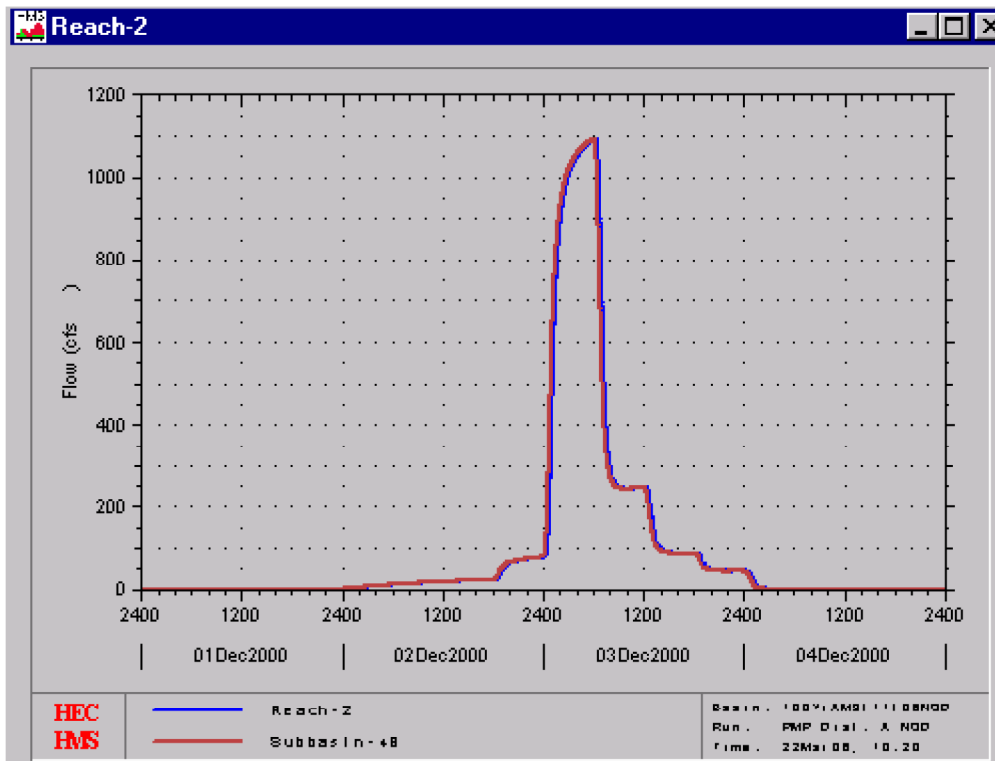
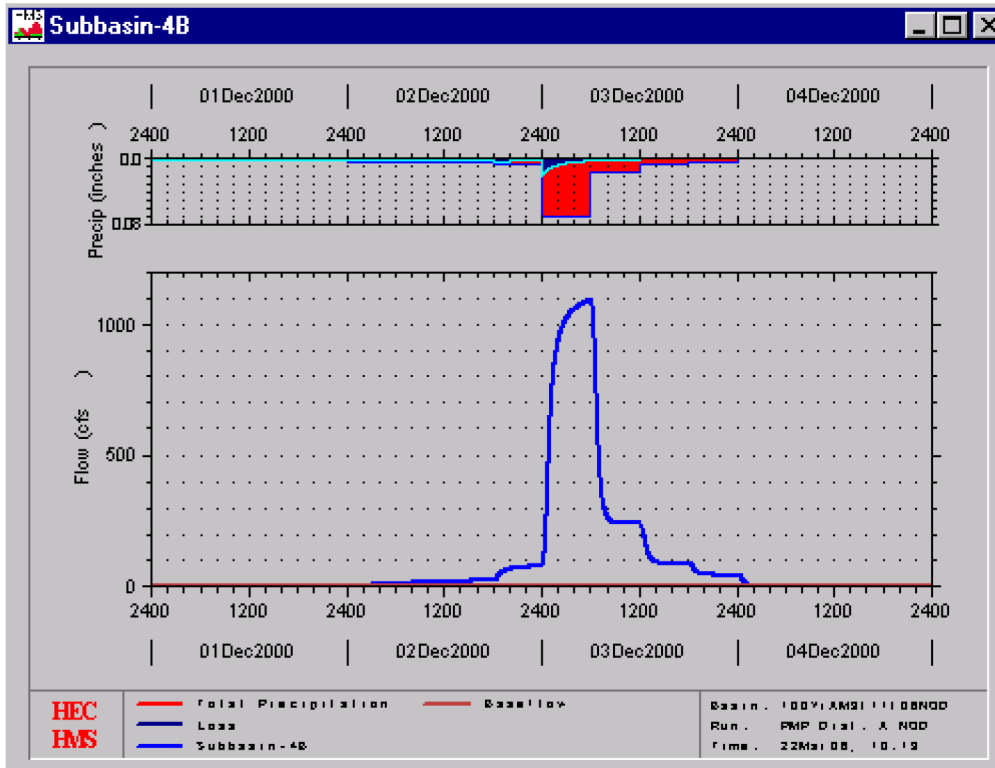
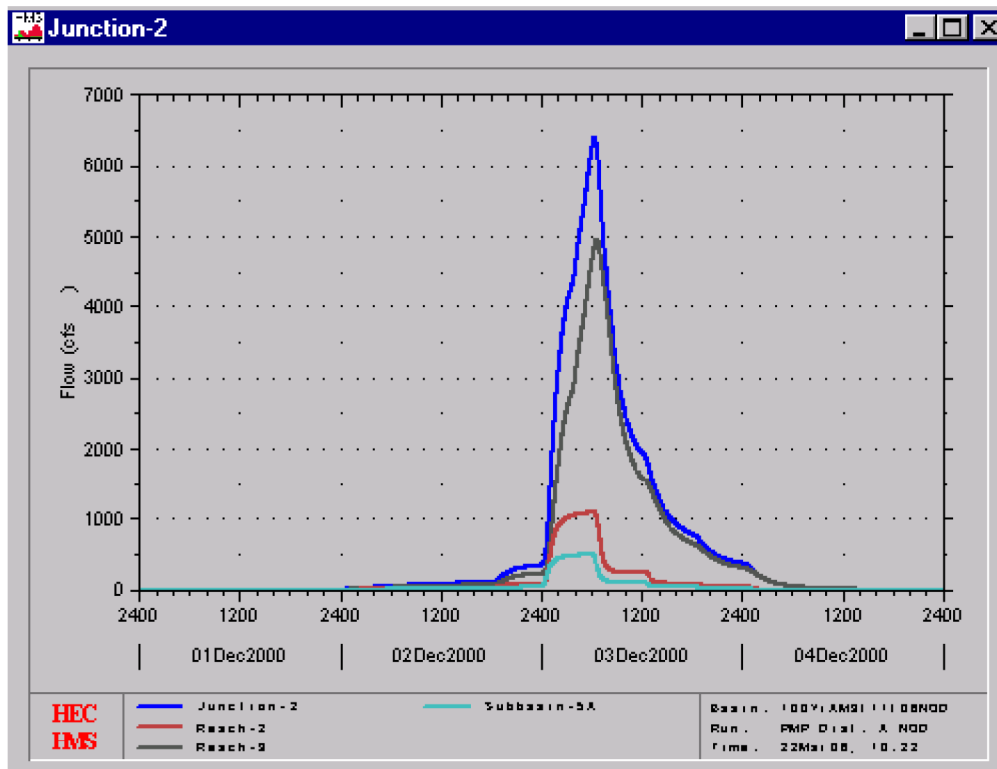
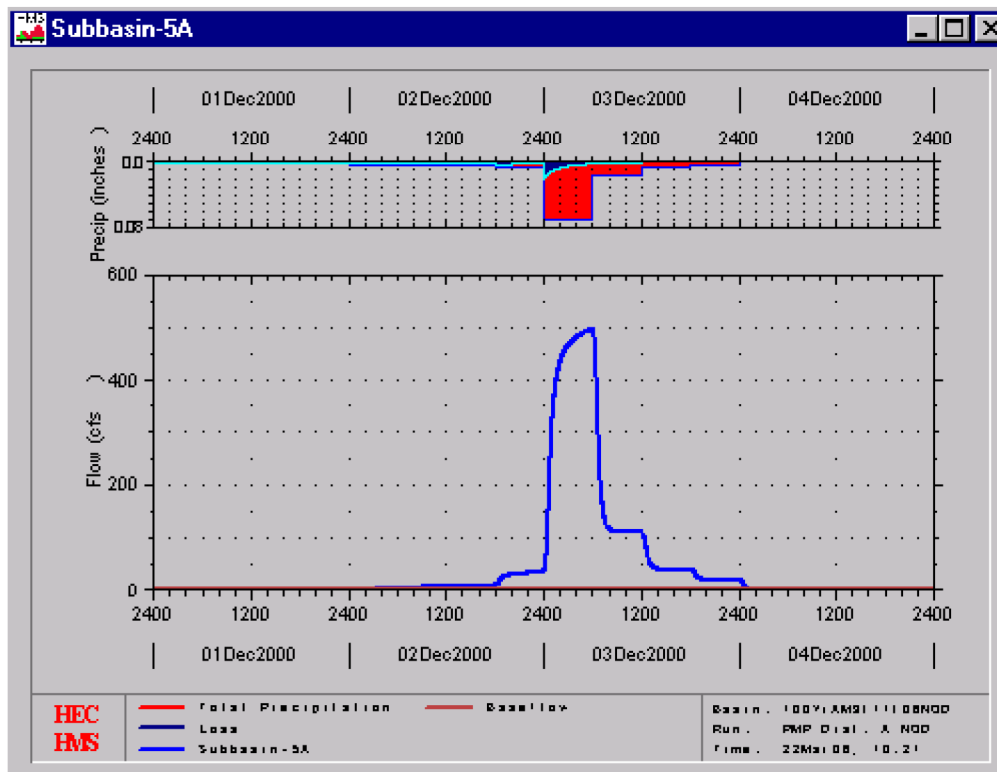


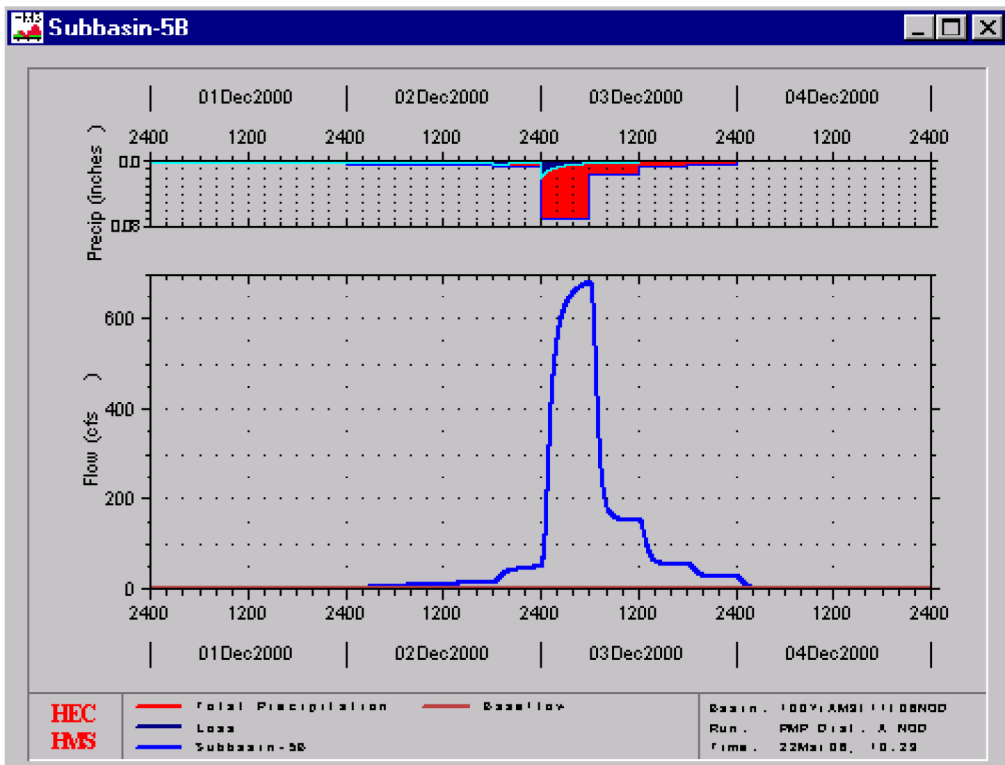
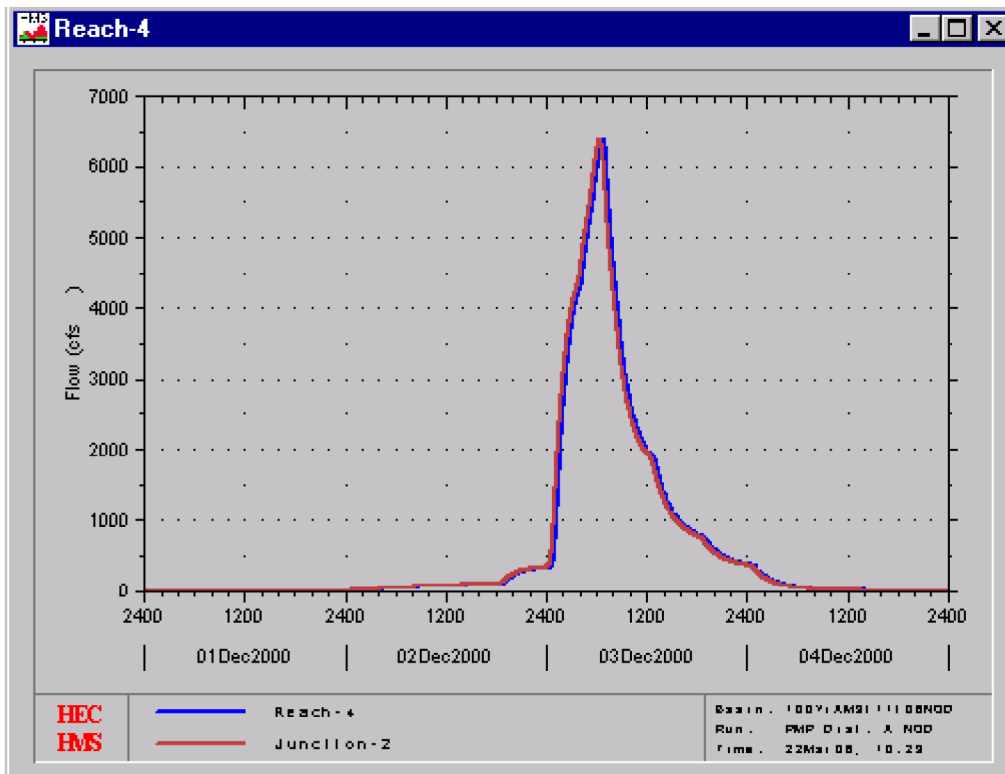
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



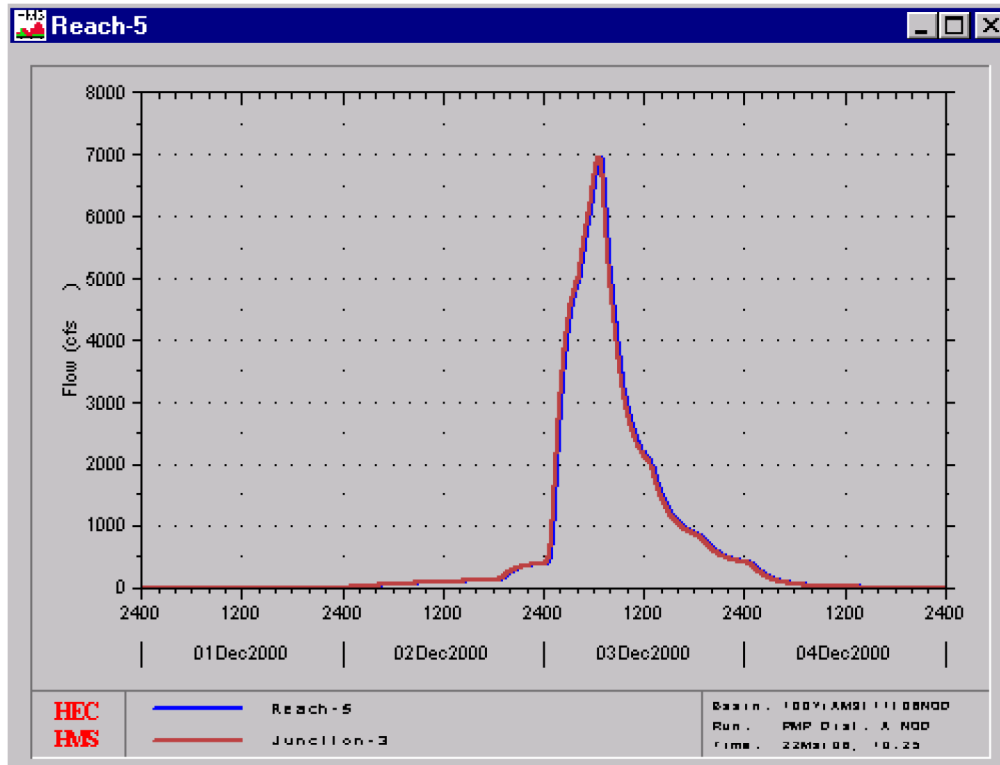
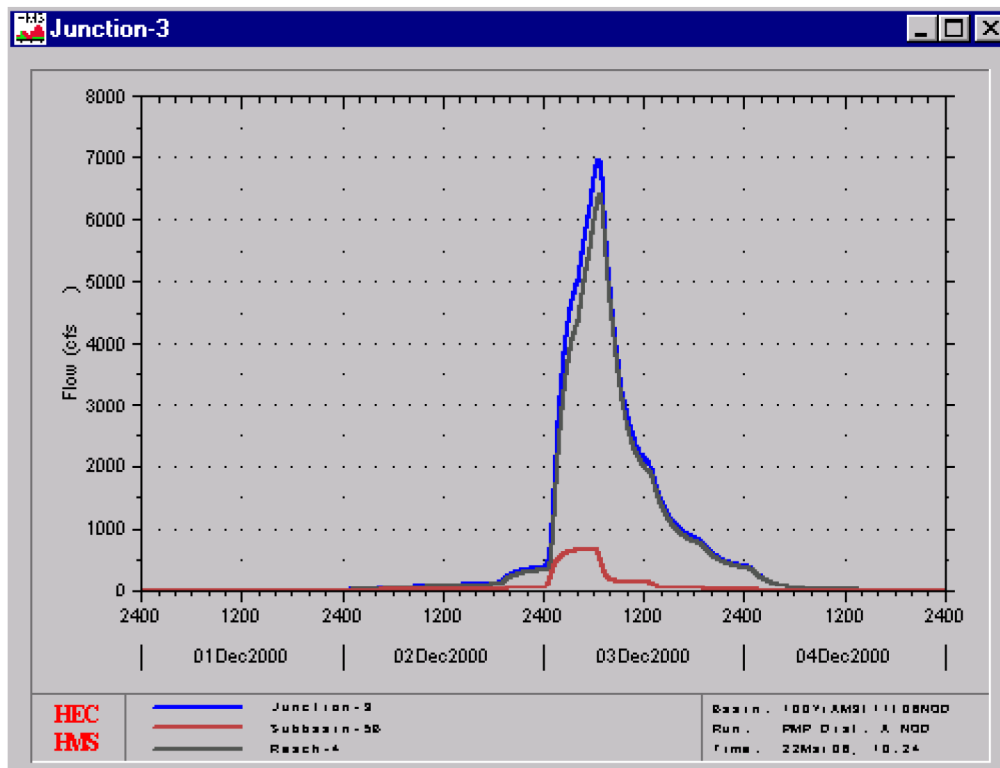
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



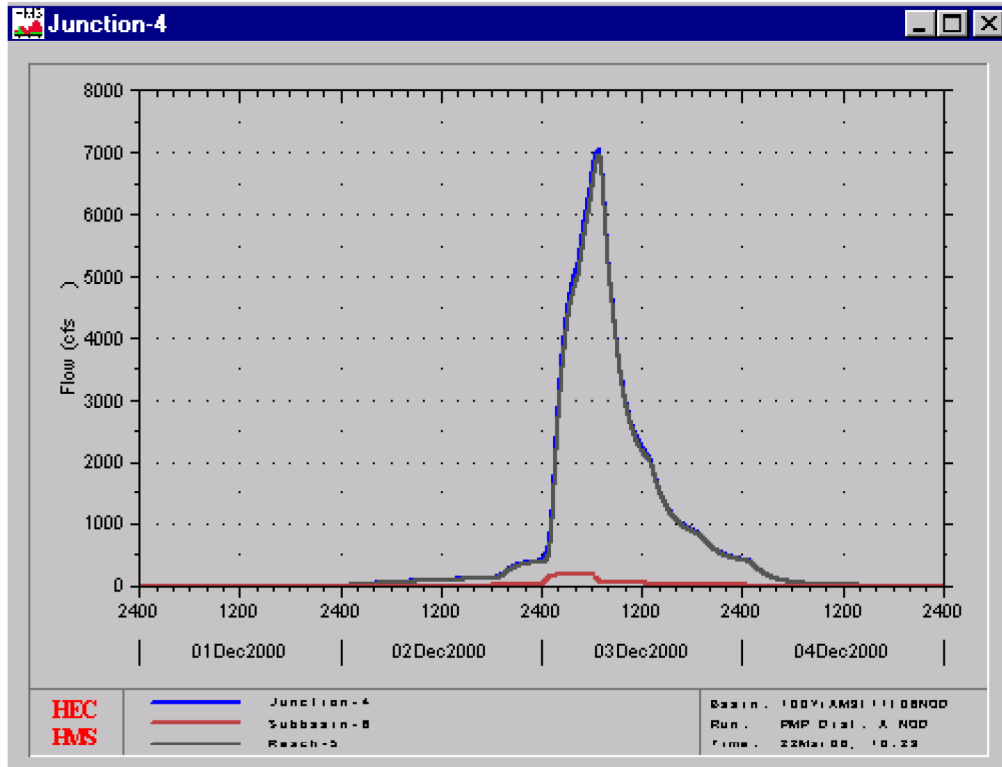
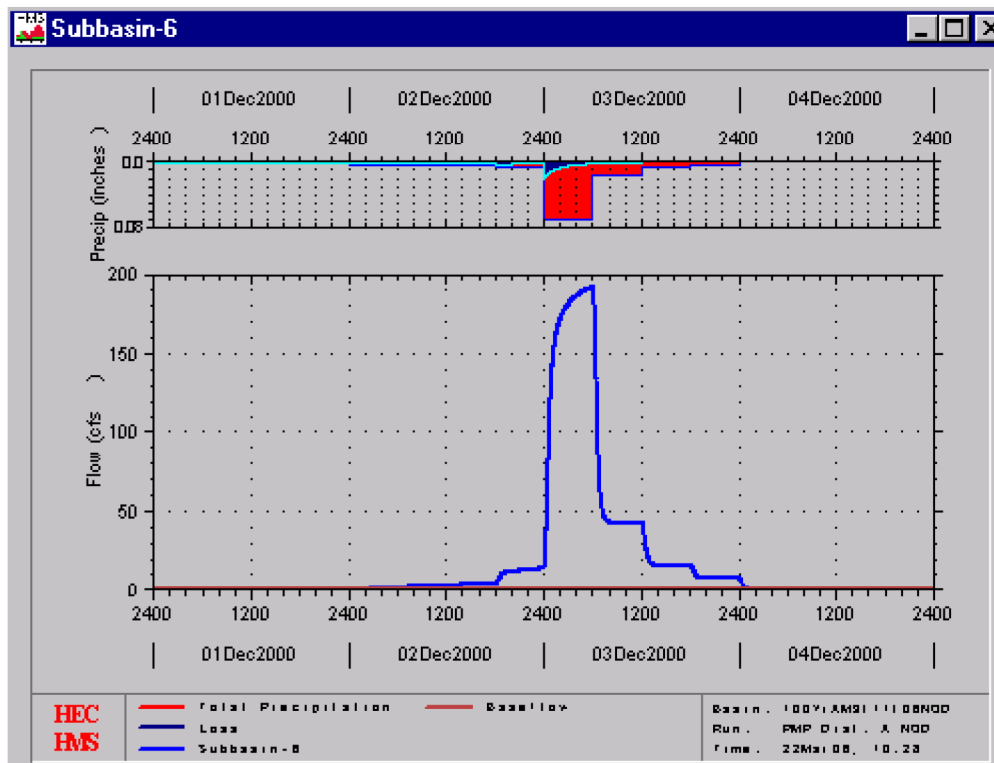
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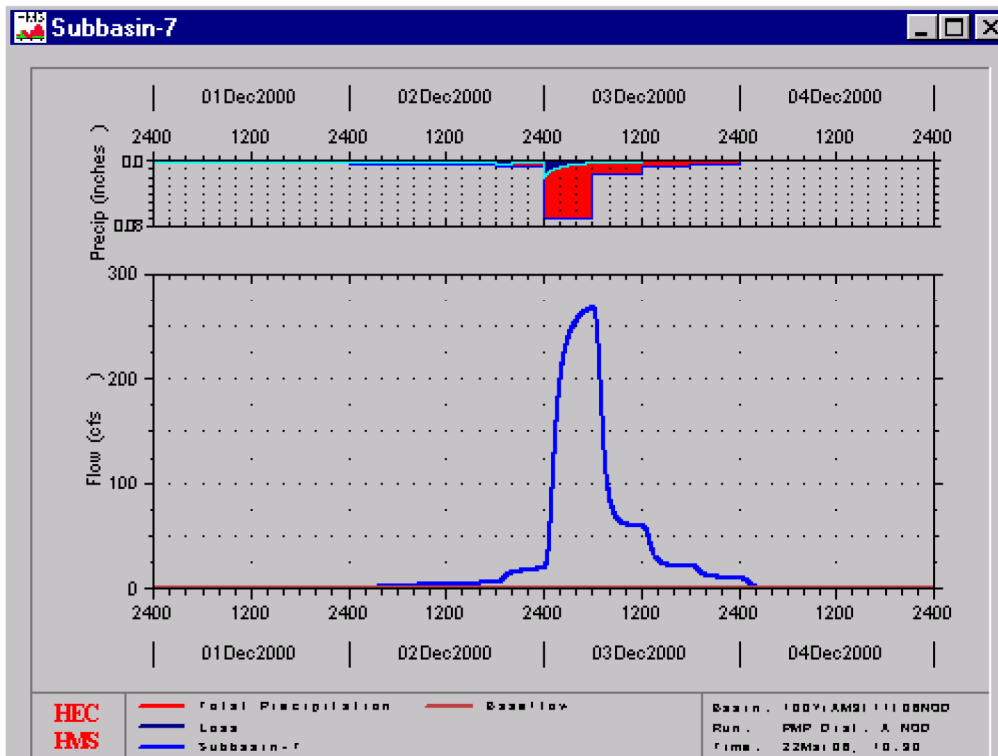
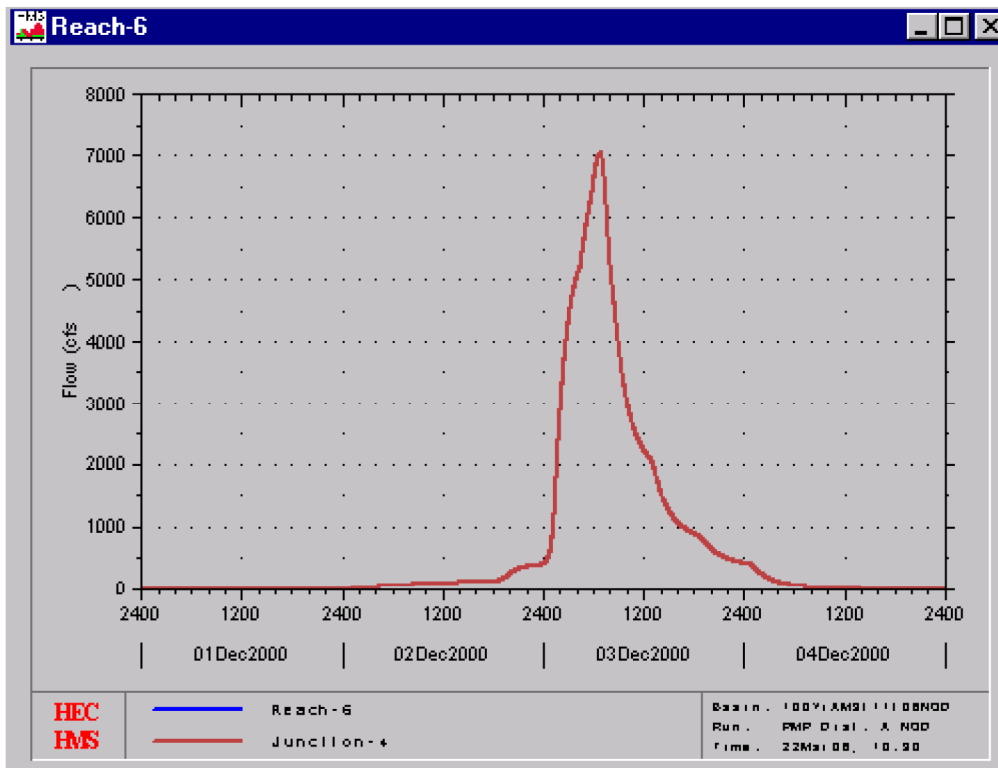
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



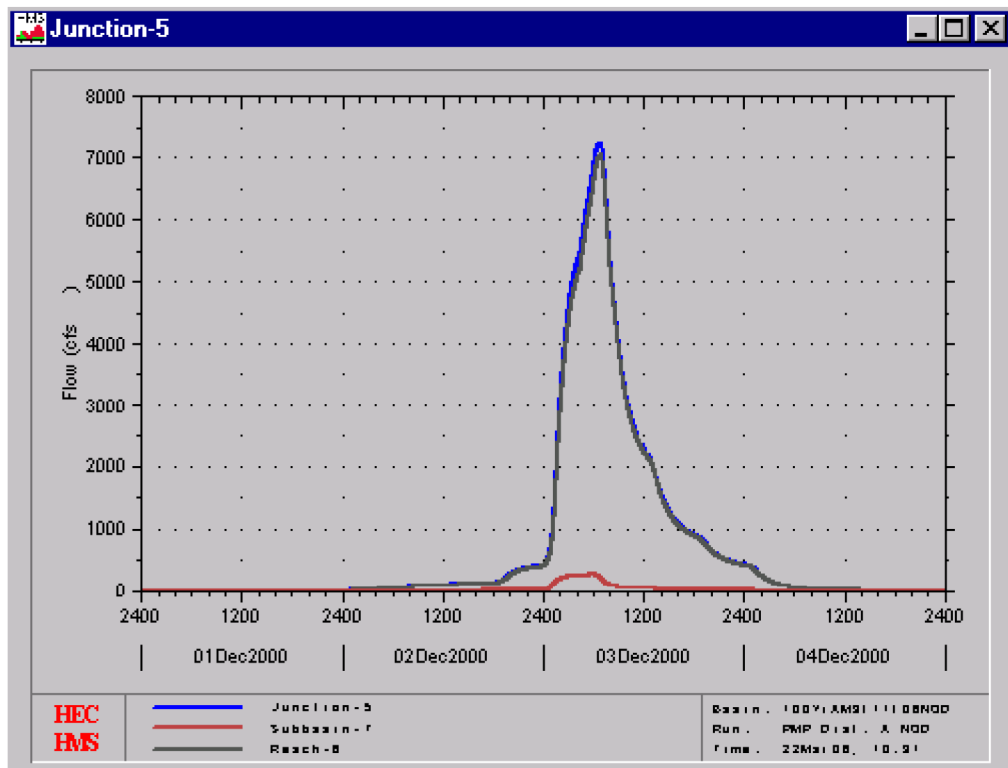
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



APPENDIX K

HEC-RAS MODEL FOR THE CALCULATION OF THE DEVELOPED LOW LEVEL & BYPRODUCT FACILITY 500-YEAR AND PMP WATER SURFACE PROFILES

HEC-RAS Plan: 3-21-06 River: Ditch A Reach: 5

Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	Max Chl Dpth (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chl (ft/s)	Sta W.S. Lft (ft)	Sta W.S. Rgt (ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
5	12674	533.00	3477.00	3478.39	3478.01	1.39	3478.47	0.003052	2.31	352.55	659.70	237.71	307.15	0.43
5	12674	1768.00	3477.00	3479.22	3478.65	2.22	3479.41	0.003111	3.61	294.31	712.12	539.30	417.81	0.48
5	11337	533.00	3469.00	3470.41	3470.38	1.41	3470.80	0.014358	5.05	428.27	558.33	107.68	132.06	0.94
5	11337	1768.00	3469.00	3471.40	3471.40	2.40	3472.19	0.011380	7.37	404.87	578.73	259.90	173.86	0.94
5	10937	533.00	3464.00	3465.81	3465.81	1.81	3466.09	0.009685	4.29	471.88	602.60	124.37	136.72	0.77
5	10937	1768.00	3464.00	3466.73	3466.67	2.73	3467.39	0.011877	6.58	438.17	635.83	274.87	197.68	0.93
6	10288	533.00	3456.00	3456.93	3456.93	0.93	3457.20	0.020830	4.16	402.40	651.88	127.98	249.47	1.02
5	10288	1768.00	3456.00	3457.50	3457.50	1.50	3457.89	0.018192	5.03	346.61	813.23	351.56	466.63	1.02
5	9690	828.00	3450.00	3451.67	3451.29	1.67	3451.79	0.004773	2.79	422.55	772.35	296.91	349.80	0.53
5	9690	4796.00	3450.00	3453.03	3452.60	3.03	3453.47	0.005600	5.43	288.83	849.46	827.89	560.63	0.67
5	9009	828.00	3445.00	3446.63	3446.51	1.63	3446.88	0.012031	4.04	439.59	717.03	205.08	277.44	0.83
5	9009	4796.00	3445.00	3448.10	3447.89	3.10	3448.61	0.009426	5.69	318.76	897.88	843.12	579.12	0.82
5	8130	828.00	3440.00	3441.76	3441.28	1.76	3441.85	0.003284	2.41	447.23	829.30	344.10	382.07	0.45
5	8130	4796.00	3440.00	3443.22	3442.55	3.22	3443.56	0.003805	4.75	348.41	939.02	1064.89	590.61	0.56
5	7717	828.00	3437.80	3438.80	3438.80	1.00	3439.11	0.019279	4.48	323.16	627.28	184.68	304.12	1.01
5	7717	4796.00	3437.80	3440.06	3440.06	2.26	3440.76	0.014557	6.74	228.27	750.71	711.27	521.44	1.01
5	7253	872.00	3435.00	3436.44	3435.98	1.44	3436.49	0.001970	1.91	401.47	927.68	461.54	526.19	0.35
5	7253	4942.00	3435.00	3437.75	3436.98	2.75	3438.01	0.003019	4.24	334.08	992.43	1236.58	658.36	0.50
5	6343	1470.00	3430.00	3430.74	3430.74	0.74	3431.06	0.018791	4.51	773.36	1296.23	326.19	522.87	1.01
5	6343	6399.00	3430.00	3431.80	3431.80	1.80	3432.49	0.013020	6.68	677.13	1465.22	974.68	788.09	0.97
5	5383	1470.00	3425.00	3426.38	3425.82	1.38	3426.44	0.001775	1.93	705.25	1552.75	775.71	847.50	0.34
5	5383	6399.00	3425.00	3427.59	3426.70	2.59	3427.77	0.002056	3.49	589.02	1795.50	2019.08	1208.47	0.41
5	4221	1668.00	3420.00	3421.05	3421.05	1.05	3421.40	0.017942	4.76	533.64	1044.80	350.94	511.16	1.00
5	4221	6955.00	3420.00	3422.09	3422.09	2.09	3422.69	0.013828	6.35	318.64	1328.07	1150.24	1009.43	0.98
5	3489	1668.00	3416.00	3417.23	3416.72	2.23	3417.29	0.002260	2.12	-117.56	884.26	858.15	1001.82	0.38
5	3489	6955.00	3416.00	3418.33	3417.53	3.33	3418.52	0.002576	3.58	-133.93	942.79	1993.06	1076.73	0.45
5	2969	1668.00	3413.80	3414.56	3414.56	0.76	3414.87	0.018785	4.28	177.66	805.71	378.40	628.05	0.99
5	2969	6955.00	3413.80	3415.53	3415.49	1.73	3416.13	0.012623	6.56	3.99	882.77	1132.34	876.78	0.95
5	2774	1668.00	3409.00	3414.04	3412.71	5.04	3414.08	0.000314	2.23	-406.27	642.67	1383.82	1048.95	0.18
5	2774	6955.00	3409.00	3415.00	3413.39	6.00	3415.18	0.001208	4.96	-437.07	683.17	2420.78	1120.24	0.37
9	2773	Culvert												
5	2734	1668.00	3408.90	3412.71	3412.71	3.81	3412.85	0.001240	3.58	83.74	515.65	665.51	431.91	0.34
5	2734	6955.00	3408.90	3413.55	3413.51	4.65	3414.43	0.006464	9.48	39.37	549.66	1061.05	510.29	0.81
5	1888	1692.00	3408.00	3409.29	3408.77	1.29	3409.38	0.002748	2.24	188.99	1004.86	754.95	815.87	0.41
5	1888	7027.00	3408.00	3410.48		2.48	3410.67	0.002815	3.54	-217.69	1201.18	2061.58	1416.87	0.46
5	1060	1767.00	3402.70	3404.18	3404.18	1.48	3404.58	0.017389	5.08	661.17	1100.39	347.74	439.22	1.01
5	1060	7252.00	3402.70	3405.41	3405.41	2.71	3406.07	0.014925	6.55	481.23	1334.86	1107.97	853.63	1.01

HECRASPMPNOD

HEC-RAS Version 3.0.1 Mar 2001
 U.S. Army Corp of Engineers
 Hydrologic Engineering Center
 609 Second Street, Suite D
 Davis, California 95616-4687
 (916) 756-1104

```

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PROJECT DATA

Project Title: WCS
 Project File : FloodPlain.prj
 Run Date and Time: 3/21/06 5:31:43 PM

Project in English units

PLAN DATA

Plan Title: Plan 33
 Plan File : D:\program files\WCS\FloodPlain.p33

Geometry Title: PMPl-20-04SecRemoved
 Geometry File : D:\program files\WCS\FloodPlain.g04

Flow Title : pmp NOD
 Flow File : D:\program files\WCS\FloodPlain.f25

Plan Summary Information:

Number of: Cross Sections =	18	Multitple Openings =	0
Culverts =	1	Inline Weirs =	0
Bridges =	0		

Computational Information

Water surface calculation tolerance =	0.01
Critical depth calculaton tolerance =	0.01
Maximum number of iterations =	20
Maximum difference tolerance =	0.3
Flow tolerance factor =	0.001

Computation Options

Critical depth computed only where necessary
 Conveyance Calculation Method: At breaks in n values only
 Friction Slope Method: Average Conveyance
 Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: pmp NOD
 Flow File : D:\program files\WCS\FloodPlain.f25

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Flow Data (cfs)

River	Reach	RS	PF 2	PF 3
Ditch A	5	12674	533	1768
Ditch A	5	9690	828	4796
Ditch A	5	7253	872	4942
Ditch A	5	6343	1470	6399
Ditch A	5	4221	1668	6955
Ditch A	5	1888	1692	7027
Ditch A	5	1060	1767	7252

Boundary Conditions

River stream	Reach	Profile	Upstream	Down
Ditch A ritical	5	PF 2	Critical	Cr

GEOMETRY DATA

Geometry Title: PMP1-20-04SecRemoved
 Geometry File : D:\program files\WCS\FloodPlain.g04

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 12674

INPUT

Description: Sta. 12674

Station Elevation Data		num= 6	
Sta	Elev	Sta	Elev
100	3482	380	3478
964	3482	560	3477
		635	3478
		761	3480

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
100	.033	380	.033
		635	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	380	635		1206	1337	1433	.1
							.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3478.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3478.39	Reach Len. (ft)	1206.00	1337.00	1433.00
Crit W.S. (ft)	3478.01	Flow Area (sq ft)	5.38	227.48	4.84
E.G. Slope (ft/ft)	0.003052	Area (sq ft)	5.38	227.48	4.84
Q Total (cfs)	533.00	Flow (cfs)	4.52	524.42	4.07
Top Width (ft)	307.15	Top Width (ft)	27.45	255.00	24.70

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Vel Total (ft/s)	2.24	Avg. Vel. (ft/s)	0.84	2.31	0.84
Max Chl Dpth (ft)	1.39	Hydr. Depth (ft)	0.20	0.89	0.20
Conv. Total (cfs)	9647.4	Conv. (cfs)	81.8	9492.0	73.6
Length Wtd. (ft)	1336.69	Wetted Per. (ft)	27.45	255.01	24.70
Min Ch El (ft)	3477.00	Shear (lb/sq ft)	0.04	0.17	0.04
Alpha	1.04	Stream Power (lb/ft s)	0.03	0.39	0.03
Frctn Loss (ft)	7.65	Cum Volume (acre-ft)	14.80	92.35	2.28
C & E Loss (ft)	0.03	Cum SA (acres)	19.23	106.63	3.81

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3479.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3479.22	Reach Len. (ft)	1206.00	1337.00	1433.00
Crit W.S. (ft)	3478.65	Flow Area (sq ft)	52.45	439.65	47.20
E.G. Slope (ft/ft)	0.003111	Area (sq ft)	52.45	439.65	47.20
Q Total (cfs)	1768.00	Flow (cfs)	94.95	1587.60	85.45
Top Width (ft)	417.81	Top Width (ft)	85.69	255.00	77.12
Vel Total (ft/s)	3.28	Avg. Vel. (ft/s)	1.81	3.61	1.81
Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)	0.61	1.72	0.61
Conv. Total (cfs)	31697.9	Conv. (cfs)	1702.3	28463.6	1532.0
Length Wtd. (ft)	1334.91	Wetted Per. (ft)	85.70	255.01	77.13
Min Ch El (ft)	3477.00	Shear (lb/sq ft)	0.12	0.33	0.12
Alpha	1.12	Stream Power (lb/ft s)	0.22	1.21	0.22
Frctn Loss (ft)	7.16	Cum Volume (acre-ft)	43.67	236.67	12.77
C & E Loss (ft)	0.06	Cum SA (acres)	37.42	137.75	18.53

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

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additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 11337

INPUT

Description: Sta. 11337

Station Elevation Data		num= 8							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3477	315	3474	392	3472	435	3470	499	3469
550	3470	591	3472	694	3474				

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	435	.033	550	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	435	550		545 400	332	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3470.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3470.41	Reach Len. (ft)	545.00	400.00	332.00
Crit W.S. (ft)	3470.38	Flow Area (sq ft)	1.77	104.22	1.69
E.G. Slope (ft/ft)	0.014358	Area (sq ft)	1.77	104.22	1.69
Q Total (cfs)	533.00	Flow (cfs)	3.31	526.54	3.15
Top Width (ft)	132.06	Top Width (ft)	8.73	115.00	8.33
Vel Total (ft/s)	4.95	Avg. Vel. (ft/s)	1.86	5.05	1.86
Max Chl Dpth (ft)	1.41	Hydr. Depth (ft)	0.20	0.91	0.20
Conv. Total (cfs)	4448.1	Conv. (cfs)	27.6	4394.2	26.3
Length Wtd. (ft)	400.25	Wetted Per. (ft)	8.74	115.02	8.34
Min Ch El (ft)	3469.00	Shear (lb/sq ft)	0.18	0.81	0.18
Alpha	1.03	Stream Power (lb/ft s)	0.34	4.10	0.34
Frctn Loss (ft)	4.67	Cum Volume (acre-ft)	14.70	87.26	2.17
C & E Loss (ft)	0.03	Cum SA (acres)	18.73	100.95	3.27

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

HECRASPMFNOD

CROSS SECTION OUTPUT Profile #PF 3

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	3472.19				
Vel Head (ft)	0.79	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3471.40	Reach Len. (ft)	545.00	400.00	332.00
Crit W.S. (ft)	3471.40	Flow Area (sq ft)	21.11	218.66	20.13
E.G. Slope (ft/ft)	0.011380	Area (sq ft)	21.11	218.66	20.13
Q Total (cfs)	1768.00	Flow (cfs)	79.94	1611.84	76.22
Top Width (ft)	173.86	Top Width (ft)	30.13	115.00	28.73
Vel Total (ft/s)	6.80	Avg. Vel. (ft/s)	3.79	7.37	3.79
Max Chl Dpth (ft)	2.40	Hydr. Depth (ft)	0.70	1.90	0.70
Conv. Total (cfs)	16573.1	Conv. (cfs)	749.4	15109.3	714.5
Length Wtd. (ft)	401.35	Wetted Per. (ft)	30.16	115.02	28.76
Min Ch El (ft)	3469.00	Shear (lb/sq ft)	0.50	1.35	0.50
Alpha	1.10	Stream Power (lb/ft s)	1.88	9.96	1.88
Frctn Loss (ft)	4.67	Cum Volume (acre-ft)	42.65	226.56	11.66
C & E Loss (ft)	0.04	Cum SA (acres)	35.82	132.07	16.79

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program selected the water surface that had the least amount of error between computed and assumed values.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 10937

INPUT

Description: Sta. 10937

Station Elevation Data				num=	9				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3470	351	3468	428	3467	465	3466	536	3464
543	3464	609	3466	683	3468	811	3472		

Manning's n Values				num=	3		
Sta	n Val	Sta	n Val	Sta	n Val		
100	.033	428	.033	609	.033		

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Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
428	609	729	649	445	.1	.3	

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3466.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.		0.033	
W.S. Elev (ft)	3465.81	Reach Len. (ft)	729.00	649.00	445.00
Crit W.S. (ft)	3465.61	Flow Area (sq ft)		124.37	
E.G. Slope (ft/ft)	0.009685	Area (sq ft)		124.37	
Q Total (cfs)	533.00	Flow (cfs)		533.00	
Top Width (ft)	130.72	Top Width (ft)		130.72	
Vel Total (ft/s)	4.29	Avg. Vel. (ft/s)		4.29	
Max Chl Dpth (ft)	1.81	Hydr. Depth (ft)		0.95	
Conv. Total (cfs)	5416.0	Conv. (cfs)		5416.0	
Length Wtd. (ft)	649.00	Wetted Per. (ft)		130.77	
Min Ch El (ft)	3464.00	Shear (lb/sq ft)		0.58	
Alpha	1.00	Stream Power (lb/ft s)		2.46	
Frctn Loss (ft)	8.89	Cum Volume (acre-ft)	14.69	86.21	2.16
C & E Loss (ft)	0.00	Cum SA (acres)	18.67	99.82	3.23

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3467.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.		0.033	0.033
W.S. Elev (ft)	3466.73	Reach Len. (ft)	729.00	649.00	445.00
Crit W.S. (ft)	3466.67	Flow Area (sq ft)		265.14	9.73
E.G. Slope (ft/ft)	0.011877	Area (sq ft)		265.14	9.73
Q Total (cfs)	1768.00	Flow (cfs)		1743.74	24.26
Top Width (ft)	197.66	Top Width (ft)		170.83	26.83
Vel Total (ft/s)	6.43	Avg. Vel. (ft/s)		6.58	2.49

		HECRASPMPNOD			
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	1.55	0.36	
Conv. Total (cfs)	16222.6	Conv. (cfs)	16000.0	222.6	
Length Wtd. (ft)	647.60	Wetted Per. (ft)	170.90	26.84	
Min Ch El (ft)	3464.00	Shear (lb/sq ft)	1.15	0.27	
Alpha	1.03	Stream Power (lb/ft s)	7.57	0.67	
Frctn Loss (ft)	9.41	Cum Volume (acre-ft)	42.52	224.34	11.55
C & E Loss (ft)	0.08	Cum SA (acres)	35.63	130.76	16.58

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 10288

INPUT

Description: Sta. 10288

Station Elevation Data		num=	12						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3464	177	3462	238	3460	298	3458	493	3456
519	3456	662	3457	778	3457.1	857	3458	903	3460
947	3462	989	3464						

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	298	.033	857	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	298	857		552 598	633	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3457.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.033	
W.S. Elev (ft)	3456.93	Reach Len. (ft)	552.00	598.00	633.00
Crit W.S. (ft)	3456.93	Flow Area (sq ft)		127.98	
E.G. Slope (ft/ft)	0.020830	Area (sq ft)		127.98	
Q Total (cfs)	533.00	Flow (cfs)		533.00	
Top Width (ft)	249.47	Top Width (ft)		249.47	
Vel Total (ft/s)	4.16	Avg. Vel. (ft/s)		4.16	
Max Chl Dpth (ft)	0.93	Hydr. Depth (ft)		0.51	
Conv. Total (cfs)	3693.1	Conv. (cfs)		3693.1	
Length Wtd. (ft)	598.00	Wetted Per. (ft)		249.48	
Min Ch El (ft)	3456.00	Shear (lb/sq ft)		0.67	

HECRASPMPNOD

Alpha	1.00	Stream Power (lb/ft s)	2.78		
Frctn Loss (ft)	4.51	Cum Volume (acre-ft)	14.69	84.33	2.16
C & E Loss (ft)	0.04	Cum SA (acres)	18.67	96.99	3.23

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3457.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.		0.033	
W.S. Elev (ft)	3457.50	Reach Len. (ft)	552.00	598.00	633.00
Crit W.S. (ft)	3457.50	Flow Area (sq ft)		351.58	
E.G. Slope (ft/ft)	0.018192	Area (sq ft)		351.58	
Q Total (cfs)	1768.00	Flow (cfs)		1768.00	
Top Width (ft)	466.63	Top Width (ft)		466.63	
Vel Total (ft/s)	5.03	Avg. Vel. (ft/s)		5.03	
Max Chl Dpth (ft)	1.50	Hydr. Depth (ft)		0.75	
Conv. Total (cfs)	13108.2	Conv. (cfs)		13108.2	
Length Wtd. (ft)	597.58	Wetted Per. (ft)		466.64	
Min Ch El (ft)	3456.00	Shear (lb/sq ft)		0.86	
Alpha	1.00	Stream Power (lb/ft s)		4.30	
Frctn Loss (ft)	4.32	Cum Volume (acre-ft)	42.52	219.75	11.50
C & E Loss (ft)	0.01	Cum SA (acres)	35.63	126.01	16.44

Warning: The energy equation could not be balanced within the specified number of iterations.
The

HECRASMPNOD

program selected the water surface that had the least amount of error between computed and assumed values.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 9690

INPUT

Description: Sta. 9690

Station Elevation Data				num=	8				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3454.5	202	3454	381	3452	632	3450	638	3450
799	3452	897	3454	1010	3458				

Manning's n Values				num=	3		
Sta	n Val	Sta	n Val	Sta	n Val		
100	.033	381	.033	799	.033		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	381	799		639 681	658	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3451.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.033	
W.S. Elev (ft)	3451.67	Reach Len. (ft)	639.00	681.00	658.00
Crit W.S. (ft)	3451.29	Flow Area (sq ft)		296.91	
E.G. Slope (ft/ft)	0.004773	Area (sq ft)		296.91	
Q Total (cfs)	828.00	Flow (cfs)		828.00	
Top Width (ft)	349.80	Top Width (ft)		349.80	
Vel Total (ft/s)	2.79	Avg. Vel. (ft/s)		2.79	
Max Chl Dpth (ft)	1.67	Hydr. Depth (ft)		0.85	
Conv. Total (cfs)	11984.5	Conv. (cfs)		11984.5	
Length Wtd. (ft)	681.00	Wetted Per. (ft)		349.82	
Min Ch El (ft)	3450.00	Shear (lb/sq ft)		0.25	
Alpha	1.00	Stream Power (lb/ft s)		0.71	
Frctn Loss (ft)	4.89	Cum Volume (acre-ft)	14.69	81.41	2.16
C & E Loss (ft)	0.01	Cum SA (acres)	18.67	92.87	3.23

HECRASPMPNOD

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3453.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3453.03	Reach Len. (ft)	639.00	681.00	658.00
Crit W.S. (ft)	3452.60	Flow Area (sq ft)	47.46	854.45	25.98
E.G. Slope (ft/ft)	0.005600	Area (sq ft)	47.46	854.45	25.98
Q Total (cfs)	4796.00	Flow (cfs)	102.72	4637.05	56.23
Top Width (ft)	560.63	Top Width (ft)	92.17	418.00	50.46
Vel Total (ft/s)	5.17	Avg. Vel. (ft/s)	2.16	5.43	2.16
Max Chl Dpth (ft)	3.03	Hydr. Depth (ft)	0.51	2.04	0.51
Conv. Total (cfs)	64091.1	Conv. (cfs)	1372.7	61967.1	751.4
Length Wtd. (ft)	680.41	Wetted Per. (ft)	92.17	418.02	50.47
Min Ch El (ft)	3450.00	Shear (lb/sq ft)	0.18	0.71	0.18
Alpha	1.07	Stream Power (lb/ft s)	0.39	3.88	0.39
Frctn Loss (ft)	4.86	Cum Volume (acre-ft)	42.22	211.47	11.31
C & E Loss (ft)	0.01	Cum SA (acres)	35.05	119.94	16.08

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 9009

INPUT

Description: Sta. 9009

Station Elevation Data		num= 9							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3452	203	3450	325	3448	492	3446	596	3445
637	3446	892	3448	1007	3450	1124	3452		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	325	.033	892	.033

HECRASPMNOD

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	325	892		898 879	794	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3446.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.		0.033	
W.S. Elev (ft)	3446.63	Reach Len. (ft)	898.00	879.00	794.00
Crit W.S. (ft)	3446.51	Flow Area (sq ft)		205.08	
E.G. Slope (ft/ft)	0.012031	Area (sq ft)		205.08	
Q Total (cfs)	828.00	Flow (cfs)		828.00	
Top Width (ft)	277.44	Top Width (ft)		277.44	
Vel Total (ft/s)	4.04	Avg. Vel. (ft/s)		4.04	
Max Chl Dpth (ft)	1.63	Hydr. Depth (ft)		0.74	
Conv. Total (cfs)	7548.9	Conv. (cfs)		7548.9	
Length Wtd. (ft)	879.00	Wetted Per. (ft)		277.46	
Min Ch El (ft)	3445.00	Shear (lb/sq ft)		0.56	
Alpha	1.00	Stream Power (lb/ft s)		2.24	
Frctn Loss (ft)	4.98	Cum Volume (acre-ft)	14.69	77.49	2.16
C & E Loss (ft)	0.05	Cum SA (acres)	18.67	87.97	3.23

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3448.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3448.10	Reach Len. (ft)	898.00	879.00	794.00
Crit W S. (ft)	3447.89	Flow Area (sq ft)	0.32	842.50	0.30
E.G. Slope (ft/ft)	0.009426	Area (sq ft)	0.32	842.50	0.30
Q Total (cfs)	4796.00	Flow (cfs)	0.19	4795.63	0.18
Top Width (ft)	579.12	Top Width (ft)	6.24	567.00	5.88
Vel Total (ft/s)	5.69	Avg. Vel. (ft/s)	0.60	5.69	0.60

HECRASPMNOD					
Max Chl Dpth (ft)	3.10	Hydr. Depth (ft)	0.05	1.49	0.05
Conv. Total (cfs)	49399.8	Conv. (cfs)	2.0	49395.9	1.9
Length Wtd. (ft)	878.23	Wetted Per. (ft)	6.24	567.04	5.88
Min Ch El (ft)	3445.00	Shear (lb/sq ft)	0.03	0.87	0.03
Alpha	1.00	Stream Power (lb/ft s)	0.02	4.98	0.02
Frctn Loss (ft)	5.00	Cum Volume (acre-ft)	41.87	198.21	11.11
C & E Loss (ft)	0.05	Cum SA (acres)	34.32	112.24	15.65

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 8130

INPUT

Description: Sta. 8130

Station Elevation Data				num=	8				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3448	303	3444	419	3442	654	3440	663	3440
852	3442	995	3444	1104	3446				

Manning's n Values				num=	3				
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
100	.033	419	.033	852	.033				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	419	852		399 413	456	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3441.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.033	
W.S. Elev (ft)	3441.76	Reach Len. (ft)	399.00	413.00	456.00
Crit W.S. (ft)	3441.26	Flow Area (sq ft)		344.10	
E.G. Slope (ft/ft)	0.003284	Area (sq ft)		344.10	
Q Total (cfs)	828.00	Flow (cfs)		828.00	
Top Width (ft)	382.07	Top Width (ft)		382.07	
Vel Total (ft/s)	2.41	Avg. Vel. (ft/s)		2.41	
Max Chl Dpth (ft)	1.76	Hydr. Depth (ft)		0.90	
Conv. Total (cfs)	14449.0	Conv. (cfs)		14449.0	
Length Wtd. (ft)	413.00	Wetted Per. (ft)		382.09	

HECRASEMPPNOD

Min Ch El (ft)	3440.00	Shear (lb/sq ft)	0.18		
Alpha	1.00	Stream Power (lb/ft s)	0.44		
Frctn Loss (ft)	2.72	Cum Volume (acre-ft)	14.69	71.94	2.16
C & E Loss (ft)	0.02	Cum SA (acres)	18.67	81.32	3.23

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3443.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3443.22	Reach Len. (ft)	399.00	413.00	456.00
Crit W.S. (ft)	3442.55	Flow Area (sq ft)	42.95	968.98	52.95
E.G. Slope (ft/ft)	0.003805	Area (sq ft)	42.95	968.98	52.95
Q Total (cfs)	4796.00	Flow (cfs)	85.67	4604.71	105.61
Top Width (ft)	590.61	Top Width (ft)	70.59	433.00	87.02
Vel Total (ft/s)	4.50	Avg. Vel. (ft/s)	1.99	4.75	1.99
Max Chl Dpth (ft)	3.22	Hydr. Depth (ft)	0.61	2.24	0.61
Conv. Total (cfs)	77745.8	Conv. (cfs)	1388.8	74644.9	1712.1
Length Wtd. (ft)	413.35	Wetted Per. (ft)	70.60	433.02	87.03
Min Ch El (ft)	3440.00	Shear (lb/sq ft)	0.14	0.53	0.14
Alpha	1.08	Stream Power (lb/ft s)	0.29	2.53	0.29
Frctn Loss (ft)	2.75	Cum Volume (acre-ft)	41.42	179.93	10.63
C & E Loss (ft)	0.04	Cum SA (acres)	33.53	102.15	14.81

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 7717

HECRASMPMNOD

INPUT

Description: Sta 7717

Station Elevation Data		num=		8					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3442	233	3440	383	3438	492	3437.8	510	3438
657	3439	747	3440	879	3442				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	233	.033	747	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	233	747		444 464	510	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3439.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.		0.033	
W.S. Elev (ft)	3438.80	Reach Len. (ft)	444.00	464.00	510.00
Crit W.S. (ft)	3438.80	Flow Area (sq ft)		184.68	
E.G. Slope (ft/ft)	0.019279	Area (sq ft)		184.68	
Q Total (cfs)	828.00	Flow (cfs)		828.00	
Top Width (ft)	304.12	Top Width (ft)		304.12	
Vel Total (ft/s)	4.48	Avg. Vel. (ft/s)		4.48	
Max Chl Dpth (ft)	1.00	Hydr. Depth (ft)		0.61	
Conv. Total (cfs)	5963.3	Conv. (cfs)		5963.3	
Length Wtd. (ft)	464.05	Wetted Per. (ft)		304.13	
Min Ch El (ft)	3437.80	Shear (lb/sq ft)		0.73	
Alpha	1.00	Stream Power (lb/ft s)		3.28	
Frctn Loss (ft)	2.04	Cum Volume (acre-ft)	14.69	69.44	2.16
C & E Loss (ft)	0.08	Cum SA (acres)	18.67	78.06	3.23

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical dep

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th.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3440.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3440.06	Reach Len. (ft)	444.00	464.00	510.00
Crit W.S. (ft)	3440.06	Flow Area (sq ft)	0.10	711.06	0.10
E.G. Slope (ft/ft)	0.014557	Area (sq ft)	0.10	711.06	0.10
Q Total (cfs)	4796.00	Flow (cfs)	0.05	4795.90	0.05
Top Width (ft)	521.44	Top Width (ft)	3.73	514.00	3.71
Vel Total (ft/s)	6.74	Avg. Vel. (ft/s)	0.50	6.74	0.50
Max Chl Dpth (ft)	2.26	Hydr. Depth (ft)	0.03	1.38	0.03
Conv. Total (cfs)	39750.7	Conv. (cfs)	0.4	39749.9	0.4
Length Wtd. (ft)	464.44	Wetted Per. (ft)	3.73	514.02	3.71
Min Ch El (ft)	3437.80	Shear (lb/sq ft)	0.03	1.26	0.03
Alpha	1.00	Stream Power (lb/ft s)	0.01	8.48	0.01
Frctn Loss (ft)	2.62	Cum Volume (acre-ft)	41.22	171.96	10.35
C & E Loss (ft)	0.13	Cum SA (acres)	33.19	97.66	14.33

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 7253

INPUT

Description: Sta. 7253

Station Elevation Data		num=	9						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3438	109	3438.7	321	3438	424	3436	668	3435
906	3436	1005	3438	1200	3440	1365	3442		

Manning's n Values

num=

3

Sta	n Val	Sta	n Val	Sta	n Val
100	.033	424	.033	906	.033

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
424	906	756	910	980	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

		HECRASMPNOD			
E.G. Elev (ft)	3436.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3436.44	Reach Len. (ft)	756.00	910.00	980.00
Crit W.S. (ft)	3435.96	Flow Area (sq ft)	4.93	451.88	4.74
E.G. Slope (ft/ft)	0.001970	Area (sq ft)	4.93	451.88	4.74
Q Total (cfs)	872.00	Flow (cfs)	3.58	864.99	3.44
Top Width (ft)	526.19	Top Width (ft)	22.53	482.00	21.66
Vel Total (ft/s)	1.89	Avg. Vel. (ft/s)	0.73	1.91	0.73
Max Chl Dpth (ft)	1.44	Hydr. Depth (ft)	0.22	0.94	0.22
Conv. Total (cfs)	19648.0	Conv. (cfs)	80.6	19490.0	77.4
Length Wtd. (ft)	909.87	Wetted Per. (ft)	22.54	482.00	21.66
Min Ch El (ft)	3435.00	Shear (lb/sq ft)	0.03	0.12	0.03
Alpha	1.02	Stream Power (lb/ft s)	0.02	0.22	0.02
Frctn Loss (ft)	5.41	Cum Volume (acre-ft)	14.66	66.05	2.14
C & E Loss (ft)	0.03	Cum SA (acres)	18.56	73.88	3.11

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3438.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3437.75	Reach Len. (ft)	756.00	910.00	980.00
Crit W.S. (ft)	3436.98	Flow Area (sq ft)	78.51	1082.62	75.46
E.G. Slope (ft/ft)	0.003019	Area (sq ft)	78.51	1082.62	75.46
Q Total (cfs)	4942.00	Flow (cfs)	177.41	4594.06	170.52
Top Width (ft)	658.36	Top Width (ft)	89.92	482.00	86.43
Vel Total (ft/s)	4.00	Avg. Vel. (ft/s)	2.26	4.24	2.26
Max Chl Dpth (ft)	2.75	Hydr. Depth (ft)	0.87	2.25	0.87
Conv. Total (cfs)	89938.3	Conv. (cfs)	3228.7	83606.3	3103.3
Length Wtd. (ft)	908.83	Wetted Per. (ft)	89.94	482.00	86.45

HECRASMPNOD					
Min Ch El (ft)	3435.00	Shear (lb/sq ft)	0.16	0.42	0.16
Alpha	1.07	Stream Power (lb/ft s)	0.37	1.80	0.37
Frctn Loss (ft)	5.48	Cum Volume (acre-ft)	40.82	162.41	9.91
C & E Loss (ft)	0.04	Cum SA (acres)	32.71	92.35	13.80

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 6343

INPUT

Description: Sta. 6343

Station Elevation Data		num= 9							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3434	346	3433	663	3432	732	3431	860	3430.2
981	3430	1273	3430	1320	3431.5	1566	3432		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	663	.033	1320	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	663	1320		767 980	1051	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3431.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.		0.033	
W.S. Elev (ft)	3430.74	Reach Len. (ft)	767.00	980.00	1051.00
Crit W.S. (ft)	3430.74	Flow Area (sq ft)		326.19	
E.G. Slope (ft/ft)	0.018791	Area (sq ft)		326.19	
Q Total (cfs)	1470.00	Flow (cfs)		1470.00	
Top Width (ft)	522.87	Top Width (ft)		522.87	
Vel Total (ft/s)	4.51	Avg. Vel. (ft/s)		4.51	
Max Chl Dpth (ft)	0.74	Hydr. Depth (ft)		0.62	
Conv. Total (cfs)	10723.5	Conv. (cfs)		10723.5	
Length Wtd. (ft)	979.90	Wetted Per. (ft)		522.88	
Min Ch El (ft)	3430.00	Shear (lb/sq ft)		0.73	
Alpha	1.00	Stream Power (lb/ft s)		3.30	
Frctn Loss (ft)	4.07	Cum Volume (acre-ft)	14.62	57.92	2.08

HECRASPMNOD

C & E Loss (ft)	0.08	Cum SA (acres)	18.36	63.38	2.86
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Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3432.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.		0.033	0.033
W.S. Elev (ft)	3431.80	Reach Len. (ft)	767.00	980.00	1051.00
Crit W.S. (ft)	3431.80	Flow Area (sq ft)		953.23	21.43
E.G. Slope (ft/ft)	0.013020	Area (sq ft)		953.23	21.43
Q Total (cfs)	6399.00	Flow (cfs)		6368.25	30.75
Top Width (ft)	788.09	Top Width (ft)		642.87	145.22
Vel Total (ft/s)	6.57	Avg. Vel. (ft/s)		6.68	1.43
Max Chl Dpth (ft)	1.80	Hydr. Depth (ft)		1.48	0.15
Conv. Total (cfs)	56079.7	Conv. (cfs)		55810.2	269.5
Length Wtd. (ft)	979.09	Wetted Per. (ft)		642.90	145.22
Min Ch El (ft)	3430.00	Shear (lb/sq ft)		1.21	0.12
Alpha	1.03	Stream Power (lb/ft s)		8.05	0.17
Frctn Loss (ft)	4.12	Cum Volume (acre-ft)	40.14	141.15	8.82
C & E Loss (ft)	0.15	Cum SA (acres)	31.93	80.61	11.20

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

HECRASPMENOD

additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 5363

INPUT

Description: Sta. 5363

Station Elevation Data		num= 10		Sta Elev		Sta Elev		Sta Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3432	282	3430	550	3428	742	3426	885	3425
1097	3425	1476	3426	1877	3428	1966	3428	2160	3430

Manning's n Values		num= 3		Sta n Val		Sta n Val	
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
100	.033	742	.033	1476	.033		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	742	1476		1199 1142	713	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3426.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3426.38	Reach Len. (ft)	1199.00	1142.00	713.00
Crit W.S. (ft)	3425.82	Flow Area (sq ft)	7.03	753.98	14.69
E.G. Slope (ft/ft)	0.001775	Area (sq ft)	7.03	753.98	14.69
Q Total (cfs)	1470.00	Flow (cfs)	4.43	1456.31	9.26
Top Width (ft)	847.50	Top Width (ft)	36.75	734.00	76.75
Vel Total (ft/s)	1.90	Avg. Vel. (ft/s)	0.63	1.93	0.63
Max Chl Dpth (ft)	1.38	Hydr. Depth (ft)	0.19	1.03	0.19
Conv. Total (cfs)	34888.5	Conv. (cfs)	105.2	34563.6	219.7
Length Wtd. (ft)	1140.82	Wetted Per. (ft)	36.75	734.00	76.75
Min Ch El (ft)	3425.00	Shear (lb/sq ft)	0.02	0.11	0.02
Alpha	1.03	Stream Power (lb/ft s)	0.01	0.22	0.01
Frctn Loss (ft)	5.01	Cum Volume (acre-ft)	14.56	45.77	1.91
C & E Loss (ft)	0.03	Cum SA (acres)	18.04	49.24	1.94

HECRASPMNOD

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3427.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3427.59	Reach Len. (ft)	1199.00	1142.00	713.00
Crit W.S. (ft)	3426.70	Flow Area (sq ft)	121.88	1642.63	254.56
E.G. Slope (ft/ft)	0.002056	Area (sq ft)	121.88	1642.63	254.56
Q Total (cfs)	6399.00	Flow (cfs)	213.88	5738.41	446.71
Top Width (ft)	1206.47	Top Width (ft)	152.98	734.00	319.50
Vel Total (ft/s)	3.17	Avg. Vel. (ft/s)	1.75	3.49	1.75
Max Chl Dpth (ft)	2.59	Hydr. Depth (ft)	0.80	2.24	0.80
Conv. Total (cfs)	141114.1	Conv. (cfs)	4716.6	126546.4	9851.1
Length Wtd. (ft)	1130.38	Wetted Per. (ft)	152.98	734.00	319.50
Min Ch El (ft)	3425.00	Shear (lb/sq ft)	0.10	0.29	0.10
Alpha	1.12	Stream Power (lb/ft s)	0.18	1.00	0.18
Frctn Loss (ft)	5.03	Cum Volume (acre-ft)	39.07	111.94	5.49
C & E Loss (ft)	0.04	Cum SA (acres)	30.59	65.12	5.59

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 4221

INPUT

Description: Sta. 4221

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3423	341	3422	544	3421	640	3420	669	3420
753	3420.2	829	3420	837	3420	1030	3421	1320	3422
1407	3423	1497	3424						

Sta	n Val	Sta	n Val	Sta	n Val

HECRASPMNOD

100 .033 544 .033 1407 .033

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
544	1407	749	732	843		.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3421.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3421.05	Reach Len. (ft)	749.00	732.00	843.00
Crit W.S. (ft)	3421.05	Flow Area (sq ft)	0.26	350.68	
E.G. Slope (ft/ft)	0.017942	Area (sq ft)	0.26	350.68	
Q Total (cfs)	1668.00	Flow (cfs)	0.14	1667.86	
Top Width (ft)	511.16	Top Width (ft)	10.36	500.80	
Vel Total (ft/s)	4.75	Avg. Vel. (ft/s)	0.52	4.76	
Max Chl Dpth (ft)	1.05	Hydr. Depth (ft)	0.03	0.70	
Conv. Total (cfs)	12452.5	Conv. (cfs)	1.0	12451.4	
Length Wtd. (ft)	736.81	Wetted Per. (ft)	10.36	500.81	
Min Ch El (ft)	3420.00	Shear (lb/sq ft)	0.03	0.78	
Alpha	1.00	Stream Power (lb/ft s)	0.01	3.73	
Frctn Loss (ft)	3.63	Cum Volume (acre-ft)	14.46	31.29	1.79
C & E Loss (ft)	0.09	Cum SA (acres)	17.39	33.06	1.31

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3422.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.	0.033	0.033	

HECRASMPNOD					
W.S. Elev (ft)	3422.09	Reach Len. (ft)	749.00	732.00	843.00
Crit W.S. (ft)	3422.09	Flow Area (sq ft)	121.37	1028.87	
E.G. Slope (ft/ft)	0.013828	Area (sq ft)	121.37	1028.87	
Q Total (cfs)	6955.00	Flow (cfs)	425.40	6529.60	
Top Width (ft)	1009.43	Top Width (ft)	225.36	784.07	
Vel Total (ft/s)	6.05	Avg. Vel. (ft/s)	3.50	6.35	
Max Chl Dpth (ft)	2.09	Hydr. Depth (ft)	0.54	1.31	
Conv. Total (cfs)	59145.1	Conv. (cfs)	3617.6	55527.5	
Length Wtd. (ft)	737.78	Wetted Per. (ft)	225.36	784.08	
Min Ch El (ft)	3420.00	Shear (lb/sq ft)	0.46	1.13	
Alpha	1.05	Stream Power (lb/ft s)	1.63	7.19	
Frctn Loss (ft)	3.71	Cum Volume (acre-ft)	35.72	76.93	3.40
C & E Loss (ft)	0.12	Cum SA (acres)	25.38	45.22	2.98

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 3489

INPUT

Description: Sta. 3489

Station Elevation Data		num= 22							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-286	3420	-138	3418.5	-126	3418	-104	3416	-91	3415.5
-76	3416	-21	3417	100	3417	258	3416.5	299	3416
309	3415	318	3416	405	3416	422	3416	539	3416.4
581	3416.2	642	3416.4	744	3416	830	3416	918	3418
1068	3420	1159	3421						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-286	.033	539	.033	918	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	539	918		464	500	457	
						.1	.3

HECRASEMPPNOD

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3417.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3417.23	Reach Len. (ft)	464.00	500.00	457.00
Crit W.S. (ft)	3416.72	Flow Area (sq ft)	517.14	341.02	
E.G. Slope (ft/ft)	0.002260	Area (sq ft)	517.14	341.02	
Q Total (cfs)	1668.00	Flow (cfs)	943.99	724.01	
Top Width (ft)	1001.82	Top Width (ft)	656.56	345.26	
Vel Total (ft/s)	1.94	Avg. Vel. (ft/s)	1.83	2.12	
Max Chl Dpth (ft)	2.23	Hydr. Depth (ft)	0.79	0.99	
Conv. Total (cfs)	35084.5	Conv. (cfs)	19855.8	15228.6	
Length Wtd. (ft)	481.69	Wetted Per. (ft)	656.76	345.27	
Min Ch El (ft)	3416.00	Shear (lb/sq ft)	0.11	0.14	
Alpha	1.02	Stream Power (lb/ft s)	0.20	0.30	
Frctn Loss (ft)	2.40	Cum Volume (acre-ft)	10.01	25.48	1.79
C & E Loss (ft)	0.02	Cum SA (acres)	11.66	25.95	1.31

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3418.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3418.33	Reach Len. (ft)	464.00	500.00	457.00
Crit W.S. (ft)	3417.53	Flow Area (sq ft)	1244.99	744.00	4.10
E.G. Slope (ft/ft)	0.002576	Area (sq ft)	1244.99	744.00	4.10
Q Total (cfs)	6955.00	Flow (cfs)	4286.73	2665.45	2.82
Top Width (ft)	1076.73	Top Width (ft)	672.93	379.00	24.79
Vel Total (ft/s)	3.49	Avg. Vel. (ft/s)	3.44	3.58	0.69
Max Chl Dpth (ft)	3.33	Hydr. Depth (ft)	1.85	1.96	0.17

HECRAS PMPNOD					
Conv. Total (cfs)	137040.4	Conv. (cfs)	84465.1	52519.7	55.6
Length Wtd. (ft)	481.05	Wetted Per. (ft)	673.17	379.02	24.79
Min Ch El (ft)	3416.00	Shear (lb/sq ft)	0.30	0.32	0.03
Alpha	1.00	Stream Power (lb/ft s)	1.02	1.13	0.02
Frctn Loss (ft)	2.35	Cum Volume (acre-ft)	23.97	62.03	3.36
C & E Loss (ft)	0.04	Cum SA (acres)	17.66	35.45	2.74

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 2989

INPUT

Description: Sta. 2989

Station Elevation Data		num= 14							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-31	3416	59	3414.8	170	3414.8	196	3414	436	3413.8
613	3414	651	3414	700	3414	747	3414	761	3414
841	3415.01	920	3416	976	3418	1067	3420		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-31	.033	436	.033	841	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	436	841		317 215	172	.3	.5

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3414.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3414.56	Reach Len. (ft)	317.00	215.00	172.00
Crit W.S. (ft)	3414.56	Flow Area (sq ft)	164.64	213.76	
E.G. Slope (ft/ft)	0.018785	Area (sq ft)	164.64	213.76	
Q Total (cfs)	1668.00	Flow (cfs)	752.43	915.57	
Top Width (ft)	628.05	Top Width (ft)	258.34	369.71	
Vel Total (ft/s)	4.41	Avg. Vel. (ft/s)	4.57	4.28	
Max Chl Dpth (ft)	0.76	Hydr. Depth (ft)	0.64	0.58	
Conv. Total (cfs)	12170.1	Conv. (cfs)	5489.9	6680.1	
Length Wtd. (ft)	253.48	Wetted Per. (ft)	258.35	369.71	

		HECRASPMFNOD			
Min Ch El (ft)	3413.80	Shear (lb/sq ft)	0.75	0.68	
Alpha	1.00	Stream Power (lb/ft s)	3.42	2.90	
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	6.38	22.29	1.79
C & E Loss (ft)	0.13	Cum SA (acres)	6.79	21.84	1.31

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3416.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3415.53	Reach Len. (ft)	317.00	215.00	172.00
Crit W.S. (ft)	3415.49	Flow Area (sq ft)	523.07	598.34	10.93
E.G. Slope (ft/ft)	0.012623	Area (sq ft)	523.07	598.34	10.93
Q Total (cfs)	6955.00	Flow (cfs)	3005.95	3926.42	22.63
Top Width (ft)	878.78	Top Width (ft)	432.01	405.00	41.77
Vel Total (ft/s)	6.14	Avg. Vel. (ft/s)	5.75	6.56	2.07
Max Chl Dpth (ft)	1.73	Hydr. Depth (ft)	1.21	1.48	0.26
Conv. Total (cfs)	61904.5	Conv. (cfs)	26755.1	34948.0	201.4
Length Wtd. (ft)	262.25	Wetted Per. (ft)	432.02	405.01	41.77
Min Ch El (ft)	3413.80	Shear (lb/sq ft)	0.95	1.16	0.21
Alpha	1.02	Stream Power (lb/ft s)	5.48	7.64	0.43
Frctn Loss (ft)	0.74	Cum Volume (acre-ft)	14.56	54.33	3.28
C & E Loss (ft)	0.21	Cum SA (acres)	11.77	30.95	2.39

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

HECRASPMPNOD

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 2774

INPUT

Description: Sta. 2774 Upstream of culverts

Station		Elevation		Data		num=		18	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-453	3416	-437	3415	-405	3414	-289	3413.8	-13	3413.8
100	3413.8	175	3413.8	204	3412	261	3412	298	3411.2
402	3410.9	437	3410	469	3409	491	3409	511	3410
560	3412	641	3414	725	3416				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
-453	.033	437	.033	511	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	437	511		40	40	.3	.5

Ineffective Flow		num=		2	
Sta L	Sta R	Elev	Permanent		
-888	F				
888	F				

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3414.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3414.04	Reach Len. (ft)	40.00	40.00	40.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	803.67	346.94	233.21
E.G. Slope (ft/ft)	0.000314	Area (sq ft)	803.67	346.94	233.21
Q Total (cfs)	1668.00	Flow (cfs)	620.80	774.97	272.22
Top Width (ft)	1048.95	Top Width (ft)	843.27	74.00	131.67
Vel Total (ft/s)	1.21	Avg. Vel. (ft/s)	0.77	2.23	1.17
Max Chl Dpth (ft)	5.04	Hydr. Depth (ft)	0.95	4.69	1.77
Conv. Total (cfs)	94155.3	Conv. (cfs)	35043.1	43745.7	15366.6
Length Wtd. (ft)	40.00	Wetted Per. (ft)	843.35	74.04	131.74
Min Ch El (ft)	3409.00	Shear (lb/sq ft)	0.02	0.09	0.03
Alpha	1.90	Stream Power (lb/ft s)	0.01	0.21	0.04
Frctn Loss (ft)		Cum Volume (acre-ft)	2.85	20.91	1.33
C & E Loss (ft)		Cum SA (acres)	2.78	20.75	1.05

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #PF 3

HECRASPMNOD

E.G. Elev (ft)	3415.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3415.00	Reach Len. (ft)	40.00	40.00	40.00
Crit W.S. (ft)	3413.39	Flow Area (sq ft)	1631.76	418.31	379.71
E.G. Slope (ft/ft)	0.001208	Area (sq ft)	1631.76	418.31	379.71
Q Total (cfs)	6955.00	Flow (cfs)	3871.69	2076.72	1006.59
Top Width (ft)	1120.24	Top Width (ft)	874.07	74.00	172.17
Vel Total (ft/s)	2.86	Avg. Vel. (ft/s)	2.37	4.96	2.65
Max Chl Dpth (ft)	6.00	Hydr. Depth (ft)	1.87	5.65	2.21
Conv. Total (cfs)	200099.2	Conv. (cfs)	111390.7	59748.5	28960.1
Length Wtd. (ft)	40.00	Wetted Per. (ft)	874.16	74.04	172.25
Min Ch El (ft)	3409.00	Shear (lb/sq ft)	0.14	0.43	0.17
Alpha	1.40	Stream Power (lb/ft s)	0.33	2.12	0.44
Frctn Loss (ft)		Cum Volume (acre-ft)	6.72	51.82	2.51
C & E Loss (ft)		Cum SA (acres)	7.02	29.76	1.96

Warning: The cross section had to be extended vertically during the critical depth calculations.

Warning: The parabolic search method failed to converge on critical depth. The program will try the

cross section slice/secant method to find critical depth.

CULVERT RIVER: Ditch A
REACH: 5 RS: 2773

INPUT

Description:

Distance from Upstream XS = 8

Deck/Roadway Width = 24

Weir Coefficient = 3

Upstream Deck/Roadway Coordinates

num= 6

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
26	3413.8				100	3413.8				402	3412.7			
500	3412.8				600	3413.9				700	3415.7			

Upstream Bridge Cross Section Data

Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-453	3416	-437	3415	-405	3414	-289	3413.8	-13	3413.8
100	3413.8	175	3413.8	204	3412	261	3412	298	3411.2
402	3410.9	437	3410	469	3409	491	3409	511	3410
560	3412	641	3414	725	3416				

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-453	.033	437	.033	511	.033

HECRASPMNOD

Bank Sta: Left Right Coeff Contr. Expan.
 437 511 .3 .5
 Ineffective Flow num= 2
 Sta L Sta R Elev Permanent
 -888 F
 888 F

Downstream Deck/Roadway Coordinates

num= 6

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
26	3413.8				100	3413.8				402	3412.7			
500	3412.8				600	3413.9				700	3415.7			

Downstream Bridge Cross Section Data

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1721	3416	-1410	3414	26	3413.8	100	3412.4	155	3412
299	3411.4	349	3410	387	3408.9	391.4	3408.9	395.8	3408.9
400.2	3408.9	404.6	3408.9	409	3408.9	434	3410	487	3412
568	3414	658	3416						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-1721	.033	349	.033	434	.033

Bank Sta: Left Right Coeff Contr. Expan.
 349 434 .3 .5
 Ineffective Flow num= 2
 Sta L Sta R Elev Permanent
 -888 F
 888 F

Upstream Embankment side slope = 3 horiz. to 1.0 vertical
 Downstream Embankment side slope = 3 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .95
 Elevation at which weir flow begins = 3412.7
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span
 Culvert #1 Pipe Arch 1.833 2.43
 FHWA Chart # 34- 18 inch corner radius; Corrugated metal
 FHWA Scale # 1 - 90 Degree headwall
 Solution Criteria = Highest U.S. EG

Culvert Upstrm Dist	Length	n Value	Entrance Loss Coef	Exit Loss Coef
1	39	.024	.5	1

Number of Barrels = 6

Upstream Elevation = 3409

Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
469	473.4	477.8	482.2	486.6	491

Downstream Elevation = 3408.9

Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
387	391.4	395.8	400.2	404.6	409

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 2734

INPUT

Description: Sta. 2734 Downstream of culverts

HECRASMPNOD

Station Elevation Data				num=	17				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1721	3416	-1410	3414	26	3413.8	100	3412.4	155	3412
299	3411.4	349	3410	387	3408.9	391.4	3408.9	395.8	3408.9
400.2	3408.9	404.6	3408.9	409	3408.9	434	3410	487	3412
568	3414	658	3416						

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
-1721	.033	349	.033	434	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	349	434		745	846	1015	

Ineffective Flow				num=	2
Sta L	Sta R	Elev	Permanent		
-888	F				
888	F				

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3412.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3412.71	Reach Len. (ft)	745.00	846.00	1015.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	275.89	288.99	100.64
E.G. Slope (ft/ft)	0.001240	Area (sq ft)	275.89	288.99	100.64
Q Total (cfs)	1668.00	Flow (cfs)	448.98	1035.68	183.34
Top Width (ft)	431.91	Top Width (ft)	265.26	85.00	81.65
Vel Total (ft/s)	2.51	Avg. Vel. (ft/s)	1.63	3.58	1.82
Max Chl Dpth (ft)	3.81	Hydr. Depth (ft)	1.04	3.40	1.23
Conv. Total (cfs)	47371.8	Conv. (cfs)	12751.3	29413.6	5206.9
Length Wtd. (ft)	841.73	Wetted Per. (ft)	265.28	85.04	81.70
Min Ch El (ft)	3408.90	Shear (lb/sq ft)	0.08	0.26	0.10
Alpha	1.44	Stream Power (lb/ft s)	0.13	0.94	0.17
Frctn Loss (ft)	1.50	Cum Volume (acre-ft)	2.36	20.62	1.17
C & E Loss (ft)	0.03	Cum SA (acres)	2.27	20.68	0.95

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to

HECRASPMFNOD

critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Warning: The parabolic search method failed to converge on critical depth. The program will try the

cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3414.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3413.55	Reach Len. (ft)	745.00	846.00	1015.00
Crit W.S. (ft)	3413.51	Flow Area (sq ft)	517.22	360.36	183.47
E.G. Slope (ft/ft)	0.006464	Area (sq ft)	517.22	360.36	183.47
Q Total (cfs)	6955.00	Flow (cfs)	2635.84	3416.09	903.07
Top Width (ft)	510.29	Top Width (ft)	309.63	85.00	115.66
Vel Total (ft/s)	6.55	Avg. Vel. (ft/s)	5.10	9.48	4.92
Max Chl Dpth (ft)	4.65	Hydr. Depth (ft)	1.67	4.24	1.59
Conv. Total (cfs)	86509.1	Conv. (cfs)	32785.7	42490.7	11232.7
Length Wtd. (ft)	837.02	Wetted Per. (ft)	309.67	85.04	115.72
Min Ch El (ft)	3408.90	Shear (lb/sq ft)	0.67	1.71	0.64
Alpha	1.33	Stream Power (lb/ft s)	3.43	16.21	3.15
Frctn Loss (ft)	3.41	Cum Volume (acre-ft)	5.73	51.46	2.25
C & E Loss (ft)	0.35	Cum SA (acres)	6.48	29.69	1.83

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 1888

INPUT

Description: Sta. 1888

Station	Elevation	Data	num=	10	Sta	Elev	Sta	Elev	Sta	Elev
-775	3412	-41	3410	81	3410	100	3410.2	110	3410	
331	3408	532	3408	690	3408	1180	3410	1268	3412	

HECRASPMNOD

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 -775 .033 100 .033 1180 .033

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 100 1180 305 828 980 .1 .3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3409.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.033	
W.S. Elev (ft)	3409.29	Reach Len. (ft)	305.00	828.00	980.00
Crit W.S. (ft)	3408.77	Flow Area (sq ft)		754.95	
E.G. Slope (ft/ft)	0.002748	Area (sq ft)		754.95	
Q Total (cfs)	1692.00	Flow (cfs)		1692.00	
Top Width (ft)	815.87	Top Width (ft)		815.87	
Vel Total (ft/s)	2.24	Avg. Vel. (ft/s)		2.24	
Max Chl Dpth (ft)	1.29	Hydr. Depth (ft)		0.93	
Conv. Total (cfs)	32279.3	Conv. (cfs)		32279.3	
Length Wtd. (ft)	828.00	Wetted Per. (ft)		815.88	
Min Ch El (ft)	3408.00	Shear (lb/sq ft)		0.16	
Alpha	1.00	Stream Power (lb/ft s)		0.36	
Frctn Loss (ft)	4.75	Cum Volume (acre-ft)		10.48	
C & E Loss (ft)	0.03	Cum SA (acres)		11.93	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3410.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3410.48	Reach Len. (ft)	305.00	828.00	980.00
Crit W.S. (ft)		Flow Area (sq ft)	108.52	1947.96	5.10
E.G. Slope (ft/ft)	0.002815	Area (sq ft)	108.52	1947.96	5.10

HECRAS PMPNOD					
Q Total (cfs)	7027.00	Flow (cfs)	126.68	6895.60	4.71
Top Width (ft)	1418.87	Top Width (ft)	317.69	1080.00	21.18
Vel Total (ft/s)	3.41	Avg. Vel. (ft/s)	1.17	3.54	0.92
Max Chl Dpth (ft)	2.48	Hydr. Depth (ft)	0.34	1.80	0.24
Conv. Total (cfs)	132442.1	Conv. (cfs)	2387.7	129965.6	88.8
Length Wtd. (ft)	823.41	Wetted Per. (ft)	317.69	1080.02	21.19
Min Ch El (ft)	3408.00	Shear (lb/sq ft)	0.06	0.32	0.04
Alpha	1.06	Stream Power (lb/ft s)	0.07	1.12	0.04
Frctn Loss (ft)	4.56	Cum Volume (acre-ft)	0.38	29.04	0.06
C & E Loss (ft)	0.05	Cum SA (acres)	1.11	18.38	0.24

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 1060

INPUT

Description: Sta. 1060

Station Elevation Data		num=	6						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3408	394	3406	879	3402.7	909	3402.7	1206	3405
1523	3406								

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	394	.033	1523	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	394	1523		60	60	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3404.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.		0.033	
W.S. Elev (ft)	3404.18	Reach Len. (ft)			
Crit W.S. (ft)	3404.18	Flow Area (sq ft)		347.74	
E.G. Slope (ft/ft)	0.017389	Area (sq ft)		347.74	
Q Total (cfs)	1767.00	Flow (cfs)		1767.00	
Top Width (ft)	439.22	Top Width (ft)		439.22	
Vel Total (ft/s)	5.08	Avg. Vel. (ft/s)		5.08	

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Max Chl Dpth (ft)	1.48	Hydr. Depth (ft)	0.79
Conv. Total (cfs)	13399.8	Conv. (cfs)	13399.8
Length Wtd. (ft)		Wetted Per. (ft)	439.23
Min Ch El (ft)	3402.70	Shear (lb/sq ft)	0.86
Alpha	1.00	Stream Power (lb/ft s)	4.37
Frctn Loss (ft)		Cum Volume (acre-ft)	
C & E Loss (ft)		Cum SA (acres)	

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3406.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.		0.033	
W.S. Elev (ft)	3405.41	Reach Len. (ft)			
Crit W.S. (ft)	3405.41	Flow Area (sq ft)		1107.97	
E.G. Slope (ft/ft)	0.014925	Area (sq ft)		1107.97	
Q Total (cfs)	7252.00	Flow (cfs)		7252.00	
Top Width (ft)	853.63	Top Width (ft)		853.63	
Vel Total (ft/s)	6.55	Avg. Vel. (ft/s)		6.55	
Max Chl Dpth (ft)	2.71	Hydr. Depth (ft)		1.30	
Conv. Total (cfs)	59361.7	Conv. (cfs)		59361.7	
Length Wtd. (ft)		Wetted Per. (ft)		853.65	
Min Ch El (ft)	3402.70	Shear (lb/sq ft)		1.21	
Alpha	1.00	Stream Power (lb/ft s)		7.92	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:Ditch A

Reach	River Sta.	n1	n2	n3
5	12674	.033	.033	.033
5	11337	.033	.033	.033
5	10937	.033	.033	.033

		HECRASPMNOD		
5	10288	..033	..033	..033
5	9690	..033	..033	..033
5	9009	..033	..033	..033
5	8130	..033	..033	..033
5	7717	..033	..033	..033
5	7253	..033	..033	..033
5	6343	..033	..033	..033
5	5363	..033	..033	..033
5	4221	..033	..033	..033
5	3489	..033	..033	..033
5	2989	..033	..033	..033
5	2774	..033	..033	..033
5	2773	Culvert		
5	2734	..033	..033	..033
5	1888	..033	..033	..033
5	1060	..033	..033	..033

SUMMARY OF REACH LENGTHS

River: Ditch A

	Reach	River Sta..	Left	Channel	Right
5		12674	1206	1337	1433
5		11337	545	400	332
5		10937	729	649	445
5		10288	552	598	633
5		9690	639	681	658
5		9009	898	879	794
5		8130	399	413	456
5		7717	444	464	510
5		7253	756	910	980
5		6343	767	980	1051
5		5363	1199	1142	713
5		4221	749	732	843
5		3489	464	500	457
5		2989	317	215	172
5		2774	40	40	40
5		2773	Culvert		
5		2734	745	846	1015
5		1888	305	828	980
5		1060	60	60	60

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: Ditch A

	Reach	River Sta..	Contr..	Expan..
5		12674	..1	..3
5		11337	..1	..3
5		10937	..1	..3
5		10288	..1	..3
5		9690	..1	..3
5		9009	..1	..3
5		8130	..1	..3
5		7717	..1	..3
5		7253	..1	..3
5		6343	..1	..3

HECRASPMFNOD				
5	5363	.1	.3	
5	4221	.1	.3	
5	3489	.1	.3	
5	2989	.3	.5	
5	2774	.3	.5	
5	2773	Culvert		
5	2734	.3	.5	
5	1888	.1	.3	
5	1060	.1	.3	

Profile Output Table - Standard Table 1

Reach lope /ft)	Vel Chnl (ft/s)	River Sta Flow Area (sq ft)	Q Total Top Width (cfs) (ft)	Min Ch El Froude # (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. S (ft)
5		12674	533.00	3477.00	3478.39	3478.01	3478.47	0.00
3052	2.31	237.71	307.15	0.43				
5		12674	1768.00	3477.00	3479.22	3478.65	3479.41	0.00
3111	3.61	539.30	417.81	0.48				
5		11337	533.00	3469.00	3470.41	3470.38	3470.80	0.01
4358	5.05	107.68	132.06	0.94				
5		11337	1768.00	3469.00	3471.40	3471.40	3472.19	0.01
1380	7.37	259.90	173.86	0.94				
5		10937	533.00	3464.00	3465.81	3465.61	3466.09	0.00
9685	4.29	124.37	130.72	0.77				
5		10937	1768.00	3464.00	3466.73	3466.67	3467.39	0.01
1877	6.58	274.87	197.66	0.93				
5		10288	533.00	3456.00	3456.93	3456.93	3457.20	0.02
0830	4.16	127.98	249.47	1.02				
5		10288	1768.00	3456.00	3457.50	3457.50	3457.89	0.01
8192	5.03	351.58	466.63	1.02				
5		9690	828.00	3450.00	3451.67	3451.29	3451.79	0.00
4773	2.79	296.91	349.80	0.53				
5		9690	4796.00	3450.00	3453.03	3452.60	3453.47	0.00
5600	5.43	927.89	560.63	0.67				
5		9009	828.00	3445.00	3446.63	3446.51	3446.88	0.01
2031	4.04	205.08	277.44	0.83				
5		9009	4796.00	3445.00	3448.10	3447.89	3448.61	0.00
9426	5.69	843.12	579.12	0.82				
5		8130	828.00	3440.00	3441.76	3441.26	3441.85	0.00
3284	2.41	344.10	382.07	0.45				
5		8130	4796.00	3440.00	3443.22	3442.55	3443.56	0.00
3805	4.75	1064.89	590.61	0.56				
5		7717	828.00	3437.80	3438.80	3438.80	3439.11	0.01
9279	4.48	184.68	304.12	1.01				
5		7717	4796.00	3437.80	3440.06	3440.06	3440.76	0.01

HECRASMPNOD								
4557	6.74	711.27	521.44	1.01				
5		7253	872.00	3435.00	3436.44	3435.96	3436.49	0.00
1970	1.91	461.54	526.19	0.35				
5		7253	4942.00	3435.00	3437.75	3436.98	3438.01	0.00
3019	4.24	1236.58	658.36	0.50				
5		6343	1470.00	3430.00	3430.74	3430.74	3431.06	0.01
8791	4.51	326.19	522.87	1.01				
5		6343	6399.00	3430.00	3431.80	3431.80	3432.49	0.01
3020	6.68	974.66	788.09	0.97				
5		5363	1470.00	3425.00	3426.38	3425.82	3426.44	0.00
1775	1.93	775.71	847.50	0.34				
5		5363	6399.00	3425.00	3427.59	3426.70	3427.77	0.00
2056	3.49	2019.08	1206.47	0.41				
5		4221	1668.00	3420.00	3421.05	3421.05	3421.40	0.01
7942	4.76	350.94	511.16	1.00				
5		4221	6955.00	3420.00	3422.09	3422.09	3422.69	0.01
3828	6.35	1150.24	1009.43	0.98				
5		3489	1668.00	3416.00	3417.23	3416.72	3417.29	0.00
2260	2.12	858.15	1001.82	0.38				
5		3489	6955.00	3416.00	3418.33	3417.53	3418.52	0.00
2576	3.58	1993.09	1076.73	0.45				
5		2989	1668.00	3413.80	3414.56	3414.56	3414.87	0.01
8785	4.28	378.40	628.05	0.99				
5		2989	6955.00	3413.80	3415.53	3415.49	3416.13	0.01
2623	6.56	1132.34	878.78	0.95				
5		2774	1668.00	3409.00	3414.04	3412.71	3414.08	0.00
0314	2.23	1383.82	1048.95	0.18				
5		2774	6955.00	3409.00	3415.00	3413.39	3415.18	0.00
1208	4.96	2429.78	1120.24	0.37				
5		2773	Culvert					
5		2734	1668.00	3408.90	3412.71	3412.71	3412.85	0.00
1240	3.58	665.51	431.91	0.34				
5		2734	6955.00	3408.90	3413.55	3413.51	3414.43	0.00
6464	9.48	1061.05	510.29	0.81				
5		1888	1692.00	3408.00	3409.29	3408.77	3409.36	0.00
2748	2.24	754.95	815.87	0.41				
5		1888	7027.00	3408.00	3410.48		3410.67	0.00
2815	3.54	2061.58	1418.87	0.46				
5		1060	1767.00	3402.70	3404.18	3404.18	3404.58	0.01
7389	5.08	347.74	439.22	1.01				
5		1060	7252.00	3402.70	3405.41	3405.41	3406.07	0.01
4925	6.55	1107.97	853.63	1.01				

HECRASPMFNOD

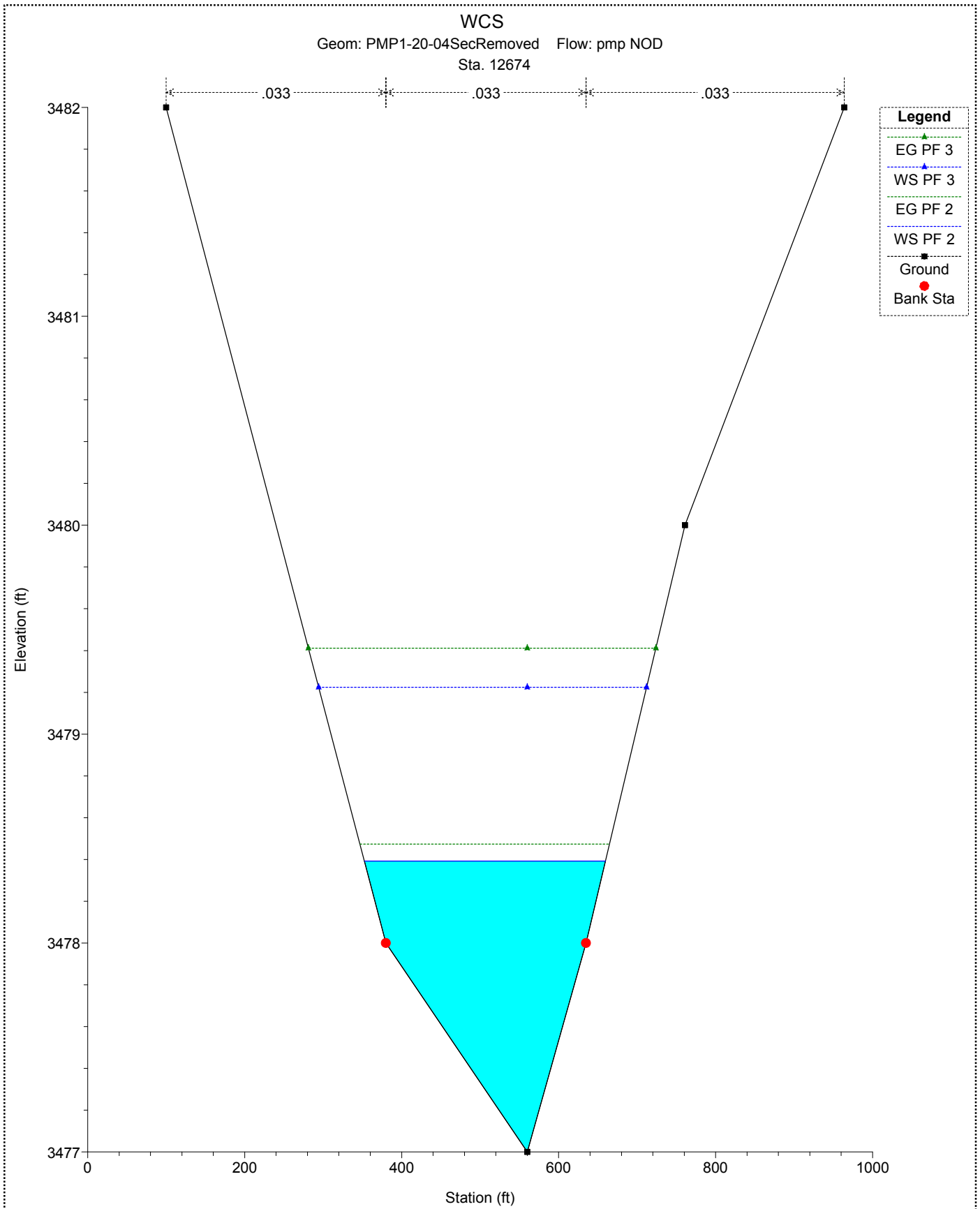
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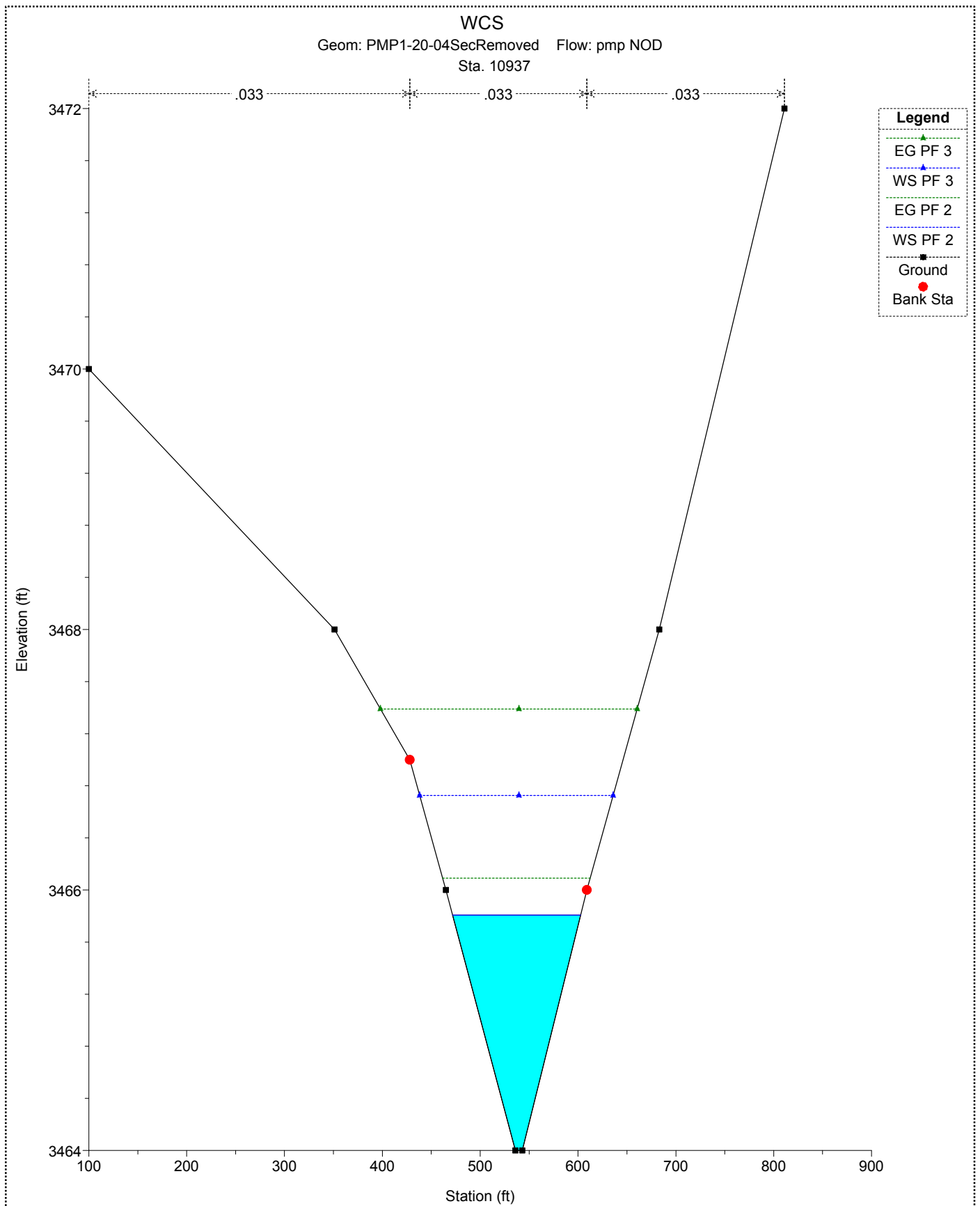
Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	Max Chl Dpth	E.G
Elev	E.G. Slope	Sta W.S. Lft	Sta W.S. Rgt	Flow Area	Top Width	Froude #	Chl
(ft)	(ft/ft)	(ft/s)	(cfs) (ft)	(ft) (ft)	(ft) (sq ft)	(ft)	(ft)
5	12674	533.00	3477.00	3478.39	3478.01	1.39	3
478.47	0.003052	352.55	659.70	237.71	307.15	0.43	
5	12674	1768.00	3477.00	3479.22	3478.65	2.22	3
479.41	0.003111	294.31	712.12	539.30	417.81	0.48	
5	11337	533.00	3469.00	3470.41	3470.38	1.41	3
470.80	0.014358	426.27	558.33	107.68	132.06	0.94	
5	11337	1768.00	3469.00	3471.40	3471.40	2.40	3
472.19	0.011380	404.87	578.73	259.90	173.86	0.94	
5	10937	533.00	3464.00	3465.81	3465.61	1.81	3
466.09	0.009685	471.88	602.60	124.37	130.72	0.77	
5	10937	1768.00	3464.00	3466.73	3466.67	2.73	3
467.39	0.011877	438.17	635.83	274.87	197.66	0.93	
5	10288	533.00	3456.00	3456.93	3456.93	0.93	3
457.20	0.020830	402.40	651.88	127.98	249.47	1.02	
5	10288	1768.00	3456.00	3457.50	3457.50	1.50	3
457.89	0.018192	346.61	813.23	351.58	466.63	1.02	
5	9690	828.00	3450.00	3451.67	3451.29	1.67	3
451.79	0.004773	422.55	772.35	296.91	349.80	0.53	
5	9690	4796.00	3450.00	3453.03	3452.60	3.03	3
453.47	0.005600	288.83	849.46	927.89	560.63	0.67	
5	9009	828.00	3445.00	3446.63	3446.51	1.63	3
446.88	0.012031	439.59	717.03	205.08	277.44	0.83	
5	9009	4796.00	3445.00	3448.10	3447.89	3.10	3

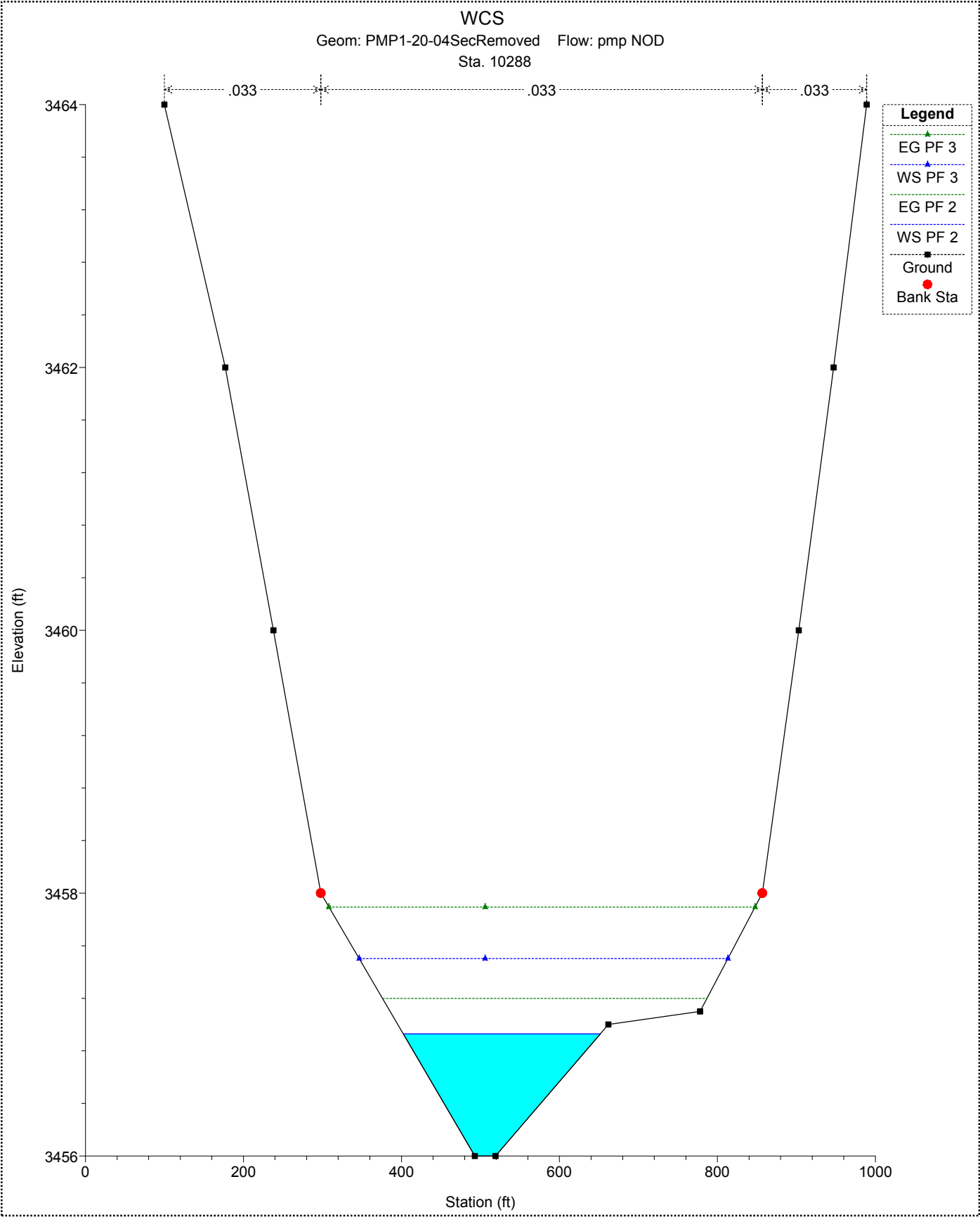
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448.61	0.009426	5.69	318.76	897.88	843.12	579.12		0.82	
5	8130		828.00	3440.00	3441.76	3441.26		1.76	3
441.85	0.003284	2.41	447.23	829.30	344.10	382.07		0.45	
5	8130		4796.00	3440.00	3443.22	3442.55		3.22	3
443.56	0.003805	4.75	348.41	939.02	1064.89	590.61		0.56	
5	7717		828.00	3437.80	3438.80	3438.80		1.00	3
439.11	0.019279	4.48	323.16	627.28	184.68	304.12		1.01	
5	7717		4796.00	3437.80	3440.06	3440.06		2.26	3
440.76	0.014557	6.74	229.27	750.71	711.27	521.44		1.01	
5	7253		872.00	3435.00	3436.44	3435.96		1.44	3
436.49	0.001970	1.91	401.47	927.66	461.54	526.19		0.35	
5	7253		4942.00	3435.00	3437.75	3436.98		2.75	3
438.01	0.003019	4.24	334.08	992.43	1236.58	658.36		0.50	
5	6343		1470.00	3430.00	3430.74	3430.74		0.74	3
431.06	0.018791	4.51	773.36	1296.23	326.19	522.87		1.01	
5	6343		6399.00	3430.00	3431.80	3431.80		1.80	3
432.49	0.013020	6.68	677.13	1465.22	974.66	788.09		0.97	
5	5363		1470.00	3425.00	3426.38	3425.82		1.38	3
426.44	0.001775	1.93	705.25	1552.75	775.71	847.50		0.34	
5	5363		6399.00	3425.00	3427.59	3426.70		2.59	3
427.77	0.002056	3.49	589.02	1795.50	2019.08	1206.47		0.41	
5	4221		1668.00	3420.00	3421.05	3421.05		1.05	3
421.40	0.017942	4.76	533.64	1044.80	350.94	511.16		1.00	
5	4221		6955.00	3420.00	3422.09	3422.09		2.09	3
422.69	0.013828	6.35	318.64	1328.07	1150.24	1009.43		0.98	
5	3489		1668.00	3416.00	3417.23	3416.72		2.23	3
417.29	0.002260	2.12	-117.56	884.26	858.15	1001.82		0.38	
5	3489		6955.00	3416.00	3418.33	3417.53		3.33	3
418.52	0.002576	3.58	-133.93	942.79	1993.09	1076.73		0.45	

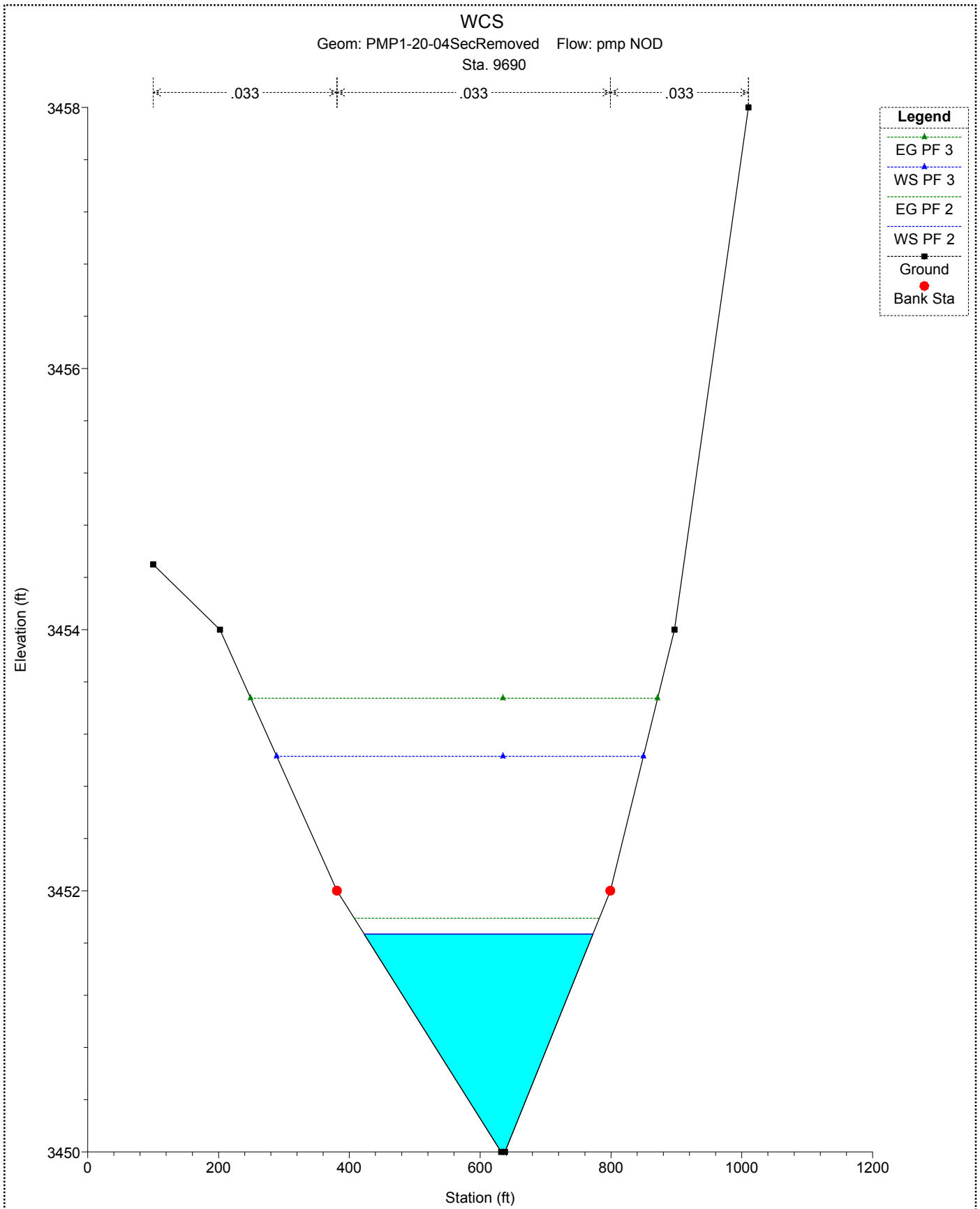
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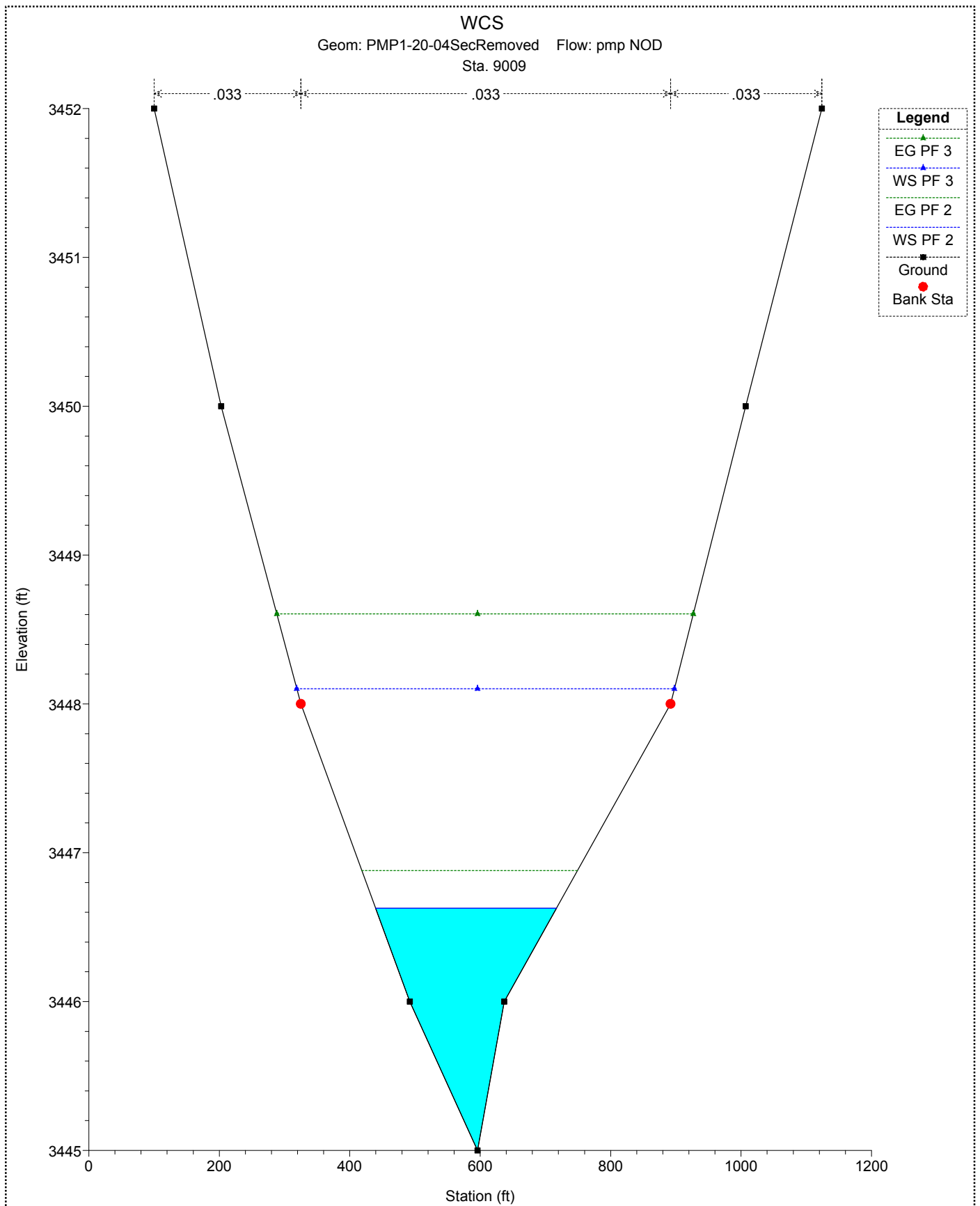
5	2989		1668.00	3413.80	3414.56	3414.56	0.76	3
414.87	0.018785	4.28	177.66	805.71	378.40	628.05		0.99
5	2989		6955.00	3413.80	3415.53	3415.49	1.73	3
416.13	0.012623	6.56	3.99	882.77	1132.34	878.78		0.95
5	2774		1668.00	3409.00	3414.04	3412.71	5.04	3
414.08	0.000314	2.23	-406.27	642.67	1383.82	1048.95		0.18
5	2774		6955.00	3409.00	3415.00	3413.39	6.00	3
415.18	0.001208	4.96	-437.07	683.17	2429.78	1120.24		0.37
5	2773		Culvert					
5	2734		1668.00	3408.90	3412.71	3412.71	3.81	3
412.85	0.001240	3.58	83.74	515.65	665.51	431.91		0.34
5	2734		6955.00	3408.90	3413.55	3413.51	4.65	3
414.43	0.006464	9.48	39.37	549.66	1061.05	510.29		0.81
5	1888		1692.00	3408.00	3409.29	3408.77	1.29	3
409.36	0.002748	2.24	188.99	1004.86	754.95	815.87		0.41
5	1888		7027.00	3408.00	3410.48		2.48	3
410.67	0.002815	3.54	-217.69	1201.18	2061.58	1418.87		0.46
5	1060		1767.00	3402.70	3404.18	3404.18	1.48	3
404.58	0.017389	5.08	661.17	1100.39	347.74	439.22		1.01
5	1060		7252.00	3402.70	3405.41	3405.41	2.71	3
406.07	0.014925	6.55	481.23	1334.86	1107.97	853.63		1.01

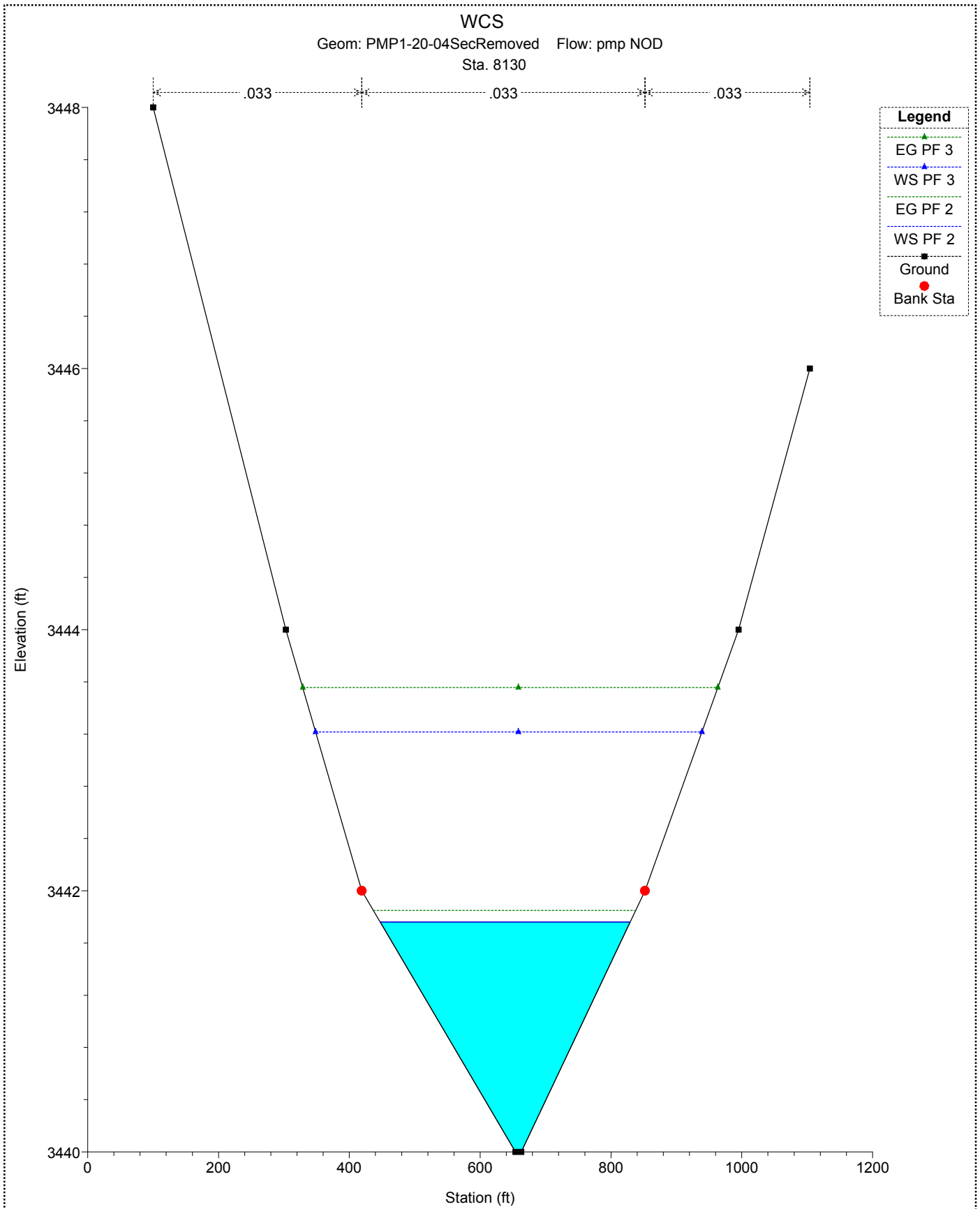


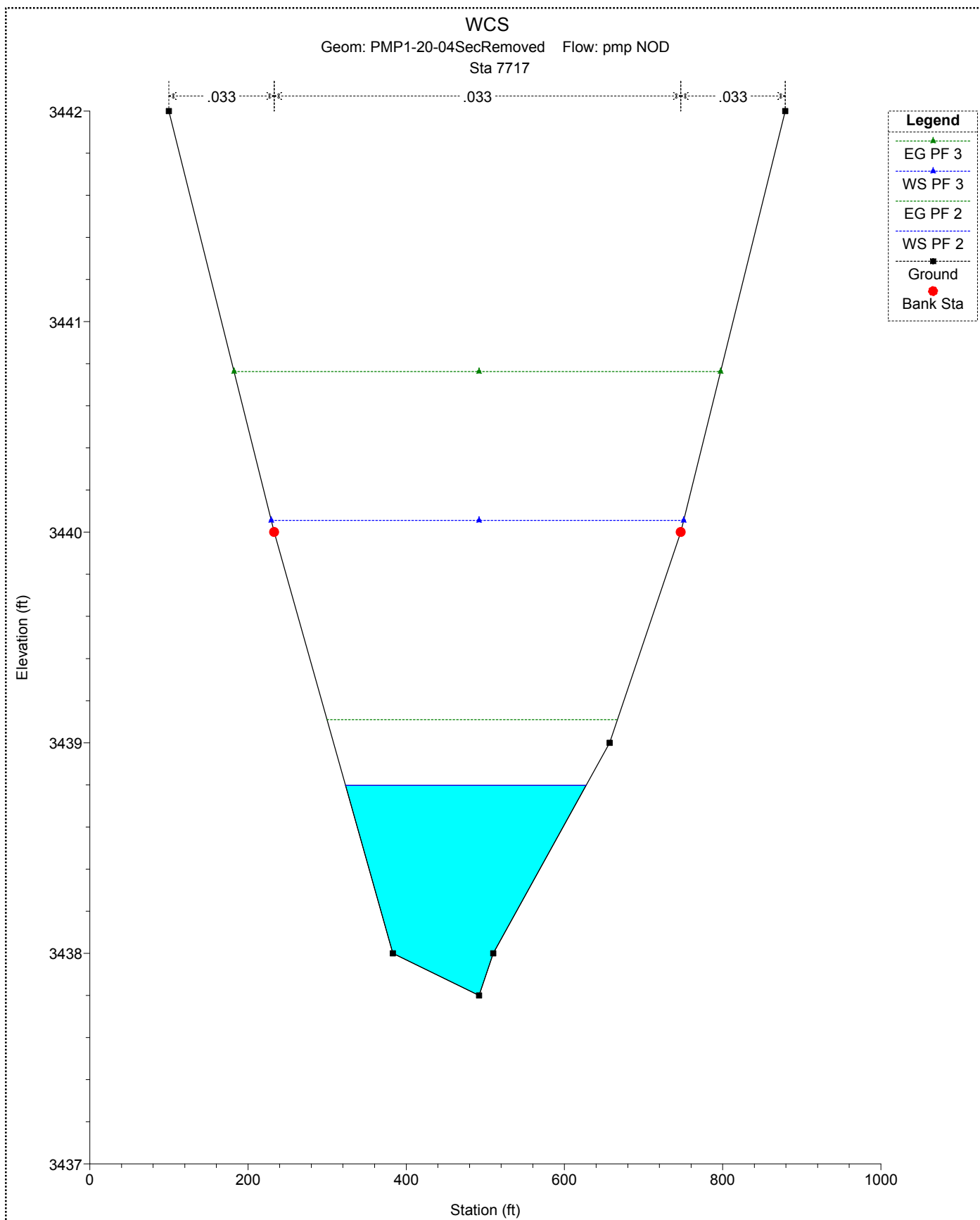


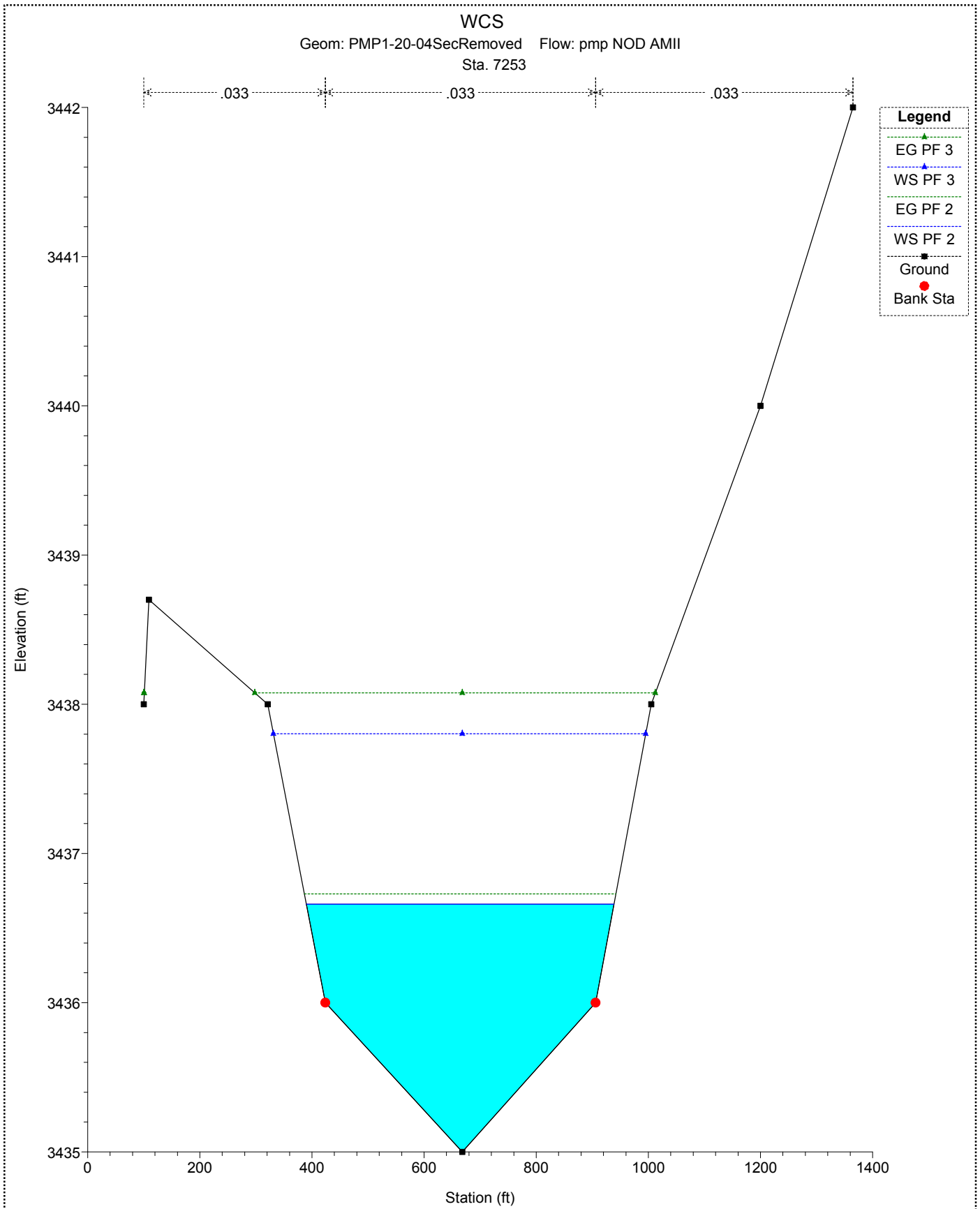


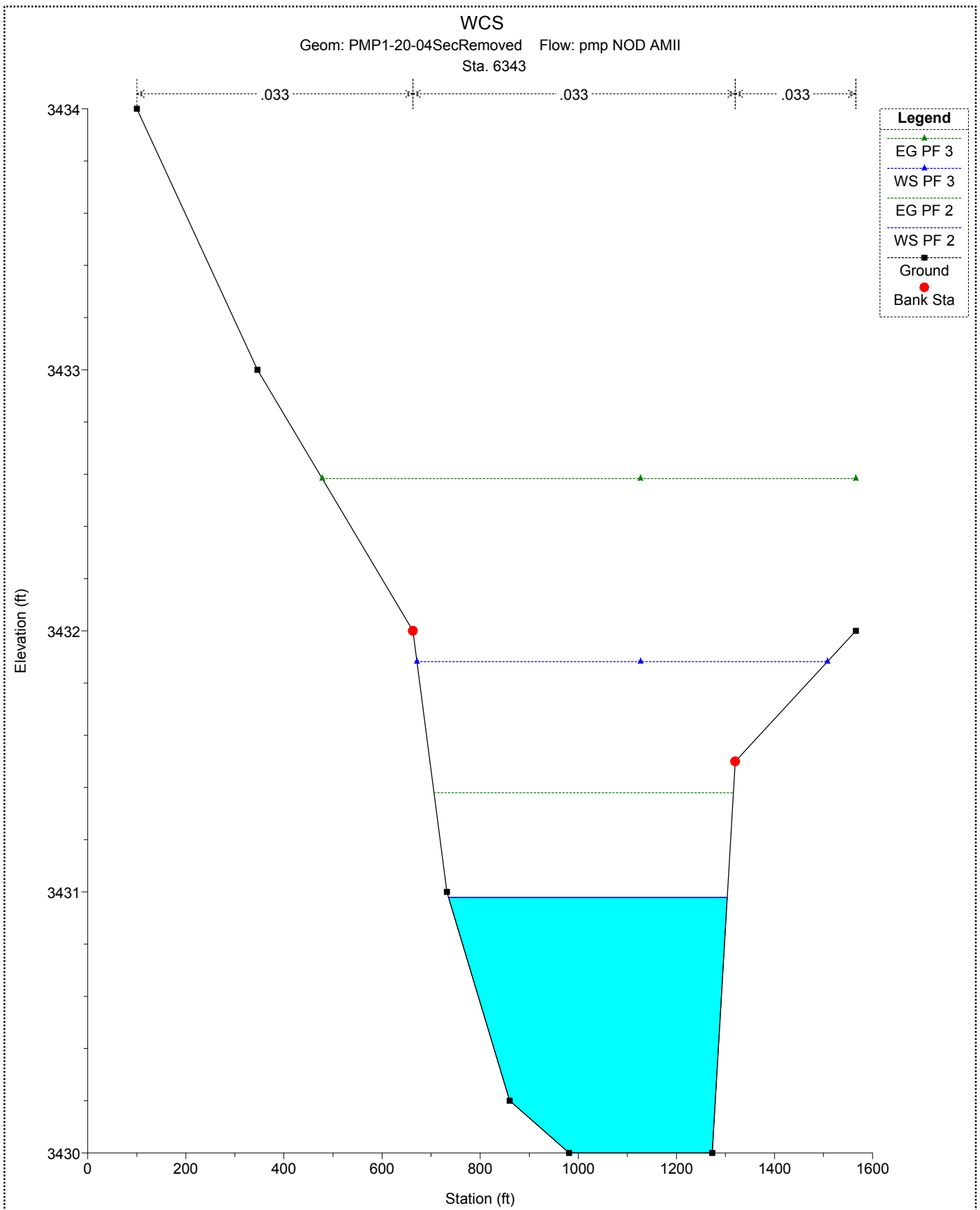


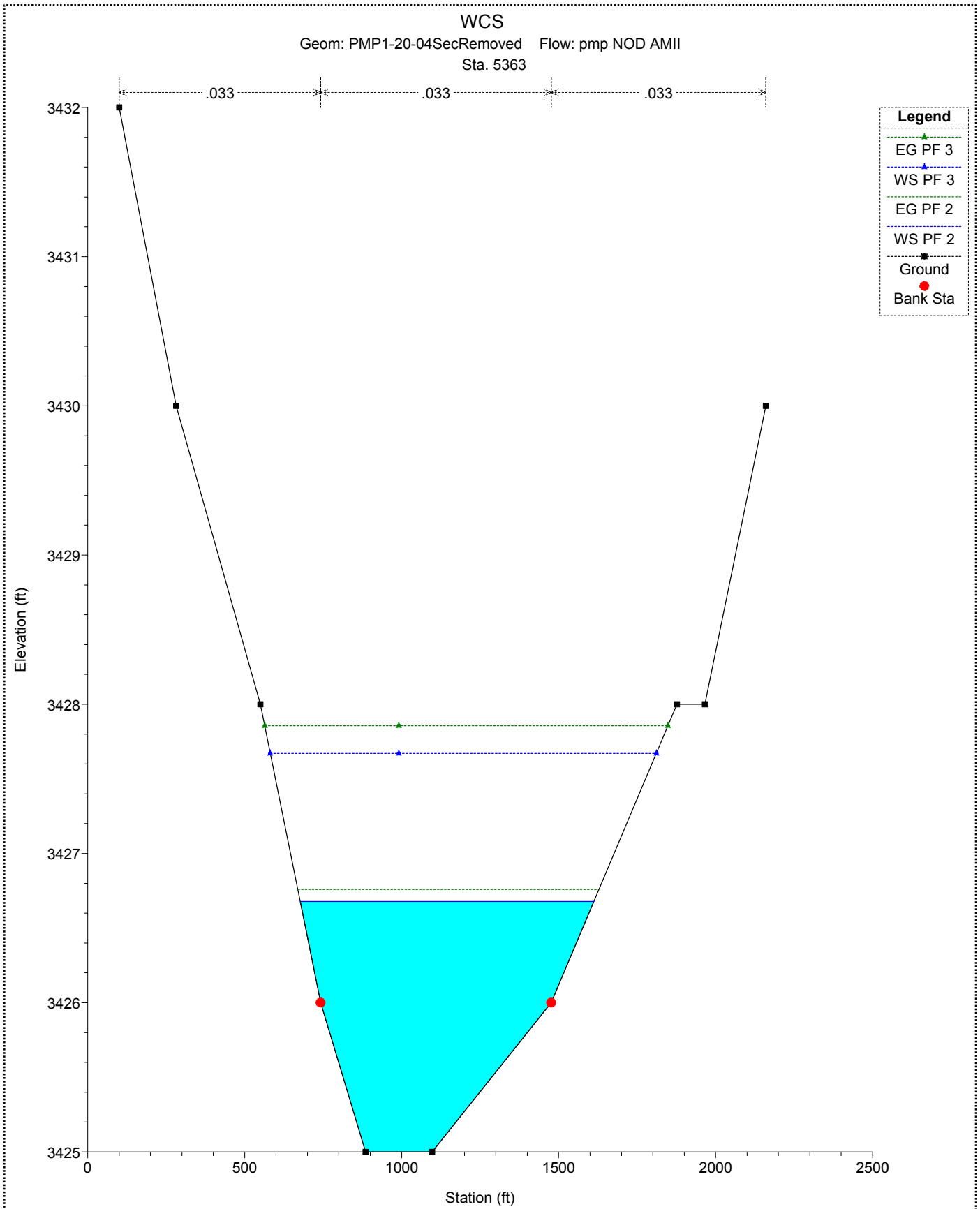


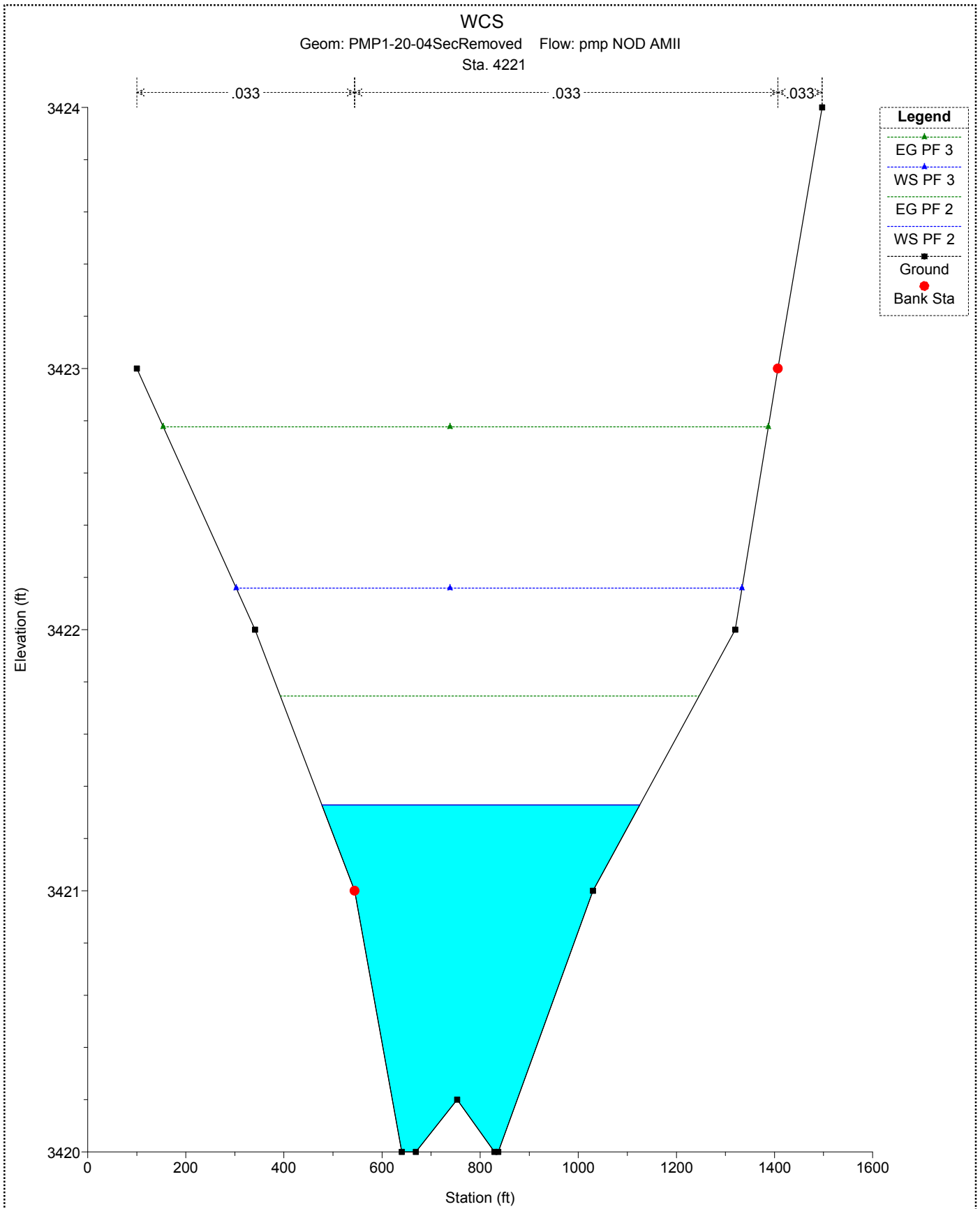


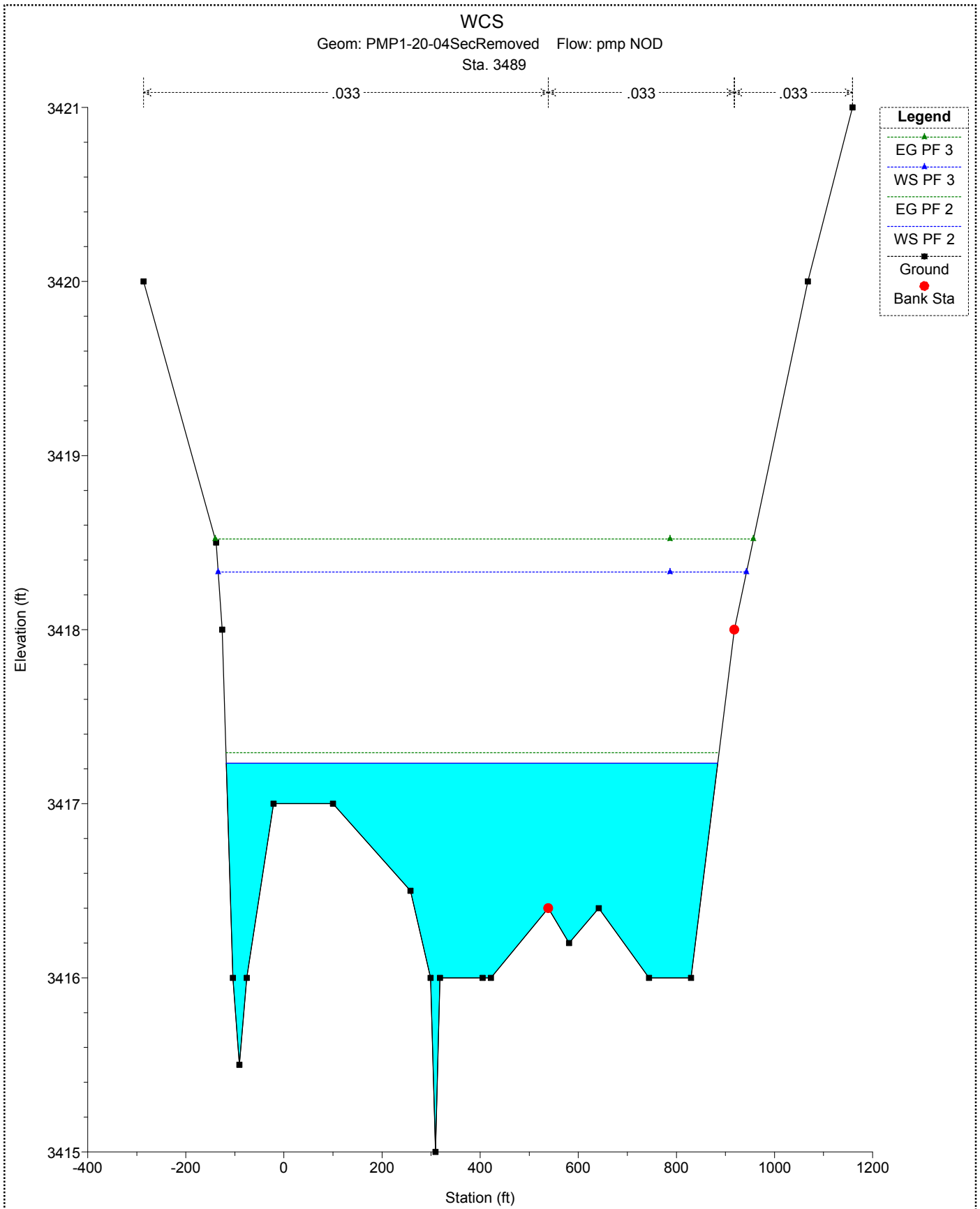


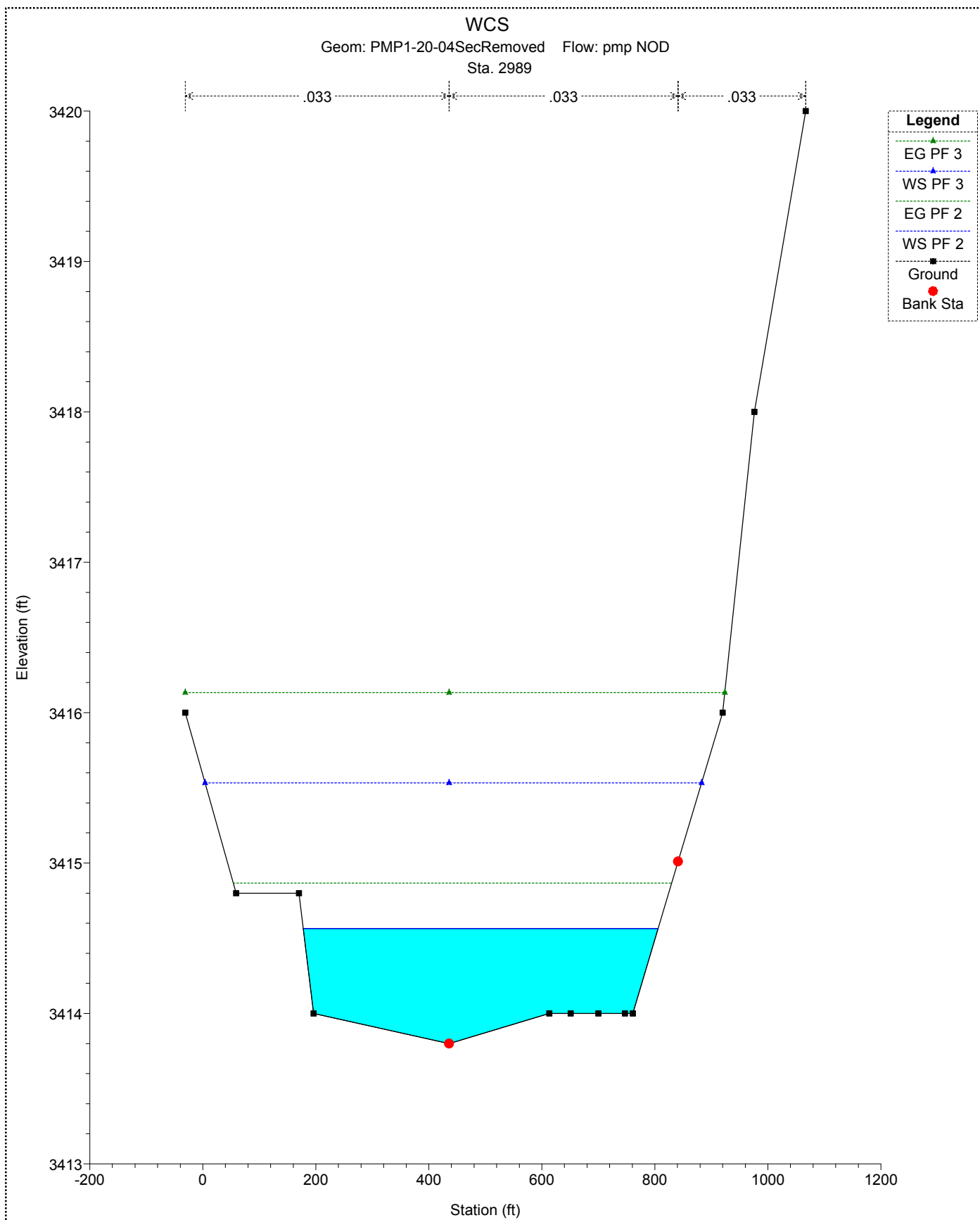


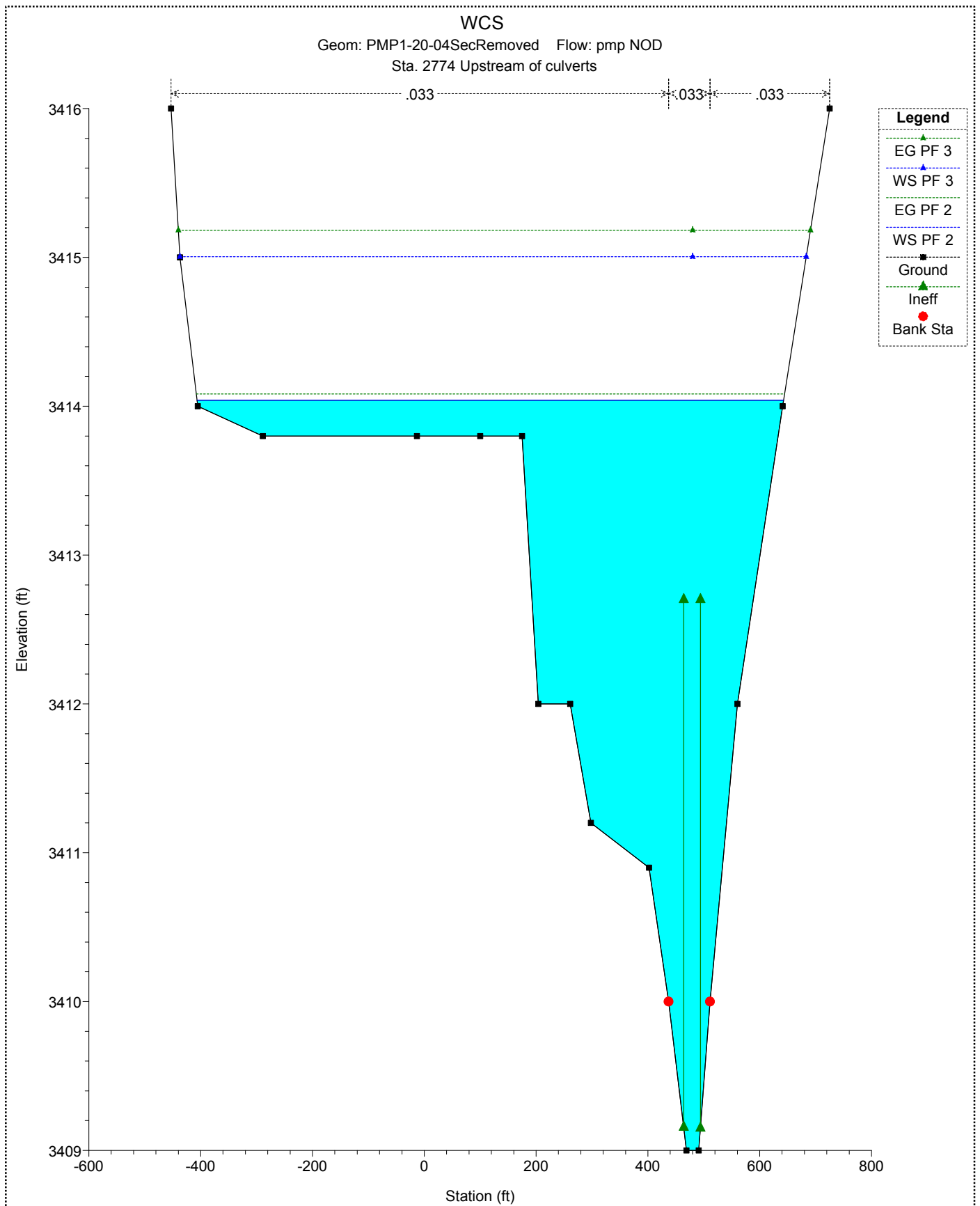


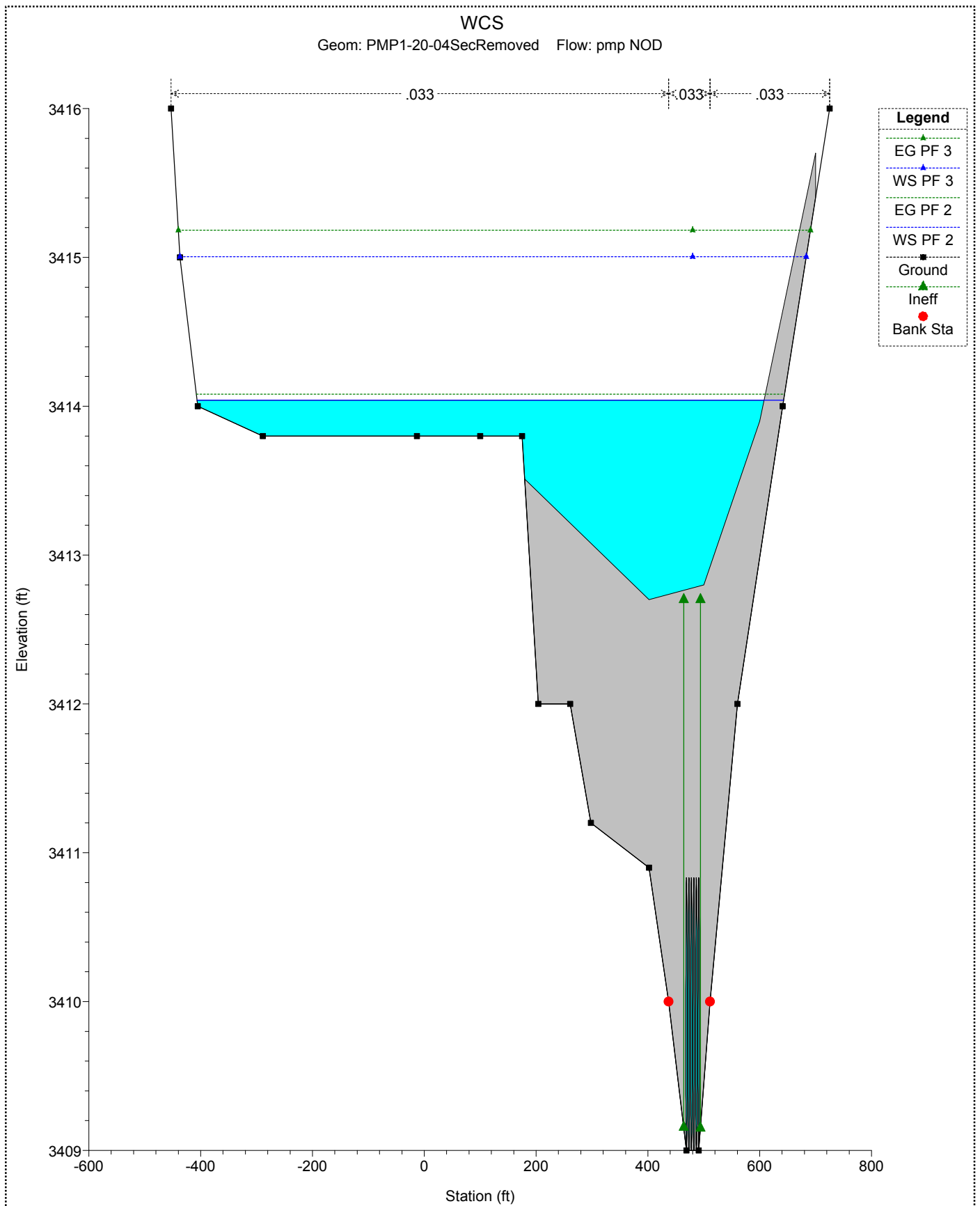


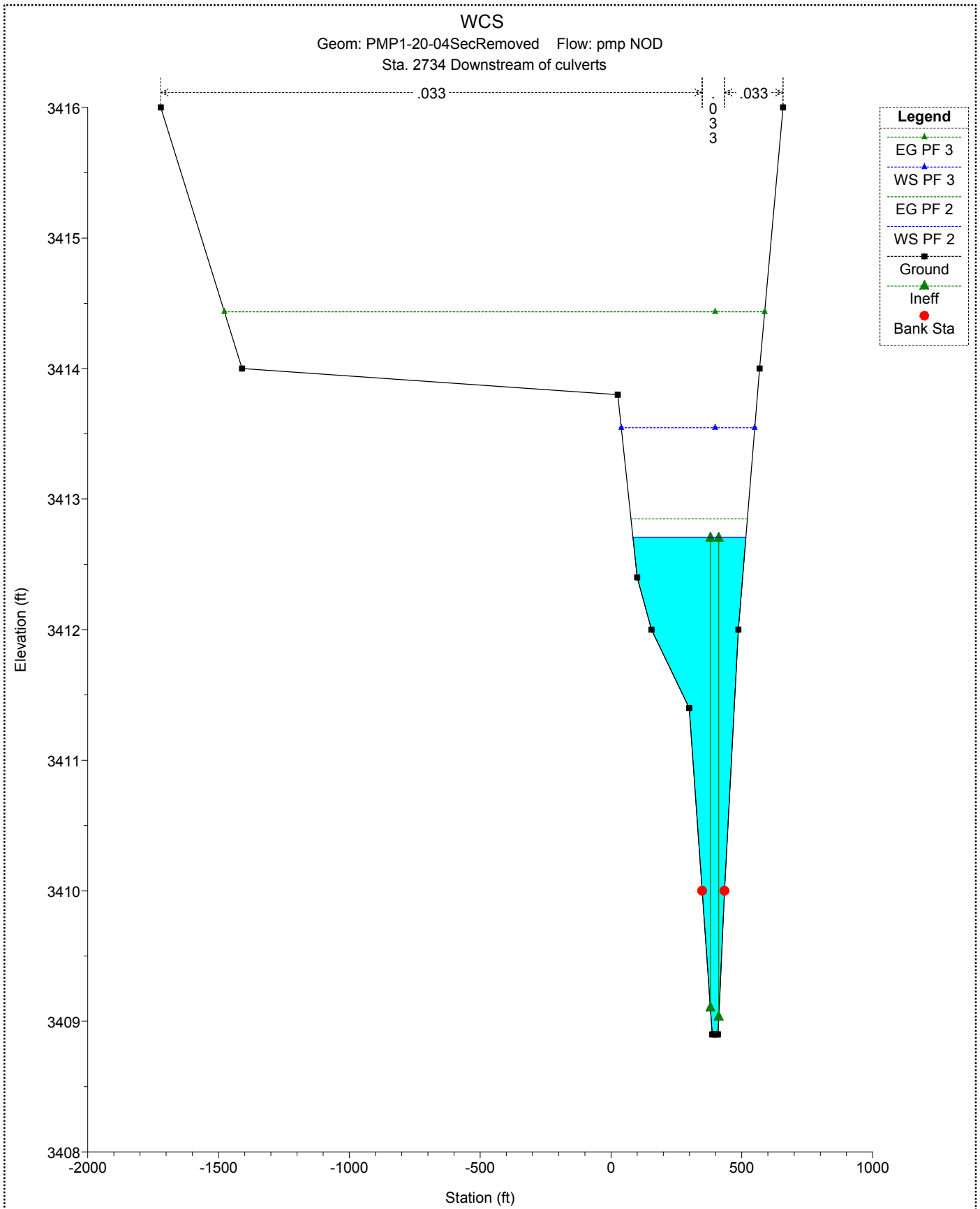


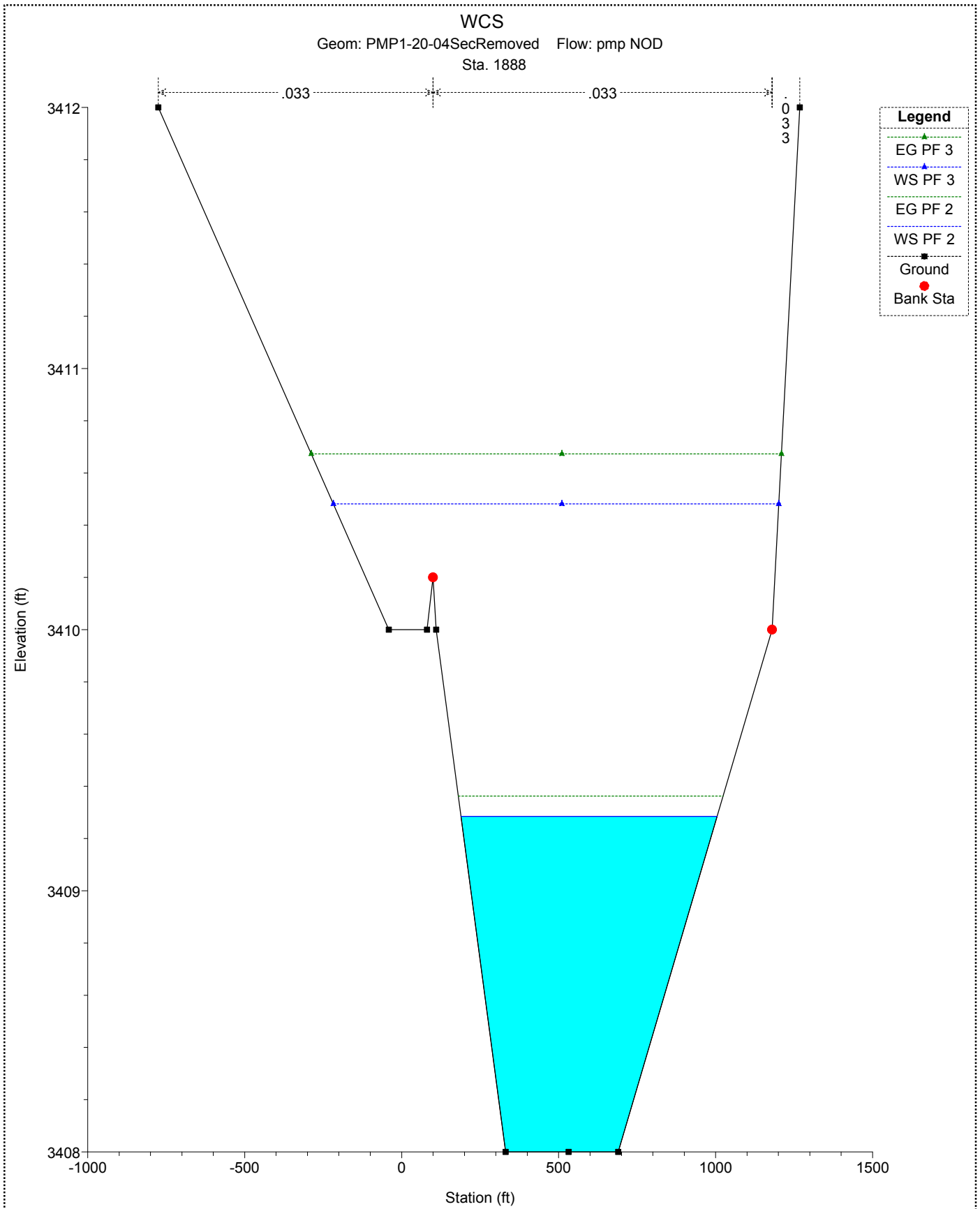












APPENDIX L

HEC-HMS MODEL FOR THE CALCULATION OF THE 100-YEAR PEAK DISCHARGE, ANTECEDENT MOISTURE CONDITION II

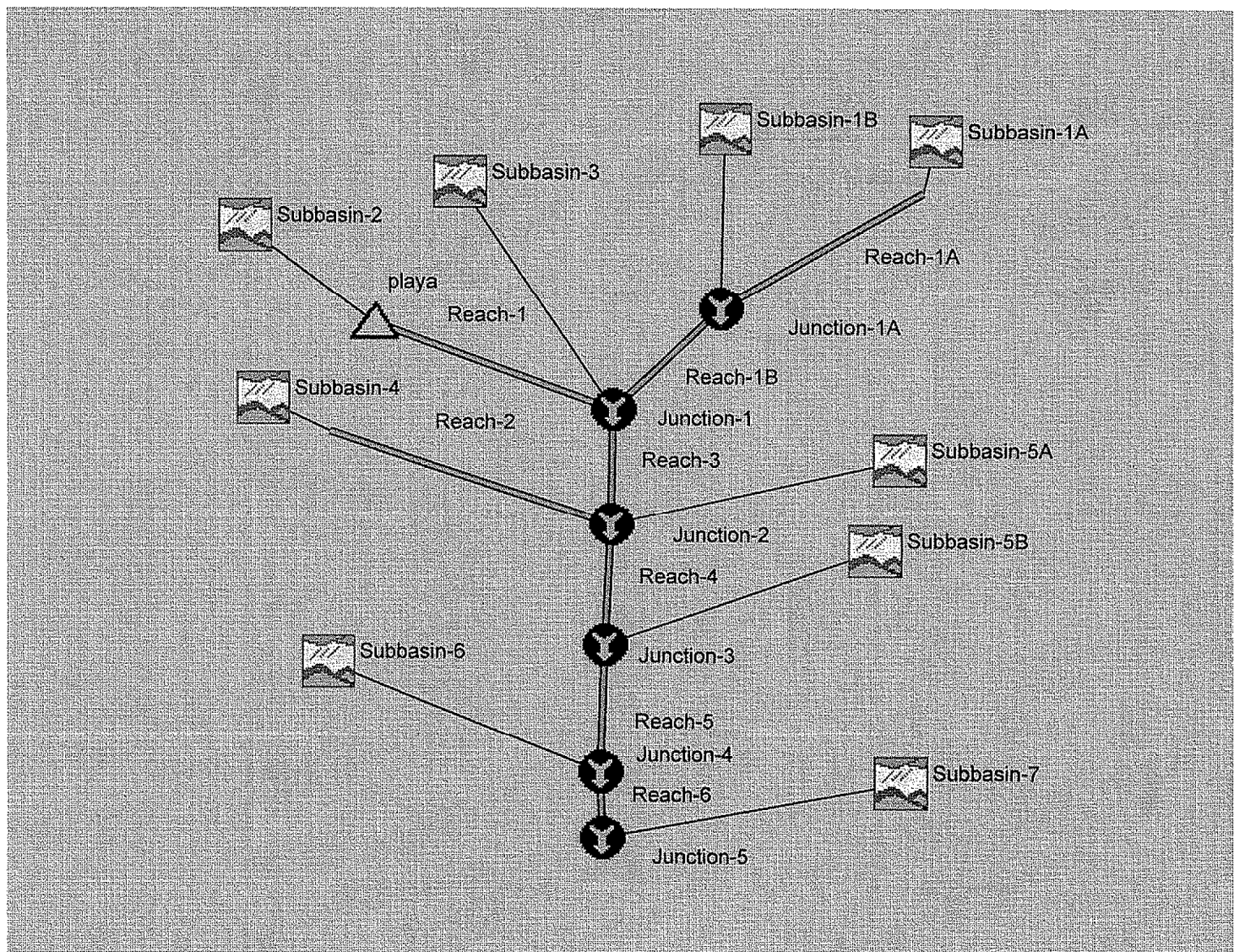
HMS * Summary of Results

Project : WCS

Run Name : 100YrAMII3/24/06NOD

Start of Run : 01Dec00 0000 Basin Model : 100YrAMII3/24/06NOD
 End of Run : 02Dec00 0000 Met. Model : Met100 Year
 Execution Time : 24Mar06 1343 Control Specs : Control 1

Hydrologic Element	Discharge Peak (cfs)	Time of Peak	Volume (ac ft)	Drainage Area (sq mi)
Subbasin-4	572.63	01 Dec 00 1232	87.051	0.490
Reach-2	572.63	01 Dec 00 1247	86.663	0.490
Subbasin-2	744.22	01 Dec 00 1301	165.24	1.063
playa	0.0	30 Nov 00 2400	0.0	1.063
Reach-1	0.0	30 Nov 00 2400	0.0	1.063
Subbasin-1A	487.80	01 Dec 00 1323	131.37	0.691
Reach-1A	487.80	01 Dec 00 1340	130.69	0.691
Subbasin-1B	325.64	01 Dec 00 1238	54.045	0.314
Junction-1A	611.21	01 Dec 00 1325	184.74	1.005
Reach-1B	611.21	01 Dec 00 1328	184.57	1.005
Subbasin-3	166.92	01 Dec 00 1238	27.661	0.156
Junction-1	697.32	01 Dec 00 1259	212.23	2.224
Reach-3	697.32	01 Dec 00 1316	211.13	2.224
Subbasin-5A	200.57	01 Dec 00 1232	30.187	0.192
Junction-2	1328.0	01 Dec 00 1252	327.98	2.906
Reach-4	1328.0	01 Dec 00 1313	325.85	2.906
Subbasin-5B	216.46	01 Dec 00 1248	41.405	0.265
Junction-3	1500.7	01 Dec 00 1311	367.25	3.171
Reach-5	1500.7	01 Dec 00 1325	365.62	3.171
Subbasin-6	91.584	01 Dec 00 1223	11.673	0.074
Junction-4	1520.6	01 Dec 00 1325	377.30	3.245
Reach-6	1520.6	01 Dec 00 1325	377.30	3.245
Subbasin-7	76.276	01 Dec 00 1300	16.696	0.104
Junction-5	1584.9	01 Dec 00 1325	393.99	3.349



Meteorologic Model Input

HMS * Meteorologic Model

File Edit Help

Meteorologic Model: Met100 Year Subbasin List

Description: 100 Year, 24 Hour Storm ...

Precipitation Evapotranspiration

Method : SCS Hypothetical Storm

Storm Selection: Type II

Storm Depth (in) : 6.0

OK Apply Cancel

HMS * Basin Model * SCS Curve Number

Sort Help

Basin Model ID: 100YrAMII3/24/06NOD

Subbasin Name	SCS Curve Number	Initial Abstraction (in)	Imperviousness (%)
Subbasin-1A	79		0.0
Subbasin-2	72		0.0
Subbasin-3	76		0.0
Subbasin-4	76		0.0
Subbasin-5B	72		0.0
Subbasin-6	72		0.0
Subbasin-1B	75		0.0
Subbasin-5A	72		0.0
Subbasin-7	73		0.0

OK Apply Cancel

HMS * Basin Model * SCS UH

Sort Help

Basin Model ID: 100YrAMII3/24/06NOD

Time Units : Minutes

Subbasin Name	SCS Lag (min)
Subbasin-1A	86
Subbasin-2	65
Subbasin-3	44
Subbasin-4	39
Subbasin-5B	53
Subbasin-6	30
Subbasin-1B	44
Subbasin-5A	38
Subbasin-7	64

OK Apply Cancel

HMS * Basin Model * Lag Routing

Help

Basin Model ID : 100YrAMII3/24/06NOD

Interval :

Reach Name	Lag (min)
Reach-1	35
Reach-2	15
Reach-3	17
Reach-4	21
Reach-5	14
Reach-1A	17
Reach-1B	3
Reach-6	0

OK Apply Cancel

HMS * Basin Model * Reservoir Editor

Edit File Help

Reservoir Name:

Description:

Storage Outlet Spillway Overflow Dam Break

Method :

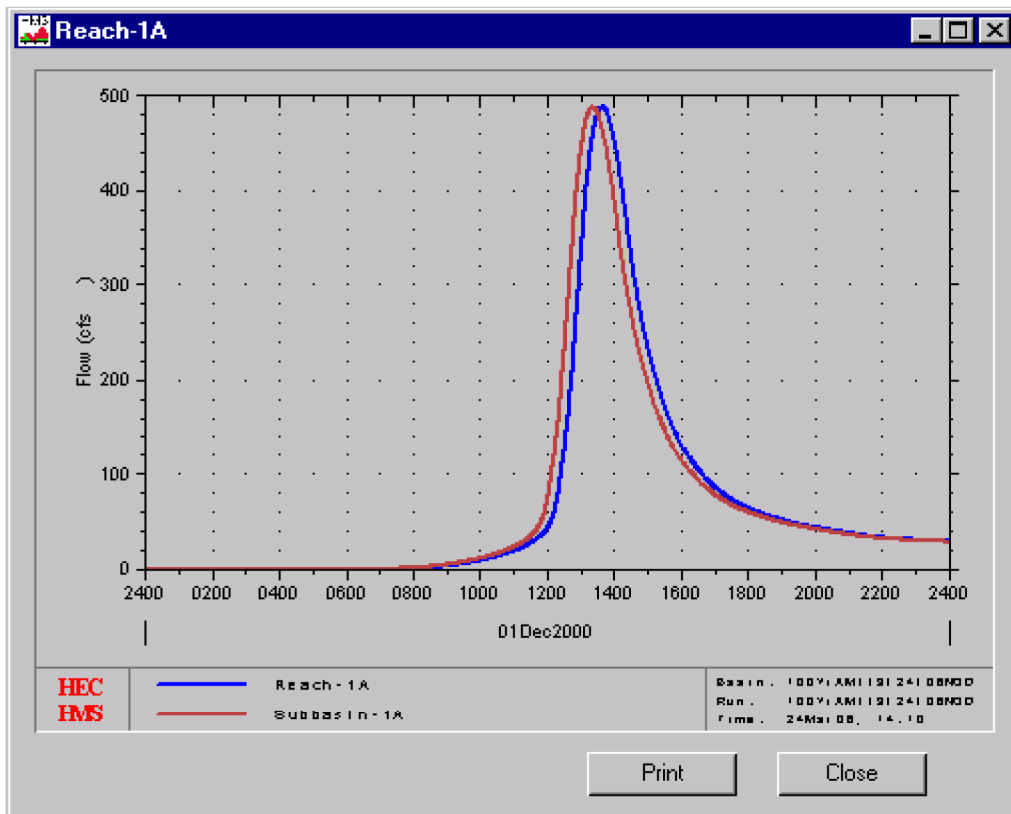
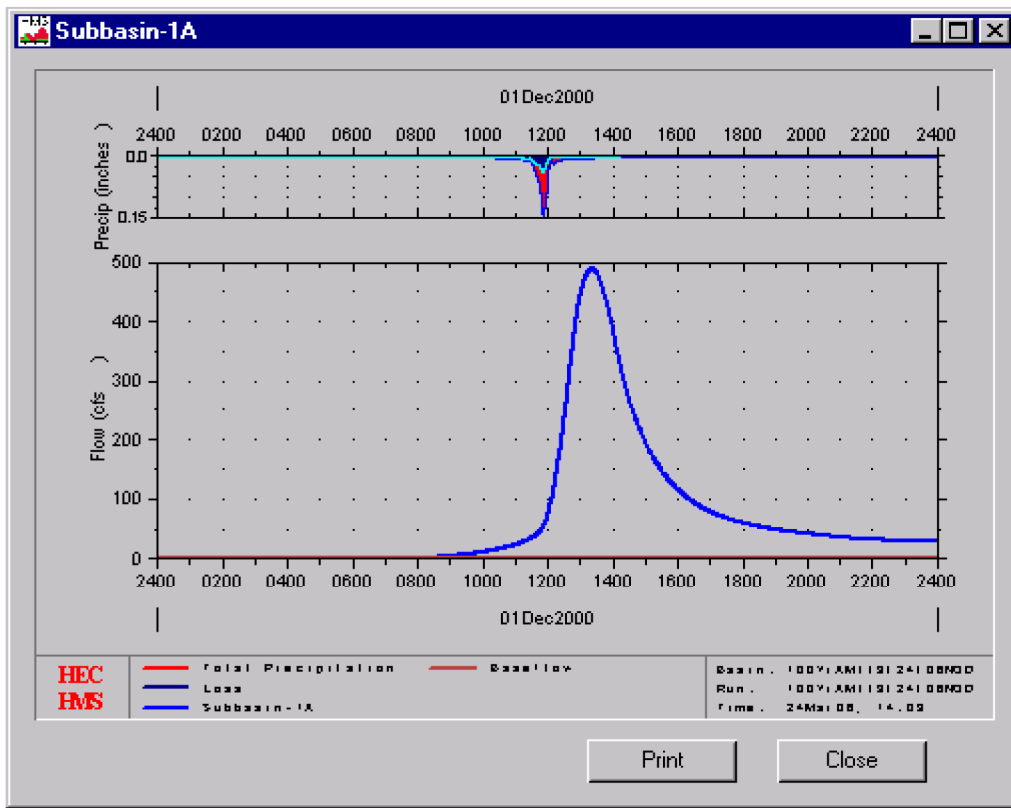
Initial

Elevation (ft)	Storage (acre-feet)	Outflow (cfs)
3478.0	0.0	0.0
3480.0	24.0	0.0
3482.0	61.0	0.0
3484.0	170.0	0.0
3486.0	457.0	0.0
3487.0	693.0	863.0
3488.0	928.0	2427.0

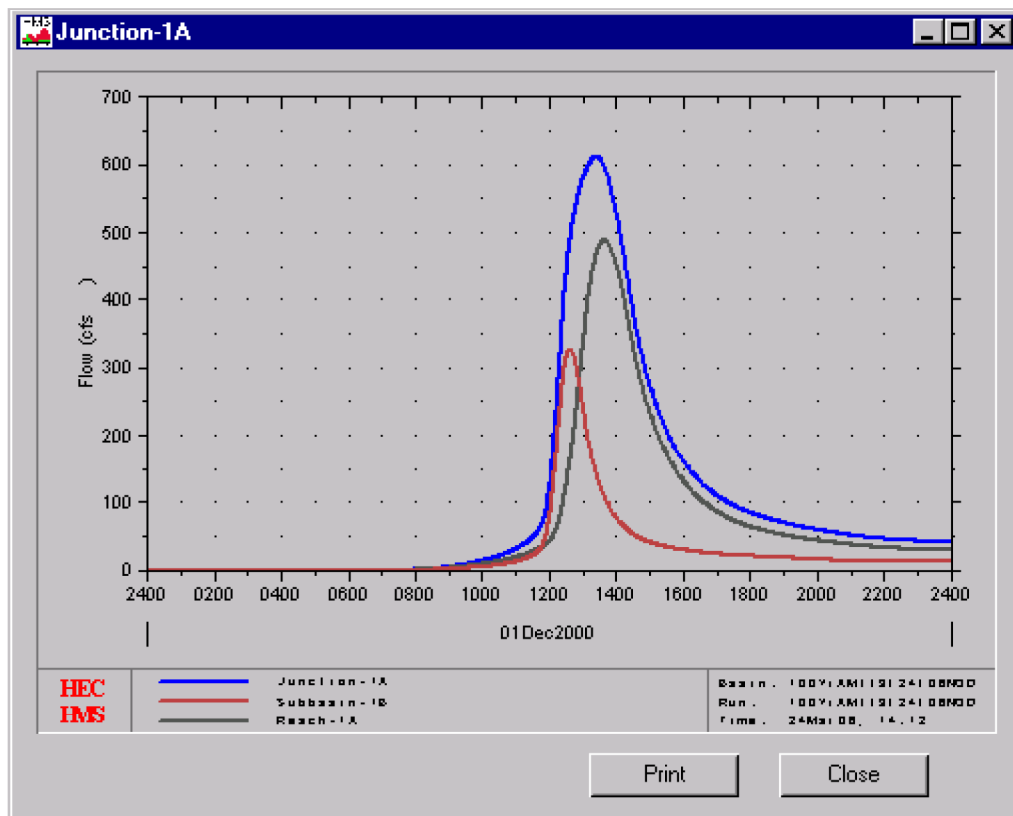
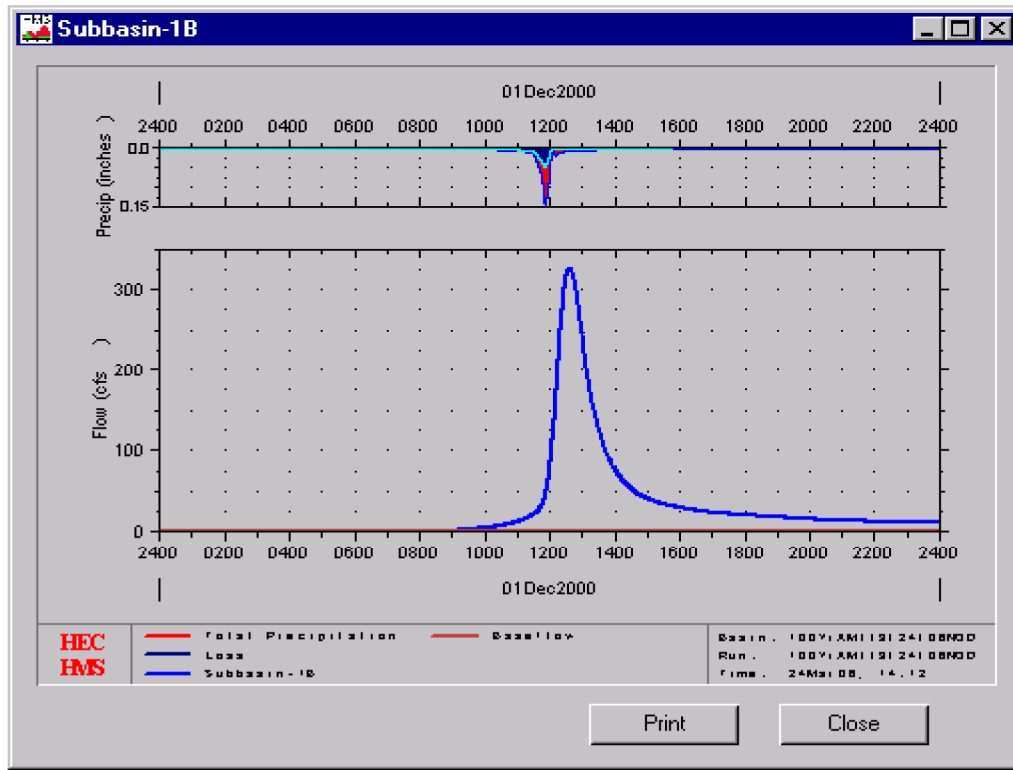
Graph

OK Apply Cancel

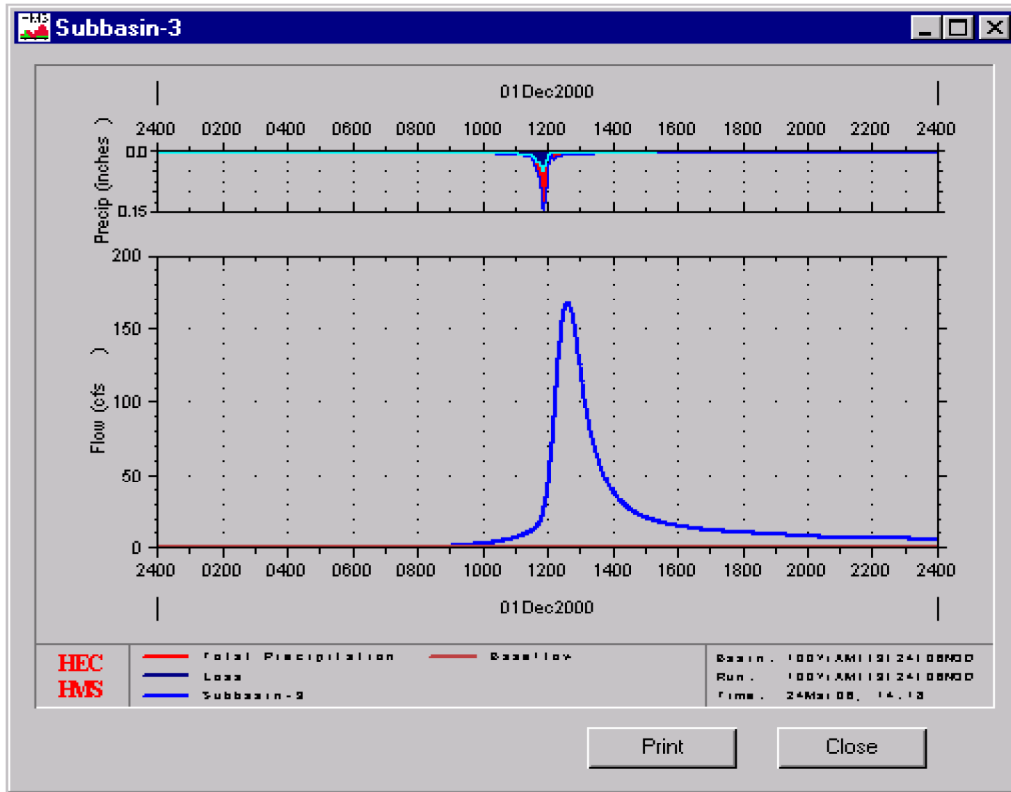
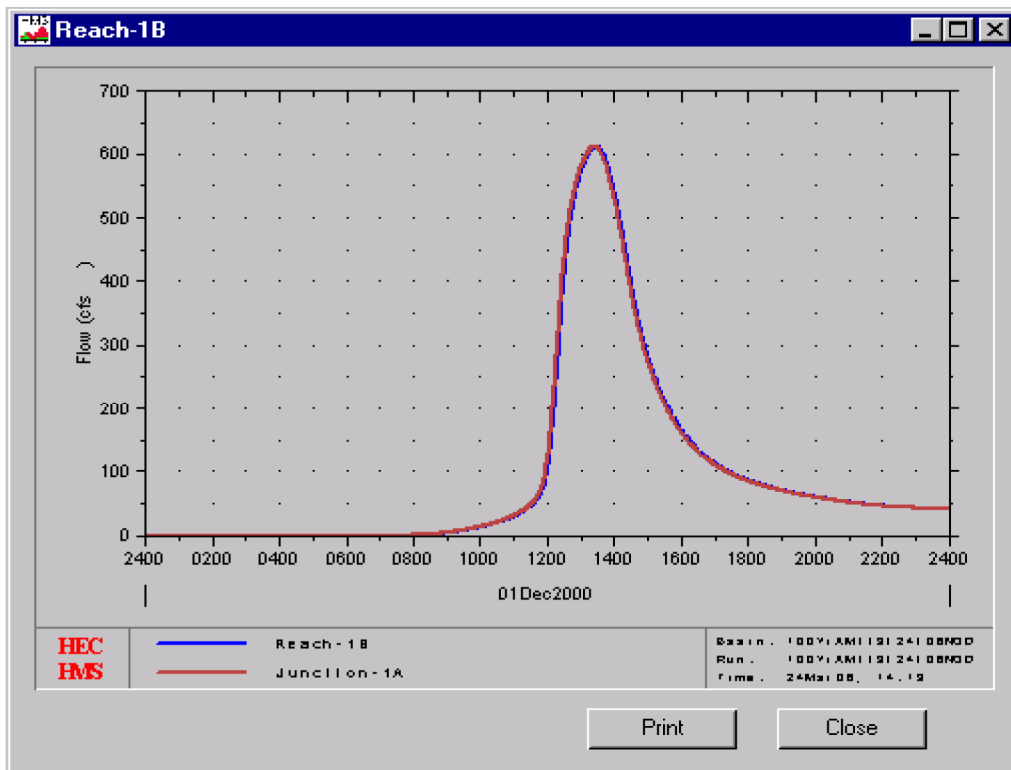
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



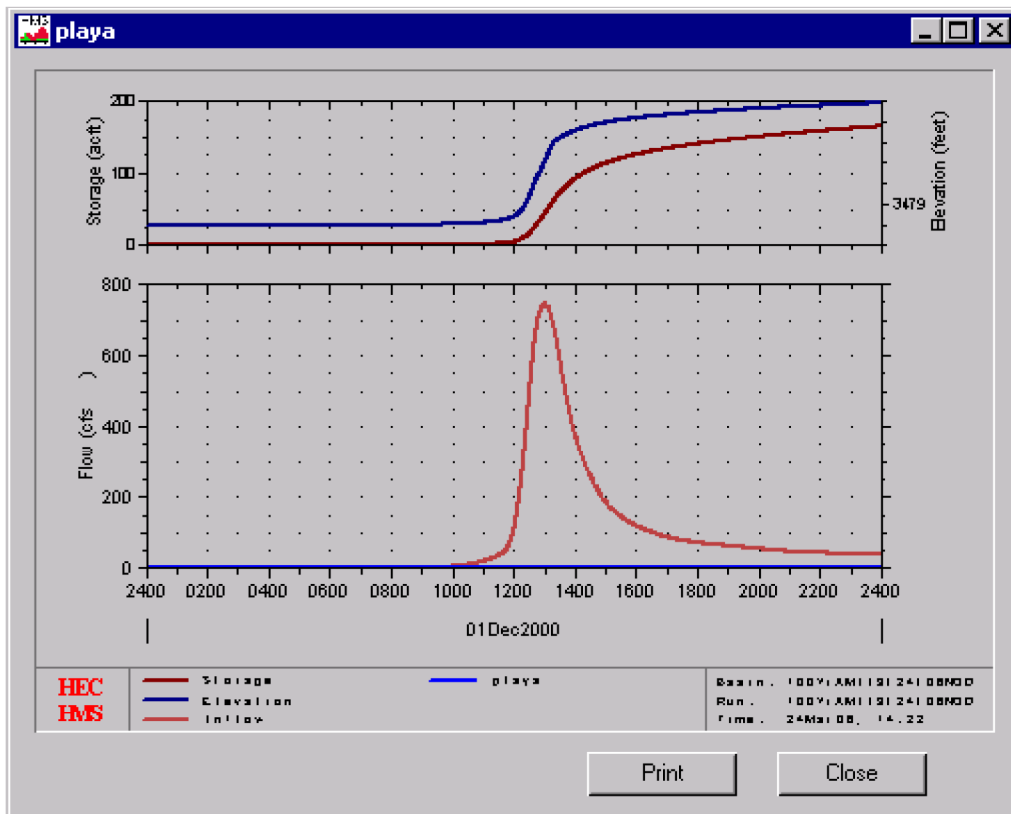
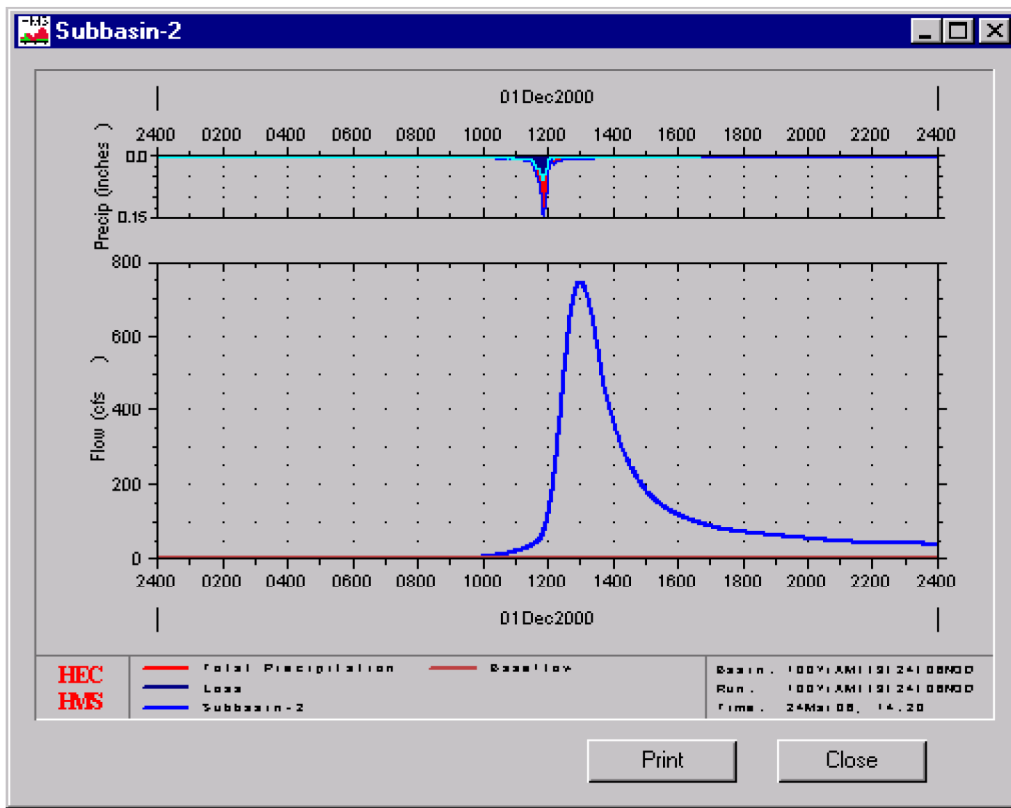
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



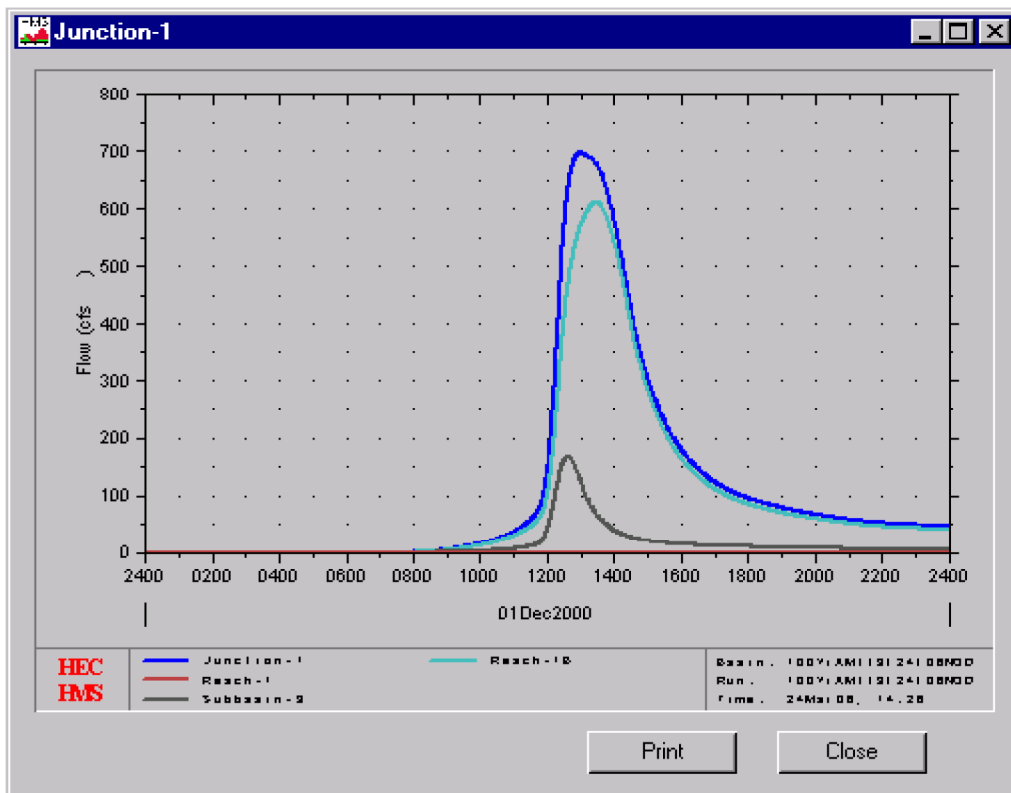
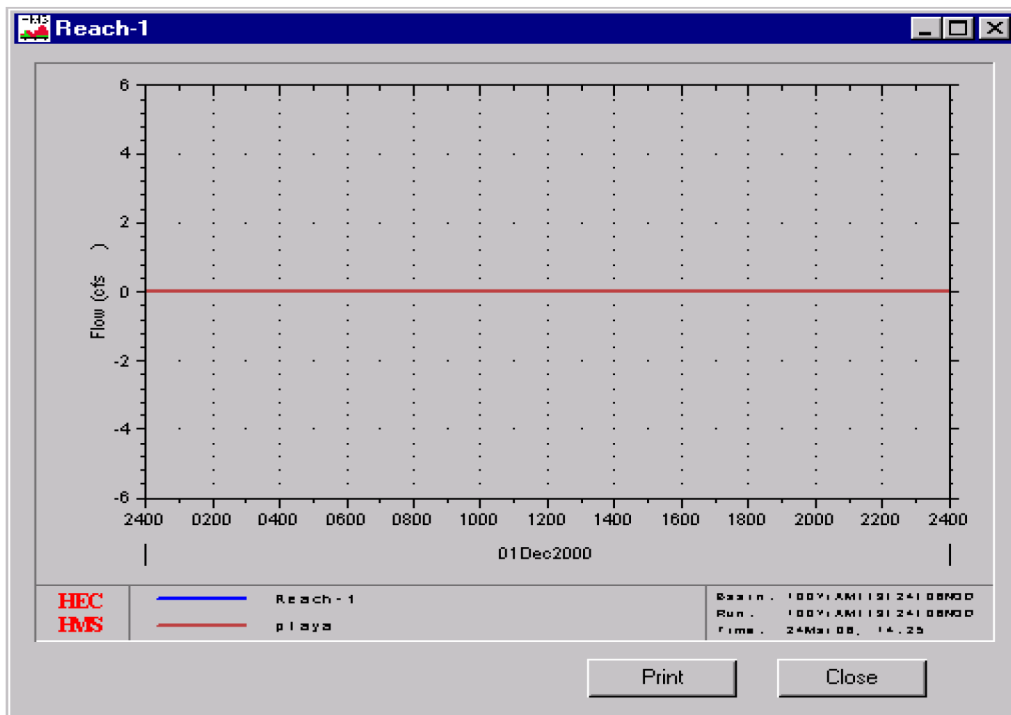
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



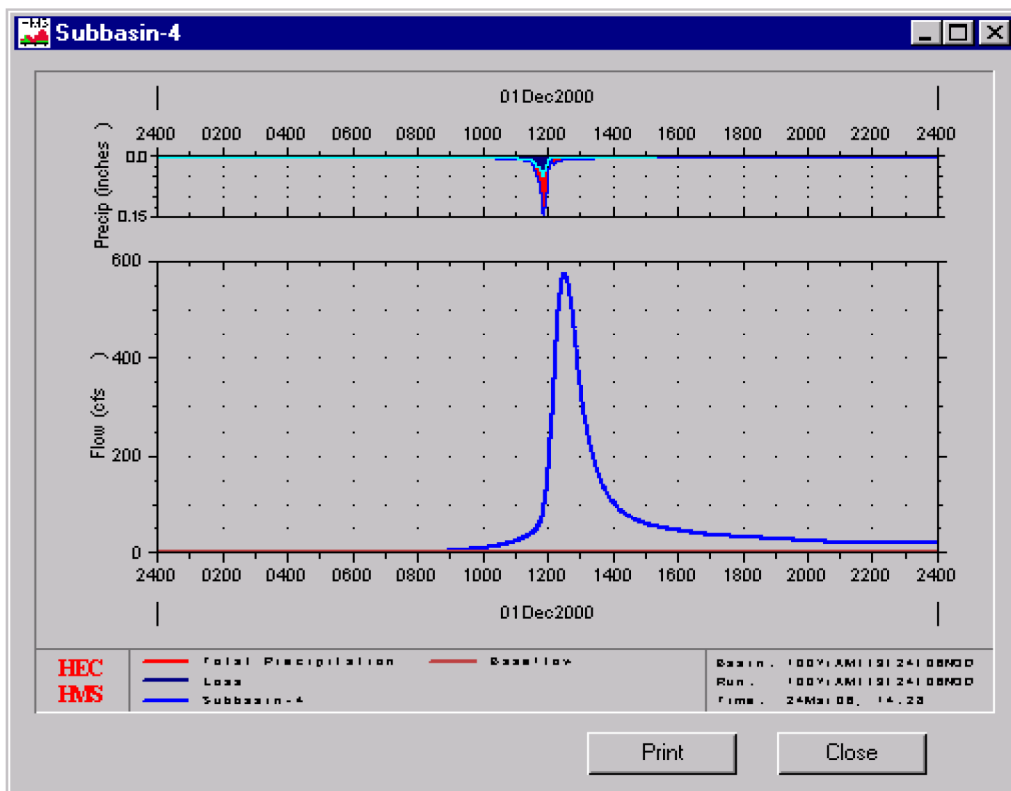
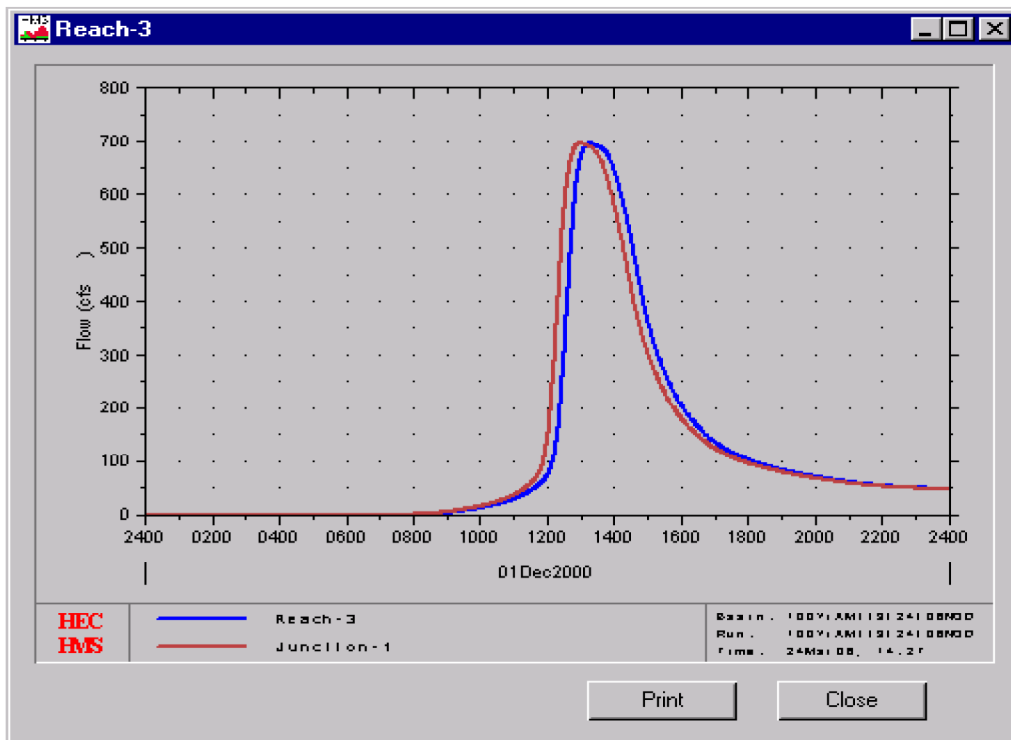
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



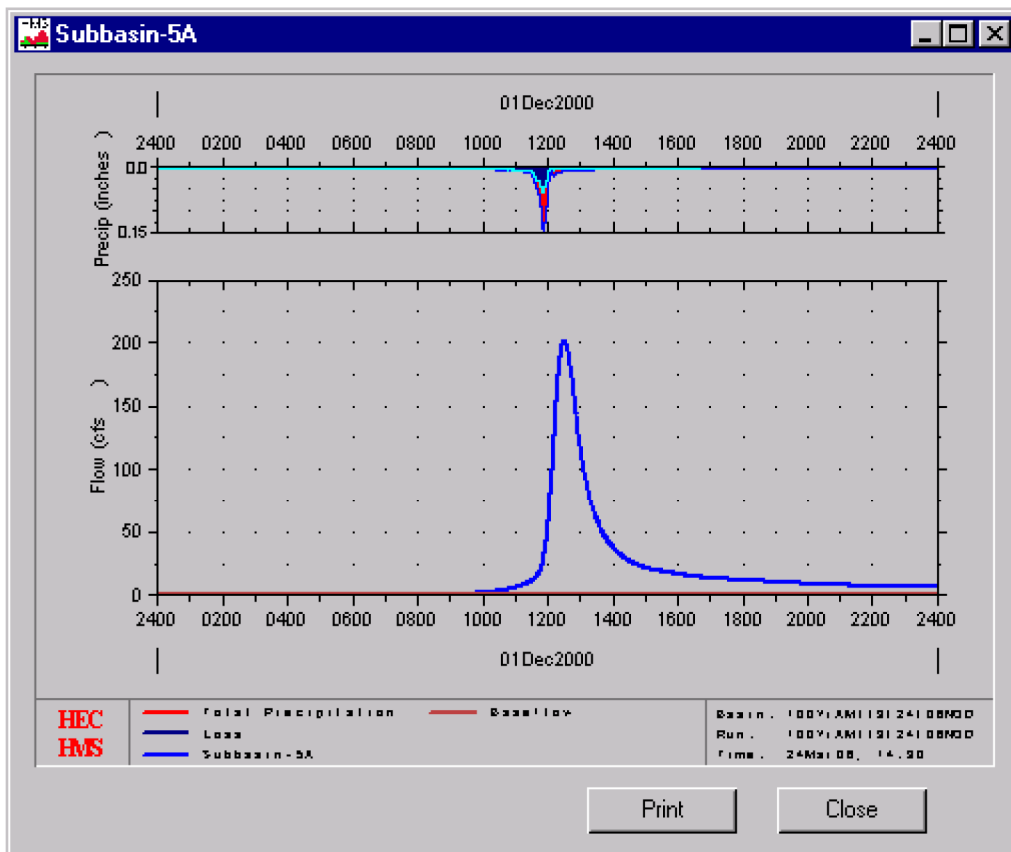
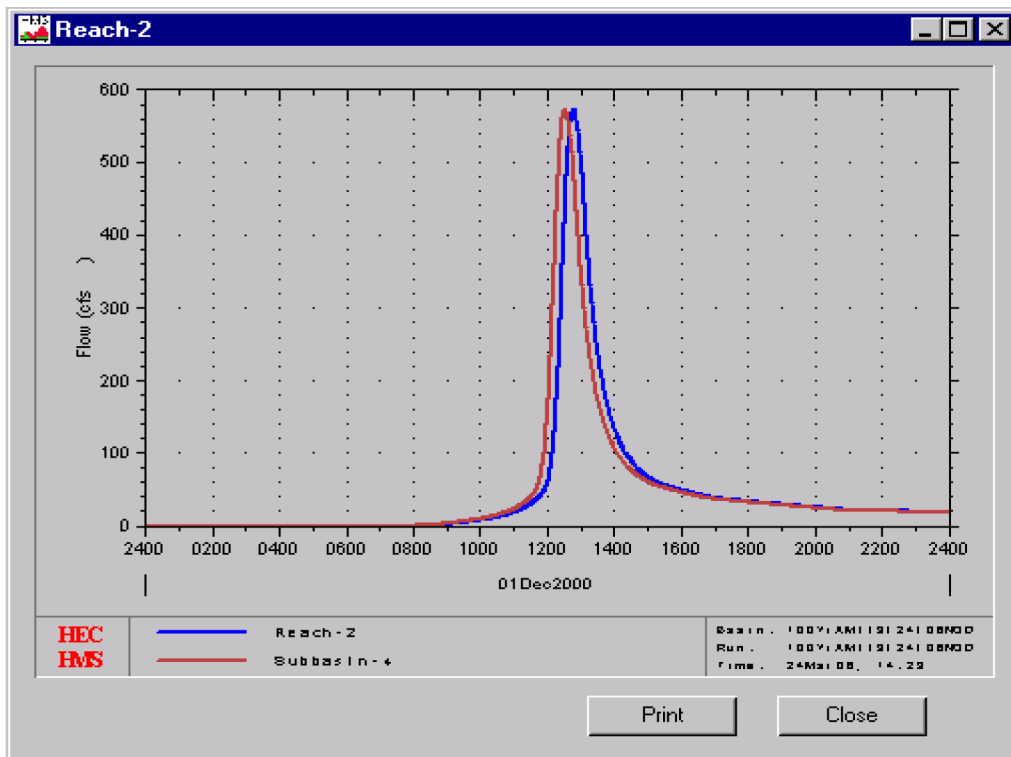
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



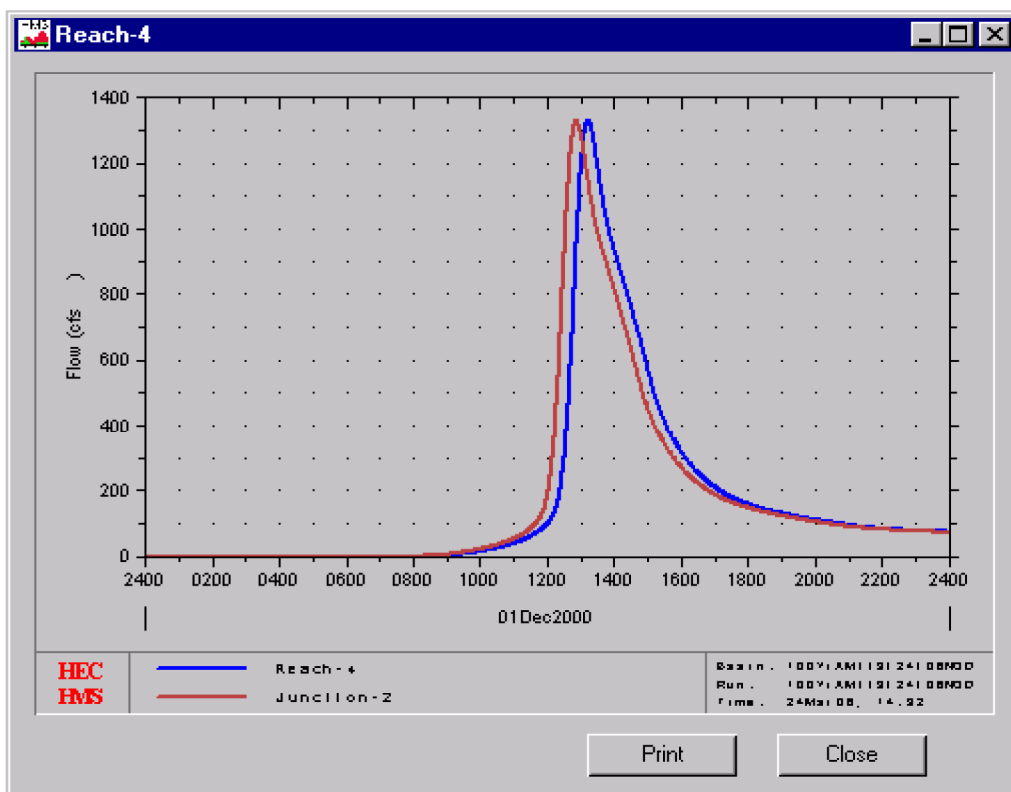
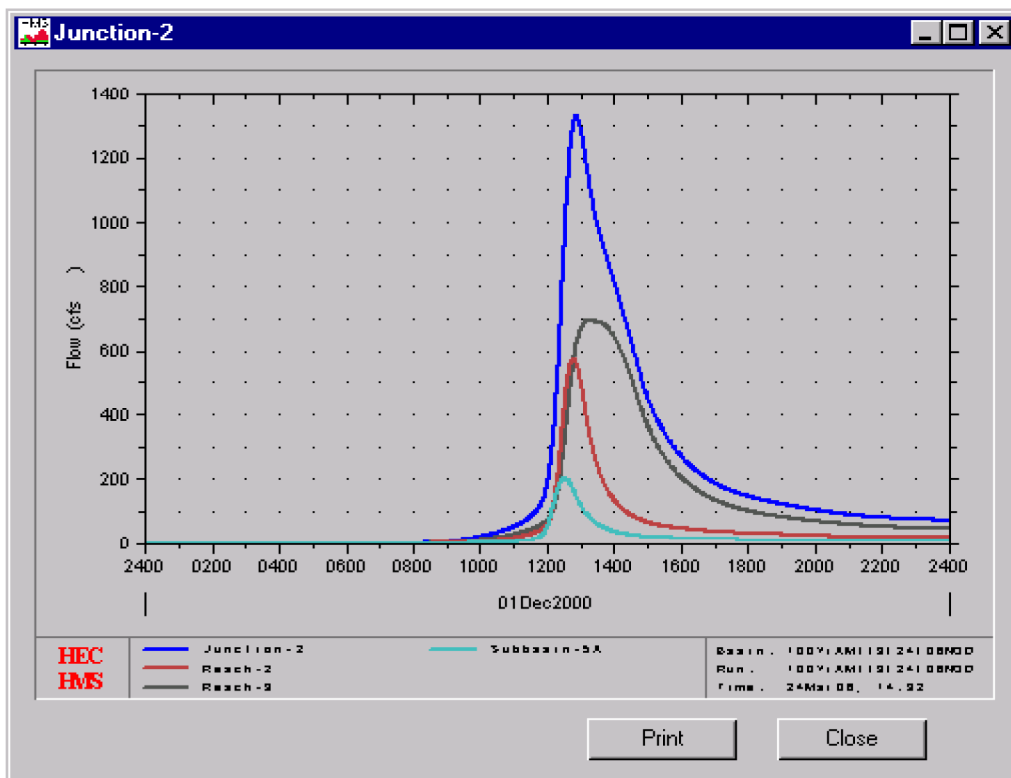
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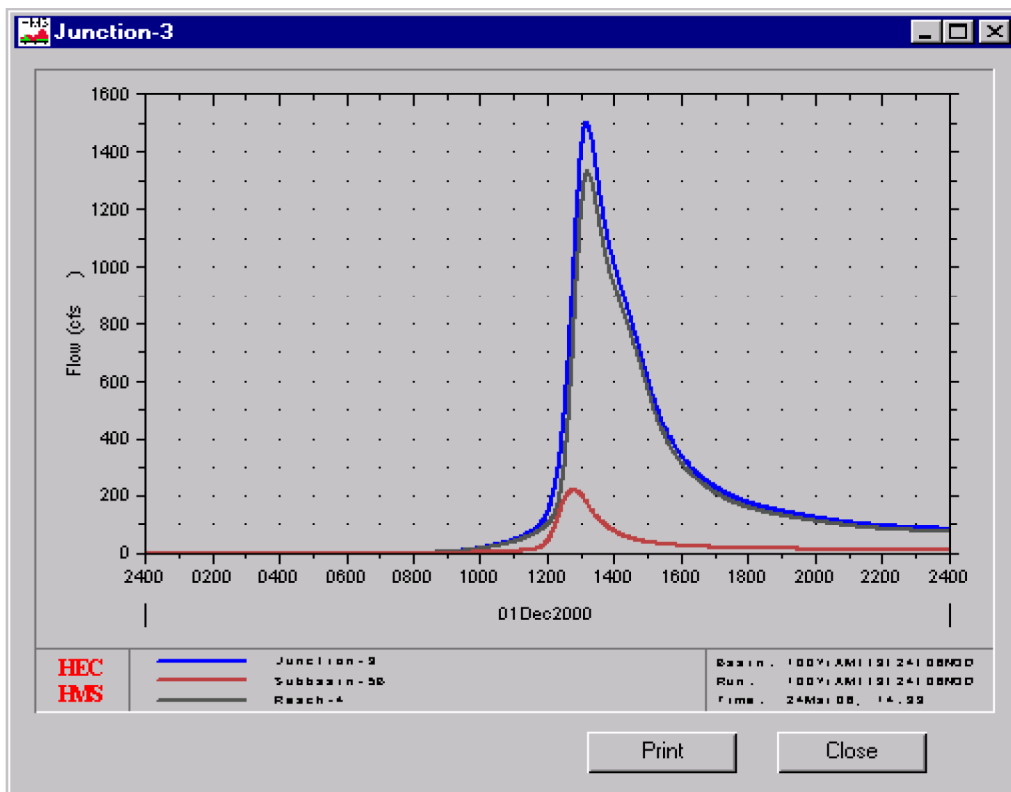
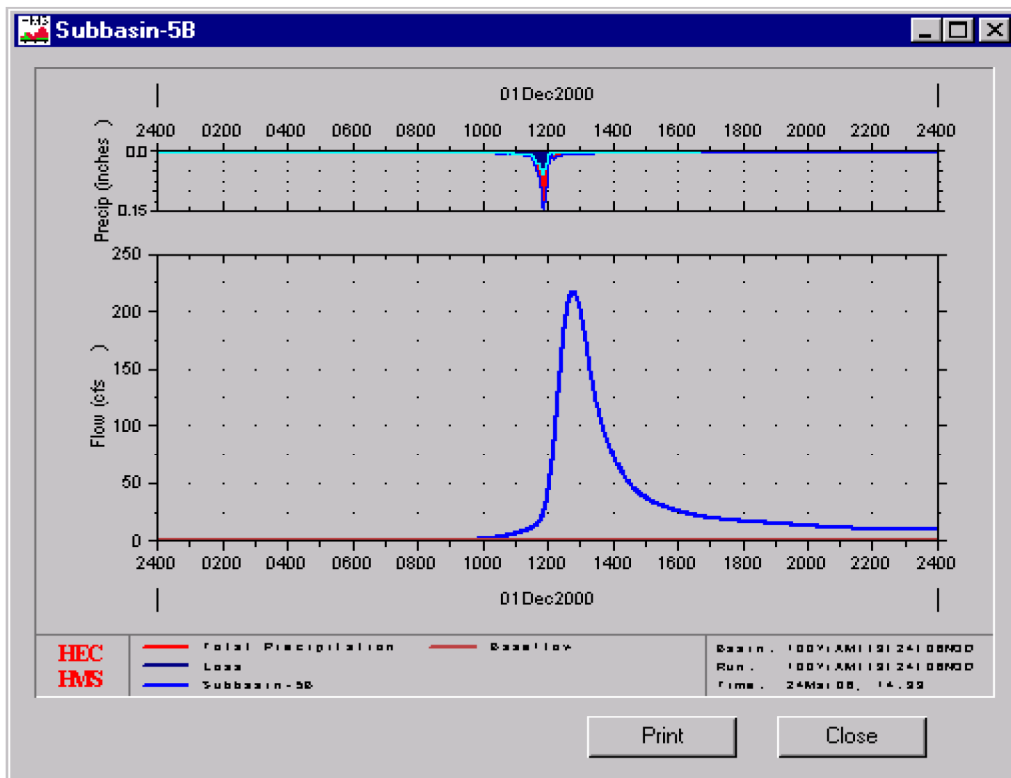
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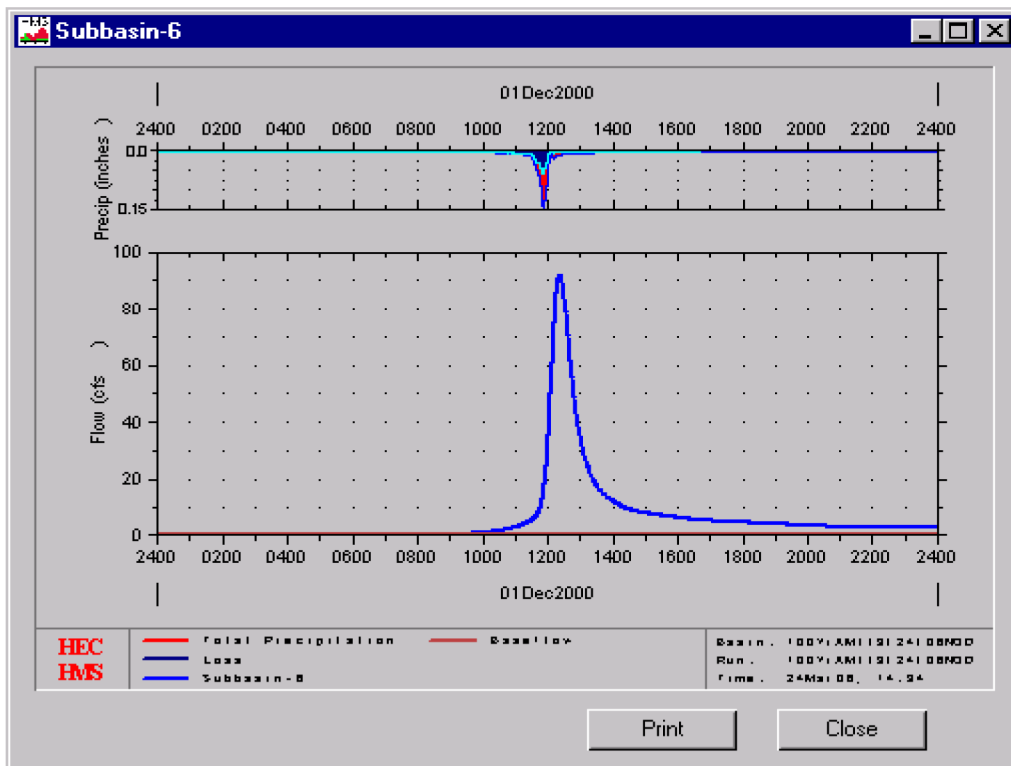
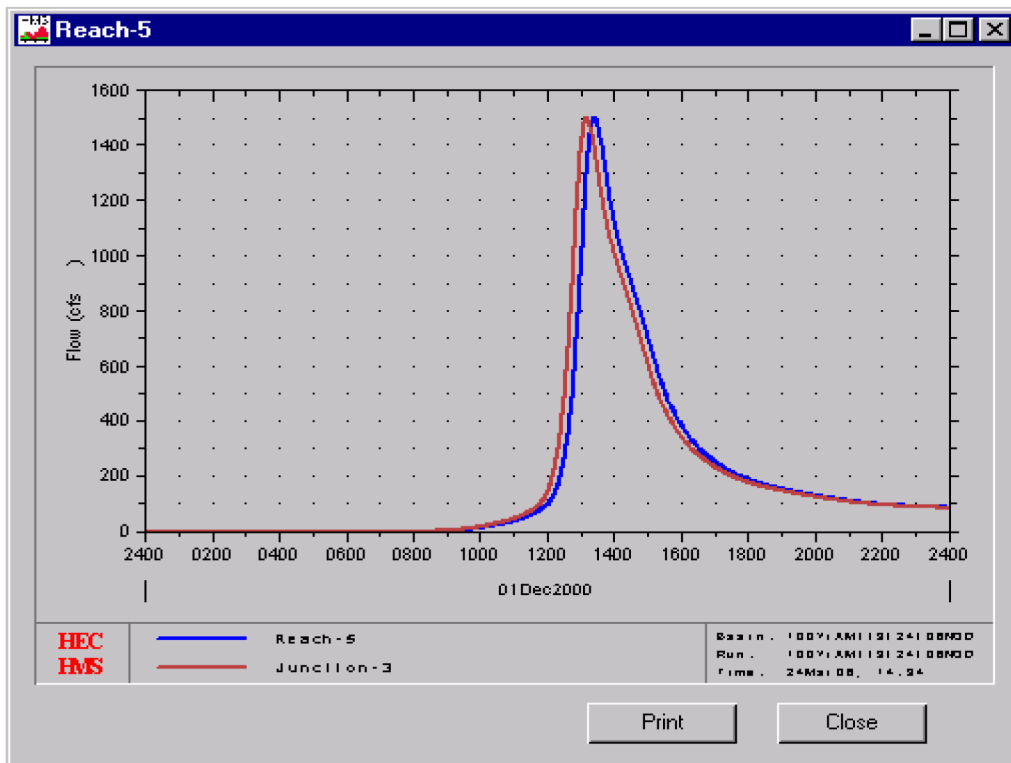
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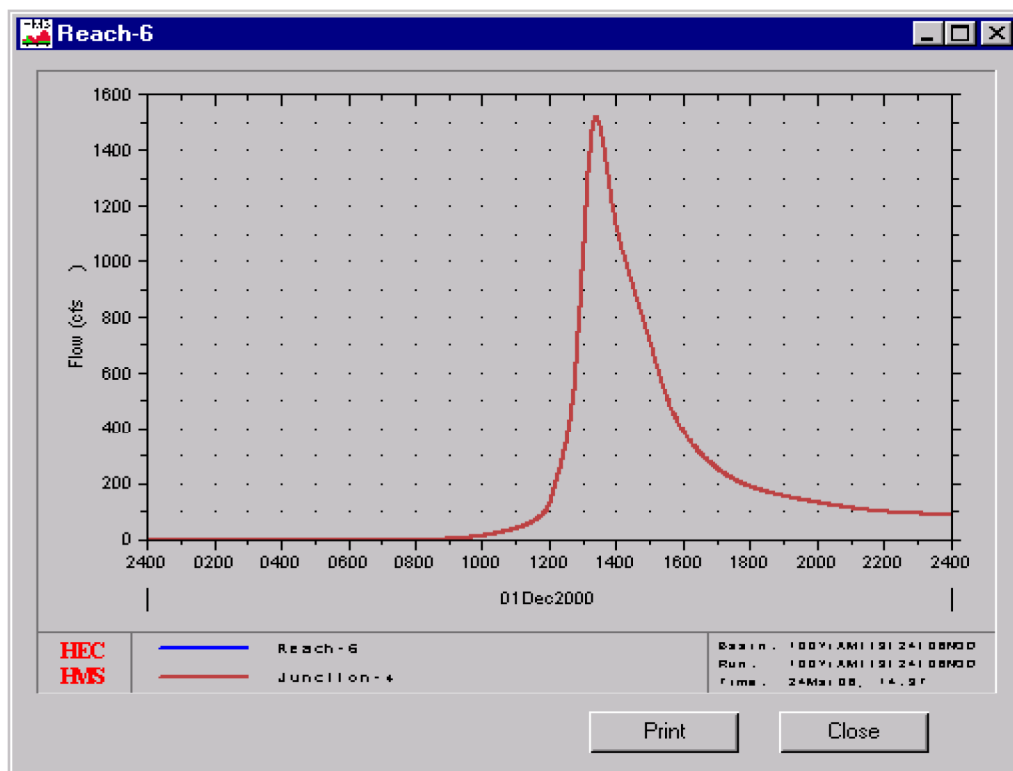
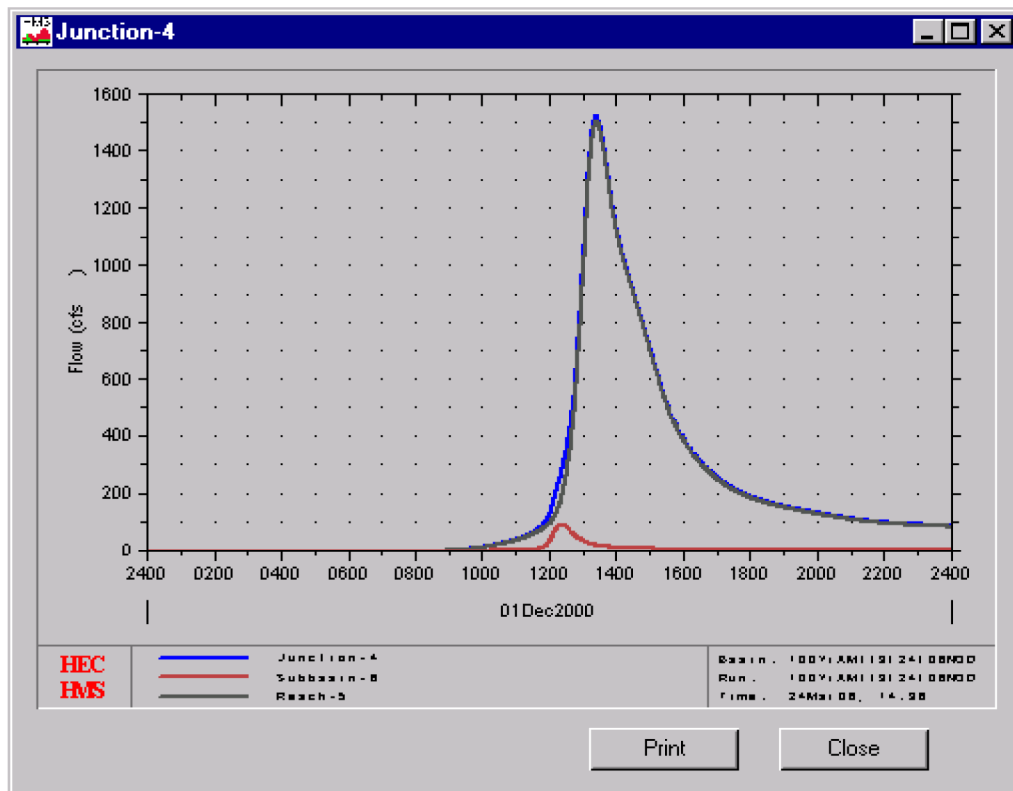
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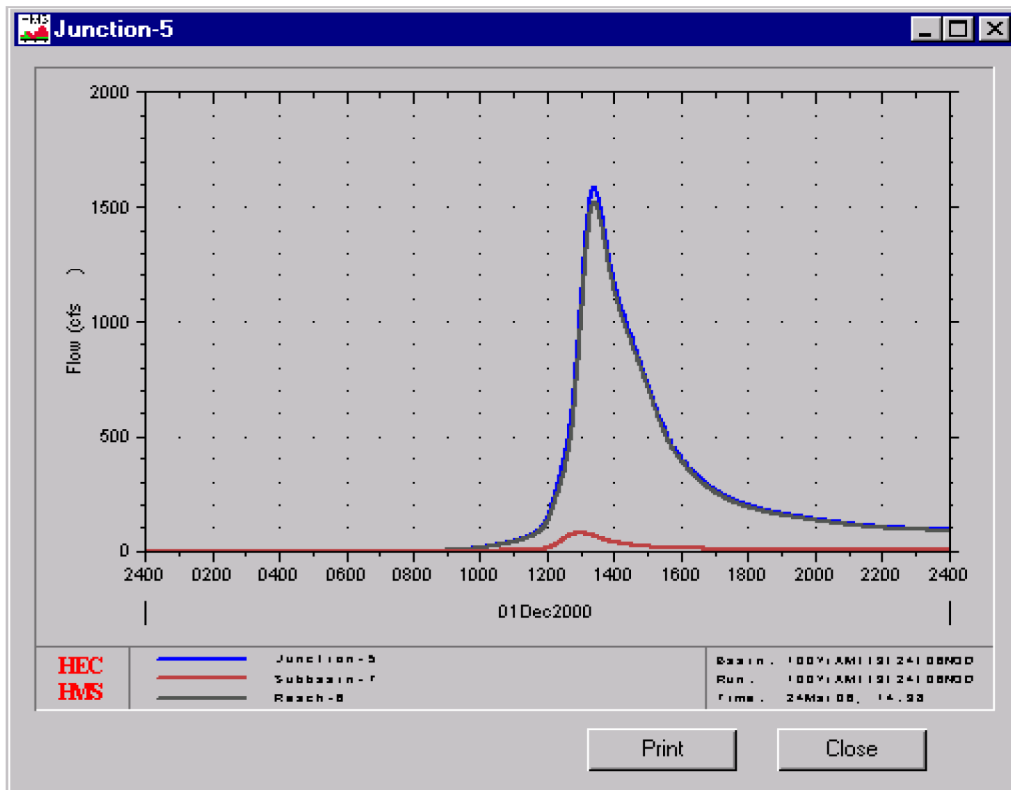
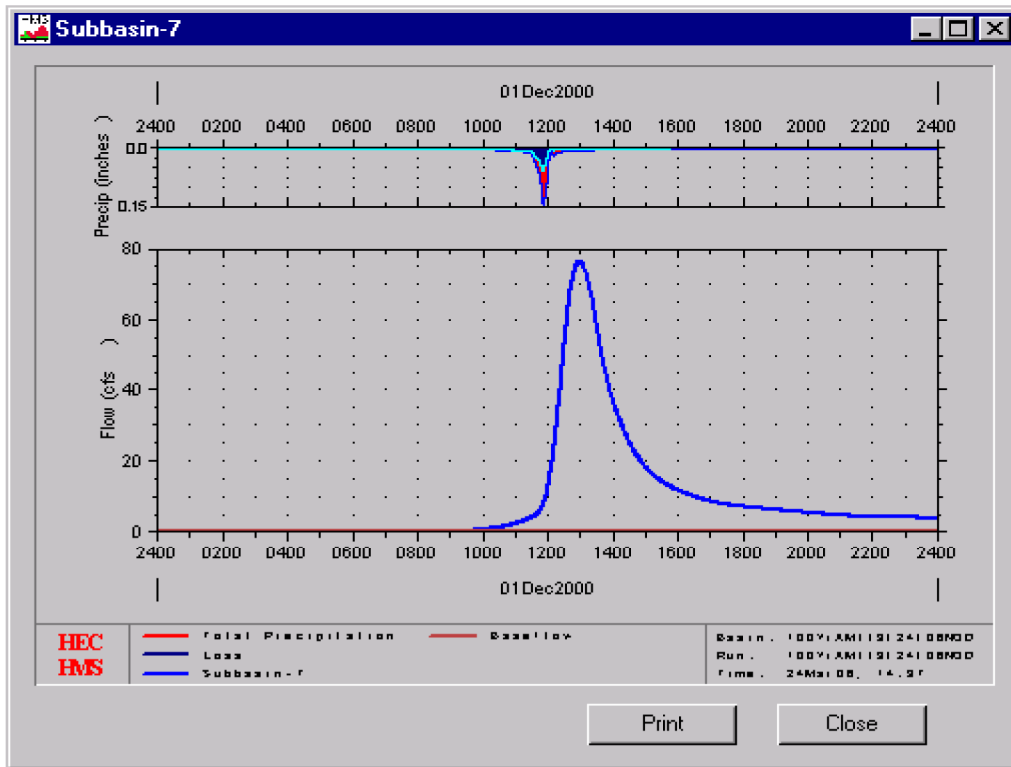
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



APPENDIX M

HEC-RAS MODEL FOR THE CALCULATION OF THE 100-YEAR WATER SURFACE PROFILE, ANTECEDENT MOISTURE CONDITION II

HEC-RAS Plan: AMH 100 River: Ditch A Reach: 5

Reach	River Sta	Q Total (cfs)	Min Chl El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	Max Chl Dpth (ft)	E.G. Elev (ft)	E.G. Slope (ft/m)	Vel Chnl (ft/s)	Sta W.S. Lft (ft)	Sta W.S. Rgt (ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
5	12674	488.00	3477.00	3478.35	3477.98	1.35	3478.42	0.003073	2.23	355.77	656.81	223.75	301.04	0.43
5	12674	488.00	3477.00	3478.35	3477.98	1.35	3478.42	0.003073	2.23	355.77	656.81	223.75	301.04	0.43
5	12674	488.00	3477.00	3478.35	3477.98	1.35	3478.42	0.003073	2.23	355.77	656.81	223.75	301.04	0.43
5	12674	488.00	3477.00	3478.35	3477.98	1.35	3478.42	0.003073	2.23	355.77	656.81	223.75	301.04	0.43
5	11337	488.00	3469.00	3470.36	3470.33	1.36	3470.73	0.014260	4.87	427.21	557.43	101.95	130.23	0.92
5	11337	488.00	3469.00	3470.36	3470.33	1.36	3470.73	0.014260	4.87	427.21	557.43	101.95	130.23	0.92
5	11337	488.00	3469.00	3470.36	3470.33	1.36	3470.73	0.014260	4.87	427.21	557.43	101.95	130.23	0.92
5	11337	488.00	3469.00	3470.36	3470.33	1.36	3470.73	0.014260	4.87	427.21	557.43	101.95	130.23	0.92
5	11337	488.00	3469.00	3470.36	3470.33	1.36	3470.73	0.014260	4.87	427.21	557.43	101.95	130.23	0.92
5	10937	488.00	3464.00	3465.74	3465.55	1.74	3466.02	0.009772	4.21	474.19	600.46	116.03	126.27	0.77
5	10937	488.00	3464.00	3465.74	3465.55	1.74	3466.02	0.009772	4.21	474.19	600.46	116.03	126.27	0.77
5	10937	488.00	3464.00	3465.74	3465.55	1.74	3466.02	0.009772	4.21	474.19	600.46	116.03	126.27	0.77
5	10937	488.00	3464.00	3465.74	3465.55	1.74	3466.02	0.009772	4.21	474.19	600.46	116.03	126.27	0.77
5	10288	488.00	3456.00	3456.90	3456.90	0.90	3457.15	0.020388	4.04	405.26	647.69	120.78	242.43	1.01
5	10288	488.00	3456.00	3456.90	3456.90	0.90	3457.15	0.020388	4.04	405.26	647.69	120.78	242.43	1.01
5	10288	488.00	3456.00	3456.90	3456.90	0.90	3457.15	0.020388	4.04	405.26	647.69	120.78	242.43	1.01
5	10288	488.00	3456.00	3456.90	3456.90	0.90	3457.15	0.020388	4.04	405.26	647.69	120.78	242.43	1.01
5	9690	611.00	3450.00	3451.49	3451.14	1.49	3451.60	0.004656	2.56	444.61	758.20	238.60	313.59	0.52
5	9690	611.00	3450.00	3451.49	3451.14	1.49	3451.60	0.004656	2.56	444.61	758.20	238.60	313.59	0.52
5	9690	611.00	3450.00	3451.49	3451.14	1.49	3451.60	0.004656	2.56	444.61	758.20	238.60	313.59	0.52
5	9690	611.00	3450.00	3451.49	3451.14	1.49	3451.60	0.004656	2.56	444.61	758.20	238.60	313.59	0.52
5	9009	611.00	3445.00	3446.45	3446.34	1.45	3446.66	0.012581	3.84	454.43	694.37	159.10	239.94	0.83
5	9009	611.00	3445.00	3446.45	3446.34	1.45	3446.66	0.012581	3.84	454.43	694.37	159.10	239.94	0.83
5	9009	611.00	3445.00	3446.45	3446.34	1.45	3446.66	0.012581	3.84	454.43	694.37	159.10	239.94	0.83
5	9009	611.00	3445.00	3446.45	3446.34	1.45	3446.66	0.012581	3.84	454.43	694.37	159.10	239.94	0.83
5	8130	611.00	3440.00	3441.57	3441.11	1.57	3441.65	0.003204	2.21	469.14	811.67	276.52	342.53	0.43
5	8130	611.00	3440.00	3441.57	3441.11	1.57	3441.65	0.003204	2.21	469.14	811.67	276.52	342.53	0.43
5	8130	611.00	3440.00	3441.57	3441.11	1.57	3441.65	0.003204	2.21	469.14	811.67	276.52	342.53	0.43
5	8130	611.00	3440.00	3441.57	3441.11	1.57	3441.65	0.003204	2.21	469.14	811.67	276.52	342.53	0.43
5	7717	611.00	3437.80	3438.66	3438.66	0.86	3438.94	0.020021	4.18	333.18	607.65	146.05	274.48	1.01
5	7717	611.00	3437.80	3438.66	3438.66	0.86	3438.94	0.020021	4.18	333.18	607.65	146.05	274.48	1.01
5	7717	611.00	3437.80	3438.66	3438.66	0.86	3438.94	0.020021	4.18	333.18	607.65	146.05	274.48	1.01
5	7717	611.00	3437.80	3438.66	3438.66	0.86	3438.94	0.020021	4.18	333.18	607.65	146.05	274.48	1.01
5	7253	697.00	3435.00	3436.35	3435.88	1.35	3436.40	0.001738	1.69	405.86	923.44	417.07	517.58	0.32
5	7253	697.00	3435.00	3436.35	3435.88	1.35	3436.40	0.001738	1.69	405.86	923.44	417.07	517.58	0.32
5	7253	697.00	3435.00	3436.35	3435.88	1.35	3436.40	0.001738	1.69	405.86	923.44	417.07	517.58	0.32
5	7253	697.00	3435.00	3436.35	3435.88	1.35	3436.40	0.001738	1.69	405.86	923.44	417.07	517.58	0.32
5	6343	1328.00	3430.00	3430.70	3430.70	0.70	3431.00	0.019035	4.37	780.28	1294.88	303.78	514.60	1.00
5	6343	1328.00	3430.00	3430.70	3430.70	0.70	3431.00	0.019035	4.37	780.28	1294.88	303.78	514.60	1.00
5	6343	1328.00	3430.00	3430.70	3430.70	0.70	3431.00	0.019035	4.37	780.28	1294.88	303.78	514.60	1.00
5	6343	1328.00	3430.00	3430.70	3430.70	0.70	3431.00	0.019035	4.37	780.28	1294.88	303.78	514.60	1.00
5	5363	1328.00	3425.00	3426.33	3425.78	1.33	3426.38	0.001763	1.85	710.73	1541.30	727.78	830.57	0.33
5	5363	1328.00	3425.00	3426.33	3425.78	1.33	3426.38	0.001763	1.85	710.73	1541.30	727.78	830.57	0.33
5	5363	1328.00	3425.00	3426.33	3425.78	1.33	3426.38	0.001763	1.85	710.73	1541.30	727.78	830.57	0.33
5	5363	1328.00	3425.00	3426.33	3425.78	1.33	3426.38	0.001763	1.85	710.73	1541.30	727.78	830.57	0.33
5	4221	1501.00	3420.00	3420.99	3420.99	0.99	3421.33	0.018533	4.67	544.80	1028.40	321.48	483.60	1.01
5	4221	1501.00	3420.00	3420.99	3420.99	0.99	3421.33	0.018533	4.67	544.80	1028.40	321.48	483.60	1.01
5	4221	1501.00	3420.00	3420.99	3420.99	0.99	3421.33	0.018533	4.67	544.80	1028.40	321.48	483.60	1.01
5	4221	1501.00	3420.00	3420.99	3420.99	0.99	3421.33	0.018533	4.67	544.80	1028.40	321.48	483.60	1.01
5	3489	1501.00	3416.00	3417.18	3416.67	2.18	3417.24	0.002251	2.05	-116.98	881.92	804.91	998.90	0.37
5	3489	1501.00	3416.00	3417.18	3416.67	2.18	3417.24	0.002251	2.05	-116.98	881.92	804.91	998.90	0.37
5	3489	1501.00	3416.00	3417.18	3416.67	2.18	3417.24	0.002251	2.05	-116.98	881.92	804.91	998.90	0.37
5	3489	1501.00	3416.00	3417.18	3416.67	2.18	3417.24	0.002251	2.05	-116.98	881.92	804.91	998.90	0.37
5	2689	1501.00	3413.80	3414.52	3414.52	0.72	3414.81	0.019219	4.14	179.04	802.32	351.67	623.28	0.99
5	2689	1501.00	3413.80	3414.52	3414.52	0.72	3414.81	0.019219	4.14	179.04	802.32	351.67	623.28	0.99
5	2689	1501.00	3413.80	3414.52	3414.52	0.72	3414.81	0.019219	4.14	179.04	802.32	351.67	623.28	0.99
5	2689	1501.00	3413.80	3414.52	3414.52	0.72	3414.81	0.019219	4.14	179.04	802.32	351.67	623.28	0.99
5	2774	1501.00	3409.00	3413.99	3412.71	4.99	3414.03	0.000278	2.09	-399.05	640.58	1331.44	1039.64	0.17
5	2774	1501.00	3409.00	3413.99	3412.71	4.99	3414.03	0.000278	2.09	-399.05	640.58	1331.44	1039.64	0.17
5	2774	1501.00	3409.00	3413.99	3412.71	4.99	3414.03	0.000278	2.09	-399.05	640.58	1331.44	1039.64	0.17
5	2774	1501.00	3409.00	3413.99	3412.71	4.99	3414.03	0.000278	2.09	-399.05	640.58	1331.44	1039.64	0.17
5	2773	Culvert												
5	2734	1501.00	3408.90	3412.71	3412.71	3.81	3412.82	0.001004	3.22	83.74	515.65	665.51	431.91	0.31
5	2734	1501.00	3408.90	3412.71	3412.71	3.81	3412.82	0.001004	3.22	83.74	515.65	665.51	431.91	0.31
5	2734	1501.00	3408.90	3412.71	3412.71	3.81	3412.82	0.001004	3.22	83.74	515.65	665.51	431.91	0.31
5	2734	1501.00	3408.90	3412.71	3412.71	3.81	3412.82	0.001004	3.22	83.74	515.65	665.51	431.91	0.31
5	1888	1521.00	3408.00	3408.41	3408.72	0.41	3409.58	0.151914	8.68	286.11	788.53	175.18	503.42	2.59
5	1888	1521.00	3408.00	3408.41	3408.72	0.41	3409.58	0.151914	8.68	286.11	788.53	175.18	503.42	2.59

HEC-RAS Plan: AM11 100 River: Ditch A Reach: 5 (Continued)

Reach	River Sta	Q Total (cfs)	Min Chl El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	Max Chl Dpth (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Sta W.S. Lft (ft)	Sta W.S. Rgt (ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
5	1888	1521.00	3408.00	3408.41	3408.72	0.41	3409.58	0.151914	8.68	286.11	789.53	175.18	503.42	2.59
5	1888	1521.00	3408.00	3408.41	3408.72	0.41	3409.58	0.151914	8.68	286.11	789.53	175.18	503.42	2.59
5	1060	1585.00	3402.70	3404.50	3404.11	1.80	3404.66	0.005270	3.16	614.45	1141.44	501.30	526.98	0.57
5	1060	1585.00	3402.70	3405.00	3404.11	2.30	3405.06	0.001518	1.98	540.97	1206.09	799.30	665.03	0.32
5	1060	1585.00	3402.70	3406.00	3404.11	3.30	3406.01	0.000250	0.93	394.00	1523.00	1696.32	1129.00	0.13
5	1080	1585.00	3402.70	3407.00	3404.11	4.30	3407.01	0.000045	0.56	247.00	1523.00	2898.82	1276.00	0.06

FloodPlain.rep

HEC-RAS Version 3.0.1 Mar 2001
 U.S. Army Corp of Engineers
 Hydrologic Engineering Center
 609 Second Street, Suite D
 Davis, California 95616-4687
 (916) 756-1104

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X      X  XXXXXX  XXXX      XXXX      XX      XXXX
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PROJECT DATA

Project Title: WCS
 Project File : FloodPlain.prj
 Run Date and Time: 3/24/06 3:15:28 PM

Project in English units

PLAN DATA

Plan Title: Plan 35
 Plan File : D:\program files\WCS\FloodPlain.p35

Geometry Title: PMP1-20-04SecRemoved
 Geometry File : D:\program files\WCS\FloodPlain.g04

Flow Title : 100YrAMII3-24-06ManyNOD
 Flow File : D:\program files\WCS\FloodPlain.f27

Plan Summary Information:

Number of:	Cross Sections =	18	Multitple Openings =	0
	Culverts =	1	Inline Weirs =	0
	Bridges =	0		

Computational Information

Water surface calculation tolerance =	0.01
Critical depth calculaton tolerance =	0.01
Maximum number of interations =	20
Maximum difference tolerance =	0.3
Flow tolerance factor =	0.001

Computation Options

Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: 100YrAMII3-24-06ManyNOD
 Flow File : D:\program files\WCS\FloodPlain.f27

FloodPlain.rep

Flow Data (cfs)

River	Reach	RS	100 Yr.-WS3404.5	100 Yr.-WS3405	100 Yr.-WS3406
100 Yr.-WS3407					
Ditch A	5	12674	488	488	488
488					
Ditch A	5	9690	611	611	611
611					
Ditch A	5	7253	697	697	697
697					
Ditch A	5	6343	1328	1328	1328
1328					
Ditch A	5	4221	1501	1501	1501
1501					
Ditch A	5	1888	1521	1521	1521
1521					
Ditch A	5	1060	1585	1585	1585
1585					

Boundary Conditions

River stream	Reach	Profile	Upstream	Down
Ditch A	5	100 Yr.-WS3404.5	Critical	Known WS
= 3404.5				
Ditch A	5	100 Yr.-WS3405	Critical	Known
WS = 3405				
Ditch A	5	100 Yr.-WS3406	Critical	Known
WS = 3406				
Ditch A	5	100 Yr.-WS3407	Critical	Known
WS = 3407				

GEOMETRY DATA

Geometry Title: PMF1-20-04SecRemoved
 Geometry File : D:\program files\WCS\FloodPlain.g04

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 12674

INPUT

Description: Sta.. 12674

Station Elevation Data		num=		6					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3482	380	3478	560	3477	635	3478	761	3480
964	3482								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	380	.033	635	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	380	635		1206	1337	1433	.1
							.3

FloodPlain.rep

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3478.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3478.35	Reach Len. (ft)	1206.00	1337.00	1433.00
Crit W.S. (ft)	3477.98	Flow Area (sq ft)	4.19	215.78	3.78
E.G. Slope (ft/ft)	0.003073	Area (sq ft)	4.19	215.78	3.78
Q Total (cfs)	488.00	Flow (cfs)	3.25	481.82	2.93
Top Width (ft)	301.04	Top Width (ft)	24.23	255.00	21.81
Vel Total (ft/s)	2.18	Avg. Vel. (ft/s)	0.78	2.23	0.78
Max Chl Dpth (ft)	1.35	Hydr. Depth (ft)	0.17	0.85	0.17
Conv. Total (cfs)	8803.6	Conv. (cfs)	58.7	8692.1	52.8
Length Wtd. (ft)	1336.75	Wetted Per. (ft)	24.24	255.01	21.81
Min Ch El (ft)	3477.00	Shear (lb/sq ft)	0.03	0.16	0.03
Alpha	1.04	Stream Power (lb/ft s)	0.03	0.36	0.03
Frctn Loss (ft)	7.66	Cum Volume (acre-ft)	13.94	75.93	2.13
C & E Loss (ft)	0.03	Cum SA (acres)	18.70	98.60	3.43

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3478.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3478.35	Reach Len. (ft)	1206.00	1337.00	1433.00
Crit W.S. (ft)	3477.98	Flow Area (sq ft)	4.19	215.78	3.78
E.G. Slope (ft/ft)	0.003073	Area (sq ft)	4.19	215.78	3.78
Q Total (cfs)	488.00	Flow (cfs)	3.25	481.82	2.93
Top Width (ft)	301.04	Top Width (ft)	24.23	255.00	21.81
Vel Total (ft/s)	2.18	Avg. Vel. (ft/s)	0.78	2.23	0.78
Max Chl Dpth (ft)	1.35	Hydr. Depth (ft)	0.17	0.85	0.17
Conv. Total (cfs)	8803.6	Conv. (cfs)	58.7	8692.1	52.8

FloodPlain.rep

Length Wtd. (ft)	1336.75	Wetted Per. (ft)	24.24	255.01	21.81
Min Ch El (ft)	3477.00	Shear (lb/sq ft)	0.03	0.16	0.03
Alpha	1.04	Stream Power (lb/ft s)	0.03	0.36	0.03
Frctn Loss (ft)	7.66	Cum Volume (acre-ft)	13.94	78.76	2.13
C & E Loss (ft)	0.03	Cum SA (acres)	18.70	99.92	3.43

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3478.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3478.35	Reach Len. (ft)	1206.00	1337.00	1433.00
Crit W.S. (ft)	3477.98	Flow Area (sq ft)	4.19	215.78	3.78
E.G. Slope (ft/ft)	0.003073	Area (sq ft)	4.19	215.78	3.78
Q Total (cfs)	488.00	Flow (cfs)	3.25	481.82	2.93
Top Width (ft)	301.04	Top Width (ft)	24.23	255.00	21.81
Vel Total (ft/s)	2.18	Avg. Vel. (ft/s)	0.78	2.23	0.78
Max Chl Dpth (ft)	1.35	Hydr. Depth (ft)	0.17	0.85	0.17
Conv. Total (cfs)	8803.6	Conv. (cfs)	58.7	8692.1	52.8
Length Wtd. (ft)	1336.75	Wetted Per. (ft)	24.24	255.01	21.81
Min Ch El (ft)	3477.00	Shear (lb/sq ft)	0.03	0.16	0.03
Alpha	1.04	Stream Power (lb/ft s)	0.03	0.36	0.03
Frctn Loss (ft)	7.66	Cum Volume (acre-ft)	13.94	87.29	2.13
C & E Loss (ft)	0.03	Cum SA (acres)	18.70	104.33	3.43

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

FloodPlain.rep

E.G. Elev (ft)	3478.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3478.35	Reach Len. (ft)	1206.00	1337.00	1433.00
Crit W.S. (ft)	3477.98	Flow Area (sq ft)	4.19	215.78	3.78
E.G. Slope (ft/ft)	0.003073	Area (sq ft)	4.19	215.78	3.78
Q Total (cfs)	488.00	Flow (cfs)	3.25	481.82	2.93
Top Width (ft)	301.04	Top Width (ft)	24.23	255.00	21.81
Vel Total (ft/s)	2.18	Avg. Vel. (ft/s)	0.78	2.23	0.78
Max Chl Dpth (ft)	1.35	Hydr. Depth (ft)	0.17	0.85	0.17
Conv. Total (cfs)	8803.6	Conv. (cfs)	58.7	8692.1	52.8
Length Wtd. (ft)	1336.75	Wetted Per. (ft)	24.24	255.01	21.81
Min Ch El (ft)	3477.00	Shear (lb/sq ft)	0.03	0.16	0.03
Alpha	1.04	Stream Power (lb/ft s)	0.03	0.36	0.03
Frctn Loss (ft)	7.66	Cum Volume (acre-ft)	14.20	98.02	2.13
C & E Loss (ft)	0.03	Cum SA (acres)	19.22	104.33	3.43

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 11337

INPUT

Description: Sta. 11337

Station Elevation Data		num= 8	
Sta	Elev	Sta	Elev
100	3477	315	3474
550	3470	591	3472

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
100	.033	435	.033
		550	.033

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
435	550	545	400	332	.1
					.3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3470.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.033	0.033	0.033

FloodPlain.rep

W.S. Elev (ft)	3470.36	Reach Len. (ft)	545.00	400.00	332.00
Crit W.S. (ft)	3470.33	Flow Area (sq ft)	1.41	99.19	1.35
E.G. Slope (ft/ft)	0.014260	Area (sq ft)	1.41	99.19	1.35
Q Total (cfs)	488.00	Flow (cfs)	2.43	483.25	2.32
Top Width (ft)	130.23	Top Width (ft)	7.79	115.00	7.43
Vel Total (ft/s)	4.79	Avg. Vel. (ft/s)	1.72	4.87	1.72
Max Chl Dpth (ft)	1.36	Hydr. Depth (ft)	0.18	0.86	0.18
Conv. Total (cfs)	4086.5	Conv. (cfs)	20.4	4046.8	19.4
Length Wtd. (ft)	400.20	Wetted Per. (ft)	7.80	115.02	7.44
Min Ch El (ft)	3469.00	Shear (lb/sq ft)	0.16	0.77	0.16
Alpha	1.03	Stream Power (lb/ft s)	0.28	3.74	0.28
Frctn Loss (ft)	4.68	Cum Volume (acre-ft)	13.87	71.10	2.04
C & E Loss (ft)	0.03	Cum SA (acres)	18.26	92.93	2.95

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3470.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3470.36	Reach Len. (ft)	545.00	400.00	332.00
Crit W.S. (ft)	3470.33	Flow Area (sq ft)	1.41	99.19	1.35
E.G. Slope (ft/ft)	0.014260	Area (sq ft)	1.41	99.19	1.35
Q Total (cfs)	488.00	Flow (cfs)	2.43	483.25	2.32
Top Width (ft)	130.23	Top Width (ft)	7.79	115.00	7.43
Vel Total (ft/s)	4.79	Avg. Vel. (ft/s)	1.72	4.87	1.72
Max Chl Dpth (ft)	1.36	Hydr. Depth (ft)	0.18	0.86	0.18
Conv. Total (cfs)	4086.5	Conv. (cfs)	20.4	4046.8	19.4
Length Wtd. (ft)	400.20	Wetted Per. (ft)	7.80	115.02	7.44
Min Ch El (ft)	3469.00	Shear (lb/sq ft)	0.16	0.77	0.16
Alpha	1.03	Stream Power (lb/ft s)	0.28	3.74	0.28
Frctn Loss (ft)	4.68	Cum Volume (acre-ft)	13.87	73.93	2.04

C & E Loss (ft)	0.03	FloodPlain.rep Cum SA (acres)	18.26	94.24	2.95
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Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3470.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3470.36	Reach Len. (ft)	545.00	400.00	332.00
Crit W.S. (ft)	3470.33	Flow Area (sq ft)	1.41	99.19	1.35
E.G. Slope (ft/ft)	0.014260	Area (sq ft)	1.41	99.19	1.35
Q Total (cfs)	488.00	Flow (cfs)	2.43	483.25	2.32
Top Width (ft)	130.23	Top Width (ft)	7.79	115.00	7.43
Vel Total (ft/s)	4.79	Avg. Vel. (ft/s)	1.72	4.87	1.72
Max Chl Dpth (ft)	1.36	Hydr. Depth (ft)	0.18	0.86	0.18
Conv. Total (cfs)	4086.5	Conv. (cfs)	20.4	4046.8	19.4
Length Wtd. (ft)	400.20	Wetted Per. (ft)	7.80	115.02	7.44
Min Ch El (ft)	3469.00	Shear (lb/sq ft)	0.16	0.77	0.16
Alpha	1.03	Stream Power (lb/ft s)	0.28	3.74	0.28
Frctn Loss (ft)	4.68	Cum Volume (acre-ft)	13.87	82.45	2.04
C & E Loss (ft)	0.03	Cum SA (acres)	18.26	98.65	2.95

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3470.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3470.36	Reach Len. (ft)	545.00	400.00	332.00
Crit W.S. (ft)	3470.33	Flow Area (sq ft)	1.41	99.19	1.35
E.G. Slope (ft/ft)	0.014260	Area (sq ft)	1.41	99.19	1.35
Q Total (cfs)	488.00	Flow (cfs)	2.43	483.25	2.32
Top Width (ft)	130.23	Top Width (ft)	7.79	115.00	7.43

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FloodPlain.rep

Vel Total (ft/s)	4.79	Avg. Vel. (ft/s)	1.72	4.87	1.72
Max Chl Dpth (ft)	1.36	Hydr. Depth (ft)	0.18	0.86	0.18
Conv. Total (cfs)	4086.5	Conv. (cfs)	20.4	4046.8	19.4
Length Wtd. (ft)	400.20	Wetted Per. (ft)	7.80	115.02	7.44
Min Ch El (ft)	3469.00	Shear (lb/sq ft)	0.16	0.77	0.16
Alpha	1.03	Stream Power (lb/ft s)	0.28	3.74	0.28
Frctn Loss (ft)	4.68	Cum Volume (acre-ft)	14.12	93.18	2.04
C & E Loss (ft)	0.03	Cum SA (acres)	18.77	98.65	2.95

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 10937

INPUT

Description: Sta. 10937

Station Elevation Data		num=	9						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3470	351	3468	428	3467	465	3466	536	3464
543	3464	609	3466	683	3468	811	3472		

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	428	.033	609	.033

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
428	609	729 649	445	.1	.3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3466.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.033	
W.S. Elev (ft)	3465.74	Reach Len. (ft)	729.00	649.00	445.00
Crit W.S. (ft)	3465.55	Flow Area (sq ft)		116.03	
E.G. Slope (ft/ft)	0.009772	Area (sq ft)		116.03	
Q Total (cfs)	488.00	Flow (cfs)		488.00	
Top Width (ft)	126.27	Top Width (ft)		126.27	
Vel Total (ft/s)	4.21	Avg. Vel. (ft/s)		4.21	
Max Chl Dpth (ft)	1.74	Hydr. Depth (ft)		0.92	
Conv. Total (cfs)	4936.6	Conv. (cfs)		4936.6	
Length Wtd. (ft)	649.00	Wetted Per. (ft)		126.32	

FloodPlain.rep

Min Ch El (ft)	3464.00	Shear (lb/sq ft)	0.56		
Alpha	1.00	Stream Power (lb/ft s)	2.36		
Frctn Loss (ft)	8.86	Cum Volume (acre-ft)	13.86	70.11	2.04
C & E Loss (ft)	0.01	Cum SA (acres)	18.21	91.82	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3466.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.033	
W.S. Elev (ft)	3465.74	Reach Len. (ft)	729.00	649.00	445.00
Crit W.S. (ft)	3465.55	Flow Area (sq ft)		116.03	
E.G. Slope (ft/ft)	0.009772	Area (sq ft)		116.03	
Q Total (cfs)	488.00	Flow (cfs)		488.00	
Top Width (ft)	126.27	Top Width (ft)		126.27	
Vel Total (ft/s)	4.21	Avg. Vel. (ft/s)		4.21	
Max Chl Dpth (ft)	1.74	Hydr. Depth (ft)		0.92	
Conv. Total (cfs)	4936.6	Conv. (cfs)		4936.6	
Length Wtd. (ft)	649.00	Wetted Per. (ft)		126.32	
Min Ch El (ft)	3464.00	Shear (lb/sq ft)		0.56	
Alpha	1.00	Stream Power (lb/ft s)		2.36	
Frctn Loss (ft)	8.86	Cum Volume (acre-ft)	13.86	72.94	2.04
C & E Loss (ft)	0.01	Cum SA (acres)	18.21	93.13	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3466.02	FloodPlain.rep Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.033	
W.S. Elev (ft)	3465.74	Reach Len. (ft)	729.00	649.00	445.00
Crit W.S. (ft)	3465.55	Flow Area (sq ft)		116.03	
E.G. Slope (ft/ft)	0.009772	Area (sq ft)		116.03	
Q Total (cfs)	488.00	Flow (cfs)		488.00	
Top Width (ft)	126.27	Top Width (ft)		126.27	
Vel Total (ft/s)	4.21	Avg. Vel. (ft/s)		4.21	
Max Chl Dpth (ft)	1.74	Hydr. Depth (ft)		0.92	
Conv. Total (cfs)	4936.6	Conv. (cfs)		4936.6	
Length Wtd. (ft)	649.00	Wetted Per. (ft)		126.32	
Min Ch El (ft)	3464.00	Shear (lb/sq ft)		0.56	
Alpha	1.00	Stream Power (lb/ft s)		2.36	
Frctn Loss (ft)	8.86	Cum Volume (acre-ft)	13.86	81.46	2.04
C & E Loss (ft)	0.01	Cum SA (acres)	18.21	97.54	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3466.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.033	
W.S. Elev (ft)	3465.74	Reach Len. (ft)	729.00	649.00	445.00
Crit W.S. (ft)	3465.55	Flow Area (sq ft)		116.03	
E.G. Slope (ft/ft)	0.009772	Area (sq ft)		116.03	
Q Total (cfs)	488.00	Flow (cfs)		488.00	
Top Width (ft)	126.27	Top Width (ft)		126.27	
Vel Total (ft/s)	4.21	Avg. Vel. (ft/s)		4.21	
Max Chl Dpth (ft)	1.74	Hydr. Depth (ft)		0.92	
Conv. Total (cfs)	4936.6	Conv. (cfs)		4936.6	
Length Wtd. (ft)	649.00	Wetted Per. (ft)		126.32	

Min Ch El (ft)	3464.00	FloodPlain.rep Shear (lb/sq ft)	0.56
Alpha	1.00	Stream Power (lb/ft s)	2.36
Frctn Loss (ft)	8.86	Cum Volume (acre-ft)	14.11 92.19 2.04
C & E Loss (ft)	0.01	Cum SA (acres)	18.72 97.54 2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 10288

INPUT

Description: Sta. 10288

Station Elevation Data		num=	12
Sta	Elev	Sta	Elev
100	3464	177	3462
519	3456	662	3457
947	3462	989	3464

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
100	.033	298	.033
		857	.033

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
298	857	552 598	633	.1	.3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3457.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.		0.033	
W.S. Elev (ft)	3456.90	Reach Len. (ft)	552.00	598.00	633.00
Crit W.S. (ft)	3456.90	Flow Area (sq ft)		120.78	
E.G. Slope (ft/ft)	0.020388	Area (sq ft)		120.78	
Q Total (cfs)	488.00	Flow (cfs)		488.00	
Top Width (ft)	242.43	Top Width (ft)		242.43	
Vel Total (ft/s)	4.04	Avg. Vel. (ft/s)		4.04	
Max Chl Dpth (ft)	0.90	Hydr. Depth (ft)		0.50	
Conv. Total (cfs)	3417.7	Conv. (cfs)		3417.7	
Length Wtd. (ft)	598.00	Wetted Per. (ft)		242.43	
Min Ch El (ft)	3456.00	Shear (lb/sq ft)		0.63	
Alpha	1.00	Stream Power (lb/ft s)		2.56	

		FloodPlain.rep			
Frctn Loss (ft)	4.72	Cum Volume (acre-ft)	13.86	68.34	2.04
C & E Loss (ft)	0.05	Cum SA (acres)	18.21	89.07	2.92

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3457.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.		0.033	
W.S. Elev (ft)	3456.90	Reach Len. (ft)	552.00	598.00	633.00
Crit W.S. (ft)	3456.90	Flow Area (sq ft)		120.78	
E.G. Slope (ft/ft)	0.020388	Area (sq ft)		120.78	
Q Total (cfs)	488.00	Flow (cfs)		488.00	
Top Width (ft)	242.43	Top Width (ft)		242.43	
Vel Total (ft/s)	4.04	Avg. Vel. (ft/s)		4.04	
Max Chl Dpth (ft)	0.90	Hydr. Depth (ft)		0.50	
Conv. Total (cfs)	3417.7	Conv. (cfs)		3417.7	
Length Wtd. (ft)	598.00	Wetted Per. (ft)		242.43	
Min Ch El (ft)	3456.00	Shear (lb/sq ft)		0.63	
Alpha	1.00	Stream Power (lb/ft s)		2.56	
Frctn Loss (ft)	4.72	Cum Volume (acre-ft)	13.86	71.18	2.04
C & E Loss (ft)	0.05	Cum SA (acres)	18.21	90.38	2.92

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less

than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to

critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3457.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.		0.033	
W.S. Elev (ft)	3456.90	Reach Len. (ft)	552.00	598.00	633.00
Crit W.S. (ft)	3456.90	Flow Area (sq ft)		120.78	
E.G. Slope (ft/ft)	0.020388	Area (sq ft)		120.78	
Q Total (cfs)	488.00	Flow (cfs)		488.00	
Top Width (ft)	242.43	Top Width (ft)		242.43	
Vel Total (ft/s)	4.04	Avg. Vel. (ft/s)		4.04	
Max Chl Dpth (ft)	0.90	Hydr. Depth (ft)		0.50	
Conv. Total (cfs)	3417.7	Conv. (cfs)		3417.7	
Length Wtd. (ft)	598.00	Wetted Per. (ft)		242.43	
Min Ch El (ft)	3456.00	Shear (lb/sq ft)		0.63	
Alpha	1.00	Stream Power (lb/ft s)		2.56	
Frctn Loss (ft)	4.72	Cum Volume (acre-ft)	13.86	79.70	2.04
C & E Loss (ft)	0.05	Cum SA (acres)	18.21	94.79	2.92

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to

critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

FloodPlain.rep

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3457.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.		0.033	
W.S. Elev (ft)	3456.90	Reach Len. (ft)	552.00	598.00	633.00
Crit W.S. (ft)	3456.90	Flow Area (sq ft)		120.78	
E.G. Slope (ft/ft)	0.020388	Area (sq ft)		120.78	
Q Total (cfs)	488.00	Flow (cfs)		488.00	
Top Width (ft)	242.43	Top Width (ft)		242.43	
Vel Total (ft/s)	4.04	Avg. Vel. (ft/s)		4.04	
Max Chl Dpth (ft)	0.90	Hydr. Depth (ft)		0.50	
Conv. Total (cfs)	3417.7	Conv. (cfs)		3417.7	
Length Wtd. (ft)	598.00	Wetted Per. (ft)		242.43	
Min Ch El (ft)	3456.00	Shear (lb/sq ft)		0.63	
Alpha	1.00	Stream Power (lb/ft s)		2.56	
Frctn Loss (ft)	4.72	Cum Volume (acre-ft)	14.11	90.43	2.04
C & E Loss (ft)	0.05	Cum SA (acres)	18.72	94.79	2.92

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 9690

INPUT

Description: Sta. 9690

Station Elevation Data		num= 8							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3454.5	202	3454	381	3452	632	3450	638	3450
799	3452	897	3454	1010	3458				

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val

FloodPlain.rep

100	.033	381	.033	799	.033		
Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.	
381	799	639	681	658	.1	.3	

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3451.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.033	
W.S. Elev (ft)	3451.49	Reach Len. (ft)	639.00	681.00	658.00
Crit W.S. (ft)	3451.14	Flow Area (sq ft)		238.60	
E.G. Slope (ft/ft)	0.004656	Area (sq ft)		238.60	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	313.59	Top Width (ft)		313.59	
Vel Total (ft/s)	2.56	Avg. Vel. (ft/s)		2.56	
Max Chl Dpth (ft)	1.49	Hydr. Depth (ft)		0.76	
Conv. Total (cfs)	8953.9	Conv. (cfs)		8953.9	
Length Wtd. (ft)	681.00	Wetted Per. (ft)		313.61	
Min Ch El (ft)	3450.00	Shear (lb/sq ft)		0.22	
Alpha	1.00	Stream Power (lb/ft s)		0.57	
Frctn Loss (ft)	4.90	Cum Volume (acre-ft)	13.86	65.88	2.04
C & E Loss (ft)	0.01	Cum SA (acres)	18.21	85.26	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3451.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.033	
W.S. Elev (ft)	3451.49	Reach Len. (ft)	639.00	681.00	658.00
Crit W.S. (ft)	3451.14	Flow Area (sq ft)		238.60	
E.G. Slope (ft/ft)	0.004656	Area (sq ft)		238.60	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	313.59	Top Width (ft)		313.59	

Vel Total (ft/s)	2.56	FloodPlain.rep Avg. Vel. (ft/s)	2.56
Max Chl Dpth (ft)	1.49	Hydr. Depth (ft)	0.76
Conv. Total (cfs)	8953.9	Conv. (cfs)	8953.9
Length Wtd. (ft)	681.00	Wetted Per. (ft)	313.61
Min Ch El (ft)	3450.00	Shear (lb/sq ft)	0.22
Alpha	1.00	Stream Power (lb/ft s)	0.57
Frctn Loss (ft)	4.90	Cum Volume (acre-ft)	13.86 68.71 2.04
C & E Loss (ft)	0.01	Cum SA (acres)	18.21 86.57 2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3451.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.033	
W.S. Elev (ft)	3451.49	Reach Len. (ft)	639.00	681.00	658.00
Crit W.S. (ft)	3451.14	Flow Area (sq ft)		238.60	
E.G. Slope (ft/ft)	0.004656	Area (sq ft)		238.60	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	313.59	Top Width (ft)		313.59	
Vel Total (ft/s)	2.56	Avg. Vel. (ft/s)		2.56	
Max Chl Dpth (ft)	1.49	Hydr. Depth (ft)		0.76	
Conv. Total (cfs)	8953.9	Conv. (cfs)		8953.9	
Length Wtd. (ft)	681.00	Wetted Per. (ft)		313.61	
Min Ch El (ft)	3450.00	Shear (lb/sq ft)		0.22	
Alpha	1.00	Stream Power (lb/ft s)		0.57	
Frctn Loss (ft)	4.90	Cum Volume (acre-ft)	13.86	77.23	2.04
C & E Loss (ft)	0.01	Cum SA (acres)	18.21	90.98	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3451.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.033	
W.S. Elev (ft)	3451.49	Reach Len. (ft)	639.00	681.00	658.00
Crit W.S. (ft)	3451.14	Flow Area (sq ft)		238.60	
E.G. Slope (ft/ft)	0.004656	Area (sq ft)		238.60	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	313.59	Top Width (ft)		313.59	
Vel Total (ft/s)	2.56	Avg. Vel. (ft/s)		2.56	
Max Chl Dpth (ft)	1.49	Hydr. Depth (ft)		0.76	
Conv. Total (cfs)	8953.9	Conv. (cfs)		8953.9	
Length Wtd. (ft)	681.00	Wetted Per. (ft)		313.61	
Min Ch El (ft)	3450.00	Shear (lb/sq ft)		0.22	
Alpha	1.00	Stream Power (lb/ft s)		0.57	
Frctn Loss (ft)	4.90	Cum Volume (acre-ft)	14.11	87.96	2.04
C & E Loss (ft)	0.01	Cum SA (acres)	18.72	90.98	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 9009

INPUT

Description: Sta 9009

Station Elevation Data		num= 9	
Sta	Elev	Sta	Elev
100	3452	203	3450
637	3446	892	3448

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
100	.033	325	.033
		892	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	325	892		898	879	794	
						.1	.3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

FloodPlain.rep

E.G. Elev (ft)	3446.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.		0.033	
W.S. Elev (ft)	3446.45	Reach Len. (ft)	898.00	879.00	794.00
Crit W.S. (ft)	3446.34	Flow Area (sq ft)		159.10	
E.G. Slope (ft/ft)	0.012581	Area (sq ft)		159.10	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	239.94	Top Width (ft)		239.94	
Vel Total (ft/s)	3.84	Avg. Vel. (ft/s)		3.84	
Max Chl Dpth (ft)	1.45	Hydr. Depth (ft)		0.66	
Conv. Total (cfs)	5447.3	Conv. (cfs)		5447.3	
Length Wtd. (ft)	879.00	Wetted Per. (ft)		239.96	
Min Ch El (ft)	3445.00	Shear (lb/sq ft)		0.52	
Alpha	1.00	Stream Power (lb/ft s)		2.00	
Frctn Loss (ft)	4.98	Cum Volume (acre-ft)	13.86	62.77	2.04
C & E Loss (ft)	0.05	Cum SA (acres)	18.21	80.93	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3446.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.		0.033	
W.S. Elev (ft)	3446.45	Reach Len. (ft)	898.00	879.00	794.00
Crit W.S. (ft)	3446.34	Flow Area (sq ft)		159.10	
E.G. Slope (ft/ft)	0.012581	Area (sq ft)		159.10	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	239.94	Top Width (ft)		239.94	
Vel Total (ft/s)	3.84	Avg. Vel. (ft/s)		3.84	
Max Chl Dpth (ft)	1.45	Hydr. Depth (ft)		0.66	
Conv. Total (cfs)	5447.3	Conv. (cfs)		5447.3	

Length Wtd. (ft)	879.00	FloodPlain.rep Wetted Per. (ft)	239.96		
Min Ch El (ft)	3445.00	Shear (lb/sq ft)	0.52		
Alpha	1.00	Stream Power (lb/ft s)	2.00		
Frctn Loss (ft)	4.98	Cum Volume (acre-ft)	13.86	65.60	2.04
C & E Loss (ft)	0.05	Cum SA (acres)	18.21	82.24	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3446.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.		0.033	
W.S. Elev (ft)	3446.45	Reach Len. (ft)	898.00	879.00	794.00
Crit W.S. (ft)	3446.34	Flow Area (sq ft)		159.10	
E.G. Slope (ft/ft)	0.012581	Area (sq ft)		159.10	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	239.94	Top Width (ft)		239.94	
Vel Total (ft/s)	3.84	Avg. Vel. (ft/s)		3.84	
Max Chl Dpth (ft)	1.45	Hydr. Depth (ft)		0.66	
Conv. Total (cfs)	5447.3	Conv. (cfs)		5447.3	
Length Wtd. (ft)	879.00	Wetted Per. (ft)		239.96	
Min Ch El (ft)	3445.00	Shear (lb/sq ft)		0.52	
Alpha	1.00	Stream Power (lb/ft s)		2.00	
Frctn Loss (ft)	4.98	Cum Volume (acre-ft)	13.86	74.12	2.04
C & E Loss (ft)	0.05	Cum SA (acres)	18.21	86.65	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

FloodPlain.rep

E.G. Elev (ft)	3446.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.		0.033	
W.S. Elev (ft)	3446.45	Reach Len. (ft)	898.00	879.00	794.00
Crit W.S. (ft)	3446.34	Flow Area (sq ft)		159.10	
E.G. Slope (ft/ft)	0.012581	Area (sq ft)		159.10	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	239.94	Top Width (ft)		239.94	
Vel Total (ft/s)	3.84	Avg. Vel. (ft/s)		3.84	
Max Chl Dpth (ft)	1.45	Hydr. Depth (ft)		0.66	
Conv. Total (cfs)	5447.3	Conv. (cfs)		5447.3	
Length Wtd. (ft)	879.00	Wetted Per. (ft)		239.96	
Min Ch El (ft)	3445.00	Shear (lb/sq ft)		0.52	
Alpha	1.00	Stream Power (lb/ft s)		2.00	
Frctn Loss (ft)	4.98	Cum Volume (acre-ft)	14.11	84.86	2.04
C & E Loss (ft)	0.05	Cum SA (acres)	18.72	86.65	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 8130

INPUT

Description: Sta. 8130

Station Elevation Data		num=	8
Sta	Elev	Sta	Elev
100	3448	303	3444
852	3442	995	3444

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
100	.033	419	.033
		852	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	419	852		399	413	456	.1
							.3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3441.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.033	

W.S. Elev (ft)	3441.57	FloodPlain.rep Reach Len. (ft)	399.00	413.00	456.00
Crit W.S. (ft)	3441.11	Flow Area (sq ft)		276.52	
E.G. Slope (ft/ft)	0.003204	Area (sq ft)		276.52	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	342.53	Top Width (ft)		342.53	
Vel Total (ft/s)	2.21	Avg. Vel. (ft/s)		2.21	
Max Chl Dpth (ft)	1.57	Hydr. Depth (ft)		0.81	
Conv. Total (cfs)	10794.8	Conv. (cfs)		10794.8	
Length Wtd. (ft)	413.00	Wetted Per. (ft)		342.54	
Min Ch El (ft)	3440.00	Shear (lb/sq ft)		0.16	
Alpha	1.00	Stream Power (lb/ft s)		0.36	
Frctn Loss (ft)	2.70	Cum Volume (acre-ft)	13.86	58.37	2.04
C & E Loss (ft)	0.02	Cum SA (acres)	18.21	75.05	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3441.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.033	
W.S. Elev (ft)	3441.57	Reach Len. (ft)	399.00	413.00	456.00
Crit W.S. (ft)	3441.11	Flow Area (sq ft)		276.52	
E.G. Slope (ft/ft)	0.003204	Area (sq ft)		276.52	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	342.53	Top Width (ft)		342.53	
Vel Total (ft/s)	2.21	Avg. Vel. (ft/s)		2.21	
Max Chl Dpth (ft)	1.57	Hydr. Depth (ft)		0.81	
Conv. Total (cfs)	10794.8	Conv. (cfs)		10794.8	
Length Wtd. (ft)	413.00	Wetted Per. (ft)		342.54	
Min Ch El (ft)	3440.00	Shear (lb/sq ft)		0.16	
Alpha	1.00	Stream Power (lb/ft s)		0.36	

Frctn Loss (ft)	2.70	FloodPlain.rep Cum Volume (acre-ft)	13.86	61.20	2.04
C & E Loss (ft)	0.02	Cum SA (acres)	18.21	76.36	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3441.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.033	
W.S. Elev (ft)	3441.57	Reach Len. (ft)	399.00	413.00	456.00
Crit W.S. (ft)	3441.11	Flow Area (sq ft)		276.52	
E.G. Slope (ft/ft)	0.003204	Area (sq ft)		276.52	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	342.53	Top Width (ft)		342.53	
Vel Total (ft/s)	2.21	Avg. Vel. (ft/s)		2.21	
Max Chl Dpth (ft)	1.57	Hydr. Depth (ft)		0.81	
Conv. Total (cfs)	10794.8	Conv. (cfs)		10794.8	
Length Wtd. (ft)	413.00	Wetted Per. (ft)		342.54	
Min Ch El (ft)	3440.00	Shear (lb/sq ft)		0.16	
Alpha	1.00	Stream Power (lb/ft s)		0.36	
Frctn Loss (ft)	2.70	Cum Volume (acre-ft)	13.86	69.73	2.04
C & E Loss (ft)	0.02	Cum SA (acres)	18.21	80.77	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3441.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.033	
W.S. Elev (ft)	3441.57	Reach Len. (ft)	399.00	413.00	456.00

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Crit W.S. (ft)	3441.11	Flow Area (sq ft)	276.52		
E.G. Slope (ft/ft)	0.003204	Area (sq ft)	276.52		
Q Total (cfs)	611.00	Flow (cfs)	611.00		
Top Width (ft)	342.53	Top Width (ft)	342.53		
Vel Total (ft/s)	2.21	Avg. Vel. (ft/s)	2.21		
Max Chl Dpth (ft)	1.57	Hydr. Depth (ft)	0.81		
Conv. Total (cfs)	10794.8	Conv. (cfs)	10794.8		
Length Wtd. (ft)	413.00	Wetted Per. (ft)	342.54		
Min Ch El (ft)	3440.00	Shear (lb/sq ft)	0.16		
Alpha	1.00	Stream Power (lb/ft s)	0.36		
Frctn Loss (ft)	2.70	Cum Volume (acre-ft)	14.11	80.46	2.04
C & E Loss (ft)	0.02	Cum SA (acres)	18.72	80.77	2.92

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 7717

INPUT

Description: Sta 7717

Station Elevation Data		num=	8						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3442	233	3440	383	3438	492	3437.8	510	3438
657	3439	747	3440	879	3442				

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	233	.033	747	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	233	747		444 464	510	.1	.3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3438.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.	0.033		
W.S. Elev (ft)	3438.66	Reach Len. (ft)	444.00	464.00	510.00
Crit W.S. (ft)	3438.66	Flow Area (sq ft)	146.05		
E.G. Slope (ft/ft)	0.020021	Area (sq ft)	146.05		

Q Total (cfs)	611.00	FloodPlain.rep Flow (cfs)	611.00
Top Width (ft)	274.48	Top Width (ft)	274.48
Vel Total (ft/s)	4.18	Avg. Vel. (ft/s)	4.18
Max Chl Dpth (ft)	0.86	Hydr. Depth (ft)	0.53
Conv. Total (cfs)	4318.2	Conv. (cfs)	4318.2
Length Wtd. (ft)	464.03	Wetted Per. (ft)	274.48
Min Ch El (ft)	3437.80	Shear (lb/sq ft)	0.67
Alpha	1.00	Stream Power (lb/ft s)	2.78
Frctn Loss (ft)	1.79	Cum Volume (acre-ft)	13.86 56.37 2.04
C & E Loss (ft)	0.07	Cum SA (acres)	18.21 72.13 2.92

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3438.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.033	
W.S. Elev (ft)	3438.66	Reach Len. (ft)	444.00	464.00	510.00
Crit W.S. (ft)	3438.66	Flow Area (sq ft)		146.05	
E.G. Slope (ft/ft)	0.020021	Area (sq ft)		146.05	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	274.48	Top Width (ft)		274.48	
Vel Total (ft/s)	4.18	Avg. Vel. (ft/s)		4.18	
Max Chl Dpth (ft)	0.86	Hydr. Depth (ft)		0.53	
Conv. Total (cfs)	4318.2	Conv. (cfs)		4318.2	
Length Wtd. (ft)	464.03	Wetted Per. (ft)		274.48	

Min Ch El (ft)	3437.80	FloodPlain.rep Shear (lb/sq ft)	0.67		
Alpha	1.00	Stream Power (lb/ft s)	2.78		
Frctn Loss (ft)	1.79	Cum Volume (acre-ft)	13.86	59.20	2.04
C & E Loss (ft)	0.07	Cum SA (acres)	18.21	73.44	2.92

Warning: The energy equation could not be balanced within the specified number of iterations.
The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3438.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.033	
W.S. Elev (ft)	3438.66	Reach Len. (ft)	444.00	464.00	510.00
Crit W.S. (ft)	3438.66	Flow Area (sq ft)		146.05	
E.G. Slope (ft/ft)	0.020021	Area (sq ft)		146.05	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	274.48	Top Width (ft)		274.48	
Vel Total (ft/s)	4.18	Avg. Vel. (ft/s)		4.18	
Max Chl Dpth (ft)	0.86	Hydr. Depth (ft)		0.53	
Conv. Total (cfs)	4318.2	Conv. (cfs)		4318.2	
Length Wtd. (ft)	464.03	Wetted Per. (ft)		274.48	
Min Ch El (ft)	3437.80	Shear (lb/sq ft)		0.67	
Alpha	1.00	Stream Power (lb/ft s)		2.78	
Frctn Loss (ft)	1.79	Cum Volume (acre-ft)	13.86	67.73	2.04
C & E Loss (ft)	0.07	Cum SA (acres)	18.21	77.85	2.92

Warning: The energy equation could not be balanced within the specified number of iterations.

FloodPlain.rep

The program used critical depth for the water surface and continued on with the calculations.
 Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
 Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.
 Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3438.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.033	
W.S. Elev (ft)	3438.66	Reach Len. (ft)	444.00	464.00	510.00
Crit W.S. (ft)	3438.66	Flow Area (sq ft)		146.05	
E.G. Slope (ft/ft)	0.020021	Area (sq ft)		146.05	
Q Total (cfs)	611.00	Flow (cfs)		611.00	
Top Width (ft)	274.48	Top Width (ft)		274.48	
Vel Total (ft/s)	4.18	Avg. Vel. (ft/s)		4.18	
Max Chl Dpth (ft)	0.86	Hydr. Depth (ft)		0.53	
Conv. Total (cfs)	4318.2	Conv. (cfs)		4318.2	
Length Wtd. (ft)	464.03	Wetted Per. (ft)		274.48	
Min Ch El (ft)	3437.80	Shear (lb/sq ft)		0.67	
Alpha	1.00	Stream Power (lb/ft s)		2.78	
Frctn Loss (ft)	1.79	Cum Volume (acre-ft)	14.11	78.46	2.04
C & E Loss (ft)	0.07	Cum SA (acres)	18.72	77.85	2.92

Warning: The energy equation could not be balanced within the specified number of iterations.
 The program used critical depth for the water surface and continued on with the calculations.
 Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
 Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.
 Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

FloodPlain.rep

ndicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 7253

INPUT

Description: Sta. 7253

Station Elevation Data		num=	9						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3438	109	3438.7	321	3438	424	3436	668	3435
906	3436	1005	3438	1200	3440	1365	3442		

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	424	.033	906	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	424	906		756 910	980	.1	.3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3436.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3436.35	Reach Len. (ft)	756.00	910.00	980.00
Crit W.S. (ft)	3435.88	Flow Area (sq ft)	3.20	410.81	3.07
E.G. Slope (ft/ft)	0.001738	Area (sq ft)	3.20	410.81	3.07
Q Total (cfs)	697.00	Flow (cfs)	1.89	693.30	1.81
Top Width (ft)	517.58	Top Width (ft)	18.14	482.00	17.44
Vel Total (ft/s)	1.67	Avg. Vel. (ft/s)	0.59	1.69	0.59
Max Chl Dpth (ft)	1.35	Hydr. Depth (ft)	0.18	0.85	0.18
Conv. Total (cfs)	16716.8	Conv. (cfs)	45.2	16628.1	43.5
Length Wtd. (ft)	909.92	Wetted Per. (ft)	18.15	482.00	17.44
Min Ch El (ft)	3435.00	Shear (lb/sq ft)	0.02	0.09	0.02
Alpha	1.02	Stream Power (lb/ft s)	0.01	0.16	0.01
Frctn Loss (ft)	5.38	Cum Volume (acre-ft)	13.84	53.40	2.02
C & E Loss (ft)	0.03	Cum SA (acres)	18.12	68.10	2.82

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

FloodPlain.rep

E.G. Elev (ft)	3436.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3436.35	Reach Len. (ft)	756.00	910.00	980.00
Crit W.S. (ft)	3435.88	Flow Area (sq ft)	3.20	410.81	3.07
E.G. Slope (ft/ft)	0.001738	Area (sq ft)	3.20	410.81	3.07
Q Total (cfs)	697.00	Flow (cfs)	1.89	693.30	1.81
Top Width (ft)	517.58	Top Width (ft)	18.14	482.00	17.44
Vel Total (ft/s)	1.67	Avg. Vel. (ft/s)	0.59	1.69	0.59
Max Chl Dpth (ft)	1.35	Hydr. Depth (ft)	0.18	0.85	0.18
Conv. Total (cfs)	16716.8	Conv. (cfs)	45.2	16628.1	43.5
Length Wtd. (ft)	909.92	Wetted Per. (ft)	18.15	482.00	17.44
Min Ch El (ft)	3435.00	Shear (lb/sq ft)	0.02	0.09	0.02
Alpha	1.02	Stream Power (lb/ft s)	0.01	0.16	0.01
Frctn Loss (ft)	5.38	Cum Volume (acre-ft)	13.84	56.24	2.02
C & E Loss (ft)	0.03	Cum SA (acres)	18.12	69.41	2.82

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3436.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3436.35	Reach Len. (ft)	756.00	910.00	980.00
Crit W.S. (ft)	3435.88	Flow Area (sq ft)	3.20	410.81	3.07
E.G. Slope (ft/ft)	0.001738	Area (sq ft)	3.20	410.81	3.07
Q Total (cfs)	697.00	Flow (cfs)	1.89	693.30	1.81
Top Width (ft)	517.58	Top Width (ft)	18.14	482.00	17.44
Vel Total (ft/s)	1.67	Avg. Vel. (ft/s)	0.59	1.69	0.59
Max Chl Dpth (ft)	1.35	Hydr. Depth (ft)	0.18	0.85	0.18
Conv. Total (cfs)	16716.8	Conv. (cfs)	45.2	16628.1	43.5

Length Wtd. (ft)	909.92	FloodPlain.rep Wetted Per. (ft)	18.15	482.00	17.44
Min Ch El (ft)	3435.00	Shear (lb/sq ft)	0.02	0.09	0.02
Alpha	1.02	Stream Power (lb/ft s)	0.01	0.16	0.01
Frctn Loss (ft)	5.38	Cum Volume (acre-ft)	13.84	64.76	2.02
C & E Loss (ft)	0.03	Cum SA (acres)	18.12	73.82	2.82

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3436.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3436.35	Reach Len. (ft)	756.00	910.00	980.00
Crit W.S. (ft)	3435.88	Flow Area (sq ft)	3.20	410.81	3.07
E.G. Slope (ft/ft)	0.001738	Area (sq ft)	3.20	410.81	3.07
Q Total (cfs)	697.00	Flow (cfs)	1.89	693.30	1.81
Top Width (ft)	517.58	Top Width (ft)	18.14	482.00	17.44
Vel Total (ft/s)	1.67	Avg. Vel. (ft/s)	0.59	1.69	0.59
Max Chl Dpth (ft)	1.35	Hydr. Depth (ft)	0.18	0.85	0.18
Conv. Total (cfs)	16716.8	Conv. (cfs)	45.2	16628.1	43.5
Length Wtd. (ft)	909.92	Wetted Per. (ft)	18.15	482.00	17.44
Min Ch El (ft)	3435.00	Shear (lb/sq ft)	0.02	0.09	0.02
Alpha	1.02	Stream Power (lb/ft s)	0.01	0.16	0.01
Frctn Loss (ft)	5.38	Cum Volume (acre-ft)	14.10	75.49	2.02
C & E Loss (ft)	0.03	Cum SA (acres)	18.63	73.82	2.82

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 6343

FloodPlain.rep

INPUT

Description: Sta. 6343

Station Elevation Data		num= 9							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3434	346	3433	663	3432	732	3431	860	3430.2
981	3430	1273	3430	1320	3431.5	1566	3432		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	663	.033	1320	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	663	1320		767	980	1051	.1
							.3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3431.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.		0.033	
W.S. Elev (ft)	3430.70	Reach Len. (ft)	767.00	980.00	1051.00
Crit W.S. (ft)	3430.70	Flow Area (sq ft)		303.78	
E.G. Slope (ft/ft)	0.019035	Area (sq ft)		303.78	
Q Total (cfs)	1328.00	Flow (cfs)		1328.00	
Top Width (ft)	514.60	Top Width (ft)		514.60	
Vel Total (ft/s)	4.37	Avg. Vel. (ft/s)		4.37	
Max Chl Dpth (ft)	0.70	Hydr. Depth (ft)		0.59	
Conv. Total (cfs)	9625.4	Conv. (cfs)		9625.4	
Length Wtd. (ft)	979.93	Wetted Per. (ft)		514.61	
Min Ch El (ft)	3430.00	Shear (lb/sq ft)		0.70	
Alpha	1.00	Stream Power (lb/ft s)		3.07	
Frcn Loss (ft)	4.06	Cum Volume (acre-ft)	13.81	45.94	1.99
C & E Loss (ft)	0.07	Cum SA (acres)	17.96	57.69	2.63

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3431.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.		0.033	
W.S. Elev (ft)	3430.70	Reach Len. (ft)	767.00	980.00	1051.00
Crit W.S. (ft)	3430.70	Flow Area (sq ft)		303.78	
E.G. Slope (ft/ft)	0.019035	Area (sq ft)		303.78	
Q Total (cfs)	1328.00	Flow (cfs)		1328.00	
Top Width (ft)	514.60	Top Width (ft)		514.60	
Vel Total (ft/s)	4.37	Avg. Vel. (ft/s)		4.37	
Max Chl Dpth (ft)	0.70	Hydr. Depth (ft)		0.59	
Conv. Total (cfs)	9625.4	Conv. (cfs)		9625.4	
Length Wtd. (ft)	979.93	Wetted Per. (ft)		514.61	
Min Ch El (ft)	3430.00	Shear (lb/sq ft)		0.70	
Alpha	1.00	Stream Power (lb/ft s)		3.07	
Frctn Loss (ft)	4.06	Cum Volume (acre-ft)	13.81	48.77	1.99
C & E Loss (ft)	0.07	Cum SA (acres)	17.96	59.00	2.63

Warning: The energy equation could not be balanced within the specified number of iterations. The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3431.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.		0.033	
W.S. Elev (ft)	3430.70	Reach Len. (ft)	767.00	980.00	1051.00

Crit W.S. (ft)	3430.70	FloodPlain.rep Flow Area (sq ft)	303.78		
E.G. Slope (ft/ft)	0.019035	Area (sq ft)	303.78		
Q Total (cfs)	1328.00	Flow (cfs)	1328.00		
Top Width (ft)	514.60	Top Width (ft)	514.60		
Vel Total (ft/s)	4.37	Avg. Vel. (ft/s)	4.37		
Max Chl Dpth (ft)	0.70	Hydr. Depth (ft)	0.59		
Conv. Total (cfs)	9625.4	Conv. (cfs)	9625.4		
Length Wtd. (ft)	979.93	Wetted Per. (ft)	514.61		
Min Ch El (ft)	3430.00	Shear (lb/sq ft)	0.70		
Alpha	1.00	Stream Power (lb/ft s)	3.07		
Frctn Loss (ft)	4.06	Cum Volume (acre-ft)	13.81	57.30	1.99
C & E Loss (ft)	0.07	Cum SA (acres)	17.96	63.41	2.63

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to

critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3431.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.		0.033	
W.S. Elev (ft)	3430.70	Reach Len. (ft)	767.00	980.00	1051.00
Crit W.S. (ft)	3430.70	Flow Area (sq ft)		303.78	
E.G. Slope (ft/ft)	0.019035	Area (sq ft)		303.78	
Q Total (cfs)	1328.00	Flow (cfs)		1328.00	
Top Width (ft)	514.60	Top Width (ft)		514.60	
Vel Total (ft/s)	4.37	Avg. Vel. (ft/s)		4.37	
Max Chl Dpth (ft)	0.70	Hydr. Depth (ft)		0.59	

		FloodPlain.rep			
Conv. Total (cfs)	9625.4	Conv. (cfs)		9625.4	
Length Wtd. (ft)	979.93	Wetted Per. (ft)		514.61	
Min Ch El (ft)	3430.00	Shear (lb/sq ft)		0.70	
Alpha	1.00	Stream Power (lb/ft s)		3.07	
Frctn Loss (ft)	4.06	Cum Volume (acre-ft)	14.07	68.03	1.99
C & E Loss (ft)	0.07	Cum SA (acres)	18.47	63.41	2.63

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 5363

INPUT

Description: Sta. 5363

Station Elevation Data		num= 10							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3432	282	3430	550	3428	742	3426	885	3425
1097	3425	1476	3426	1877	3428	1966	3428	2160	3430

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	742	.033	1476	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	742	1476		1199	1142	713	.1 .3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3426.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3426.33	Reach Len. (ft)	1199.00	1142.00	713.00
Crit W.S. (ft)	3425.78	Flow Area (sq ft)	5.09	712.05	10.63
E.G. Slope (ft/ft)	0.001763	Area (sq ft)	5.09	712.05	10.63
Q Total (cfs)	1328.00	Flow (cfs)	2.87	1319.14	5.99
Top Width (ft)	830.57	Top Width (ft)	31.27	734.00	65.30

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Vel Total (ft/s)	1.82	Avg. Vel. (ft/s)	0.56	1.85	0.56
Max Chl Dpth (ft)	1.33	Hydr. Depth (ft)	0.16	0.97	0.16
Conv. Total (cfs)	31630.8	Conv. (cfs)	68.4	31419.6	142.8
Length Wtd. (ft)	1141.15	Wetted Per. (ft)	31.27	734.00	65.30
Min Ch El (ft)	3425.00	Shear (lb/sq ft)	0.02	0.11	0.02
Alpha	1.02	Stream Power (lb/ft s)	0.01	0.20	0.01
Frctn Loss (ft)	5.02	Cum Volume (acre-ft)	13.77	34.51	1.86
C & E Loss (ft)	0.03	Cum SA (acres)	17.68	43.64	1.84

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3426.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3426.33	Reach Len. (ft)	1199.00	1142.00	713.00
Crit W.S. (ft)	3425.78	Flow Area (sq ft)	5.09	712.05	10.63
E.G. Slope (ft/ft)	0.001763	Area (sq ft)	5.09	712.05	10.63
Q Total (cfs)	1328.00	Flow (cfs)	2.87	1319.14	5.99
Top Width (ft)	830.57	Top Width (ft)	31.27	734.00	65.30
Vel Total (ft/s)	1.82	Avg. Vel. (ft/s)	0.56	1.85	0.56
Max Chl Dpth (ft)	1.33	Hydr. Depth (ft)	0.16	0.97	0.16
Conv. Total (cfs)	31630.8	Conv. (cfs)	68.4	31419.6	142.8
Length Wtd. (ft)	1141.15	Wetted Per. (ft)	31.27	734.00	65.30
Min Ch El (ft)	3425.00	Shear (lb/sq ft)	0.02	0.11	0.02
Alpha	1.02	Stream Power (lb/ft s)	0.01	0.20	0.01
Frctn Loss (ft)	5.02	Cum Volume (acre-ft)	13.77	37.34	1.86
C & E Loss (ft)	0.03	Cum SA (acres)	17.68	44.95	1.84

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

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Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3426.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3426.33	Reach Len. (ft)	1199.00	1142.00	713.00
Crit W.S. (ft)	3425.78	Flow Area (sq ft)	5.09	712.05	10.63
E.G. Slope (ft/ft)	0.001763	Area (sq ft)	5.09	712.05	10.63
Q Total (cfs)	1328.00	Flow (cfs)	2.87	1319.14	5.99
Top Width (ft)	830.57	Top Width (ft)	31.27	734.00	65.30
Vel Total (ft/s)	1.82	Avg. Vel. (ft/s)	0.56	1.85	0.56
Max Chl Dpth (ft)	1.33	Hydr. Depth (ft)	0.16	0.97	0.16
Conv. Total (cfs)	31630.8	Conv. (cfs)	68.4	31419.6	142.8
Length Wtd. (ft)	1141.15	Wetted Per. (ft)	31.27	734.00	65.30
Min Ch El (ft)	3425.00	Shear (lb/sq ft)	0.02	0.11	0.02
Alpha	1.02	Stream Power (lb/ft s)	0.01	0.20	0.01
Frctn Loss (ft)	5.02	Cum Volume (acre-ft)	13.77	45.87	1.86
C & E Loss (ft)	0.03	Cum SA (acres)	17.68	49.36	1.84

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3426.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3426.33	Reach Len. (ft)	1199.00	1142.00	713.00
Crit W.S. (ft)	3425.78	Flow Area (sq ft)	5.09	712.05	10.63
E.G. Slope (ft/ft)	0.001763	Area (sq ft)	5.09	712.05	10.63
Q Total (cfs)	1328.00	Flow (cfs)	2.87	1319.14	5.99
Top Width (ft)	830.57	Top Width (ft)	31.27	734.00	65.30

Vel Total (ft/s)	1.82	FloodPlain.rep Avg. Vel. (ft/s)	0.56	1.85	0.56
Max Chl Dpth (ft)	1.33	Hydr. Depth (ft)	0.16	0.97	0.16
Conv. Total (cfs)	31630.8	Conv. (cfs)	68.4	31419.6	142.8
Length Wtd. (ft)	1141.15	Wetted Per. (ft)	31.27	734.00	65.30
Min Ch El (ft)	3425.00	Shear (lb/sq ft)	0.02	0.11	0.02
Alpha	1.02	Stream Power (lb/ft s)	0.01	0.20	0.01
Frctn Loss (ft)	5.02	Cum Volume (acre-ft)	14.03	56.60	1.86
C & E Loss (ft)	0.03	Cum SA (acres)	18.20	49.36	1.84

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 4221

INPUT

Description: Sta. 4221

Station Elevation Data		num= 12							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3423	341	3422	544	3421	640	3420	669	3420
753	3420.2	829	3420	837	3420	1030	3421	1320	3422
1407	3423	1497	3424						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	544	.033	1407	.033

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
544	1407	749	732	843	.1 .3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3421.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.		0.033	
W.S. Elev (ft)	3420.99	Reach Len. (ft)	749.00	732.00	843.00
Crit W.S. (ft)	3420.99	Flow Area (sq ft)		321.48	
E.G. Slope (ft/ft)	0.018533	Area (sq ft)		321.48	
Q Total (cfs)	1501.00	Flow (cfs)		1501.00	
Top Width (ft)	483.60	Top Width (ft)		483.60	
Vel Total (ft/s)	4.67	Avg. Vel. (ft/s)		4.67	
Max Chl Dpth (ft)	0.99	Hydr. Depth (ft)		0.66	

		FloodPlain.rep			
Conv. Total (cfs)	11025.7	Conv. (cfs)		11025.7	
Length Wtd. (ft)	736.75	Wetted Per. (ft)		483.61	
Min Ch El (ft)	3420.00	Shear (lb/sq ft)		0.77	
Alpha	1.00	Stream Power (lb/ft s)		3.59	
Frctn Loss (ft)	3.65	Cum Volume (acre-ft)	13.70	20.96	1.77
C & E Loss (ft)	0.09	Cum SA (acres)	17.25	27.68	1.30

Warning: The energy equation could not be balanced within the specified number of iterations.
The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3421.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.		0.033	
W.S. Elev (ft)	3420.99	Reach Len. (ft)	749.00	732.00	843.00
Crit W.S. (ft)	3420.99	Flow Area (sq ft)		321.48	
E.G. Slope (ft/ft)	0.018533	Area (sq ft)		321.48	
Q Total (cfs)	1501.00	Flow (cfs)		1501.00	
Top Width (ft)	483.60	Top Width (ft)		483.60	
Vel Total (ft/s)	4.67	Avg. Vel. (ft/s)		4.67	
Max Chl Dpth (ft)	0.99	Hydr. Depth (ft)		0.66	
Conv. Total (cfs)	11025.7	Conv. (cfs)		11025.7	
Length Wtd. (ft)	736.75	Wetted Per. (ft)		483.61	
Min Ch El (ft)	3420.00	Shear (lb/sq ft)		0.77	
Alpha	1.00	Stream Power (lb/ft s)		3.59	
Frctn Loss (ft)	3.65	Cum Volume (acre-ft)	13.70	23.80	1.77
C & E Loss (ft)	0.09	Cum SA (acres)	17.25	28.99	1.30

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3421.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.		0.033	
W.S. Elev (ft)	3420.99	Reach Len. (ft)	749.00	732.00	843.00
Crit W.S. (ft)	3420.99	Flow Area (sq ft)		321.48	
E.G. Slope (ft/ft)	0.018533	Area (sq ft)		321.48	
Q Total (cfs)	1501.00	Flow (cfs)		1501.00	
Top Width (ft)	483.60	Top Width (ft)		483.60	
Vel Total (ft/s)	4.67	Avg. Vel. (ft/s)		4.67	
Max Chl Dpth (ft)	0.99	Hydr. Depth (ft)		0.66	
Conv. Total (cfs)	11025.7	Conv. (cfs)		11025.7	
Length Wtd. (ft)	736.75	Wetted Per. (ft)		483.61	
Min Ch El (ft)	3420.00	Shear (lb/sq ft)		0.77	
Alpha	1.00	Stream Power (lb/ft s)		3.59	
Frctn Loss (ft)	3.65	Cum Volume (acre-ft)	13.70	32.32	1.77
C & E Loss (ft)	0.09	Cum SA (acres)	17.25	33.40	1.30

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

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Warning: section. This may indicate the need for additional cross sections.
 During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3421.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.		0.033	
W.S. Elev (ft)	3420.99	Reach Len. (ft)	749.00	732.00	843.00
Crit W.S. (ft)	3420.99	Flow Area (sq ft)		321.48	
E.G. Slope (ft/ft)	0.018533	Area (sq ft)		321.48	
Q Total (cfs)	1501.00	Flow (cfs)		1501.00	
Top Width (ft)	483.60	Top Width (ft)		483.60	
Vel Total (ft/s)	4.67	Avg. Vel. (ft/s)		4.67	
Max Chl Dpth (ft)	0.99	Hydr. Depth (ft)		0.66	
Conv. Total (cfs)	11025.7	Conv. (cfs)		11025.7	
Length Wtd. (ft)	736.75	Wetted Per. (ft)		483.61	
Min Ch El (ft)	3420.00	Shear (lb/sq ft)		0.77	
Alpha	1.00	Stream Power (lb/ft s)		3.59	
Frctn Loss (ft)	3.65	Cum Volume (acre-ft)	13.96	43.05	1.77
C & E Loss (ft)	0.09	Cum SA (acres)	17.77	33.40	1.30

Warning: The energy equation could not be balanced within the specified number of iterations.
 The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 3489

INPUT

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Description: Sta. 3489

Station Elevation Data		num= 22							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-286	3420	-138	3418.5	-126	3418	-104	3416	-91	3415.5
-76	3416	-21	3417	100	3417	258	3416.5	299	3416
309	3415	318	3416	405	3416	422	3416	539	3416.4
581	3416.2	642	3416.4	744	3416	830	3416	918	3418
1068	3420	1159	3421						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-286	.033	539	.033	918	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	539	918		464 500	457	.1	.3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3417.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3417.18	Reach Len. (ft)	464.00	500.00	457.00
Crit W.S. (ft)	3416.67	Flow Area (sq ft)	482.21	322.70	
E.G. Slope (ft/ft)	0.002251	Area (sq ft)	482.21	322.70	
Q Total (cfs)	1501.00	Flow (cfs)	838.96	662.05	
Top Width (ft)	998.90	Top Width (ft)	655.98	342.92	
Vel Total (ft/s)	1.86	Avg. Vel. (ft/s)	1.74	2.05	
Max Chl Dpth (ft)	2.18	Hydr. Depth (ft)	0.74	0.94	
Conv. Total (cfs)	31635.3	Conv. (cfs)	17681.9	13953.4	
Length Wtd. (ft)	481.78	Wetted Per. (ft)	656.17	342.93	
Min Ch El (ft)	3416.00	Shear (lb/sq ft)	0.10	0.13	
Alpha	1.02	Stream Power (lb/ft s)	0.18	0.27	
Frctn Loss (ft)	2.41	Cum Volume (acre-ft)	9.55	15.55	1.77
C & E Loss (ft)	0.02	Cum SA (acres)	11.61	20.74	1.30

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3417.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.033	0.033	

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W.S. Elev (ft)	3417.18	Reach Len. (ft)	464.00	500.00	457.00
Crit W.S. (ft)	3416.67	Flow Area (sq ft)	482.21	322.70	
E.G. Slope (ft/ft)	0.002251	Area (sq ft)	482.21	322.70	
Q Total (cfs)	1501.00	Flow (cfs)	838.96	662.05	
Top Width (ft)	998.90	Top Width (ft)	655.98	342.92	
Vel Total (ft/s)	1.86	Avg. Vel. (ft/s)	1.74	2.05	
Max Chl Dpth (ft)	2.18	Hydr. Depth (ft)	0.74	0.94	
Conv. Total (cfs)	31635.3	Conv. (cfs)	17681.9	13953.4	
Length Wtd. (ft)	481.78	Wetted Per. (ft)	656.17	342.93	
Min Ch El (ft)	3416.00	Shear (lb/sq ft)	0.10	0.13	
Alpha	1.02	Stream Power (lb/ft s)	0.18	0.27	
Frctn Loss (ft)	2.41	Cum Volume (acre-ft)	9.55	18.38	1.77
C & E Loss (ft)	0.02	Cum SA (acres)	11.61	22.05	1.30

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3417.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3417.18	Reach Len. (ft)	464.00	500.00	457.00
Crit W.S. (ft)	3416.67	Flow Area (sq ft)	482.21	322.70	
E.G. Slope (ft/ft)	0.002251	Area (sq ft)	482.21	322.70	
Q Total (cfs)	1501.00	Flow (cfs)	838.96	662.05	
Top Width (ft)	998.90	Top Width (ft)	655.98	342.92	
Vel Total (ft/s)	1.86	Avg. Vel. (ft/s)	1.74	2.05	
Max Chl Dpth (ft)	2.18	Hydr. Depth (ft)	0.74	0.94	
Conv. Total (cfs)	31635.3	Conv. (cfs)	17681.9	13953.4	
Length Wtd. (ft)	481.78	Wetted Per. (ft)	656.17	342.93	
Min Ch El (ft)	3416.00	Shear (lb/sq ft)	0.10	0.13	
Alpha	1.02	Stream Power (lb/ft s)	0.18	0.27	

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Frctn Loss (ft)	2.41	Cum Volume (acre-ft)	9.55	26.91	1.77
C & E Loss (ft)	0.02	Cum SA (acres)	11.61	26.46	1.30

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3417.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3417.18	Reach Len. (ft)	464.00	500.00	457.00
Crit W.S. (ft)	3416.67	Flow Area (sq ft)	482.21	322.70	
E.G. Slope (ft/ft)	0.002251	Area (sq ft)	482.21	322.70	
Q Total (cfs)	1501.00	Flow (cfs)	838.96	662.05	
Top Width (ft)	998.90	Top Width (ft)	655.98	342.92	
Vel Total (ft/s)	1.86	Avg. Vel. (ft/s)	1.74	2.05	
Max Chl Dpth (ft)	2.18	Hydr. Depth (ft)	0.74	0.94	
Conv. Total (cfs)	31635.3	Conv. (cfs)	17681.9	13953.4	
Length Wtd. (ft)	481.78	Wetted Per. (ft)	656.17	342.93	
Min Ch El (ft)	3416.00	Shear (lb/sq ft)	0.10	0.13	
Alpha	1.02	Stream Power (lb/ft s)	0.18	0.27	
Frctn Loss (ft)	2.41	Cum Volume (acre-ft)	9.81	37.64	1.77
C & E Loss (ft)	0.02	Cum SA (acres)	12.13	26.46	1.30

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 2989

INPUT

Description: Sta. 2989

Station Elevation Data	num=	14							
Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev

				FloodPlain.rep					
-31	3416	59	3414.8	170	3414.8	196	3414	436	3413.8
613	3414	651	3414	700	3414	747	3414	761	3414
841	3415.01	920	3416	976	3418	1067	3420		

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
-31	.033	436	.033	841	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	436	841		317 215	172	.3	.5

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3414.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3414.52	Reach Len. (ft)	317.00	215.00	172.00
Crit W.S. (ft)	3414.52	Flow Area (sq ft)	153.63	198.04	
E.G. Slope (ft/ft)	0.019219	Area (sq ft)	153.63	198.04	
Q Total (cfs)	1501.00	Flow (cfs)	680.62	820.38	
Top Width (ft)	623.28	Top Width (ft)	256.96	366.32	
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)	4.43	4.14	
Max Chl Dpth (ft)	0.72	Hydr. Depth (ft)	0.60	0.54	
Conv. Total (cfs)	10827.1	Conv. (cfs)	4909.5	5917.6	
Length Wtd. (ft)	252.84	Wetted Per. (ft)	256.96	366.33	
Min Ch El (ft)	3413.80	Shear (lb/sq ft)	0.72	0.65	
Alpha	1.00	Stream Power (lb/ft s)	3.18	2.69	
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	6.17	12.56	1.77
C & E Loss (ft)	0.12	Cum SA (acres)	6.75	16.67	1.30

Warning: The energy equation could not be balanced within the specified number of iterations.
The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3414.81	Element	Left OB	Channel	Right OB
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FloodPlain.rep

Vel Head (ft)	0.28	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3414.52	Reach Len. (ft)	317.00	215.00	172.00
Crit W.S. (ft)	3414.52	Flow Area (sq ft)	153.63	198.04	
E.G. Slope (ft/ft)	0.019219	Area (sq ft)	153.63	198.04	
Q Total (cfs)	1501.00	Flow (cfs)	680.62	820.38	
Top Width (ft)	623.28	Top Width (ft)	256.96	366.32	
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)	4.43	4.14	
Max Chl Dpth (ft)	0.72	Hydr. Depth (ft)	0.60	0.54	
Conv. Total (cfs)	10827.1	Conv. (cfs)	4909.5	5917.6	
Length Wtd. (ft)	252.84	Wetted Per. (ft)	256.96	366.33	
Min Ch El (ft)	3413.80	Shear (lb/sq ft)	0.72	0.65	
Alpha	1.00	Stream Power (lb/ft s)	3.18	2.69	
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	6.17	15.40	1.77
C & E Loss (ft)	0.12	Cum SA (acres)	6.75	17.98	1.30

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3414.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3414.52	Reach Len. (ft)	317.00	215.00	172.00
Crit W.S. (ft)	3414.52	Flow Area (sq ft)	153.63	198.04	
E.G. Slope (ft/ft)	0.019219	Area (sq ft)	153.63	198.04	
Q Total (cfs)	1501.00	Flow (cfs)	680.62	820.38	
Top Width (ft)	623.28	Top Width (ft)	256.96	366.32	
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)	4.43	4.14	

Max Chl Dpth (ft)	0.72	FloodPlain.rep Hydr. Depth (ft)	0.60	0.54	
Conv. Total (cfs)	10827.1	Conv. (cfs)	4909.5	5917.6	
Length Wtd. (ft)	252.84	Wetted Per. (ft)	256.96	366.33	
Min Ch El (ft)	3413.80	Shear (lb/sq ft)	0.72	0.65	
Alpha	1.00	Stream Power (lb/ft s)	3.18	2.69	
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	6.17	23.92	1.77
C & E Loss (ft)	0.12	Cum SA (acres)	6.75	22.39	1.30

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3414.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3414.52	Reach Len. (ft)	317.00	215.00	172.00
Crit W.S. (ft)	3414.52	Flow Area (sq ft)	153.63	198.04	
E.G. Slope (ft/ft)	0.019219	Area (sq ft)	153.63	198.04	
Q Total (cfs)	1501.00	Flow (cfs)	680.62	820.38	
Top Width (ft)	623.28	Top Width (ft)	256.96	366.32	
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)	4.43	4.14	
Max Chl Dpth (ft)	0.72	Hydr. Depth (ft)	0.60	0.54	
Conv. Total (cfs)	10827.1	Conv. (cfs)	4909.5	5917.6	
Length Wtd. (ft)	252.84	Wetted Per. (ft)	256.96	366.33	
Min Ch El (ft)	3413.80	Shear (lb/sq ft)	0.72	0.65	
Alpha	1.00	Stream Power (lb/ft s)	3.18	2.69	
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	6.42	34.65	1.77
C & E Loss (ft)	0.12	Cum SA (acres)	7.27	22.39	1.30

FloodPlain.rep

Warning: The energy equation could not be balanced within the specified number of iterations.
The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 2774

INPUT

Description: Sta. 2774 Upstream of culverts

Station		Elevation Data		num= 18		Sta		Elev		Sta		Elev	
-453	3416	-437	3415	-405	3414	-289	3413.8	-13	3413.8				
100	3413.8	175	3413.8	204	3412	261	3412	298	3411.2				
402	3410.9	437	3410	469	3409	491	3409	511	3410				
560	3412	641	3414	725	3416								

Manning's n Values		num= 3		Sta		n Val	
-453	.033	437	.033	511	.033		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	437	511		40	40		.3	.5

Ineffective Flow num= 2
Sta L Sta R Elev Permanent
-888 F
888 F

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3414.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3413.99	Reach Len. (ft)	40.00	40.00	40.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	761.53	343.24	226.67
E.G. Slope (ft/ft)	0.000278	Area (sq ft)	761.53	343.24	226.67
Q Total (cfs)	1501.00	Flow (cfs)	537.33	716.64	247.03
Top Width (ft)	1039.64	Top Width (ft)	836.05	74.00	129.58
Vel Total (ft/s)	1.13	Avg. Vel. (ft/s)	0.71	2.09	1.09
Max Chl Dpth (ft)	4.99	Hydr. Depth (ft)	0.91	4.64	1.75
Conv. Total (cfs)	90001.4	Conv. (cfs)	32219.0	42970.2	14812.2
Length Wtd. (ft)	40.00	Wetted Per. (ft)	836.13	74.04	129.65
Min Ch El (ft)	3409.00	Shear (lb/sq ft)	0.02	0.08	0.03

FloodPlain.rep

Alpha	1.93	Stream Power (lb/ft s)	0.01	0.17	0.03
Frctn Loss (ft)		Cum Volume (acre-ft)	2.84	11.23	1.32
C & E Loss (ft)		Cum SA (acres)	2.77	15.58	1.05

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3414.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3413.99	Reach Len. (ft)	40.00	40.00	40.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	761.53	343.24	226.67
E.G. Slope (ft/ft)	0.000278	Area (sq ft)	761.53	343.24	226.67
Q Total (cfs)	1501.00	Flow (cfs)	537.33	716.64	247.03
Top Width (ft)	1039.64	Top Width (ft)	836.05	74.00	129.58
Vel Total (ft/s)	1.13	Avg. Vel. (ft/s)	0.71	2.09	1.09
Max Chl Dpth (ft)	4.99	Hydr. Depth (ft)	0.91	4.64	1.75
Conv. Total (cfs)	90001.4	Conv. (cfs)	32219.0	42970.2	14812.2
Length Wtd. (ft)	40.00	Wetted Per. (ft)	836.13	74.04	129.65
Min Ch El (ft)	3409.00	Shear (lb/sq ft)	0.02	0.08	0.03
Alpha	1.93	Stream Power (lb/ft s)	0.01	0.17	0.03
Frctn Loss (ft)		Cum Volume (acre-ft)	2.84	14.06	1.32
C & E Loss (ft)		Cum SA (acres)	2.77	16.89	1.05

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3414.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3413.99	Reach Len. (ft)	40.00	40.00	40.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	761.53	343.24	226.67

E.G. Slope (ft/ft)	0.000278	FloodPlain.rep Area (sq ft)	761.53	343.24	226.67
Q Total (cfs)	1501.00	Flow (cfs)	537.33	716.64	247.03
Top Width (ft)	1039.64	Top Width (ft)	836.05	74.00	129.58
Vel Total (ft/s)	1.13	Avg. Vel. (ft/s)	0.71	2.09	1.09
Max Chl Dpth (ft)	4.99	Hydr. Depth (ft)	0.91	4.64	1.75
Conv. Total (cfs)	90001.4	Conv. (cfs)	32219.0	42970.2	14812.2
Length Wtd. (ft)	40.00	Wetted Per. (ft)	836.13	74.04	129.65
Min Ch El (ft)	3409.00	Shear (lb/sq ft)	0.02	0.08	0.03
Alpha	1.93	Stream Power (lb/ft s)	0.01	0.17	0.03
Frctn Loss (ft)		Cum Volume (acre-ft)	2.84	22.58	1.32
C & E Loss (ft)		Cum SA (acres)	2.77	21.30	1.05

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3414.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3413.99	Reach Len. (ft)	40.00	40.00	40.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	761.53	343.24	226.67
E.G. Slope (ft/ft)	0.000278	Area (sq ft)	761.53	343.24	226.67
Q Total (cfs)	1501.00	Flow (cfs)	537.33	716.64	247.03
Top Width (ft)	1039.64	Top Width (ft)	836.05	74.00	129.58
Vel Total (ft/s)	1.13	Avg. Vel. (ft/s)	0.71	2.09	1.09
Max Chl Dpth (ft)	4.99	Hydr. Depth (ft)	0.91	4.64	1.75
Conv. Total (cfs)	90001.4	Conv (cfs)	32219.0	42970.2	14812.2
Length Wtd. (ft)	40.00	Wetted Per. (ft)	836.13	74.04	129.65
Min Ch El (ft)	3409.00	Shear (lb/sq ft)	0.02	0.08	0.03
Alpha	1.93	Stream Power (lb/ft s)	0.01	0.17	0.03
Frctn Loss (ft)		Cum Volume (acre-ft)	3.09	33.31	1.32
C & E Loss (ft)		Cum SA (acres)	3.29	21.30	1.05

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CULVERT RIVER: Ditch A
REACH: 5 RS: 2773

INPUT

Description:

Distance from Upstream XS = 8

Deck/Roadway Width = 24

Weir Coefficient = 3

Upstream Deck/Roadway Coordinates

num= 6

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
26	3413.8				100	3413.8				402	3412.7			
500	3412.8				600	3413.9				700	3415.7			

Upstream Bridge Cross Section Data

Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-453	3416	-437	3415	-405	3414	-289	3413.8	-13	3413.8
100	3413.8	175	3413.8	204	3412	261	3412	298	3411.2
402	3410.9	437	3410	469	3409	491	3409	511	3410
560	3412	641	3414	725	3416				

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-453	.033	437	.033	511	.033

Bank Sta: Left Right Coeff Contr. Expan.
437 511 .3 .5

Ineffective Flow num= 2

Sta L Sta R Elev Permanent

-888 F

888 F

Downstream Deck/Roadway Coordinates

num= 6

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
26	3413.8				100	3413.8				402	3412.7			
500	3412.8				600	3413.9				700	3415.7			

Downstream Bridge Cross Section Data

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1721	3416	-1410	3414	26	3413.8	100	3412.4	155	3412
299	3411.4	349	3410	387	3408.9	391.4	3408.9	395.8	3408.9
400.2	3408.9	404.6	3408.9	409	3408.9	434	3410	487	3412
568	3414	658	3416						

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-1721	.033	349	.033	434	.033

Bank Sta: Left Right Coeff Contr. Expan.
349 434 .3 .5

Ineffective Flow num= 2

Sta L Sta R Elev Permanent

-888 F

888 F

Upstream Embankment side slope = 3 horiz. to 1.0 vertical

Downstream Embankment side slope = 3 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .95

FloodPlain.rep

Elevation at which weir flow begins = 3412.7
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span
 Culvert #1 Pipe Arch 1.833 2.43
 FHWA Chart # 34- 18 inch corner radius; Corrugated metal
 FHWA Scale # 1 - 90 Degree headwall
 Solution Criteria = Highest U.S. EG
 Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef
 1 39 .024 .5 1

Number of Barrels = 6
 Upstream Elevation = 3409

Centerline Stations
 Sta. Sta. Sta. Sta. Sta. Sta.
 469 473.4 477.8 482.2 486.6 491
 Downstream Elevation = 3408.9
 Centerline Stations
 Sta. Sta. Sta. Sta. Sta. Sta.
 387 391.4 395.8 400.2 404.6 409

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 2734

INPUT

Description: Sta. 2734 Downstream of culverts

Station Elevation Data		num= 17									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1721	3416	-1410	3414	26	3413.8	100	3412.4	155	3412		
299	3411.4	349	3410	387	3408.9	391.4	3408.9	395.8	3408.9		
400.2	3408.9	404.6	3408.9	409	3408.9	434	3410	487	3412		
568	3414	658	3416								

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-1721	.033	349	.033	434	.033

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
349	434	745	846	1015		.3	.5

Ineffective Flow num= 2
 Sta L Sta R Elev Permanent
 -888 F
 888 F

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3412.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3412.71	Reach Len. (ft)	745.00	846.00	1015.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	275.89	288.99	100.64
E.G. Slope (ft/ft)	0.001004	Area (sq ft)	275.89	288.99	100.64
Q Total (cfs)	1501.00	Flow (cfs)	404.03	931.98	164.98
Top Width (ft)	431.91	Top Width (ft)	265.26	85.00	81.65
Vel Total (ft/s)	2.26	Avg. Vel. (ft/s)	1.46	3.22	1.64

FloodPlain.rep

Max Chl Dpth (ft)	3.81	Hydr. Depth (ft)	1.04	3.40	1.23
Conv. Total (cfs)	47371.8	Conv. (cfs)	12751.3	29413.6	5206.9
Length Wtd. (ft)	841.72	Wetted Per. (ft)	265.28	85.04	81.70
Min Ch El (ft)	3408.90	Shear (lb/sq ft)	0.07	0.21	0.08
Alpha	1.44	Stream Power (lb/ft s)	0.10	0.69	0.13
Frctn Loss (ft)	1.67	Cum Volume (acre-ft)	2.36	10.94	1.17
C & E Loss (ft)	0.00	Cum SA (acres)	2.27	15.51	0.95

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

Warning: The parabolic search method failed to converge on critical depth. The program will try the

cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3412.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3412.71	Reach Len. (ft)	745.00	846.00	1015.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	275.89	288.99	100.64
E.G. Slope (ft/ft)	0.001004	Area (sq ft)	275.89	288.99	100.64
Q Total (cfs)	1501.00	Flow (cfs)	404.03	931.98	164.98
Top Width (ft)	431.91	Top Width (ft)	265.26	85.00	81.65
Vel Total (ft/s)	2.26	Avg. Vel. (ft/s)	1.46	3.22	1.64
Max Chl Dpth (ft)	3.81	Hydr. Depth (ft)	1.04	3.40	1.23
Conv. Total (cfs)	47371.8	Conv. (cfs)	12751.3	29413.6	5206.9
Length Wtd. (ft)	841.72	Wetted Per. (ft)	265.28	85.04	81.70
Min Ch El (ft)	3408.90	Shear (lb/sq ft)	0.07	0.21	0.08

Alpha	1.44	FloodPlain.rep Stream Power (lb/ft s)	0.10	0.69	0.13
Frctn Loss (ft)	2.25	Cum Volume (acre-ft)	2.36	13.77	1.17
C & E Loss (ft)	0.05	Cum SA (acres)	2.27	16.82	0.95

Warning: The energy equation could not be balanced within the specified number of iterations.

The program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

Warning: The parabolic search method failed to converge on critical depth. The program will try the

cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3412.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3412.71	Reach Len. (ft)	745.00	846.00	1015.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	275.89	288.99	100.64
E.G. Slope (ft/ft)	0.001004	Area (sq ft)	275.89	288.99	100.64
Q Total (cfs)	1501.00	Flow (cfs)	404.03	931.98	164.98
Top Width (ft)	431.91	Top Width (ft)	265.26	85.00	81.65
Vel Total (ft/s)	2.26	Avg. Vel. (ft/s)	1.46	3.22	1.64
Max Chl Dpth (ft)	3.81	Hydr. Depth (ft)	1.04	3.40	1.23
Conv. Total (cfs)	47371.8	Conv. (cfs)	12751.3	29413.6	5206.9
Length Wtd. (ft)	841.72	Wetted Per. (ft)	265.28	85.04	81.70
Min Ch El (ft)	3408.90	Shear (lb/sq ft)	0.07	0.21	0.08
Alpha	1.44	Stream Power (lb/ft s)	0.10	0.69	0.13
Frctn Loss (ft)	2.25	Cum Volume (acre-ft)	2.36	22.29	1.17
C & E Loss (ft)	0.05	Cum SA (acres)	2.27	21.23	0.95

FloodPlain.rep

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

Warning: The parabolic search method failed to converge on critical depth. The program will try the

cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3412.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3412.71	Reach Len. (ft)	745.00	846.00	1015.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	275.89	288.99	100.64
E.G. Slope (ft/ft)	0.001004	Area (sq ft)	275.89	288.99	100.64
Q Total (cfs)	1501.00	Flow (cfs)	404.03	931.98	164.98
Top Width (ft)	431.91	Top Width (ft)	265.26	85.00	81.65
Vel Total (ft/s)	2.26	Avg. Vel. (ft/s)	1.46	3.22	1.64
Max Chl Dpth (ft)	3.81	Hydr. Depth (ft)	1.04	3.40	1.23
Conv. Total (cfs)	47371.8	Conv. (cfs)	12751.3	29413.6	5206.9
Length Wtd. (ft)	841.72	Wetted Per. (ft)	265.28	85.04	81.70
Min Ch El (ft)	3408.90	Shear (lb/sq ft)	0.07	0.21	0.08
Alpha	1.44	Stream Power (lb/ft s)	0.10	0.69	0.13
Frctn Loss (ft)	2.25	Cum Volume (acre-ft)	2.62	33.02	1.17
C & E Loss (ft)	0.05	Cum SA (acres)	2.78	21.23	0.95

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

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section. This may indicate the need for additional cross sections.
 Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
 Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 1888

INPUT

Description: Sta. 1888

Station Elevation Data		num= 10							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-775	3412	-41	3410	81	3410	100	3410.2	110	3410
331	3408	532	3408	690	3408	1180	3410	1268	3412

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-775	.033	100	.033	1180	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	100	1180		305	828	980	.1 .3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3409.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.17	Wt. n-Val.		0.033	
W.S. Elev (ft)	3408.41	Reach Len. (ft)	305.00	828.00	980.00
Crit W.S. (ft)	3408.72	Flow Area (sq ft)		175.18	
E.G. Slope (ft/ft)	0.151914	Area (sq ft)		175.18	
Q Total (cfs)	1521.00	Flow (cfs)		1521.00	
Top Width (ft)	503.42	Top Width (ft)		503.42	
Vel Total (ft/s)	8.68	Avg. Vel. (ft/s)		8.68	
Max Chl Dpth (ft)	0.41	Hydr. Depth (ft)		0.35	
Conv. Total (cfs)	3902.4	Conv. (cfs)		3902.4	
Length Wtd. (ft)	828.00	Wetted Per. (ft)		503.42	
Min Ch El (ft)	3408.00	Shear (lb/sq ft)		3.30	
Alpha	1.00	Stream Power (lb/ft s)		28.65	
Frctn Loss (ft)	2.92	Cum Volume (acre-ft)		6.43	
C & E Loss (ft)	0.32	Cum SA (acres)		9.79	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the n

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eed for

additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: The parabolic search method failed to converge on critical depth. The program will try the

cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)	3409.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.17	Wt. n-Val.		0.033	
W.S. Elev (ft)	3408.41	Reach Len. (ft)	305.00	828.00	980.00
Crit W.S. (ft)	3408.72	Flow Area (sq ft)		175.18	
E.G. Slope (ft/ft)	0.151914	Area (sq ft)		175.18	
Q Total (cfs)	1521.00	Flow (cfs)		1521.00	
Top Width (ft)	503.42	Top Width (ft)		503.42	
Vel Total (ft/s)	8.68	Avg. Vel. (ft/s)		8.68	
Max Chl Dpth (ft)	0.41	Hydr. Depth (ft)		0.35	
Conv. Total (cfs)	3902.4	Conv. (cfs)		3902.4	
Length Wtd. (ft)	828.00	Wetted Per. (ft)		503.42	
Min Ch El (ft)	3408.00	Shear (lb/sq ft)		3.30	
Alpha	1.00	Stream Power (lb/ft s)		28.65	
Frctn Loss (ft)	2.92	Cum Volume (acre-ft)		9.26	
C & E Loss (ft)	0.32	Cum SA (acres)		11.11	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: The parabolic search method failed to converge on critical depth. The program will try the

cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3409.58	Element	Left OB	Channel	Right OB
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Vel Head (ft)	1.17	Wt. n-Val.	0.033
W.S. Elev (ft)	3408.41	Reach Len. (ft)	305.00 828.00 980.00
Crit W.S. (ft)	3408.72	Flow Area (sq ft)	175.18
E.G. Slope (ft/ft)	0.151914	Area (sq ft)	175.18
Q Total (cfs)	1521.00	Flow (cfs)	1521.00
Top Width (ft)	503.42	Top Width (ft)	503.42
Vel Total (ft/s)	8.68	Avg. Vel. (ft/s)	8.68
Max Chl Dpth (ft)	0.41	Hydr. Depth (ft)	0.35
Conv. Total (cfs)	3902.4	Conv. (cfs)	3902.4
Length Wtd. (ft)	828.00	Wetted Per. (ft)	503.42
Min Ch El (ft)	3408.00	Shear (lb/sq ft)	3.30
Alpha	1.00	Stream Power (lb/ft s)	28.65
Frctn Loss (ft)	2.92	Cum Volume (acre-ft)	17.79
C & E Loss (ft)	0.32	Cum SA (acres)	15.51

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: The parabolic search method failed to converge on critical depth. The program will try the

cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3409.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.17	Wt. n-Val.		0.033	
W.S. Elev (ft)	3408.41	Reach Len. (ft)	305.00	828.00	980.00
Crit W.S. (ft)	3408.72	Flow Area (sq ft)		175.18	
E.G. Slope (ft/ft)	0.151914	Area (sq ft)		175.18	
Q Total (cfs)	1521.00	Flow (cfs)		1521.00	
Top Width (ft)	503.42	Top Width (ft)		503.42	
Vel Total (ft/s)	8.68	Avg. Vel. (ft/s)		8.68	
Max Chl Dpth (ft)	0.41	Hydr. Depth (ft)		0.35	

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Conv. Total (cfs)	3902.4	Conv. (cfs)	3902.4
Length Wtd. (ft)	825.65	Wetted Per. (ft)	503.42
Min Ch El (ft)	3408.00	Shear (lb/sq ft)	3.30
Alpha	1.00	Stream Power (lb/ft s)	28.65
Frctn Loss (ft)	2.92	Cum Volume (acre-ft)	0.26 28.52
C & E Loss (ft)	0.32	Cum SA (acres)	0.51 15.51

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: The parabolic search method failed to converge on critical depth. The program will try the

cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 1060

INPUT

Description: Sta. 1060

Station Elevation Data		num= 6		Sta Elev		Sta Elev		Sta Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3408	394	3406	879	3402.7	909	3402.7	1206	3405
1523	3406								

Manning's n Values		num= 3		Sta n Val	
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	394	.033	1523	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	394	1523		60 60	60	.1	.3

CROSS SECTION OUTPUT Profile #100 Yr.-WS3404.5

E.G. Elev (ft)	3404.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.		0.033	
W.S. Elev (ft)	3404.50	Reach Len. (ft)			
Crit W.S. (ft)	3404.11	Flow Area (sq ft)		501.30	
E.G. Slope (ft/ft)	0.005270	Area (sq ft)		501.30	
Q Total (cfs)	1585.00	Flow (cfs)		1585.00	
Top Width (ft)	526.98	Top Width (ft)		526.98	
Vel Total (ft/s)	3.16	Avg. Vel. (ft/s)		3.16	

Max Chl Dpth (ft)	1.80	FloodPlain.rep Hydr. Depth (ft)	0.95
Conv. Total (cfs)	21832.6	Conv. (cfs)	21832.6
Length Wtd. (ft)		Wetted Per. (ft)	527.00
Min Ch El (ft)	3402.70	Shear (lb/sq ft)	0.31
Alpha	1.00	Stream Power (lb/ft s)	0.99
Frctn Loss (ft)		Cum Volume (acre-ft)	
C & E Loss (ft)		Cum SA (acres)	

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3405

E.G. Elev (ft)		Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.		0.033	
W.S. Elev (ft)	3405.00	Reach Len. (ft)			
Crit W.S. (ft)	3404.11	Flow Area (sq ft)		799.30	
E.G. Slope (ft/ft)	0.001518	Area (sq ft)		799.30	
Q Total (cfs)	1585.00	Flow (cfs)		1585.00	
Top Width (ft)	665.03	Top Width (ft)		665.03	
Vel Total (ft/s)	1.98	Avg. Vel. (ft/s)		1.98	
Max Chl Dpth (ft)	2.30	Hydr. Depth (ft)		1.20	
Conv. Total (cfs)	40684.8	Conv. (cfs)		40684.8	
Length Wtd. (ft)		Wetted Per. (ft)		665.05	
Min Ch El (ft)	3402.70	Shear (lb/sq ft)		0.11	
Alpha	1.00	Stream Power (lb/ft s)		0.23	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3406

E.G. Elev (ft)	3406.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.033	

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W.S. Elev (ft)	3406.00	Reach Len. (ft)	
Crit W.S. (ft)	3404.11	Flow Area (sq ft)	1696.32
E.G. Slope (ft/ft)	0.000250	Area (sq ft)	1696.32
Q Total (cfs)	1585.00	Flow (cfs)	1585.00
Top Width (ft)	1129.00	Top Width (ft)	1129.00
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)	0.93
Max Chl Dpth (ft)	3.30	Hydr. Depth (ft)	1.50
Conv. Total (cfs)	100198.1	Conv. (cfs)	100198.1
Length Wtd. (ft)		Wetted Per. (ft)	1129.02
Min Ch El (ft)	3402.70	Shear (lb/sq ft)	0.02
Alpha	1.00	Stream Power (lb/ft s)	0.02
Frctn Loss (ft)		Cum Volume (acre-ft)	
C & E Loss (ft)		Cum SA (acres)	

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT Profile #100 Yr.-WS3407

E.G. Elev (ft)	3407.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3407.00	Reach Len. (ft)			
Crit W.S. (ft)	3404.11	Flow Area (sq ft)	73.50	2825.32	
E.G. Slope (ft/ft)	0.000045	Area (sq ft)	73.50	2825.32	
Q Total (cfs)	1585.00	Flow (cfs)	13.98	1571.02	
Top Width (ft)	1276.00	Top Width (ft)	147.00	1129.00	
Vel Total (ft/s)	0.55	Avg. Vel. (ft/s)	0.19	0.56	
Max Chl Dpth (ft)	4.30	Hydr. Depth (ft)	0.50	2.50	
Conv. Total (cfs)	236437.3	Conv. (cfs)	2084.9	234352.5	
Length Wtd. (ft)		Wetted Per. (ft)	147.00	1130.02	
Min Ch El (ft)	3402.70	Shear (lb/sq ft)	0.00	0.01	
Alpha	1.03	Stream Power (lb/ft s)	0.00	0.00	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

SUMMARY OF MANNING'S N VALUES

River: Ditch A

Reach	River Sta.	n1	n2	n3
5	12674	.033	.033	.033
5	11337	.033	.033	.033
5	10937	.033	.033	.033
5	10288	.033	.033	.033
5	9690	.033	.033	.033
5	9009	.033	.033	.033
5	8130	.033	.033	.033
5	7717	.033	.033	.033
5	7253	.033	.033	.033
5	6343	.033	.033	.033
5	5363	.033	.033	.033
5	4221	.033	.033	.033
5	3489	.033	.033	.033
5	2989	.033	.033	.033
5	2774	.033	.033	.033
5	2773	Culvert		
5	2734	.033	.033	.033
5	1888	.033	.033	.033
5	1060	.033	.033	.033

SUMMARY OF REACH LENGTHS

River: Ditch A

Reach	River Sta.	Left	Channel	Right
5	12674	1206	1337	1433
5	11337	545	400	332
5	10937	729	649	445
5	10288	552	598	633
5	9690	639	681	658
5	9009	898	879	794
5	8130	399	413	456
5	7717	444	464	510
5	7253	756	910	980
5	6343	767	980	1051
5	5363	1199	1142	713
5	4221	749	732	843
5	3489	464	500	457
5	2989	317	215	172
5	2774	40	40	40
5	2773	Culvert		
5	2734	745	846	1015
5	1888	305	828	980
5	1060	60	60	60

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Ditch A

Reach	River Sta.	Contr.	Expan.
5	12674	.1	.3
5	11337	.1	.3
5	10937	.1	.3
5	10288	.1	.3
5	9690	.1	.3
5	9009	.1	.3
5	8130	.1	.3
5	7717	.1	.3
5	7253	.1	.3
5	6343	.1	.3
5	5363	.1	.3
5	4221	.1	.3
5	3489	.1	.3
5	2989	.3	.5
5	2774	.3	.5
5	2773	Culvert	
5	2734		.5
5	1888	.1	.3
5	1060	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. S	
lope	Vel Chnl	Flow Area	Top Width	Froude #	Chl			
(ft)	(ft/s)	(sq ft)	(ft)	(cfs)	(ft)	(ft)	(ft)	
5		12674	488.00	3477.00	3478.35	3477.98	3478.42	0.00
3073	2.23	223.75	301.04	0.43				
5		12674	488.00	3477.00	3478.35	3477.98	3478.42	0.00
3073	2.23	223.75	301.04	0.43				
5		12674	488.00	3477.00	3478.35	3477.98	3478.42	0.00
3073	2.23	223.75	301.04	0.43				
5		12674	488.00	3477.00	3478.35	3477.98	3478.42	0.00
3073	2.23	223.75	301.04	0.43				
5		11337	488.00	3469.00	3470.36	3470.33	3470.73	0.01
4260	4.87	101.95	130.23	0.92				
5		11337	488.00	3469.00	3470.36	3470.33	3470.73	0.01
4260	4.87	101.95	130.23	0.92				
5		11337	488.00	3469.00	3470.36	3470.33	3470.73	0.01
4260	4.87	101.95	130.23	0.92				
5		11337	488.00	3469.00	3470.36	3470.33	3470.73	0.01
4260	4.87	101.95	130.23	0.92				
5		10937	488.00	3464.00	3465.74	3465.55	3466.02	0.00
9772	4.21	116.03	126.27	0.77				
5		10937	488.00	3464.00	3465.74	3465.55	3466.02	0.00
9772	4.21	116.03	126.27	0.77				
5		10937	488.00	3464.00	3465.74	3465.55	3466.02	0.00
9772	4.21	116.03	126.27	0.77				
5		10937	488.00	3464.00	3465.74	3465.55	3466.02	0.00

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9772	4.21	116.03	126.27	0.77				
5		10288	488.00	3456.00	3456.90	3456.90	3457.15	0.02
0388	4.04	120.78	242.43	1.01				
5		10288	488.00	3456.00	3456.90	3456.90	3457.15	0.02
0388	4.04	120.78	242.43	1.01				
5		10288	488.00	3456.00	3456.90	3456.90	3457.15	0.02
0388	4.04	120.78	242.43	1.01				
5		10288	488.00	3456.00	3456.90	3456.90	3457.15	0.02
0388	4.04	120.78	242.43	1.01				
5		9690	611.00	3450.00	3451.49	3451.14	3451.60	0.00
4656	2.56	238.60	313.59	0.52				
5		9690	611.00	3450.00	3451.49	3451.14	3451.60	0.00
4656	2.56	238.60	313.59	0.52				
5		9690	611.00	3450.00	3451.49	3451.14	3451.60	0.00
4656	2.56	238.60	313.59	0.52				
5		9690	611.00	3450.00	3451.49	3451.14	3451.60	0.00
4656	2.56	238.60	313.59	0.52				
5		9009	611.00	3445.00	3446.45	3446.34	3446.68	0.01
2581	3.84	159.10	239.94	0.83				
5		9009	611.00	3445.00	3446.45	3446.34	3446.68	0.01
2581	3.84	159.10	239.94	0.83				
5		9009	611.00	3445.00	3446.45	3446.34	3446.68	0.01
2581	3.84	159.10	239.94	0.83				
5		9009	611.00	3445.00	3446.45	3446.34	3446.68	0.01
2581	3.84	159.10	239.94	0.83				
5		8130	611.00	3440.00	3441.57	3441.11	3441.65	0.00
3204	2.21	276.52	342.53	0.43				
5		8130	611.00	3440.00	3441.57	3441.11	3441.65	0.00
3204	2.21	276.52	342.53	0.43				
5		8130	611.00	3440.00	3441.57	3441.11	3441.65	0.00
3204	2.21	276.52	342.53	0.43				
5		8130	611.00	3440.00	3441.57	3441.11	3441.65	0.00
3204	2.21	276.52	342.53	0.43				
5		7717	611.00	3437.80	3438.66	3438.66	3438.94	0.02
0021	4.18	146.05	274.48	1.01				
5		7717	611.00	3437.80	3438.66	3438.66	3438.94	0.02
0021	4.18	146.05	274.48	1.01				
5		7717	611.00	3437.80	3438.66	3438.66	3438.94	0.02
0021	4.18	146.05	274.48	1.01				
5		7717	611.00	3437.80	3438.66	3438.66	3438.94	0.02
0021	4.18	146.05	274.48	1.01				
5		7253	697.00	3435.00	3436.35	3435.88	3436.40	0.00
1738	1.69	417.07	517.58	0.32				
5		7253	697.00	3435.00	3436.35	3435.88	3436.40	0.00
1738	1.69	417.07	517.58	0.32				
5		7253	697.00	3435.00	3436.35	3435.88	3436.40	0.00
1738	1.69	417.07	517.58	0.32				
5		7253	697.00	3435.00	3436.35	3435.88	3436.40	0.00
1738	1.69	417.07	517.58	0.32				
5		6343	1328.00	3430.00	3430.70	3430.70	3431.00	0.01
9035	4.37	303.78	514.60	1.00				

FloodPlain.rep								
5		6343	1328.00	3430.00	3430.70	3430.70	3431.00	0.01
9035	4.37	303.78	514.60	1.00				
5		6343	1328.00	3430.00	3430.70	3430.70	3431.00	0.01
9035	4.37	303.78	514.60	1.00				
5		6343	1328.00	3430.00	3430.70	3430.70	3431.00	0.01
9035	4.37	303.78	514.60	1.00				
5		5363	1328.00	3425.00	3426.33	3425.78	3426.38	0.00
1763	1.85	727.78	830.57	0.33				
5		5363	1328.00	3425.00	3426.33	3425.78	3426.38	0.00
1763	1.85	727.78	830.57	0.33				
5		5363	1328.00	3425.00	3426.33	3425.78	3426.38	0.00
1763	1.85	727.78	830.57	0.33				
5		5363	1328.00	3425.00	3426.33	3425.78	3426.38	0.00
1763	1.85	727.78	830.57	0.33				
5		4221	1501.00	3420.00	3420.99	3420.99	3421.33	0.01
8533	4.67	321.48	483.60	1.01				
5		4221	1501.00	3420.00	3420.99	3420.99	3421.33	0.01
8533	4.67	321.48	483.60	1.01				
5		4221	1501.00	3420.00	3420.99	3420.99	3421.33	0.01
8533	4.67	321.48	483.60	1.01				
5		4221	1501.00	3420.00	3420.99	3420.99	3421.33	0.01
8533	4.67	321.48	483.60	1.01				
5		3489	1501.00	3416.00	3417.18	3416.67	3417.24	0.00
2251	2.05	804.91	998.90	0.37				
5		3489	1501.00	3416.00	3417.18	3416.67	3417.24	0.00
2251	2.05	804.91	998.90	0.37				
5		3489	1501.00	3416.00	3417.18	3416.67	3417.24	0.00
2251	2.05	804.91	998.90	0.37				
5		3489	1501.00	3416.00	3417.18	3416.67	3417.24	0.00
2251	2.05	804.91	998.90	0.37				
5		2989	1501.00	3413.80	3414.52	3414.52	3414.81	0.01
9219	4.14	351.67	623.28	0.99				
5		2989	1501.00	3413.80	3414.52	3414.52	3414.81	0.01
9219	4.14	351.67	623.28	0.99				
5		2989	1501.00	3413.80	3414.52	3414.52	3414.81	0.01
9219	4.14	351.67	623.28	0.99				
5		2989	1501.00	3413.80	3414.52	3414.52	3414.81	0.01
9219	4.14	351.67	623.28	0.99				
5		2774	1501.00	3409.00	3413.99	3412.71	3414.03	0.00
0278	2.09	1331.44	1039.64	0.17				
5		2774	1501.00	3409.00	3413.99	3412.71	3414.03	0.00
0278	2.09	1331.44	1039.64	0.17				
5		2774	1501.00	3409.00	3413.99	3412.71	3414.03	0.00
0278	2.09	1331.44	1039.64	0.17				
5		2774	1501.00	3409.00	3413.99	3412.71	3414.03	0.00
0278	2.09	1331.44	1039.64	0.17				
5		2773	Culvert					
5		2734	1501.00	3408.90	3412.71	3412.71	3412.82	0.00
1004	3.22	665.51	431.91	0.31				
5		2734	1501.00	3408.90	3412.71	3412.71	3412.82	0.00

FloodPlain.rep								
1004	3.22	665.51	431.91	0.31				
5	2734		1501.00	3408.90	3412.71	3412.71	3412.82	0.00
1004	3.22	665.51	431.91	0.31				
5	2734		1501.00	3408.90	3412.71	3412.71	3412.82	0.00
1004	3.22	665.51	431.91	0.31				
5	1888		1521.00	3408.00	3408.41	3408.72	3409.58	0.15
1914	8.68	175.18	503.42	2.59				
5	1888		1521.00	3408.00	3408.41	3408.72	3409.58	0.15
1914	8.68	175.18	503.42	2.59				
5	1888		1521.00	3408.00	3408.41	3408.72	3409.58	0.15
1914	8.68	175.18	503.42	2.59				
5	1888		1521.00	3408.00	3408.41	3408.72	3409.58	0.15
1914	8.68	175.18	503.42	2.59				
5	1060		1585.00	3402.70	3404.50	3404.11	3404.66	0.00
5270	3.16	501.30	526.98	0.57				
5	1060		1585.00	3402.70	3405.00	3404.11	3405.06	0.00
1518	1.98	799.30	665.03	0.32				
5	1060		1585.00	3402.70	3406.00	3404.11	3406.01	0.00
0250	0.93	1696.32	1129.00	0.13				
5	1060		1585.00	3402.70	3407.00	3404.11	3407.01	0.00
0045	0.56	2898.82	1276.00	0.06				

Profile Output Table - Report Standard Table 1

Reach	River Sta	Q Total	Min Ch El	W.S.	Elev	Crit W.S.	Max Chl Dpth	E.G
Elev	E.G. Slope	Vel Chnl	Sta W.S. Lft	Sta W.S. Rgt	Flow Area	Top Width	Froude #	Chl
(ft)	(ft/ft)	(ft/s)	(cfs) (ft)	(ft)	(ft) (sq ft)	(ft)	(ft)	(ft)
5	12674		488.00	3477.00	3478.35	3477.98	1.35	3
478.42	0.003073	2.23	355.77	656.81	223.75	301.04		0.43
5	12674		488.00	3477.00	3478.35	3477.98	1.35	3
478.42	0.003073	2.23	355.77	656.81	223.75	301.04		0.43
5	12674		488.00	3477.00	3478.35	3477.98	1.35	3
478.42	0.003073	2.23	355.77	656.81	223.75	301.04		0.43
5	12674		488.00	3477.00	3478.35	3477.98	1.35	3
478.42	0.003073	2.23	355.77	656.81	223.75	301.04		0.43
5	11337		488.00	3469.00	3470.36	3470.33	1.36	3
470.73	0.014260	4.87	427.21	557.43	101.95	130.23		0.92
5	11337		488.00	3469.00	3470.36	3470.33	1.36	3
470.73	0.014260	4.87	427.21	557.43	101.95	130.23		0.92
5	11337		488.00	3469.00	3470.36	3470.33	1.36	3
470.73	0.014260	4.87	427.21	557.43	101.95	130.23		0.92

			FloodPlain.rep					
5	11337		488.00	3469.00	3470.36	3470.33	1.36	3
470.73	0.014260	4.87	427.21	557.43	101.95	130.23		0.92
5	10937		488.00	3464.00	3465.74	3465.55	1.74	3
466.02	0.009772	4.21	474.19	600.46	116.03	126.27		0.77
5	10937		488.00	3464.00	3465.74	3465.55	1.74	3
466.02	0.009772	4.21	474.19	600.46	116.03	126.27		0.77
5	10937		488.00	3464.00	3465.74	3465.55	1.74	3
466.02	0.009772	4.21	474.19	600.46	116.03	126.27		0.77
5	10937		488.00	3464.00	3465.74	3465.55	1.74	3
466.02	0.009772	4.21	474.19	600.46	116.03	126.27		0.77
5	10288		488.00	3456.00	3456.90	3456.90	0.90	3
457.15	0.020388	4.04	405.26	647.69	120.78	242.43		1.01
5	10288		488.00	3456.00	3456.90	3456.90	0.90	3
457.15	0.020388	4.04	405.26	647.69	120.78	242.43		1.01
5	10288		488.00	3456.00	3456.90	3456.90	0.90	3
457.15	0.020388	4.04	405.26	647.69	120.78	242.43		1.01
5	10288		488.00	3456.00	3456.90	3456.90	0.90	3
457.15	0.020388	4.04	405.26	647.69	120.78	242.43		1.01
5	9690		611.00	3450.00	3451.49	3451.14	1.49	3
451.60	0.004656	2.56	444.61	758.20	238.60	313.59		0.52
5	9690		611.00	3450.00	3451.49	3451.14	1.49	3
451.60	0.004656	2.56	444.61	758.20	238.60	313.59		0.52
5	9690		611.00	3450.00	3451.49	3451.14	1.49	3
451.60	0.004656	2.56	444.61	758.20	238.60	313.59		0.52
5	9690		611.00	3450.00	3451.49	3451.14	1.49	3
451.60	0.004656	2.56	444.61	758.20	238.60	313.59		0.52
5	9009		611.00	3445.00	3446.45	3446.34	1.45	3
446.68	0.012581	3.84	454.43	694.37	159.10	239.94		0.83
5	9009		611.00	3445.00	3446.45	3446.34	1.45	3
446.68	0.012581	3.84	454.43	694.37	159.10	239.94		0.83
5	9009		611.00	3445.00	3446.45	3446.34	1.45	3
446.68	0.012581	3.84	454.43	694.37	159.10	239.94		0.83
5	9009		611.00	3445.00	3446.45	3446.34	1.45	3
446.68	0.012581	3.84	454.43	694.37	159.10	239.94		0.83

FloodPlain.rep

5	8130		611.00	3440.00	3441.57	3441.11	1.57	3
441.65	0.003204	2.21	469.14	811.67	276.52	342.53		0.43
5	8130		611.00	3440.00	3441.57	3441.11	1.57	3
441.65	0.003204	2.21	469.14	811.67	276.52	342.53		0.43
5	8130		611.00	3440.00	3441.57	3441.11	1.57	3
441.65	0.003204	2.21	469.14	811.67	276.52	342.53		0.43
5	8130		611.00	3440.00	3441.57	3441.11	1.57	3
441.65	0.003204	2.21	469.14	811.67	276.52	342.53		0.43
5	7717		611.00	3437.80	3438.66	3438.66	0.86	3
438.94	0.020021	4.18	333.18	607.65	146.05	274.48		1.01
5	7717		611.00	3437.80	3438.66	3438.66	0.86	3
438.94	0.020021	4.18	333.18	607.65	146.05	274.48		1.01
5	7717		611.00	3437.80	3438.66	3438.66	0.86	3
438.94	0.020021	4.18	333.18	607.65	146.05	274.48		1.01
5	7717		611.00	3437.80	3438.66	3438.66	0.86	3
438.94	0.020021	4.18	333.18	607.65	146.05	274.48		1.01
5	7253		697.00	3435.00	3436.35	3435.88	1.35	3
436.40	0.001738	1.69	405.86	923.44	417.07	517.58		0.32
5	7253		697.00	3435.00	3436.35	3435.88	1.35	3
436.40	0.001738	1.69	405.86	923.44	417.07	517.58		0.32
5	7253		697.00	3435.00	3436.35	3435.88	1.35	3
436.40	0.001738	1.69	405.86	923.44	417.07	517.58		0.32
5	7253		697.00	3435.00	3436.35	3435.88	1.35	3
436.40	0.001738	1.69	405.86	923.44	417.07	517.58		0.32
5	6343		1328.00	3430.00	3430.70	3430.70	0.70	3
431.00	0.019035	4.37	780.28	1294.88	303.78	514.60		1.00
5	6343		1328.00	3430.00	3430.70	3430.70	0.70	3
431.00	0.019035	4.37	780.28	1294.88	303.78	514.60		1.00
5	6343		1328.00	3430.00	3430.70	3430.70	0.70	3
431.00	0.019035	4.37	780.28	1294.88	303.78	514.60		1.00
5	6343		1328.00	3430.00	3430.70	3430.70	0.70	3
431.00	0.019035	4.37	780.28	1294.88	303.78	514.60		1.00
5	5363		1328.00	3425.00	3426.33	3425.78	1.33	3
426.38	0.001763	1.85	710.73	1541.30	727.78	830.57		0.33
5	5363		1328.00	3425.00	3426.33	3425.78	1.33	3

FloodPlain.rep									
426.38	0.001763	1.85	710.73	1541.30	727.78	830.57		0.33	
5	5363		1328.00	3425.00	3426.33	3425.78		1.33	3
426.38	0.001763	1.85	710.73	1541.30	727.78	830.57		0.33	
5	5363		1328.00	3425.00	3426.33	3425.78		1.33	3
426.38	0.001763	1.85	710.73	1541.30	727.78	830.57		0.33	
5	4221		1501.00	3420.00	3420.99	3420.99		0.99	3
421.33	0.018533	4.67	544.80	1028.40	321.48	483.60		1.01	
5	4221		1501.00	3420.00	3420.99	3420.99		0.99	3
421.33	0.018533	4.67	544.80	1028.40	321.48	483.60		1.01	
5	4221		1501.00	3420.00	3420.99	3420.99		0.99	3
421.33	0.018533	4.67	544.80	1028.40	321.48	483.60		1.01	
5	4221		1501.00	3420.00	3420.99	3420.99		0.99	3
421.33	0.018533	4.67	544.80	1028.40	321.48	483.60		1.01	
5	3489		1501.00	3416.00	3417.18	3416.67		2.18	3
417.24	0.002251	2.05	-116.98	881.92	804.91	998.90		0.37	
5	3489		1501.00	3416.00	3417.18	3416.67		2.18	3
417.24	0.002251	2.05	-116.98	881.92	804.91	998.90		0.37	
5	3489		1501.00	3416.00	3417.18	3416.67		2.18	3
417.24	0.002251	2.05	-116.98	881.92	804.91	998.90		0.37	
5	3489		1501.00	3416.00	3417.18	3416.67		2.18	3
417.24	0.002251	2.05	-116.98	881.92	804.91	998.90		0.37	
5	2989		1501.00	3413.80	3414.52	3414.52		0.72	3
414.81	0.019219	4.14	179.04	802.32	351.67	623.28		0.99	
5	2989		1501.00	3413.80	3414.52	3414.52		0.72	3
414.81	0.019219	4.14	179.04	802.32	351.67	623.28		0.99	
5	2989		1501.00	3413.80	3414.52	3414.52		0.72	3
414.81	0.019219	4.14	179.04	802.32	351.67	623.28		0.99	
5	2989		1501.00	3413.80	3414.52	3414.52		0.72	3
414.81	0.019219	4.14	179.04	802.32	351.67	623.28		0.99	
5	2774		1501.00	3409.00	3413.99	3412.71		4.99	3
414.03	0.000278	2.09	-399.05	640.58	1331.44	1039.64		0.17	
5	2774		1501.00	3409.00	3413.99	3412.71		4.99	3
414.03	0.000278	2.09	-399.05	640.58	1331.44	1039.64		0.17	
5	2774		1501.00	3409.00	3413.99	3412.71		4.99	3
414.03	0.000278	2.09	-399.05	640.58	1331.44	1039.64		0.17	

				FloodPlain.rep					
5	2774		1501.00	3409.00	3413.99	3412.71	4.99	3	
414.03	0.000278	2.09	-399.05	640.58	1331.44	1039.64		0.17	

5	2773			Culvert				
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5	2734		1501.00	3408.90	3412.71	3412.71	3.81	3
412.82	0.001004	3.22	83.74	515.65	665.51	431.91		0.31

5	2734		1501.00	3408.90	3412.71	3412.71	3.81	3
412.82	0.001004	3.22	83.74	515.65	665.51	431.91		0.31

5	2734		1501.00	3408.90	3412.71	3412.71	3.81	3
412.82	0.001004	3.22	83.74	515.65	665.51	431.91		0.31

5	2734		1501.00	3408.90	3412.71	3412.71	3.81	3
412.82	0.001004	3.22	83.74	515.65	665.51	431.91		0.31

5	1888		1521.00	3408.00	3408.41	3408.72	0.41	3
409.58	0.151914	8.68	286.11	789.53	175.18	503.42		2.59

5	1888		1521.00	3408.00	3408.41	3408.72	0.41	3
409.58	0.151914	8.68	286.11	789.53	175.18	503.42		2.59

5	1888		1521.00	3408.00	3408.41	3408.72	0.41	3
409.58	0.151914	8.68	286.11	789.53	175.18	503.42		2.59

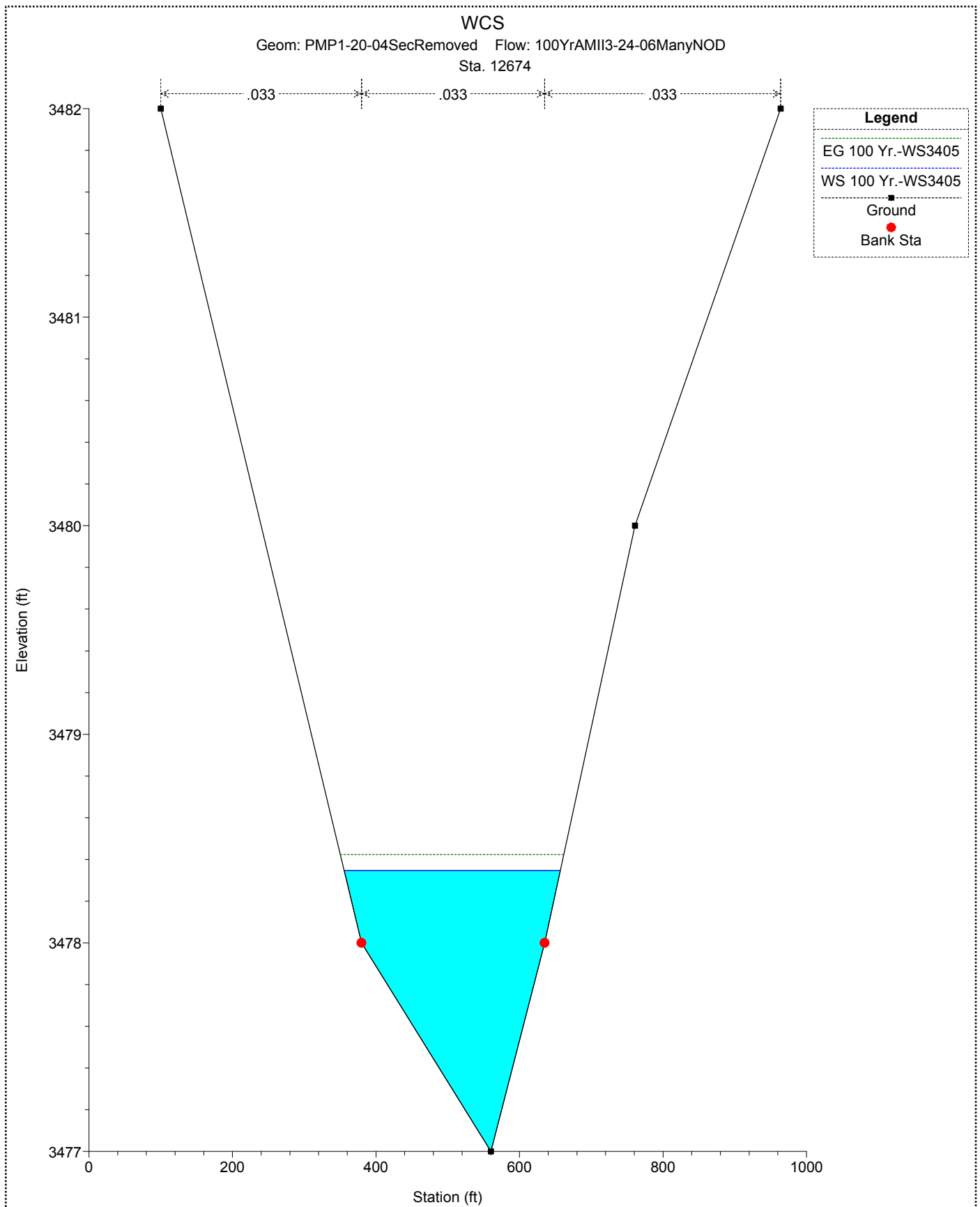
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409.58	0.151914	8.68	286.11	789.53	175.18	503.42		2.59

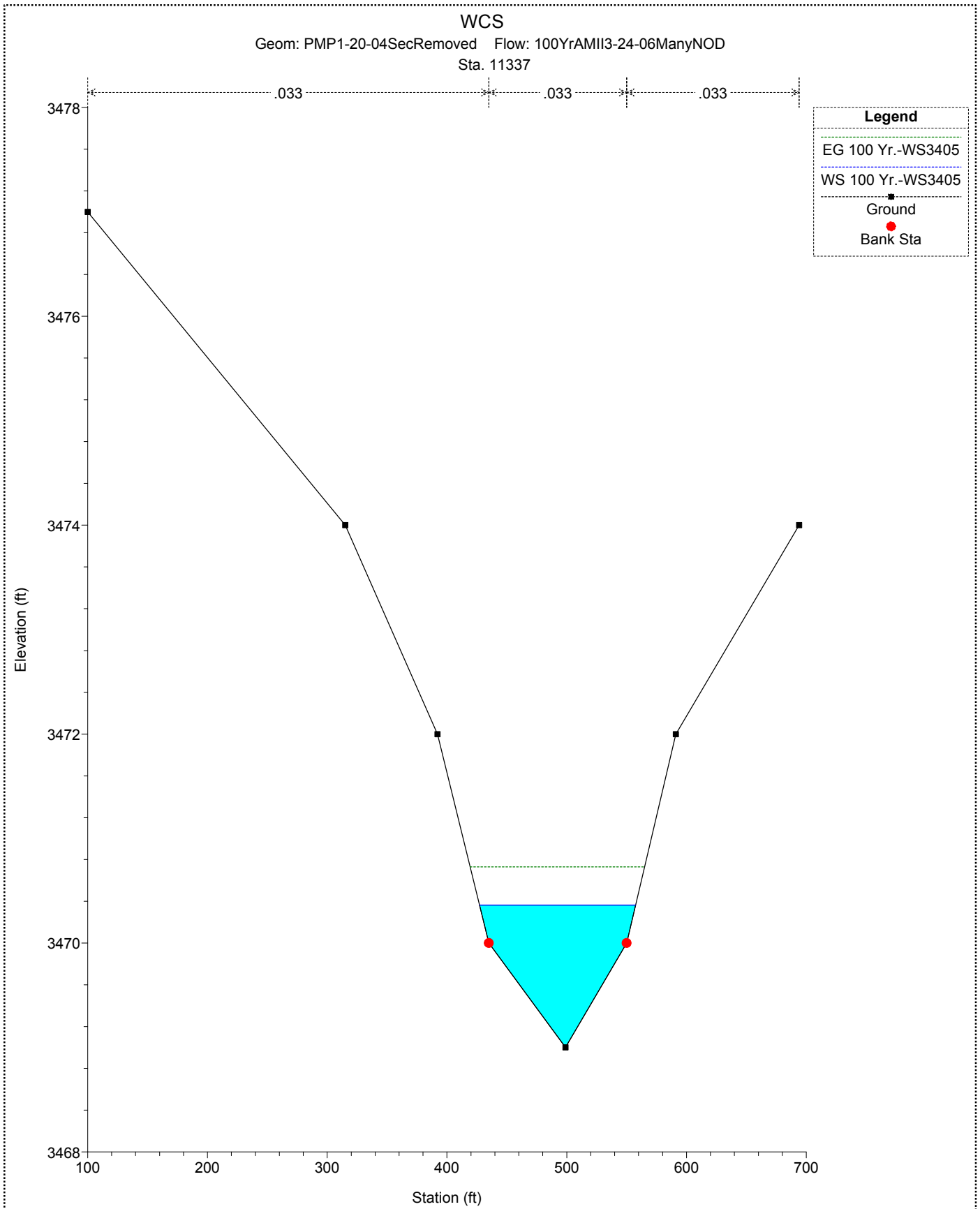
5	1060		1585.00	3402.70	3404.50	3404.11	1.80	3
404.66	0.005270	3.16	614.45	1141.44	501.30	526.98		0.57

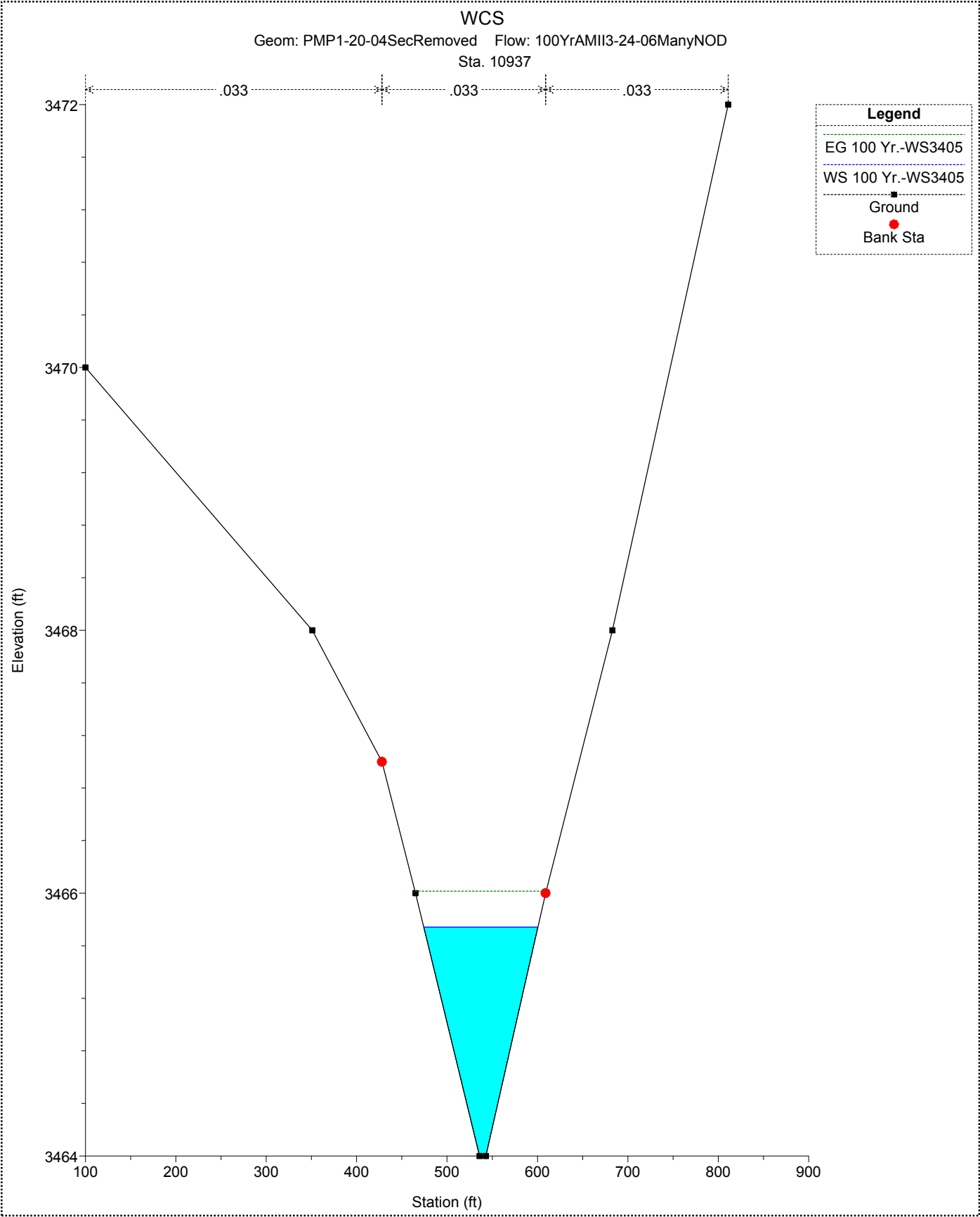
5	1060		1585.00	3402.70	3405.00	3404.11	2.30	3
405.06	0.001518	1.98	540.97	1206.00	799.30	665.03		0.32

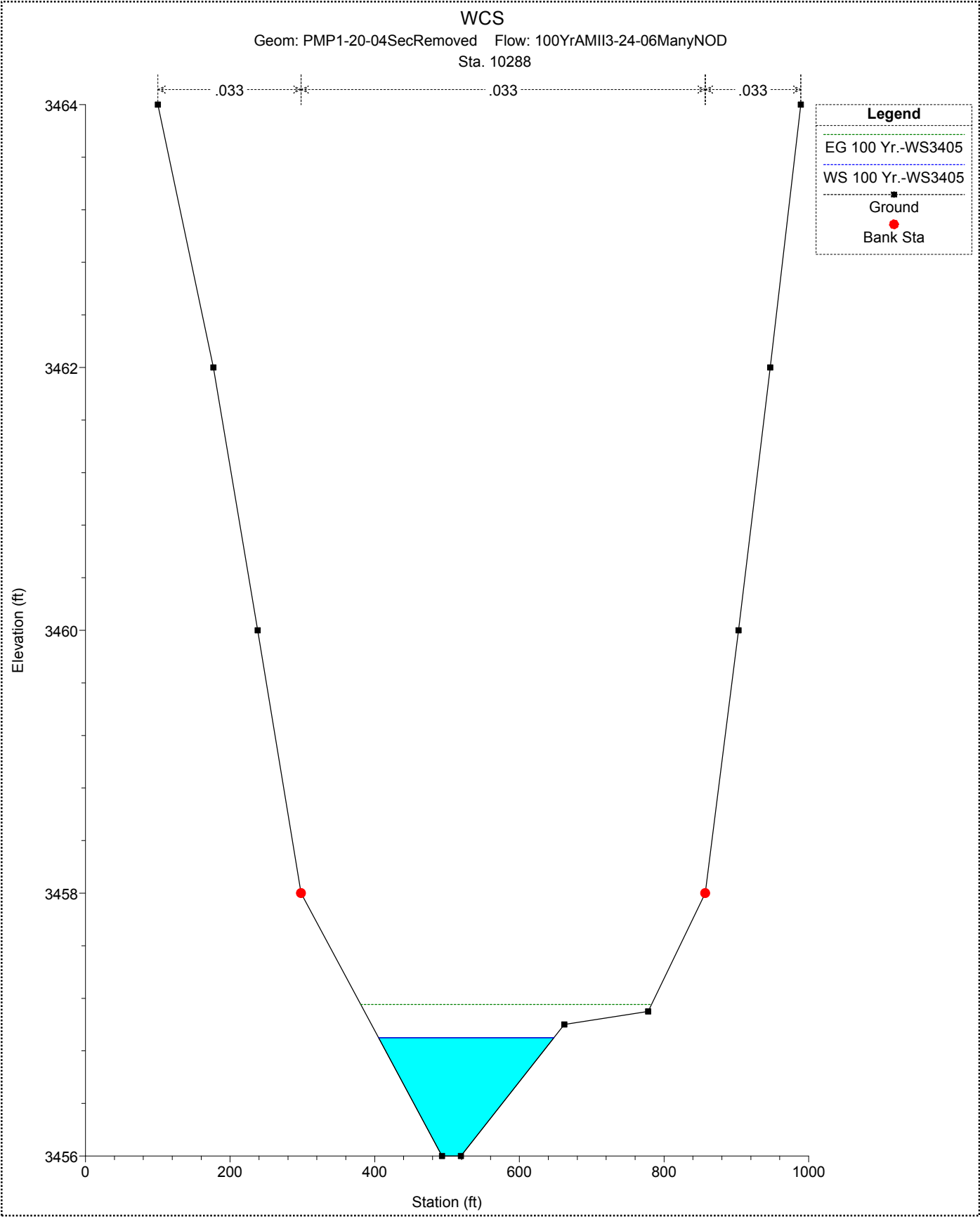
5	1060		1585.00	3402.70	3406.00	3404.11	3.30	3
406.01	0.000250	0.93	394.00	1523.00	1696.32	1129.00		0.13

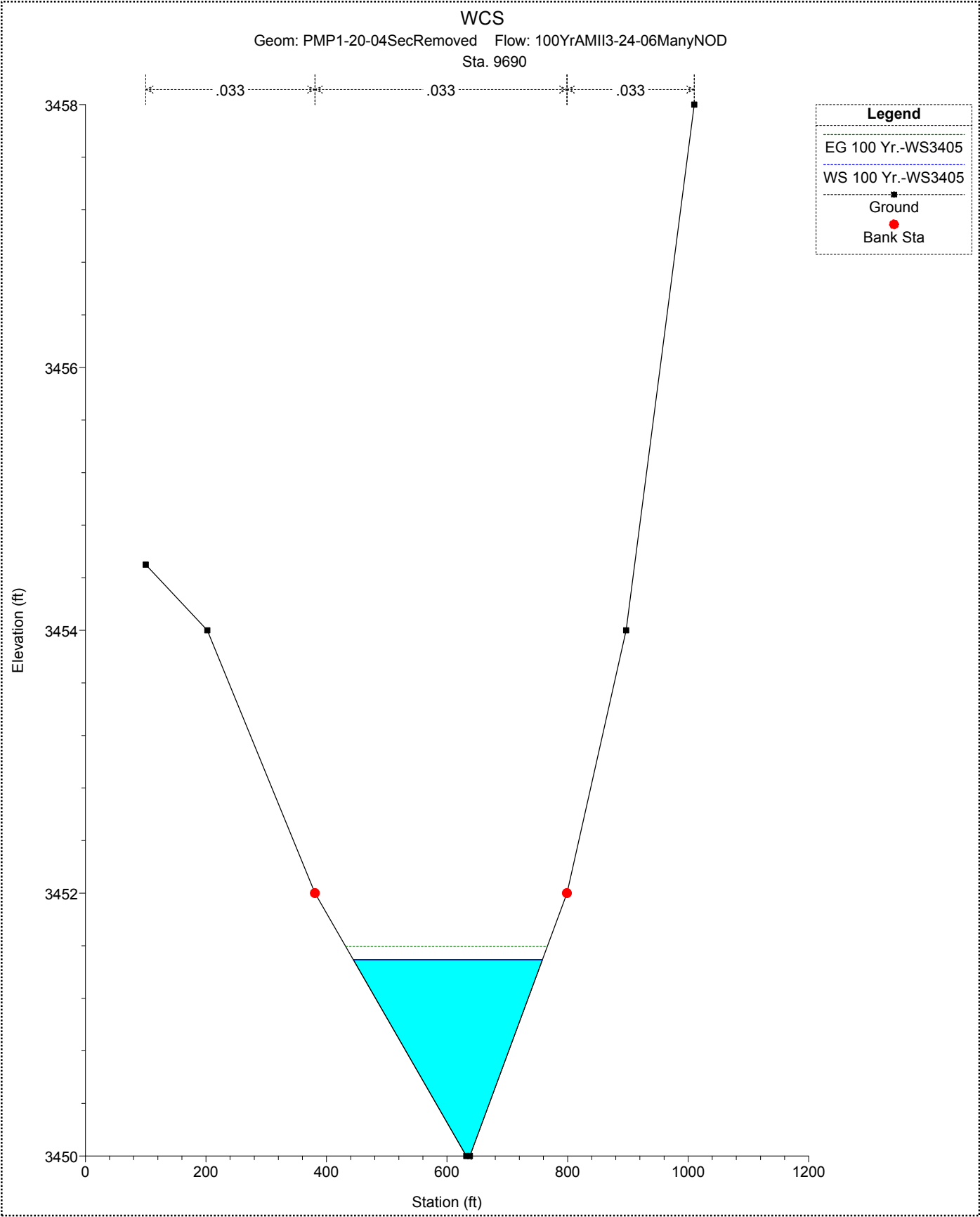
5	1060		1585.00	3402.70	3407.00	3404.11	4.30	3
407.01	0.000045	0.56	247.00	1523.00	2898.82	1276.00		0.06

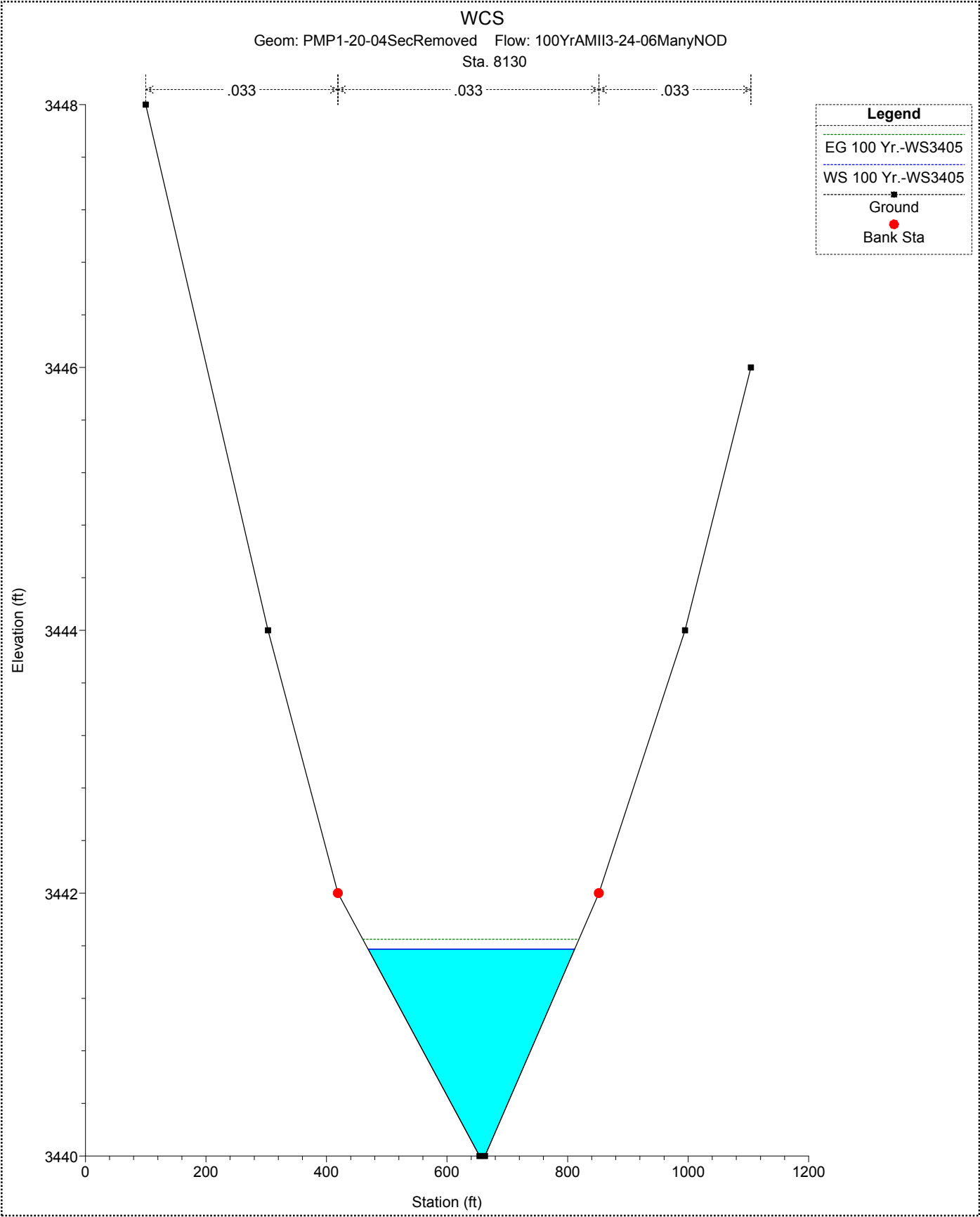


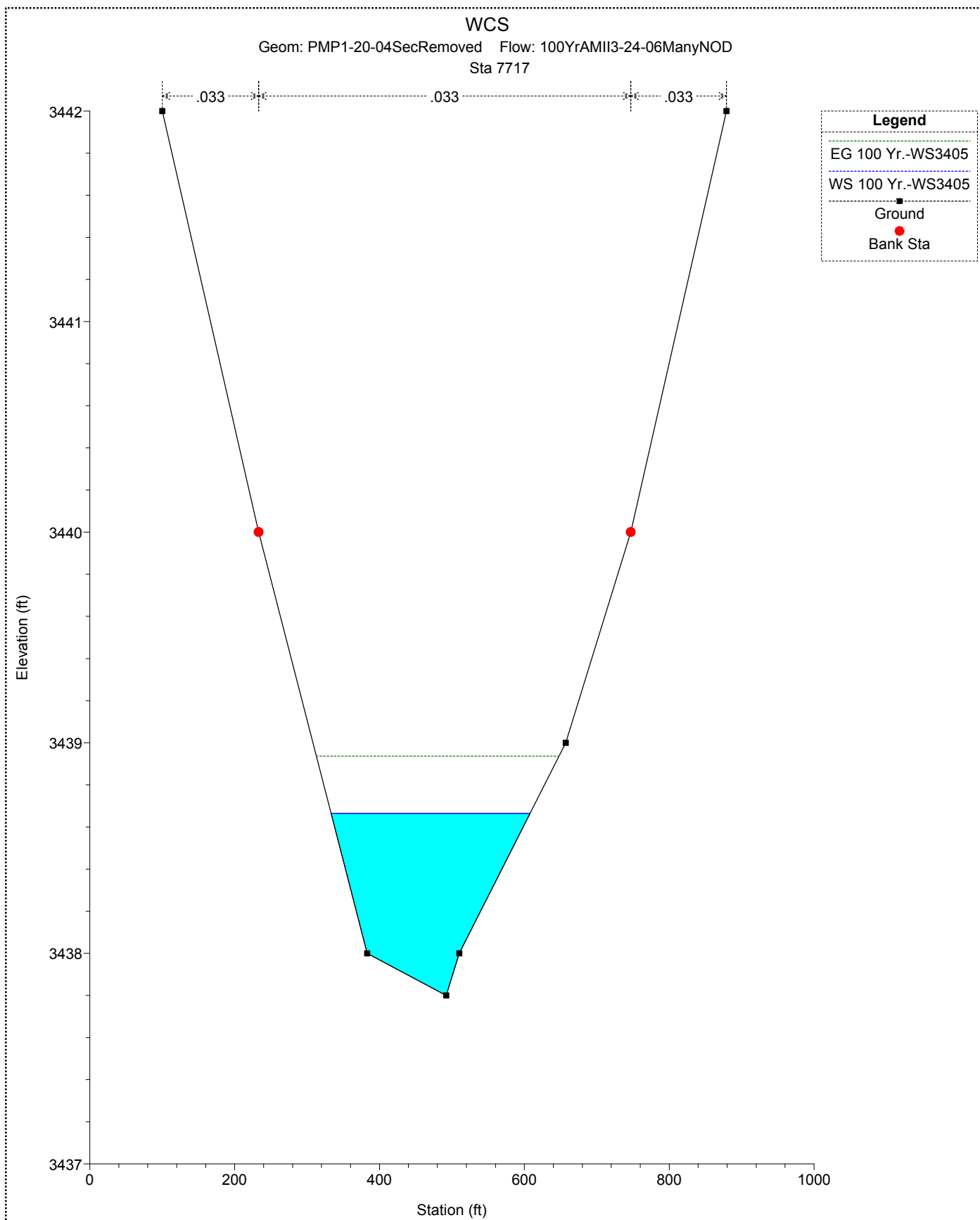


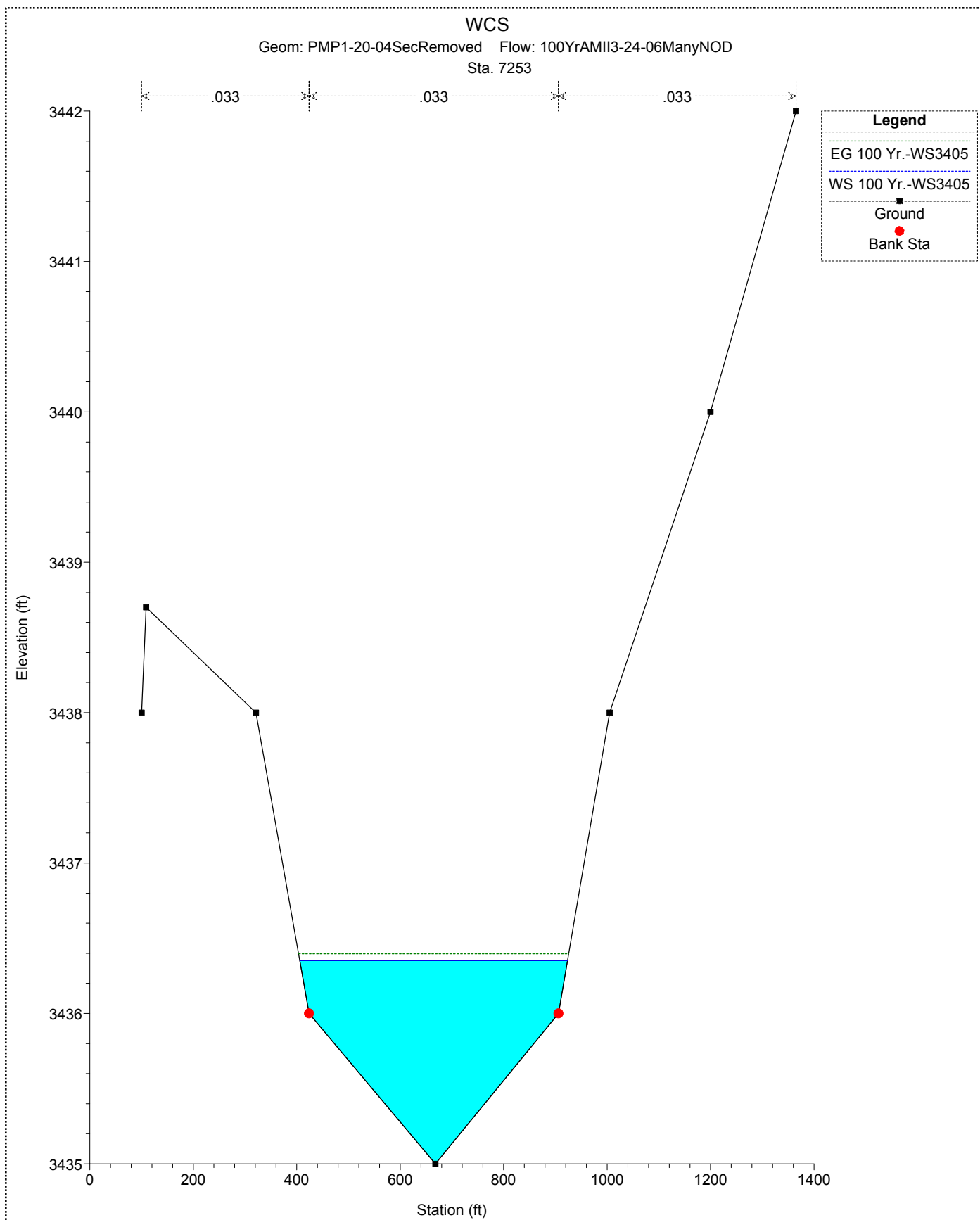


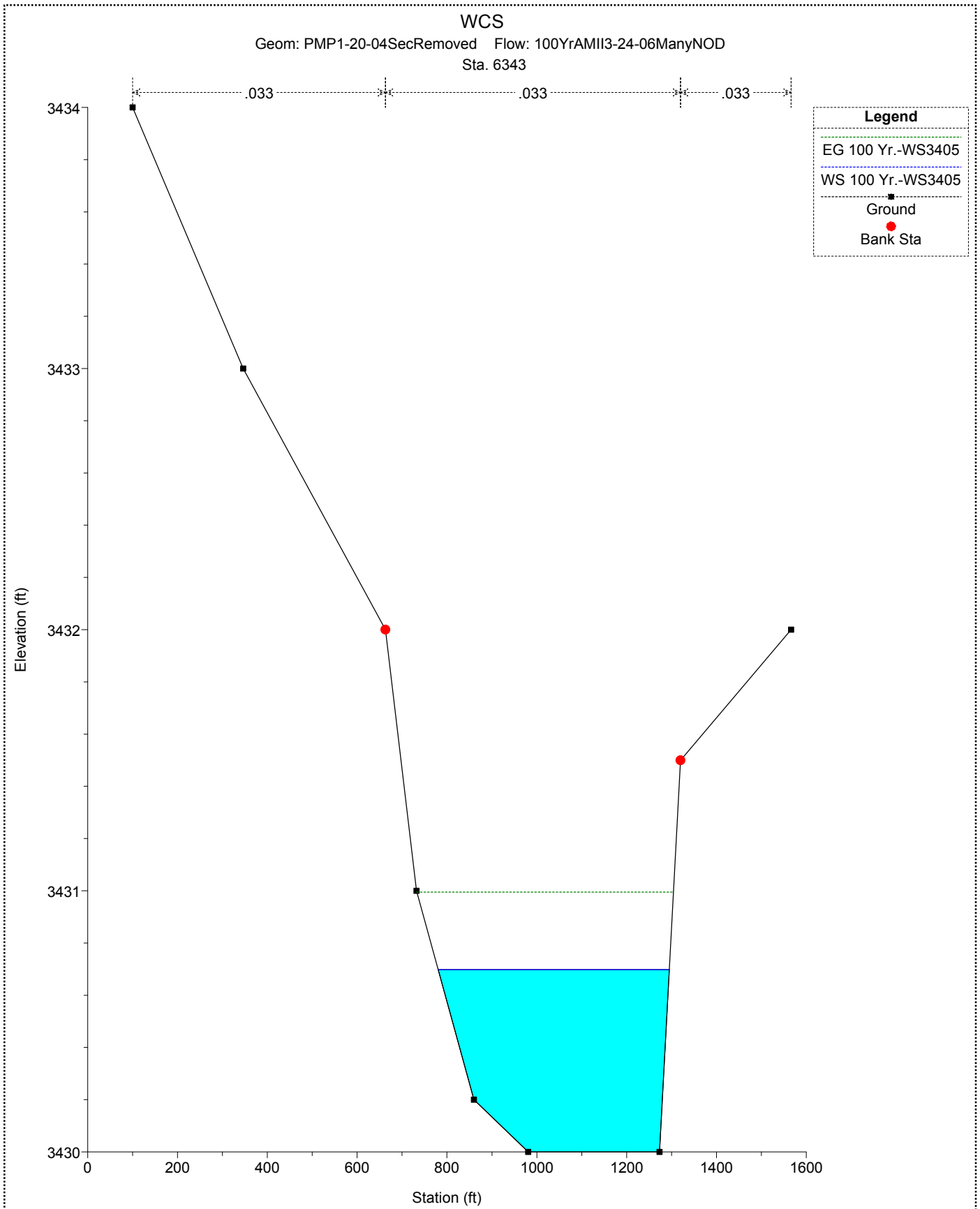


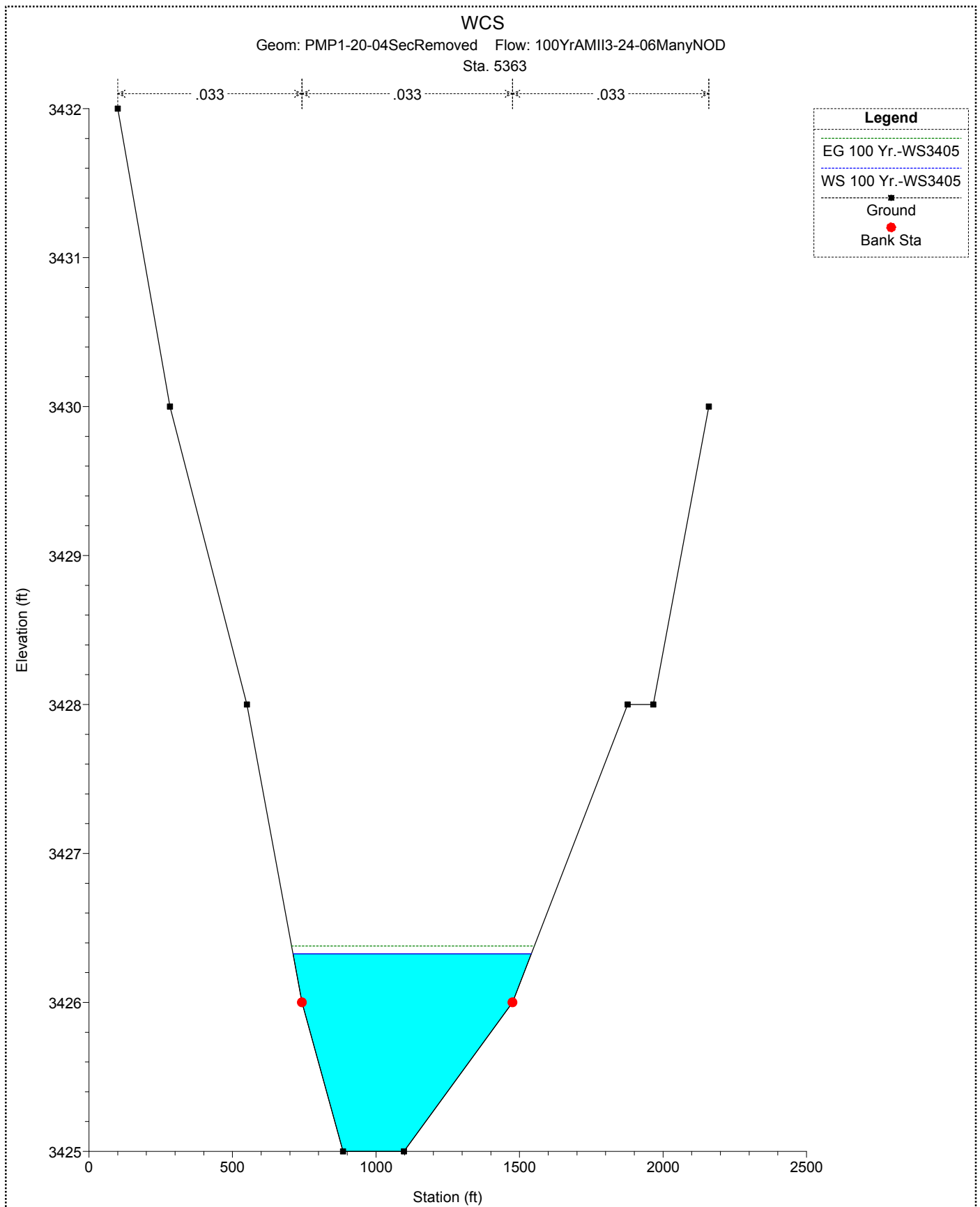


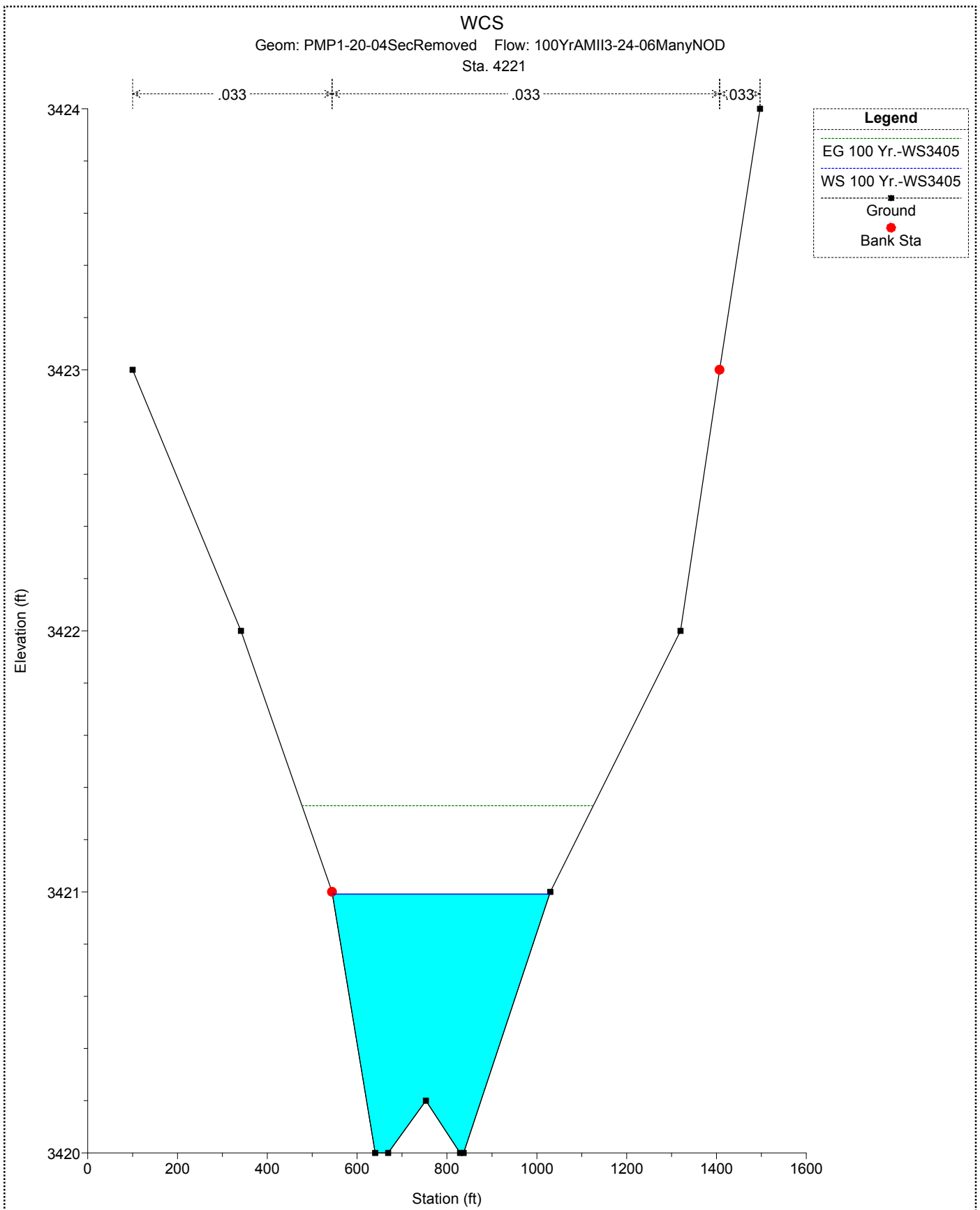


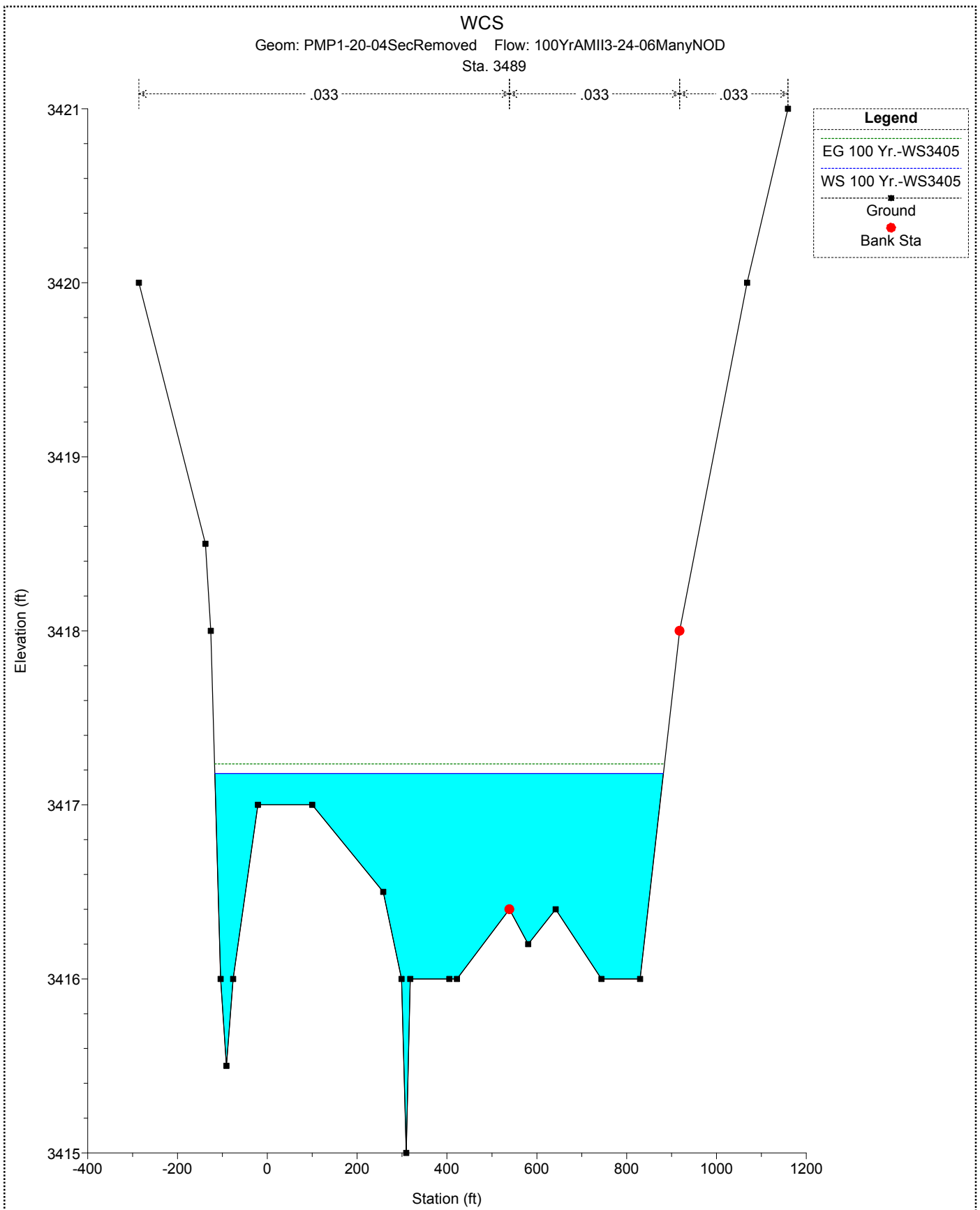


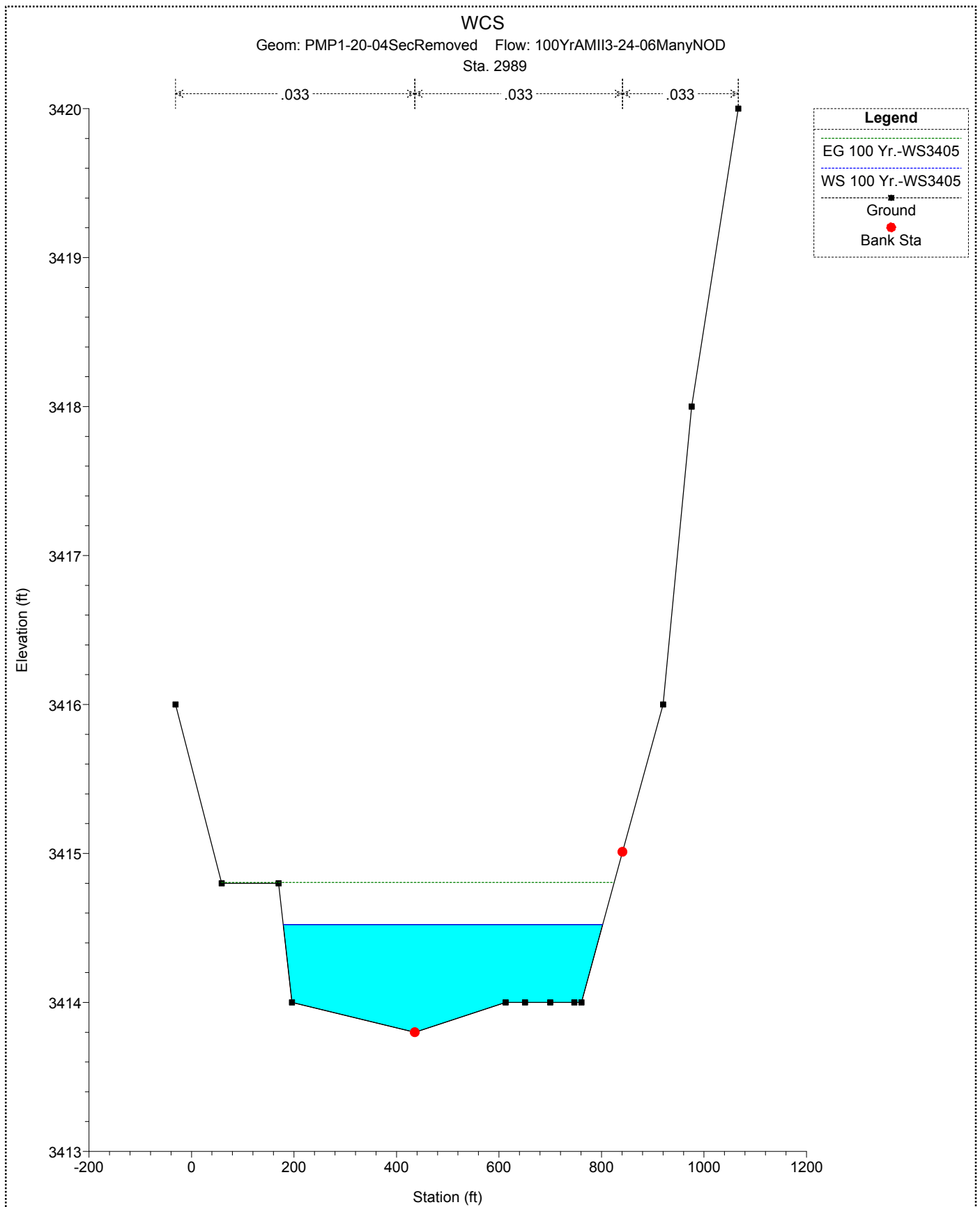


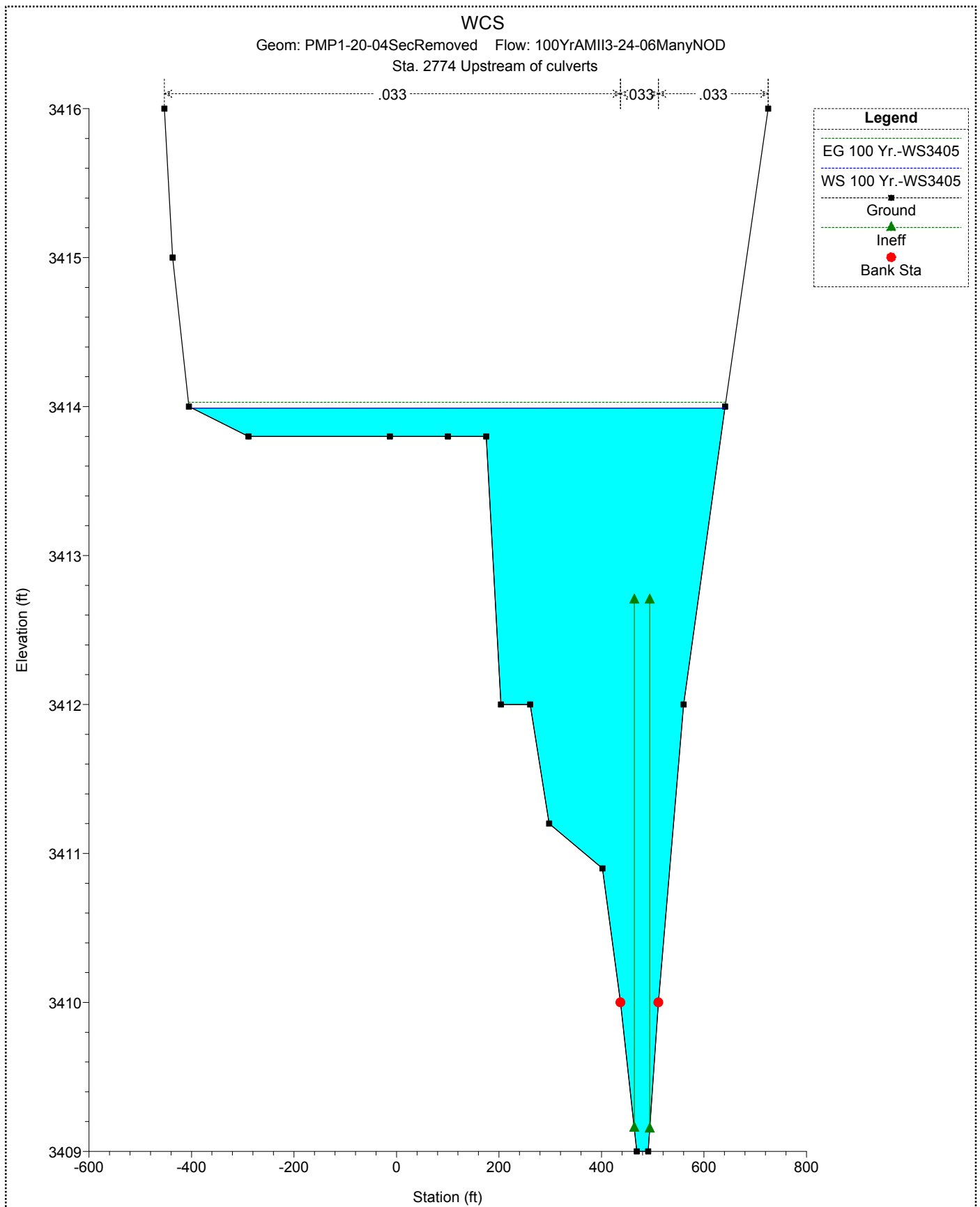


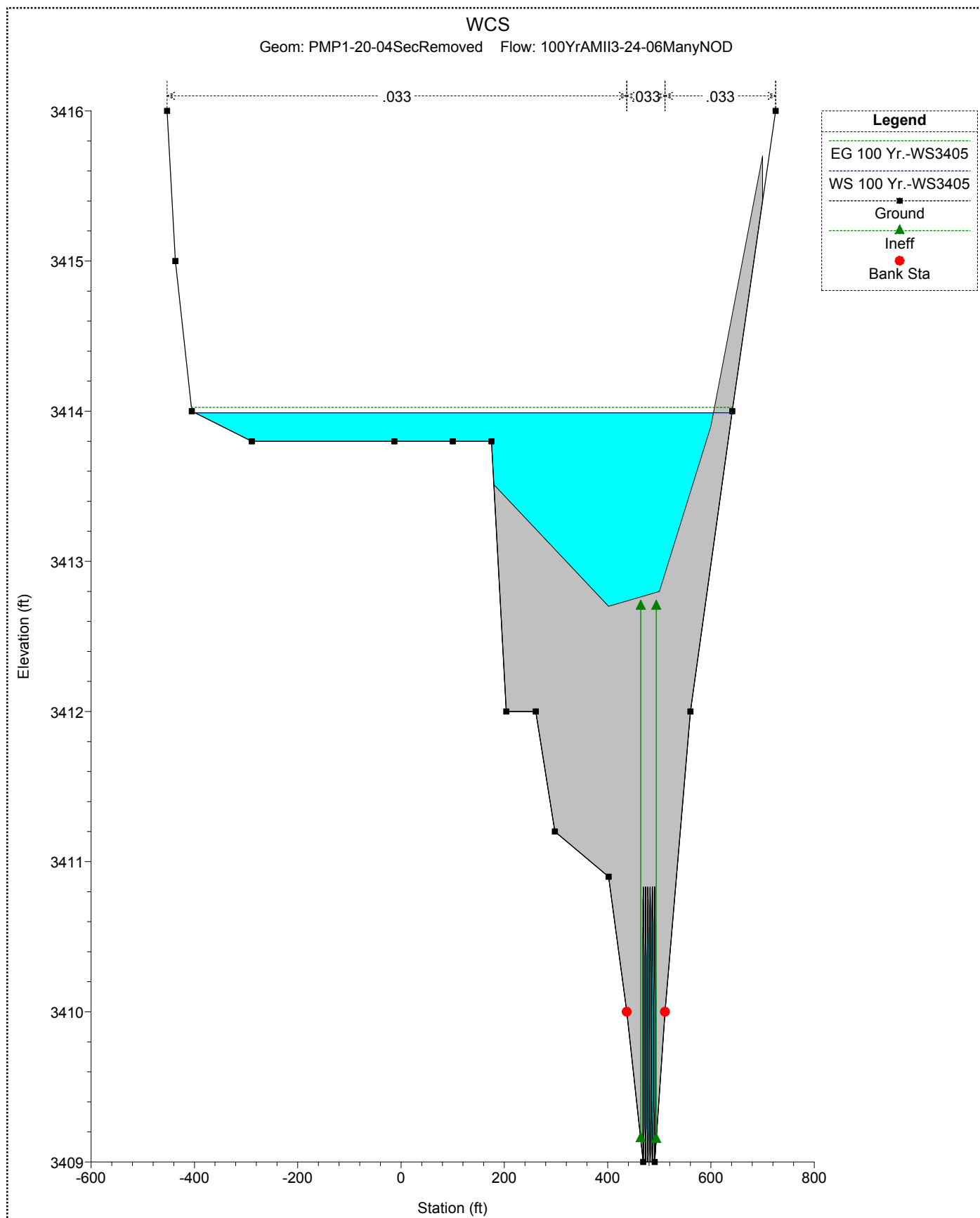




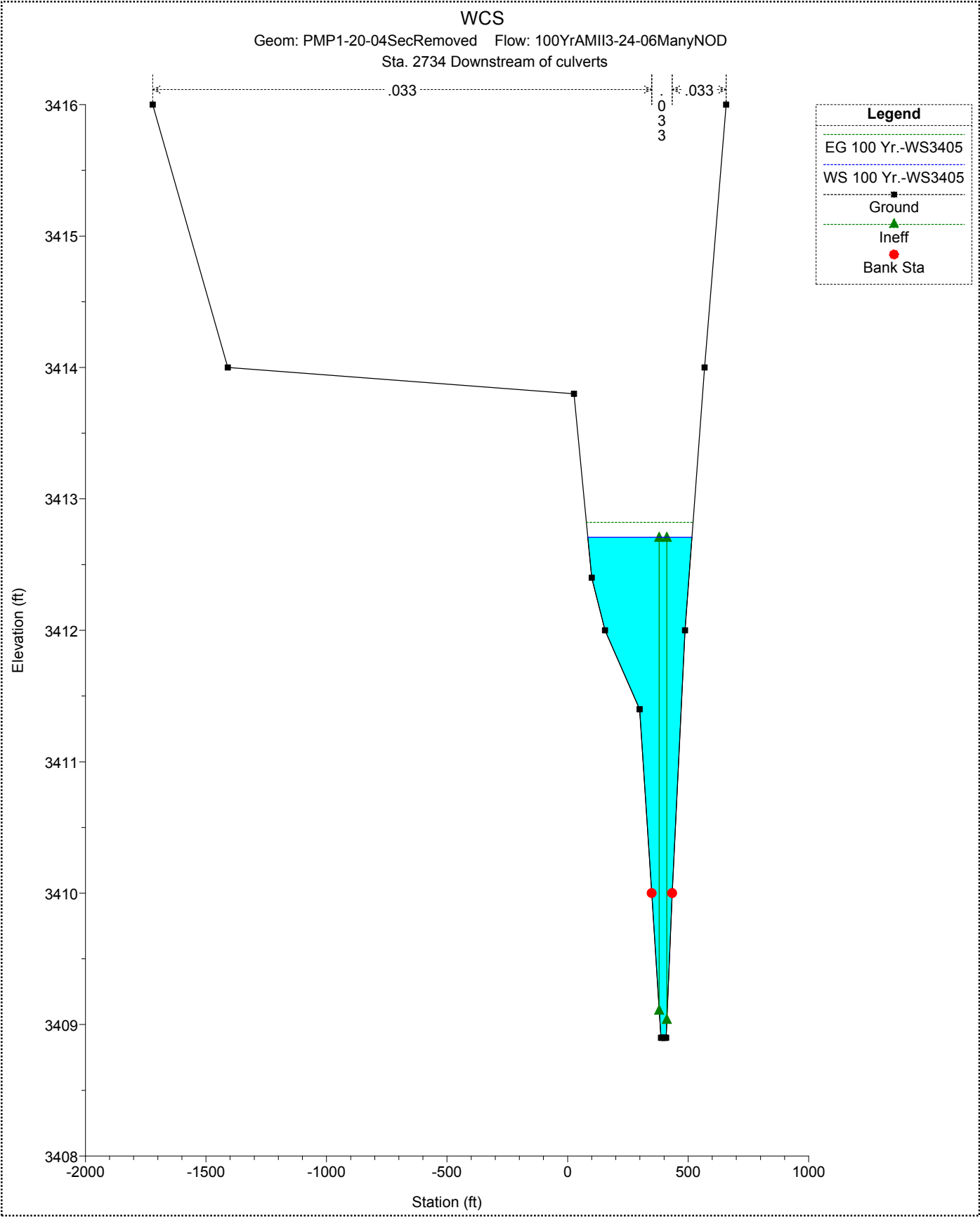












APPENDIX N

HEC-HMS MODEL FOR THE CALCULATION OF THE 500-YEAR PEAK DISCHARGE, ANTECEDENT MOISTURE CONDITION II

HMS * Summary of Results

Project : WCS

Run Name : 500 Yr AMII

Start of Run : 01Dec00 0000 Basin Model : 100YrAMII3/24/06NOD

End of Run : 02Dec00 0000 Met. Model : Met 500 Year

Execution Time : 29Mar06 1101 Control Specs : Control 1

Hydrologic Element	Discharge Peak (cfs)	Time of Peak	Volume (ac ft)	Drainage Area (sq mi)
Subbasin-4	986.26	01 Dec 00 1232	149.79	0.490
Reach-2	986.26	01 Dec 00 1247	149.19	0.490
Subbasin-2	1343.1	01 Dec 00 1300	294.70	1.063
playa	0.0	30 Nov 00 2400	0.0	1.063
Reach-1	0.0	30 Nov 00 2400	0.0	1.063
Subbasin-1A	817.92	01 Dec 00 1321	220.98	0.691
Reach-1A	817.92	01 Dec 00 1338	219.95	0.691
Subbasin-1B	567.21	01 Dec 00 1237	93.801	0.314
Junction-1A	1031.9	01 Dec 00 1322	313.75	1.005
Reach-1B	1031.9	01 Dec 00 1325	313.49	1.005
Subbasin-3	287.68	01 Dec 00 1237	47.606	0.156
Junction-1	1200.7	01 Dec 00 1256	361.10	2.224
Reach-3	1200.7	01 Dec 00 1313	359.40	2.224
Subbasin-5A	361.11	01 Dec 00 1231	53.770	0.192
Junction-2	2314.6	01 Dec 00 1251	562.36	2.906
Reach-4	2314.6	01 Dec 00 1312	559.06	2.906
Subbasin-5B	390.30	01 Dec 00 1247	73.802	0.265
Junction-3	2624.5	01 Dec 00 1310	632.86	3.171
Reach-5	2624.5	01 Dec 00 1324	630.34	3.171
Subbasin-6	164.62	01 Dec 00 1222	20.784	0.074
Junction-4	2658.6	01 Dec 00 1324	651.12	3.245
Reach-6	2658.6	01 Dec 00 1324	651.12	3.245
Subbasin-7	136.06	01 Dec 00 1259	29.510	0.104
Junction-5	2772.5	01 Dec 00 1323	680.63	3.349

Meteorologic Model Input

The screenshot shows a software window titled "HMS * Meteorologic Model". It has a menu bar with "File", "Edit", and "Help". The "Meteorologic Model" is set to "Met 500 Year". The "Description" field contains "500 Year, 24 Hour Storm". There is a "Subbasin List" button. Two tabs are visible: "Precipitation" (selected) and "Evapotranspiration". Under the "Precipitation" tab, the "Method" is set to "SCS Hypothetical Storm". The "Storm Selection" is set to "Type II". The "Storm Depth (in)" is set to "8.71". At the bottom are "OK", "Apply", and "Cancel" buttons. A status bar is at the very bottom.

HMS * Meteorologic Model

File Edit Help

Meteorologic Model: Met 500 Year Subbasin List

Description: 500 Year, 24 Hour Storm

Precipitation Evapotranspiration

Method : SCS Hypothetical Storm

Storm Selection: Type II

Storm Depth (in) : 8.71

OK Apply Cancel

HMS * Basin Model * SCS Curve Number

Sort Help

Basin Model ID: 100YrAMII3/24/06NOD

Subbasin Name	SCS Curve Number	Initial Abstraction (in)	Imperviousness (%)
Subbasin-1A	79		0.0
Subbasin-2	72		0.0
Subbasin-3	76		0.0
Subbasin-4	76		0.0
Subbasin-5B	72		0.0
Subbasin-6	72		0.0
Subbasin-1B	75		0.0
Subbasin-5A	72		0.0
Subbasin-7	73		0.0

OK Apply Cancel

HMS * Basin Model * SCS UH

Sort Help

Basin Model ID: 100YrAMII3/24/06NOD

Time Units : Minutes

Subbasin Name	SCS Lag (min)
Subbasin-1A	86
Subbasin-2	65
Subbasin-3	44
Subbasin-4	39
Subbasin-5B	53
Subbasin-6	30
Subbasin-1B	44
Subbasin-5A	38
Subbasin-7	64

OK Apply Cancel

HMS * Basin Model * Lag Routing

Help

Basin Model ID : 100YrAMII3/24/06NOD

Interval : Minutes

Reach Name	Lag (min)
Reach-1	35
Reach-2	15
Reach-3	17
Reach-4	21
Reach-5	14
Reach-1A	17
Reach-1B	3
Reach-6	0

OK Apply Cancel

HMS - Basin Model - Reservoir Editor

Edit File Help

Reservoir Name:

Description:

Storage

Method:

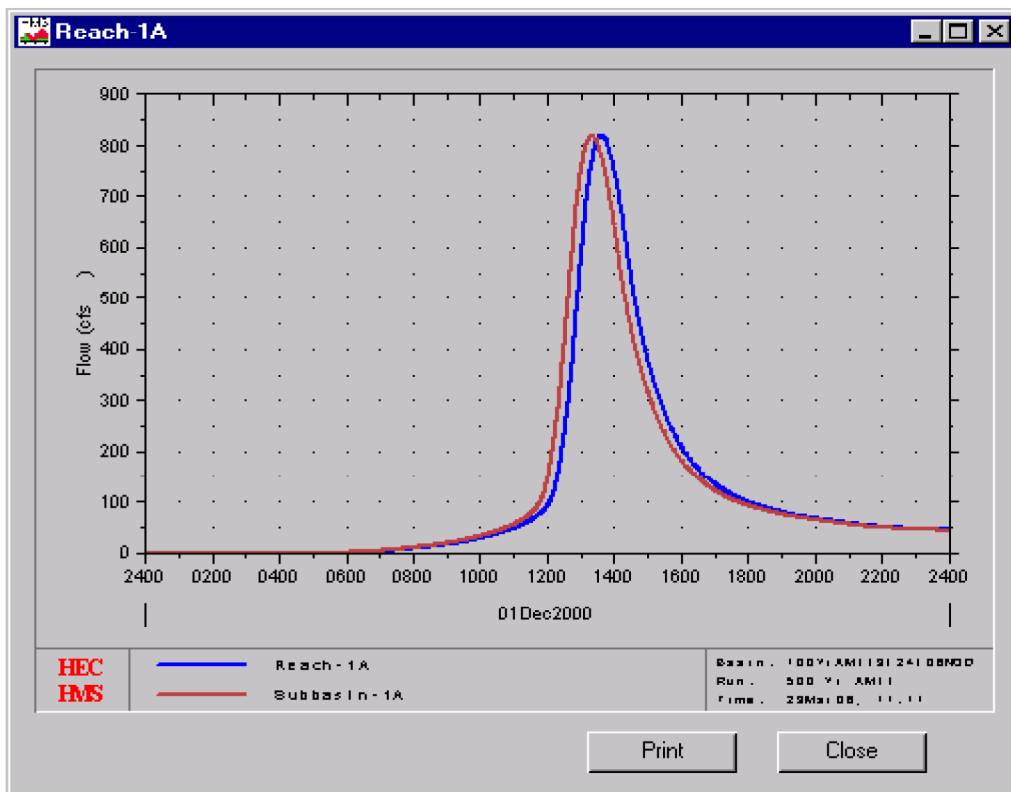
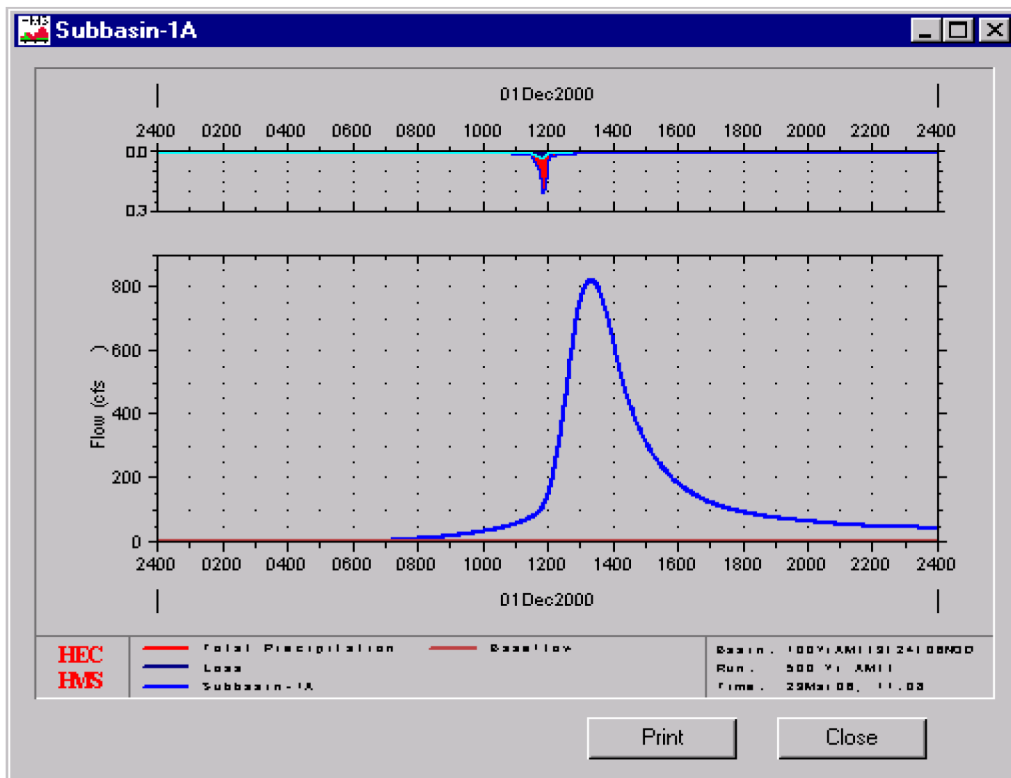
Initial

Elevation (ft)	Storage (acre-feet)	Outflow (cfs)
3478.0	0.0	0.0
3480.0	24.0	0.0
3482.0	61.0	0.0
3484.0	170.0	0.0
3486.0	457.0	0.0
3487.0	693.0	863.0
3488.0	928.0	2427.0

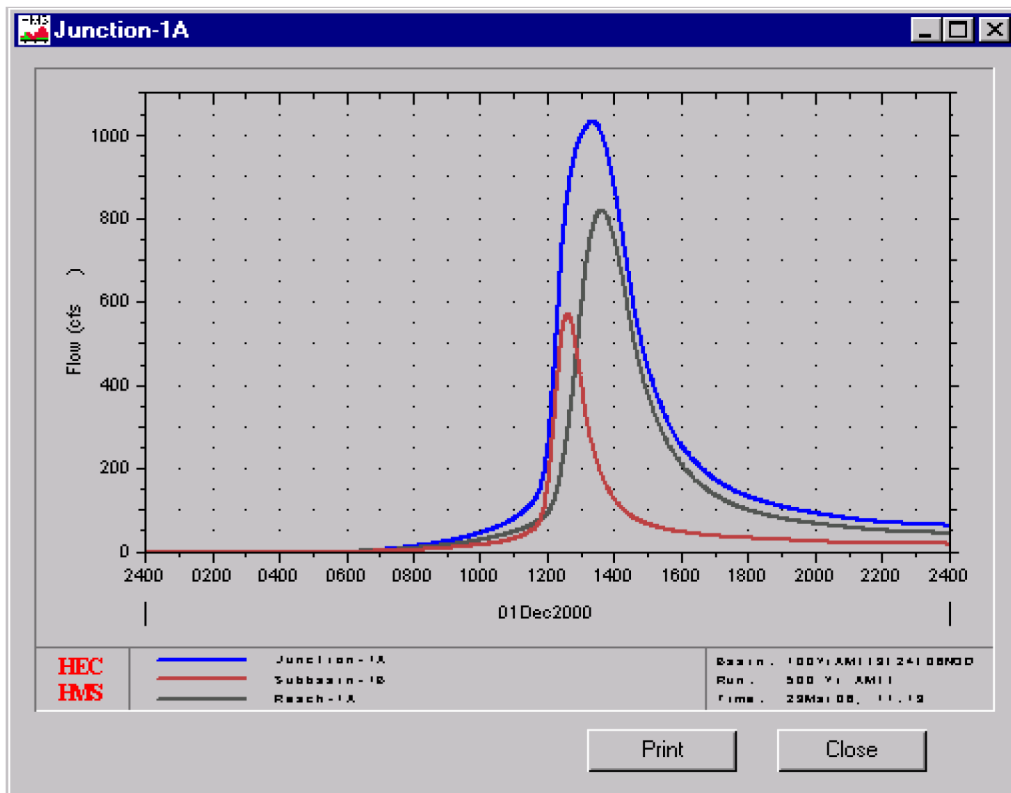
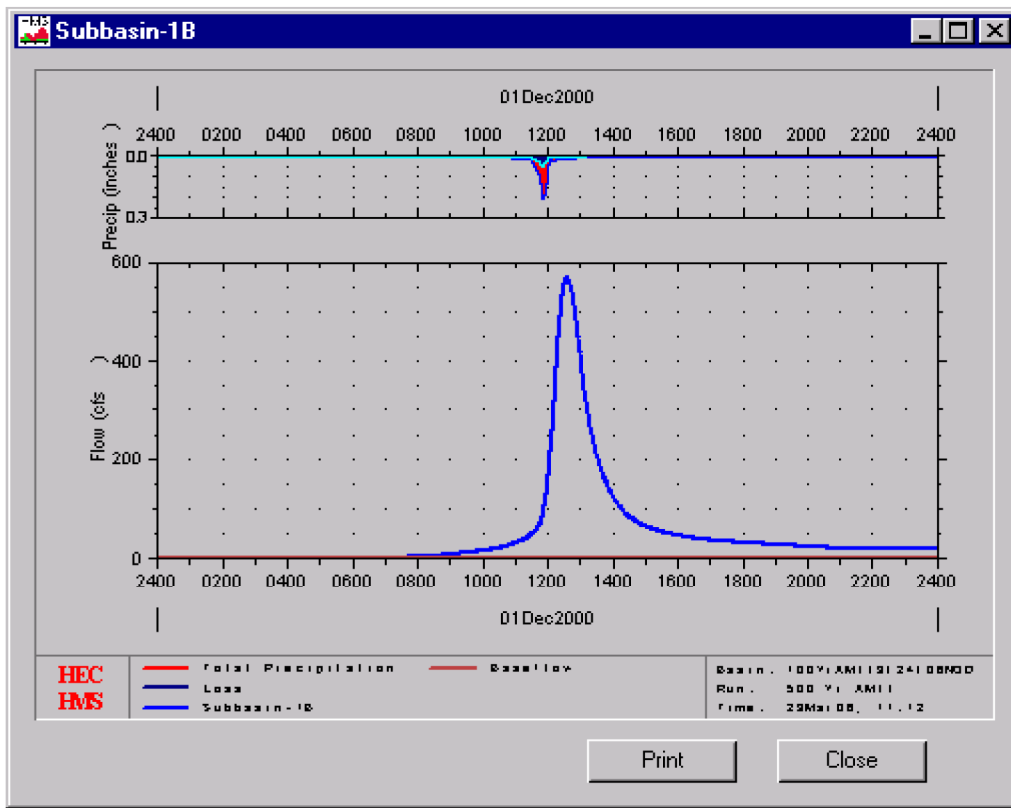
Graph

OK Apply Cancel

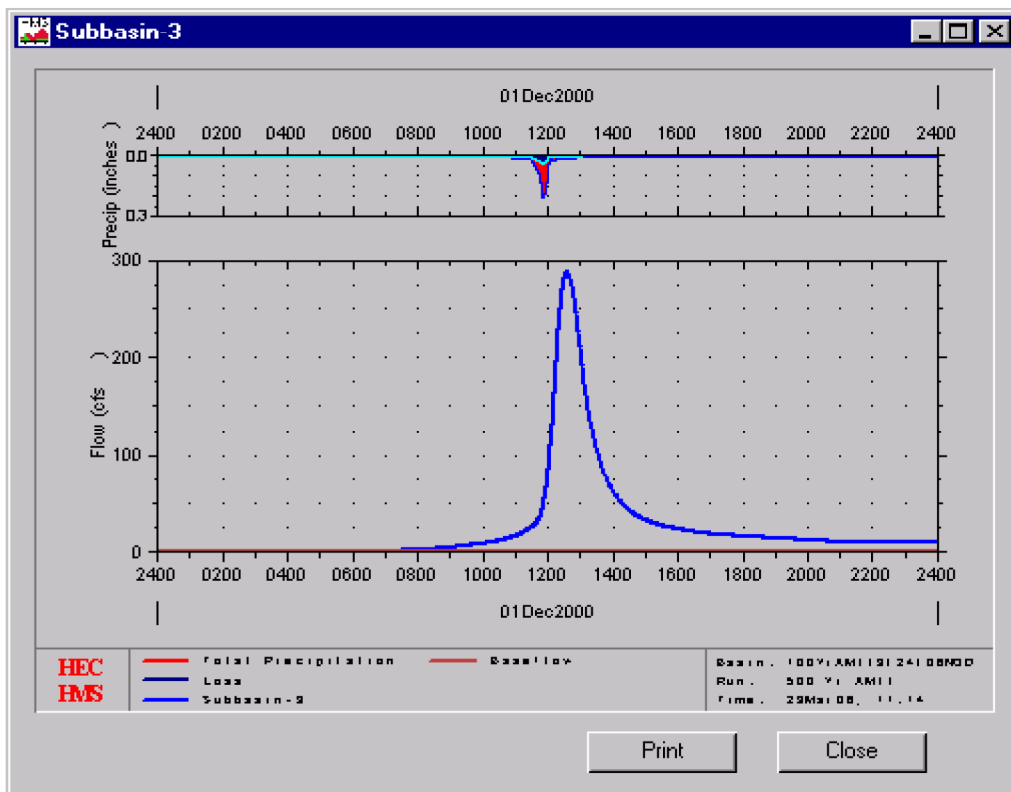
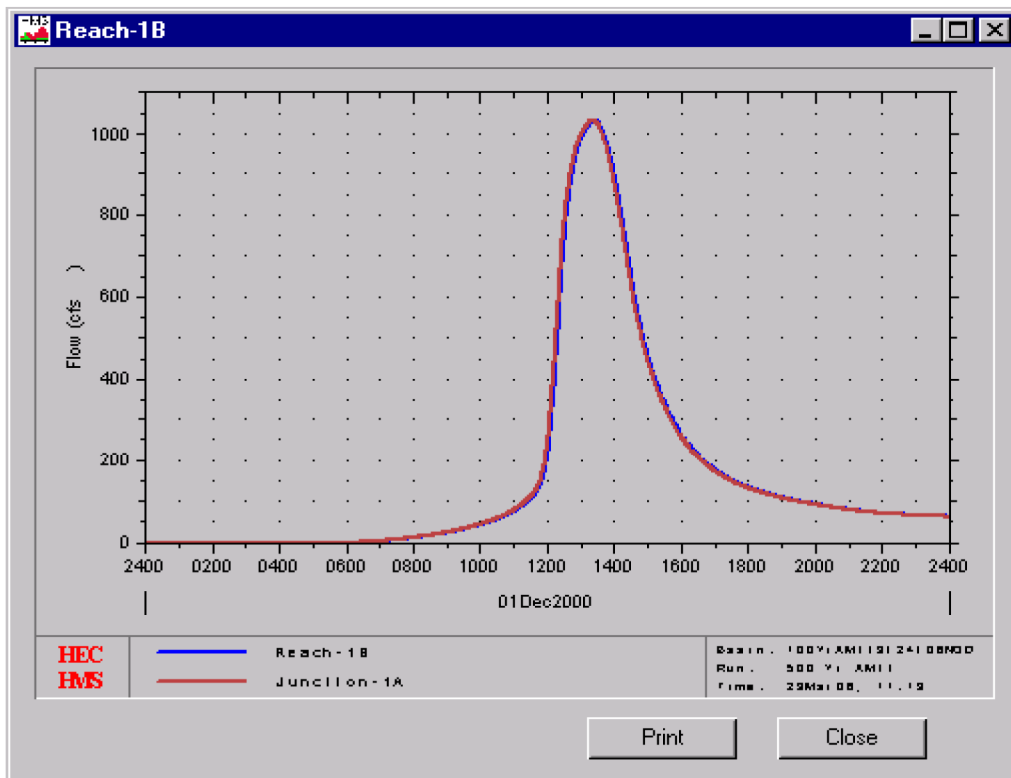
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



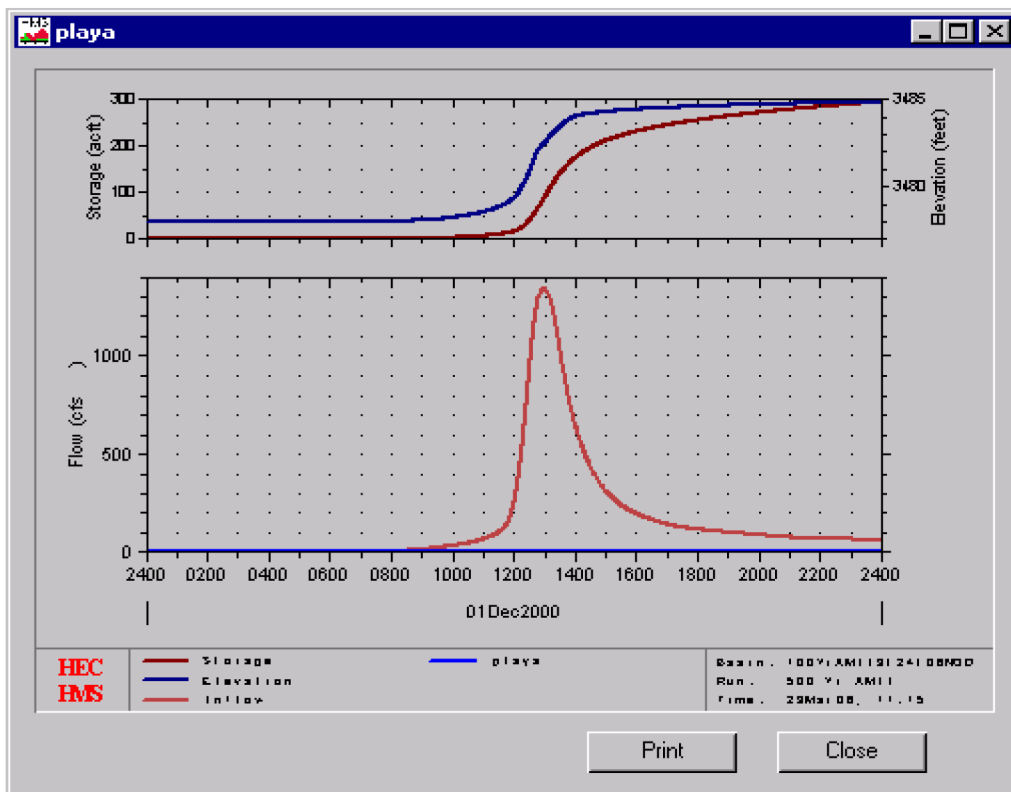
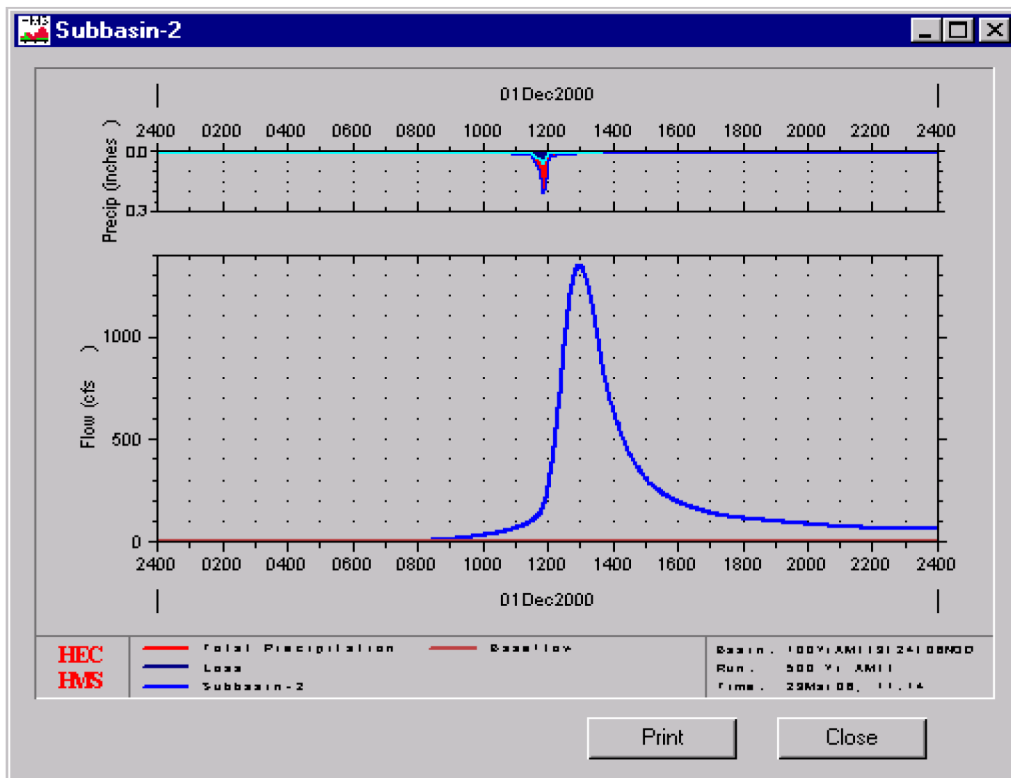
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



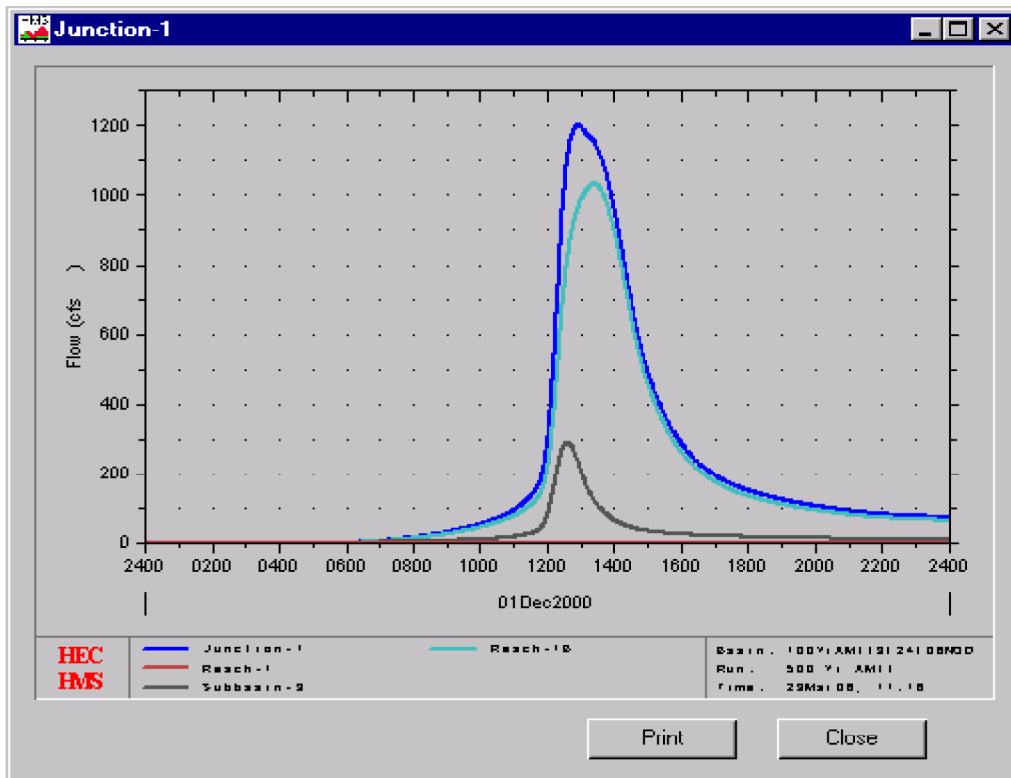
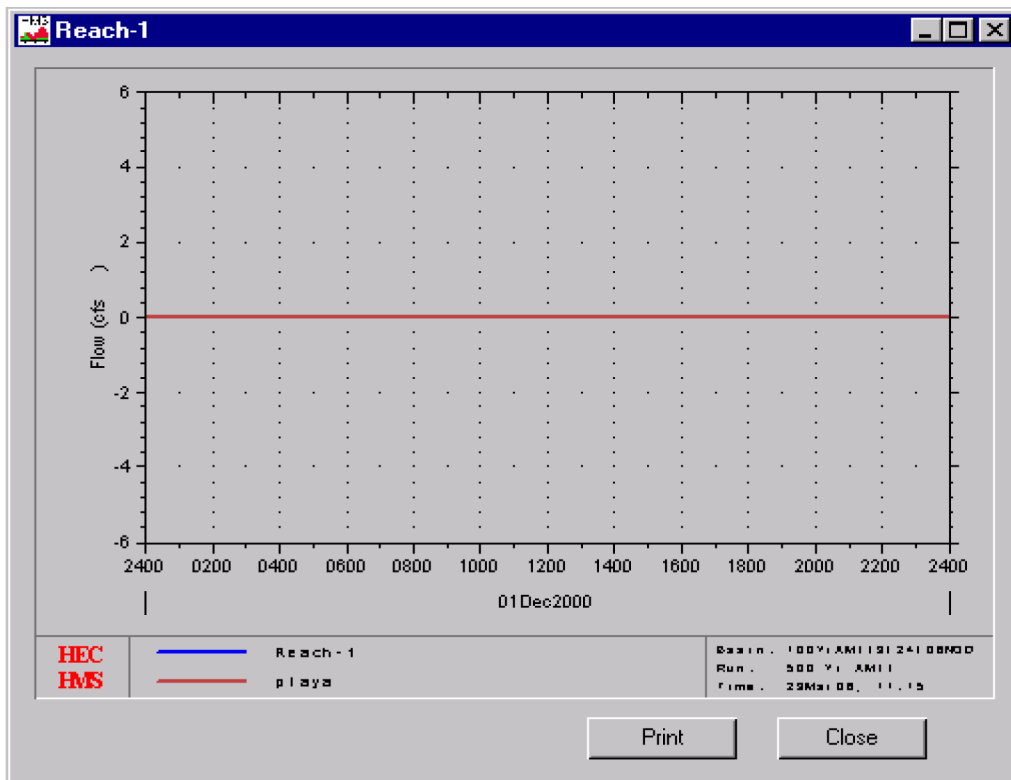
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



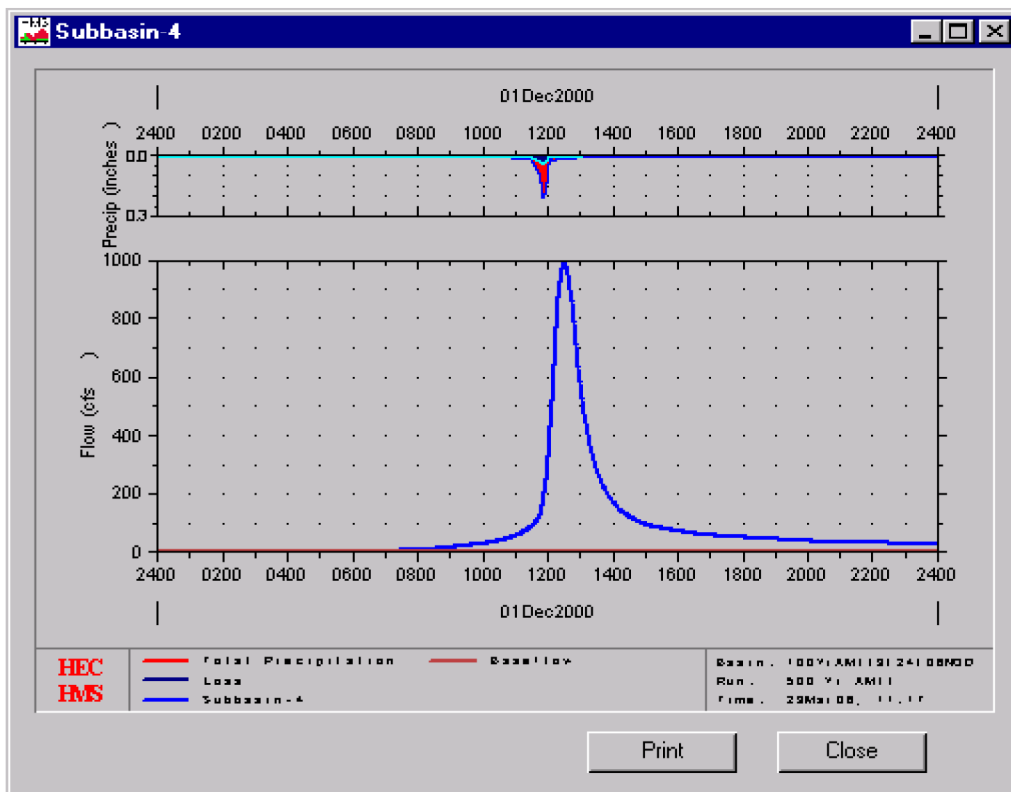
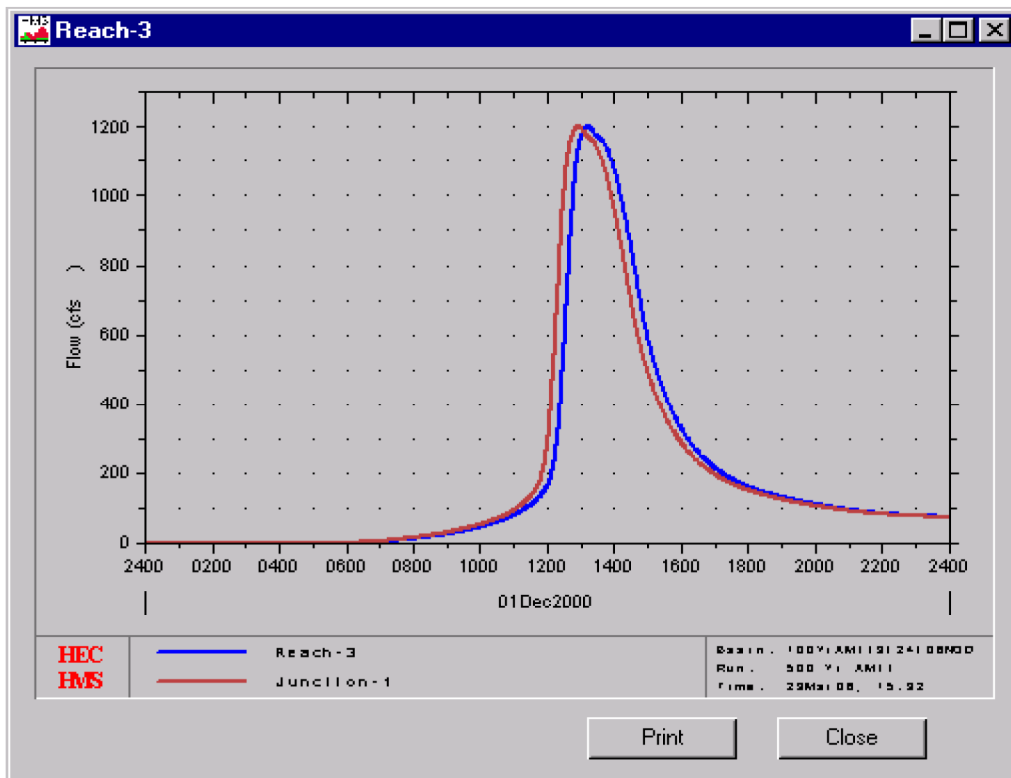
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



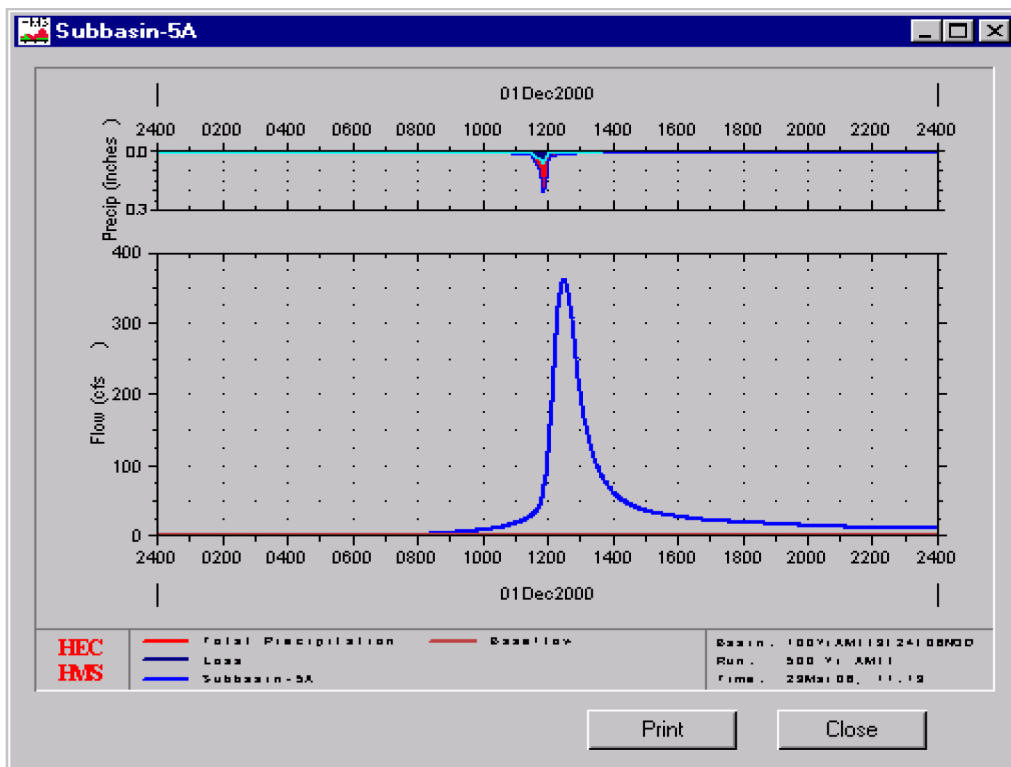
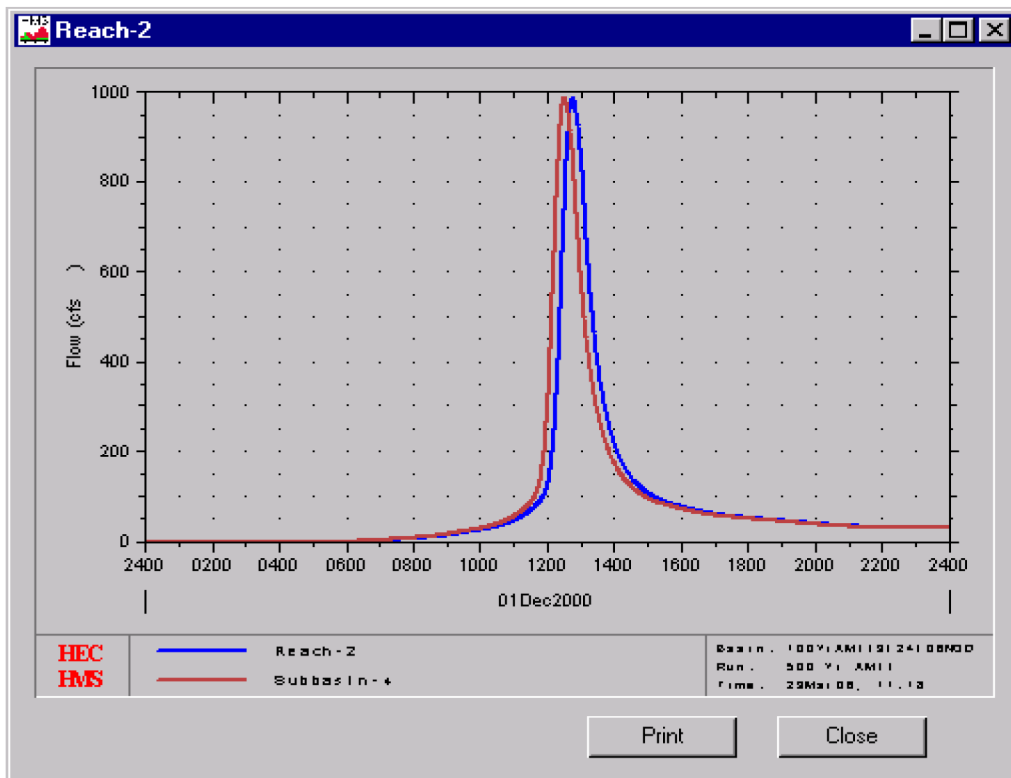
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



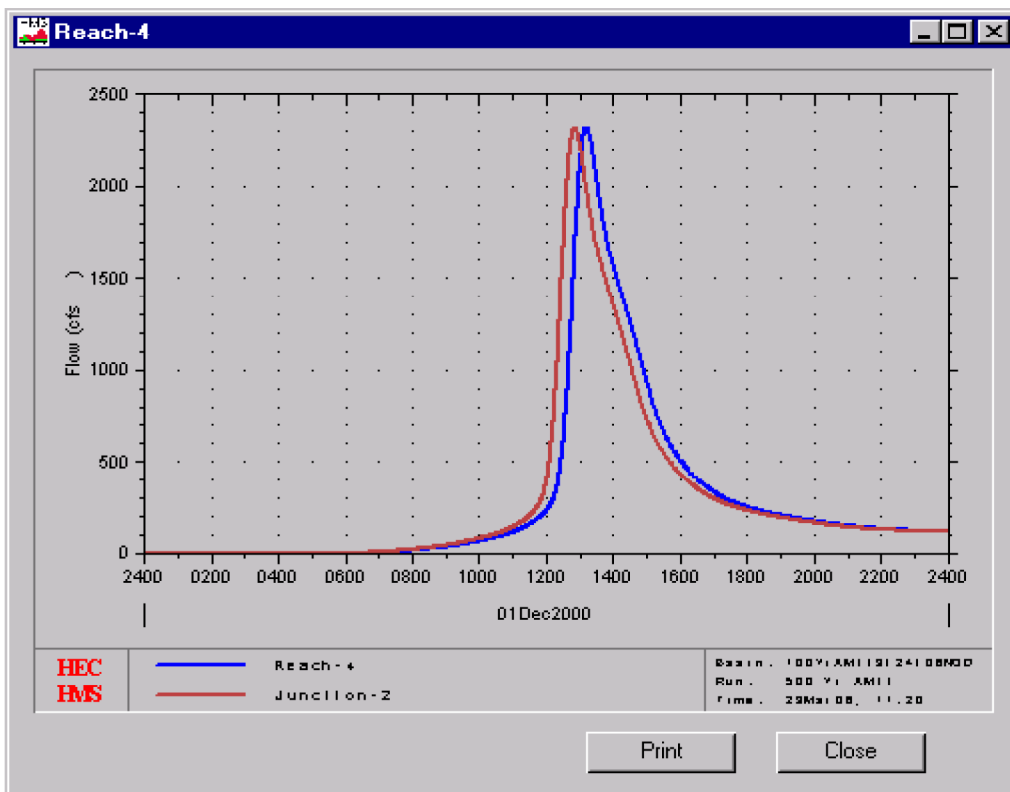
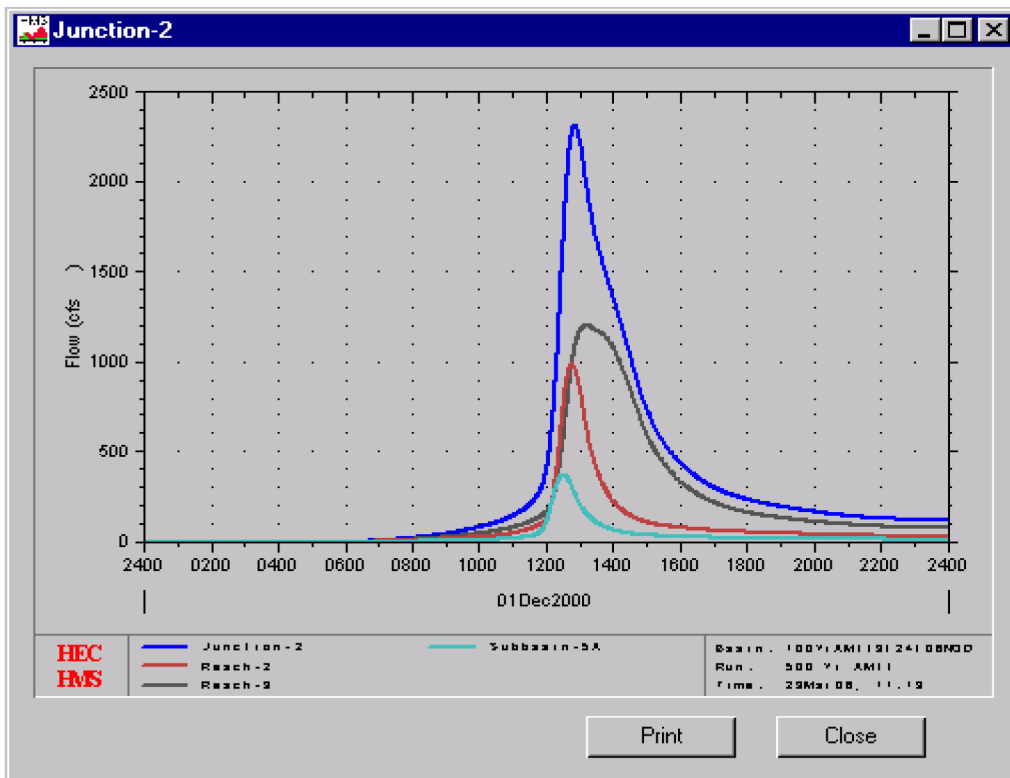
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



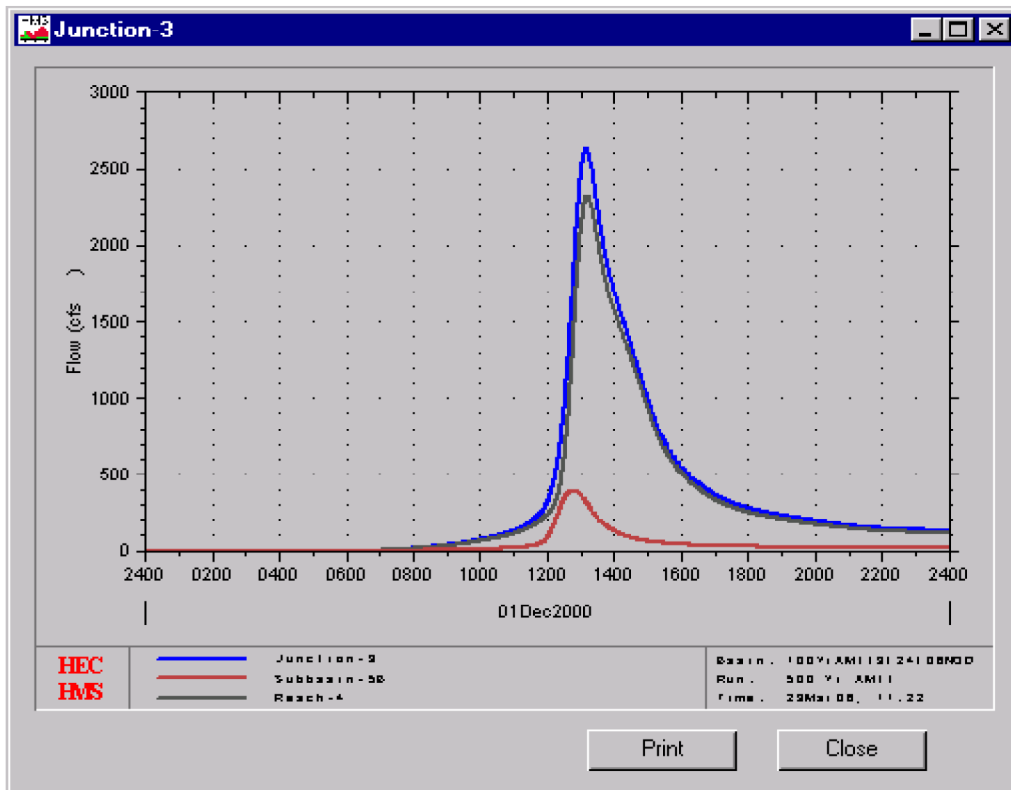
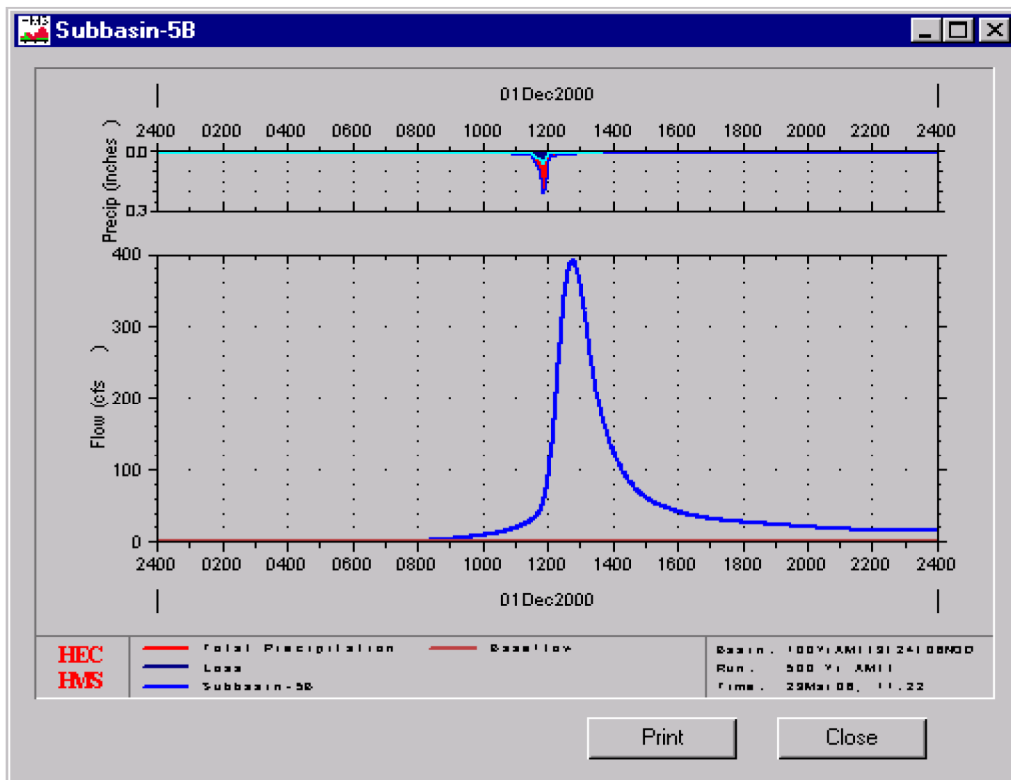
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



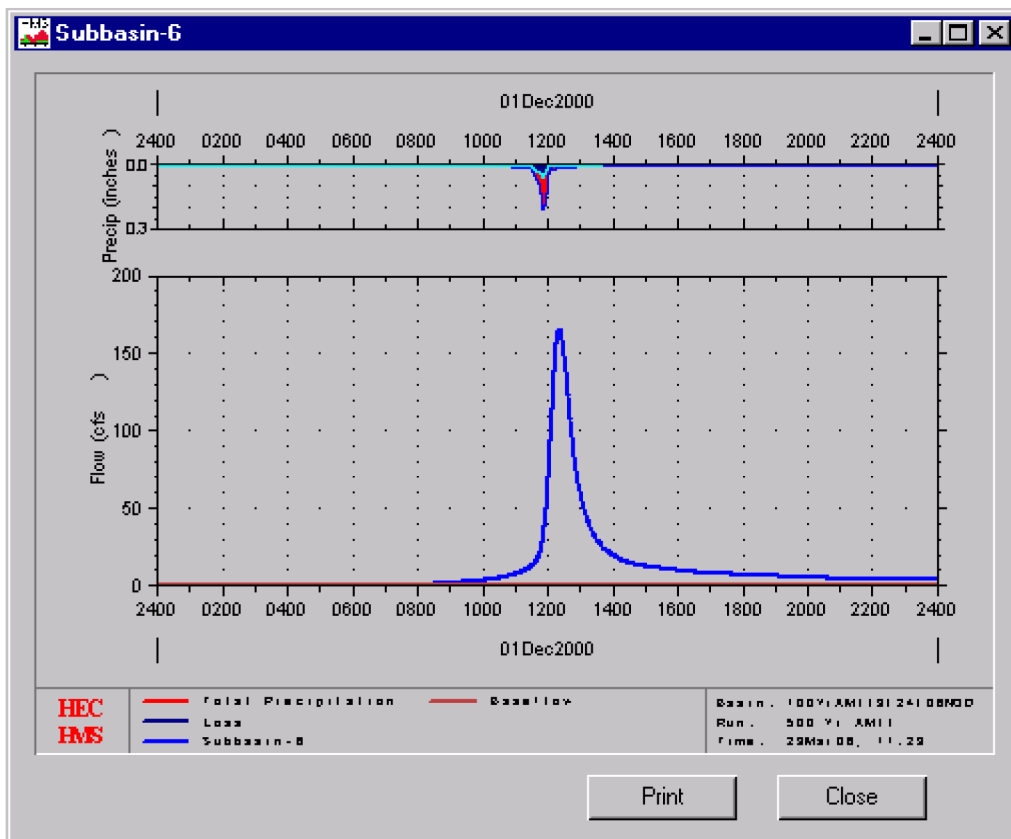
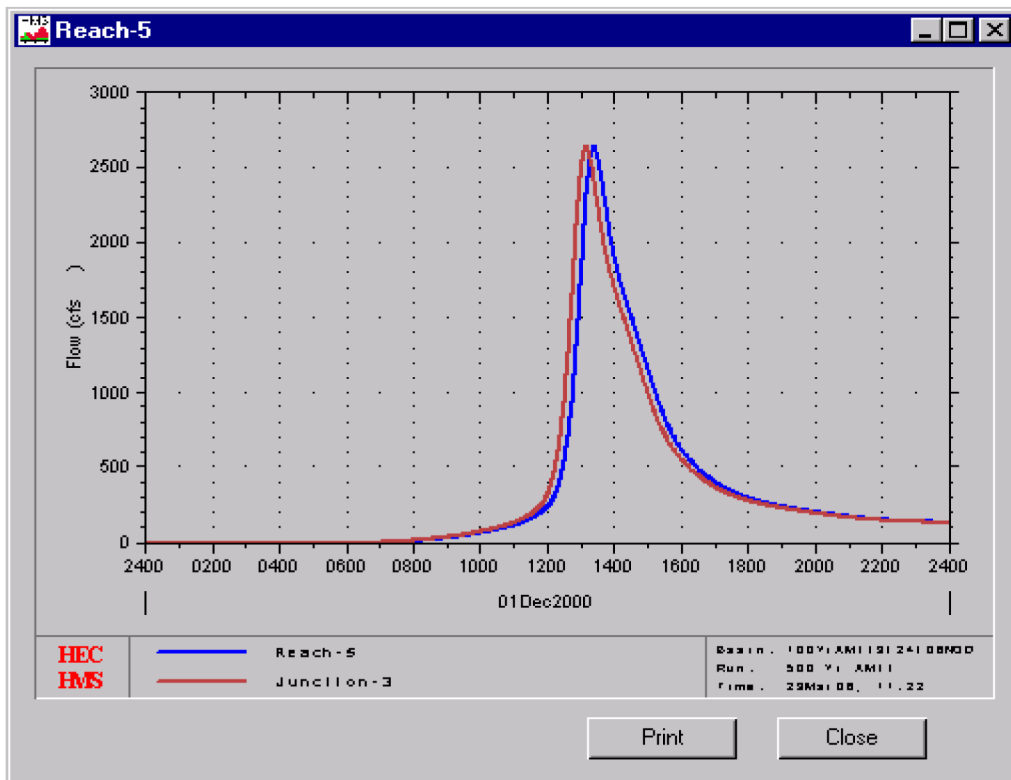
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



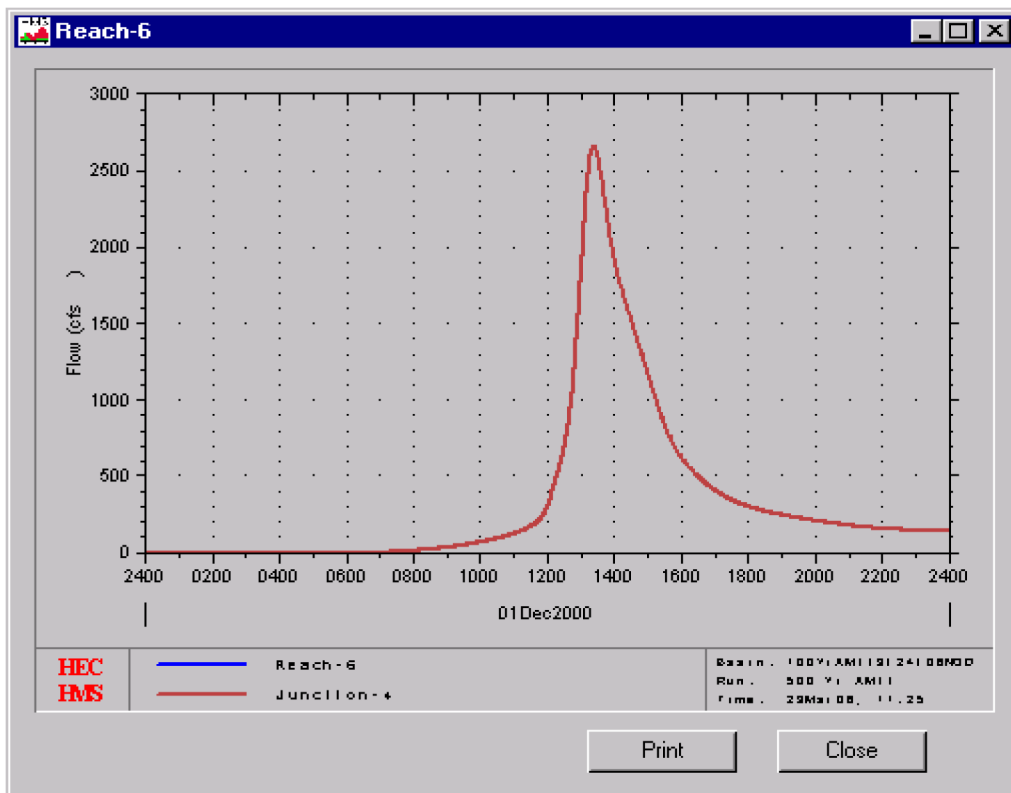
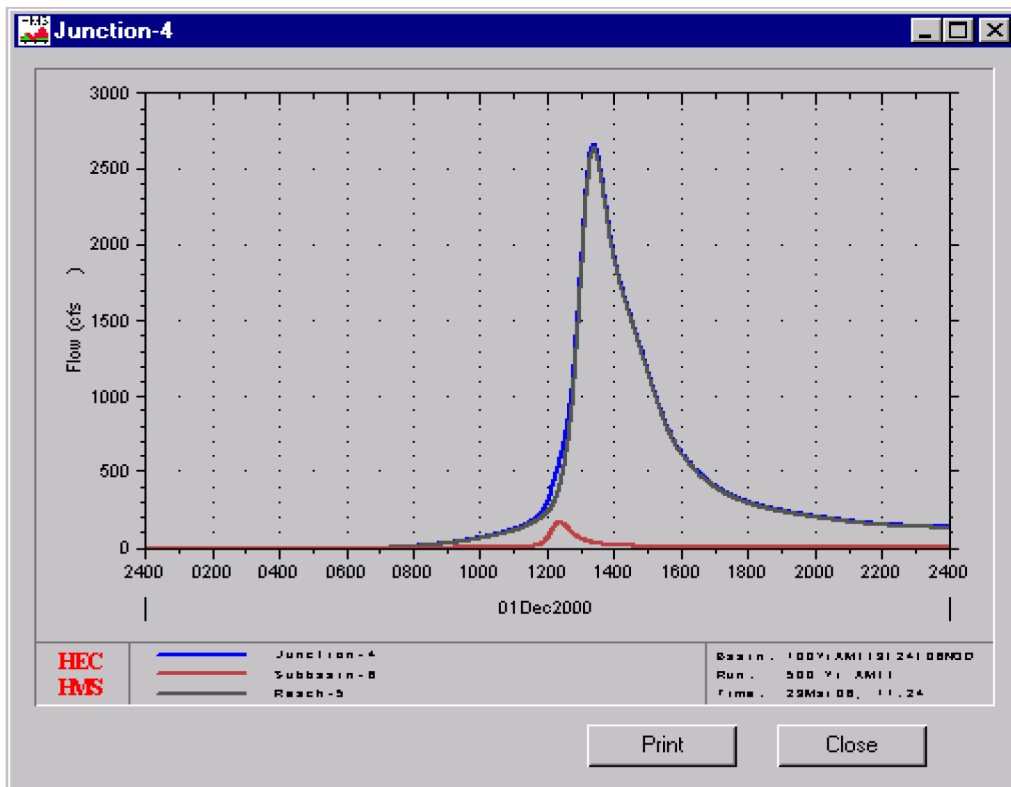
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



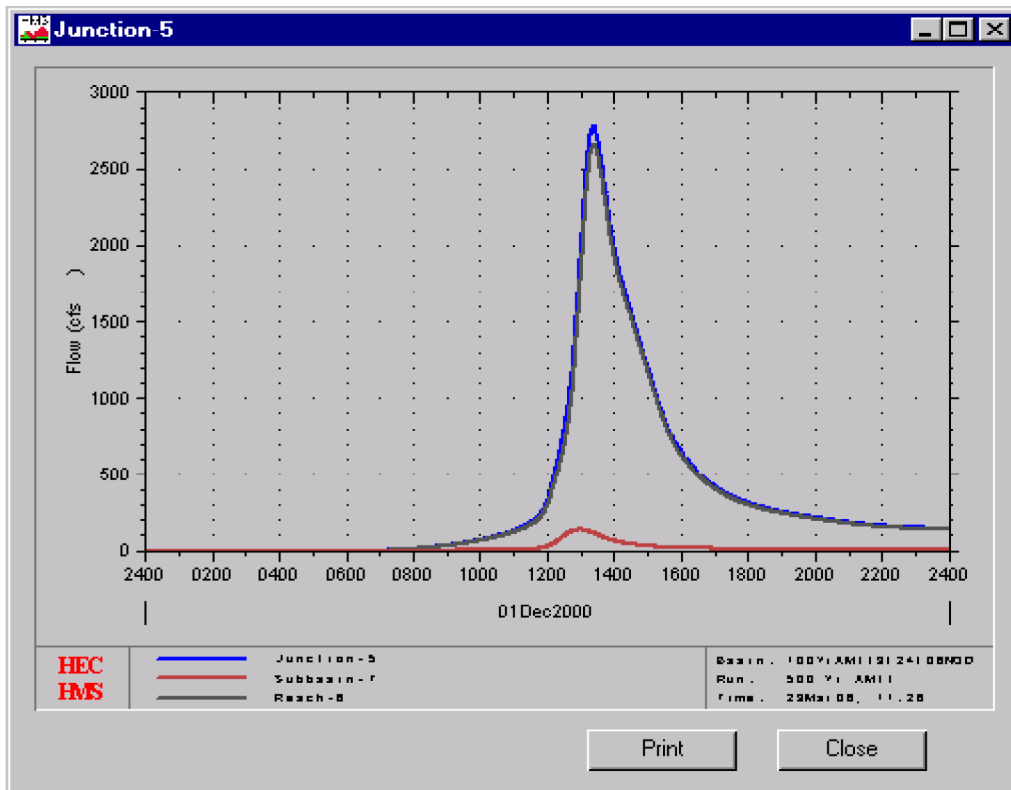
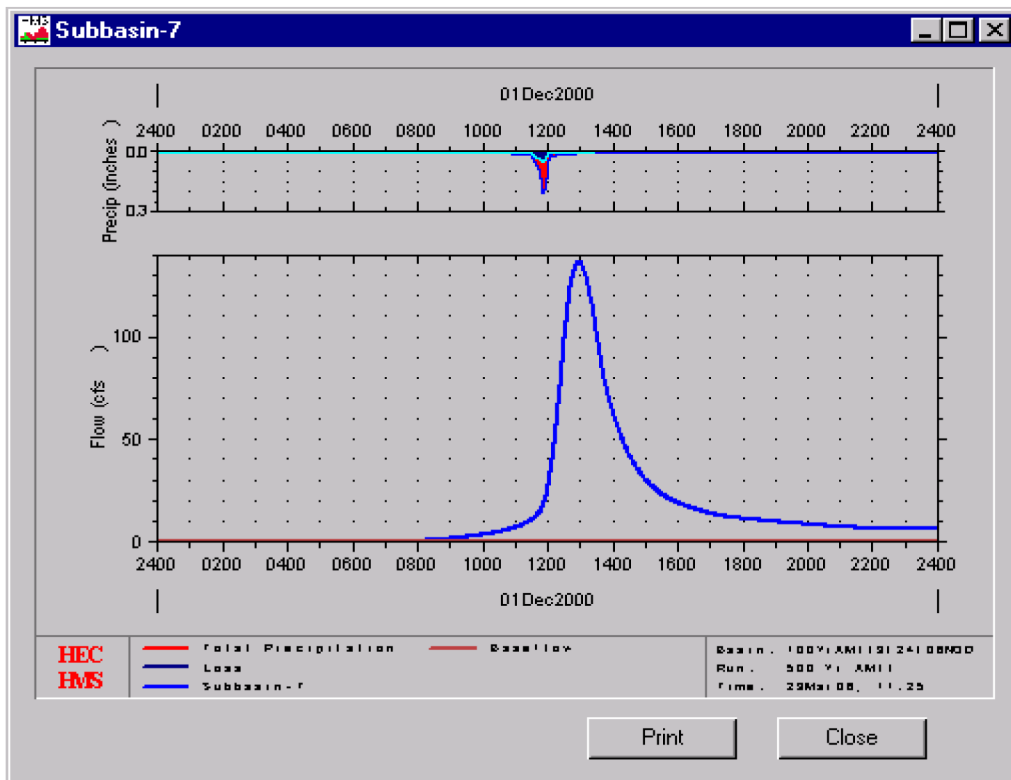
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



APPENDIX O

HEC-HMS MODEL FOR THE CALCULATION OF THE PMP PEAK DISCHARGE, ANTECEDENT MOISTURE CONDITION II

HMS * Summary of Results

Project : WCS

Run Name : PMP Dist A AMII

Start of Run : 01Dec00 0000 Basin Model : 100YrAMII3/24/06NOD

End of Run : 05Dec00 0000 Met. Model : PMP Dist. A NOD

Execution Time : 29Mar06 1606 Control Specs : Control PMP

Hydrologic Element	Discharge Peak (cfs)	Time of Peak	Volume (ac ft)	Drainage Area (sq mi)
Subbasin-4	1303.2	03 Dec 00 0600	965.43	0.490
Reach-2	1303.2	03 Dec 00 0615	965.43	0.490
Subbasin-2	2804.8	03 Dec 00 0602	2051.2	1.063
playa	2380.3	03 Dec 00 0649	1594.1	1.063
Reach-1	2380.3	03 Dec 00 0724	1594.1	1.063
Subbasin-1A	1832.7	03 Dec 00 0605	1381.1	0.691
Reach-1A	1832.7	03 Dec 00 0622	1381.1	0.691
Subbasin-1B	833.89	03 Dec 00 0600	615.56	0.314
Junction-1A	2662.1	03 Dec 00 0604	1996.7	1.005
Reach-1B	2662.1	03 Dec 00 0607	1996.7	1.005
Subbasin-3	414.76	03 Dec 00 0600	307.36	0.156
Junction-1	5169.8	03 Dec 00 0621	3898.2	2.224
Reach-3	5169.8	03 Dec 00 0638	3898.1	2.224
Subbasin-5A	508.22	03 Dec 00 0600	370.48	0.192
Junction-2	6871.1	03 Dec 00 0622	5234.1	2.906
Reach-4	6871.1	03 Dec 00 0643	5234.1	2.906
Subbasin-5B	700.32	03 Dec 00 0601	511.35	0.265
Junction-3	7467.3	03 Dec 00 0635	5745.4	3.171
Reach-5	7467.3	03 Dec 00 0649	5745.4	3.171
Subbasin-6	196.02	03 Dec 00 0600	142.79	0.074
Junction-4	7552.2	03 Dec 00 0644	5888.2	3.245
Reach-6	7552.2	03 Dec 00 0644	5888.2	3.245
Subbasin-7	274.88	03 Dec 00 0601	201.77	0.104
Junction-5	7798.5	03 Dec 00 0640	6090.0	3.349

Meteorologic Model Input

HMS - Meteorologic Model

File Edit Help

Meteorologic Model: PMP Distribution A Subbasin List

Description: PMP with Distribution per figure in HMR 51 ...

Precipitation Evapotranspiration

Method : User Hyetograph

Subbasin	"Gage" ID
Subbasin-1A	PMP Distribution A
Subbasin-2	PMP Distribution A
Subbasin-3	PMP Distribution A
Subbasin-4	PMP Distribution A
Subbasin-6	PMP Distribution A
Subbasin-1B	PMP Distribution A
Subbasin-7	PMP Distribution A
Subbasin-5B	PMP Distribution A
Subbasin-5A	PMP Distribution A

OK Apply Cancel

HMS * Basin Model * SCS Curve Number

Sort Help

Basin Model ID: 100YrAMII3/24/06NOD

Subbasin Name	SCS Curve Number	Initial Abstraction (in)	Imperviousness (%)
Subbasin-1A	79		0.0
Subbasin-2	72		0.0
Subbasin-3	76		0.0
Subbasin-4	76		0.0
Subbasin-5B	72		0.0
Subbasin-6	72		0.0
Subbasin-1B	75		0.0
Subbasin-5A	72		0.0
Subbasin-7	73		0.0

OK Apply Cancel

HMS * Basin Model * SCS UH

Sort Help

Basin Model ID: 100YrAMII3/24/06NOD

Time Units : Minutes

Subbasin Name	SCS Lag (min)
Subbasin-1A	86
Subbasin-2	65
Subbasin-3	44
Subbasin-4	39
Subbasin-5B	53
Subbasin-6	30
Subbasin-1B	44
Subbasin-5A	38
Subbasin-7	64

OK Apply Cancel

HMS * Basin Model * Lag Routing

Help

Basin Model ID : 100YrAMII3/24/06NOD

Interval : Minutes

Reach Name	Lag (min)
Reach-1	35
Reach-2	15
Reach-3	17
Reach-4	21
Reach-5	14
Reach-1A	17
Reach-1B	3
Reach-6	0

OK Apply Cancel

HMS - Basin Model - Reservoir Editor

Edit File Help

Reservoir Name:

Description: ...

Storage Outlet Spillway Overflow Dam Break

Method:

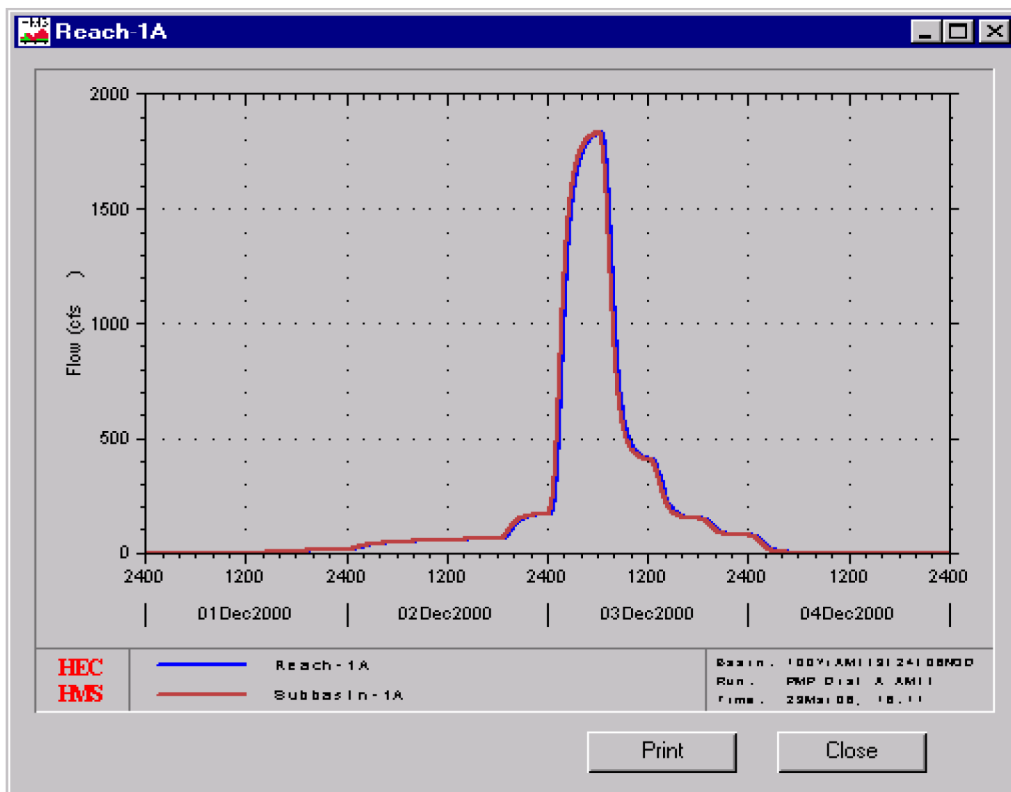
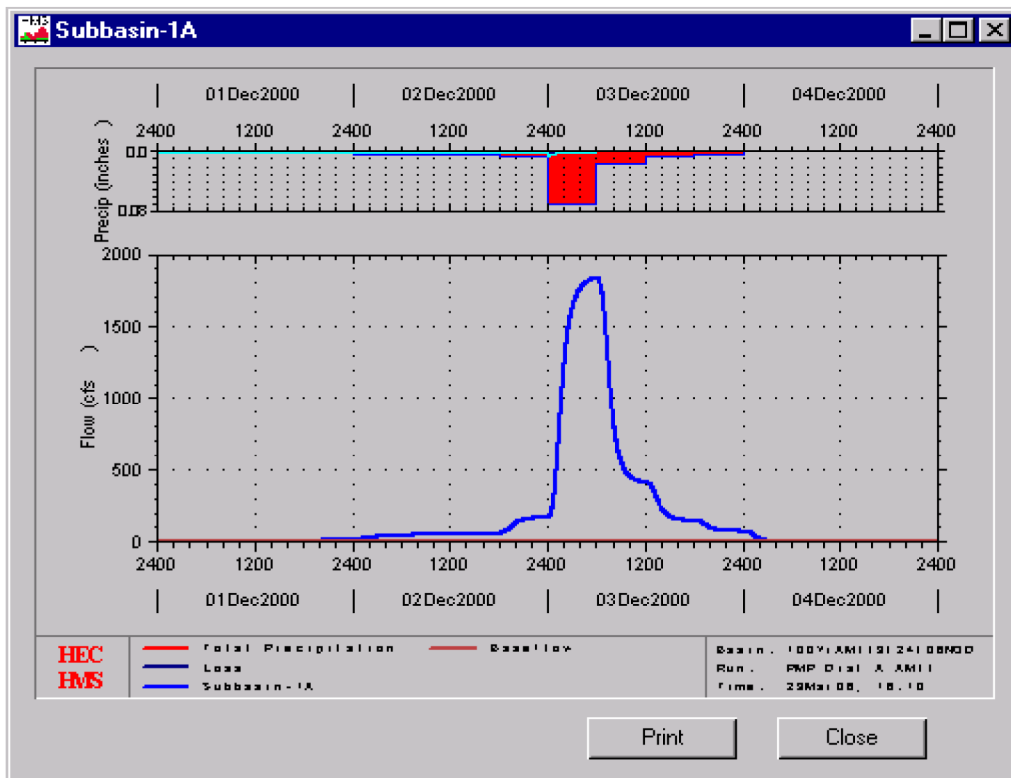
Initial

Elevation (ft)	Storage (acre-feet)	Outflow (cfs)
3478.0	0.0	0.0
3480.0	24.0	0.0
3482.0	61.0	0.0
3484.0	170.0	0.0
3486.0	457.0	0.0
3487.0	693.0	863.0
3488.0	928.0	2427.0

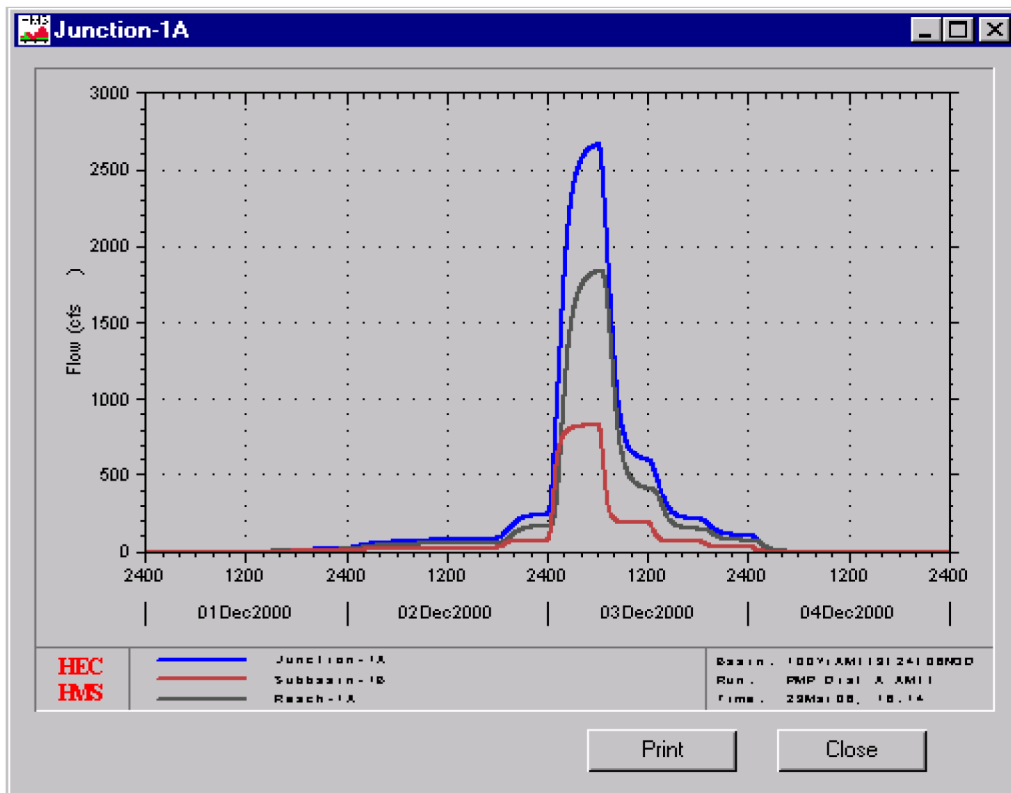
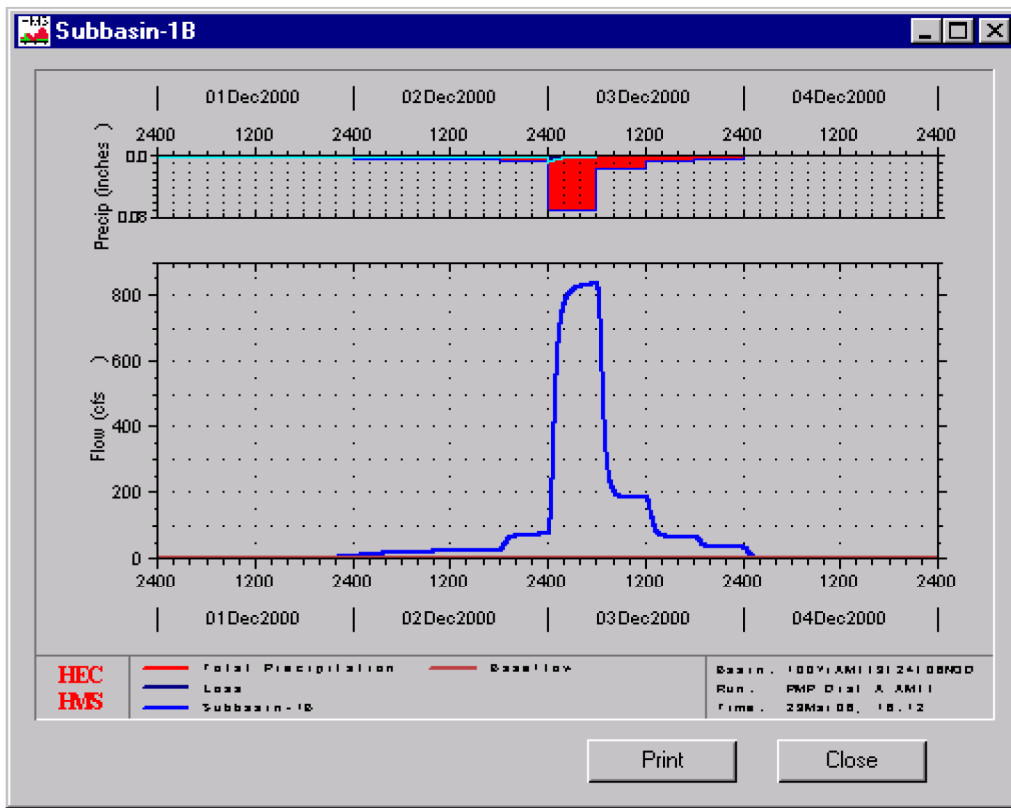
Graph

OK Apply Cancel

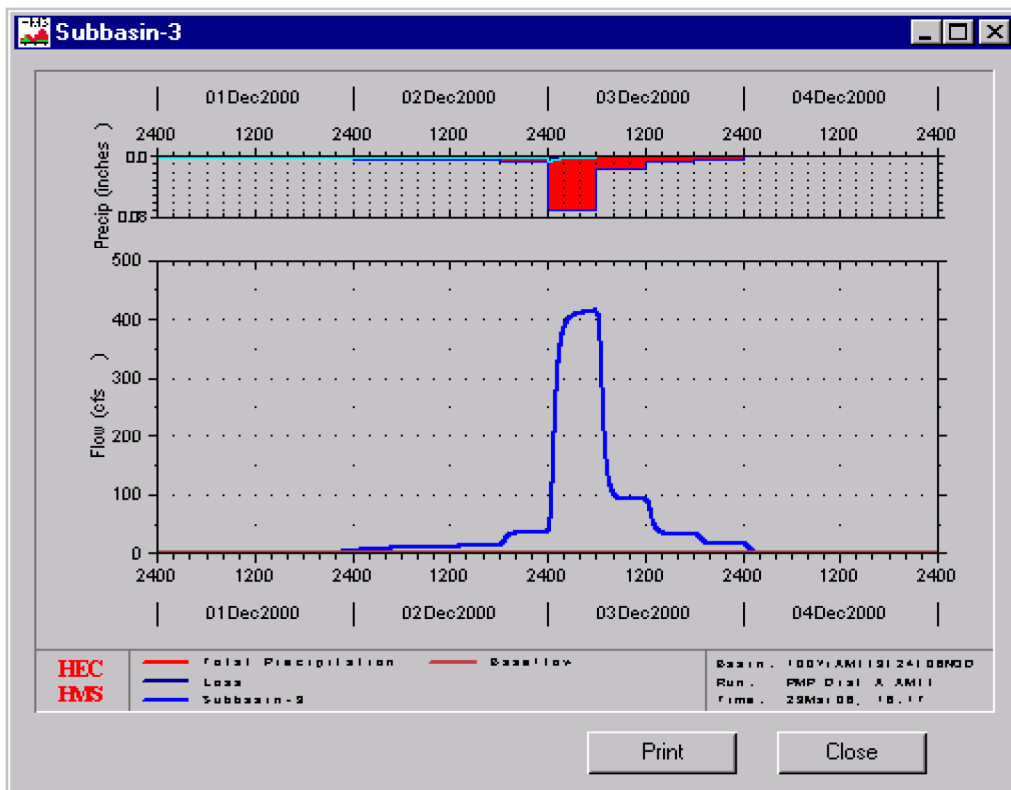
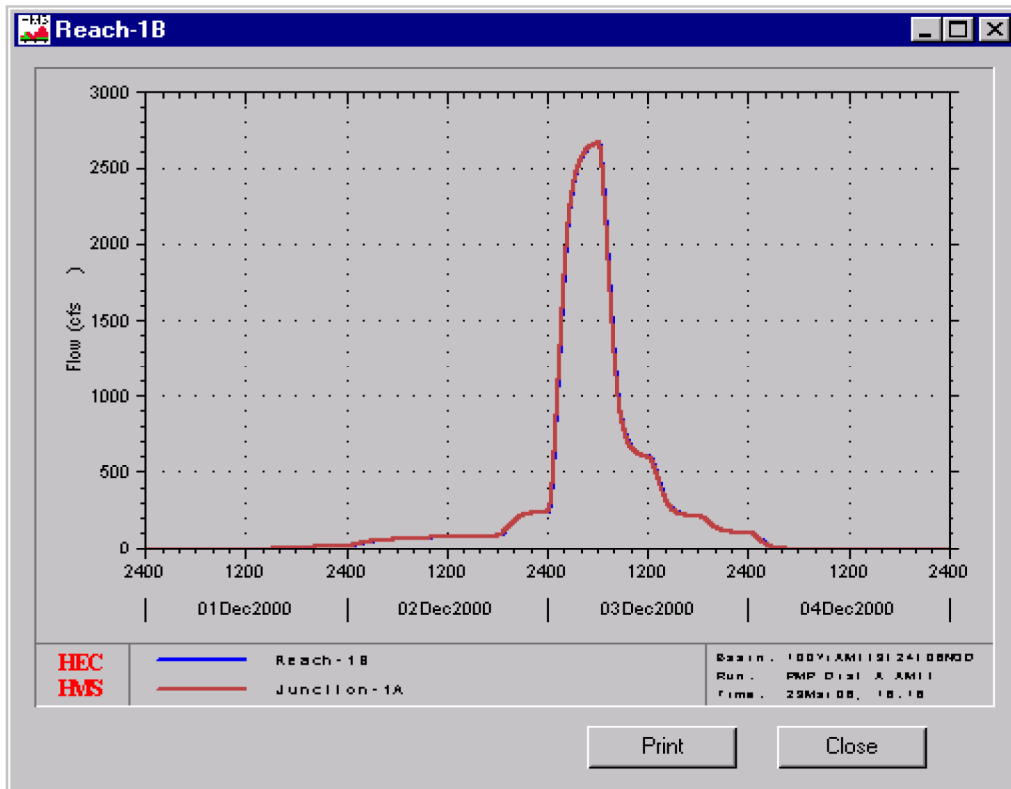
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



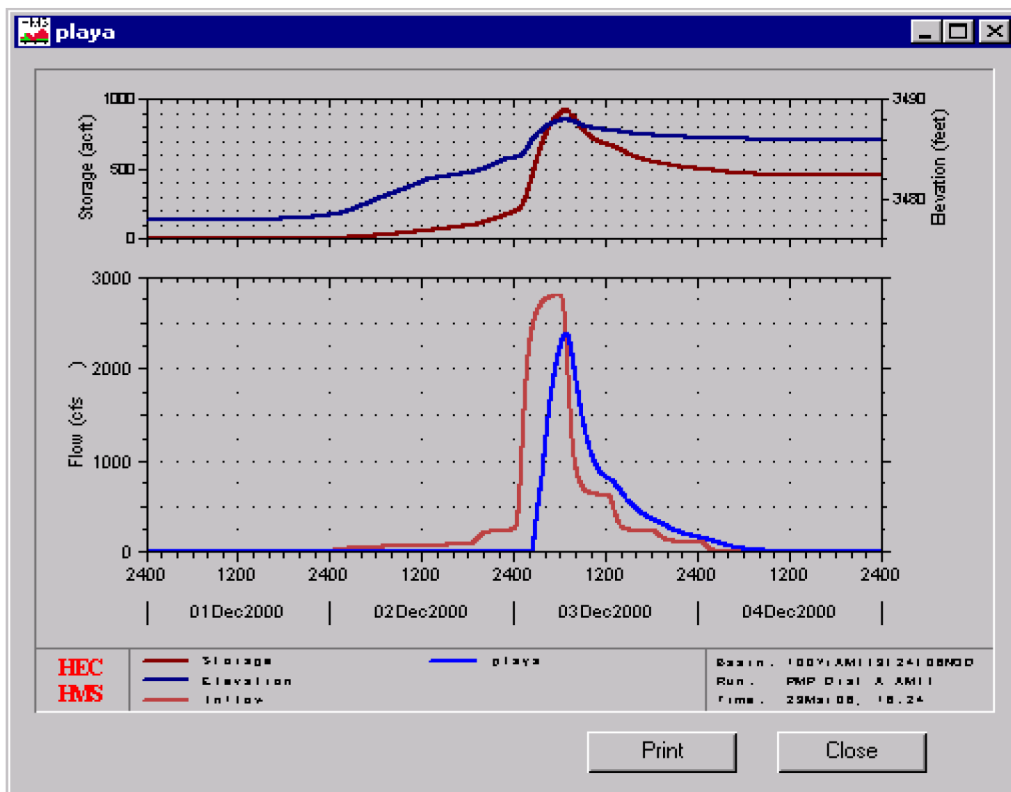
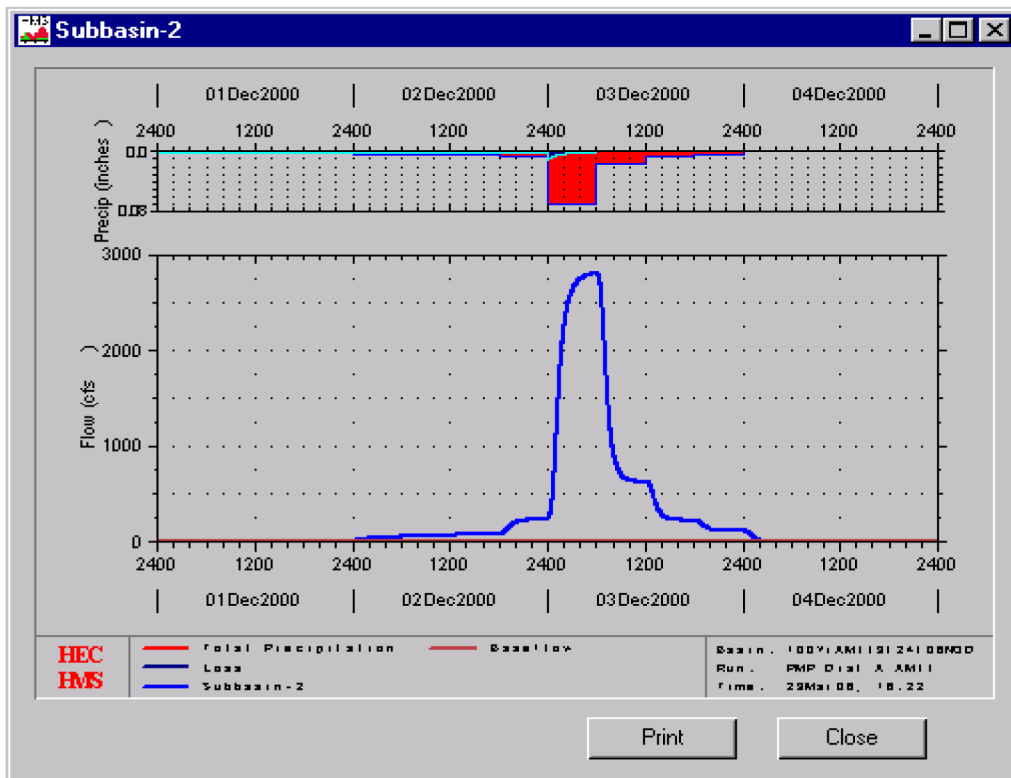
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



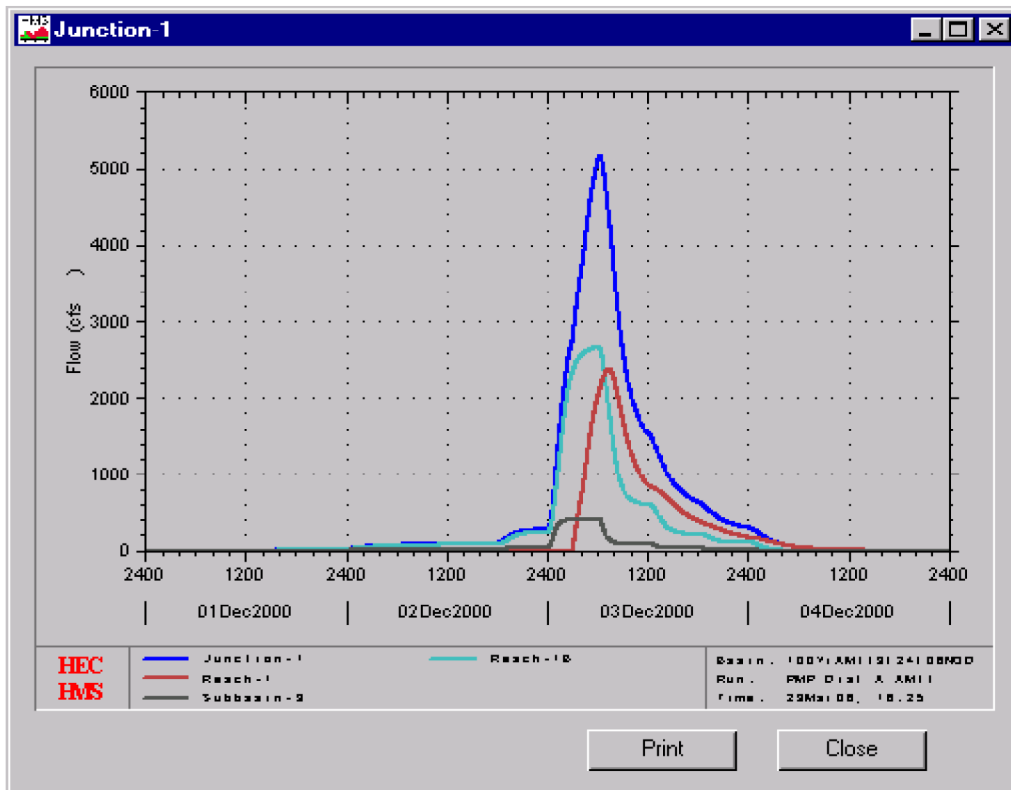
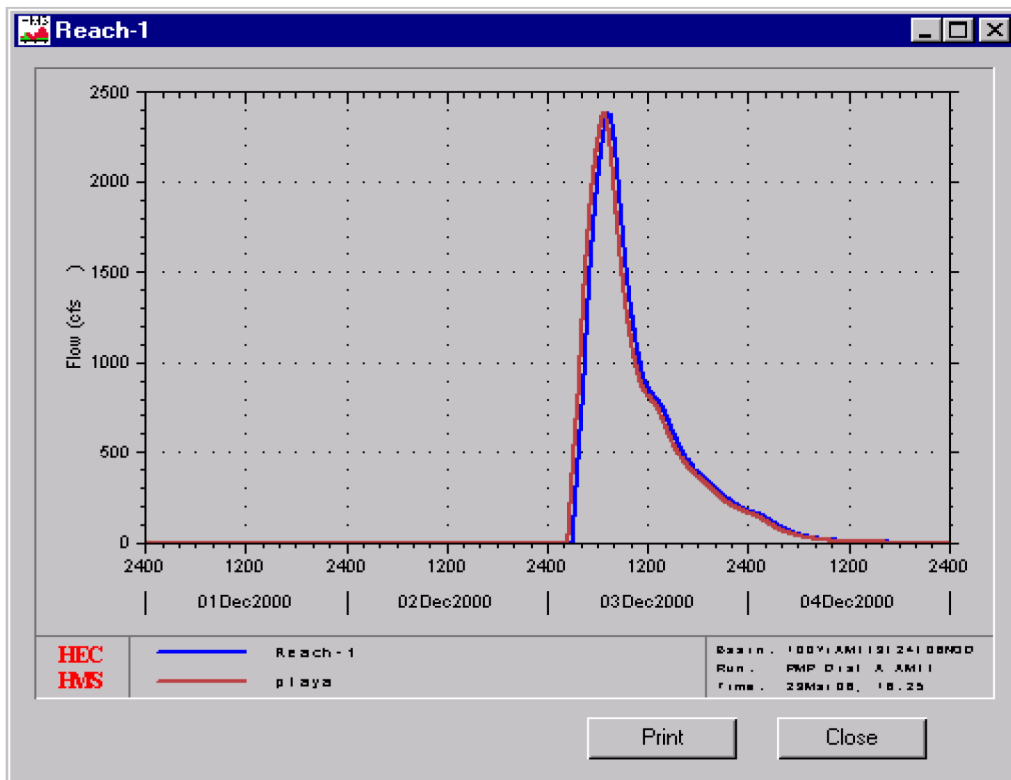
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



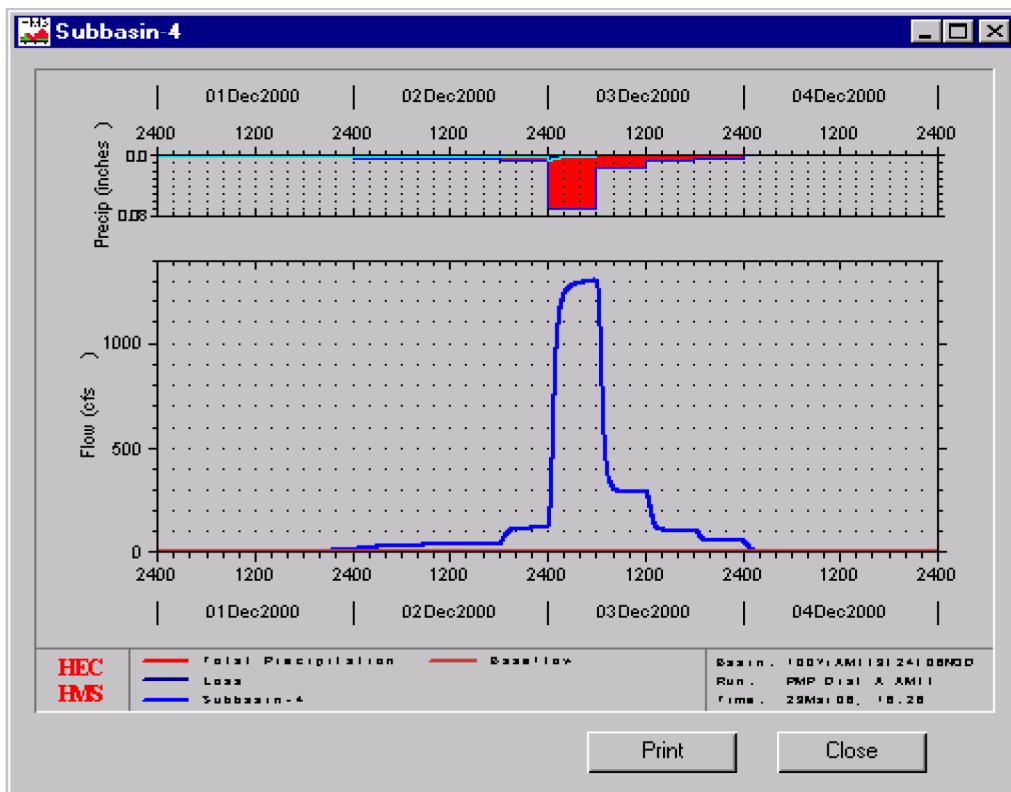
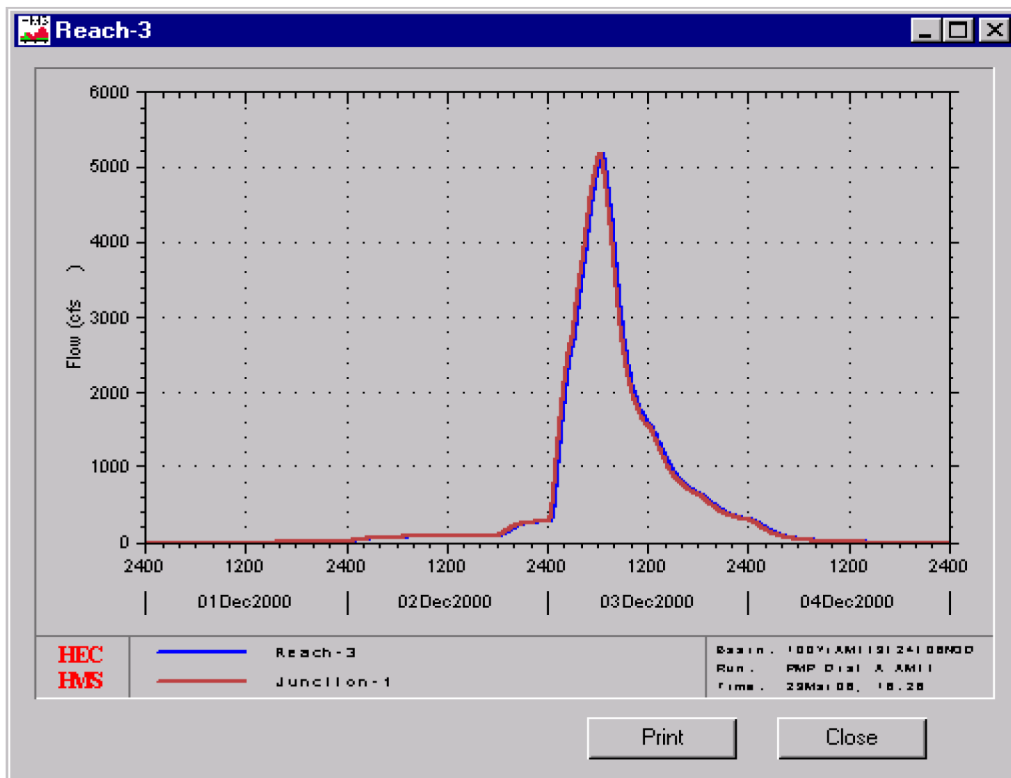
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



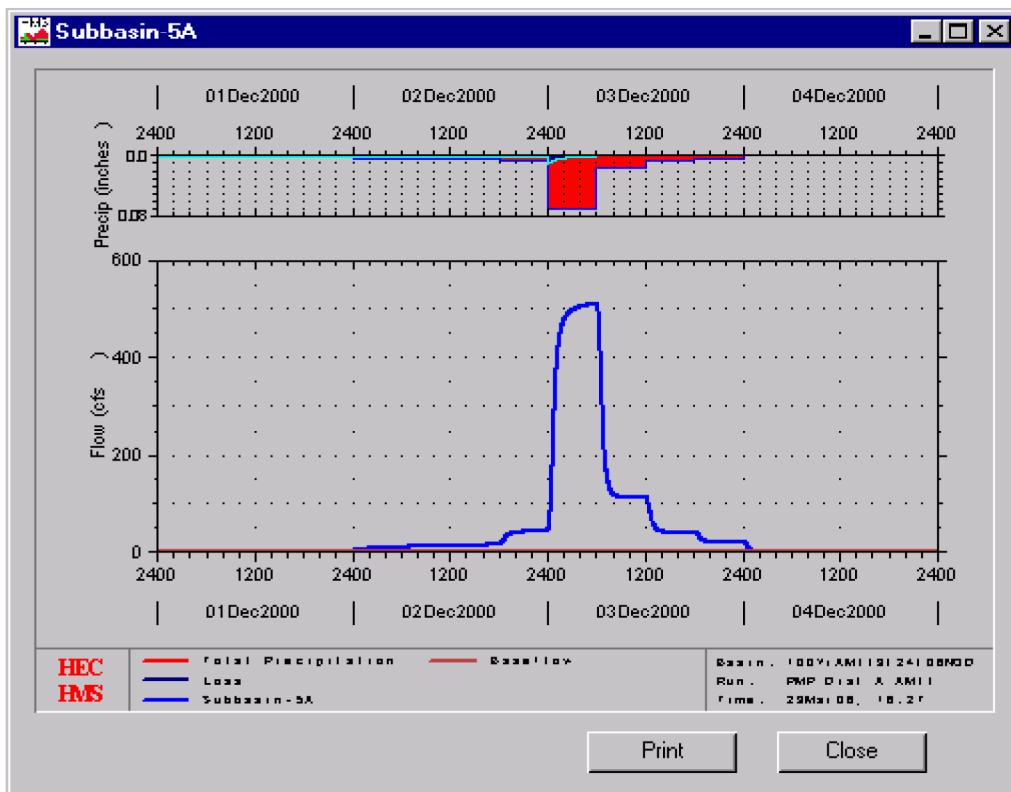
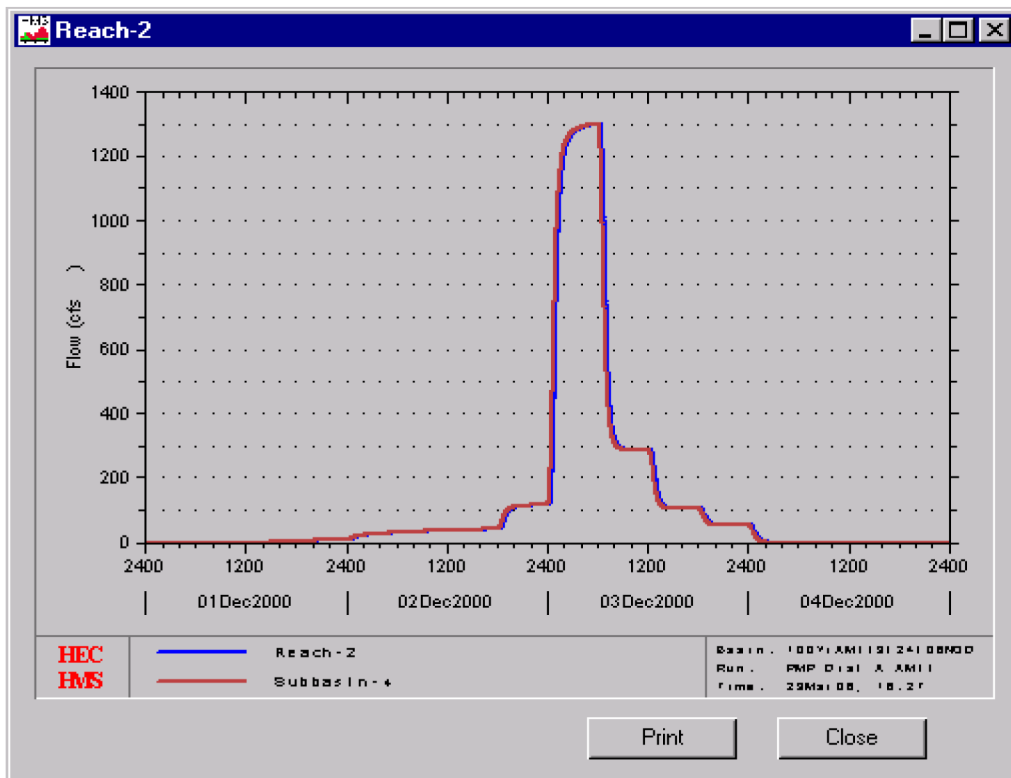
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



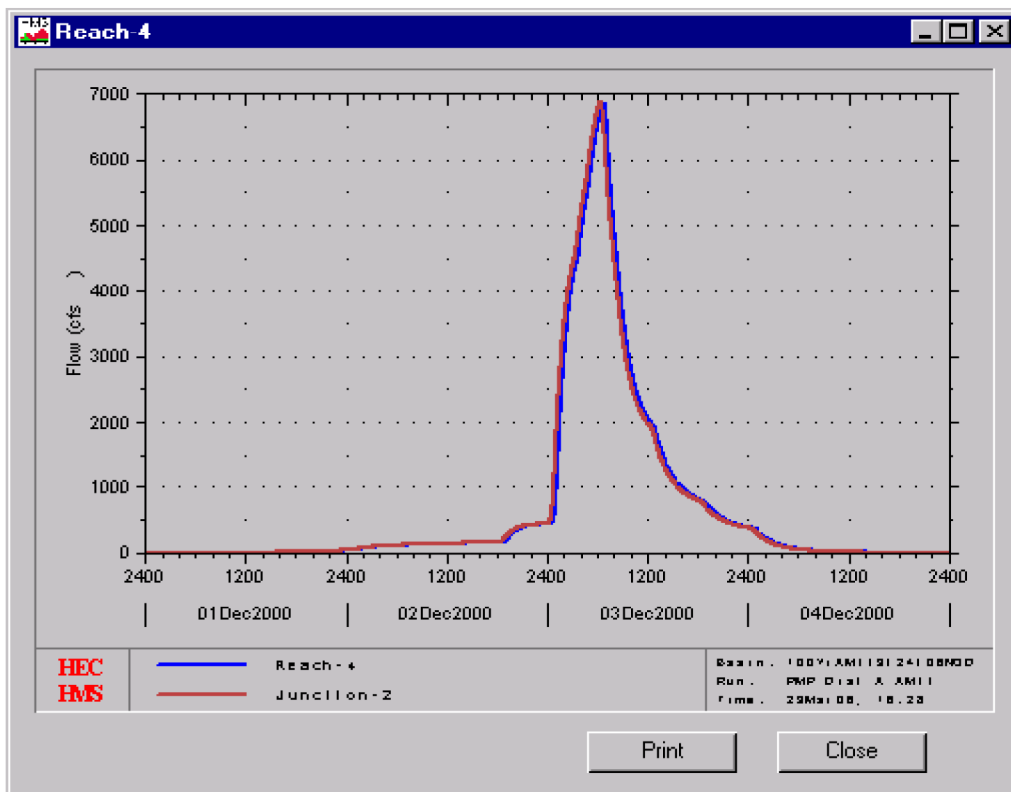
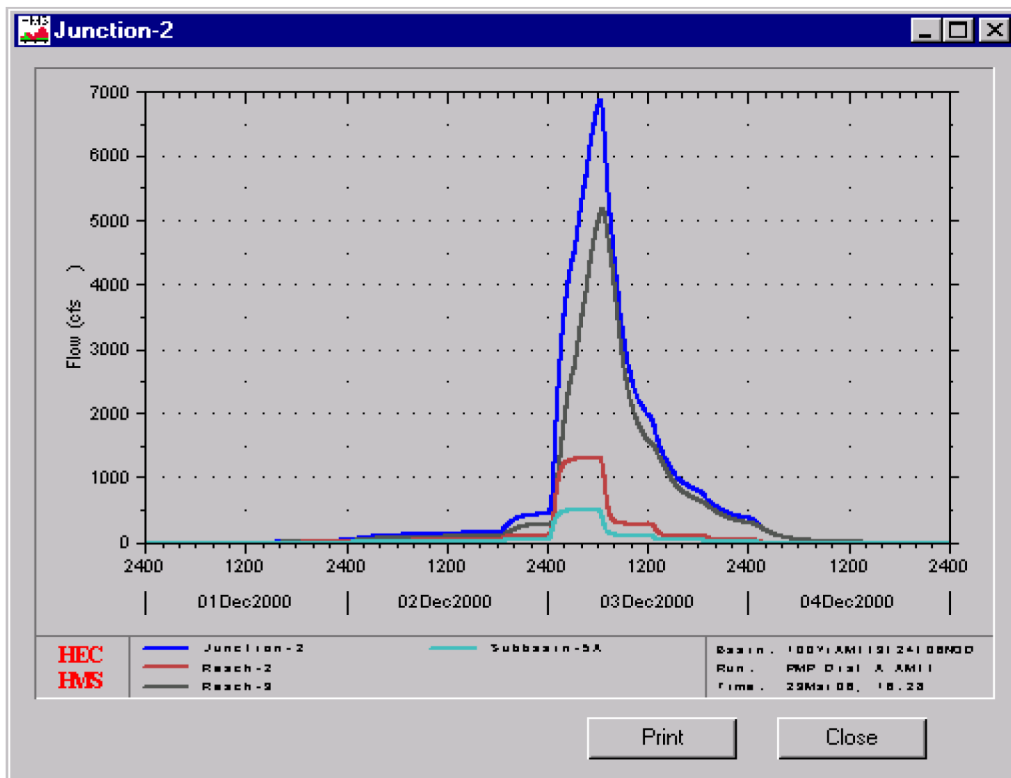
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



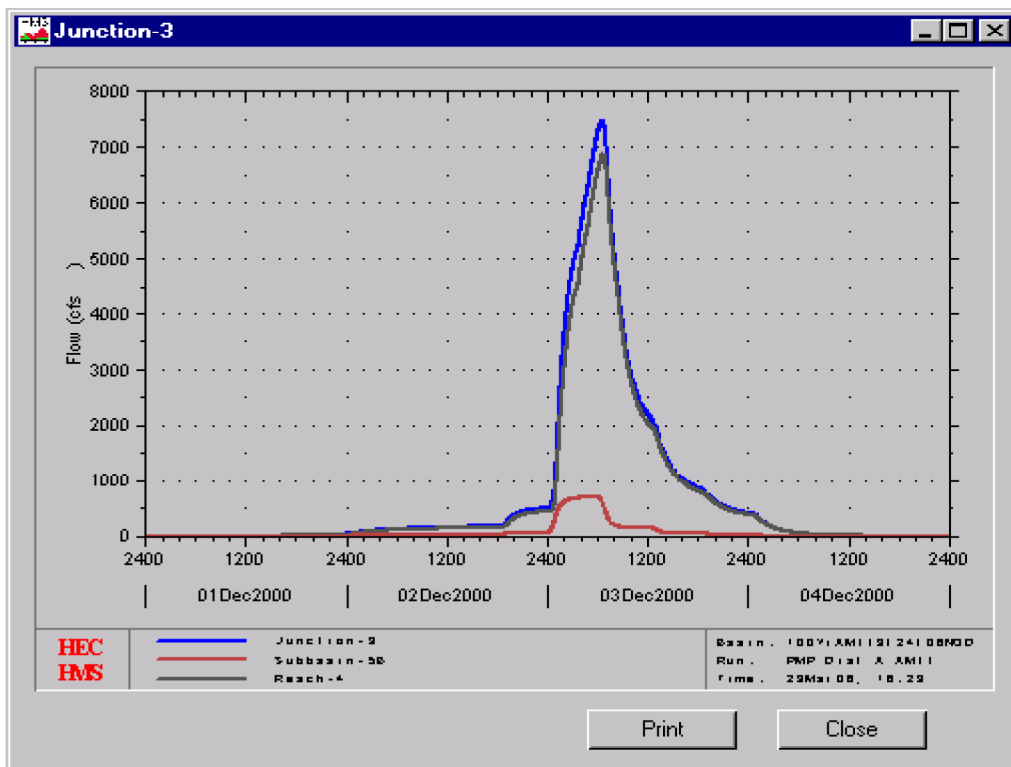
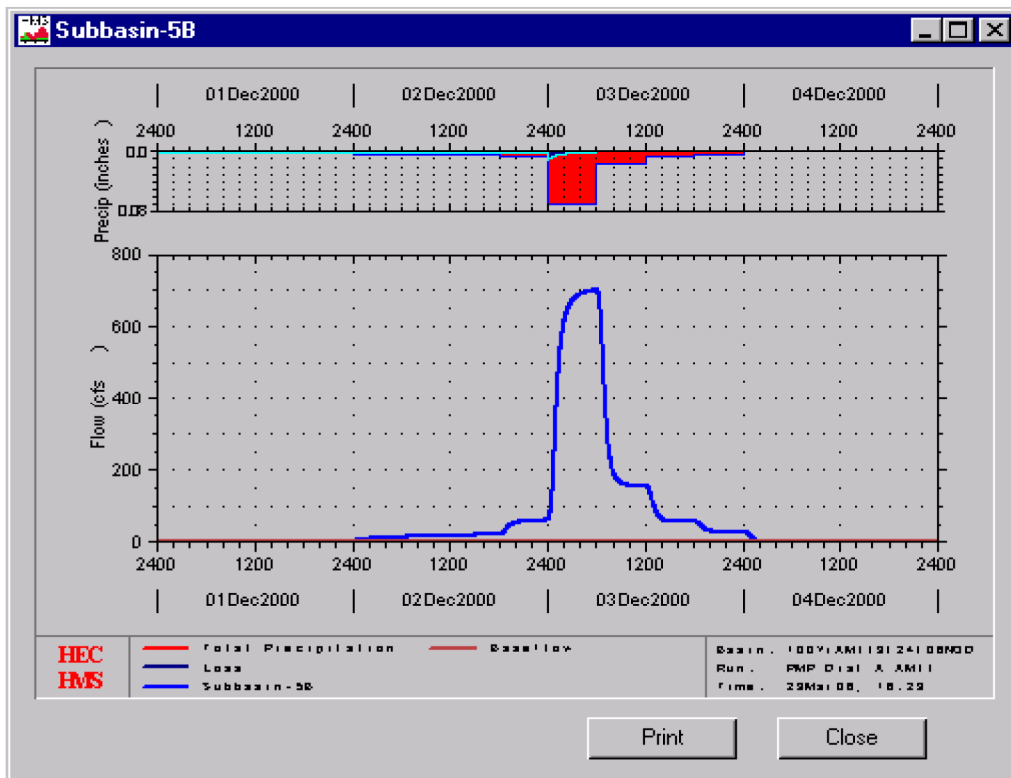
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



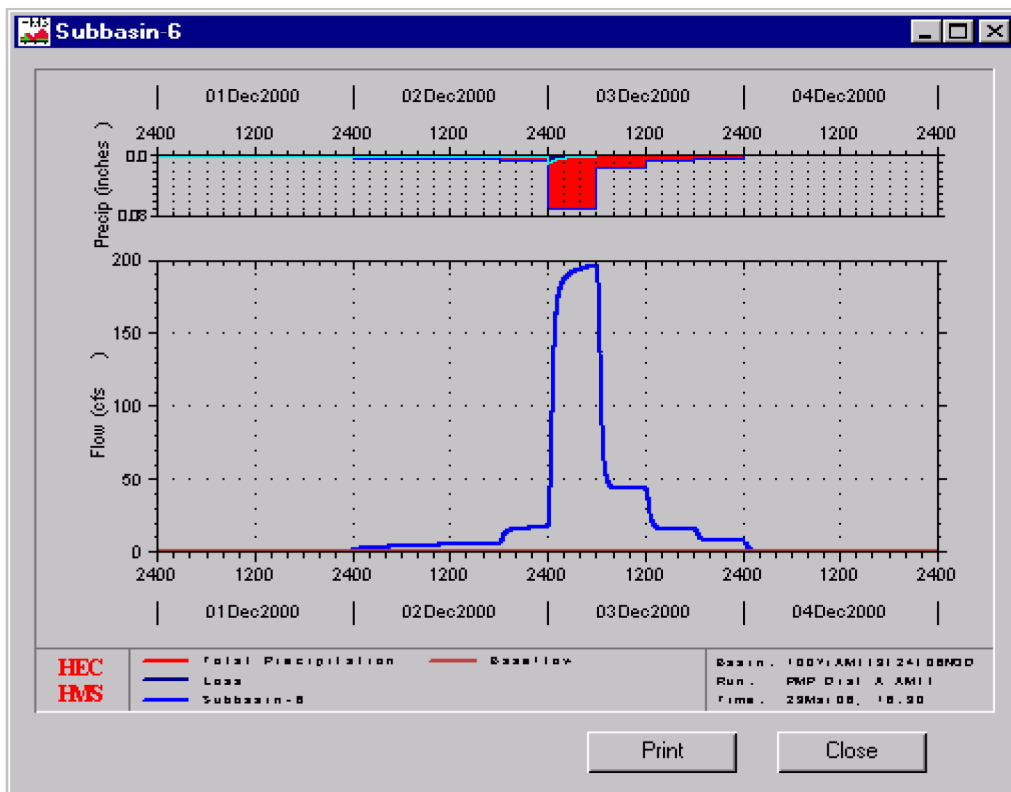
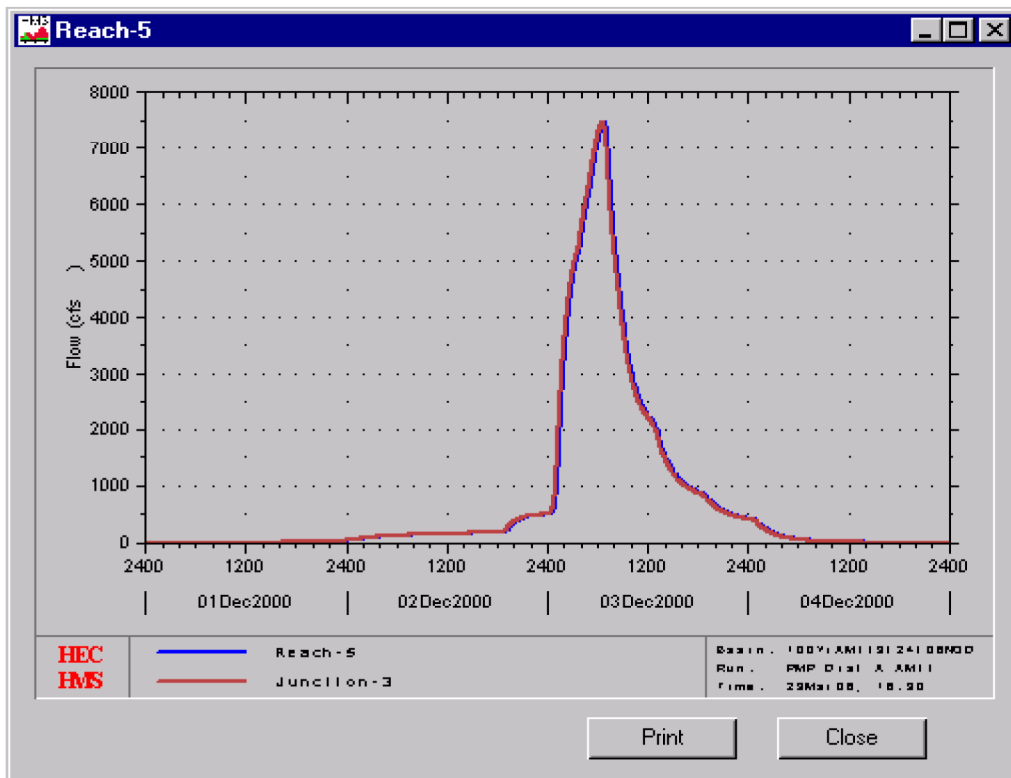
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



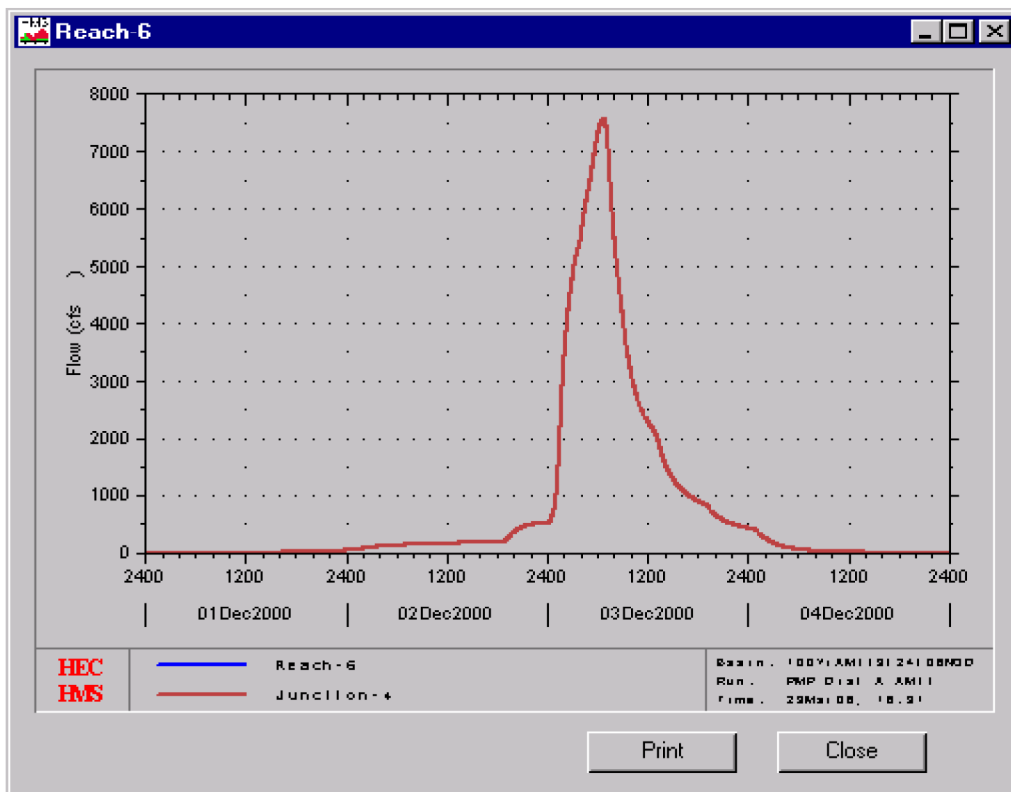
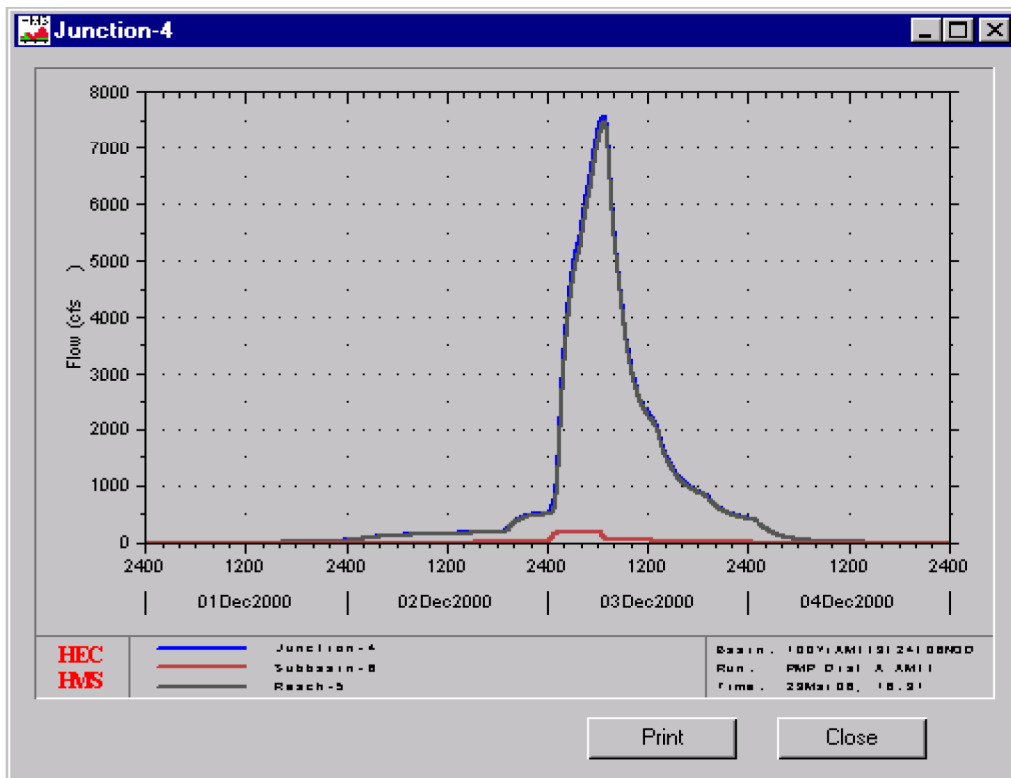
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



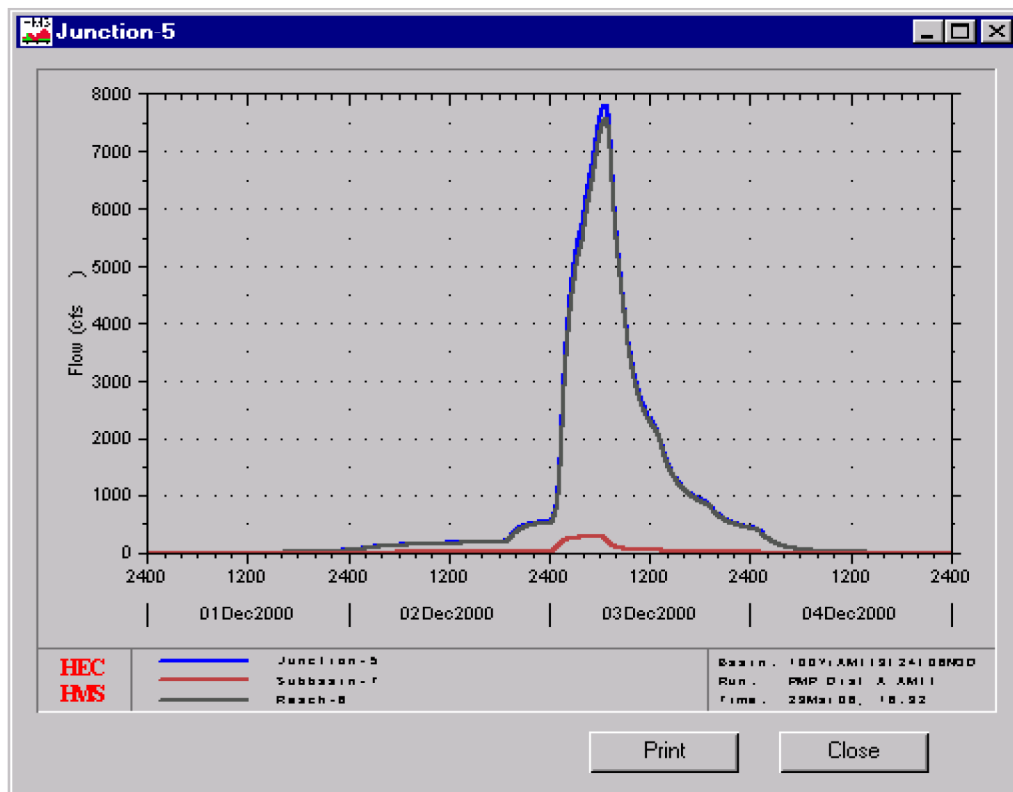
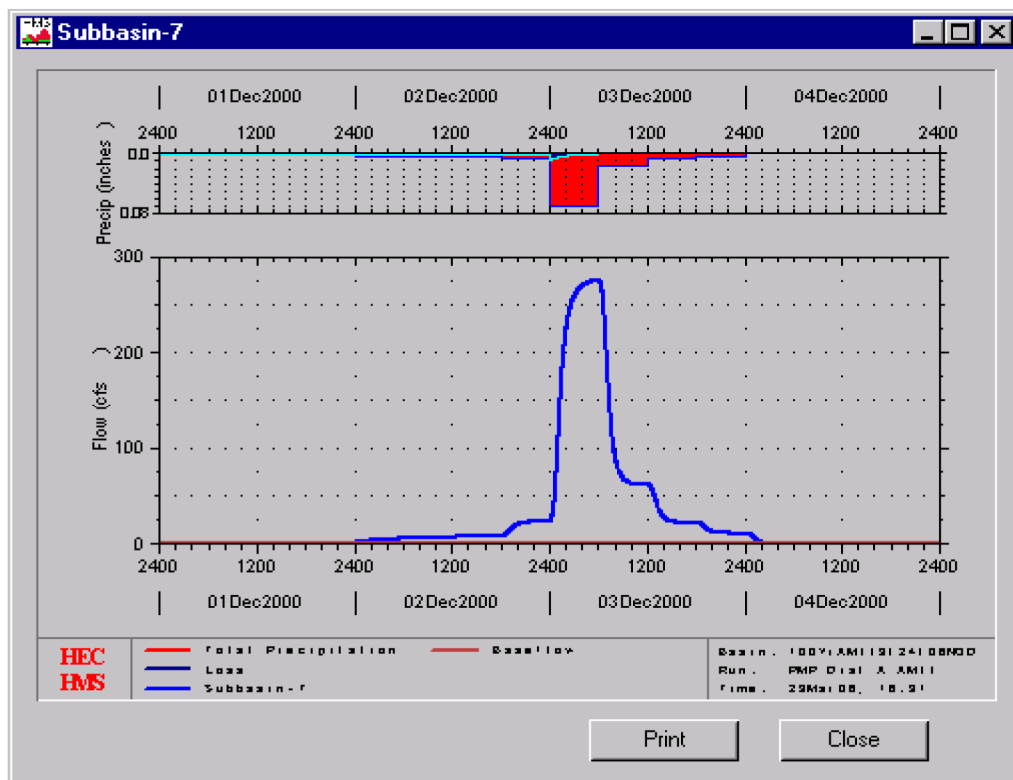
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



APPENDIX P

HEC-RAS MODEL FOR THE CALCULATION OF THE 500-YEAR AND PMP WATER SURFACE PROFILES, ANTECEDENT MOISTURE CONDITION II

HEC-RAS Plan: PMP AMII River: Ditch A Reach: 5

Reach	River Sta	Q Total (cfs)	Min Chl El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	Max Chl Dpth (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Sta W.S. Lft (ft)	Sta W.S. Rgt (ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
5	12674	818.00	3477.00	3478.64	3478.18	1.64	3478.75	0.003030	2.70	335.19	675.33	317.98	340.14	0.45
5	12674	1833.00	3477.00	3479.26	3478.68	2.26	3479.45	0.003127	3.66	292.14	714.07	552.32	421.93	0.49
5	11337	818.00	3489.00	3470.67	3470.66	1.67	3471.20	0.013821	5.89	420.54	583.79	144.35	143.25	0.96
5	11337	1833.00	3489.00	3471.45	3471.45	2.45	3472.25	0.011178	7.43	403.86	579.69	268.14	175.84	0.94
5	10937	818.00	3484.00	3468.11	3465.94	2.11	3468.48	0.009957	4.88	460.77	613.23	167.94	152.46	0.81
5	10937	1833.00	3484.00	3466.73	3468.71	2.73	3467.44	0.012731	6.81	438.12	635.88	275.16	197.77	0.96
5	10288	818.00	3456.00	3457.15	3457.15	1.15	3457.41	0.020844	4.08	380.58	782.65	200.26	402.08	1.02
5	10288	1833.00	3456.00	3457.54	3457.52	1.54	3457.92	0.016736	4.94	342.63	816.81	370.76	474.18	0.99
5	9890	1032.00	3450.00	3451.81	3451.40	1.81	3451.94	0.004888	2.97	405.24	783.45	347.12	378.22	0.55
5	9890	2662.00	3450.00	3452.41	3452.06	2.41	3452.72	0.006092	4.45	344.33	819.07	606.88	474.74	0.66
5	9009	1032.00	3445.00	3446.77	3446.84	1.77	3447.04	0.011604	4.19	427.76	735.08	246.48	307.32	0.82
5	9009	2662.00	3445.00	3447.61		2.61	3447.94	0.008189	4.59	357.39	842.54	580.42	485.14	0.74
5	8130	1032.00	3440.00	3441.91	3441.38	1.91	3442.01	0.003348	2.56	429.84	843.28	402.94	413.44	0.48
5	8130	2662.00	3440.00	3442.51	3442.02	2.51	3442.76	0.004426	3.98	389.33	888.57	680.41	499.24	0.57
5	7717	1032.00	3437.80	3438.91	3438.91	1.11	3439.25	0.018884	4.70	314.92	643.43	219.43	320.51	1.01
5	7717	2662.00	3437.80	3439.69	3439.52	1.89	3440.08	0.010227	5.00	265.92	719.48	532.79	463.57	0.82
5	7253	1201.00	3435.00	3436.66	3436.07	1.66	3436.73	0.001800	2.11	389.96	938.71	581.61	548.75	0.35
5	7253	5170.00	3435.00	3437.80	3437.02	2.80	3438.08	0.003027	4.32	331.21	995.19	1273.39	863.98	0.50
5	6343	2315.00	3430.00	3430.98	3430.98	0.98	3431.38	0.017106	5.08	735.44	1303.66	455.52	568.22	1.00
5	6343	6871.00	3430.00	3431.88	3431.88	1.88	3432.58	0.012467	6.75	671.15	1507.86	1045.07	836.71	0.95
5	5363	2315.00	3425.00	3426.68	3426.03	1.68	3426.76	0.001829	2.32	676.94	1611.89	1038.55	934.06	0.36
5	5363	6871.00	3425.00	3427.67	3426.76	2.67	3427.86	0.002084	3.60	581.55	1811.11	2113.94	1229.57	0.42
5	4221	2625.00	3420.00	3421.33	3421.33	1.33	3421.75	0.016273	5.20	477.24	1125.37	511.99	648.13	0.99
5	4221	7467.00	3420.00	3422.16	3422.16	2.16	3422.78	0.013513	6.45	302.64	1333.85	1218.00	1031.21	0.97
5	3489	2625.00	3416.00	3417.51	3416.93	2.51	3417.59	0.002263	2.45	-120.59	896.35	1135.64	1018.94	0.39
5	3489	7467.00	3416.00	3418.39	3417.57	3.39	3418.60	0.002662	3.72	-135.46	947.57	2061.90	1083.03	0.46
5	2589	2625.00	3413.80	3414.77	3414.77	0.97	3415.18	0.018036	5.02	170.96	822.03	510.19	651.07	1.02
5	2589	7467.00	3413.80	3415.64	3415.55	1.84	3416.23	0.011451	6.54	-3.75	891.01	1223.92	894.76	0.92
5	2774	2625.00	3409.00	3414.27	3412.71	5.27	3414.34	0.000514	2.95	-413.72	652.44	1629.88	1066.16	0.23
5	2774	7467.00	3409.00	3415.13	3413.50	6.13	3415.31	0.001181	4.98	-439.10	688.51	2572.47	1127.60	0.37
5	2773	Culvert												
5	2734	2625.00	3408.90	3412.71	3412.71	3.81	3413.06	0.003071	5.84	83.74	515.65	665.51	431.91	0.54
5	2734	7467.00	3408.90	3413.64	3413.58	4.74	3414.57	0.006651	9.75	34.58	553.33	1107.66	518.75	0.83
5	1888	2659.00	3408.00	3409.62	3409.00	1.61	3409.72	0.002763	2.55	152.60	1085.55	1042.93	932.96	0.42
5	1888	7552.00	3408.00	3410.56		2.56	3410.76	0.002811	3.63	-245.29	1204.49	2169.43	1449.78	0.47
5	1060	2773.00	3402.70	3404.49	3404.49	1.79	3404.98	0.016639	5.60	616.07	1140.02	495.53	523.95	1.01
5	1060	7799.00	3402.70	3405.49	3405.49	2.79	3406.17	0.014796	6.60	468.88	1361.48	1181.30	892.80	1.01

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HEC-RAS Version 3.0.1 Mar 2001
 U.S. Army Corp of Engineers
 Hydrologic Engineering Center
 609 Second Street, Suite D
 Davis, California 95616-4687
 (916) 756-1104

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X      X  XXXXXX  XXXX      XXXX      XX      XXXX
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PROJECT DATA

Project Title: WCS
 Project File : FloodPlain.prj
 Run Date and Time: 3/30/06 9:08:03 AM

Project in English units

PLAN DATA

Plan Title: Plan 37
 Plan File : D:\program files\WCS\FloodPlain.p37

Geometry Title: PMP1-20-04SecRemoved
 Geometry File : D:\program files\WCS\FloodPlain.g04

Flow Title : pmp NOD AMII
 Flow File : D:\program files\WCS\FloodPlain.f29

Plan Summary Information:

Number of: Cross Sections =	18	Multitple Openings =	0
Culverts =	1	Inline Weirs =	0
Bridges =	0		

Computational Information

Water surface calculation tolerance =	0.01
Critical depth calculaton tolerance =	0.01
Maximum number of iterations =	20
Maximum difference tolerance =	0.3
Flow tolerance factor =	0.001

Computation Options

Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: pmp NOD AMII
 Flow File : D:\program files\WCS\FloodPlain.f29

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Flow Data (cfs)

River	Reach	RS	PF 2	PF 3
Ditch A	5	12674	818	1833
Ditch A	5	9690	1032	2662
Ditch A	5	7253	1201	5170
Ditch A	5	6343	2315	6871
Ditch A	5	4221	2625	7467
Ditch A	5	1888	2659	7552
Ditch A	5	1060	2773	7799

Boundary Conditions

River stream	Reach	Profile	Upstream	Down
Ditch A ritical	5	PF 2	Critical	Cr

GEOMETRY DATA

Geometry Title: PMPl-20-04SecRemoved
 Geometry File : D:\program files\WCS\FloodPlain.g04

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 12674

INPUT

Description: Sta. 12674

Station Elevation Data		num=	6						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3482	380	3478	560	3477	635	3478	761	3480
964	3482								

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	380	.033	635	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.	
	380	635		1206	1337	1433	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3478.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3478.64	Reach Len. (ft)	1206.00	1337.00	1433.00
Crit W.S. (ft)	3478.18	Flow Area (sq ft)	14.34	290.73	12.91
E.G. Slope (ft/ft)	0.003030	Area (sq ft)	14.34	290.73	12.91
Q Total (cfs)	818.00	Flow (cfs)	16.63	786.40	14.97
Top Width (ft)	340.14	Top Width (ft)	44.81	255.00	40.33

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Vel Total (ft/s)	2.57	Avg. Vel. (ft/s)	1.16	2.70	1.16
Max Chl Dpth (ft)	1.64	Hydr. Depth (ft)	0.32	1.14	0.32
Conv. Total (cfs)	14861.0	Conv. (cfs)	302.2	14286.9	271.9
Length Wtd. (ft)	1336.25	Wetted Per. (ft)	44.81	255.01	40.33
Min Ch El (ft)	3477.00	Shear (lb/sq ft)	0.06	0.22	0.06
Alpha	1.07	Stream Power (lb/ft s)	0.07	0.58	0.07
Frctn Loss (ft)	7.51	Cum Volume (acre-ft)	19.46	120.19	3.29
C & E Loss (ft)	0.04	Cum SA (acres)	21.78	116.76	5.62

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3479.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3479.26	Reach Len. (ft)	1206.00	1337.00	1433.00
Crit W.S. (ft)	3478.68	Flow Area (sq ft)	55.14	447.56	49.62
E.G. Slope (ft/ft)	0.003127	Area (sq ft)	55.14	447.56	49.62
Q Total (cfs)	1833.00	Flow (cfs)	101.76	1639.66	91.58
Top Width (ft)	421.93	Top Width (ft)	87.86	255.00	79.07
Vel Total (ft/s)	3.32	Avg. Vel. (ft/s)	1.85	3.66	1.85
Max Chl Dpth (ft)	2.26	Hydr. Depth (ft)	0.63	1.76	0.63
Conv. Total (cfs)	32779.3	Conv. (cfs)	1819.7	29321.9	1637.7
Length Wtd. (ft)	1334.83	Wetted Per. (ft)	87.87	255.01	79.08
Min Ch El (ft)	3477.00	Shear (lb/sq ft)	0.12	0.34	0.12
Alpha	1.12	Stream Power (lb/ft s)	0.23	1.26	0.23
Frctn Loss (ft)	7.14	Cum Volume (acre-ft)	45.36	229.55	13.10
C & E Loss (ft)	0.06	Cum SA (acres)	37.00	136.51	18.89

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

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additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 11337

INPUT

Description: Sta. 11337

Station Elevation Data		num= 8	
Sta	Elev	Sta	Elev
100	3477	315	3474
550	3470	591	3472

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
100	.033	435	.033
		550	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	435	550		545 400	332	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3471.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.52	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3470.67	Reach Len. (ft)	545.00	400.00	332.00
Crit W.S. (ft)	3470.66	Flow Area (sq ft)	4.86	134.85	4.64
E.G. Slope (ft/ft)	0.013821	Area (sq ft)	4.86	134.85	4.64
Q Total (cfs)	818.00	Flow (cfs)	12.44	793.70	11.86
Top Width (ft)	143.25	Top Width (ft)	14.46	115.00	13.79
Vel Total (ft/s)	5.67	Avg. Vel. (ft/s)	2.56	5.89	2.56
Max Chl Dpth (ft)	1.67	Hydr. Depth (ft)	0.34	1.17	0.34
Conv. Total (cfs)	6958.0	Conv. (cfs)	105.8	6751.3	100.9
Length Wtd. (ft)	400.60	Wetted Per. (ft)	14.48	115.02	13.80
Min Ch El (ft)	3469.00	Shear (lb/sq ft)	0.29	1.01	0.29
Alpha	1.05	Stream Power (lb/ft s)	0.74	5.95	0.74
Frctn Loss (ft)	4.67	Cum Volume (acre-ft)	19.19	113.66	3.00
C & E Loss (ft)	0.05	Cum SA (acres)	20.96	111.08	4.73

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT

Profile #PF 3

E.G. Elev (ft)	3472.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.80	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3471.45	Reach Len. (ft)	545.00	400.00	332.00
Crit W.S. (ft)	3471.45	Flow Area (sq ft)	22.55	224.08	21.51
E.G. Slope (ft/ft)	0.011178	Area (sq ft)	22.55	224.08	21.51
Q Total (cfs)	1833.00	Flow (cfs)	86.53	1663.97	82.50
Top Width (ft)	175.84	Top Width (ft)	31.14	115.00	29.69
Vel Total (ft/s)	6.84	Avg. Vel. (ft/s)	3.84	7.43	3.84
Max Chl Dpth (ft)	2.45	Hydr. Depth (ft)	0.72	1.95	0.72
Conv. Total (cfs)	17337.3	Conv. (cfs)	818.5	15738.5	780.3
Length Wtd. (ft)	401.42	Wetted Per. (ft)	31.18	115.02	29.73
Min Ch El (ft)	3469.00	Shear (lb/sq ft)	0.50	1.36	0.50
Alpha	1.10	Stream Power (lb/ft s)	1.94	10.10	1.94
Frctn Loss (ft)	4.78	Cum Volume (acre-ft)	44.28	219.24	11.93
C & E Loss (ft)	0.03	Cum SA (acres)	35.35	130.83	17.11

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 10937

INPUT

Description: Sta. 10937

Station Elevation Data		num= 9							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3470	351	3468	428	3467	465	3466	536	3464
543	3464	609	3466	683	3468	811	3472		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	428	.033	609	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	428	609		729 649	445	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3466.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.		0.033	0.033
W.S. Elev (ft)	3466.11	Reach Len. (ft)	729.00	649.00	445.00

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Crit W.S. (ft)	3465.94	Flow Area (sq ft)	167.69	0.24
E.G. Slope (ft/ft)	0.009957	Area (sq ft)	167.69	0.24
Q Total (cfs)	818.00	Flow (cfs)	817.84	0.16
Top Width (ft)	152.46	Top Width (ft)	148.23	4.23
Vel Total (ft/s)	4.87	Avg. Vel. (ft/s)	4.88	0.67
Max Chl Dpth (ft)	2.11	Hydr. Depth (ft)	1.13	0.06
Conv. Total (cfs)	8197.8	Conv. (cfs)	8196.2	1.6
Length Wtd. (ft)	648.98	Wetted Per. (ft)	148.29	4.23
Min Ch El (ft)	3464.00	Shear (lb/sq ft)	0.70	0.04
Alpha	1.00	Stream Power (lb/ft s)	3.43	0.02
Frctn Loss (ft)	9.04	Cum Volume (acre-ft)	19.16	112.27
C & E Loss (ft)	0.03	Cum SA (acres)	20.87	109.87

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3467.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.		0.033	0.033
W.S. Elev (ft)	3466.73	Reach Len. (ft)	729.00	649.00	445.00
Crit W.S. (ft)	3466.71	Flow Area (sq ft)		265.39	9.77
E.G. Slope (ft/ft)	0.012731	Area (sq ft)		265.39	9.77
Q Total (cfs)	1833.00	Flow (cfs)		1807.75	25.26
Top Width (ft)	197.77	Top Width (ft)		170.88	26.88
Vel Total (ft/s)	6.66	Avg. Vel. (ft/s)		6.81	2.59
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)		1.55	0.36
Conv. Total (cfs)	16245.6	Conv. (cfs)		16021.8	223.8
Length Wtd. (ft)	647.59	Wetted Per. (ft)		170.95	26.89
Min Ch El (ft)	3464.00	Shear (lb/sq ft)		1.23	0.29
Alpha	1.03	Stream Power (lb/ft s)		8.40	0.75
Frctn Loss (ft)	9.41	Cum Volume (acre-ft)	44.14	217.00	11.81

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C & E Loss (ft)	0.10	Cum SA (acres)	35.16	129.52	16.89
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Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 10288

INPUT

Description: Sta. 10288

Station Elevation Data		num= 12							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3464	177	3462	238	3460	298	3458	493	3456
519	3456	662	3457	778	3457.1	857	3458	903	3460
947	3462	989	3464						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	298	.033	857	.033

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
298	857	552 598	633	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3457.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.		0.033	
W.S. Elev (ft)	3457.15	Reach Len. (ft)	552.00	598.00	633.00
Crit W.S. (ft)	3457.15	Flow Area (sq ft)		200.26	
E.G. Slope (ft/ft)	0.020844	Area (sq ft)		200.26	
Q Total (cfs)	818.00	Flow (cfs)		818.00	
Top Width (ft)	402.08	Top Width (ft)		402.08	
Vel Total (ft/s)	4.08	Avg. Vel. (ft/s)		4.08	
Max Chl Dpth (ft)	1.15	Hydr. Depth (ft)		0.50	
Conv. Total (cfs)	5665.8	Conv. (cfs)		5665.8	
Length Wtd. (ft)	598.00	Wetted Per. (ft)		402.09	
Min Ch El (ft)	3456.00	Shear (lb/sq ft)		0.65	
Alpha	1.00	Stream Power (lb/ft s)		2.65	
Frctn Loss (ft)	4.91	Cum Volume (acre-ft)	19.16	109.53	2.98
C & E Loss (ft)	0.04	Cum SA (acres)	20.87	105.78	4.64

Warning: The energy equation could not be balanced within the specified number of iterations.

FloodPlain.rep

The program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3457.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.		0.033	
W.S. Elev (ft)	3457.54	Reach Len. (ft)	552.00	598.00	633.00
Crit W.S. (ft)	3457.52	Flow Area (sq ft)		370.76	
E.G. Slope (ft/ft)	0.016736	Area (sq ft)		370.76	
Q Total (cfs)	1833.00	Flow (cfs)		1833.00	
Top Width (ft)	474.18	Top Width (ft)		474.18	
Vel Total (ft/s)	4.94	Avg. Vel. (ft/s)		4.94	
Max Chl Dpth (ft)	1.54	Hydr. Depth (ft)		0.78	
Conv. Total (cfs)	14169.0	Conv. (cfs)		14169.0	
Length Wtd. (ft)	597.95	Wetted Per. (ft)		474.20	
Min Ch El (ft)	3456.00	Shear (lb/sq ft)		0.82	
Alpha	1.00	Stream Power (lb/ft s)		4.04	
Frctn Loss (ft)	5.18	Cum Volume (acre-ft)	44.14	212.26	11.76
C & E Loss (ft)	0.02	Cum SA (acres)	35.16	124.71	16.75

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 9690

INPUT
Description: Sta. 9690
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3454.5	202	3454	381	3452	632	3450	638	3450
799	3452	897	3454	1010	3458				

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
100	.033	381	.033
		799	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	381	799		639 681	658	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3451.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.033	
W.S. Elev (ft)	3451.81	Reach Len. (ft)	639.00	681.00	658.00
Crit W.S. (ft)	3451.40	Flow Area (sq ft)		347.12	
E.G. Slope (ft/ft)	0.004888	Area (sq ft)		347.12	
Q Total (cfs)	1032.00	Flow (cfs)		1032.00	
Top Width (ft)	378.22	Top Width (ft)		378.22	
Vel Total (ft/s)	2.97	Avg. Vel. (ft/s)		2.97	
Max Chl Dpth (ft)	1.81	Hydr. Depth (ft)		0.92	
Conv. Total (cfs)	14760.6	Conv. (cfs)		14760.6	
Length Wtd. (ft)	681.00	Wetted Per. (ft)		378.24	
Min Ch El (ft)	3450.00	Shear (lb/sq ft)		0.28	
Alpha	1.00	Stream Power (lb/ft s)		0.83	
Frctn Loss (ft)	4.90	Cum Volume (acre-ft)	19.16	105.77	2.98
C & E Loss (ft)	0.01	Cum SA (acres)	20.87	100.42	4.64

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3452.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3452.41	Reach Len. (ft)	639.00	681.00	658.00
Crit W.S. (ft)	3452.06	Flow Area (sq ft)	7.51	595.24	4.11

E.G. Slope (ft/ft)	0.006092	FloodPlain.rep Area (sq ft)	7.51	595.24	4.11
Q Total (cfs)	2662.00	Flow (cfs)	9.17	2647.81	5.02
Top Width (ft)	474.74	Top Width (ft)	36.67	418.00	20.07
Vel Total (ft/s)	4.39	Avg. Vel. (ft/s)	1.22	4.45	1.22
Max Chl Dpth (ft)	2.41	Hydr. Depth (ft)	0.20	1.42	0.20
Conv. Total (cfs)	34105.6	Conv. (cfs)	117.5	33923.8	64.3
Length Wtd. (ft)	680.91	Wetted Per. (ft)	36.67	418.02	20.08
Min Ch El (ft)	3450.00	Shear (lb/sq ft)	0.08	0.54	0.08
Alpha	1.02	Stream Power (lb/ft s)	0.10	2.41	0.10
Frctn Loss (ft)	4.78	Cum Volume (acre-ft)	44.10	205.63	11.73
C & E Loss (ft)	0.00	Cum SA (acres)	34.92	118.59	16.61

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 9009

INPUT

Description: Sta. 9009

Station Elevation Data		num= 9							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3452	203	3450	325	3448	492	3446	596	3445
637	3446	892	3448	1007	3450	1124	3452		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	325	.033	892	.033

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
325	892	898	879	794	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3447.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.033	
W.S. Elev (ft)	3446.77	Reach Len. (ft)	898.00	879.00	794.00
Crit W.S. (ft)	3446.64	Flow Area (sq ft)		246.48	
E.G. Slope (ft/ft)	0.011604	Area (sq ft)		246.48	
Q Total (cfs)	1032.00	Flow (cfs)		1032.00	
Top Width (ft)	307.32	Top Width (ft)		307.32	
Vel Total (ft/s)	4.19	Avg. Vel. (ft/s)		4.19	

Max Chl Dpth (ft)	1.77	FloodPlain.rep Hydr. Depth (ft)	0.80
Conv. Total (cfs)	9580.2	Conv. (cfs)	9580.2
Length Wtd. (ft)	879.00	Wetted Per. (ft)	307.34
Min Ch El (ft)	3445.00	Shear (lb/sq ft)	0.58
Alpha	1.00	Stream Power (lb/ft s)	2.43
Frctn Loss (ft)	4.98	Cum Volume (acre-ft)	19.16 101.13 2.98
C & E Loss (ft)	0.05	Cum SA (acres)	20.87 95.06 4.64

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3447.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.		0.033	
W.S. Elev (ft)	3447.61	Reach Len. (ft)	898.00	879.00	794.00
Crit W.S. (ft)		Flow Area (sq ft)		580.42	
E.G. Slope (ft/ft)	0.008169	Area (sq ft)		580.42	
Q Total (cfs)	2662.00	Flow (cfs)		2662.00	
Top Width (ft)	485.14	Top Width (ft)		485.14	
Vel Total (ft/s)	4.59	Avg. Vel. (ft/s)		4.59	
Max Chl Dpth (ft)	2.61	Hydr. Depth (ft)		1.20	
Conv. Total (cfs)	29451.9	Conv. (cfs)		29451.9	
Length Wtd. (ft)	878.85	Wetted Per. (ft)		485.18	
Min Ch El (ft)	3445.00	Shear (lb/sq ft)		0.61	
Alpha	1.00	Stream Power (lb/ft s)		2.80	
Frctn Loss (ft)	5.16	Cum Volume (acre-ft)	44.04	196.44	11.70
C & E Loss (ft)	0.02	Cum SA (acres)	34.66	111.53	16.46

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A

FloodPlain.rep

REACH: 5

RS: 8130

INPUT

Description: Sta. 8130

Station Elevation Data		num=		8					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3448	303	3444	419	3442	654	3440	663	3440
852	3442	995	3444	1104	3446				

Manning's n Values

		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	419	.033	852	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	419	852		399 413	456	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3442.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.033	
W.S. Elev (ft)	3441.91	Reach Len. (ft)	399.00	413.00	456.00
Crit W.S. (ft)	3441.38	Flow Area (sq ft)		402.94	
E.G. Slope (ft/ft)	0.003348	Area (sq ft)		402.94	
Q Total (cfs)	1032.00	Flow (cfs)		1032.00	
Top Width (ft)	413.44	Top Width (ft)		413.44	
Vel Total (ft/s)	2.56	Avg. Vel. (ft/s)		2.56	
Max Chl Dpth (ft)	1.91	Hydr. Depth (ft)		0.97	
Conv. Total (cfs)	17834.9	Conv. (cfs)		17834.9	
Length Wtd. (ft)	413.00	Wetted Per. (ft)		413.45	
Min Ch El (ft)	3440.00	Shear (lb/sq ft)		0.20	
Alpha	1.00	Stream Power (lb/ft s)		0.52	
Frctn Loss (ft)	2.73	Cum Volume (acre-ft)	19.16	94.58	2.98
C & E Loss (ft)	0.02	Cum SA (acres)	20.87	87.79	4.64

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3442.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.	0.033	0.033	0.033

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W.S. Elev (ft)	3442.51	Reach Len. (ft)	399.00	413.00	456.00
Crit W.S. (ft)	3442.02	Flow Area (sq ft)	7.59	663.47	9.35
E.G. Slope (ft/ft)	0.004426	Area (sq ft)	7.59	663.47	9.35
Q Total (cfs)	2662.00	Flow (cfs)	9.16	2641.56	11.29
Top Width (ft)	499.24	Top Width (ft)	29.67	433.00	36.57
Vel Total (ft/s)	3.91	Avg. Vel. (ft/s)	1.21	3.98	1.21
Max Chl Dpth (ft)	2.51	Hydr. Depth (ft)	0.26	1.53	0.26
Conv. Total (cfs)	40012.1	Conv. (cfs)	137.6	39704.9	169.7
Length Wtd. (ft)	413.07	Wetted Per. (ft)	29.67	433.02	36.57
Min Ch El (ft)	3440.00	Shear (lb/sq ft)	0.07	0.42	0.07
Alpha	1.03	Stream Power (lb/ft s)	0.09	1.69	0.09
Frctn Loss (ft)	2.66	Cum Volume (acre-ft)	43.96	183.89	11.61
C & E Loss (ft)	0.01	Cum SA (acres)	34.35	102.27	16.12

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 7717

INPUT

Description: Sta 7717

Station Elevation Data		num= 8	
Sta	Elev	Sta	Elev
100	3442	233	3440
657	3439	747	3440

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
100	.033	233	.033
		747	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	233	747		444 464	510	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3439.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.		0.033	
W.S. Elev (ft)	3438.91	Reach Len. (ft)	444.00	464.00	510.00
Crit W.S. (ft)	3438.91	Flow Area (sq ft)		219.43	

E.G. Slope (ft/ft)	0.018684	FloodPlain.rep Area (sq ft)	219.43
Q Total (cfs)	1032.00	Flow (cfs)	1032.00
Top Width (ft)	328.51	Top Width (ft)	328.51
Vel Total (ft/s)	4.70	Avg. Vel. (ft/s)	4.70
Max Chl Dpth (ft)	1.11	Hydr. Depth (ft)	0.67
Conv. Total (cfs)	7550.0	Conv. (cfs)	7550.0
Length Wtd. (ft)	464.11	Wetted Per. (ft)	328.52
Min Ch El (ft)	3437.80	Shear (lb/sq ft)	0.78
Alpha	1.00	Stream Power (lb/ft s)	3.66
Frctn Loss (ft)	1.80	Cum Volume (acre-ft)	19.16 91.63 2.98
C & E Loss (ft)	0.08	Cum SA (acres)	20.87 84.27 4.64

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3440.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.		0.033	
W.S. Elev (ft)	3439.69	Reach Len. (ft)	444.00	464.00	510.00
Crit W.S. (ft)	3439.52	Flow Area (sq ft)		532.79	
E.G. Slope (ft/ft)	0.010227	Area (sq ft)		532.79	
Q Total (cfs)	2662.00	Flow (cfs)		2662.00	
Top Width (ft)	463.57	Top Width (ft)		463.57	
Vel Total (ft/s)	5.00	Avg. Vel. (ft/s)		5.00	
Max Chl Dpth (ft)	1.89	Hydr. Depth (ft)		1.15	
Conv. Total (cfs)	26322.5	Conv. (cfs)		26322.5	

Length Wtd. (ft)	464.60	FloodPlain.rep	Wetted Per. (ft)	463.59		
Min Ch El (ft)	3437.80	Shear (lb/sq ft)		0.73		
Alpha	1.00	Stream Power (lb/ft s)		3.67		
Frctn Loss (ft)	1.97	Cum Volume (acre-ft)	43.93	178.22	11.57	
C & E Loss (ft)	0.03	Cum SA (acres)	34.21	98.02	15.93	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 7253

INPUT

Description: Sta. 7253

Station Elevation Data		num=	9						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3438	109	3438.7	321	3438	424	3436	668	3435
906	3436	1005	3438	1200	3440	1365	3442		

Manning's n Values

Sta	n Val	Sta	n Val	Sta	n Val
100	.033	424	.033	906	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	424	906		756	910	980	.1 .3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3436.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3436.66	Reach Len. (ft)	756.00	910.00	980.00
Crit W.S. (ft)	3436.07	Flow Area (sq ft)	11.25	559.55	10.81
E.G. Slope (ft/ft)	0.001800	Area (sq ft)	11.25	559.55	10.81
Q Total (cfs)	1201.00	Flow (cfs)	10.27	1180.86	9.87
Top Width (ft)	548.75	Top Width (ft)	34.04	482.00	32.71
Vel Total (ft/s)	2.06	Avg. Vel. (ft/s)	0.91	2.11	0.91
Max Chl Dpth (ft)	1.66	Hydr. Depth (ft)	0.33	1.16	0.33
Conv. Total (cfs)	28304.5	Conv. (cfs)	242.0	27829.8	232.6
Length Wtd. (ft)	909.75	Wetted Per. (ft)	34.04	482.00	32.72
Min Ch El (ft)	3435.00	Shear (lb/sq ft)	0.04	0.13	0.04
Alpha	1.03	Stream Power (lb/ft s)	0.03	0.28	0.03

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Frctn Loss (ft)	5.31	Cum Volume (acre-ft)	19.11	87.48	2.92
C & E Loss (ft)	0.03	Cum SA (acres)	20.69	79.95	4.45

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3438.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3437.80	Reach Len. (ft)	756.00	910.00	980.00
Crit W.S. (ft)	3437.02	Flow Area (sq ft)	83.59	1109.45	80.35
E.G. Slope (ft/ft)	0.003027	Area (sq ft)	83.59	1109.45	80.35
Q Total (cfs)	5170.00	Flow (cfs)	193.14	4791.23	185.63
Top Width (ft)	663.98	Top Width (ft)	92.79	482.00	89.19
Vel Total (ft/s)	4.06	Avg. Vel. (ft/s)	2.31	4.32	2.31
Max Chl Dpth (ft)	2.80	Hydr. Depth (ft)	0.90	2.30	0.90
Conv. Total (cfs)	93972.8	Conv. (cfs)	3510.5	87088.0	3374.2
Length Wtd. (ft)	908.96	Wetted Per. (ft)	92.81	482.00	89.21
Min Ch El (ft)	3435.00	Shear (lb/sq ft)	0.17	0.43	0.17
Alpha	1.07	Stream Power (lb/ft s)	0.39	1.88	0.39
Frctn Loss (ft)	5.45	Cum Volume (acre-ft)	43.50	169.47	11.10
C & E Loss (ft)	0.04	Cum SA (acres)	33.74	92.98	15.41

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 6343

INPUT

Description: Sta. 6343

Station Elevation Data	num=	9
Sta Elev	Sta Elev	Sta Elev

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100	3434	346	3433	663	3432	732	3431	860	3430.2
981	3430	1273	3430	1320	3431.5	1566	3432		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
100	.033	663	.033	1320	.033

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

663	1320	767	980	1051	.1	.3
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CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3431.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.		0.033	
W.S. Elev (ft)	3430.98	Reach Len. (ft)	767.00	980.00	1051.00
Crit W.S. (ft)	3430.98	Flow Area (sq ft)		455.52	
E.G. Slope (ft/ft)	0.017106	Area (sq ft)		455.52	
Q Total (cfs)	2315.00	Flow (cfs)		2315.00	
Top Width (ft)	568.22	Top Width (ft)		568.22	
Vel Total (ft/s)	5.08	Avg. Vel. (ft/s)		5.08	
Max Chl Dpth (ft)	0.98	Hydr. Depth (ft)		0.80	
Conv. Total (cfs)	17700.0	Conv. (cfs)		17700.0	
Length Wtd. (ft)	979.71	Wetted Per. (ft)		568.24	
Min Ch El (ft)	3430.00	Shear (lb/sq ft)		0.86	
Alpha	1.00	Stream Power (lb/ft s)		4.35	
Frctn Loss (ft)	4.07	Cum Volume (acre-ft)	19.01	76.87	2.80
C & E Loss (ft)	0.10	Cum SA (acres)	20.40	68.98	4.08

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 3

FloodPlain.rep

E.G. Elev (ft)	3432.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.		0.033	0.033
W.S. Elev (ft)	3431.88	Reach Len. (ft)	767.00	980.00	1051.00
Crit W.S. (ft)	3431.88	Flow Area (sq ft)		1009.20	35.87
E.G. Slope (ft/ft)	0.012467	Area (sq ft)		1009.20	35.87
Q Total (cfs)	6871.00	Flow (cfs)		6811.21	59.79
Top Width (ft)	836.71	Top Width (ft)		648.85	187.86
Vel Total (ft/s)	6.57	Avg. Vel. (ft/s)		6.75	1.67
Max Chl Dpth (ft)	1.88	Hydr. Depth (ft)		1.56	0.19
Conv. Total (cfs)	61536.4	Conv. (cfs)		61001.0	535.5
Length Wtd. (ft)	979.16	Wetted Per. (ft)		648.88	187.86
Min Ch El (ft)	3430.00	Shear (lb/sq ft)		1.21	0.15
Alpha	1.05	Stream Power (lb/ft s)		8.17	0.25
Frctn Loss (ft)	4.11	Cum Volume (acre-ft)	42.78	147.34	9.79
C & E Loss (ft)	0.16	Cum SA (acres)	32.94	81.17	12.29

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to

critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 5363

INPUT

Description: Sta. 5363

Station	Elevation	Data	num=	10
Sta	Elev	Sta	Elev	Sta Elev Sta Elev Sta Elev
100	3432	282	3430	550 3428 742 3426 885 3425
1097	3425	1476	3426	1877 3428 1966 3428 2160 3430

Manning's n Values num= 3

				FloodPlain.rep			
Sta	n Val	Sta	n Val	Sta	n Val		
100	.033	742	.033	1476	.033		
Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	742	1476		1199 1142	713	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3426.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3426.68	Reach Len. (ft)	1199.00	1142.00	713.00
Crit W.S. (ft)	3426.03	Flow Area (sq ft)	22.05	970.46	46.05
E.G. Slope (ft/ft)	0.001829	Area (sq ft)	22.05	970.46	46.05
Q Total (cfs)	2315.00	Flow (cfs)	20.64	2251.26	43.10
Top Width (ft)	934.95	Top Width (ft)	65.06	734.00	135.89
Vel Total (ft/s)	2.23	Avg. Vel. (ft/s)	0.94	2.32	0.94
Max Chl Dpth (ft)	1.68	Hydr. Depth (ft)	0.34	1.32	0.34
Conv. Total (cfs)	54129.5	Conv. (cfs)	482.5	52639.2	1007.8
Length Wtd. (ft)	1138.71	Wetted Per. (ft)	65.07	734.00	135.89
Min Ch El (ft)	3425.00	Shear (lb/sq ft)	0.04	0.15	0.04
Alpha	1.06	Stream Power (lb/ft s)	0.04	0.35	0.04
Frctn Loss (ft)	4.98	Cum Volume (acre-ft)	18.81	60.83	2.24
C & E Loss (ft)	0.03	Cum SA (acres)	19.82	54.34	2.45

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3427.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3427.67	Reach Len. (ft)	1199.00	1142.00	713.00
Crit W.S. (ft)	3426.76	Flow Area (sq ft)	134.09	1699.80	280.05
E.G. Slope (ft/ft)	0.002084	Area (sq ft)	134.09	1699.80	280.05
Q Total (cfs)	6871.00	Flow (cfs)	244.53	6115.75	510.72
Top Width (ft)	1229.57	Top Width (ft)	160.45	734.00	335.11

FloodPlain.rep

Vel Total (ft/s)	3.25	Avg. Vel. (ft/s)	1.82	3.60	1.82
Max Chl Dpth (ft)	2.67	Hydr. Depth (ft)	0.84	2.32	0.84
Conv. Total (cfs)	150515.5	Conv. (cfs)	5356.6	133971.0	11187.9
Length Wtd. (ft)	1129.64	Wetted Per. (ft)	160.46	734.00	335.12
Min Ch El (ft)	3425.00	Shear (lb/sq ft)	0.11	0.30	0.11
Alpha	1.13	Stream Power (lb/ft s)	0.20	1.08	0.20
Frctn Loss (ft)	5.04	Cum Volume (acre-ft)	41.60	116.87	5.98
C & E Loss (ft)	0.04	Cum SA (acres)	31.52	65.61	5.98

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 4221

INPUT

Description: Sta. 4221

Station Elevation Data		num= 12									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3423	341	3422	544	3421	640	3420	669	3420		
753	3420.2	829	3420	837	3420	1030	3421	1320	3422		
1407	3423	1497	3424								

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	544	.033	1407	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	544	1407		749	732	843	.1 .3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3421.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3421.33	Reach Len. (ft)	749.00	732.00	843.00
Crit W.S. (ft)	3421.33	Flow Area (sq ft)	10.98	501.01	
E.G. Slope (ft/ft)	0.016273	Area (sq ft)	10.98	501.01	
Q Total (cfs)	2625.00	Flow (cfs)	18.92	2606.08	
Top Width (ft)	648.13	Top Width (ft)	66.76	581.37	
Vel Total (ft/s)	5.13	Avg. Vel. (ft/s)	1.72	5.20	
Max Chl Dpth (ft)	1.33	Hydr. Depth (ft)	0.16	0.86	

FloodPlain.rep

Conv. Total (cfs)	20577.6	Conv. (cfs)	148.3	20429.3	
Length Wtd. (ft)	737.09	Wetted Per. (ft)	66.76	581.38	
Min Ch El (ft)	3420.00	Shear (lb/sq ft)	0.17	0.88	
Alpha	1.02	Stream Power (lb/ft s)	0.29	4.55	
Frctn Loss (ft)	3.54	Cum Volume (acre-ft)	18.36	41.55	1.86
C & E Loss (ft)	0.10	Cum SA (acres)	18.01	37.09	1.33

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3422.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.62	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3422.16	Reach Len. (ft)	749.00	732.00	843.00
Crit W.S. (ft)	3422.16	Flow Area (sq ft)	136.87	1081.13	
E.G. Slope (ft/ft)	0.013513	Area (sq ft)	136.87	1081.13	
Q Total (cfs)	7467.00	Flow (cfs)	490.80	6976.20	
Top Width (ft)	1031.21	Top Width (ft)	241.36	789.85	
Vel Total (ft/s)	6.13	Avg. Vel. (ft/s)	3.59	6.45	
Max Chl Dpth (ft)	2.16	Hydr. Depth (ft)	0.57	1.37	
Conv. Total (cfs)	64234.9	Conv. (cfs)	4222.1	60012.8	
Length Wtd. (ft)	737.83	Wetted Per. (ft)	241.37	789.86	
Min Ch El (ft)	3420.00	Shear (lb/sq ft)	0.48	1.15	
Alpha	1.06	Stream Power (lb/ft s)	1.72	7.45	
Frctn Loss (ft)	3.77	Cum Volume (acre-ft)	37.87	80.41	3.68
C & E Loss (ft)	0.12	Cum SA (acres)	25.99	45.64	3.24

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program selected the water surface that had the least amount of error between computed and assumed values.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 3489

INPUT

Description: Sta. 3489

Station Elevation Data		num= 22									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-286	3420	-138	3418.5	-126	3418	-104	3416	-91	3415.5		
-76	3416	-21	3417	100	3417	258	3416.5	299	3416		
309	3415	318	3416	405	3416	422	3416	539	3416.4		
581	3416.2	642	3416.4	744	3416	830	3416	918	3418		
1068	3420	1159	3421								

Manning's n Values

num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-286	.033	539	.033	918	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	539	918		464 500	457	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3417.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3417.51	Reach Len. (ft)	464.00	500.00	457.00
Crit W.S. (ft)	3416.93	Flow Area (sq ft)	698.04	437.59	
E.G. Slope (ft/ft)	0.002263	Area (sq ft)	698.04	437.59	
Q Total (cfs)	2625.00	Flow (cfs)	1552.31	1072.69	
Top Width (ft)	1016.94	Top Width (ft)	659.59	357.35	
Vel Total (ft/s)	2.31	Avg. Vel. (ft/s)	2.22	2.45	
Max Chl Dpth (ft)	2.51	Hydr. Depth (ft)	1.06	1.22	
Conv. Total (cfs)	55186.5	Conv. (cfs)	32634.8	22551.7	

Length Wtd. (ft)	481.39	FloodPlain.rep Wetted Per. (ft)	659.79	357.37	
Min Ch El (ft)	3416.00	Shear (lb/sq ft)	0.15	0.17	
Alpha	1.01	Stream Power (lb/ft s)	0.33	0.42	
Frctn Loss (ft)	2.38	Cum Volume (acre-ft)	12.26	33.66	1.86
C & E Loss (ft)	0.03	Cum SA (acres)	11.77	29.21	1.33

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3418.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3418.39	Reach Len. (ft)	464.00	500.00	457.00
Crit W.S. (ft)	3417.57	Flow Area (sq ft)	1287.92	768.15	5.83
E.G. Slope (ft/ft)	0.002662	Area (sq ft)	1287.92	768.15	5.83
Q Total (cfs)	7467.00	Flow (cfs)	4604.42	2858.00	4.59
Top Width (ft)	1083.03	Top Width (ft)	674.46	379.00	29.57
Vel Total (ft/s)	3.62	Avg. Vel. (ft/s)	3.58	3.72	0.79
Max Chl Dpth (ft)	3.39	Hydr. Depth (ft)	1.91	2.03	0.20
Conv. Total (cfs)	144720.1	Conv. (cfs)	89239.5	55391.6	88.9
Length Wtd. (ft)	480.96	Wetted Per. (ft)	674.70	379.02	29.57
Min Ch El (ft)	3416.00	Shear (lb/sq ft)	0.32	0.34	0.03
Alpha	1.00	Stream Power (lb/ft s)	1.13	1.25	0.03
Frctn Loss (ft)	2.33	Cum Volume (acre-ft)	25.62	64.87	3.63
C & E Loss (ft)	0.04	Cum SA (acres)	18.12	35.82	2.95

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 2989

FloodPlain.rep

INPUT

Description: Sta. 2989

Station Elevation Data		num= 14							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-31	3416	59	3414.8	170	3414.8	196	3414	436	3413.8
613	3414	651	3414	700	3414	747	3414	761	3414
841	3415.01	920	3416	976	3418	1067	3420		

Manning's n Values

num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-31	.033	436	.033	841	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	436	841		317 215	172	.3	.5

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3415.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3414.77	Reach Len. (ft)	317.00	215.00	172.00
Crit W.S. (ft)	3414.77	Flow Area (sq ft)	218.56	291.62	
E.G. Slope (ft/ft)	0.018036	Area (sq ft)	218.56	291.62	
Q Total (cfs)	2625.00	Flow (cfs)	1162.24	1462.76	
Top Width (ft)	651.07	Top Width (ft)	265.04	386.03	
Vel Total (ft/s)	5.15	Avg. Vel. (ft/s)	5.32	5.02	
Max Chl Dpth (ft)	0.97	Hydr. Depth (ft)	0.82	0.76	
Conv. Total (cfs)	19545.9	Conv. (cfs)	8654.1	10891.8	
Length Wtd. (ft)	256.34	Wetted Per. (ft)	265.05	386.03	
Min Ch El (ft)	3413.80	Shear (lb/sq ft)	0.93	0.85	
Alpha	1.00	Stream Power (lb/ft s)	4.94	4.27	
Frictn Loss (ft)	0.39	Cum Volume (acre-ft)	7.38	29.47	1.86
C & E Loss (ft)	0.17	Cum SA (acres)	6.84	24.94	1.33

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program selected the water surface that had the least amount of error between computed and assumed values.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

th.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3416.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3415.64	Reach Len. (ft)	317.00	215.00	172.00
Crit W.S. (ft)	3415.55	Flow Area (sq ft)	568.08	640.17	15.67
E.G. Slope (ft/ft)	0.011451	Area (sq ft)	568.08	640.17	15.67
Q Total (cfs)	7467.00	Flow (cfs)	3246.66	4185.51	34.83
Top Width (ft)	894.76	Top Width (ft)	439.75	405.00	50.01
Vel Total (ft/s)	6.10	Avg. Vel. (ft/s)	5.72	6.54	2.22
Max Chl Dpth (ft)	1.84	Hydr. Depth (ft)	1.29	1.58	0.31
Conv. Total (cfs)	69779.2	Conv. (cfs)	30340.1	39113.6	325.5
Length Wtd. (ft)	263.12	Wetted Per. (ft)	439.77	405.01	50.01
Min Ch El (ft)	3413.80	Shear (lb/sq ft)	0.92	1.13	0.22
Alpha	1.03	Stream Power (lb/ft s)	5.28	7.39	0.50
Frctn Loss (ft)	0.71	Cum Volume (acre-ft)	15.73	56.79	3.52
C & E Loss (ft)	0.21	Cum SA (acres)	12.18	31.32	2.54

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 2774

INPUT

Description: Sta. 2774 Upstream of culverts

Station Elevation Data		num= 18		Sta Elev		Sta Elev		Sta Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-453	3416	-437	3415	-405	3414	-289	3413.8	-13	3413.8
100	3413.8	175	3413.8	204	3412	261	3412	298	3411.2
402	3410.9	437	3410	469	3409	491	3409	511	3410
560	3412	641	3414	725	3416				

Manning's n Values		num= 3		Sta n Val	
Sta	n Val	Sta	n Val	Sta	n Val
-453	.033	437	.033	511	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	437	511		40	40	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-888	F		
888	F		

CROSS SECTION OUTPUT

Profile #PF 2

E.G. Elev (ft)	3414.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3414.27	Reach Len. (ft)	40.00	40.00	40.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	1000.73	364.16	264.98
E.G. Slope (ft/ft)	0.000514	Area (sq ft)	1000.73	364.16	264.98
Q Total (cfs)	2625.00	Flow (cfs)	1138.58	1075.38	411.03
Top Width (ft)	1066.16	Top Width (ft)	850.72	74.00	141.44
Vel Total (ft/s)	1.61	Avg. Vel. (ft/s)	1.14	2.95	1.55
Max Chl Dpth (ft)	5.27	Hydr. Depth (ft)	1.18	4.92	1.87
Conv. Total (cfs)	115759.9	Conv. (cfs)	50210.4	47423.4	18126.1
Length Wtd. (ft)	40.00	Wetted Per. (ft)	850.80	74.04	141.51
Min Ch El (ft)	3409.00	Shear (lb/sq ft)	0.04	0.16	0.06
Alpha	1.74	Stream Power (lb/ft s)	0.04	0.47	0.09
Frctn Loss (ft)		Cum Volume (acre-ft)	2.95	27.86	1.34
C & E Loss (ft)		Cum SA (acres)	2.78	23.80	1.05

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT

Profile #PF 3

E.G. Elev (ft)	3415.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3415.13	Reach Len. (ft)	40.00	40.00	40.00
Crit W.S. (ft)	3413.50	Flow Area (sq ft)	1742.86	427.70	401.91
E.G. Slope (ft/ft)	0.001181	Area (sq ft)	1742.86	427.70	401.91
Q Total (cfs)	7467.00	Flow (cfs)	4264.79	2130.35	1071.87
Top Width (ft)	1127.60	Top Width (ft)	876.10	74.00	177.51
Vel Total (ft/s)	2.90	Avg. Vel. (ft/s)	2.45	4.98	2.67
Max Chl Dpth (ft)	6.13	Hydr. Depth (ft)	1.99	5.78	2.26
Conv. Total (cfs)	217319.5	Conv. (cfs)	124122.4	62001.6	31195.6
Length Wtd. (ft)	40.00	Wetted Per. (ft)	876.19	74.04	177.59

Min Ch El (ft)	3409.00	FloodPlain.rep Shear (lb/sq ft)	0.15	0.43	0.17
Alpha	1.37	Stream Power (lb/ft s)	0.36	2.12	0.44
Frctn Loss (ft)		Cum Volume (acre-ft)	7.32	54.16	2.69
C & E Loss (ft)		Cum SA (acres)	7.40	30.13	2.09

Warning: The cross section had to be extended vertically during the critical depth calculations.

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CULVERT RIVER: Ditch A
REACH: 5 RS: 2773

INPUT

Description:

Distance from Upstream XS = 8

Deck/Roadway Width = 24

Weir Coefficient = 3

Upstream Deck/Roadway Coordinates

num=	6								
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
26	3413.8				100	3413.8			
500	3412.8				600	3413.9			
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
402	3412.7				700	3415.7			

Upstream Bridge Cross Section Data

Station	Elevation	Data	num=	18					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-453	3416	-437	3415	-405	3414	-289	3413.8	-13	3413.8
100	3413.8	175	3413.8	204	3412	261	3412	298	3411.2
402	3410.9	437	3410	469	3409	491	3409	511	3410
560	3412	641	3414	725	3416				

Manning's n Values

Sta	n	Val	Sta	n	Val
-453	.033		437	.033	
			511	.033	

Bank	Sta	Left	Right	Coeff	Contr.	Expan.
	437		511	.3		.5

Ineffective Flow

num= 2

Sta L Sta R Elev Permanent

-888 F

888 F

Downstream Deck/Roadway Coordinates

num=	6								
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
26	3413.8				100	3413.8			
500	3412.8				600	3413.9			
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
402	3412.7				700	3415.7			

Downstream Bridge Cross Section Data

Station	Elevation	Data	num=	17					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1721	3416	-1410	3414	26	3413.8	100	3412.4	155	3412
299	3411.4	349	3410	387	3408.9	391.4	3408.9	395.8	3408.9
400.2	3408.9	404.6	3408.9	409	3408.9	434	3410	487	3412
568	3414	658	3416						

Manning's n Values

num= 3

FloodPlain.rep

Sta	n Val	Sta	n Val	Sta	n Val
-1721	.033	349	.033	434	.033

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	349	434		.3	.5

Ineffective Flow	num=	2
Sta L	Sta R	Elev Permanent
-888	F	
888	F	

Upstream Embankment side slope	=	3 horiz. to 1.0 vertical
Downstream Embankment side slope	=	3 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.95
Elevation at which weir flow begins	=	3412.7
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
Culvert #1	Pipe Arch	1.833	2.43
FHWA Chart # 34- 18 inch corner radius; Corrugated metal			
FHWA Scale # 1 - 90 Degree headwall			
Solution Criteria = Highest U.S. EG			
Culvert Upstrm Dist	Length	n Value	Entrance Loss Coef
1	39	.024	.5
			Exit Loss Coef
			1

Number of Barrels =	6
Upstream Elevation =	3409
Centerline Stations	

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
469	473.4	477.8	482.2	486.6	491

Downstream Elevation = 3408.9

Centerline Stations					
Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
387	391.4	395.8	400.2	404.6	409

CROSS SECTION	RIVER: Ditch A
REACH: 5	RS: 2734

INPUT

Description: Sta. 2734 Downstream of culverts

Station	Elevation	Data	num=	17					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1721	3416	-1410	3414	26	3413.8	100	3412.4	155	3412
299	3411.4	349	3410	387	3408.9	391.4	3408.9	395.8	3408.9
400.2	3408.9	404.6	3408.9	409	3408.9	434	3410	487	3412
568	3414	658	3416						

Manning's n Values	num=	3			
Sta	n Val	Sta	n Val	Sta	n Val
-1721	.033	349	.033	434	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	349	434		745	846		.3	.5

Ineffective Flow	num=	2
Sta L	Sta R	Elev Permanent
-888	F	
888	F	

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3413.06	Element	Left OB	Channel	Right OB
----------------	---------	---------	---------	---------	----------

		FloodPlain.rep			
Vel Head (ft)	0.35	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3412.71	Reach Len. (ft)	745.00	846.00	1015.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	275.89	288.99	100.64
E.G. Slope (ft/ft)	0.003071	Area (sq ft)	275.89	288.99	100.64
Q Total (cfs)	2625.00	Flow (cfs)	706.59	1629.89	288.53
Top Width (ft)	431.91	Top Width (ft)	265.26	85.00	81.65
Vel Total (ft/s)	3.94	Avg. Vel. (ft/s)	2.56	5.64	2.87
Max Chl Dpth (ft)	3.81	Hydr. Depth (ft)	1.04	3.40	1.23
Conv. Total (cfs)	47371.8	Conv. (cfs)	12751.3	29413.6	5206.9
Length Wtd. (ft)	841.72	Wetted Per. (ft)	265.28	85.04	81.70
Min Ch El (ft)	3408.90	Shear (lb/sq ft)	0.20	0.65	0.24
Alpha	1.44	Stream Power (lb/ft s)	0.51	3.67	0.68
Frctn Loss (ft)	2.45	Cum Volume (acre-ft)	2.36	27.56	1.17
C & E Loss (ft)	0.12	Cum SA (acres)	2.27	23.73	0.95

Warning: The energy equation could not be balanced within the specified number of iterations.
The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3414.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.93	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3413.64	Reach Len. (ft)	745.00	846.00	1015.00
Crit W.S. (ft)	3413.58	Flow Area (sq ft)	545.49	368.06	194.11
E.G. Slope (ft/ft)	0.006651	Area (sq ft)	545.49	368.06	194.11
Q Total (cfs)	7467.00	Flow (cfs)	2891.92	3589.49	985.59
Top Width (ft)	518.75	Top Width (ft)	314.42	85.00	119.33

Vel Total (ft/s)	6.74	FloodPlain.rep Avg. Vel. (ft/s)	5.30	9.75	5.08
Max Chl Dpth (ft)	4.74	Hydr. Depth (ft)	1.73	4.33	1.63
Conv. Total (cfs)	91560.7	Conv. (cfs)	35460.9	44014.4	12085.4
Length Wtd. (ft)	836.58	Wetted Per. (ft)	314.45	85.04	119.38
Min Ch El (ft)	3408.90	Shear (lb/sq ft)	0.72	1.80	0.68
Alpha	1.32	Stream Power (lb/ft s)	3.82	17.53	3.43
Frctn Loss (ft)	3.45	Cum Volume (acre-ft)	6.27	53.79	2.42
C & E Loss (ft)	0.37	Cum SA (acres)	6.85	30.06	1.95

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 1888

INPUT

Description: Sta. 1888

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-775	3412	-41	3410	81	3410	100	3410.2	110	3410
331	3408	532	3408	690	3408	1180	3410	1268	3412

Sta	n Val	Sta	n Val	Sta	n Val
-775	.033	100	.033	1180	.033

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
100	1180	305	828	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3409.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.033	
W.S. Elev (ft)	3409.62	Reach Len. (ft)	305.00	828.00	980.00
Crit W.S. (ft)	3409.00	Flow Area (sq ft)		1042.93	
E.G. Slope (ft/ft)	0.002763	Area (sq ft)		1042.93	
Q Total (cfs)	2659.00	Flow (cfs)		2659.00	
Top Width (ft)	932.96	Top Width (ft)		932.96	
Vel Total (ft/s)	2.55	Avg. Vel. (ft/s)		2.55	

Max Chl Dpth (ft)	1.61	FloodPlain.rep Hydr. Depth (ft)	1.12
Conv. Total (cfs)	50582.2	Conv. (cfs)	50582.2
Length Wtd. (ft)	828.00	Wetted Per. (ft)	932.97
Min Ch El (ft)	3408.00	Shear (lb/sq ft)	0.19
Alpha	1.00	Stream Power (lb/ft s)	0.49
Frctn Loss (ft)	4.70	Cum Volume (acre-ft)	14.62
C & E Loss (ft)	0.04	Cum SA (acres)	13.85

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3410.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3410.56	Reach Len. (ft)	305.00	828.00	980.00
Crit W.S. (ft)		Flow Area (sq ft)	133.44	2029.17	6.82
E.G. Slope (ft/ft)	0.002811	Area (sq ft)	133.44	2029.17	6.82
Q Total (cfs)	7552.00	Flow (cfs)	169.03	7376.04	6.94
Top Width (ft)	1449.78	Top Width (ft)	345.29	1080.00	24.49
Vel Total (ft/s)	3.48	Avg. Vel. (ft/s)	1.27	3.63	1.02
Max Chl Dpth (ft)	2.56	Hydr. Depth (ft)	0.39	1.88	0.28
Conv. Total (cfs)	142439.9	Conv. (cfs)	3188.0	139121.0	130.8
Length Wtd. (ft)	822.31	Wetted Per. (ft)	345.29	1080.02	24.50
Min Ch El (ft)	3408.00	Shear (lb/sq ft)	0.07	0.33	0.05
Alpha	1.07	Stream Power (lb/ft s)	0.09	1.20	0.05
Frctn Loss (ft)	4.54	Cum Volume (acre-ft)	0.47	30.51	0.08
C & E Loss (ft)	0.05	Cum SA (acres)	1.21	18.75	0.28

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

FloodPlain.rep

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 1060

INPUT

Description: Sta. 1060

Station Elevation Data		num= 6	
Sta	Elev	Sta	Elev
100	3408	394	3406
1523	3406		

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
100	.033	394	.033
		1523	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	394	1523		60	60	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3404.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.		0.033	
W.S. Elev (ft)	3404.49	Reach Len. (ft)			
Crit W.S. (ft)	3404.49	Flow Area (sq ft)		495.53	
E.G. Slope (ft/ft)	0.016639	Area (sq ft)		495.53	
Q Total (cfs)	2773.00	Flow (cfs)		2773.00	
Top Width (ft)	523.95	Top Width (ft)		523.95	
Vel Total (ft/s)	5.60	Avg. Vel. (ft/s)		5.60	
Max Chl Dpth (ft)	1.79	Hydr. Depth (ft)		0.95	
Conv. Total (cfs)	21497.7	Conv. (cfs)		21497.7	
Length Wtd. (ft)		Wetted Per. (ft)		523.96	
Min Ch El (ft)	3402.70	Shear (lb/sq ft)		0.98	
Alpha	1.00	Stream Power (lb/ft s)		5.50	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3406.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.68	Wt. n-Val.		0.033	
W.S. Elev (ft)	3405.49	Reach Len. (ft)			

FloodPlain.rep

Crit W.S. (ft)	3405.49	Flow Area (sq ft)	1181.30
E.G. Slope (ft/ft)	0.014796	Area (sq ft)	1181.30
Q Total (cfs)	7799.00	Flow (cfs)	7799.00
Top Width (ft)	892.60	Top Width (ft)	892.60
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)	6.60
Max Chl Dpth (ft)	2.79	Hydr. Depth (ft)	1.32
Conv. Total (cfs)	64116.4	Conv. (cfs)	64116.4
Length Wtd. (ft)		Wetted Per. (ft)	892.62
Min Ch El (ft)	3402.70	Shear (lb/sq ft)	1.22
Alpha	1.00	Stream Power (lb/ft s)	8.07
Frctn Loss (ft)		Cum Volume (acre-ft)	
C & E Loss (ft)		Cum SA (acres)	

SUMMARY OF MANNING'S N VALUES

River:Ditch A

Reach	River Sta.	n1	n2	n3
5	12674	.033	.033	.033
5	11337	.033	.033	.033
5	10937	.033	.033	.033
5	10288	.033	.033	.033
5	9690	.033	.033	.033
5	9009	.033	.033	.033
5	8130	.033	.033	.033
5	7717	.033	.033	.033
5	7253	.033	.033	.033
5	6343	.033	.033	.033
5	5363	.033	.033	.033
5	4221	.033	.033	.033
5	3489	.033	.033	.033
5	2989	.033	.033	.033
5	2774	.033	.033	.033
5	2773	Culvert		
5	2734	.033	.033	.033
5	1888	.033	.033	.033
5	1060	.033	.033	.033

SUMMARY OF REACH LENGTHS

River: Ditch A

Reach	River Sta.	Left	Channel	Right
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FloodPlain.rep				
5	12674	1206	1337	1433
5	11337	545	400	332
5	10937	729	649	445
5	10288	552	598	633
5	9690	639	681	658
5	9009	898	879	794
5	8130	399	413	456
5	7717	444	464	510
5	7253	756	910	980
5	6343	767	980	1051
5	5363	1199	1142	713
5	4221	749	732	843
5	3489	464	500	457
5	2989	317	215	172
5	2774	40	40	40
5	2773	Culvert		
5	2734	745	846	1015
5	1888	305	828	980
5	1060	60	60	60

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Ditch A

Reach	River Sta.	Contr.	Expan.
5	12674	.1	.3
5	11337	.1	.3
5	10937	.1	.3
5	10288	.1	.3
5	9690	.1	.3
5	9009	.1	.3
5	8130	.1	.3
5	7717	.1	.3
5	7253	.1	.3
5	6343	.1	.3
5	5363	.1	.3
5	4221	.1	.3
5	3489	.1	.3
5	2989	.3	.5
5	2774	.3	.5
5	2773	Culvert	
5	2734	.3	.5
5	1888	.1	.3
5	1060	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. S
lope	Vel Chnl	Flow Area	Top Width	Froude #	Chl		
(ft)	(ft/s)	(sq ft)	(ft)	(cfs)	(ft)	(ft)	(ft)
5	12674	818.00	3477.00	3478.64	3478.18	3478.75	0.00
3030	2.70	317.98	340.14	0.45			
5	12674	1833.00	3477.00	3479.26	3478.68	3479.45	0.00
3127	3.66	552.32	421.93	0.49			

FloodPlain.rep								
5		11337	818.00	3469.00	3470.67	3470.66	3471.20	0.01
3821	5.89	144.35	143.25	0.96				
5		11337	1833.00	3469.00	3471.45	3471.45	3472.25	0.01
1178	7.43	268.14	175.84	0.94				
5		10937	818.00	3464.00	3466.11	3465.94	3466.48	0.00
9957	4.88	167.94	152.46	0.81				
5		10937	1833.00	3464.00	3466.73	3466.71	3467.44	0.01
2731	6.81	275.16	197.77	0.96				
5		10288	818.00	3456.00	3457.15	3457.15	3457.41	0.02
0844	4.08	200.26	402.08	1.02				
5		10288	1833.00	3456.00	3457.54	3457.52	3457.92	0.01
6736	4.94	370.76	474.18	0.99				
5		9690	1032.00	3450.00	3451.81	3451.40	3451.94	0.00
4888	2.97	347.12	378.22	0.55				
5		9690	2662.00	3450.00	3452.41	3452.06	3452.72	0.00
6092	4.45	606.86	474.74	0.66				
5		9009	1032.00	3445.00	3446.77	3446.64	3447.04	0.01
1604	4.19	246.48	307.32	0.82				
5		9009	2662.00	3445.00	3447.61		3447.94	0.00
8169	4.59	580.42	485.14	0.74				
5		8130	1032.00	3440.00	3441.91	3441.38	3442.01	0.00
3348	2.56	402.94	413.44	0.46				
5		8130	2662.00	3440.00	3442.51	3442.02	3442.76	0.00
4426	3.98	680.41	499.24	0.57				
5		7717	1032.00	3437.80	3438.91	3438.91	3439.25	0.01
8684	4.70	219.43	328.51	1.01				
5		7717	2662.00	3437.80	3439.69	3439.52	3440.08	0.01
0227	5.00	532.79	463.57	0.82				
5		7253	1201.00	3435.00	3436.66	3436.07	3436.73	0.00
1800	2.11	581.61	548.75	0.35				
5		7253	5170.00	3435.00	3437.80	3437.02	3438.08	0.00
3027	4.32	1273.39	663.98	0.50				
5		6343	2315.00	3430.00	3430.98	3430.98	3431.38	0.01
7106	5.08	455.52	568.22	1.00				
5		6343	6871.00	3430.00	3431.88	3431.88	3432.58	0.01
2467	6.75	1045.07	836.71	0.95				
5		5363	2315.00	3425.00	3426.68	3426.03	3426.76	0.00
1829	2.32	1038.55	934.95	0.36				
5		5363	6871.00	3425.00	3427.67	3426.76	3427.86	0.00
2084	3.60	2113.94	1229.57	0.42				
5		4221	2625.00	3420.00	3421.33	3421.33	3421.75	0.01
6273	5.20	511.99	648.13	0.99				
5		4221	7467.00	3420.00	3422.16	3422.16	3422.78	0.01
3513	6.45	1218.00	1031.21	0.97				

FloodPlain.rep

5		3489		2625.00	3416.00	3417.51	3416.93	3417.59	0.00
2263	2.45	1135.64	1016.94	0.39					
5		3489		7467.00	3416.00	3418.39	3417.57	3418.60	0.00
2662	3.72	2061.90	1083.03	0.46					
5		2989		2625.00	3413.80	3414.77	3414.77	3415.18	0.01
8036	5.02	510.19	651.07	1.02					
5		2989		7467.00	3413.80	3415.64	3415.55	3416.23	0.01
1451	6.54	1223.92	894.76	0.92					
5		2774		2625.00	3409.00	3414.27	3412.71	3414.34	0.00
0514	2.95	1629.88	1066.16	0.23					
5		2774		7467.00	3409.00	3415.13	3413.50	3415.31	0.00
1181	4.98	2572.47	1127.60	0.37					
5		2773		Culvert					
5		2734		2625.00	3408.90	3412.71	3412.71	3413.06	0.00
3071	5.64	665.51	431.91	0.54					
5		2734		7467.00	3408.90	3413.64	3413.58	3414.57	0.00
6651	9.75	1107.66	518.75	0.83					
5		1888		2659.00	3408.00	3409.62	3409.00	3409.72	0.00
2763	2.55	1042.93	932.96	0.42					
5		1888		7552.00	3408.00	3410.56		3410.76	0.00
2811	3.63	2169.43	1449.78	0.47					
5		1060		2773.00	3402.70	3404.49	3404.49	3404.98	0.01
6639	5.60	495.53	523.95	1.01					
5		1060		7799.00	3402.70	3405.49	3405.49	3406.17	0.01
4796	6.60	1181.30	892.60	1.01					

Profile Output Table - Report Standard Table 1

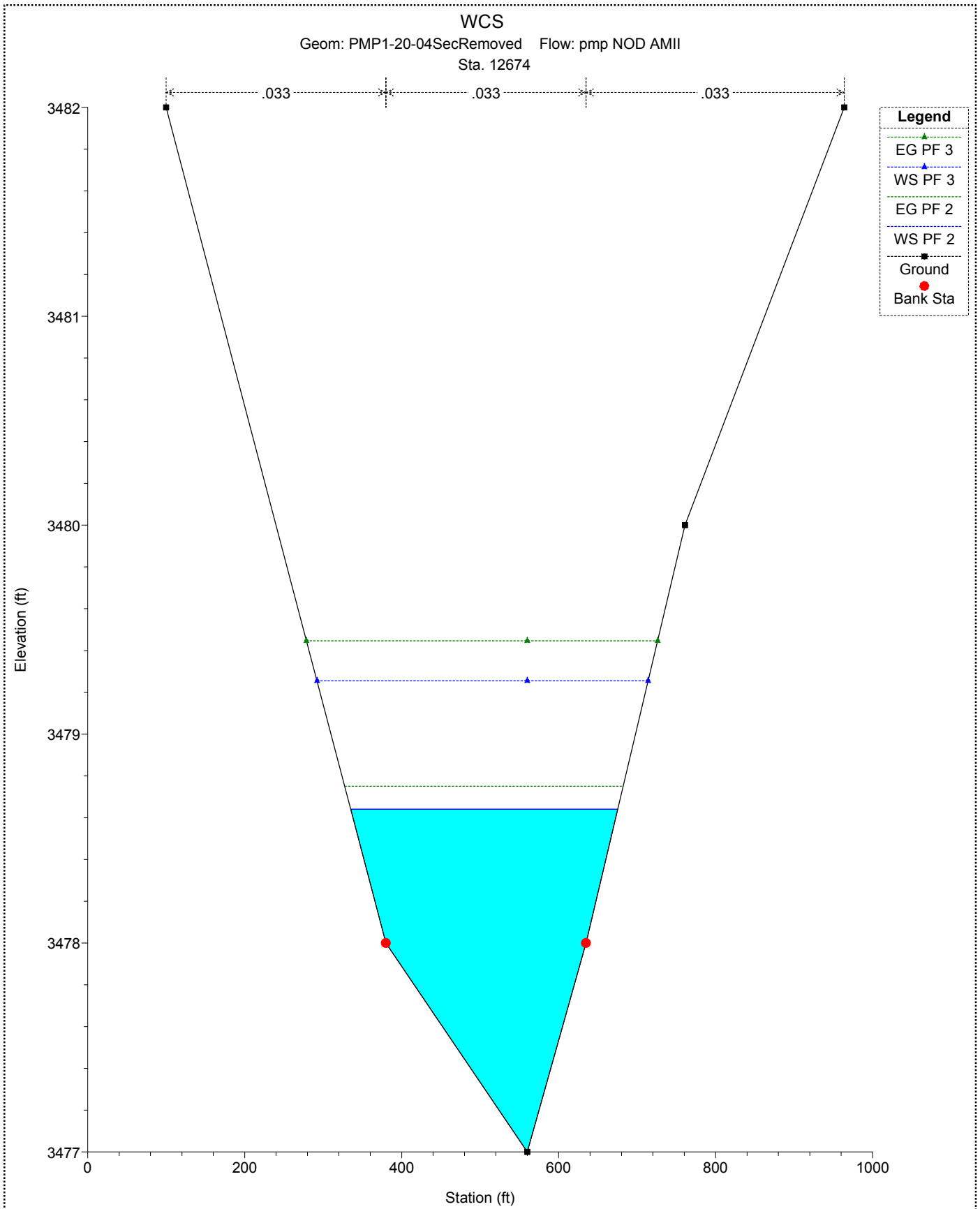
Reach	River Sta		Q Total	Min Ch El	W.S. Elev	Crit W.S.	Max Chl Dpth	E.G
Elev	E.G. Slope	Vel Chnl	Sta W.S. Lft	Sta W.S. Rgt	Flow Area	Top Width	Froude #	Chl
(ft)	(ft/ft)	(ft/s)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)
			(ft)	(ft)	(sq ft)	(ft)		
5	12674		818.00	3477.00	3478.64	3478.18	1.64	3
478.75	0.003030	2.70	335.19	675.33	317.98	340.14		0.45
5	12674		1833.00	3477.00	3479.26	3478.68	2.26	3
479.45	0.003127	3.66	292.14	714.07	552.32	421.93		0.49
5	11337		818.00	3469.00	3470.67	3470.66	1.67	3

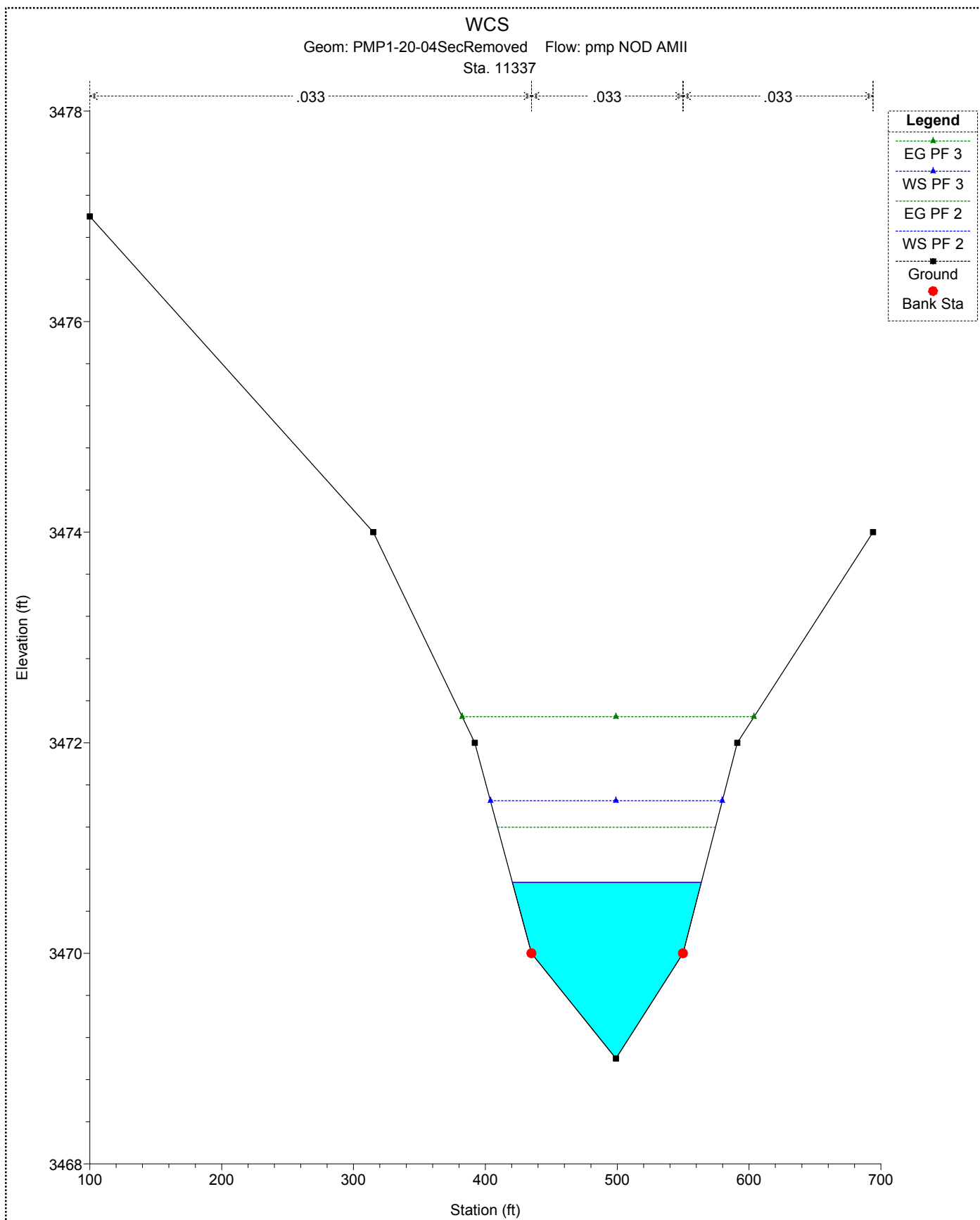
FloodPlain.rep									
471.20	0.013821	5.89	420.54	563.79	144.35	143.25		0.96	
5	11337		1833.00	3469.00	3471.45	3471.45		2.45	3
472.25	0.011178	7.43	403.86	579.69	268.14	175.84		0.94	
5	10937		818.00	3464.00	3466.11	3465.94		2.11	3
466.48	0.009957	4.88	460.77	613.23	167.94	152.46		0.81	
5	10937		1833.00	3464.00	3466.73	3466.71		2.73	3
467.44	0.012731	6.81	438.12	635.88	275.16	197.77		0.96	
5	10288		818.00	3456.00	3457.15	3457.15		1.15	3
457.41	0.020844	4.08	380.58	782.65	200.26	402.08		1.02	
5	10288		1833.00	3456.00	3457.54	3457.52		1.54	3
457.92	0.016736	4.94	342.63	816.81	370.76	474.18		0.99	
5	9690		1032.00	3450.00	3451.81	3451.40		1.81	3
451.94	0.004888	2.97	405.24	783.45	347.12	378.22		0.55	
5	9690		2662.00	3450.00	3452.41	3452.06		2.41	3
452.72	0.006092	4.45	344.33	819.07	606.86	474.74		0.66	
5	9009		1032.00	3445.00	3446.77	3446.64		1.77	3
447.04	0.011604	4.19	427.76	735.08	246.48	307.32		0.82	
5	9009		2662.00	3445.00	3447.61			2.61	3
447.94	0.008169	4.59	357.39	842.54	580.42	485.14		0.74	
5	8130		1032.00	3440.00	3441.91	3441.38		1.91	3
442.01	0.003348	2.56	429.84	843.28	402.94	413.44		0.46	
5	8130		2662.00	3440.00	3442.51	3442.02		2.51	3
442.76	0.004426	3.98	389.33	888.57	680.41	499.24		0.57	
5	7717		1032.00	3437.80	3438.91	3438.91		1.11	3
439.25	0.018684	4.70	314.92	643.43	219.43	328.51		1.01	
5	7717		2662.00	3437.80	3439.69	3439.52		1.89	3
440.08	0.010227	5.00	255.92	719.49	532.79	463.57		0.82	
5	7253		1201.00	3435.00	3436.66	3436.07		1.66	3
436.73	0.001800	2.11	389.96	938.71	581.61	548.75		0.35	

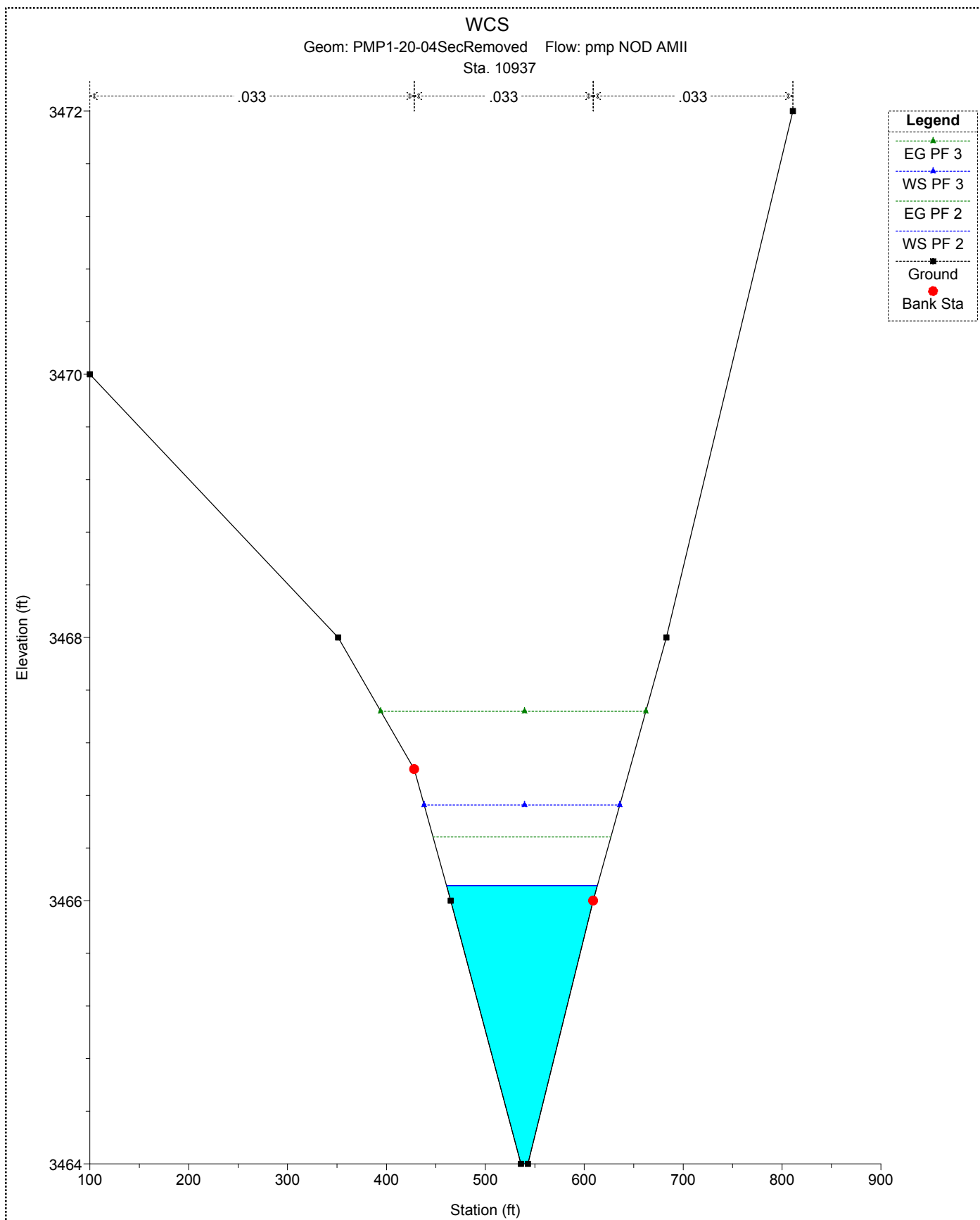
FloodPlain.rep									
5	7253		5170.00	3435.00	3437.80	3437.02	2.80	3	
438.08	0.003027	4.32	331.21	995.19	1273.39	663.98		0.50	
5	6343		2315.00	3430.00	3430.98	3430.98	0.98	3	
431.38	0.017106	5.08	735.44	1303.66	455.52	568.22		1.00	
5	6343		6871.00	3430.00	3431.88	3431.88	1.88	3	
432.58	0.012467	6.75	671.15	1507.86	1045.07	836.71		0.95	
5	5363		2315.00	3425.00	3426.68	3426.03	1.68	3	
426.76	0.001829	2.32	676.94	1611.89	1038.55	934.95		0.36	
5	5363		6871.00	3425.00	3427.67	3426.76	2.67	3	
427.86	0.002084	3.60	581.55	1811.11	2113.94	1229.57		0.42	
5	4221		2625.00	3420.00	3421.33	3421.33	1.33	3	
421.75	0.016273	5.20	477.24	1125.37	511.99	648.13		0.99	
5	4221		7467.00	3420.00	3422.16	3422.16	2.16	3	
422.78	0.013513	6.45	302.64	1333.85	1218.00	1031.21		0.97	
5	3489		2625.00	3416.00	3417.51	3416.93	2.51	3	
417.59	0.002263	2.45	-120.59	896.35	1135.64	1016.94		0.39	
5	3489		7467.00	3416.00	3418.39	3417.57	3.39	3	
418.60	0.002662	3.72	-135.46	947.57	2061.90	1083.03		0.46	
5	2989		2625.00	3413.80	3414.77	3414.77	0.97	3	
415.18	0.018036	5.02	170.96	822.03	510.19	651.07		1.02	
5	2989		7467.00	3413.80	3415.64	3415.55	1.84	3	
416.23	0.011451	6.54	-3.75	891.01	1223.92	894.76		0.92	
5	2774		2625.00	3409.00	3414.27	3412.71	5.27	3	
414.34	0.000514	2.95	-413.72	652.44	1629.88	1066.16		0.23	
5	2774		7467.00	3409.00	3415.13	3413.50	6.13	3	
415.31	0.001181	4.98	-439.10	688.51	2572.47	1127.60		0.37	
5	2773		Culvert						

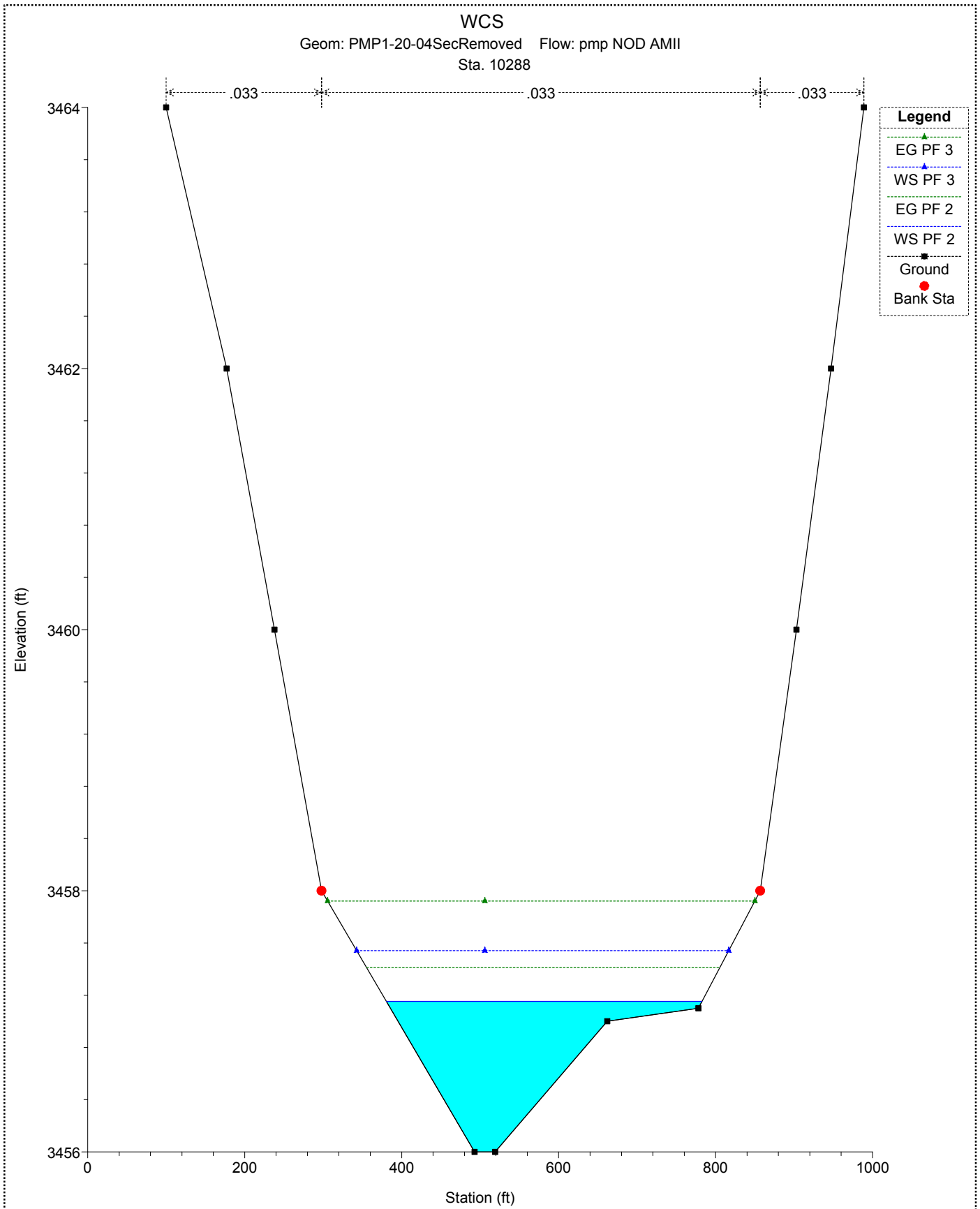
FloodPlain.rep

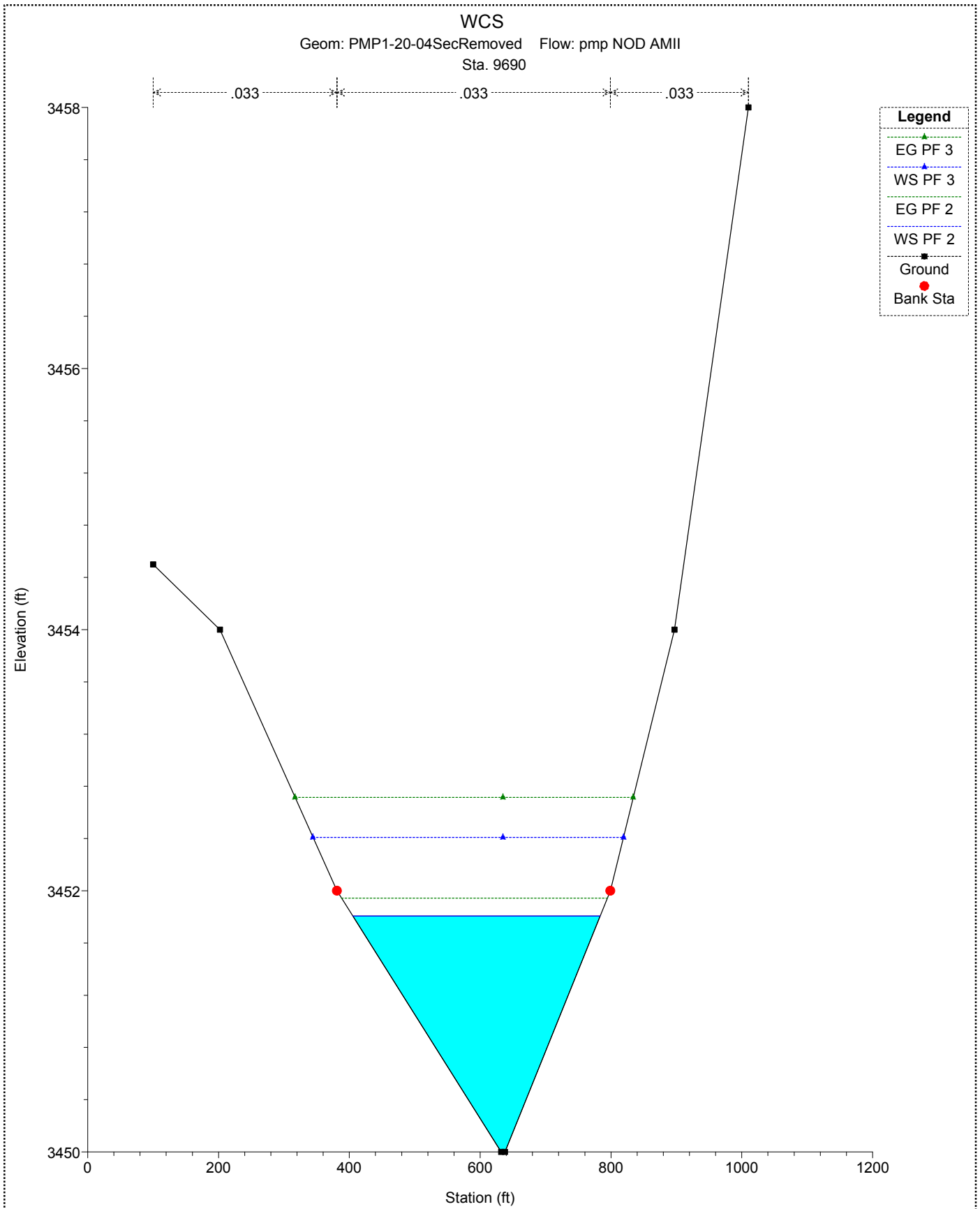
5	2734		2625.00	3408.90	3412.71	3412.71	3.81	3
413.06	0.003071	5.64	83.74	515.65	665.51	431.91	0.54	
5	2734		7467.00	3408.90	3413.64	3413.58	4.74	3
414.57	0.006651	9.75	34.58	553.33	1107.66	518.75	0.83	
5	1888		2659.00	3408.00	3409.62	3409.00	1.61	3
409.72	0.002763	2.55	152.60	1085.55	1042.93	932.96	0.42	
5	1888		7552.00	3408.00	3410.56		2.56	3
410.76	0.002811	3.63	-245.29	1204.49	2169.43	1449.78	0.47	
5	1060		2773.00	3402.70	3404.49	3404.49	1.79	3
404.98	0.016639	5.60	616.07	1140.02	495.53	523.95	1.01	
5	1060		7799.00	3402.70	3405.49	3405.49	2.79	3
406.17	0.014796	6.60	468.88	1361.48	1181.30	892.60	1.01	

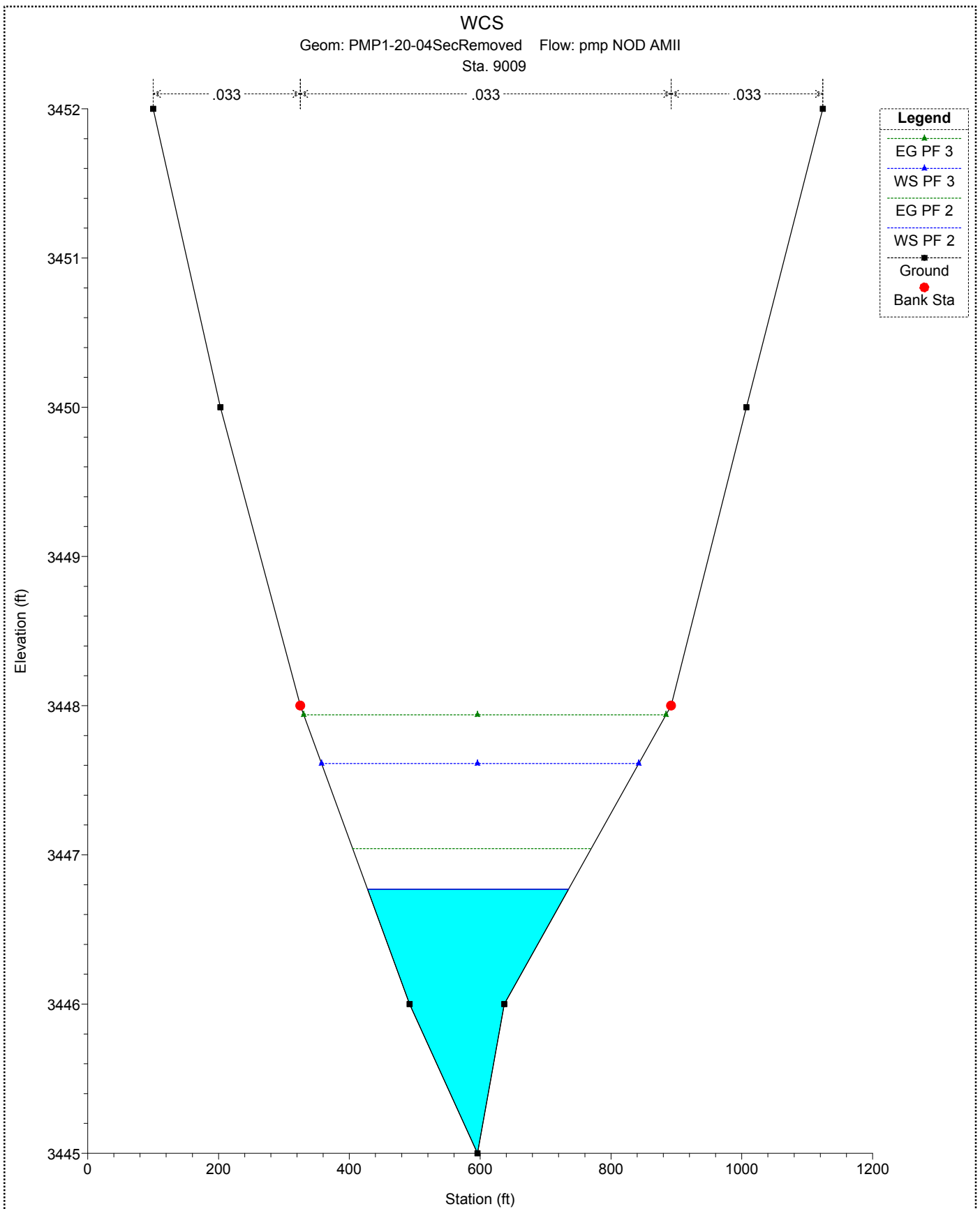


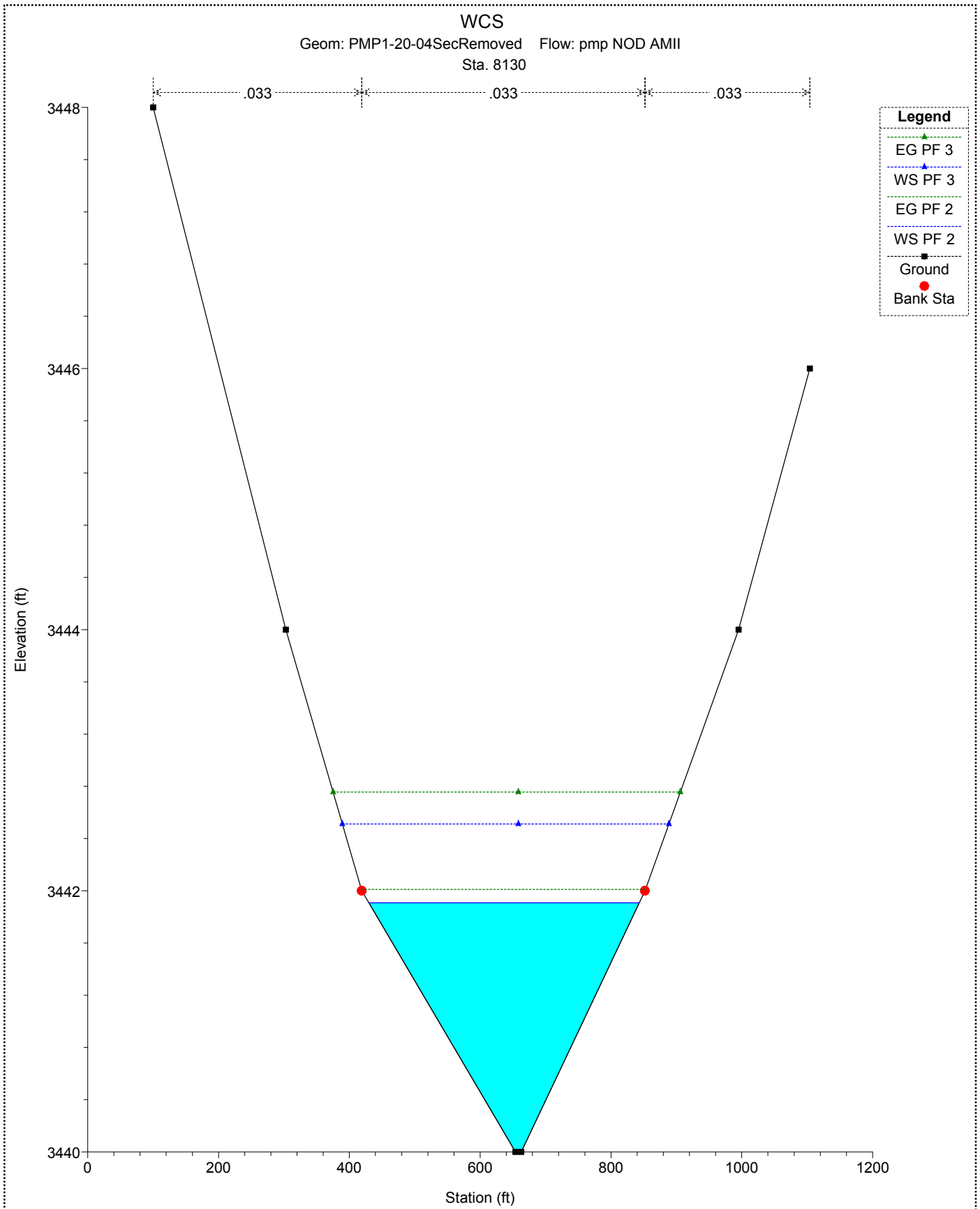


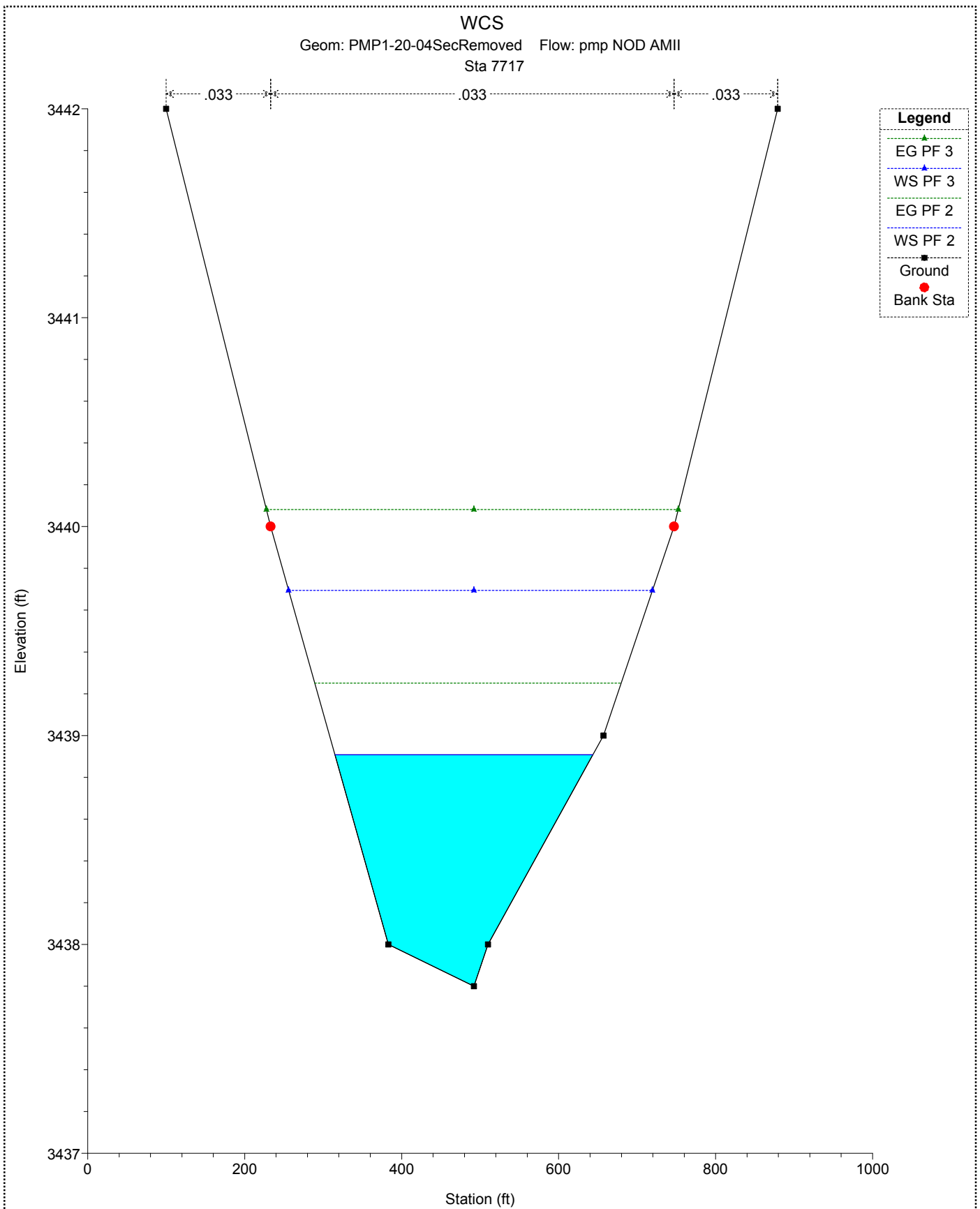


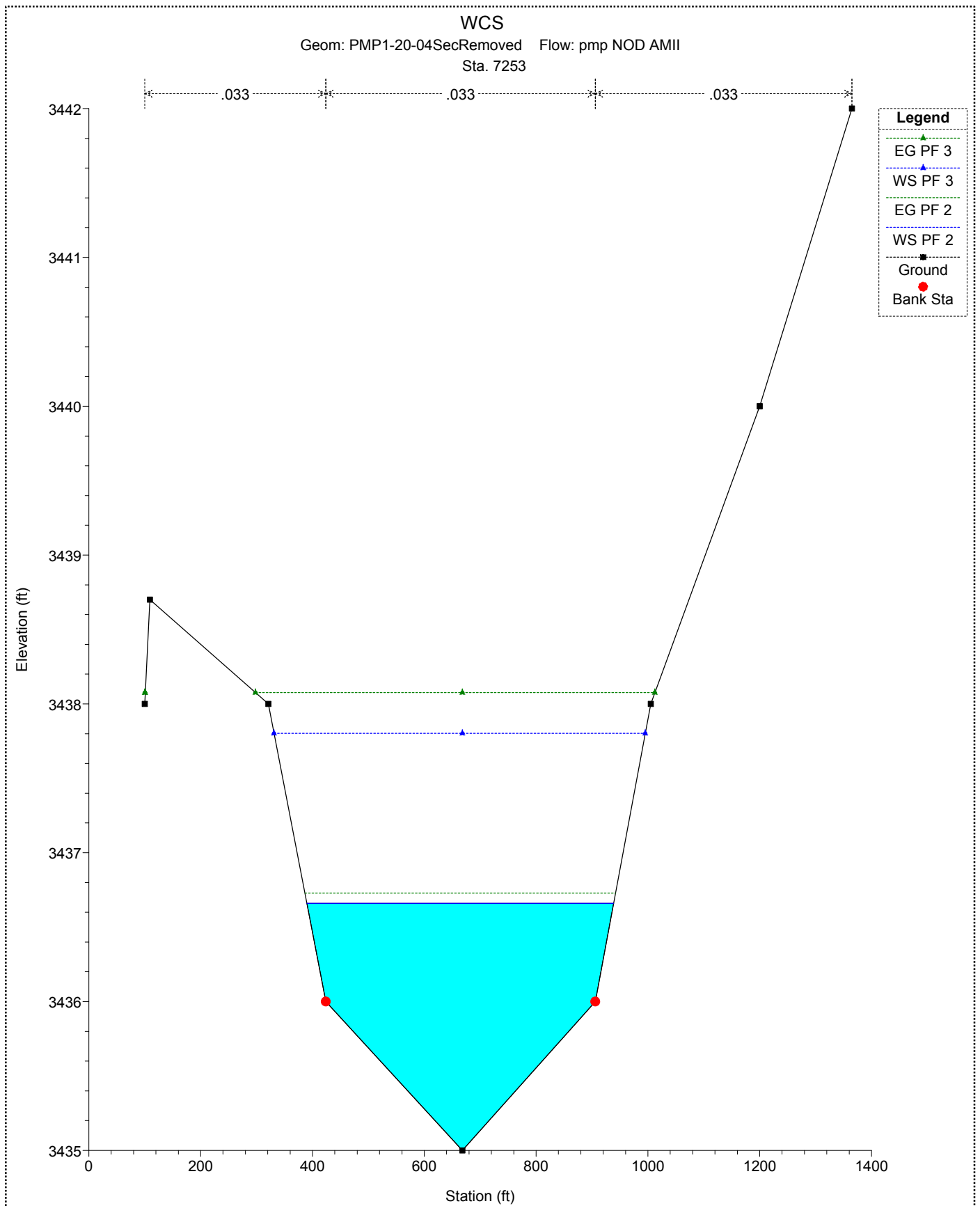


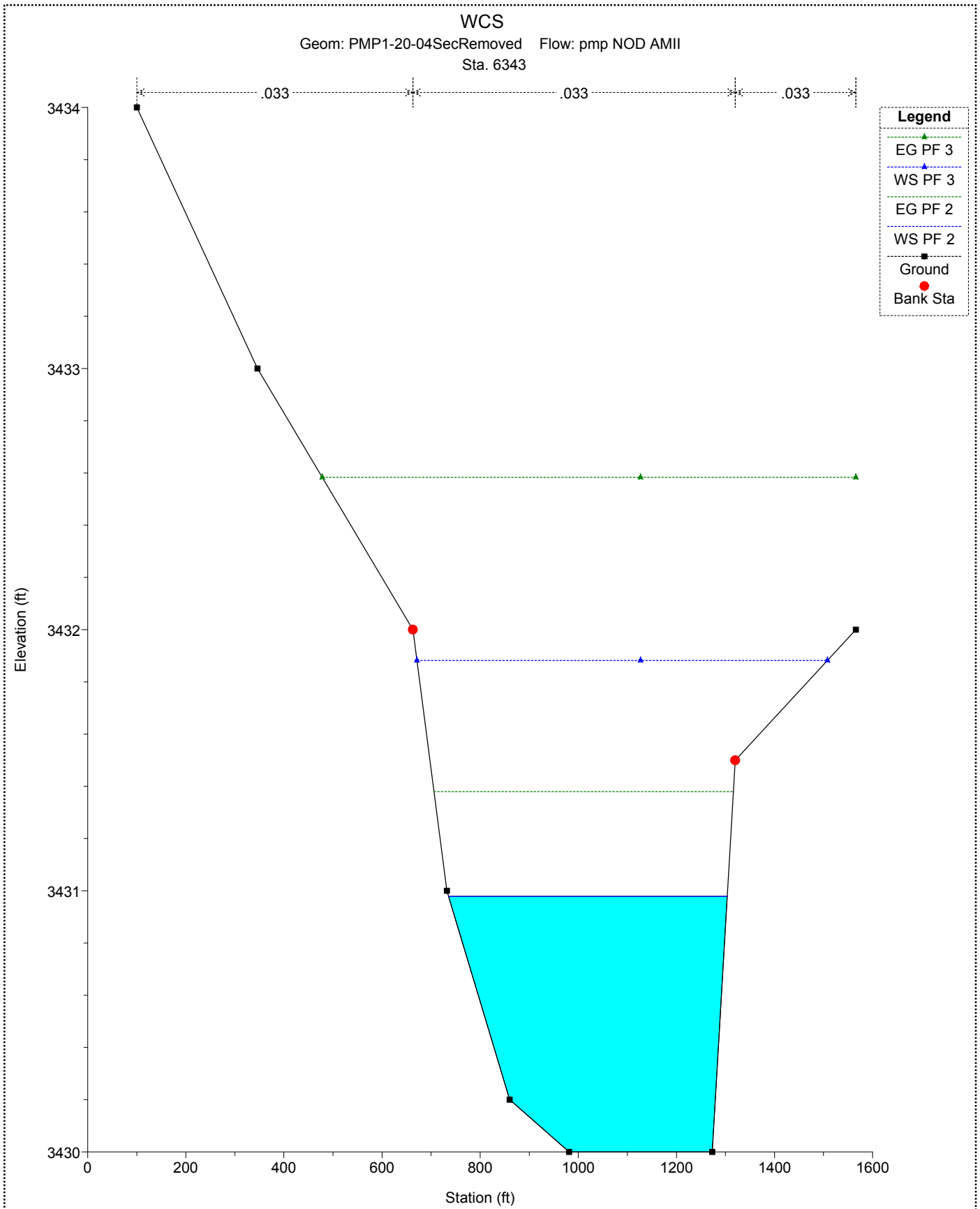


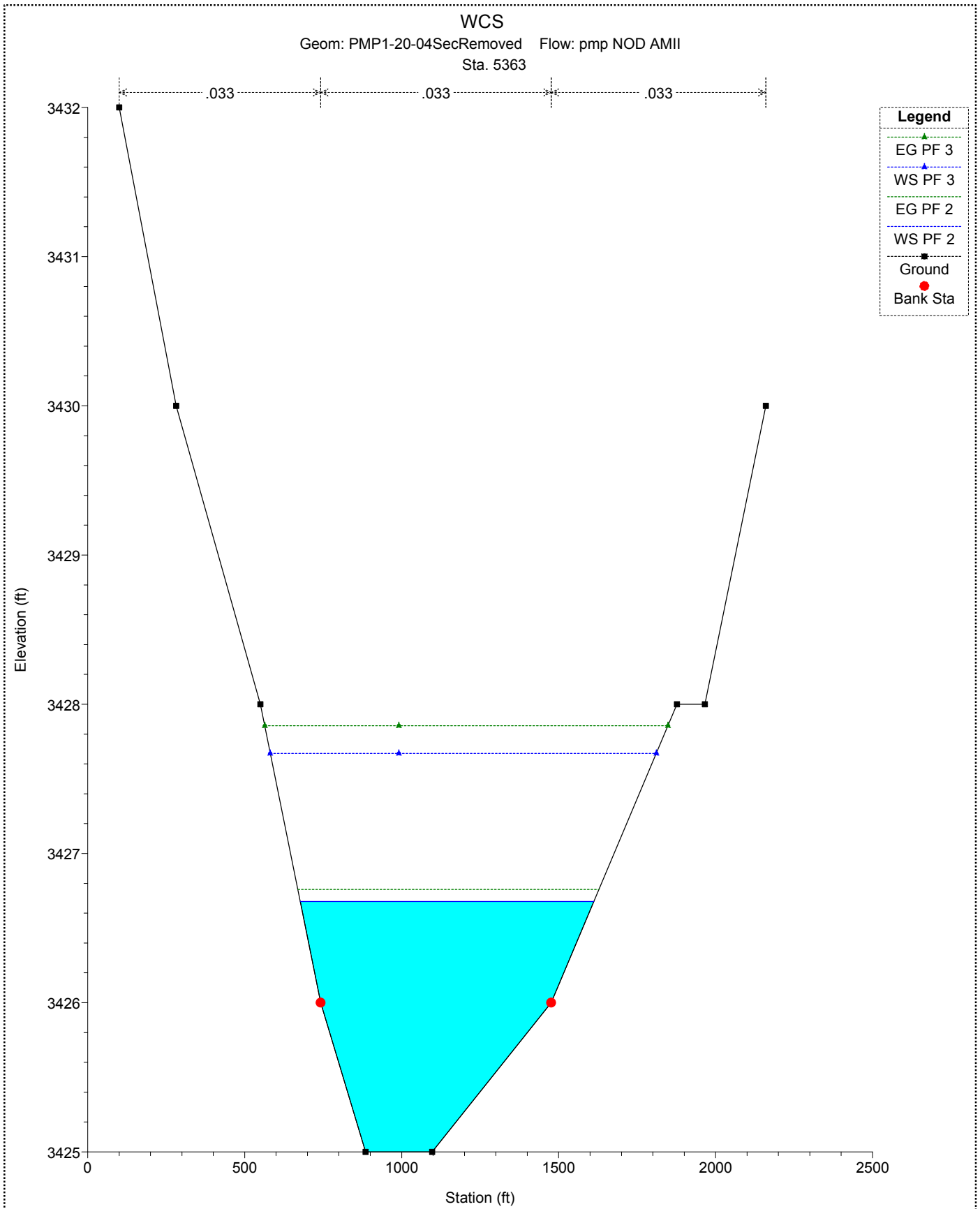


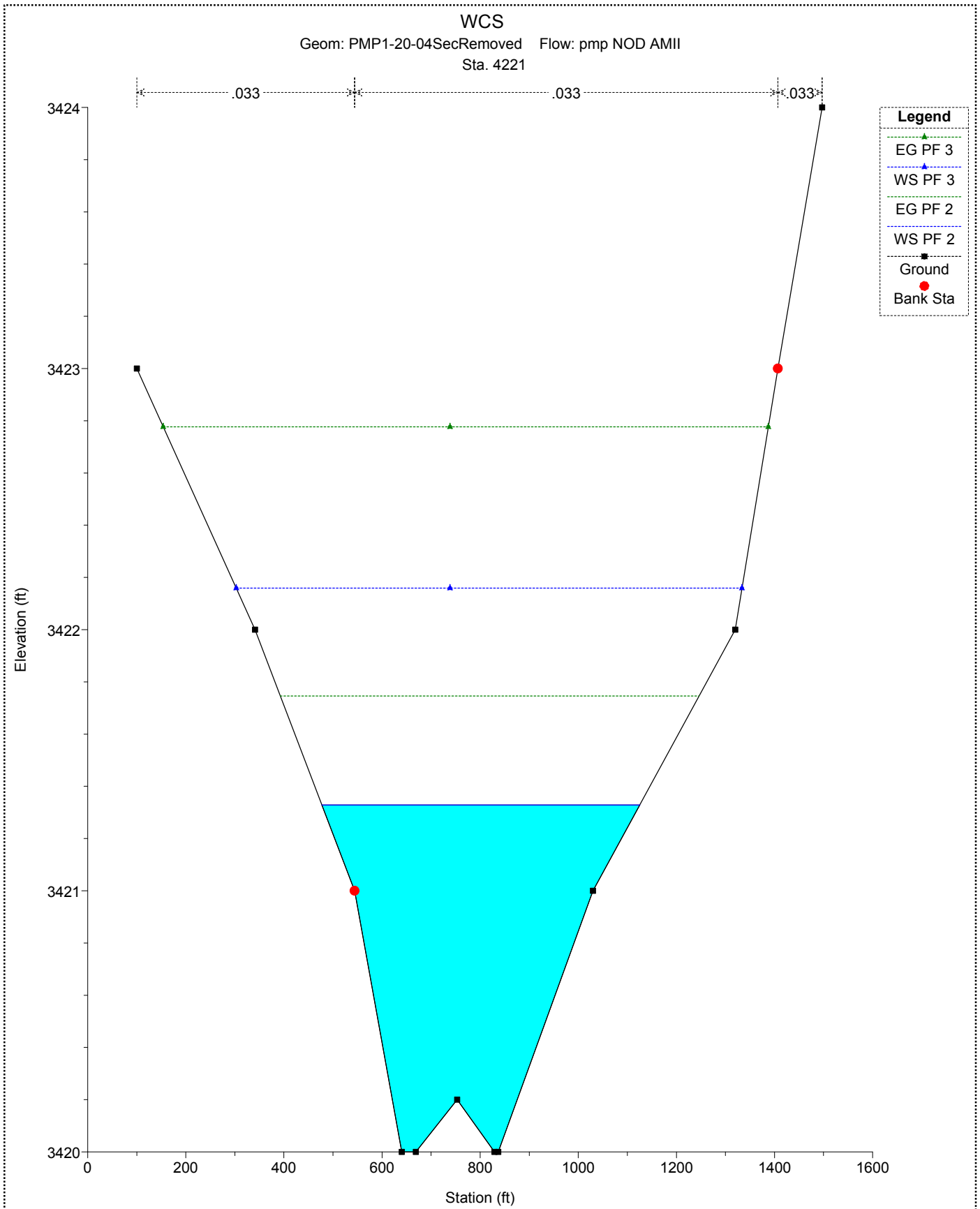


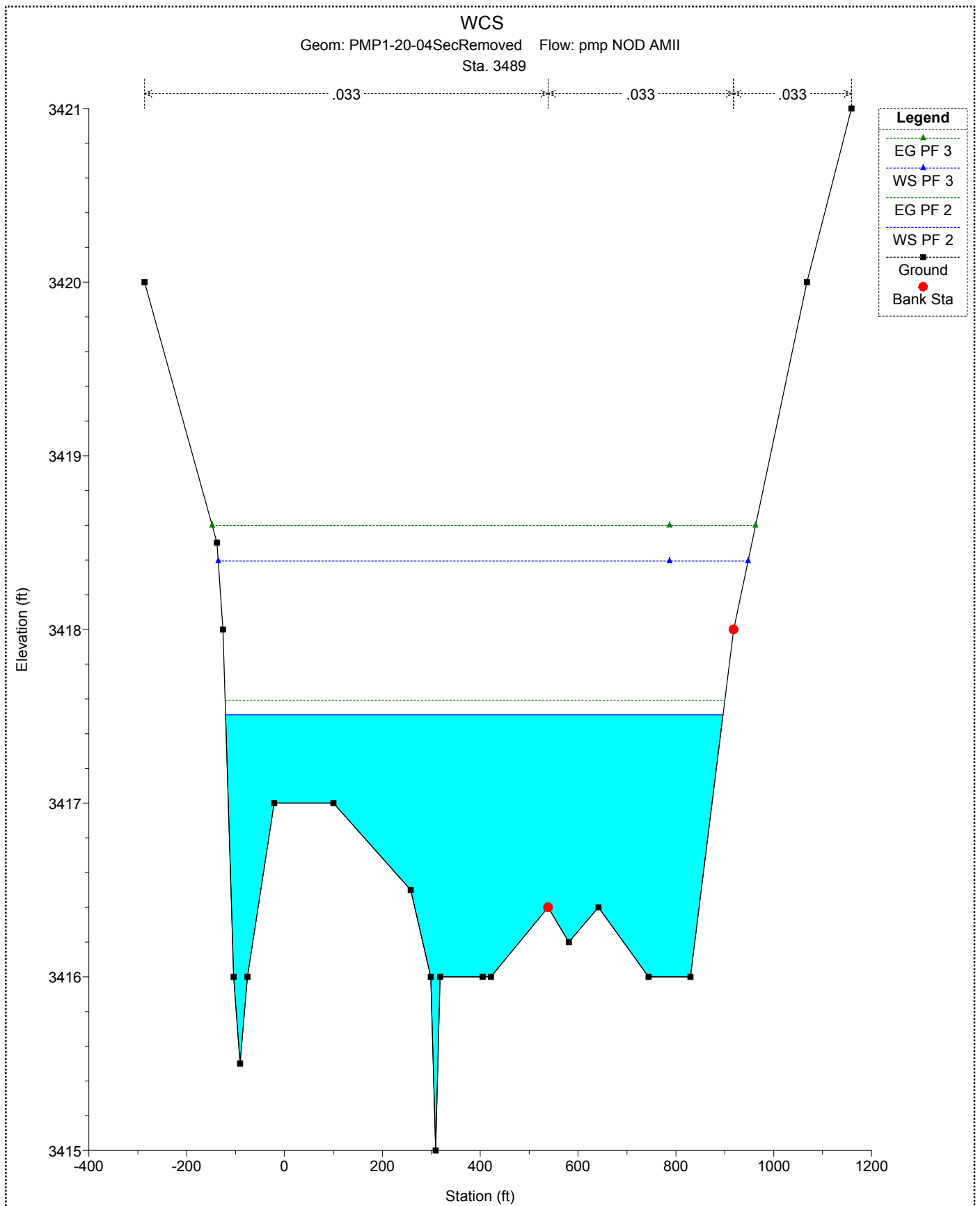


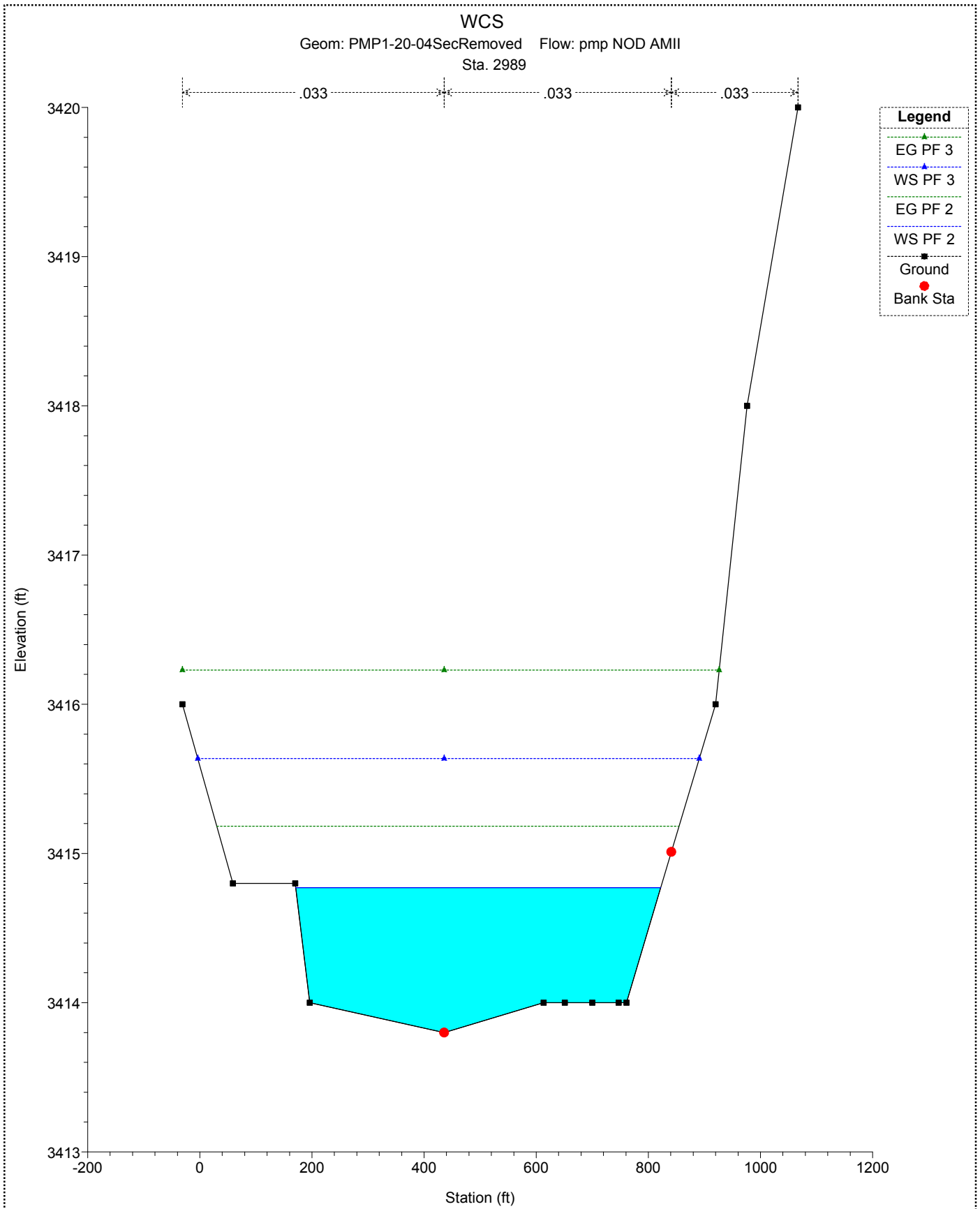


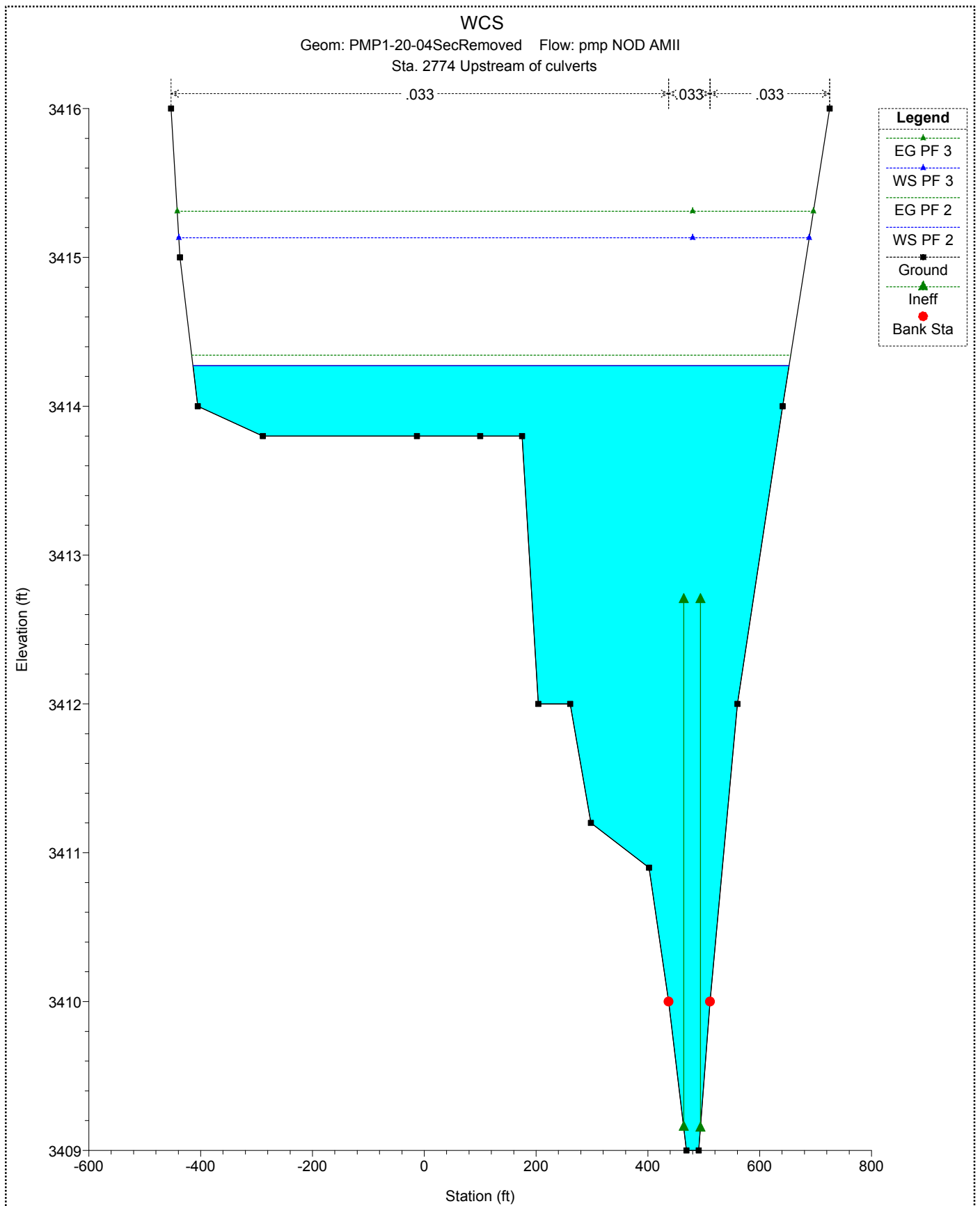


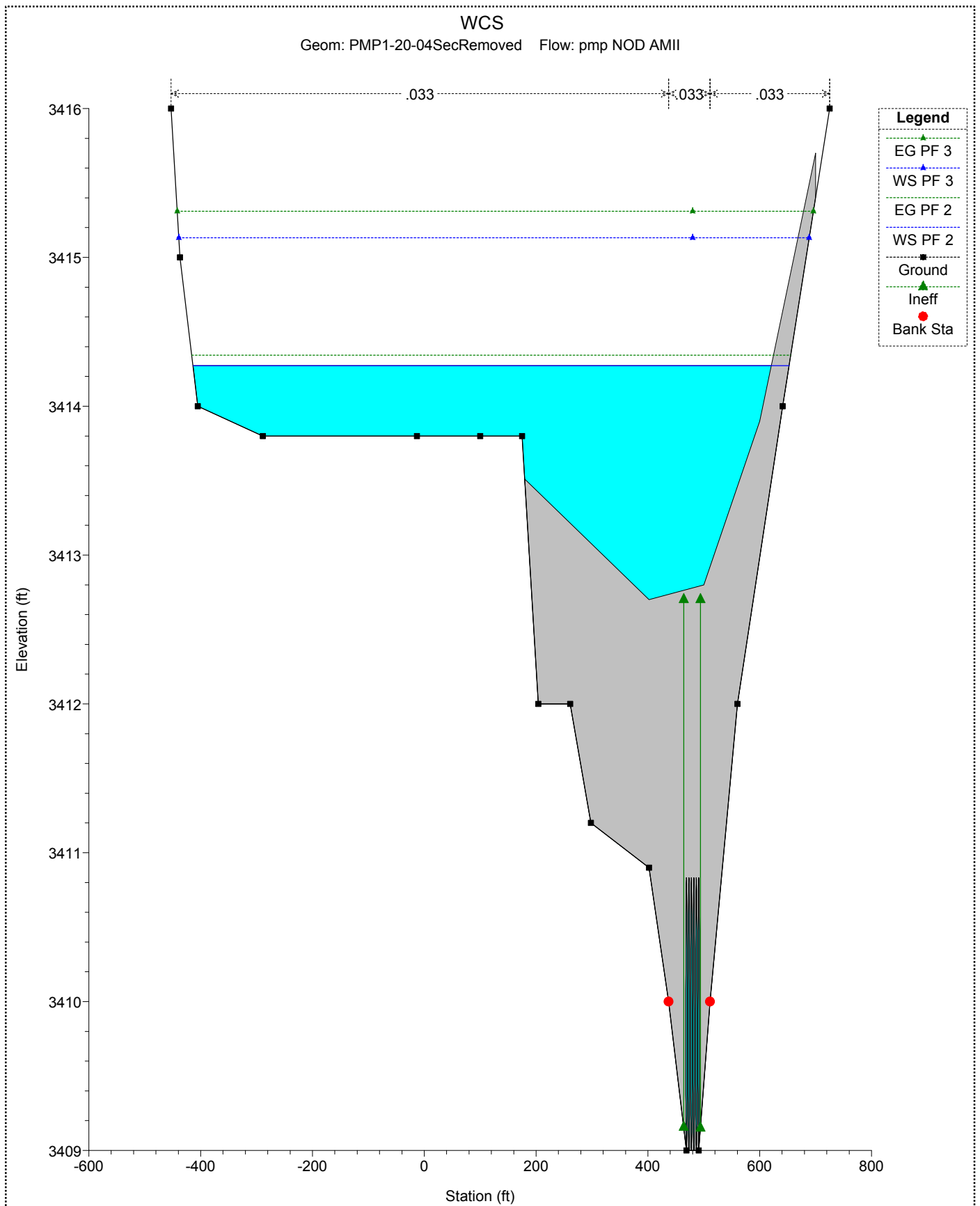


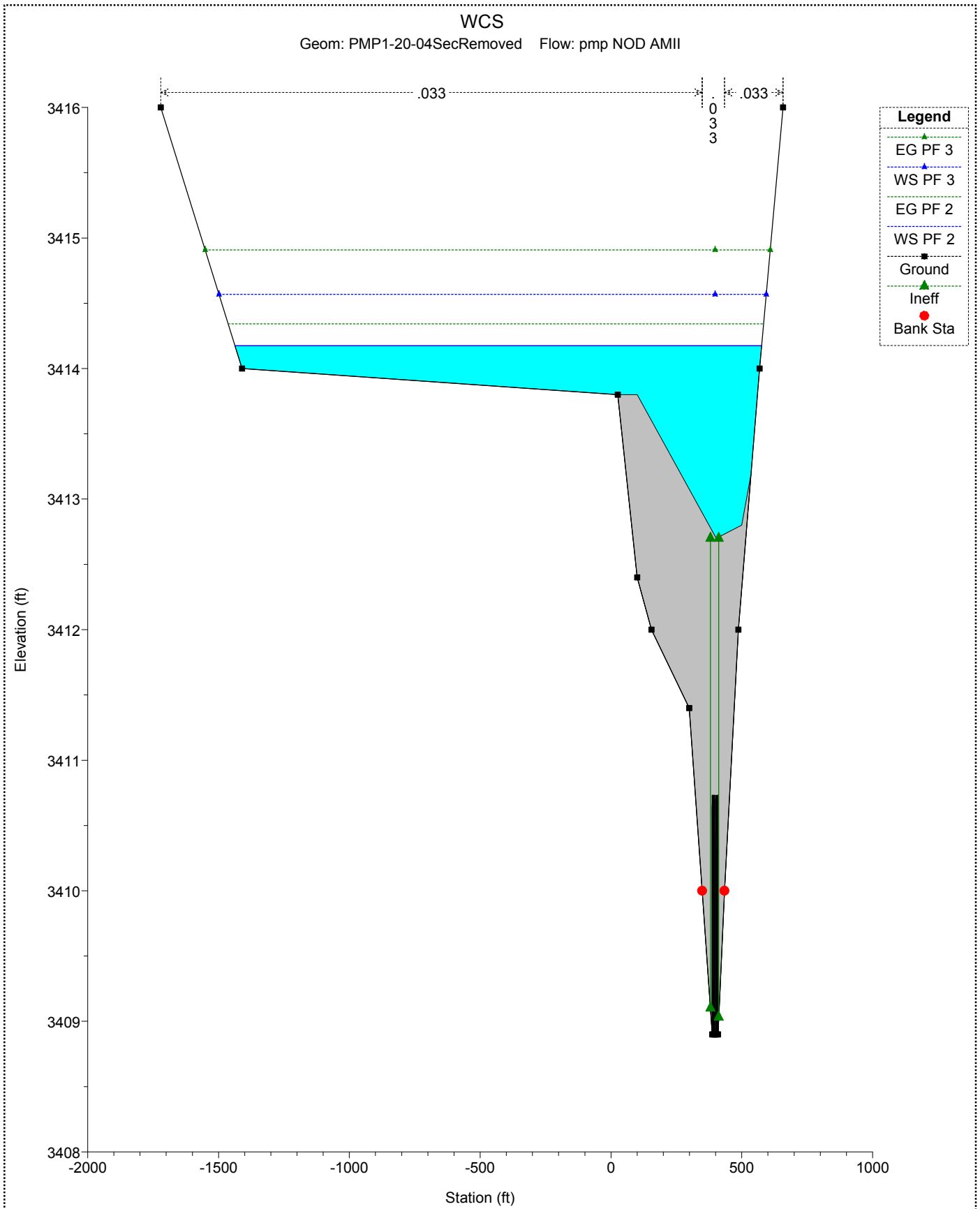


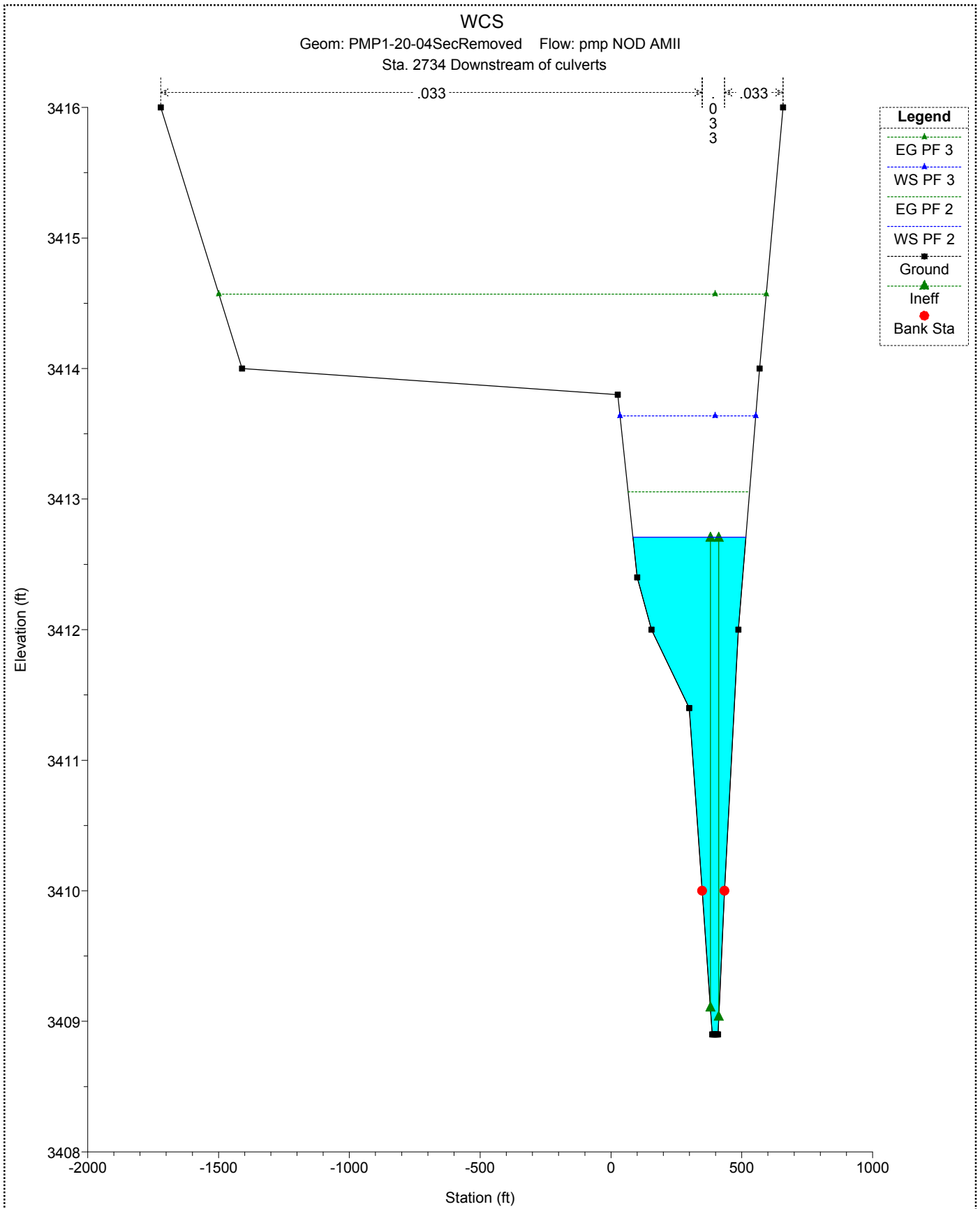


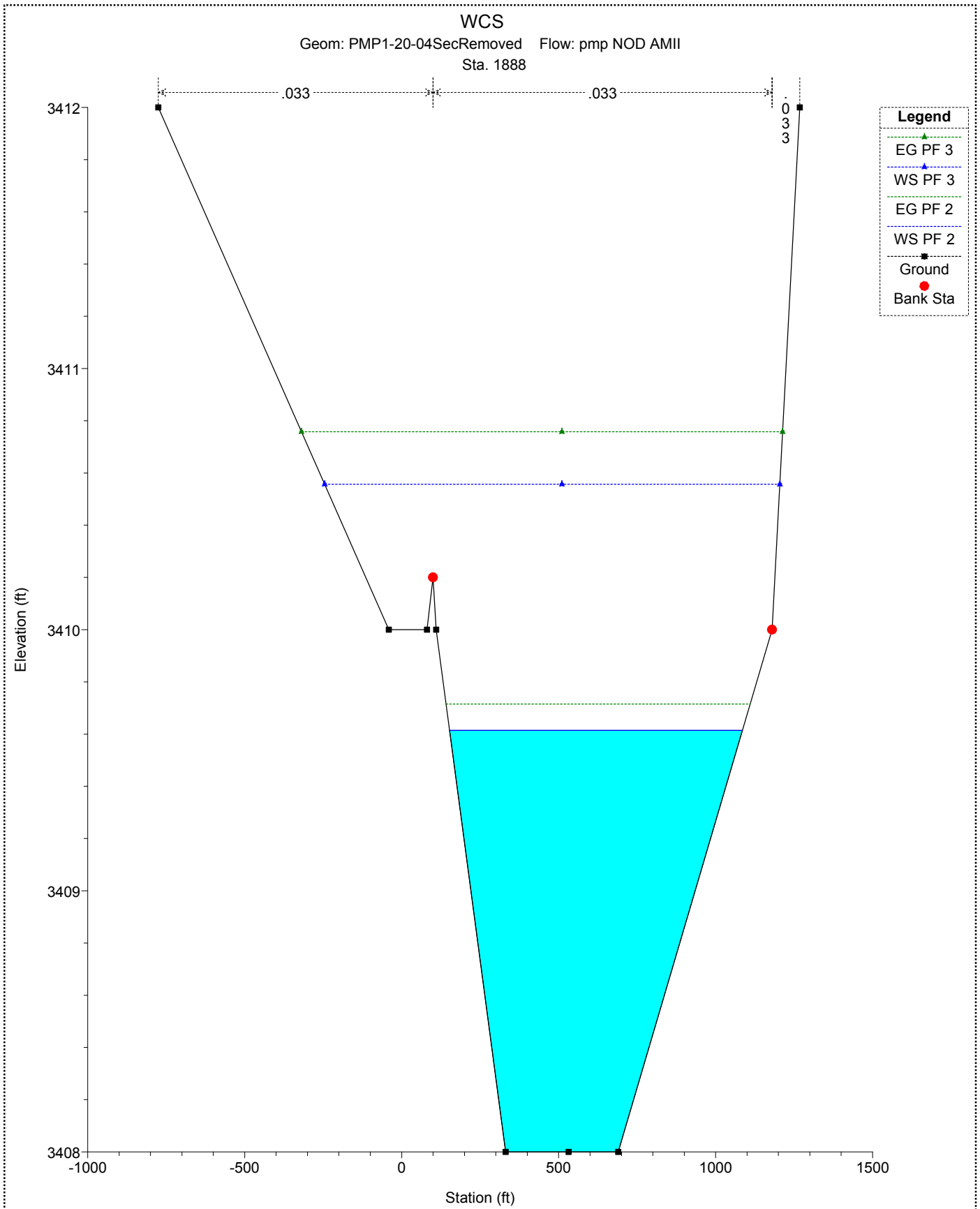


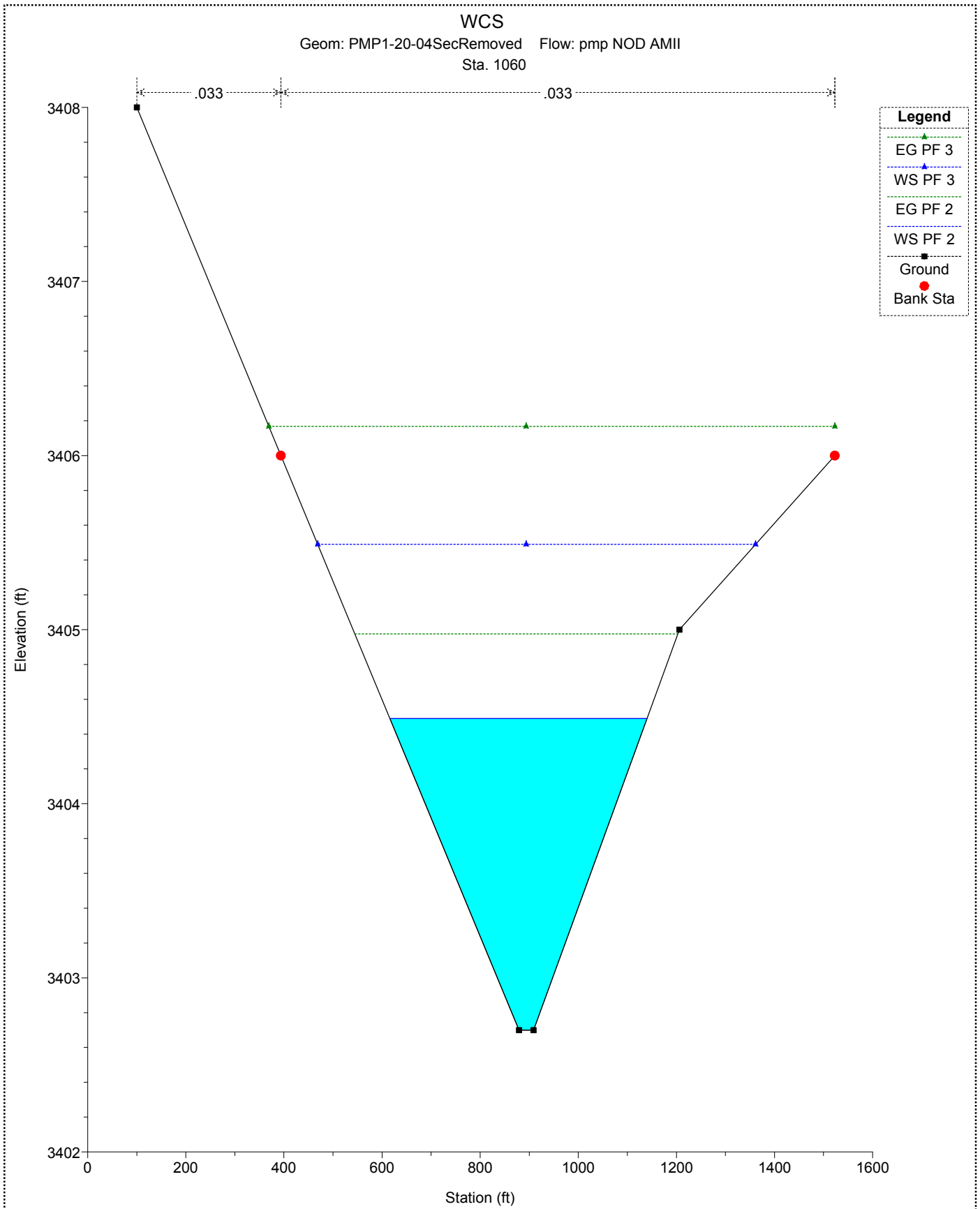












APPENDIX Q

HEC-HMS MODEL FOR THE CALCULATION OF THE 100-YEAR PEAK DISCHARGE, ANTECEDENT MOISTURE CONDITION III

HMS * Summary of Results

Project : WCS

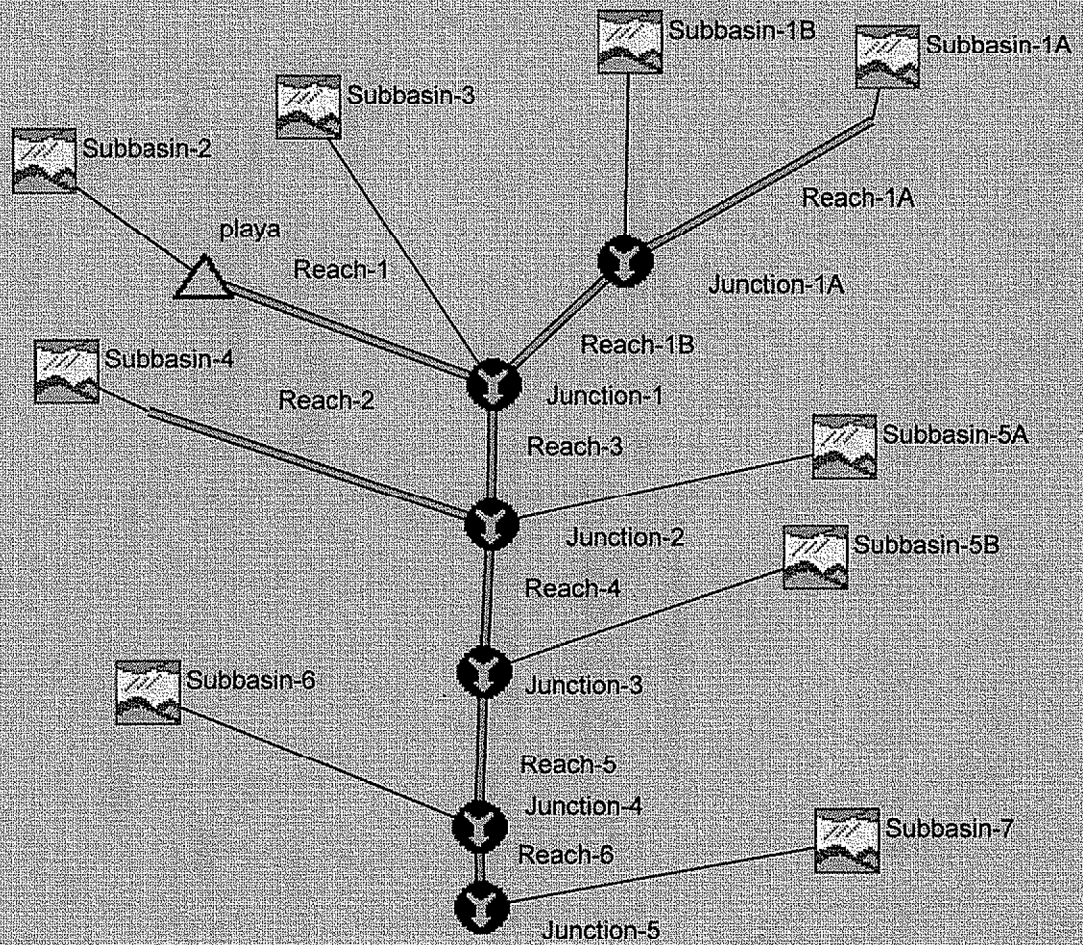
Run Name : 100YrAMIII3/24/06NOD

Start of Run : 01Dec00 0000 Basin Model : 100YrAMIII3/24/06NOD

End of Run : 02Dec00 0000 Met. Model : Met100 Year

Execution Time : 24Mar06 1557 Control Specs : Control 1

Hydrologic Element	Discharge Peak (cfs)	Time of Peak	Volume (ac ft)	Drainage Area (sq mi)
Subbasin-4	790.29	01 Dec 00 1231	122.31	0.490
Reach-2	790.29	01 Dec 00 1246	121.87	0.490
Subbasin-2	1107.9	01 Dec 00 1259	244.80	1.063
playa	0.0	30 Nov 00 2400	0.0	1.063
Reach-1	0.0	30 Nov 00 2400	0.0	1.063
Subbasin-1A	644.57	01 Dec 00 1319	178.03	0.691
Reach-1A	644.57	01 Dec 00 1336	177.29	0.691
Subbasin-1B	455.38	01 Dec 00 1236	76.429	0.314
Junction-1A	816.66	01 Dec 00 1319	253.72	1.005
Reach-1B	816.66	01 Dec 00 1322	253.54	1.005
Subbasin-3	230.66	01 Dec 00 1236	38.879	0.156
Junction-1	965.95	01 Dec 00 1253	292.42	2.224
Reach-3	965.95	01 Dec 00 1310	291.19	2.224
Subbasin-5A	296.92	01 Dec 00 1230	44.613	0.192
Junction-2	1873.4	01 Dec 00 1250	457.68	2.906
Reach-4	1873.4	01 Dec 00 1311	455.29	2.906
Subbasin-5B	321.56	01 Dec 00 1246	61.273	0.265
Junction-3	2127.6	01 Dec 00 1309	516.56	3.171
Reach-5	2127.6	01 Dec 00 1323	514.73	3.171
Subbasin-6	135.18	01 Dec 00 1222	17.239	0.074
Junction-4	2154.5	01 Dec 00 1323	531.96	3.245
Reach-6	2154.5	01 Dec 00 1323	531.96	3.245
Subbasin-7	112.07	01 Dec 00 1257	24.553	0.104
Junction-5	2247.7	01 Dec 00 1323	556.52	3.349



Meteorologic Model Input

The screenshot shows a software window titled "HMS * Meteorologic Model". It has a menu bar with "File", "Edit", and "Help". The main area contains several input fields and buttons. At the top, "Meteorologic Model:" is set to "Met100 Year" and "Description:" is "100 Year, 24 Hour Storm". There is a "Subbasin List" button. Below these are two tabs: "Precipitation" (selected) and "Evapotranspiration". Under the "Precipitation" tab, "Method:" is set to "SCS Hypothetical Storm" (a dropdown menu). Further down, "Storm Selection:" is set to "Type II" (a dropdown menu). At the bottom of the tab area, "Storm Depth (in) :" is set to "6.0". At the very bottom of the window are three buttons: "OK", "Apply", and "Cancel".

HMS * Meteorologic Model

File Edit Help

Meteorologic Model: Met100 Year Subbasin List

Description: 100 Year, 24 Hour Storm

Precipitation Evapotranspiration

Method : SCS Hypothetical Storm

Storm Selection: Type II

Storm Depth (in) : 6.0

OK Apply Cancel

HMS * Basin Model * SCS Curve Number

Sort Help

Basin Model ID: 100YrAMIII3/24/06NOD

Subbasin Name	SCS Curve Number	Initial Abstraction (in)	Imperviousness (%)
Subbasin-1A	91		0.0
Subbasin-2	86		0.0
Subbasin-3	89		0.0
Subbasin-4	89		0.0
Subbasin-5B	86		0.0
Subbasin-6	86		0.0
Subbasin-1B	88		0.0
Subbasin-5A	86		0.0
Subbasin-7	87		0.0

OK Apply Cancel

HMS * Basin Model * SCS UH

Sort Help

Basin Model ID: 100YrAMIII3/24/06NOD

Time Units : Minutes

Subbasin Name	SCS Lag (min)
Subbasin-1A	86
Subbasin-2	65
Subbasin-3	44
Subbasin-4	39
Subbasin-5B	53
Subbasin-6	30
Subbasin-1B	44
Subbasin-5A	38
Subbasin-7	64

OK Apply Cancel

HMS * Basin Model * Lag Routing

Help

Basin Model ID : 100YrAMIII3/24/06NOD

Interval :

Reach Name	Lag (min)
Reach-1	35
Reach-2	15
Reach-3	17
Reach-4	21
Reach-5	14
Reach-1A	17
Reach-1B	3
Reach-6	0

OK Apply Cancel

HMS * Basin Model * Reservoir Editor

Edit File Help

Reservoir Name:

Description:

Storage Outlet Spillway Overflow Dam Break

Method :

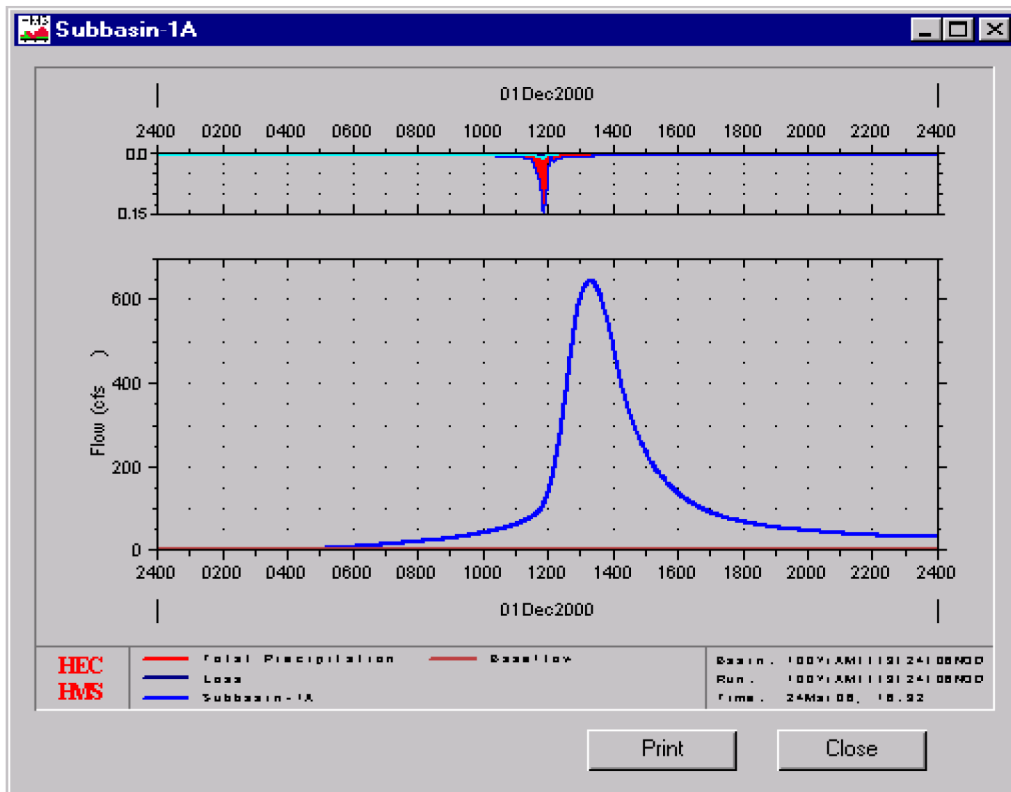
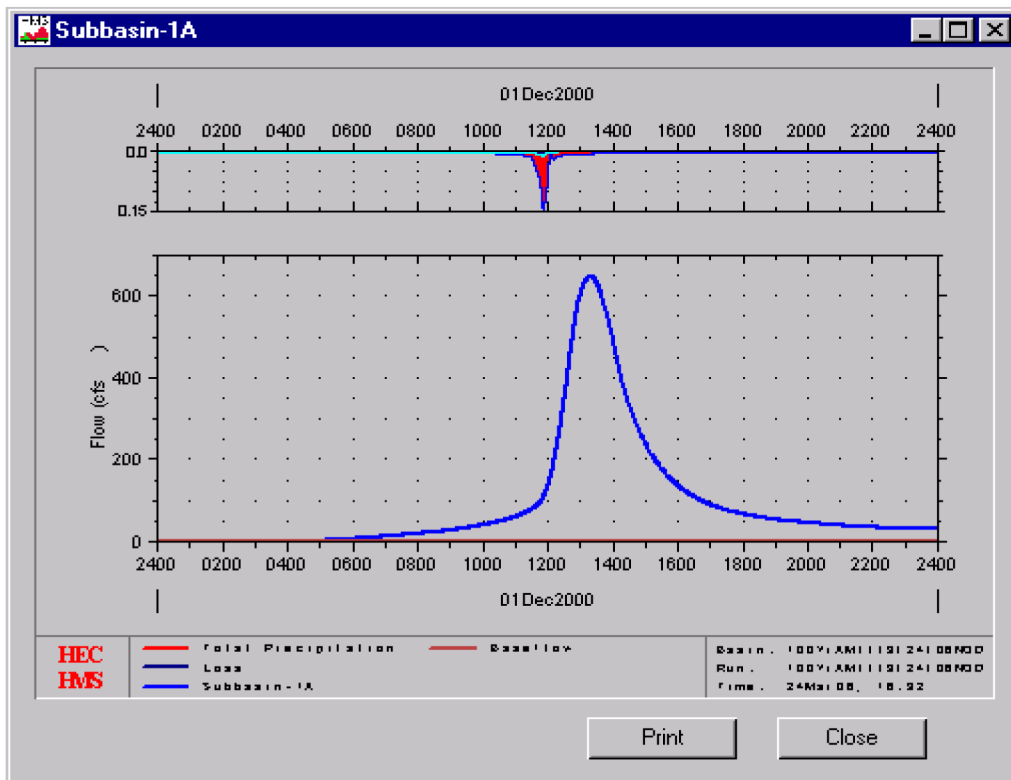
Initial

Elevation (ft)	Storage (acre-feet)	Outflow (cfs)
3478.0	0.0	0.0
3480.0	24.0	0.0
3482.0	61.0	0.0
3484.0	170.0	0.0
3486.0	457.0	0.0
3487.0	693.0	863.0
3488.0	928.0	2427.0

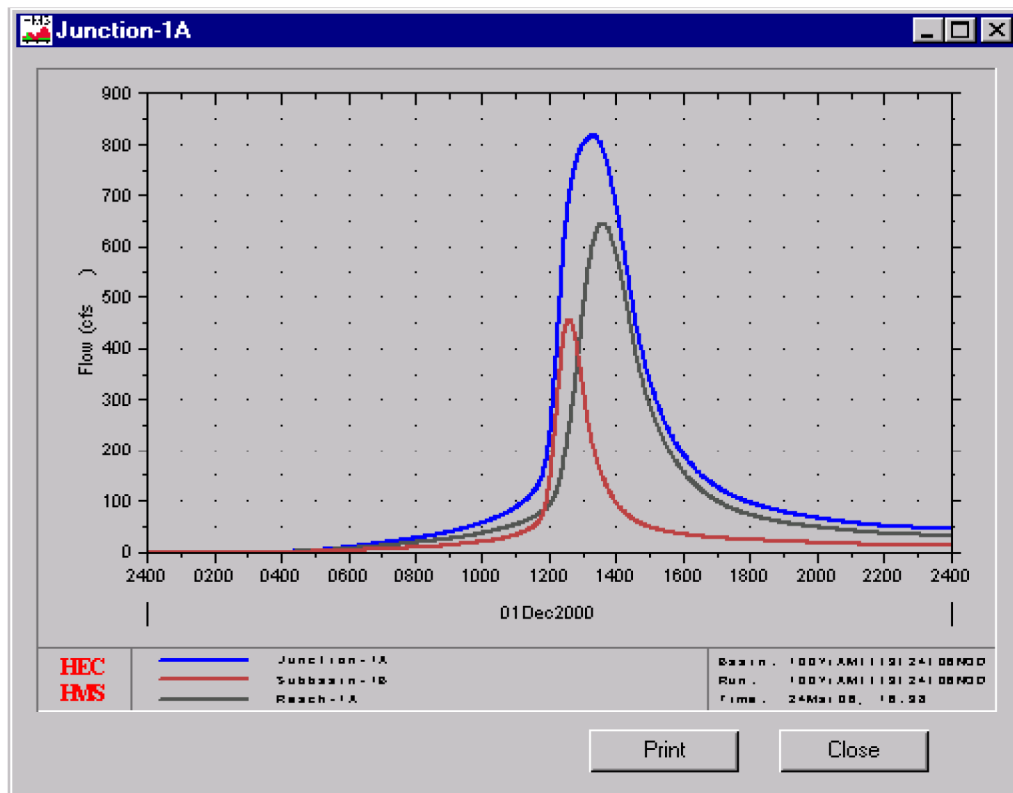
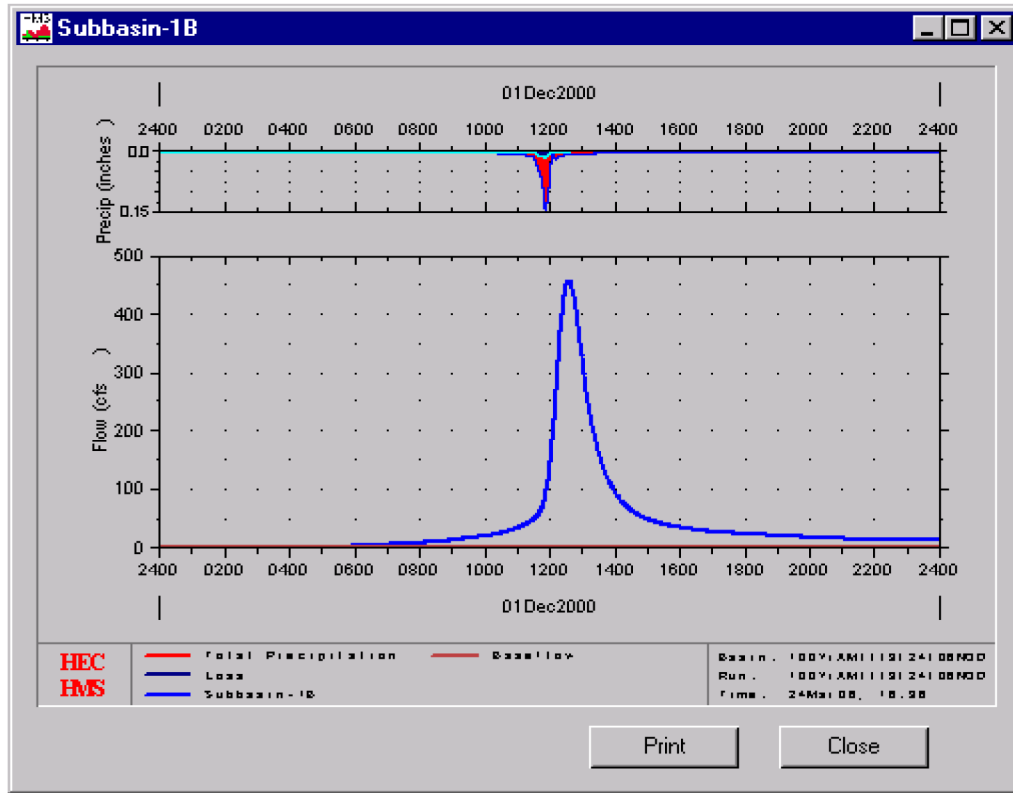
Graph

OK Apply Cancel

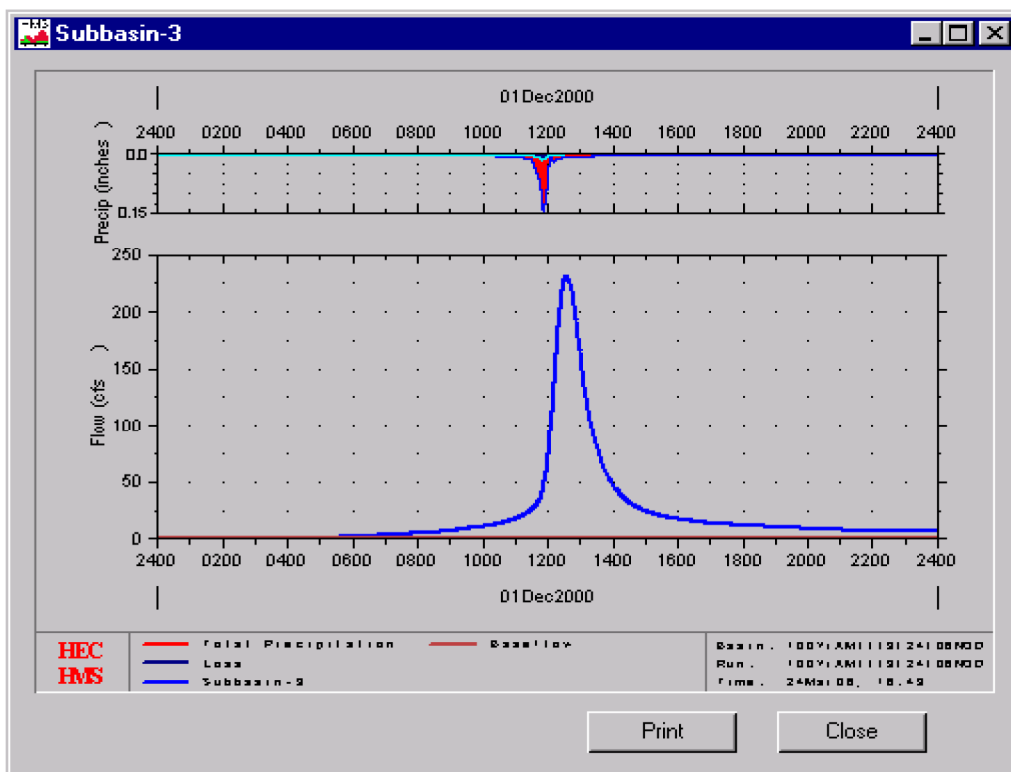
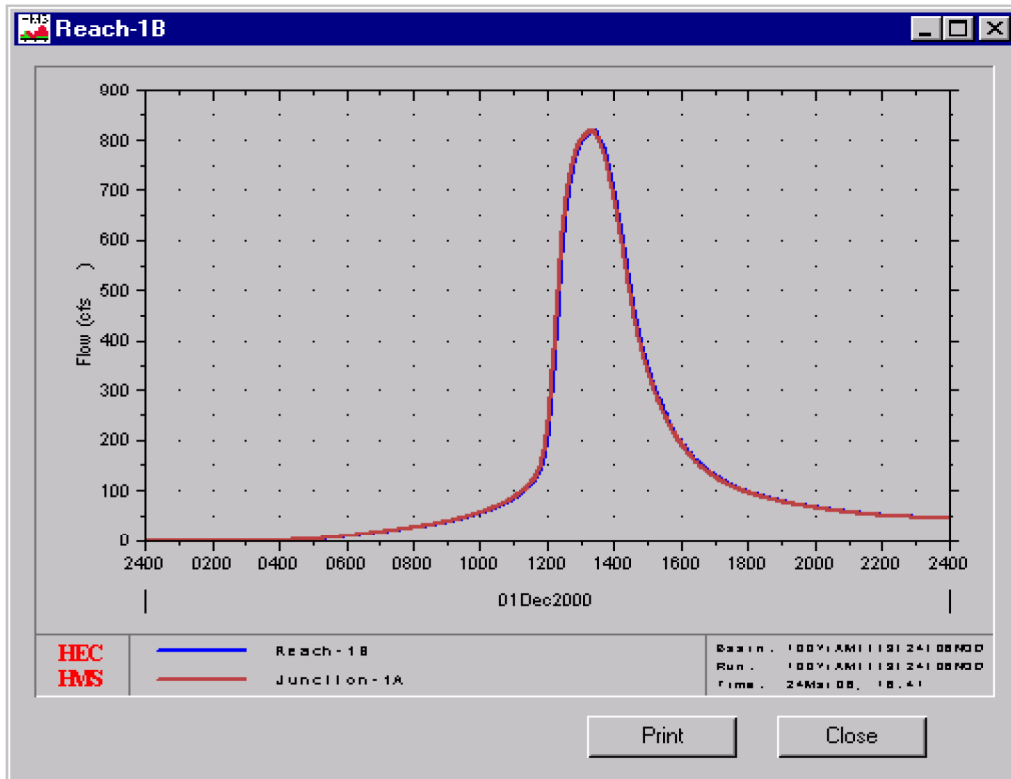
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



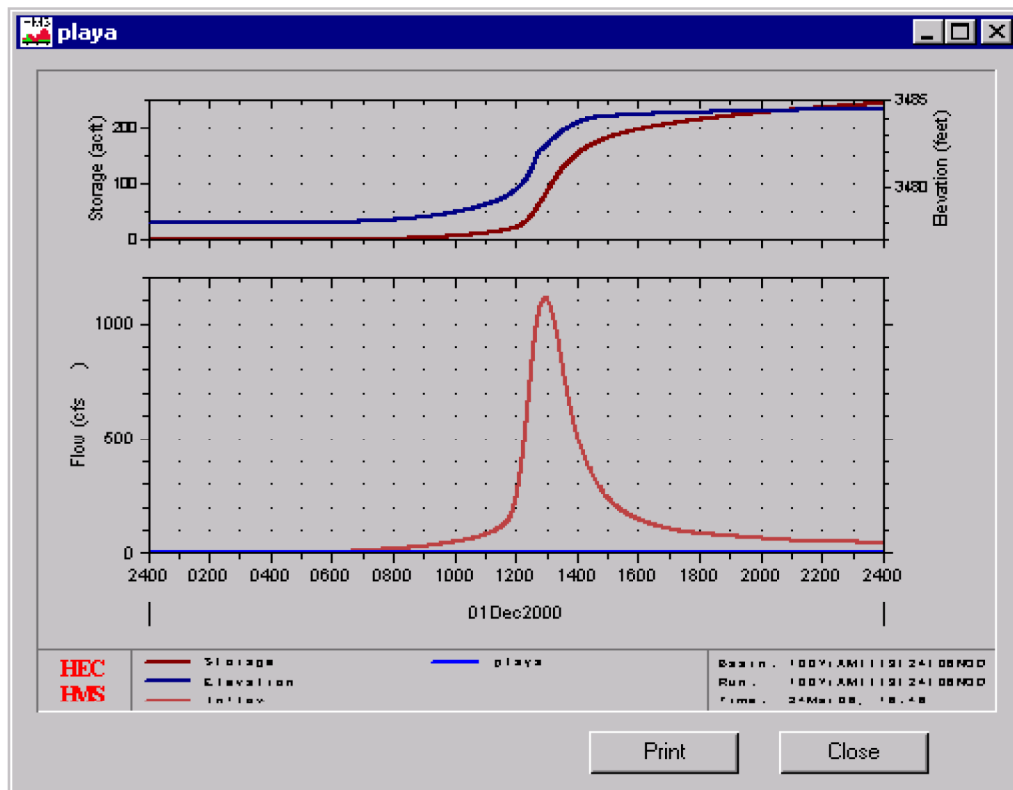
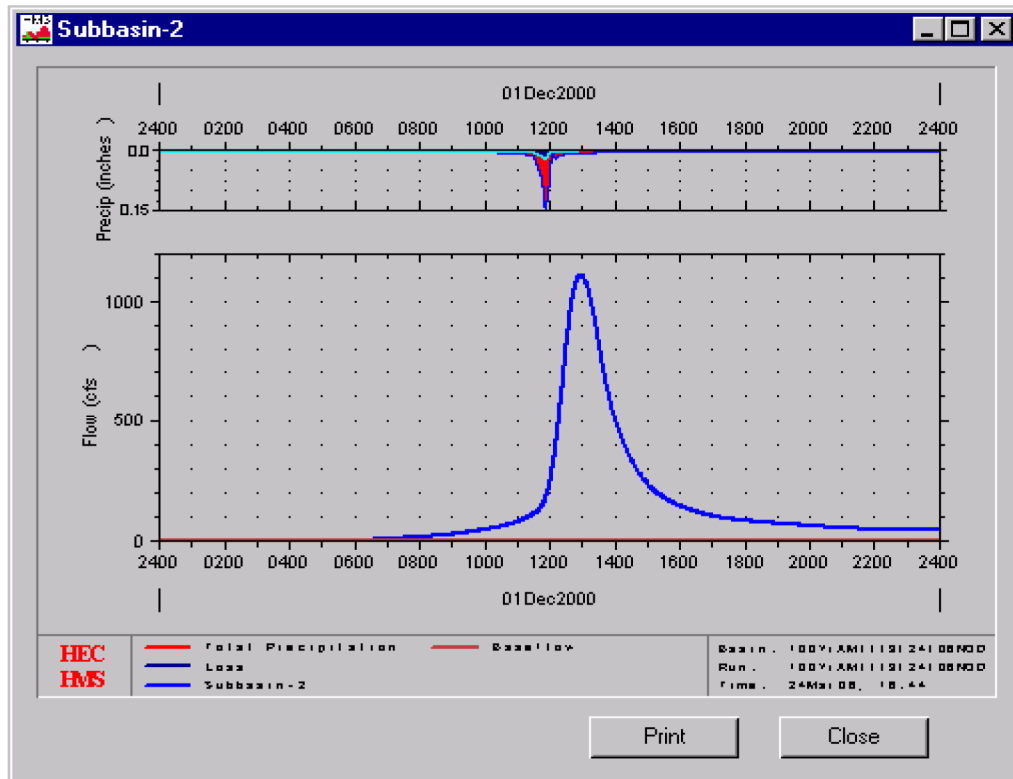
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



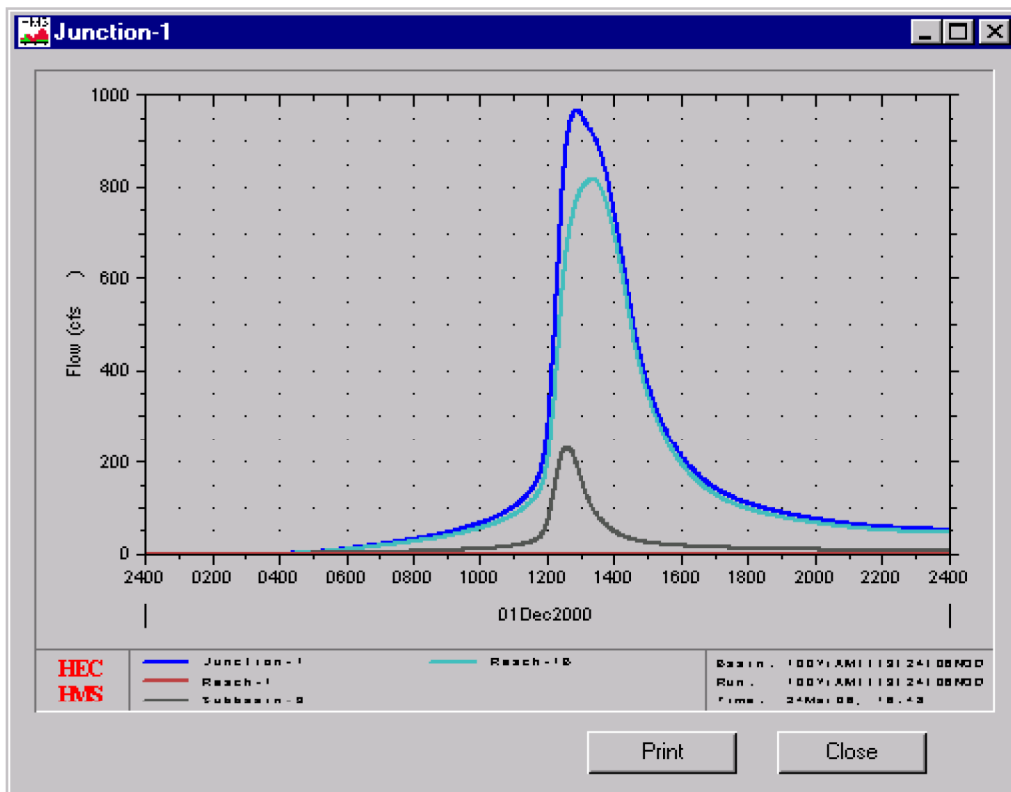
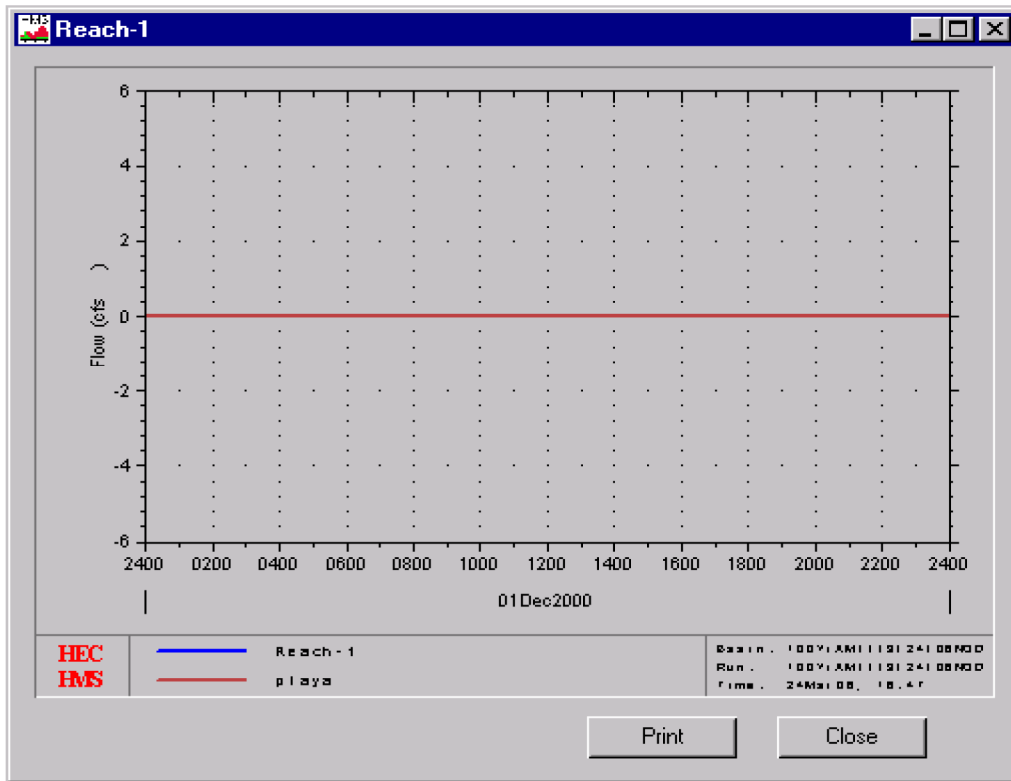
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



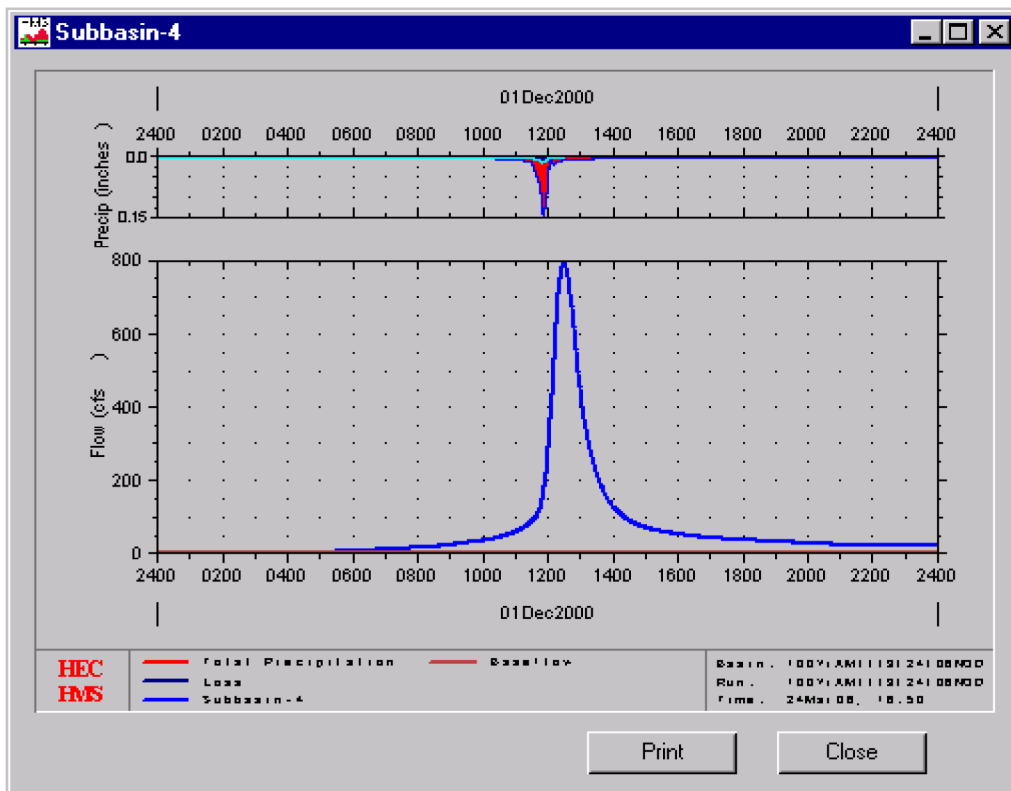
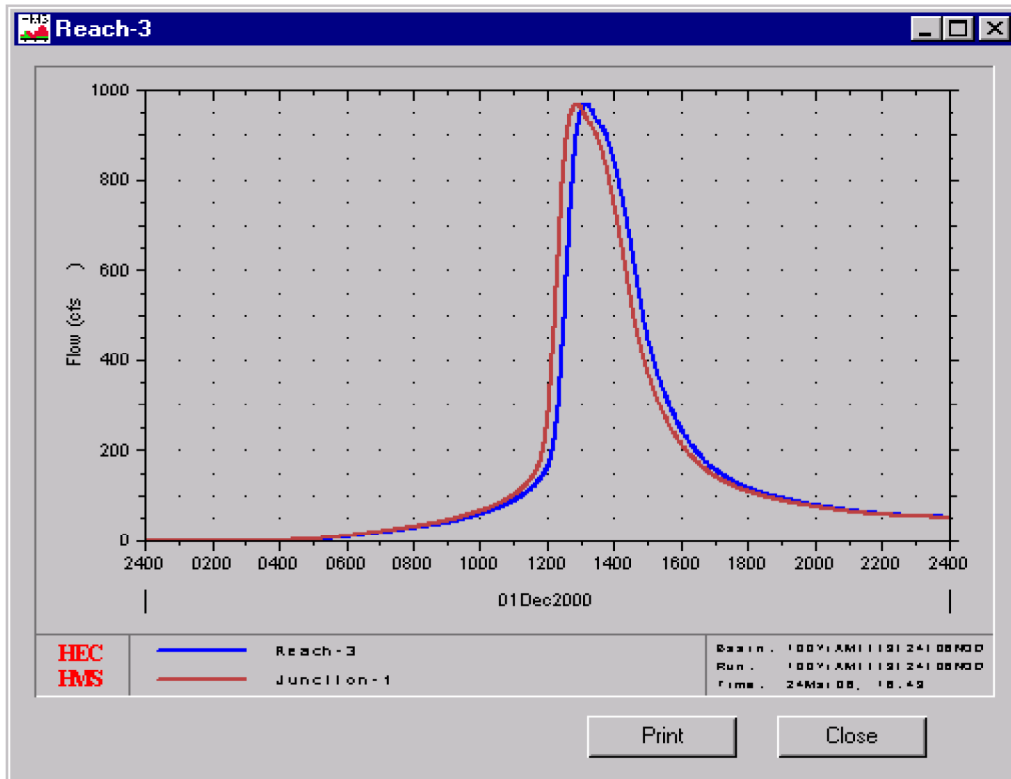
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



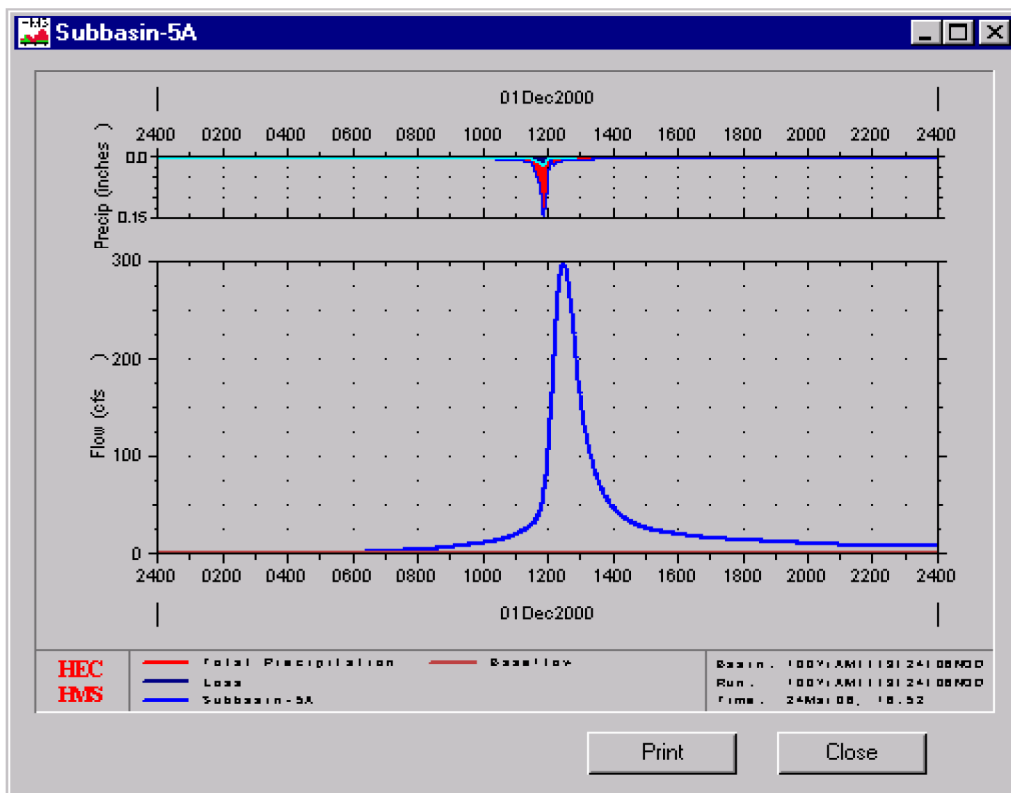
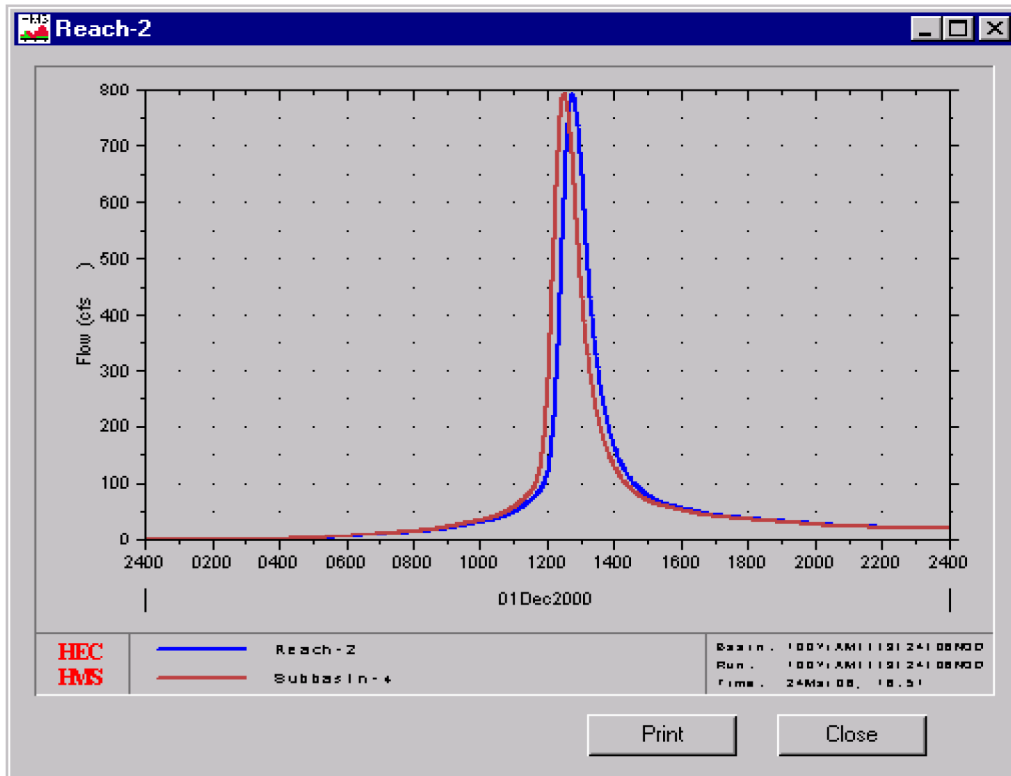
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



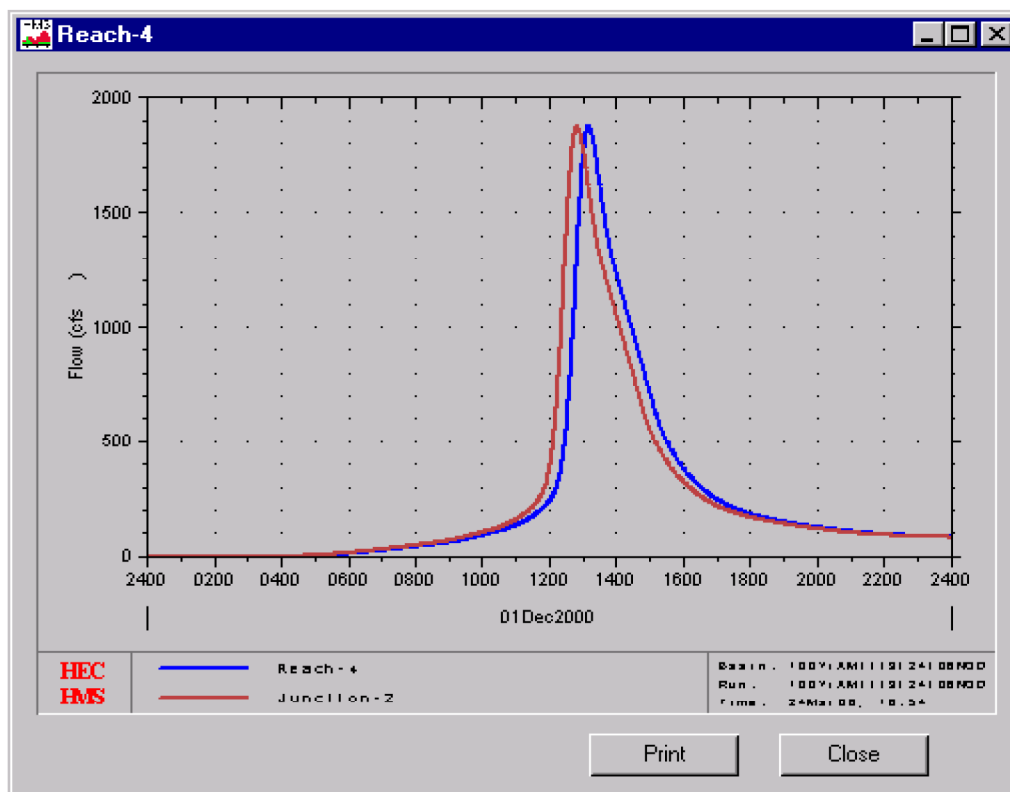
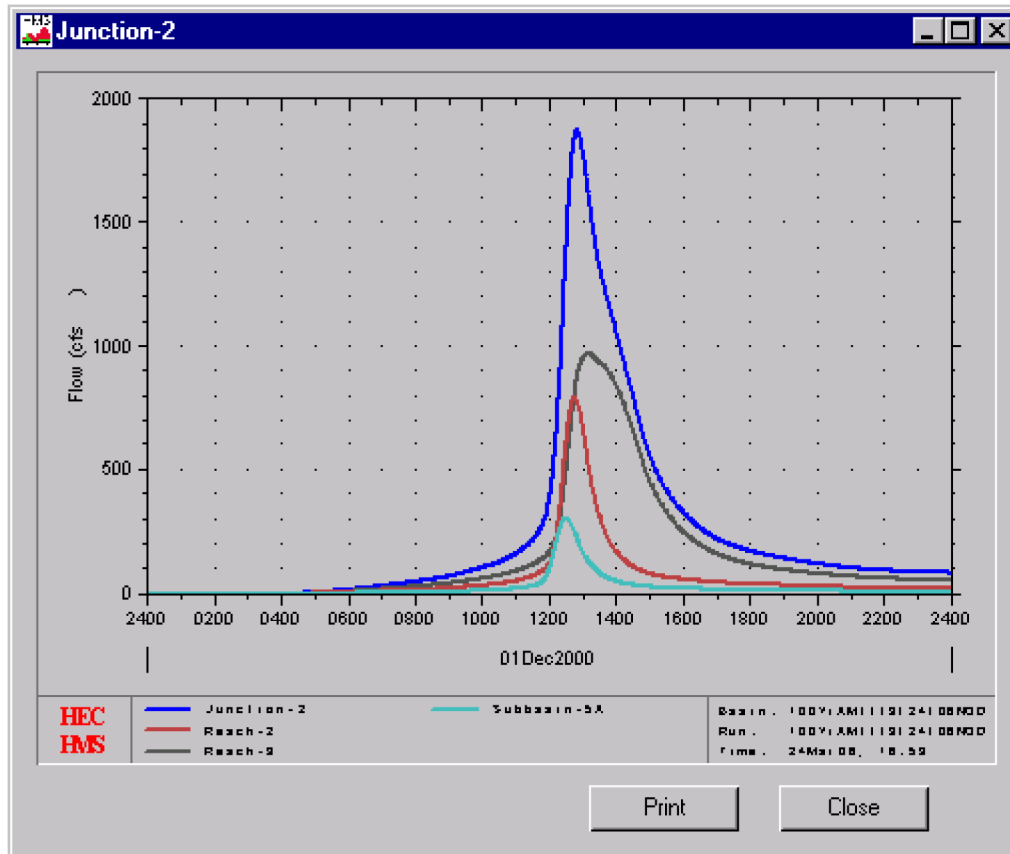
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



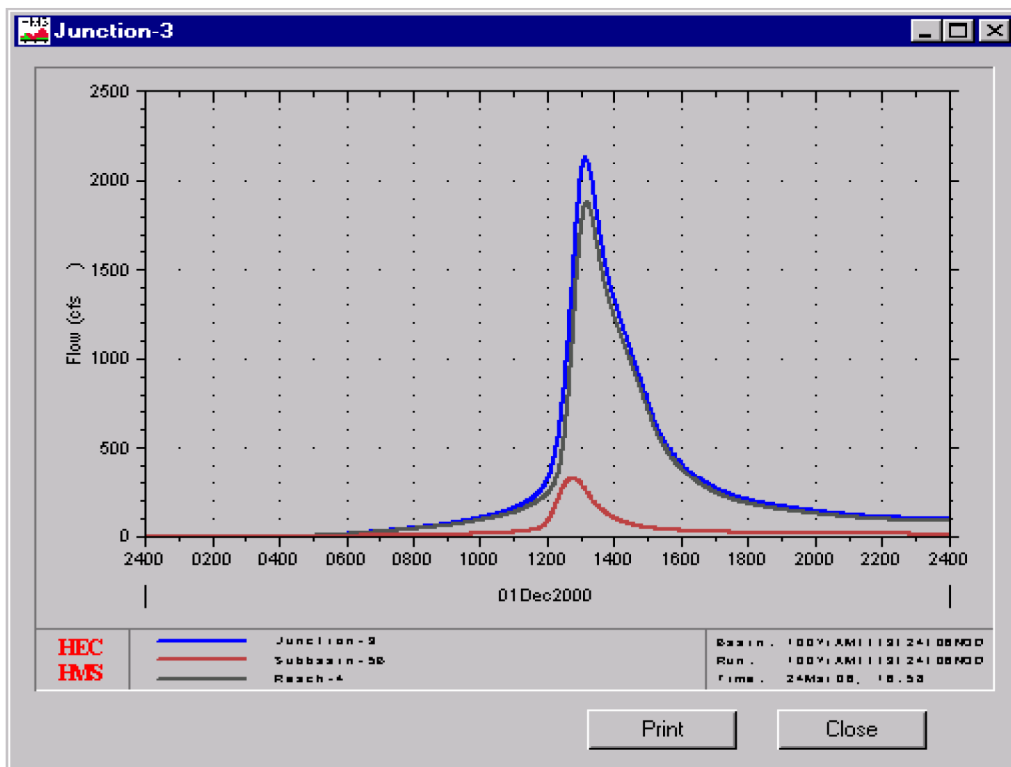
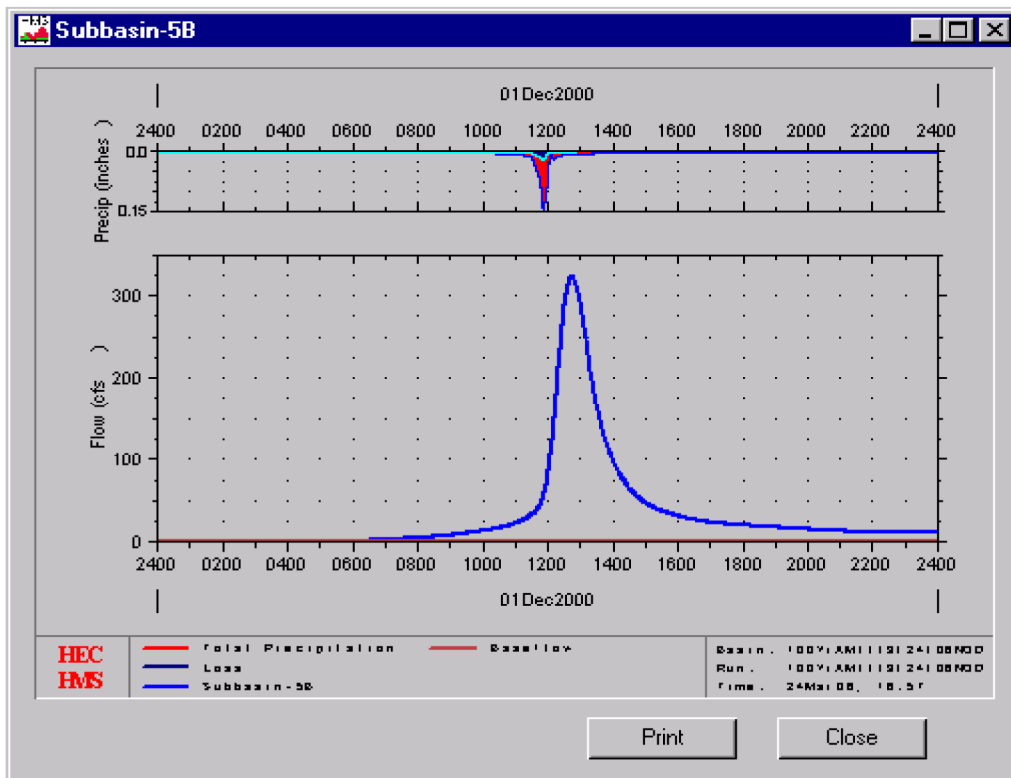
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



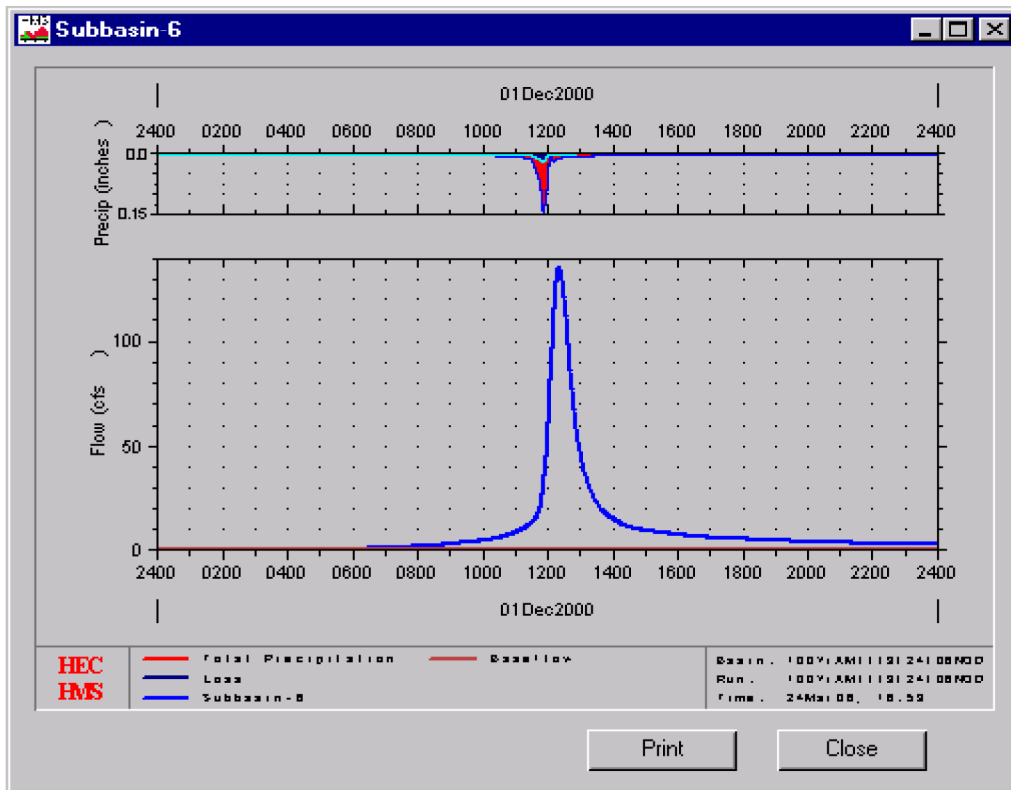
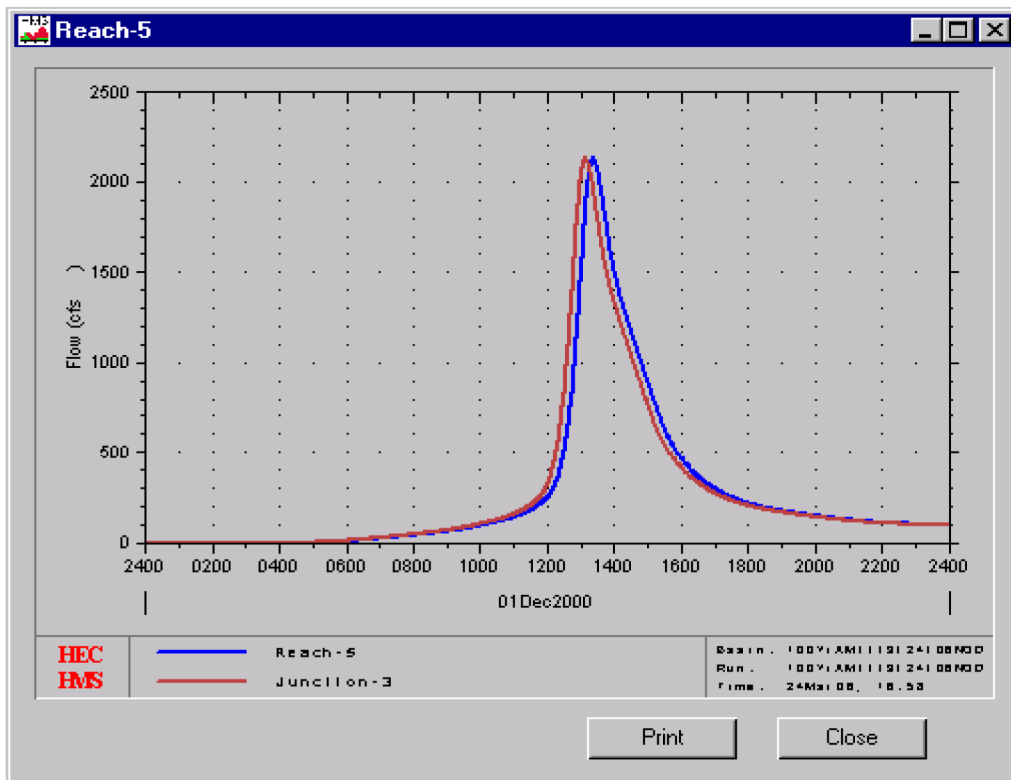
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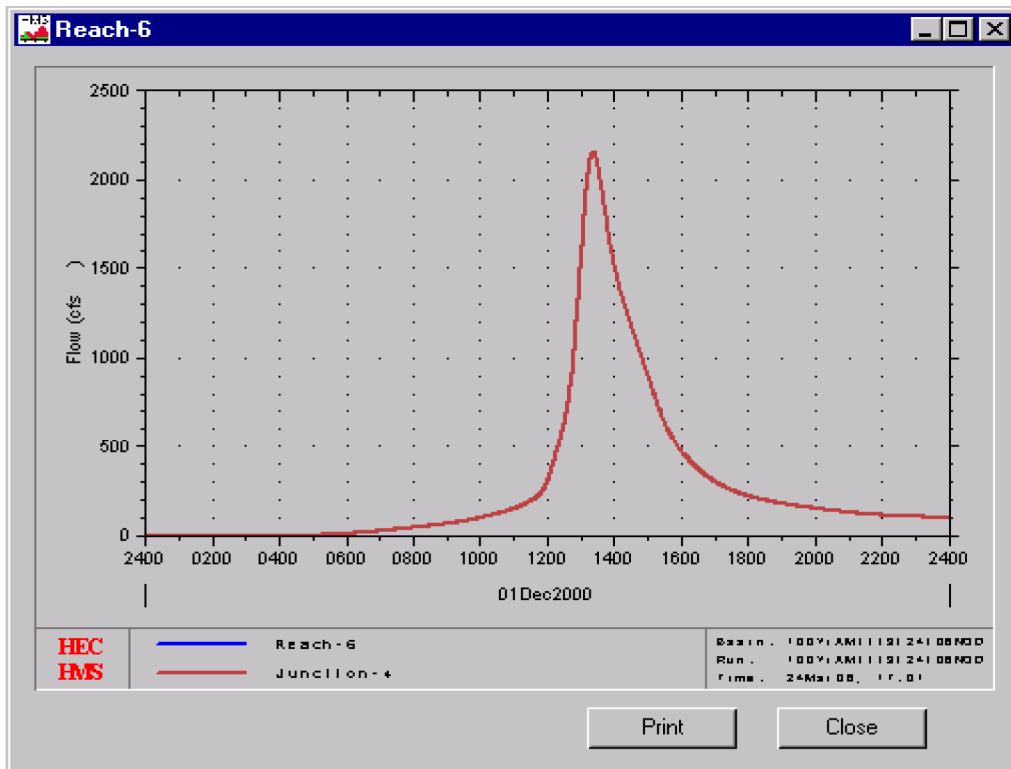
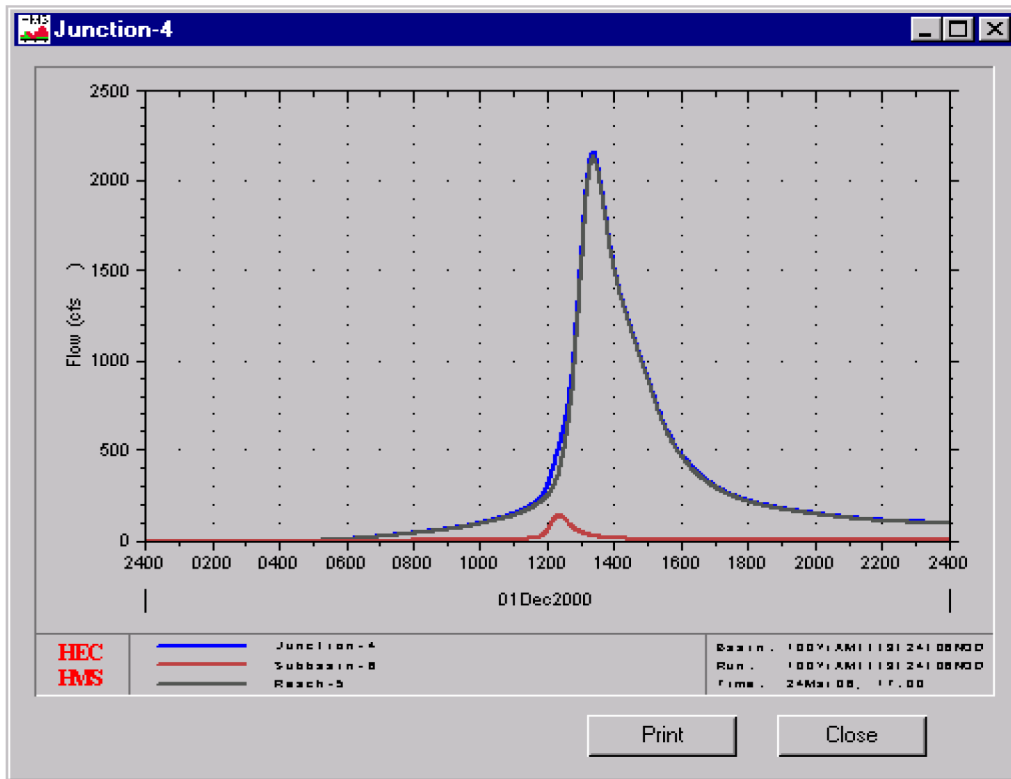
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