시설	개 소	- 332	- 38	- 184	- 31	- 1	- 3	- 157	- 306	- 27	- 137	- 285	- 61	- 54	1,616	124
	방 조 제	"	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-	0
	리 피 해 액	천 원	- 6,067,440	- 734,611	- 5,115,061	- 266,057	- 72,150	- 106,476	- 7,620,034	- 7,749,207	- 260,698	- 5,758,505	- 9,874,108	- 2,923,173	- 2,228,369	48,775,889	3,751,991
	사 방	개소/ha	31 22	1 1	30 15	- -	- -	- -	55 41	80 499	- -	16 8	60 11,529	21 10	7 6	12,130	933
	사 조림기타	개소/m	25 22	1 0	4 1	- -	- -	2 -	13 8	- -	- -	16 32,068	35 20,250	18 2,900	4 1,310	56,560	4,351
	방 피 해 액	천 원	- 293,881	- 21,942	- 447,378	- -	- -	- 16,167	- 2,716,079	- 1,980,698	- -	- 778,995	- 5,689,535	- 1,281,513	- 734,777	13,960,965	1,073,920
	용 시 설	개 소	- 7	- 9	- -	- -	- -	- -	- 2	- 1	- -	- -	- -	- -	- -	19	1
	신 피 해 액	천 원	- 153,164	- 2,668	- -	- -	- -	- -	- 692,234	- 123	- -	- -	- -	- -	- -	848,188	65,245
	군 시 설	개 소	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 1	- 1	- 10	- 1	13	1
	사 피 해 액	천 원	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 903,985	- 134,703	- 244,531	- 39,549	1,322,768	101,751
	소 시 설	개 소	- 1,224	- 598	- 719	- 33	- 10	- 26	- 658	- 1,826	- 147	- 638	- 1,140	- 130	- 185	7,334	564
	규모 피 해 액	천 원	- 18,631,074	- 9,897,887	- 18,733,262	- 252,137	- 65,781	- 502,714	- 29,828,659	- 33,327,421	- 1,151,186	- 11,832,300	- 23,263,107	- 2,374,464	- 1,548,572	151,408,563	11,646,813
	기 시 설	개 소	- 94	- 53	- 70	- 8	- -	- 3	- 37	- 76	- -	- 31	- 58	- 34	- 33	497	38
	타 피 해 액	천 원	- 1,012,665	- 555,201	- 4,365,296	- 131,575	- -	- 68,138	- 1,387,449	- 1,895,124	- -	- 1,072,686	- 2,062,292	- 600,540	- 1,331,077	14,482,043	1,114,003
	피 해 액 소 계	"	- 51,665,904	- 14,256,140	- 44,401,642	- 994,229	- 254,529	- 1,073,911	- 70,734,290	- 69,756,269	- 2,080,787	- 39,627,243	- 117,206,513	- 15,595,277	- 16,506,194	444,152,929	34,165,610
기타	축 대, 담 장	개소/천원	- -	5 -	11 172,960	- -	2 31,917	3 7,097	7 77,114	58 191,752	4 3,514	1 15,612	- -	- -	- -	499,966	38,459
	수산시설(중,양식)	"	- -	- -	22 1,042,185	1 3,700	- -	3 13,651	10 40,575	20 79,498	- -	3 760	9 170,633	1 8,635	- -	1,359,637	104,587
	산 업 시 설	"	- -	325 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-	0
	가 축 생 몰	두/천원	- -	#### -	#### 111,333	#### -	- -	#### -	#### -	#### -	#### -	#### -	#### -	#### -	#### -	111,333	8,564
	축 사, 잠 사	개소/천원	- -	268 -	183 335,033	20 92,449	3 31,120	49 168,791	23 124,329	33 269,828	2 12,847	5 56,688	119 1,285,479	9 50,767	- -	2,427,331	186,718
	비닐하우스	ha/천원	- -	- -	385 524,468	15 143,642	1 2,352	26 228,068	- 23,962	7 247,805	2 125,841	1 94,876	17 779,399	20 844,781	- 22,999	3,038,193	233,707
	어 구	통/천원	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	-	0
	기 타	개소/천원	- 3,160,492	- 1,440,085	93 32,516,355	2 15,904	1 3,000	- -	13 265,363	167 2,894,259	- -	5 438,615	#### 7,939,504	150 373,197	11 53,683	49,100,457	3,776,958
	피 해 액	천 원	- 4,690,486	- 2,106,556	- 48,729,017	- 342,631	- 89,740	- 539,757	- 668,748	- 4,427,137	- 165,623	- 680,126	- 10,166,875	- 1,303,439	- 76,682	73,986,817	5,691,294
총 피 해 액		천 원	- 73,779,351	- 20,661,782	- 119,877,917	- 1,551,370	- 397,902	- 1,728,088	- 79,842,873	- 89,590,602	- 2,510,783	- 44,641,595	- 144,010,269	- 17,039,167	- 16,727,057	612,358,757	47,104,520

건설교통부

⊙전라북도 재해 상황 총괄표(당해년 가치)

구분		단위	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	합계	13개년 평균
이재민	주택	세대/인	40	424	67 266	19 56	14 64	97 349	9 32	39 107	3 10	31 83	65 146	22 57	65 166	1,800	138
	기타	"		2,842	1144 5,464	163 798	19 85	141 613	327 1,476	46 225		25 95	33 129	146 554		12,281	945
	계	"	40	3,266	5,730	854	149	962	1,508	332	10	178	275	611	166	14,081	1,083
인명	사망	인	3	12	6	2	1	4		1			7		5	41	3
	실종	"		5	1			4			8					18	1
	부상	"						5		2	1		2	9		19	1
	계	"	3	17	7	2	1	13		3	9		9	9	5	78	6
침수면적	농경지	ha	113.20	8,053.34	7,859 80		5,621.85	16,394.10	133.50	4,905.80	5,522.63	880,748.00	3,085.06	22.80	11,032.00	943,492	72,576
	기타	"								11.60	20.90					33	3
	계	"	113.20	8,053.34	7,859.80		5,621.85	16,394.10	133.50	4,917.40	5,543.53	880,748.00	3,085.06	22.80	11,032.00	943,525	72,579
건물	유실,전파	동	13	89	49	14	11	59	8	21	2	25	60	43	50	444	34
	주반파	"		25	27	5	4	43	4	23	2	9	36	73	20	271	21
	건소파	"	8					25								33	3
	침수	"					51	741		108	9	535	132		168	1,744	134
	부속건물	"	3		4	1	1	28	3							40	3
	계	"	24	114	80	20	67	896	15	152	13	569	228	116	238	2,532	195
	피해액	천원	7,148	50,170	30,979	7,371	12,534	121,507	15,703	32,812	1,651	15,186	245,839	616,675	1,222,036	2,379,611	183,047
선박	동력선 전파	척	3 13	159 1,011	18 49	1 0	6 4	39 77	8 38	69 110	1 70	3 3	3 8	18 18	145 265	1,664	128
	선반파	"	9 31	199 1,134	37 171		2 5	105 276	9 24	61 150			11 12	33 119	72 147	2,070	159
	무동력선 전파	"	7 9	227 182	33 21		1 1		6 68	4 4						283	22
	반파	"	6 10	156 113	16 10		1 1			10 23						157	12
	계	"	62	2,440	250	0	10	353	130	286	70	3	20	137	412	4,174	321
	피해액	천원	36,549	2,013,320	239,912	1,096	22,867	648,978	114,832	490,294	95,403	15,186	44,412	341,959	1,649,819	5,714,627	439,587
농경지	전 (유실,매몰)	ha	6.66	40.94				1.20		35.28	1.07	0.31	0.53		6.00	92	7
	답 (유실,매몰)	"	8.34	914.32	4.49	0.13	0.75	24.85		165.59	2.86	25.40	39.74	1.74	3.00	1,191	92
	계	"	15.00	955.26	4.49	0.13	0.75	26.05		200.87	3.93	25.71	40.27	1.74	9.00	1,283	99
	피해액	천원	31,360	905,464	29,656	692	16,359	180,341		2,108,196	25,436	299,467	421,873	10,729	156,954	4,186,527	322,041
농작물	전작	ha	17.88	88.84	261.91	21.60	19.50	7.00		802.48	311.00	6.55	247.17	4,821.83	672.00	7,278	560
	답작	"	6.34	1,105.97		7,875.00	227.90	5,714.30	154.27	4,760.26	5,116.23	221.62		11,549.24	11,732.00	48,463	3,728
	기타	"					43.60	644.90	81.90	4.13	2.30		0.14		2,068.00	2,845	219
	계	"	24.22	1,194.81	261.91	7,896.60	291.00	6,366.20	236.17	5,566.87	5,429.53	228.17	247.31	16,371.07	14,472.00	58,586	4,507
	피해액	천원	252,848	2,033,320	541,892											2,828,060	217,543
공공시설	도로	개소/m	16 677	26 5,146		1 46	2 45	17 3,342		68 8,411	9 645	41 2,653	66 9,114	67	48 8,349	38,428	2,956
	교량	개소/m		3			1	10			1	1 15	7 240	3 82	3 219	584	45
	파해액	천원	57,919	477,336		7,125	15,516	953,242		1,238,092	57,873	759,213	3,086,472	743,585	2,358,807	9,755,180	750,398
	하천 제방,기타	개소/m	24 5,065	105 42,093	6 390		6 405	72 14,486		114 28,134	45 4,634	86 9,002	194 35,539	10 2,033	50 16,543	158,324	12,179
	피해액	천원	347,747	2,785,971	33,819		394,000	1,687,862		2,625,499	704,160	2,466,773	6,500,758	1,011,860	10,558,662	29,117,111	2,239,778
	하천 제방,기타	개소/m										51 9,981	123 11,762		19 2,638	24,381	1,875
	피해액	천원										767,640	1,244,148		567,156	2,578,944	198,380
	수도 상,하수도	개소		4				5	1	9	3	7	5	3	13	50	4
	피해액	천원		32,319				93,043	9,105	48,902	7,967	122,479	26,087	37,343	213,845	591,090	45,468
	항만 항만시설	개소		1								2				3	0
	피해액	천원		5,000								102,051				107,051	8,235
	어항 어항시설	개소		34	1	1	3	6	1	1					2	49	4
	피해액	천원		1,280,273	53,000	20,140	27,000	276,632	40,000	60,128					79,282	1,836,455	141,266
공공시설	학교 교실	교실			4							1	2	17	4	28	2
	부속건물	동		3	1			3		1						8	1
	교 피해액	천원		29,655	15,644			6,159		2,304		4,000	7,081	287,764	23,390	375,997	28,923
	철도	개소/m					2 140			1 120				2	4 200	462	36
	도 피해액	천원						8,355		5,839				25,106	132,815	172,115	13,240
시설	수 수리시설	개소	16	134	9	1	3	45		109	17	57	97	5	90	583	45
	방조제	"		33	1		3	1	8	5		1			1	53	4
	리 피해액	천원	241,784	4,384,990	136,700	70,742	92,632	1,415,261	755,034	5,510,190	214,584	1,889,385	3,256,185	554,526	2,602,483	21,124,496	1,624,961
	사방	개소/ha		13 6.75			1 0	11 2		32 13.97		2 65.00	6 1.50	1 3	69 42	134	10
	조림기타	개소/m											4 230.00		7 1,107	1,337	103
	사방 피해액	천원		82,944		1,800		45,010		679,620		4,869	151,555	70,744	565,922	1,602,464	123,266
	용 시설	개소		43												43	3
	신 피해액	천원		11,710												11,710	901
	군 시설	개소											1	8	1	10	1
	사 피해액	천원											53,795	302,607	9,305	365,707	28,131
	소 시설	개소	30	346	8	2	14	127	5	211	37	51	143	2	60	1,036	80
	규모 피해액	천원	118,285	3,320,038	72,685	4,320	41,867	1,054,181	330,726	3,120,980	419,161	804,902	1,406,370	11,667	881,324	11,586,506	891,270
	기 시설	개소	1	21	3	1		19	6	21	2	15	64	148	1,494	1,795	138
	타 피해액	천원	1,300	376,892	3,873	2,258		82,388	11,600	324,195	8,613	239,681	1,645,098	1,272,293	6,082,036	10,050,227	773,094
	피해액소계	"	767,035	12,787,128	315,721	104,585	572,815	5,622,133	1,146,465	13,615,749	1,412,358	7,160,993	17,377,549	4,317,495	24,075,027	89,275,053	6,867,312
기타	축대,담장	개소/천원	3	4 7,445	2	4 38,033	32 70,246	3 3,287	20029 92,952		7 31,486				1 75,042	318,491	24,499
	수산시설(종,양식)	"	4	1374	170 4,018,401	7 649,972	5E+06 413,266	40 362,470	761 2,385,665	451 1,568,871	40 80,912	5 168,781	54 118,929	10 54,452	24 688,635	10,510,354	808,489
	산업시설	"		1939												0	0
	가축생물	두/천원		8491	7802 9,360		22065	107302	15000	80211	24018	137548	37005	228353	93,490	9,360	720
	축사,잠시	개소/천원	8	14	242 133,484	5 48,151	1 2,800	132 207,303	85 178,427	10 82,768	604 3,550,962	100 699,884	17 58,915	375 2,824,508	3 7,621	7,794,823	599,602
	비닐하우스	ha/천원			130 1,523,847			305 1,927,916	79 1,424,189	17 370,916	104.2 4,581,286	30.74 1,610,207	21.6 857,602	417.06 16,724,367	7 582,656	29,602,986	2,277,153
	어구	통/천원						23 96,985	6 8,292	23 34,028			3 500	6 15,825	109 125,154	280,784	21,599
	기타	개소/천원	112,711	3,837,846	209 488,116	21 2,520	5 81,180	7 25,432	3 18,719	15 446,597	1890 13,430,852	738 2,482,711	1043 2,400,668	925 4,642,342	12 871,972	28,841,666	2,218,590
	피해액	천원	112,711	3,837,846	6,180,653	700,643	535,279	2,690,352	4,018,579	2,596,132	21,644,012	4,993,069	3,436,614	24,261,494	2,351,080	77,358,464	5,950,651
총피해액		천원	1207651	21,627,248	7,338,813	814387	1159854	9,263,311	5295579	18,843,183	23,178,860	12,483,901	21,526,287	29,548,352	29,454,916	181,742,342	13,980,180

건설교통부

⊙전라북도 재해 상황 총괄표(2000년 현가치)

구 분		단위	1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000		합계	13개년 평균
이재인	주 택	세대/인	-	40	-	424	67	266	19	56	14	64	97	349	9	32	39	107	3	10	31	83	65	146	22	57	65	166	1,800	138
	기 타	"	-	-	-	2,842	####	5,464	163	798	19	85	141	613	327	1,476	46	225	-	-	25	95	33	129	146	554	-	-	12,281	945
	계	"	-	40	-	3,266	-	5,730	-	854	-	149	-	962	-	1,508	-	332	-	10	-	178	-	275	-	611	-	166	14,081	1,083
인명	사 망	인	-	3	-	12	-	6	-	2	-	1	-	4	-	-	-	1	-	-	-	-	-	7	-	-	-	5	41	3
	실 종	"	-	-	-	5	-	1	-	-	-	-	-	4	-	-	-	-	-	8	-	-	-	-	-	-	-	-	18	1
	부 상	"	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	2	-	1	-	-	-	2	-	9	-	-	19	1
	계	"	-	3	-	17	-	7	-	2	-	1	-	13	-	-	-	3	-	9	-	-	-	9	-	9	-	5	78	6
침수면적	농경지	ha	-	113	-	8,053	-	7,860	-	-	-	5,622	-	16,394	-	134	-	4,906	-	5,523	-	880,748	-	3,085	-	23	-	11,032	943,492	72,576
	기 타	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	21	-	-	-	-	-	-	-	-	33	3
	계	"	-	113	-	8,053	-	7,860	-	-	-	5,622	-	16,394	-	134	-	4,917	-	5,544	-	880,748	-	3,085	-	23	-	11,032	943,525	72,579
건물	유실, 전파	동	-	13	-	89	-	49	-	14	-	11	-	59	-	8	-	21	-	2	-	25	-	60	-	43	-	50	444	34
	주택 반파	"	-	-	-	25	-	27	-	5	-	4	-	43	-	4	-	23	-	2	-	9	-	36	-	73	-	20	271	21
	주택 소파	"	-	8	-	-	-	-	-	-	-	-	-	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	3
	침수	"	-	-	-	-	-	-	-	-	-	51	-	741	-	-	-	108	-	9	-	535	-	132	-	168	-	1,744	134	
	부속건물	"	-	3	-	-	-	4	-	1	-	1	-	28	-	3	-	-	-	-	-	-	-	-	-	-	-	-	40	3
	계	"	-	24	-	114	-	80	-	20	-	67	-	896	-	15	-	152	-	13	-	569	-	228	-	116	-	238	2,532	195
	피해액	천 원	-	10,608	-	73,389	-	43,501	-	9,877	-	16,447	-	157,048	-	19,764	-	39,440	-	1,923	-	17,028	-	245,642	-	629,255	-	1,222,036	2,485,958	191,228
선박	동력 전파	척	3	13	159	1,011	18	49	1	0	6	4	39	77	8	38	69	110	1	70	3	3	3	8	18	18	145	265	1,664	128
	선 반파	"	9	31	199	1,134	37	171	-	-	2	5	105	276	9	24	61	150	-	-	-	-	11	12	33	119	72	147	2,070	159
	무동력 전파	"	7	9	227	182	33	21	-	-	1	1	-	-	6	68	4	4	-	-	-	-	-	-	-	-	-	-	283	22
	선 반파	"	6	10	156	113	16	10	-	-	1	1	-	-	-	-	10	23	-	-	-	-	-	-	-	-	-	-	157	12
	계	"	-	62	-	2,440	-	250	-	0	-	10	-	353	-	130	-	286	-	70	-	3	-	20	-	137	-	412	4,174	321
	피해액	천 원	-	54,242	-	2,945,084	-	336,884	-	1,469	-	30,006	-	838,804	-	144,528	-	589,333	-	111,116	-	17,028	-	44,376	-	348,935	-	1,649,819	7,111,625	547,048
농경지	전 (유실, 매몰)	ha	-	7	-	41	-	-	-	-	-	-	-	1	-	-	-	35	-	1	-	0	-	1	-	-	-	6	92	7
	답 (유실, 매몰)	"	-	8	-	914	-	4	-	0	-	1	-	25	-	-	-	166	-	3	-	25	-	40	-	2	-	3	1,191	92
	계	"	-	15	-	955	-	4	-	0	-	1	-	26	-	-	-	201	-	4	-	26	-	40	-	2	-	9	1,283	99
	피해액	천 원	-	46,541	-	1,324,513	-	41,643	-	927	-	21,466	-	233,091	-	-	-	2,534,052	-	29,625	-	335,792	-	421,536	-	10,948	-	156,954	5,157,088	396,699
농작물	논 작	ha	-	18	-	89	-	262	-	22	-	20	-	7	-	-	-	802	-	311	-	7	-	247	-	4,822	-	672	7,278	560
	밭 작	"	-	6	-	1,106	-	-	-	7,875	-	228	-	5,714	-	154	-	4,760	-	5,116	-	222	-	-	-	11,549	-	11,732	48,463	3,728
	기 타	"	-	-	-	-	-	-	-	-	-	44	-	645	-	82	-	4	-	2	-	-	-	0	-	-	-	2,068	2,845	219
	계	"	-	24	-	1,195	-	262	-	7,897	-	291	-	6,366	-	236	-	5,567	-	5,430	-	228	-	247	-	16,371	-	14,472	58,586	4,507
	피해액	천 원	-	375,252	-	2,974,340	-	760,925	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,110,517	316,194
공공시설	도 로	개소/m	16	677	26	5,146	-	-	1	46	2	45	17	3,342	-	-	68	8,411	9	645	41	2,653	66	9,114	67	-	48	8,349	38,428	2,956
	교 량	개소/m	-	-	-	3	-	-	-	-	-	1	-	10	-	-	-	13	-	1	1	15	7	240	3	82	3	219	584	45
	피해액	천 원	-	85,958	-	698,247	-	-	-	9,548	-	20,360	-	1,232,065	-	-	-	1,488,187	-	67,405	-	851,306	-	3,084,003	-	758,754	-	2,358,807	10,654,638	819,588
	항만시설 기타	개소/m	24	5,065	105	42,093	6	390	-	-	6	405	72	14,486	-	-	114	28,134	45	4,634	86	9,002	194	35,539	10	2,033	50	16,543	158,324	12,179
	피해액	천 원	-	516,091	-	4,075,318	-	47,489	-	-	-	517,007	-	2,181,562	-	-	-	3,155,850	-	820,135	-	2,765,993	-	6,495,557	-	1,032,502	-	10,558,662	32,166,166	2,474,320
	항만시설 기타	개소/m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	9,981	123	11,762	-	-	19	2,638	24,381	1,875
	피해액	천 원	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	860,755	-	1,243,153	-	-	-	567,156	2,671,063	205,466
	수상, 하수도	개 소	-	-	-	4	-	-	-	-	-	-	-	5	-	1	-	9	-	3	-	7	-	5	-	3	-	13	50	4
	피해액	천 원	-	-	-	47,276	-	-	-	-	-	-	-	120,258	-	11,460	-	58,780	-	9,279	-	137,336	-	26,066	-	38,105	-	213,845	662,405	50,954
	항만시설	개 소	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	3	0
	피해액	천 원	-	-	-	7,314	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114,430	-	-	-	-	-	-	121,744	9,365
	어항시설	개 소	-	-	-	34	-	1	-	1	-	3	-	6	-	1	-	1	-	-	-	-	-	-	-	-	-	2	49	4
	피해액	천 원	-	-	-	1,872,783	-	74,423	-	26,988	-	35,429	-	357,547	-	50,344	-	72,274	-	-	-	-	-	-	-	-	-	79,282	2,569,070	197,621
공공시설	교 실	교 실	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	-	17	-	4	28	2
	부속건물	동	-	-	-	3	-	1	-	-	-	-	-	3	-	-	-	1	-	-	-	-	-	-	-	-	-	-	8	1
	피해액	천 원	-	-	-	43,379	-	21,967	-	-	-	-	-	7,961	-	-	-	2,769	-	-	-	4,485	-	7,075	-	293,634	-	23,390	404,661	31,128
	실 도	개소/m	-	-	-	-	-	-	-	-	-	-	2	140	-	-	1	120	-	-	-	-	-	-	-	2	4	200	462	36
	피해액	천 원	-	-	-	-	-	-	-	-	-	-	-	10,799	-	-	-	7,018	-	-	-	-	-	-	-	25,618	-	132,815	176,250	13,558
시설	수리시설	개 소	-	16	-	134	-	9	-	1	-	3	-	45	-	-	-	109	-	17	-	57	-	97	-	5	-	90	583	45
	방조제	"	-	-	-	33	-	1	-	-	-	3	-	1	-	8	-	5	-	-	-	1	-	-	-	-	-	1	53	4
	피해액	천 원	-	358,832	-	6,414,363	-	191,954	-	94,794	-	121,552	-	1,829,225	-	950,280	-	6,623,248	-	249,926	-	2,118,567	-	3,253,580	-	565,838	-	2,602,483	25,374,649	1,951,896
	사 방	개소/ha	-	-	13	7	-	-	-	-	1	0	11	2	-	-	32	14	-	-	2	65	6	2	1	3	69	42	134	10
	사방조림기타	개소/m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	230	-	-	7	1,107	1,337	103
	농림피해액	천 원	-	-	-	121,330	-	-	-	-	-	2,362	-	58,175	-	-	-	816,903	-	-	-	5,460	-	151,434	-	72,187	-	565,922	1,793,774	137,983
	용 시 설	개 소	-	-	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	3
	수산피해액	천 원	-	-	-	17,129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17,129	1,318
	양 시 설	개 소	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	8	-	1	10	1
	식피해액	천 원	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53,752	-	308,780	-	9,305	371,837	28,603
	소 시 설	개 소	-	30	-	346	-	8	-	2	-	14	-	127	-	5	-	211	-	37	-	51	-	143	-	2	-	60	1,036	80
	규모피해액	천 원	-	175,547	-	4,856,552	-	102,064	-	5,789	-	54,938	-	1,362,529	-	416,252	-	3,751,418	-	488,197	-	902,537	-	1,405,245	-	11,905	-	881,324	14,414,295	1,108,792
	기 시 설	개 소	-	1	-	21	-	3	-	1	-	-	-	19	-	6	-	21	-	2	-	15	-	64	-	148	-	1,494	1,795	138
	타 피해액	천 원	-	1,929	-	551,318	-	5,438	-	3,026	-	-	-	106,486	-	14,600	-	389,682	-	10,032	-	268,754	-	1,643,782	-	1,298,248	-	6,082,036	10,375,331	798,102
피해액 소계		"	-	1,138,357	-	18,705,011	-	443,335	-	140,144	-	751,648	-	7,266,607	-	1,442,941	-	16,366,130	-	1,644,973	-	8,029,621	-	17,363,647	-	4,405,572	-	24,075,027	101,773,013	7,828,693
기타	축 대, 담 장	개소/천원	3	-	4	-	2	7,445	-	-	4	38,033	32	70,246	3	3,287	####	92,952	-	-	7	31,486	-	-	-	-	1	75,042	318,491	24,499
	수리시설(중,양식)	"	4	-	####	-	170	4,018,401	7	649,972	####	413,266	40	362,470	761	2,365,665	451	1,568,871	40	80,912	5	168,781	54	118,929	10	54,452	24	688,635	10,510,354	808,489
	소 업 시 설	"	-	-	####	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	기 축 생 물	두/천원	-	-	####	-	####	9,360	-	-	####	-	####	-	####	-	####	-	####	-	####	-	####	-	####	-	####	-	9,360	720
	축사, 잠 사	개소/천원	8	-	14	-	242	133,484	5	48,151	1	2,800	132	207,303	85	176,427	10	82,768	604	3,550,962	100	699,884	17	58,915	375	2,824,508	3	7,621	7,794,823	599,602
	비닐하우스	ha/천원	-	-	-	-	130	1,523,847	-	-	-	-	305	1,927,916	79	1,424,189	17	370,916	104	4,581,286	31	1,610,207	22	857,602	417	16,724,367	7	582,656	29,602,986	2,277,153
	온 구	동/천원	-	-	-	-	-	-	-	-	-	-	23	96,985	6	8,292	23	34,028	-	-	-	-	3	500	6	15,825	109	125,154	280,784	21,599
	기 타	개소/천원	-	112,711	-	3,837,846	209	488,116	21	2,520	5	81,180	7	25,432	3	15,719	15	446,597	####	13,430,852	738	2,482,711	####	2,400,668	925	4,642,342	12	871,972	28,841,666	2,218,590
그 해 액		천 원	-	167,274	-	5,614,001	-	8,678,873	-	938,862	-	702,393	-	3,477,280	-	5,057,784	-	3,120,551	-	25,208,781	-	5,598,728	-	3,433,865	-	24,756,428	-	2,351,080	89,105,900	6,854,300
총 피 해 액		천 원	-	1,792,275	-	31,636,338	-	10,305,161	-	1,091,279	-	1,521,960	-	11,972,829	-	6,665,016	-	22,649,506	-	26,996,418	-	13,998,198	-	21,509,066	-	30,151,138	-	29,454,916	209,744,101	16,134,162

건설교통부

⊙대전광역시 재해 상황 총괄표(당해년 가치)

구분			단위	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	합계	9개년 평균
이재민	주택		세대/인		144	1 2			1 2		4 17		1 2				167	19
	기타		"		271								1 2				273	30
	계		"		415	1 2			1 2		4 17		2 4				440	49
인명	사망		인		3												3	0
	실종		"														0	0
	부상		"		3	1			1						3	4	12	1
	계		"		6	1			1						3	4	15	2
침수면적	농경지		ha			49.80					239.83	13.08	78.08	122.04	75.92		579	64
	기타		"								8.71						9	1
	계		"			49.80					248.54	13.08	78.08	122.04	75.92	0.00	587	65
건물	유실.전파		동		11	5			1		6		2	4			29	3
	주반파		"		10	5			1		8		3	13	2	1	43	5
	건소파		"		12	2					2						16	2
	침수		"		1,475	36					159		188	50	155	8	2,071	230
	부속건물		"		30	1					15						46	5
	계		"		1,538	49			2		190		193	67	157	9	2,205	245
	피해액		천원		68,136	17,243			614		26,205		88,709	199,716	16,000	13,500	430,123	47,791
선박	동력선	전파	척														0	0
		반파	"														0	0
	무동력선	전파	"														0	0
		반파	"														0	0
	계		"														0	0
	피해액		천원														0	0
농경지	전 (유실.매몰)		ha		20.20	1.20					3.45		17.00	8.48			50	6
	답 (유실.매몰)		"		104.80	4.40					13.35	0.02	10.10	10.64	9.88		153	17
	계		"		125.00	5.60					16.80	0.02	27.10	19.12	9.88	0.00	204	23
	피해액		천원		552,900	13,460					150,762	158	510,973	176,285	27,522	16	1,432,076	159,120
농작물	전작		ha		84.10	14.69		15.5			106.11	1.95		38.25	28.04		289	32
	답작		"		607.10			15.5			177.17	11.13	32.09	0.04	52.42	6.00	901	100
	기타		"					5.0			11.45			0.50	191.78	94.00	303	34
	계		"		691.20	14.69		36.0			294.73	13.08	32.09	38.79	272.24	100.00	1,493	166
	피해액		천원		1,300,146	30,394											1,330,540	147,838
공공시설	도로	도로	개소/m		8 1,326	2 40					43 2,560	13 385	31 3,428	28 2,465	1 30	1 115	10,349	1,150
		교량	개소/m								4		2 23				27	3
		피해액	천원		130,186	900					1,153,077	56,418	1,326,723	1,059,067	160,000	11,097	3,897,468	433,052
	하천	제방.기타	개소/m		14 6,965						56 15,491	11 2,508	58 12,890	51 10,568	8 941	65	49,428	5,492
		피해액	천원		488,178						1,286,999	224,094	3,912,367	1,848,355	353,478	12,665	8,126,136	902,904
	하천	제방.기타	개소/m										32 13,749	66 10,060	17 2,304	10 432	26,545	2,949
		피해액	천원										2,668,044	1,579,044	769,423	104,323	5,120,834	568,982
	수도	상.하수도	개소		36						16		16	21			89	10
		피해액	천원		247,623						373,386		192,969	443,902			1,257,880	139,764
	항만	항만시설	개소														0	0
		피해액	천원														0	0
	어항	어항시설	개소														0	0
		피해액	천원														0	0
교육시설	학교	교실	교실						5				1	1	1		8	1
		부속건물	동		12						2						14	2
	교육	피해액	천원		37,567				4,000		14,250		7,142	23,621	2,700		89,280	9,920
	철도	철도	개소/m		1 15						3 157		8 3580				3,752	417
		피해액	천원		86						26,015		133,211				159,312	17,701
	수리	수리시설	개소		11						15	1	5	10		4	46	5
		방조제	"														0	0
		피해액	천원		84,842						523,560	10,000	19,936	444,759		186,748	1,269,845	141,094
	사방	사방	개소/ha		7 2.90						6 0.36		4 0.74	3 0.47			4	0
		조림기타	개소/m		1 0.10								2 4,940.00	4 2,379.00			7,319	813
		피해액	천원		34,472						90,316		161,581	134,366			420,735	46,748
	공공시설	시설	개소		1												1	0
		피해액	천원		600												600	67
	군사	시설	개소											3	8	1	12	1
		피해액	천원											25,433	302,607	38,120	366,160	40,684
	소규모	시설	개소		174	19					85	6	147	134	42	9	616	68
		피해액	천원		1,388,242	148,530					577,698	55,789	1,238,969	2,040,539	356,120	34,514	5,840,401	648,933
	기타	시설	개소		254						44	3	13	6	1	1	322	36
		피해액	천원		261,855						46,742	22,397	795,822	568,798	6,000	31,153	1,732,767	192,530
	피해액소계		"		2,673,651	149,430					4,092,043	368,698	10,456,764	8,167,884	1,950,328	418,620	28,277,418	3,141,935
기타	축대.담장		개소/천원		81	6 6,752			1 23,161		39 49,544		12 35,792	15 20,055		3	135,304	15,034
	수산시설(종,양식)		"										1 18,000				18,000	2,000
	산업시설		"		142												0	0
	가축생활		두/천원		666	4 4,800					47103		40587	7000	29056		4,800	533
	축사.꼽사		개소/천원		59	108 45,994					1 1,106		1 14,612	30 130,682	2 6,845		199,239	22,138
	비닐하우스		ha/천원			21 279,701			3 20,948		4 60,243			3.66 122,430	2.03 53,764	4,058	541,144	60,127
	어구		통/천원														0	0
	기타		개소/천원		2,093,201	35 97,602					19 1,299		53 208,573	50 281,842	8 79,000	2 7,420	2,768,937	307,660
	피해액		천원		2,093,201	434,849			44,109		112,192		276,977	555,009	139,609	11,478	3,667,424	407,492
총피해액			천원		6,688,034	645,376			44,723		4,381,202	368,856	11,333,423	9,098,894	2,133,459	443,614	35,137,581	3,904,176

건설교통부

⊙대전광역시 재해 상황 총괄표(2000년 현가치)

구분		단위	1988		1989		1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000		합계	9개년 평균
이재민	주택	세대/인	-	-	-	144	1	2	-	-	-	-	1	2	-	-	4	17	-	-	1	2	-	-	-	-	-	-	167	19
	기타	"	-	-	-	271	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	273	30
	계	"	-	-	-	415	1	2	-	-	-	-	1	2	-	-	4	17	-	-	2	4	-	-	-	-	-	-	440	49
인명	사망	인	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	0
	실종	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	부상	"	-	-	-	3	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	3	-	4	12	1
	계	"	-	-	-	6	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	3	-	4	15	2
침수면적	농경지	ha	-	-	-	-	-	50	-	-	-	-	-	-	-	-	-	240	-	13	-	78	-	122	-	76	-	-	579	64
	기타	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	9	1
	계	"	-	-	-	-	-	50	-	-	-	-	-	-	-	-	-	249	-	13	-	78	-	122	-	76	-	-	587	65
건물	유실.전파	동	-	-	-	11	-	5	-	-	-	-	-	1	-	-	-	6	-	-	-	2	-	4	-	-	-	-	29	3
	주택 반파	"	-	-	-	10	-	5	-	-	-	-	-	1	-	-	-	8	-	-	-	3	-	13	-	2	-	1	43	5
	주택 소파	"	-	-	-	12	-	2	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	16	2
	침수	"	-	-	-	1,475	-	36	-	-	-	-	-	-	-	-	-	159	-	-	-	188	-	50	-	155	-	8	2,071	230
	부속건물	"	-	-	-	30	-	1	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	-	-	-	-	46	5
	계	"	-	-	-	1,538	-	49	-	-	-	-	-	2	-	-	-	190	-	-	-	193	-	67	-	157	-	9	2,205	245
	피해액	천원	-	-	-	99,669	-	24,213	-	-	-	-	-	794	-	-	-	31,498	-	-	-	99,469	-	199,556	-	16,326	-	13,500	485,026	53,892
선박	동력선 전파	척	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	동력선 반파	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	무동력선 전파	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	무동력선 반파	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	계	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	피해액	천원	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
농경지	전 (유실.매몰)	ha	-	-	-	20	-	1	-	-	-	-	-	-	-	-	-	3	-	-	-	17	-	8	-	-	-	-	50	6
	답 (유실.매몰)	"	-	-	-	105	-	4	-	-	-	-	-	-	-	-	-	13	-	0	-	10	-	11	-	10	-	-	153	17
	계	"	-	-	-	125	-	6	-	-	-	-	-	-	-	-	-	17	-	0	-	27	-	19	-	10	-	-	204	23
	피해액	천원	-	-	-	808,782	-	18,901	-	-	-	-	-	-	-	-	-	181,216	-	184	-	572,954	-	176,144	-	28,083	-	16	1,786,280	198,476
농작물	전작	ha	-	-	-	84	-	15	-	-	-	16	-	-	-	-	-	106	-	2	-	-	-	38	-	28	-	-	289	32
	답작	"	-	-	-	607	-	-	-	-	-	16	-	-	-	-	-	177	-	11	-	32	-	0	-	52	-	6	901	100
	기타	"	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	11	-	-	-	-	-	1	-	192	-	94	303	34
	계	"	-	-	-	691	-	15	-	-	-	36	-	-	-	-	-	295	-	13	-	32	-	39	-	272	-	100	1,493	166
	피해액	천원	-	-	-	1,901,854	-	42,679	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,944,533	216,059
공공시설	도로 도로	개소/m	-	-	8	1,326	2	40	-	-	-	-	-	-	-	-	43	2,560	13	385	31	3,428	28	2,465	1	30	1	115	10,349	1,150
	교량	개소/m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	2	23	-	-	-	-	-	-	27	3
	피해액	천원	-	-	-	190,436	-	1,264	-	-	-	-	-	-	-	-	-	1,385,999	-	65,710	-	1,487,654	-	1,058,220	-	163,264	-	11,097	4,363,644	484,849
	하천 제방.기타	개소/m	-	-	14	6,965	-	-	-	-	-	-	-	-	-	-	56	15,491	11	2,508	58	12,890	51	10,568	8	941	-	65	49,428	5,492
	피해액	천원	-	-	-	714,107	-	-	-	-	-	-	-	-	-	-	-	1,546,973	-	261,002	-	4,386,937	-	1,846,876	-	360,689	-	12,665	9,129,249	1,014,361
	하천 제방.기타	개소/m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	13,749	66	10,060	17	2,304	10	432	26,545	2,949
	피해액	천원	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,991,678	-	1,577,781	-	785,119	-	104,323	5,458,901	606,545
	수도 상.하수도	개소	-	-	-	36	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	16	-	21	-	-	-	-	89	10
	피해액	천원	-	-	-	362,223	-	-	-	-	-	-	-	-	-	-	-	448,810	-	-	-	216,376	-	443,547	-	-	-	-	1,470,956	163,440
	항만 항만시설	개소	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	피해액	천원	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	어항 어항시설	개소	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	피해액	천원	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	학교 교실	교실	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	1	-	1	-	1	-	-	8	1
	부속건물	동	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	14	2
	피해액	천원	-	-	-	54,953	-	-	-	-	-	-	-	5,170	-	-	-	17,129	-	-	-	8,008	-	23,602	-	2,755	-	-	111,617	12,402
	철도 철도	개소/m	-	-	1	15	-	-	-	-	-	-	-	-	-	-	3	157	-	-	8	3,580	-	-	-	-	-	-	3,752	417
	피해액	천원	-	-	-	126	-	-	-	-	-	-	-	-	-	-	-	31,270	-	-	-	149,369	-	-	-	-	-	-	180,765	20,085
시설	수리시설	개소	-	-	-	11	-	-	-	-	-	-	-	-	-	-	-	15	-	1	-	5	-	10	-	-	-	4	46	5
	방조제	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	피해액	천원	-	-	-	124,107	-	-	-	-	-	-	-	-	-	-	-	629,319	-	11,647	-	22,354	-	444,403	-	-	-	186,748	1,418,578	157,620
	사방	개소/ha	-	-	7	3	-	-	-	-	-	-	-	-	-	-	6	0	-	-	4	1	3	0	-	-	-	-	4	0
	사방 조림기타	개소/m	-	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4,940	4	2,379	-	-	-	-	7,319	813
	피해액	천원	-	-	-	50,426	-	-	-	-	-	-	-	-	-	-	-	108,560	-	-	-	181,181	-	134,259	-	-	-	-	474,425	52,714
	용신 시설	개소	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0
	피해액	천원	-	-	-	878	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	878	98
	군사 시설	개소	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	8	-	1	12	1
	피해액	천원	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25,413	-	308,780	-	38,120	372,313	41,368
	소규모 시설	개소	-	-	-	174	-	19	-	-	-	-	-	-	-	-	-	85	-	6	-	147	-	134	-	42	-	9	616	68
	피해액	천원	-	-	-	2,030,720	-	208,566	-	-	-	-	-	-	-	-	-	694,393	-	64,977	-	1,389,256	-	2,038,907	-	363,385	-	34,514	6,824,718	758,302
	기타 시설	개소	-	-	-	254	-	-	-	-	-	-	-	-	-	-	-	44	-	3	-	13	-	6	-	1	-	1	322	36
	피해액	천원	-	-	-	383,041	-	-	-	-	-	-	-	-	-	-	-	56,184	-	26,086	-	892,355	-	568,343	-	6,122	-	31,153	1,963,285	218,143
피해액 소계		"	-	-	-	3,911,017	-	209,830	-	-	-	-	-	5,170	-	-	-	4,918,636	-	429,423	-	11,725,169	-	8,161,350	-	1,990,115	-	418,620	31,769,328	3,529,925
기타	축대.담장	개소/천원	-	-	81	-	6	6,752	-	-	-	-	1	23,161	-	-	39	49,544	-	-	12	35,792	15	20,055	-	-	3	-	135,304	15,034
	수산시설(종.양식)	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	18,000	-	-	-	-	-	-	18,000	2,000
	산업시설	"	-	-	142	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	가축생물	두/천원	-	-	666	-	4	4,800	-	-	-	-	-	-	-	-	####	-	-	-	####	-	####	-	####	-	-	-	4,800	533
	축사.잠사	개소/천원	-	-	59	-	108	45,994	-	-	-	-	-	-	-	-	1	1,106	-	-	1	14,612	30	130,682	2	6,845	-	-	199,239	22,138
	비닐하우스	ha/천원	-	-	-	-	21	279,701	-	-	-	-	3	20,948	-	-	4	60,243	-	-	-	-	4	122,430	2	53,764	-	4,058	541,144	60,127
	어구	통/천원	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	기타	개소/천원	-	-	-	2,093,201	35	97,602	-	-	-	-	-	-	-	-	19	1,299	-	-	53	208,573	50	281,842	8	79,000	2	7,420	2,768,937	307,660
피해액		천원	-	-	-	3,061,934	-	610,615	-	-	-	-	-	57,011	-	-	-	134,855	-	-	-	310,574	-	554,565	-	142,457	-	11,478	4,883,489	542,610
총 피해액		천원	-	-	-	9,783,256	-	906,237	-	-	-	-	-	62,974	-	-	-	5,266,205	-	429,607	-	12,708,167	-	9,091,615	-	2,176,982	-	443,614	40,868,657	4,540,962

건설교통부

2. 2002년 금강상류 홍수피해조사

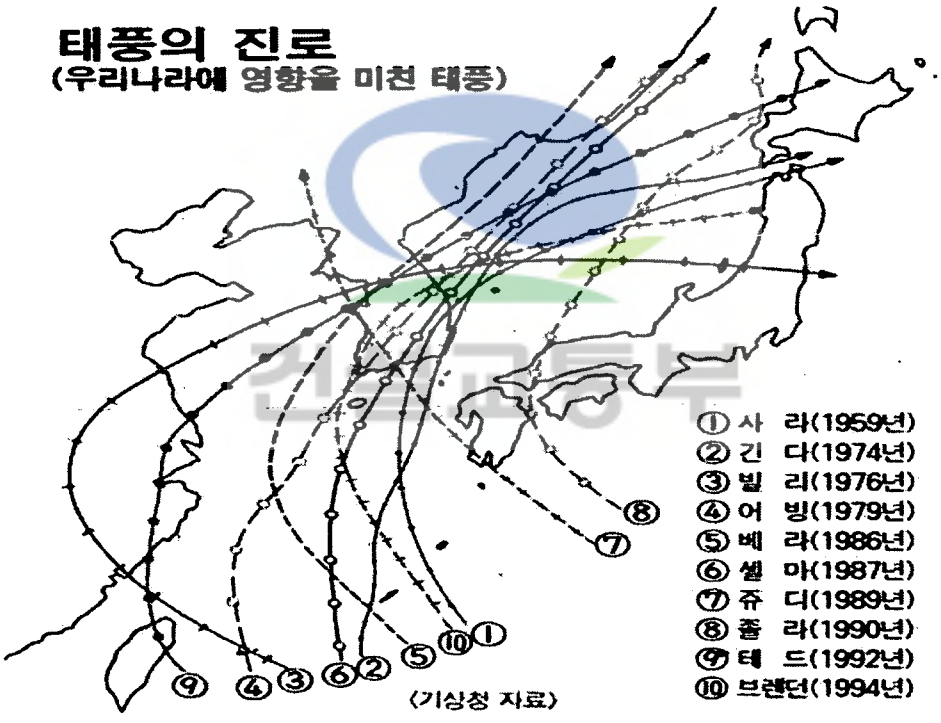
건설교통부

1. 기상현황 및 특성분석

가. 태풍 루사의 이동경로와 특성 분석

제12호 태풍 간무리의 영향으로 발생한 2002년 8월4일 ~ 8월15일 기간의 집중호우로 전국적인 호우피해가 발생하였고, 이에 대한 복구공사가 완료되지 못한 상태에서 2002년 8월 31일 제15호 태풍 루사가 한반도를 중심으로 동남부를 관통하며 강한 바람과 집중호우로 인한 막대한 인명 및 재산피해를 발생시켰다.

우리나라의 연평균 태풍 발생 회수는 약 27개이며, 그 중 3~4개가 우리나라에 직·간접적인 영향을 주는 것으로 알려져 있다. 태풍으로 인한 가장 많은 영향을 받은 해는 1959년으로서 총 7개의 태풍 영향을 받았으며, '59년의 '사라', '74년의 '긴다', '87년의 '셀마'는 큰 피해를 발생시켰다. 과거 우리나라에 직접적으로 영향을 준 주요태풍은 다음 그림과 같다.



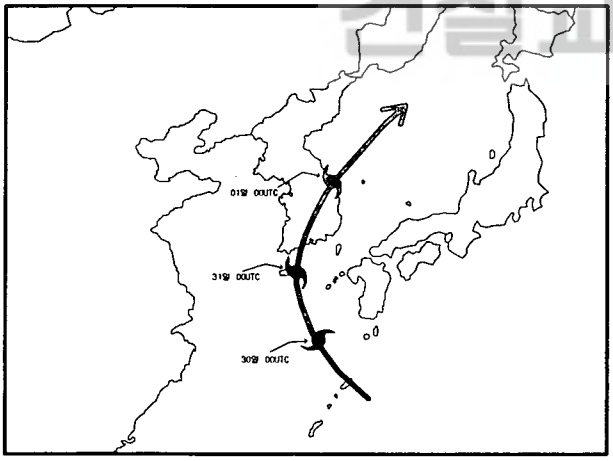
<그림 1.1> 과거 주요태풍 및 경로

2002년 8월 제15호 태풍 루사는 다음 그림과 같이 괌섬 동북동쪽 약 1,800km 부근 해상에서 2002년 8월 23일 오전 9시경 발생하여 일본 남쪽 해상을 거쳐 8월 30일 09시경 제주도 서귀포 남남동쪽 약 430km 부근 해상에서 강한 세력을 유지하면서 북상하였으며, 8월 31일 15시경 전남 고흥반도 남쪽해안으로 상륙하여 순천, 무주를 지나 9월 1일 21시경 동해로 진출하였다. 태풍 루사의 발생부터 소멸까지 일생을 시간대별로 정리하면 다음과 같다.

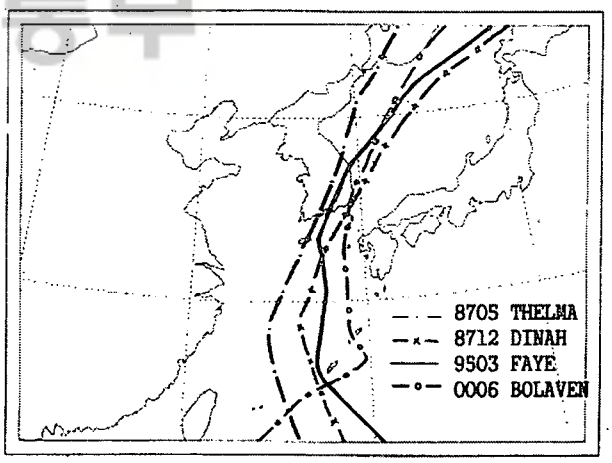
<표 1.1> 시간대별 태풍 진행방향과 강도

구 분	위 치	중심기압 (hPa)	진행방향	진행속도 (km/h)	최대풍속 (m/sec)	강 도	크 기	비 고
08-23 09	16.5N, 161.0E	1,000	WNW	26	18	약	소형	최초 발생
08-29 09	27.6N, 131.5E	950	WNW	24	41	강	대형	가장 발달
08-31 03	31.6N, 127.0E	955	N	11	36	강	대형	북진 시작
08-31 06	32.1N, 127.0E	955	N	11	36	강	대형	서귀포남동쪽 160km 해상
08-31 15	34.4N, 127.4E	960	N	30	36	강	대형	전남 고흥
08-31 18	35.0N, 127.0E	965	N	23	33	강	대형	전남 순천
08-31 21	35.5N, 127.0E	975	N	22	28	강	대형	전북 남원
09-01 00	35.9N, 127.0E	980	N	18	24	강	대형	전북 무주
09-01 03	36.4N, 127.0E	985	NNE	20	21	약	소형	충북 보은
09-01 06	37.0N, 128.0E	990	NNE	23	18	약	소형	충북 충주
09-01 09	37.5N, 128.0E	990	NNE	23	18	약	소형	강원 평창
09-01 12	38.0N, 128.0E	990	NNE	23	18	약	소형	강원 인제
09-01 15	38.9N, 129.0E	992	NE	24	0	약	소형	속초 북동쪽 130km 해상

건설교통부



<그림 1.2> 제15호 태풍 루사의 이동경로



<그림 1.3> 루사 이동경로와 유사한 태풍

2002년 8월 제15호 태풍 루사와 이동경로가 비슷한 태풍은 <그림 1.3>에서 보는 바와 같이 '87년의 '셀마', '다이나', '95년의 '페이' 등으로 남쪽해안에 상륙하여 한반도를 관통해 동해로 빠져나갔으며, 이와 같은 이동경로의 태풍은 막대한 피해를 동반하였다.

<표 1.2> 유사 태풍 기록

태 풍 명	기 간	한반도부근의 진로	최저기압 (hPa)	최대풍속 (m/sec)	최다강수량 (mm)	피해지역
THELMA	87. 7.15-16	제주도-고흥-대구-동해	915	26	297 (산청)	전 국
DINAH	87. 8.30-31	제주동쪽-대한해협-동해	915	26	252 (성산포)	전 국 (충청제외)
FAYE	95. 7.22-24	제주동쪽-여수-울진-동해	950	21	226 (남해)	영호남 제 주
BOLAVEN	00. 7.30-31	남해동부-부산앞바다-동해	980	26	61 (속초)	제 주 남해안

태풍 루사의 이동경로도 상기한 과거 막대한 피해를 유발한 태풍과 비슷하며, 고흥 반도로 상륙해 전남 순천과 전북 무주, 충북 보은, 강원 평창을 통해 동해로 빠져나가면서 태풍 오른쪽에 위치한 지역들에 막대한 인명과 재산피해를 발생시켰다.

나. 기상현황

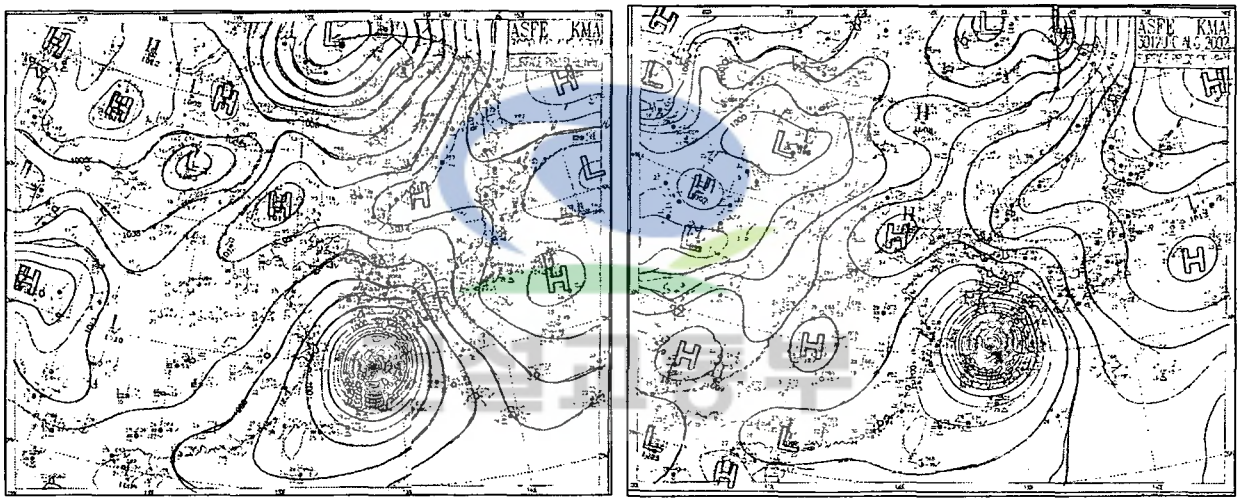
태풍 루사 내습시 우리나라 주변의 일기도는 다음과 같다. 그림에서 보는바와 같이 8월 30일 00UTC에서는 일본 동쪽 해상에서 북한 지역을 거쳐 몽고지역까지 동서로 폭넓게 고기압이 걸쳐있고, 제주도 서귀포 남남동쪽 360km 부근에 위치한 태풍이 중국 산둥반도와 우리나라 그리고 일본열도에 걸쳐 폭넓게 느리게 북쪽으로 이동하고 있다. 8월 30일 12UTC에서는 태풍이 점차로 우리나라에 세력을 확장하면서 직접적으로 영향을 미치고 일본 동쪽 해상에 있던 고기압이 점차로 동쪽으로 이동하고 있다. 8월 31일 00UTC에서는 태풍이 본격적으로 우리나라에 영향을 미치고 있으며, 북쪽에 위치한 북태평양 고기압이 태풍의 북진을 막는 형상을 하고 있고, 태풍의 세력이 30일 UTC보다 작게 나타나고 있다. 8월 31일 12UTC에서는 태풍이 내륙에 상륙한 상태로서 강한 열대폭풍으로 바뀌었으며, 북쪽에서 찬공기가 남하하여 태풍에 동반된 아열대 기류와 맞부딪치면서 강한 비구름이 발달하고 있다.

9월 1일 00UTC에서는 태풍이 열대폭풍으로 상당히 약화되었으며, 동해상으로 진출하고 있다. 또한 북쪽의 저기압과 태풍이 부딪히면서 점차로 저기압으로 바뀌고 있으며, 일본 남동해상에는 제 16호 태풍이 보이고 있다. 9월 1일 12UTC에서는 우리나라 대부분이 고기압 가장자리에 위치하고 있다.

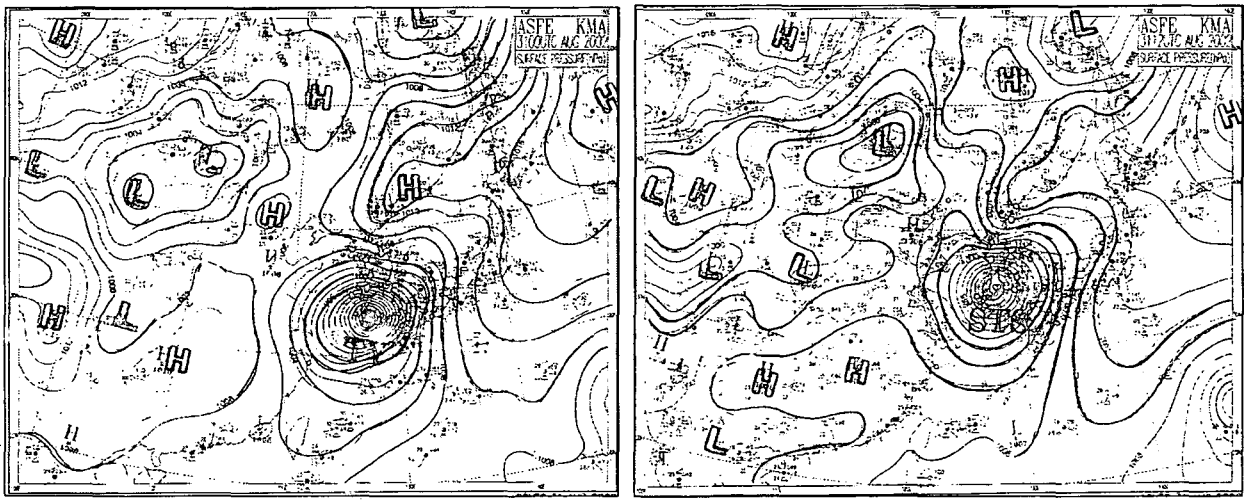
또한, 태풍피해가 심했던 8월 31일 12:00 ~9월 1일 03:00까지 우리나라 주변의 기상위성영상사진을 살펴보면 다음 그림과 같다. 그림에서 보는바와 같이 8월 31일 12시에는 우리나라 전역이 태풍으로 덮여 있고, 남해상의 구름대가 우리나라로 유

입되고 있으며, 이 구름이 북동쪽으로 폭넓게 분포하고 있다. 또한, 8월 31일 12시에는 제주도를 비롯한 남해안 일대가 서서히 태풍의 영역에서 벗어나고 있으며, 태풍은 동해상으로 진출하려 하고 있고, 15:00경에도 전국이 12:00과 마찬가지로 태풍의 영향권에 있음을 알수 있다. 8월 31일 18:00경부터 남부지방 일부 및 서해 도서지역에서 구름대가 옅어지며 점차 태풍의 영향권에서 벗어나고 있으며, 9월 1일 03시부터는 우리나라 남부전지역이 태풍의 영향권에서 벗어나고 있음을 확연하게 보여주고 태풍이 동해상으로 진출하고 있음 알 수 있다.

이상의 일기도 및 기상위성영상사진을 통해서도 알 수 있듯이 2002년 우리나라를 내습한 태풍 루사는 8월 30일 오전에 남해안을 상륙하여 8월 31일경 우리나라에 가장 큰 영향을 미쳤으며, 9월1일 03시경 이후 06시경에 동해안을 벗어났음을 알 수 있다.

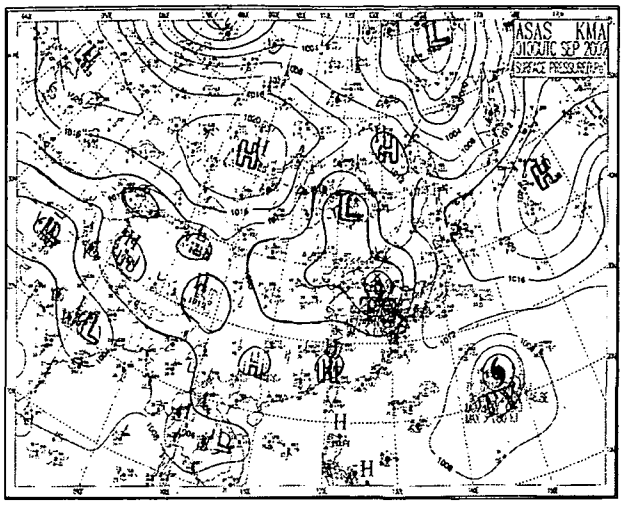


(a) 8월 30일 00UTC　　(b) 8월 30일 12UTC

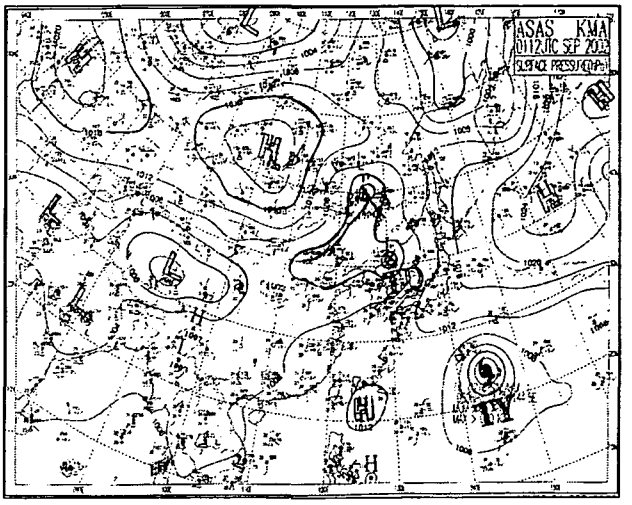


(c) 8월 31일 00UTC　　(d) 8월 31일 12UTC

<그림 1.4> 태풍 루사 내습시 지상일기도

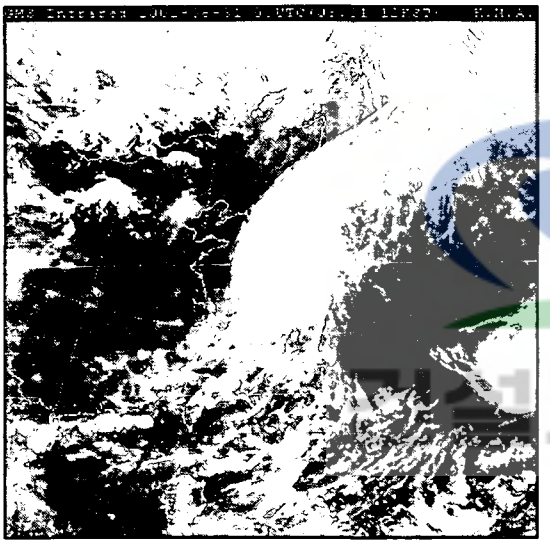


(e) 9월 1일 00UTC

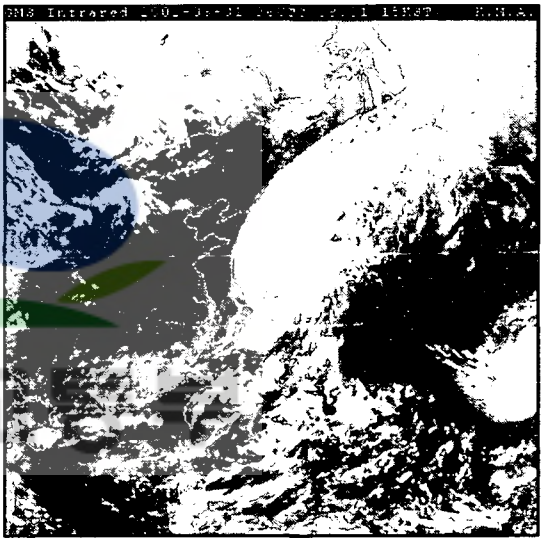


(f) 9월 1일 12UTC

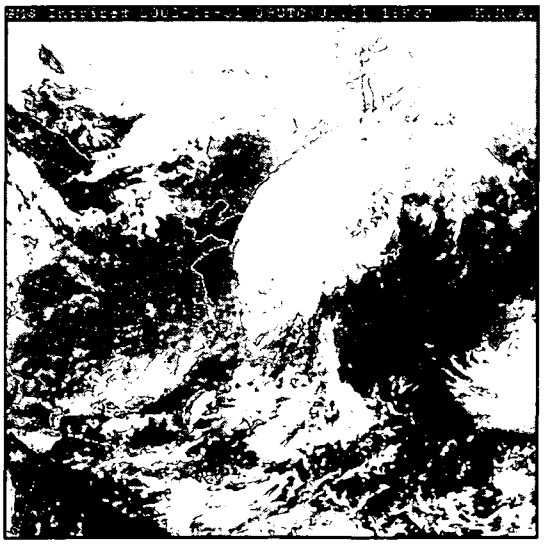
<그림 1.4> 태풍 루사 내습시 지상일기도(계속)



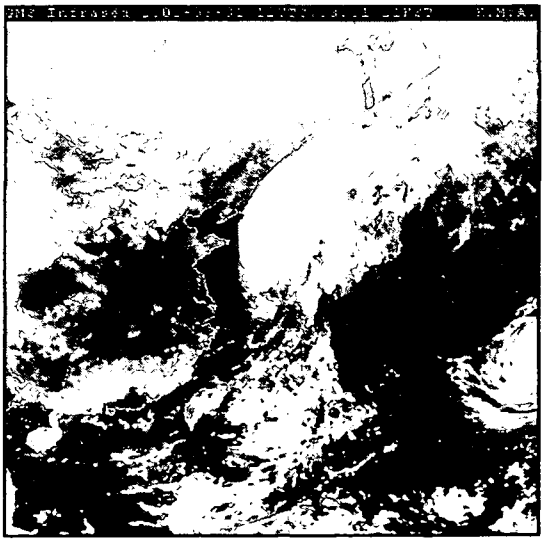
(a) 8월 31일 12시



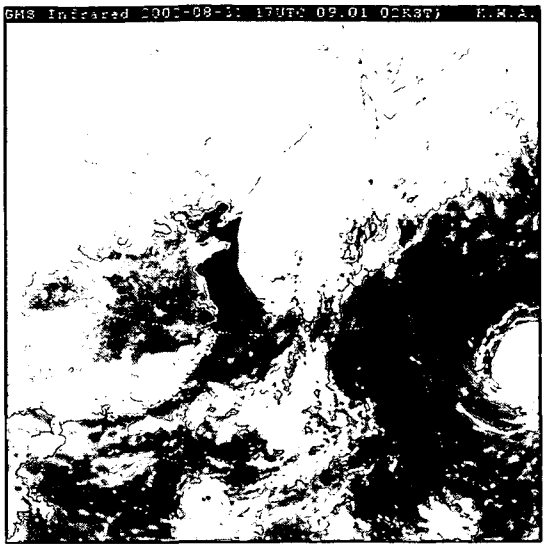
(b) 8월 31일 15시



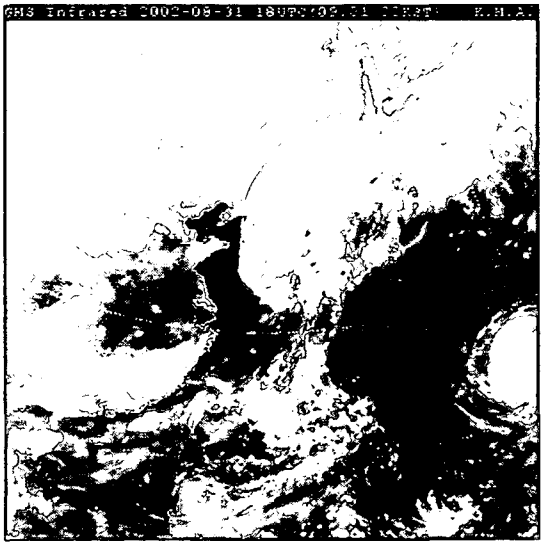
(c) 8월 31일 18시



(d) 8월 31일 21시



(e) 9월 1일 02시



(f) 9월 1일 03시

<그림 1.5> 태풍 루사 내습시 기상위성영상자료

다. 기상 및 강우특성 분석

태풍 루사는 강한 바람을 동반하여 강우량과 함께 바람에 의한 피해를 유발하였으며, 루사 통과시 기상청 관할 관측소의 순간최대풍속 및 지역별 순간최대풍속 극값 경신 내용은 다음과 같다.

<표 1.3> 지역별 순간최대풍속

구 분	제주고산	흑산도	서귀포	목포	완도	대전	광주	부산	서울	수원	군산
순간최대풍속 (m/sec)	56.7	50.2	40.8	37.8	37.0	24.6	24.8	34.7	20.5	27.3	36.7

<표 1.4> 순간최대풍속 극값 순위 경신

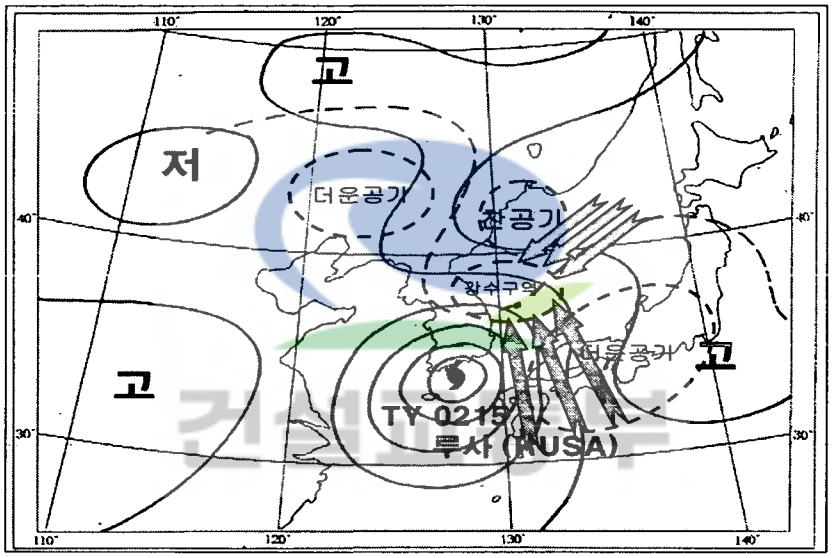
구 분	극값 순위 경신	종 전	비 고
제주고산	1위 N 56.7m/s	1위 WNW 41.2m/s (1997. 1. 5)	전국 2위 경신
남 해	1위 ENE 30.7m/s	1위 SSE 28.9m/s (1995. 7. 23)	
수 원	1위 NE 27.3m/s	1위 W 26.0m/s (1977. 3. 24)	
동 두 천	1위 NNE27.3m/s(22:02)	1위 S 25.2m/s (1999. 8. 3)	
임 실	2위 NW 25.6m/s	2위 N 21.0m/s (1993. 7. 11)	

주) 순간최대풍속 1위(흑산도 58.3m/s, 2000. 8월 태풍 '프라피룬')

상기 표에서 보는바와 같이 태풍 루사 내습시 제부고산, 남해, 수원, 동두천 관측소의 기왕의 순간최대풍속을 경신하는 강한 바람이 불었으며, 제주고산 지점의 순간최대풍속 56.7m/sec는 전국 관측지점의 순간최대풍속 2위를 경신하는 기록인 것으

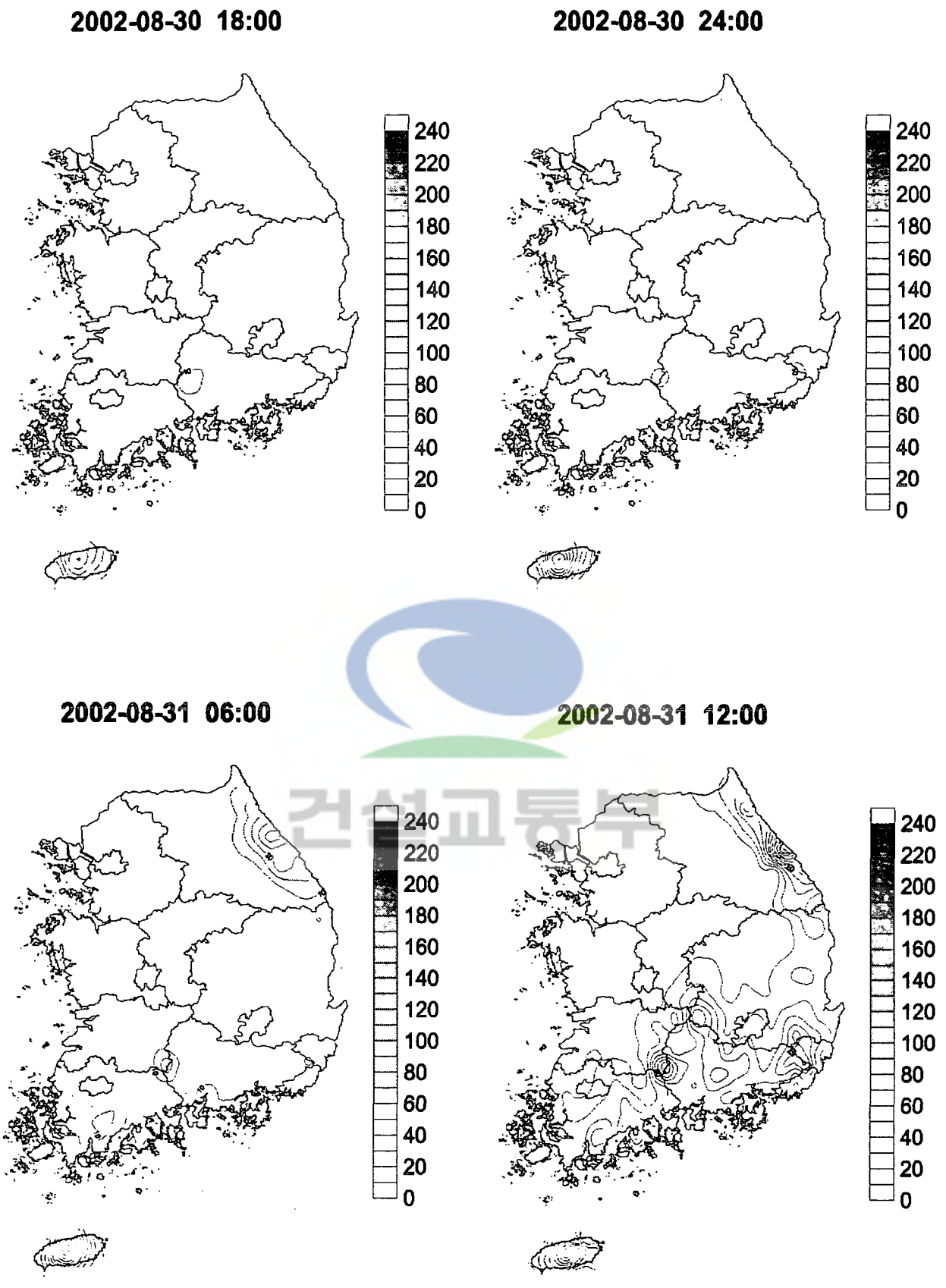
로 나타났다.

또한 제15호 태풍 루사 내습시 우리나라 전체적인 기압배치 모식도는 다음과 같다. 그림에서 보는바와 같이 태풍 루사가 북상하면서 북태평양 고기압의 가장자리에 위치한 강원도 영동지방으로 저온다습한 동풍계열의 바람이 지속적으로 불어 습윤역이 형성되었고, 850hPa 부근의 찬공기와 태풍전면의 우측반원에서 태풍과 함께 실려온 열대해상의 더운 공기가 만나는 강릉 부근에서 강한 비구름대가 발달하였고, 습한 북동기류가 태백산맥에 부딪혀 강제 상승하면서 비구름이 발달한 풍상측(바람이 불어 올라가는 쪽)인 강릉, 속초, 동해, 대관령 등 강원도 영동지방은 많은 비가 내렸고, 풍하측(바람이 불어 내려가는 쪽)에 위치한 춘천, 원주지방 등 강원도 영서지방은 상대적으로 비가 적게 내렸다.



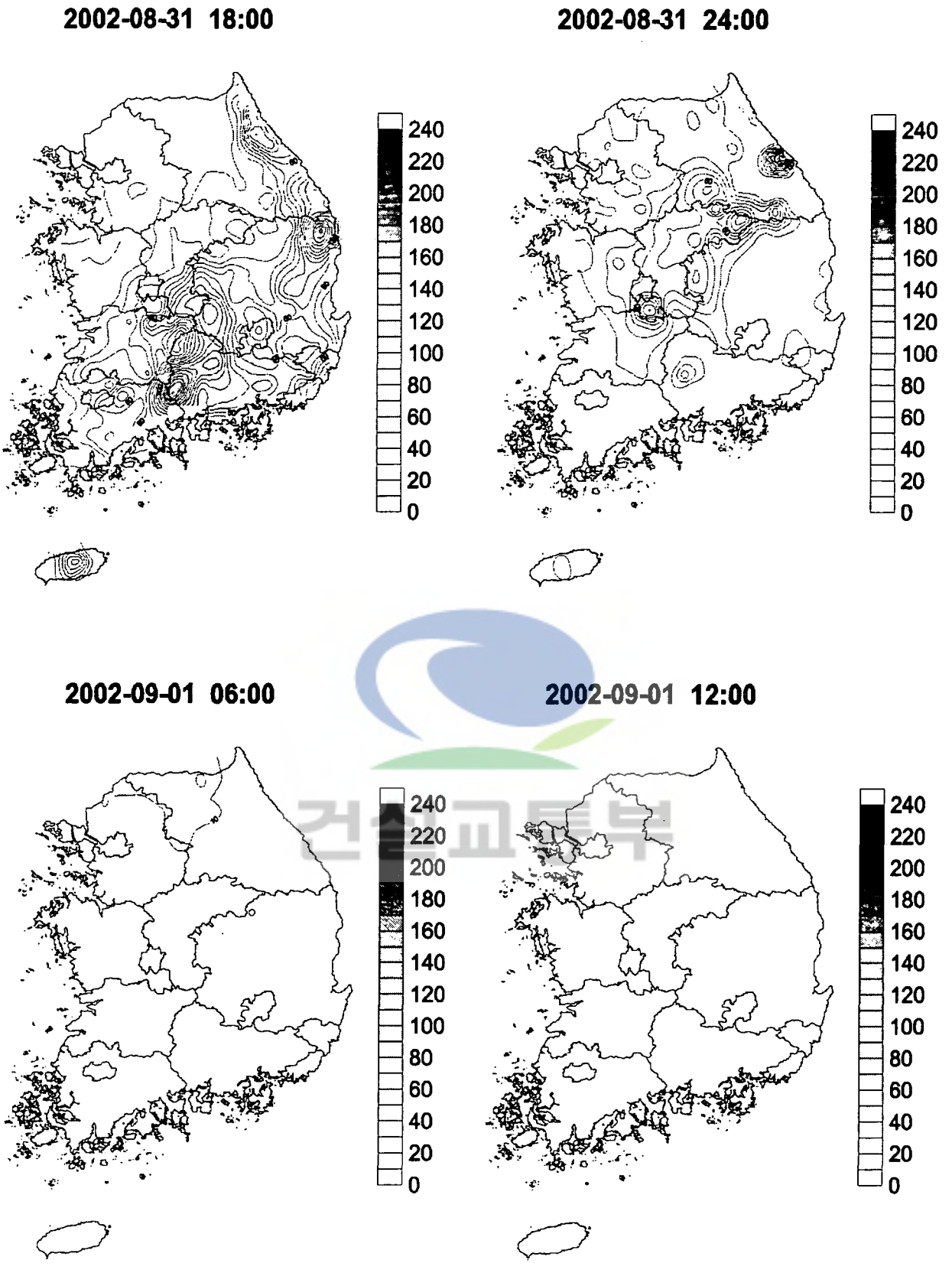
<그림 1.6> 집중호우 모식도(8. 31. 09시 기압배치)

태풍 루사에 의한 호우의 시간적·공간적 특성은 기상청 AWS 자료를 이용하여 작성된 등우선도를 통하여 파악할 수 있다. 다음 그림은 8월 30일 18:00부터 9월 1일 12:00 까지의 6시간 단위의 등우선도이며, 그림에서 보는바와 같이 8월 30일 24시까지는 경남 일부지역에서 강우가 발생되었다. 8월 31일 06시경 강원지역과 경남지역에서 강우가 집중되었으며, 18:00경 전국적으로 강우가 확대되었고, 9월1일 06:00 이후 강원지역을 중심으로 내린 후 종료되었다.



건설교통부

<그림 1.7> 태풍 루사시 호우의 시간적·공간적 분포(2002.8.31~9.1, 6시간연속강우)



<그림 1.7> 태풍 루사시 호우의 시간적·공간적 분포(2002.8.31~9.1, 6시간연속강우)(계속)

2. 강우기록 및 빈도분석

제15호 태풍 루사 내습시 2002년 8월 30일~9월 1일 기간에 강한 바람과 집중호우가 발생하였으며, 금강 상류지역에도 8월 31일 많은 비가 내렸다. 동 기간동안 금강상류 주요 지점별 강우기록을 살펴보면 다음과 같다.

<표 2.1> 주요지점별 시간강우 기록

구 분	보은	금산	무주	모서	영동	영동읍	용산면	황간면	추풍령	매곡면	상촌면	양강면	용화면	학산면	양산면	심천면
08-31 00:00	0	1	1	2	1	1	0	2	1	2	0	1	0	0	0	1
08-31 01:00	2	1	0	1	0	0	0	0	2	1	2	0	1	0	1	1
08-31 02:00	1	0	0	0	1	1	0	1	2	1	1	1	0	0	0	0
08-31 03:00	1	0	0	2	0	0	0	0	1	0	2	0	0	0	0	0
08-31 04:00	0	0	1	0	0	0	0	0	1	0	1	0	0	1	0	0
08-31 05:00	0	0	0	0	1	0	1	2	3	2	1	0	1	0	0	0
08-31 06:00	0	0	3	1	1	2	0	1	2	2	3	2	3	1	2	1
08-31 07:00	0	2	3	2	2	2	1	2	2	2	2	2	2	1	0	1
08-31 08:00	1	0	4	1	1	1	1	2	2	3	2	1	1	1	1	0
08-31 09:00	0	1	4	1	1	2	3	4	4	4	5	2	2	1	1	1
08-31 10:00	3	0	6	2	3	6	5	6	5	6	8	6	7	7	5	4
08-31 11:00	2	3	11	5	11	10	6	10	9	10	11	10	11	11	7	5
08-31 12:00	6	6	13	9	17	9	9	11	9	7	9	9	10	7	8	6
08-31 13:00	9	4	14	9	13	8	8	13	10	8	12	8	15	13	10	5
08-31 14:00	7	8	10	9	27	18	9	12	17	12	24	18	19	17	20	5
08-31 15:00	6	12	10	11	25	31	16	29	32	27	26	31	21	17	20	12
08-31 16:00	12	10	14	16	27	26	25	30	32	33	30	26	23	23	28	8
08-31 17:00	12	15	22	21	33	37	28	45	39	53	41	37	24	20	18	21
08-31 18:00	17	17	28	18	21	25	21	23	33	34	42	25	24	24	16	17
08-31 19:00	20	15	26	22	17	23	10	11	21	17	59	23	22	16	0	8
08-31 20:00	23	9	22	22	26	24	11	17	35	19	0	24	23	12	0	14
08-31 21:00	13	14	17	12	23	13	14	21	27	21	0	13	20	13	0	7
08-31 22:00	12	16	7	29	17	10	11	11	10	13	0	8	0	18	0	21
08-31 23:00	15	10	1	20	5	1	1	3	5	3	0	0	0	0	0	2
소 계	162	143	216	213	272	250	180	256	304	280	281	250	229	203	137	140
09-01 00:00	0	0	0	0	0	3	0	0	1	1	0	0	0	4	0	8
09-01 01:00	5	1	1	2	2	1	1	1	0	1	0	0	0	0	0	2
09-01 02:00	5	0	1	3	1	0	1	0	0	1	0	0	0	0	0	0
09-01 03:00	5	2	0	2	0	1	1	1	0	0	0	0	0	0	0	1
09-01 04:00	1	0	0	1	1	0	0	1	1	1	0	0	0	0	0	0
09-01 05:00	2	0	1	1	0	0	1	0	0	0	0	0	0	1	0	0
09-01 06:00	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
09-01 07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09-01 08:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
09-01 09:00	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
09-01 10:00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
09-01 11:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
09-01 12:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
09-01 13:00	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
09-01 14:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
09-01 15:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09-01 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
소 계	23	4	8	13	4	5	4	3	2	4	0	0	0	5	0	11

상기 표에서 보는바와 같이 영동군 추풍령면에서는 304mm(지자체 관측기록이며, 기상청 관측치는 280mm)의 강우를 기록하여 기왕 최대강우기록(1996년 6월 17일 215.4mm)을 경신하였으며, 영동지역에서도 8월 31일 하루동안 272mm의 많은 강우를 기록하였다. 또한 태풍 루사시 시간별 강우기록을 살펴보면 8월 31일 14:00 부터 8월31일 오후 24:00까지 강우가 집중되었으며, 추풍령, 영동, 무주, 모서, 보은 지역에서는 6시간 지속강우량이 100mm 이상의 집중호우를 기록하였다.

태풍 루사시 금강 상류 주요지점별 강우기록에 대한 빈도분석 결과는 다음 표와 같다. 빈도분석은 지점별, 지속시간별로 시행하였으며, 한국확률강우량도 작성(2000. 6, 건설교통부) 성과 및 금강수계 하천정비기본계획의 성과와 비교 분석하였으며, 그 결과는 다음 표와 같다. 한편 추풍령 관측소 지점은 "태풍 루사에 의한 2002 전국 홍수조사 보고서, 2002, 한국수자원공사"의 분석 성과를 인용하였다.

<표 2.2> 지속시간별 강우기록 및 재현기간

관측소	1 시간		6 시간		12 시간		24 시간		48 시간	
	강우	빈도	강우	빈도	강우	빈도	강우	빈도	강우	빈도
추풍령	33	3	170	500이상	253	500이상	280	400	287	300
보 은	23	<2	100	5	152	10	179	5	186	3
금 산	17	<2	86	3	136	10	145	3	150	2
모 서	29	<2	124	70	198	200이상	217	20	229	10
무 주	28	<2	129	100	194	200이상	218	50	225	30
영 동	33	3	150	300이상	257	500이상	274	300이상	279	200
용산면	28	2	111	30	168	70	183	20	184	10
황간면	45	10	155	500	233	500이상	256	200	259	100
추풍령면	39	5	192	500이상	274	500이상	304	500이상	306	500
매곡면	53	30	183	500이상	254	500이상	280	500	284	300
상촌면	59	70	222	500이상	269	500이상	281	500	281	200
양강면	37	5	166	500이상	232	500이상	246	100	247	80
용화면	24	<2	137	150	219	500이상	229	70	229	40
학산면	24	<2	117	50	191	200	207	50	208	20
양산면	28	2	112	30	134	20	137	3	137	3
심천면	21	<2	88	10	129	10	149	5	151	5

주) 모서, 무주, 영동 및 영동군 관내 읍면별 관측소의 재현기간은 추풍령 관측소의 분석성과를 적용하였음.

표에서 보는바와 같이 지속시간 6시간의 경우 추풍령, 영동, 무주 지역은 100년 빈도 이상인 것으로 나타났고, 지속시간 12시간의 경우 추풍령, 영동, 모서, 무주 지역에서 500년 빈도 이상인 것으로 나타났다. 또한 추풍령, 영동 지역은 24시간, 48시간 강우량의 재현기간이 200년 빈도 이상을 기록하였다. 이상의 빈도 분석결과

지속시간 12시간 강우가 전 지역에 비교적 큰 영향을 미친 것으로 나타났으며, 특히 추풍령과 영동지역에 강우가 집중되었음을 알 수 있다.

한편 금강수계 하천정비기본계획의 지점별 강우분석 결과와 태풍 루사시 지역별 강우기록을 비교하면 다음 표와 같다. 표에서 보는바와 같이 재현기간의 크기에서는 분석자료기간, 채택분포형 등의 차이로 다르게 분석되었으나, 추풍령과 영동지역의 24시간 강우는 100년 빈도, 48시간 강우는 각각 50년 빈도, 30년 빈도에 해당하며, 동 지역에 호우가 집중된 것으로 나타났다.

<표 2.3> 빈도별 확률강우량 및 재현기간

관측소	구분	빈도별 확률강우량(mm)								2002년 루사시	비고
		10년	20년	30년	50년	80년	100년	150년	200년		
추풍령	24시간	191.3	219.1	235.1	255.0	273.4	282.0	297.8	309.0	280.0	100년
	48시간	217.4	246.7	263.6	284.6	303.9	313.1	329.6	341.4	287.0	50년
보 은	24시간	243.0	282.6	305.4	333.9	359.9	372.2	394.6	410.5	179.0	3년
	48시간	276.0	319.8	345.1	376.6	405.4	419.1	443.9	461.4	186.0	3년
금 산	24시간	206.9	236.5	253.4	274.7	294.2	303.4	320.1	331.9	145.0	3년
	48시간	245.7	281.7	302.5	328.5	352.3	363.5	384.0	398.4	150.0	3년
모 서	24시간	193.7	218.0	232.0	249.4	265.4	273.0	286.7	296.4	217.0	20년
	48시간	225.6	254.2	270.6	291.0	309.8	318.8	334.9	346.3	229.0	10년
무 주	24시간	199.1	230.4	248.4	270.8	291.4	301.2	318.8	331.3	218.0	15년
	48시간	230.2	265.2	285.3	310.4	333.4	344.4	364.1	378.2	225.0	10년
영 동	24시간	186.5	214.1	229.8	249.7	267.8	276.4	292.0	302.9	274.0	100년
	48시간	217.1	250.3	269.5	293.5	315.4	325.7	344.6	357.9	279.0	30년

3. 유출 분석

가. 흔적수위조사 및 홍수위 분석

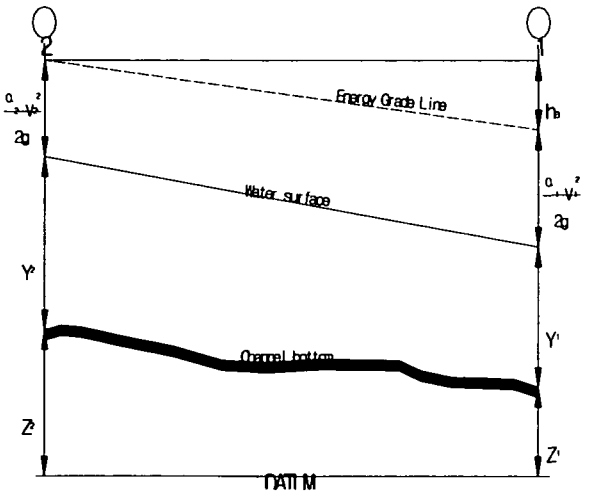
제15호 태풍 루사로 인한 금강 상류의 홍수위 산정은 표준축차계산법에 의해 시행하였다.(HEC-RAS Model 이용) 홍수위 산정시 기점홍수위는 금강휴게소 지점의 흔적홍수위인 EL. 92.00m를 유량규모별(Q=6,000, 7,000, 8,000, 9,000, 10,000㎥/sec)로 동일하게 적용하였으며, 조도계수는 하천정비기본계획시 채택한 0.034를 적용하였다. 또한 흔적홍수위는 그 표고를 파악할 수 있는 주요지점에 대하여 실시하였으며, 하천별 구조물 및 나무등에 걸린 잡물의 높이, 지역주민들의 조언을 토대로 그 높이를 측정하여 추정하였다. 한편 주요 수위표 지점의 수위기록도 조사하여 비교 가능토록 하였다.

홍수위 산정시 하천 종·횡단 측량자료는 금강수계 하천정비기본계획(2000년 측량실시)의 개수전 자료를 이용하였으며, 홍수위 산정에 이용한 표준축차계산법의 이론식은 다음과 같다.

◎ 표준축차 계산법(Standard Step Method)

수리계산에 이용한 표준축차계산법은 수로 상하류 단면에 에너지 방정식을 적용하여 미지수인 상류 또는 하류의 수위를 시행착오법에 의해 구하는 방법으로, 에너지 방정식의 기본식 및 도해는 다음과 같다.

○ 기본식 : $Y_2 + Z_2 + \frac{\alpha_2 V_2^2}{2g} = Y_1 + Z_1 + \frac{\alpha_1 V_1^2}{2g} + h_e$



여기서

Y_1, Y_2 = 구간 양단에서의 수심

Z_1, Z_2 = 기준면으로부터 하상까지의 높이

V_1, V_2 = 구간 양단에서의 평균 유속

α_1, α_2 = 에너지 보정계수

g = 중력가속도

he = 에너지 손실수두

상기 식에서 두 단면 사이의 에너지 손실수두(h_e)는 마찰 손실과 수축 또는 확대 손실을 포함하고 있으며, 에너지 손실에 대한 방정식은 다음과 같다.

$$h_e = L \cdot S_f + C \left| \frac{\alpha_2 V_2^2}{2g} - \frac{\alpha_1 V_1^2}{2g} \right|$$

여기서, L = 유량가중평균 구간 길이

S_f = 평균마찰경사

C = 단면 확대, 축소에 의한 손실계수

본 수리검토에서 사용한 HEC-RAS 모형은 상기한 표준축차계산법을 이용하여 하천의 수면곡선을 계산하는 모형으로, 계산과정은 다음과 같다.

① 상류단면의 수위(Y_2)를 가정한다.

② 가정수위에 대하여 총통수능(K)과 속도수두를 구하고,

③ 이 값을 이용하여 마찰경사 S_f 및 손실수두 he를 구하고,

④ 상류단면의 수위(Y_2)를 계산하고 가정한 수위와 비교한다.

⑤ 상류단면의 수위(Y_2)와 ①에서 가정한 수위가 0.01m이내로 수렴할 때까지 반복 계산

상기 수리계산 결과 유량규모 8,000㎥/sec가 유하한 경우의 홍수위가 흔적수위 조사결과와 유사한 것으로 나타났으며, 그 결과는 다음 표와 같다. 표에서 보는바와 같이 태풍 루사시 홍수유출량 규모는 금강의 대청댐 상류구간 계획홍수량을 초과하는 것으로 나타났으며, 그 결과는 <표 3.-1>과 같다.

한편 태풍 루사시 영동관측소에서 기록한 강우기록(48시간, 289mm)을 금회 기본계획수립시 적용한 유출모형(Clark우역추적법+Muskingum하도추적)에 적용하여 유출량을 산정한 결과는 <표 3.-2>와 같다.

표에서 보는바와 같이 금회 과업구간인 금강4교~양강교수위표 지점의 2002년 홍수가 기본홍수량보다는 적지만 계획홍수량을 초과하였음을 알 수 있으며, 옥천수위표 지점을 살펴보면 계획홍수량(6,100㎥/sec) 보다 2002년 추정 홍수량(6,230㎥/sec)이 130㎥/sec 초과한 것으로 나타났으며, 800㎥/sec(11%) 정도의 용담댐 홍수조절효과 있었던 것으로 나타났다.

따라서 2002년 태풍 루사시 금강상류 지역은 계획홍수량을 초과하는 이상홍수로 판단된다.

<표 3.1> 홍수위 산정결과(유량규모별)

측 점 (No.)	누가거리 (m)	계획홍수위 (EL. m)	흔적수위 (EL. m)	유량규모별 홍수위(EL. m)					비 고
				6,000㎥/s	7,000㎥/s	8,000㎥/s	9,000㎥/s	10,000㎥/s	
222.530	0	90.00	92.00	92.00	92.00	92.00	92.00	92.00	
222.915	385	90.27		92.08	92.11	92.15	92.19	92.23	
223.570	1,040	90.36		92.21	92.29	92.38	92.48	92.59	
223.580	1,050	90.37		92.23	92.32	92.43	92.55	92.71	고속도로신설교
223.615	1,085	90.39		92.40	92.56	92.75	92.99	93.25	고속도로신설교
223.645	1,115	90.42		92.43	92.61	92.81	93.06	93.35	금강3교
224.125	1,595	90.79		92.55	92.77	93.01	93.30	93.63	
224.580	2,050	90.96	93.00	92.65	92.89	93.16	93.47	93.82	
224.955	2,425	91.11		92.79	93.08	93.38	93.74	94.12	
225.415	2,885	91.41		92.99	93.33	93.69	94.09	94.51	
225.590	3,060	91.65		93.21	93.61	94.03	94.51	95.00	금강2교
225.775	3,245	91.91		93.32	93.76	94.22	94.72	95.24	
225.830	3,300	91.99		93.33	93.77	94.22	94.72	95.24	
226.275	3,745	92.33		93.56	94.05	94.55	95.10	95.68	고속도로신설교
226.385	3,855	92.42		93.58	94.08	94.59	95.15	95.73	
226.950	4,420	92.83		93.74	94.27	94.81	95.40	96.01	
227.100	4,570	92.88		93.78	94.32	94.86	95.46	96.07	
227.425	4,895	92.99	95.00	93.69	94.20	94.72	95.29	95.88	
227.610	5,080	93.06	93.14	93.70	94.22	94.74	95.31	95.90	옥천수위표
227.745	5,215	93.10		93.82	94.36	94.90	95.48	96.09	
228.340	5,810	93.31		94.02	94.58	95.15	95.75	96.36	
229.100	6,570	93.74		94.28	94.90	95.51	96.14	96.78	
229.550	7,020	93.92		94.32	94.94	95.55	96.20	96.85	
229.925	7,395	94.08		94.48	95.11	95.73	96.41	97.05	
230.485	7,955	95.00		95.11	95.85	96.57	97.33	98.04	
230.895	8,365	95.05		95.08	95.81	96.52	97.26	97.97	
231.365	8,835	95.28		95.31	96.06	96.79	97.53	98.23	
231.605	9,075	95.40		95.49	96.25	96.99	97.73	98.44	
231.925	9,395	95.67		95.68	96.46	97.23	97.99	98.71	
232.360	9,830	95.88		95.87	96.66	97.43	98.19	98.91	
232.905	10,375	96.00		96.05	96.82	97.57	98.32	99.02	
233.465	10,935	96.89		96.72	97.56	98.37	99.16	99.91	
234.130	11,600	97.27		97.11	97.98	98.81	99.63	100.39	

건설교통부

<표 3.1> 홍수위 산정결과(계속)

측 점 (No.)	누가거리 (m)	계획홍수위 (EL. m)	흔적수위 (EL. m)	유량규모별 홍수위(EL. m)					비 고
				6,000㎥/s	7,000㎥/s	8,000㎥/s	9,000㎥/s	10,000㎥/s	
234.585	12,055	97.54		97.17	98.03	98.86	99.67	100.44	
235.060	12,530	97.96	99.00	97.28	98.15	98.97	99.78	100.54	
235.420	12,890	98.18		97.57	98.44	99.27	100.08	100.90	경부선철도신설교
235.450	12,920	98.20		97.63	98.50	99.33	100.16	101.01	고속철도신설교
235.530	13,000	98.25		97.59	98.44	99.26	100.08	100.91	경부선(하행)
235.570	13,040	98.27		97.65	98.51	99.34	100.17	101.01	
235.595	13,065	98.28		97.65	98.50	99.32	100.14	100.98	경부선(상행)
235.710	13,180	98.32		97.78	98.64	99.47	100.30	101.17	이원대교(이원)
236.055	13,525	98.44		97.86	98.73	99.55	100.38	101.24	
236.505	13,975	98.88		98.16	99.03	99.85	100.69	101.55	
237.040	14,510	99.08		98.45	99.31	100.11	100.94	101.78	
237.455	14,925	99.41		98.61	99.47	100.27	101.10	101.94	
237.865	15,335	99.58	101.00	98.82	99.67	100.48	101.30	102.14	
238.335	15,805	99.80		99.06	99.88	100.68	101.49	102.30	
238.780	16,250	100.04		99.23	100.04	100.83	101.63	102.43	
239.170	16,640	100.25		99.45	100.27	101.07	101.87	102.68	
239.220	16,690	100.31		99.55	100.36	101.15	101.95	102.75	
239.635	17,105	100.33		99.64	100.45	101.24	102.03	102.83	
240.070	17,540	100.35		99.69	100.49	101.27	102.05	102.84	
240.295	17,765	100.56		99.82	100.62	101.41	102.21	103.01	
240.825	18,295	101.14		100.18	101.01	101.85	102.67	103.46	
241.055	18,525	101.37		100.31	101.14	101.99	102.81	103.61	고속철도신설교
241.220	18,690	101.53		100.39	101.23	102.08	102.91	103.70	
241.765	19,235	101.54		100.47	101.28	102.11	102.91	103.72	
242.610	20,080	102.18		100.93	101.75	102.58	103.38	104.14	
243.355	20,825	102.70	104.00	101.21	102.02	102.82	103.61	104.35	
243.940	21,410	103.08		101.57	102.35	103.13	103.90	104.63	초강합류후
244.360	21,830	103.35		101.94	102.71	103.47	104.23	104.96	초강합류전
244.830	22,300	103.55		102.59	103.20	103.86	104.55	105.24	
244.870	22,340	103.57		102.71	103.34	103.94	104.60	105.27	고속철도신설교
245.305	22,775	103.83		103.39	103.91	104.43	105.00	105.59	
245.840	23,310	104.09		103.69	104.19	104.70	105.23	105.79	
246.330	23,800	104.38	105.00	104.06	104.59	105.12	105.65	106.09	양강교수위표
246.365	23,835	104.40		103.95	104.45	104.96	105.49	105.90	

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<표 3.2> 홍수량 산정결과(태풍루사시) 비교

(단위: ㎥/sec)

산정지점명	부 호	유로연장 (㎞)	유역면적 (㎢)	'02년 기왕호우 (영동관측소,48시간)		하천정비기본계획 (100년 빈도)		비 고
				①	②	기본	계획	
소옥천합류후	KU36	223.20	3,894.37	7,185	6,536	8,560	7,300	
소옥천합류전	KU37	223.20	3,703.06	7,074	6,398	8,560	7,300	
보청천합류후	KU38	180.00	3,564.78	8,607	7,867	8,560	7,300	
보청천합류전	KU39	180.00	3,008.92	6,976	6,172	7,490	6,110	
금강4교	KU40	175.10	3,000.53	7,005	6,194	7,490	6,100	
옥천수위표	KU41	169.40	2,987.62	7,036	6,230	7,490	6,100	
이원수위표	KU42	161.30	2,912.44	7,107	6,314	7,490	6,060	
초강합류후	KU43	153.20	2,888.35	7,174	6,392	7,490	6,050	
초강합류전	KU44	153.20	2,227.08	5,026	4,279	6,110	4,670	
양강교수위표	KU45	150.70	2,080.38	4,653	3,775	5,950	4,520	

주) " '02년 기왕호우"란의 ①은 용담댐의 홍수조절효과를 미고려한 경우이며,
②는 루사시 용담댐의 실측 방류량을 적용한 경우 임

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나. 다목적댐 운용 현황

1) 댐 유역 강우현황

금강 상류 유역의 면적평균 강우량은 대청댐 유역 188mm, 용담댐 유역 186mm로 나타났으며, 면적평균강우량의 재현빈도는 하천정비기본계획의 분석 결과와 대비할 때 각각 15년, 10년인 것으로 분석되었다.

<표 3.2> 주요지점별 면적확률강우량

하천명	지점명	면적(㎢)	빈도별 면적확률강우량(mm)							2002. 8. 31	
			10년	20년	50년	80년	100년	150년	200년	용담댐	대청댐
금 강	대청댐 지 점	4,189.09	175.1	199.3	230.5	246.6	254.1	267.9	277.6		188.0
	금 강 4 교	3,000.53	170.0	193.0	222.6	238.0	245.1	258.3	267.4		
	옥 천 수위표	2,987.62	173.2	196.7	227.3	243.0	250.4	263.8	273.2		
	이 원 수위표	2,912.44	172.5	195.9	226.3	242.0	249.3	262.7	272.0		
	초 강 합류후	2,888.35	172.3	195.7	226.0	241.6	248.9	262.3	271.6		
	초 강 합류전	2,227.08	173.6	197.3	228.0	243.8	251.3	264.8	274.2		
	영동천합류전	2,080.38	174.4	198.2	229.0	244.9	252.3	265.9	275.4		
	용담댐 지 점	928.83	185.4	210.7	243.6	260.4	268.3	282.7	292.9	186.0	

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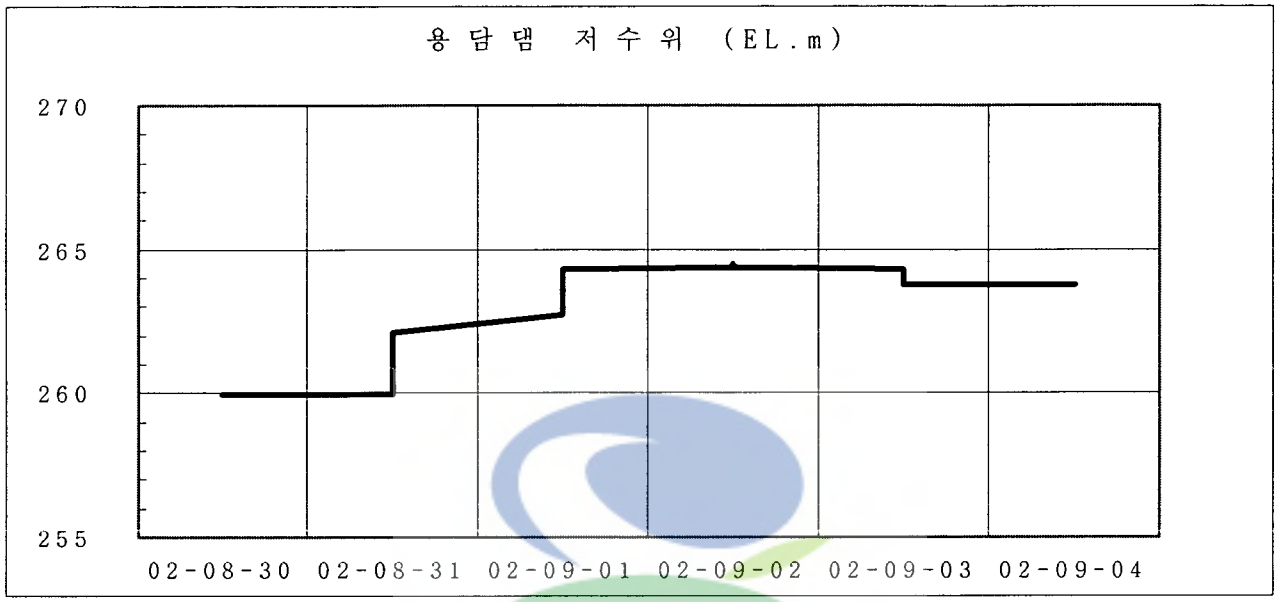
2) 다목적 댐 운용현황

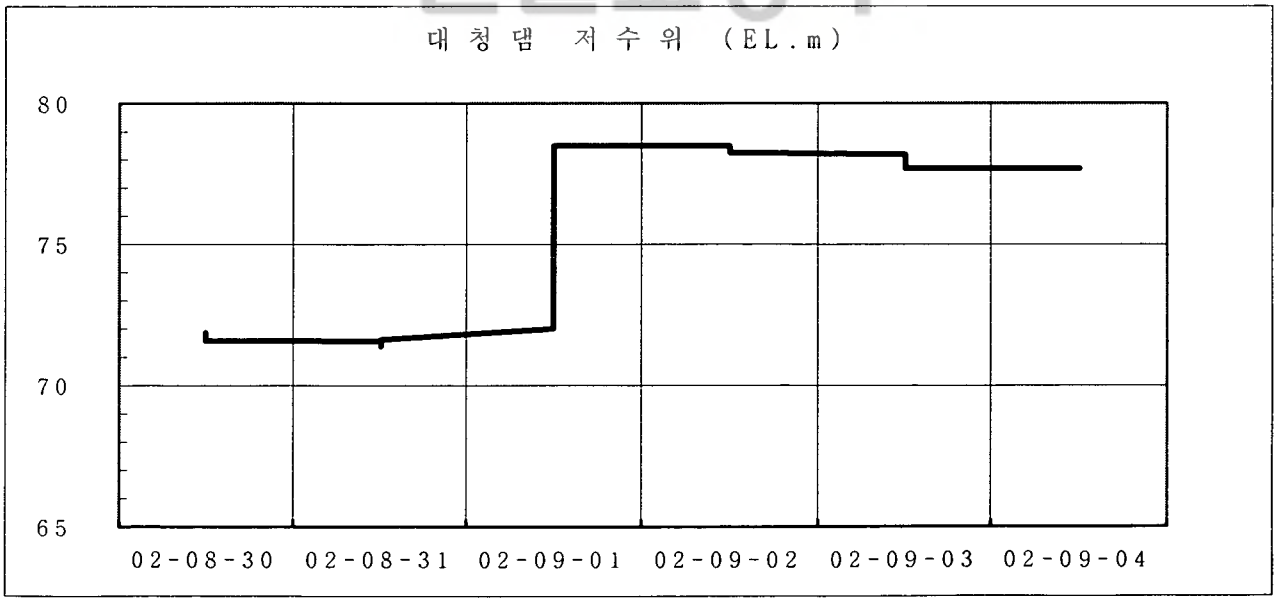
제15호 태풍 루사 내습시 금강 유역내 다목적 댐인 대청댐과 용담댐의 운용현황을 살펴보면 다음 표와 같다. 표에서 보는바와 같이 용담댐은 25년빈도에 상당하는 최대 유입량 3,813㎥/sec을 댐하류 상황을 고려하여 방류시기를 지체한 후 406㎥/sec로 조절 방류하였으며, 대청댐은 최대 유입량 10,069㎥/sec을 1,171㎥/sec로 조절 방류하였다.(조절율 약 88%) 그 결과 용담댐 및 대청댐의 저수위는 각각 초기수위인 EL. 259.98m, EL. 71.88m에서 최고 EL. 264.52m, EL. 78.51m까지 상승하였다.

이와 같은 다목적 댐의 연계운용 및 조절방류로 인하여 하류부 홍수피해 저감에 큰 효과를 나타냈으며, 용담댐의 경우 조절 방류로 하류부 금산군 제원면 일원의 침수지역 피해를 경감하였고, 특히 대청댐은 설계유입량 9,500㎥/sec를 초과하였음에도 계획방류량 6,000㎥/sec 이하인 1,171㎥/sec만을 방류하여 하류부 공주 수위표 지점의 수위가 계획홍수위 EL. 20.55m에 못 미치는 EL. 11.33m까지 상승하는데 그쳤다.

만약 대청댐에서 계획방류량인 초당 6,000㎥의 물을 방류하였다면 공주지점의 수위는 EL. 16.42m까지 상승하였을 것으로 예측되었으며('98년 공주지점 수위-유량 관계곡선식 이용), 대청댐의 조절효과로 수위를 5.09m 저하시키는 역할을 한 것으로 나타났다.



건설교통부



<표 3.3> 다목적댐 운용현황

구 분	용담댐			대청댐			비 고
	저수위 (EL. m)	유입량 (㎥/sec)	방류량 (㎥/sec)	저수위 (EL. m)	유입량 (㎥/sec)	방류량 (㎥/sec)	
02-8-30 01:00	259.98	30.70	13.90	71.88	84.00	254.30	
02:00	259.98	13.60	14.10	71.87	84.00	254.30	
03:00	259.98	13.70	13.90	71.86	84.10	254.20	
04:00	259.98	13.20	14.30	71.84	12.90	254.10	
05:00	259.98	13.90	14.80	71.83	84.30	254.10	
06:00	259.98	13.50	13.10	71.82	84.30	254.10	
07:00	259.98	13.40	13.10	71.80	84.50	254.10	
08:00	259.98	13.80	14.20	71.79	84.40	254.00	
09:00	259.98	14.40	14.30	71.78	12.90	254.00	
10:00	259.98	14.40	14.50	71.76	84.40	253.60	
11:00	259.98	14.80	17.30	71.75	84.60	253.70	
12:00	259.98	15.10	17.30	71.74	84.60	253.60	
13:00	259.98	14.80	17.30	71.74	266.50	253.80	
14:00	259.98	15.00	17.30	71.74	266.50	253.70	
15:00	259.98	13.90	17.30	71.70	266.90	254.10	
16:00	259.98	13.30	17.30	71.69	115.80	254.20	
17:00	259.98	13.60	17.30	71.67	12.90	254.20	
18:00	259.98	13.80	17.30	71.66	115.70	253.90	
19:00	259.98	13.60	17.30	71.65	115.70	253.80	
20:00	259.98	13.50	17.30	71.64	115.60	253.70	
21:00	259.98	13.50	17.30	71.62	12.90	253.60	
22:00	259.98	13.30	17.30	71.60	12.90	253.60	
23:00	259.98	13.30	17.30	71.59	115.90	253.60	
02-8-31 00:00	259.98	12.90	17.30	71.58	115.90	253.60	
01:00	259.98	15.10	17.30	71.57	116.00	253.50	
02:00	259.98	16.40	17.30	71.55	12.90	253.50	
03:00	259.98	17.30	17.30	71.54	76.40	213.80	
04:00	259.98	16.80	17.30	71.53	92.40	229.70	
05:00	259.98	16.80	17.30	71.52	118.90	256.10	
06:00	259.98	17.00	17.30	71.51	119.20	256.40	
07:00	259.98	17.20	17.30	71.50	12.90	256.50	
08:00	259.99	51.20	17.30	71.48	119.60	256.60	
09:00	259.99	34.20	17.30	71.47	119.60	256.50	
10:00	259.99	34.20	17.30	71.45	12.90	256.50	
11:00	260.00	68.10	17.30	71.44	119.70	256.40	
12:00	260.01	51.10	16.30	71.42	12.90	256.30	

주) 상기 자료는 수자원관리 종합정보 시스템에서 인용하였으며, 검증되지 않은 자료임.

<표 3.3> 다목적댐 운용현황(계속)

구 분	용담댐			대청댐			비 고
	저수위 (EL. m)	유입량 (㎥/sec)	방류량 (㎥/sec)	저수위 (EL. m)	유입량 (㎥/sec)	방류량 (㎥/sec)	
02-8-31 13:00	260.03	33.50	16.40	71.42	249.40	236.60	
14:00	260.04	15.00	14.70	71.41	102.80	239.30	
15:00	260.09	15.00	16.50	71.40	117.50	253.90	
16:00	260.17	15.80	16.50	71.40	266.60	253.80	
17:00	260.29	13.50	10.90	71.38	12.90	253.70	
18:00	260.47	10.30	5.20	71.38	266.60	253.80	
19:00	260.73	0.00	0.00	71.39	341.50	179.70	
20:00	261.07	8.30	8.20	71.42	574.30	113.90	
21:00	261.50	8.20	8.20	71.47	1,000.20	240.00	
22:00	261.96	8.20	8.20	71.52	1,018.30	256.40	
23:00	262.09	0.00	8.20	71.65	2,527.20	256.60	
02-9-01 00:00	262.74	0.00	8.50	72.02	5,745.50	249.80	
01:00	262.99	0.00	8.50	72.38	5,383.80	247.40	
02:00	263.19	1,876.50	8.40	72.81	5,855.10	245.10	
03:00	263.34	1,549.40	8.40	73.31	5,855.10	245.20	
04:00	263.46	1,157.10	8.40	73.82	5,855.10	242.50	
05:00	263.56	1,047.70	8.40	74.36	5,855.10	240.40	
06:00	263.65	936.50	8.40	74.91	10,069.10	233.80	
07:00	263.72	707.00	8.30	75.46	9,776.10	237.30	
08:00	263.78	592.30	8.40	75.98	9,689.30	465.00	
09:00	263.84	592.10	5.60	76.45	9,439.40	486.30	
10:00	263.89	416.40	5.40	76.88	8,713.80	489.70	
11:00	263.94	594.00	8.10	77.25	7,719.50	492.20	
12:00	263.99	421.00	8.10	77.54	6,674.10	494.70	
13:00	264.03	540.10	8.10	77.78	5,357.20	497.30	
14:00	264.07	245.00	8.10	77.96	4,466.90	498.70	
15:00	264.11	364.20	12.40	78.10	3,556.40	498.90	
16:00	264.14	425.20	9.10	78.19	2,780.80	947.80	
17:00	264.18	366.20	9.10	78.26	2,555.90	1,009.90	
18:00	264.20	247.30	9.10	78.32	2,325.50	1,012.10	
19:00	264.23	367.20	9.10	78.36	1,974.20	1,013.50	
20:00	264.26	367.70	9.10	78.40	1,739.60	1,014.70	
21:00	264.28	186.20	6.40	78.43	1,622.60	1,015.60	
22:00	264.31	185.80	6.40	78.45	1,504.90	1,016.40	
23:00	264.33	306.50	9.10	78.47	1,386.00	1,015.40	
02-9-02 00:00	264.36	189.20	9.10	78.49	1,386.00	1,015.80	
01:00	264.37	189.40	9.10	78.50	1,267.30	1,016.10	

<표 3.3> 다목적댐 운용현황(계속)

구 분	용담댐			대청댐			비 고
	저수위 (EL. m)	유입량 (㎥/sec)	방류량 (㎥/sec)	저수위 (EL. m)	유입량 (㎥/sec)	방류량 (㎥/sec)	
02-9-02 02:00	264.40	189.40	9.10	78.50	1,148.20	1,016.20	
03:00	264.41	189.70	9.10	78.51	1,148.40	1,016.30	대청댐 최고수위
04:00	264.43	250.10	9.10	78.51	1,148.50	1,016.50	
05:00	264.45	250.30	9.10	78.51	1,029.20	1,016.50	
06:00	264.46	129.50	9.10	78.51	1,029.20	1,016.50	
07:00	264.48	250.60	9.10	78.51	1,029.10	1,016.40	
08:00	264.49	69.50	9.10	78.50	927.40	1,016.30	
09:00	264.51	251.00	9.10	78.49	825.60	1,016.00	
10:00	264.52	130.20	88.30	78.48	825.50	1,015.80	용담댐 최고수위
11:00	264.52	244.50	306.20	78.47	825.20	1,015.40	
12:00	264.52	303.20	306.20	78.45	723.40	1,014.90	
13:00	264.51	306.20	306.10	78.44	723.00	1,014.40	
14:00	264.50	43.70	305.90	78.42	722.70	1,014.10	
15:00	264.49	266.00	305.80	78.41	823.80	1,013.60	
16:00	264.47	214.00	305.60	78.38	620.70	1,013.00	
17:00	264.45	149.80	305.40	78.37	721.60	1,012.40	
18:00	264.44	235.40	305.30	78.36	620.60	1,011.90	
19:00	264.42	177.00	305.10	78.32	479.50	1,011.50	
20:00	264.40	164.70	304.90	78.30	501.30	1,010.60	
21:00	264.38	265.10	304.50	78.28	624.30	1,010.00	
22:00	264.36	204.00	304.30	78.26	646.00	1,009.30	
23:00	264.35	212.90	304.10	78.23	527.10	1,008.60	
02-9-03 00:00	264.33	209.80	303.90	78.20	549.30	1,009.60	
01:00	264.31	206.50	303.60	78.18	549.30	1,009.00	
02:00	264.29	212.40	303.30	78.15	510.10	1,008.30	
03:00	264.27	203.20	303.20	78.13	510.10	1,007.50	
04:00	264.25	172.80	303.00	78.10	510.30	1,006.70	
05:00	264.23	178.70	302.80	78.08	549.30	1,006.00	
06:00	264.21	169.50	302.60	78.07	588.10	1,005.60	
07:00	264.19	172.50	302.30	78.05	627.10	1,005.20	
08:00	264.17	181.40	302.00	78.03	626.80	1,004.60	
09:00	264.15	175.20	301.70	78.01	665.70	1,004.00	
10:00	264.13	212.00	304.70	78.00	704.50	1,003.50	
11:00	264.11	211.50	303.40	77.98	665.00	1,003.10	
12:00	264.08	212.60	303.90	77.96	664.70	1,002.50	
13:00	264.06	212.70	303.80	77.95	664.50	1,002.60	
14:00	264.04	212.50	303.40	77.93	703.40	1,002.50	

<표 3.3> 다목적댐 운용현황(계속)

구 분	용담댐			대청댐			비 고
	저수위 (EL. m)	유입량 (㎥/sec)	방류량 (㎥/sec)	저수위 (EL. m)	유입량 (㎥/sec)	방류량 (㎥/sec)	
02-9-03 15:00	264.02	209.40	386.60	77.91	664.30	1,002.10	
16:00	263.99	236.20	406.90	77.89	664.30	1,002.00	
17:00	263.96	244.00	327.50	77.87	664.60	1,002.30	
18:00	263.93	201.90	326.90	77.84	658.30	1,164.30	
19:00	263.90	237.70	405.00	77.81	614.60	1,171.30	
20:00	263.87	242.90	404.50	77.79	648.70	1,170.60	
21:00	263.84	242.60	404.00	77.76	605.00	1,168.90	
22:00	263.81	121.20	403.50	77.72	599.90	1,168.50	
23:00	263.78	161.40	402.90	77.70	639.80	1,167.60	
02-9-04 00:00	263.74	161.10	402.30	77.67	639.50	1,166.80	

<표 3.4> 다목적댐 운용결과

구 분	수 위(EL. m)				유량(㎥/sec)		비 고
	초 기 수 위	제 한 수 위	계 획 홍수위	최 고 수 위	최 대 유입량	최 대 방류량	
용담댐	259.98	261.50	265.50	264.52 9/2 10:00	3,813 9/1 02:00	406 9/3 16:00	방류시작일시 9/2 11:00
대청댐	71.88	76.50	80.00	78.51 9/2 03:00	10,069 9/1 06:00	1,171 9/3 19:00	방류시작일시 9/1 16:00

주) 초기수위는 2002년 8월 30일 01:00 기준이며, 최대유입량 및 최대방류량 자료는 다목적댐 운용현황 자료와는 차이가 있음.

4. 홍수피해현황

우리나라의 최근 10년간(1991년~2000년) 풍수해 상황을 살펴보면 하천을 포함한 공공시설 피해액이 총 피해액의 76%인 4,523억원으로 가장 높게 나타나고 있으며, 연평균 피해액은 5,968억원이다. 최근 10년간 풍수해 현황 및 태풍 루사시 금강상류 유역의 지역별 피해현황은 다음 표와 같다.

<표 4.1> 최근 10년간 풍수해 현황

구 분	사망 (인)	침수면적 (ha)	건물 (백만원)	농경지 (백만원)	공공시설 (백만원)	기타 (백만원)	총피해액 (백만원)
계	1,216	533,749	125,826	365,151	4,523,022	906,776	5,968,541
평균	122	53,375	12,582	36,515	452,302	90,677	596,854
1991	240	61,173	6,631	51,405	398,677	58,762	518,412
1992	40	13,969	127	1,824	19,734	8,457	31,570
1993	69	58,489	1,514	13,010	198,270	28,248	254,764
1994	72	6,275	700	13,769	109,118	63,940	193,043
1995	158	79,253	5,960	73,362	522,029	112,866	722,584
1996	77	47,968	17,434	62,996	389,615	91,580	562,622
1997	38	45,774	2,107	12,456	164,055	32,316	214,066
1998	384	91,629	38,586	105,203	1,226,345	210,043	1,581,495
1999	89	76,128	41,385	24,687	964,721	211,472	1,244,530
2000	49	53,092	11,378	6,435	530,451	89,086	645,451

<표 4.2> 루사시 시군별 피해현황

구분 \ 지역		전 국	대전시	옥천군	청원군	영동군	보은군	금산군	진안군	장수군	무주군
인 명	명	331	-	-	-	9	-	-	-	-	15
침 수	ha	34,640	-	364	-	1,520	1	315	142	14	684
건 물	천원	133,728,464	34,850	310,500	288	4,305,000	6,404	67,500	12,000	135,000	211,990
농 경 지	천원	290,956,354	224	32,741	4,900	2,796,336	-	41,023	159,350	390,513	18,489,111
농 작 물	ha	180,514	160	572	944	1,844	524	167	1,367	1,338	681
공공시설	천원	4,439,993,771	323,464	3,019,486	-	121,733,553	116,489	1,725,371	15,748,386	10,872,167	159,157,749
사유시설	천원	599,581,321	275,761	916,273	330,486	75,949,396	131,066	645,418	1,386,223	872,682	4,624,539
총피해액	천원	5,469,728,665	634,299	4,301,000	335,674	204,784,285	253,959	2,479,312	17,305,959	12,270,362	182,483,389

상기 표에서 보는바와 같이 태풍 루사시 전국에서 인명피해 331인, 재산피해액 약 5조4천억원의 사상최대의 피해가 발생하였으며, 금강상류 지역도 영동, 무주의 순으로 그 피해액은 각각 약 2,000억원, 1,800억원의 재산피해가 발생하였다. 또한 금강 상류지역의 홍수시 국가하천 구간의 시설물 피해현황 및 영동시가지 침수 피해 현황 사진은 다음과 같다.

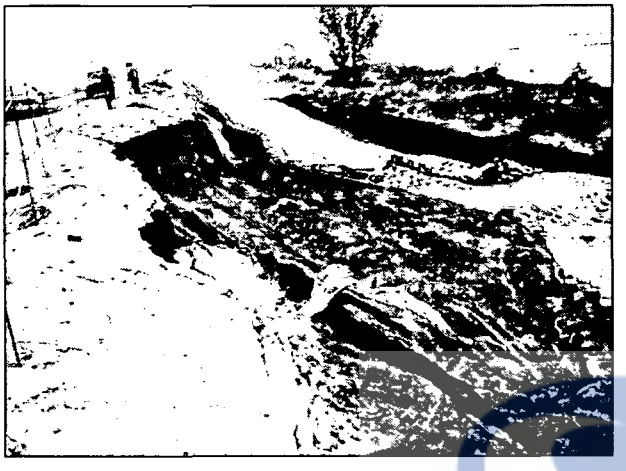


그림 4.1 지탄제 비탈면 붕괴 현황

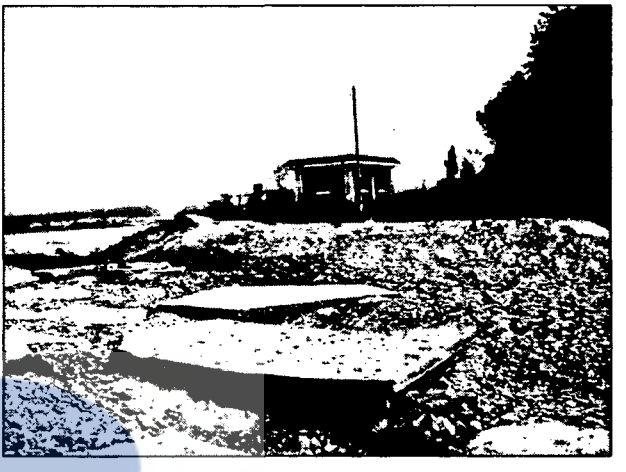


그림 4.2 고당제 유실 전경

그림 4.3 장동제 유실 및 복구 현황

그림 4.4 영동읍 침수이후 복구 전경

5. 내수배제 시설물 규모 결정

배수통문 또는 배수통관 규모 결정은 현재 도심지역, 산간지역, 농경지역으로 구분하여 도심 및 산간지역은 지속시간 1시간 강우량을 1시간동안 배제토록 하고, 농경지역은 12시간 강우량을 12시간동안 배제하는 것으로 그 규모를 결정하고 있다. 본 검토에서는 농경지역을 대상으로 다음과 같은 경우에 대하여 배수시설물 규모를 결정하고 비교하기로 한다.

① 제내측 배수구역내 발생 유출량만을 배제하는 경우(비월류시)

② 제내측 배수구역내 유출량과 외수에 의한 월류량을 배제하는 경우(월류시)

상기 경우 중 ②의 경우는 외수에 의한 월류 발생시 계획제방고까지 유량이 만제한다는 가정으로, 외수에 의한 월류 발생이후 동 유량(제내측 발생유량 + 월류량)을 ①의 경우와 동일한 시간에 신속히 배제할 수 있는 규모를 검토함에 있다.

이상의 2가지 경우에 대한 분석을 위해서는 시간별 내수위 및 외수위 조건이 규명되어야 하나 현실적으로 구득 불가능하므로 본 검토에서는 다음과 같은 절차 및 가정을 하였으며 그 내용은 다음과 같다.

- 제내측 배후지의 표고별 저류용량(Area-Capacity Curve) 결정
- 표고별 저류용량 결정시 평균지반고에서 계획제방고까지 산정
- 월류량은 계획제방고까지 도달하여 제내측에 저류된다고 가정
- 제내측 발생유출량 산정시 강우량은 이원환 공식 적용
- 배제유속은 외수위와 내수위의 차이에 따라 변하나 본 검토에서는 2.0m/sec로 균등한 것으로 가정
- 소요단면은 제내측 발생량과 월류량을 ①과 동일한 시간에 배제할 수 있는 규모로 결정
- 계획단면적은 소요단면적의 1.2배 적용

이상의 가정을 토대로 금강 상류의 지탄2제, 원동제의 배수문에 대하여 검토하였으며, 기 설계규모(①의 경우)는 지탄2제 1배수문은 3.0×2.0×2련이고, 원동제 2배수문은 2.0×2.0×2련이며, 검토내용은 다음과 같다.

○ 표고별 저류용량 결정

구 분	지탄2제 1배수문	원동제 2배수문	비 고
EL. 90.0m	-	760	
EL. 91.0m	490	1,770	
EL. 92.0m	1,235	4,615	
EL. 93.0m	3,300	10,975	
EL. 94.0m	22,055	26,495	
EL. 95.0m	79,415	73,365	
EL. 96.0m	176,685	186,895	
EL. 97.0m	331,880	375,410	
EL. 98.0m	543,330	654,000	
EL. 99.0m	819,150	1,015,625	
EL. 100.0m	1,173,680	1,425,635	

○ 유출량 및 유출체적 산정

구 분	집수면적 (㎢)	강우량 (mm)	배제시간 (hr)	유출율 (f)	배제량 (㎥/sec)	유속 (m/sec)	소요단면 (㎡)	계획단면 (㎡)
지탄2제 1배수문	3.98	221.9	12	0.76	15.54	2	7.77	9.32
원동제 2배수문	2.45	221.9	12	0.75	9.44	2	4.72	5.66

건설교통부

· 비월류시 유출체적

- 지탄2제 : 15.54㎥/sec × 12 hr × 3600 sec / 1hr = 671,328 ㎥
- 원동제 : 9.44㎥/sec × 12 hr × 3600 sec / 1hr = 407,808 ㎥

· 월류시 유출체적(표고별 저류용량 표 참조)

- 지탄2제 : 1,173,680 ㎥
- 원동제 : 1,425,635 ㎥

○ 규모결정

소요단면은 다음식에 의해 결정

$$A = \frac{V}{(t \times \upsilon \times 3,600)}$$

여기서 A : 소요단면적(㎡)

t : 배제시간(hr)

υ : 배제유속(m/sec)

· 지탄2제 1배수문

배제시간(hr)	비 월류시			월류시			비 고
	소요단면적(㎡)	계획단면적(㎡)	시설규모(B×H×련)	소요단면적(㎡)	계획단면적(㎡)	시설규모(B×H×련)	
2	46.62	55.94	6.0×5.0@2련	81.51	97.81	7.0×7.0@2련	1.8배 증가
4	23.31	27.97	4.0×3.5@2련	40.75	48.90	5.0×5.0@2련	
6	15.54	18.65	3.5×3.0@2련	27.17	32.60	4.5×4.0@2련	
7	13.32	15.98	3.0×3.0@2련	23.29	27.94	4.0×3.5@2련	
10	9.32	11.19	3.0×2.0@2련	16.30	19.56	3.5×3.0@2련	
12	7.77	9.32	3.0×2.0@2련	13.58	16.30	3.0×3.0@2련	

· 원동제 2배수문

배제시간(hr)	비 월류시			월류시			비 고
	소요단면적(㎡)	계획단면적(㎡)	시설규모(B×H×련)	소요단면적(㎡)	계획단면적(㎡)	시설규모(B×H×련)	
2	28.32	33.98	5.0×4.0@2련	99.00	118.80	8.0×7.0@2련	3.5배 증가
4	14.16	16.99	3.0×3.0@2련	49.50	59.40	6.0×5.0@2련	
6	9.44	11.33	2.5×2.5@2련	33.00	39.60	4.5×4.5@2련	
7	8.09	9.71	2.5×2.0@2련	28.29	33.94	4.5×4.0@2련	
10	5.66	6.80	2.0×2.0@2련	19.80	23.76	3.5×3.5@2련	
12	4.72	5.66	2.0×2.0@2련	16.50	19.80	4.0×3.0@2련	

상기 분석 결과와 같이 지탄2제의 경우 월류량을 동일 시간내에 배제시킬 수 있는 규모는 비월류시 규모의 1.8배 증가하였고, 원동제의 경우 비월류시 규모의 약 3.5배 증가되는 것으로 나타났으며, 이러한 시설물 규모는 월류로 인한 유출체적량을 좌우하는 배후지의 특성에 따라 다양한 결과가 도출될 것으로 사료된다.

6. 하천정비기본계획 수립시 반영 내용

가. 계획규모

금강 대청댐 상류구간은 영동군 심천면 구간을 제외하고는 거의 대부분 산지부 구간인 점을 감안하여 100년 빈도를 채택 후, 기 수립된 계획홍수위 대비 낮게 산정된 구간은 기수립된 홍수위 채택 예정

나. 제방보강계획

대청댐 상류 국가하천구간의 기설제방으로는 지탄1제(장동제), 지탄2제, 심천1제, 심천2제, 심천3제, 원동제, 고당제, 동대제 등 8개 제방이 있음. 지탄1제(장동제), 지탄2제, 원동제는 현재 공사 시행중이며, 기설제방 중 고당제, 동대제는 제방규모가 부족하고 축제재료도 불량한 것으로 조사되어 금회 하천정비기본계획시 보강대상에 포함.

다. 제방축조계획

고당제 하류부가 일부구간은 무제부로 금강수계 하천정비기본계획 수립시 개수계획 대상지구에 포함.

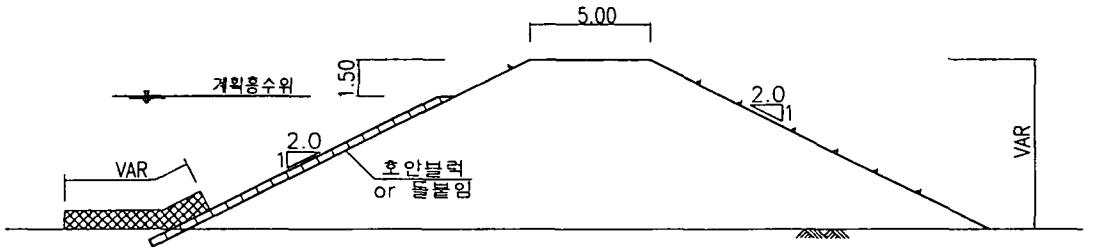
건설교통부

라. 제방보강 및 축조시 고려 사항

기성제 보강 및 제방신설시 설계기준에 부합되도록 표준단면을 제시하되, 2002년 홍수시 홍수기록을 참고하여 고수호안 상단고는 기왕홍수위선까지 상향 적용.

마. 제방표준단면도(붙임도면 참조)

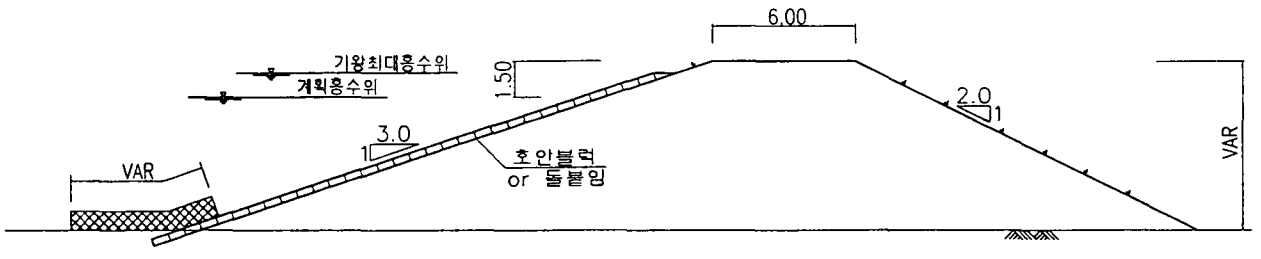
기 존 표 준 단 면 도



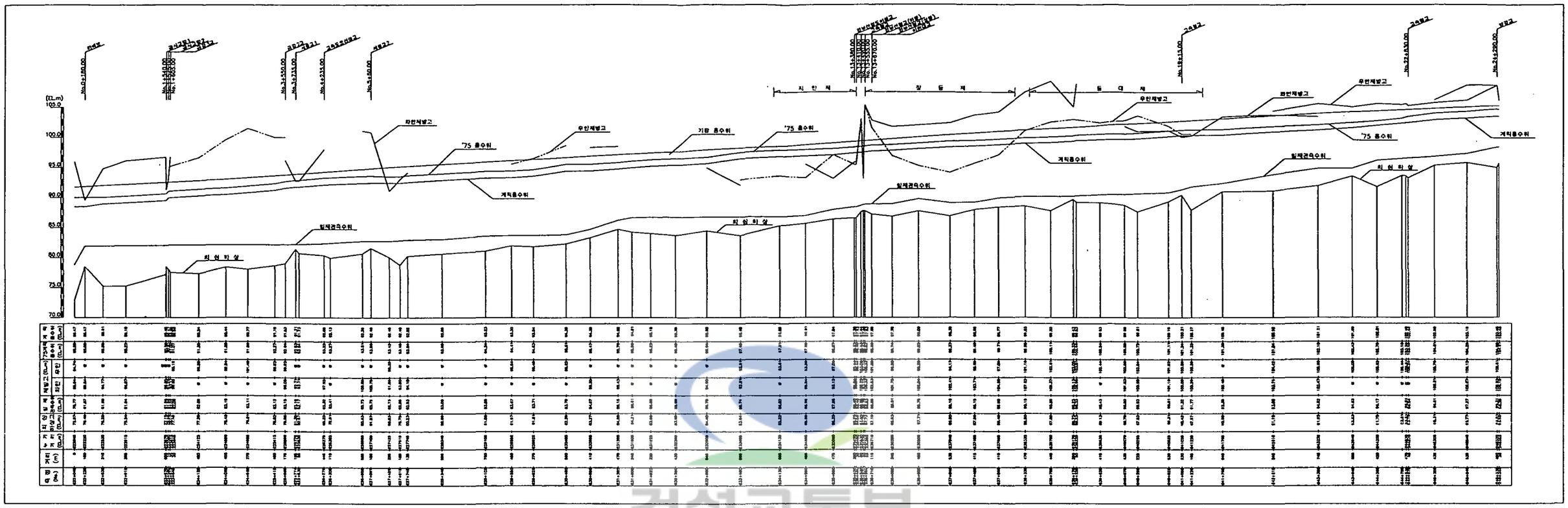
금 강 (대청댐 상류)

건설교통부

변 경 표 준 단 면 도 (안)



금 강 (대청댐 상류)


(EL.m)
105.0
100.0
95.0
90.0
85.0
80.0
75.0
70.0
지 반 제
장 등 제
토 대 제
좌안제방고
우안제방고
'75 홍수위
계획홍수위
기왕 홍수위
계획갈수위
지 심 하 상

건설교통부

□ . 2002년 15호 태풍 루시시 금강상류 수위기록

시간	옥천	청성	호탄	송천	수통	대청댐
02-8-29 1:00	84.079	93.700	114.490	120.671	146.190	72.200
02-8-29 2:00	84.079	93.690	114.490	120.671	146.190	72.190
02-8-29 3:00	84.079	93.690	114.490	120.671	146.190	72.170
02-8-29 4:00	84.079	93.690	114.510	120.671	146.190	72.160
02-8-29 5:00	84.079	93.680	114.520	120.671	146.190	72.150
02-8-29 6:00	84.079	93.680	114.520	120.671	146.200	72.140
02-8-29 7:00	84.069	93.680	114.520	120.671	146.270	72.130
02-8-29 8:00	84.069	93.680	114.520	120.671	146.470	72.120
02-8-29 9:00	84.059	93.670	114.520	120.681	146.530	72.100
02-8-29 10:00	84.059	93.670	114.520	120.681	146.510	72.100
02-8-29 11:00	84.049	93.670	114.520	120.681	146.470	72.100
02-8-29 12:00	84.049	93.660	114.510	120.681	146.450	72.060
02-8-29 13:00	84.039	93.660	114.510	120.681	146.430	72.050
02-8-29 14:00	84.039	93.650	114.510	120.681	146.410	72.030
02-8-29 15:00	84.039	93.650	114.510	120.681	146.360	72.020
02-8-29 16:00	84.039	93.650	114.540	120.681	146.340	72.010
02-8-29 17:00	84.039	93.650	114.630	120.681	146.330	72.000
02-8-29 18:00	84.049	93.650	114.690	120.671	146.320	71.980
02-8-29 19:00	84.049	93.640	114.710	120.671	146.320	71.970
02-8-29 20:00	84.049	93.640	114.710	120.671	146.320	71.950
02-8-29 21:00	84.049	93.630	114.710	120.671	146.330	71.940
02-8-29 22:00	84.049	93.630	114.700	120.661	146.330	71.930
02-8-29 23:00	84.049	93.630	114.680	120.661	146.330	71.910
02-8-30 0:00	84.049	93.630	114.660	120.661	146.330	71.900
02-8-30 1:00	84.059	93.630	114.650	120.671	146.320	71.880
02-8-30 2:00	84.079	93.620	114.630	120.671	146.320	71.870
02-8-30 3:00	84.129	93.620	114.630	120.671	146.320	71.860
02-8-30 4:00	84.169	93.620	114.620	120.671	146.310	71.840
02-8-30 5:00	84.189	93.620	114.620	120.661	146.310	71.830
02-8-30 6:00	84.199	93.620	114.620	120.661	146.300	71.820
02-8-30 7:00	84.199	93.620	114.620	120.661	146.260	71.800
02-8-30 8:00	84.199	93.620	114.620	120.661	146.240	71.790
02-8-30 9:00	84.199	93.620	114.610	120.661	146.230	71.770
02-8-30 10:00	84.189	93.620	114.610	120.661	146.260	71.760
02-8-30 11:00	84.179	93.610	114.610	120.661	146.300	71.750
02-8-30 12:00	84.169	93.610	114.600	120.661	146.320	71.740
02-8-30 13:00	84.169	93.610	114.600	120.661	146.330	71.740
02-8-30 14:00	84.169	93.610	114.600	120.661	146.330	71.740
02-8-30 15:00	84.159	93.610	114.590	120.661	146.320	71.700
02-8-30 16:00	84.149	93.610	114.580	120.661	146.320	71.690
02-8-30 17:00	84.149	93.610	114.580	120.651	146.310	71.670
02-8-30 18:00	84.149	93.610	114.570	120.651	146.300	71.660
02-8-30 19:00	84.149	93.610	114.560	120.651	146.260	71.640
02-8-30 20:00	84.139	93.610	114.560	120.651	146.240	71.630
02-8-30 21:00	84.139	93.610	114.580	120.651	146.270	71.620
02-8-30 22:00	84.139	93.610	114.590	120.651	146.290	71.600

시간	옥천	청성	호탄	송천	수통	대청댐
02-8-30 23:00	84.139	93.610	114.600	120.651	146.320	71.590
02-8-31 0:00	84.139	93.610	114.610	120.651	146.340	71.580
02-8-31 1:00	84.139	93.620	114.610	120.661	146.340	71.560
02-8-31 2:00	84.129	93.620	114.610	120.661	146.340	71.550
02-8-31 3:00	84.129	93.630	114.610	120.661	146.340	71.540
02-8-31 4:00	84.119	93.630	114.600	120.661	146.330	71.530
02-8-31 5:00	84.119	93.630	114.600	120.661	146.330	71.520
02-8-31 6:00	84.119	93.640	114.590	120.661	146.320	71.510
02-8-31 7:00	84.119	93.640	114.590	120.671	146.320	71.490
02-8-31 8:00	84.119	93.650	114.610	120.681	146.310	71.480
02-8-31 9:00	84.129	93.650	114.620	120.691	146.310	71.460
02-8-31 10:00	84.129	93.670	114.640	120.701	146.310	71.450
02-8-31 11:00	84.139	93.690	114.650	120.721	146.310	71.440
02-8-31 12:00	84.149	93.720	114.650	120.741	146.310	71.420
02-8-31 13:00	84.169	93.720	114.660	120.781	146.360	71.400
02-8-31 14:00	84.179	93.720	114.670	120.841	146.380	71.400
02-8-31 15:00	84.189	93.720	114.710	120.941	146.410	71.400
02-8-31 16:00	84.239	93.720	114.790	121.351	146.470	71.400
02-8-31 17:00	84.309	93.720	115.030	124.201	146.580	71.370
02-8-31 18:00	84.479	93.720	115.490	126.131	149.180	71.380
02-8-31 19:00	84.479	93.720	116.040	127.181	150.190	71.400
02-8-31 20:00	84.479	93.720	116.800	127.511	150.980	71.410
02-8-31 21:00	84.479	93.720	116.800	127.511	150.980	71.410
02-8-31 22:00	88.789	93.720	120.570	128.691	151.610	71.520
02-8-31 23:00	90.489	93.720	121.490	128.871	151.690	71.680
02-9-1 0:00	91.359	93.720	121.640	128.911	151.570	72.050
02-9-1 1:00	92.819	93.720	121.640	128.901	151.250	72.410
02-9-1 2:00	92.599	93.720	121.640	128.901	150.780	72.850
02-9-1 3:00	92.969	93.720	121.370	128.901	150.160	73.350
02-9-1 4:00	93.139	93.720	120.590	128.901	149.670	73.860
02-9-1 5:00	92.809	93.720	119.910	128.901	149.370	74.410
02-9-1 6:00	92.369	93.720	119.140	128.901	149.090	74.950
02-9-1 7:00	91.569	93.720	118.590	128.901	148.860	75.500
02-9-1 8:00	90.579	93.720	118.110	128.901	148.650	76.010
02-9-1 9:00	89.399	93.720	117.770	128.901	148.450	76.490
02-9-1 10:00	88.359	93.720	117.520	128.901	148.270	76.900
02-9-1 11:00	87.489	93.720	117.260	128.901	148.160	77.270
02-9-1 12:00	86.719	93.720	117.100	128.901	148.060	77.560
02-9-1 13:00	86.049	93.720	116.930	128.901	147.980	77.800
02-9-1 14:00	85.689	93.720	116.830	128.901	147.910	77.980
02-9-1 15:00	85.539	93.720	116.730	128.901	147.850	78.110
02-9-1 16:00	85.269	93.720	116.640	128.901	147.790	78.190
02-9-1 17:00	85.079	93.720	116.570	128.901	147.740	78.260
02-9-1 18:00	84.899	93.720	116.510	128.901	147.680	78.320
02-9-1 19:00	84.779	93.720	116.440	128.901	147.630	78.360
02-9-1 20:00	84.609	93.720	116.390	128.901	147.590	78.400
02-9-1 21:00	84.509	93.720	116.340	128.901	147.550	78.430

시간	옥천	청성	호탄	송천	수통	대청댐
02-9-1 22:00	84.469	93.720	116.290	128.901	147.520	78.450
02-9-1 23:00	84.349	93.720	116.230	128.901	147.490	78.470
02-9-2 0:00	84.289	93.720	116.190	128.901	147.460	78.490
02-9-2 1:00	84.239	93.720	116.150	128.901	147.430	78.500
02-9-2 2:00	84.109	93.720	116.110	128.901	147.400	78.500
02-9-2 3:00	84.059	93.720	116.080	128.901	147.380	78.510
02-9-2 4:00	84.009	93.720	116.050	128.901	147.360	78.510
02-9-2 5:00	83.959	93.720	116.020	128.901	147.320	78.510
02-9-2 6:00	83.889	93.720	116.000	128.901	147.290	78.510
02-9-2 7:00	83.839	93.720	115.970	128.901	147.260	78.510
02-9-2 8:00	83.789	93.720	115.950	128.901	147.240	78.500
02-9-2 9:00	83.749	93.720	115.920	128.901	147.220	78.490
02-9-2 10:00	83.689	93.720	115.890	128.901	147.210	78.480
02-9-2 11:00	83.669	93.720	115.870	128.901	147.190	78.470
02-9-2 12:00	83.619	93.720	115.850	128.901	147.180	78.450
02-9-2 13:00	83.599	93.720	115.820	128.901	147.160	78.440
02-9-2 14:00	83.559	93.720	115.810	128.901	147.150	78.420
02-9-2 15:00	83.509	94.500	115.790	128.901	147.160	78.410
02-9-2 16:00	83.509	94.470	115.770	128.901	147.090	78.380
02-9-2 17:00	83.509	94.450	115.760	128.901	147.760	78.360
02-9-2 18:00	83.509	94.420	115.740	128.901	147.840	78.360
02-9-2 19:00	83.509	94.400	115.730	128.901	147.860	78.320
02-9-2 20:00	83.509	94.380	115.730	128.901	147.850	78.300
02-9-2 21:00	83.511	94.350	116.090	128.901	147.840	78.280
02-9-2 22:00	83.513	94.350	116.260	128.901	147.830	78.250
02-9-2 23:00	83.515	94.350	116.270	128.901	147.830	78.230
02-9-3 0:00	83.517	94.290	116.270	128.901	147.820	78.200
02-9-3 1:00	83.519	94.270	116.260	128.901	147.820	78.180
02-9-3 2:00	83.739	94.250	116.260	128.901	147.820	78.150
02-9-3 3:00	83.799	94.240	116.250	128.901	147.810	78.120
02-9-3 4:00	83.819	94.220	116.250	128.901	147.810	78.100
02-9-3 5:00	83.819	94.210	116.240	128.901	147.810	78.080
02-9-3 6:00	83.789	94.190	116.240	128.901	147.800	78.070
02-9-3 7:00	83.769	94.180	116.230	128.901	147.800	78.050
02-9-3 8:00	83.789	94.170	116.230	128.901	147.790	78.030
02-9-3 9:00	83.759	94.160	116.220	128.901	147.790	78.010
02-9-3 10:00	83.769	94.140	116.210	128.901	147.790	78.000
02-9-3 11:00	83.769	94.130	116.210	128.901	147.790	77.980
02-9-3 12:00	83.749	94.120	116.170	128.901	147.770	77.960
02-9-3 13:00	83.739	94.110	116.150	128.901	147.800	77.940
02-9-3 14:00	83.729	94.100	116.150	128.901	147.790	77.920
02-9-3 15:00	83.719	94.090	116.140	128.901	147.790	77.910
02-9-3 16:00	83.719	94.080	116.150	128.901	147.780	77.890
최대값	93.139	94.500	121.640	128.911	151.690	78.510

피해상황총괄표(확정)

【8.30~9.1태풍"루사"】

구분			지역	총계		서울특별시		부산광역시		대구광역시	
총 이 재 민			세대/명	21,318	63,085	2	4	1	4		
인	사 망		명		209				2		1
	실 종		명		37						
	부 상		명		75				4		
명	계		명		321				6		1
침	농 경 지		ha		31,280.33				366		179
	도 시		ha		119.20				1		
수	계		ha		31,399.53				366.90		179.08
건	주	유실·전파	동		2,837				3		1
	건	반 파	동		4,797		35		20		1
물	물	침 수	동		27,562		1		38		93
	계		동		35,196		36		61		95
	피 해 액		천원		109,853,985		472,500		82,500		22,600
선	동	전 파	척/톤	373	107,232			5	11		
	력	반 파	척/톤	397	31,665			2	10		
	무	전 파	척/톤	38	1,879						
	동	반 파	척/톤	19	8						
박	계		척/톤	827	140,784.30			7	21.39		
	피 해 액		천원		4,623,068				45,585		
농	전 (유실.매몰)		ha		6,527.42						
경	답 (유실.매몰)		ha		11,221.98				0		0
지	계		ha		17,749.41				0.03		0.23
	피 해 액		천원		422,131,712				374		8,229
농	전 작		ha		42,747.74						29
작	답 작		ha		162,871.44				392		158
물	기 타		ha		26,227.53		6		173		10
	계		ha		231,846.71		6		564		197
공	도	도 로	개소/m	1,847	718,138			6	1,295	9	1,007
		교 량	개소/m	86	44,661						
	로	피 해 액	천원		729,586,016				113,846		156,250
	하	하 천	개소/m	2,649	1,928,404			4	3,372	39	7,395
	천	피 해 액	천원		1,021,141,303				318,000		2,077,864
		소 하 천	개소/m	3,335	1,754,068					16	1,015
	피 해 액		천원		449,872,836						256,000
	수	상.하수도	개소		925						
	도	피 해 액	천원		96,377,327						
	항	항만시설	개소		68				19		
	만	피 해 액	천원		19,547,996				681,080		
	어	어항시설	개소		268				5		
	항	피 해 액	천원		42,063,278				1,805,000		
	학	교 실	동		346		3		3		
	교	피 해 액	천원		15,279,928		24,900		65,000		
	철	철 도	개소/m	70	68,832						
	도	피 해 액	천원		93,579,703						
	수	수리시설	개소		4,526				3		28
		방 조 제	개소		113						
시	리	피 해 액	천원		407,956,531				329,065		1,069,091
	사	사 방	개소/ha	1,102	4,100					2	0
		임 도	개소/m	265	349,960					3	65
	방	피 해 액	천원		171,723,637						41,677
	군 시 설		개소		273		3		12		1
	피 해 액		천원		173,816,441		76,764		7,259,078		3,800
	소 규 모		개소		7,197						11
	피 해 액		천원		440,537,144						112,000
	기	기 타	개소		6,554		2		41		3
설	타	피 해 액	천원		525,868,668		35,840		778,567		234,000
피해액 소계			천원		4,187,350,808		137,504		11,349,636		3,950,682
사	축대·담장		개소/천원	16	115,844			1	1,000	3	19,393
	가 축		두/천원	2,425,027	130,293					320	40,800
유	축사·잠사		개소/천원	38,631	24,752,315						
	수산증양식		개소/천원	137,122	38,314,875			6	55,640		
시	어망·어구		몽/천원	152,727	11,946,277						
설	비닐하우스		ha/천원	1,303	53,615,177			8	524,829	1	47,865
	기타사유시설		개소/천원	6,008	295,082,861			16	505,805	15	216,091
피해액 소계			천원		423,957,642				1,087,274		324,149
총 피 해 액			천원		5,147,917,215		610,004		12,565,369		4,305,660

건설교통부

피해상황총괄표(확정)

【8.30~9.1태풍"루사"】

구분			지역	인천광역시		광주광역시		대전광역시		울산광역시	
총 이 재 민			세대/명			158	425				
인	사 망		명				3				3
	실 종		명								
	부 상		명								1
영	계		명				3				4
침	농 경 지		ha								41
	도 시		ha								
수	계		ha								41.43
건	주	유실·전파	동		1		5				
	건	반 파	동		6		19		6		2
	물	침 수	동				1				1
물	계		동		7		25		6		3
	피 해 액		천원		108,000		472,500		41,450		27,750
선	동	전 파	척/톤							1	2
	력	반 파	척/톤							1	7
	무	전 파	척/톤								
	동	반 파	척/톤								
박	계		척/톤							2	9.18
	피 해 액		천원								18,842
농	전 (유실.매몰)		ha						0		0
경	답 (유실.매몰)		ha				0				2
지	계		ha				0.36		0.02		2.26
	피 해 액		천원				1,739		224		18,561
농	전 작		ha		39		98		2		106
작	답 작		ha				1,201				5
물	기 타		ha				125		157		1,319
	계		ha		39		1,424		160		1,429
공	도	도 로	개소/m	1	100	9	307			2	690
		교 량	개소/m							1	55
	로	피 해 액	천원		75,842		72,666				894,000
	하	하 천	개소/m			13	470	8	615	32	5,045
	천	피 해 액	천원				132,492		174,551		1,280,065
		소 하 천	개소/m			3	440	1	80	15	1,715
		피 해 액	천원				82,738		8,401		366,880
	수	상.하수도	개소				3				
	도	피 해 액	천원				170,900				
	항	항만시설	개소								4
	만	피 해 액	천원								242,000
공	어	어항시설	개소								1
	항	피 해 액	천원								10,000
	학	교 실	동								2
	교	피 해 액	천원								13,725
	철	철 도	개소/m							2	
	도	피 해 액	천원								10,000
	수	수리시설	개소								41
시		방 조 제	개소								
	리	피 해 액	천원								1,844,807
	사	사 방	개소/ha							6	2
		임 도	개소/m							9	2,385
	방	피 해 액	천원								318,133
	군 시 설		개소		1		1		5		
	피 해 액		천원		15,000		17,661		175,892		
	소 규 모		개소		2		6				11
	피 해 액		천원		109,925		125,000				140,403
	기	기 타	개소		3		3		2		4
설	타	피 해 액	천원		229,686		23,851		23,388		15,400
	피해액 소계		천원		430,453		625,308		382,232		5,135,413
사	축대·당장		개소/천원			1	826	1	200	2	550
	가 축		두/천원			17,250	24,138				
유	축사·잠사		개소/천원	2	3,930	2	48,196			1	4,217
시	수산증양식		개소/천원	6	97,860					1	12,750
설	어망·어구		통/천원							3	36,640
	비닐하우스		ha/천원	0	24,665	113	3,337,690	3	183,211	1	80,123
	기타사유시설		개소/천원	4	31,364	38	662,459	6	92,434	5	487,900
피해액 소계			천원		157,819		4,073,309		275,845		622,180
총 피 해 액			천원		696,272		5,172,856		699,751		5,822,746

건설교통부

피해상황총괄표(확정)

【8.30~9.1태풍"루사"】

구분		지역	경기도		강원도		충청북도		충청남도	
총이재민		세대/명	46	141	13,158	40,874	1,422	3,967	157	439
인명	사망	명				123		9		1
	실종	명				20		1		
	부상	명				35				
	계	명				178		10		1
침수	농경지	ha		46		435		2,147		291
	도시	ha						115		
	계	ha		45.75		435.17		2,261.74		291.40
건물	주택 유실·전파	동		3		1,697		94		7
	건물 반파	동		66		2,470		125		77
	침수	동				18,386		1,132		8
	계	동		69		22,553		1,351		92
	피해액	천원		988,550		79,164,000		3,886,598		1,228,500
선박	동력 전파	척/톤	4	5	39		5	1	7	10
	동력 반파	척/톤	13	16			1	0	8	26
	무동 전파	척/톤								
	무동 반파	척/톤								
	계	척/톤	17	20.67	39		6	1.29	15	36.11
	피해액	천원		77,920		302,644		8,817		81,704
농경지	전 (유실,매몰)	ha				3,934		175		1,410
	답 (유실,매몰)	ha				5,409		338		831
	계	ha				9,342.79		513.14		2,240.99
	피해액	천원				276,725,332		2,691,060		51,599
농작물	전작	ha		14		2,319		1,702		4,924
	답작	ha		237		1,605		3,890		30,639
	기타	ha		2,981				524		
	계	ha		3,232		3,924		6,116		35,563
공시설	도로	개소/m			569	352,453	66	19,855	8	551
	교량	개소/m					6	338	1	40
	피해액	천원				465,239,750		11,186,564		834,038
	하천	개소/m			300	447,430	132	89,795	44	8,640
	피해액	천원				292,151,670		62,092,647		4,722,223
	소하천	개소/m			394	494,656	177	144,395	38	6,260
	피해액	천원				150,501,538		26,700,280		2,364,849
	상.하수도	개소		1		328		27		7
	피해액	천원		24,500		61,967,086		4,289,238		113,570
	항만시설	개소				5				
	피해액	천원				7,651,000				
	어항시설	개소		1		24				4
	피해액	천원		200,000		4,402,487				1,072,554
	교실	동		3		121		1		24
	피해액	천원		62,550		10,222,094		41,400		281,763
	철도	개소/m			52	66,812	1	40		
	피해액	천원				87,138,120		20,265		
	수리시설	개소				606		121		24
	방조제	개소								
	피해액	천원				175,914,940		7,816,342		719,835
	사방	개소/ha			446		35	33		
	임도	개소/m					13	13,960		
	피해액	천원				85,758,658		3,286,119		
	군시설	개소		54		95		6		13
	피해액	천원		2,385,475		154,068,985		126,695		687,888
	소규모	개소				1,101		287		25
	피해액	천원				209,208,581		14,947,144		400,648
	기타	개소		50		691		221		57
	피해액	천원		939,106		276,275,904		6,748,969		5,711,228
	피해액 소계	천원		3,611,631		1,980,500,813		137,255,663		16,908,596
사유시설	축대·담장	개소/천원	1	29,617						
	가축	두/천원	3,021	23,910	505,107		40,502		48,684	
	축사·잠사	개소/천원	61	404,965	503	9,326,064	13	195,111	129	1,565,585
	수산증양식	개소/천원	1	350,000	50	5,391,087			85	521,287
	어망·어구	통/천원	11,465	76,255	679	8,435,260	53	13,250	17	49,856
	비닐하우스	ha/천원	49	2,885,240	471	2,788,318	30	2,220,584	113	9,452,271
	기타사유시설	개소/천원	707	2,782,465	949	167,889,834	1,180	14,228,769	53	6,575,045
	피해액 소계	천원		6,552,452		193,830,563		16,657,714		18,164,044
총피해액		천원		11,230,553		2,530,523,352		160,499,852		36,434,443

건설교통부

피해상황총괄표(확정)

【8.30~9.1태풍"루사"】

구분			지역	전라북도		전라남도		경상북도		경상남도	
총 이 재 민			세대/명	304	773	679	1,945	4,297	11,335	1,094	3,178
인명	사 망		명		15		9		27		16
	실 종		명				5		10		1
	부 상		명		3		2		16		14
	계		명		18		16		53		31
침수	농 경 지		ha		1,401		1,768		6,259		9,994
	도 시		ha				3				
	계		ha		1,401.44		1,770.90		6,258.69		9,994.13
건물	주건물	유실·전파	동		141		224		382		266
		반 파	동		162		499		1,033		205
		침 수	동		349		1,555		4,267		1,653
	계		동		652		2,278		5,682		2,124
	피 해 액		천원		1,559,200		10,017,190		1,304,351		9,456,896
선박	동력	전 파	척/톤	11	37	159	106,804	3	8	114	252
		반 파	척/톤	33	66	87	30,645	1	1	161	288
	무동	전 파	척/톤			9	1,866			29	14
		반 파	척/톤			1	1			18	7
	계		척/톤	44	102.71	256	139,315.90	4	9.18	322	560.75
	피 해 액		천원		240,361		1,774,252		16,126		792,654
농경지	전 (유실.매몰)		ha		28		4		899		73
	답 (유실.매몰)		ha		677		374		2,356		1,234
	계		ha		705.13		377.72		3,255.13		1,306.91
	피 해 액		천원		20,803,890		2,885,181		93,808,004		25,091,057
농작물	전 작		ha		3,562		7,194		2,207		6,075
	답 작		ha		30,959		74,560		4,526		14,671
	기 타		ha				15,742		3,640		1,549
	계		ha		34,521		97,497		10,373		22,295
공시설	도로	도 로	개소/m	150	20,167	209	84,422	421	152,601	336	69,319
		교 량	개소/m			1	190	54	42,668	30	1,748
		피 해 액	천원		22,113,461		24,020,677		141,850,992		58,404,169
	하천	하 천	개소/m	128	89,169	224	207,034	926	394,010	779	670,638
		피 해 액	천원		106,540,862		96,539,435		132,679,611		318,086,365
		소 하 천	개소/m	210	98,832	517	173,136	990	540,794	970	291,575
		피 해 액	천원		35,635,905		45,703,885		115,250,725		72,467,635
	수도	상.하수도	개소		99		69		241		148
		피 해 액	천원		3,249,767		2,768,265		17,005,214		4,758,787
	항만	항만시설	개소		2		25		2		5
		피 해 액	천원		173,603		7,405,082		688,000		248,981
	어항	어항시설	개소		4		87		30		100
		피 해 액	천원		563,533		21,009,434		2,616,666		8,753,604
	학교	교 실	동		12		83		40		45
		피 해 액	천원		261,673		1,432,285		820,186		1,994,152
	철도	철 도	개소/m			2	380	11	1,208	2	392
		피 해 액	천원				105,857		6,274,105		31,356
	수리시설	수리시설	개소		331		378		1,646		1,342
		방 조 제	개소				82				31
		피 해 액	천원		19,425,159		18,949,143		76,940,366		104,248,033
	사방	사 방	개소/ha	128		39	50	215	3,642	231	373
		임 도	개소/m			43	16,950	141	145,880	56	170,720
		피 해 액	천원		13,558,475		5,994,801		33,327,651		29,438,123
	군시설		개소		9		12		23		36
	피 해 액		천원		112,190		1,637,296		472,191		6,673,570
	소 규 모		개소		361		576		3,535		1,272
	피 해 액		천원		9,304,800		20,405,231		131,629,956		53,400,846
	기타	기 타	개소		194		581		2,705		502
		피 해 액	천원		21,328,401		68,428,870		69,234,490		60,986,412
피해액 소계			천원		232,267,829		314,400,261		728,790,153		719,492,033
사유시설	축대·담장		개소/천원					5	50,258		
	가 축		두/천원	294,288		52,005	33,345	947,623		196,691	
	축사·잠사		개소/천원	132	1,236,027	377	4,614,118	37,204	5,501,904	153	1,375,166
	수산증양식		개소/천원	17	101,529	1,389	18,251,709	135,154	619,678	232	5,936,834
	어망·어구		통/천원	2	13,750	40,337	1,961,250	100,014	236,358	144	946,410
	비닐하우스		ha/천원	108	8,500,900	174	8,944,366	101	3,710,582	71	4,318,834
	기타사유시설		개소/천원	385	28,117,382	210	16,823,047	1,304	31,767,805	926	22,445,003
피해액 소계			천원		37,969,588		50,627,835		41,886,585		35,022,247
총 피 해 액			천원		292,840,868		379,704,719		865,805,219		789,854,887

피해상황총괄표(확정)

8.30~9.1태풍"루사"

구분 \ 지역				제주도									
총 이 재 민			세대/명										
인명	사 망		명										
	실 종		명										
	부 상		명										
	계		명										
침수	농 경 지		ha		8,353								
	도 시		ha										
	계		ha		8,352.90								
건물	주	유실·전파	동		13								
	건	반 파	동		71								
	물	침 수	동		78								
	계		동		162								
	피 해 액		천원		1,021,400								
선박	동력	전 파	척/톤	25	102								
		반 파	척/톤	90	605								
	무동력	전 파	척/톤										
		반 파	척/톤										
	계		척/톤	115	707.12								
	피 해 액		천원		1,264,163								
농경지	전 (유실,매몰)		ha		5								
	답 (유실,매몰)		ha										
	계		ha		4.70								
	피 해 액		천원		46,462								
농작물	전 작		ha		14,475								
	답 작		ha		30								
	기 타		ha		2								
	계		ha		14,507								
공시설	도로	도 로	개소/m	61	15,371								
		교 량	개소/m										
		피 해 액	천원		4,623,761								
	하천	하 천	개소/m	20	4,791								
		피 해 액	천원		4,345,518								
		소 하 천	개소/m	4	1,170								
		피 해 액	천원		534,000								
	수도	상.하수도	개소		2								
		피 해 액	천원		2,030,000								
	항만	항만시설	개소		6								
		피 해 액	천원		2,458,250								
	어항	어항시설	개소		12								
		피 해 액	천원		1,630,000								
	학교	교 실	동		9								
		피 해 액	천원		60,200								
	철도	철 도	개소/m										
		피 해 액	천원										
	수리시설	수리시설	개소		6								
		방 조 제	개소										
		피 해 액	천원		699,750								
	사방	사 방	개소/ha										
		임 도	개소/m										
		피 해 액	천원										
	군시설		개소		2								
	피 해 액		천원		103,956								
	소 규 모		개소		10								
	피 해 액		천원		752,610								
	기타	기 타	개소		1,495								
		피 해 액	천원		14,874,556								
피해액 소계			천원		32,112,601								
사유시설	축대·담장		개소/천원	2	14,000								
	가 축		두/천원	319,536	8,100								
	축사·잠사		개소/천원	54	477,032								
	수산증양식		개소/천원	181	6,976,501								
	어망·어구		통/천원	13	177,248								
	비닐하우스		ha/천원	59	6,595,699								
	기타사유시설		개소/천원	210	2,457,458								
피해액 소계			천원		16,706,038								
총 피 해 액			천원		51,150,664								

건설교통부

□ 피해현장 사진

그림 1 장동제(우안) 대안측(좌안)으로 도로 구간이며, 태풍 루사시 홍수위는 백호우 하단 갈색선까지 상승하였음.

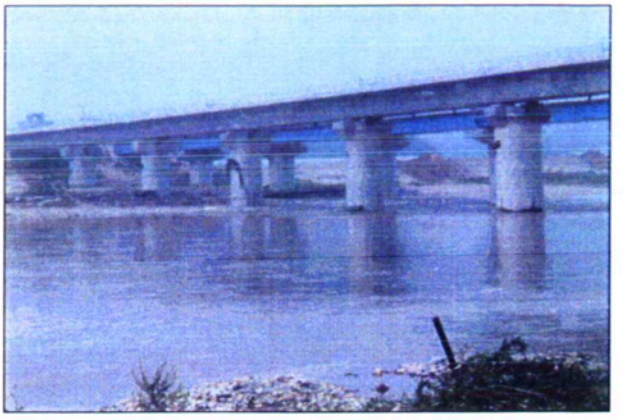


그림 2 경부고속전철교량 홍수 흔적(교각에 부유물이 걸려있음.)

그림 3 지탄제(우안) 홍수후의 모습. 고수호안 상단이 계획홍수위이나 태풍 루사시 계획홍수위보다 약 1m이상 홍수위가 상승하였음.

그림 4 지탄제 태풍 루사가 지나간 후의 현장 모습

그림 5 지탄제 비탈면 붕괴 현황

그림 6 동대제(우안) 제방유실 전경. 성토재료가 부적절하여 유실됨.

그림 7 고당제(좌안)유실 전경. 고당 양수장이 위치하고 있으며, 성토재료가 부적절하여 유실됨.

그림 8 고당제 유실로 인한 제내측 홍수피해 현황

그림 9 고당제 유실 단면. 거의 자갈로 이루어져 있음.

그림 10 고당제(좌안)유실 부분 전경

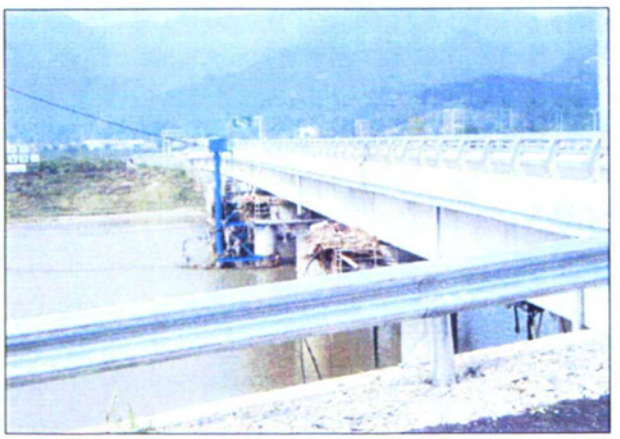


그림 11 초강하구부의 심천교 전경

그림 12 심천교 교좌장치 부분에 및 상판에 부유물이 걸림

3. 홍수피해 잠재능 산정결과

건설교통부

금강 권역은 금강, 삽교천, 만경강 수계로 이루어진 권역으로 치수계획에서 가장 중심이 되는 하천정비 현황, 계획 홍수량 및 단위구역별 특성을 중심으로 치수계획을 분석하였으며, 금강권역의 개략적인 하천현황 및 계획 홍수량은 다음과 같다.

금강 수계는 국가하천 11개소, 지방1급 하천 20개소 및 지방2급 하천 457개소 등 총 488개소의 하천이 있으며, 이중 국가하천 11개소, 지방1급 하천 20개소, 지방2급 하천 98개소 등 총 129개소의 하천에 대해 하천정비기본계획이 수립되어 있다. 금강 수계의 계획 홍수량의 채택 빈도는 본류 하천과의 연계성, 하천등급, 하천의 중요도 및 지역적 특성 등을 고려하여 30년, 50년, 80년 및 100년 빈도를 채택하였다.

삽교천 수계는 국가하천 3개소와 지방 1급 하천 2개소, 지방2급 하천 94개소 등 총 99개소의 하천이 있으며, 이중 국가하천 3개소와 지방1급 하천 2개소, 지방2급 하천 19개소 등 총 24개소의 하천에 대해 하천정비기본계획이 수립되었다. 또한 형산강수계의 계획 홍수량의 채택 빈도는 국가하천은 모두 100년 빈도, 지방1급인 삽교천 전구간 및 곡교천 일부구간은 80년 빈도를 적용하였으며, 지방2급 하천 중 8개소는 30년 빈도, 56개소는 50년 빈도의 계획 홍수량을 채택하였다.

만경강 수계는 국가하천 3개소, 지방1급 하천 2개소, 지방2급 하천 76개소 등 총 81개소의 하천이 있으며, 이중 국가하천 3개소, 지방1급 하천 3개소, 지방2급 하천 8개소 등 총 14개소의 하천에 대해 하천정비기본계획을 수립하였다. 또한 계획 홍수량의 채택 빈도는 국가하천은 3개 모두 100년 빈도, 지방1급인 전주천은 100년 빈도, 지방2급 하천중 1개소는 30년 빈도, 나머지 8개소는 50년 빈도를 적용하였다.

□ 금강 상류 유역(3001)

금강상류지역인 3001번 구역은 전북 장수군, 진안군의 일부지역을 포함한 금강 최상류지역으로 용담댐 유역을 포함하고 있다. 단위구역 특성상 D 지역의 산지지역으로 개수율은 15%로 개수율이 매우 낮으며, 피해밀도도 2,433천원/㎢으로 전국 평균인 5,715.16천원보다 낮은 편이다. 또한 이 구역의 토지이용현황은 79.46%가 임야로 산지지역이며, 이 구역의 하천현황은 금강 본류의 지방1급하천 구간 및 진안천, 구량천, 장계천, 장수천은 50년 빈도를, 그 외의 정자천, 계북천 등은 미개수 지역이다. 이 지역의 특성은 잠재성은 낮지만 위험성이 높은 적절한 대책을 요하는 지역으로, 용담댐에 의한 하류지역의 홍수를 조절하는 역할을 하는 구역이다. 이 구역의 치수계획은 상류지역의 하천개수가 되지 않은 지역에 대해서는 하천개수를 실시하여

하천개수율을 높이며, 금강의 최상류 지역으로 홍수량을 하도에만 분담하기보다는 지역의 저수지 시설 등에 대한 홍수방어능력을 실시하여 홍수량을 하도 및 기타 유역에 분담을 시켜 하류에 영향을 최소화하게 한다

수계명	금강		단 위 구역명	금강상류(용담댐 상류)			단위구역 코 드	3001
하천명 (개수율(%), 하천정비 기본계획 수립유무)	국가하천							
	지방1급	금강 (52,수립)						
	지방2급	계북천 (14,수립)	연동천 (0,수립)	백암천 (17,수립)	구량천 (8,수립)	통안천 (13,수립)	사전천 (6,수립)	금강 (14,수립)
		양악천 (0,수립)	수침천 (0,수립)	상노천 (0,수립)	수분천 (0,수립)	신지천 (20,수립)	화성천 (0,수립)	와룡천 (17,수립)
		용추천 (0,수립)	송천천 (0,수립)	월포천 (0,수립)	율치천 (0,수립)	장계천 (19,수립)	명덕천 (62,수립)	평지천 (0,수립)
		유천 (18,수립)	용산곡천 (0,수립)	나치천 (7,수립)	도좌천 (0,수립)	장수천 (44,수립)	정자천 (23,수립)	황금천 (45,수립)
		마조천 (14,수립)	내동천 (0,수립)	주자천 (18,수립)	무룡천 (43,수립)	용덕천 (27,수립)	안정천 (25,수립)	호암천 (0,수립)
		진안천 (19,수립)	상림천 (0,수립)	내오천 (10,수립)	후사동천 (0,수립)	신전천 (0,수립)	하신천 (0,수립)	후창천 (0,수립)

하 천 개수율		요개수 연장(㎞)	기개수 연장(㎞)	개수율(%)
	전체	393.59	60.76	0.15
	국가	0.00	0.00	0.00
	지방1급	9.39	4.86	0.52
	지방2급	384.20	55.90	0.15

유역면적	918 ㎢	배수펌프장 (개소수)	1

건설교통부

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="2">금강상류(용담댐 상류)</td><td>단위구역
코 드</td><td>3001</td></tr>
<tr><td rowspan="5">PFD
산정결과</td><td colspan="2" rowspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td rowspan="2">인구지수</td><td rowspan="2">자산지수</td><td rowspan="2">도시화율</td><td rowspan="2">사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td></tr>
<tr><td>지수</td><td>순위</td><td>0.1504</td><td>143/150</td><td>0.0390</td><td>0.0592</td><td>0.0260</td><td>0.0262</td></tr>
<tr><td rowspan="2">0.2950</td><td rowspan="2">139/150</td><td colspan="2">위험성</td><td rowspan="2">홍수피해
지 수</td><td rowspan="2">확율강우
지 수</td><td rowspan="2">외수방어
능력지수</td><td rowspan="2">댐 지수</td></tr>
<tr><td>지수</td><td>순위</td></tr>
<tr><td>0.5786</td><td>60/150</td><td>0.0467</td><td>0.0743</td><td>0.2963</td><td>0.0614</td></tr>
<tr><td>특성</td><td>D4</td><td colspan="4">적절한 대책을 요하는 지역</td><td>유역위치</td><td>상류</td></tr>
<tr><td rowspan="3">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td rowspan="2">이재민
(인)</td><td rowspan="2">인명피해
(인)</td><td rowspan="2">침수면적
(ha)</td><td colspan="2" rowspan="2">공공시설물피해
(천원)</td></tr>
<tr><td>피해액 (천원)</td><td>밀도
(천원/㎢)</td></tr>
<tr><td>2,167,689</td><td>2,361</td><td>84</td><td>0</td><td>124</td><td colspan="2">1,080,928</td></tr>
<tr><td rowspan="3">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td rowspan="2">전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td></tr>
<tr><td>23.39</td><td>2.55</td><td>131.14</td><td>14.29</td><td>729.40</td><td>79.46</td><td>918.00</td><td>산지지역</td></tr>
<tr><td>행정구역
(편입비율:%)</td><td>무주군
(0.15)</td><td>장수군
(0.59)</td><td>진안군
(0.65)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="5">교 량
(km)</td><td colspan="2">전 체</td><td colspan="2">고속도로</td><td colspan="2">국도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td>연장</td><td>개소수</td><td>연장</td><td colspan="2"></td></tr>
<tr><td>136</td><td>3,189</td><td>7</td><td>130</td><td>27</td><td>1,284</td><td colspan="2"></td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="2">시군도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td>연장</td><td>개소수</td><td>연장(km)</td><td colspan="2"></td></tr>
<tr><td>-</td><td>-</td><td colspan="2">57</td><td colspan="2">1,088</td><td>45</td><td>687</td><td colspan="2"></td></tr>
<tr><td>도 로
(km)</td><td>합계</td><td>고속도로</td><td>국도</td><td>특별시도</td><td>지방도</td><td colspan="3">시군도</td></tr>
<tr><td>539.89</td><td>4.46</td><td>103.33</td><td>-</td><td>223.70</td><td colspan="3">208.39</td></tr>
<tr><td colspan="2">사회기반 시설지수</td><td rowspan="2">철 도
(km)</td><td colspan="2">인구현황</td><td colspan="3" rowspan="2">자산현황
(천원/㎡)</td></tr>
<tr><td>액 수(억원)</td><td>밀도(억원/㎢)</td><td>전체인구(명)</td><td>밀도(명/㎢)</td></tr>
</table>

□ 금강 본류(무주남대천 합류전, 3002)

용담댐 하류에서 무주남대천 합류점까지 금강 본류유역인 3002번 구역은 전북 무주군, 진안군의 일부지역을 포함한 금강 상류지역으로, 단위구역 특성상 C지역의

산지지역으로 개수율은 26%로 개수율이 매우 낮으며, 피해밀도도 1,308천원/㎢으로 전국 평균인 5,715.16천원보다 매우 낮은 편이다. 또한 이 구역의 토지이용현황은 82.34%가 임야로 산지지역이며, 이 구역의 하천현황은 금강 본류의 지방1급 하천 구간은 계획홍수량을 50년 빈도로 사용하였으며, 그 외의 주자천, 방호천, 가당천, 삼유천 등은 미개수 지역이다. 이 지역의 특성은 잠재성 및 위험성이 낮은 홍수피해에 둔감한 지역으로, 용담댐의 방류량에 직접적인 영향을 받는 구역이다. 이 구역의 치수계획은 지류의 하천개수가 되지 않은 지역에 대해서는 하천개수를 실시하여 하천 개수율을 높여 홍수방어 능력을 향상시킬 필요가 있다.

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="2">금강본류 (무주남대천 합류전)</td><td colspan="2">단위구역
코 드</td><td>3002</td></tr>
<tr><td rowspan="3">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td>국가하천</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방1급</td><td>금강
(52,수립)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방2급</td><td>가당천
(0,수립)</td><td>방화천
(100,수립)</td><td>삼류천
(14,수립)</td><td>내동천
(12,수립)</td><td>안창천
(18,수립)</td><td></td><td></td></tr>
<tr><td rowspan="5">하 천
개수율</td><td colspan="2"></td><td colspan="2">요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td colspan="2">전체</td><td colspan="2">70.19</td><td colspan="2">18.31</td><td colspan="2">0.26</td></tr>
<tr><td colspan="2">국가</td><td colspan="2">0.00</td><td colspan="2">0.00</td><td colspan="2">0.00</td></tr>
<tr><td colspan="2">지방1급</td><td colspan="2">9.69</td><td colspan="2">5.01</td><td colspan="2">0.52</td></tr>
<tr><td colspan="2">지방2급</td><td colspan="2">60.50</td><td colspan="2">13.30</td><td colspan="2">0.22</td></tr>
<tr><td>유역면적</td><td colspan="3">123 ㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">-</td><td></td></tr>
<tr><td rowspan="5">PFD
산정결과</td><td colspan="2" rowspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td rowspan="2">인구지수</td><td rowspan="2">자산지수</td><td rowspan="2">도시화율</td><td rowspan="2">사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td></tr>
<tr><td>지수</td><td>순위</td><td>0.0790</td><td>148/150</td><td>0.0401</td><td>0.0035</td><td>0.0175</td><td>0.0179</td></tr>
<tr><td rowspan="2">0.1951</td><td rowspan="2">149/150</td><td colspan="2">위험성</td><td rowspan="2">홍수피해
지 수</td><td rowspan="2">확율강우
지 수</td><td rowspan="2">외수방어
능력지수</td><td rowspan="2">댐 지수</td></tr>
<tr><td>지수</td><td>순위</td></tr>
<tr><td>0.4819</td><td>109/150</td><td>0.0062</td><td>0.0299</td><td>0.2844</td><td>0.0614</td></tr>
<tr><td>특성</td><td>D3</td><td colspan="4">적절한 대책을 요하는 지역</td><td>유역위치</td><td>상류</td></tr>
<tr><td rowspan="2">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td rowspan="2">이재민
(인)</td><td rowspan="2">인명피해
(인)</td><td rowspan="2">침수면적
(ha)</td><td colspan="2" rowspan="2">공공시설물피해
(천원)</td></tr>
<tr><td>피해액 (천원)</td><td>밀도
(천원/㎢)</td></tr>
<tr><td colspan="2">154,509</td><td>1,254</td><td>4</td><td>0</td><td>6</td><td colspan="2">78,242</td></tr>
</table>

건설교통부

<table>
<tr><td>수계명</td><td colspan="3">금강</td><td>단 위
구역명</td><td colspan="3">금강본류 (무주남대천 합류전)</td><td>단위구역
코 드</td><td>3002</td></tr>
<tr><td rowspan="3">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td rowspan="2">전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>산지지역</td></tr>
<tr><td>행정구역
(편입비율:%)</td><td colspan="2">무주군
(0.17)</td><td colspan="2">진안군
(0.02)</td><td colspan="2"></td><td colspan="2"></td><td></td></tr>
<tr><td rowspan="6">교 량
(km)</td><td colspan="3">전 체</td><td colspan="2">고속도로</td><td colspan="2">국도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td></tr>
<tr><td>13</td><td colspan="2">380.70</td><td>-</td><td>-</td><td>4</td><td colspan="2">179.12</td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="3">시군도</td><td></td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td colspan="2">연장(km)</td><td></td></tr>
<tr><td>-</td><td>-</td><td>4</td><td colspan="2">87.14</td><td>5</td><td colspan="2">114.44</td><td></td></tr>
<tr><td rowspan="2">도 로
(km)</td><td colspan="2">합계</td><td>고속도로</td><td>국도</td><td>특별시도</td><td>지방도</td><td colspan="2">시군도</td><td></td></tr>
<tr><td colspan="2">56.73</td><td>-</td><td>20.45</td><td>-</td><td>15.82</td><td colspan="2">20.46</td><td></td></tr>
<tr><td colspan="2">사회기반 시설지수</td><td rowspan="2">철 도
(km)</td><td colspan="3">인구현황</td><td colspan="2" rowspan="2">자산현황
(천원/㎡)</td><td></td></tr>
<tr><td>액 수(억원)</td><td>밀도(억원/㎢)</td><td colspan="2">전체인구(명)</td><td>밀도(명/㎢)</td><td colspan="2"></td><td></td></tr>
<tr><td>6,891</td><td colspan="2">56</td><td></td><td colspan="2">6,083</td><td>49</td><td colspan="2">30</td><td></td></tr>
</table>

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□ 무주 남대천 유역(3003)

무주 남대천 유역인 3003번 구역은 전북 무주군의 일부지역을 포함한 금강 상류 지역으로, 단위구역 특성상 C 지역의 산지지역으로 개수율은 25%로 개수율이 매우 낮으며, 피해밀도도 1,199천원/㎢으로 전국 평균인 5,715.16천원보다 매우 낮은 편이다. 또한 이 구역의 토지이용현황은 82.07%가 임야로 산지지역이며, 이 구역의 하천현황은 무주남대천 지방1급 하천 구간은 80년 빈도로 사용하였으며, 지방2급 하천구간은 50년 빈도를, 그 외의 적상천, 당산천, 상곡천, 원당천, 미대천 등은 미개수 지역이다. 이 지역의 특성은 잠재성 및 위험성이 낮은 홍수피해에 둔감한 지역으로, 유역내 치수계획과 함께 하류부 홍수방어 능력 향상을 위해 유역내 저류를 실시하며, 숲가꾸기 등을 이용하여, 산림지역의 보수기능을 유지·향상시킨다.

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="3">무주남대천</td><td>단위구역
코 드</td><td>3003</td></tr>
<tr><td rowspan="6">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td>국가하천</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방1급</td><td>무주남대천
(60,수립)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="4">지방2급</td><td>무주남대천
(31,수립)</td><td>도마천
(40,수립)</td><td>금평천
(12,수립)</td><td>대동천
(80,수립)</td><td>미령천
(0,수립)</td><td>원당천
(5,수립)</td><td>구천동천
(43,수립)</td></tr>
<tr><td>등방천
(13,수립)</td><td>벌한천
(0,수립)</td><td>미대천
(4,수립)</td><td>내북천
(0,수립)</td><td>용화천
(79,수립)</td><td>대왕천
(34,수립)</td><td>상곡천
(7,수립)</td></tr>
<tr><td>기마천
(0,수립)</td><td>왕소천
(0,수립)</td><td>북창천
(0,수립)</td><td>율곡천
(40,수립)</td><td>당산천
(32,수립)</td><td>적상천
(45,수립)</td><td>삼가천
(31.0,수립)</td></tr>
<tr><td>소퇴천
(15,수립)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="5">하 천
개수율</td><td colspan="2"></td><td colspan="2">요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td colspan="2">전체</td><td colspan="2">202.60</td><td colspan="2">49.80</td><td colspan="2">0.25</td></tr>
<tr><td colspan="2">국가</td><td colspan="2">0.00</td><td colspan="2">0.00</td><td colspan="2">0.00</td></tr>
<tr><td colspan="2">지방1급</td><td colspan="2">15.00</td><td colspan="2">9.00</td><td colspan="2">0.60</td></tr>
<tr><td colspan="2">지방2급</td><td colspan="2">187.60</td><td colspan="2">40.80</td><td colspan="2">0.22</td></tr>
<tr><td>유역면적</td><td colspan="3">470 ㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">-</td></tr>
<tr><td rowspan="5">PFD
산정결과</td><td colspan="2" rowspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td rowspan="2">인구지수</td><td rowspan="2">자산지수</td><td rowspan="2">도시화율</td><td rowspan="2">사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td></tr>
<tr><td>지수</td><td>순위</td><td>0.1216</td><td>147/150</td><td>0.0439</td><td>0.0396</td><td>0.0190</td><td>0.0190</td></tr>
<tr><td rowspan="2">0.2409</td><td rowspan="2">147/150</td><td colspan="2">위험성</td><td rowspan="2">홍수피해
지 수</td><td rowspan="2">확율강우
지 수</td><td rowspan="2">외수방어
능력지수</td><td rowspan="2">댐 지수</td></tr>
<tr><td>지수</td><td>순위</td></tr>
<tr><td>0.4776</td><td>111/150</td><td>0.0051</td><td>0.0244</td><td>0.2867</td><td>0.0614</td></tr>
<tr><td>특성</td><td>D4</td><td colspan="4">적절한 대책을 요하는 지역</td><td>유역위치</td><td>상류</td></tr>
<tr><td rowspan="3">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td rowspan="2">이재민
(인)</td><td rowspan="2">인명피해
(인)</td><td rowspan="2">침수면적
(ha)</td><td colspan="2" rowspan="2">공공시설물피해
(천원)</td></tr>
<tr><td>피해액 (천원)</td><td>밀도
(천원/㎢)</td></tr>
<tr><td>561,316</td><td>1,194</td><td>9</td><td>-</td><td>24</td><td colspan="2">320,845</td></tr>
<tr><td rowspan="3">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td rowspan="2">전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td></tr>
<tr><td>10.54</td><td>2.24</td><td>57.54</td><td>12.24</td><td>385.69</td><td>82.07</td><td>469.93</td><td>산지지역</td></tr>
</table>

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<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="3">무주남대천</td><td>단위구역
코 드</td><td>3003</td></tr>
<tr><td>행정구역
(편입비율:%)</td><td>거창군
(0)</td><td>무주군
(0.65)</td><td>영동군
(0.07)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="6">교 량
(km)</td><td colspan="3">전 체</td><td colspan="2">고속도로</td><td colspan="2">국도</td></tr>
<tr><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td></tr>
<tr><td>60</td><td colspan="2">1,465</td><td>15</td><td>61.25</td><td>14</td><td colspan="2">648.52</td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="2">시군도</td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td colspan="2">연장(km)</td></tr>
<tr><td>-</td><td>-</td><td>14</td><td colspan="2">329.99</td><td>18</td><td colspan="2">431.49</td></tr>
<tr><td rowspan="2">도 로
(km)</td><td colspan="2">합계</td><td>고속도로</td><td>국도</td><td>특별시도</td><td>지방도</td><td colspan="2">시군도</td></tr>
<tr><td colspan="2">221.06</td><td>1.86</td><td>78.10</td><td>-</td><td>57.64</td><td colspan="2">83.46</td></tr>
<tr><td colspan="2">사회기반 시설지수</td><td rowspan="2">철 도
(km)</td><td colspan="2">인구현황</td><td rowspan="2">자산현황
(천원/㎡)</td></tr>
<tr><td>액 수(억원)</td><td>밀도(억원/㎢)</td><td>전체인구(명)</td><td>밀도(명/㎢)</td></tr>
<tr><td>27,126</td><td>58</td><td></td><td>24,893</td><td>53</td><td>128</td></tr>
</table>

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□ 금강 본류(초강천 합류전, 3004)

무주 남대천 합류점에서 초강천 합류점까지의 금강본류 유역인 3004번 구역은 충북 영동군의 일부지역을 포함한 금강 중류지역으로, 단위구역 특성상 C 지역의 산지지역으로 개수율은 60%이며, 피해밀도도 2,615천원/㎢으로 전국 평균인 5,715.16천원보다 매우 낮은 편이다. 또한 이 구역의 토지이용현황은 75.07%가 임야, 17.32%가 농경지인 농경지가 혼합된 산지지역이며, 이 구역의 하천현황은 금강의 지방1급구간 및 영동천구간은 80년 빈도를, 봉황천 및 기산천, 금산촌, 역평천 등은 50년 빈도의 홍수량을 채택하였으며, 그 외의 압수천, 현내천, 원통천, 학산천 등은 미개수 지역이다. 이 지역의 특성은 잠재성 및 위험성이 낮은 홍수피해에 둔감한 지역으로, 유역내 치수계획과 함께 하류부 홍수방어 능력 향상을 위해 유역내 저류를 실시하며, 숲가꾸기 등을 이용하여, 산림지역의 보수기능을 유지 · 향상시킨다.

수계명	금강		단 위 구역명	금강 본류 (초강천 합류전)			단위구역 코 드	3004
하천명 (개수율(%), 하천정비 기본계획 수립유무)	국가하천							
	지방1급	영동천 (66,수립)	금강 (52,수립)					
	지방2급	봉황천 (91,수립)	역평천 (3,수립)	대양천 (14,수립)	궁동천 (5,수립)	신정천 (67,수립)	신동천 (4.41,수립)	보석천 (14,수립)
		성곡천 (0,수립)	관천 (21,수립)	금산천 (84,수립)	후곤천 (32,수립)	기사천 (72,수립)	개성천 (97,수립)	오룡천 (86,수립)
		외부천 (78,수립)	대암천 (2,수립)	조정천 (84,수립)	산의천 (19,수립)	승제천 (44,수립)	시항천 (95,수립)	유점천 (68,수립)
		압수천 (0,수립)	영동천 (100,수립)	양정천 (57,수립)	삼봉천 (65,수립)	주곡천 (77,수립)	원통천 (0,수립)	주토천 (0,수립)
		학산천 (80,수립)	현내천 (10,수립)	부리천 (41,수립)	선원천 (0,수립)	호탄천 (100,수립)		

하 천 개수율		요개수 연장(㎞)	기개수 연장(㎞)	개수율(%)
	전체	314.62	187.73	0.60
	국가	0.00	0.00	0.00
	지방1급	47.72	26.73	0.56
	지방2급	266.90	161.00	0.60

유역면적	708 ㎢	배수펌프장 (개소수)	-

PFD 산정결과	PFD산정결과		잠재성		인구지수	자산지수	도시화율	사회기반 시설지수
			지수	순위				
	지수	순위	0.2729	110/150	0.0823	0.1261	0.0392	0.0254
	0.3436	124/150	위험성		홍수피해 지 수	확율강우 지 수	외수방어 능력지수	댐 지수
			지수	순위				
			0.4325	128/150	0.0650	0.0347	0.1714	0.0614
	특성	C4	홍수피해에 둔감한 지역				유역위치	중류-

홍수피해 현황 (20년 평균)	총피해액		이재민 (인)	인명피해 (인)	침수면적 (ha)	공공시설물피해 (천원)
	피해액 (천원)	밀도 (천원/㎢)				
	1,927,081	2,721	14	-	131	1,328,297

토지이용현황 ('98년말 기준)	도시지역		농경지역		산지지역		전체면적 (㎢)	특성
	면적(㎢)	비율(%)	면적(㎢)	비율(%)	면적(㎢)	비율(%)		
								산지지역

행정구역 (편입비율:%)	무주군 (0.03)	금산군 (0.61)	영동군 (0.4)					

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="2">금강 본류 (초강천 합류전)</td><td>단위구역
코 드</td><td>3004</td></tr>
<tr><td rowspan="6">교 량
(km)</td><td colspan="2">전 체</td><td colspan="2">고속도로</td><td colspan="2">국도</td><td></td></tr>
<tr><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td></tr>
<tr><td>132</td><td colspan="2">2,466.14</td><td>11</td><td>350.00</td><td>18</td><td colspan="2">712.66</td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="2">시군도</td><td></td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td colspan="2">연장(km)</td></tr>
<tr><td>-</td><td>-</td><td>36</td><td colspan="2">898.73</td><td>67</td><td colspan="2">504.74</td></tr>
<tr><td rowspan="2">도 로
(km)</td><td colspan="2">합계</td><td>고속도로</td><td>국도</td><td>특별시도</td><td>지방도</td><td colspan="2">시군도</td></tr>
<tr><td colspan="2">397.32</td><td>10.64</td><td>64.56</td><td>-</td><td>141.86</td><td colspan="2">180.25</td></tr>
<tr><td colspan="2">사회기반 시설지수</td><td rowspan="2">철 도
(km)</td><td colspan="2">인구현황</td><td rowspan="2">자산현황
(천원/㎡)</td><td></td></tr>
<tr><td>액 수(억원)</td><td>밀도(억원/㎢)</td><td>전체인구(명)</td><td>밀도(명/㎢)</td><td></td></tr>
<tr><td>48,177</td><td colspan="2">68</td><td>17</td><td>64,990</td><td>92</td><td colspan="2">404</td></tr>
</table>

□ 초강천 유역(3005)

초강천 유역인 3005번 구역은 충북 영동군 및 경북 상주시의 일부지역을 포함한 금강 중류에 위치한 유역특성상 상류지역의 특성을 가지는 지역으로, 단위구역 특성상 D지역의 산지지역으로 개수율은 47%이며, 피해밀도도 4,336천원/㎢으로 전국 평균인 5,715천원/㎢보다 낮은 편이다. 또한 이 구역의 토지이용현황은 74.27%가 임야, 17.71%가 농경지인 농경지가 혼합된 산지지역이며, 이 구역의 하천현황은 초강천의 지방1급 구간은 80년 빈도를, 지방2급구간 및 추풍령천은 50년 빈도의 계획 홍수량을 채택하였으며, 그 외의 법화천, 반계천, 서송원천, 금계천 등은 미개수 지역이다. 이 지역의 특성은 잠재성은 낮으나 위험성이 높은 적절한 대책을 요하는 지역으로, 미개수지역에 대한 개수공사를 실시하며, 유역내 치수계획과 함께 하류부 홍수방어 능력 향상을 위해 유역내 저류를 실시하며, 숲가꾸기 등을 이용하여, 산림지역의 보수기능을 유지·향상시킨다.

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="4">초강천</td><td>단위구역
코 드</td><td>3005</td></tr>
<tr><td rowspan="4">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td>국가하천</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방1급</td><td>초강
(61,수립)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">지방2급</td><td>초강
(60,수립)</td><td>고자천
(8,수립)</td><td>궁촌천
(60,수립)</td><td>어촌천
(42,수립)</td><td>추풍령천
(38,수립)</td><td>난곡천
(35,수립)</td><td>석천
(9,수립)</td></tr>
<tr><td>금계천
(42,수립)</td><td>삼포리천
(45,수립)</td><td>이소천
(86,수립)</td><td>반계천
(13,수립)</td><td>서송원천
(43,수립)</td><td>봉현천
(100,수립)</td><td>법화천
(68,수립)</td></tr>
<tr><td rowspan="5">하 천
개수율</td><td colspan="2"></td><td>요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td colspan="2">전체</td><td>163.05</td><td colspan="2">76.74</td><td colspan="2">0.47</td></tr>
<tr><td colspan="2">국가</td><td>0.00</td><td colspan="2">0.00</td><td colspan="2">0.00</td></tr>
<tr><td colspan="2">지방1급</td><td>17.90</td><td colspan="2">10.90</td><td colspan="2">0.61</td></tr>
<tr><td colspan="2">지방2급</td><td>145.15</td><td colspan="2">65.84</td><td colspan="2">0.45</td></tr>
<tr><td>유역면적</td><td colspan="3">674 ㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">-</td></tr>
<tr><td rowspan="4">PFD
산정결과</td><td colspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td>인구지수</td><td>자산지수</td><td>도시화율</td><td>사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td><td>지수</td><td>순위</td><td>0.0733</td><td>0.0903</td><td>0.0379</td><td>0.0261</td></tr>
<tr><td rowspan="2">0.3634</td><td rowspan="2">120/150</td><td colspan="2">위험성</td><td>홍수피해
지 수</td><td>확율강우
지 수</td><td>외수방어
능력지수</td><td rowspan="2">댐 지수</td></tr>
<tr><td>지수</td><td>순위</td><td>0.1468</td><td>0.0447</td><td>0.2275</td></tr>
<tr><td>특성</td><td>D3</td><td colspan="4">적절한 대책을 요하는 지역</td><td>유역위치</td><td>상류</td></tr>
<tr><td rowspan="2">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td rowspan="2">밀도
(천원/㎢)</td><td rowspan="2">이재민
(인)</td><td rowspan="2">인명피해
(인)</td><td rowspan="2">침수면적
(ha)</td><td colspan="2" rowspan="2">공공시설물피해
(천원)</td></tr>
<tr><td colspan="2">피해액 (천원)</td></tr>
<tr><td colspan="2">2,924,486</td><td>4,336</td><td>56</td><td>1</td><td>223</td><td colspan="2">2,226,220</td></tr>
<tr><td rowspan="3">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td>전체면적
(㎢)</td><td>특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td rowspan="2">674.42</td><td rowspan="2">산지지역</td></tr>
<tr><td>20.43</td><td>3.03</td><td>119.42</td><td>17.71</td><td>500.87</td><td>74.27</td></tr>
<tr><td>행정구역
(편입비율:%)</td><td>상주시
(0.19)</td><td>보은군
(0)</td><td>영동군
(0.51)</td><td>옥천군
(0)</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="5">교 량
(km)</td><td colspan="2">전 체</td><td colspan="2">고속도로</td><td colspan="2">국도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td></tr>
<tr><td>97</td><td colspan="2">2,772.33</td><td>19</td><td>446.25</td><td>17</td><td colspan="2">941.11</td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="2">시군도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td colspan="2">연장(km)</td></tr>
<tr><td>-</td><td>-</td><td>27</td><td colspan="2">826.49</td><td>33</td><td colspan="2">558.48</td></tr>
<tr><td>도 로
(km)</td><td colspan="2">합계</td><td>고속도로</td><td>국도</td><td>특별시도</td><td>지방도</td><td colspan="2">시군도</td></tr>
<tr><td colspan="2">285.58</td><td>13.57</td><td>59.90</td><td>-</td><td>123.51</td><td colspan="2">184.57</td></tr>
<tr><td colspan="2">사회기반 시설지수</td><td rowspan="2">철 도
(km)</td><td colspan="2" rowspan="2">인구현황</td><td colspan="2" rowspan="2">자산현황
(천원/㎡)</td></tr>
<tr><td>액 수(억원)</td><td>밀도(억원/㎢)</td></tr>
<tr><td>46,669</td><td>69</td><td>15</td><td colspan="2">55,396</td><td colspan="2">82</td><td colspan="2">270</td></tr>
</table>

□ 금강 본류(보청천 합류전, 3006)

초강천 합류점에서 보청천 합류점까지의 금강 본류인 3006번 구역은 충북 옥천군, 영동군의 일부지역을 포함한 금강 중류에 위치한 지역으로, 단위구역 특성상 C지역의 산지지역으로 개수율은 79%이며, 피해밀도도 6,543천원/㎢으로 전국 평균인 5,715.16천원보다 높은 편이다. 또한 이 구역의 토지이용현황은 66.58%가 임야,

20.27%가 농경지인 농경지가 혼합된 산지지역이며, 이 구역의 하천현황은 금강 본류의 지방1급 하천 구간은 100년 빈도의 계획 홍수량을 채택하였다. 이 지역의 특성은 잠재성 및 위험성이 낮은 홍수피해에 둔감한 지역으로, 단위구역내의 홍수방어 계획과 함께 하류부 홍수량을 줄이기 위해 유역내 저류를 실시하며, 숲가꾸기 등을 이용하여, 산림지역의 보수기능을 유지·향상시킨다.

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="3">금강 본류 (보청천 합류전)</td><td>단위구역
코 드</td><td>3006</td></tr>
<tr><td rowspan="3">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td>국가하천</td><td>금강
(79,수립)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방1급</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방2급</td><td>이원천
(78,수립)</td><td>건진천
(79,수립)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="5">하 천
개수율</td><td colspan="2"></td><td colspan="2">요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td colspan="2">전체</td><td colspan="2">39.13</td><td colspan="2">30.89</td><td colspan="2">0.79</td></tr>
<tr><td colspan="2">국가</td><td colspan="2">18.63</td><td colspan="2">14.79</td><td colspan="2">0.79</td></tr>
<tr><td colspan="2">지방1급</td><td colspan="2">0.00</td><td colspan="2">0.00</td><td colspan="2">0.00</td></tr>
<tr><td colspan="2">지방2급</td><td colspan="2">20.50</td><td colspan="2">16.10</td><td colspan="2">0.79</td></tr>
<tr><td>유역면적</td><td colspan="3">275 ㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">-</td><td></td></tr>
<tr><td rowspan="4">PFD
산정결과</td><td colspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td>인구지수</td><td>자산지수</td><td>도시화율</td><td>사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td><td>지수</td><td>순위</td><td>0.1007</td><td>0.0606</td><td>0.0656</td><td>0.0406</td></tr>
<tr><td rowspan="2">0.3687</td><td rowspan="2">117/150</td><td colspan="2">위험성</td><td>홍수피해
지 수</td><td>확률강우
지 수</td><td>외수방어
능력지수</td><td rowspan="2">댐 지수</td></tr>
<tr><td>지수</td><td>순위</td><td>0.2217</td><td>0.0593</td><td>0.0660</td><td>0.0614</td></tr>
<tr><td>특성</td><td>C4</td><td colspan="4">홍수피해에 둔감한 지역</td><td>유역위치</td><td>중류</td></tr>
<tr><td rowspan="3">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td rowspan="2">밀도
(천원/㎢)</td><td rowspan="2">이재민
(인)</td><td rowspan="2">인명피해
(인)</td><td rowspan="2">침수면적
(ha)</td><td colspan="2" rowspan="2">공공시설물피해
(천원)</td></tr>
<tr><td colspan="2">피해액 (천원)</td></tr>
<tr><td colspan="2">1,797,435</td><td>6,543</td><td>68</td><td>1</td><td>92</td><td colspan="2">1,198,542</td></tr>
<tr><td rowspan="3">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td rowspan="2">전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td></tr>
<tr><td>11.30</td><td>4.11</td><td>55.68</td><td>20.27</td><td>182.91</td><td>66.58</td><td>274.71</td><td>산지지역</td></tr>
<tr><td>행정구역
(편입비율:%)</td><td>영동군
(0.02)</td><td>옥천군
(0.48)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="5">교 량
(km)</td><td colspan="2">전 체</td><td colspan="2">고속도로</td><td colspan="2">국도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td colspan="3">연장</td><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td></tr>
<tr><td>56</td><td colspan="3">2,070.45</td><td>10</td><td>899.79</td><td>11</td><td colspan="2">567.24</td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="2">시군도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td colspan="3">연장</td><td>개소수</td><td colspan="2">연장(km)</td></tr>
<tr><td>-</td><td>-</td><td>15</td><td colspan="3">301.66</td><td>20</td><td colspan="2">301.76</td></tr>
<tr><td rowspan="2">도 로
(km)</td><td colspan="2">합계</td><td>고속도로</td><td>국도</td><td>특별시도</td><td>지방도</td><td colspan="2">시군도</td></tr>
<tr><td colspan="2">198.50</td><td>13.60</td><td>35.51</td><td>-</td><td>44.41</td><td colspan="2">104.98</td></tr>
<tr><td colspan="2">사회기반 시설지수</td><td rowspan="2">철 도
(km)</td><td colspan="3">인구현황</td><td colspan="2" rowspan="2">자산현황
(천원/㎡)</td></tr>
<tr><td>액 수(억원)</td><td>밀도(억원/㎢)</td><td colspan="2">전체인구(명)</td><td>밀도(명/㎢)</td></tr>
<tr><td>25,791</td><td>94</td><td>13</td><td colspan="2">30,999</td><td>113</td><td colspan="2">183</td></tr>
</table>

□ 보청천 유역(3007)

보청천 유역인 3007번 구역은 충북 옥천군, 보은군의 일부지역을 포함한 금강 중류에 위치한 유역특성상 상류에 해당하는 지역으로, 단위구역 특성상 D 지역의 산지지역으로 개수율은 73%이며, 피해밀도도 15,998천원/㎢으로 전국 평균인 5,715천원/㎢의 3배에 가까운 높은 지역이다. 또한 이 구역의 토지이용현황은 69.33%가 임야, 20.86%가 농경지인 농경지가 혼합된 산지지역이며, 이 구역의 하천현황은 보청천의 지방1급구간은 80년 빈도를, 지방2급구간은 50년 빈도의 계획 홍수량을 채택하였으며, 지류인 장연천, 예곡천, 한중천, 삼가천, 항건천 등은 미개수 지역이다. 이 지역의 특성은 잠재성은 낮으나 위험성이 높은 적절한 대책을 요하는 지역으로, 단위구역내 속리산 국립공원이 위치하고있어 인명피해도 많이 발생하는 지역이다. 인명피해에 대한 대국민 홍보 등 적절한 대책이 필요하며, 미개수 하천에 대한 하천 개수공사도 필요한 실정이다.

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="3">보청천</td><td>단위구역
코 드</td><td>3007</td></tr>
<tr><td rowspan="5">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td>국가하천</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방1급</td><td>보청천
(89,수립)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">지방2급</td><td>보청천
(77,수립)</td><td>종곡천
(98,수립)</td><td>항건천
(55,수립)</td><td>거현천
(55.48,수립)</td><td>중초천
(59.63,수립)</td><td>오덕천
(56,수립)</td><td>삼가천
(76,수립)</td></tr>
<tr><td>적암천
(100,수립)</td><td>한중천
(100,수립)</td><td>예곡천
(44,수립)</td><td>장연천
(12,수립)</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="5">하 천
개수율</td><td colspan="2"></td><td colspan="2">요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td colspan="2">전체</td><td colspan="2">200.90</td><td colspan="2">147.50</td><td colspan="2">0.73</td></tr>
<tr><td colspan="2">국가</td><td colspan="2">0.00</td><td colspan="2">0.00</td><td colspan="2">0.00</td></tr>
<tr><td colspan="2">지방1급</td><td colspan="2">19.50</td><td colspan="2">17.30</td><td colspan="2">0.89</td></tr>
<tr><td colspan="2">지방2급</td><td colspan="2">181.40</td><td colspan="2">130.20</td><td colspan="2">0.72</td></tr>
<tr><td>유역면적</td><td colspan="3">345㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">2</td></tr>
<tr><td rowspan="5">PFD
산정결과</td><td colspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td>인구지수</td><td>자산지수</td><td>도시화율</td><td>사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td><td>지수</td><td>순위</td><td></td><td></td><td></td><td></td></tr>
<tr><td>0.3636</td><td>119/150</td><td>0.2145</td><td>130/150</td><td>0.0704</td><td>0.0644</td><td>0.0466</td><td>0.0331</td></tr>
<tr><td rowspan="2"></td><td rowspan="2"></td><td colspan="2">위험성</td><td>홍수피해
지 수</td><td>확율강우
지 수</td><td>외수방어
능력지수</td><td>댐 지수</td></tr>
<tr><td>지수</td><td>순위</td><td></td><td></td><td></td><td></td></tr>
<tr><td>특성</td><td>B3</td><td colspan="4">주의를 요하는 지역</td><td>유역위치</td><td>상류</td></tr>
<tr><td rowspan="2">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td rowspan="2">밀도
(천원/㎢)</td><td rowspan="2">이재민
(인)</td><td rowspan="2">인명피해
(인)</td><td rowspan="2">침수면적
(ha)</td><td colspan="2" rowspan="2">공공시설물피해
(천원)</td></tr>
<tr><td colspan="2">피해액 (천원)</td></tr>
<tr><td></td><td colspan="2">5,526,392</td><td>15,998</td><td>506</td><td>9</td><td>210</td><td colspan="2">3,904,830</td></tr>
<tr><td rowspan="3">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td>전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td></td></tr>
<tr><td>11.65</td><td>3.37</td><td>72.07</td><td>20.86</td><td>239.48</td><td>69.33</td><td>345.44</td><td>산지지역</td></tr>
</table>

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="3">보청천</td><td>단위구역
코 드</td><td>3007</td></tr>
<tr><td rowspan="3">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td rowspan="2">전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td></tr>
<tr><td>11.65</td><td>3.37</td><td>72.07</td><td>20.86</td><td>239.48</td><td>69.33</td><td>345.44</td><td>산지지역</td></tr>
<tr><td>행정구역
(편입비율:%)</td><td>상주시
(0.03)</td><td>보은군
(0.52)</td><td>영동군
(0)</td><td colspan="5"></td></tr>
<tr><td rowspan="5">교 량
(km)</td><td colspan="2">전 체</td><td colspan="3">고속도로</td><td colspan="2">국도</td></tr>
<tr><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td>연장</td><td>개소수</td><td>연장</td></tr>
<tr><td>53</td><td colspan="2">1,432.17</td><td>-</td><td>-</td><td>19</td><td>536.33</td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="2">시군도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td colspan="3">연장</td><td>개소수</td><td>연장(km)</td></tr>
<tr><td>-</td><td>-</td><td>17</td><td colspan="3">560.05</td><td>17</td><td>335.78</td></tr>
<tr><td rowspan="2">도 로
(km)</td><td colspan="2">합계</td><td>고속도로</td><td>국도</td><td>특별시도</td><td>지방도</td><td colspan="2">시군도</td></tr>
<tr><td colspan="2">224.63</td><td>-</td><td>60.17</td><td>-</td><td>59.25</td><td colspan="2">120.60</td></tr>
<tr><td colspan="2">사회기반 시설지수</td><td rowspan="2">철 도
(km)</td><td colspan="3">인구현황</td><td colspan="2" rowspan="2">자산현황
(천원/㎡)</td></tr>
<tr><td>액 수(억원)</td><td>밀도(억원/㎢)</td><td colspan="2">전체인구(명)</td><td>밀도(명/㎢)</td></tr>
<tr><td>27,890</td><td colspan="2">81</td><td></td><td colspan="2">27,333</td><td>79</td><td colspan="2">193</td></tr>
</table>

□ 금강 본류(갑천 합류전, 3008)

금강 본류 유역인 3008번 구역은 충북 보은군, 옥천군, 청원군 및 대전광역시의 일부지역을 포함한 금강 중류에 위치한 지역으로, 단위구역 특성상 A지역의 산지지역으로 개수율은 74%이며, 피해밀도도 8,542천원/㎢으로 전국 평균인 5,715.16천원보다 높은 지역이다. 또한 이 구역의 토지이용현황은 64.40%가 임야, 20.33%가 농경지, 6.43%가 도시지역인 혼합지역이며, 이 구역의 하천현황은 금강본류의 국가하천 구간은 100년 빈도의 계획홍수량을, 소옥천, 금구천, 용호천은 50년 빈도를, 추풍령천은 30년 빈도의 계획홍수량을 채택하였으며, 지류인 안남천, 안내천, 가산천, 등동천 등은 미개수 지역이다. 이 지역의 특성은 잠재성 및 위험성이 높은 시급한 대책을 요하는 지역으로, 미개수 하천에 대한 개수공사가 필요하며, 또한 내수피해가능성이 있는 지역으로 배수시설 및 펌프장의 신설·보강이 요구되는 지역이다. 또한 이 지역은 금강의 홍수량을 조절을 하는 구역으로 유역내의 홍수량뿐만 아니라 상류의 홍수량도 저류하는 기능을 하고 있다.

건설교통부

수계명	금강		단위 구역명	금강 본류 (갑천 합류전)			단위구역 코드	3008
하천명 (개수율(%), 하천정비 기본계획 수립유무)	국가하천	소옥천 (200,수립)	주원천 (200,수립)	품곡천 (200,수립)	회인천 (200,수립)	금강 (79,수립)		
	지방1급							
	지방2급	가산천 (100,수립)	묘암천 (100,수립)	소옥천 (66,수립)	추풍천 (79,수립)	서대천 (54,수립)	성당천 (58,수립)	금산천 (57,수립)
		상곡천 (10,수립)	금구천 (70,수립)	안남천 (47,수립)	안내천 (30,수립)	용호천 (91,수립)	주원천 (90,수립)	품곡천 (100,수립)
		등동천 (32,수립)	회인천 (100,수립)					

하천 개수율	요개수 연장(㎞)	기개수 연장(㎞)	개수율(%)
전체	202.34	150.13	0.74
국가	65.24	56.63	0.87
지방1급	0.00	0.00	0.00
지방2급	137.10	93.50	0.68

유역면적	661 ㎢	배수펌프장 (개소수)	3

PFD 산정결과	PFD산정결과		잠재성		인구지수	자산지수	도시화율	사회기반 시설지수
	지수	순위	지수	순위				
	0.6387	27/150	0.6658	34/150	0.2599	0.2305	0.1152	0.0602
			위험성		홍수피해지수	확율강우지수	외수방어 능력지수	댐 지수
			지수	순위				
			0.6127	40/150	0.2575	0.0870	0.1069	0.0614
	특성	A3	적절한 대책을 요하는 지역				유역위치	중류

홍수피해 현황 (20년 평균)	총피해액		이재민	인명피해	침수면적	공공시설물피해
	피해액 (천원)	밀도 (천원/㎢)	(인)	(인)	(ha)	(천원)
	5,649,120	8,542	371	5	442	3,707,623

토지이용현황 ('98년말 기준)	도시지역		농경지역		산지지역		전체면적 (㎢)	특성
	면적(㎢)	비율(%)	면적(㎢)	비율(%)	면적(㎢)	비율(%)		
	42.53	6.43	134.42	20.33	425.90	64.40	661.33	산지지역

행정구역 (편입비율:%)	대덕구	동구	금산군	보은군	옥천군	청원군		
	(0.57)	(0.46)	(0.13)	(0.17)	(0.52)	(0.13)		

교 량 (km)	전 체		고속도로		국도	
	개소수	연장	개소수	연장	개소수	연장
	156	8,530.09	29	3,608.86	31	1,570.26
	특별광역시도		지방도		시군도	
	개소수	연장	개소수	연장	개소수	연장(km)
	22	1,862.02	32.62	915.55	41.20	571.41

도 로 (km)	합계	고속도로	국도	특별시도	지방도	시군도
	663.94	28.67	85.03	247.31	104.81	198.11

사회기반 시설지수		철 도	인구현황		자산현황
액 수(억원)	밀도(억원/㎢)	(km)	전체인구(명)	밀도(명/㎢)	(천원/㎡)
90,592	137	20	310,397	469	1,300

□ 갑천 상류 유역(두계천 합류점, 3009-1)

갑천 상류 유역인 3009-1번 구역은 충남 논산시 및 대전광역시의 일부지역을 포

함한 금강 중류에 위치한 유역특성상 상류의 특성을 띄는 지역으로, 단위구역 특성상 A 지역의 도시지역으로 개수율은 68%이며, 피해밀도도 6,700천원/㎢으로 전국평균인 5,715.16천원보다 높은 지역이다. 또한 이 구역의 토지이용현황은 50.53%가 임야, 30.99%가 농경지, 10.59%가 도시지역인 농경지와 혼합된 도시구역이며, 이 구역의 하천현황은 갑천의 지방1급 하천 구간 및 구계천 구간은 100년 빈도의 계획홍수량을 채택하였으며, 어곡천, 금촌천, 왕대천, 농소천 등은 미개수 지역이다. 이 지역의 특성은 잠재성 및 위험성이 높은 시급한 대책을 요하는 지역으로, 지류의 미개수 하천에 대한 개수공사가 필요하며, 또한 개발가능이 높은 지역으로 신규개발에 대해서는 재해영향평가 등을 통해 저류시설을 확보하며, 기타 유역내 저류시설을 확보하여 홍수량을 분담하도록 한다.

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="2">갑천 상류 (두계천 합류점)</td><td colspan="2">단위구역
코 드</td><td>3009-1</td></tr>
<tr><td rowspan="3">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td>국가하천</td><td></td><td></td><td colspan="2"></td><td colspan="2"></td><td></td></tr>
<tr><td>지방1급</td><td></td><td></td><td colspan="2"></td><td colspan="2"></td><td></td></tr>
<tr><td>지방2급</td><td>갑천
(48,수립)</td><td>어곡천
(96,수립)</td><td>검천천
(40,수립)</td><td>두계천
(98,수립)</td><td>농소천
(100,수립)</td><td>왕대천
(42,수립)</td><td></td></tr>
<tr><td rowspan="4">하 천
개수율</td><td colspan="2"></td><td colspan="2">요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td colspan="2">전체</td><td colspan="2">85.30</td><td colspan="2">57.80</td><td colspan="2">0.68</td></tr>
<tr><td colspan="2">국가</td><td colspan="2">0.00</td><td colspan="2">0.00</td><td colspan="2">0.00</td></tr>
<tr><td colspan="2">지방1급</td><td colspan="2">0.00</td><td colspan="2">0.00</td><td colspan="2">0.00</td></tr>
<tr><td colspan="2">지방2급</td><td colspan="2">85.30</td><td colspan="2">57.80</td><td colspan="2">0.68</td></tr>
<tr><td>유역면적</td><td colspan="3">171 ㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">1</td><td></td></tr>
<tr><td rowspan="5">PFD
산정결과</td><td colspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td>인구지수</td><td>자산지수</td><td>도시화율</td><td>사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td><td>지수</td><td>순위</td><td>0.3468</td><td>0.1361</td><td>0.1626</td><td>0.0744</td></tr>
<tr><td rowspan="2">0.6663</td><td rowspan="2">24/150</td><td colspan="2">위험성</td><td>홍수피해
지 수</td><td>확율강우
지 수</td><td>외수방어
능력지수</td><td rowspan="2">댐 지수</td></tr>
<tr><td>지수</td><td>순위</td><td>0.2254</td><td>0.1012</td><td>0.1286</td></tr>
<tr><td>특성</td><td>A3</td><td colspan="2">0.6166</td><td>38/150</td><td colspan="2">시급한 대책을 요하는 지역</td><td>0.0614
유역위치</td><td>상류</td></tr>
<tr><td rowspan="3">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td rowspan="2">밀도
(천원/㎢)</td><td rowspan="2">이재민
(인)</td><td rowspan="2">인명피해
(인)</td><td rowspan="2">침수면적
(ha)</td><td colspan="2" rowspan="2">공공시설물피해
(천원)</td></tr>
<tr><td colspan="2">피해액 (천원)</td></tr>
<tr><td colspan="2">1,147,779</td><td>6,700</td><td>196</td><td>1</td><td>306</td><td colspan="2">629,687</td></tr>
<tr><td rowspan="2">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td rowspan="2">전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td></tr>
<tr><td>행정구역
(편입비율:%)</td><td>17.99</td><td>10.50</td><td>53.09</td><td>30.99</td><td>86.56</td><td>50.53</td><td>171.32</td><td>혼합지역</td></tr>
<tr><td></td><td>서구
(0.35)</td><td>유성구
(0.1)</td><td>금산군
(0.02)</td><td>논산시
(0.18)</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="6">교 량
(km)</td><td colspan="2">전 체</td><td colspan="2">고속도로</td><td colspan="2">국도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td></tr>
<tr><td>50</td><td colspan="2">3,269.14</td><td>9</td><td>234.46</td><td>10</td><td colspan="2">598.66</td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="2">시군도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td colspan="2">연장(km)</td></tr>
<tr><td>13</td><td>1,890.31</td><td>7</td><td colspan="2">291.67</td><td>11</td><td colspan="2">254.03</td></tr>
</table>

건설교통부

수계명	금강	단 위 구역명	갑천 상류 (두계천 합류점)			단위구역 코 드	3009-1
도 로 (km)	합계	고속도로	국도	특별시도	지방도	시군도	
	221.70	9.66	22.24	121.13	27.67	40.99	
사회기반 시설지수		철 도 (km)	인구현황			자산현황 (천원/㎡)	
액 수(억원)	밀도(억원/㎢)		전체인구(명)		밀도(명/㎢)		
31,735	185		215,408		1,257	449	

□ 갑천 본류 유역(유등천 합류전, 3009-2)

갑천 중류 유역인 3009-2번 구역은 대전광역시의 일부지역을 포함한 금강 중류에 위치한 지역으로, 단위구역 특성상 B지역의 도시지역으로 개수율은 80%이며, 피해밀도도 3,845천원/㎢으로 전국 평균인 5,715/㎢천원보다 높은 지역이다. 또한 이 구역의 토지이용현황은 53.73%가 임야, 22.40%가 농경지, 16.36%가 도시지역인 도시구역이며, 이 구역의 하천현황은 갑천의 국가하천 구간 및 진잠천, 유성천, 탄동천, 반석천 등은 100년 빈도의 계획홍수량을 채택하였으며, 매노천, 성전천 등은 50년 빈도의 계획홍수량을 채택하였다. 이 지역의 특성은 잠재성은 높으나 위험성이 낮은 주의를 요하는 지역으로, 도시화가 많이 진행된 전형적인 도시하천 구간이다. 또한 이 지역의 신규개발지는 재해영향평가 등을 통해 저류시설을 확보하며, 기타 유역내 도로, 및 주택단지 등에 침투시설을 설치하여 홍수량이 침투할 수 있도록 한다.

건설교통부

수계명	금강		단 위 구역명	갑천본류 (유등천 합류전)			단위구역 코 드	3009-2
하천명 (개수율(%), 하천정비 기본계획 수립유무)	국가하천	갑천 (84,수립)						
	지방1급							
	지방2급	탄동천 (72,수립)	매노천 (89,수립)	진잠천 (63,수립)	성전천 (52,수립)	화산천 (91,수립)	유성천 (96,수립)	
하 천 개수율			요개수 연장(㎞)		기개수 연장(㎞)		개수율(%)	
	전체		99.17		79.23		0.80	
	국가		30.27		25.33		0.84	
	지방1급		0.00		0.00		0.00	
	지방2급		68.90		53.90		0.78	
유역면적	147 ㎢				배수펌프장 (개소수)		-	
PFD 산정결과	PFD산정결과		잠재성		인구지수	자산지수	도시화율	사회기반 시설지수
			지수	순위				
	지수	순위	0.8460	18/150	0.3743	0.1892	0.1872	0.0954
	0.6292	30/150	위험성		홍수피해 지 수	확률강우 지 수	외수방어 능력지수	댐 지수
			지수	순위				
			0.4680	117/150	0.1236	0.1222	0.0608	0.0614
	특성	D1	적절한 대책을 요하는 지역				유역위치	중류

수계명	금강		단 위 구역명	갑천본류 (유등천 합류전)			단위구역 코 드	3009-2
홍수피해 현황 (20년 평균)	총피해액			이재민 (인)	인명피해 (인)	침수면적 (ha)	공공시설물피해 (천원)	
	피해액 (천원)		밀도 (천원/㎢)					
	566,925		3,845	29	-	35	343,219	
토지이용현황 ('98년말 기준)	도시지역		농경지역		산지지역		전체면적 (㎢)	특성
	면적(㎢)	비율(%)	면적(㎢)	비율(%)	면적(㎢)	비율(%)		
	24.12	16.36	33.03	22.40	79.27	53.76	147.45	도시지역
행정구역 (편입비율:%)	서구 (0.5)	유성구 (0.57)						
교 량 (km)	전 체			고속도로		국도		
	개소수	연장		개소수	연장	개소수	연장	
	60	4,976.18		14.85	559.83	4.74	534.77	
	특별광역시도		지방도			시군도		
	개소수	연장	개소수	연장		개소수	연장(km)	
	40.66	3,881.59	-	-		-	-	
도 로 (km)	합계		고속도로	국도	특별시도	지방도	시군도	
	391.52		12.38	21.45	357.69	-	-	
사회기반 시설지수			철 도 (km)	인구현황			자산현황 (천원/㎡)	
액 수(억원)	밀도(억원/㎢)			전체인구(명)		밀도(명/㎢)		
59,440	403		17	321,920		2,183	788	

□ 유등천 상류 유역(유등천 국가하천 구간 상류, 3009-3)

유등천 상류 유역인 3009-3번 구역은 대전광역시 및 충남 금산군의 일부지역을 포함한 금강 중류에 위치한 유역특성상 상류지역의 특성을 띄는 지역으로, 단위구역 특성상 A 지역의 산지지역이며, 개수율은 28%로 매우 낮고, 피해밀도도 3,420천원/㎢으로 전국 평균인 5,715.16천원보다 낮은 지역이다. 또한 이 구역의 토지이용현황은 70.30%가 임야, 19.08%가 농경지, 5.83%가 도시지역인 산지지역이며, 이 구역의 하천현황은 유등천의 지방2급구간 및 진산천, 지방천, 삼가천 등은 50년 빈도의 계획홍수량을 채택하였으며, 금성천 등은 미개수 하천이다. 이 지역의 특성은 잠재성 및 위험성이 높은 시급한 대책을 요하는 지역으로, 미개수 하천에 대한 개수공사 실시가 무엇보다 필요하며, 향후 개발가능성이 농후한 지역으로 신규개발에 대해서는 재해영향평가 등을 통해 저류시설을 확보하도록 한다.

건설교통부

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="3">유등천 상류
(유등천 국가하천 구간 상류)</td><td>단위구역
코 드</td><td>3009-3</td></tr>
<tr><td rowspan="3">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td colspan="2">국가하천</td><td colspan="5"></td></tr>
<tr><td colspan="2">지방1급</td><td colspan="5"></td></tr>
<tr><td colspan="2">지방2급</td><td>반석천
(72,수립)</td><td>유등천
(23,수립)</td><td>삼가천
(12,수립)</td><td>진산천
(12,수립)</td><td>금성천
(35,수립)</td><td>지방천
(8,수립)</td><td></td></tr>
<tr><td rowspan="5">하 천
개수율</td><td colspan="3"></td><td colspan="2">요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td colspan="3">전체</td><td colspan="2">89.90</td><td colspan="2">25.50</td><td colspan="2">0.28</td></tr>
<tr><td colspan="3">국가</td><td colspan="2">0.00</td><td colspan="2">0.00</td><td colspan="2">0.00</td></tr>
<tr><td colspan="3">지방1급</td><td colspan="2">0.00</td><td colspan="2">0.00</td><td colspan="2">0.00</td></tr>
<tr><td colspan="3">지방2급</td><td colspan="2">89.90</td><td colspan="2">25.50</td><td colspan="2">0.28</td></tr>
<tr><td>유역면적</td><td colspan="4">159 ㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">-</td></tr>
<tr><td rowspan="4">PFD
산정결과</td><td colspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td>인구지수</td><td>자산지수</td><td>도시화율</td><td>사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td><td>지수</td><td>순위</td><td>0.6197</td><td>40/150</td><td>0.2901</td><td>0.1801</td><td>0.1041</td><td>0.0454</td></tr>
<tr><td rowspan="2">0.6200</td><td rowspan="2">33/150</td><td colspan="2">위험성</td><td>홍수피해
지 수</td><td>확율강우
지 수</td><td>외수방어
능력지수</td><td rowspan="2">댐 지수</td></tr>
<tr><td>지수</td><td>순위</td><td>0.6203</td><td>34/150</td><td>0.1020</td><td>0.0764</td><td>0.2805</td><td>0.0614</td></tr>
<tr><td>특성</td><td>A3</td><td colspan="6">시급한 대책을 요하는 지역</td><td>유역위치</td><td>상류</td></tr>
<tr><td rowspan="2">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td rowspan="2">밀도
(천원/㎢)</td><td rowspan="2">이재민
(인)</td><td rowspan="2">인명피해
(인)</td><td rowspan="2">침수면적
(ha)</td><td colspan="2" rowspan="2">공공시설물피해
(천원)</td></tr>
<tr><td colspan="2">피해액 (천원)</td></tr>
<tr><td colspan="2">544,372</td><td>3,420</td><td>3</td><td>-</td><td>22</td><td colspan="2">401,030</td></tr>
<tr><td rowspan="2">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td rowspan="2">전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td></tr>
<tr><td>행정구역
(편입비율:%)</td><td>중구
(0.32)</td><td>금산군
(0.24)</td><td colspan="4"></td><td>9.28</td><td>5.83</td><td>30.37</td><td>19.08</td><td>111.90</td><td>70.30</td><td>159.18</td><td>산지지역</td></tr>
<tr><td rowspan="6">교 량
(km)</td><td colspan="2">전 체</td><td colspan="3">고속도로</td><td colspan="3">국도</td></tr>
<tr><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td></tr>
<tr><td>43</td><td colspan="2">1,585.56</td><td>0</td><td></td><td>6</td><td colspan="2">449.28</td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="3">시군도</td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td colspan="2">연장(km)</td></tr>
<tr><td>9</td><td>858.59</td><td>8</td><td colspan="2">179.59</td><td>20</td><td colspan="2">98.09</td></tr>
<tr><td>도 로
(km)</td><td colspan="2">합계</td><td>고속도로</td><td>국도</td><td>특별시도</td><td>지방도</td><td colspan="2">시군도</td></tr>
<tr><td colspan="2">122.68</td><td>1.69</td><td>14.55</td><td>48.69</td><td>27.88</td><td colspan="2">29.89</td></tr>
<tr><td colspan="2">사회기반 시설지수</td><td rowspan="2">철 도
(km)</td><td colspan="3">인구현황</td><td colspan="2" rowspan="2">자산현황
(천원/㎡)</td></tr>
<tr><td>액 수(억원)</td><td>밀도(억원/㎢)</td><td colspan="2">전체인구(명)</td><td>밀도(명/㎢)</td></tr>
<tr><td>16,388</td><td>103</td><td></td><td colspan="2">99,824</td><td>627</td><td colspan="2">714</td></tr>
</table>

□ 유등천 하류 유역(유등천 국가하천 구간, 3009-4)

유등천 하류 유역인 3009-4번 구역은 대전광역시의 일부지역을 포함한 금강 중류에 위치한 지역으로, 단위구역 특성상 B지역의 도시지역이며, 개수율은 93%로 높고, 피해밀도도 5,946천원/㎢으로 전국 평균인 5,715천원/㎢보다 높은 지역이다. 또한 이 구역의 토지이용현황은 59.23%가 임야, 12.15%가 농경지, 17.93%가 도시지역

인 도시지역이며, 이 구역의 하천현황은 유등천의 국가하천 구간 및 대동천은 100년 빈도의 계획 홍수량을, 대전천은 80년 빈도, 장생천, 구완천은 50년 빈도의 계획홍수량을 채택하였으며, 과례천 등은 미개수 하천이다. 이 지역의 특성은 잠재성은 높으나 위험성이 낮은 주의를 요하는 지역으로, 신규개발에 대해서는 재해영향평가 등을 통해 저류시설을 확보하며, 기타 유역내 도로, 및 주택단지 등에 침투시설을 설치하여 홍수량이 침투할 수 있도록 한다.

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="3">유등천 하류
(유등천 국가하천 구간)</td><td>단위구역
코 드</td><td>3009-4</td></tr>
<tr><td rowspan="4">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td>국가하천</td><td>유등천
(93,수립)</td><td colspan="6"></td></tr>
<tr><td>지방1급</td><td>대전천
(97,수립)</td><td colspan="6"></td></tr>
<tr><td rowspan="2">지방2급</td><td>정생천
(78,수립)</td><td>금동천
(75,수립)</td><td>구완천
(25,수립)</td><td>과례천
(100,수립)</td><td>대전천
(95,수립)</td><td>대사천
(100,수립)</td><td>대동천
(100,수립)</td></tr>
<tr><td>오정천
(100,수립)</td><td colspan="6"></td></tr>
<tr><td rowspan="5">하 천
개수율</td><td colspan="2"></td><td>요개수 연장(㎞)</td><td colspan="3">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td colspan="2">전체</td><td>104.00</td><td colspan="3">96.56</td><td colspan="2">0.93</td></tr>
<tr><td colspan="2">국가</td><td>22.90</td><td colspan="3">21.26</td><td colspan="2">0.93</td></tr>
<tr><td colspan="2">지방1급</td><td>14.90</td><td colspan="3">14.40</td><td colspan="2">0.97</td></tr>
<tr><td colspan="2">지방2급</td><td>66.20</td><td colspan="3">60.90</td><td colspan="2">0.92</td></tr>
<tr><td>유역면적</td><td colspan="3">148 ㎢</td><td colspan="3">배수펌프장
(개소수)</td><td colspan="2">-</td></tr>
<tr><td rowspan="4">PFD
산정결과</td><td colspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td>인구지수</td><td>자산지수</td><td>도시화율</td><td>사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td><td>지수</td><td>순위</td><td>0.3842</td><td>0.2649</td><td>0.1901</td><td>0.0954</td></tr>
<tr><td rowspan="2">0.6719</td><td rowspan="2">22/150</td><td colspan="2">위험성</td><td>홍수피해
지 수</td><td>확율강우
지 수</td><td>외수방어
능력지수</td><td>댐 지수</td></tr>
<tr><td>지수</td><td>순위</td><td>0.2059</td><td>0.1128</td><td>0.0029</td><td>0.0614</td></tr>
<tr><td>특성</td><td>D1</td><td colspan="4">적절한 대책을 요하는 지역</td><td>유역위치</td><td>중류</td></tr>
<tr><td rowspan="2">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td rowspan="2">밀도
(천원/㎢)</td><td rowspan="2">이재민
(인)</td><td rowspan="2">인명피해
(인)</td><td rowspan="2">침수면적
(ha)</td><td colspan="2" rowspan="2">공공시설물피해
(천원)</td></tr>
<tr><td colspan="2">피해액 (천원)</td></tr>
<tr><td colspan="2">877,994</td><td>5,946</td><td>45</td><td>1</td><td>44</td><td colspan="2">658,142</td></tr>
<tr><td rowspan="3">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td>전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td></tr>
<tr><td>26.47</td><td>17.93</td><td>17.95</td><td>12.15</td><td>87.45</td><td>59.23</td><td>147.65</td><td>도시지역</td></tr>
<tr><td>행정구역
(편입비율:%)</td><td>대덕구
(0.24)</td><td>동구
(0.54)</td><td>서구
(0.16)</td><td>중구
(0.68)</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="5">교 량
(km)</td><td colspan="2">전 체</td><td colspan="2">고속도로</td><td colspan="2">국도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td></tr>
<tr><td>70</td><td colspan="2">6,428.95</td><td>16</td><td>1,366.35</td><td>13.77</td><td colspan="2">1,245.24</td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="2">시군도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td colspan="2">연장(km)</td></tr>
<tr><td>40</td><td>3,817.36</td><td>-</td><td colspan="2">-</td><td>-</td><td colspan="2">-</td></tr>
<tr><td>도 로
(km)</td><td colspan="2">합계</td><td>고속도로</td><td>국도</td><td>특별시도</td><td>지방도</td><td colspan="2">시군도</td></tr>
<tr><td colspan="2">392.07</td><td>12.40</td><td>21.48</td><td>358.19</td><td>-</td><td colspan="2">-</td></tr>
<tr><td colspan="2">사회기반 시설지수</td><td rowspan="2">철 도
(km)</td><td colspan="2">인구현황</td><td rowspan="2">자산현황
(천원/㎡)</td></tr>
<tr><td>액 수(억원)</td><td>밀도(억원/㎢)</td><td>전체인구(명)</td><td>밀도(명/㎢)</td></tr>
<tr><td>59,587</td><td>404</td><td>20</td><td>443,582</td><td>3,004</td><td>2,304</td></tr>
</table>

□ 갑천 하류 유역(유등천 합류후, 3009-5)

갑천 하류 유역인 3009-5번 구역은 대전광역시의 일부지역을 포함한 금강 중류에 위치한 지역으로, 단위구역 특성상 A 지역의 도시지역이며, 개수율은 79%로 높고, 피해밀도도 7,300천원/㎢으로 전국 평균인 5,715.16천원보다 높은 지역이다. 또한 이 구역의 토지이용현황은 50.99%가 임야, 21.21%가 농경지, 18.63%가 도시지역인 농경지와 혼합된 도시지역이며, 이 구역의 하천현황은 갑천의 국가하천 구간 및 관평천은 100년 빈도의 계획 홍수량을, 덕진천 및 관평천 상류지역은 50년 빈도의 계획 홍수량을, 법동천은 미개수 하천이다. 이 지역의 특성은 잠재성 및 위험성이 높은 시급한 대책을 요하는 지역으로, 신규개발에 대해서는 재해영향평가 등을 통해 저류시설을 확보하며, 기타 유역내 도로, 및 주택단지 등에 침투시설을 설치하여 홍수량이 침투할 수 있도록 한다.

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="2">갑천 본류(유등천 합류후)</td><td>단위구역
코 드</td><td>3009-5</td></tr>
<tr><td rowspan="3">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td>국가하천</td><td>갑천
(84,수립)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방1급</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방2급</td><td>법동천
(100,수립)</td><td>관평천
(60,수립)</td><td>덕진천
(60,수립)</td><td></td><td></td><td></td></tr>
<tr><td rowspan="5">하 천
개수율</td><td colspan="2"></td><td>요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td colspan="2">전체</td><td>33.13</td><td colspan="2">26.31</td><td colspan="2">0.79</td></tr>
<tr><td colspan="2">국가</td><td>17.93</td><td colspan="2">15.01</td><td colspan="2">0.84</td></tr>
<tr><td colspan="2">지방1급</td><td>0.00</td><td colspan="2">0.00</td><td colspan="2">0.00</td></tr>
<tr><td colspan="2">지방2급</td><td>15.20</td><td colspan="2">11.30</td><td colspan="2">0.74</td></tr>
<tr><td>유역면적</td><td colspan="3">41 ㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">-</td></tr>
<tr><td rowspan="5">PFD
산정결과</td><td colspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td>인구지수</td><td>자산지수</td><td>도시화율</td><td>사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td><td>지수</td><td>순위</td><td>0.3614</td><td>0.0735</td><td>0.1912</td><td>0.0954</td></tr>
<tr><td rowspan="2">0.6304</td><td rowspan="2">29/150</td><td colspan="2">위험성</td><td>홍수피해
지 수</td><td>확률강우
지 수</td><td>외수방어
능력지수</td><td rowspan="2">댐 지수</td></tr>
<tr><td>지수</td><td>순위</td><td>0.2380</td><td>0.0880</td><td>0.0635</td></tr>
<tr><td>0.5508</td><td>82/150</td><td colspan="2">0.0614</td></tr>
<tr><td>특성</td><td>A3</td><td colspan="4">시급한 대책을 요하는 지역</td><td>유역위치</td><td>중류</td></tr>
<tr><td rowspan="2">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td></td><td>이재민</td><td>인명피해</td><td>침수면적</td><td colspan="2">공공시설물피해</td></tr>
<tr><td colspan="2">피해액 (천원)</td><td>밀도
(천원/㎢)</td><td>(인)</td><td>(인)</td><td>(ha)</td><td colspan="2">(천원)</td></tr>
<tr><td colspan="2">289,218</td><td>7,300</td><td>26</td><td>-</td><td>24</td><td colspan="2">164,467</td></tr>
<tr><td rowspan="3">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td>전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td></td></tr>
<tr><td>7.61</td><td>18.63</td><td>8.66</td><td>21.21</td><td>20.83</td><td>50.99</td><td>40.85</td><td>도시지역</td></tr>
</table>

수계명	금강		단 위 구역명	갑천 본류(유등천 합류후)			단위구역 코 드	3009-5
행정구역 (편입비율:%)	대덕구 (0.19)	유성구 (0.16)						
교 량 (km)	전 체			고속도로		국도		
	개소수	연장		개소수	연장	개소수	연장	
	19	1,674.23		7	629.56	2	212.06	
	특별광역시도		지방도			시군도		
	개소수	연장	개소수	연장		개소수	연장(km)	
도 로 (km)	합계		고속도로	국도	특별시도	지방도	시군도	
	11		832.61	-	-	-	-	
사회기반 시설지수			철 도 (km)	인구현황			자산현황 (천원/㎡)	
액 수(억원)	밀도(억원/㎢)			전체인구(명)		밀도(명/㎢)		
16,483	403		6	66,410		1,626	219	

□ 금강 본류(미호천 합류전, 3010)

갑천 합류점에서 미호천 합류점까지의 금강본류 유역인 3010번 구역은 대전광역시 및 충북 청원군, 충남 연기군의 일부지역을 포함한 금강 중류에 위치한 지역으로, 단위구역 특성상 C 지역의 농경지역이며, 개수율은 64%로 비교적 높고, 피해밀도도 7,301천원/㎢으로 전국 평균인 5,715천원/㎢보다 높은 지역이다. 또한 이 구역의 토지이용현황은 56.96%가 임야, 27.31%가 농경지, 7.90%가 도시지역인 농경지역이며, 이 구역의 하천현황은 금강본류의 국가하천 구간은 100년 빈도, 신동천은 50년 빈도 계획 홍수량을, 백천천은 미개수 하천이다. 이 지역의 특성은 잠재성 및 위험성이 낮은 홍수피해에 둔감한 지역이나, 향후 개발가능성이 높은 지역으로, 신규개발에 대해서는 재해영향평가 등을 통해 저류시설을 확보하며, 미개수 하천에 대한 개수공사를 실시한다.

건설교통부

수계명	금강		단 위 구역명	금강 본류 (미호천 합류전)			단위구역 코 드	3010
하천명 (개수율(%), 하천정비 기본계획 수립유무)	국가하천	금강 (79,수립)						
	지방1급							
	지방2급	백천 (71,수립)	신동천 (8,수립)	외천천 (66,수립)				
하 천 개수율			요개수 연장(km)		기개수 연장(km)		개수율(%)	
	전체		52.31		33.56		0.64	
	국가		11.41		9.06		0.79	
	지방1급		0.00		0.00		0.00	
	지방2급		40.90		24.50		0.60	

<table>
<tr><td>수계명</td><td colspan="3">금강</td><td>단 위
구역명</td><td colspan="3">금강 본류 (미호천 합류전)</td><td>단위구역
코 드</td><td>3010</td></tr>
<tr><td>유역면적</td><td colspan="4">149 ㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">2</td></tr>
<tr><td rowspan="4">PFD
산정결과</td><td colspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td>인구지수</td><td>자산지수</td><td>도시화율</td><td>사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td><td>지수</td><td>순위</td><td>0.2273</td><td>0.0623</td><td>0.1372</td><td>0.0695</td></tr>
<tr><td rowspan="2">0.4920</td><td rowspan="2">72/150</td><td colspan="2">위험성</td><td>홍수피해
지 수</td><td>확율강우
지 수</td><td>외수방어
능력지수</td><td rowspan="2">댐 지수</td></tr>
<tr><td>지수</td><td>순위</td><td>0.2380</td><td>0.0815</td><td>0.0635</td></tr>
<tr><td>특성</td><td></td><td colspan="2">0.4876</td><td>107/150</td><td colspan="2">주의를 요하는 지역</td><td>유역위치</td><td>상류</td></tr>
<tr><td rowspan="2">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td rowspan="2">밀도
(천원/㎢)</td><td rowspan="2">이재민
(인)</td><td rowspan="2">인명피해
(인)</td><td rowspan="2">침수면적
(ha)</td><td colspan="2" rowspan="2">공공시설물피해
(천원)</td></tr>
<tr><td colspan="2">피해액 (천원)</td></tr>
<tr><td></td><td colspan="2">1,089,519</td><td>7,301</td><td>63</td><td>-</td><td>225</td><td colspan="2">638,527</td></tr>
<tr><td rowspan="3">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td rowspan="2">전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td></tr>
<tr><td>11.79</td><td>7.90</td><td>40.75</td><td>27.31</td><td>84.99</td><td>56.96</td><td>149.23</td><td>혼합지역</td></tr>
<tr><td>행정구역
(편입비율:%)</td><td>유성구
(0.18)</td><td>연기군
(0.05)</td><td>청원군
(0.12)</td><td>청주시
(0.01)</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="5">교 량
(km)</td><td colspan="2">전 체</td><td colspan="2">고속도로</td><td colspan="2">국도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td>연장</td><td>개소수</td><td>연장</td><td colspan="2"></td></tr>
<tr><td>37</td><td>2,058.57</td><td>9</td><td>716.39</td><td>5</td><td>349.54</td><td colspan="2"></td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="2">시군도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td>연장</td><td>개소수</td><td>연장(km)</td><td colspan="2"></td></tr>
<tr><td>9</td><td>493.95</td><td>8</td><td>353.59</td><td>6.22</td><td>145.10</td><td colspan="2"></td></tr>
<tr><td rowspan="2">도 로
(km)</td><td colspan="2">합계</td><td>고속도로</td><td>국도</td><td>특별시도</td><td>지방도</td><td>시군도</td><td colspan="2"></td></tr>
<tr><td colspan="2">177.04</td><td>8.31</td><td>15.39</td><td>77.37</td><td>30.63</td><td>45.34</td><td colspan="2"></td></tr>
<tr><td colspan="2">사회기반 시설지수</td><td rowspan="2">철 도
(km)</td><td colspan="3" rowspan="2">인구현황</td><td rowspan="2">자산현황
(천원/㎡)</td><td colspan="2"></td></tr>
<tr><td>액 수(억원)</td><td>밀도(억원/㎢)</td><td colspan="2"></td></tr>
<tr><td>24,735</td><td>166</td><td>12</td><td colspan="2">전체인구(명)
52,533</td><td>밀도(명/㎢)
352</td><td>188</td><td colspan="2"></td></tr>
</table>

□ 미호천 상류 유역(무심천 합류전, 3011-1)

미호천 상류유역인 3011-1번 구역은 충북 진천군, 음성군의 일부지역을 포함한 상류에 위치한 지역으로, 단위구역 특성상 C지역의 농경지역이며, 개수율은 70%이며, 피해밀도도 3,602천원/㎢으로 전국 평균인 5,715.16천원보다 낮은 지역이다. 또한 이 구역의 토지이용현황은 60.26%가 임야, 27.29%가 농경지인 농경지역이며, 이 구역의 하천현황은 미호천 국가하천 구간은 100년 빈도, 미호천 지방1급하천 및 보강천은 80년 빈도, 미호천 지방2급 구간 및 초평천, 석화천, 묵방천, 덕암천 등은 50년 빈도 계획 홍수량을, 장양천, 구암천, 성산천, 도청천, 등은 미개수 하천이다. 이 지역의 특성은 잠재성 및 위험성이 낮은 홍수피해에 둔감한 지역이나, 내수피해 가능성이 있는 지역으로 배수시설을 확보하며, 미개수 하천에 대한 개수공사를 실시한다.

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="2">미호천 상류(무심천 합류전)</td><td>단위구역
코 드</td><td>3011-1</td></tr>
<tr><td rowspan="5">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td>국가하천</td><td>미호천
(91,수립)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방1급</td><td>백곡천
(78,수립)</td><td>보강천
(100,수립)</td><td>미호천
(100,수립)</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">지방2급</td><td>구암천
(100,수립)</td><td>도청천
(80,수립)</td><td>백곡천
(35,수립)</td><td>보강천
(90,수립)</td><td>문암천
(69,수립)</td><td>문방천
(76,수립)</td><td>삼기천
(89,수립)</td></tr>
<tr><td>석화천
(76,수립)</td><td>덕암천
(86,수립)</td><td>묵방천
(22,수립)</td><td>성산천
(57,수립)</td><td>성암천
(55,수립)</td><td>장량천
(100,수립)</td><td>초평천
(37,수립)</td></tr>
<tr><td>마송천
(38,수립)</td><td>군자천
(20,수립)</td><td>칠장천
(100,수립)</td><td>당목천
(200,수립)</td><td>한천
(83,수립)</td><td>미호천
(68,수립)</td><td></td></tr>
<tr><td rowspan="5">하 천
개수율</td><td colspan="2"></td><td>요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td colspan="2">전체</td><td>433.09</td><td colspan="2">301.08</td><td colspan="2">0.70</td></tr>
<tr><td colspan="2">국가</td><td>18.89</td><td colspan="2">17.18</td><td colspan="2">0.91</td></tr>
<tr><td colspan="2">지방1급</td><td>43.50</td><td colspan="2">40.00</td><td colspan="2">0.92</td></tr>
<tr><td colspan="2">지방2급</td><td>370.70</td><td colspan="2">243.90</td><td colspan="2">0.66</td></tr>
<tr><td>유역면적</td><td colspan="3">916㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">6</td></tr>
<tr><td rowspan="5">PFD
산정결과</td><td colspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td>인구지수</td><td>자산지수</td><td>도시화율</td><td>사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td><td>지수</td><td>순위</td><td>0.1387</td><td>0.1630</td><td>0.1039</td><td>0.0420</td></tr>
<tr><td rowspan="2">0.4530</td><td rowspan="2">88/150</td><td colspan="2">위험성</td><td>홍수피해
지 수</td><td>확률강우
지 수</td><td>외수방어
능력지수</td><td>댐 지수</td></tr>
<tr><td>지수</td><td>순위</td><td>0.1114</td><td>0.0651</td><td>0.1205</td><td>0.0614</td></tr>
<tr><td>특성</td><td>C1</td><td colspan="4">홍수피해에 둔간한 지역</td><td>유역위치</td><td>상류</td></tr>
<tr><td rowspan="3">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td>이재민</td><td>인명피해</td><td>침수면적</td><td colspan="2">공공시설물피해</td></tr>
<tr><td colspan="2">피해액 (천원)</td><td>밀도
(천원/㎢)</td><td>(인)</td><td>(인)</td><td>(ha)</td><td colspan="2">(천원)</td></tr>
<tr><td colspan="2">3,299,355</td><td>3,602</td><td>147</td><td>2</td><td>676</td><td colspan="2">1,957,381</td></tr>
<tr><td rowspan="3">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td>전체면적
(㎢)</td><td>특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>916.00</td><td>농경지역</td></tr>
<tr><td>53.28</td><td>5.82</td><td>249.98</td><td>27.29</td><td>552.01</td><td>60.26</td><td></td><td></td></tr>
<tr><td>행정구역
(편입비율:%)</td><td>안성시
(0.04)</td><td>괴산군
(0.14)</td><td>음성군
(0.44)</td><td>진천군
(0.99)</td><td>청원군
(0.16)</td><td>청주시
(0.02)</td><td></td><td></td></tr>
<tr><td rowspan="5">교 량
(km)</td><td colspan="2">전 체</td><td colspan="2">고속도로</td><td colspan="2">국도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td></tr>
<tr><td>150</td><td colspan="2">6,023.47</td><td>21.18</td><td>2,380.53</td><td>36.25</td><td colspan="2">1,468.04</td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="2">시군도</td><td colspan="2"></td></tr>
<tr><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td colspan="2">연장(km)</td></tr>
<tr><td>-</td><td>-</td><td>46.69</td><td colspan="2">1,325.93</td><td>45.94</td><td colspan="2">848.97</td></tr>
<tr><td>도 로
(km)</td><td colspan="2">합계</td><td>고속도로</td><td>국도</td><td>특별시도</td><td>지방도</td><td colspan="2">시군도</td></tr>
<tr><td colspan="2">694.90</td><td>32.54</td><td>154.62</td><td>-</td><td>175.31</td><td colspan="2">332.43</td></tr>
<tr><td colspan="2">사회기반 시설지수</td><td>철 도</td><td colspan="2">인구현황</td><td colspan="2">자산현황</td></tr>
<tr><td>액 수(억원)</td><td>밀도(억원/㎢)</td><td>(km)</td><td>전체인구(명)</td><td>밀도(명/㎢)</td><td colspan="2">(천원/㎡)</td></tr>
<tr><td>88,457</td><td>97</td><td>31</td><td>149,924</td><td>164</td><td colspan="2">595</td></tr>
</table>

□ 무심천 (3011-2)

무심천 유역인 3011-2번 구역은 충북 청주시, 청원군의 일부지역을 포함한 상류

에 위치한 지역으로, 단위구역 특성상 B 지역의 도시지역이며, 개수율은 83%이며, 피해밀도도 10,172천원/㎢으로 전국 평균인 5,715.16천원보다 높은 지역이다. 또한 이 구역의 토지이용현황은 49.07%가 임야, 30.42%가 농경지, 12.57%가 도시지역인 농경지를 포함한 도시지역이며, 이 구역의 하천현황은 무심천의 지방1급 하천구간은 100년 빈도, 명암천, 영운천은 80년 빈도, 월운천 및 무심천 지방2급 하천 구간은 50년 빈도의 계획 홍수량을 채택하였으며, 율량천, 한계천 등은 미개수 하천이다. 이 지역의 특성은 잠재성은 높으나 위험성이 낮은 주의를 요하는 지역으로, 내수피해 가능성이 있는 지역으로 배수시설을 확보하며, 미개수 하천에 대한 개수공사를 실시한다.

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="2">무심천</td><td colspan="2">단위구역
코 드</td><td>3011-2</td></tr>
<tr><td rowspan="3">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td>국가하천</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방1급</td><td>무심천
(100,수립)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방2급</td><td>무심천
(72,수립)</td><td>한계천
(35.71,수립)</td><td>월운천
(97.86,수립)</td><td>미평천
(45.22,수립)</td><td>영운천
(100,수립)</td><td>명암천
(66.67,수립)</td><td>율량천
(100,수립)</td></tr>
<tr><td rowspan="5">하 천
개수율</td><td colspan="2"></td><td colspan="2">요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td colspan="2">전체</td><td colspan="2">121.10</td><td colspan="2">100.20</td><td colspan="2">0.83</td></tr>
<tr><td colspan="2">국가</td><td colspan="2">0.00</td><td colspan="2">0.00</td><td colspan="2">0.00</td></tr>
<tr><td colspan="2">지방1급</td><td colspan="2">36.20</td><td colspan="2">36.20</td><td colspan="2">1.00</td></tr>
<tr><td colspan="2">지방2급</td><td colspan="2">84.90</td><td colspan="2">64.00</td><td colspan="2">0.75</td></tr>
<tr><td>유역면적</td><td colspan="3">213 ㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">5</td><td></td></tr>
<tr><td rowspan="5">PFD
산정결과</td><td colspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td>인구지수</td><td>자산지수</td><td>도시화율</td><td>사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td><td>지수</td><td>순위</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">0.6341</td><td rowspan="2">28/150</td><td colspan="2">0.7376</td><td>0.3578</td><td>0.1195</td><td>0.1748</td><td>0.0855</td></tr>
<tr><td colspan="2">위험성</td><td>홍수피해
지 수</td><td>확율강우
지 수</td><td>외수방어
능력지수</td><td rowspan="2">댐 지수</td></tr>
<tr><td>지수</td><td>순위</td><td>0.2737</td><td>0.0644</td><td>0.0456</td><td>0.0614</td></tr>
<tr><td>0.5451</td><td>87/150</td><td colspan="2">시급한 대책을 요하는 지역</td><td>유역위치</td><td>상류</td></tr>
<tr><td>특성</td><td>A3</td><td colspan="4"></td><td></td><td></td></tr>
<tr><td rowspan="3">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td rowspan="2">밀도
(천원/㎢)</td><td rowspan="2">이재민
(인)</td><td rowspan="2">인명피해
(인)</td><td rowspan="2">침수면적
(ha)</td><td colspan="2" rowspan="2">공공시설물피해
(천원)</td></tr>
<tr><td colspan="2">피해액 (천원)</td></tr>
<tr><td colspan="2">2,164,444</td><td>10,172</td><td>105</td><td>1</td><td>327</td><td colspan="2">1,412,626</td></tr>
<tr><td rowspan="2">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td>전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td></td></tr>
<tr><td>26.75</td><td>12.57</td><td>64.74</td><td>30.42</td><td>104.41</td><td>49.07</td><td>212.78</td><td>혼합지역</td></tr>
<tr><td>행정구역
(편입비율:%)</td><td>진천군
(0.01)</td><td>청원군
(0.15)</td><td>청주시
(0.53)</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

건설교통부

수계명	금강		단 위 구역명	무심천		단위구역 코 드	3011-2
교 량 (km)	전 체			고속도로		국도	
	개소수	연장		개소수	연장	개소수	연장
	77	4,408.85		16	1,423.72	10.78	693.74
	특별광역시도		지방도			시군도	
	개소수	연장	개소수	연장		개소수	연장(km)
	-	-	12	634.77		38	1,656.62
도 로 (km)	합계		고속도로	국도	특별시도	지방도	시군도
	472.04		14.52	29.64	-	50.07	377.81
사회기반 시설지수			철 도 (km)	인구현황			자산현황 (천원/㎡)
액 수(억원)	밀도(억원/㎢)			전체인구(명)	밀도(명/㎢)		
53,546	252		2	322,362	1,515		376

□ 미호천 하류 유역(미호천 합류후, 3011-3)

미호천 하류 유역인 3011-3번 구역은 충남 천안시, 연기군 및 충북 청주시, 청원군의 일부지역을 포함한 중류에 위치한 지역으로, 단위구역 특성상 B 지역의 도시지역이며, 개수율은 79%이며, 피해밀도도 5,739천원/㎢으로 전국 평균인 5,715.16천원과 비슷한 지역이다. 또한 이 구역의 토지이용현황은 53.84%가 임야, 30.14%가 농경지, 8.64%가 도시지역인 농경지를 포함한 도시지역이며, 이 구역의 하천현황은 국가하천인 미호천 구간은 100년 빈도, 지방1급 하천인 조천은 80년 빈도, 월하천, 병천천, 석남천 등은 50년 빈도의 계획 홍수량을 채택하였으며, 내삼천, 연기천, 국촌천, 봉암천, 용두천 등은 미개수 하천이다. 이 지역의 특성은 잠재성은 높으나 위험성이 낮은 주의를 요하는 지역으로, 내수피해 가능성이 있는 지역으로 배수시설을 확보하며, 미개수 하천에 대한 개수공사를 실시한다.

건설교통부

수계명	금강		단 위 구역명	미호천 본류 (미호천 합류후)			단위구역 코 드	3011-3
하천명 (개수율(%), 하천정비 기본계획 수립유무)	국가하천	미호천 (91,수립)						
	지방1급	조천 (85,수립)						
	지방2급	노송천 (32,수립)	문주천 (92,수립)	용호천 (44.68,수립)	병천 (87,수립)	산방천 (100,수립)	광기천 (64.34,수립)	서원천 (90,수립)
		녹동천 (88,수립)	승천천 (98,수립)	조양천 (92,수립)	지압천 (76,수립)	용두천 (65,수립)	봉암천 (77,수립)	석남천 (71,수립)
		가경천 (54,수립)	연기천 (82,수립)	월하천 (85,수립)	쌍류천 (13,수립)	국촌천 (62,수립)	행화천 (66,수립)	조천 (85,수립)
		덕현천 (65,수립)	북암천 (48,수립)	송성천 (48,수립)	노장천 (71,수립)	송곡천 (100,수립)	내창천 (96,수립)	

<table>
<tr><td>수계명</td><td colspan="3">금강</td><td>단 위 구역명</td><td colspan="3">미호천 본류 (미호천 합류후)</td><td>단위구역 코 드</td><td>3011-3</td></tr>
<tr><td rowspan="4">하 천 개수율</td><td></td><td colspan="2">요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="3">개수율(%)</td></tr>
<tr><td>전체</td><td colspan="2">391.69</td><td colspan="2">308.90</td><td colspan="3">0.79</td></tr>
<tr><td>국가</td><td colspan="2">39.59</td><td colspan="2">36.00</td><td colspan="3">0.91</td></tr>
<tr><td>지방1급</td><td colspan="2">31.80</td><td colspan="2">26.90</td><td colspan="3">0.85</td></tr>
<tr><td></td><td>지방2급</td><td colspan="2">320.30</td><td colspan="2">246.00</td><td colspan="3">0.77</td></tr>
<tr><td rowspan="2">유역면적</td><td colspan="3">732 ㎢</td><td colspan="3">배수펌프장 (개소수)</td><td colspan="3">6</td></tr>
<tr><td colspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td>인구지수</td><td>자산지수</td><td>도시화율</td><td>사회기반 시설지수</td></tr>
<tr><td rowspan="3">PFD 산정결과</td><td rowspan="2">지수</td><td rowspan="2">순위</td><td>지수</td><td>순위</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>0.7097</td><td>31/150</td></tr>
<tr><td>0.5894</td><td>41/150</td><td colspan="2">위험성</td><td>홍수피해 지 수</td><td>확율강우 지 수</td><td>외수방어 능력지수</td><td>댐 지수</td></tr>
<tr><td>특성</td><td>D2</td><td>지수</td><td>순위</td><td>0.1997</td><td>0.0619</td><td>0.0665</td><td>0.0614</td></tr>
<tr><td rowspan="3">홍수피해 현황 (20년 평균)</td><td colspan="4">적절한 대책을 요하는 지역</td><td colspan="2">유역위치</td><td>중류</td></tr>
<tr><td colspan="2">총피해액</td><td rowspan="2">밀도 (천원/㎢)</td><td rowspan="2">이재민 (인)</td><td rowspan="2">인명피해 (인)</td><td rowspan="2">침수면적 (ha)</td><td colspan="3" rowspan="2">공공시설물피해 (천원)</td></tr>
<tr><td colspan="2">피해액 (천원)</td></tr>
<tr><td colspan="2">4,201,293</td><td>5,739</td><td>251</td><td>1</td><td>885</td><td colspan="3">2,736,661</td></tr>
<tr><td rowspan="3">토지이용현황 ('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td>전체면적 (㎢)</td><td>특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td></td><td></td></tr>
<tr><td>63.27</td><td>8.64</td><td>220.64</td><td>30.14</td><td>394.17</td><td>53.84</td><td>732.06</td><td>혼합지역</td></tr>
<tr><td rowspan="2">행정구역 (편입비율:%)</td><td>연기군 (0.61)</td><td>천안시 (0.42)</td><td>청원군 (0.22)</td><td>청주시 (0.42)</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">전 체</td><td colspan="2">고속도로</td><td colspan="2">국도</td><td colspan="2"></td></tr>
<tr><td rowspan="3">교 량 (km)</td><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td></tr>
<tr><td>176</td><td colspan="2">9,145.63</td><td>27.65</td><td>2,403.91</td><td>39.60</td><td colspan="2">3,098.22</td></tr>
<tr><td colspan="2">특별광역시도</td><td colspan="2">지방도</td><td colspan="2">시군도</td><td colspan="2"></td></tr>
<tr><td rowspan="3">도 로 (km)</td><td>개소수</td><td>연장</td><td>개소수</td><td colspan="2">연장</td><td>개소수</td><td colspan="2">연장(km)</td></tr>
<tr><td>-</td><td>-</td><td>42</td><td colspan="2">1,435.16</td><td>67</td><td colspan="2">2,208.35</td></tr>
<tr><td>합계</td><td>고속도로</td><td>국도</td><td>특별시도</td><td>지방도</td><td colspan="2">시군도</td></tr>
<tr><td colspan="2">954.98</td><td>31</td><td>98.08</td><td>-</td><td>158.07</td><td colspan="2">667.83</td></tr>
<tr><td colspan="2">사회기반 시설지수</td><td rowspan="2">철 도 (km)</td><td colspan="2">인구현황</td><td rowspan="2">자산현황 (천원/㎡)</td><td colspan="2"></td></tr>
<tr><td>액 수(억원)</td><td>밀도(억원/㎢)</td><td>전체인구(명)</td><td>밀도(명/㎢)</td><td colspan="2"></td></tr>
<tr><td>111,645</td><td>153</td><td>49</td><td>487,697</td><td>666</td><td colspan="2">914</td></tr>
</table>

□ 금강 본류(논산천 합류전, 3012)

미호천 합류점에서 논산천 합류점까지의 금강 본류 유역인 3012번 구역은 충남 공주시, 부여군, 청양군 등의 일부지역을 포함한 중류에 위치한 지역으로, 단위구역 특성상 B 지역의 농경지역이며, 개수율은 80%이며, 피해밀도도 8,762천원/㎢으로 전국 평균보다 높은 지역이다. 또한 이 구역의 토지이용현황은 64.49%가 임야, 24.60%가 농경지, 4.32%가 도시지역인 농경지역이며, 이 구역의 하천현황은 국가하천인 금강 본류의 국가하천 구간 및 금천의 지방 1급하천 구간은 100년 빈도, 석성천, 지천은 80년 빈도, 석성천 지방2급하천 구간, 횡천, 구룡천, 증평천, 이인천, 어천, 치성천,

유구천, 정안천, 용수천, 삼성천 등은 50년 빈도의 계획 홍수량을 채택하였으며, 제천, 대교천, 석장천, 도남천, 음성천, 검상천, 하황천 등은 미개수 하천이다. 이 지역의 특성은 잠재성은 높으나 위험성이 낮은 주의를 요하는 지역으로, 미개수 하천에 대한 개수공사를 실시하고, 금강본류 및 금천 하류, 유구천 하류 등지의 농경지 침수가 잦은 지역에 대해서는 배수시설을 신설·보강하여야 할 것이다.

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위 구역명</td><td colspan="2">금강 본류 (논산천 합류전)</td><td>단위구역 코 드</td><td>3012</td></tr>
<tr><td rowspan="11">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td>국가하천</td><td>금강
(79,수립)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방1급</td><td>금천
(100,수립)</td><td>석성천
(87,수립)</td><td>유구천
(97,수립)</td><td>지천
(84,수립)</td><td></td><td></td><td></td></tr>
<tr><td rowspan="9">지방2급</td><td>가증천
(100,수립)</td><td>석목천
(100,수립)</td><td>자왕천
(89,수립)</td><td>검상천
(96,수립)</td><td>오곡천
(87,수립)</td><td>태봉천
(38,수립)</td><td>화수천
(21,수립)</td></tr>
<tr><td>신안천
(94,수립)</td><td>홍산천
(100,수립)</td><td>교원천
(100,수립)</td><td>구룡천
(100,수립)</td><td>천보천
(100,수립)</td><td>주정천
(51.61,수립)</td><td>마정천
(83,수립)</td></tr>
<tr><td>원문천
(100,수립)</td><td>내삼천
(10,수립)</td><td>대교천
(96,수립)</td><td>가락천
(93,수립)</td><td>궁동천
(100,수립)</td><td>용두천
(39,수립)</td><td>신치천
(100,수립)</td></tr>
<tr><td>송정천
(96,수립)</td><td>근동천
(100,수립)</td><td>정계천
(80,수립)</td><td>율곡천
(100,수립)</td><td>은룡천
(75,수립)</td><td>대학천
(55,수립)</td><td>도남천
(42,수립)</td></tr>
<tr><td>도천
(73,수립)</td><td>반곡천
(0,수립)</td><td>마암천
(63,수립)</td><td>무릉천
(30,수립)</td><td>박산천
(0,수립)</td><td>보흥천
(65,수립)</td><td>봉두천
(72,수립)</td></tr>
<tr><td>북고천
(100,수립)</td><td>삼성천
(70,수립)</td><td>유천천
(57,수립)</td><td>석성천
(100,수립)</td><td>광명천
(61,수립)</td><td>신영천
(72,수립)</td><td>월송천
(72,수립)</td></tr>
<tr><td colspan="2"></td><td colspan="2">요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td rowspan="4">하 천
개수율</td><td colspan="2">전체</td><td colspan="2">1,177.07</td><td colspan="2">946.18</td><td colspan="2">0.80</td></tr>
<tr><td colspan="2">국가</td><td colspan="2">51.27</td><td colspan="2">40.71</td><td colspan="2">0.79</td></tr>
<tr><td colspan="2">지방1급</td><td colspan="2">84.00</td><td colspan="2">77.64</td><td colspan="2">0.92</td></tr>
<tr><td colspan="2">지방2급</td><td colspan="2">1,041.80</td><td colspan="2">827.83</td><td colspan="2">0.79</td></tr>
<tr><td>유역면적</td><td colspan="3">1,795 ㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">15</td></tr>
<tr><td rowspan="4">PFD
산정결과</td><td colspan="2" rowspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td rowspan="2">인구지수</td><td rowspan="2">자산지수</td><td rowspan="2">도시화율</td><td rowspan="2">사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td></tr>
<tr><td>지수</td><td>순위</td><td>0.4497</td><td>71/150</td><td>0.1268</td><td>0.2229</td><td>0.0708</td><td>0.0291</td></tr>
<tr><td rowspan="2">0.4908</td><td rowspan="2">74/150</td><td colspan="2">위험성</td><td>홍수피해
지 수</td><td>확율강우
지 수</td><td>외수방어
능력지수</td><td rowspan="2">댐 지수</td></tr>
<tr><td>지수</td><td>순위</td><td></td><td></td><td></td></tr>
<tr><td>0.5356</td><td>92/150</td><td>0.2602</td><td>0.1124</td><td>0.0582</td><td>0.0049</td></tr>
<tr><td>특성</td><td>B4</td><td colspan="4">주의를 요하는 지역</td><td>유역위치</td><td>중류</td></tr>
<tr><td rowspan="2">홍수피해 현황
(20년 평균)</td><td colspan="2">총피해액</td><td rowspan="2">밀도
(천원/㎢)</td><td rowspan="2">이재민
(인)</td><td rowspan="2">인명피해
(인)</td><td rowspan="2">침수면적
(ha)</td><td colspan="2" rowspan="2">공공시설물피해
(천원)</td></tr>
<tr><td colspan="2">피해액 (천원)</td></tr>
<tr><td colspan="2">15,726,792</td><td>8,762</td><td>1,231</td><td>13</td><td>3,076</td><td colspan="2">10,052,273</td></tr>
<tr><td rowspan="3">토지이용현황
('98년말 기준)</td><td colspan="2">도시지역</td><td colspan="2">농경지역</td><td colspan="2">산지지역</td><td>전체면적
(㎢)</td><td rowspan="2">특성</td></tr>
<tr><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td>면적(㎢)</td><td>비율(%)</td><td></td></tr>
<tr><td>77.60</td><td>4.32</td><td>441.60</td><td>24.60</td><td>1,157.45</td><td>64.49</td><td>1,794.87</td><td>혼합지역</td></tr>
<tr><td>행정구역
(편입비율:%)</td><td>공주시
(0.95)</td><td>논산시
(0.1)</td><td>부여군
(0.64)</td><td>연기군
(0.27)</td><td>청양군
(0.72)</td><td></td><td></td><td></td></tr>
</table>

수계명	금강		단 위 구역명	금강 본류 (논산천 합류전)		단위구역 코 드	3012
교 량 (km)	전 체			고속도로		국도	
	개소수	연장		개소수	연장	개소수	연장
	299	9,069.05		2.50	77.74	110.23	5,179.41
	특별광역시도		지방도			시군도	
	개소수	연장	개소수	연장		개소수	연장(km)
	-	-	80.27	1,758.86		106.09	2,053.03
도 로 (km)	합계		고속도로	국도	특별시도	지방도	시군도
	1,124.58		3.04	296.21	-	341.27	484.07
사회기반 시설지수			철 도 (km)	인구현황			자산현황 (천원/㎡)
액 수(억원)	밀도(억원/㎢)			전체인구(명)		밀도(명/㎢)	
132,975	74			262,965		147	1,176

□ 논산천 유역(3013)

논산천 유역인 3013번 구역은 충남 논산시 및 전북 익산시, 완주군 등의 일부지역을 포함한 중류에 위치한 지역으로, 단위구역 특성상 B지역의 농경지역이며, 개수율은 79%이며, 피해밀도도 6,590천원/㎢으로 전국 평균보다 높은 지역이다. 또한 이 구역의 토지이용현황은 50.57%가 임야, 34.78%가 농경지, 6.88%가 도시지역인 농경지역이며, 이 구역의 하천현황은 국가하천인 논산천, 강경천, 노성천 구간은 100년 빈도, 어랑천, 마산천, 논산천 지방1급하천 구간은 80년 빈도, 노성천 지방1급 하천 구간 및 장성천, 양촌천, 오산천, 연산천, 장선천 등은 50년 빈도의 계획 홍수량을 채택하였으며, 대촌천, 월암천, 하대천, 방축천, 안심천 등은 미개수 하천이다. 이 지역의 특성은 잠재성은 높으나 위험성이 낮은 주의를 요하는 지역으로, 미개수 하천에 대한 개수공사를 실시하고, 또한 논산천 및 강경천 등의 농경지 침수가 잦은 지역에 대해서는 배수시설을 신설·보강하여야 할 것이다.

건설교통부

수계명	금강		단 위 구역명	논산천			단위구역 코 드	3013
하천명 (개수율(%), 하천정비 기본계획 수립유무)	국가하천	논산천 (100,수립)	노성천 (100,수립)	강경천 (100,수립)				
	지방1급	논산천 (82,수립)	강경천 (60,수립)					
	지방2급	장선천 (17,수립)	괴목동천 (33,수립)	안심천 (20,수립)	오산천 (12,수립)	양촌천 (100,수립)	입촌천 (88,수립)	장성천 (83,수립)
		응촌천 (100,수립)	명암천 (21,수립)	왕암천 (78,수립)	노성천 (100,수립)	하대천 (100,수립)	월암천 (100,수립)	용두천 (99,수립)
		월산천 (100,수립)	추천 (100,수립)	대명천(100,수립)	대촌천 (100,수립)	옥천 (0,수립)	연산천 (81.16,수립)	도곡천 (0,수립)
		화암천 (63,수립)	왕덕천 (79,수립)	방축천 (100,수립)	시묘천 (100,수립)	강경천 (95,수립)	일월천 (0,수립)	신량천 (100,수립)
		마산천 (100,수립)	마산천 (100,수립)	황화천 (69,수립)	수철천 (85,수립)	어량천 (89,수립)	어량천 (89,수립)	

하 천 개수율		요개수 연장(㎞)	기개수 연장(㎞)	개수율(%)
	전체	433.26	340.56	0.79
	국가	54.16	54.16	1.00
	지방1급	25.90	20.00	0.77
	지방2급	353.20	266.40	0.75

유역면적	652 ㎢	배수펌프장 (개소수)	4

PFD 산정결과	PFD산정결과		잠재성		인구지수	자산지수	도시화율	사회기반 시설지수
	지수	순위	지수	순위				
	0.5480	55/150	0.5471	48/150	0.2126	0.1711	0.1226	0.0409
			위험성		홍수피해 지 수	확율강우 지 수	외수방어 능력지수	댐 지수
			지수	순위				
			0.5489	83/150	0.2228	0.0968	0.0679	0.0614
	특성	A3	시급한 대책을 요하는 지역				유역위치	중류

홍수피해 현황 (20년 평균)	총피해액	밀도	이재민	인명피해	침수면적	공공시설물피해
	피해액 (천원)	(천원/㎢)	(인)	(인)	(ha)	(천원)
	4,298,491	6,590	773	2	1,585	2,328,894

토지이용현황 ('98년말 기준)	도시지역		농경지역		산지지역		전체면적 (㎢)	특성
	면적(㎢)	비율(%)	면적(㎢)	비율(%)	면적(㎢)	비율(%)		
	44.86	6.88	226.84	34.78	329.87	50.57	652.29	농경지역

행정구역 (편입비율:%)	완주군	익산시	공주시	논산시				
	(0.12)	(0.13)	(0.05)	(0.72)				

교 량 (km)	전 체		고속도로		국도	
	개소수	연장	개소수	연장	개소수	연장
	147	4,916.70	20	642.12	41	1,707.35
	특별광역시도		지방도		시군도	
	개소수	연장	개소수	연장	개소수	연장(km)
	-	-	37	1,336.47	49.09	1,230.76

도 로 (km)	합계	고속도로	국도	특별시도	지방도	시군도
	481.12	25.27	84.50	-	147.78	223.56

사회기반 시설지수		철 도	인구현황		자산현황
액 수(억원)	밀도(억원/㎢)	(km)	전체인구(명)	밀도(명/㎢)	(천원/㎡)
61,591	94	38	202,404	310	648

건설교통부

□ 금강 본류 유역(논산천 합류후, 3014)

금강 하구 유역인 3014번 구역은 충남 서천군, 부여군 및 전북 군산시, 익산시 등의 일부지역을 포함한 하류에 위치한 지역으로, 단위구역 특성상 A 지역의 도시지역이며, 개수율은 73%이며, 피해밀도도 10,866천원/㎢으로 전국 평균보다 높은 지역이다. 또한 이 구역의 토지이용현황은 38.77%가 임야, 43.04%가 농경지, 8.09%가 도시지역인 농경지가 혼합된 도시지역이며, 이 구역의 하천현황은 국가하천인 금강본류는 100년 빈도, 길산천은 80년 빈도의 계획 홍수량을, 산북천 등은 50년 빈도의 계획 홍수량을 채택하였으며, 경포천, 옥포천, 광암천, 주상천 원산천, 주당천, 칠산천 등은 미개수 하천이다. 이 지역의 특성은 잠재성 및 위험성이 높은 시급한 대책을 요하는 지역으로, 지류의 미개수 하천에 대한 개수공사를 실시하고, 길산천 등의 농경지 침수가 잦은 지역에 대해서는 배수시설을 신설·보강하여야 할 것이다.

<table>
<tr><td>수계명</td><td colspan="2">금강</td><td>단 위
구역명</td><td colspan="3">금강본류(논산천 합류후)</td><td>단위구역
코 드</td><td>3014</td></tr>
<tr><td rowspan="8">하천명
(개수율(%),
하천정비
기본계획
수립유무)</td><td>국가하천</td><td>금강
(79,수립)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>지방1급</td><td>길산천
(100,수립)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="6">지방2급</td><td>경포천
(82,수립)</td><td>계양천
(100,수립)</td><td>광암천
(24,수립)</td><td>길산천
(94,수립)</td><td>나궁천
(62,수립)</td><td>도마천
(87,수립)</td><td>직천
(69,수립)</td></tr>
<tr><td>화산천
(79,수립)</td><td>단상천
(77,수립)</td><td>사동천
(96,수립)</td><td>지토천
(52,수립)</td><td>산북천
(41,수립)</td><td>죽청천
(78,수립)</td><td>대조
천(52,수립
)</td></tr>
<tr><td>중신천
(50,수립)</td><td>나암천
(0,수립)</td><td>송천
(50,수립)</td><td>고창천
(53,수립)</td><td>옥포천
(42,수립)</td><td>원당천
(0,수립)</td><td>원산천
(100,수립)</td></tr>
<tr><td>용동천
(100,수립)</td><td>여사천
(47,수립)</td><td>입포천
(100,수립)</td><td>주교천
(100,수립)</td><td>청포천
(0,수립)</td><td>칠산천
(100,수립)</td><td>임천천
(100,수립)</td></tr>
<tr><td>남성천
(0,수립)</td><td>함열천
(52,수립)</td><td>갈산천
(70,수립)</td><td>은천
(52,수립)</td><td>해지천
(50,수립)</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="5">하 천
개수율</td><td colspan="2"></td><td>요개수 연장(㎞)</td><td colspan="2">기개수 연장(㎞)</td><td colspan="2">개수율(%)</td></tr>
<tr><td colspan="2">전체</td><td>358.33</td><td colspan="2">262.12</td><td colspan="2">0.73</td></tr>
<tr><td colspan="2">국가</td><td>23.23</td><td colspan="2">18.45</td><td colspan="2">0.79</td></tr>
<tr><td colspan="2">지방1급</td><td>20.10</td><td colspan="2">20.10</td><td colspan="2">1.00</td></tr>
<tr><td colspan="2">지방2급</td><td>315.00</td><td colspan="2">223.57</td><td colspan="2">0.71</td></tr>
<tr><td>유역면적</td><td colspan="3">511 ㎢</td><td colspan="2">배수펌프장
(개소수)</td><td colspan="2">3</td></tr>
<tr><td rowspan="4">PFD
산정결과</td><td colspan="2">PFD산정결과</td><td colspan="2">잠재성</td><td>인구지수</td><td>자산지수</td><td>도시화율</td><td>사회기반
시설지수</td></tr>
<tr><td>지수</td><td>순위</td><td>지수</td><td>순위</td><td>0.2374</td><td>0.1728</td><td>0.1396</td><td>0.459</td></tr>
<tr><td rowspan="2">0.5814</td><td rowspan="2">47/150</td><td colspan="2">위험성</td><td>홍수피해
지 수</td><td>확율강우
지 수</td><td>외수방어
능력지수</td><td rowspan="2">댐 지수</td></tr>
<tr><td>지수</td><td>순위</td><td></td><td></td><td></td><td></td></tr>
<tr><td>특성</td><td>A3</td><td colspan="4">시급한 대책을 요하는 지역</td><td>유역위치</td><td>하류</td></tr>
</table>

수계명	금강		단 위 구역명	금강본류(논산천 합류후)			단위구역 코 드	3014
홍수피해 현황 (20년 평균)	총피해액			이재민 (인)	인명피해 (인)	침수면적 (ha)	공공시설물피해 (천원)	
	피해액 (천원)		밀도 (천원/㎢)					
	5,558,038		10,866	764	5	2,212	2,649,778	
토지이용현황 ('98년말 기준)	도시지역		농경지역		산지지역		전체면적 (㎢)	특성
	면적(㎢)	비율(%)	면적(㎢)	비율(%)	면적(㎢)	비율(%)		
	41.38	8.09	220.13	43.04	198.31	38.77	511.50	혼합지역
행정구역 (편입비율:%)	군산시 (0.11)	익산시 (0.32)	논산시 (0)	부여군 (0.24)	서천군 (0.44)			
교 량 (km)	전 체			고속도로		국도		
	개소수	연장		개소수	연장	개소수	연장	
	83	3,203.09		14	1,386.51	23	932.67	
	특별광역시도		지방도			시군도		
	개소수	연장	개소수	연장		개소수	연장(km)	
	-	-	17.28	315		28	568.69	
도 로 (km)	합계		고속도로	국도	특별시도	지방도	시군도	
	440.13		11.85	84.37	0	115.86	228.05	
사회기반 시설지수			철 도 (km)	인구현황			자산현황 (천원/㎡)	
액 수(억원)	밀도(억원/㎢)			전체인구(명)		밀도(명/㎢)		
53,249	104		16	196,446		384	661	

건설교통부

◆ 홍수피해잠재능(PFD) 산정을 위한 구성요소

치수단위구역	잠재성요소				위험성요소			
	인구 밀도 (명/㎢)	자산 밀도 (천원/㎡)	도시화율 (%)	사회기반시설물 (억원/㎢)	피해 밀도 (천원/㎢)	확률강우량 (mm)	개수율 (%)	댐홍수조절량 (10^6/㎢)
3001	48.3	178.9	2.6	69.3	2361.3	308.3	15.4	0.0
3002	49.4	30.4	2.2	55.9	1254.0	265.0	26.1	0.0
3003	53.0	128.5	2.2	57.7	1194.5	257.9	24.6	0.0
3004	91.8	403.9	3.1	68.0	2721.2	270.6	59.7	0.0
3005	82.1	270.5	3.0	69.2	4336.3	281.2	47.1	0.0
3006	112.8	182.8	4.1	93.9	6543.1	295.0	79.0	0.0
3007	79.1	193.2	3.4	80.7	15998.0	298.7	73.4	0.0
3008	469.4	1300.4	6.4	137.0	8542.1	319.3	71.7	0.0
3009-1	1257.4	448.9	10.5	185.2	6699.7	331.7	67.8	0.0
3009-2	2183.3	788.4	16.4	403.1	3845.0	351.1	79.9	0.0
3009-3	627.1	714.2	5.8	103.0	3419.9	310.1	28.4	0.0
3009-4	3004.2	2303.8	17.9	403.6	5946.3	342.2	92.9	0.0
3009-5	1625.6	219.0	18.6	403.5	7299.7	320.1	79.4	0.0
3010	352.0	187.6	7.9	165.8	7301.0	314.5	79.4	207.1
3011-1	163.7	595.3	5.8	96.6	3601.9	300.3	69.2	0.0
3011-2	1515.0	376.3	12.6	251.7	10172.3	299.7	82.7	0.0
3011-3	666.2	914.2	8.6	152.5	5739.0	297.4	78.9	0.0
3012	146.5	1176.5	4.3	74.1	8762.1	341.8	80.4	119.5
3013	310.3	648.4	6.9	94.4	6589.9	327.8	78.6	0.0
3014	384.1	660.6	8.1	104.1	10866.2	318.0	73.2	105.3

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◆ 치수단위구역별 홍수피해잠재능(PFD) 산정결과

치수단위구역	잠재성요소				위험성요소					잠재성요소 지수	위험성요소 지수	PFD 지수	치수단위구역범위	등급
	인구밀도 지수	자산밀도 지수	도시화율 지수	사회기반시설밀도 지수	피해밀도 지수	확률강우량 지수	개수율 지수	댐홍수조절량 지수	내수방어능력 지수					
3001	0.0975	0.1972	0.1302	0.2618	0.1555	0.3715	0.9876	0.6137	1.0000	0.1504	0.5786	0.2950	금강-금강 상류(용담댐 상류)	D
3002	0.1003	0.0117	0.0876	0.1788	0.0207	0.1495	0.9480	0.6137	1.0000	0.0790	0.4819	0.1951	금강-금강 본류(무주남대천 합류전)	C
3003	0.1098	0.1321	0.0951	0.1899	0.0171	0.1218	0.9557	0.6137	1.0000	0.1216	0.4776	0.2409	금강-무주남대천	C
3004	0.2057	0.4203	0.1958	0.2540	0.2168	0.1737	0.5712	0.6137	1.0000	0.2729	0.4325	0.3436	금강-금강 본류(초강천 합류전)	C
3005	0.1832	0.3010	0.1894	0.2612	0.4892	0.2235	0.7584	0.6137	1.0000	0.2276	0.5804	0.3634	금강-초강천	D
3006	0.2518	0.2020	0.3278	0.4059	0.7390	0.2963	0.2199	0.6137	1.0000	0.2675	0.5083	0.3687	금강-금강 본류(보청천 합류전)	D
3007	0.1759	0.2147	0.2331	0.3312	0.9817	0.3166	0.3232	0.6137	1.0000	0.2145	0.6162	0.3636	금강-보청천	D
3008	0.6497	0.7682	0.5759	0.6023	0.8583	0.4351	0.3562	0.6137	1.0000	0.6658	0.6127	0.6387	금강-금강 본류(갑천 합류전)	A
3009-1	0.8671	0.4535	0.8132	0.7443	0.7513	0.5060	0.4287	0.6137	1.0000	0.7200	0.6166	0.6663	금강-갑천 상류(두계천 합류점)	A
3009-2	0.9358	0.6305	0.9359	0.9535	0.4121	0.6111	0.2026	0.6137	1.0000	0.8460	0.4680	0.6292	금강-갑천 본류(유등천 합류전)	B
3009-3	0.7253	0.6003	0.5207	0.4536	0.3401	0.3818	0.9351	0.6137	1.0000	0.6197	0.6203	0.6200	금강-유등천 상류(국가하천 구간 상류)	A
3009-4	0.9605	0.8829	0.9507	0.9537	0.6862	0.5642	0.0097	0.6137	1.0000	0.9346	0.4830	0.6719	금강-유등천 하류(국가하천 구간)	B
3009-5	0.9036	0.2451	0.9560	0.9536	0.7932	0.4398	0.2117	0.6137	1.0000	0.7215	0.5508	0.6304	금강-갑천 본류(유등천 합류후)	A
3010	0.5683	0.2078	0.6860	0.6950	0.7933	0.4073	0.2117	0.0463	1.0000	0.4964	0.4876	0.4920	금강-금강 본류(미호천 합류전)	C
3011-1	0.3468	0.5433	0.5197	0.4204	0.3714	0.3255	0.4017	0.6137	1.0000	0.4477	0.4584	0.4530	금강-미호천 상류(무심천 합류전)	C
3011-2	0.8944	0.3983	0.8741	0.8554	0.9124	0.3222	0.1520	0.6137	1.0000	0.7376	0.5451	0.6341	금강-무심천	A
3011-3	0.7400	0.6741	0.7297	0.6556	0.6655	0.3096	0.2216	0.6137	1.0000	0.7097	0.4894	0.5894	금강-미호천 본류(무심천 합류후)	B
3012	0.3171	0.7431	0.3538	0.2913	0.8673	0.5618	0.1939	0.0490	1.0000	0.4497	0.5356	0.4908	금강-금강 본류(논산천 합류전)	D
3013	0.5314	0.5702	0.6132	0.4088	0.7427	0.4841	0.2264	0.6137	1.0000	0.5471	0.5489	0.5480	금강-논산천	A
3014	0.5934	0.5760	0.6979	0.4593	0.9283	0.4276	0.3283	0.0497	1.0000	0.5957	0.5675	0.5814	금강-금강 본류(논산천 합류후)	A

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4. 문화재,민속자료,기념물 현황

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일련번호	명 칭	출토지역	관할기관	소장번호
1	갈현성 (葛峴城) -- 시도기념물 12호	대전 동구	문화재청	51
2	갑진북정록 (甲辰北征錄) -- 문화재자료 40호	대전 대덕구	문화재청	118
3	검파형동기(劍把形銅器)	대전 서구 괴정동 244-14	국립중앙박물관	5
4	견두산성 (犬頭山城) -- 시도기념물 20호	대전 동구	문화재청	59
5	계현산성 (鷄峴山城) -- 시도기념물 24호	대전 동구	문화재청	63
6	고봉산성 (古峯山城) -- 시도기념물 21호	대전 동구	문화재청	60
7	고산사대웅전 (高山寺大雄殿) -- 시도유형문화재 10호	대전 동구	문화재청	12
8	고흥유씨정려각및비 (高興柳氏旌閭閣및碑) -- 시도유형문화재 25호	대전 대덕구	문화재청	27
9	곡옥(曲玉)	대전 서구 괴정동 244-14	국립중앙박물관	6
10	관동묘려 (寬洞墓廬) -- 문화재자료 37호	충북 청원군 문의 후곡리	문화재청	115
11	구성동유적 (구성동유적) -- 시도기념물 37호	대전 유성구	문화재청	76
12	구성리산성 (九城里山城) -- 시도기념물 6호	대전 유성구	문화재청	45
13	구완동상감청자가마터 (舊完洞象嵌靑磁가마터) -- 시도기념물 35호	대전 중구	문화재청	74
14	구완동청자가마터 (舊完洞靑磁가마터) -- 시도기념물 34호	대전 중구	문화재청	73
15	국사봉유적 (國師峰遺蹟) -- 문화재자료 38호	대전 중구	문화재청	116
16	궁동유적 (궁동유적) -- 시도기념물 39호	대전 유성구	문화재청	78
17	권준의호구단자 (權俊의戶口單子) -- 시도유형문화재 12호	대전 대덕구	문화재청	14
18	금암집판목 (琴巖雜版木) -- 시도유형문화재 23호	대전 중구	문화재청	25
19	기성관 (杞城館) -- 문화재자료 29호	대전 유성구	문화재청	107
20	김반·김익겸의묘 (金槃·김익겸의墓) -- 문화재자료 7호	대전 유성구	문화재청	87
21	김여온의묘 (金汝溫의墓) -- 문화재자료 16호	대전 서구	문화재청	94
22	김익희의묘 (金益熙의墓) -- 시도기념물 5호	대전 유성구	문화재청	44
23	김정선생묘소일원 (金淨先生墓所一圓) -- 문화재자료 25호	대전 동구	문화재청	103
24	남간정사 (南澗精舍) -- 시도유형문화재 4호	대전 동구	문화재청	6
25	내동리지석묘 (內洞里支石墓) -- 시도기념물 3호	대전 유성구	문화재청	42
26	노고산성 (老姑山城) -- 시도기념물 19호	대전 동구	문화재청	58
27	노은동유적 (노은동유적) -- 시도기념물 38호	대전 유성구	문화재청	77
28	농암진적 (農巖眞蹟) -- 시도유형문화재 16호	대전 대덕구	문화재청	18
29	능성 (陵城) -- 시도기념물 11호	대전 동구	문화재청	50
30	다뉴조문경(多뉴粗文鏡)	대전 서구 괴정동 244-14	국립중앙박물관	2
31	단재신채호선생생가지 (丹齋申采浩先生生家址) -- 시도기념물 26호	대전 중구	문화재청	65
32	단청장 (丹靑匠) -- 시도무형문화재 11호	대전 서구	문화재청	40
33	대덕계족산성 (大德鷄足山城) -- 사적 355호	대전 대덕구	문화재청	2
34	대덕법동리석장승 (大德法洞里石長生) -- 시도민속자료 1호	대전 대덕구	문화재청	79
35	대전의암은굿 (大田의암은굿) -- 시도무형문화재 2호	대전 중구	문화재청	32
36	도산서원 (道山書院) -- 문화재자료 3호	대전 서구	문화재청	83
37	독립지사김태원생가유허 (獨立志士金泰源生家遺墟) -- 문화재자료 41호	대전 동구	문화재청	119
38	동국사략 (東國史略) -- 문화재자료 18호	대전 대덕구	문화재청	96
39	동탁(銅鐸)	대전 서구 괴정동 244-14	국립중앙박물관	4
40	둔산선사유적지 (屯山先史遺蹟地) -- 시도기념물 28호	대전 서구	문화재청	67
41	류혁연의묘 (柳赫然의墓) -- 문화재자료 28호	대전 서구	문화재청	106
42	마산동산성 (馬山洞山城) -- 시도기념물 30호	대전 동구	문화재청	69
43	마제석촉(磨製石鏃)	대전 서구 괴정동 244-14	국립중앙박물관	9
44	磨製石a	대전 유성구 진잠면 내동리 산9-1	국립부여박물관	1
45	만회집탄옹문집판목 (晩悔集炭翁文集板木) -- 시도유형문화재 17호	대전 서구	문화재청	19
46	매사냥 (매사냥) -- 시도무형문화재 8호	대전 동구	문화재청	37
47	문정공왕고간독 (文正公王考簡牘) -- 문화재자료 22호	대전 대덕구	문화재청	100
48	문충사 (文忠祠) -- 문화재자료 4호	대전 동구	문화재청	84
49	박원상의묘 (朴元象의墓) -- 문화재자료 42호	대전 동구	문화재청	120
50	박인년교지 (朴引年敎旨) -- 문화재자료 24호	대전 대덕구	문화재청	102
51	박팽년선생유허 (朴彭年先生遺墟) -- 시도기념물 1호	대전 동구	문화재청	41
52	박팽년선생유허비 (朴彭年先生遺墟碑) -- 문화재자료 8호	대전 동구	문화재청	88
53	방패형동기(防牌形銅器)	대전 서구 괴정동 244-14	국립중앙박물관	3
54	백골산성 (白骨山城) -- 시도기념물 22호	대전 동구	문화재청	61
55	보문사지 (普文寺址) -- 시도기념물 4호	대전 중구	문화재청	43
56	보문사지석조 (普文寺址石槽) -- 문화재자료 10호	대전 중구	문화재청	90
57	보문산마애여래좌상 (寶文山磨崖如來坐像) -- 시도유형문화재 19호	대전 중구	문화재청	21
58	보문산성 (寶文山城) -- 시도기념물 10호	대전 중구	문화재청	49
59	봉소루 (鳳巢樓) -- 문화재자료 35호	대전 중구	문화재청	113

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일련번호	명칭	출토지역	관할기관	소장번호
60	불상조각장 (佛像彫刻匠) -- 시도무형문화재 6호	대전 서구	문화재청	35
61	비래동고인돌 (飛來洞고인돌) -- 시도기념물 33호	대전 대덕구	문화재청	72
62	비파산성 (琵琶山城) -- 시도기념물 25호	대전 동구	문화재청	64
63	사정성 (沙井城) -- 시도기념물 14호	대전 중구	문화재청	53
64	삼강행실도 (三綱行實圖) -- 문화재자료 19호	대전 대덕구	문화재청	97
65	삼매당 (三梅堂) -- 문화재자료 1호	대전 동구	문화재청	81
66	삼정동산성 (三丁洞山城) -- 시도기념물 17호	대전 동구	문화재청	56
67	상제집략판목 (喪祭類略版木) -- 시도유형문화재 21호	대전 서구	문화재청	23
68	설고시첩 (雪皐詩帖) -- 시도유형문화재 27호	대전 대덕구	문화재청	29
69	성북동산성 (城北洞山城) -- 시도기념물 18호	대전 유성구	문화재청	57
70	성치산성 (城峙山城) -- 시도기념물 29호	대전 동구	문화재청	68
71	소목장 (小木匠) -- 시도무형문화재 7호	대전 중구	문화재청	36
72	소문산성 (蘇文山城) -- 시도기념물 23호	대전 유성구	문화재청	62
73	송순주 (松筍酒) -- 시도무형문화재 9호	대전 대덕구	문화재청	38
74	송씨양세정려 (송씨양세정려) -- 문화재자료 43호	대전 중구	문화재청	121
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110	정생동백자가마터 (政生洞白磁가마터) -- 시도기념물 36호	대전 중구	문화재청	75
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124	한국식동검(韓國式銅劍)	대전 서구 괴정동 244-14	국립중앙박물관	1
125	화산세가필적 (花山世家筆蹟) -- 문화재자료 23호	대전 대덕구	문화재청	101
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127	회덕동춘선생고택(정침,가묘,별묘) (懷德同春先生故宅(正寢,家廟,別廟)) -- 시도유형문화재 3호	대전 대덕구	문화재청	5
128	회덕쌍청당 (懷德雙淸堂) -- 시도유형문화재 2호	대전 대덕구	문화재청	4
129	회덕향교대성전 (懷德鄕校大成殿) -- 문화재자료 5호	대전 대덕구	문화재청	85
130	흑색마연장경호(黑色磨硏長頸壺)	대전 서구 괴정동 244-14	국립중앙박물관	8
131	흑석동산성 (黑石洞山城) -- 시도기념물 15호	대전 서구	문화재청	54
132	가교비 (架橋碑) -- 문화재자료 118호	충남 부여군	문화재청	788
133	가선대부인녕부윤영락15년<전흥> (嘉善大夫仁寧府尹永樂15年<田興>) -- 보물 727-2호	충남 논산시	문화재청	132
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135	玉금동은제식리(金銅銀製飾履)	충남 공주시 송산리 무령왕릉	국립공주박물관	64
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137	玉妃금제관식(金製冠飾) -- 국보(國寶) 155호	충남 공주시 송산리 무령왕릉	국립공주박물관	25
138	왕비금제이식(金製耳飾) -- 보물(寶物) 157호	충남 공주시 송산리 무령왕릉	국립공주박물관	27
139	玉妃목제족좌(木製足座) -- 국보(國寶) 165호	충남 공주시 송산리 무녕왕릉	국립공주박물관	20
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141	玉지석(誌石) -- 국보(國寶) 163호	충북 청원군 문의 후곡리	국립공주박물관	16
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143	가선대부인순부윤선덕9년<전흥> (嘉善大夫仁順府尹宣德9年<田興>) -- 보물 727-3호	충남 논산시	문화재청	133
144	가정목은선생문집판 (稼亭牧隱先生文集板) -- 시도유형문화재 77호	충남 서천군	문화재청	455
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149	감금탄목제편옥(嵌金炭木製扁玉)	충남 공주시 송산리 무령왕릉	국립공주박물관	49
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158	갑사사적비 (甲寺史蹟碑) -- 시도유형문화재 52호	충남 공주시	문화재청	436
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161	갑사석조보살입상 (甲寺石造菩薩立像) -- 시도유형문화재 51호	충남 공주시	문화재청	435
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172	개심사심검당 (開心寺尋劍堂) -- 문화재자료 358호	충남 서산시	문화재청	974
173	개심사영산회괘불탱 (開心寺靈山會掛佛幀) -- 보물 1264호	충남 서산시	문화재청	175
174	개태사오층석탑 (開泰寺五層石塔) -- 문화재자료 274호	충남 논산시	문화세청	901
175	개태사지 (開泰寺址) -- 시도기념물 44호	충남 논산시	문화재청	590
176	개태사지석문입상 (開泰寺址石佛立像) -- 보물 219호	충남 논산시	문화재청	60

일련번호	영 칭	출토지역	관합기관	소장번호
177	개태사지석조 (開泰寺址石槽) -- 문화재자료 275호	충남 논산시	문화재청	902
178	개태사철확 (開泰寺鐵鑊) -- 시도민속자료 1호	충남 논산시	문화재청	694
179	건지산성 (乾芝山城) -- 사적 60호	충남 서천군	문화재청	189
180	劍把形銅器	충남 예산군 대흥면 동서리 산 5-2	국립부여박물관	45
181	검파형동기(劍把形銅器)	충남 아산시 신창면 남성리 산(山) 4	국립중앙박물관	13
182	결성농요 (結城農謠) -- 시도무형문화재 20호	충남 홍성군	문화재청	542
183	결성동헌 (結城東軒) -- 문화재자료 306호	충남 홍성군	문화재청	931
184	결성향교 (結城鄕校) -- 시도기념물 134호	충남 홍성군	문화재청	673
185	경옥제곡옥(硬玉製曲玉)	충남 공주시 송산리 무녕왕릉	국립공주박물관	42
186	경이정 (慶夷亭) -- 시도유형문화재 123호	충남 태안군	문화재청	492
187	계룡백일주 (鷄龍百日酒) -- 시도무형문화재 7호	충남 공주시	문화재청	530
188	계룡산신도내주초석석재 (鷄龍山新都內柱礎石石材) -- 시도유형문화재 66호	충남 논산시	문화재청	449
189	계룡산중악단 (鷄龍山中嶽壇) -- 보물 1293호	충남 공주시	문화재청	179
190	계룡산초혼각지 (鷄龍山招魂閣址) -- 시도기념물 18호	충남 공주시	문화재청	567
191	계백장군유적전승지 (階伯將軍遺蹟傳承地) -- 시도기념물 74호	충남 논산시	문화재청	613
192	계봉사오층석탑 (鷄鳳寺五層石塔) -- 문화재자료 147호	충남 청양군	문화재청	811
193	계유명삼존천불비상 (癸酉銘三尊千佛碑像) -- 국보 108호	충남 공주시	문화재청	9
194	계유명삼존천불비상(癸酉銘三尊千佛碑像) -- 국보(國寶) 108호	충남 연기군 조치원면 서창리 서광암	국립중앙박물관	6
195	고간원지 (古諫院址) -- 시도기념물 51호	충남 공주시	문화재청	597
196	고경명선생비 (高敬命先生碑) -- 문화재자료 28호	충남 금산군	문화재청	720
197	고란사 (皐蘭寺) -- 문화재자료 98호	충남 부여군	문화재청	769
198	고령박씨종중재심 (高靈朴氏宗中齋室) -- 문화재자료 289호	충남 천안시	문화재청	915
199	고방채 (고방채) -- 중요민속자료 191-3호	충남 예산군	문화재청	350
200	고방채 (고방채) -- 중요민속자료 194-3호	충남 아산시	문화재청	360
201	고방채 (고방채) -- 중요민속자료 197-3호	충남 서천군	문화재청	377
202	高杯	충남 논산군 양촌면	국립부여박물관	25
203	高杯	충남 논산군 연산면 표정리 55-3	국립부여박물관	58
204	高杯	충남 부여군 연산면 표정리	국립부여박물관	59
205	高杯形器蓋	충남 논산군 연산면 신흥리	국립부여박물관	56
206	고정리양천허씨정려 (高井里陽川許氏旌閭) -- 시도유형문화재 109호	충남 논산시	문화재청	483
207	곡옥(曲玉)	충남 부여군 초촌면 송국리 산(山)	국립중앙박물관	10
208	곡적(필사본) (曲籍(筆寫本)) -- 중요민속자료 30-3-9호	충남 부여군	문화재청	302
209	골석제반가보살상(骨石製半跏菩薩像)	충남 부여군 부소산	국립중앙박물관	4
210	骨壺	충남 부여군 부여읍 관북리 추정왕궁지	국립부여박물관	90
211	공문 (公文) -- 중요민속자료 30-2-10호	충남 예산군	문화재청	276
212	공북루 (拱北樓) -- 시도유형문화재 37호	충남 공주시	문화재청	424
213	공산성광복루 (公山城光復樓) -- 문화재자료 50호	충남 공주시	문화재청	731
214	공산성쌍수정 (公山城雙樹亭) -- 문화재자료 49호	충남 공주시	문화재청	730
215	공산성진남루 (公山城鎭南樓) -- 문화재자료 48호	충남 공주시	문화재청	729
216	공주가척리석탑 (公州加尺里石塔) -- 시도유형문화재 98호	충남 공주시	문화재청	473
217	공주공산성 (公州公山城) -- 사적 12호	충남 공주시	문화재청	182
218	공주공산성연지 (公州公山城蓮池) -- 시도기념물 42호	충남 공주시	문화재청	589
219	공주구룡사지 (公州九龍寺址) -- 시도기념물 39호	충남 공주시	문화재청	586
220	공주귀산리만경노씨3의사생가지 (公州貴山里萬頃盧氏三義士生家址) -- 시도기념물 23호	충남 공주시	문화재청	571
221	공주남혈사지 (公州南穴寺址) -- 시도기념물 35호	충남 공주시	문화재청	582
222	공주동원리석탑 (公州東院里石塔) -- 시도유형문화재 49호	충남 공주시	문화재청	433
223	공주반죽동당간지주 (公州班竹洞幢竿支柱) -- 보물 150호	충남 공주시	문화재청	49
224	공주반죽동석조 (公州班竹洞石槽) -- 보물 149호	충남 공주시	문화재청	48
225	공주봉현리상여소리 (公州鳳峴里喪輿소리) -- 시도무형문화재 23호	충남 공주시	문화재청	545
226	공주상신리당간지주 (公州上莘里幢竿支柱) -- 시도유형문화재 94호	충남 공주시	문화재청	469
227	공주서혈사석불좌상 (公州西穴寺石佛坐像) -- 보물 979호	충남 공주시	문화재청	164
228	공주서혈사지 (公州西穴寺址) -- 시도기념물 37호	충남 공주시	문화재청	584
229	공주석장리구석기유적 (公州石莊里舊石器遺蹟) -- 사적 334호	충남 공주시	문화재청	209
230	공주소학리효자향덕비 (公州巢鶴里孝子向德碑) -- 시도유형문화재 99호	충남 공주시	문화재청	474
231	공주송산리고분군 (公州宋山里古墳群) -- 사적 13호	충남 공주시	문화재청	183
232	공주수원사지 (公州水源寺址) -- 시도기념물 36호	충남 공주시	문화재청	583
233	공주숙종대왕태실비 (公州肅宗大王胎室碑) -- 문화재자료 321호	충남 공주시	문화재청	945
234	공주순천박씨공신록권2책 (공주순천박씨공신록권2책) -- 문화재자료 375호	충남 공주시	문화재청	991
235	공주신관리석실고분 (公州新官里石室古墳) -- 시도기념물 7호	충남 공주시	문화재청	558

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일련번호	영 칭	출토지역	관할기관	소장번호
236	공주오룡리귀부 (公州五龍里龜趺) -- 시도유형문화재 61호	충남 공주시	문화재청	444
237	공주옥녀봉성 (公州玉女峰城) -- 시도기념물 99호	충남 공주시	문화재청	638
238	공주의당금동보살입상 (公州儀堂金銅菩薩立像) -- 국보 247호	충남 공주시	문화재청	25
239	공주장선리토실유적 (公州長善里土室遺蹟) -- 사적 433호	충남 공주시	문화재청	219
240	공주정지산백제유적 (公州艇止山百濟遺蹟) -- 시도기념물 147호	충남 공주시	문화재청	686
241	공주주미사지 (公州舟尾寺址) -- 시도기념물 38호	충남 공주시	문화재청	585
242	공주중동석조 (公州中洞石槽) -- 보물 148호	충남 공주시	문화재청	47
243	공주중동성당 (公州中洞聖堂) -- 시도기념물 142호	충남 공주시	문화재청	681
244	공주탄천장승제 (公州灘川長丞祭) -- 시도무형문화재 8호	충남 공주시	문화재청	531
245	공주학봉리도요지 (公州鶴峰里陶窯址) -- 사적 333호	충남 공주시	문화재청	208
246	공주향교 (公州鄕校) -- 시도유형문화재 75호	충남 공주시	문화재청	453
247	과형장식(과形裝飾)	충남 공주시 송산리 무령왕릉	국립공주박물관	40
248	관련문서 (關聯文書) -- 중요민속자료 30-3-4호	충남 부여군	문화재청	297
249	관복 (官服) -- 중요민속자료 110-1호	충남 부여군	문화재청	340
250	관음사석조여래불상 (觀音寺石造如來佛像) -- 문화재자료 233호	충남 아산시	문화재청	875
251	관음사석탑 (觀音寺石塔) -- 문화재자료 232호	충남 아산시	문화재청	874
252	관촉사배례석 (灌燭寺拜禮石) -- 시도유형문화재 53호	충남 논산시	문화재청	437
253	관촉사석등 (灌燭寺石燈) -- 보물 232호	충남 논산시	문화재청	62
254	관촉사석문 (灌燭寺石門) -- 문화재자료 79호	충남 논산시	문화재청	757
255	관촉사석조미륵보살입상 (灌燭寺石造彌勒菩薩立像) -- 보물 218호	충남 논산시	문화재청	59
256	광경사지삼층석탑 (廣景寺址三層石塔) -- 문화재자료 159호	충남 홍성군	문화재청	818
257	광경사지석불좌상 (廣景寺址石佛座像) -- 문화재자료 161호	충남 홍성군	문화재청	820
258	광남군이광악선무공신교서 (廣南君李光岳宣武功臣敎書) -- 보물 952호	충남 천안시	문화재청	163
259	광덕사고려사경 (廣德寺高麗寫經) -- 보물 390호	충남 천안시	문화재청	79
260	광덕사노사나불괘불탱 (廣德寺盧舍那佛掛佛幀) -- 보물 1261호	충남 천안시	문화재청	172
261	광덕사대웅전 (廣德寺大雄殿) -- 문화재자료 246호	충남 천안시	문화재청	886
262	광덕사부도 (廣德寺浮屠) -- 문화재자료 253호	충남 천안시	문화재청	890
263	광덕사부도 (廣德寺浮屠) -- 시도유형문화재 85호	충남 천안시	문화재청	461
264	광덕사삼층석탑 (廣德寺三層石塔) -- 시도유형문화재 120호	충남 천안시	문화재청	489
265	광덕사석사자 (廣德寺石獅子) -- 문화재자료 252호	충남 천안시	문화재청	889
266	광덕사소장면역사패교지 (廣德寺所藏免役賜牌敎旨) -- 보물 1246호	충남 천안시	문화재청	169
267	광덕사소장조선시대사경 (廣德寺所藏朝鮮時代寫經) -- 보물 1247호	충남 천안시	문화재청	170
268	광덕사천불전 (廣德寺千佛殿) -- 문화재자료 247호	충남 천안시	문화재청	887
269	광성부원군사우 (光城府院君祠宇) -- 문화재자료 143호	충남 보령시	문화재청	808
270	교지,전석규위가선대부자강희7년6월17일 (敎旨,田錫圭爲嘉善大夫者康熙7年6月17日) -- 보물 727-24호	충남 논산시	문화재청	154
271	교지,전석규위절충장군행용양위부호군자강희5년정월15일 (敎旨,田錫圭爲折衝將軍行龍驤衛副護軍者康熙5年正月15日) -- 보물 727-23호	충남 논산시	문화재청	153
272	교지,전석규위통정대부자강희4년6월23일 (敎旨,田錫圭爲通政大夫者康熙4年6月23日) -- 보물 727-22호	충남 논산시	문화재청	152
273	교지,전해위봉렬대부행목릉참봉자순치8년2월18일 (敎旨,田澥爲奉列大夫行穆陵參奉者順治8年2月18日) -- 보물 727-14호	충남 논산시	문화재청	144
274	교지,전해위봉정대부행목릉참봉자순치8년3월15일 (敎旨,田澥爲奉正大夫行穆陵參奉者順治8年3月15日) -- 보물 727-15호	충남 논산시	문화재청	145
275	교지,전해위조봉대부행목릉참봉자순치7년10월초8일 (敎旨,田澥爲朝奉大夫行穆陵參奉者順治7년10月初8日) -- 보물 727-12호	충남 논산시	문화재청	142
276	교지,전해위조산대부행목릉참봉자순치8년3월초3일 (敎旨,田澥爲朝散大夫行穆陵參奉者順治8年3月初3日) -- 보물 727-13호	충남 논산시	문화재청	143
277	교지,전해위중직대부행목릉참봉자순치8년8월초6일 (敎旨,田澥爲中直大夫行穆陵參奉者順治8年8月初6日) -- 보물 727-17호	충남 논산시	문화재청	147
278	교지,전해위중훈대부행목릉참봉자순치8년7월11일 (敎旨,田澥爲中訓大夫行穆陵參奉者順治8年7月11日) -- 보물 727-16호	충남 논산시	문화재청	146
279	교지유학전석규진사삼등제39인입격자만력40년7월16일 (敎旨幼學田錫圭進士三等第39人入格者萬曆40年7月16日) -- 보물 727-9호	충남 논산시	문화재청	139
280	교지유학전해생원삼등제10인입격자천계4년10월13일 (敎旨幼學田澥生員三等第10人入格者天啓4年10月13日) -- 보물 727-10호	충남 논산시	문화재청	140
281	구의(상,하) (구衣(上,下)) -- 중요민속자료 21-1호	충남 당진군	문화재청	241
282	군수리금동미륵보살입상 (軍守里金銅彌勒菩薩立像) -- 보물 330호	충남 부여군	문화재청	74
283	군수리석조여래좌상 (軍守里石造如來坐像) -- 보물 329호	충남 부여군	문화재청	73
284	군창지 (軍倉址) -- 문화재자료 109호	충남 부여군	문화재청	780
285	궁남지 (宮南池) -- 사적 135호	충남 부여군	문화재청	197

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286	권성선생영정 (權惺先生影幀) -- 문화재자료 325호	충남 서천군	문화재청	948
287	권충민공순절비 (權忠愍公殉節碑) -- 문화재자료 24호	충남 금산군	문화재청	717
288	귀암사 (龜岩祠) -- 문화재자료 301호	충남 금산군	문화재청	926
289	鬼板(귀판)	충남 부여군 부여읍 관북리 부소산 서복사지	국립부여박물관	5
290	금강사지 (金剛寺址) -- 시도기념물 31호	충남 부여군	문화재청	579
291	금곡서원 (金谷書院) -- 문화재자료 78호	충남 논산시	문화재청	756
292	金銅觀音菩薩	충남 서산시 해미면 산수리 33	국립부여박물관	40
293	金銅光背(금동광배)	충남 부여군 부여읍 쌍북리 부소산성 동문지	국립부여박물관	92
294	금동미륵보살반가상 (金銅彌勒菩薩半跏像) -- 국보 83호	충남 부여군	문화재청	7
295	金銅菩薩立像	충남 부여군 규암면 신리 중뜸부락	국립부여박물관	18
296	金銅佛坐像	충남 서산시 해미면 산수리 33	국립부여박물관	39
297	금동석가여래입상 (金銅釋迦如來立像) -- 보물 196호	충남 부여군	문화재청	56
298	金銅如來坐像	충남 부여군 규암면 신리 중뜸부락	국립부여박물관	17
299	금동은제식리(金銅銀製飾履)	충남 공주시 송산리 무령왕릉	국립공주박물관	65
300	金銅裝飾板	충남 부여군 부여읍 능산리 절터	국립부여박물관	96
301	金銅裝飾品, 金銅棺釘	충남 부여군 부여읍 능산리	국립부여박물관	37
302	金銅製耳飾	충남 부여군 부여읍 관북리 추정왕궁지	국립부여박물관	69
303	金銅製耳飾	충남 부여군 능산리 고분군	국립부여박물관	106
304	金銅製立佛(금동제입불)	충남 부여군 부여읍 가탑리	국립부여박물관	1
305	금동제환두대도(金銅製環頭大刀)	충남 공주시 송산리 무령왕릉	국립공주박물관	17
306	金銅地藏菩薩	충남 서산시 해미면 산수리 33	국립부여박물관	38
307	金銅透刻履			3
308	금모곡옥(金冒曲玉)	충남 공주시 송산리 무령왕릉	국립공주박물관	41
309	금산농바우끄시기 (금산농바우끄시기) -- 시도무형문화재 32호	충남 금산군	문화재청	554
310	금산대원정사 (錦山대원정사) -- 문화재자료 337호	충남 금산군	문화재청	960
311	금산물페기농요 (錦山물페기農謠) -- 시도무형문화재 16호	충남 금산군	문화재청	538
312	금산백령성 (錦山栢嶺城) -- 시도기념물 83호	충남 금산군	문화재청	622
313	금산보석사의은행나무 (錦山寶石寺의은행나무) -- 천연기념물 365호	충남 금산군	문화재청	232
314	금산용화리고인돌 (錦山龍化里고인돌) -- 문화재자료 336호	충남 금산군	문화재청	959
315	금산이치대첩지 (금산이치대첩지) -- 시도기념물 154호	충남 금산군	문화재청	693
316	금산인삼백주 (錦山人參白酒) -- 시도무형문화재 19호	충남 금산군	문화재청	541
317	금산천내리고인돌 (錦山天內里고인돌) -- 문화재자료 335호	충남 금산군	문화재청	958
318	금산천내리용호석 (錦山川內里龍虎石) -- 시도유형문화재 4호	충남 금산군	문화재청	397
319	금산충렬사 (錦山忠烈祠) -- 문화재자료 17호	충남 금산군	문화재청	712
320	금산행정의은행나무 (錦山杏亭의은행나무) -- 천연기념물 84호	충남 금산군	문화재청	221
321	금산향교 (錦山形校) -- 시도기념물 121호	충남 금산군	문화재청	660
322	금성산석불좌상 (錦城山石佛坐像) -- 시도유형문화재 23호	충남 부여군	문화재청	410
323	금암리념선재 (金岩里念先齋) -- 문화재자료 316호	충남 논산시	문화재청	940
324	금암리오층석탑 (金岩里五層石塔) -- 문화재자료 88호	충남 부여군	문화재청	763
325	금은장도자(金銀裝刀子)	충남 공주시 송산리 무령왕릉	국립공주박물관	18
326	금제(金製)뒤꽂이 -- 국보(國寶) 159호	충남 공주시 송산리 무령왕릉	국립공주박물관	30
327	금제거치형장식(金製鋸齒形裝飾)	충남 공주시 송산리 무령왕릉	국립공주박물관	75
328	금제경식<왕비> (金製頸飾<王妃>) -- 국보 158호	충남 공주시	문화재청	14
329	금제관식<왕> (金製冠飾<王>) -- 국보 154호	충남 공주시	문화재청	10
330	금제관식<왕비> (金製冠飾<王妃>) -- 국보 155호	충남 공주시	문화재청	11
331	금제구절경식(金製九節頸飾) -- 국보(國寶) 158호	충남 공주시 송산리 무령왕릉	국립공주박물관	34
332	金製귀걸이(耳飾)	충남 부여군 陵山里 古墳(傳)		1
333	금제나선형장식(金製螺旋形裝飾)	충남 공주시 송산리 무령왕릉	국립공주박물관	74
334	금제뒤꽂이<왕> (金製뒤꽂이<王>) -- 국보 159호	충남 공주시	문화재청	15
335	금제사엽형장식(金製四葉形裝飾)	충남 공주시 송산리 무령왕릉	국립공주박물관	22
336	금제소주(金製小珠)	충남 공주시 송산리 무령왕릉	국립공주박물관	31
337	금제수식부이식(金製垂飾附耳飾) -- 국보(國寶) 157호	충남 공주시 송산리 무령왕릉	국립공주박물관	26
338	금제수식부이식<왕비> (金製垂飾附耳飾<王妃>) -- 국보 157호	충남 공주시	문화재청	13
339	금제심엽형이식(金製心葉形耳飾) -- 국보(國寶) 156호	충남 공주시 송산리 무령왕릉	국립공주박물관	29
340	금제심엽형이식<왕> (金製心葉形耳飾<王>) -- 국보 156호	충남 공주시	문화재청	12
341	금제엽형장식(金製葉形裝飾)	충남 공주시 송산리 무령왕릉	국립공주박물관	76
342	금제영락부사각형장식(金製瓔珞附四角形裝飾)	충남 공주시 송산리 무령왕릉	국립공주박물관	23
343	금제영락부소환(金製瓔珞附小環)	충남 공주시 송산리 무령왕릉	국립공주박물관	39
344	금제영락부원형장식(金製瓔珞附圓形裝飾)	충남 공주시 송산리 무령왕릉	국립공주박물관	79

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345	금제오각형장식(金製五角形裝飾)	충남 공주시 송산리 무령왕릉	국립공주박물관	24
346	금제원형장식(金製圓形裝飾)	충남 공주시 송산리 무령왕릉	국립공주박물관	83
347	金製裝飾具	충남 부여군 陵山里 古墳(傳)		2
348	금제천(金製鋲)	충남 공주시 송산리 무령왕릉	국립공주박물관	35
349	금제화형장식(金製花形裝飾)	충남 공주시 송산리 무령왕릉	국립공주박물관	78
350	기사계첩 (耆社契帖) -- 보물 639호	충남 아산시	문화재청	121
351	기지시줌다리기 (機池市줌다리기) -- 중요무형문화재 75호	충남전역	문화재청	237
352	김거익의묘 (金居翼의墓) -- 문화재자료 112호	충남 부여군	문화재청	783
353	김계휘신도비 (金繼輝神道碑) -- 시도유형문화재 110호	충남 논산시	문화재청	484
354	김대건신부생가지 (金大建神父生家址) -- 시도기념물 146호	충남 당진군	문화재청	685
355	김복한묘 (金福漢墓) -- 문화재자료 169호	충남 홍성군	문화재청	828
356	김시습영정 (金時習影幀) -- 시도유형문화재 64호	충남 부여군	문화재청	447
357	김옥균선생유허 (金玉均先生遺墟) -- 시도기념물 13호	충남 공주시	문화재청	563
358	김우열가옥 (金宇烈家屋) -- 시도민속자료 10호	충남 홍성군	문화재청	700
359	김육비 (金堉碑) -- 문화재자료 237호	충남 아산시	문화재청	879
360	김임신도비 (金임神道碑) -- 문화재자료 363호	충남 논산시	문화재청	979
361	김장생문묘배향교지 (金長生文廟配享敎旨) -- 시도유형문화재 128호	충남 논산시	문화재청	497
362	김장생선생묘소일원 (金長生先生墓所一圓) -- 시도기념물 47호	충남 논산시	문화재청	593
363	김정희묘 (金正喜墓) -- 문화재자료 188호	충남 예산군	문화재청	843
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365	김정희선생고택<안채.사랑채> (金正喜先生古宅<안채.사랑채>) -- 시도유형문화재 43호	충남 예산군	문화재청	428
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369	김정희영정 (金正喜影幀) -- 보물 547-5호	충남 예산군	문화재청	108
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372	김좌진장군묘 (金佐鎭將軍墓) -- 시도기념물 73호	충남 보령시	문화재청	612
373	김좌진장군비 (金佐鎭將軍碑) -- 문화재자료 167호	충남 홍성군	문화재청	826
374	김좌진장군생가지 (金佐鎭將軍生家地) -- 시도기념물 76호	충남 홍성군	문화재청	615
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382	남문리오층석탑 (南門里五層石塔) -- 문화재자료 201호	충남 태안군	문화재청	853
383	남산영당 (南山影堂) -- 문화재자료 72호	충남 공주시	문화재청	753
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392	남포읍성 (남浦邑城) -- 시도기념물 10호	충남 보령시	문화재청	560
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402	논산돈암서원 (論山遯岩書院) -- 사적 383호	충남 논산시	문화재청	211
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404	논산신기리지석묘 (論山新基里支石墓) -- 문화재자료 278호	충남 논산시	문화재청	905
405	논산신풍리마애불 (論山新豊里磨崖佛) -- 시도유형문화재 54호	충남 논산시	문화재청	438
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407	논산원목다리<원항교> (論山院木다리<院項橋>) -- 시도유형문화재 10호	충남 논산시	문화재청	399
408	논산육곡리고분군 (論山六谷里古墳群) -- 시도기념물 95호	충남 논산시	문화재청	634
409	논산탑정리석탑 (論山塔亭里石塔) -- 시도유형문화재 60호	충남 논산시	문화재청	443
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411	논산황화산성 (論山皇華山城) -- 시도기념물 92호	충남 논산시	문화재청	631
412	놋항로		광주민속박물관	1
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443	덕산본방장내좌목 (德山本房帳內座目) -- 중요민속자료 30-2-24호	충남 예산군	문화재청	290
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460	陶俑	충남 부여군 부여읍 동남리 정림사지	국립부여박물관	77
461	陶俑	충남 부여군 부여읍 동남리 정림사지	국립부여박물관	78
462	陶俑	충남 부여군 부여읍 동남리 정림사지	국립부여박물관	79
463	陶俑	충남 부여군 부여읍 동남리 정림사지	국립부여박물관	80
464	陶俑	충남 부여군 부여읍 동남리 정림사지	국립부여박물관	82
465	도응선생묘일원 (都膺先生墓一圓) -- 시도기념물 90호	충남 예산군	문화재청	629
466	도응위보공장군호용순위사섭대장군자흥무30년12월초10일 (都膺爲保功將軍虎勇巡衛司攝大將軍者洪武30年12月初10日) -- 보물 724-4호	충남 논산시	문화재청	128
467	도응위선절장군용무위사좌령장군자흥무28년2월13일 (都膺爲宣節將軍龍武衛司左領將軍者洪武28年2月13日) -- 보물 724-3호	충남 논산시	문화재청	127
468	도응위선절장군흥위위좌령장군자흥무27년9월일 (都膺爲宣節將軍興威衛左領將軍者洪武27年9月日) -- 보물 724-2호	충남 논산시	문화재청	126
469	도응위조봉대부전의소감자흥무26년10월일 (都膺爲朝奉大夫典醫小監者洪武26년10月日) -- 보물 724-1호	충남 논산시	문화재청	125
470	도찬문연 (도贊文硯) -- 보물 547-1-6호	충남 예산군	문화재청	96
471	독락정 (獨樂亭) -- 문화재자료 264호	충남 연기군	문화재청	899
472	돈암서원원정비 (돈암서원원정비) -- 문화재자료 366호	충남 논산시	문화재청	982
473	돈암서원유경사 (돈암서원유경사) -- 시도유형문화재 155호	충남 논산시	문화재청	520
474	돈암서원응도당 (돈암서원응도당) -- 시도유형문화재 156호	충남 논산시	문화재청	521
475	동경(銅鏡)	충남 공주시 금성동	국립공주박물관	7
476	동곡서원 (東谷書院) -- 문화재자료 92호	충남 부여군	문화재청	767
477	銅戈	충남 부여군 규암면 합송 1구 산4	국립부여박물관	87
478	동남리사지 (東南里寺址) -- 시도기념물 50호	충남 부여군	문화재청	596
479	동남리석탑 (東南里石塔) -- 문화재자료 104호	충남 부여군	문화재청	775
480	동남리전천왕사지 (東南里傳天王寺址) -- 시도기념물 53호	충남 부여군	문화재청	599
481	동문리오층석탑및당간지주 (東門里五層石塔및幢竿支柱) -- 시도유형문화재 14호	충남 서산시	문화재청	402
482	동사리석탑 (東寺里石塔) -- 문화재자료 121호	충남 부여군	문화재청	791
483	동아개진교육회상무과세칙(상무장정) (東亞開進敎育會商務課細則(商務章程)) -- 중요민속자료 30-4-5호	충남 홍성군	문화재청	308
484	동제관장식(銅製棺裝飾)	충남 공주시 송산리 무녕왕릉	국립공주박물관	82
485	동제금고(銅製金鼓)	충남 천안군 북면 운용리	국립공주박물관	13
486	동제시(銅製匙)	충남 공주시 송산리 무녕왕릉 츕토	국립공주박물관	50
487	동제이차구(銅製二叉具)	충남 공주시 송산리 무녕왕릉 츕토	국립공주박물관	68
488	동제잔(銅製盞)	충남 공주시 송산리 무령왕릉	국립공주박물관	56
489	銅製品	충남 부여군 규암면 신리	국립부여박물관	21
490	銅鐸	충남 부여군 규암면 합송리 1구 산 4	국립부여박물관	84
491	동학사삼성각 (東鶴寺三聖閣) -- 문화재자료 57호	충남 공주시	문화재청	738
492	동학사삼층석탑 (東鶴寺三層石塔) -- 문화재자료 58호	충남 공주시	문화재청	739
493	두계은농재 (豆溪隱農齋) -- 시도유형문화재 134호	충남 논산시	문화재청	503
494	두릉산성(두릉이성) (豆陵山城(豆陵伊城)) -- 문화재자료 156호	충남 청양군	문화재청	817
495	두침 (頭枕) -- 국보 164호	충남 공주시	문화재청	23
496	두침(頭枕) -- 국보(國寶) 164호	충남 공주시 송산리 무령왕릉	국립공주박물관	21
497	豆形土器	충남 보령시 오천면 교성리 58	국립부여박물관	67
498	鎔金製品	충남 부여군 부여읍 능산리 절터	국립부여박물관	97
499	마곡사국사당 (麻谷寺國師堂) -- 문화재자료 63호	충남 공주시	문화재청	744
500	마곡사대광보전 (麻谷寺大光寶殿) -- 보물 802호	충남 공주시	문화재청	162
501	마곡사대웅보전 (麻谷寺大雄寶殿) -- 보물 801호	충남 공주시	문화재청	161
502	마곡사동제은입사향로 (麻谷寺銅製銀入絲香爐) -- 시도유형문화재 20호	충남 공주시	문화재청	407
503	마곡사동종 (麻谷寺銅鐘) -- 시도유형문화재 62호	충남 공주시	문화재청	445
504	마곡사명부전 (麻谷寺冥府殿) -- 문화재자료 64호	충남 공주시	문화재청	745
505	마곡사석가모니불괘불탱 (麻谷寺釋迦牟尼佛掛佛幀) -- 보물 1260호	충남 공주시	문화재청	171
506	마곡사심검당및고방 (麻谷寺尋劍堂및庫房) -- 시도유형문화재 135호	충남 공주시	문화재청	504
507	마곡사영산전 (麻谷寺靈山殿) -- 보물 800호	충남 공주시	문화재청	160
508	마곡사오층석탑 (麻谷寺五層石塔) -- 보물 799호	충남 공주시	문화재청	159
509	마곡사응진전 (麻谷寺應眞殿) -- 문화재자료 65호	충남 공주시	문화재청	746
510	마곡사천왕문 (麻谷寺天王門) -- 문화재자료 62호	충남 공주시	문화재청	743
511	마곡사해탈문 (麻谷寺解脫門) -- 문화재자료 66호	충남 공주시	문화재청	747
512	마량리동백나무숲 (馬梁里동백나무숲) -- 천연기념물 169호	충남 서천군	문화재청	225
513	馬鈴	충남 논산군 연산면 표정리	국립부여박물관	33
514	磨製石劍	충남 부여군 부여읍 구교리	국립부여박물관	26

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515	磨製石劍	충남 부여군 남면 송학리 219-12	국립부여박물관	50
516	마제석검(磨製石劍)	충남 부여군 초촌면 송국리 산(山)	국립중앙박물관	8
517	磨製石斧	충남 보령시 오천면 소성리 선림사 뒷산	국립부여박물관	66
518	마제석촉(磨製石鏃)	충남 부여군 초촌면 송국리 산(山)	국립중앙박물관	9
519	磨製石a	충남 부여군 부여읍 군수리	국립부여박물관	6
520	만일사금동불 (晩日寺金銅佛) -- 문화재자료 258호	충남 천안시	문화재청	895
521	만일사마애불 (晩日寺磨崖佛) -- 문화재자료 255호	충남 천안시	문화재청	892
522	만일사법당 (晩日寺法堂) -- 문화재자료 250호	충남 천안시	문화재청	888
523	만일사석불좌상 (晩日寺石佛坐像) -- 문화재자료 256호	충남 천안시	문화재청	893
524	만일사오층석탑 (晩日寺奧屠石塔) -- 문화재자료 254호	충남 천안시	문화재청	891
525	매죽헌사우(문절사) (梅竹軒祠宇(文節祠)) -- 문화재자료 40호	충남 연기군	문화재청	722
526	매헌윤봉길의사사적지 (梅軒尹奉吉義士事蹟地) -- 사적 229호	충남 예산군	문화재청	200
527	면천두견주 (沔川杜鵑酒) -- 중요무형문화재 86-2호	충남전역	문화재청	238
528	면천은행나무 (沔川銀行나무) -- 시도기념물 82호	충남 당진군	문화재청	621
529	면천향교 (沔川鄕校) -- 시도기념물 141호	충남 당진군	문화재청	680
530	명국삼장비 (明國三將碑) -- 시도유형문화재 36호	충남 공주시	문화재청	423
531	명문전(銘文塼)	충남 공주시 송산리 무령왕릉	국립공주박물관	84
532	명종대왕태실및비 (明宗大王胎室및碑) -- 시도유형문화재 121호	충남 서산시	문화재청	490
533	모덕사 (慕德祠) -- 문화재자료 152호	충남 청양군	문화재청	814
534	모선재 (慕先齋) -- 문화재자료 307호	충남 논산시	문화재청	932
535	모원재 (慕遠齋) -- 문화재자료 308호	충남 논산시	문화재청	933
536	모필 (毛筆) -- 보물 547-1-7호	충남 예산군	문화재청	97
537	목사김효성의비 (牧使金孝誠의碑) -- 문화재자료 71호	충남 공주시	문화재청	752
538	목제봉황두(木製鳳凰頭)	충남 공주시 송산리 무령왕릉	국립공주박물관	66
539	木造金箔小塔(목조금박소탑)	충남 부여군 장암면 장하리	국립부여박물관	14
540	목천향교 (木川鄕校) -- 시도기념물 108호	충남 천안시	문화재청	647
541	목칠도형배 (木漆桃形杯) -- 중요민속자료 225-5호	충남 아산시	문화재청	392
542	몽산리석가여래좌상 (夢山里釋迦如來坐像) -- 시도유형문화재 122호	충남 태안군	문화재청	491
543	무량사극락전 (無量寺極樂殿) -- 보물 356호	충남 부여군	문화재청	78
544	무량사김시습부도 (無量寺金時習浮屠) -- 시도유형문화재 25호	충남 부여군	문화재청	412
545	무량사당간지주 (無量寺幢竿支柱) -- 시도유형문화재 57호	충남 부여군	문화재청	441
546	무량사미륵불괘불탱 (無量寺彌勒佛掛佛幀) -- 보물 1265호	충남 부여군	문화재청	176
547	무량사석등 (無量寺石燈) -- 보물 233호	충남 부여군	문화재청	63
548	무량사오층석탑 (無量寺五層石塔) -- 보물 185호	충남 부여군	문화재청	54
549	무량사오층석탑출토유물 (無量寺五層石塔出土遺物) -- 시도유형문화재 100호	충남 부여군	문화재청	475
550	無文土器	충남 보령시 오천면 소성리 선림사 뒷산	국립부여박물관	65
551	無文土器壺	충남 부여군 초촌면 송국리	국립부여박물관	43
552	무인명석불상부대좌 (戊寅銘石佛像附臺座) -- 보물 649호	충남 연기군	문화재청	122
553	문간채 (문간채) -- 중요민속자료 195-1-3호	충남 아산시	문화재청	365
554	문수사극락보전 (文殊寺極樂寶殿) -- 시도유형문화재 13호	충남 서산시	문화재청	401
555	문수사금동여래좌상 (文殊寺金銅如來坐像) -- 시도유형문화재 34호	충남 서산시	문화재청	421
556	문양전(文樣塼)	충남 공주시 송산리 무령왕릉	국립공주박물관	85
557	문헌서원 (文獻書院) -- 문화재자료 125호	충남 서천군	문화재청	793
558	민익현가옥 (閔益鉉家屋) -- 문화재자료 290호	충남 천안시	문화재청	916
559	민입암집판각 (閔立巖集板刻) -- 문화재자료 341호	충남 부여군	문화재청	964
560	바디장 (바디匠) -- 중요무형문화재 88호	충남전역	문화재청	239
561	박기성가옥 (朴基星家屋) -- 문화재자료 286호	충남 예산군	문화재청	913
562	박문수묘 (朴文秀墓) -- 문화재자료 261호	충남 천안시	문화재청	896
563	박문수영정 (朴文秀影幀) -- 보물 1189호	충남 천안시	문화재청	168
564	박물관석조여래입상 (博物館石造如來立像) -- 문화재자료 106호	충남 부여군	문화재청	777
565	박물관석탑 (博物館石塔) -- 문화재자료 105호	충남 부여군	문화재청	776
566	반수의인 (班首의印) -- 중요민속자료 30-1-3호	충남 부여군	문화재청	261
567	반수의직인 (班首의職印) -- 중요민속자료 30-2-6호	충남 예산군	문화재청	272
568	반수정건모한식제답기증기념비 (班首鄭建謨寒食祭畓寄贈紀念碑) -- 중요민속자료 30-4-19호	충남 보령시	문화재청	322
569	蟠龍文塼	충남 부여군 규암면 외리	국립부여박물관	11
570	半月形石刀	충남 부여군 남면	국립부여박물관	60
571	방기옥가옥 (方基鈺家屋) -- 문화재자료 279호	충남 청양군	문화재청	906
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574	배방산성 (排芳山城) -- 시도기념물 67호	충남 아산시	문화재청	606
575	백목화 (白木靴) -- 중요민속자료 22-8호	충남 논산시	문화재청	253
576	백암사지 (百庵寺址) -- 문화재자료 211호	충남 서산시	문화재청	863
577	백옥방인 (白玉方印) -- 중요민속자료 225-2호	충남 아산시	문화재청	389
578	백자묘지(白磁墓誌)	충남 공주시 반포면 상신리	국립공주박물관	12
579	百濟金銅大香爐 -- 국보(國寶) 287호	충남 부여군 부여읍 능산리사지내	국립부여박물관	104
580	百濟砂宅智積堂塔碑(백제사택지적당탑비)	충남 부여군 부여읍 관북리	국립부여박물관	8
581	백제창왕명석조사리감 (百濟昌王銘石造舍利龕) -- 국보 288호	충남 부여군	문화재청	27
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583	백화산성 (白華山城) -- 문화재자료 212호	충남 태안군	문화재청	864
584	백화정 (百花亭) -- 문화재자료 108호	충남 부여군	문화재청	779
585	梵鐘(범종)	충남 금산군 금성면 화림리 월봉사지	국립부여박물관	3
586	碧玉製管玉	충남 예산군 대흥면 동서리 산5-2	국립부여박물관	47
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588	별당채 (별당채) -- 중요민속자료 198-4호	충남 홍성군	문화재청	382
589	보광사대보광선사비 (普光寺大普光禪師碑) -- 보물 107호	충남 부여군	문화재청	44
590	보덕사극락전 (報德寺極樂殿) -- 시도유형문화재 145호	충남 예산군	문화재청	512
591	보덕사석등 (報德寺石燈) -- 문화재자료 183호	충남 예산군	문화재청	839
592	보령경찰서망루 (保寧警察署望樓) -- 문화재자료 272호	충남 보령시	문화재청	900
593	보령관아문 (保寧官衙門) -- 시도유형문화재 40호	충남 보령시	문화재청	425
594	보령금강암석불및비편 (보령금강암석불및비편) -- 시도유형문화재 158호	충남 보령시	문화재청	523
595	보령남포벼루제작 (保寧藍浦벼루製作) -- 시도무형문화재 6호	충남 보령시	문화재청	529
596	보령독산리독살 (보령독산리독살) -- 시도민속자료 16호	충남 보령시	문화재청	706
597	보령리오층석탑 (保寧里五層石塔) -- 문화재자료 139호	충남 보령시	문화재청	804
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599	보령성곽 (保寧城郭) -- 문화재자료 146호	충남 보령시	문화재청	810
600	보령성주사지석분임상 (보령성주사지석분임상) -- 문화재자료 373호	충남 보령시	문화재청	989
601	보령수부리귀부및이수 (保寧水美里龜趺및이首) -- 시도유형문화재 32호	충남 보령시	문화재청	419
602	보령오천성 (保寧鰲川城) -- 시도기념물 9호	충남 보령시	문화재청	559
603	보령유격장군청덕비 (보령유격장군청덕비) -- 시도유형문화재 159호	충남 보령시	문화재청	524
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605	보령향교 (保寧鄕校) -- 시도기념물 112호	충남 보령시	문화재청	651
606	보부상감의비 (褓負商感義碑) -- 중요민속자료 30-4-20호	충남 홍성군	문화재청	323
607	보부상유품 (褓負商遺品) -- 중요민속자료 30호	충남 부여군	문화재청	257
608	보상선생안 (褓商先生案) -- 중요민속자료 30-2-16호	충남 예산군	문화재청	282
609	보석사대웅전 (寶石寺大雄殿) -- 시도유형문화재 143호	충남 금산군	문화재청	511
610	보원사법인국사보승탑 (普願寺法印國師寶乘塔) -- 보물 105호	충남 서산시	문화재청	42
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612	보원사지당간지주 (普願寺址幢竿支柱) -- 보물 103호	충남 서산시	문화재청	40
613	보원사지석조 (普願寺址石槽) -- 보물 102호	충남 서산시	문화재청	39
614	보원사지오층석탑 (普願寺址五層石塔) -- 보물 104호	충남 서산시	문화재청	41
615	보제염주 (菩提念珠) -- 보물 547-1-3호	충남 예산군	문화재청	93
616	복한효자비 (卜漢孝子碑) -- 문화재자료 339호	충남 홍성군	문화재청	962
617	봉곡사대웅전및고방 (鳳谷寺大雄殿및庫房) -- 문화재자료 323호	충남 아산시	문화재청	947
618	봉곡사불화 (鳳谷寺佛畵) -- 문화재자료 242호	충남 아산시	문화재청	883
619	봉남리삼층석탑 (鳳南里三層石塔) -- 문화재자료 130호	충남 서천군	문화재청	797
620	봉도기 (奉悼旗) -- 중요민속자료 30-3-2호	충남 부여군	문화재청	295
621	봉산영당 (鳳山影堂) -- 문화재자료 47호	충남 연기군	문화재청	728
622	봉서사소조삼존불상 (鳳棲寺塑造三尊佛像) -- 문화재자료 334호	충남 서천군	문화재청	957
623	봉선홍경사사적갈비 (奉先弘慶寺事蹟碣碑) -- 국보 7호	충남 천안시	문화재청	1
624	봉안사옥석불 (奉安寺玉石佛) -- 문화재자료 85호	충남 금산군	문화재청	761
625	捧持寶珠菩薩立像	충남 부여군 규암면 신리 중뜸부락	국립부여박물관	19
626	鳳凰文塼	충남 부여군 규암면 외리	국립부여박물관	10
627	부산각서석 (浮山刻書石) -- 시도유형문화재 47호	충남 부여군	문화재청	432
628	부석사 (浮石寺) -- 문화재자료 195호	충남 서산시	문화재청	850
629	부성사 (富城祠) -- 문화재자료 199호	충남 서산시	문화재청	851
630	부여계성군영정 (부여계성군영정) -- 문화재자료 370호	충남 부여군	문화재청	986
631	부여관북리백제유적 (扶餘官北里百濟遺蹟) -- 사적 428호	충남 부여군	문화재청	217

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633	부여구아리백제유적 (扶餘舊衙里百濟遺蹟) -- 시도기념물 88호	충남 부여군	문화재청	627
634	부여군수리사지 (扶餘軍守里寺址) -- 사적 44호	충남 부여군	문화재청	186
635	부여금사리성당 (扶餘金寺里聖堂) -- 시도기념물 143호	충남 부여군	문화재청	682
636	부여김동효영정 (부여김동효영정) -- 시도유형문화재 157호	충남 부여군	문화재청	522
637	부여나성 (扶餘羅城) -- 사적 58호	충남 부여군	문화재청	187
638	부여내산면의은행나무 (扶餘內山面의은행나무) -- 천연기념물 320호	충남 부여군	문화재청	228
639	부여능산리고분군 (扶餘陵山里古墳群) -- 사적 14호	충남 부여군	문화재청	184
640	부여능산리출토백제금동대향로 (扶餘陵山里出土百濟金銅大香爐) -- 국보 287호	충남 부여군	문화재청	26
641	부여능안골고분군 (夫餘陵안골古墳群) -- 사적 420호	충남 부여군	문화재청	214
642	부여능안골고분군 (扶餘능안골古墳群) -- 시도기념물 102호	충남 부여군	문화재청	641
643	부여동매 (扶餘冬梅) -- 문화재자료 122호	충남 부여군	문화재청	792
644	부여동헌 (扶餘東軒) -- 시도유형문화재 96호	충남 부여군	문화재청	471
645	부여민칠식가옥 (扶餘閔七植家屋) -- 중요민속자료 192호	충남 부여군	문화재청	351
646	부여보광사지 (扶餘普光寺址) -- 시도기념물 98호	충남 부여군	문화재청	637
647	부여부소산성 (扶餘扶蘇山城) -- 사적 5호	충남 부여군	문화재청	181
648	부여산직리지석묘 (扶餘山直里支石墓) -- 시도기념물 40호	충남 부여군	문화재청	587
649	부여석목리석조비로자나불좌상 (扶餘石木里石造毘盧蔗那佛坐像) -- 시도유형문화재 24호	충남 부여군	문화재청	411
650	부여석성산성 (扶餘石城山城) -- 사적 89호	충남 부여군	문화재청	190
651	부여석조 (扶餘石槽) -- 보물 194호	충남 부여군	문화재청	55
652	부여성흥산성 (扶餘聖興山城) -- 사적 4호	충남 부여군	문화재청	180
653	부여세탑리오층석탑 (扶餘細塔里五層石塔) -- 시도유형문화재 21호	충남 부여군	문화재청	408
654	부여송국리선사취락지 (扶餘松菊里先史聚落址) -- 사적 249호	충남 부여군	문화재청	203
655	부여쌍북리도요지 (扶餘雙北里陶窯址) -- 시도기념물 41호	충남 부여군	문화재청	588
656	부여쌍북리요지 (扶餘雙北里窯址) -- 사적 99호	충남 부여군	문화재청	192
657	부여용정리상여소리 (扶餘龍井里喪輿소리) -- 시도무형문화재 22호	충남 부여군	문화재청	544
658	부여용정리소룡골백제건물지 (扶餘龍井里소룡골百濟建物址) -- 시도기념물 86호	충남 부여군	문화재청	625
659	부여임천유품(3) (扶餘林川遺品(3)) -- 중요민속자료 30-3호	충남 부여군	문화재청	293
660	부여장하리삼층석탑 (扶餘長蝦里三層石塔) -- 보물 184호	충남 부여군	문화재청	53
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662	부여정계채가옥 (扶餘鄭啓采家屋) -- 중요민속자료 193호	충남 부여군	문화재청	355
663	부여정림사지 (扶餘定林寺址) -- 사적 301호	충남 부여군	문화재청	204
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665	부여정림사지오층석탑 (扶餘定林寺址五層石塔) -- 국보 9호	충남 부여군	문화재청	3
666	부여정암리와요지 (扶餘亭岩里瓦窯址) -- 사적 373호	충남 부여군	문화재청	210
667	부여중정리백제건물지 (扶餘中井里百濟建物址) -- 시도기념물 54호	충남 부여군	문화재청	600
668	부여지선리고분군 (扶餘芝仙里古墳群) -- 시도기념물 87호	충남 부여군	문화재청	626
669	부여천진전단군화상 (부여천진전단군화상) -- 문화재자료 369호	충남 부여군	문화재청	985
670	부여청마산성 (扶餘靑馬山城) -- 사적 34호	충남 부여군	문화재청	185
671	부여청산성 (扶餘靑山城) -- 사적 59호	충남 부여군	문화재청	188
672	부여태양리백제석실고분 (扶餘太陽里百濟石室古墳) -- 시도기념물 45호	충남 부여군	문화재청	591
673	부여향교 (扶餘鄕校) -- 시도기념물 125호	충남 부여군	문화재청	664
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679	분청사기투각학연당초문두침(粉靑沙器透刻鶴蓮唐草文頭枕)		국립공주박물관	6
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681	佛身片	충남 부여군 부여읍 능산리	국립부여박물관	100
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715	상리국서문 (商理局序文) -- 중요민속자료 30-4-4호	충남 홍성군	문화재청	307
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760	선생안 (先生案) -- 중요민속자료 30-2-25호	충남 예산군	문화재청	291
761	선생안 (先生案) -- 중요민속자료 30-4-2호	충남 홍성군	문화재청	305
762	선조2년간월인석보판목 (宣祖二年刊月印釋譜板木) -- 보물 582호	충남 공주시	문화재청	120
763	선조대왕태실비 (宣祖大王胎室碑) -- 문화재자료 117호	충남 부여군	문화재청	787
764	선화당 (宣化堂) -- 시도유형문화재 92호	충남 공주시	문화재청	467
765	성거산성 (聖居山城) -- 문화재자료 263호	충남 천안시	문화재청	898
766	성동은행나무 (성동은행나무) -- 시도기념물 152호	충남 논산시	문화재청	691
767	성륜사 (成倫寺) -- 문화재자료 10호	충남 천안시	문화재청	707
768	성삼문선생유허 (成三門先生遺墟) -- 시도기념물 5호	충남 홍성군	문화재청	556
769	성삼문선생유허비 (成三問先生遺墟碑) -- 문화재자료 164호	충남 홍성군	문화재청	823
770	성삼문의묘 (成三問의墓) -- 문화재자료 81호	충남 논산시	문화재청	759
771	성암서원 (聖岩書院) -- 문화재자료 205호	충남 서산시	문화재청	857
772	성주도씨종중문서 (星州都氏宗中文書) -- 보물 724호	충남 논산시	문화재청	124
773	성주사낭혜화상백월보광탑비 (聖住寺郎慧和尙白月보光塔碑) -- 국보 8호	충남 보령시	문화재청	2
774	성주사지 (聖住寺址) -- 사적 307호	충남 보령시	문화재청	205
775	성주사지동삼층석탑 (聖住寺址東三層石塔) -- 시도유형문화재 26호	충남 보령시	문화재청	413
776	성주사지서삼층석탑 (聖住寺址西三層石塔) -- 보물 47호	충남 보령시	문화재청	35
777	성주사지석계단 (聖住寺址石階段) -- 문화재자료 140호	충남 보령시	문화재청	805
778	성주사지석등 (聖住寺址石燈) -- 시도유형문화재 33호	충남 보령시	문화재청	420
779	성주사지오층석탑 (聖住寺址五層石塔) -- 보물 19호	충남 보령시	문화재청	32
780	성주사지중앙삼층석탑 (聖住寺址中央三層石塔) -- 보물 20호	충남 보령시	문화재청	33
781	세도두레풍장 (世道두레풍장) -- 시도무형문화재 28호	충남 부여군	문화재청	550
782	세심사다층탑 (洗心寺多層塔) -- 문화재자료 231호	충남 아산시	문화재청	873
783	세절찬 (歲節饌) -- 중요민속자료 30-4-12호	충남 홍성군	문화재청	315
784	세조대왕연 (世祖大王輦) -- 시도민속자료 14호	충남 공주시	문화재청	704
785	세형동검(細形銅劍)	충남 서산시 음암면 탑곡리 549-1	국립공주박물관	91
786	소목장 (小木匠) -- 시도무형문화재 18호	충남 예산군	문화재청	540
787	소재첩 (蘇齋帖) -- 보물 547-2-9호	충남 예산군	문화재청	105
788	塑造菩薩像片	충남 부여군 부여읍 동남리 정림사지	국립부여박물관	83
789	塑造佛頭	충남 부여군 부여읍 동남리 정림사지	국립부여박물관	70
790	소지 (所志) -- 중요민속자료 30-3-6호	충남 부여군	문화재청	299
791	소지 (所志) -- 중요민속자료 30-4-9호	충남 홍성군	문화재청	312
792	小形蓮花文瓦當	충남 부여군 부여읍 관북리 부소산 폐사지	국립부여박물관	32
793	손수건 (손수건) -- 보물 568-6호	충남 예산군	문화재청	113
794	송곡서원 (松谷書院) -- 문화재자료 207호	충남 서산시	문화재청	859
795	송불암미륵불 (松佛庵彌勒佛) -- 문화재자료 83호	충남 논산시	문화재청	760
796	송용리마애불 (松龍里磨崖佛) -- 문화재자료 43호	충남 연기군	문화재청	725
797	수대경 (獸帶鏡) -- 국보 161-3호	충남 공주시	문화재청	20
798	수덕사노사나불괘불탱 (修德寺盧舍那佛掛佛幀) -- 보물 1263호	충남 예산군	문화재청	174
799	수덕사대웅전 (修德寺大雄殿) -- 국보 49호	충남 예산군	문화재청	4
800	수덕사삼층석탑 (修德寺三層石塔) -- 시도유형문화재 103호	충남 예산군	문화재청	478
801	수덕사유물(거문고) (修德寺遺物(거문고)) -- 문화재자료 192호	충남 예산군	문화재청	847
802	수덕사칠층석탑 (修德寺七層石塔) -- 문화재자료 181호	충남 예산군	문화재청	837
803	수북정 (水北亭) -- 문화재자료 100호	충남 부여군	문화재청	771
804	수심대 (水心臺) -- 문화재자료 26호	충남 금산군	문화재청	718
805	수암리삼층석탑 (水岩里三層石塔) -- 문화재자료 129호	충남 서천군	문화재청	796
806	수정염주 (水晶念珠) -- 보물 547-1-2호	충남 예산군	문화재청	92
807	수정죽절비녀 (水晶竹節비녀) -- 중요민속자료 225-4호	충남 아산시	문화재청	391
808	수현사 (水鉉祠) -- 문화재자료 142호	충남 보령시	문화재청	807

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809	숙모전 (肅慕殿) -- 문화재자료 67호	충남 공주시	문화재청	748
810	純金製耳飾	충남 부여군 능산리 고분군	국립부여박물관	105
811	순우장하승비임본 (淳于長夏承碑臨本) -- 보물 547-2-2호	충남 예산군	문화재청	98
812	숭선군묘 (崇善君墓) -- 시도기념물 6호	충남 공주시	문화재청	557
813	숭의사 (崇義祠) -- 문화재자료 300호	충남 태안군	문화재청	925
814	승무 (僧舞) -- 시도무형문화재 27호	충남 서산시	문화재청	549
815	신(기이) (신(其二)) -- 중요민속자료 22-6호	충남 논산시	문화재청	251
816	신(기일) (신(其一)) -- 중요민속자료 22-5호	충남 논산시	문화재청	250
817	신경섭가옥 (申慶燮家屋) -- 문화재자료 291호	충남 보령시	문화재청	917
818	新里出土佛坐像 및 菩薩像, 銅製品	충남 부여군 규암면 신리	국립부여박물관	16
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820	신안사대광전 (身安寺大光殿) -- 시도유형문화재 3호	충남 금산군	문화재청	396
821	신원사노사나불괘불탱 (新元寺盧舍那佛掛佛幀) -- 국보 299호	충남 공주시	문화재청	29
822	신원사대웅전 (新元寺大雄殿) -- 시도유형문화재 80호	충남 공주시	문화재청	457
823	신원사오층석탑 (新元寺五層石塔) -- 시도유형문화재 31호	충남 공주시	문화재청	418
824	신유창백자음각묘지(愼惟昌白磁陰刻墓誌)	충남 공주시 관동산	부산광역시립박물관	1
825	신유창백자음각묘지(愼惟昌白磁陰刻墓誌)	충남 공주시 관동산	부산광역시립박물관	2
826	신유창백자음각묘지(愼惟昌白磁陰刻墓誌)	충남 공주시 관동산	부산광역시립박물관	3
827	신유창백자음각묘지(愼惟昌白磁陰刻墓誌)	충남 공주시 관동산	부산광역시립박물관	4
828	신유창백자음각묘지(愼惟昌白磁陰刻墓誌)	충남 공주시 관동산	부산광역시립박물관	5
829	신유창백자음각묘지(愼惟昌白磁陰刻墓誌)	충남 공주시 관동산	부산광역시립박물관	6
830	신유창백자음각묘지(愼惟昌白磁陰刻墓誌)	충남 공주시 관동산	부산광역시립박물관	7
831	신유창백자음각묘지(愼惟昌白磁陰刻墓誌)	충남 공주시 관동산	부산광역시립박물관	8
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833	신자경선생묘 (申自敬先生墓) -- 시도기념물 69호	충남 천안시	문화재청	608
834	神將像	충남 부여군 규암면 신리 중뜸부락	국립부여박물관	20
835	신정비 (神井碑) -- 문화재자료 229호	충남 아산시	문화재청	871
836	신창척화비 (新昌斥和碑) -- 문화재자료 236호	충남 아산시	문화재청	878
837	신창학성 (新昌鶴城) -- 문화재자료 244호	충남 아산시	문화재청	885
838	신창향교 (新昌鄕校) -- 시도기념물 113호	충남 아산시	문화재청	652
839	신표 (信標) -- 중요민속자료 30-1-6호	충남 부여군	문화재청	264
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842	쌍수정사적비 (雙樹亭史蹟碑) -- 시도유형문화재 35호	충남 공주시	문화재청	422
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844	아산공세곶고지 (牙山貢稅串庫址) -- 시도기념물 21호	충남 아산시	문화재청	569
845	아산공세리성당 (牙山貢稅里聖堂) -- 시도기념물 144호	충남 아산시	문화재청	683
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854	아산읍내리당간지주 (牙山邑內里幢竿支柱) -- 보물 537호	충남 아산시	문화재청	88
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857	아산향교 (牙山鄕校) -- 시도기념물 114호	충남 아산시	문화재청	653
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859	아인리석탑 (衙仁里石塔) -- 문화재자료 327호	충남 금산군	문화재청	950
860	안경집 (眼鏡집) -- 보물 568-7호	충남 예산군	문화재청	114
861	안국사지석불입상 (安國寺址石佛立像) -- 보물 100호	충남 당진군	문화재청	37
862	안국사지석탑 (安國寺址石塔) -- 보물 101호	충남 당진군	문화재청	38
863	안면도의모감주나무군락 (安眠島의모감주나무群落) -- 천연기념물 138호	충남 태안군	문화재청	224
864	안채 (안채) -- 중요민속자료 190-1호	충남 논산시	문화재청	345
865	안채 (안채) -- 중요민속자료 191-1호	충남 예산군	문화재청	348
866	안채 (안채) -- 중요민속자료 192-1호	충남 부여군	문화재청	352
867	안채 (안채) -- 중요민속자료 193-1호	충남 부여군	문화재청	356

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869	안채 (안채) -- 중요민속자료 195-1-1호	충남 아산시	문화재청	363
870	안채 (안채) -- 중요민속자료 195-2-1호	충남 아산시	문화재청	367
871	안채 (안채) -- 중요민속자료 196-1호	충남 아산시	문화재청	370
872	안채 (안채) -- 중요민속자료 197-1호	충남 서천군	문화재청	375
873	안채 (안채) -- 중요민속자료 198-1호	충남 홍성군	문화재청	379
874	안채 (안채) -- 중요민속자료 199-1호	충남 서산시	문화재청	384
875	안흥성 (安興城) -- 시도기념물 11호	충남 태안군	문화재청	561
876	兩枝槍(양지창)	충남 부여군 부여읍 쌍북리 부소산성 옹문지	국립부여박물관	94
877	여민루 (與民樓) -- 시도유형문화재 17호	충남 아산시	문화재청	405
878	연기금이성 (燕岐金伊城) -- 시도기념물 78호	충남 연기군	문화재청	617
879	연기백로서식지 (燕岐白鷺棲息地) -- 시도기념물 71호	충남 연기군	문화재청	610
880	연기봉산동의향나무 (燕岐鳳山洞의향나무) -- 천연기념물 321호	충남 연기군	문화재청	229
881	연기운주산성 (燕岐運住山城) -- 시도기념물 79호	충남 연기군	문화재청	618
882	연기이성 (燕岐李城) -- 시도기념물 77호	충남 연기군	문화재청	616
883	연기향교 (燕岐鄕校) -- 시도기념물 123호	충남 연기군	문화재청	662
884	椽木瓦	충남 부여군 恩山面 金谷里 金剛寺址		15
885	연산백중놀이 (連山百中놀이) -- 시도무형문화재 14호	충남 논산시	문화재청	537
886	연산송정리마애삼존불 (連山松亭里磨崖三尊佛) -- 문화재자료 328호	충남 논산시	문화재청	951
887	연산아문 (連山衙門) -- 시도유형문화재 9호	충남 논산시	문화재청	398
888	연산천호리비로자나석불 (連山天護里毘盧舍那石佛) -- 시도유형문화재 91호	충남 논산시	문화재청	466
889	연산향교 (連山鄕校) -- 시도기념물 119호	충남 논산시	문화재청	658
890	연산화악리의오골계 (連山花岳里의烏骨鷄) -- 천연기념물 265호	충남 논산시	문화재청	226
891	연평부원군신도비 (延平府院君神道碑) -- 시도유형문화재 89호	충남 공주시	문화재청	465
892	蓮花過樂文塼	충남 부여군 규암면 외리	국립부여박물관	9
893	蓮花文瓦當	충남 부여군 부여읍 구아리 井址	국립부여박물관	12
894	蓮花文瓦當	충남 부여군 부여읍 구아리 井址	국립부여박물관	13
895	蓮花文瓦當	충남 부여군 부여읍 부소산 서복사지	국립부여박물관	35
896	연화문와당(蓮花文瓦當)	충남 공주시 중동 174	국립공주박물관	92
897	연화문전(蓮花文塼)	충남 부여군 규암면 외산리	국립중앙박물관	2
898	영괴대 (靈槐臺) -- 문화재자료 228호	충남 아산시	문화재청	870
899	영규대사묘 (靈圭大師墓) -- 시도기념물 15호	충남 공주시	문화재청	564
900	영규대사비 (靈圭大師碑) -- 문화재자료 56호	충남 공주시	문화재청	737
901	영남루 (永南樓) -- 문화재자료 12호	충남 천안시	문화재청	709
902	영랑사대웅전 (影浪寺大雄殿) -- 시도유형문화재 15호	충남 당진군	문화재청	403
903	영랑사범종 (影浪寺梵鐘) -- 문화재자료 221호	충남 당진군	문화재청	868
904	영사암 (永思庵) -- 시도유형문화재 129호	충남 논산시	문화재청	498
905	영위의인 (領位의印) -- 중요민속자료 30-1-2호	충남 부여군	문화재청	260
906	영위의직인 (領位의職印) -- 중요민속자료 30-2-5호	충남 예산군	문화재청	271
907	영은사대웅전 (靈隱寺大雄殿) -- 문화재자료 51호	충남 공주시	문화재청	732
908	영인석불 (靈仁石佛) -- 문화재자료 240호	충남 아산시	문화재청	882
909	영인신현리미륵불 (靈仁新峴里彌勒佛) -- 문화재자료 234호	충남 아산시	문화재청	876
910	영인오층석탑 (靈仁五層石塔) -- 문화재자료 239호	충남 아산시	문화재청	881
911	영일루 (迎日樓) -- 문화재자료 101호	충남 부여군	문화재청	772
912	영정 (影幀) -- 중요민속자료 36-1호	충남 서산시	문화재청	334
913	영탑사금동삼존불 (靈塔寺金銅三尊佛) -- 보물 409호	충남 당진군	문화재청	83
914	영탑사범종 (靈塔寺梵鐘) -- 문화재자료 219호	충남 당진군	문화재청	867
915	영탑사약사여래상 (靈塔寺藥師如來像) -- 시도유형문화재 111호	충남 당진군	문화재청	485
916	영탑사칠층석탑 (靈塔寺七層石塔) -- 문화재자료 216호	충남 당진군	문화재청	865
917	예덕면당사읍임소소임안 (禮德丙座四邑任所所任案) -- 중요민속자료 30-2-17호	충남 예산군	문화재청	283
918	예산가야사지 (禮山伽倻寺址) -- 시도기념물 150호	충남 예산군	문화재청	689
919	예산김정희종가유물 (禮山金貞喜宗家遺物) -- 보물 547호	충남 예산군	문화재청	90
920	예산덕산유품(2) (禮山德山遺品(2)) -- 중요민속자료 30-2호	충남 예산군	문화재청	266
921	예산보상임소좌목 (禮山報商任所座木) -- 중요민속자료 30-2-19호	충남 예산군	문화재청	285
922	예산보상임소좌목 (禮山報商任所座目) -- 중요민속자료 30-2-20호	충남 예산군	문화재청	286
923	예산보상임소좌목 (禮山報商任所座目) -- 중요민속자료 30-2-21호	충남 예산군	문화재청	287
924	예산본방장내좌목 (禮山本房帳內座目) -- 중요민속자료 30-2-23호	충남 예산군	문화재청	289
925	예산산성 (禮山山城) -- 시도기념물 30호	충남 예산군	문화재청	578
926	예산삽교석조보살입상 (禮山揷橋石造菩薩立像) -- 보물 508호	충남 예산군	문화재청	86

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927	예산상항리석불 (禮山上項里石佛) -- 시도유형문화재 69호	충남 예산군	문화재청	452
928	예산읍삼층석탑 (禮山邑三層石塔) -- 문화재자료 175호	충남 예산군	문화재청	831
929	예산의백송 (禮山의白松) -- 천연기념물 106호	충남 예산군	문화재청	222
930	예산이성만형제효제비 (禮山李成萬兄弟孝悌碑) -- 시도유형문화재 102호	충남 예산군	문화재청	477
931	예산임방절목부한성부완문 (禮山任房節目附漢城府完文) -- 중요민속자료 30-2-11호	충남 예산군	문화재청	277
932	예산임소좌목 (禮山任所座目) -- 중요민속자료 30-2-13호	충남 예산군	문화재청	279
933	예산임소좌목 (禮山任所座目) -- 중요민속자료 30-2-18호	충남 예산군	문화재청	284
934	예산정동호가옥 (禮山鄭東鎬家屋) -- 중요민속자료 191호	충남 예산군	문화재청	347
935	예산향교 (禮山鄕校) -- 시도기념물 138호	충남 예산군	문화재청	677
936	예산호서은행본점 (禮山湖西銀行本店) -- 시도기념물 66호	충남 예산군	문화재청	605
937	예산화전리사면석불 (禮山花田里四面石佛) -- 보물 794호	충남 예산군	문화재청	158
938	오강표의묘 (吳剛杓의墓) -- 문화재자료 45호	충남 연기군	문화재청	726
939	오천향교대성전 (鰲川鄕校大成殿) -- 문화재자료 137호	충남 보령시	문화재청	802
940	오천현관아 (鰲川縣官衙) -- 시도유형문화재 136호	충남 보령시	문화재청	505
941	옥로 (玉鷺) -- 보물 326-2호	충남 아산시	문화재청	70
942	옥적 (玉笛) -- 중요민속자료 225-1호	충남 아산시	문화재청	388
943	온양어의정 (溫陽御醫井) -- 문화재자료 314호	충남 아산시	문화재청	938
944	온양이씨어필각 (溫陽李氏御筆閣) -- 문화재자료 22호	충남 금산군	문화재청	715
945	온양향교 (溫陽鄕校) -- 시도기념물 115호	충남 아산시	문화재청	654
946	온주아문및동헌 (溫州衙門및東軒) -- 시도유형문화재 16호	충남 아산시	문화재청	404
947	온천리석불 (溫泉里石佛) -- 문화재자료 227호	충남 아산시	문화재청	869
948	甕棺	충남 부여군 부여읍 염창리 상염부락	국립부여박물관	42
949	완문 (完文) -- 중요민속자료 30-4-8호	충남 홍성군	문화재청	311
950	왕흥사지 (王興寺址) -- 사적 427호	충남 부여군	문화재청	216
951	외성산성 (外城山城) -- 문화재자료 277호	충남 논산시	문화재청	904
952	외암선생문집판각 (巍巖先生文集板刻) -- 문화재자료 333호	충남 아산시	문화재청	956
953	외연도의상록수림 (外煙島의常綠樹林) -- 천연기념물 136호	충남 보령시	문화재청	223
954	요녕식동검(遼寧式銅劍)	충남 부여군 초촌면 송국리산	국립중앙박물관	7
955	요대 (腰帶) -- 보물 326-3호	충남 아산시	문화재청	71
956	용강서원 (龍江書院) -- 문화재자료 19호	충남 금산군	문화재청	713
957	용대기 (龍大旗) -- 시도민속자료 4호	충남 홍성군	문화재청	695
958	용봉사마애불 (龍鳳寺磨崖佛) -- 시도유형문화재 118호	충남 홍성군	문화재청	487
959	용봉사부도 (龍鳳寺浮屠) -- 문화재자료 168호	충남 홍성군	문화재청	827
960	용봉사영산회괘불탱 (龍鳳寺靈山會掛佛幀) -- 보물 1262호	충남 홍성군	문화재청	173
961	용봉사지석조(마애,석구,석조) (龍鳳寺址石造(碼崖,石臼,石槽)) -- 문화재자료 162호	충남 홍성군	문화재청	821
962	용서·봉계·성재공문집판각 (龍西·鳳溪·省齋公文集板刻) -- 시도유형문화재 150호	충남 논산시	문화재청	515
963	용암영당 (龍岩影堂) -- 문화재자료 141호	충남 보령시	문화재청	806
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980	圓形瓦當			12
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983	원흥주등육군상무사단제비 (元洪州等六郡商務社壇祭碑) -- 중요민속자료 30-4-17호	충남 보령시	문화재청	320
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996	유리옥(琉璃玉)	충남 공주시 송산리 무령왕릉	국립공주박물관	32
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1033	은제화형원두관정(銀製花形圓頭棺釘)	충남 공주시 송산리 무녕왕릉	국립공주박물관	81
1034	은제화형장식(銀製花形裝飾)	충남 공주시 송산리 무령왕릉	국립공주박물관	69
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1054	이심원충신정려현판 (李深源忠臣旌閭懸板) -- 문화재자료 338호	충남 논산시	문화재청	961
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1064	이조순치8년11월19일봉교학생전유성위장사랑자순치8년11월일 (吏曹順治8年11月19日奉敎學生田有成爲將仕郎者順治8年11月日) -- 보물 727-18호	충남 논산시	문화재청	148
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1066	이지함선생묘 (李之函先生墓) -- 문화재자료 320호	충남 보령시	문화재청	944
1067	이충무공난중일기부서간첩임진장초 (李忠武公亂中日記附書簡帖壬辰狀草) -- 국보 76호	충남 아산시	문화재청	6
1068	이충무공묘 (李忠武公墓) -- 사적 112호	충남 아산시	문화재청	195
1069	이충무공사적비 (李忠武公史蹟碑) -- 문화재자료 230호	충남 아산시	문화재청	872
1070	이충무공유물 (李忠武公遺物) -- 보물 326호	충남 아산시	문화재청	68
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1075	인궤 (印櫃) -- 중요민속자료 30-3-1호	충남 부여군	문화재청	294
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1085	일락사삼층석탑 (日樂寺三層石塔) -- 문화재자료 200호	충남 서산시	문화재청	852
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1098	장곡사철조비로자나불좌상부석조대좌 (長谷寺鐵造毘盧舍那佛坐像附石造蓮座) -- 보물 174호	충남 청양군	문화재청	51
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1102	장무원의인 (掌務員의印) -- 중요민속자료 30-1-5호	충남 부여군	문화재청	263
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1105	적색마연토기발(赤色磨硏土器鉢)	충남 부여군 초촌면 송국리	국립중앙박물관	15
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1163	채운포석교비 (彩雲浦石橋碑) -- 문화재자료 217호	충남 당진군	문화재청	866
1164	채제공선생영정 (蔡濟恭先生影幀) -- 시도유형문화재 130호	충남 청양군	문화재청	499
1165	척독초본 (尺牘초本) -- 보물 547-2-4호	충남 예산군	문화재청	100
1166	천안광덕사의호도나무 (天安廣德寺의호도나무) -- 천연기념물 398호	충남 천안시	문화재청	233
1167	천안노은정 (天安老隱亭) -- 문화재자료 355호	충남 천안시	문화재청	971
1168	천안백석동선사유적및백제토성 (天安白石洞先史遺蹟및百濟土城) -- 시도기념물 106호	충남 천안시	문화재청	645
1169	천안성거산위례성 (天安聖居山慰禮城) -- 시도기념물 148호	충남 천안시	문화재청	687
1170	천안성환의향나무 (천안성환의향나무) -- 천연기념물 427호	충남 천안시	문화재청	234
1171	천안세성산성 (天安細城山城) -- 시도기념물 105호	충남 천안시	문화재청	644
1172	천안장산리석불입상 (天安長山里石佛立像) -- 문화재자료 356호	충남 천안시	문화재청	972
1173	천안향교 (天安鄕校) -- 시도기념물 110호	충남 천안시	문화재청	649
1174	천원삼대리마애불 (天原三垈里磨崖佛) -- 보물 407호	충남 천안시	문화재청	81
1175	천장사칠층석탑 (天藏寺七層石塔) -- 문화재자료 202호	충남 서산시	문화재청	854
1176	천정대 (天政臺) -- 시도기념물 49호	충남 부여군	문화재청	595
1177	천진보탑 (天眞寶塔) -- 문화재자료 68호	충남 공주시	문화재청	749
1178	천흥사동제관음상 (天興寺銅製觀音像) -- 문화재자료 257호	충남 천안시	문화재청	894
1179	천흥사지당간지주 (天興寺址幢竿支柱) -- 보물 99호	충남 천안시	문화재청	36
1180	천흥사지오층석탑 (天興寺址五層石塔) -- 보물 354호	충남 천안시	문화재청	76
1181	鐵鎌(철겸)	충남 부여군 부여읍 관북리 부소산성	국립부여박물관	93
1182	鐵鑿	충남 부여군 부여읍 부소산	국립부여박물관	2
1183	철모(鐵矛)	충남 공주시 송산리 무녕왕릉	국립공주박물관	73
1184	鐵斧	충남 부여군 규암면 합송리 1구 산 4	국립부여박물관	86
1185	철제방두형관정(鐵製方頭形棺釘)	충남 공주시 송산리 무녕왕릉	국립공주박물관	80
1186	철제여래좌상(鐵製如來坐像)	충남 서산시 운산면(雲山面)	국립중앙박물관	1
1187	철제오수전(鐵製五銖錢)	충남 공주시 송산리 무녕왕릉	국립공주박물관	67
1188	鐵製b斗	충남 부여군 부여읍 구아리 경찰서앞	국립부여박물관	15
1189	첩지 (첩지) -- 중요민속자료 22-10호	충남 논산시	문화재청	255
1190	청금목 (靑衿鉢) -- 중요민속자료 30-4-1호	충남 홍성군	문화재청	304
1191	靑銅矛	충남 부여군 구룡면 구봉리 470-1	국립부여박물관	63
1192	靑銅飯子	충남 논산군 연산면 천호리	국립부여박물관	49
1193	청동신수경 (淸銅神獸鏡) -- 국보 161-1호	충남 공주시	문화재청	18
1194	청동신수경 (靑銅神獸鏡) -- 국보 161호	충남 공주시	문화재청	17
1195	靑銅六角蓋	충남 부여군 부여읍 부소산 서복사지	국립부여박물관	36
1196	청동잔(靑銅盞)	충남 공주시 송산리 무령왕릉	국립공주박물관	57
1197	청동저(靑銅箸)	충남 공주시 송산리 무령왕릉	국립공주박물관	51
1198	청동정병(靑銅淨甁)	충남 부여군 부여읍부소산사비루부근(樓附近)	국립중앙박물관	5
1199	청동제(靑銅製)위두	충남 공주시 송산리 무령왕릉	국립공주박물관	58
1200	靑銅製鬼面裝飾	충남 부여군 부여읍 구아리	국립부여박물관	34
1201	청동제발(靑銅製鉢)	충남 공주시 송산리 무령왕릉	국립공주박물관	54
1202	청동제방격규구신수문경(靑銅製方格規矩神獸文鏡) -- 국보(國寶) 161호	충남 공주시 송산리 무령왕릉	국립공주박물관	59
1203	청동제수대경(靑銅製獸帶鏡) -- 국보(國寶) 161호	충남 공주시 송산리 무령왕릉	국립공주박물관	61
1204	청동제쌍두영(靑銅製雙頭鈴)	충남 당진군 당진면 우두리	국립공주박물관	11
1205	청동제완(靑銅製完)	충남 공주시 송산리 무령왕릉	국립공주박물관	52
1206	청동제완(靑銅製完)	충남 공주시 송산리 무령왕릉	국립공주박물관	53
1207	청동제의자손수대경(靑銅製宜子孫獸帶鏡) -- 국보(國寶) 161호	충남 공주시 송산리 무령왕릉	국립공주박물관	60
1208	청동제접시형용기(靑銅製接匙形容器)	충남 공주시 송산리 무령왕릉	국립공주박물관	72
1209	청량사지오층석탑 (淸凉寺址五層石塔) -- 보물 1284호	충남 공주시	문화재청	177
1210	청량사지칠층석탑 (淸凉寺址七層石塔) -- 보물 1285호	충남 공주시	문화재청	178

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1211	청사측통철구 (青紗燭筒鐵具) -- 중요민속자료 30-2-9호	충남 예산군	문화재청	275
1212	청양구기자주 (청양구기자주) -- 시도무형문화재 30호	충남 청양군	문화재청	552
1213	청양도림사지 (청양도림사지) -- 시도기념물 100호	충남 청양군	문화재청	639
1214	청양삼층석탑 (青陽三層石塔) -- 문화재자료 148호	충남 청양군	문화재청	812
1215	청양석조삼존불입상 (青陽石造三尊佛立像) -- 보물 197호	충남 청양군	문화재청	57
1216	청양영모재 (青陽詠慕齋) -- 시도유형문화재 154호	충남 청양군	문화재청	519
1217	청양운장암철보살좌상 (青陽雲藏菴鐵菩薩坐像) -- 보물 986호	충남 청양군	문화재청	165
1218	청양정산동화제 (青陽定山洞火祭) -- 시도무형문화재 9호	충남 청양군	문화재청	532
1219	청양춘포짜기 (青陽춘포짜기) -- 시도무형문화재 25호	충남 청양군	문화재청	547
1220	청양향교 (青陽鄕校) -- 시도기념물 133호	충남 청양군	문화재청	672
1221	청일사 (淸逸祠) -- 문화재자료 93호	충남 부여군	문화재청	768
1222	청천익 (青天묘) -- 중요민속자료 110-2호	충남 부여군	문화재청	341
1223	청풍사 (淸風祠) -- 문화재자료 16호	충남 금산군	문화재청	711
1224	초려이유태유고 (草廬李惟泰遺稿) -- 시도유형문화재 104호	충남 공주시	문화재청	479
1225	초려이유태의유물 (草廬李惟泰의遺物) -- 시도민속자료 5호	충남 공주시	문화재청	696
1226	초자벽편(硝子壁片)	충남 부여군 림천면 가신리 보광사	국립중앙박물관	3
1227	측작대 (측작대) -- 중요민속자료 30-1-1호	충남 부여군	문화재청	259
1228	최고운유적 (崔孤雲遺蹟) -- 문화재자료 145호	충남 보령시	문화재청	809
1229	최익현선생묘 (崔益鉉先生墓) -- 시도기념물 29호	충남 예산군	문화재청	577
1230	충곡서원지 (忠谷書院址) -- 시도기념물 12호	충남 논산시	문화재청	562
1231	충남상업주식합자회사규칙 (忠南商業株式合資會社規則) -- 중요민속자료 30-4-6호	충남 홍성군	문화재청	309
1232	충남예당상무지사 (忠南禮唐商務支社) -- 중요민속자료 30-2-2호	충남 예산군	문화재청	268
1233	충순위보공장군정덕10년<전우평> (忠順衛保功將軍正德10年<田禹平>) -- 보물 727-7호	충남 논산시	문화재청	137
1234	충순위어모장군홍치18년<전청> (忠順衛禦侮將軍弘治18年<田淸>) -- 보물 727-6호	충남 논산시	문화재청	136
1235	충절사 (忠節祠) -- 문화재자료 70호	충남 공주시	문화재청	751
1236	충헌공윤전사우 (忠憲公尹栓祠宇) -- 문화재자료 283호	충남 공주시	문화재청	910
1237	충헌공윤전재실 (忠憲公尹栓齋室) -- 문화재자료 350호	충남 논산시	문화재청	966
1238	충현서원 (忠賢書院) -- 문화재자료 60호	충남 공주시	문화재청	741
1239	충현서원유적 (忠賢書院遺蹟) -- 시도기념물 46호	충남 공주시	문화재청	592
1240	칠백의총 (七百義塚) -- 사적 105호	충남 금산군	문화재청	193
1241	칠산서원 (七山書院) -- 문화재자료 102호	충남 부여군	문화재청	773
1242	칠존석불상 (七尊石佛像) -- 보물 650호	충남 연기군	문화재청	123
1243	탄목조옥(炭木璌玉)	충남 공주시 송산리 무령왕릉	국립공주박물관	47
1244	탄화목(炭化木) 수형패식(獸形佩飾)	충남 공주시 송산리 무령왕릉	국립공주박물관	46
1245	탑선리석탑 (塔仙里石塔) -- 문화재자료 326호	충남 금산군	문화재청	949
1246	태고사대웅전 (太古寺大雄殿) -- 문화재자료 27호	충남 금산군	문화재청	719
1247	태안마애삼존불 (泰安磨崖三尊佛) -- 보물 432호	충남 태안군	문화재청	84
1248	태안목애당 (泰安牧愛堂) -- 시도유형문화재 138호	충남 태안군	문화재청	507
1249	태안설위설경 (泰安設位說經) -- 시도무형문화재 24호	충남 태안군	문화재청	546
1250	태안소근진성 (泰安所斤鎭城) -- 시도기념물 93호	충남 태안군	문화재청	632
1251	태안승언리상여 (泰安承彦里喪輿) -- 문화재자료 315호	충남 태안군	문화재청	939
1252	태안향교 (泰安鄕校) -- 시도기념물 139호	충남 태안군	문화재청	678
1253	태조대왕태실 (太祖大王胎室) -- 시도유형문화재 131호	충남 금산군	문화재청	500
1254	土器淨甁	충남 부여군 부여읍 관북리 구박물관	국립부여박물관	52
1255	토기호(土器壺)	충남 공주시 우성면 도천리 산17	국립공주박물관	86
1256	토제개(土製蓋)	충남 공주시 우성면 도천리 산 17	국립공주박물관	87
1257	토제개배(土製蓋杯)	충남 논산군 가야곡면 육곡리 백제폐고분	국립공주박물관	96
1258	토제고배(土製高杯)	충남 논산군 연산면 표정리	국립공주박물관	89
1259	토제고배(土製高杯)	충남 논산군 연산면 표정리 산 58-2	국립공주박물관	95
1260	토제광구장경호(土製廣口長頸壺)	충남 논산군 연산면 표정리 산 58-2	국립공주박물관	93
1261	토제기대(土製器臺)	충남 공주시 송산리 고분군 6호분	국립공주박물관	2
1262	토제대부장경호(土製臺附長頸壺)	충남 연기군 서면 와촌리 42-1	국립공주박물관	88
1263	토제삼족기(土製三足器)	충남 논산군 연산면 표정리 산 58-2	국립공주박물관	94
1264	토제양이부호(土製兩耳附壺)	충남 공주시 탄천면 남산리	국립공주박물관	4
1265	토제양이부호(土製兩耳附壺)	충남 공주시 사곡면 호계리	국립공주박물관	9
1266	토제옹관(土製甕棺)	충남 공주시 장기면 하봉리 산1	국립공주박물관	99
1267	토제원저단경호(土製圓底短頸壺)	충남 공주시 장기면 하봉리 산4-49,50	국립공주박물관	98
1268	토제유개호(土製有蓋壺)	충남 공주시 우성면 도천리 산 17	국립공주박물관	8
1269	토제파수부잔(土製把手付盞)	충남 논산군 연산면 표정리	국립공주박물관	90

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일련번호	명 칭	출토지역	관할기관	소장번호
1270	토제호(土製壺)	충남 공주시 이인면	국립공주박물관	10
1271	통문 (通文) -- 중요민속자료 30-3-8호	충남 부여군	문화재청	301
1272	통정대부공주진병마첨절제사겸공주목사겸권농사천순7년<전가생> (通政大夫公州鎭兵馬僉節制使兼公州牧使兼勸農使天頌7年<田稼生>) -- 보물 727-5호	충남 논산시	문화재청	135
1273	통정대부형조참의영락14년<전흥> (通政大夫刑曹參議永樂14년<田興>) -- 보물 727-1호	충남 논산시	문화재청	131
1274	퇴수서원 (退修書院) -- 문화재자료 91호	충남 부여군	문화재청	766
1275	把手附鉢	충남 서천군(서천군) 비인면 장포리	국립부여박물관	41
1276	파평윤씨덕포공재실 (坡平尹氏德浦公齋室) -- 문화재자료 359호	충남 논산시	문화재청	975
1277	파평윤씨재실 (坡平尹氏齋室) -- 문화재자료 299호	충남 논산시	문화재청	924
1278	팔각정 (八角井) -- 문화재자료 103호	충남 부여군	문화재청	774
1279	팔괘정 (八掛亭) -- 시도유형문화재 76호	충남 논산시	문화재청	454
1280	편무성가옥 (片戊成家屋) -- 문화재자료 304호	충남 보령시	문화재청	929
1281	편지 (便紙) -- 보물 568-12호	충남 예산군	문화재청	119
1282	포저유서및송곡문집판각 (浦渚遺書및松谷文集板刻) -- 시도유형문화재 126호	충남 공주시	문화재청	495
1283	포정사및삼문 (布政司및三門) -- 시도유형문화재 93호	충남 공주시	문화재청	468
1284	표절사 (表節祠) -- 문화재자료 154호	충남 청양군	문화재청	816
1285	표제「충숙근수교,훈둑의헌진장」(表題「忠肅謹受敎,訓纛의軒珍藏」) -- 보물 547-2-8호	충남 예산군	문화재청	104
1286	표제<상지십년용집협흡> (表題<上之十年龍集協洽>) -- 보물 547-2-7호	충남 예산군	문화재청	103
1287	표제<십삼년정미> (表題<十三年丁未>) -- 보물 547-2-5호	충남 예산군	문화재청	101
1288	표지「묘칠정」「금칠십재」(表紙「乙卯七正」「金七十齋」) -- 보물 547-2-3호	충남 예산군	문화재청	99
1289	韓國式銅劍	충남 예산군 광시면 동서리 산5-2	국립부여박물관	44
1290	한국식동검(韓國式銅劍)	충남 아산시 산창면 남성리 산(山) 4	국립중앙박물관	11
1291	한명회선생신도비 (韓明澮先生神道碑) -- 문화재자료 332호	충남 천안시	문화재청	955
1292	한산모시짜기 (韓山모시짜기) -- 중요무형문화재 14호	충남전역	문화재청	236
1293	한산세모시짜기 (韓山세모시짜기) -- 시도무형문화재 1호	충남 서천군	문화재청	525
1294	한산소곡주 (韓山素곡酒) -- 시도무형문화재 3호	충남 서천군	문화재청	527
1295	한산읍성 (韓山邑城) -- 문화재자료 134호	충남 서천군	문화재청	801
1296	한산향교 (韓山鄕校) -- 시도기념물 131호	충남 서천군	문화재청	670
1297	한용운선생생가지 (韓龍雲先生生家地) -- 시도기념물 75호	충남 홍성군	문화재청	614
1298	한음선생영정 (漢陰先生影幀) -- 문화재자료 298호	충남 당진군	문화재청	923
1299	합죽선 (合竹扇) -- 중요민속자료 22-7호	충남 논산시	문화재청	252
1300	합호서원 (合湖書院) -- 문화재자료 41호	충남 연기군	문화재청	723
1301	해미읍성 (海美邑城) -- 사적 116호	충남 서산시	문화재청	196
1302	해미향교 (海美鄕校) -- 시도기념물 117호	충남 서산시	문화재청	656
1303	행랑채 (행랑채) -- 중요민속자료 192-3호	충남 부여군	문화재청	354
1304	행랑채 (행랑채) -- 중요민속자료 196-3호	충남 아산시	문화재청	372
1305	행랑채 (행랑채) -- 중요민속자료 198-3호	충남 홍성군	문화재청	381
1306	행랑채 (행랑채) -- 중요민속자료 199-3호	충남 서산시	문화재청	386
1307	행림서원 (杏林書院) -- 문화재자료 76호	충남 논산시	문화재청	755
1308	향로 (香爐) -- 중요민속자료 36-4호	충남 서산시	문화재청	337
1309	향천사구층석탑 (香泉寺九層石塔) -- 문화재자료 174호	충남 예산군	문화재청	830
1310	향천사부도 (香泉寺浮屠) -- 문화재자료 179호	충남 예산군	문화재청	835
1311	향천사천불전 (香泉寺千佛殿) -- 문화재자료 173호	충남 예산군	문화재청	829
1312	향합 (香盒) -- 중요민속자료 36-5호	충남 서산시	문화재청	338
1313	현내리부도 (縣內里浮屠) -- 시도유형문화재 22호	충남 부여군	문화재청	409
1314	형제송 (兄弟松) -- 문화재자료 243호	충남 아산시	문화재청	884
1315	형틀대 (刑틀臺) -- 보물 568-11호	충남 예산군	문화재청	118
1316	호박제관옥(琥珀製管玉)	충남 공주시 송산리 무령왕릉	국립공주박물관	45
1317	호암사지 (虎岩寺址) -- 시도기념물 32호	충남 부여군	문화재청	580
1318	虎子	충남 부여군 부여읍 군수리 149-2	국립부여박물관	53
1319	호지집 (호지집) -- 중요민속자료 196-4호	충남 아산시	문화재청	373
1320	호패 (號牌) -- 중요민속자료 21-3호	충남 당진군	문화재청	243
1321	홍가신선생교지 (洪可臣先生敎旨) -- 문화재자료 310호	충남 아산시	문화재청	935
1322	홍가신청란비 (洪可臣淸亂碑) -- 문화재자료 165호	충남 홍성군	문화재청	824
1323	홍대용선생묘 (홍대용선생묘) -- 시도기념물 101호	충남 천안시	문화재청	640
1324	홍대용선생생가지 (洪大容先生生家址) -- 문화재자료 349호	충남 천안시	문화재청	965
1325	홍산객사 (鴻山客舍) -- 시도유형문화재 97호	충남 부여군	문화재청	472
1326	홍산동헌 (鴻山東軒) -- 시도유형문화재 141호	충남 부여군	문화재청	510
1327	홍산만덕교비 (鴻山萬德橋碑) -- 시도기념물 3호	충남 부여군	문화재청	555

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1328	홍산태봉산성 (홍산태봉산성) -- 문화재자료 368호	충남 부여군	문화재청	984
1329	홍산향교 (鴻山鄕校) -- 시도기념물 128호	충남 부여군	문화재청	667
1330	홍성고산사대웅전 (洪城高山寺大雄殿) -- 보물 399호	충남 홍성군	문화재청	80
1331	홍성구절암마애불 (洪城九節庵磨崖佛) -- 문화재자료 361호	충남 홍성군	문화재청	977
1332	홍성댕댕이장 (홍성댕댕이장) -- 시도무형문화재 31호	충남 홍성군	문화재청	553
1333	홍성동문동당간지주 (洪城東門洞幢竿支柱) -- 보물 538호	충남 홍성군	문화재청	89
1334	홍성상하리미륵불 (洪城上下里彌勒佛) -- 시도유형문화재 87호	충남 홍성군	문화재청	463
1335	홍성신경리마애석불 (洪城新耕里磨崖石佛) -- 보물 355호	충남 홍성군	문화재청	77
1336	홍성신금성 (洪城神衿城) -- 시도기념물 149호	충남 홍성군	문화재청	688
1337	홍성염찬고택 (洪城嚴璨古宅) -- 중요민속자료 231호	충남 홍성군	문화재청	393
1338	홍성연산서씨석보 (洪城迎山徐氏石譜) -- 문화재자료 354호	충남 홍성군	문화재청	970
1339	홍성임득의장군묘 (洪城林得義將軍墓) -- 문화재자료 340호	충남 홍성군	문화재청	963
1340	홍성장곡산성 (洪城長谷山城) -- 문화재자료 360호	충남 홍성군	문화재청	976
1341	홍성조응식가옥 (洪城趙應植家屋) -- 중요민속자료 198호	충남 홍성군	문화재청	378
1342	홍성지석묘 (洪城支石墓) -- 시도기념물 28호	충남 홍성군	문화재청	576
1343	홍양호묘 (洪良浩墓) -- 문화재자료 13호	충남 천안시	문화재청	710
1344	홍일섭의묘 (洪一燮義墓) -- 문화재자료 46호	충남 연기군	문화재청	727
1345	홍주성(조양문,아문,산성) (洪州城(朝陽門,衙門,山城)) -- 사적 231호	충남 홍성군	문화재청	202
1346	홍주성수성비 (洪州城修城碑) -- 문화재자료 166호	충남 홍성군	문화재청	825
1347	홍주의사총 (洪州義士塚) -- 사적 431호	충남 홍성군	문화재청	218
1348	홍주향교 (洪州鄕校) -- 시도기념물 135호	충남 홍성군	문화재청	674
1349	홍진도선생영정 (洪振道先生影幀) -- 문화재자료 318호	충남 천안시	문화재청	942
1350	홍천익 (紅天翼) -- 중요민속자료 110-3호	충남 부여군	문화재청	342
1351	화산영당 (華山影堂) -- 문화재자료 69호	충남 공주시	문화재청	750
1352	화성리오층석탑 (花城里五層石塔) -- 문화재자료 89호	충남 부여군	문화재청	764
1353	화순옹주홍문 (和順翁主紅門) -- 시도유형문화재 45호	충남 예산군	문화재청	430
1354	화순최씨참판공재실 (和順崔氏參判公齋室) -- 문화재자료 357호	충남 연기군	문화재청	973
1355	화암서원 (華岩書院) -- 문화재자료 138호	충남 보령시	문화재청	803
1356	環頭大刀	충남 보령시 청라면 장현리 산820	국립부여박물관	54
1357	滑石製三尊佛	충남 부여군 부여읍 동남리 정림사지	국립부여박물관	81
1358	滑石製立佛(환석제입불)	충남 부여군 부여읍 구아리	국립부여박물관	4
1359	황도붕기풍어제 (黃島붕기豊漁祭) -- 시도무형문화재 12호	충남 태안군	문화재청	535
1360	황산성 (黃山城) -- 시도기념물 56호	충남 논산시	문화재청	601
1361	황일호의묘 (黃一晧義墓) -- 문화재자료 111호	충남 부여군	문화재청	782
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1449	금동귀걸이(金銅太環耳飾)	충북 충주시 가금면 루암리 산 36번지	국립청주박물관	28
1450	금동귀걸이[金銅細環耳飾]	충북 충주시 가금면 루암리 산 36번지	국립청주박물관	29
1451	금동보살입상(金銅菩薩立像)	충북 청원군 수락리 출토	충북대학교박물관	4
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1453	금성대군사우 (錦城大君祠宇) -- 문화재자료 10호	충북 진천군	문화재청	522
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1457	'기유년'명동제금고	충북 청주시 흥덕구 사직동 270	국립청주박물관	100
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1459	기타류 (其他類) -- 중요민속자료 109-4호	충북 청주시 흥덕구	문화재청	116
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1506	덕주사마애불 (德周寺磨崖佛) -- 보물 406호	충북 제천시	문화재청	24
1507	덕주사약사여래입상 (德周寺藥師如來立像) -- 시도유형문화재 196호	충북 제천시	문화재청	383
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1515	돌보습(石犁)	충북 청원군 쌍천리 3호 주거지	국립청주박물관	66
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1518	동래부사송상현충렬사 (東萊府使宋象賢忠烈祠) -- 시도기념물 16호	충북 청주시 흥덕구	문화재청	421
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1542	동화사석조비로자나불좌상 (東華寺石造毘盧舍那佛座像) -- 시도유형문화재 168호	충북 청원군	문화재청	354
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1544	둥근바닥토기(圓底土器)	충북 청원군 쌍청리 4호 주거지	국립청주박물관	68
1545	뚜껑굽다리사발(有蓋聳附鉢)	충북 충주시 가금면 루암리 산 41번지	국립청주박물관	36
1546	뚜껑굽다리접시(有蓋高杯)	충북 청원군 문의면 미천리	국립청주박물관	141
1547	뚜껑달린굽다리합(有蓋聳附盒)	충북 영동군 양산면 가곡리	국립청주박물관	60
1548	뚜껑달린병(有蓋甁)	충북 영동군 양산면 가곡리	국립청주박물관	59
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1575	목관 (목관) -- 중요민속자료 109-4-2호	충북 청주시 흥덕구	문화재청	118
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1599	반달돌칼(半月形石刀)	충북 청원군 쌍청리 4호 주거지	국립청주박물관	70
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1606	백자(白磁)접시	충북 옥천군 동이면 석탄리	충북대학교박물관	1
1607	백자명기(白磁明器)	충북 청원군 옥산면 남촌리 새말 산18-4	국립청주박물관	142
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1630	보안사석조여래좌상 (보안사석조여래좌상) -- 문화재자료 22호	충북 괴산군	문화재청	534
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1633	보은속리산의망개나무 (報恩俗離山의망개나무) -- 천연기념물 207호	충북 보은군	문화재청	81
1634	보은송로주 (報恩松露酒) -- 시도무형문화재 3호	충북 보은군	문화재청	401
1635	보은원정리삼층석탑 (報恩院汀里三層石塔) -- 시도유형문화재 118호	충북 보은군	문화재청	306
1636	보은의백송 (報恩의白松) -- 천연기념물 104호	충북 보은군	문화재청	78
1637	보은최태하가옥 (報恩崔台夏家屋) -- 중요민속자료 139호	충북 보은군	문화재청	191
1638	보은풍림정사 (報恩楓林精舍) -- 시도기념물 28호	충북 보은군	문화재청	432
1639	보은향교 (報恩鄕校) -- 시도유형문화재 95호	충북 보은군	문화재청	284
1640	보한재영정 (保閑齋影幀) -- 보물 613호	충북 청원군	문화재청	36
1641	복도별업암각자 (復道別業岩刻字) -- 시도유형문화재 82호	충북 단양군	문화재청	272
1642	복천암수암화상탑 (福泉庵秀庵和尙塔) -- 시도유형문화재 12호	충북 보은군	문화재청	220
1643	복천암학조등곡화상탑 (福泉庵學祖燈谷和尙塔) -- 시도유형문화재 13호	충북 보은군	문화재청	221
1644	봉서재 (鳳捿齋) -- 문화재자료 21호	충북 괴산군	문화재청	533
1645	봉석주부조묘 (奉石柱不조墓) -- 문화재자료 8호	충북 청원군	문화재청	520
1646	粉靑沙器象嵌우점문병	충북 영동군 영동읍 계산리 882-12	국립광주박물관	1
1647	분청사기항아리(粉靑沙器壺)	충북 제천시 백운면 도곡1구(우경리)	국립청주박물관	80
1648	붉은간토기(紅陶)	충북 제천시 청풍면 양평리 A지구	국립청주박물관	8
1649	빗살무늬토기(櫛文土器)	충북 청원군 쌍청리 4호 주거지	국립청주박물관	67
1650	빗살무늬토기조각(櫛文土器片)	충북 청원군 쌍청리 4호 주거지	국립청주박물관	69
1651	사내사명동제향로조각	충북 청주시 흥덕구 사직동 270	국립청주박물관	108
1652	사로당 (四老堂) -- 시도유형문화재 151호	충북 영동군	문화재청	337
1653	사서공<전식>영정 (沙西公<全湜>影幀) -- 시도유형문화재 171호	충북 옥천군	문화재청	357
1654	사자빈신사지석탑 (獅子頻迅寺址石塔) -- 보물 94호	충북 제천시	문화재청	14
1655	삼각형전돌(三角形塼)	충북 충주시 가금면 탑평리	국립청주박물관	39
1656	삼년산성 (三年山城) -- 사적 235호	충북 보은군	문화재청	60
1657	삼베적삼 (삼베적삼) -- 중요민속자료 118-1호	충북 청주시 흥덕구	문화재청	168
1658	삼세충효문 (三世忠孝門) -- 시도기념물 40호	충북 청원군	문화재청	442
1659	상당산성 (上黨山城) -- 사적 212호	충북 청주시 상당구	문화재청	59
1660	상투 (상투) -- 중요민속자료 117-31호	충북 청주시 흥덕구	문화재청	164
1661	상평통보(常平通寶)	충북 충주시 소태면 복탄리 420	국립청주박물관	63
1662	상현서원 (象賢書院) -- 시도기념물 43호	충북 보은군	문화재청	445
1663	서간문 (書簡文) -- 중요민속자료 109-2-1호	충북 청주시 흥덕구	문화재청	112
1664	석보군묘각 (石保君廟閣) -- 문화재자료 16호	충북 괴산군	문화재청	528
1665	선병묵고가 (宣炳默古家) -- 문화재자료 4호	충북 보은군	문화재청	516
1666	선병우고가 (宣炳禹古家) -- 문화재자료 5호	충북 보은군	문화재청	517
1667	성운묘소및묘갈 (成運墓所및墓碣) -- 시도기념물 70호	충북 보은군	문화재청	456
1668	세발토기(三足土器)	충북 청주시 신봉동(신봉동 고분군)	국립청주박물관	48
1669	세발토기(三足土器)	충북 충주시 동량면 하천리 F지구	국립청주박물관	78
1670	세조대 (세조대) -- 중요민속자료 117-28호	충북 청주시 흥덕구	문화재청	161
1671	세천재 (歲薦齋) -- 문화재자료 29호	충북 영동군	문화재청	541
1672	소백산의주목군락 (小白山의朱木群落) -- 천연기념물 244호	충북 단양군	문화재청	86
1673	소색견편직모자 (소색견편직모자) -- 중요민속자료 117-30호	충북 청주시 흥덕구	문화재청	163
1674	소색마단령(素色麻團領) -- 중요민속(中要民俗) 117호	충북 청원군 문의 후곡리	충북대학교박물관	8
1675	소색면단속곳 (소색면단속곳) -- 중요민속자료 116-2호	충북 청주시 흥덕구	문화재청	122
1676	소색면적고리(素色綿赤古里) -- 중요민속(中要民俗) 109호	-	충북대학교박물관	15
1677	소색명주감투 (소색명주감투) -- 중요민속자료 117-32호	충북 청주시 흥덕구	문화재청	165
1678	소색명주겹유누비상(내작무명) (소색명주겹유누비상(내작무명)) -- 중요민속자료 117-22호	충남 공주시 반죽동 대통사지	문화재청	155
1679	소색명주겹유저고리 (소색명주겹유저고리) -- 중요민속자료 117-4호	충북 청주시 흥덕구	문화재청	137

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1680	소색명주겹유저고리 (소색명주겹유저고리) -- 중요민속자료 117-7호	충북 청주시 흥덕구	문화재청	140
1681	소색명주겹유치마 (소색명주겹유치마) -- 중요민속자료 117-24호	충북 청주시 흥덕구	문화재청	157
1682	소색명주겹치마 (소색명주겹치마) -- 중요민속자료 217-8호	충북 청주시 흥덕구	문화재청	208
1683	소색명주누비겹유저고리 (소색명주누비겹유저고리) -- 중요민속자료 117-3호	충북 청주시 흥덕구	문화재청	136
1684	소색명주누비동방형포 (소색명주누비동방형포) -- 중요민속자료 117-17호	충북 청주시 흥덕구	문화재청	150
1685	소색명주동방형포(素色明紬東方型袍) -- 중요민속(中要民俗) 117호	충북 청원군 문의 후곡리	충북대학교박물관	11
1686	소색명주명목 (소색명주명목) -- 중요민속자료 117-27호	충북 청주시 흥덕구	문화재청	160
1687	소색명주명정 (소색명주명정) -- 중요민속자료 217-6호	충북 청주시 흥덕구	문화재청	206
1688	소색명주목도리 (소색명주목도리) -- 중요민속자료 217-12호	충북 청주시 흥덕구	문화재청	212
1689	소색명주솜치마 (소색명주솜치마) -- 중요민속자료 217-10호	충북 청주시 흥덕구	문화재청	210
1690	소색명주악수 (소색명주악수) -- 중요민속자료 117-29호	충북 청주시 흥덕구	문화재청	162
1691	소색명주적고리(素色明紬赤古里) -- 중요민속(中要民俗) 116호	충북 청원군 북일면 우산리 출토	충북대학교박물관	3
1692	소색무명겹유바지 (소색무명겹유바지) -- 중요민속자료 117-21호	충북 청주시 흥덕구	문화재청	154
1693	소색무명겹유창의 (소색무명겹유창의) -- 중요민속자료 117-19호	충북 청주시 흥덕구	문화재청	152
1694	소색무명겹창의 (소색무명겹창의) -- 중요민속자료 117-13호	충북 청주시 흥덕구	문화재청	146
1695	소색무명겹치마 (소색무명겹치마) -- 중요민속자료 217-9호	충북 청주시 흥덕구	문화재청	209
1696	소색무명도포 (소색무명도포) -- 중요민속자료 117-16호	충북 청주시 흥덕구	문화재청	149
1697	소색무명적삼 (소색무명적삼) -- 중요민속자료 117-11호	충북 청주시 흥덕구	문화재청	144
1698	소색무명홑이불 (소색무명홑이불) -- 중요민속자료 117-25호	충북 청주시 흥덕구	문화재청	158
1699	소색삼베관복(단령) (소색삼베관복(단령)) -- 중요민속자료 117-12호	충북 청주시 흥덕구	문화재청	145
1700	소색저천익(素色紵天翼) -- 중요민속(中要民俗) 109호	-	충북대학교박물관	16
1701	속리산금강굔쌍탑 (俗離山金剛菴雙塔) -- 시도유형문화재 200호	충북 보은군	문화재청	387
1702	속리산법주사일원 (俗離山法住寺一圓) -- 사적 및 명승 4호	충북 보은군	문화재청	74
1703	속리산사실기비 (俗離山事實記碑) -- 시도유형문화재 167호	충북 보은군	문화재청	353
1704	속리서원리의소나무 (俗離書院里의소나무) -- 천연기념물 352호	충북 보은군	문화재청	94
1705	속리의정이품송 (俗離의正二品松) -- 천연기념물 103호	충북 보은군	문화재청	77
1706	손병희선생유허지 (孫秉熙先生遺墟址) -- 시도기념물 30호	충북 청원군	문화재청	434
1707	손잡이달린잔(把杯)	충북 청주시 신봉동 고분군	국립청주박물관	71
1708	손잡이잔(把手附杯)	충북 청주시 신봉동(신봉동 고분군)	국립청주박물관	56
1709	송강정철묘소 (松江鄭澈墓所) -- 시도기념물 106호	충북 진천군	문화재청	490
1710	송강정철신도비 (松江鄭澈神道碑) -- 시도유형문화재 187호	충북 진천군	문화재청	375
1711	송담재 (松潭齋) -- 문화재자료 25호	충북 영동군	문화재청	537
1712	송상현묘소및신도비 (宋象賢墓所및神道碑) -- 시도기념물 66호	충북 청주시 흥덕구	문화재청	452
1713	송우암신도비및묘소 (宋尤庵神道碑및墓所) -- 시도기념물 10호	충북 괴산군	문화재청	415
1714	송인묘소 (宋仁墓所) -- 시도기념물 91호	충북 진천군	문화재청	476
1715	송풍관조각(送風管片)	충북 진천군 덕산면 석장리 381번지	국립청주박물관	92
1716	쇠낫(鐵鎌)	충북 제천시 청풍면 양평리 A지구	국립청주박물관	7
1717	쇠단지(鐵製四足登)	충북 청주시 흥덕구 사직동 270	국립청주박물관	129
1718	쇠도끼(鐵斧)	충북 제천시 청풍면 양평리 A지구	국립청주박물관	9
1719	쇠도끼(鐵斧)	충북 청주시 신봉동(신봉동 고분군)	국립청주박물관	50
1720	쇠망치(鐵鎚)	충북 청원군 오창면 괴정리 산40	국립청주박물관	132
1721	쇠보습	충북 충주시 동량면 하천리 F지구	국립청주박물관	79
1722	쇠뿔손잡이단지	충북 진천군 진천읍 송두리 2호 무덤	국립청주박물관	44
1723	쇠뿔손잡이달린잔	충북 청주시 신봉동(신봉동 고분군)	국립청주박물관	47
1724	쇠살촉(鐵鏃)	충북 청주시 신봉동(신봉동 고분군)	국립청주박물관	51
1725	쇠살촉(鐵鏃)	충북 청주시 신봉동(신봉동 고분군)	국립청주박물관	55
1726	쇠살촉덩어리(鐵製鏃群)	충북 청주시 신봉동 고분군	국립청주박물관	75
1727	쇠손칼(鐵製刀子)	충북 청주시 신봉동(신봉동 고분군)	국립청주박물관	54
1728	쇠솥(鐵釜)	충북 청주시 흥덕구 사직동 270	국립청주박물관	130
1729	쇠자물쇠(鐵製鈕)	충북 청주시 흥덕구 사직동 270	국립청주박물관	128
1730	쇠투겁창(鐵矛)	충북 청원군 오창면 송대리(마-11호)	국립청주박물관	135
1731	수산지곡리고가 (水山池谷里古家) -- 시도유형문화재 89호	충북 제천시	문화재청	279
1732	수정산성 (水精山城) -- 시도기념물 111호	충북 음성군	문화재청	495
1733	순성좌리4등공신록권 (純誠佐理四等功臣錄券) -- 보물 716호	충북 청주시 흥덕구	문화재청	41
1734	순조대왕태실 (純祖大王胎室) -- 시도유형문화재 11호	충북 보은군	문화재청	219
1735	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	17
1736	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	18
1737	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	19
1738	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	20

일련번호	명칭	출토지역	관할기관	소장번호
1739	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	21
1740	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	22
1741	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	23
1742	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	24
1743	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	25
1744	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	26
1745	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	27
1746	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	28
1747	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	29
1748	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	30
1749	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	31
1750	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	32
1751	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	33
1752	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	34
1753	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	35
1754	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	36
1755	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	37
1756	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	38
1757	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	39
1758	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	40
1759	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	41
1760	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	42
1761	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	43
1762	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	44
1763	순천김씨묘출토간찰(順天金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	45
1764	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	46
1765	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	47
1766	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	48
1767	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	49
1768	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	50
1769	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	51
1770	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	52
1771	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	53
1772	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	54
1773	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	55
1774	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	56
1775	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	57
1776	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	58
1777	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	59
1778	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	60
1779	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	61
1780	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	62
1781	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	63
1782	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	64
1783	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	65
1784	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	66
1785	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	67
1786	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	68
1787	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	69
1788	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	70
1789	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	71
1790	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	72
1791	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	73
1792	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	74
1793	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	75
1794	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	76
1795	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	77
1796	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	78
1797	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	79

일련번호	명 칭	출토지역	관함기관	소장번호
1798	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	80
1799	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	81
1800	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	82
1801	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	83
1802	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	84
1803	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	85
1804	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	86
1805	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	87
1806	순천김씨묘출토간찰(順川金氏墓出土簡札) -- 중요민속(中要民俗) 109호	충북 청주시 북일면 외남리	충북대학교박물관	88
1807	숫돌(砥石)	충북 청주시 명암동 41-1(4호목관묘)	국립청주박물관	136
1808	슴베찌르개	충북 단양군 적성면 애곡리 수양개	국립청주박물관	96
1809	신경행영정 (申景行影幀) -- 시도유형문화재 155호	충북 괴산군	문화재청	341
1810	신법천문도병풍 (新法天文圖屛風) -- 보물 848호	충북 보은군	문화재청	42
1811	신잡영정 (申磼影幀) -- 시도유형문화재 45호	충북 진천군	문화재청	246
1812	신중암신도비 (申仲庵神道碑) -- 시도유형문화재 161호	충북 청원군	문화재청	347
1813	신항서원 (莘巷書院) -- 시도기념물 42호	충북 청주시 상당구	문화재청	444
1814	신화국묘지 (申華國墓誌) -- 시도민속자료 7호	충북 진천군	문화재청	509
1815	신황호고가 (申晄浩古家) -- 시도유형문화재 148호	충북 청원군	문화재청	334
1816	신후재영정 (申厚載影幀) -- 시도유형문화재 154호	충북 음성군	문화재청	340
1817	아청색무명겹유직령포 (아청색무명겹유직령포) -- 중요민속자료 117-15호	충북 청주시 흥덕구	문화재청	148
1818	아청색소화당초문단겹당저고리 (아청색소화당초문단겹당저고리) -- 중요민속자료 117-10호	충북 청주시 흥덕구	문화재청	143
1819	안동김씨묘출토의복 (安東金氏墓出土衣服) -- 중요민속자료 217호	충북 청주시 흥덕구	문화재청	200
1820	안심사대웅전 (安心寺大雄殿) -- 보물 664호	충북 청원군	문화재청	40
1821	안심사영산회괘불탱 (安心寺靈山會掛佛幀) -- 국보 297호	충북 청원군	문화재청	10
1822	암서재 (巖棲齋) -- 시도유형문화재 175호	충북 괴산군	문화재청	361
1823	양촌권근및경주이씨묘표 (陽村權近및慶州李氏墓表) -- 시도유형문화재 207호	충북 음성군	문화재청	394
1824	양촌권근삼대묘소및신도비 (陽村權近三代墓所및神道碑) -- 시도기념물 32호	충북 음성군	문화재청	436
1825	어깨단지(有肩壺)	충북 청주시 신봉동(신봉동 고분군)	국립청주박물관	46
1826	억정사대지국사비 (億政寺大智國師碑) -- 보물 16호	충북 충주시	문화재청	12
1827	언해태산집요 (諺解胎産集要) -- 보물 1088호	충북 음성군	문화재청	47
1828	여러면 석기	충북 단양군 적성면 애곡리 수양개	국립청주박물관	94
1829	연꽃·사람얼굴무늬수막새	충북 충주시 상모면 미륵리	국립청주박물관	34
1830	연꽃무늬수막새(蓮花文圓瓦當)	충북 청주시 운천동 515-1 흥덕사지	국립청주박물관	22
1831	연꽃무늬수막새(蓮花文圓瓦當)	충북 충주시 소태면 오량리561(청룡사지)	국립청주박물관	83
1832	연꽃무늬수막새조각	충북 충주시 동량면 하천리	국립청주박물관	10
1833	연꽃무늬수막새조각	충북 충주시 동량면 하천리	국립청주박물관	11
1834	연꽃무늬수막새조각	충북 충주시 가금면 탑평리	국립청주박물관	38
1835	연담공묘소 (蓮潭公墓所) -- 시도기념물 20호	충북 청주시 상당구	문화재청	425
1836	연덩굴무늬수막새	충북 청주시 운천동 515-1 흥덕사지	국립청주박물관	23
1837	연풍동헌 (延豊東軒) -- 시도유형문화재 162호	충북 괴산군	문화재청	348
1838	연풍입석의소나무 (延豊立石의소나무) -- 천연기념물 383호	충북 괴산군	문화재청	97
1839	연풍향교 (延豊鄕橋) -- 시도유형문화재 103호	충북 괴산군	문화재청	292
1840	연풍향청 (延豊鄕廳) -- 문화재자료 13호	충북 괴산군	문화재청	525
1841	염수 (염수) -- 중요민속자료 116-12호	충북 청주시 흥덕구	문화재청	132
1842	영국사망탑봉삼층석탑 (寧國寺望塔峰三層石塔) -- 보물 535호	충북 영동군	문화재청	33
1843	영국사부도 (寧國寺浮屠) -- 보물 532호	충북 영동군	문화재청	30
1844	영국사삼층석탑 (寧國寺三層石塔) -- 보물 533호	충북 영동군	문화재청	31
1845	영국사원각국사비 (寧國寺圓覺國師碑) -- 보물 534호	충북 영동군	문화재청	32
1846	영동가곡리고가 (永同柯谷里古家) -- 시도유형문화재 147호	충북 영동군	문화재청	333
1847	영동가곡리고분 (永同柯谷里古墳) -- 시도기념물 97호	충북 영동군	문화재청	482
1848	영동가학루 (永同駕鶴樓) -- 시도유형문화재 22호	충북 영동군	문화재청	229
1849	영동김선조가옥 (永同金善照家屋) -- 중요민속자료 142호	충북 영동군	문화재청	194
1850	영동김자수유적 (永同金自粹遺蹟) -- 시도기념물 41호	충북 영동군	문화재청	443
1851	영동당곡리십이장신당 (永同堂谷里十二將神堂) -- 시도민속자료 2호	충북 영동군	문화재청	505
1852	영동매천리의미선나무자생지 (永同梅川里의미선나무自生地) -- 천연기념물 364호	충북 영동군	문화재청	95
1853	영동묵정리고가 (永同墨井里古家) -- 시도유형문화재 146호	충북 영동군	문화재청	332
1854	영동반야사삼층석탑 (永同般若寺三層石塔) -- 시도유형문화재 186호	충북 영동군	문화재청	374
1855	영동부용리고분 (永同芙蓉里古墳) -- 시도기념물 34호	충북 영동군	문화재청	438

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일련번호	영 칭	출토지역	관할기관	소장번호
1856	영동삼괴당 (永同三槐堂) -- 시도기념물 22호	충북 영동군	문화재청	427
1857	영동설계리농요 (永同雪溪里農謠) -- 시도무형문화재 6호	충북 영동군	문화재청	404
1858	영동성위제가옥 (永同成渭濟家屋) -- 중요민속자료 144호	충북 영동군	문화재청	196
1859	영동송우암유허비 (永同宋尤庵遺墟碑) -- 시도기념물 46호	충북 영동군	문화재청	448
1860	영동송재운가옥 (永同宋在文家屋) -- 중요민속자료 132호	충북 영동군	문화재청	184
1861	영동송재휘가옥 (永同宋在徽家屋) -- 중요민속자료 140호	충북 영동군	문화재청	192
1862	영동신항리삼존불입상 (永同新項里三尊佛立像) -- 보물 984호	충북 영동군	문화재청	45
1863	영동신항리상여 (永同新項里喪輿) -- 시도민속자료 10호	충북 영동군	문화재청	512
1864	영동심원리부도 (永同深源里浮屠) -- 시도유형문화재 122호	충북 영동군	문화재청	309
1865	영동영국사대웅전 (永同寧國寺大雄殿) -- 시도유형문화재 61호	충북 영동군	문화재청	255
1866	영동영국사석종형부도 (永同寧國寺石鐘形浮屠) -- 시도유형문화재 184호	충북 영동군	문화재청	372
1867	영동영국사원구형부도 (永同寧國寺圓球形浮屠) -- 시도유형문화재 185호	충북 영동군	문화재청	373
1868	영동영국사의은행나무 (永同寧國寺의은행나무) -- 천연기념물 223호	충북 영동군	문화재청	84
1869	영동자풍서당 (永同資風書堂) -- 시도유형문화재 73호	충북 영동군	문화재청	266
1870	영동향교 (永同鄕校) -- 시도유형문화재 99호	충북 영동군	문화재청	288
1871	영동화수루 (永東花樹樓) -- 시도유형문화재 165호	충북 영동군	문화재청	351
1872	영모사 (永慕祠) -- 문화재자료 19호	충북 충주시	문화재청	531
1873	영모재 (永慕齋) -- 시도유형문화재 176호	충북 영동군	문화재청	362
1874	영정 (影幀) -- 시도유형문화재 178-2호	충북 충주시	문화재청	366
1875	영조대왕태실가봉의 (英祖大王胎室加封儀) -- 시도유형문화재 170호	충북 청주시 상당구	문화재청	356
1876	영조대왕태실유적 (英祖大王胎室遺蹟) -- 시도기념물 69호	충북 청원군	문화재청	455
1877	영천리의측백수림 (令泉里의側栢樹林) -- 천연기념물 62호	충북 단양군	문화재청	76
1878	영춘향교 (永春鄕校) -- 시도유형문화재 106호	충북 단양군	문화재청	295
1879	오갑사지석불좌상 (烏岬寺址石佛坐像) -- 시도유형문화재 144호	충북 충주시	문화재청	330
1880	옥천경현당 (沃川景賢堂) -- 시도유형문화재 158호	충북 옥천군	문화재청	344
1881	옥천두암리삼층석탑 (沃天斗岩里三層石塔) -- 시도유형문화재 120호	충북 옥천군	문화재청	307
1882	옥천사마소 (沃川司馬所) -- 시도유형문화재 157호	충북 옥천군	문화재청	343
1883	옥천석탄리입석 (沃川石灘里立石) -- 시도유형문화재 156호	충북 옥천군	문화재청	342
1884	옥천송우암유허비 (沃川宋尤庵遺墟碑) -- 시도기념물 45호	충북 옥천군	문화재청	447
1885	옥천양신정 (沃川養神亭) -- 시도기념물 29호	충북 옥천군	문화재청	433
1886	옥천용암사쌍석탑 (沃川龍岩寺雙石塔) -- 시도유형문화재 3호	충북 옥천군	문화재청	214
1887	옥천이지당 (沃川二止堂) -- 시도유형문화재 42호	충북 옥천군	문화재청	244
1888	옥천지석묘 (沃川支石墓) -- 시도유형문화재 10호	충북 옥천군	문화재청	218
1889	옥천척화비 (沃川斥和碑) -- 시도기념물 6호	충북 옥천군	문화재청	411
1890	옥천청마리제신탑 (沃川靑馬里祭神塔) -- 시도민속자료 1호	충북 옥천군	문화재청	504
1891	옥천청석교 (沃川靑石橋) -- 시도유형문화재 121호	충북 옥천군	문화재청	308
1892	옥천향교 (沃川鄕校) -- 시도유형문화재 97호	충북 옥천군	문화재청	286
1893	옥천후율당 (沃川後栗堂) -- 시도기념물 13호	충북 옥천군	문화재청	418
1894	온달동굴 (溫達洞窟) -- 천연기념물 261호	충북 단양군	문화재청	88
1895	용두사지철당간 (龍頭寺址鐵幢竿) -- 국보 41호	충북 청주시 상당구	문화재청	3
1896	용머리장식(靑銅寶幢龍頭)	충북 청주시 운천동 515-1 흥덕사지	국립청주박물관	25
1897	용암사마애불 (龍岩寺磨崖佛) -- 시도유형문화재 17호	충북 옥천군	문화재청	224
1898	용암사목조아미타여래좌상 (龍庵寺木造阿彌陀如來坐像) -- 시도유형문화재 193호	충북 옥천군	문화재청	380
1899	우화교신사비 (羽化橋新事碑) -- 시도유형문화재 80호	충북 단양군	문화재청	270
1900	운곡서원 (雲谷書院) -- 문화재자료 11호	충북 음성군	문화재청	523
1901	운천동사적비(雲泉洞寺蹟碑)	충북 청주시 운천동 470	국립청주박물관	2
1902	원호유허비및관란정 (元昊遺墟碑및觀瀾亭) -- 시도기념물 92호	충북 제천시	문화재청	477
1903	위정사 (威靖祠) -- 문화재자료 12호	충북 괴산군	문화재청	524
1904	유근영정<71세상> (柳根影幀<七十一歲像>) -- 보물 566호	충북 괴산군	문화재청	35
1905	유리거푸집조각(琉璃范片)	충북 진천군 덕산면 석장리 田381번지	국립청주박물관	90
1906	윤관영정 (尹瓘影幀) -- 시도유형문화재 160호	충북 청원군	문화재청	346
1907	은장도 (銀粧刀) -- 중요민속자료 109-3-1호	충북 청주시 흥덕구	문화재청	115
1908	을축갑회원및죽림갑계문서 (乙丑甲繪圓및竹林甲契文書) -- 시도유형문화재 135호	충북 청원군	문화재청	321
1909	음성감곡성당 (陰城甘谷聖堂) -- 시도유형문화재 188호	충북 음성군	문화재청	376
1910	음성김주태가옥 (陰城金周泰家屋) -- 중요민속자료 141호	충북 음성군	문화재청	193
1911	음성미타사마애여래입상 (陰城彌陀寺磨崖如來立像) -- 시도유형문화재 130호	충북 음성군	문화재청	316
1912	음성서정우가옥 (陰城徐廷禹家屋) -- 중요민속자료 143호	충북 음성군	문화재청	195
1913	음성오층모전석탑 (陰城五層模傳石塔) -- 시도유형문화재 9호	충북 음성군	문화재청	217
1914	음성읍내리삼층석탑 (陰城邑內里三層石塔) -- 시도유형문화재 129호	충북 음성군	문화재청	315

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일련번호	명칭	출토지역	관할기관	소장번호
1915	음성팔성리고가 (陰城八聖里古家) -- 문화재자료 3호	충북 음성군	문화재청	515
1916	음성향교 (陰城鄕校) -- 시도유형문화재 104호	충북 음성군	문화재청	293
1917	읍내리은행나무 (邑內里은행나무) -- 천연기념물 165호	충북 괴산군	문화재청	80
1918	의림지 (義林池) -- 시도기념물 11호	충북 제천시	문화재청	416
1919	의방유취 (醫方類聚) -- 보물 1234호	충북 음성군	문화재청	50
1920	의상류 (衣裳類) -- 중요민속자료 109-1호	충북 청주시 흥덕구	문화재청	101
1921	이거이묘소 (李居易墓所) -- 시도기념물 95호	충북 진천군	문화재청	480
1922	이구판본 (李구板本) -- 시도유형문화재 153호	충북 괴산군	문화재청	339
1923	이기윤망북비 (李其允望北碑) -- 문화재자료 15호	충북 옥천군	문화재청	527
1924	이불 (이불) -- 중요민속자료 116-9호	충북 청주시 흥덕구	문화재청	129
1925	이상설생가 (李相卨生家) -- 시도기념물 77호	충북 진천군	문화재청	463
1926	이수임진무공신록권및영정 (李守一振武功臣錄券및影幀) -- 시도유형문화재 178호	충북 충주시	문화재청	364
1927	이시발신도비 (李時發神道碑) -- 시도유형문화재 142호	충북 진천군	문화재청	328
1928	이의정유적 (李宜耕遺蹟) -- 문화재자료 6호	충북 영동군	문화재청	518
1929	이정부부묘와묘표석 (李挺夫婦墓와墓表石) -- 시도기념물 94호	충북 진천군	문화재청	479
1930	이집묘갈 (李集墓碣) -- 시도기념물 104호	충북 진천군	문화재청	488
1931	익재영정 (益齋影幀) -- 시도유형문화재 72호	충북 보은군	문화재청	265
1932	인동덩굴무늬암막새조각	충북 청주시 운천동 515-1 흥덕사지	국립청주박물관	24
1933	인성군태실과태실비 (仁城郡胎室과胎室碑) -- 시도기념물 86호	충북 청원군	문화재청	471
1934	임경업장군묘소 (林慶業將軍墓所) -- 시도기념물 67호	충북 충주시	문화재청	453
1935	임충민공충렬사 (林忠愍公忠烈祠) -- 사적 189호	충북 충주시	문화재청	58
1936	자색명주천릭 (자색명주천릭) -- 중요민속자료 118-3호	충북 청주시 흥덕구	문화재청	170
1937	자양금(거문고) (紫陽琴(거문고)) -- 시도민속자료 9호	충북 충주시	문화재청	511
1938	자양영당 (紫陽影堂) -- 시도기념물 37호	충북 제천시	문화재청	441
1939	'장신효'명동제풍탁	충북 청주시 흥덕구 사직동 270	국립청주박물관	103
1940	장연오가리의느티나무 (長延五佳里의느티나무) -- 천연기념물 382호	충북 괴산군	문화재청	96
1941	장원군황성원부자영정 (長原君黃性元父子影幀) -- 시도유형문화재 202호	충북 충주시	문화재청	389
1942	장지현장군순절비및전적지 (張智賢將軍殉節碑및戰蹟地) -- 시도기념물 96호	충북 영동군	문화재청	481
1943	적삼 (적삼) -- 중요민속자료 116-3호	충북 청주시 흥덕구	문화재청	123
1944	적색마연토기호(赤色磨硏土器壺)	충북 제천시 청풍면 황석리	국립중앙박물관	3
1945	정송강사 (鄭松江祠) -- 시도기념물 9호	충북 진천군	문화재청	414
1946	정수충영정및영정중모기 (鄭守忠影幀및影幀重模記) -- 시도유형문화재 159호	충북 청원군	문화재청	345
1947	정인지묘 (鄭麟址墓) -- 시도기념물 33호	충북 괴산군	문화재청	437
1948	정토사법경대사자등탑비 (淨土寺法鏡大師慈燈塔碑) -- 보물 17호	충북 충주시	문화재청	13
1949	정토사홍법국사실상탑(淨土寺弘法國師實相塔) -- 국보(國寶) 102호	충북 충주시 동량면 정토사지	국립중앙박물관	1
1950	제사토기(祭祀土器)	충북 진천군 덕산면 석장리 田381번지	국립청주박물관	91
1951	제원박도수가옥 (提原朴道秀家屋) -- 중요민속자료 137호	충북 제천시	문화재청	189
1952	제원송계리의망개나무 (堤原松界里의망개나무) -- 천연기념물 337호	충북 제천시	문화재청	93
1953	제원정원태가옥 (堤原鄭元泰家屋) -- 중요민속자료 148호	충북 제천시	문화재청	199
1954	제천교리방단석조물 (堤川校里方壇石造物) -- 시도유형문화재 203호	충북 제천시	문화재청	390
1955	제천금남루 (堤川錦南樓) -- 시도유형문화재 20호	충북 제천시	문화재청	227
1956	제천덕주산성 (堤川德周山城) -- 시도기념물 35호	충북 제천시	문화재청	439
1957	제천신륵사극락전 (堤川神勒寺極樂殿) -- 시도유형문화재 132호	충북 제천시	문화재청	318
1958	제천신륵사삼층석탑 (堤川神勒寺三層石塔) -- 보물 1296호	충북 제천시	문화재청	56
1959	제천오티별신제 (堤川吾峙別神祭) -- 시도무형문화재 8호	충북 제천시	문화재청	406
1960	제천입석리선돌 (堤川立石里立石) -- 시도기념물 117호	충북 제천시	문화재청	501
1961	제천장락리칠층모전석탑 (堤川長樂里七層模塼石塔) -- 보물 459호	충북 제천시	문화재청	26
1962	제천점말동굴유적 (堤川점말洞窟遺蹟) -- 시도기념물 116호	충북 제천시	문화재청	500
1963	제천정방사목조관음보살좌상및복장유물 (堤川淨芳寺木造觀音菩薩坐像및腹藏遺物) -- 시도유형문화재 206호	충북 제천시	문화재청	393
1964	제천청풍응청각 (堤川淸風凝淸閣) -- 시도유형문화재 90호	충북 제천시	문화재청	280
1965	제천향교 (堤川鄕校) -- 시도유형문화재 105호	충북 제천시	문화재청	294
1966	조중봉묘소 (趙重峰墓所) -- 시도기념물 14호	충북 옥천군	문화재청	419
1967	조중봉후율사 (조중봉후율사) -- 시도기념물 15호	충북 보은군	문화재청	420
1968	종이류 (종이類) -- 중요민속자료 109-2호	충북 청주시 흥덕구	문화재청	111
1969	주먹도끼	충북 제천시 한수면 사기리 창내	국립청주박물관	84
1970	주먹찌르개	충북 단양군 적성면 애곡리 수양개	국립청주박물관	97
1971	주성강당 (酒城講堂) -- 문화재자료 17호	충북 청주시 상당구	문화재청	529
1972	주정산봉수 (周井山烽燧) -- 시도기념물 113호	충북 충주시	문화재청	497

일련번호	명칭	출토지역	관할기관	소장번호
1973	죽령산신당 (竹嶺山神堂) -- 시도민속자료 3호	충북 단양군	문화재청	506
1974	중흥조헌신도비 (重興趙憲神道碑) -- 시도유형문화재 183호	충북 옥천군	문화재청	371
1975	중원고구려비 (中原高句麗碑) -- 국보 205호	충북 충주시	문화재청	9
1976	중원김위유출토유물 (中原金緯玧出土遺物) -- 중요민속자료 118호	충북 청주시 흥덕구	문화재청	167
1977	중원누암리고분군 (中原樓岩里古墳群) -- 시도기념물 36호	충북 충주시	문화재청	440
1978	중원마수리농요 (中原馬水里農謠) -- 시도무형문화재 5호	충북 충주시	문화재청	403
1979	중원문주리와요지 (中原文周里瓦窯址) -- 시도기념물 81호	충북 충주시	문화재청	467
1980	중원미륵리도요지 (中原彌勒里陶窯址) -- 시도기념물 100호	충북 충주시	문화재청	485
1981	중원미륵리사지 (中原彌勒里寺址) -- 사적 317호	충북 충주시	문화재청	64
1982	중원미륵리삼층석탑 (中原彌勒里三層石塔) -- 시도유형문화재 33호	충북 충주시	문화재청	237
1983	중원미륵리석등 (中原彌勒里石燈) -- 시도유형문화재 19호	충북 충주시	문화재청	226
1984	중원백운암철불좌상 (中原白雲庵鐵佛坐像) -- 시도유형문화재 21호	충북 충주시	문화재청	228
1985	중원봉황리마애불상군 (中原鳳凰里磨崖佛像群) -- 시도유형문화재 131호	충북 충주시	문화재청	317
1986	중원원평리미륵석불 (中原院坪里彌勒石佛) -- 시도유형문화재 18호	충북 충주시	문화재청	225
1987	중원윤민걸가옥 (中原尹民傑家屋) -- 중요민속자료 135호	충북 충주시	문화재청	187
1988	중원창동마애불 (中原倉洞磨崖佛) -- 시도유형문화재 76호	충북 충주시	문화재청	268
1989	중원창동오층석탑 (中原創洞五層石塔) -- 시도유형문화재 8호	충북 충주시	문화재청	216
1990	중원청명주 (中原淸明酒) -- 시도무형문화재 2호	충북 충주시	문화재청	400
1991	중원탑평리칠층석탑 (中原塔坪里七層石塔) -- 국보 6호	충북 충주시	문화재청	2
1992	지선정 (止善亭) -- 시도유형문화재 111호	충북 청원군	문화재청	300
1993	직령두루마기 (直領두루마기) -- 중요민속자료 109-1-4호	충북 청주시 흥덕구	문화재청	105
1994	진갈색목단당초문단겹치마 (진갈색목단당초문단겹치마) -- 중요민속자료 117-23호	충북 청주시 흥덕구	문화재청	156
1995	진무공신록권 (振武功臣錄券) -- 시도유형문화재 178-1호	충북 충주시	문화재청	365
1996	진천노원리석조마애여래입상 (鎭川老院里石造磨崖如來立像) -- 시도유형문화재 189호	충북 진천군	문화재청	377
1997	진천농교 (鎭川籠橋) -- 시도유형문화재 28호	충북 진천군	문화재청	234
1998	진천대모산성 (鎭川大母山城) -- 시도기념물 83호	충북 진천군	문화재청	468
1999	진천사곡리마애여래입상 (鎭川沙谷里磨崖如來立像) -- 시도유형문화재 124호	충북 진천군	문화재청	310
2000	진천산수리마애여래좌상 (鎭川山水里磨崖如來坐像) -- 문화재자료 20호	충북 진천군	문화재청	532
2001	진천산수리백제요지 (鎭川山水里百濟窯址) -- 사적 325호	충북 진천군	문화재청	66
2002	진천삼용리백제토기요지 (鎭川三龍里百濟土器窯址) -- 사적 344호	충북 진천군	문화재청	67
2003	진천신헌고택 (鎭川申櫶故宅) -- 문화재자료 1호	충북 진천군	문화재청	514
2004	진천연곡리석비 (鎭川連谷里石碑) -- 보물 404호	충북 진천군	문화재청	22
2005	진천영수암괘불 (鎭川靈水庵掛佛) -- 시도유형문화재 44호	충북 진천군	문화재청	245
2006	진천용화사석불입상 (鎭川龍華寺石佛立像) -- 시도유형문화재 138호	충북 진천군	문화재청	324
2007	진천의왜가리번식지 (鎭川의왜가리繁殖地) -- 천연기념물 13호	충북 진천군	문화재청	75
2008	진천태화4년명마애불입상 (鎭川太和4年銘磨崖佛立像) -- 시도유형문화재 91호	충북 진천군	문화재청	281
2009	진천향교 (鎭川鄕校) -- 시도유형문화재 101호	충북 진천군	문화재청	290
2010	짝맞는 돕감(符合石材)	충북 단양군 적성면 애곡리 수양개	국립청주박물관	93
2011	짧은목단지(短頸壺)	충북 청주시 신봉동(신봉동 고분군)	국립청주박물관	57
2012	짧은목단지(短頸壺)	충북 청주시 송절동 산 35-2	국립청주박물관	61
2013	짧은목단지(短頸壺)	충북 청주시 송절동 산 35-2	국립청주박물관	62
2014	짧은목단지(短頸壺)	충북 청주시 송절동 '93B-6호	국립청주박물관	65
2015	찬도방론맥결집성 (纂圖方論脈訣集成) -- 보물 1111호	충북 음성군	문화재청	48
2016	창주서원묘정비 (滄州書院廟庭碑) -- 시도기념물 105호	충북 옥천군	문화재청	489
2017	채운암대웅전 (彩雲庵大雄殿) -- 문화재자료 30호	충북 괴산군	문화재청	542
2018	채운암목조여래좌상 (彩雲庵木造如來坐像) -- 시도유형문화재 191호	충북 괴산군	문화재청	378
2019	철제가위	충북 청주시 명암동 41-1(4호고려묘)	국립청주박물관	139
2020	청덕사 (淸德祠) -- 문화재자료 9호	충북 괴산군	문화재청	521
2021	청동말모양허리띠고리	충북 청원군 오창면 송대리(마-11호)	국립청주박물관	134
2022	청동말방(靑銅馬鐮)	충북 제천시 청풍면 양평리 A지구	국립청주박물관	6
2023	청동불감외일괄(靑銅佛龕外一括)	충북 괴산군 사리면 사담리 산(山)1봉학사지	국립중앙박물관	2
2024	청동팔찌(銅釧)	충북 제천시 청풍면 도화리 도화리지구	국립청주박물관	13
2025	청룡사보각국사정혜원융탑 (靑龍寺普覺國師定慧圓融塔) -- 국보 197호	충북 충주시	문화재청	7
2026	청룡사보각국사정혜원융탑비 (靑龍寺普覺國師定慧圓融塔碑) -- 보물 658호	충북 충주시	문화재청	39
2027	청룡사보각국사정혜원융탑전사자석등 (靑龍寺普覺國師定慧圓融塔前獅子石燈) -- 보물 656호	충북 충주시	문화재청	38
2028	청산향교 (靑山鄕校) -- 시도유형문화재 98호	충북 옥천군	문화재청	287
2029	청색면고의(靑色綿袴衣) -- 중요민속(中要民俗) 117호	충북 청원군 문의 후곡리	충북대학교박물관	12
2030	청색면창의(靑色綿氅衣) -- 중요민속(中要民俗) 117호	충북 청원군 문의 후곡리	충북대학교박물관	10

건설교통부

일련번호	명 칭	출토지역	관함기관	소장번호
2031	청색무명겹유고 (청색무명겹유고) -- 중요민속자료 117-20호	충북 청주시 흥덕구	문화재청	153
2032	청색무명겹창의 (청색무명겹창의) -- 중요민속자료 117-14호	충북 청주시 흥덕구	문화재청	147
2033	청안동헌(안민헌) (淸安東軒(安民軒)) -- 시도유형문화재 93호	충북 괴산군	문화재청	282
2034	청안사마소 (淸安司馬所) -- 시도기념물 49호	충북 괴산군	문화재청	450
2035	청안향교 (淸安鄕校) -- 시도유형문화재 40호	충북 괴산군	문화재청	243
2036	청원강외면의음나무 (淸原江外面의음나무) -- 천연기념물 305호	충북 청원군	문화재청	92
2037	청원계산리오층석탑 (淸原桂山里五層石塔) -- 보물 511호	충북 청원군	문화재청	27
2038	청원과필헌고가 (淸原果必軒古家) -- 시도민속자료 8호	충북 청원군	문화재청	510
2039	청원구례손씨묘출토유물 (淸原求禮孫氏墓出土遺物) -- 중요민속자료 116호	충북 청주시 흥덕구	문화재청	120
2040	청원비중리일광삼존불상 (淸原飛中里一光三尊佛像) -- 시도유형문화재 114호	충북 청원군	문화재청	303
2041	청원신선주 (淸原神仙酒) -- 시도무형문화재 4호	충북 청원군	문화재청	402
2042	청원안심사비로전 (淸原安心寺毘盧殿) -- 시도유형문화재 112호	충북 청원군	문화재청	301
2043	청원안심사세존사리탑 (淸原安心寺世尊舍利塔) -- 시도유형문화재 27호	충북 청원군	문화재청	233
2044	청원연제리의모과나무 (淸原連堤里의모과나무) -- 시도기념물 112호	충북 청원군	문화재청	496
2045	청원월리사대웅전 (淸原月裡寺大雄殿) -- 시도유형문화재 58호	충북 청원군	문화재청	253
2046	청원유계화가옥 (淸原楡桂和家屋) -- 중요민속자료 138호	충북 청원군	문화재청	190
2047	청원이항희가옥 (淸原李恒熙家屋) -- 중요민속자료 133호	충북 청원군	문화재청	185
2048	청원전박장군출토유물 (淸原傳朴將軍出土遺物) -- 중요민속자료 117호	충북 청주시 흥덕구	문화재청	133
2049	청자상감국화무늬병	충북 충주시 목벌1동 668	국립청주박물관	35
2050	청자상감상악국명합 (靑磁象嵌尙藥局銘盒) -- 보물 646호	충북 음성군	문화재청	37
2051	청자상감포류수금문대접	충북 제천시 중앙로 2가 27-1	국립청주박물관	81
2052	청자참외모양주전자	충북 충주시 단월동 산 33-1	국립청주박물관	40
2053	청자퇴화우늬기름병	충북 옥천군 안내면 장계리 296	국립청주박물관	19
2054	청자풀무늬기름병(靑磁草文油甁)	충북 충주시 단월동 산 33-1	국립청주박물관	42
2055	청주농악 (淸州農樂) -- 시도무형문화재 1호	충북 청주시 흥덕구	문화재청	399
2056	청주동헌 (淸州東軒) -- 시도유형문화재 109호	충북 청주시 상당구	문화재청	298
2057	청주망선루 (淸州望仙樓) -- 시도유형문화재 110호	충북 청주시 상당구	문화재청	299
2058	청주목관명동제기큽말	충북 청주시 흥덕구 사직동 270	국립청주박물관	120
2059	청주보살사극락보전 (淸州菩薩寺極樂寶殿) -- 시도유형문화재 56호	충북 청주시 상당구	문화재청	251
2060	청주보살사석조이존병립여래상 (淸州菩薩寺石造二尊竝立如來像) -- 시도유형문화재 24호	충북 청주시 상당구	문화재청	231
2061	청주보살사오층석탑 (淸州菩薩寺五層石塔) -- 시도유형문화재 65호	충북 청주시 상당구	문화재청	258
2062	청주사내사명향로(淸州思內寺銘香爐)	충북 청주시 흥덕구 사직동 270	국립청주박물관	113
2063	청주서기사석조약사여래좌상 (淸州瑞氣寺石造藥師如來坐像) -- 시도유형문화재 174호	충북 청주시 상당구	문화재청	360
2064	청주성공회성당 (淸州聖公會聖堂) -- 시도유형문화재 149호	충북 청주시 상당구	문화재청	335
2065	청주순치명석불입상 (淸州順治銘石佛立像) -- 시도유형문화재 150호	충북 청주시 상당구	문화재청	336
2066	청주신봉동백제고분군 (淸州新鳳洞百濟古墳群) -- 사적 319호	충북 청주시 흥덕구	문화재청	65
2067	청주신전동고가 (淸州薪田洞古家) -- 시도유형문화재 145호	충북 청주시 흥덕구	문화재청	331
2068	청주압각수 (淸州鴨脚樹) -- 시도기념물 5호	충북 청주시 상당구	문화재청	410
2069	청주용암사비로자나불좌상 (淸州龍岩寺毘盧舍那佛坐像) -- 시도유형문화재 23호	충북 청주시 상당구	문화재청	230
2070	청주용화사석불상군 (淸州龍華寺石佛像群) -- 보물 985호	충북 청주시 흥덕구	문화재청	46
2071	청주운천동신라사적비 (淸州雲泉洞新羅事蹟碑) -- 시도유형문화재 134호	충북 청주시 상당구	문화재청	320
2072	청주운천동출토동종 (淸州雲泉洞出土銅鐘) -- 보물 1167호	충북 청주시 상당구	문화재청	49
2073	청주정북동토성 (淸州井北洞土城) -- 사적 415호	충북 청주시 상당구	문화재청	72
2074	청주정하리마애비로자나불좌상 (淸州井下里磨崖毘盧舍那佛坐像) -- 시도유형문화재 113호	충북 청주시 상당구	문화재청	302
2075	청주조헌전장기적비 (淸州趙憲戰場紀蹟碑) -- 시도유형문화재 136호	충북 청주시 상당구	문화재청	322
2076	청주척화비 (淸州斥和碑) -- 시도기념물 23호	충북 청주시 상당구	문화재청	428
2077	청주출토순천김씨의복및간찰 (淸州出土順天金氏衣服및簡札) -- 중요민속자료 109호	충북 청주시 흥덕구	문화재청	100
2078	청주탑동양관 (淸州塔洞洋館) -- 시도유형문화재 133호	충북 청주시 상당구	문화재청	319
2079	청주탑동오층석탑 (淸州塔洞五層石塔) -- 시도유형문화재 25호	충북 청주시 상당구	문화재청	232
2080	청주표충사 (청주표충사) -- 시도기념물 17호	충북 청주시 상당구	문화재청	422
2081	청주한씨시조제단비 (淸州韓氏始祖祭壇碑) -- 시도유형문화재 169호	충북 청주시 상당구	문화재청	355
2082	청주향교 (淸州鄕校) -- 시도유형문화재 39호	충북 청주시 상당구	문화재청	242
2083	청주흥덕사지 (淸州興德寺址) -- 사적 315호	충북 청주시 흥덕구	문화재청	63
2084	청풍금병헌 (淸風錦屛軒) -- 시도유형문화재 34호	충북 제천시	문화재청	238
2085	청풍도화리고가 (淸風桃花里古家) -- 시도유형문화재 83호	충북 제천시	문화재청	273
2086	청풍망월산성 (淸風望月山城) -- 시도기념물 93호	충북 제천시	문화재청	478
2087	청풍석조여래입상 (淸風石造如來立像) -- 보물 546호	충북 제천시	문화재청	34
2088	청풍팔영루 (淸風八詠樓) -- 시도유형문화재 35호	충북 제천시	문화재청	239
2089	청풍한벽루 (淸風寒碧樓) -- 보물 528호	충북 제천시	문화재청	29

일련번호	명 칭	출토지역	관할기관	소장번호
2090	청풍향교 (淸風鄕校) -- 시도유형문화재 64호	충북 제천시	문화재청	257
2091	청풍황석리고가 (淸風黃石里古家) -- 시도유형문화재 84호	충북 제천시	문화재청	274
2092	청풍후산리고가 (淸風後山里古家) -- 시도유형문화재 85호	충북 제천시	문화재청	275
2093	체화당사및사적비 (棣華堂祠및事蹟碑) -- 시도기념물 73호	충북 청원군	문화재청	459
2094	최명길묘소 (崔鳴吉墓所) -- 시도기념물 68호	충북 청원군	문화재청	454
2095	최명길신도비 (崔鳴吉神道碑) -- 시도유형문화재 59호	충북 청원군	문화재청	254
2096	최함원고택 (崔涵月古宅) -- 시도유형문화재 87호	충북 충주시	문화재청	277
2097	충간공남지묘소및신도비 (忠簡公南智墓所및神道碑) -- 시도기념물 80호	충북 진천군	문화재청	466
2098	충강공이상급신도비 (忠剛公李尙伋神道碑) -- 시도유형문화재 63호	충북 충주시	문화재청	256
2099	충경공유백증영정 (忠景公兪伯曾影幀) -- 시도유형문화재 180호	충북 충주시	문화재청	368
2100	충무공이수일묘소 (忠武公李守一墓所) -- 시도기념물 21호	충북 충주시	문화재청	426
2101	충무공이수일신도비 (忠武公李守一神道碑) -- 시도유형문화재 205호	충북 충주시	문화재청	392
2102	충민공임경업영정 (忠愍公林慶業影幀) -- 시도유형문화재 179호	충북 충주시	문화재청	367
2103	충북양로원 (忠北養老院) -- 중요민속자료 147호	충북 괴산군	문화재청	198
2104	충비삼월의비 (忠婢三月義碑) -- 문화재자료 14호	충북 청원군	문화재청	526
2105	충의공김문기유허비 (忠毅公金文起遺墟碑) -- 시도기념물 44호	충북 옥천군	문화재청	446
2106	충익공청난공신녹권 (忠翼公淸難功臣錄券) -- 시도유형문화재 52호	충북 괴산군	문화재청	250
2107	충주김생사지 (忠州金生寺址) -- 시도기념물 114호	충북 충주시	문화재청	498
2108	충주단호사삼층석탑 (忠州丹湖寺三層石塔) -- 시도유형문화재 69호	충북 충주시	문화재청	262
2109	충주산성 (忠州山城) -- 시도기념물 31호	충북 충주시	문화재청	435
2110	충주장미산성 (忠州薔薇山城) -- 사적 400호	충북 충주시	문화재청	69
2111	충주제금당 (忠州製錦堂) -- 시도유형문화재 67호	충북 충주시	문화재청	260
2112	충주조동리지석묘 (忠州早洞里支石墓) -- 시도기념물 119호	충북 충주시	문화재청	503
2113	충주철불좌상 (忠州鐵佛坐像) -- 보물 98호	충북 충주시	문화재청	18
2114	충주청녕헌 (忠州淸寧軒) -- 시도유형문화재 66호	충북 충주시	문화재청	259
2115	충주축성사적비 (忠州築城事蹟碑) -- 시도유형문화재 68호	충북 충주시	문화재청	261
2116	충주탄금대 (忠州彈琴臺) -- 시도기념물 4호	충북 충주시	문화재청	409
2117	충주향교 (忠州鄕校) -- 시도유형문화재 57호	충북 충주시	문화재청	252
2118	충청도병마절도사영문 (忠淸道兵馬節度使營門) -- 시도유형문화재 15호	충북 청주시 상당구	문화재청	222
2119	탁오대암각자 (濯吾臺岩刻字) -- 시도유형문화재 81호	충북 단양군	문화재청	271
2120	태교사 (樂善祠) -- 문화재자료 7호	충북 음성군	문화재청	519
2121	'태화오년'명항완	충북 청주시 흥덕구 사직동 270	국립청주박물관	106
2122	택견 (택견) -- 중요무형문화재 76호	충북전역	문화재청	98
2123	토기매병(土器梅甁)	충북 충주시 단월동 산 33-1	국립청주박물관	41
2124	토시(吐手) (토시(吐手)) -- 중요민속자료 109-1-5호	충북 청주시 흥덕구	문화재청	106
2125	토제가락바퀴	충북 청주시 상당구 산성동	국립청주박물관	86
2126	토제병(土製甁)	충북 청주시 신봉동(신봉동 고분군)	국립청주박물관	53
2127	토제항아리(土製甕)	충북 충주시 동량면 하천리	국립청주박물관	5
2128	뜸날석기	충북 제천시 한수면 사기리 창내	국립청주박물관	85
2129	판갑옷(三角板釘結板甲)	충북 청주시 송절동 369-5	국립청주박물관	49
2130	표주박 (표주박) -- 중요민속자료 109-4-3호	충북 청주시 흥덕구	문화재청	119
2131	한란묘소및신도비 (韓蘭墓所및神道碑) -- 시도기념물 72호	충북 청원군	문화재청	458
2132	한수명오리고가 (寒水鳴梧里古家) -- 시도민속자료 5호	충북 제천시	문화재청	507
2133	한천정사 (寒泉精舍) -- 문화재자료 28호	충북 영동군	문화재청	540
2134	함이재 (咸履齋) -- 시도유형문화재 199호	충북 괴산군	문화재청	386
2135	함흥판본삼탄집 (咸興板本三灘集) -- 시도유형문화재 137호	충북 충주시	문화재청	323
2136	향약제생집성방 (鄕藥濟生集成方) -- 보물 1235호	충북 음성군	문화재청	51
2137	향오공허한부자영정 (香塢公許漢父子影幀) -- 시도유형문화재 201호	충북 충주시	문화재청	388
2138	호랑이사슴무늬암키와조각	충북 충주시 상모면 미륵리사지	국립청주박물관	3
2139	홍우경.정인옹주묘소 (洪友敬.貞仁翁主墓所) -- 시도기념물 78호	충북 진천군	문화재청	464
2140	화동강목판본 (華東綱目板本) -- 시도유형문화재 37호	충북 제천시	문화재청	240
2141	화양서원묘정비 (華陽書院廟庭碑) -- 시도기념물 107호	충북 괴산군	문화재청	491
2142	황간향교 (黃澗鄕校) -- 시도유형문화재 100호	충북 영동군	문화재청	289
2143	황강영당및수암사 (황강영당및수암사) -- 시도기념물 18호	충북 제천시	문화재청	423
2144	황룡십년 명품발	충북 청주시 운천동 515-1 흥덕사지	국립청주박물관	21
2145	회인인산객사 (懷仁仁山客舍) -- 시도유형문화재 116호	충북 보은군	문화재청	305
2146	회인향교 (懷仁鄕校) -- 시도유형문화재 96호	충북 보은군	문화재청	285
2147	후곡리소색명주삼수저고리 (후곡리소색명주삼수저고리) -- 중요민속자료 117-1호	충북 청주시 흥덕구	문화재청	134
2148	흥덕사지(興德寺址) -- 기타지정(其他指定) 315호	충북 청주시 운천동 866번지	청주고인쇄박물관	1

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일련번호	영 칭	출토지역	관할기관	소장번호
2149	흥학당 (興學堂) -- 시도유형문화재 152호	충북 영동군	문화재청	338
2150	가곡 (哥曲) -- 시도무형문화재 8호	전북 전주시 완산구	문화재청	395
2151	가덕사석조여래입상 (加德寺石造如來立像) -- 문화재자료 150호	전북 남원시	문화재청	653
2152	가림리줄사철나무 (가림리줄사철나무) -- 시도기념물 95호	대전 서구 괴정동 244-14	문화재청	491
2153	家形土製品	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	61
2154	강정리오층석탑 (江亭里五層石塔) -- 시도유형문화재 73호	전북 진안군	문화재청	268
2155	강천사모과나무 (剛泉寺모과나무) -- 시도기념물 97호	전북 순창군	문화재청	493
2156	강천사석탑 (剛泉寺石塔) -- 시도유형문화재 92호	전북 순창군	문화재청	284
2157	개령암지마애불상군 (開樹庵址磨崖佛像群) -- 보물 1123호	전북 남원시	문화재청	91
2158	개암사대웅전 (開岩寺大雄殿) -- 보물 292호	전북 부안군	문화재청	46
2159	개암사동종 (開岩寺銅鐘) -- 시도유형문화재 126호	충북 청원군 문의 후곡리	문화재청	318
2160	개암사영산회괘불탱및초본 (開巖寺靈山會掛佛幀및草本) -- 보물 1269호	전북 부안군	문화재청	109
2161	개암사응진전16나한상 (開巖寺應眞殿16羅漢像) -- 시도유형문화재 179호	전북 부안군	문화재청	371
2162	개형토기(蓋形土器)	전북 완주군 이서면 반교리	국립전주박물관	42
2163	거문고산조 (거문고散調) -- 시도무형문화재 3호	전북 전주시 덕진구	문화재청	384
2164	경기전 (慶基殿) -- 사적 339호	전북 전주시 완산구	문화재청	132
2165	경기전 (慶基殿) -- 시도유형문화재 2호	전북 전주시 완산구	문화재청	210
2166	경복사지 (경복사지) -- 시도기념물 108호	전북 완주군	문화재청	504
2167	경주김씨보판각 (慶州金氏譜板刻) -- 시도유형문화재 161호	전북 남원시	문화재청	353
2168	고려직제학양수생처열부이씨려 (高麗直提學楊首生妻烈婦李氏閭) -- 문화재자료 172호	전북 순창군	문화재청	675
2169	고배(高杯)	전북 진안군 안천면 삼락리 승금마을	국립전주박물관	48
2170	고부구읍성 (古阜舊邑城) -- 시도기념물 53호	전북 정읍시	문화재청	451
2171	고부향교대성전 (古阜鄕校大成殿) -- 문화재자료 74호	전북 정읍시	문화재청	593
2172	고산향교대성전 (高山鄕校大成殿) -- 시도유형문화재 116호	전북 완주군	문화재청	308
2173	고암서원묘정비 (考巖書院廟庭碑) -- 문화재자료 81호	전북 정읍시	문화재청	599
2174	고창김정희고가 (高敞金正喜古家) -- 시도민속자료 29호	전북 고창군	문화재청	533
2175	고창농악 (高敞農樂) -- 시도무형문화재 7-6호	전북 고창군	문화재청	394
2176	고창무장객사 (高敞茂長客舍) -- 시도유형문화재 34호	전북 고창군	문화재청	237
2177	고창무장동헌 (高敞茂長東軒) -- 시도유형문화재 35호	전북 고창군	문화재청	238
2178	고창분청사기요지 (高敞粉靑砂器窯址) -- 사적 250호	전북 고창군	문화재청	122
2179	고창삼인리의동백나무숲 (高敞三仁里의동백나무숲) -- 천연기념물 184호	전북 고창군	문화재청	148
2180	고창삼인리의송악 (高敞三仁里의송악) -- 천연기념물 367호	전북 고창군	문화재청	159
2181	고창삼인리의장사송 (高敞三仁里의장사송) -- 천연기념물 354호	전북 고창군	문화재청	157
2182	고창신재효고택 (高敞申在孝古宅) -- 중요민속자료 39호	전북 고창군	문화재청	199
2183	고창오거리당산 (高敞五巨里堂山) -- 중요민속자료 14호	전북 고창군	문화재청	174
2184	고창용계리청자요지 (高敞龍溪里靑瓷窯址) -- 사적 345호	전북 고창군	문화재청	133
2185	고창읍성 (高敞邑城) -- 사적 145호	전북 고창군	문화재청	118
2186	고창중산리의이팝나무 (高敞中山里의이팝나무) -- 천연기념물 183호	전북 고창군	문화재청	147
2187	고창지석묘군 (高敞支石墓群) -- 사적 391호	전북 고창군	문화재청	138
2188	고창향교대성전 (高敞鄕校大成殿) -- 문화재자료 98호	전북 고창군	문화재청	609
2189	고흥건신도비 (高弘建神道碑) -- 문화재자료 111호	전북 부안군	문화재청	618
2190	고희영정외문중유물 (高曦影幀外門中遺物) -- 보물 739호	전북 부안군	문화재청	78
2191	공덕면의은행나무 (공덕면의은행나무) -- 시도기념물 106호	전북 김제시	문화재청	502
2192	공신녹권 (功臣錄券) -- 보물 651-2호	전북 익산시	문화재청	59
2193	공신회맹문 (功臣會盟文) -- 보물 651-3호	전북 익산시	문화재청	60
2194	과립리석불입상 (科笠里石佛立像) -- 시도유형문화재 128호	전북 남원시	문화재청	320
2195	관서당남성재 (官西堂南城齋) -- 문화재자료 156호	전북 남원시	문화재청	659
2196	관성묘 (關聖廟) -- 문화재자료 5호	전북 전주시 완산구	문화재청	543
2197	관옥경식(管玉頸飾)	전북 익산시 함열읍 다송리 산(山) 121	국립전주박물관	12
2198	광제정 (光霽亭) -- 문화재자료 130호	전북 임실군	문화재청	634
2199	광한루 (廣寒樓) -- 보물 281호	전북 남원시	문화재청	42
2200	광한루원 (廣寒樓苑) -- 사적 303호	전북 남원시	문화재청	129
2201	교룡산성승장등인 (蛟龍山城僧將銅印) -- 시도민속자료 27호	전북 남원시	문화재청	531
2202	교지 (敎旨) -- 보물 651-1호	전북 익산시	문화재청	58
2203	구군산세관본관 (舊群山稅關本館) -- 시도기념물 87호	전북 군산시	문화재청	483
2204	구천동주옥군층 (九千洞珠玉群層) -- 시도기념물 2호	전북 무주군	문화재청	410
2205	구천사 (龜川祠) -- 문화재자료 58호	전북 남원시	문화재청	581
2206	구파백정기의사고택지 (鷗波白貞基義士古宅址) -- 시도기념물 103호	전북 정읍시	문화재청	499
2207	군자정 (君子亭) -- 시도유형문화재 133호	전북 정읍시	문화재청	325

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2208	권희문가옥 (權熙文家屋) -- 시도민속자료 22호	전북 장수군	문화재청	526
2209	귀래정 (歸來亭) -- 문화재자료 67호	전북 순창군	문화재청	587
2210	귀래정신말주후손세거지 (歸來亭申末舟後孫世居地) -- 시도기념물 86호	전북 순창군	문화재청	482
2211	鬼面文암막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	8
2212	鬼面文암막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	21
2213	鬼面文암막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	102
2214	鬼面瓦	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	72
2215	鬼面瓦	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	103
2216	鬼目文박공막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	12
2217	鬼目文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	20
2218	鬼目文암막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	17
2219	귀신사대적광전 (歸信寺大寂光殿) -- 보물 826호	전북 김제시	문화재청	84
2220	귀신사부도 (歸信寺浮屠) -- 시도유형문화재 63호	전북 김제시	문화재청	260
2221	귀신사석수 (歸信寺石獸) -- 시도유형문화재 64호	전북 김제시	문화재청	261
2222	귀신사석탑 (歸信寺石塔) -- 시도유형문화재 62호	전북 김제시	문화재청	259
2223	귀암정 (龜岩亭) -- 문화재자료 131호	전북 순창군	문화재청	635
2224	귀정사지 (歸政寺址) -- 시도기념물 76호	전북 남원시	문화재청	472
2225	극락암목조여래좌상 (極樂庵木造如來坐像) -- 문화재자료 151호	전북 전주시	문화재청	654
2226	금강반야경소른찬요조현목 (金剛般若經疏論纂要助顯錄) -- 시도유형문화재 164호	전북 익산시	문화재청	356
2227	금구향교대성전 (金溝鄕校大成殿) -- 문화재자료 113호	전북 김제시	문화재청	619
2228	금남군정충신영정각 (錦南君鄭忠信影幀閣) -- 문화재자료 33호	전북 장수군	문화재청	564
2229	금당사괘불탱 (金塘寺掛佛幀) -- 보물 1266호	전북 진안군	문화재청	106
2230	금당사목불좌상 (金塘寺木佛坐像) -- 시도유형문화재 18호	전북 진안군	문화재청	224
2231	금당사석탑 (金塘寺石塔) -- 문화재자료 122호	전북 진안군	문화재청	626
2232	금대포함금제금강경판(金帶包含金製金剛經板) -- 국보(國寶) 123호	전북 익산시 왕궁면 왕궁리	국립중앙박물관	8
2233	금동느티나무 (琴洞느티나무) -- 시도기념물 93호	전북 정읍시	문화재청	489
2234	金銅如來立像	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	64
2235	금동여래입상(金銅如來立像)	전북 김제시 김제읍 옥산리 421-7	국립전주박물관	5
2236	금동여래입상(金銅如來立像) -- 국보(國寶) 123호	전북 익산시 왕궁면 왕궁리	국립중앙박물관	9
2237	금동제경판내합(金銅製經板內盒) -- 국보(國寶) 123호	전북 익산시 왕궁면 왕궁리	국립중앙박물관	4
2238	금동제경판외함(金銅製經板外函) -- 국보(國寶) 123호	전북 익산시 왕궁리 5층석탑내	국립중앙박물관	5
2239	금동제사리기(金銅製舍利器)	-	국립중앙박물관	12
2240	金銅製塔上輪部	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	49
2241	金銅板佛片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	51
2242	金銅허리띠	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	77
2243	금마도토성 (金馬都土城) -- 시도기념물 70호	전북 익산시	문화재청	466
2244	'金馬渚官'銘銘文수키와	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	22
2245	금사동토성 (金寺洞土城) -- 시도기념물 55호	전북 정읍시	문화재청	453
2246	금산교회 (金山敎會) -- 문화재자료 136호	전북 김제시	문화재청	640
2247	금산사노주 (金山寺露柱) -- 보물 22호	전북 김제시	문화재청	8
2248	금산사당간지주 (金山寺幢竿支柱) -- 보물 28호	전북 김제시	문화재청	14
2249	금산사대장전 (金山寺大藏殿) -- 보물 827호	전북 김제시	문화재청	85
2250	금산사미륵전 (金山寺彌勒殿) -- 국보 62호	전북 김제시	문화재청	3
2251	금산사방등계단 (金山寺方等戒壇) -- 보물 26호	전북 김제시	문화재청	12
2252	금산사석등 (金山寺石燈) -- 보물 828호	전북 김제시	문화재청	86
2253	금산사석련대 (金山寺石蓮臺) -- 보물 23호	전북 김제시	문화재청	9
2254	금산사심원암북강삼층석탑 (金山寺深源庵北岡三層石塔) -- 보물 29호	전북 김제시	문화재청	15
2255	금산사오층석탑 (金山寺五層石塔) -- 보물 25호	전북 김제시	문화재청	11
2256	금산사육각다층석탑 (金山寺六角多層石塔) -- 보물 27호	전북 김제시	문화재청	13
2257	금산사혜덕왕사진응탑비 (金山寺慧德王師眞應塔碑) -- 보물 24호	전북 김제시	문화재청	10
2258	금제마개포함유리제사리병(金製마개包含瑠璃製舍利甁) -- 국보(國寶) 123호	전북 익산시 왕궁면 왕궁리	국립중앙박물관	6
2259	금제사리병(金製舍利甁)받침 -- 국보(國寶) 123호	전북 익산시 왕궁면 왕궁리	국립중앙박물관	7
2260	기대(器臺)	전북 남원시 고죽동 4호 석곽묘	국립전주박물관	45
2261	기묘제현수첩 (己卯諸賢手帖) -- 보물 1198호	전북 남원시	문화재청	98
2262	기묘제현수필 (己卯諸賢手筆) -- 보물 1197호	전북 남원시	문화재청	97
2263	'己丑'銘印刻암키와	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	47
2264	김기서강학당 (金麒瑞講學堂) -- 시도유형문화재 100호	전북 고창군	문화재청	292
2265	김복규.김기중효자정려비및정판 (金福奎.金其鍾孝子旌閭碑및旌板) -- 시도유형문화재 144호	전북 임실군	문화재청	336

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2266	김안균가옥 (金晏均家屋) -- 시도민속자료 23호	전북 익산시	문화재청	527
2267	김제내아 (金堤內衙) -- 시도유형문화재 61호	전북 김제시	문화재청	258
2268	김제농악 (金堤農樂) -- 시도무형문화재 7-3호	전북 김제시	문화재청	391
2269	김제동헌 (金堤東軒) -- 시도유형문화재 60호	전북 김제시	문화재청	257
2270	김제벽골제비및제방 (金堤碧骨堤碑및堤防) -- 사적 111호	전북 김제시	문화재청	117
2271	김제봉남면의느티나무 (金提鳳南面의느티나무) -- 천연기념물 280호	전북 김제시	문화재청	152
2272	김제봉남면의왕버들 (金堤鳳南面의왕버들) -- 천연기념물 296호	전북 김제시	문화재청	155
2273	김제월전리산성 (金堤月田里山城) -- 시도기념물 85호	전북 김제시	문화재청	481
2274	김제전교비 (金堤傳敎碑) -- 시도유형문화재 65호	전북 김제시	문화재청	262
2275	김제향교대성전 (金堤鄕校大成殿) -- 시도유형문화재 9호	전북 김제시	문화재청	215
2276	김희련공신록권 (金憙錬功臣錄券) -- 보물 437호	전북 정읍시	문화재청	53
2277	나무신(木製극)	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	57
2278	나주임씨절도공파종중유품 (羅州林氏節度公派宗中遺品) -- 시도유형문화재 141호	전북 순창군	문화재청	333
2279	나한전 (羅漢殿) -- 문화재자료 110호	전북 고창군	문화재청	617
2280	낙덕정 (樂德亭) -- 문화재자료 72호	전북 순창군	문화재청	591
2281	낙동리석조여래입상 (樂洞里石造如來立像) -- 시도유형문화재 47호	전북 남원시	문화재청	247
2282	난중잡록 (亂中雜錄) -- 시도유형문화재 107호	전북 남원시	문화재청	299
2283	남강정사 (南崗精舍) -- 시도기념물 64호	전북 김제시	문화재청	461
2284	남계정 (南溪亭) -- 시도유형문화재 134호	전북 완주군	문화재청	326
2285	남고사지 (南固寺址) -- 시도기념물 72호	전북 전주시 완산구	문화재청	468
2286	남고산성 (南固山城) -- 사적 294호	전북 전주시 완산구	문화재청	126
2287	남고서원 (南皐書院) -- 문화재자료 76호	전북 정읍시	문화재청	595
2288	남궁찬묘석상 (南宮璨墓石像) -- 시도유형문화재 176호	전북 익산시	문화재청	368
2289	남근석 (男根石) -- 시도민속자료 13호	전북 정읍시	문화재청	517
2290	남문안당산 (男門안堂山) -- 시도민속자료 18호	전북 부안군	문화재청	522
2291	남복리미륵암석불 (南福里彌勒庵石佛) -- 시도유형문화재 99호	전북 정읍시	문화재청	291
2292	남복리오층석탑 (南福里五層石塔) -- 시도유형문화재 95호	전북 정읍시	문화재청	287
2293	남원관왕묘 (南原關王廟) -- 시도유형문화재 22호	전북 남원시	문화재청	227
2294	남원교룡산성 (南原蛟龍山城) -- 시도기념물 9호	전북 남원시	문화재청	414
2295	남원금남재 (南原錦南齋) -- 시도기념물 15호	전북 남원시	문화재청	419
2296	남원농악 (南原農樂) -- 시도무형문화재 7-4호	전북 남원시	문화재청	392
2297	남원몽심재 (南原夢心齋) -- 중요민속자료 149호	전북 남원시	문화재청	207
2298	남원보절면의느티나무 (南原寶節面의느티나무) -- 천연기념물 281호	전북 남원시	문화재청	153
2299	남원사미륵전 (南原寺彌勒殿) -- 문화재자료 88호	전북 익산시	문화재청	604
2300	남원사직단 (南原社稷壇) -- 시도기념물 79호	전북 남원시	문화재청	475
2301	남원서천리당산 (南原西川里堂山) -- 중요민속자료 20호	전북 남원시	문화재청	188
2302	남원석돈 (南原石墩) -- 시도민속자료 28호	전북 남원시	문화재청	532
2303	남원성 (南原城) -- 사적 298호	전북 남원시	문화재청	128
2304	남원신계리마애여래좌상 (南原新溪里磨崖如來坐像) -- 보물 423호	전북 남원시	문화재청	52
2305	남원실상사석장승 (南原實相寺石長승) -- 중요민속자료 15호	전북 남원시	문화재청	178
2306	남원양씨종중문서 (南原楊氏宗中文書) -- 보물 725호	전북 순창군	문화재청	68
2307	남원양씨종중문서 (南原楊氏宗中文書) -- 시도유형문화재 152호	전북 순창군	문화재청	344
2308	남원유곡리및두락리고분군 (南原酉谷里및斗洛里古墳群) -- 시도기념물 10호	전북 남원시	문화재청	415
2309	남원죽산박씨종가 (南原竹山朴氏宗家) -- 시도유형문화재 180호	전북 남원시	문화재청	372
2310	남원향교대성전 (南原鄕校大成殿) -- 시도유형문화재 8호	전북 남원시	문화재청	214
2311	남천사 (藍川祠) -- 문화재자료 154호	전북 정읍시	문화재청	657
2312	납석제뚜껑(蓋)	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	117
2313	蠟石製卍字印章	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	65
2314	납석제호(壺)	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	86
2315	납유리장식片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	55
2316	납유리片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	54
2317	내소사고려동종 (來蘇寺高麗銅鐘) -- 보물 277호	전북 부안군	문화재청	38
2318	내소사대웅보전 (來蘇寺大雄寶殿) -- 보물 291호	전북 부안군	문화재청	45
2319	내소사삼층석탑 (來蘇寺三層石塔) -- 시도유형문화재 124호	전북 부안군	문화재청	316
2320	내소사설선당과요사 (來蘇寺設禪堂과寮舍) -- 시도유형문화재 125호	전북 부안군	문화재청	317
2321	내소사영산회괘불탱 (來蘇寺靈山會掛佛幀) -- 보물 1268호	전북 부안군	문화재청	108
2322	내소사일원 (來蘇寺一圓) -- 시도기념물 78호	전북 부안군	문화재청	474
2323	내장사이조동종 (內藏寺李朝銅鐘) -- 시도유형문화재 49호	전북 정읍시	문화재청	249
2324	내장사지(벽연사지) (內藏寺址(碧蓮寺址)) -- 시도기념물 73호	전북 정읍시	문화재청	469

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2325	내장산의굴거리나무군락 (內藏山의굴거리나무群落) -- 천연기념물 91호	전북 정읍시	문화재청	142
2326	내친상 (內親喪) -- 중요민속자료 115-4호	전북 전주시 완산구	문화재청	206
2327	노동환가옥 (盧東煥家屋) -- 문화재자료 118호	전북 임실군	문화재청	623
2328	노성당 (老星堂) -- 시도유형문화재 132호	전북 군산시	문화재청	324
2329	노적봉마애여래좌상 (노적봉마애여래좌상) -- 문화재자료 146호	전북 남원시	문화재청	649
2330	燈形土器(노형토기)	전북 김제시 로 傳함	국립부여박물관	2
2331	緑釉椽木瓦	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	143
2332	논개사당 (論介祠堂) -- 시도기념물 46호	전북 장수군	문화재청	445
2333	농악 (農樂) -- 시도무형문화재 7호	전북전역	문화재청	388
2334	단청장 (丹靑匠) -- 시도무형문화재 24호	전북 김제시	문화재청	408
2335	單瓣蓮華文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	48
2336	單瓣蓮華文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	69
2337	單瓣蓮華文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	90
2338	單瓣連華文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	80
2339	당산 (堂山) -- 중요민속자료 19-1호	전북 부안군	문화재청	185
2340	唐草文암막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	89
2341	唐草文암막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	101
2342	대곡리암각화 (大谷里岩刻畵) -- 시도유형문화재 163호	전북 남원시	문화재청	355
2343	대방광불화엄경진본<권제38> (大方廣佛華嚴經晉本<卷第三十八>) -- 보물 1192호	전북 전주시 덕진구	문화재청	95
2344	대복사극락전 (大福寺極樂殿) -- 문화재자료 48호	전북 남원시	문화재청	572
2345	대복사동종 (大福寺銅鐘) -- 시도유형문화재 24호	전북 남원시	문화재청	229
2346	대복사철불좌상 (大福寺鐵佛坐像) -- 시도유형문화재 23호	전북 남원시	문화재청	228
2347	대원사용각부도 (大院寺龍刻浮屠) -- 시도유형문화재 71호	전북 완주군	문화재청	266
2348	'大中十二年'銘土器蓋片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	34
2349	대항리패총 (大項里貝塚) -- 시도기념물 50호	전북 부안군	문화재청	448
2350	대호(大壺)	전북 부안군 변산면 격포리 죽막동	국립전주박물관	37
2351	대호(大壺)	전북 부안군 변산면 격포리 죽막동	국립전주박물관	38
2352	대호(大壺)	전북 부안군 변산면 격포리 죽막동	국립전주박물관	39
2353	대호(大壺)	전북 부안군 변산면 격포리 죽막동	국립전주박물관	40
2354	덕음암석불좌상 (德蔭庵石佛坐象) -- 문화재자료 64호	전북 남원시	문화재청	585
2355	덕천사 (德川祠) -- 문화재자료 162호	전북 고창군	문화재청	665
2356	덕치리초가 (德峙里草家) -- 시도민속자료 35호	전북 남원시	문화재청	539
2357	도계서원 (道溪書院) -- 문화재자료 79호	전북 정읍시	문화재청	598
2358	도기귀댕이(陶器耳附甕)	-	원광대학박물관	10
2359	도기장군	-	원광대학박물관	7
2360	도기화로(陶器火爐)	-	원광대학박물관	9
2361	돌모산당산 (돌모산堂山) -- 시도민속자료 19호	전북 부안군	문화재청	523
2362	동고사 (東固寺) -- 문화재자료 2호	전북 전주시 완산구	문화재청	540
2363	동고산성 (東固山城) -- 시도기념물 44호	전북 전주시 완산구	문화재청	444
2364	동목화회문기 (同睦和會文記) -- 보물 718-2호	전북 전주시 완산구	문화재청	65
2365	동목화회성문 (同睦和會成文) -- 보물 718-4호	전북 전주시 완산구	문화재청	67
2366	동목화회입의 (同睦和會立議) -- 보물 718-3호	전북 전주시 완산구	문화재청	66
2367	동죽서원 (東竹書院) -- 문화재자료 77호	전북 정읍시	문화재청	596
2368	두승산성 (斗升山城) -- 시도기념물 54호	전북 정읍시	문화재청	452
2369	둔헌임병찬창의유적지 (둔헌林秉璨倡義遺蹟址) -- 시도기념물 92호	전북 정읍시	문화재청	488
2370	류계공신도비 (兪溪公神道碑) -- 문화재자료 135호	전북 익산시	문화재청	639
2371	마산동굴 (馬山洞窟) -- 시도기념물 41호	전북 무주군	문화재청	441
2372	마이산 (馬耳山) -- 시도기념물 66호	전북 진안군	문화재청	463
2373	마이산의중사철나무군락지 (馬耳山의중사철나무群落地) -- 천연기념물 380호	전북 진안군	문화재청	161
2374	마이산탑 (馬耳山塔) -- 시도기념물 35호	전북 진안군	문화재청	436
2375	마제석검(磨製石劍)	전북 익산시 망성면	국립전주박물관	6
2376	마제석검(磨製石劍)	전북 전주시 덕진구 여의동	국립전주박물관	27
2377	마제석검(磨製石劍)	전북 완주군 이서면 반교리 510-23	국립전주박물관	32
2378	마제석검(磨製石劍)	전북 남원시 금지면 방촌리 864-1	국립전주박물관	50
2379	만경향교대성전 (萬頃鄕校大成殿) -- 문화재자료 114호	전북 김제시	문화재청	620
2380	만복사지 (萬福寺址) -- 사적 349호	전북 남원시	문화재청	136
2381	만복사지당간지주 (萬福寺址幢竿支柱) -- 보물 32호	전북 남원시	문화재청	18
2382	만복사지석불입상 (萬福寺址石佛立像) -- 보물 43호	전북 남원시	문화재청	29
2383	만복사지석좌 (萬福寺址石座) -- 보물 31호	전북 남원시	문화재청	17

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2384	만복사지오층석탑 (萬福寺址五層石塔) -- 보물 30호	전북 남원시	문화재청	16
2385	만석보지 (萬石洑址) -- 시도기념물 33호	전북 정읍시	문화재청	435
2386	만육최양선생유허비 (晩六崔瀁先生遺墟碑) -- 시도기념물 81호	전북 진안군	문화재청	477
2387	만인의총 (萬人義塚) -- 사적 272호	전북 남원시	문화재청	123
2388	만취정 (晩翠亭) -- 시도유형문화재 106호	전북 임실군	문화재청	298
2389	말목장터와감나무 (말목장터와감나무) -- 시도기념물 110호	전북 정읍시	문화재청	506
2390	망모당 (望慕堂) -- 시도유형문화재 90호	전북 익산시	문화재청	282
2391	망제동석불입상 (望帝洞石佛立像) -- 시도유형문화재 118호	전북 정읍시	문화재청	310
2392	망해사악서전 (望海寺樂西殿) -- 문화재자료 128호	전북 김제시	문화재청	632
2393	매사당 (매사당) -- 시도무형문화재 20호	전북 진안군	문화재청	405
2394	매월당부도 (梅月堂浮屠) -- 시도유형문화재 43호	전북 무주군	문화재청	243
2395	명주납의상 (明紬納衣裳) -- 중요민속자료 115-2호	전북 전주시 완산구	문화재청	204
2396	명주납의직령포 (明紬納衣直領袍) -- 중요민속자료 115-3호	전북 전주시 완산구	문화재청	205
2397	모현동부도 (慕賢洞浮屠) -- 문화재자료 13호	전북 익산시	문화재청	550
2398	목가구(소목장) (木家具(小木匠)) -- 시도무형문화재 19호	전북 전주시 덕진구	문화재청	404
2399	木簡	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	92
2400	木簡	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	93
2401	목기장 (木器匠) -- 시도무형문화재 11호	전북 남원시	문화재청	398
2402	목제빗	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	87
2403	木製칠접시	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	58
2404	묘법연화경<권제1~3> (妙法蓮華經<卷第一~三>) -- 보물 1153호	전북 전주시 덕진구	문화재청	92
2405	무등리입석 (無登里立石) -- 시도민속자료 3호	전북 완주군	문화재청	508
2406	무문토기단경호(無文土器短頸壺)	전북 전주시 덕진구 여의동	국립전주박물관	31
2407	무문토기호(無文土器壺)	전북 전주시 덕진구 여의동	국립전주박물관	29
2408	무문토기호(無文土器壺)	전북 전주시 덕진구 여의동	국립전주박물관	30
2409	무민공황진가전고문서 (武愍公黃進家傳古文書) -- 보물 942호	전북 남원시	문화재청	90
2410	무성리삼층석탑 (武城里三層石塔) -- 시도유형문화재 158호	전북 정읍시	문화재청	350
2411	무성리석불입상 (武城里石佛立像) -- 시도유형문화재 157호	전북 정읍시	문화재청	349
2412	무성서원 (武城書院) -- 사적 166호	전북 정읍시	문화재청	121
2413	무장읍성 (茂長邑城) -- 사적 346호	전북 고창군	문화재청	134
2414	무장향교대성전 (茂長鄕校大成殿) -- 문화재자료 107호	전북 고창군	문화재청	614
2415	무주구상화강편마암 (茂朱球狀花崗片麻岩) -- 천연기념물 249호	전북 무주군	문화재청	151
2416	무주설천면의반송 (茂朱雪川面의반송) -- 천연기념물 291호	전북 무주군	문화재청	154
2417	무주설천면일원의반딧불과 그먹이(다슬기)서식지 (茂朱雪川面일원의반딧불과그먹이(다슬기)棲息地) -- 천연기념물 322호	전북 무주군	문화재청	156
2418	무주한풍루 (茂朱寒風樓) -- 시도유형문화재 19호	전북 무주군	문화재청	225
2419	무주향교대성전 (茂朱鄕校大成殿) -- 문화재자료 103호	전북 무주군	문화재청	611
2420	무진정 (無盡亭) -- 문화재자료 164호	전북 남원시	문화재청	667
2421	문수사대웅전 (文殊寺大雄殿) -- 문화재자료 89호	전북 익산시	문화재청	605
2422	문수사대웅전 (文殊寺大雄殿) -- 시도유형문화재 51호	전북 고창군	문화재청	251
2423	문수사마애여래좌상 (文殊寺磨崖如來坐像) -- 시도유형문화재 175호	전북 김제시	문화재청	367
2424	문수사목조석가여래좌상 (文殊寺木造釋迦如來坐像) -- 시도유형문화재 177호	전북 김제시	문화재청	369
2425	문수사목조아미타여래좌상 (文殊寺木造阿彌陀如來坐像) -- 시도유형문화재 178호	전북 김제시	문화재청	370
2426	문수사문수전 (文殊寺文殊殿) -- 시도유형문화재 52호	전북 고창군	문화재청	252
2427	문수사부도 (文殊寺浮屠) -- 시도유형문화재 154호	전북 고창군	문화재청	346
2428	문학대 (文學臺) -- 시도기념물 24호	전북 전주시 완산구	문화재청	427
2429	문효공과정경부인영정 (文孝公과貞敬夫人影幀) -- 시도유형문화재 81호	전북 무주군	문화재청	274
2430	미륵사지당간지주 (彌勒寺址幢竿支柱) -- 보물 236호	전북 익산시	문화재청	34
2431	미륵사지석등하대석 (彌勒寺址石燈下臺石) -- 문화재자료 143호	전북 익산시	문화재청	646
2432	미륵사지석탑 (彌勒寺址石塔) -- 국보 11호	전북 익산시	문화재청	2
2433	미륵암석불 (彌勒庵石佛) -- 문화재자료 65호	전북 남원시	문화재청	586
2434	미륵암석불입상 (彌勒庵石佛立像) -- 문화재자료 62호	전북 남원시	문화재청	584
2435	바깥행랑채 (바깥행랑채) -- 중요민속자료 26-1호	전북 정읍시	문화재청	192
2436	박세중가전고문서 (朴世重家傳古文書) -- 시도유형문화재 147호	전북 남원시	문화재청	339
2437	반계선생유적지 (磻溪先生遺蹟地) -- 시도기념물 22호	전북 부안군	문화재청	425
2438	반곡서원 (盤谷書院) -- 문화재자료 11호	전북 전주시 완산구	문화재청	548
2439	반월형석도(半月形石刀)	전북 남원시 고죽동 1호 집자리	국립전주박물관	46
2440	발산리오층석탑 (鉢山里五層石塔) -- 보물 276호	전북 군산시	문화재청	37
2441	방어대장군 (防禦大將軍) -- 중요민속자료 20-1호	전북 남원시	문화재청	189

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2442	방추차(紡錘車)	전북 부안군 이서면 반교리 제 2호 주거지	국립전주박물관	43
2443	방추차(紡錘車)	전북 남원시 고죽동 1호 집자리	국립전주박물관	47
2444	배부병(杯附甁)	전북 부안군 변산면 격포리 죽막동	국립전주박물관	36
2445	백관수고택 (白寬洙古宅) -- 시도기념물 90호	전북 고창군	문화재청	486
2446	백동연죽장 (白銅煙竹匠) -- 중요무형문화재 65호	전북전역	문화재청	170
2447	백련사계단 (白蓮寺戒壇) -- 시도기념물 42호	전북 무주군	문화재청	442
2448	백련사정관당부도 (白蓮寺靜觀堂浮屠) -- 시도유형문화재 102호	전북 무주군	문화재청	294
2449	백련사지 (白蓮寺址) -- 시도기념물 62호	전북 무주군	문화재청	459
2450	백목면납의상 (白木綿納衣裳) -- 중요민속자료 115-1호	전북 전주시 완산구	문화재청	203
2451	백산서원 (白山書院) -- 문화재자료 158호	전북 김제시	문화재청	661
2452	백산서원 (栢山書院) -- 문화재자료 160호	전북 무주군	문화재청	663
2453	백산성 (白山城) -- 사적 409호	전북 부안군	문화재청	141
2454	백운암석불입상 (白雲庵石佛立像) -- 문화재자료 139호	전북 정읍시	문화재청	642
2455	白磁「官」字銘완	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	27
2456	白磁馬上杯	충남 공주시 반죽동 대통사지	미륵사지박물관	144
2457	白磁明器	전북 익산시 금마면 동삼리	국립부여박물관	1
2458	白磁蓮蓬形뚯가리개	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	127
2459	백자청화국화문병(白磁靑畵菊花文甁)	-	국립중앙박물관	1
2460	백자청화모단문완(白磁靑畵牡丹文완)	전북 전주시 서완산동 81-8	국립전주박물관	13
2461	白磁해무리굽완	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	4
2462	백장선생유적 (백장선생유적) -- 시도기념물 101호	전북 장수군	문화재청	497
2463	백장암보살좌상 (백장암보살좌상) -- 시도유형문화재 166호	전북 남원시	문화재청	358
2464	백장암청동은입사향로 (百丈庵靑銅銀入絲香爐) -- 보물 420호	전북 남원시	문화재청	49
2465	梵語蓮華文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	126
2466	梵語草文암막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	125
2467	법집별행록절요병입사기 (法集別行錄節要幷入私記) -- 보물 1222호	전북 전주시 덕진구	문화재청	100
2468	법화경절본사본 (法華經折本寫本) -- 보물 278호	전북 부안군	문화재청	39
2469	벼루(硯)	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	134
2470	벽골제쌍룡놀이 (碧骨堤雙龍놀이) -- 시도민속자료 10호	전북 김제시	문화재청	514
2471	壁畵片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	2
2472	'丙'銘印刻암키와	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	62
2473	보안입석 (保安立石) -- 시도민속자료 6호	전북 부안군	문화재청	511
2474	複瓣蓮華文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	70
2475	複瓣蓮華文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	94
2476	鳳凰文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	130
2477	부설전 (浮雪傳) -- 시도유형문화재 140호	전북 부안군	문화재청	332
2478	부안격포리의후박나무군락 (扶安格浦里의후박나무群落) -- 천연기념물 123호	전북 부안군	문화재청	144
2479	부안구암리지석묘군 (扶安龜岩里支石墓群) -- 사적 103호	전북 부안군	문화재청	115
2480	부안김상만가옥 (扶安金相萬家屋) -- 중요민속자료 150호	전북 부안군	문화재청	208
2481	부안김씨종중고문서 (扶安金氏宗中古文書) -- 보물 900호	전북 부안군	문화재청	87
2482	부안농악 (扶安農樂) -- 시도무형문화재 7-1호	전북 부안군	문화재청	389
2483	부안도청리의 호랑가시나무군락 (扶安道淸里의호랑가시나무群落) -- 천연기념물 122호	전북 부안군	문화재청	143
2484	부안동문안당산 (扶安東門안堂山) -- 중요민속자료 19호	전북 부안군	문화재청	184
2485	부안서문안당산 (扶安西門안堂山) -- 중요민속자료 18호	전북 부안군	문화재청	179
2486	부안실상사지 (扶安實相寺址) -- 시도기념물 77호	전북 부안군	문화재청	473
2487	부안유천리도요지 (扶安柳川里陶窯址) -- 사적 69호	전북 부안군	문화재청	111
2488	부안의미산나무군락지 (扶安의미산나무群落地) -- 천연기념물 370호	전북 부안군	문화재청	160
2489	부안중계리의꽝꽝나무군락 (扶安中溪里의꽝꽝나무群落) -- 천연기념물 124호	전북 부안군	문화재청	145
2490	부안진서리도요지 (扶安鎭西里陶窯址) -- 사적 70호	전북 부안군	문화재청	112
2491	부안향교대성전 (扶安鄕校大成殿) -- 문화재자료 93호	전북 부안군	문화재청	606
2492	북고사목조아미타여래좌상 (北固寺木造阿彌陀如來坐像) -- 시도유형문화재 183호	전북 무주군	문화재청	375
2493	북고사신중탱화 (北固寺神衆幀畵) -- 시도유형문화재 187호	전북 무주군	문화재청	379
2494	분양서원 (汾陽書院) -- 문화재자료 161호	전북 무주군	문화재청	664
2495	粉靑沙器귀알문盞	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	133
2496	粉靑沙器印化文盞	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	132
2497	粉靑沙器鐵畵唐草文馬上杯	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	135
2498	불조삼경 (佛祖三經) -- 보물 1224호	전북 전주시 덕진구	문화재청	102
2499	분지사대웅전 (佛智寺大雄殿) -- 시도유형문화재 117호	전북 군산시	문화재청	309
2500	비파형동모(琵琶形동모)	-	원광대학박물관	1

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2501	비홍산성 (飛鴻山城) -- 문화재자료 174호	전북 남원시	문화재청	677
2502	사계정사 (沙溪精舍) -- 문화재자료 166호	전북 남원시	문화재청	669
2503	사곡리남근석 (사곡리男根石) -- 시도민속자료 31호	전북 임실군	문화재청	535
2504	사내리당산 (사내리당산) -- 시도민속자료 32호	전북 고창군	문화재청	536
2505	사랑 (사랑) -- 중요민속자료 26-6호	전북 정읍시	문화재청	197
2506	사랑채 (사랑채) -- 중요민속자료 26-2호	전북 정읍시	문화재청	193
2507	사산리와요지 (士山里瓦窯址) -- 시도기념물 40호	전북 부안군	문화재청	440
2508	사자사지 (師子寺址) -- 시도기념물 104호	전북 익산시	문화재청	500
2509	산동리남근석 (山東里男根石) -- 시도민속자료 14호	전북 순창군	문화재청	518
2510	삼계강사계안 (三溪講舍契案) -- 시도유형문화재 160호	전북 임실군	문화재청	352
2511	삼세오충렬유적 (三世五忠烈遺蹟) -- 시도기념물 61호	전북 익산시	문화재청	458
2512	삼족토기(三足土器)	전북 고창군 아산면 대기리	국립전주박물관	9
2513	상교정본자비도량참법<권제1~5> (詳校正本慈悲道場懺法<卷第一~五>) -- 보물 1193호	전북 전주시 덕진구	문화재청	96
2514	상원사대웅전 (上院寺大雄殿) -- 문화재자료 126호	전북 고창군	문화재청	630
2515	상원주장군 (上元周將軍) -- 중요민속자료 18-3호	전북 부안군	문화재청	182
2516	상원주장군 (上元周將軍) -- 중요민속자료 19-2호	전북 부안군	문화재청	186
2517	상이암부도 (上耳庵浮屠) -- 문화재자료 124호	전북 임실군	문화재청	628
2518	상이암부도 (上耳庵浮屠) -- 시도유형문화재 150호	전북 임실군	문화재청	342
2519	생원양흥문과병과제7인급제출신자가정19년10월초9일 (生員楊洪文科丙科第7人及第出身者嘉靖19年10月初9日) -- 보물 725-5호	전북 순창군	문화재청	73
2520	서강사 (西岡祠) -- 문화재자료 157호	전북 김제시	문화재청	660
2521	서벽정 (棲碧亭) -- 시도기념물 80호	전북 무주군	문화재청	476
2522	서산산성 (西山山城) -- 문화재자료 177호	전북 고창군	문화재청	680
2523	서서학동석불입상 (西棲鶴洞石佛立像) -- 문화재자료 9호	전북 전주시 완산구	문화재청	546
2524	서외리당간지주 (西外里幢竿支柱) -- 시도유형문화재 59호	전북 부안군	문화재청	256
2525	瑞鳥文암막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	18
2526	瑞鳥文암막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	19
2527	瑞鳥文암막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	105
2528	서현사지 (西峴祠址) -- 시도기념물 48호	전북 정읍시	문화재청	447
2529	石簡	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	118
2530	石簡	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	119
2531	石簡	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	128
2532	석정이정직유저유묵 (石亭李定稷遺著遺墨) -- 시도유형문화재 149호	전북 김제시	문화재청	341
2533	石製뒤꽂이 용범	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	142
2534	석제받침(臺)	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	29
2535	석제벼루(硯)	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	136
2536	石製三層石塔	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	141
2537	석회석제십왕상(石灰石製十王像)	전북 무주군(茂朱郡) 적상면 북창리 안국사지	국립전주박물관	41
2538	선국사대북 (善國寺대북) -- 시도민속자료 5호	전북 남원시	문화재청	510
2539	선국사대웅전 (善國寺大雄殿) -- 시도유형문화재 114호	전북 남원시	문화재청	306
2540	선운사금동보살좌상 (禪雲寺金銅菩薩坐像) -- 보물 279호	전북 고창군	문화재청	40
2541	선운사대웅전 (禪雲寺大雄殿) -- 보물 290호	전북 고창군	문화재청	44
2542	선운사도솔암내원궁 (禪雲寺兜率庵內院宮) -- 문화재자료 125호	전북 고창군	문화재청	629
2543	선운사도솔암마애불 (禪雲寺兜率庵磨崖佛) -- 보물 1200호	전북 고창군	문화재청	99
2544	선운사만세루 (禪雲寺萬歲樓) -- 시도유형문화재 53호	전북 고창군	문화재청	253
2545	선운사백파율사비 (禪雲寺白坡律師碑) -- 시도유형문화재 122호	전북 고창군	문화재청	314
2546	선운사범종 (禪雲寺梵鐘) -- 시도유형문화재 31호	전북 고창군	문화재청	235
2547	선운사사적기 (禪雲寺事蹟記) -- 시도유형문화재 155호	전북 고창군	문화재청	347
2548	선운사석씨원류 (禪雲寺釋氏源流) -- 시도유형문화재 14호	전북 고창군	문화재청	220
2549	선운사약사여래불상 (禪雲寺藥師如來佛像) -- 시도유형문화재 33호	전북 고창군	문화재청	236
2550	선운사영산전목조삼존불상 (禪雲寺靈山殿木造三尊佛像) -- 시도유형문화재 28호	전북 고창군	문화재청	233
2551	선운사육층석탑 (禪雲寺六層石塔) -- 시도유형문화재 29호	전북 고창군	문화재청	234
2552	선운사지장보살좌상 (禪雲寺地藏菩薩坐像) -- 보물 280호	전북 고창군	문화재청	41
2553	선운사참당암대웅전 (禪雲寺懺堂庵大雄殿) -- 보물 803호	전북 고창군	문화재청	82
2554	선원사대웅전 (禪院寺大雄殿) -- 문화재자료 45호	전북 남원시	문화재청	571
2555	선원사동종 (禪院寺銅鐘) -- 시도유형문화재 25호	전북 남원시	문화재청	230
2556	선원사약사전 (禪院寺藥師殿) -- 시도유형문화재 119호	전북 남원시	문화재청	311
2557	선원사철조여래좌상 (禪院寺鐵造如來坐像) -- 보물 422호	전북 남원시	문화재청	51

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일련번호	명 칭	출토지역	관할기관	소장번호
2558	선자장 (扇子匠) -- 시도무형문화재 10호	전북 전주시 완산구	문화재청	397
2559	설씨부인권선문첩 (薛氏夫人勸善文帖) -- 보물 728호	전북 순창군	문화재청	77
2560	설진영서실 (薛鎭永書室) -- 시도기념물 96호	전북 순창군	문화재청	492
2561	성당면의지은행나무 (성당면의지은행나무) -- 시도기념물 109호	전북 익산시	문화재청	505
2562	성미산성 (성미산성) -- 시도기념물 100호	전북 임실군	문화재청	496
2563	성석린좌명공신왕지 (成石璘佐命功臣王旨) -- 보물 746호	전북 진안군	문화재청	80
2564	세전리석불입상 (細田里石佛立像) -- 시도유형문화재 120호	전북 남원시	문화재청	312
2565	細鱗蓮華文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	71
2566	세형동검(細形銅劍)	전북 익산시 웅포면 입점리 산 192	국립전주박물관	49
2567	소세양신도비 (蘇世讓神道碑) -- 시도유형문화재 159호	전북 익산시	문화재청	351
2568	소자파묘비 (소자파묘비) -- 문화재자료 148호	전북 익산시	문화재청	651
2569	小塔刑土器蓋	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	108
2570	小塔形土基蓋	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	66
2571	송광사금강문 (송광사금강문) -- 시도유형문화재 173호	전북 완주군	문화재청	365
2572	송광사나한전 (송광사나한전) -- 시도유형문화재 172호	전북 완주군	문화재청	364
2573	송광사동종 (松廣寺銅鐘) -- 시도유형문화재 138호	전북 완주군	문화재청	330
2574	송광사명부전소조지장보살삼존상및권속상일괄 (송광사명부전소조지장보살삼존상및권속상일괄) -- 시도유형문화재 168호	전북 완주군	문화재청	360
2575	송광사목조삼전패 (송광사목조삼전패) -- 시도유형문화재 170호	전북 완주군	문화재청	362
2576	송광사벽암당부도 (송광사벽암당부도) -- 문화재자료 144호	전북 완주군	문화재청	647
2577	송광사사적비 (松廣寺史蹟碑) -- 시도유형문화재 5호	전북 완주군	문화재청	212
2578	송광사오백나한전목조석가여래삼존상및권속상일괄 (송광사오백나한전목조석가여래삼존상및권속상일괄) -- 시도유형문화재 169호	전북 완주군	문화재청	361
2579	송광사일주문 (松廣寺一株門) -- 시도유형문화재 4호	전북 완주군	문화재청	211
2580	송양사 (松陽祠) -- 문화재자료 163호	전북 고창군	문화재청	666
2581	송우암수명유허비 (宋尤庵受命遺墟碑) -- 시도유형문화재 50호	전북 정읍시	문화재청	250
2582	송정 (松亭) -- 문화재자료 133호	전북 정읍시	문화재청	637
2583	수민리마애석불 (水滿里磨崖石佛) -- 시도유형문화재 84호	전북 완주군	문화재청	276
2584	수사공강응환가전유물 (水使公姜膺煥家傳遺物) -- 시도유형문화재 130호	전북 고창군	문화재청	322
2585	수선루 (睡仙樓) -- 문화재자료 16호	전북 진안군	문화재청	553
2586	수성당 (水城堂) -- 시도유형문화재 58호	전북 부안군	문화재청	255
2587	수열비 (樹烈碑) -- 문화재자료 40호	전북 장수군	문화재청	569
2588	수운정 (睡雲亭) -- 시도유형문화재 151호	전북 임실군	문화재청	343
2589	순창객사 (淳昌客舍) -- 시도유형문화재 48호	전북 순창군	문화재청	248
2590	순창남계리석장승 (淳昌南溪里石長생) -- 중요민속자료 102호	전북 순창군	문화재청	201
2591	순창삼인대 (淳昌三印臺) -- 시도유형문화재 27호	전북 순창군	문화재청	232
2592	순창성황대신사적현판 (淳昌城隍大神事跡懸板) -- 중요민속자료 238호	전북 순창군	문화재청	209
2593	순창충신리석장승 (淳昌忠信里石長생) -- 중요민속자료 101호	전북 순창군	문화재청	200
2594	순창향교대성전 (淳倉鄕校大成殿) -- 문화재자료 68호	전북 순창군	문화재청	588
2595	순평사금동여래좌상 (淳平寺金銅如來坐像) -- 시도유형문화재 165호	전북 순창군	문화재청	357
2596	순화리삼층석탑 (淳化里三層石塔) -- 시도유형문화재 26호	전북 순창군	문화재청	231
2597	숭림사보광전 (崇林寺普光殿) -- 보물 825호	전북 익산시	문화재청	83
2598	숭림사보광전목조석가여래좌상 (崇林寺普光殿木造釋迦如來坐像) -- 시도유형문화재 188호	전북 익산시	문화재청	380
2599	숭림사영원전지장보살좌상및권속 (崇林寺靈源殿地藏菩薩坐像및眷屬) -- 시도유형문화재 189호	전북 익산시	문화재청	381
2600	숲정이<천주교순교지> (숲정이<天主敎殉敎地>) -- 시도기념물 71호	전북 전주시 덕진구	문화재청	467
2601	시조창 (時調唱) -- 시도무형문화재 14호	전북 전주시 완산구	문화재청	401
2602	신경준의고지도 (申景濬의古地圖) -- 시도유형문화재 89호	전북 순창군	문화재청	281
2603	신광사대웅전 (新光寺大雄殿) -- 시도유형문화재 113호	전북 장수군	문화재청	305
2604	신말주선생의십로계첩 (申末舟先生의十老契帖) -- 시도유형문화재 142호	전북 순창군	문화재청	334
2605	'申''斯'銘印刻암키와	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	46
2606	신석정고택 (辛錫正故宅) -- 시도기념물 84호	전북 부안군	문화재청	480
2607	신안서원 (新安書院) -- 문화재자료 22호	전북 임실군	문화재청	558
2608	신잠비 (申潛碑) -- 문화재자료 105호	전북 정읍시	문화재청	613
2609	신흥사대웅전 (新興寺大雄殿) -- 시도유형문화재 112호	전북 임실군	문화재청	304
2610	실상사극락전 (實相寺極樂殿) -- 시도유형문화재 45호	전북 남원시	문화재청	245
2611	실상사동종 (實相寺銅鐘) -- 시도유형문화재 137호	전북 남원시	문화재청	329
2612	실상사백장암삼층석탑 (實相寺百丈菴三層石塔) -- 국보 10호	전북 남원시	문화재청	1
2613	실상사백장암석등 (實相寺百丈庵石燈) -- 보물 40호	전북 남원시	문화재청	26

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일련번호	명칭	출토지역	관할기관	소장번호
2614	실상사부도 (實相寺浮屠) -- 보물 36호	전북 남원시	문화재청	22
2615	실상사삼층석탑 (實相寺三層石塔) -- 보물 37호	전북 남원시	문화재청	23
2616	실상사석등 (實相寺石燈) -- 보물 35호	전북 남원시	문화재청	21
2617	실상사수철화상능가보월탑 (實相寺秀澈和尙楞伽寶月塔) -- 보물 33호	전북 남원시	문화재청	19
2618	실상사수철화상능가보월탑비 (實相寺秀澈和尙楞伽寶月塔碑) -- 보물 34호	전북 남원시	문화재청	20
2619	실상사약수암목조탱화 (實相寺藥水庵木彫幀畵) -- 보물 421호	전북 남원시	문화재청	50
2620	실상사위토개량성책 (實相寺位土改良成冊) -- 시도유형문화재 88호	전북 남원시	문화재청	280
2621	실상사일원 (實相寺一圓) -- 사적 309호	전북 남원시	문화재청	130
2622	실상사증각대사응료탑 (實相寺證覺大師凝寮塔) -- 보물 38호	전북 남원시	문화재청	24
2623	실상사증각대사응료탑비 (實相寺證覺大師凝寮塔碑) -- 보물 39호	전북 남원시	문화재청	25
2624	실상사철제여래좌상 (實相寺鐵製如來坐像) -- 보물 41호	전북 남원시	문화재청	27
2625	심경암석불좌상 (心鏡庵石佛坐像) -- 시도유형문화재 46호	전북 남원시	문화재청	246
2626	심곡사대웅전 (深谷寺大雄殿) -- 문화재자료 87호	전북 익산시	문화재청	603
2627	심곡사목조삼존불좌상 (深谷寺木造三尊佛坐像) -- 문화재자료 152호	전북 익산시	문화재청	655
2628	십로사 (十老祠) -- 문화재자료 59호	전북 남원시	문화재청	582
2629	쌍용문경(雙龍文鏡)	전북 군산시 옥구군 야미도리	국립전주박물관	14
2630	쌍조석간 (雙鳥石竿) -- 시도민속자료 17호	전북 부안군	문화재청	521
2631	ㅇ寺三寶銘文土器片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	50
2632	아막성 (阿莫城) -- 시도기념물 38호	전북 남원시	문화재청	438
2633	악기장 (樂器匠) -- 시도무형문화재 12호	전북 군산시	문화재청	399
2634	안국사극락전 (安國寺極樂殿) -- 시도유형문화재 42호	전북 무주군	문화재청	242
2635	안국사영산회괘불탱 (安國寺靈山會掛佛幀) -- 보물 1267호	전북 무주군	문화재청	107
2636	안사랑채 (안사랑채) -- 중요민속자료 26-5호	전북 정읍시	문화재청	196
2637	안심사부도및부도전 (安心寺浮屠및浮屠殿) -- 시도유형문화재 109호	전북 완주군	문화재청	301
2638	안심사사적비 (安心寺事蹟碑) -- 시도유형문화재 110호	전북 완주군	문화재청	302
2639	안위장군묘 (安衛將軍墓) -- 시도기념물 102호	전북 김제시	문화재청	498
2640	안채 (안채) -- 중요민속자료 26-4호	전북 정읍시	문화재청	195
2641	안행랑채 (안행랑채) -- 중요민속자료 26-3호	전북 정읍시	문화재청	194
2642	압계서원 (鴨溪書院) -- 문화재자료 35호	전북 장수군	문화재청	566
2643	양대박부자충의문 (梁大樸父子忠義門) -- 문화재자료 170호	전북 남원시	문화재청	673
2644	양수생급제홍패홍무9년 (楊首生及第紅牌洪武9年) -- 보물 725-2호	전북 순창군	문화재청	70
2645	양요정 (兩樂亭) -- 문화재자료 137호	전북 임실군	문화재청	641
2646	양이시급제홍패지정15년 (楊以時及第紅牌至正15年) -- 보물 725-1호	전북 순창군	문화재청	69
2647	양재선생유지 (良齋先生遺址) -- 시도기념물 23호	전북 부안군	문화재청	426
2648	양홍위동훈대부행청도군수자가정38년2월초10일 (楊洪爲通訓大夫行淸道郡守者嘉靖38年2月初10日) -- 보물 725-6호	전북 순창군	문화재청	74
2649	어래산성 (御來山城) -- 문화재자료 173호	전북 익산시	문화재청	676
2650	어사각 (御賜閣) -- 문화재자료 109호	전북 고창군	문화재청	616
2651	어서각 (御書閣) -- 문화재자료 32호	전북 장수군	문화재청	563
2652	어은정 (漁隱亭) -- 문화재자료 132호	전북 순창군	문화재청	636
2653	언양김씨삼강정려 (彦陽金氏三綱旌閭) -- 문화재자료 169호	전북 정읍시	문화재청	672
2654	얼굴그림기와片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	81
2655	얼굴그림기와片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	83
2656	여래붙적도 (如來佛蹟圖) -- 시도유형문화재 79호	전북 전주시 덕진구	문화재청	272
2657	여산동헌 (礪山東軒) -- 시도유형문화재 93호	전북 익산시	문화재청	285
2658	여산향교대성전 (礪山鄕校大成殿) -- 문화재자료 83호	전북 익산시	문화재청	600
2659	여원치마애불상 (女院峙磨崖佛像) -- 시도유형문화재 162호	전북 남원시	문화재청	354
2660	연안이씨이유길가전고문서 (延安李氏李有吉家傳古文書) -- 시도유형문화재 131호	전북 전주시 덕진구	문화재청	323
2661	'延祐四年丁巳'銘암키와	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	1
2662	영광정 (迎光亭) -- 문화재자료 134호	전북 순창군	문화재청	638
2663	영모정 (永慕亭) -- 문화재자료 15호	전북 진안군	문화재청	552
2664	영산작법 (靈山作法) -- 시도무형문화재 18호	전북 전주시 덕진구	문화재청	403
2665	영은사지 (靈隱寺址) -- 시도기념물 63호	전북 정읍시	문화재청	460
2666	영천서원 (寧川書院) -- 문화재자료 20호	전북 임실군	문화재청	556
2667	예종대왕태실및비 (睿宗大王胎室및碑) -- 시도민속자료 26호	전북 전주시 완산구	문화재청	530
2668	오괴정 (五槐亭) -- 문화재자료 167호	전북 임실군	문화재청	670
2669	오리정 (五里亭) -- 문화재자료 56호	전북 남원시	문화재청	579
2670	오목대와이목대 (梧木臺와梨木臺) -- 시도기념물 16호	전북 전주시 완산구	문화재청	420
2671	오수리석불 (獒樹里石佛) -- 시도유형문화재 86호	전북 임실군	문화재청	278

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2672	오영순가옥 (吳永順家屋) -- 시도민속자료 33호	전북 김제시	문화재청	537
2673	옥구반산리석등 (沃溝鉢山里石燈) -- 보물 234호	전북 군산시	문화재청	33
2674	옥구상주사대웅전 (沃溝上柱寺大雄殿) -- 시도유형문화재 37호	전북 군산시	문화재청	240
2675	옥구향교대성전 (沃溝鄕校大成殿) -- 문화재자료 96호	전북 군산시	문화재청	608
2676	옥산서원 (玉山書院) -- 문화재자료 141호	전북 정읍시	문화재청	644
2677	옹기굴뚝(甕器煙家)	-	원광대학박물관	4
2678	옹기소래기	전북 정읍시 신태인읍	원광대학박물관	2
2679	옹기시루	-	원광대학박물관	5
2680	옹기장군	-	원광대학박물관	8
2681	옹기청수단지	-	원광대학박물관	6
2682	옹기큰항아리(甕器大甕)	전북 진안군 마령면	원광대학박물관	3
2683	옻칠장 (옻漆匠) -- 시도무형문화재 13호	전북 남원시	문화재청	400
2684	와룡암 (臥龍庵) -- 문화재자료 18호	전북 진안군	문화재청	555
2685	완주송광사대웅전 (完州松廣寺大雄殿) -- 보물 1243호	전북 완주군	문화재청	103
2686	완주송광사소조사천왕상 (完州松廣寺塑造四天王像) -- 보물 1255호	전북 완주군	문화재청	105
2687	완주송광사소조삼불좌상및복장유물 (完州松廣寺塑造三佛坐像및腹藏遺物) -- 보물 1274호	전북 완주군	문화재청	110
2688	완주송광사종루 (完州松廣寺鐘樓) -- 보물 1244호	전북 완주군	문화재청	104
2689	왕궁리유적 (王宮里遺蹟) -- 사적 408호	전북 익산시	문화재청	140
2690	용계산성 (龍溪山城) -- 문화재자료 175호	전북 완주군	문화재청	678
2691	용담사지석불입상 (龍潭寺址石佛立像) -- 보물 42호	전북 남원시	문화재청	28
2692	용담사칠층석탑 (龍潭寺七層石塔) -- 시도유형문화재 11호	전북 남원시	문화재청	217
2693	용담향교대성전 (龍潭鄕校大成殿) -- 문화재자료 17호	전북 진안군	문화재청	554
2694	龍文암막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	129
2695	용성관석물 (龍城館石物) -- 문화재자료 104호	전북 남원시	문화재청	612
2696	龍樹房銘文수키와	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	68
2697	용안향교대성전 (龍安鄕校大成殿) -- 문화재자료 86호	전북 익산시	문화재청	602
2698	용오정사(사당,홍의재,경의당,상운루) (龍塢精舍(祠堂,弘毅齋,敬義堂,祥雲樓)) -- 시도유형문화재 91호	전북 고창군	문화재청	283
2699	용장서원 (龍章書院) -- 문화재자료 53호	전북 남원시	문화재청	576
2700	용화사미륵불입상 (용화사미륵불입상) -- 시도유형문화재 171호	전북 부안군	문화재청	363
2701	용흥리석불입상 (龍興里石佛立像) -- 시도유형문화재 97호	전북 정읍시	문화재청	289
2702	용흥리해정사지석탑 (龍興里海鼎寺址石塔) -- 시도유형문화재 96호	전북 정읍시	문화재청	288
2703	우금산성 (禹金山城) -- 시도기념물 20호	전북 부안군	문화재청	423
2704	우덕리산성 (優德里山城) -- 시도기념물 51호	전북 정읍시	문화재청	449
2705	운루정 (雲樓亭) -- 시도유형문화재 135호	전북 임실군	문화재청	327
2706	운봉향교대성전 (雲峰鄕校大成殿) -- 문화재자료 50호	전북 남원시	문화재청	573
2707	운산리삼층석탑 (雲山里三層石塔) -- 시도유형문화재 10호	전북 진안군	문화재청	216
2708	운선암마애여래상 (雲仙庵磨崖如來像) -- 시도유형문화재 182호	전북 고창군	문화재청	374
2709	운학리고분군 (雲鶴里古墳群) -- 시도기념물 58호	전북 정읍시	문화재청	456
2710	웅치전적지 (熊峙戰蹟地) -- 시도기념물 25호	전북 완주군	문화재청	428
2711	웅포리고분군 (熊浦里古墳群) -- 시도기념물 98호	전북 익산시	문화재청	494
2712	원광대소장건륭15년명감로탱화 (圓光大所藏乾隆十五年銘甘露幀畵) -- 시도유형문화재 185호	전북 익산시	문화재청	377
2713	원광대소장건륭29년명감로탱화 (圓光大所藏乾隆二十九年銘甘露幀畵) -- 시도유형문화재 186호	전북 익산시	문화재청	378
2714	원동향약 (源洞鄕約) -- 시도유형문화재 146호	전북 남원시	문화재청	338
2715	원통사지 (圓通寺址) -- 시도기념물 67호	전북 무주군	문화재청	464
2716	원흥석불입상 (元興石佛立像) -- 문화재자료 41호	전북 장수군	문화재청	570
2717	월강사 (月岡祠) -- 문화재자료 31호	전북 장수군	문화재청	562
2718	월인석보제15 (月印釋譜第十五) -- 보물 745-10호	전북 순창군	문화재청	79
2719	월천리석장승 (月川里石長생) -- 시도민속자료 30호	전북 부안군	문화재청	534
2720	월촌입석 (月村立石) -- 시도민속자료 7호	전북 김제시	문화재청	512
2721	위도관아 (蝟島官衙) -- 시도유형문화재 101호	전북 부안군	문화재청	293
2722	위도띠뱃놀이 (蝟島띠뱃놀이) -- 중요무형문화재 82-3호	전북전역	문화재청	171
2723	위봉사보광명전 (威鳳寺普光明殿) -- 보물 608호	전북 완주군	문화재청	56
2724	위봉사요사 (威鳳寺寮舍) -- 시도유형문화재 69호	전북 완주군	문화재청	265
2725	위봉산성 (威鳳山城) -- 시도기념물 17호	전북 완주군	문화재청	421
2726	유개고배(有蓋高杯)	-	국립전주박물관	1
2727	유리(瑠璃)구슬 -- 국보(國寶) 123호	전북 익산시 왕궁면 왕궁리	국립중앙박물관	10
2728	유리사리병(瑠璃舍利甁)	-	국립중앙박물관	13

건설교통부

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2729	유애묘 (遺愛廟) -- 문화재자료 57호	전북 남원시	문화재청	580
2730	유애사 (遺愛祠) -- 시도기념물 18호	전북 정읍시	문화재청	422
2731	유천서원 (楡川書院) -- 문화재자료 52호	전북 남원시	문화재청	575
2732	유학양공준생원삼등제59인입격자정덕2년2월일 (幼學楊公俊生員三等第59人入格者正德2年2月日) -- 보물 725-3호	전북 순창군	문화재청	71
2733	유학양시성생원삼등제63인입격자만력19년8월 (幼學楊時省生員三等第63人入格者萬曆19年8月) -- 보물 725-7호	전북 순창군	문화재청	75
2734	윤도장 (輪刀匠) -- 중요무형문화재 110호	전북전역	문화재청	173
2735	윤영채가옥 (尹永彩家屋) -- 문화재자료 117호	전북 남원시	문화재청	622
2736	율촌리고분군 (栗村里古墳群) -- 시도기념물 105호	전북 익산시	문화재청	501
2737	은선리고분군 (隱仙里古墳群) -- 시도기념물 57호	전북 정읍시	문화재청	455
2738	은선리토성 (隱仙里土城) -- 시도기념물 56호	전북 정읍시	문화재청	454
2739	은적사석가여래삼존상 (隱寂寺釋迦如來三尊像) -- 시도유형문화재 184호	전북 군산시	문화재청	376
2740	의견비 (義犬碑) -- 시도민속자료 1호	전북 임실군	문화재청	507
2741	의금부도사김도언유물 (義禁府都事金道彦遺物) -- 시도유형문화재 139호	전북 정읍시	문화재청	331
2742	의안백이화개국공신록권 (義安伯李和開國功臣錄券) -- 국보 232호	전북 정읍시	문화재청	5
2743	이리농악 (裡里農樂) -- 중요무형문화재 11-3호	전북전역	문화재청	168
2744	이리향제줄풍류 (裡理鄕制줄風流) -- 중요무형문화재 83-2호	전북전역	문화재청	172
2745	이매창묘 (李梅窓墓) -- 시도기념물 65호	전북 부안군	문화재청	462
2746	이병기선생생가 (李秉岐先生生家) -- 시도기념물 6호	전북 익산시	문화재청	412
2747	이상길초상 (李尙吉肖像) -- 보물 792호	전북 남원시	문화재청	81
2748	이석용생가 (李錫庸生家) -- 시도기념물 91호	전북 임실군	문화재청	487
2749	이석정선생생가 (李石亭先生生家) -- 시도기념물 21호	전북 김제시	문화재청	424
2750	이용화백세영수첩 (李容華百歲榮壽帖) -- 시도유형문화재 148호	전북 남원시	문화재청	340
2751	이웅재고가 (李雄宰古家) -- 시도민속자료 12호	전북 임실군	문화재청	516
2752	이재난고 (이齋亂藁) -- 시도유형문화재 111호	전북 고창군	문화재청	303
2753	이치전적지 (梨峙戰蹟地) -- 시도기념물 26호	전북 완주군	문화재청	429
2754	이태조4년및6년왕지 (李太祖四年및六年王旨) -- 보물 438호	전북 정읍시	문화재청	54
2755	이형부인동래정씨의복 (李洞夫人東萊鄭氏衣服) -- 중요민속자료 115호	전북 전주시 완산구	문화재청	202
2756	익산고도리석불입상 (益山古都里石佛立像) -- 보물 46호	전북 익산시	문화재청	31
2757	익산기세배 (益山旗歲拜) -- 시도무형문화재 25호	전북 익산시	문화재청	409
2758	익산낭산산성 (益山郎山山城) -- 시도기념물 13호	전북 익산시	문화재청	417
2759	익산목발노래 (益山木발노래) -- 시도무형문화재 1호	전북 익산시	문화재청	382
2760	익산미륵사지 (益山彌勒寺址) -- 사적 150호	전북 익산시	문화재청	120
2761	익산미륵산성 (益山彌勒山城) -- 시도기념물 12호	전북 익산시	문화재청	416
2762	익산백제토기도요지 (益山百濟土器陶窯址) -- 시도기념물 14호	전북 익산시	문화재청	418
2763	익산신작리의곰솥 (益山新鵲里의곰솥) -- 천연기념물 188호	전북 익산시	문화재청	149
2764	익산쌍릉 (益山雙陵) -- 사적 87호	전북 익산시	문화재청	113
2765	익산연동리석불좌상 (益山蓮洞里石佛坐像) -- 보물 45호	전북 익산시	문화재청	30
2766	익산연안이씨종중문적 (益山延安李氏宗中文籍) -- 보물 651호	전북 익산시	문화재청	57
2767	익산왕궁리5층석탑 (益山王宮里五層石塔) -- 국보 289호	전북 익산시	문화재청	7
2768	익산왕궁리오층석탑내발견유물 (益山王宮里五層石塔內發見遺物) -- 국보 123호	전북 전주시	문화재청	4
2769	익산입점리고분 (益山笠店里古墳) -- 사적 347호	전북 익산시	문화재청	135
2770	익산제석사지 (益山帝釋寺址) -- 사적 405호	전북 익산시	문화재청	139
2771	익산토성 (益山土城) -- 사적 92호	전북 익산시	문화재청	114
2772	익산향교대성전 (益山鄕校大成殿) -- 시도유형문화재 115호	전북 익산시	문화재청	307
2773	忍冬唐草文塑器片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	91
2774	忍冬唐草文암막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	3
2775	忍冬唐草文埠片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	109
2776	人面文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	45
2777	人面瓦	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	15
2778	人面瓦	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	16
2779	인촌선생생가 (仁村先生生家) -- 시도기념물 39호	전북 고창군	문화재청	439
2780	인후동석불입상 (麟後洞石佛立像) -- 문화재자료 10호	전북 전주시 덕진구	문화재청	547
2781	임실관촌면의 가침박달나무군락 (任實館村面의가침박달나무群落) -- 천연기념물 387호	전북 임실군	문화재청	163
2782	임실관촌면의산개나리군락 (任實館村面의산개나리群落) -- 천연기념물 388호	전북 임실군	문화재청	164
2783	임실용암리석등 (任實龍岩里石燈) -- 보물 267호	전북 임실군	문화재청	35
2784	임실이도리미륵불상 (任實二道里彌勒佛像) -- 시도유형문화재 145호	전북 임실군	문화재청	337
2785	임실필봉농악 (任實筆峰農樂) -- 중요무형문화재 11-5호	전북전역	문화재청	169

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2786	임실향교대성전 (任實鄕校大成殿) -- 문화재자료 26호	전북 임실군	문화재청	561
2787	임피향교대성전 (臨陂鄕校大成殿) -- 문화재자료 95호	전북 군산시	문화재청	607
2788	자악정 (自樂亭) -- 문화재자료 129호	전북 장수군	문화재청	633
2789	자천대 (紫泉臺) -- 문화재자료 116호	전북 군산시	문화재청	621
2790	장문리오층석탑 (長文里五層石塔) -- 시도유형문화재 13호	전북 정읍시	문화재청	219
2791	장수봉덕리의느티나무 (長水鳳德里의느티나무) -- 천연기념물 396호	전북 장수군	문화재청	165
2792	장수양악탑 (長水陽岳塔) -- 시도유형문화재 21호	전북 장수군	문화재청	226
2793	장수오성리영락12년왕지 (장수오성리영락12년왕지) -- 시도유형문화재 143호	전북 장수군	문화재청	335
2794	장수장수리의의암송 (長水長水里의의암송) -- 천연기념물 397호	전북 장수군	문화재청	166
2795	장수향교대성전 (長水鄕校大成殿) -- 보물 272호	전북 장수군	문화재청	36
2796	장재영가옥 (張在英家屋) -- 시도민속자료 21호	전북 장수군	문화재청	525
2797	장태수선생유물 (張泰秀先生遺物) -- 시도유형문화재 105호	전북 김제시	문화재청	297
2798	장포리어필각 (長浦里御筆閣) -- 문화재자료 127호	전북 남원시	문화재청	631
2799	장화리쌀뒤주 (長華里쌀뒤주) -- 시도민속자료 11호	전북 김제시	문화재청	515
2800	재궁리석등 (齋宮里石燈) -- 시도유형문화재 78호	전북 김제시	문화재청	271
2801	적벽강 (赤壁江) -- 시도기념물 29호	전북 부안군	문화재청	432
2802	적상산사고지유구 (赤裳山史庫址遺構) -- 시도기념물 88호	전북 무주군	문화재청	484
2803	적상산성 (赤裳山城) -- 사적 146호	전북 무주군	문화재청	119
2804	적상산성호국사비 (赤裳山城護國寺碑) -- 시도유형문화재 85호	전북 무주군	문화재청	277
2805	積瓦	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	82
2806	전라감영지 (全羅監營址) -- 시도기념물 107호	전북 전주시	문화재청	503
2807	전봉준선생고택지 (全琫準先生故宅址) -- 사적 293호	전북 정읍시	문화재청	125
2808	전주객사 (全州客舍) -- 보물 583호	전북 전주시 완산구	문화재청	55
2809	전주부지도 (全州府地圖) -- 시도유형문화재 80호	전북 전주시 덕진구	문화재청	273
2810	전주삼천동의곰솔 (全州三川洞의곰솔) -- 천연기념물 355호	전북 전주시 완산구	문화재청	158
2811	전주이씨고림군파종중문서 (全州李氏高林君派宗中文書) -- 보물 718호	전북 전주시 완산구	문화재청	63
2812	전주이씨칠산군파종중문서 (全州李氏漆山君派宗中文書) -- 시도유형문화재 103호	전북 전주시 완산구	문화재청	295
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2815	전주향교일원 (全州鄕校一圓) -- 사적 379호	전북 전주시 완산구	문화재청	137
2816	절현양정씨지려 (節烈兩丁氏之閭) -- 문화재자료 171호	전북 장수군	문화재청	674
2817	'丁巳'銘印刻암키와	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	79
2818	정상윤가옥 (丁相潤家屋) -- 문화재자료 119호	전북 장수군	문화재청	624
2819	정수사목조아미타여래삼존상 (정수사목조아미타여래삼존상) -- 시도유형문화재 167호	전북 완주군	문화재청	359
2820	정유재란호벌치전적지 (丁酉再亂胡伐時戰蹟地) -- 시도기념물 30호	전북 부안군	문화재청	433
2821	정읍김동수씨가옥 (井邑金東洙氏家屋) -- 중요민속자료 26호	전북 정읍시	문화재청	191
2822	정읍농악 (井邑農樂) -- 시도무형문화재 7-2호	전북 정읍시	문화재청	390
2823	정읍보화리석造입상 (井邑普化里石佛立像) -- 보물 914호	전북 정읍시	문화재청	88
2824	정읍은선리삼층석탑 (井邑隱仙里三層石塔) -- 보물 167호	전북 정읍시	문화재청	32
2825	정읍향교대성전 (井邑鄕校大成殿) -- 문화재자료 73호	전북 정읍시	문화재청	592
2826	정충복비 (丁忠復碑) -- 문화재자료 38호	전북 장수군	문화재청	568
2827	정충사지 (旌忠祠址) -- 시도기념물 74호	전북 정읍시	문화재청	470
2828	'丁亥'銘印刻암키와	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	36
2829	조경단 (肇慶壇) -- 시도기념물 3호	전북 전주시 덕진구	문화재청	411
2830	조경묘 (肇慶廟) -- 시도유형문화재 16호	전북 전주시 완산구	문화재청	222
2831	조선태조왕이성계상 (朝鮮太祖王李成桂像) -- 보물 931호	전북 전주시 완산구	문화재청	89
2832	조필담장군유물 (趙必達將軍遺物) -- 시도유형문화재 104호	전북 김제시	문화재청	296
2833	조해영가옥 (趙海英家屋) -- 문화재자료 121호	전북 익산시	문화재청	625
2834	주암서원 (舟岩書院) -- 문화재자료 21호	전북 임실군	문화재청	557
2835	주천서원 (朱川書院) -- 문화재자료 142호	전북 진안군	문화재청	645
2836	주천석장승 (朱川石長生) -- 시도민속자료 16호	전북 남원시	문화재청	520
2837	죽림리석장승 (竹林里石長生) -- 시도민속자료 20호	전북 부안군	문화재청	524
2838	죽림암 (竹林庵) -- 문화재자료 25호	전북 임실군	문화재청	560
2839	죽염제조장(죽염제조) (竹鹽製造匠(竹鹽製造)) -- 시도무형문화재 23호	전북 부안군	문화재청	407
2840	중거리함아버지당 (中巨里함아버지堂) -- 중요민속자료 14-2호	전북 고창군	문화재청	176
2841	중국식동검(中國式銅劍)	전북 완주군 이서면 상림리 삼구 185	국립전주박물관	11
2842	중기사지석불연화좌대 (中基寺址石佛蓮華座臺) -- 시도유형문화재 82호	전북 임실군	문화재청	275
2843	중앙동함아버지당 (中央洞함아버지堂) -- 중요민속자료 14-1호	전북 고창군	문화재청	175
2844	重圈菊花文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	85

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2845	直鋼菊花文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	123
2846	直鋼寶相華文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	41
2847	直鋼蓮華文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	23
2848	直鋼蓮華文수막새	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	60
2849	지당리석불입상 (池堂里石佛立像) -- 시도유형문화재 44호	전북 남원시	문화재청	244
2850	지리산천년송 (지리산천년송) -- 천연기념물 424호	전북 남원시	문화재청	167
2851	지사리고분군 (知士里古墳群) -- 시도기념물 59호	전북 정읍시	문화재청	457
2852	지선당 (止善堂) -- 문화재자료 159호	전북 진안군	문화재청	662
2853	지행당 (趾行堂) -- 시도기념물 7호	전북 전주시 덕진구	문화재청	413
2854	직구대(直口甽)	전북 부안군 변산면 적포리 죽막동	국립전주박물관	33
2855	진묵대사부도 (震默大師浮屠) -- 시도유형문화재 108호	전북 완주군	문화재청	300
2856	진서대장군 (鎭西大將軍) -- 중요민속자료 20-2호	전북 남원시	문화재청	190
2857	진안농악 (鎭安農樂) -- 시도무형문화재 7-5호	전북 진안군	문화재청	393
2858	진안은수사의청심배나무 (鎭安銀水寺의靑實배나무) -- 천연기념물 386호	전북 진안군	문화재청	162
2859	진안평지리의이팝나무 (鎭安平地里의이팝나무) -- 천연기념물 214호	전북 진안군	문화재청	150
2860	진안향교대성전 (鎭安鄕校大成殿) -- 문화재자료 14호	전북 진안군	문화재청	551
2861	집주금강반야바라밀경<하> (集註金剛般若波羅密經<下>) -- 보물 1223호	전북 전주시 덕진구	문화재청	101
2862	집固	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	25
2863	참당암동종 (懺堂庵銅鐘) -- 시도유형문화재 136호	전북 고창군	문화재청	328
2864	창계서원 (創溪書院) -- 문화재자료 36호	전북 장수군	문화재청	567
2865	창덕리남근석 (昌德里男根石) -- 시도민속자료 15호	전북 순창군	문화재청	519
2866	창덕암삼층석탑 (昌德庵三層石塔) -- 문화재자료 60호	전북 남원시	문화재청	583
2867	창동서원 (滄東書院) -- 문화재자료 78호	전북 정읍시	문화재청	597
2868	창산군장관의원종공신록권 (昌山君張貫의原從功臣錄券) -- 보물 726호	전북 정읍시	문화재청	76
2869	창원정씨종가 (昌原丁氏宗家) -- 시도민속자료 34호	전북 장수군	문화재청	538
2870	창주서원 (滄州書院) -- 문화재자료 51호	전북 남원시	문화재청	574
2871	채석강 (彩石江) -- 시도기념물 28호	전북 부안군	문화재청	431
2872	채원병가옥 (蔡元乘家屋) -- 시도민속자료 24호	전북 군산시	문화재청	528
2873	척문리산성 (尺門里山城) -- 시도기념물 52호	전북 남원시	문화재청	450
2874	천고사석불좌상 (천고사석불좌상) -- 문화재자료 145호	전북 전주시	문화재청	648
2875	천곡사지칠층석탑 (泉谷寺址七層石塔) -- 보물 309호	전북 정읍시	문화재청	48
2876	'天曆三年庚午年施主張介耳'銘암키와	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	137
2877	천양정 (穿楊亭) -- 문화재자료 6호	전북 전주시 완산구	문화재청	544
2878	천주교순교자묘 (天主敎殉敎者墓) -- 시도기념물 68호	전북 전주시 완산구	문화재청	465
2879	천호동굴 (天壺洞窟) -- 천연기념물 177호	전북 익산시	문화재청	146
2880	천호산성 (천호산성) -- 시도기념물 99호	전북 익산시	문화재청	495
2881	천황사대웅전 (天皇寺大雄殿) -- 시도유형문화재 17호	전북 진안군	문화재청	223
2882	천황사부도 (天皇寺浮屠) -- 문화재자료 123호	전북 진안군	문화재청	627
2883	철(鐵)제살포	전북 임실군 관촌면 금성리 산 176-1	국립전주박물관	7
2884	철경갑(鐵頸甲)	전북 남원시 아영면 원산리 M1-A	국립전주박물관	23
2885	鐵製솥	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	31
2886	鐵製재갈멈치	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	116
2887	鐵製저울錘	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	30
2888	鐵製札甲片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	13
2889	鐵製편자	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	10
2890	鐵製壺刑등子	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	146
2891	철주(鐵柱)	전북 남원시 아영면 원산리 M1-A	국립전주박물관	24
2892	철함(鐵銜)	전북 남원시 아영면 원산리 M1-A	국립전주박물관	25
2893	청도리삼층석탑 (淸道里三層石塔) -- 문화재자료 153호	전북 김제시	문화재청	656
2894	靑銅	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	98
2895	靑銅鏡片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	44
2896	靑銅굽	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	97
2897	靑銅鉢	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	9
2898	靑銅甁	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	32
2899	靑銅보살頭	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	59
2900	靑銅小形香垸	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	124
2901	청동요령(靑銅搖鈴) -- 국보(國寶) 123호	전북 익산시 왕궁면 왕궁리	국립중앙박물관	11
2902	청동은입인동문향로 (靑銅銀入忍冬文香爐) -- 시도유형문화재 67호	전북 익산시	문화재청	264
2903	靑銅재갈멈치	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	6

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일련번호	명칭	출토지역	관할기관	소장번호
2904	靑銅재갈멈치	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	75
2905	靑銅製 鳳凰頭	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	74
2906	靑銅製馬	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	11
2907	靑銅製저울錘	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	122
2908	靑銅鐘片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	67
2909	靑銅鐘片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	104
2910	靑銅扁球甁	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	53
2911	청룡사관음보살좌상 (靑龍寺觀音普薩坐像) -- 시도유형문화재 156호	전북 김제시	문화재청	348
2912	청림리석불좌상 (靑林里石佛坐像) -- 시도유형문화재 123호	전북 부안군	문화재청	315
2913	청운사대혜보각선사서 (靑雲寺大慧普覺禪師書) -- 시도유형문화재 174호	전북 김제시	문화재청	366
2914	靑磁象嵌菊花文뚜껑	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	112
2915	靑磁象嵌菊花文馬上杯	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	38
2916	靑磁象嵌菊花文접시	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	140
2917	靑磁象嵌菊花文八角접시	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	121
2918	靑磁小壺	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	114
2919	靑磁水注	전북 정읍시 瓮東面 七石里 山 95	국립광주박물관	1
2920	靑磁押出陽刻蓮花文접시	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	39
2921	靑磁陽陰刻蓮瓣文盛托	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	106
2922	靑磁陽陰刻蓮瓣文筒形盞	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	113
2923	靑磁陰刻鸂鶒文대접	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	131
2924	靑磁陰刻蓮花折枝文베개	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	120
2925	靑磁鐵畵唐草文뚜껑	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	76
2926	靑磁鐵繪牡丹文梅甁	전북 장수군 장수읍 노곡리 72-1	국립광주박물관	3
2927	靑磁堆花文甁	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	111
2928	靑磁堆花文접시	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	139
2929	靑磁해무리굽花形瑞	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	5
2930	靑磁花形접시	전북 정읍시 瓮東面 七石里 山 95	국립광주박물관	2
2931	초조본대방광불화엄경주본<권제30> (初雕本大方廣佛華嚴經周本<卷第三十>) -- 보물 1191호	전북 전주시 덕진구	문화재청	94
2932	초조본대방광불화엄경주본<권제36> (初雕本大方廣佛華嚴經周本<卷第三十六>) -- 국보 277호	전북 전주시 덕진구	문화재청	6
2933	초촌리고분군 (草村里古墳群) -- 시도기념물 47호	전북 남원시	문화재청	446
2934	최호장군유지 (崔湖將軍遺址) -- 시도기념물 32호	전북 군산시	문화재청	434
2935	추수경장군묘역 (추수경장군묘역) -- 시도기념물 94호	전북 완주군	문화재청	490
2936	추천대 (楸川臺) -- 문화재자료 8호	전북 전주시 덕진구	문화재청	545
2937	충신이흥발지려 (忠臣李興發之閭) -- 문화재자료 168호	전북 전주시	문화재청	671
2938	취락당 (취락당) -- 문화재자료 149호	전북 남원시	문화재청	652
2939	취석정 (醉石亭) -- 시도유형문화재 153호	전북 고창군	문화재청	345
2940	치미	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	37
2941	칠연의총 (七淵義塚) -- 시도기념물 27호	전북 무주군	문화재청	430
2942	침령산성 (砧嶺山城) -- 문화재자료 176호	전북 장수군	문화재청	679
2943	침선장(침선) (針線匠(針線)) -- 시도무형문화재 22호	전북 전주시 덕진구	문화재청	406
2944	타루비 (墮淚碑) -- 시도기념물 83호	전북 장수군	문화재청	479
2945	탑동삼층석탑 (塔洞三層石塔) -- 시도유형문화재 66호	전북 군산시	문화재청	263
2946	태고정 (太古亭) -- 문화재자료 102호	전북 진안군	문화재청	610
2947	太彌勒寺銘암키와	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	138
2948	태봉사삼존석불 (胎峰寺三尊石佛) -- 시도유형문화재 12호	전북 익산시	문화재청	218
2949	태인고현동향약 (泰仁古縣洞鄕約) -- 보물 1181호	전북 정읍시	문화재청	93
2950	태인동헌 (泰仁東軒) -- 시도유형문화재 75호	전북 정읍시	문화재청	269
2951	태인신잠선생영상 (泰仁申潛先生影像) -- 시도민속자료 4호	전북 정읍시	문화재청	509
2952	태인향교대성전 (泰仁鄕校大成殿) -- 문화재자료 75호	전북 정읍시	문화재청	594
2953	태인향교만화루 (泰仁鄕校萬化樓) -- 시도유형문화재 121호	전북 정읍시	문화재청	313
2954	태평봉수대 (太平烽燧臺) -- 시도기념물 36호	전북 진안군	문화재청	437
2955	土器蓋	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	56
2956	土器廣肩壺	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	107
2957	토기광구장경호(土器廣口長頸壺)	전북 남원시 아영면 월산리 M1-F호	국립전주박물관	20
2958	토기기대(土器器臺)	전북 남원시 아영면 월산리 M3호	국립전주박물관	17
2959	토기기대(土器器臺)	전북 남원시 아영면 월산리 M1-A호	국립전주박물관	18
2960	토기기대(土器器臺)	전북 남원시 아영면 월산리 M3호	국립전주박물관	19

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일련번호	명 칭	출토지역	관함기관	소장번호
2961	토기단경호(土器短頸壺)	전북 남원시 아영면 원산리 M2호	국립전주박물관	16
2962	토기대부장경호(土器豆附長頸壺)	전북 남원시 아영면 원산리 M1-E호	국립전주박물관	21
2963	土器대야	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	100
2964	土器大壺	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	110
2965	土器大甕壺	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	40
2966	土器燈盞	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	35
2967	土器燈盞	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	52
2968	土器盤	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	28
2969	토기삼이부소호(土器三耳附小壺)	전북 고창군 아산면 대기리	국립전주박물관	10
2970	土器시루	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	24
2971	토기유개단경호(土器有蓋短頸壺)	-	국립전주박물관	3
2972	토기유개양이부소호(土器有蓋兩耳付小壺)	전북 고창군 고창읍 신원리 산(山) 14	국립전주박물관	8
2973	토기장경호(土器長頸壺)	전북 남원시 아영면 원산리 M1-A호	국립전주박물관	15
2974	土器長身壺	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	95
2975	土器注器	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	63
2976	土器注器	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	96
2977	土器주름무늬甁	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	26
2978	土器扁甁	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	33
2979	土偶	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	84
2980	土偶(도깨비얼굴)	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	78
2981	土製도가니뚜껑	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	43
2982	土製도가니片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	42
2983	土製動物象(사자?)	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	73
2984	土製動物象片(자라)	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	145
2985	土製浮彫佛像片	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	7
2986	土製浮彫塔	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	88
2987	土製硯	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	14
2988	토제유개장경호(土製有蓋長頸壺)	-	국립전주박물관	2
2989	土製저울錘	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	99
2990	토제통형기대(土製筒形器臺)	-	국립전주박물관	4
2991	통형기대(筒形器臺)	전북 부안군 변산면 적포리 죽막동	국립전주박물관	34
2992	퇴수정 (退修亭) -- 문화재자료 165호	전북 남원시	문화재청	668
2993	파수부잔(把手附盞)	전북 부안군 변산면 적포리 죽막동	국립전주박물관	35
2994	판소리 (판소리) -- 시도무형문화재 2호	전북 전주시 완산구	문화재청	383
2995	판소리장단 (판소리長短) -- 시도무형문화재 9호	전북 전주시 덕진구	문화재청	396
2996	팔효사의은행나무 (八孝祠의은행나무) -- 시도기념물 89호	전북 김제시	문화재청	485
2997	풍계서원 (楓溪書院) -- 문화재자료 54호	전북 남원시	문화재청	577
2998	풍남문 (豊南門) -- 보물 308호	전북 전주시 완산구	문화재청	47
2999	풍양사 (楓陽祠) -- 문화재자료 155호	전북 남원시	문화재청	658
3000	피향정 (披香亭) -- 보물 289호	전북 정읍시	문화재청	43
3001	하거리함아버지당 (下巨里함아버지堂) -- 중요민속자료 14-3호	전북 고창군	문화재청	177
3002	하원당장군 (下元唐將軍) -- 중요민속자료 18-4호	전북 부안군	문화재청	183
3003	하원당장군 (下元唐將軍) -- 중요민속자료 19-3호	전북 부안군	문화재청	187
3004	학소암 (鶴巢庵) -- 문화재자료 3호	전북 전주시 완산구	문화재청	541
3005	학인당 (學忍堂) -- 시도민속자료 8호	전북 전주시 완산구	문화재청	513
3006	학정리석불 (鶴亭里石佛) -- 시도유형문화재 87호	전북 임실군	문화재청	279
3007	한벽당 (寒碧堂) -- 시도유형문화재 15호	전북 전주시 완산구	문화재청	221
3008	함머니당 (함머니堂) -- 중요민속자료 18-2호	전북 부안군	문화재청	181
3009	함아버지당 (함아버지堂) -- 중요민속자료 18-1호	전북 부안군	문화재청	180
3010	함벽정 (涵碧亭) -- 시도유형문화재 127호	전북 익산시	문화재청	319
3011	함열향교대성전 (咸悅鄕校大成殿) -- 문화재자료 85호	전북 익산시	문화재청	601
3012	합미성 (合米城) -- 문화재자료 71호	전북 순창군	문화재청	590
3013	합미성 (合米城) -- 시도기념물 75호	전북 장수군	문화재청	471
3014	해월암 (海月庵) -- 문화재자료 24호	전북 임실군	문화재청	559
3015	향목포함금동사리외함(金銅舍利外盒) -- 국보(國寶) 123호	전북 익산시 왕궁면 왕궁리	국립중앙박물관	3
3016	향토술담그기 (鄕土술담그기) -- 시도무형문화재 6호	전북 김제시	문화재청	385
3017	향토술담그기(송순주) (鄕土술담그기(松筍酒)) -- 시도무형문화재 6-1호	전북 김제시	문화재청	386
3018	향토술담그기(이강주) (향토술담그기(梨薑酒)) -- 시도무형문화재 6-2호	전북 전주시 덕진구	문화재청	387
3019	허여문기 (許與文記) -- 보물 718-1호	전북 전주시 완산구	문화재청	64

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일련번호	명 칭	출토지역	관할기관	소장번호
3020	현곡정사 (玄谷精舍) -- 시도유형문화재 57호	전북 고창군	문화재청	254
3021	현포보수로및중건불망비 (玄圃洑水路및重建不忘碑) -- 시도기념물 82호	전북 순창군	문화재청	478
3022	묵 銘土器	전북 익산시 금마면 기양리 104-1 미륵사지	미륵사지박물관	115
3023	호남삼절이춤 (湖南삼절이춤) -- 시도무형문화재 15호	전북 전주시 완산구	문화재청	402
3024	호암서원 (湖岩書院) -- 문화재자료 55호	전북 남원시	문화재청	578
3025	호지집 (호지집) -- 중요민속자료 26-7호	전북 정읍시	문화재청	198
3026	흡어머니산성 (흡어머니山城) -- 문화재자료 70호	전북 순창군	문화재청	589
3027	홍도(紅陶)	전북 완주군 이서면 반교리	국립전주박물관	44
3028	紅陶(홍도)	전북 김제시 로 傳해옴.	국립부여박물관	3
3029	화산사 (華山祠) -- 문화재자료 34호	전북 장수군	문화재청	565
3030	화산서원비 (華山書院碑) -- 문화재자료 4호	전북 전주시 완산구	문화재청	542
3031	화산천주교회 (華山天主敎會) -- 사적 318호	전북 익산시	문화재청	131
3032	화암사극락전 (花巖寺極樂殿) -- 보물 663호	전북 완주군	문화재청	62
3033	화암사동종 (花岩寺銅鐘) -- 시도유형문화재 40호	전북 완주군	문화재청	241
3034	화암사우화루 (花巖寺雨花樓) -- 보물 662호	전북 완주군	문화재청	61
3035	화암사중창비 (花岩寺重創碑) -- 시도유형문화재 94호	전북 완주군	문화재청	286
3036	환두도(環頭刀)	전북 남원시 하영면 두락리 4호분	국립전주박물관	26
3037	환두도병부편(環頭刀柄部片)	전북 남원시 아영면 월산리 M1-A호	국립전주박물관	22
3038	황강서원 (黃岡書院) -- 문화재자료 12호	전북 전주시 완산구	문화재청	549
3039	황방촌영정 (黃방村影幀) -- 시도유형문화재 129호	전북 진안군	문화재청	321
3040	황산대첩비지 (荒山大捷碑址) -- 사적 104호	전북 남원시	문화재청	116
3041	황이재생가 (黃이齋生家) -- 시도민속자료 25호	전북 고창군	문화재청	529
3042	황토현전적지 (黃土峴戰蹟地) -- 사적 295호	전북 정읍시	문화재청	127
3043	회사동석탑 (檜寺洞石塔) -- 시도유형문화재 72호	전북 진안군	문화재청	267
3044	효감천 (孝感泉) -- 시도기념물 43호	전북 고창군	문화재청	443
3045	후지리탑동석불 (後池里塔洞石佛) -- 시도유형문화재 98호	전북 정읍시	문화재청	290
3046	흑도장경호(黑陶長頸壺)	전북 전주시 덕진구 여의동 토광묘 1호	국립전주박물관	28
3047	흥덕객사 (興德客舍) -- 시도유형문화재 77호	전북 고창군	문화재청	270
3048	흥덕당간지주 (興德幢竿支柱) -- 시도유형문화재 36호	전북 고창군	문화재청	239
3049	흥덕향교대성전 (興德鄕校大成殿) -- 문화재자료 108호	전북 고창군	문화재청	615
3050	흥동장학당 (興東奬學堂) -- 문화재자료 140호	전북 고창군	문화재청	643
3051	흥복사대웅전목조삼존불좌상 (興福寺大雄殿木造三尊佛坐像) -- 시도유형문화재 181호	전북 김제시	문화재청	373
3052	흥학당 (흥학당) -- 문화재자료 147호	전북 장수군	문화재청	650
3053	금제사리함(金製舍利盒) -- 국보(國寶) 123호	전북 익산시 왕궁면 왕궁리	국립중앙박물관	2
3054	성균생원양공준문과병과제8인급제출신자정덕15년9월25일 (成均生員楊公俊文科丙科第8人及第出身者正德15年9月25日) -- 보물 725-4호	전북 순창군	문화재청	72