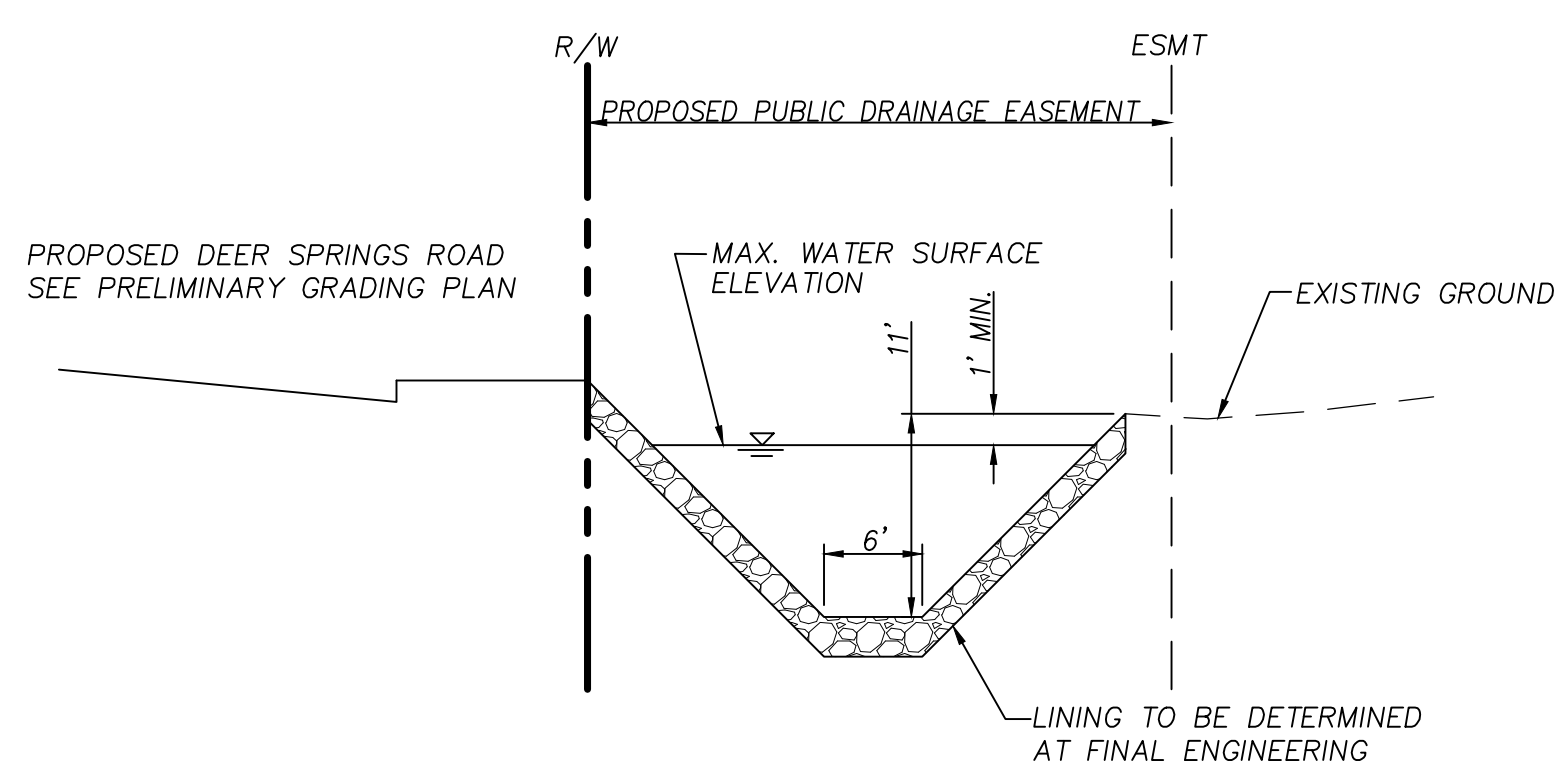
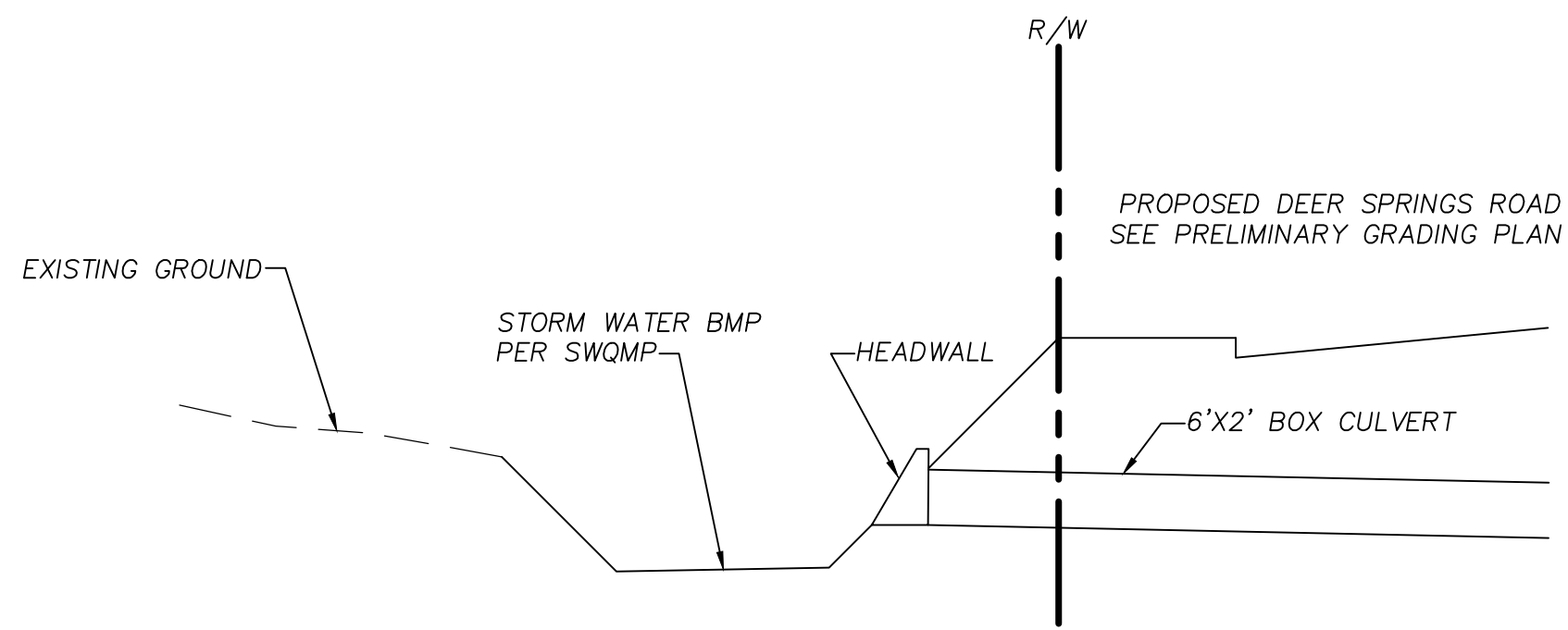
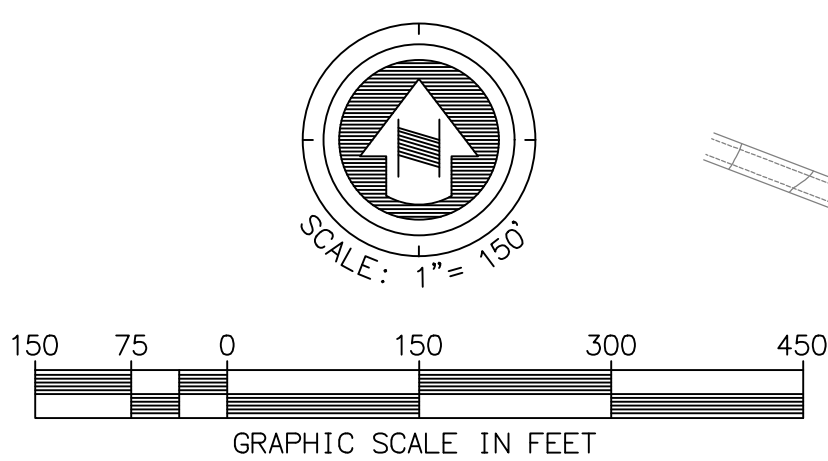
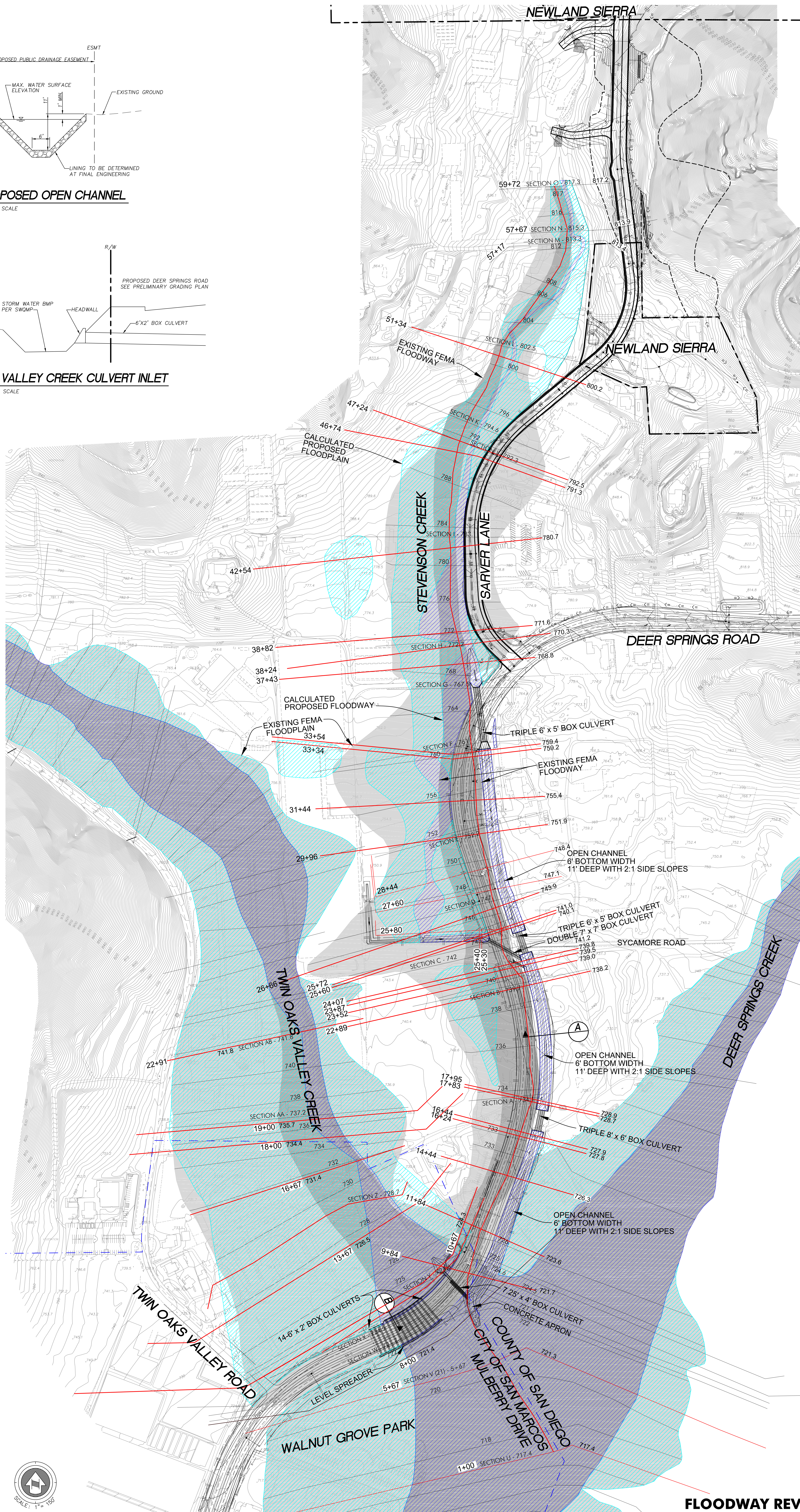




A PROPOSED OPEN CHANNEL
NOT TO SCALE



B TWIN OAKS VALLEY CREEK CULVERT INLET
NOT TO SCALE



APPENDIX E

HEC-RAS Results

Stevenson Creek Results

HEC-RAS River: STEVENSON CREEK Reach: 01

Reach	River Sta	Profile	Plan	W.S. Elev (ft)	Prof Delta WS (ft)	E.G. Elev (ft)	Top Width Act (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Enc Sta L (ft)	Ch Sta L (ft)	Ch Sta R (ft)	Enc Sta R (ft)
01	5972	PF 1	Ex	817.21		818.13	89.08	51.00	827.73	21.26		101.70	144.50	
01	5972	PF 1	High N	817.21		818.13	89.08	51.00	827.73	21.26		101.70	144.50	
01	5972	PF 1	Low N	817.21		818.13	89.08	51.00	827.73	21.26		101.70	144.50	
01	5972	PF 2	High N	818.21	1.00	820.06	22.30		900.00		101.70	101.70	144.50	124.00
01	5972	PF 2	Low N	817.21	0.00	818.13	89.08	51.00	827.73	21.26		101.70	144.50	
01	5767	PF 1	Ex	813.89		814.53	139.62	2.94	541.96	355.11		90.30	125.10	
01	5767	PF 1	High N	813.89		814.53	139.62	2.94	541.96	355.11		90.30	125.10	
01	5767	PF 1	Low N	813.89		814.53	139.62	2.94	541.96	355.11		90.30	125.10	
01	5767	PF 2	High N	814.89	1.00	816.72	22.70		900.00		98.10	90.30	125.10	120.80
01	5767	PF 2	Low N	813.89	0.00	814.53	139.62	2.94	541.96	355.11		90.30	125.10	
01	5717	PF 1	Ex	813.35		814.01	138.77		748.14	151.86		115.60	173.70	
01	5717	PF 1	High N	813.35		814.01	138.77		748.14	151.86		115.60	173.70	
01	5717	PF 1	Low N	813.35		814.01	138.77		748.14	151.86		115.60	173.70	
01	5717	PF 2	High N	814.03	0.67	816.10	19.00		900.00		127.00	115.60	173.70	146.00
01	5717	PF 2	Low N	813.35	0.00	814.01	138.77		748.14	151.86		115.60	173.70	
01	5134	PF 1	Ex	800.16		800.90	125.11	15.35	884.65			298.00	417.00	
01	5134	PF 1	High N	800.16		800.90	125.40	15.49	884.51			298.00	417.00	
01	5134	PF 1	Low N	800.16		800.90	125.40	15.49	884.51			298.00	417.00	
01	5134	PF 2	High N	801.14	0.97	803.55	15.00		900.00		330.00	298.00	417.00	345.00
01	5134	PF 2	Low N	800.16	0.00	800.90	125.40	15.49	884.51			298.00	417.00	
01	4724	PF 1	Ex	792.50		792.97	276.33	90.78	508.10	301.13		428.60	445.80	
01	4724	PF 1	High N	792.49		792.96	268.88	93.65	509.51	296.84		428.60	445.80	
01	4724	PF 1	Low N	792.50		792.97	269.30	93.10	511.89	295.02		428.60	445.80	
01	4724	PF 2	High N	793.11	0.62	795.19	15.40		900.00		428.60	428.60	445.80	444.00
01	4724	PF 2	Low N	792.50	0.00	792.97	269.30	93.10	511.89	295.02		428.60	445.80	
01	4674	PF 1	Ex	791.27		791.71	301.48	53.97	585.74	260.29		422.00	469.00	
01	4674	PF 1	High N	791.26		791.71	282.36	51.66	595.57	252.77		422.00	469.00	
01	4674	PF 1	Low N	791.27		791.72	283.04	51.26	598.31	250.43		422.00	469.00	
01	4674	PF 2	High N	792.04	0.78	794.11	19.00		900.00		429.00	422.00	469.00	448.00
01	4674	PF 2	Low N	791.27	0.00	791.72	283.04	51.26	598.31	250.43		422.00	469.00	
01	4254	PF 1	Ex	780.66		781.08	278.77		785.34	114.66		341.00	450.00	
01	4254	PF 1	High N	780.66		781.08	278.77		785.34	114.66		340.60	450.00	
01	4254	PF 1	Low N	780.67		781.08	280.45		783.87	116.13		340.60	450.00	
01	4254	PF 2	High N	781.64	0.98	782.84	42.40		900.00		340.60	340.60	450.00	383.00
01	4254	PF 2	Low N	780.67	0.00	781.08	280.45		783.87	116.13		340.60	450.00	
01	3882	PF 1	Ex	771.63		772.03	265.00		368.08	531.92		277.00	318.70	
01	3882	PF 1	High N	771.63		772.03	265.21		367.98	532.02		269.70	318.70	
01	3882	PF 1	Rt OB w Channel	771.63		772.03	264.30		368.40	531.60		277.00	318.70	
01	3882	PF 1	Low N	771.63		772.04	266.75		372.18	527.82		269.70	318.70	

HEC-RAS River: STEVENSON CREEK Reach: 01 (Continued)

Reach	River Sta	Profile	Plan	W.S. Elev (ft)	Prof Delta WS (ft)	E.G. Elev (ft)	Top Width Act (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Enc Sta L (ft)	Ch Sta L (ft)	Ch Sta R (ft)	Enc Sta R (ft)
01	3882	PF 2	High N	772.60	0.97	772.69	224.00		294.59	605.41	276.00	269.70	318.70	500.00
01	3882	PF 2	Rt OB w Channel	772.60	0.97	772.69	224.00	0.50	296.96	602.54	276.00	277.00	318.70	500.00
01	3882	PF 2	Low N	771.63	0.00	772.04	266.75		372.18	527.82		269.70	318.70	
01	3824	PF 1	Ex	770.49		770.69	340.58		435.28	464.72		338.80	389.00	
01	3824	PF 1	High N	770.27		770.61	322.98		481.83	418.17		338.80	389.00	
01	3824	PF 1	Rt OB w Channel	770.21		770.61	318.43		496.59	403.41		338.80	389.00	
01	3824	PF 1	Low N	770.14		770.50	312.75		457.89	442.11		338.80	389.00	
01	3824	PF 2	High N	770.93	0.67	772.18	41.11		900.00		338.80	338.80	389.00	382.00
01	3824	PF 2	Rt OB w Channel	770.93	0.72	772.18	41.11		900.00		338.80	338.80	389.00	382.00
01	3824	PF 2	Low N	770.14	0.00	770.50	312.75		457.89	442.11		338.80	389.00	
01	3743	PF 1	Ex	769.38		769.64	545.39	0.06	313.93	586.02		257.60	286.20	
01	3743	PF 1	High N	768.82		768.97	338.03		767.65	132.35		246.00	299.00	
01	3743	PF 1	Rt OB w Channel	768.86		769.00	342.56		747.97	152.03		246.00	299.00	
01	3743	PF 1	Low N	768.73		768.96	327.83		873.54	26.46		246.00	299.00	
01	3743	PF 2	High N	769.19	0.37	769.33	123.16		779.78	120.22	246.00	246.00	299.00	370.00
01	3743	PF 2	Rt OB w Channel	769.19	0.33	769.33	123.17		780.28	119.72	246.00	246.00	299.00	370.00
01	3743	PF 2	Low N	768.73	0.00	768.96	327.83		873.54	26.46		246.00	299.00	
01	3679	PF 1	Ex	767.78		768.10	329.65	9.45	890.05	0.49		317.70	617.30	
01	3624	PF 1	Ex	766.34		766.67	555.20	0.11	496.39	403.50		247.00	275.90	
01	3354	PF 1	Ex	760.07		760.44	301.81		379.59	520.41		262.90	283.40	
01	3354	PF 1	High N	758.15		758.34	33.93		500.00			225.70	271.70	
01	3354	PF 1	Rt OB w Channel	759.91		760.25	173.33		532.00			378.00	807.80	
01	3354	PF 1	Low N	755.46		756.41	23.26		500.00			225.70	271.70	
01	3354	PF 2	High N	758.15	0.00	758.34	33.93		500.00		188.50	225.70	271.70	271.70
01	3354	PF 2	Rt OB w Channel	760.90	0.98	761.87	35.00		532.00		385.00	378.00	807.80	420.00
01	3354	PF 2	Low N	755.46	0.00	756.41	23.26		500.00			225.70	271.70	
01	3334	PF 1	High N	757.70		757.90	33.94		500.00			226.70	273.20	
01	3334	PF 1	Rt OB w Channel	759.21		759.24	660.78		307.34	224.66		273.20	807.80	
01	3334	PF 1	Low N	754.67		755.94	21.86		500.00			226.70	273.20	
01	3334	PF 2	High N	757.70	0.00	757.90	33.94		500.00		0.00	226.70	273.20	273.20
01	3334	PF 2	Rt OB w Channel	760.07	0.85	760.17	105.00		532.00		450.00	273.20	807.80	555.00
01	3334	PF 2	Low N	754.67	0.00	755.94	21.86		500.00			226.70	273.20	
01	3144	PF 1	High N	753.84		754.01	35.37		500.00			215.90	260.50	
01	3144	PF 1	Rt OB w Channel	755.38		755.65	235.16		532.00			309.70	809.00	
01	3144	PF 1	Low N	750.92		751.82	23.67		500.00			215.90	260.50	
01	3144	PF 2	High N	753.84	0.00	754.01	35.37		500.00		215.90	215.90	260.50	809.00
01	3144	PF 2	Rt OB w Channel	756.32	0.94	757.25	36.91		532.00		412.00	309.70	809.00	453.00
01	3144	PF 2	Low N	750.92	0.00	751.82	23.67		500.00			215.90	260.50	

HEC-RAS River: STEVENSON CREEK Reach: 01 (Continued)

Reach	River Sta	Profile	Plan	W.S. Elev (ft)	Prof Delta WS (ft)	E.G. Elev (ft)	Top Width Act (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Enc Sta L (ft)	Ch Sta L (ft)	Ch Sta R (ft)	Enc Sta R (ft)
01	2996	PF 1	Ex	751.93		752.27	374.27		366.57	533.43		258.00	283.00	
01	2996	PF 1	High N	750.81		751.02	33.63		500.00			214.90	258.90	
01	2996	PF 1	Rt OB w Channel	751.90		752.05	217.30		532.00			258.90	1000.00	
01	2996	PF 1	Low N	747.88		749.14	21.91		500.00			214.90	258.90	
01	2996	PF 2	High N	750.81	0.00	751.02	33.63		500.00		29.00	214.90	258.90	1000.00
01	2996	PF 2	Rt OB w Channel	752.68	0.78	752.99	65.00		532.00		480.00	258.90	1000.00	545.00
01	2996	PF 2	Low N	747.88	0.00	749.14	21.91		500.00			214.90	258.90	
01	2844	PF 1	High N	747.34		747.52	34.77		500.00			234.90	280.40	
01	2844	PF 1	Rt OB w Channel	748.43		748.59	427.80		527.29	4.71		386.60	801.60	
01	2844	PF 1	Low N	744.28		745.43	22.43		500.00			234.90	280.40	
01	2844	PF 2	High N	747.34	0.00	747.52	34.77		500.00		153.60	234.90	280.40	680.50
01	2844	PF 2	Rt OB w Channel	749.36	0.93	750.27	39.00		532.00		538.00	386.60	801.60	577.00
01	2844	PF 2	Low N	744.28	0.00	745.43	22.43		500.00			234.90	280.40	
01	2760	PF 1	Rt OB w Channel	747.06		747.12	445.88		532.00			279.70	1030.60	
01	2760	PF 2	Rt OB w Channel	747.53	0.48	747.65	137.00		532.00		520.00	279.70	1030.60	657.00
01	2666	PF 1	Ex	744.74		744.92	621.21		161.99	738.01		169.00	191.00	
01	2666	PF 1	High N	743.87		744.05	34.66		500.00			118.30	165.10	
01	2666	PF 1	Low N	740.83		741.95	22.51		500.00			118.30	165.10	
01	2666	PF 2	High N	743.87	0.00	744.05	34.67		500.00		0.00	118.30	165.10	1059.00
01	2666	PF 2	Low N	740.83	0.00	741.95	22.51		500.00			118.30	165.10	
01	2588	PF 1	Ex	743.39		743.87	244.06		281.64	618.36		175.00	196.00	
01	2580	PF 1	Rt OB w Channel	744.52		744.70	411.63		532.00			72.60	726.00	
01	2580	PF 2	Rt OB w Channel	745.37	0.85	746.13	50.00		532.00		350.00	72.60	726.00	400.00
01	2572	PF 1	High N	740.97		741.31	30.71		499.98	0.02		164.40	213.00	
01	2572	PF 1	Low N	739.52		740.36	24.08		500.00			164.40	213.00	
01	2572	PF 2	High N	740.93	-0.04	741.28	29.73		500.00		0.00	164.40	213.00	213.00
01	2572	PF 2	Low N	739.52	0.00	740.36	24.08		500.00			164.40	213.00	
01	2560	PF 1	High N	740.13		740.63	27.27		500.00			161.50	208.00	
01	2560	PF 1	Low N	738.77		740.04	21.85		500.00			161.50	208.00	
01	2560	PF 2	High N	740.02	-0.11	740.55	26.84		500.00		-38.90	161.50	208.00	995.10
01	2560	PF 2	Low N	738.77	0.00	740.04	21.85		500.00			161.50	208.00	
01	2540	PF 1	Rt OB w Channel	740.96		741.27	31.24		532.00			18.30	59.90	
01	2540	PF 2	Rt OB w Channel	740.96	0.00	741.27	31.24		532.00			18.30	59.90	
01	2530	PF 1	Rt OB w Channel	740.39		740.79	29.48		532.00			17.70	59.70	
01	2530	PF 2	Rt OB w Channel	740.39	0.00	740.79	29.48		532.00			17.70	59.70	
01	2479	PF 1	Ex	741.64		741.87	477.04		187.22	712.78		262.00	280.00	

HEC-RAS River: STEVENSON CREEK Reach: 01 (Continued)

Reach	River Sta	Profile	Plan	W.S. Elev (ft)	Prof Delta WS (ft)	E.G. Elev (ft)	Top Width Act (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Enc Sta L (ft)	Ch Sta L (ft)	Ch Sta R (ft)	Enc Sta R (ft)
01	2444	PF 1	Ex	740.74		741.05	421.17		229.91	670.09		267.50	287.00	
01	2409	PF 1	Ex	740.20		740.59	325.96		411.45	488.55		268.40	296.70	
01	2407	PF 1	High N	739.76		739.95	45.36		900.00			194.50	252.80	
01	2407	PF 1	Rt OB w Channel	739.76		739.95	45.36		900.00			194.50	252.80	
01	2407	PF 1	Low N	735.90		736.98	29.97		900.00			194.50	252.80	
01	2407	PF 2	High N	739.68	-0.07	739.89	45.07		900.00	0.00		194.50	252.80	1034.00
01	2407	PF 2	Rt OB w Channel	739.76	0.00	739.95	45.36		900.00			194.50	252.80	
01	2407	PF 2	Low N	735.90	0.00	736.98	29.97		900.00			194.50	252.80	
01	2387	PF 1	High N	739.48		739.68	45.13		900.00			187.90	246.70	
01	2387	PF 1	Rt OB w Channel	739.48		739.68	45.13		900.00			187.90	246.70	
01	2387	PF 1	Low N	735.40		736.68	28.80		900.00			187.90	246.70	
01	2387	PF 2	High N	739.39	-0.08	739.60	44.79		900.00	12.00		187.90	246.70	1033.00
01	2387	PF 2	Rt OB w Channel	739.48	0.00	739.68	45.13		900.00			187.90	246.70	
01	2387	PF 2	Low N	735.40	0.00	736.68	28.81		900.00			187.90	246.70	
01	2374			Culvert										
01	2358	PF 1	Ex	739.60		739.80	282.57		307.41	592.59		232.00	258.00	
01	2352	PF 1	Ex	739.33		739.72	244.93		190.19	709.81		218.00	234.10	
01	2352	PF 1	High N	739.03		739.22	45.63		900.00			169.50	230.40	
01	2352	PF 1	Low N	735.11		736.18	29.99		900.00			169.50	230.40	
01	2352	PF 2	High N	738.92	-0.11	739.12	45.20		900.00	0.00		169.50	230.40	1033.00
01	2352	PF 2	Low N	735.11	0.00	736.19	30.00		900.00			169.50	230.40	
01	2289	PF 1	Ex	738.50		738.80	303.81		201.47	698.53		274.00	293.00	
01	2289	PF 1	High N	738.18		738.37	44.75		900.00			211.60	274.20	
01	2289	PF 1	Low N	733.70		735.23	27.62		900.00			211.60	274.20	
01	2289	PF 2	High N	738.00	-0.18	738.21	44.40		900.00	16.00		211.60	274.20	1006.00
01	2289	PF 2	Low N	733.70	-0.01	735.23	27.60		900.00			211.60	274.20	
01	1795	PF 1	High N	728.93		729.20	43.54	0.00	900.00			218.00	270.00	
01	1795	PF 1	Low N	725.87		726.97	29.88		900.00			218.00	270.00	
01	1795	PF 2	High N	729.45	0.52	729.67	44.19		900.00	218.00		218.00	270.00	599.00
01	1795	PF 2	Low N	725.88	0.01	726.97	29.91		900.00			218.00	270.00	
01	1794	PF 1	Ex	731.47		731.92	196.90	667.46	230.36	2.18		280.00	302.00	
01	1783	PF 1	High N	728.66		728.93	42.13		900.00			217.00	269.00	
01	1783	PF 1	Low N	724.98		726.61	27.29		900.00			217.00	269.00	
01	1783	PF 2	High N	729.24	0.59	729.46	44.50		900.00	217.00		217.00	269.00	617.40
01	1783	PF 2	Low N	724.97	-0.01	726.61	27.27		900.00			217.00	269.00	

HEC-RAS River: STEVENSON CREEK Reach: 01 (Continued)

Reach	River Sta	Profile	Plan	W.S. Elev (ft)	Prof Delta WS (ft)	E.G. Elev (ft)	Top Width Act (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Enc Sta L (ft)	Ch Sta L (ft)	Ch Sta R (ft)	Enc Sta R (ft)
01	1644	PF 1	High N	727.91		728.08	46.83		900.00			198.00	249.20	
01	1644	PF 1	Low N	724.46		725.18	33.02		900.00			198.00	249.20	
01	1644	PF 2	High N	728.44	0.53	728.58	48.95		900.00		198.00	198.00	249.20	598.00
01	1644	PF 2	Low N	724.46	0.00	725.18	33.02		900.00			198.00	249.20	
01	1624	PF 1	High N	727.78		727.88	53.91		900.00			191.20	246.80	
01	1624	PF 1	Low N	724.60		724.89	41.19		900.00			191.20	246.80	
01	1624	PF 2	High N	728.34	0.56	728.42	55.60		900.00		191.20	191.20	246.80	246.80
01	1624	PF 2	Low N	724.60	0.00	724.89	41.19		900.00			191.20	246.80	
01	1444	PF 1	Ex	727.12		727.42	281.64	634.04	265.96			280.00	301.00	
01	1444	PF 1	High N	726.31		726.44	200.91	105.01	794.99			209.90	261.30	
01	1444	PF 1	Low N	723.75		724.29	35.41		900.00			209.90	261.30	
01	1444	PF 2	High N	727.06	0.75	727.21	46.13		900.00		209.90	209.90	261.30	598.00
01	1444	PF 2	Low N	723.75	0.00	724.29	35.41		900.00			209.90	261.30	
01	1184	PF 1	Ex	723.62		724.18	219.76	551.06	348.94			247.00	274.80	
01	1184	PF 1	High N	723.62		723.72	198.95	373.42	526.58			184.20	234.90	
01	1184	PF 1	Low N	722.07		722.73	62.29	2.71	897.29			184.20	234.90	
01	1184	PF 2	High N	724.58	0.96	724.72	66.62	238.07	661.93		160.00	184.20	234.90	234.90
01	1184	PF 2	Low N	722.07	0.00	722.73	62.24	2.70	897.30			184.20	234.90	
01	984	PF 1	Ex	722.01		722.17	216.47	707.32	192.68			266.30	295.70	
01	984	PF 1	High N	721.69		721.80	177.94	443.47	456.53			204.30	263.50	
01	984	PF 1	Low N	721.76		721.94	178.11	209.41	690.59			204.30	263.50	
01	984	PF 2	High N	721.49	-0.21	721.78	70.52	159.89	740.11		175.11	204.30	263.50	524.60
01	984	PF 2	Low N	721.76	0.00	721.94	178.11	209.22	690.78			204.30	263.50	
01	800	PF 1	Ex	721.68		721.78	325.33	946.66	288.34			675.40	695.50	
01	800	PF 1	High N	721.37		721.70	310.35	196.02	1038.99			652.80	695.50	
01	800	PF 1	Low N	721.53		721.87	317.98	164.13	1070.87			652.80	695.50	
01	800	PF 2	High N	721.36	0.00	721.70	310.22	195.65	1039.36			652.80	695.50	
01	800	PF 2	Low N	721.53	0.00	721.87	317.90	163.96	1071.04			652.80	695.50	
01	567	PF 1	Ex	721.31		721.37	283.60	859.81	371.00	4.19		276.20	314.30	
01	567	PF 1	High N	721.31		721.37	283.60	859.81	371.00	4.19		276.20	314.30	
01	567	PF 1	Low N	721.47		721.55	283.60	691.42	537.03	6.55		276.20	314.30	
01	567	PF 2	High N	721.31	0.00	721.36	283.60	859.55	371.29	4.16		276.20	314.30	
01	567	PF 2	Low N	721.47	0.00	721.55	283.60	691.25	537.22	6.53		276.20	314.30	
01	100	PF 1	Ex	717.51		718.00	529.03	2242.16	542.84			1023.20	1123.60	
01	100	PF 1	High N	717.51		718.00	529.03	2242.16	542.84			1023.20	1123.60	
01	100	PF 1	Low N	717.59		718.09	530.83	1912.38	872.62			1023.20	1123.60	
01	100	PF 2	High N	717.51	0.00	718.00	529.03	2242.16	542.84			1023.20	1123.60	
01	100	PF 2	Low N	717.59	0.00	718.09	530.83	1912.38	872.62			1023.20	1123.60	

Twin Oaks Valley Creek Results

HEC-RAS

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	2436	PF 1	TOVC Ex	1750.00	737.87	743.99	743.99	744.37	0.015537	6.73	522.46	762.80	0.88
1	2436	PF 1	Split	1750.00	737.87	743.99	743.99	744.37	0.015537	6.73	522.46	762.80	0.88
1	2436	PF 1	Split Low N	1750.00	737.87	743.99	743.99	744.37	0.015537	6.73	522.46	762.80	0.88
1	2436	PF 2	TOVC Ex	1750.00	737.87	743.99	743.99	744.37	0.015537	6.73	522.46	762.80	0.88
1	2436	PF 2	Split	1750.00	737.87	744.99	744.97	746.48	0.017949	9.81	178.44	59.00	0.99
1	2436	PF 2	Split Low N	1750.00	737.87	744.99	744.97	746.48	0.017949	9.81	178.44	59.00	0.99
1	2291	PF 1	TOVC Ex	1750.00	735.57	741.83	741.83	742.19	0.012122	6.12	544.96	706.00	0.79
1	2291	PF 1	Split	1750.00	735.57	741.83	741.83	742.19	0.012122	6.12	544.96	706.00	0.79
1	2291	PF 1	Split Low N	1750.00	735.57	741.83	741.83	742.19	0.012122	6.12	544.96	706.00	0.79
1	2291	PF 2	TOVC Ex	1750.00	735.57	741.83	741.83	742.19	0.012122	6.12	544.96	706.00	0.79
1	2291	PF 2	Split	1750.00	735.57	742.43	742.43	743.93	0.018414	9.85	177.71	60.00	1.01
1	2291	PF 2	Split Low N	1750.00	735.57	742.43	742.43	743.93	0.018414	9.85	177.71	60.00	1.01
1	1900	PF 1	TOVC Ex	1750.00	730.00	735.69	735.69	735.95	0.007832	6.52	710.95	1063.22	0.59
1	1900	PF 1	Split	1750.00	730.00	735.69	735.69	735.95	0.007832	6.52	710.95	1063.22	0.59
1	1900	PF 1	Split Low N	1750.00	730.00	735.69	735.69	735.95	0.007832	6.52	710.95	1063.22	0.59
1	1900	PF 2	TOVC Ex	1750.00	730.00	735.69	735.69	735.95	0.007832	6.52	710.95	1063.22	0.59
1	1900	PF 2	Split	1750.00	730.00	736.70	736.70	737.68	0.012962	9.44	257.08	109.10	0.76
1	1900	PF 2	Split Low N	1750.00	730.00	736.70	736.70	737.68	0.012962	9.44	257.08	109.10	0.76
1	1800	PF 1	TOVC Ex	1750.00	726.40	734.42	734.42	734.71	0.005674	6.17	684.39	998.60	0.51
1	1800	PF 1	Split	1750.00	726.40	734.42	734.42	734.71	0.005674	6.17	684.39	998.60	0.51
1	1800	PF 1	Split Low N	1750.00	726.40	734.42	734.42	734.71	0.005674	6.17	684.39	998.60	0.51
1	1800	PF 2	TOVC Ex	1750.00	726.40	734.42	734.42	734.71	0.005674	6.17	684.39	998.60	0.51
1	1800	PF 2	Split	1750.00	726.40	735.36	735.17	736.48	0.010860	9.31	234.97	79.00	0.70
1	1800	PF 2	Split Low N	1750.00	726.40	735.36	735.17	736.48	0.010859	9.31	234.98	79.00	0.70
1	1667	PF 1	TOVC Ex	1750.00	724.40	731.88	731.88	732.27	0.005880	6.99	584.59	804.45	0.53
1	1667	PF 1	Split	1750.00	724.40	731.37	731.37	732.20	0.014260	7.51	270.16	368.41	0.80
1	1667	PF 1	Split Low N	1750.00	724.40	731.37	731.37	732.20	0.014260	7.51	270.16	368.41	0.80
1	1667	PF 2	TOVC Ex	1750.00	724.40	731.88	731.88	732.27	0.005880	6.99	584.59	804.45	0.53
1	1667	PF 2	Split	1750.00	724.40	732.36	732.09	734.49	0.020325	11.71	149.51	29.70	0.92
1	1667	PF 2	Split Low N	1750.00	724.40	732.36	732.09	734.49	0.020328	11.71	149.50	29.70	0.92
1	1367	PF 1	TOVC Ex	1750.00	721.80	726.48	726.48	726.75	0.012701	6.85	579.42	813.00	0.73
1	1367	PF 1	Split	1750.00	721.80	726.49	726.49	726.75	0.012474	6.79	583.10	813.10	0.73
1	1367	PF 1	Split Low N	1750.00	721.80	726.50	726.50	726.75	0.011964	6.66	591.68	813.36	0.71
1	1367	PF 2	TOVC Ex	1750.00	721.80	726.48	726.48	726.75	0.012701	6.85	579.42	813.00	0.73
1	1367	PF 2	Split	1750.00	721.80	727.45	727.45	728.17	0.014907	8.65	298.52	170.00	0.82
1	1367	PF 2	Split Low N	1750.00	721.80	727.45	727.45	728.17	0.014904	8.65	298.54	170.00	0.82
1	1067	PF 1	TOVC Ex	1750.00	719.80	724.89	723.40	724.89	0.000086	0.70	3353.09	1293.13	0.06
1	1067	PF 2	TOVC Ex	1750.00	719.80	724.89	723.40	724.89	0.000086	0.70	3353.09	1293.13	0.06

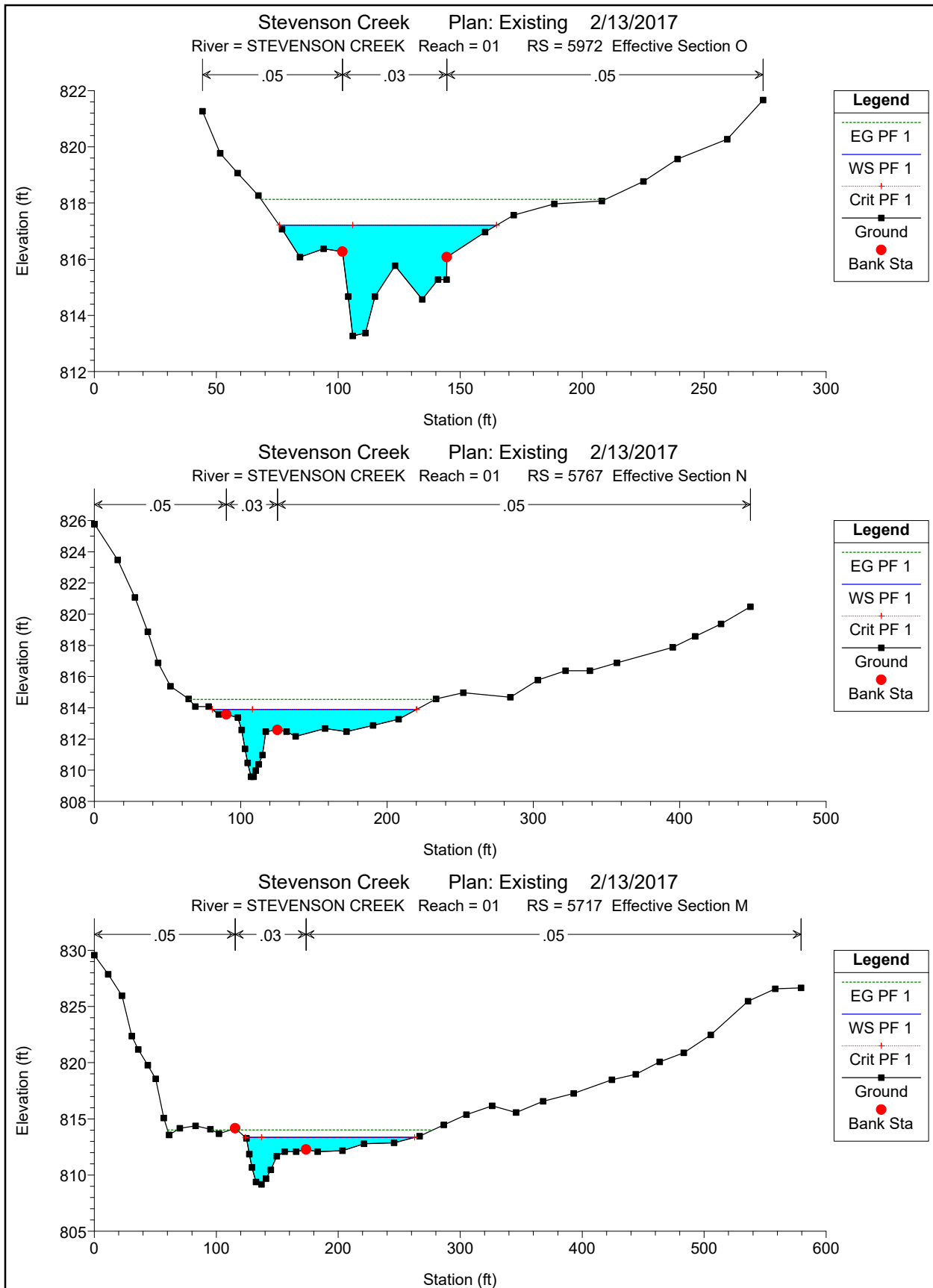
HEC-RAS (Continued)

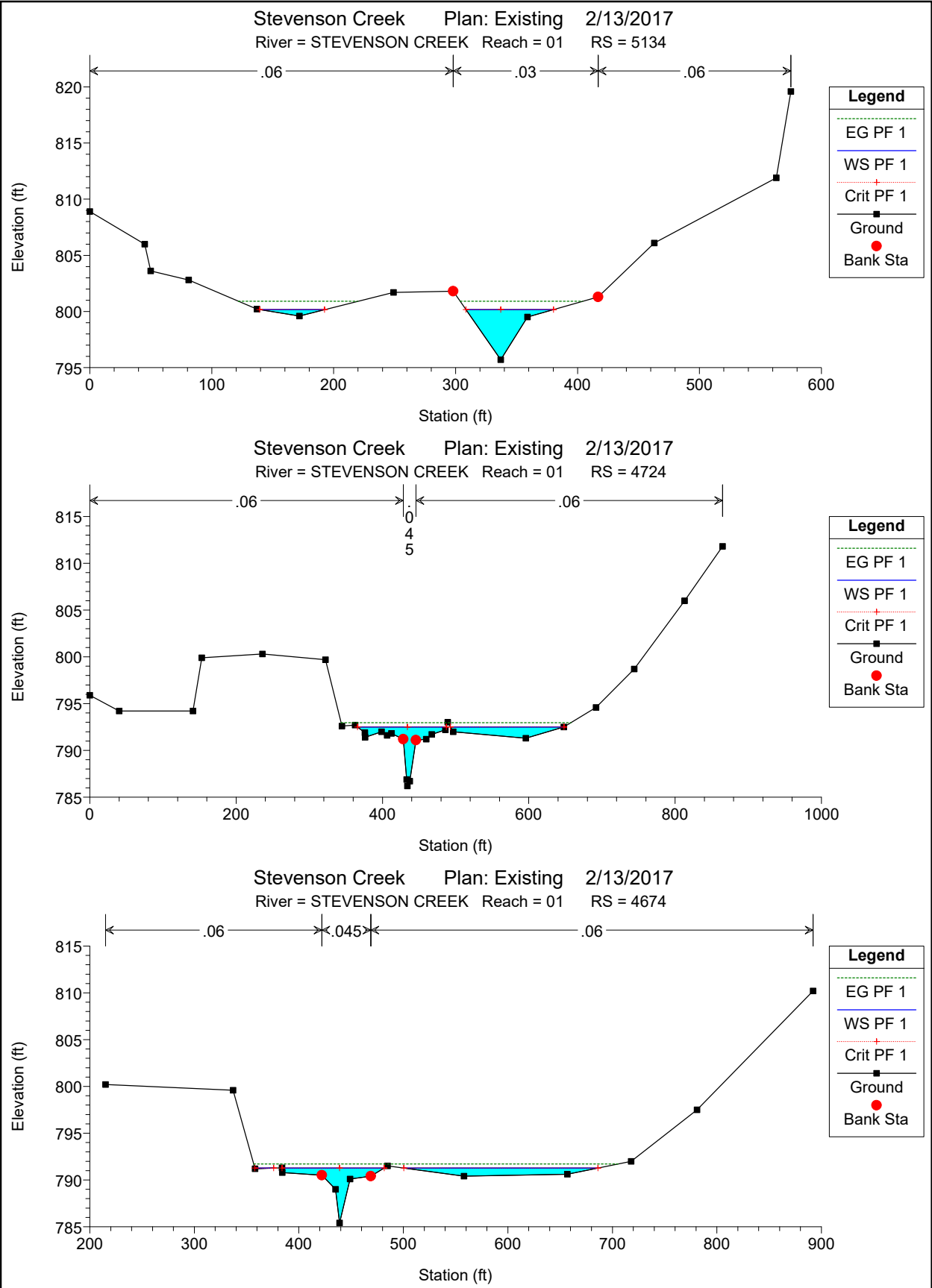
Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	1012	PF 1	TOVC Ex	1750.00	719.10	724.88	723.41	724.89	0.000105	0.80	3154.11	1296.51	0.07
1	1012	PF 2	TOVC Ex	1750.00	719.10	724.88	723.41	724.89	0.000105	0.80	3154.11	1296.51	0.07
1	950		Culvert										
1	800	PF 1	TOVC Ex	2650.00	715.70	719.69	718.82	719.77	0.003052	3.12	1183.62	831.06	0.35
1	800	PF 1	TOVC Ex- Split L	1235.00	715.70	721.68		721.78	0.002343	3.73	561.93	325.33	0.33
1	800	PF 1	TOVC Ex- Split R	1415.00	717.70	719.16		719.22	0.003301	2.00	751.25	675.02	0.31
1	800	PF 2	TOVC Ex	2650.00	715.70	719.69	718.82	719.77	0.003052	3.12	1183.62	831.06	0.35
1	567	PF 1	TOVC Ex	2650.00	714.60	717.52	717.52	717.89	0.035999	6.86	554.52	715.13	0.88
1	567	PF 1	TOVC Ex- Split L	1235.00	714.60	721.31	719.83	721.37	0.001183	2.21	679.61	283.60	0.18
1	567	PF 1	TOVC Ex- Split R	1415.00	716.00	717.39		717.58	0.020058	2.97	428.89	677.67	0.68
1	567	PF 2	TOVC Ex	2650.00	714.60	717.52	717.52	717.89	0.035999	6.86	554.52	715.13	0.88
1	100	PF 1	TOVC Ex	4200.00	715.97	717.40	713.77	717.41	0.000147	0.29	5152.97	1796.84	0.05
1	100	PF 1	TOVC Ex- Split L	2785.00	715.97	717.51	717.51	718.00	0.041054	5.17	498.96	529.03	0.89
1	100	PF 1	TOVC Ex- Split R	1415.00	711.87	717.40	713.29	717.40	0.000017	0.34	4546.29	1123.09	0.03
1	100	PF 2	TOVC Ex	4200.00	715.97	717.40	713.77	717.41	0.000147	0.29	5152.97	1796.84	0.05
Left Split	1067	PF 1	Split	335.00	717.00	724.26	718.09	724.26	0.000046	0.23	1184.47	1264.56	0.02
Left Split	1067	PF 1	Split Low N	335.00	717.00	724.26	718.09	724.26	0.000015	0.44	1184.18	1264.52	0.03
Left Split	1067	PF 2	Split	335.00	717.00	724.26	718.09	724.26	0.000046	0.23	1184.47	1264.56	0.02
Left Split	1067	PF 2	Split Low N	335.00	717.00	724.26	718.09	724.26	0.000015	0.44	1184.18	1264.52	0.03
Left Split	800	PF 1	Split	1235.00	715.20	720.23	719.21	721.04	0.000713	7.38	255.59	207.28	0.65
Left Split	800	PF 1	Split Low N	1235.00	715.20	720.23	719.21	721.04	0.000713	7.38	255.59	207.28	0.65
Left Split	800	PF 2	Split	1235.00	715.20	720.23	719.21	721.04	0.000713	7.38	255.59	207.28	0.65
Left Split	800	PF 2	Split Low N	1235.00	715.20	720.23	719.21	721.04	0.000713	7.38	255.59	207.28	0.65
Left Split	567	PF 1	Split	1235.00	714.60	719.83	719.83	720.29	0.018084	6.57	272.42	271.13	0.68
Left Split	567	PF 1	Split Low N	1235.00	714.60	719.83	719.83	720.29	0.018084	6.57	272.42	271.13	0.68
Left Split	567	PF 2	Split	1235.00	714.60	719.83	719.83	720.29	0.018084	6.57	272.42	271.13	0.68
Left Split	567	PF 2	Split Low N	1235.00	714.60	719.83	719.83	720.29	0.018084	6.57	272.42	271.13	0.68
Left Split	100	PF 1	Split	2785.00	715.97	717.40	713.55	717.41	0.000065	0.19	5152.97	1796.84	0.03
Left Split	100	PF 1	Split Low N	2785.00	715.97	717.40	713.54	717.41	0.000065	0.19	5152.97	1796.84	0.03
Left Split	100	PF 2	Split	2785.00	715.97	717.40	713.55	717.41	0.000065	0.19	5152.97	1796.84	0.03
Left Split	100	PF 2	Split Low N	2785.00	715.97	717.40	713.56	717.41	0.000065	0.19	5152.97	1796.84	0.03
Right Split	1067	PF 1	Split	1415.00	717.00	724.28	719.78	724.29	0.000116	0.36	2897.89	1265.44	0.02
Right Split	1067	PF 1	Split Low N	1415.00	717.00	724.28	719.78	724.29	0.000070	0.95	2894.95	1265.33	0.07
Right Split	1067	PF 2	Split	1415.00	717.00	724.28	719.78	724.29	0.000116	0.36	2897.89	1265.44	0.02
Right Split	1067	PF 2	Split Low N	1415.00	717.00	724.28	719.78	724.29	0.000070	0.95	2894.95	1265.33	0.07

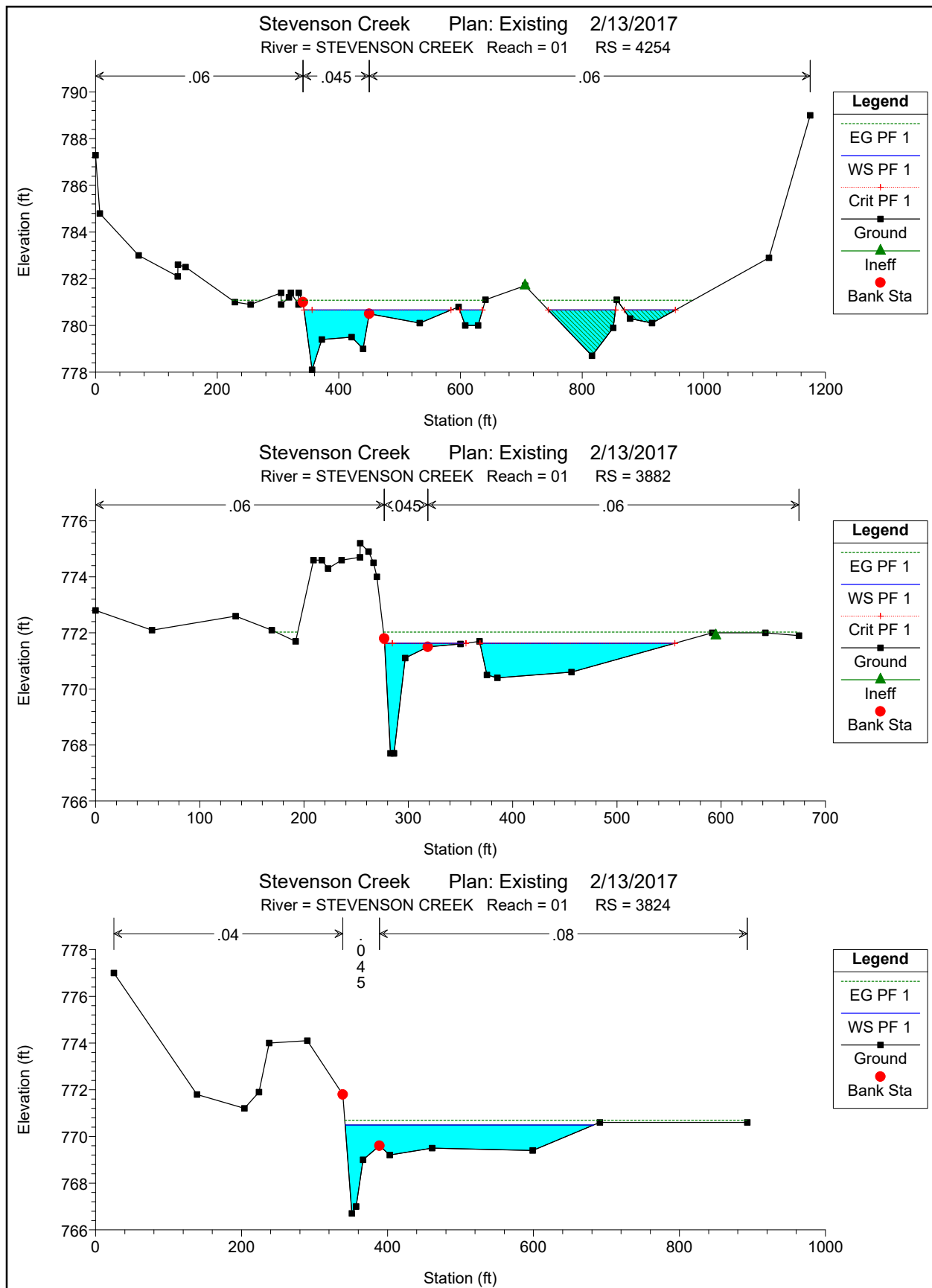
HEC-RAS (Continued)

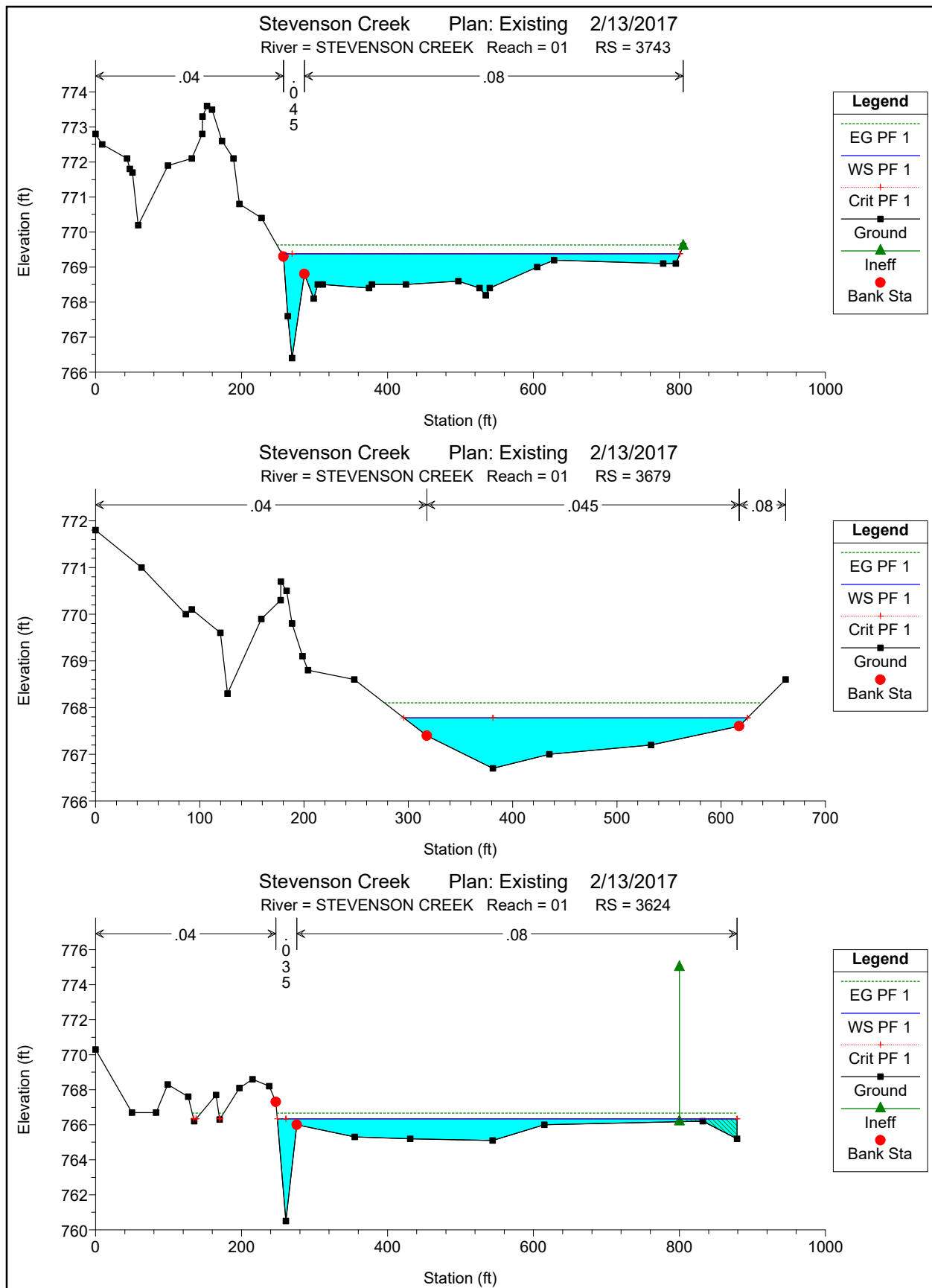
Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Right Split	800	PF 1	Split	1415.00	717.70	719.16		719.22	0.003294	1.99	751.75	675.06	0.31
Right Split	800	PF 1	Split Low N	1415.00	717.70	719.16		719.22	0.003294	1.99	751.75	675.06	0.31
Right Split	800	PF 2	Split	1415.00	717.70	719.16		719.22	0.003292	1.99	751.87	675.07	0.31
Right Split	800	PF 2	Split Low N	1415.00	717.70	719.16		719.22	0.003294	1.99	751.75	675.06	0.31
Right Split	567	PF 1	Split	1415.00	716.00	717.39		717.58	0.020193	2.98	427.94	677.48	0.68
Right Split	567	PF 1	Split Low N	1415.00	716.00	717.39		717.58	0.020193	2.98	427.94	677.48	0.68
Right Split	567	PF 2	Split	1415.00	716.00	717.39		717.58	0.020216	2.98	427.77	677.45	0.68
Right Split	567	PF 2	Split Low N	1415.00	716.00	717.39		717.58	0.020193	2.98	427.94	677.48	0.68
Right Split	100	PF 1	Split	1415.00	715.97	717.40	713.28	717.40	0.000017	0.10	5152.97	1796.84	0.02
Right Split	100	PF 1	Split Low N	1415.00	715.97	717.40	713.28	717.40	0.000017	0.10	5152.97	1796.84	0.02
Right Split	100	PF 2	Split	1415.00	715.97	717.40	713.29	717.40	0.000017	0.10	5152.97	1796.84	0.02
Right Split	100	PF 2	Split Low N	1415.00	715.97	717.40	713.28	717.40	0.000017	0.10	5152.97	1796.84	0.02

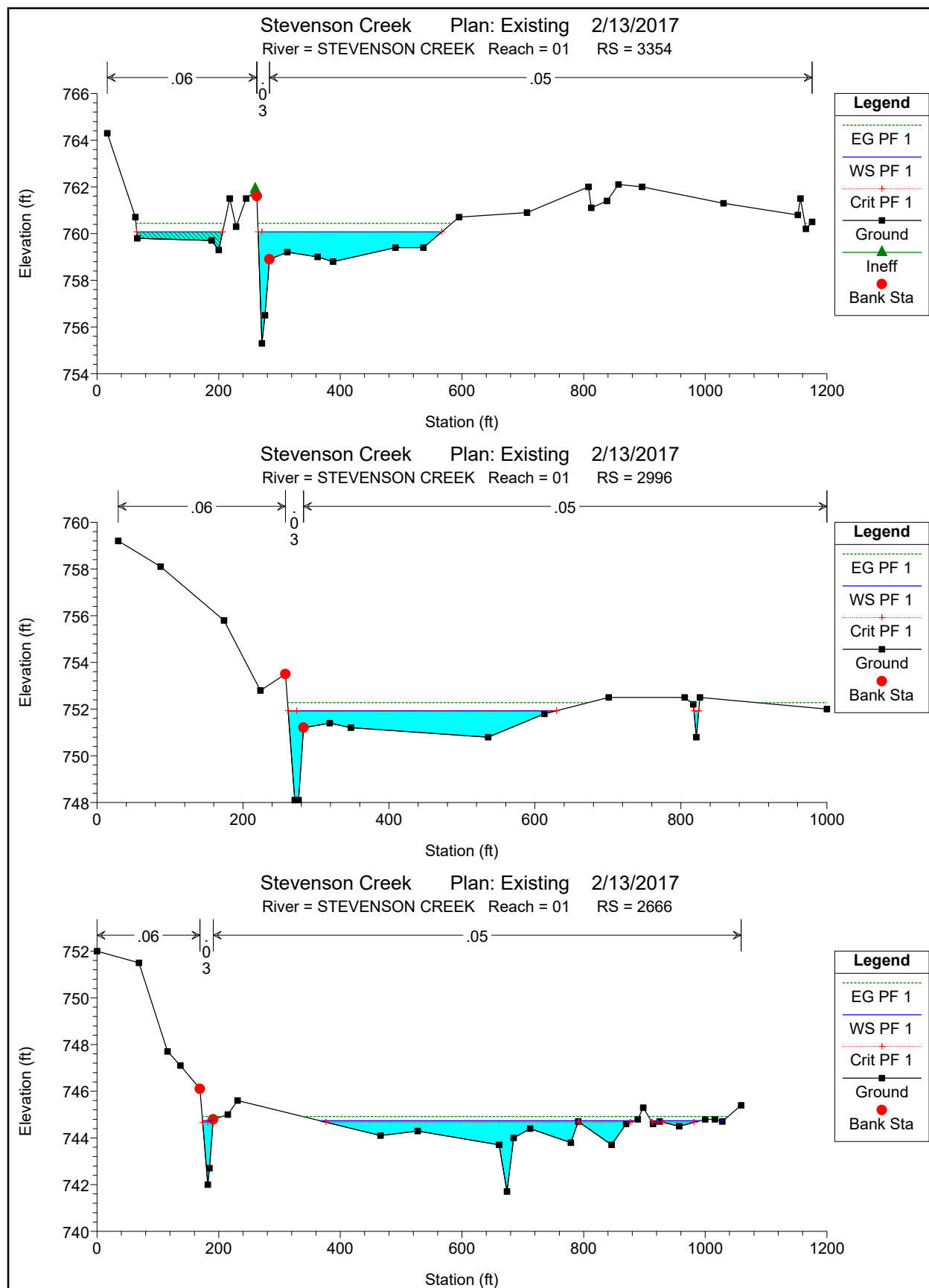
Stevenson Creek Existing Sections

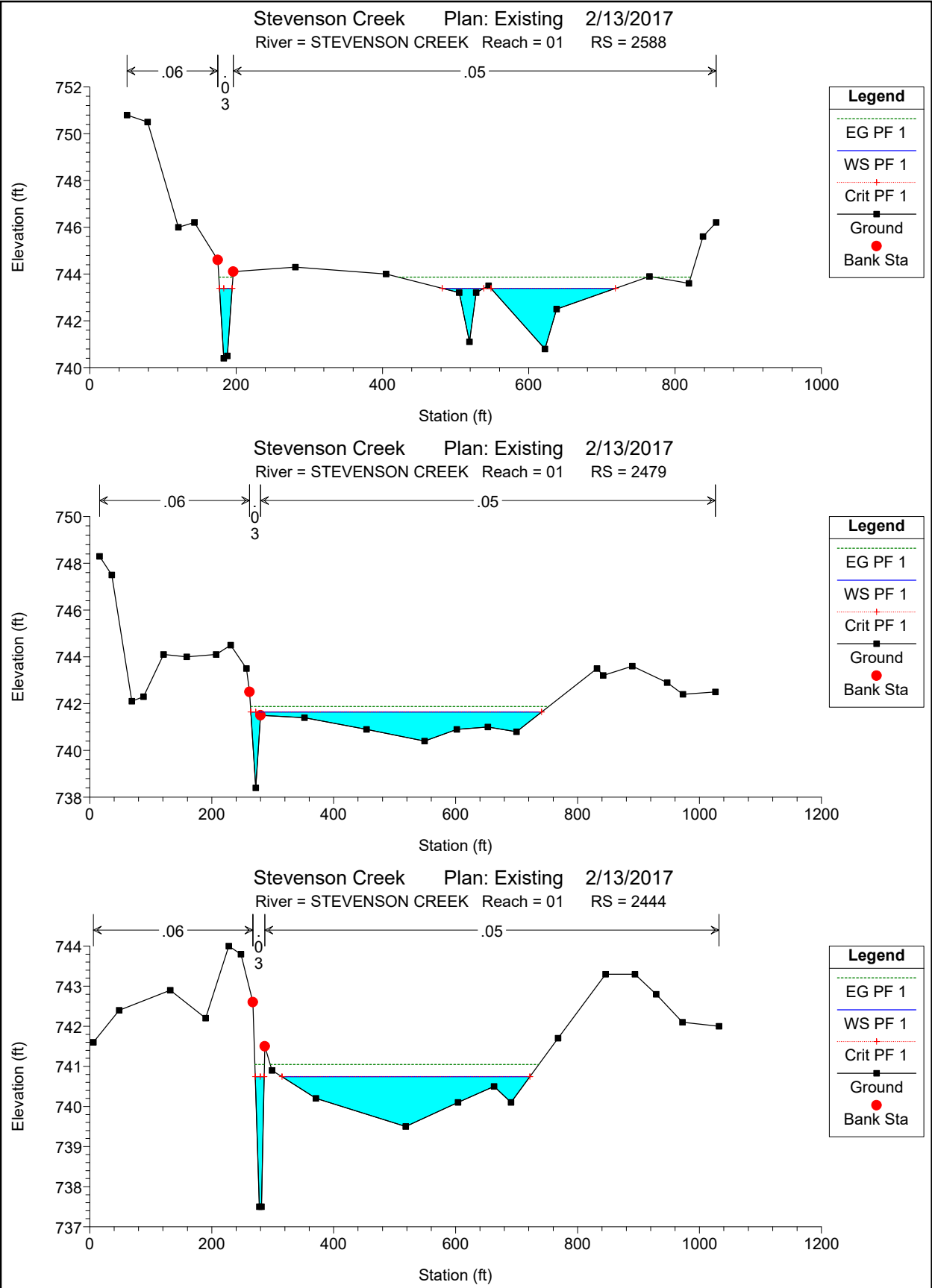


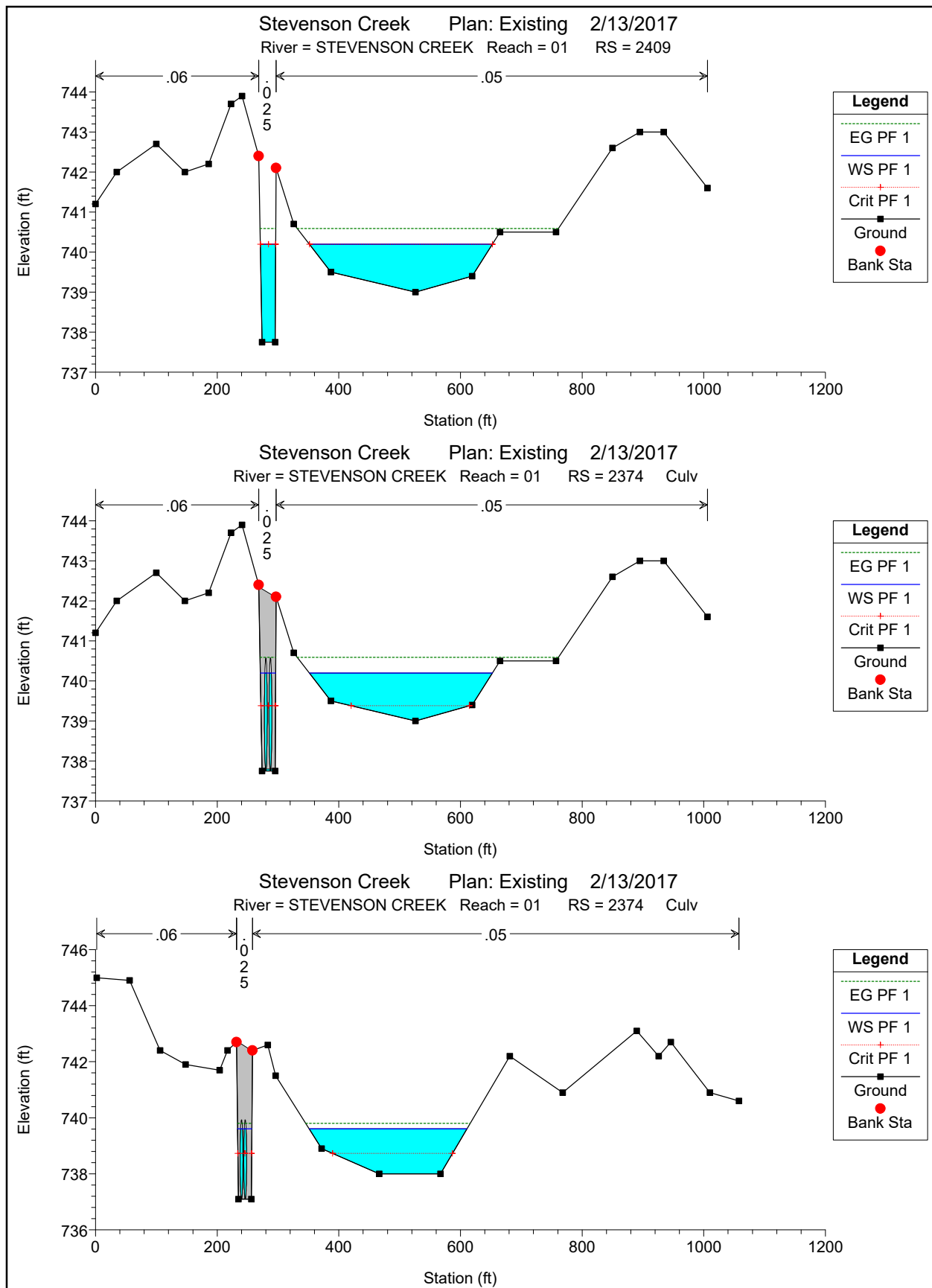


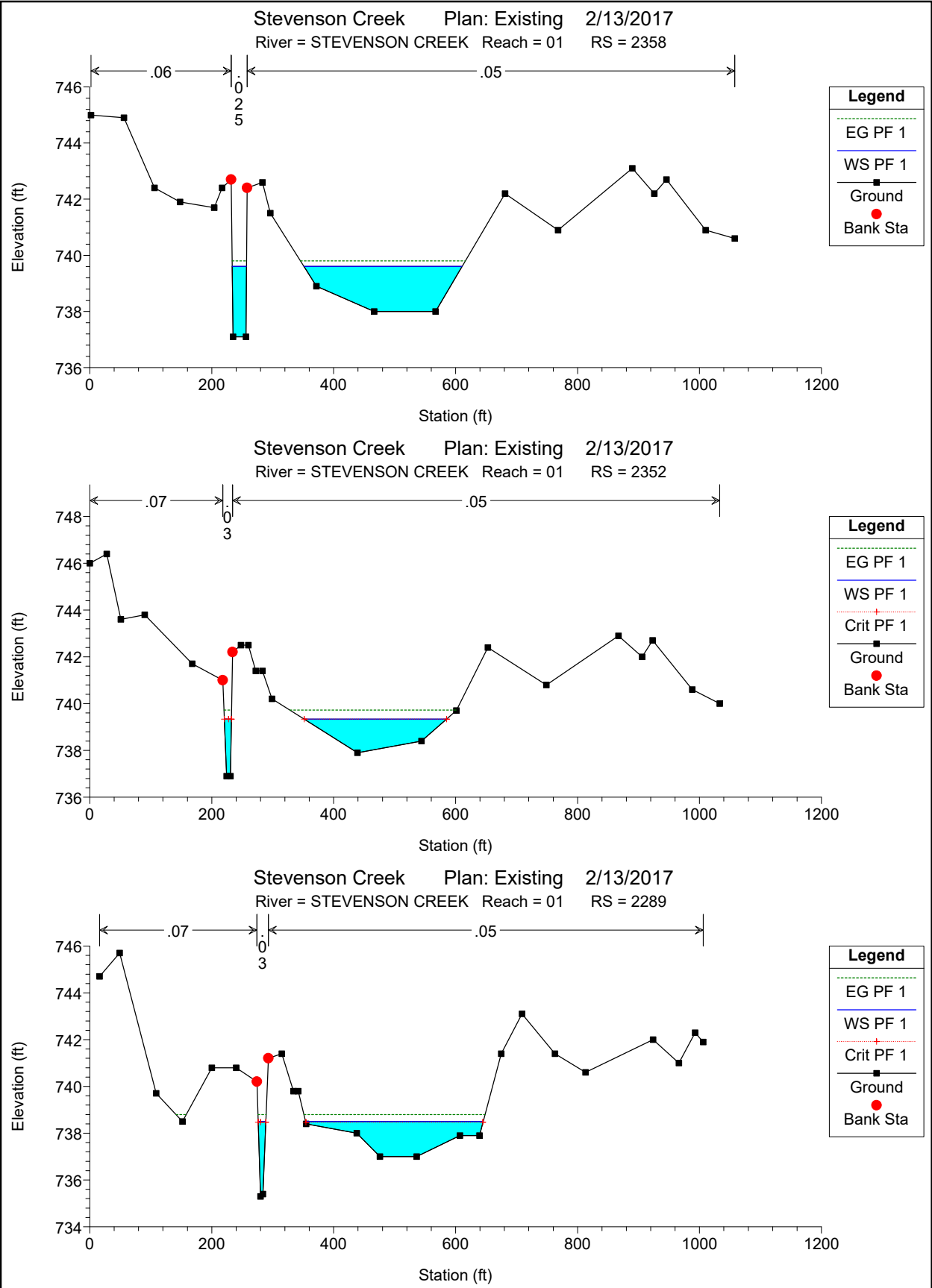


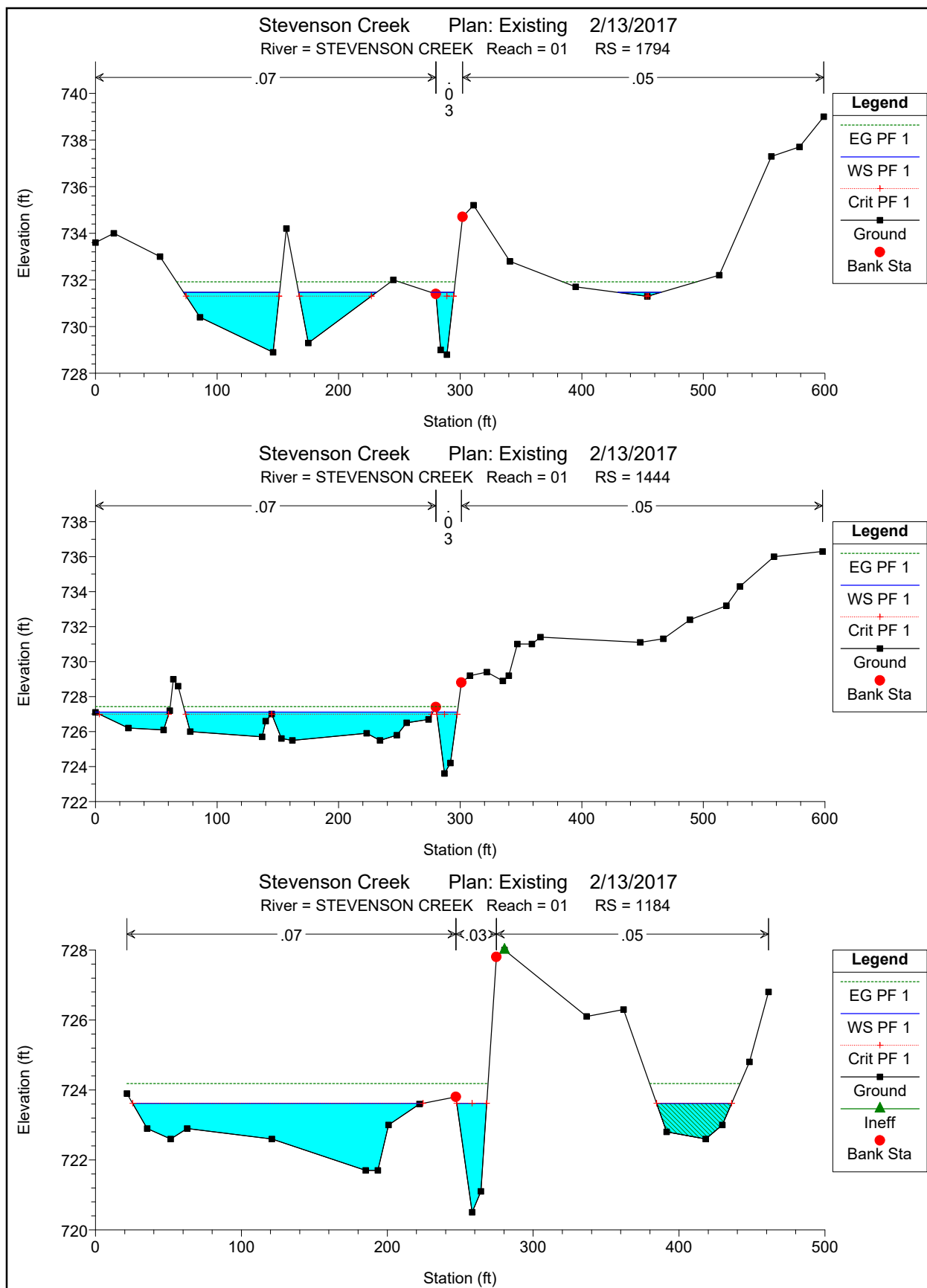


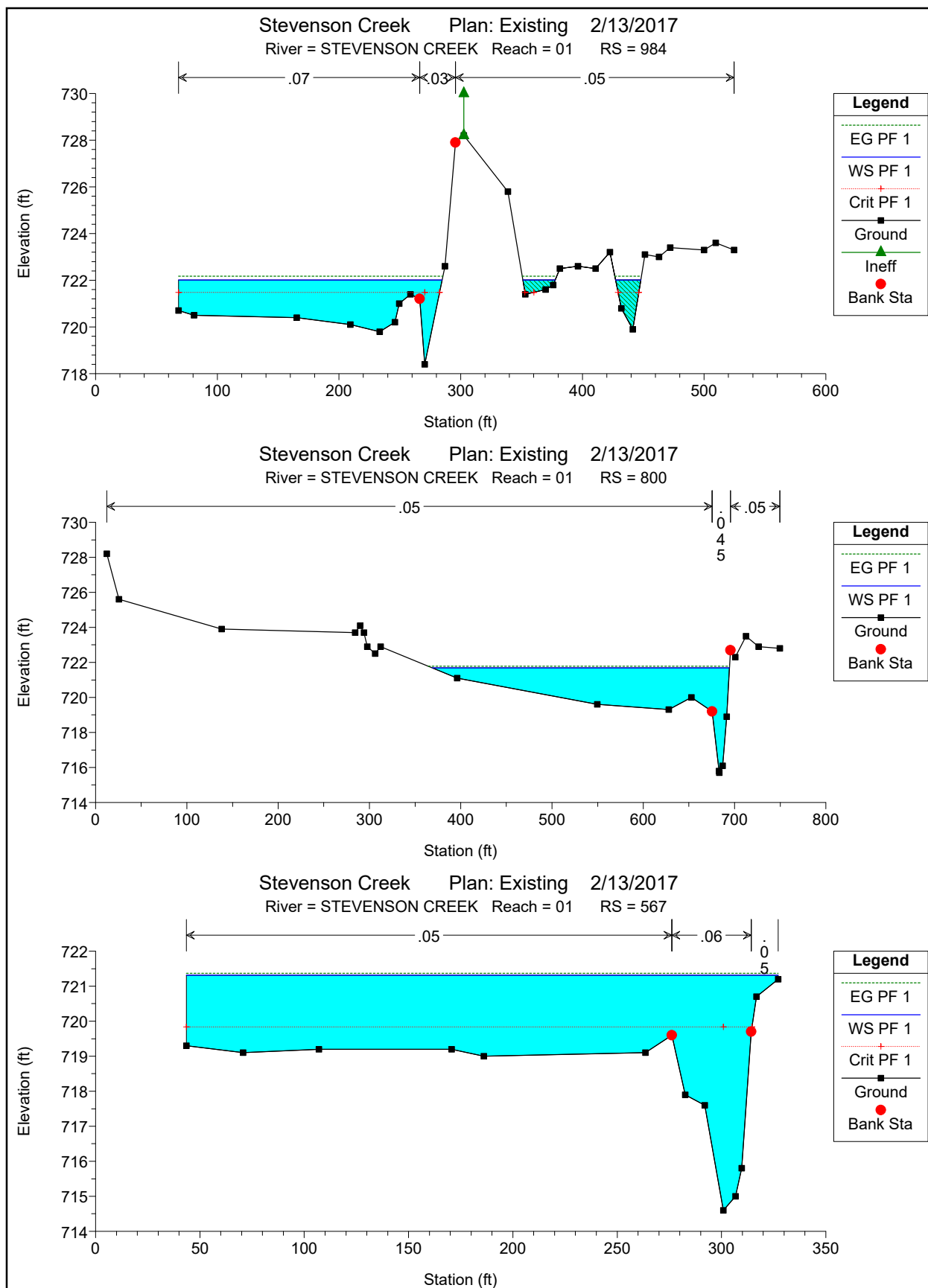




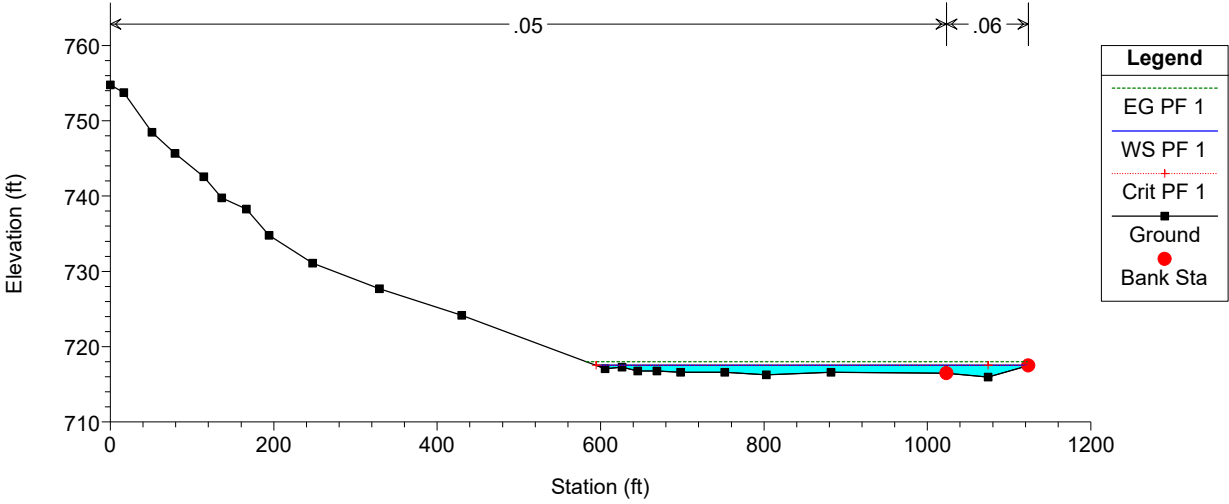




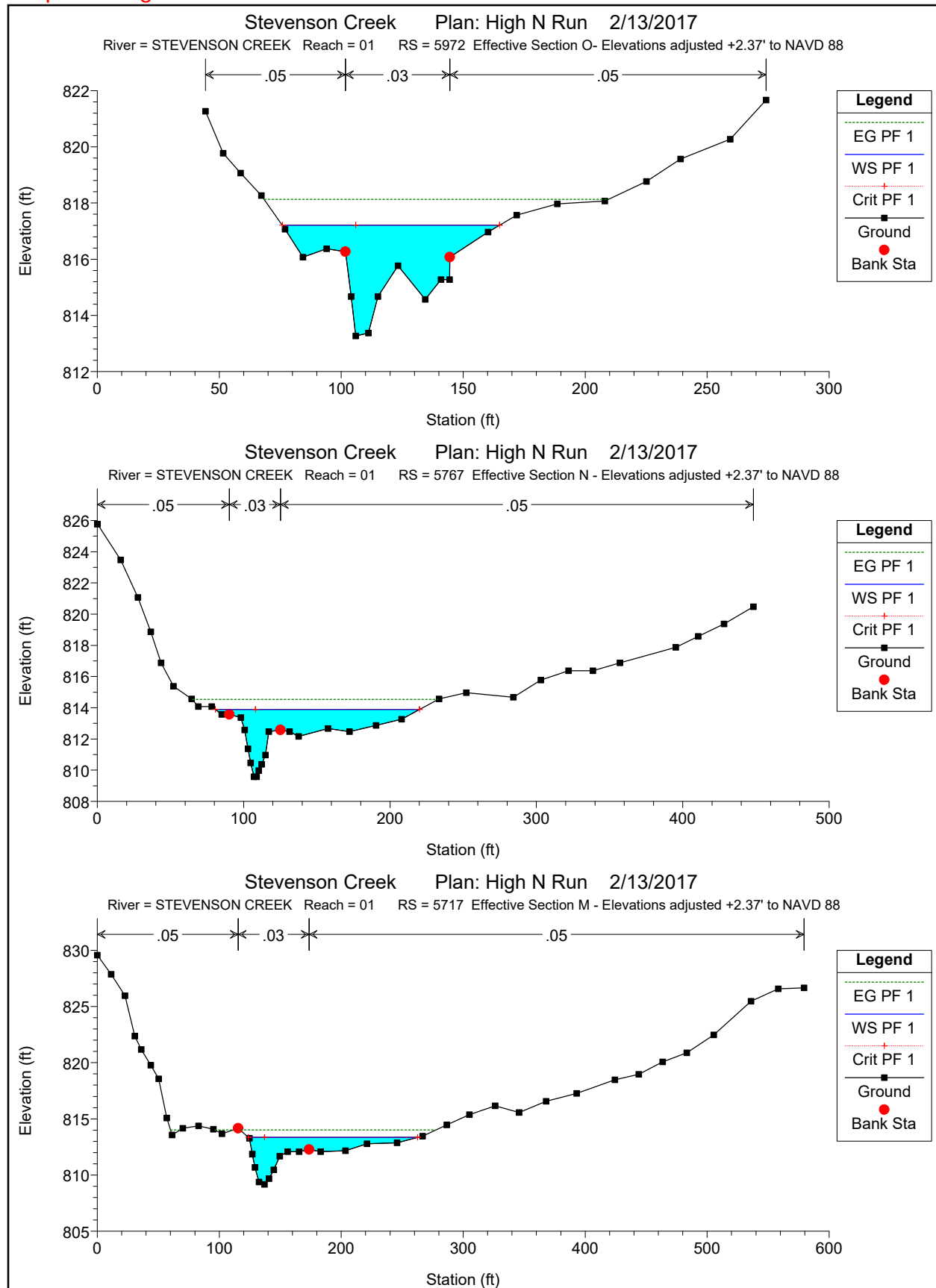


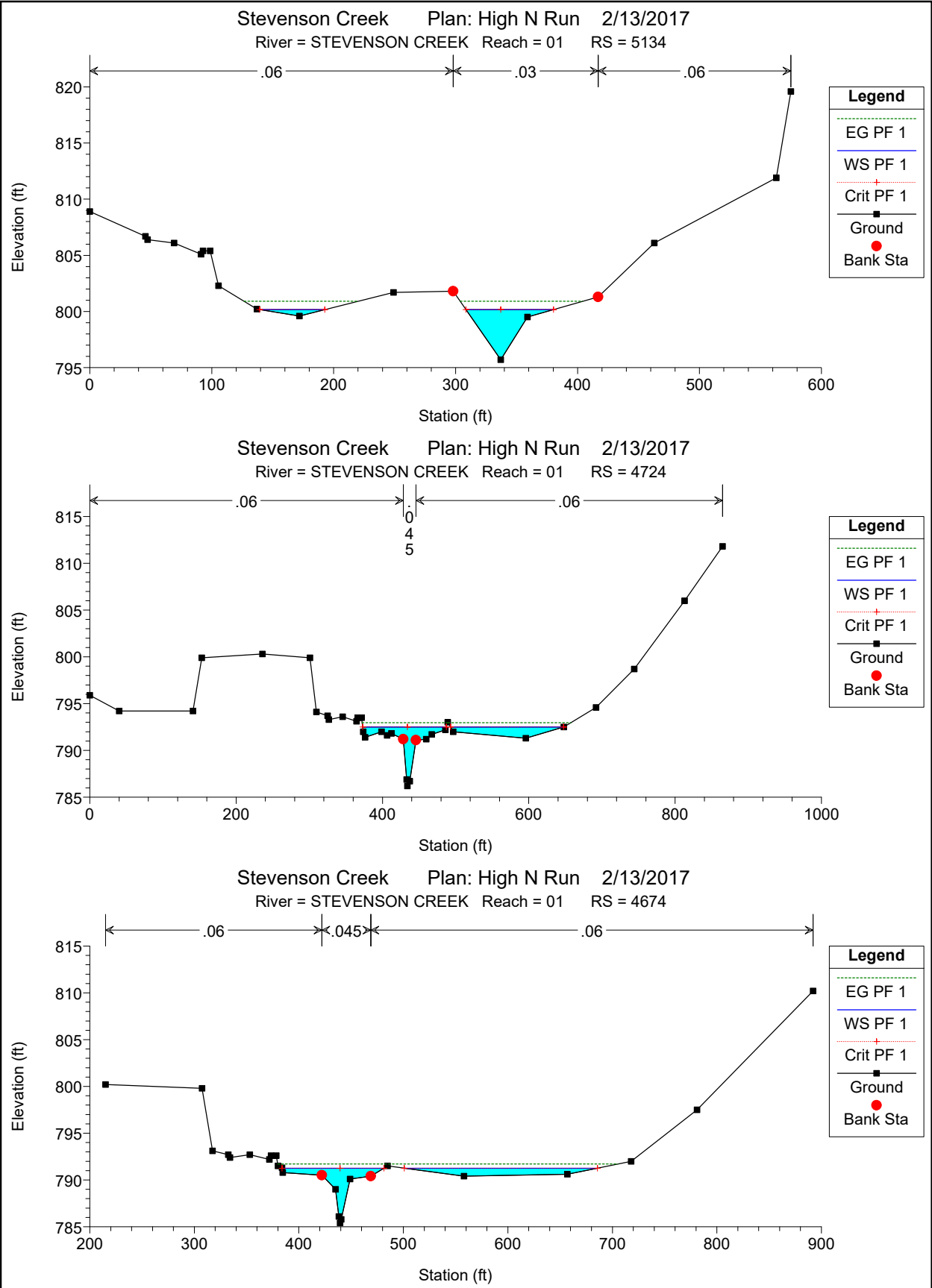


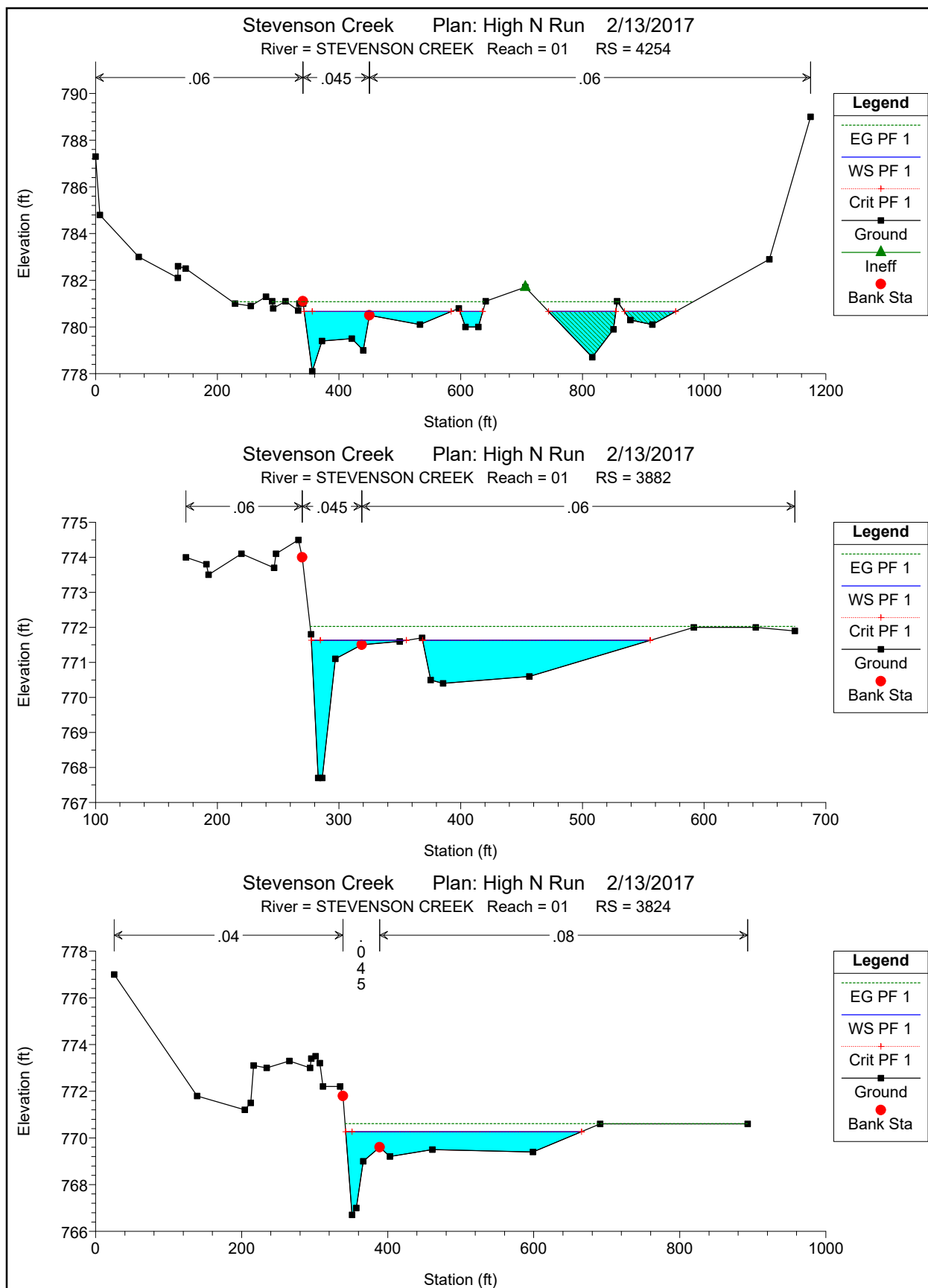
Stevenson Creek Plan: Existing 2/13/2017
River = STEVENSON CREEK Reach = 01 RS = 100

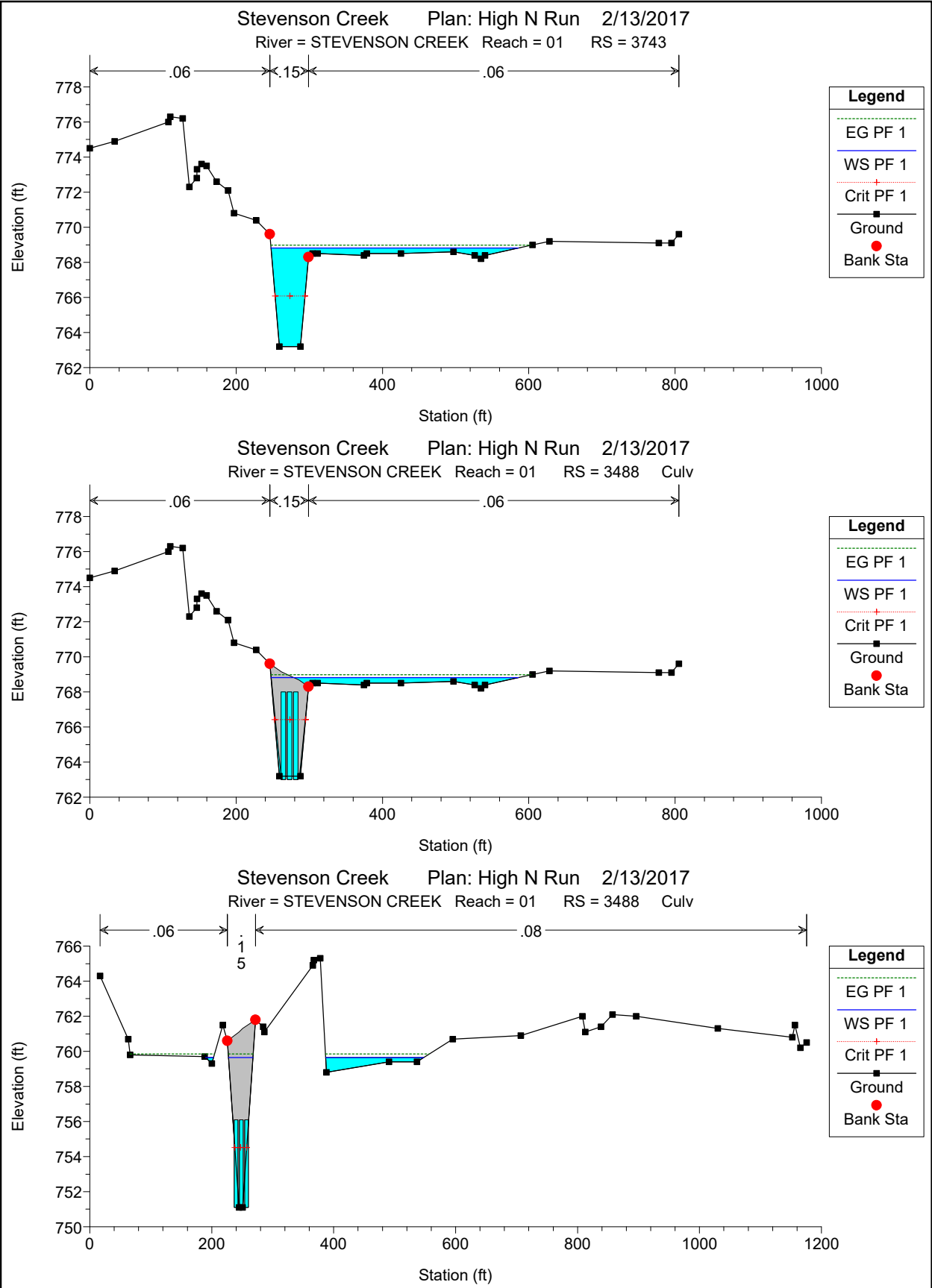


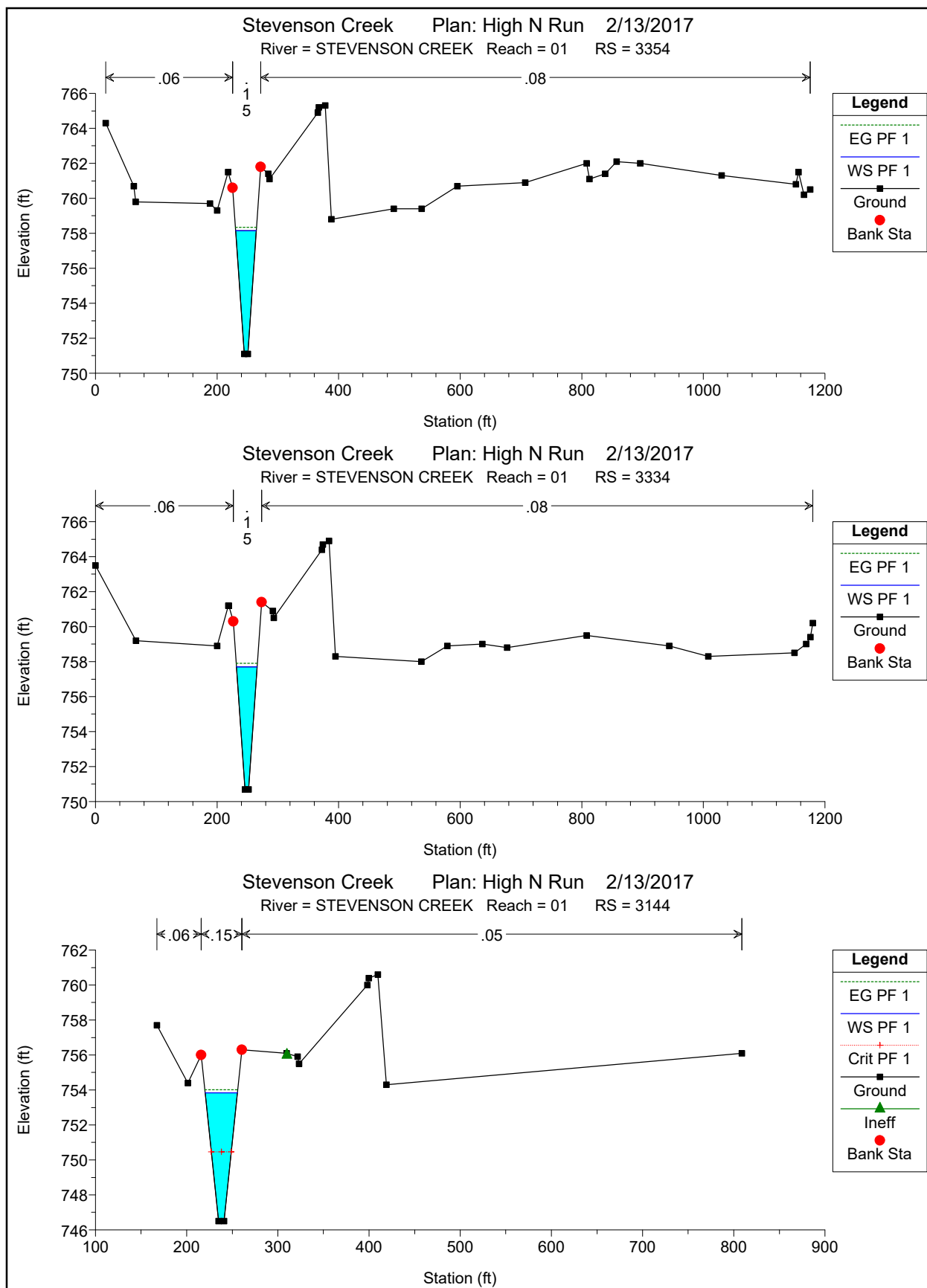
Stevenson Creek Proposed High N Conditions

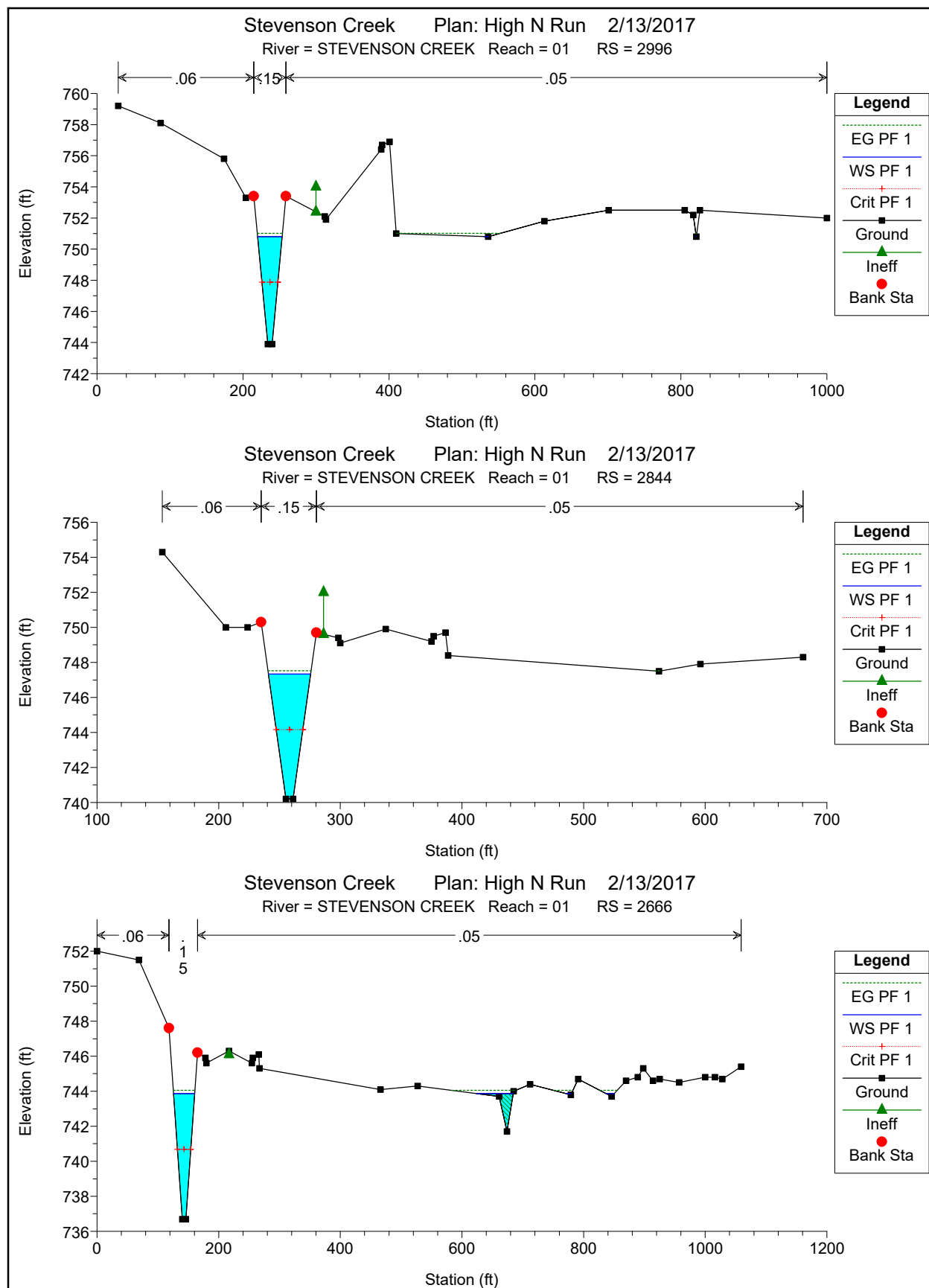


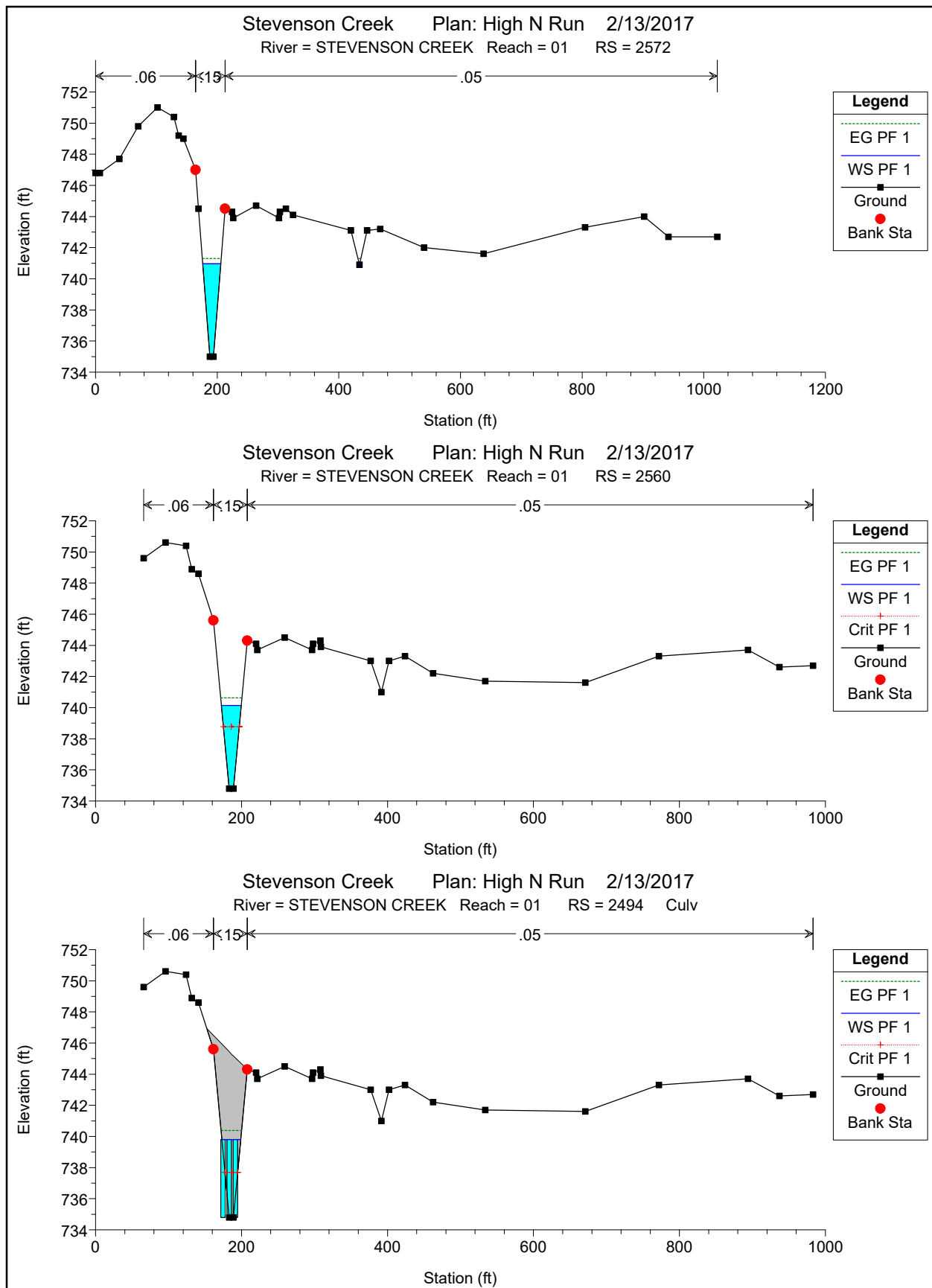


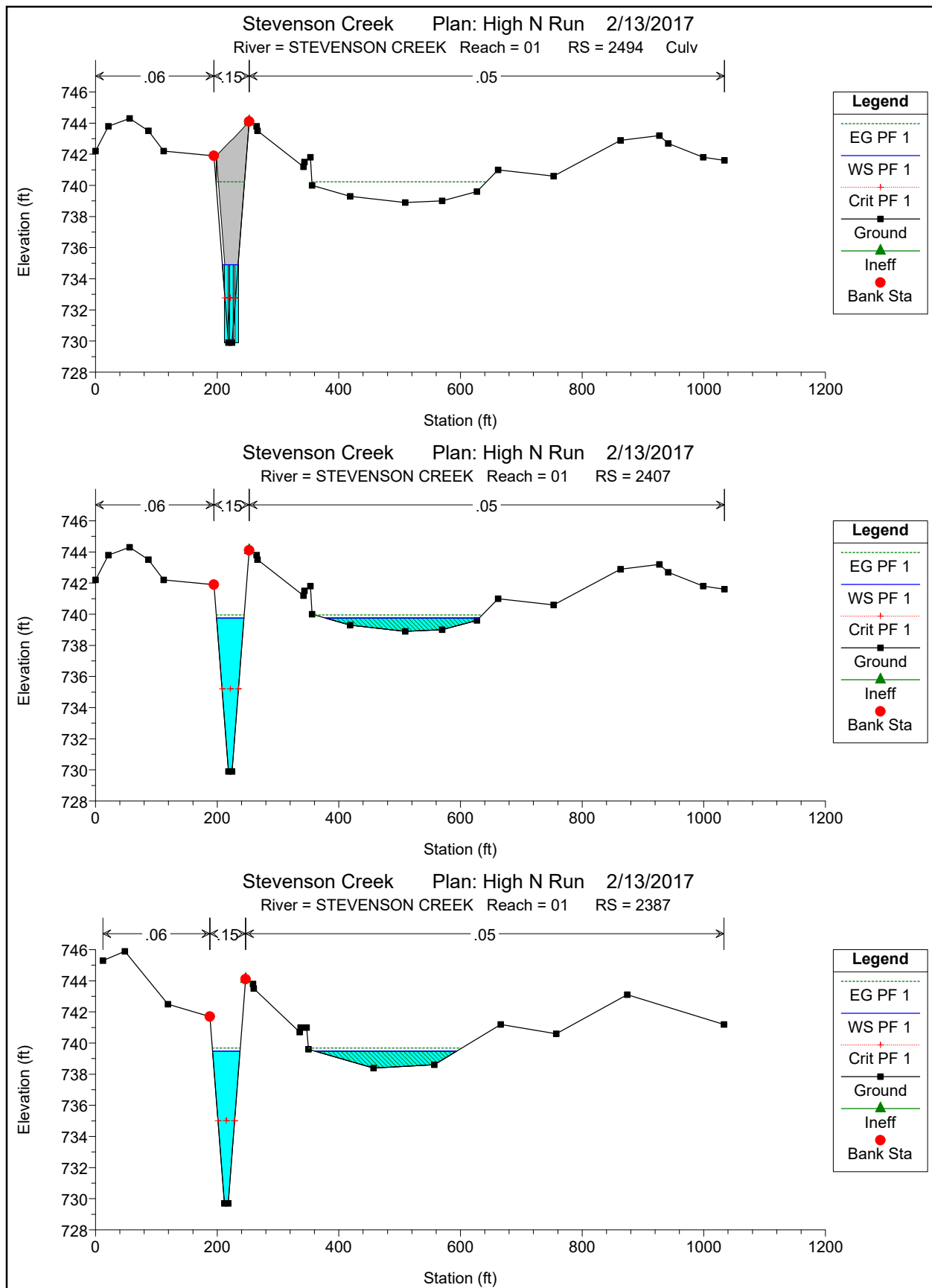


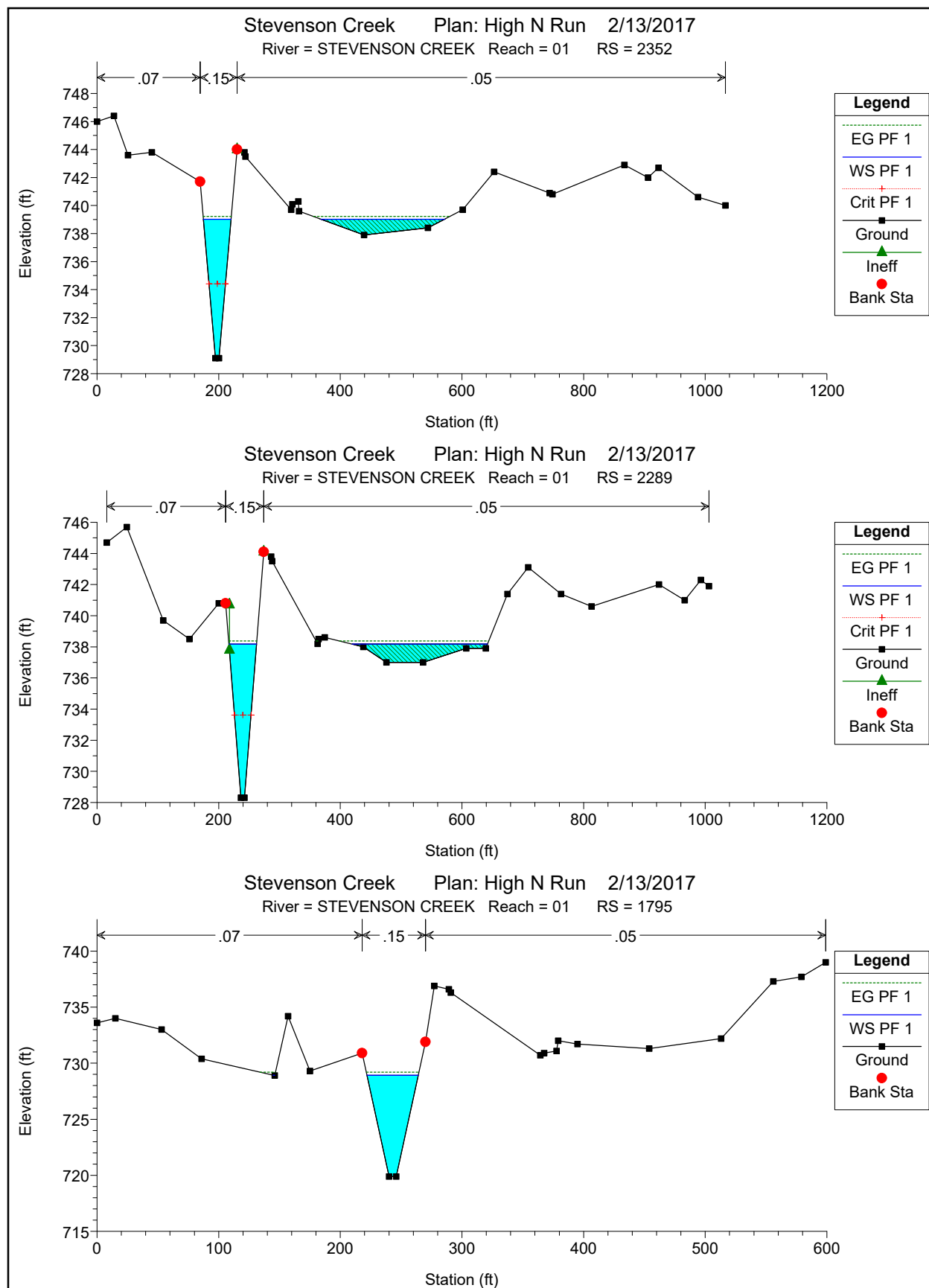


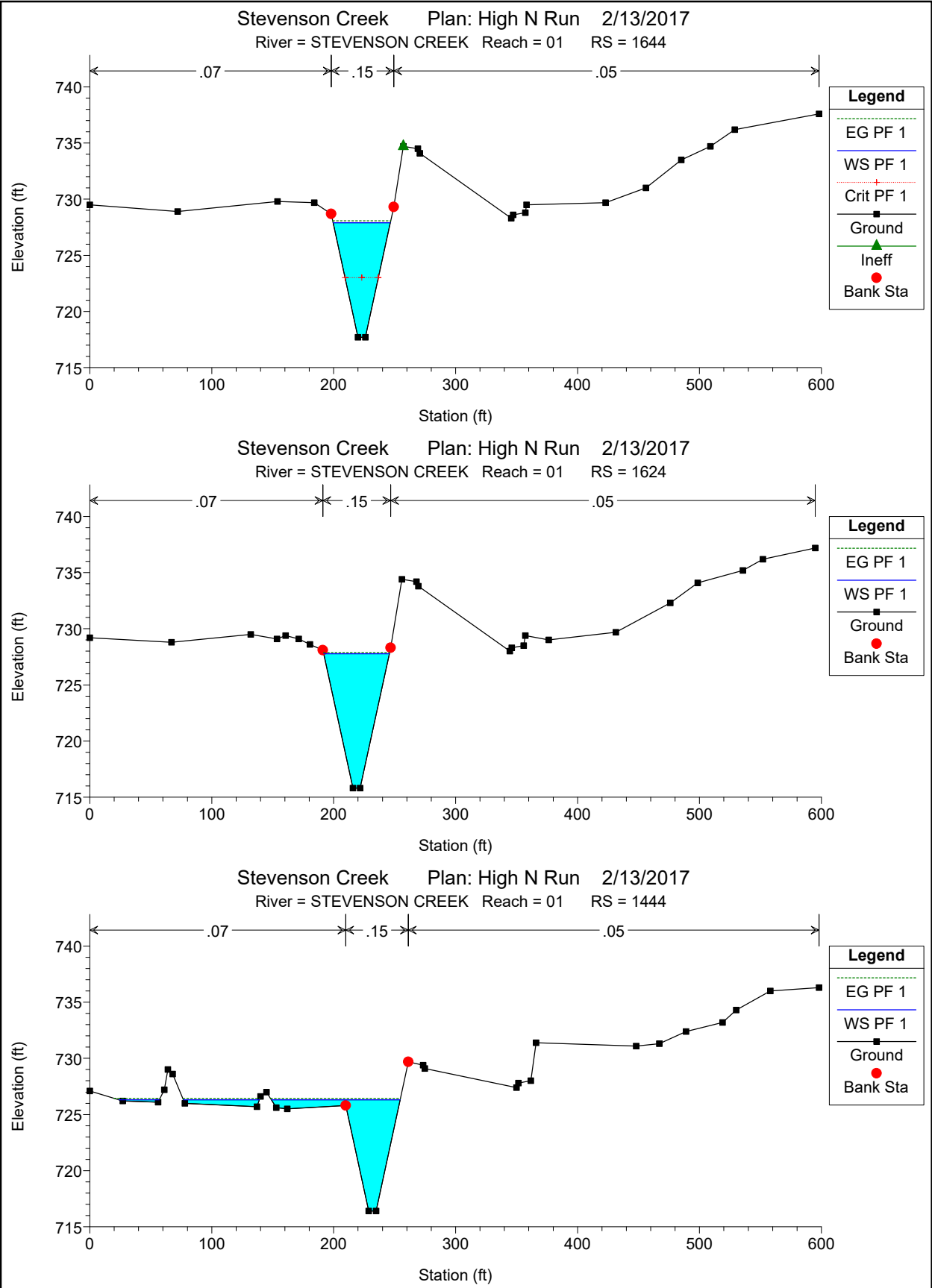


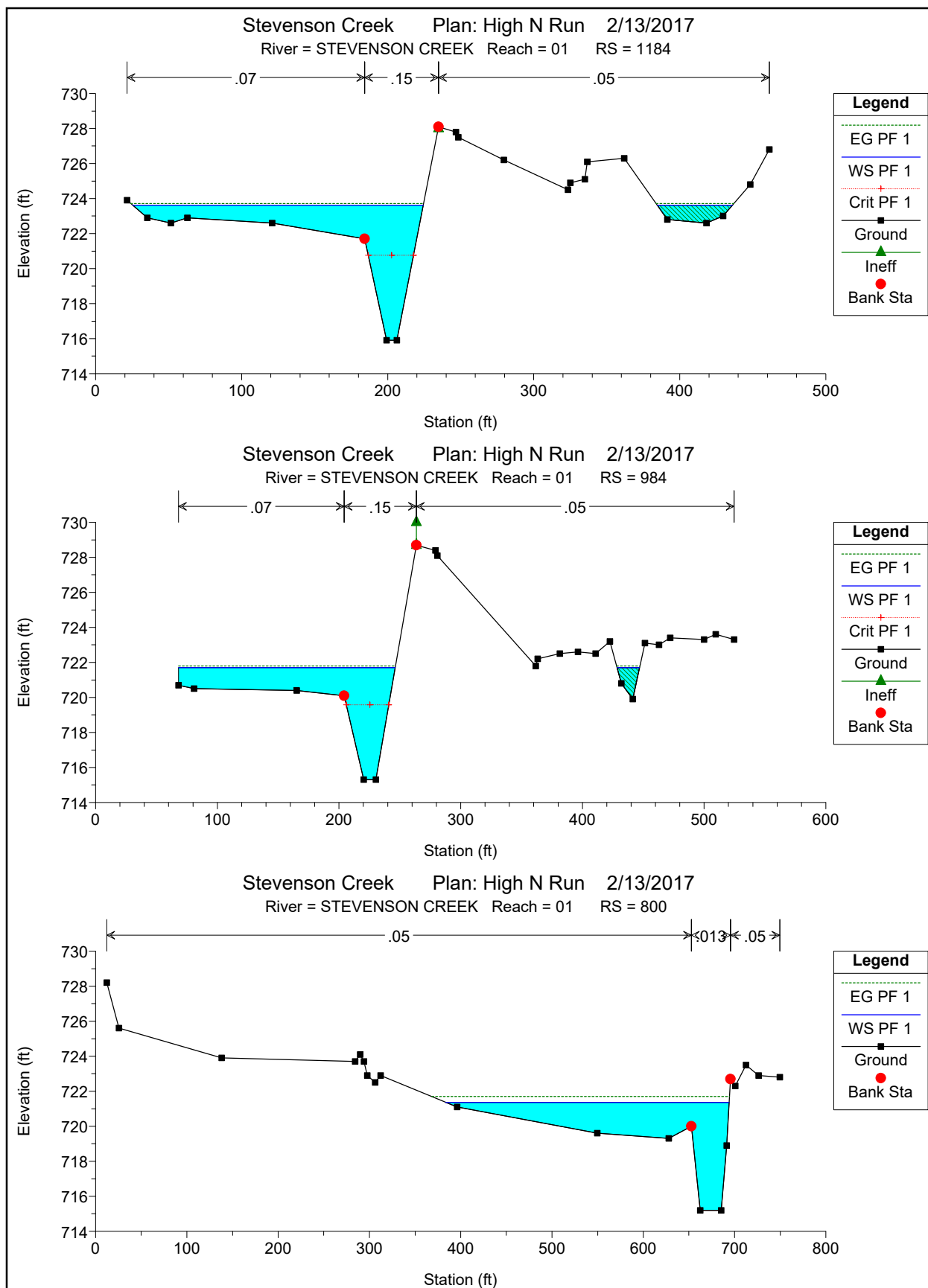


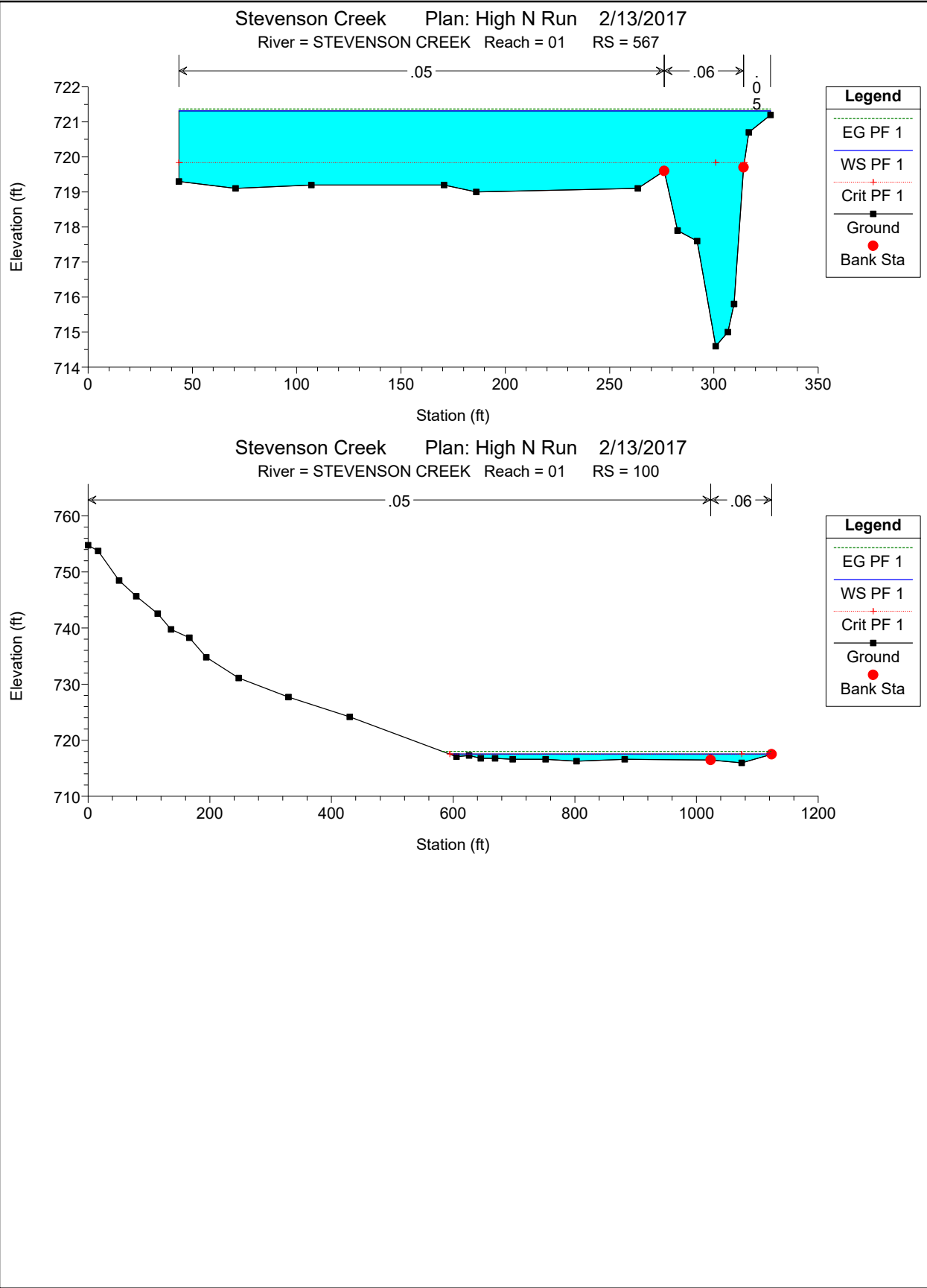




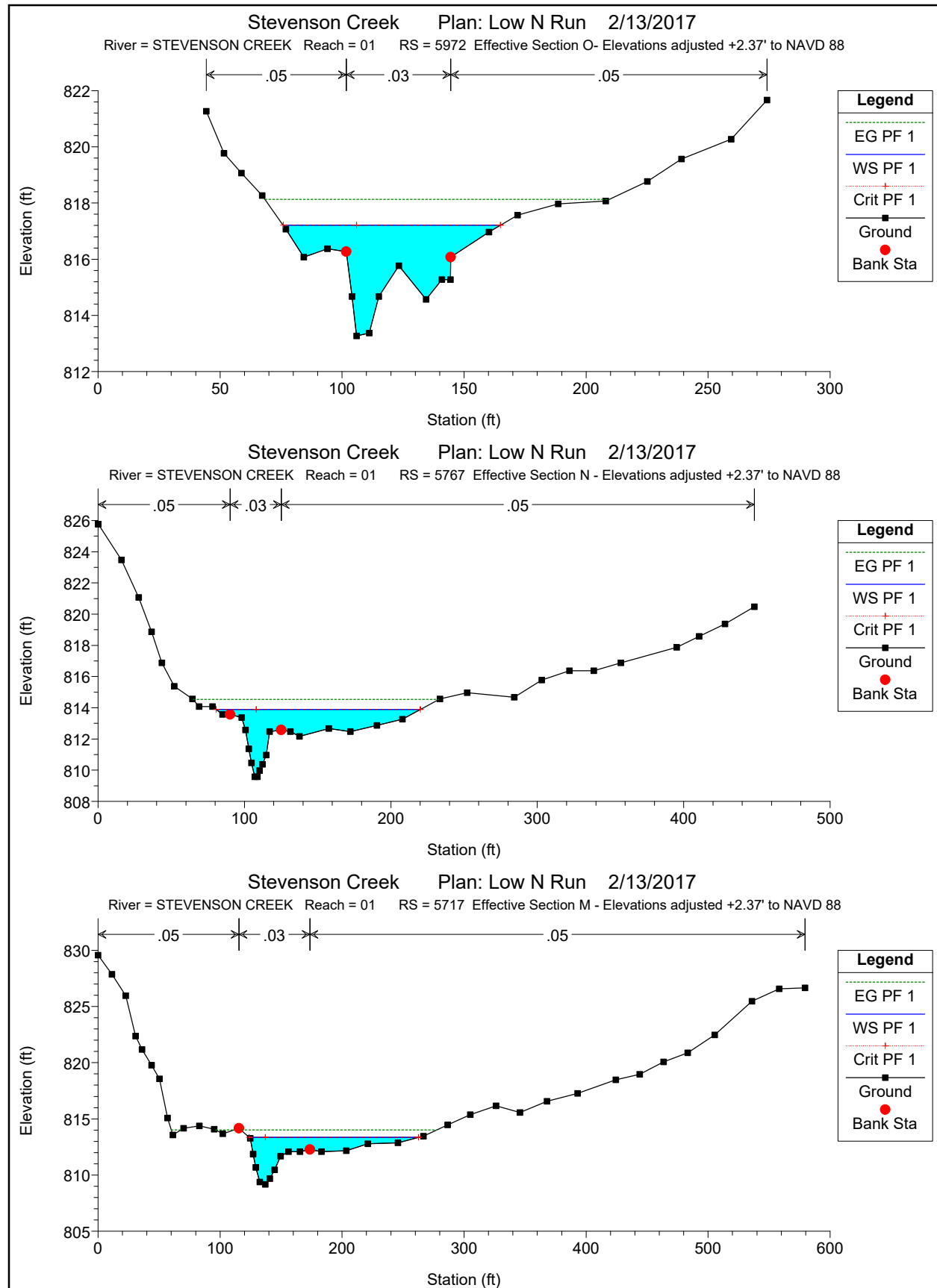


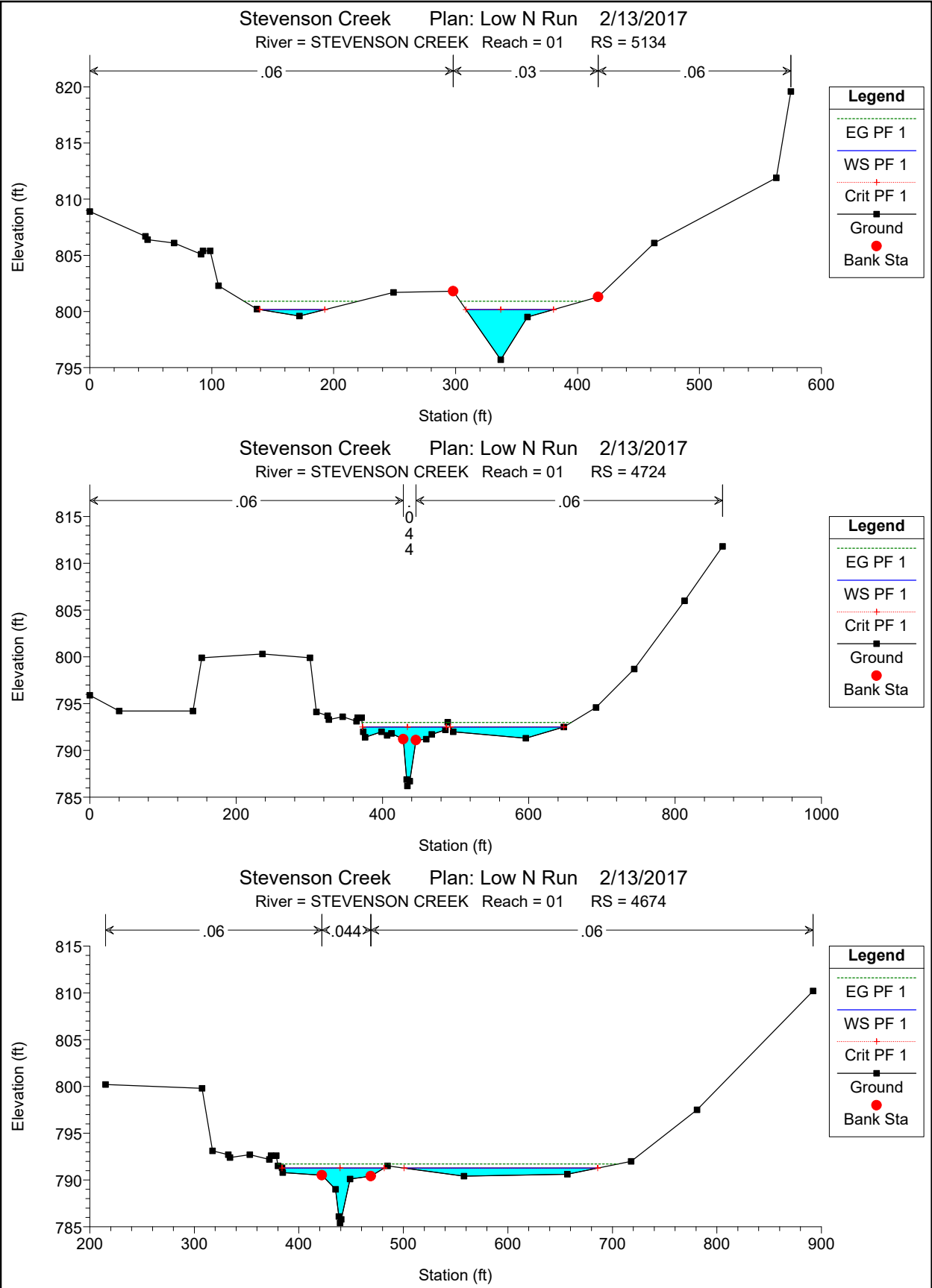


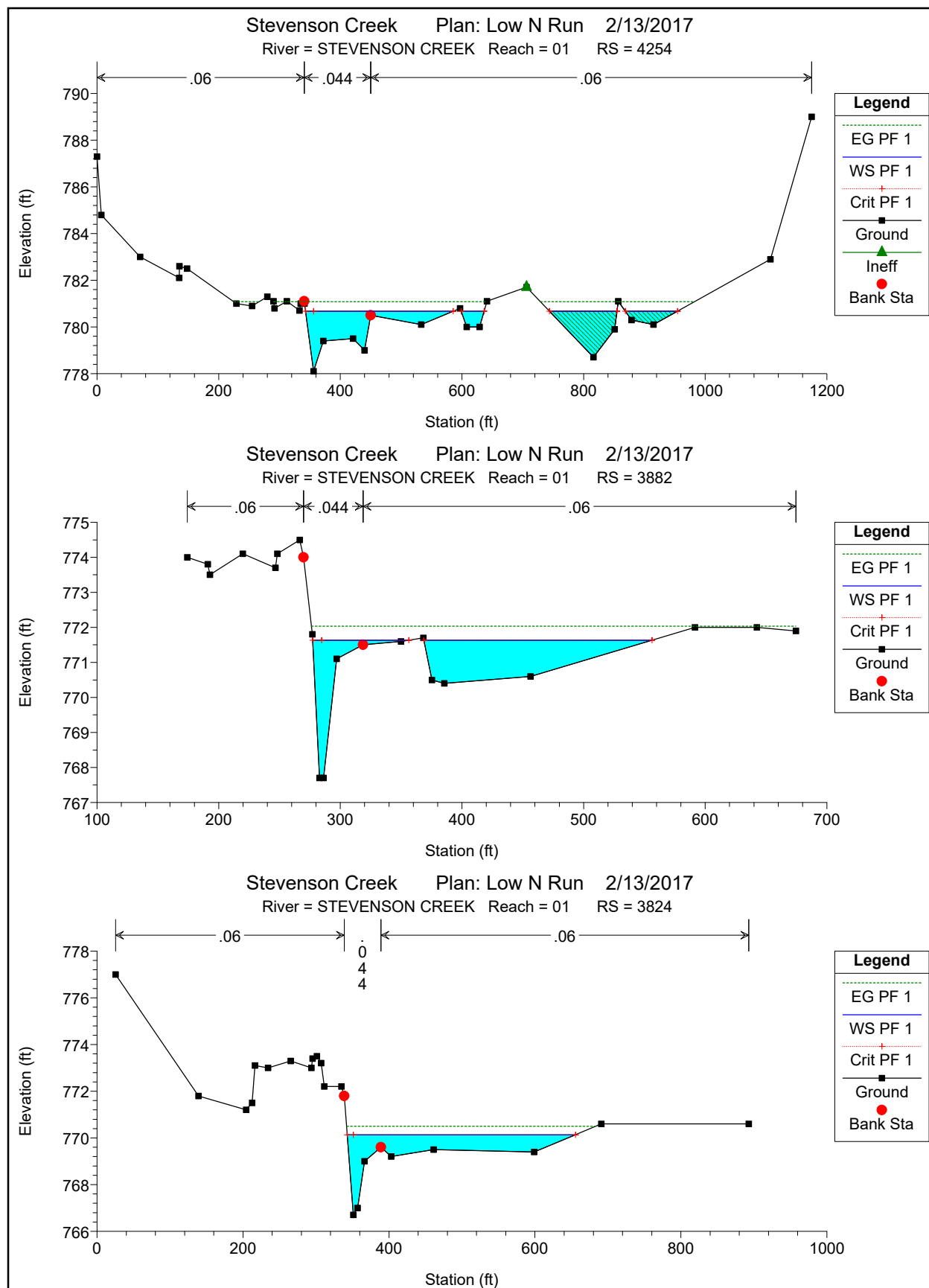


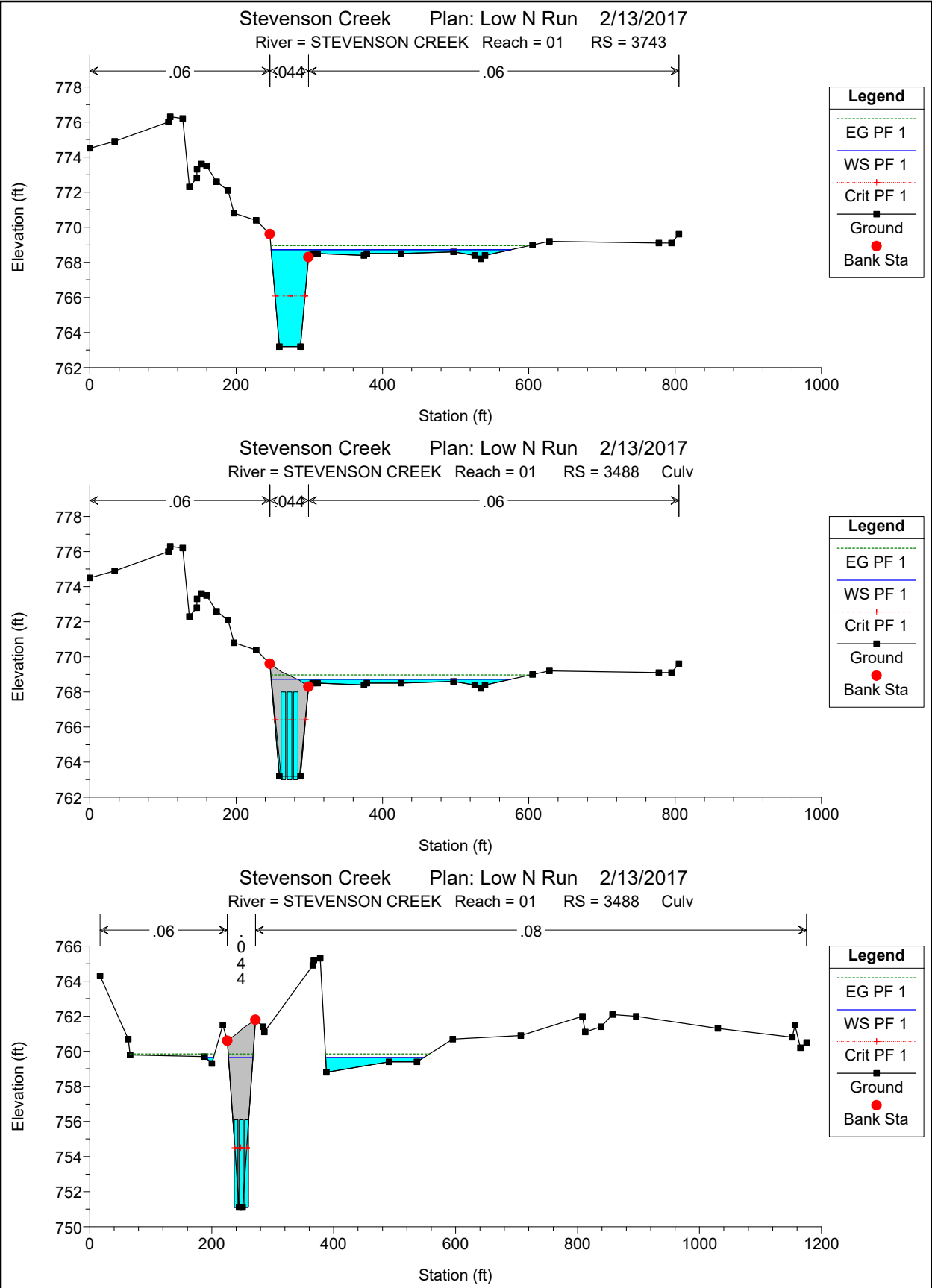


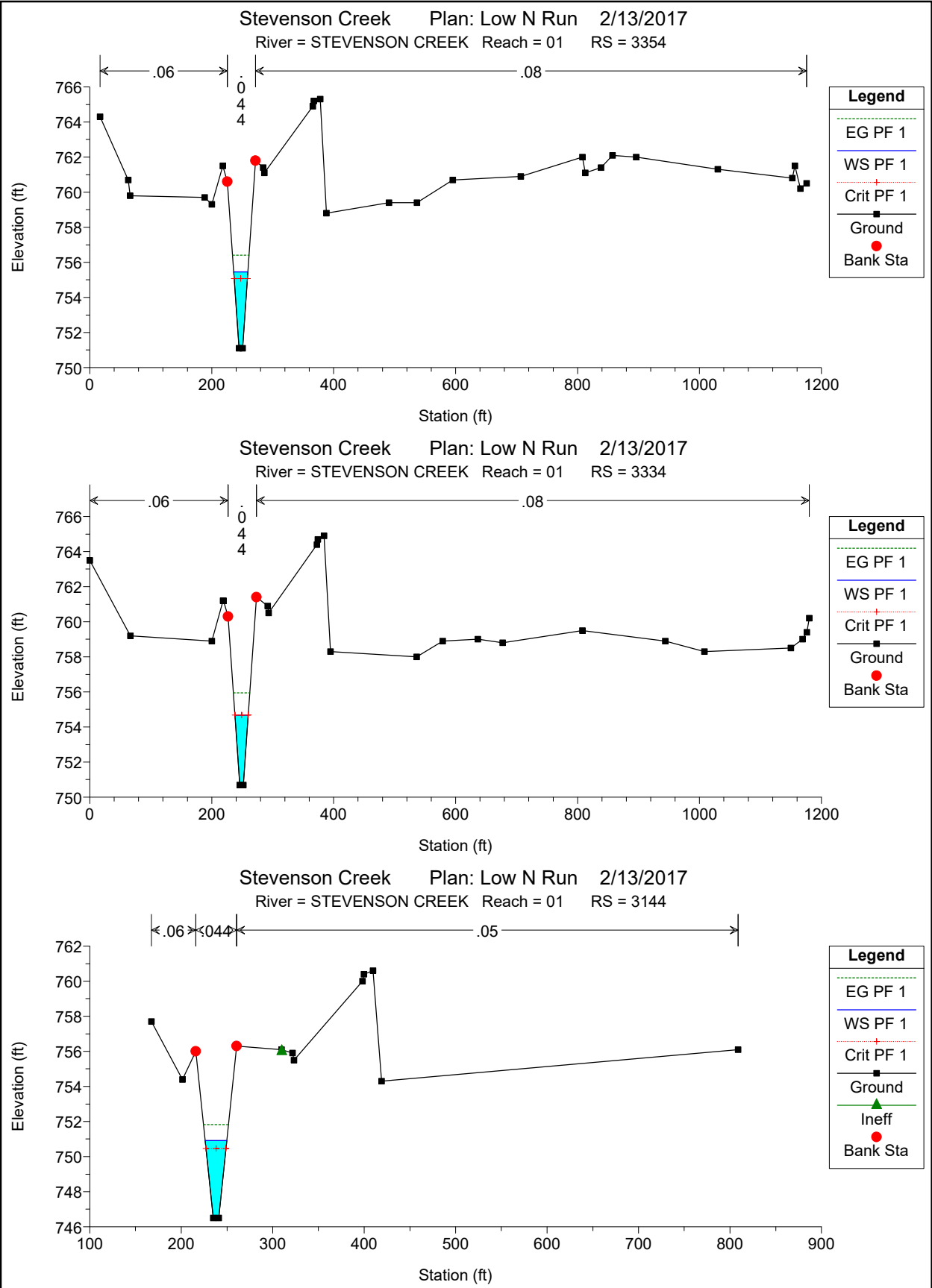
Stevenson Creek Proposed Low N Conditions

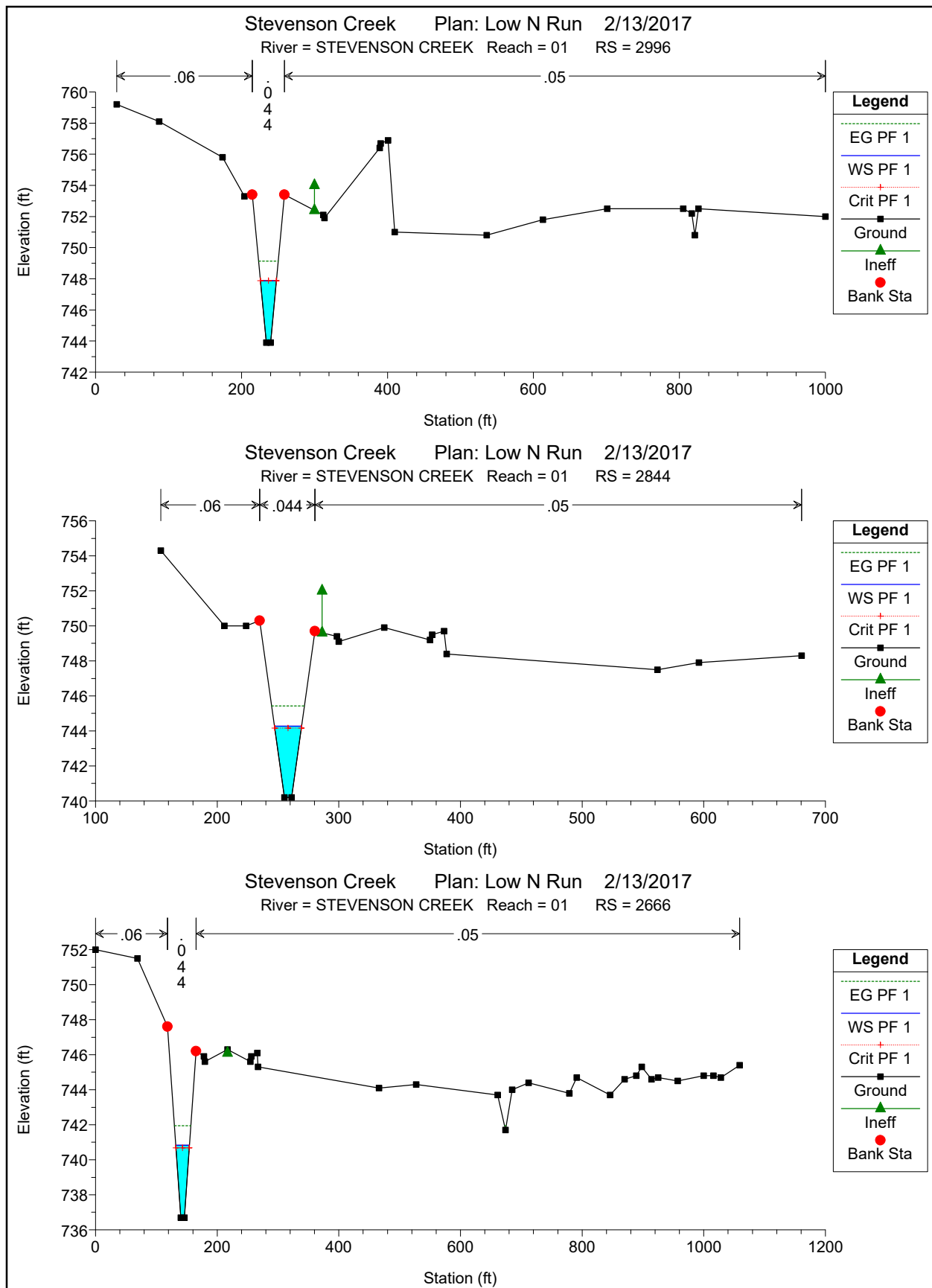


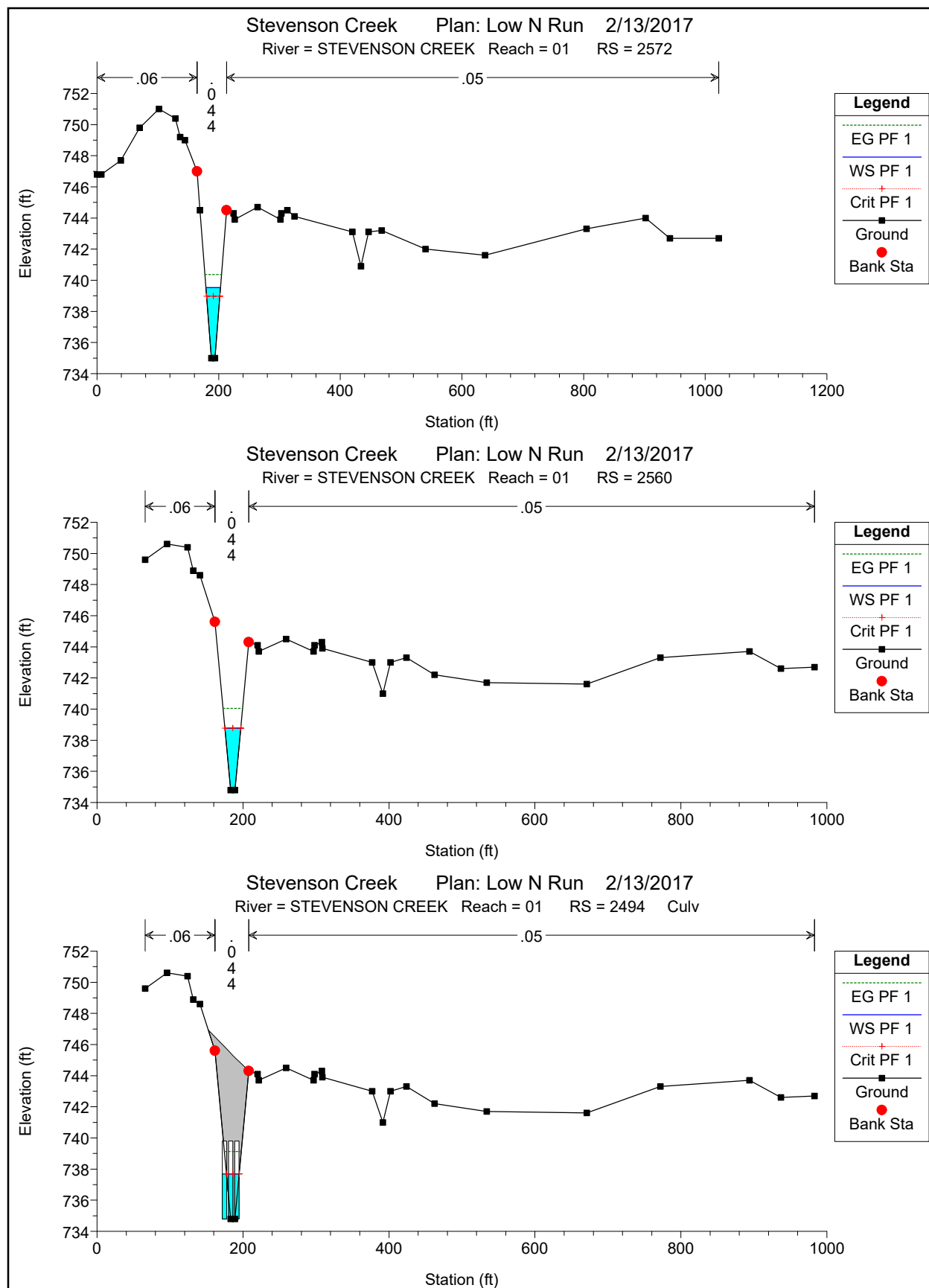


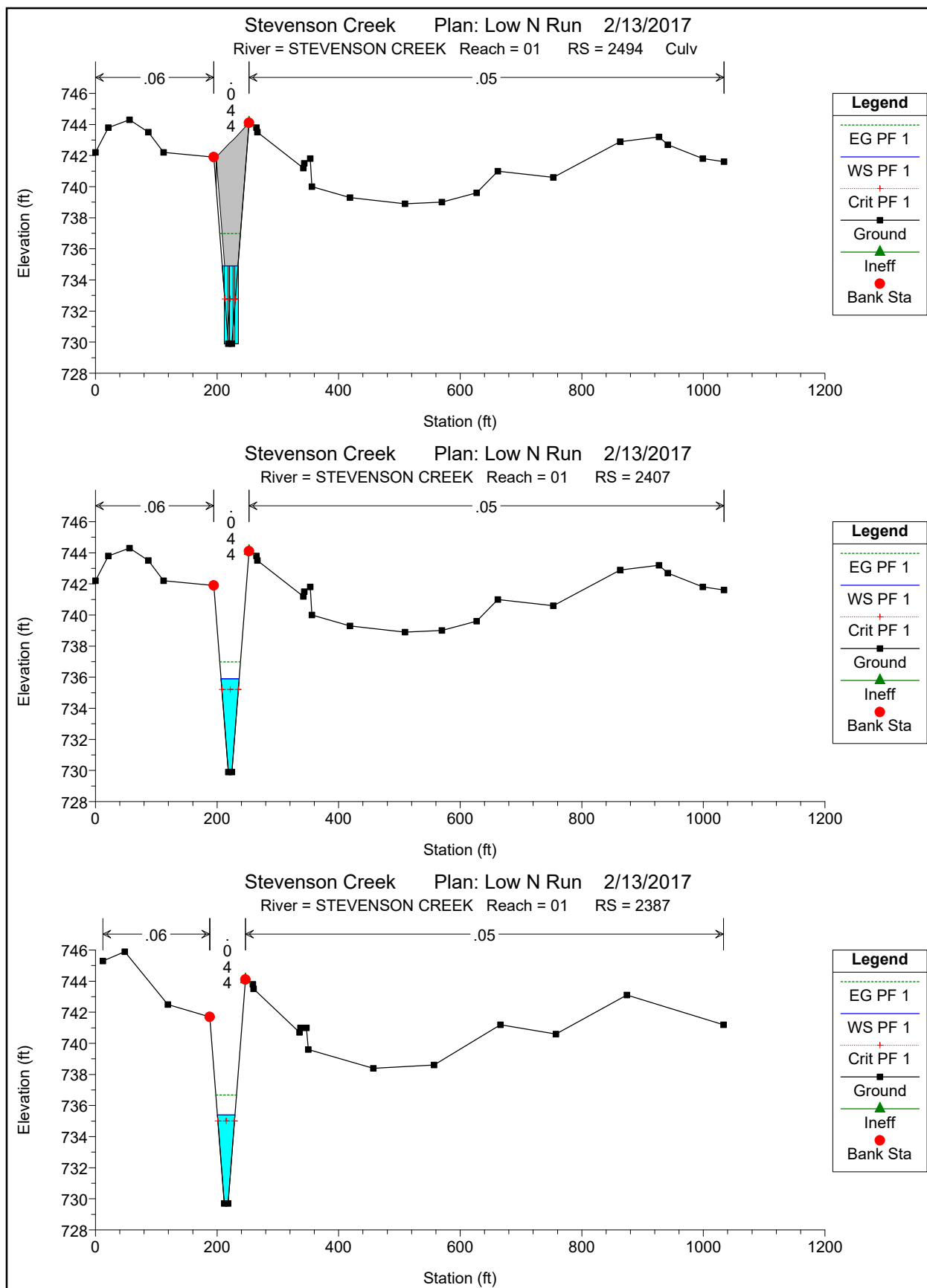


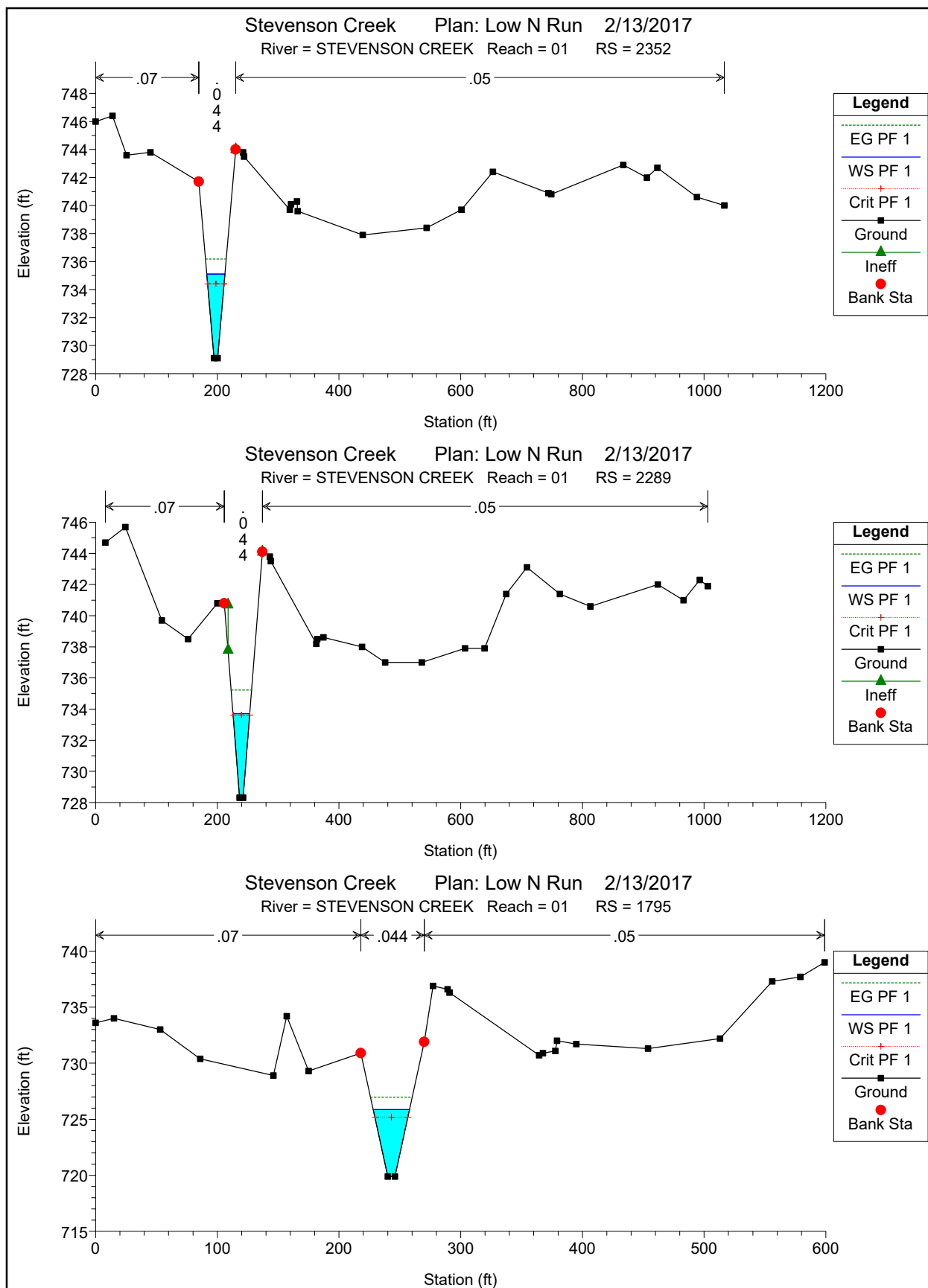


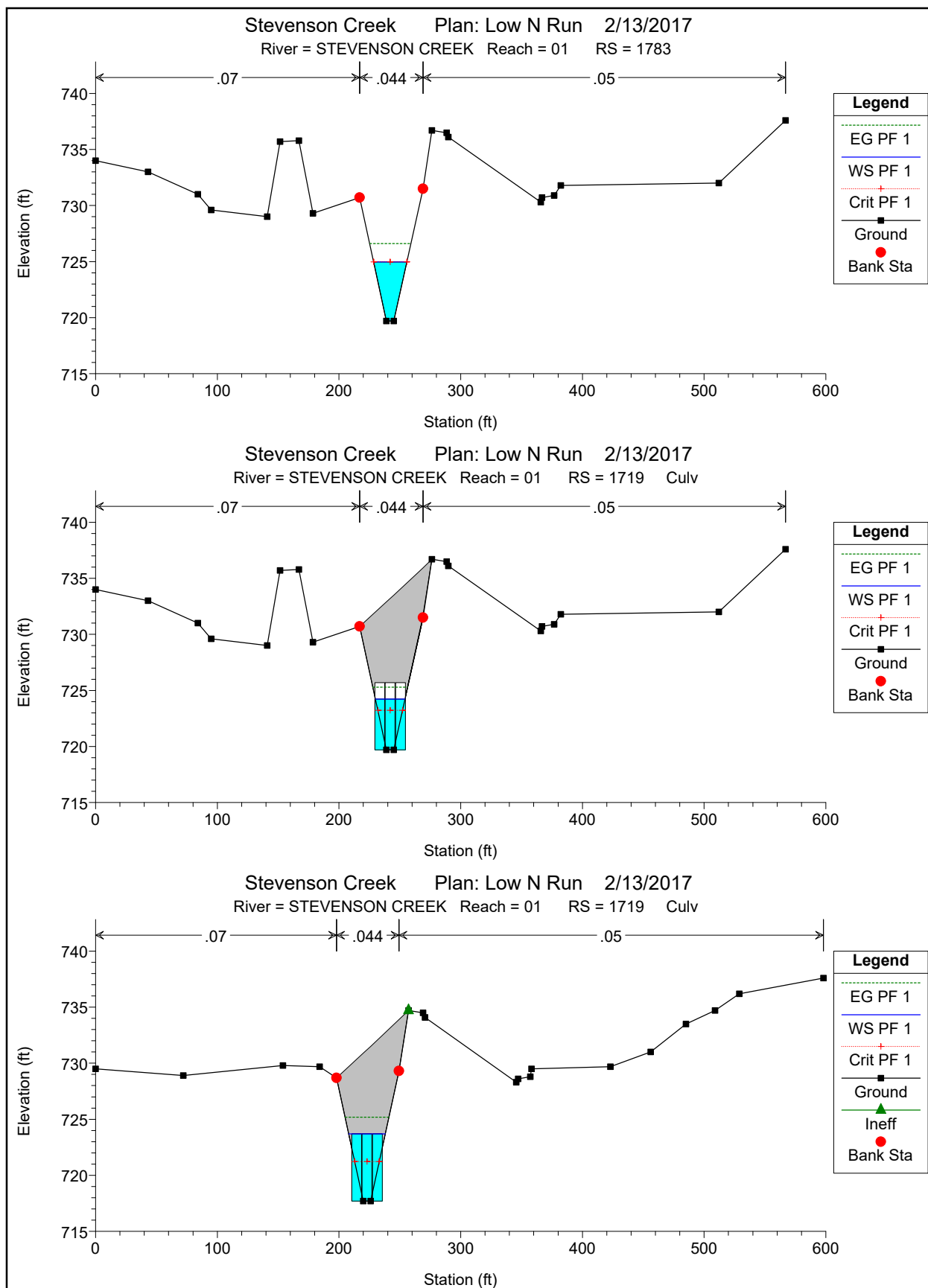


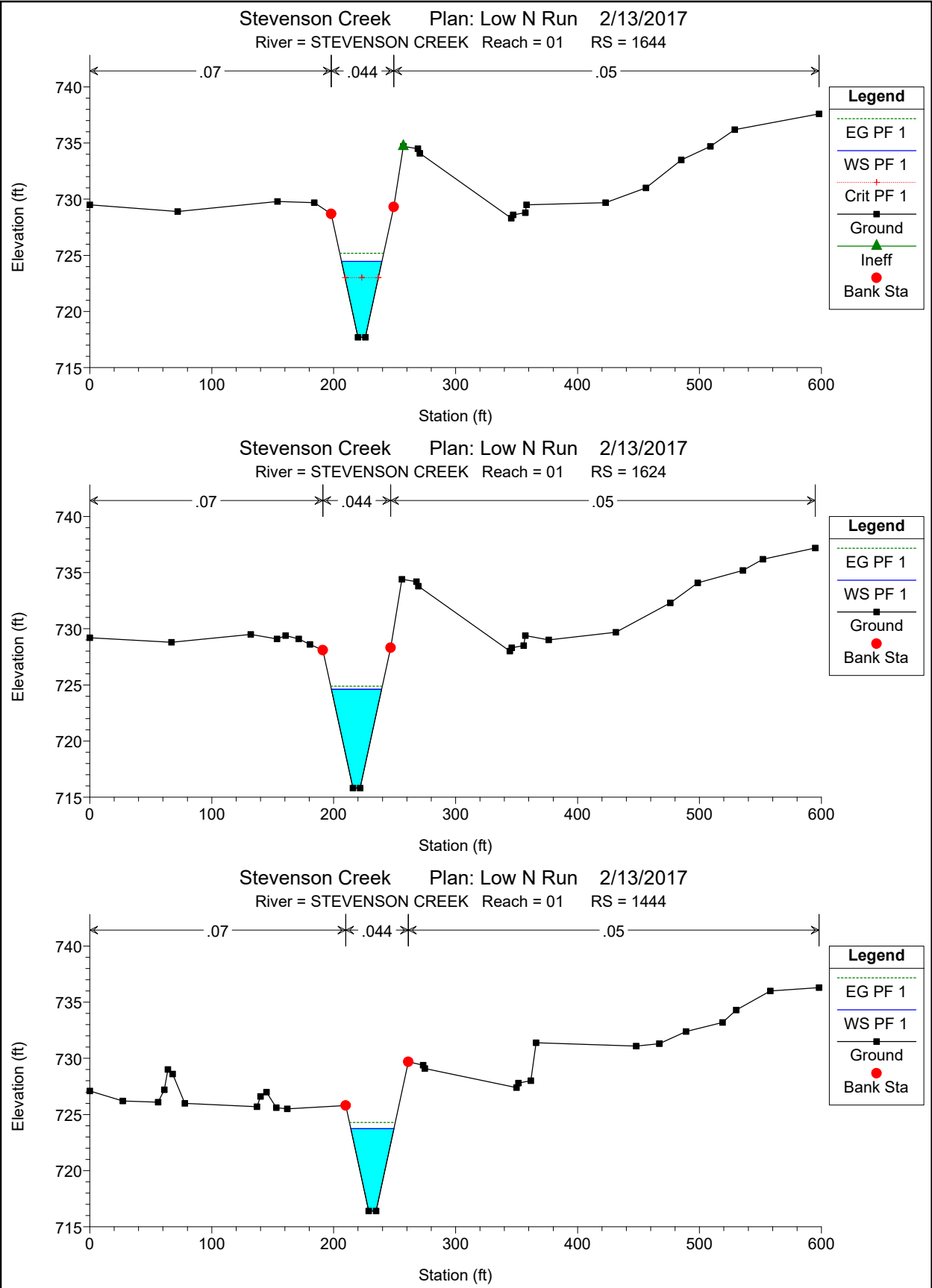


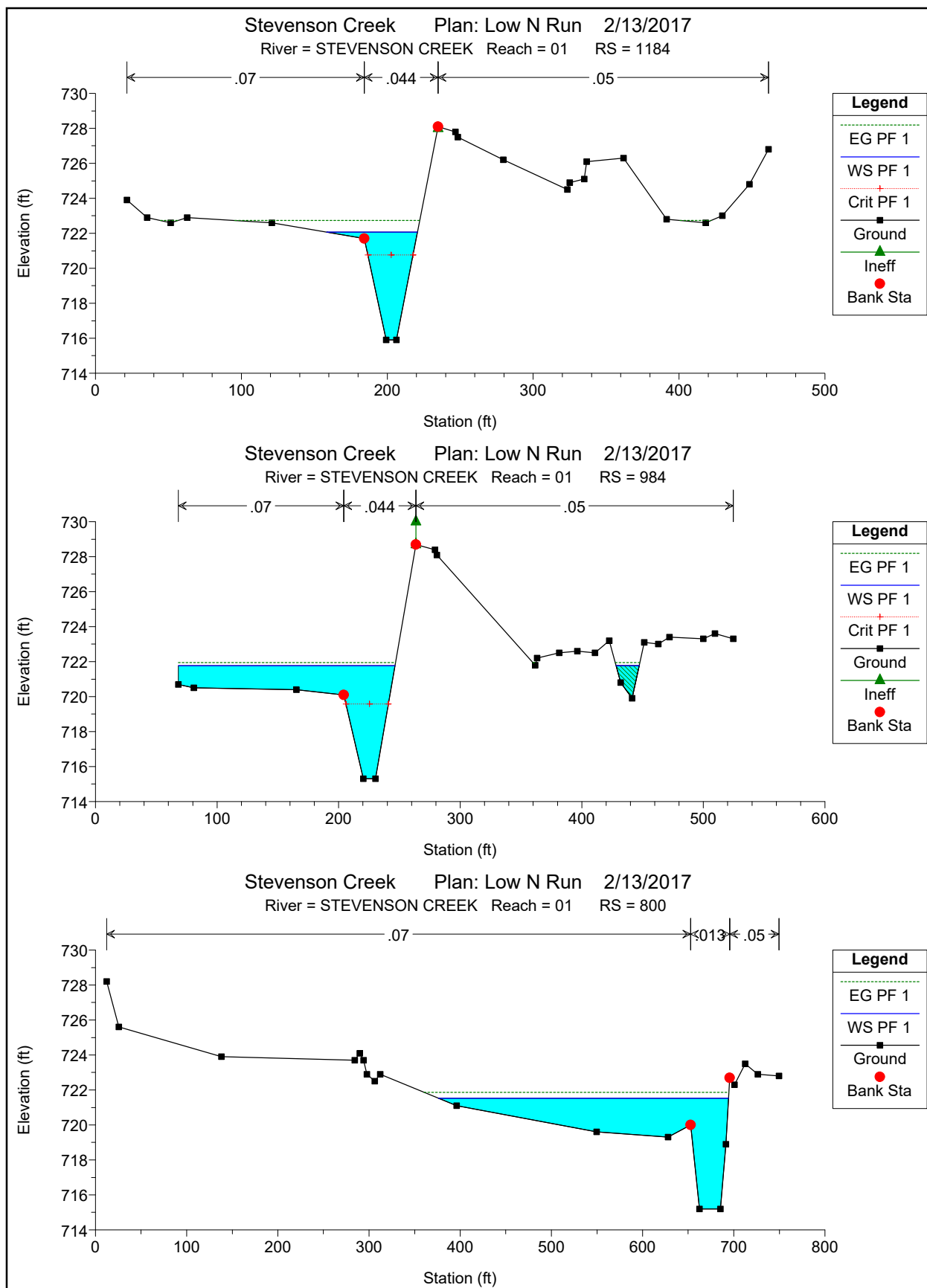


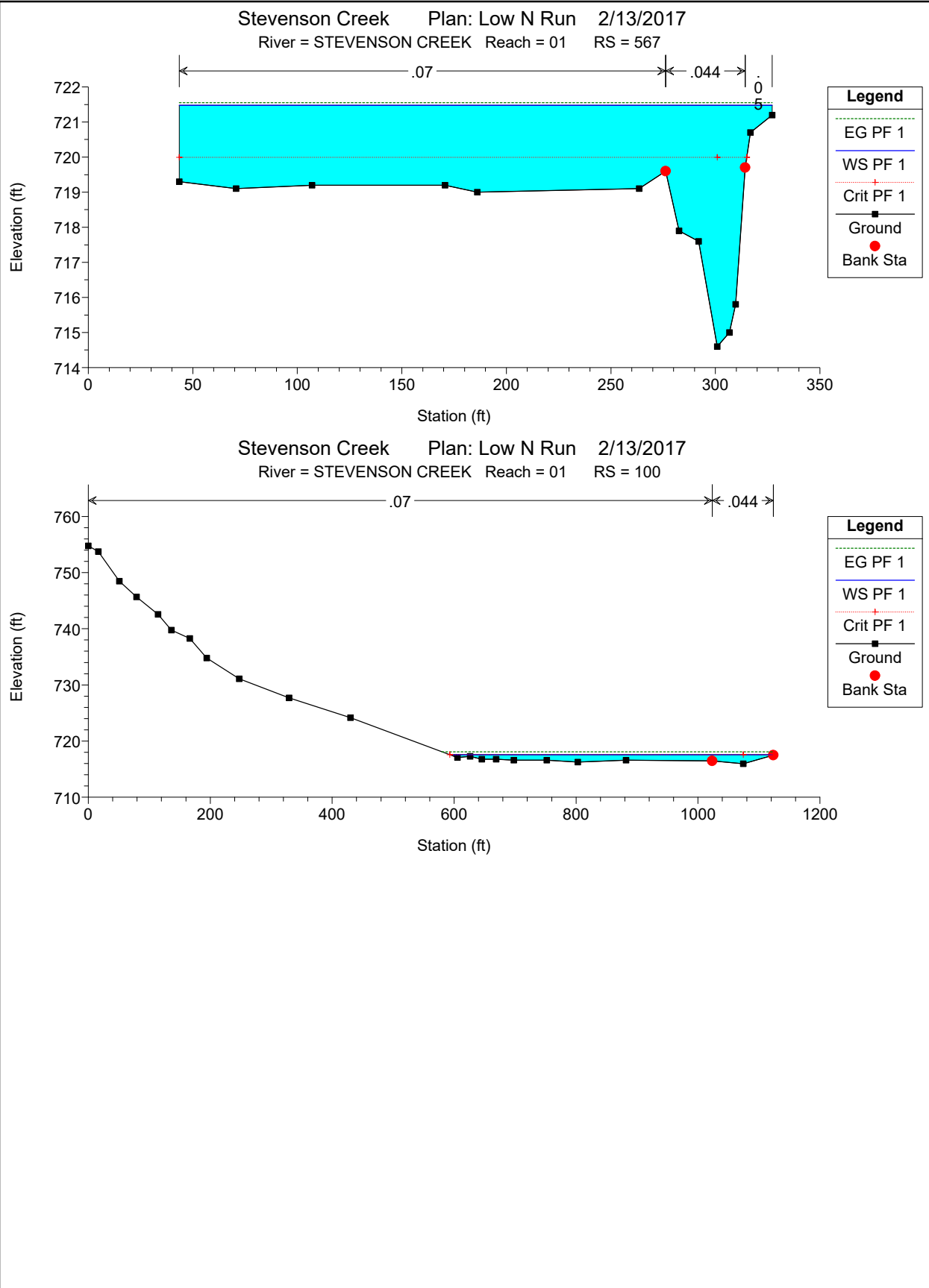




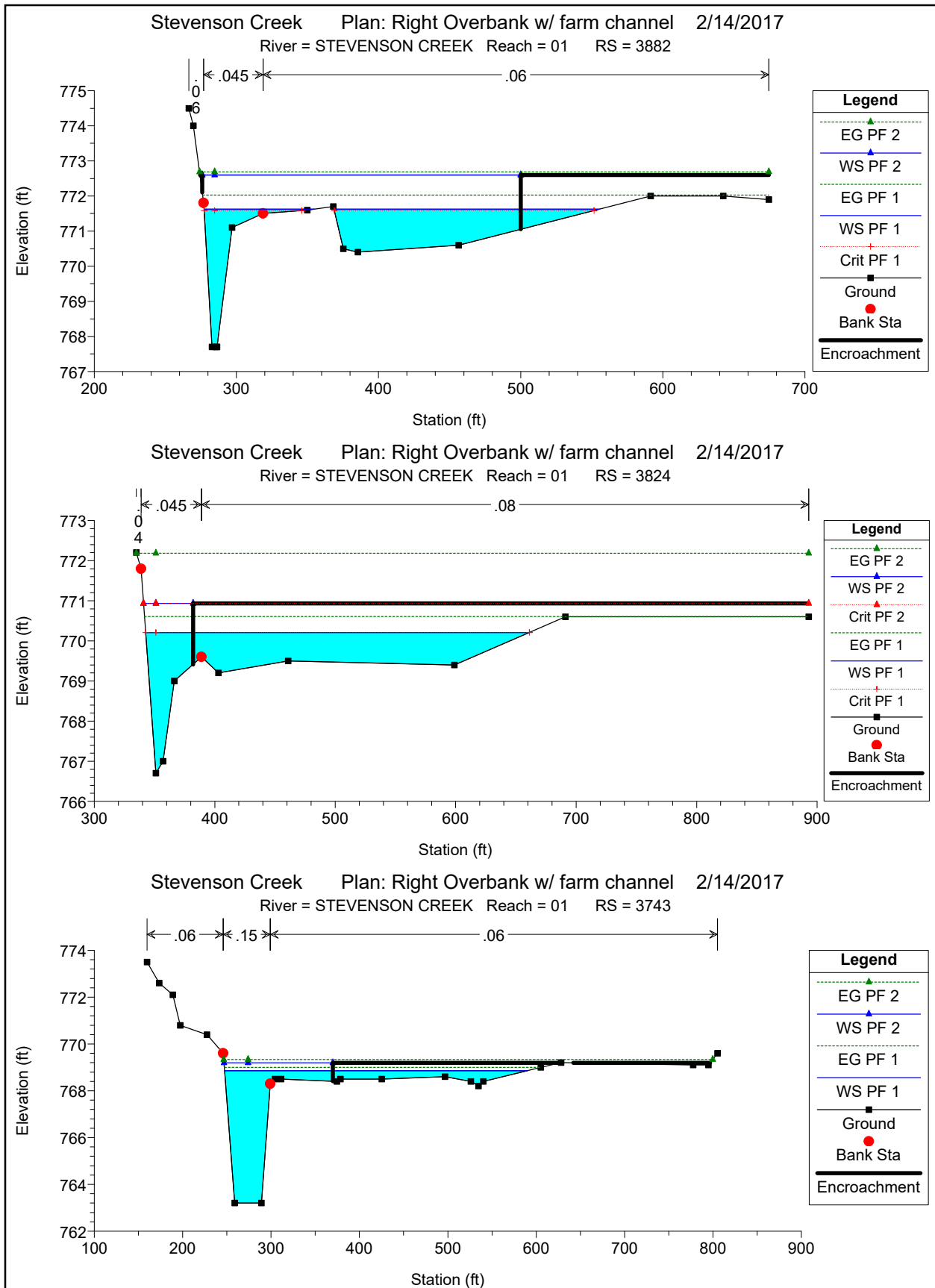


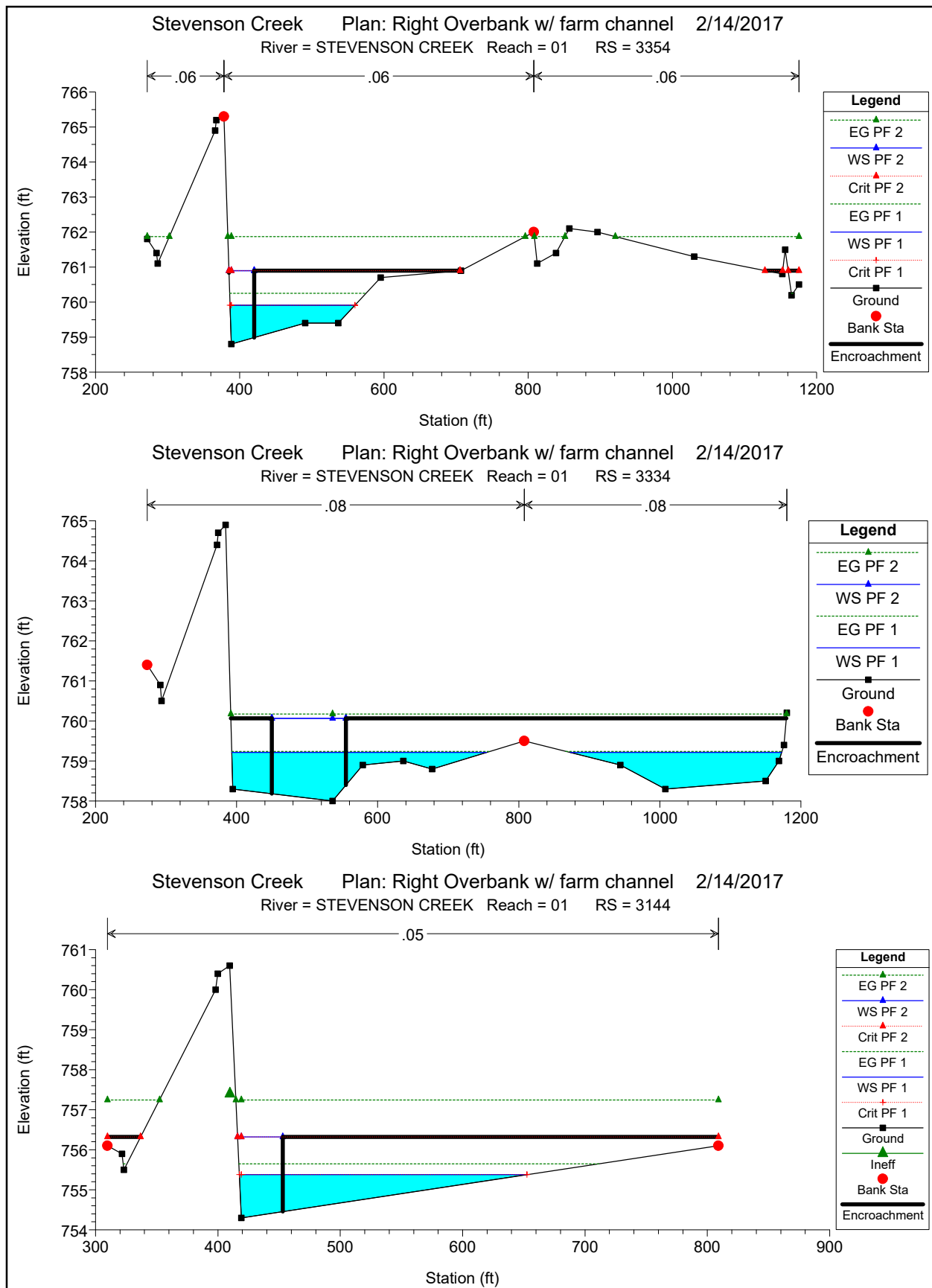


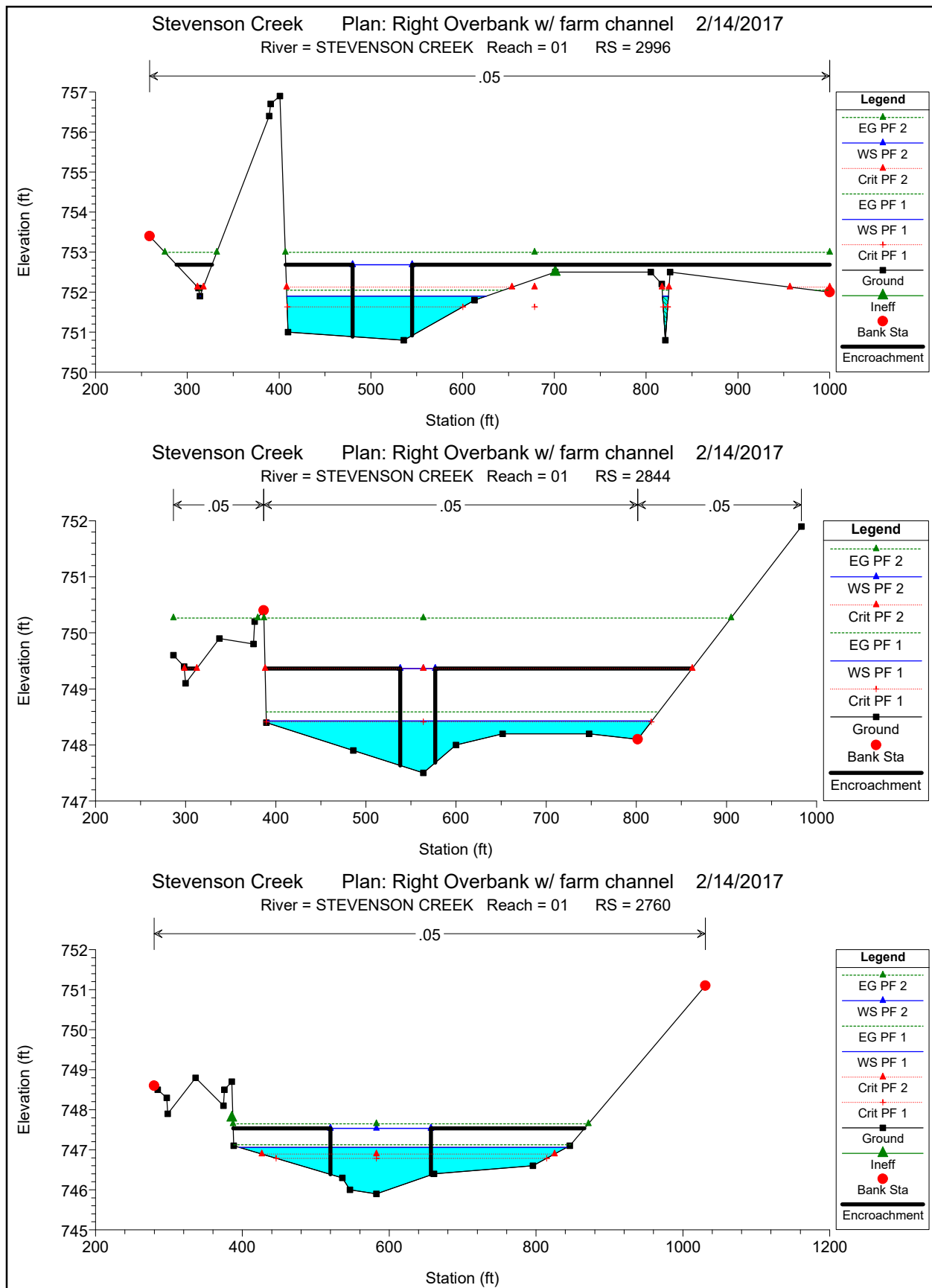


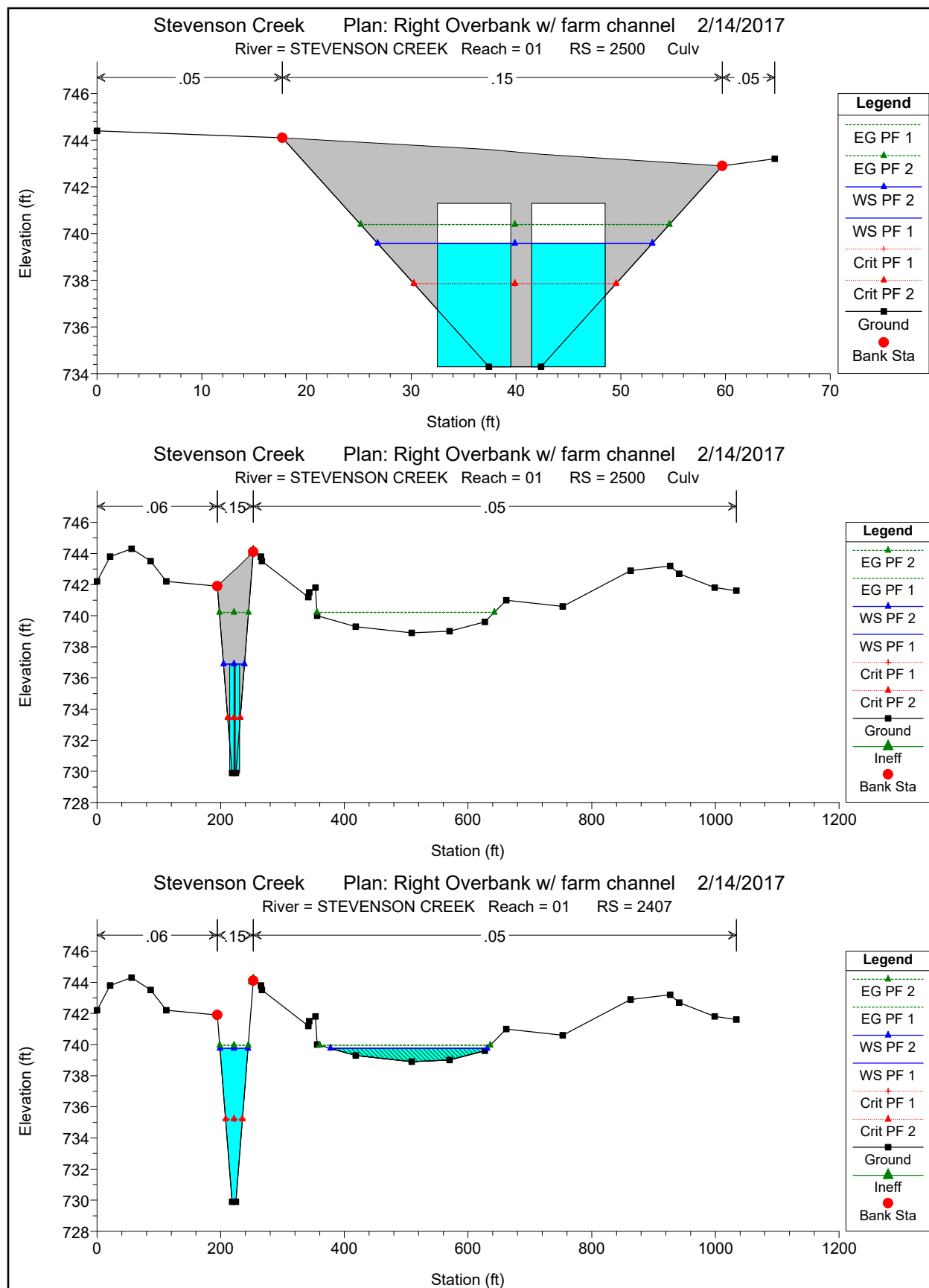


Stevenson Creek Split Flow Right Sections



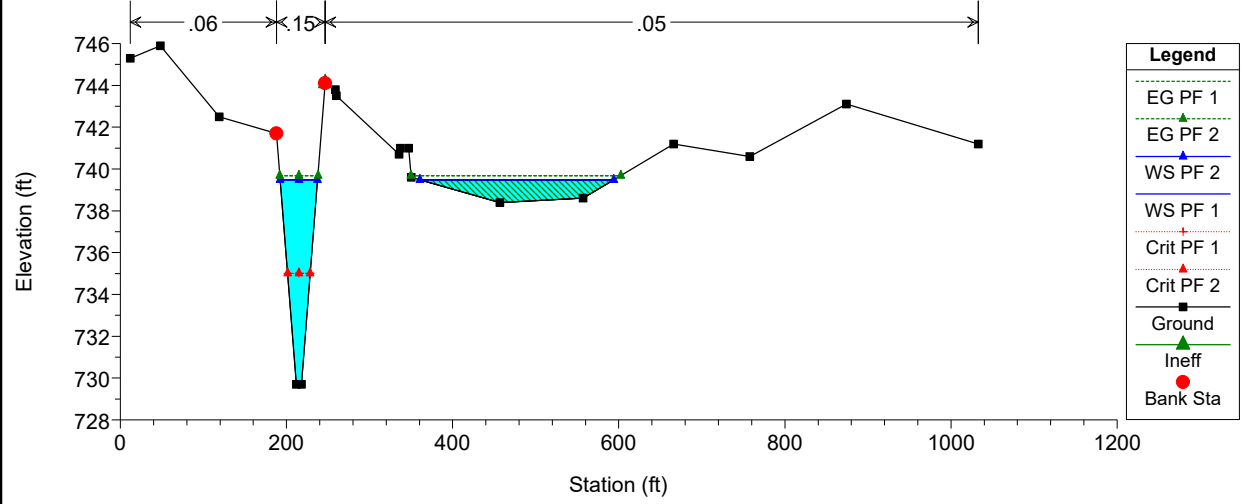






Stevenson Creek Plan: Right Overbank w/ farm channel 2/14/2017

River = STEVENSON CREEK Reach = 01 RS = 2387



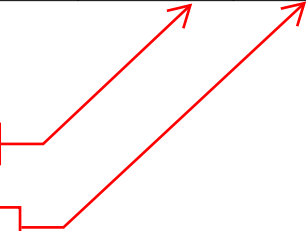
Twin Oaks Valley Creek
Existing Culvert

HEC-RAS Plan: TOVC Ex River: Twin Oaks Valley Reach: 1 Profile: PF 1

Reach	River Sta		Profile	E.G. US.	W.S. US.	E.G. IC	E.G. OC	Min El Weir Flow	Q Culv Group	Q Weir	Delta WS	Culv Vel US	Culv Vel DS
				(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(ft)	(ft/s)	(ft/s)
1	950	Culvert #1	PF 1	724.89	724.88	724.91	724.89	723.41	334.87	1413.01	5.19	9.79	9.79

Left Split Flow

Right Split Flow



Twin Oaks Valley Creek Proposed Culverts

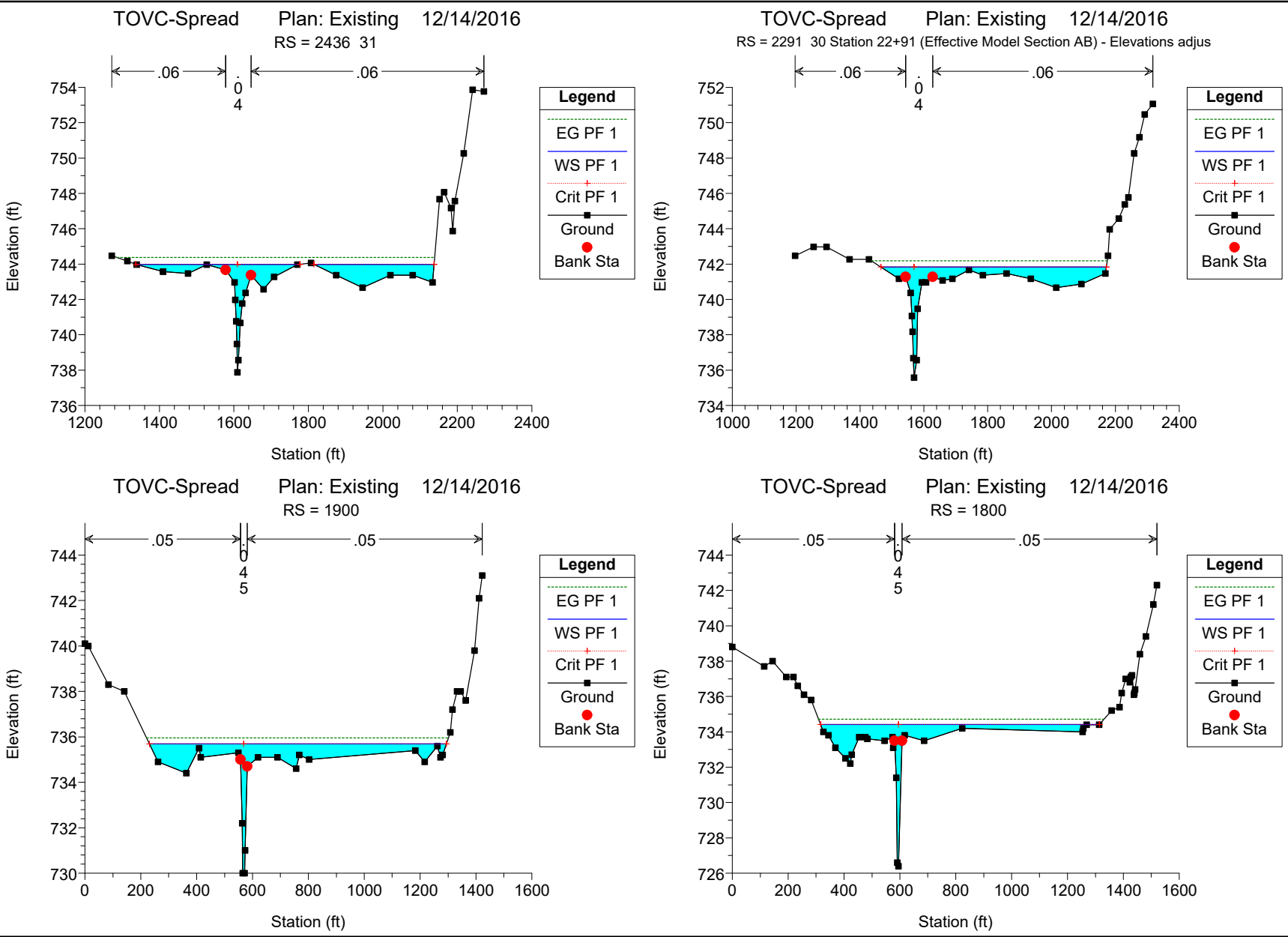
HEC-RAS Plan: Split Profile: PF 1

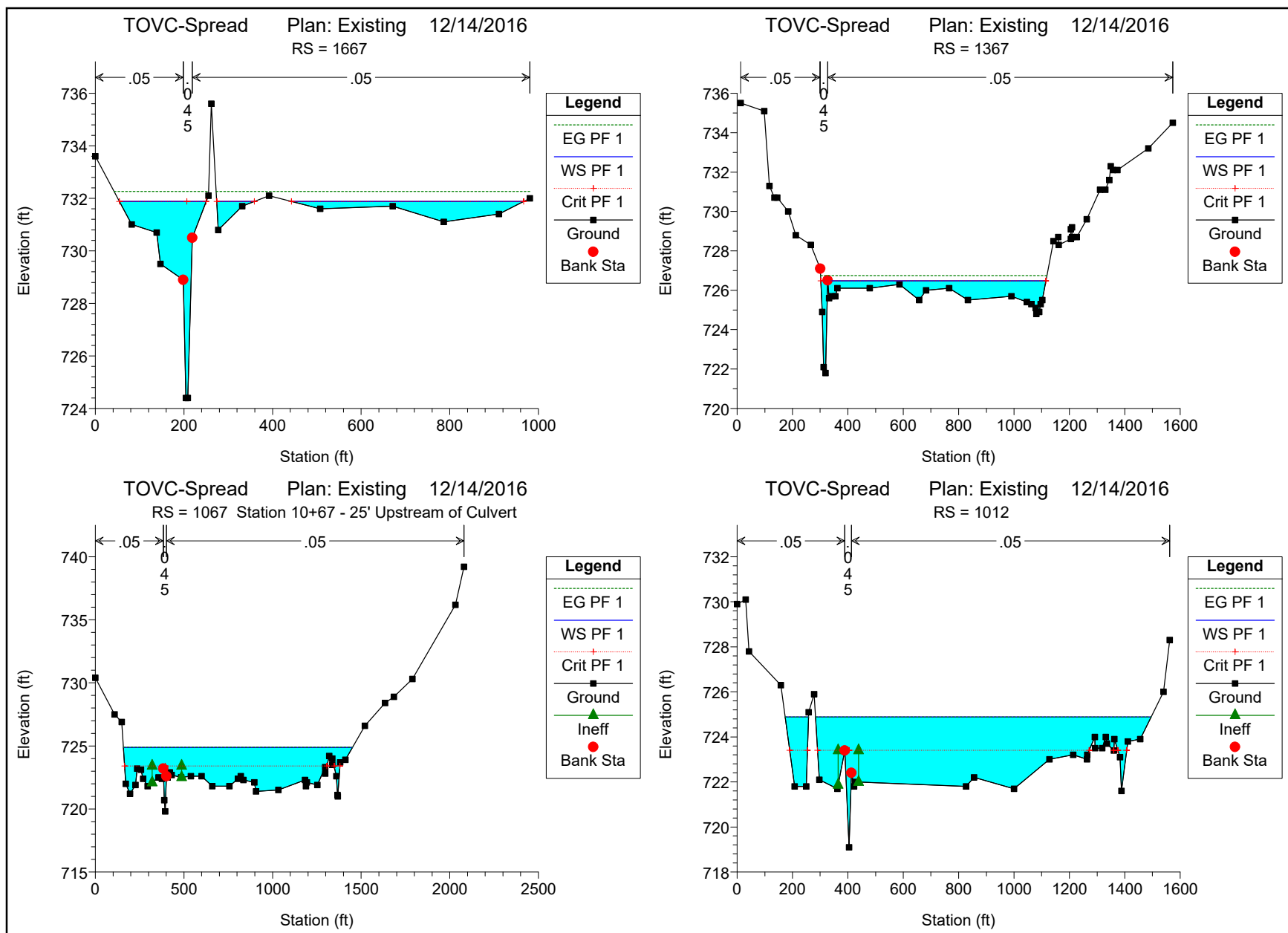
Reach	River Sta		Profile	E.G. US.	W.S. US.	E.G. IC	E.G. OC	Min El Weir Flow	Q Culv Group	Q Weir	Delta WS	Culv Vel US	Culv Vel DS
				(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(ft)	(ft/s)	(ft/s)
Left Split	950	Culvert #1	PF 1	724.26	724.26	725.05	724.26	725.01	335.00		4.04	11.55	11.55
Right Split	950	Culvert #1	PF 1	724.29	724.28	724.18	724.29	725.01	1415.00		5.12	8.42	8.42

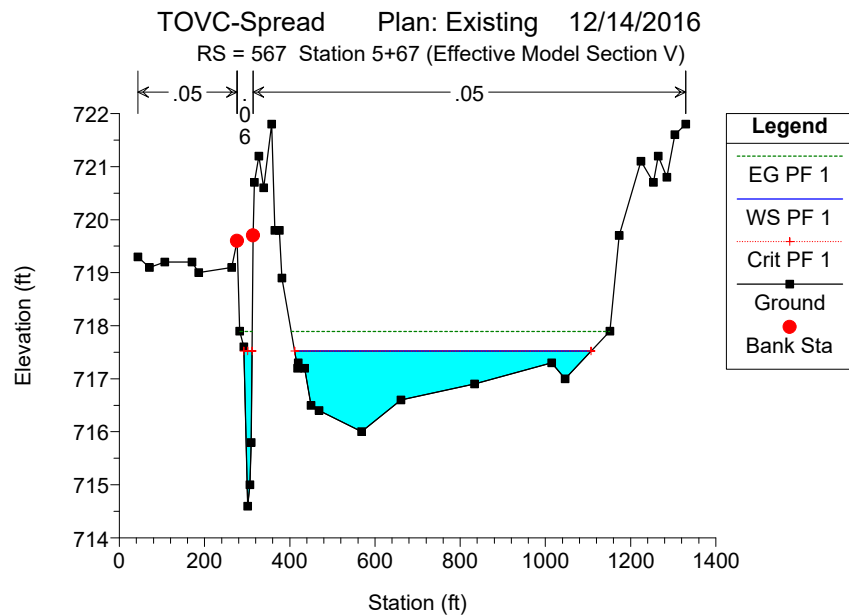
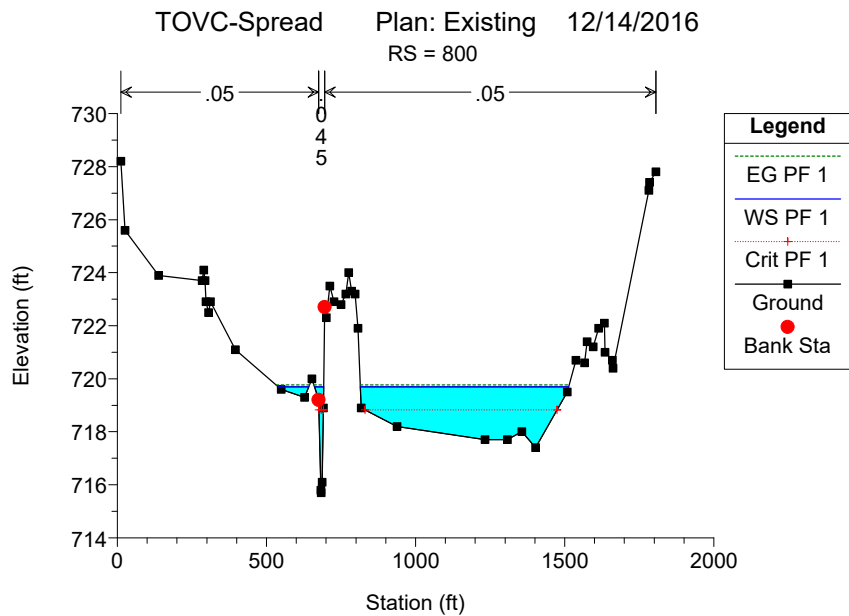
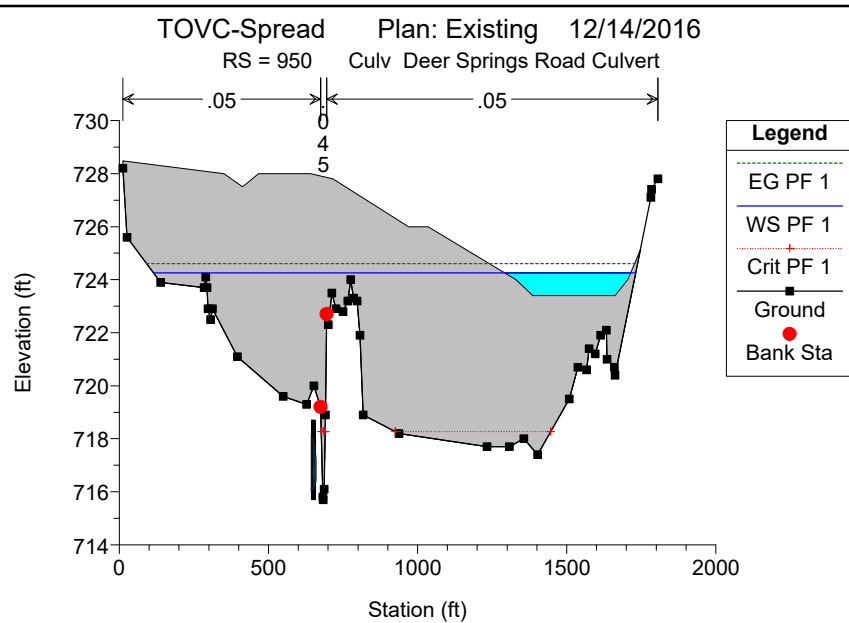
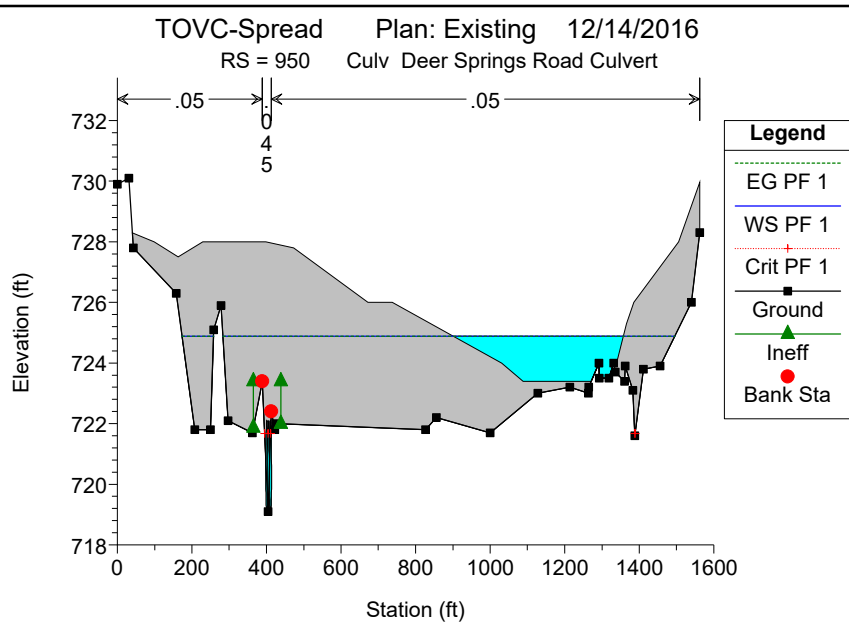
Left Split Flow

Right Split Flow

Twin Oaks Valley Creek
Existing Conditions

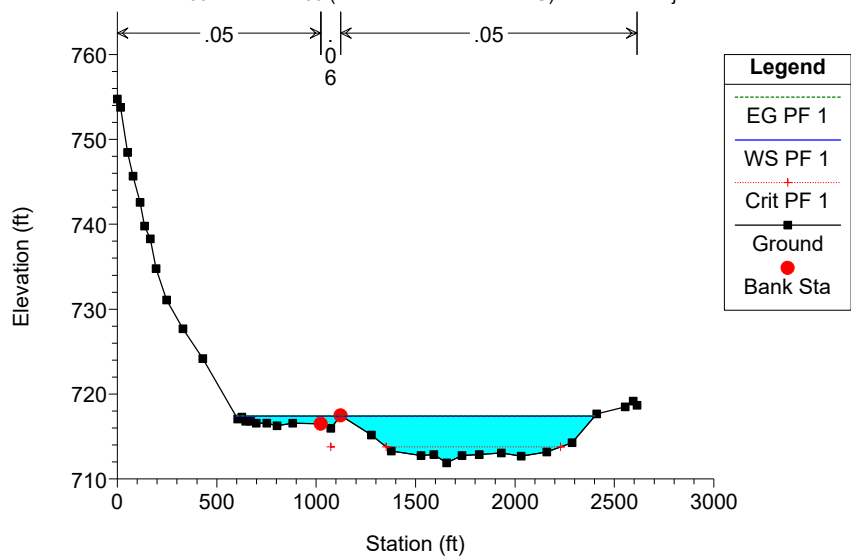




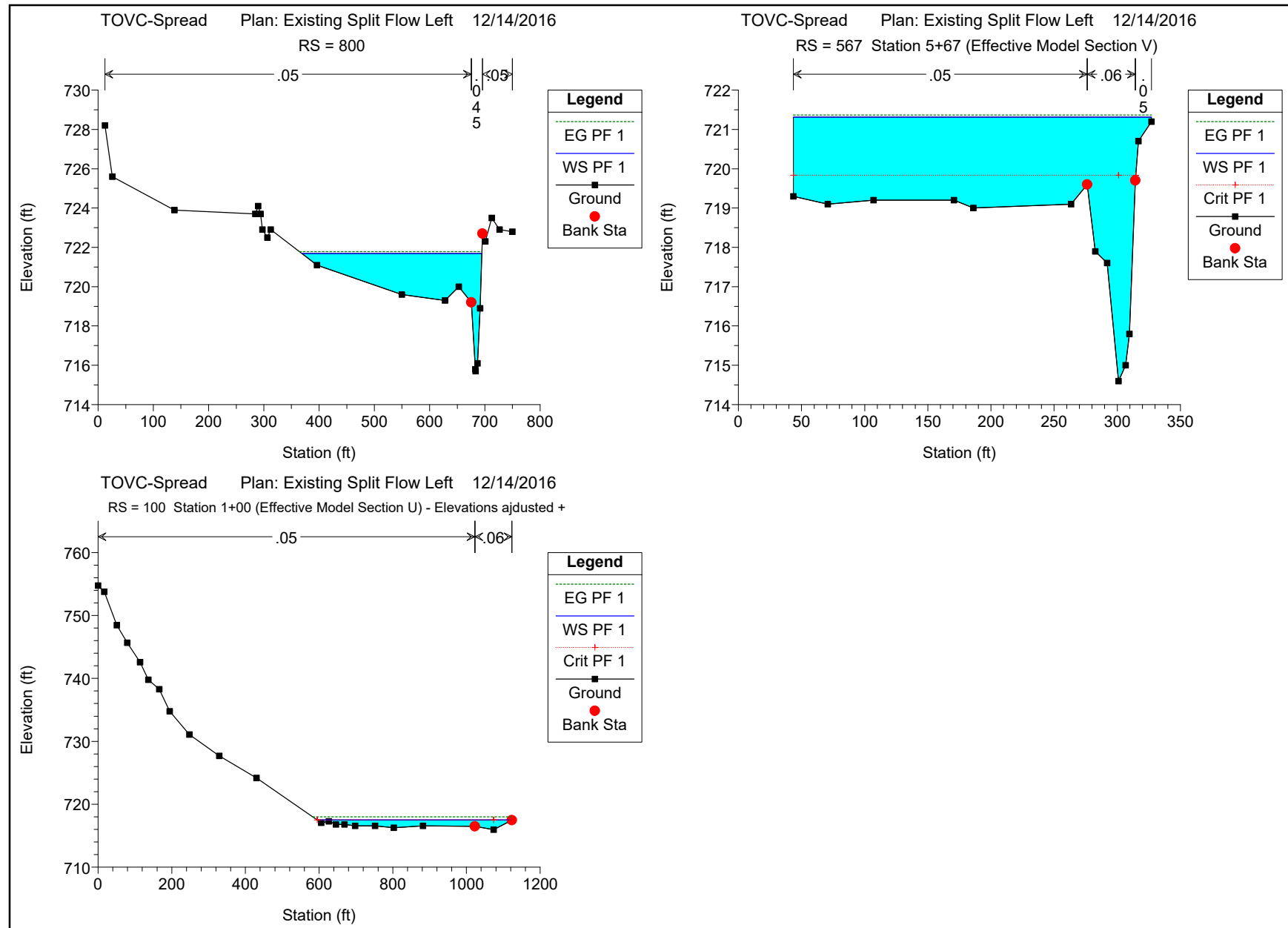


TOVC-Spread Plan: Existing 12/14/2016

RS = 100 Station 1+00 (Effective Model Section U) - Elevations adjusted +

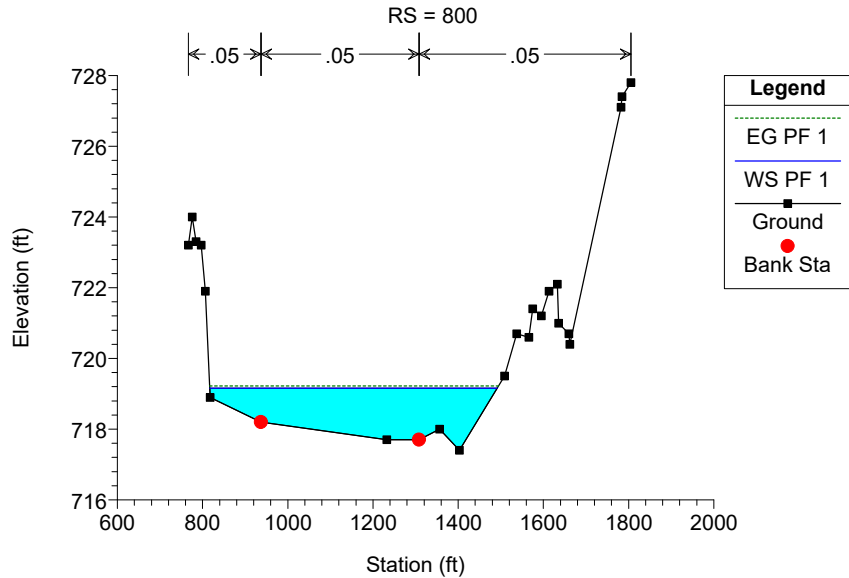


Twin Oaks Valley Creek Existing Split Flow Left

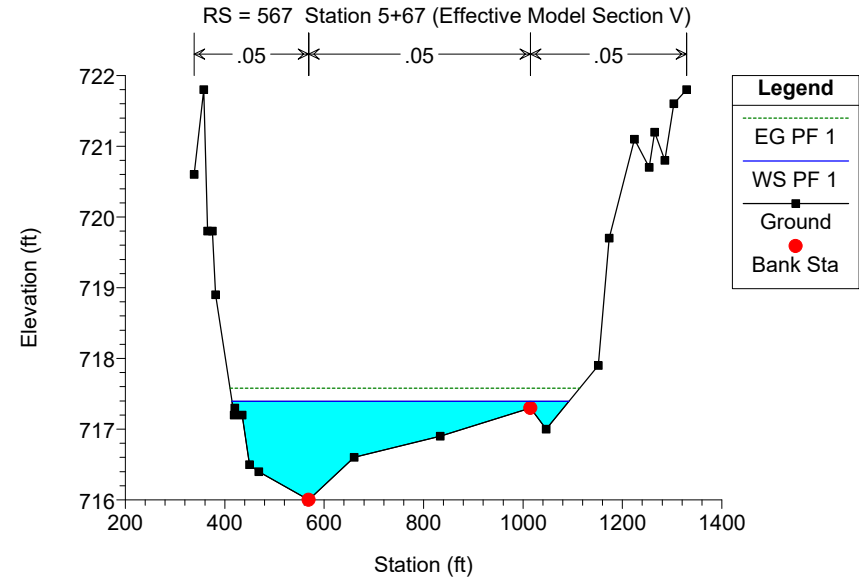


Twin Oaks Valley Creek Existing Split Flow Right

TOVC-Spread Plan: Existing Split Flow Right 12/15/2016

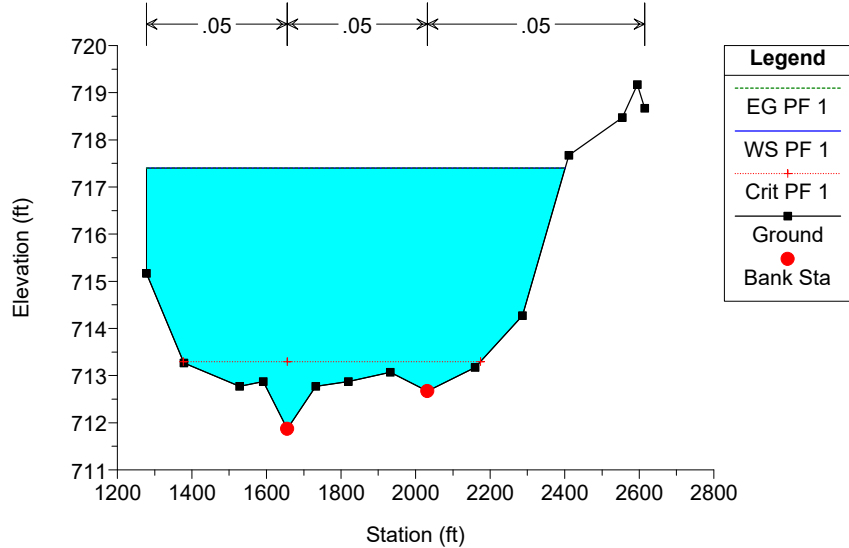


TOVC-Spread Plan: Existing Split Flow Right 12/15/2016

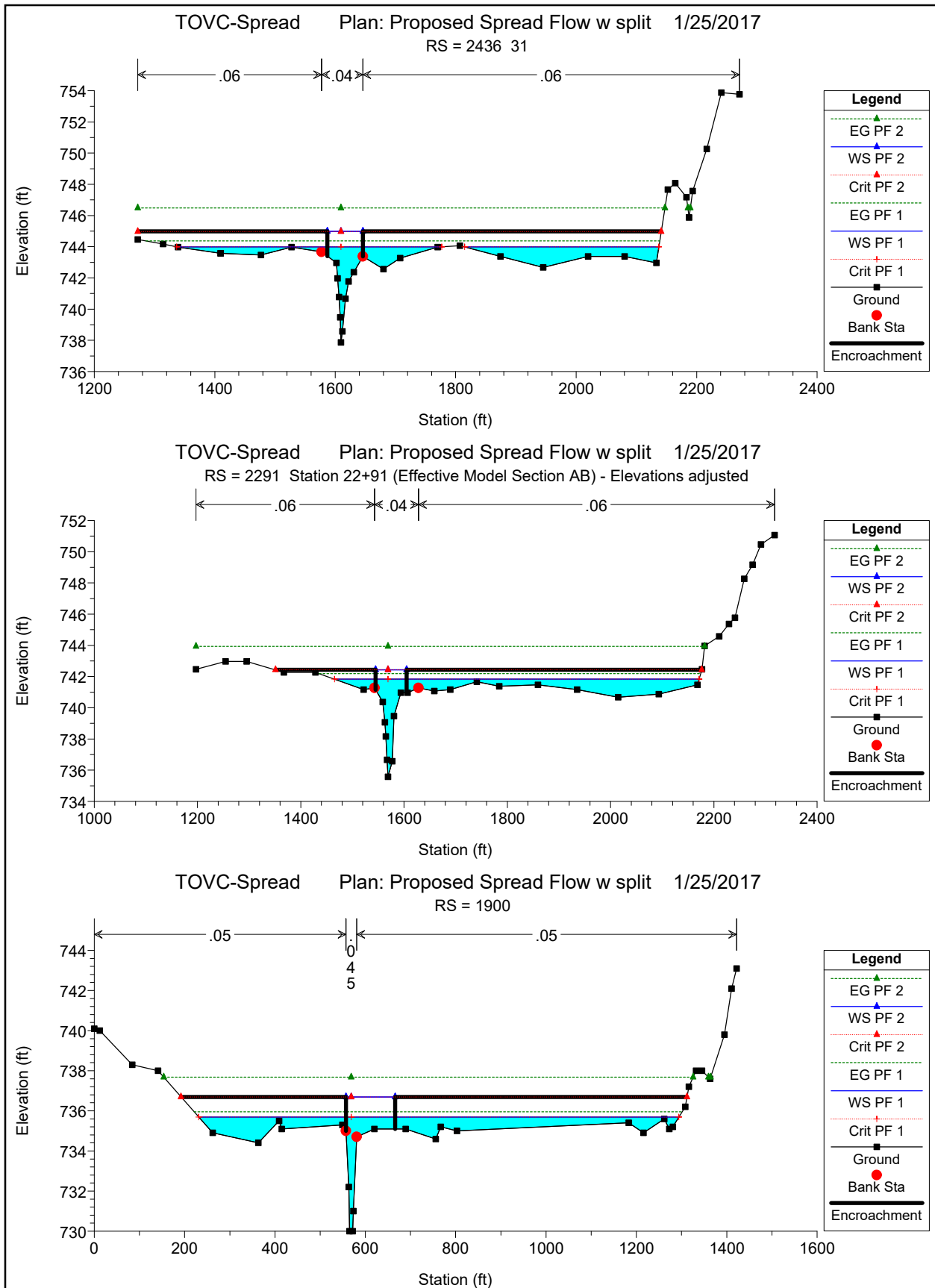


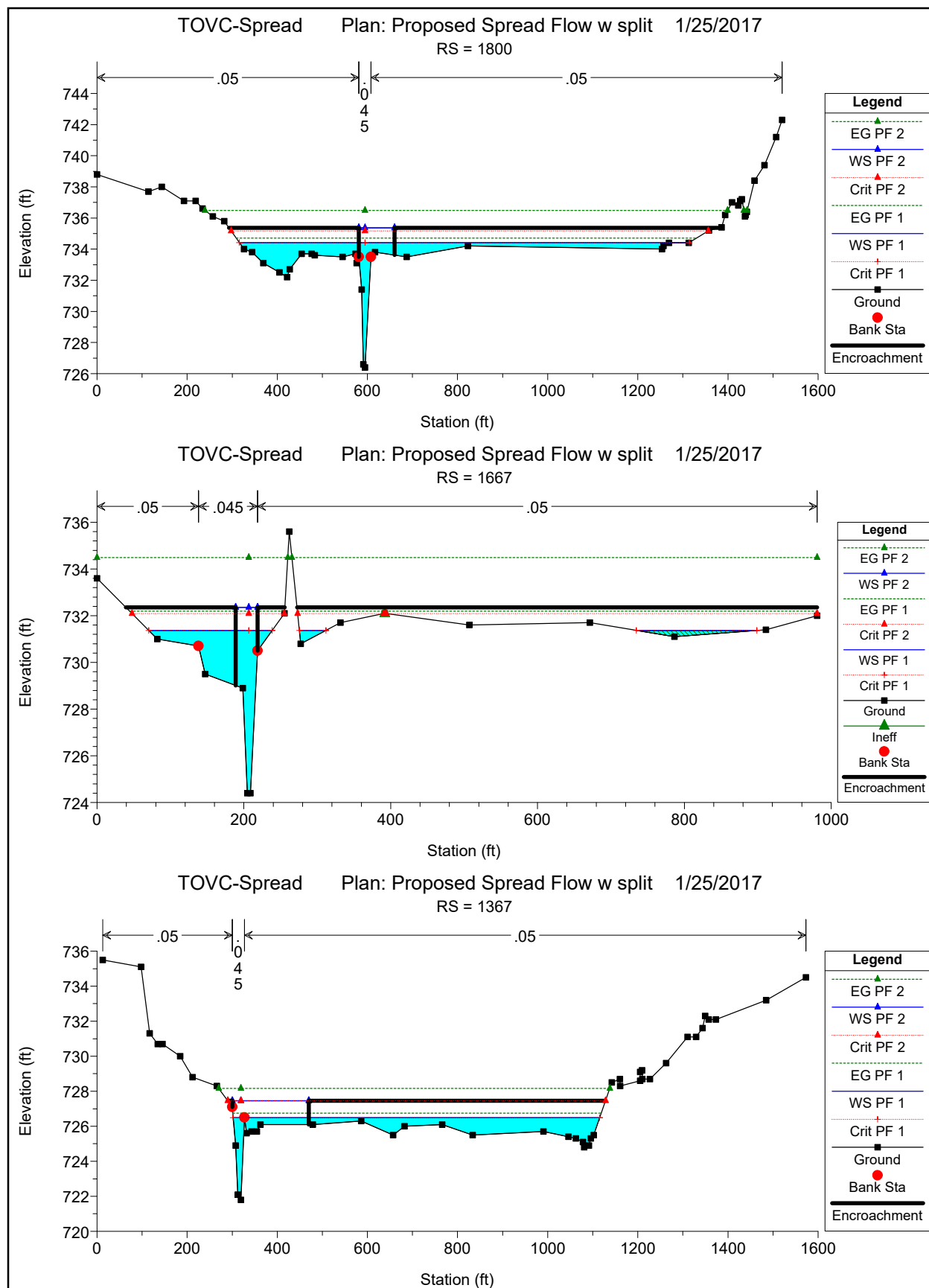
TOVC-Spread Plan: Existing Split Flow Right 12/15/2016

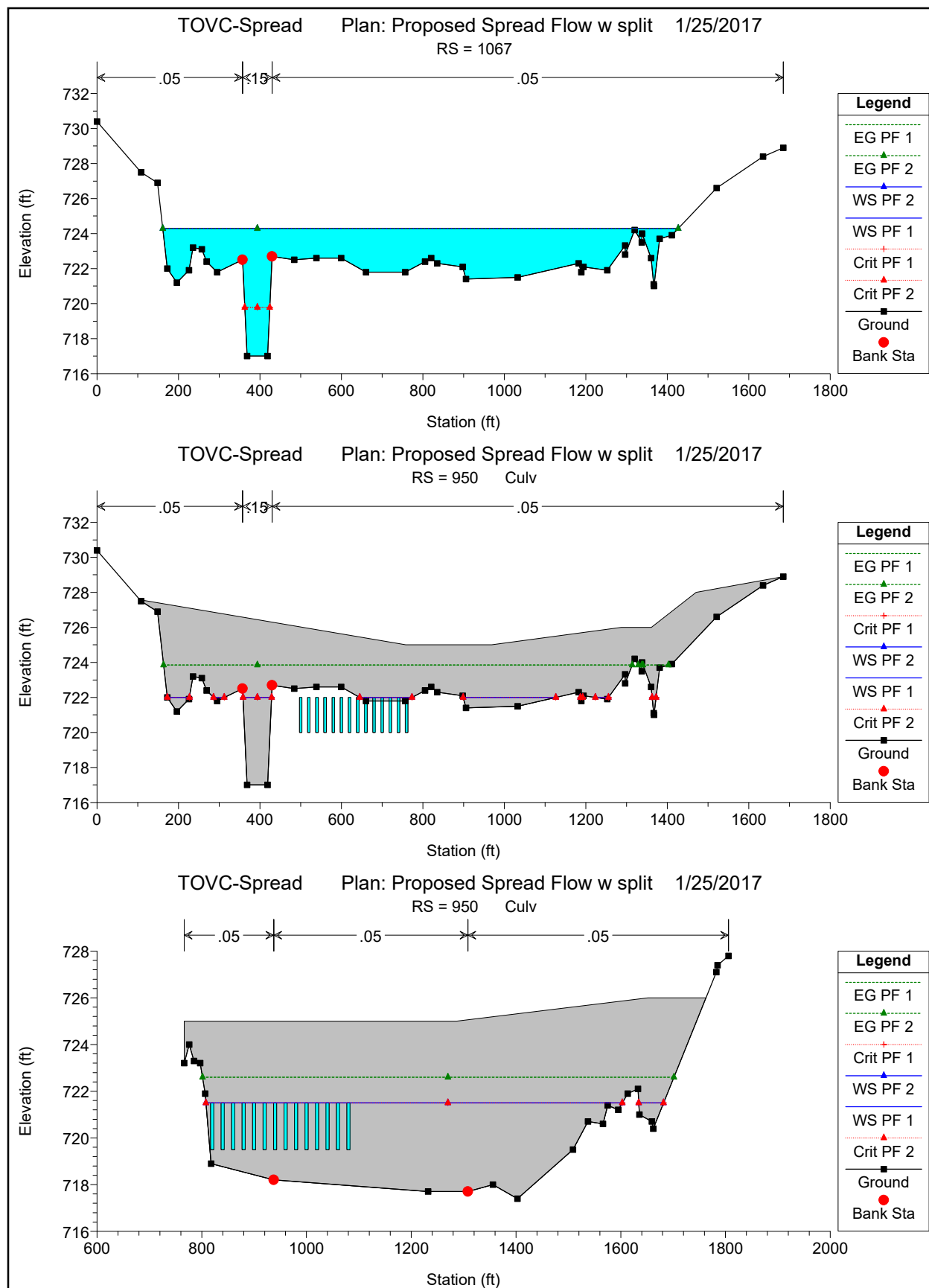
RS = 100 Station 1+00 (Effective Model Section U) - Elevations adjusted +

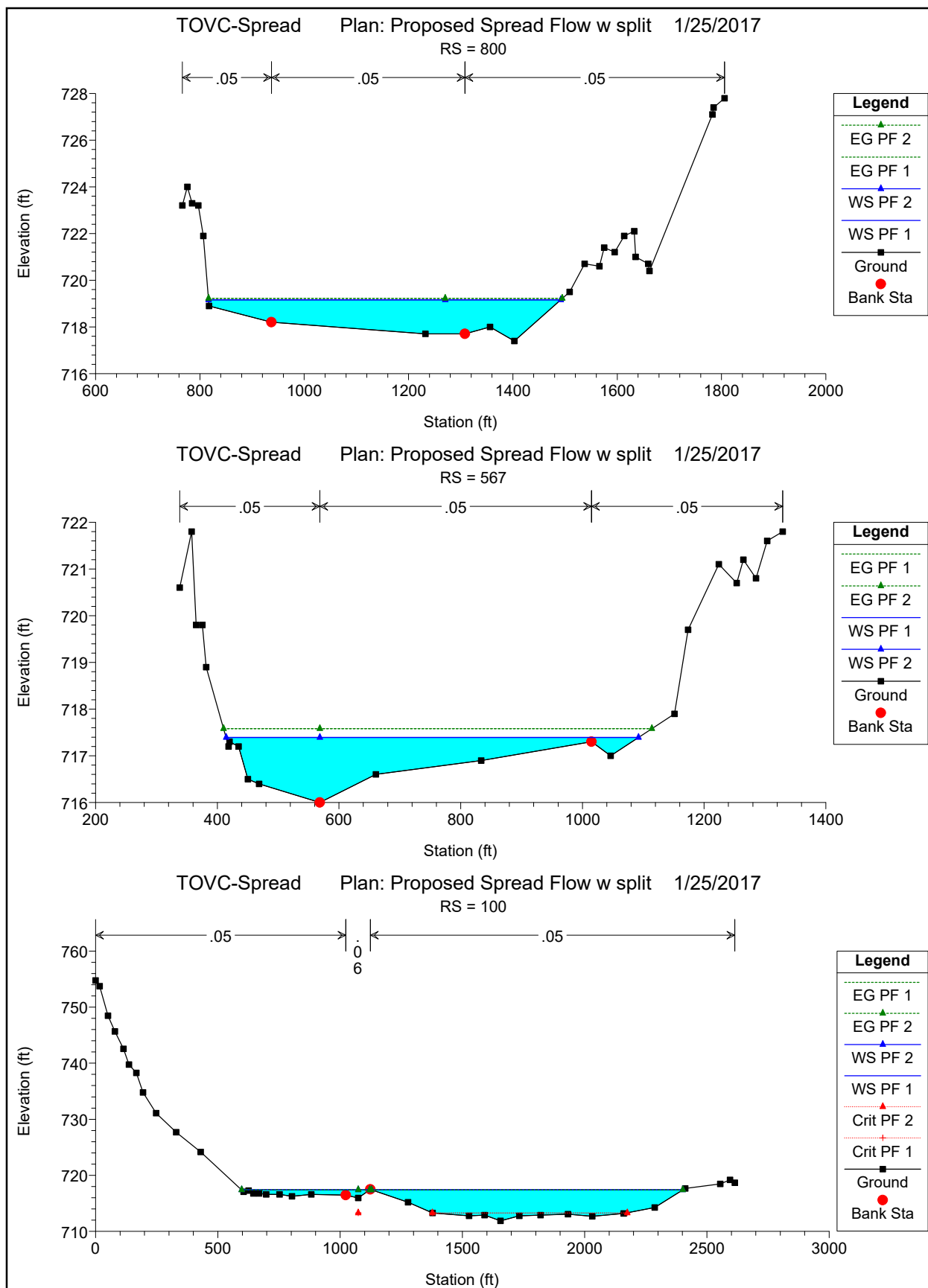


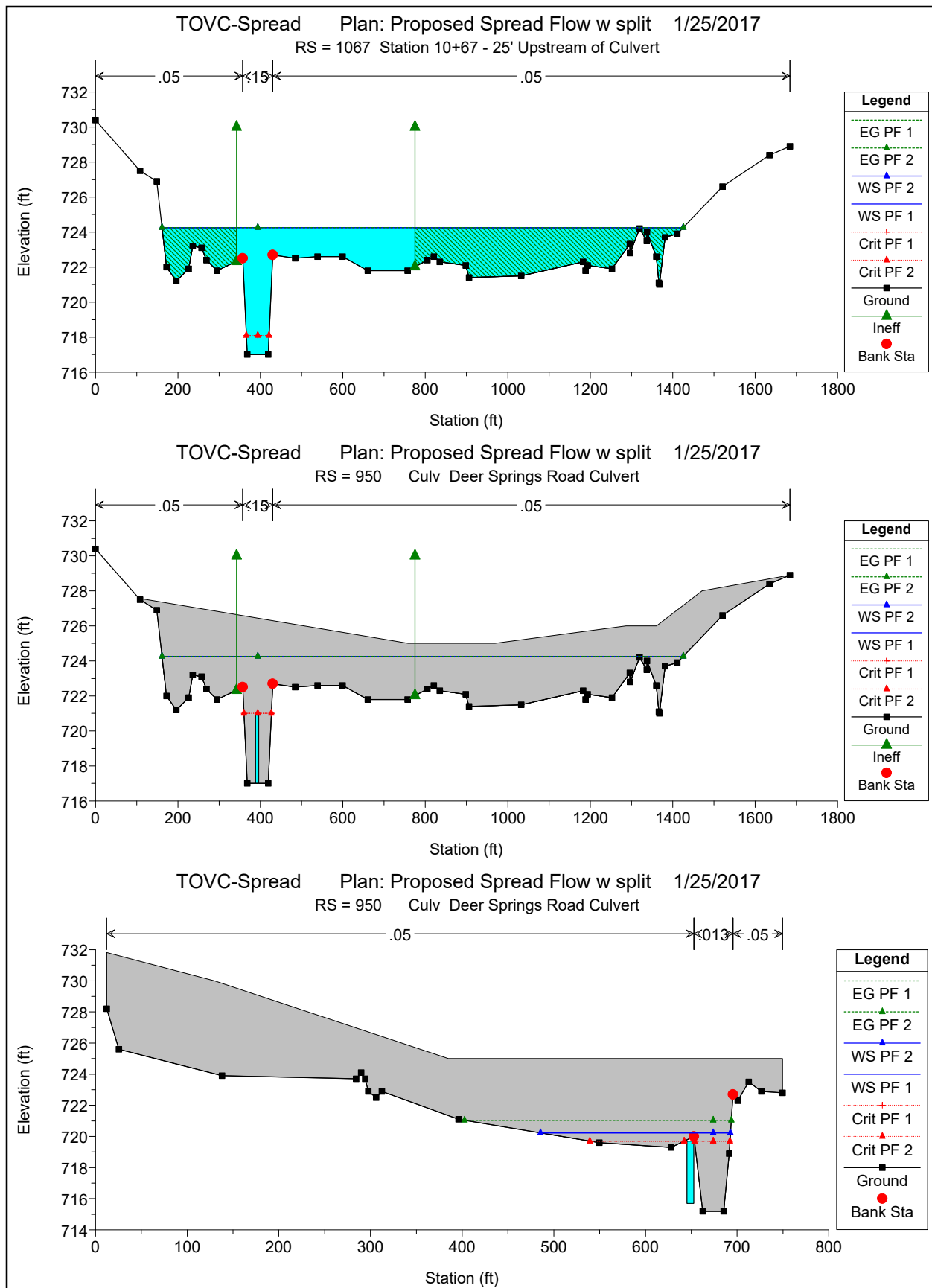
Twin Oaks Valley Creek Proposed Conditions

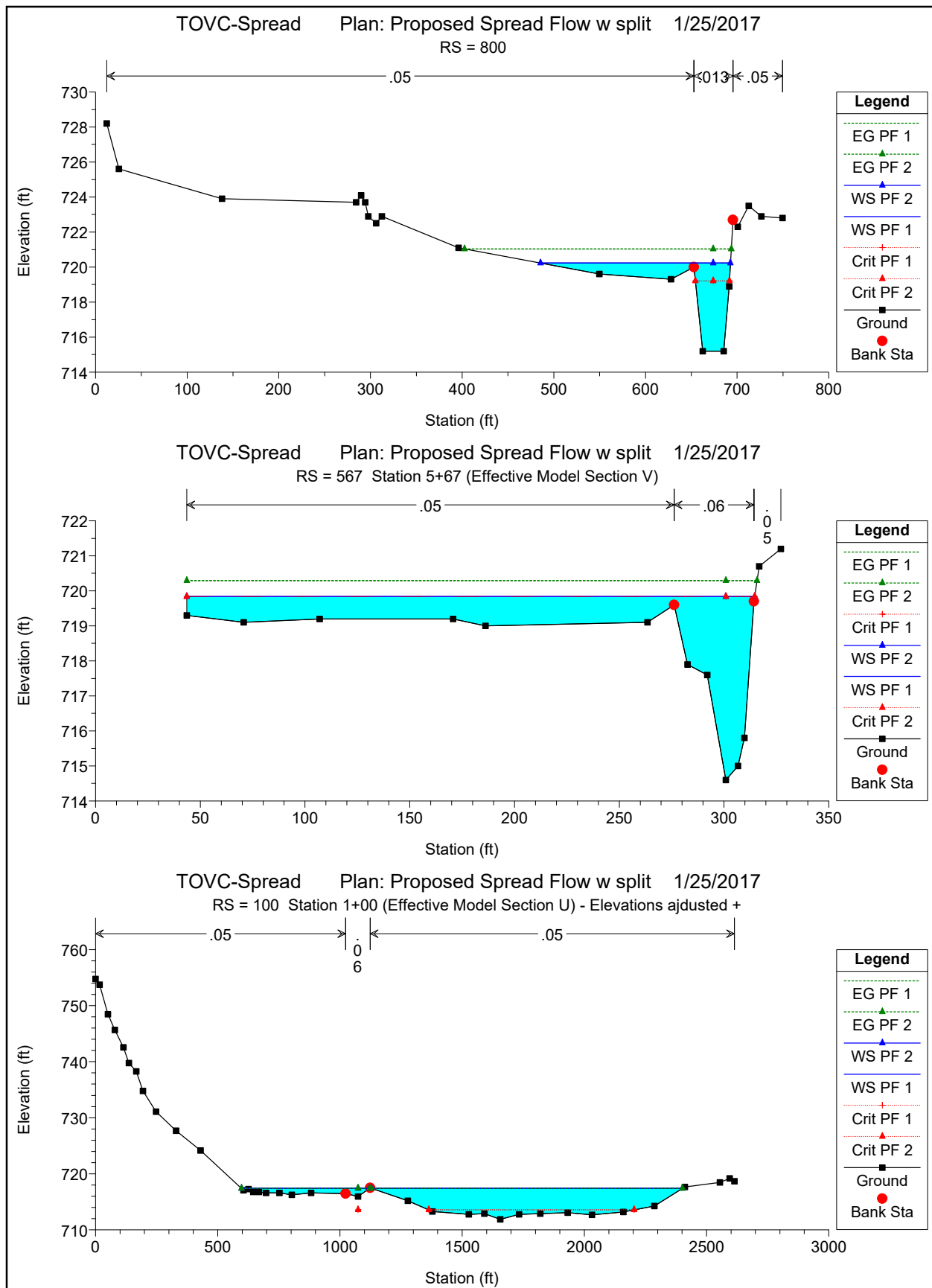




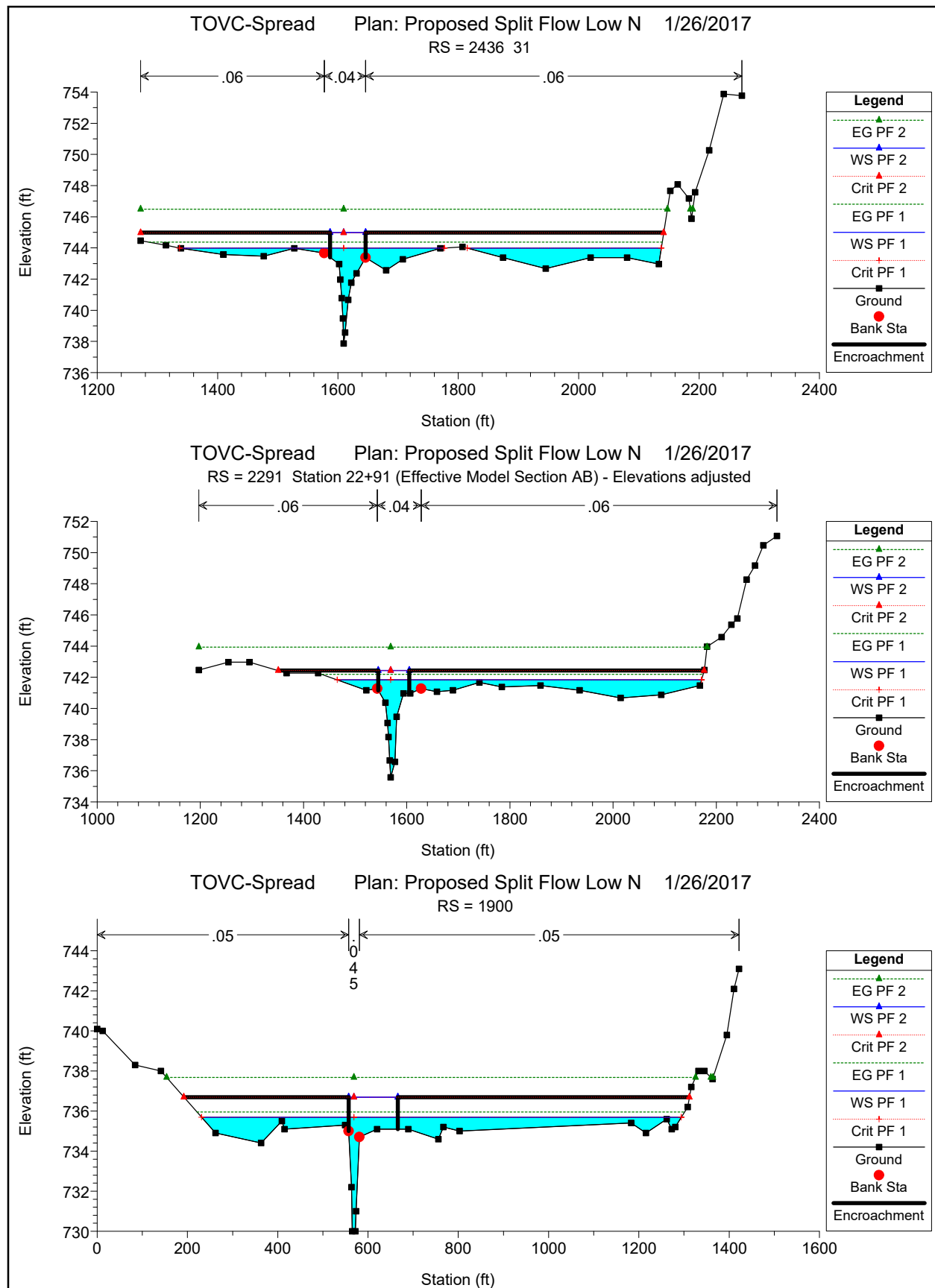


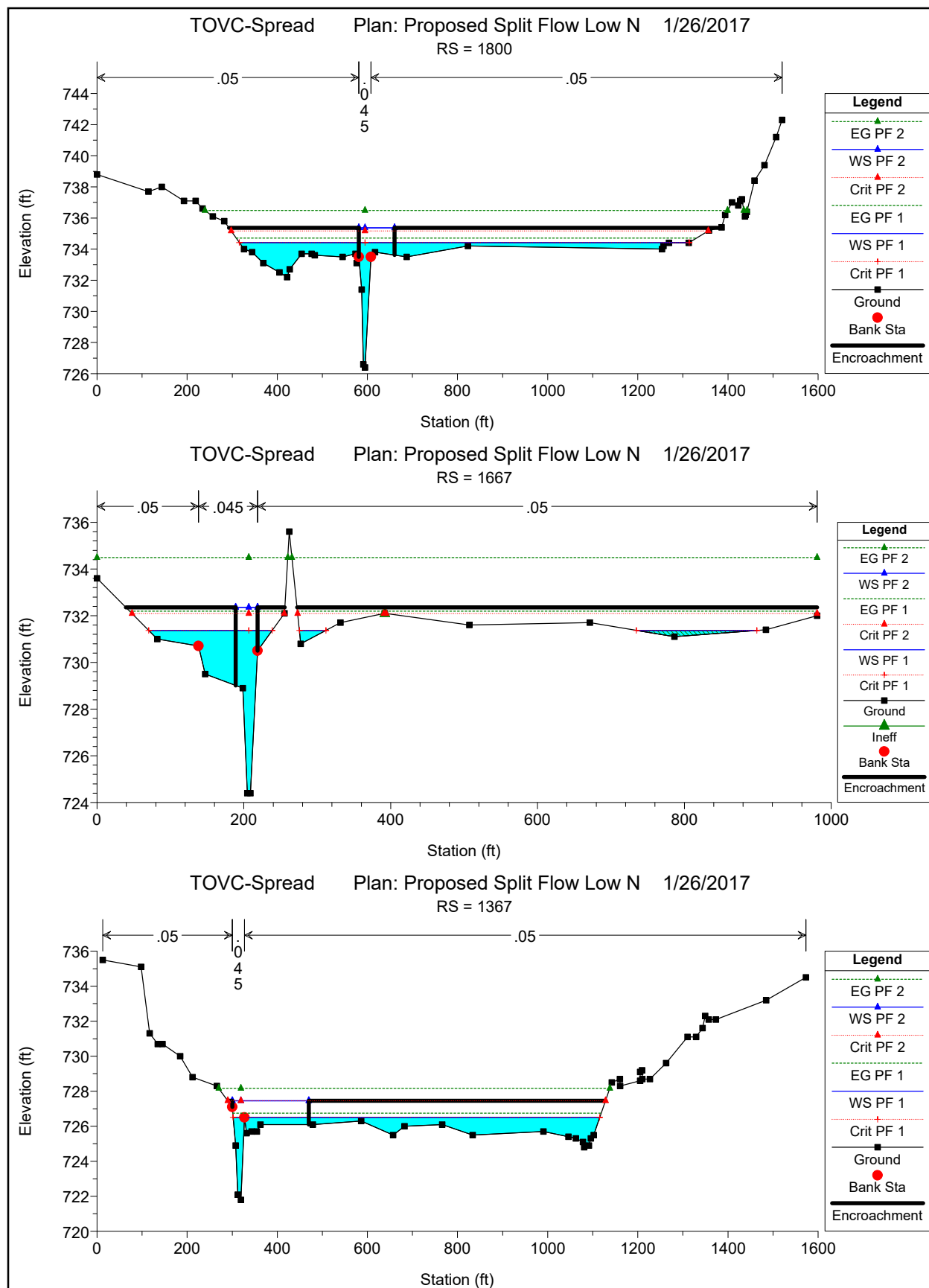


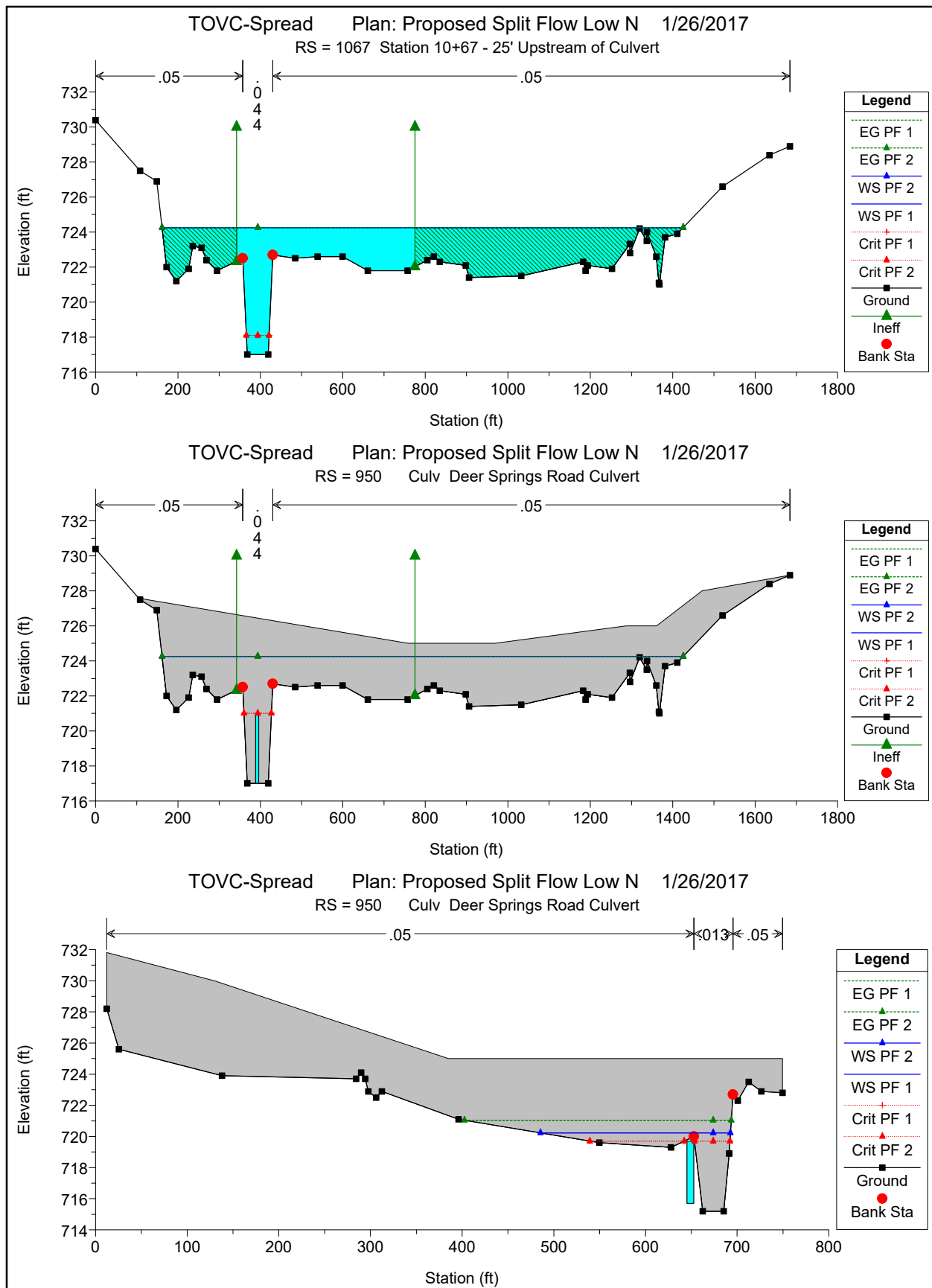


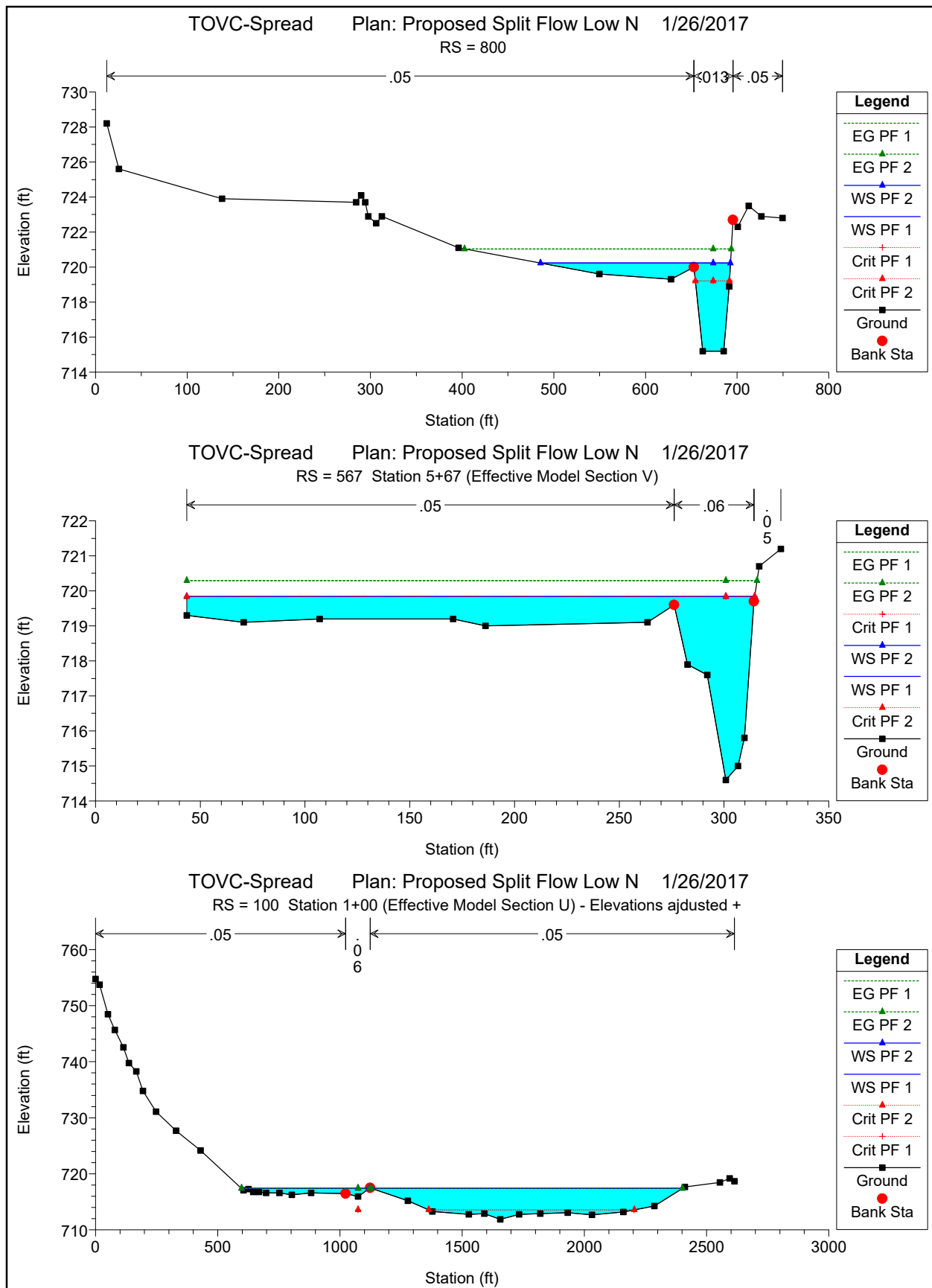


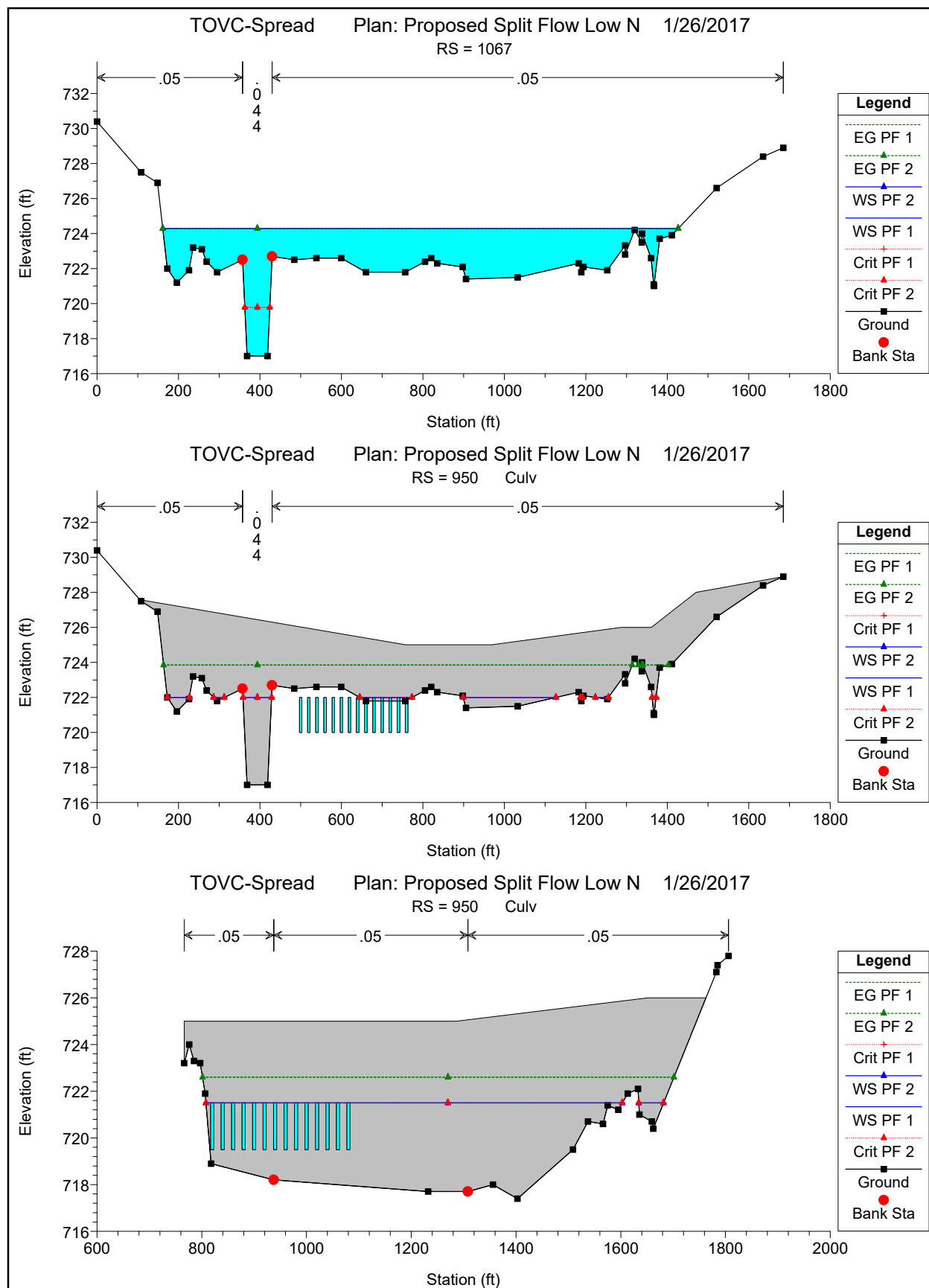
Twin Oaks Valley Creek Low N Model

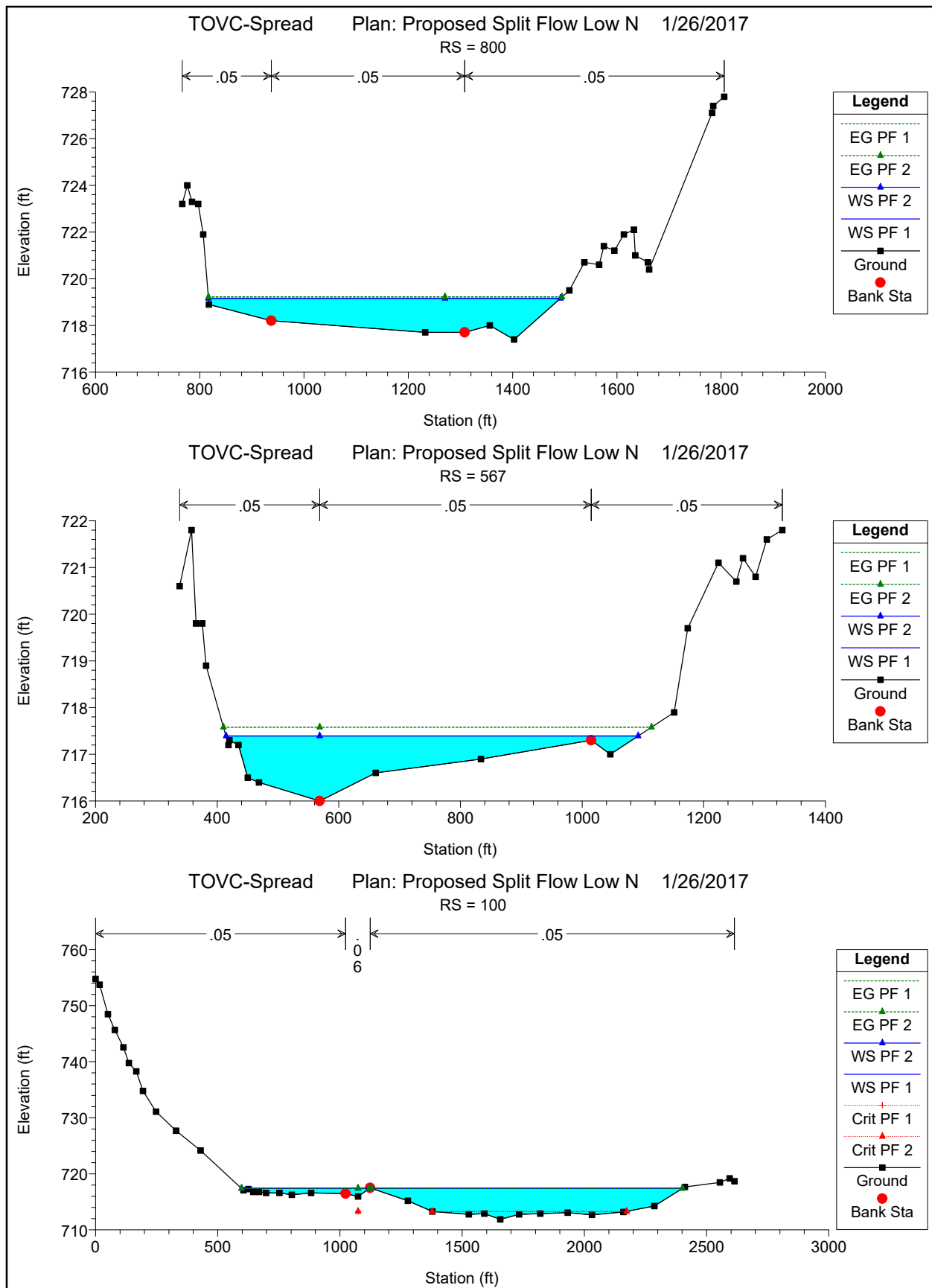












APPENDIX F

Preliminary Grading Plans

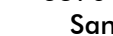
SEE BELOW: RIGHT



SEE SHEET 13



ENGINEER OF WORK
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SHEET 15 OF 17

NO.	DATE	REVISION



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APPENDIX G

CD with HEC-RAS Files