RAINFALL DISTRIBUTION:

1_yr_sm		0.1			
	0.0000	0.0011	0.0022	0.0033	0.0044
	0.0055	0.0067	0.0078	0.0089	0.0100
	0.0111	0.0122	0.0133	0.0144	0.0155
	0.0166	0.0178	0.0189	0.0200	0.0211
	0.0222	0.0233	0.0244	0.0255	0.0266
	0.0277	0.0289	0.0300	0.0311	0.0322
	0.0333	0.0344	0.0355	0.0366	0.0377
	0.0388	0.0399	0.0411	0.0422	0.0433
	0.0444	0.0455	0.0466	0.0477	0.0488
	0.0499	0.0510	0.0522	0.0533	0.0544
	0.0555	0.0566	0.0577	0.0588	0.0599
	0.0610	0.0621	0.0633	0.0644	0.0655
	0.0666	0.0693	0.0721	0.0748	0.0776
	0.0803	0.0830	0.0858	0.0885	0.0913
	0.0940	0.0967	0.0995	0.1022	0.1050
	0.1077	0.1105	0.1132	0.1159	0.1187
	0.1214	0.1242	0.1269	0.1297	0.1324
	0.1351	0.1379	0.1406	0.1434	0.1461
	0.1488	0.1535	0.1581	0.1627	0.1674
	0.1720	0.1766	0.1813	0.1859	0.1905
	0.1951	0.1998	0.2044	0.2090	0.2137
	0.2183	0.2224	0.2266	0.2307	0.2348
	0.2390	0.2476	0.2562	0.2648	0.2734
	0.2820	0.2992	0.3165	0.3440	0.3877
	0.5000	0.6123	0.6560	0.6835	0.7008
	0.7180	0.7266	0.7352	0.7438	0.7524
	0.7610	0.7652	0.7693	0.7734	0.7776
	0.7817	0.7863	0.7910	0.7956	0.8002
	0.8049	0.8095	0.8141	0.8187	0.8234
	0.8280	0.8326	0.8373	0.8419	0.8465
	0.8512	0.8539	0.8566	0.8594	0.8621
	0.8649	0.8676	0.8703	0.8731	0.8758
	0.8786	0.8813	0.8841	0.8868	0.8895
	0.8923	0.8950	0.8978	0.9005	0.9033
	0.9060	0.9087	0.9115	0.9142	0.9170
	0.9197	0.9224	0.9252	0.9279	0.9307
	0.9334	0.9345	0.9356	0.9367	0.9379
	0.9390	0.9401	0.9412	0.9423	0.9434
	0.9445	0.9456	0.9467	0.9478	0.9490
	0.9501	0.9512	0.9523	0.9534	0.9545
	0.9556	0.9567	0.9578	0.9589	0.9601
	0.9612	0.9623	0.9634	0.9645	0.9656
	0.9667	0.9678	0.9689	0.9700	0.9711
	0.9723	0.9734	0.9745	0.9756	0.9767
	0.9778	0.9789	0.9800	0.9811	0.9822
	0.9834	0.9845	0.9856	0.9867	0.9878
	0.9889	0.9900	0.9911	0.9922	0.9933
	0.9945	0.9956	0.9967	0.9978	0.9989
	1.0000				
2_yr_sm		0.1			
	0.0000	0.0011	0.0022	0.0033	0.0044
	0.0055	0.0066	0.0077	0.0088	0.0099
	0.0110	0.0122	0.0133	0.0144	0.0155
	0.0166	0.0177	0.0188	0.0199	0.0210
	0.0221	0.0232	0.0243	0.0254	0.0265
	0.0276	0.0287	0.0298	0.0309	0.0320
	0.0331	0.0343	0.0354	0.0365	0.0376

	0.0387	0.0398	0.0409	0.0420	0.0431
	0.0442	0.0453	0.0464	0.0475	0.0486
	0.0497	0.0508	0.0519	0.0530	0.0541
	0.0552	0.0564	0.0575	0.0586	0.0597
	0.0608	0.0619	0.0630	0.0641	0.0652
	0.0663	0.0690	0.0717	0.0745	0.0772
	0.0799	0.0826	0.0853	0.0881	0.0908
	0.0935	0.0962	0.0989	0.1017	0.1044
	0.1071	0.1098	0.1125	0.1153	0.1180
	0.1207	0.1234	0.1261	0.1289	0.1316
	0.1343	0.1370	0.1397	0.1425	0.1452
	0.1479	0.1525	0.1571	0.1616	0.1662
	0.1708	0.1754	0.1799	0.1845	0.1891
	0.1937	0.1982	0.2028	0.2074	0.2120
	0.2165	0.2207	0.2248	0.2289	0.2330
	0.2372	0.2457	0.2543	0.2629	0.2714
	0.2800	0.2979	0.3158	0.3440	0.3886
	0.5000	0.6114	0.6560	0.6842	0.7021
	0.7200	0.7286	0.7371	0.7457	0.7543
	0.7628	0.7670	0.7711	0.7752	0.7793
	0.7835	0.7880	0.7926	0.7972	0.8018
	0.8063	0.8109	0.8155	0.8201	0.8246
	0.8292	0.8338	0.8384	0.8429	0.8475
	0.8521	0.8548	0.8575	0.8603	0.8630
	0.8657	0.8684	0.8711	0.8739	0.8766
	0.8793	0.8820	0.8847	0.8875	0.8902
	0.8929	0.8956	0.8983	0.9011	0.9038
	0.9065	0.9092	0.9119	0.9147	0.9174
	0.9201	0.9228	0.9255	0.9283	0.9310
	0.9337	0.9348	0.9359	0.9370	0.9381
	0.9392	0.9403	0.9414	0.9425	0.9436
	0.9448	0.9459	0.9470	0.9481	0.9492
	0.9503	0.9514	0.9525	0.9536	0.9547
	0.9558	0.9569	0.9580	0.9591	0.9602
	0.9613	0.9624	0.9635	0.9646	0.9657
	0.9669	0.9680	0.9691	0.9702	0.9713
	0.9724	0.9735	0.9746	0.9757	0.9768
	0.9779	0.9790	0.9801	0.9812	0.9823
	0.9834	0.9845	0.9856	0.9867	0.9878
	0.9890	0.9901	0.9912	0.9923	0.9934
	0.9945	0.9956	0.9967	0.9978	0.9989
	1.0000				
5_yr_sm		0.1			
	0.0000	0.0012	0.0024	0.0035	0.0047
	0.0059	0.0071	0.0082	0.0094	0.0106
	0.0118	0.0129	0.0141	0.0153	0.0165
	0.0176	0.0188	0.0200	0.0212	0.0223
	0.0235	0.0247	0.0259	0.0270	0.0282
	0.0294	0.0306	0.0317	0.0329	0.0341
	0.0353	0.0364	0.0376	0.0388	0.0400
	0.0411	0.0423	0.0435	0.0447	0.0458
	0.0470	0.0482	0.0494	0.0505	0.0517
	0.0529	0.0541	0.0552	0.0564	0.0576
	0.0588	0.0599	0.0611	0.0623	0.0635
	0.0646	0.0658	0.0670	0.0682	0.0693
	0.0705	0.0733	0.0761	0.0788	0.0816
	0.0844	0.0871	0.0899	0.0927	0.0954
	0.0982	0.1010	0.1037	0.1065	0.1093
	0.1120	0.1148	0.1176	0.1203	0.1231
	0.1259	0.1286	0.1314	0.1342	0.1369
	0.1397	0.1425	0.1452	0.1480	0.1508
	0.1535	0.1580	0.1624	0.1669	0.1713
	0.1758	0.1802	0.1847	0.1891	0.1936

	0.1981	0.2025	0.2070	0.2114	0.2159
	0.2203	0.2245	0.2287	0.2329	0.2371
	0.2413	0.2501	0.2588	0.2676	0.2763
	0.2851	0.3040	0.3229	0.3522	0.3968
	0.5000	0.6032	0.6478	0.6771	0.6960
	0.7149	0.7237	0.7324	0.7412	0.7499
	0.7587	0.7629	0.7671	0.7713	0.7755
	0.7797	0.7841	0.7886	0.7930	0.7975
	0.8019	0.8064	0.8109	0.8153	0.8198
	0.8242	0.8287	0.8331	0.8376	0.8420
	0.8465	0.8492	0.8520	0.8548	0.8575
	0.8603	0.8631	0.8658	0.8686	0.8714
	0.8741	0.8769	0.8797	0.8824	0.8852
	0.8880	0.8907	0.8935	0.8963	0.8990
	0.9018	0.9046	0.9073	0.9101	0.9129
	0.9156	0.9184	0.9212	0.9239	0.9267
	0.9295	0.9307	0.9318	0.9330	0.9342
	0.9354	0.9365	0.9377	0.9389	0.9401
	0.9412	0.9424	0.9436	0.9448	0.9459
	0.9471	0.9483	0.9495	0.9506	0.9518
	0.9530	0.9542	0.9553	0.9565	0.9577
	0.9589	0.9600	0.9612	0.9624	0.9636
	0.9647	0.9659	0.9671	0.9683	0.9694
	0.9706	0.9718	0.9730	0.9741	0.9753
	0.9765	0.9777	0.9788	0.9800	0.9812
	0.9824	0.9835	0.9847	0.9859	0.9871
	0.9882	0.9894	0.9906	0.9918	0.9929
	0.9941	0.9953	0.9965	0.9976	0.9988
	1.0000	1.0000	1.0000	1.0000	1.0000
10_yr_sm		0.1			
	0.0000	0.0012	0.0025	0.0037	0.0049
	0.0061	0.0074	0.0086	0.0098	0.0110
	0.0123	0.0135	0.0147	0.0159	0.0172
	0.0184	0.0196	0.0209	0.0221	0.0233
	0.0245	0.0258	0.0270	0.0282	0.0294
	0.0307	0.0319	0.0331	0.0344	0.0356
	0.0368	0.0380	0.0393	0.0405	0.0417
	0.0429	0.0442	0.0454	0.0466	0.0478
	0.0491	0.0503	0.0515	0.0528	0.0540
	0.0552	0.0564	0.0577	0.0589	0.0601
	0.0613	0.0626	0.0638	0.0650	0.0663
	0.0675	0.0687	0.0699	0.0712	0.0724
	0.0736	0.0765	0.0794	0.0822	0.0851
	0.0880	0.0908	0.0937	0.0966	0.0995
	0.1023	0.1052	0.1081	0.1110	0.1138
	0.1167	0.1196	0.1224	0.1253	0.1282
	0.1311	0.1339	0.1368	0.1397	0.1425
	0.1454	0.1483	0.1512	0.1540	0.1569
	0.1598	0.1642	0.1687	0.1732	0.1777
	0.1821	0.1866	0.1911	0.1956	0.2000
	0.2045	0.2090	0.2134	0.2179	0.2224
	0.2269	0.2311	0.2353	0.2395	0.2438
	0.2480	0.2570	0.2659	0.2749	0.2838
	0.2928	0.3120	0.3312	0.3606	0.4040
	0.5000	0.5960	0.6394	0.6688	0.6880
	0.7072	0.7162	0.7251	0.7341	0.7430
	0.7520	0.7562	0.7605	0.7647	0.7689
	0.7731	0.7776	0.7821	0.7866	0.7910
	0.7955	0.8000	0.8044	0.8089	0.8134
	0.8179	0.8223	0.8268	0.8313	0.8358
	0.8402	0.8431	0.8460	0.8488	0.8517
	0.8546	0.8575	0.8603	0.8632	0.8661
	0.8689	0.8718	0.8747	0.8776	0.8804

0.8833	0.8862	0.8890	0.8919	0.8948
0.8977	0.9005	0.9034	0.9063	0.9092
0.9120	0.9149	0.9178	0.9206	0.9235
0.9264	0.9276	0.9288	0.9301	0.9313
0.9325	0.9337	0.9350	0.9362	0.9374
0.9387	0.9399	0.9411	0.9423	0.9436
0.9448	0.9460	0.9472	0.9485	0.9497
0.9509	0.9522	0.9534	0.9546	0.9558
0.9571	0.9583	0.9595	0.9607	0.9620
0.9632	0.9644	0.9656	0.9669	0.9681
0.9693	0.9706	0.9718	0.9730	0.9742
0.9755	0.9767	0.9779	0.9791	0.9804
0.9816	0.9828	0.9841	0.9853	0.9865
0.9877	0.9890	0.9902	0.9914	0.9926
0.9939	0.9951	0.9963	0.9975	0.9988
1.0000				

25_yr_sm 0.1

0.0000	0.0013	0.0026	0.0039	0.0052
0.0066	0.0079	0.0092	0.0105	0.0118
0.0131	0.0144	0.0157	0.0170	0.0184
0.0197	0.0210	0.0223	0.0236	0.0249
0.0262	0.0275	0.0289	0.0302	0.0315
0.0328	0.0341	0.0354	0.0367	0.0380
0.0393	0.0407	0.0420	0.0433	0.0446
0.0459	0.0472	0.0485	0.0498	0.0511
0.0525	0.0538	0.0551	0.0564	0.0577
0.0590	0.0603	0.0616	0.0630	0.0643
0.0656	0.0669	0.0682	0.0695	0.0708
0.0721	0.0734	0.0748	0.0761	0.0774
0.0787	0.0817	0.0847	0.0877	0.0907
0.0937	0.0967	0.0997	0.1028	0.1058
0.1088	0.1118	0.1148	0.1178	0.1208
0.1238	0.1268	0.1298	0.1328	0.1358
0.1389	0.1419	0.1449	0.1479	0.1509
0.1539	0.1569	0.1599	0.1629	0.1659
0.1689	0.1735	0.1781	0.1826	0.1872
0.1918	0.1963	0.2009	0.2054	0.2100
0.2146	0.2191	0.2237	0.2283	0.2328
0.2374	0.2417	0.2460	0.2503	0.2546
0.2589	0.2681	0.2774	0.2866	0.2958
0.3050	0.3245	0.3439	0.3726	0.4137
0.5000	0.5863	0.6274	0.6561	0.6755
0.6950	0.7042	0.7134	0.7226	0.7319
0.7411	0.7454	0.7497	0.7540	0.7583
0.7626	0.7672	0.7717	0.7763	0.7809
0.7854	0.7900	0.7946	0.7991	0.8037
0.8082	0.8128	0.8174	0.8219	0.8265
0.8311	0.8341	0.8371	0.8401	0.8431
0.8461	0.8491	0.8521	0.8551	0.8581
0.8611	0.8642	0.8672	0.8702	0.8732
0.8762	0.8792	0.8822	0.8852	0.8882
0.8912	0.8942	0.8972	0.9003	0.9033
0.9063	0.9093	0.9123	0.9153	0.9183
0.9213	0.9226	0.9239	0.9252	0.9266
0.9279	0.9292	0.9305	0.9318	0.9331
0.9344	0.9357	0.9370	0.9384	0.9397
0.9410	0.9423	0.9436	0.9449	0.9462
0.9475	0.9489	0.9502	0.9515	0.9528
0.9541	0.9554	0.9567	0.9580	0.9593
0.9607	0.9620	0.9633	0.9646	0.9659
0.9672	0.9685	0.9698	0.9711	0.9725
0.9738	0.9751	0.9764	0.9777	0.9790
0.9803	0.9816	0.9830	0.9843	0.9856

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          0.9869    0.9882    0.9895    0.9908    0.9921
          0.9934    0.9948    0.9961    0.9974    0.9987
          1.0000
50_yr_sm              0.1
          0.0000    0.0014    0.0027    0.0041    0.0055
          0.0068    0.0082    0.0096    0.0109    0.0123
          0.0137    0.0150    0.0164    0.0178    0.0191
          0.0205    0.0219    0.0232    0.0246    0.0260
          0.0273    0.0287    0.0301    0.0314    0.0328
          0.0342    0.0355    0.0369    0.0383    0.0396
          0.0410    0.0424    0.0437    0.0451    0.0465
          0.0478    0.0492    0.0505    0.0519    0.0533
          0.0546    0.0560    0.0574    0.0587    0.0601
          0.0615    0.0628    0.0642    0.0656    0.0669
          0.0683    0.0697    0.0710    0.0724    0.0738
          0.0751    0.0765    0.0779    0.0792    0.0806
          0.0820    0.0851    0.0882    0.0914    0.0945
          0.0977    0.1008    0.1039    0.1071    0.1102
          0.1134    0.1165    0.1196    0.1228    0.1259
          0.1290    0.1322    0.1353    0.1385    0.1416
          0.1447    0.1479    0.1510    0.1541    0.1573
          0.1604    0.1636    0.1667    0.1698    0.1730
          0.1761    0.1808    0.1854    0.1901    0.1947
          0.1994    0.2040    0.2087    0.2133    0.2180
          0.2227    0.2273    0.2320    0.2366    0.2413
          0.2459    0.2503    0.2546    0.2589    0.2633
          0.2676    0.2771    0.2866    0.2961    0.3056
          0.3151    0.3345    0.3538    0.3819    0.4208
          0.5000    0.5792    0.6181    0.6462    0.6655
          0.6849    0.6944    0.7039    0.7134    0.7229
          0.7324    0.7367    0.7411    0.7454    0.7497
          0.7541    0.7587    0.7634    0.7680    0.7727
          0.7773    0.7820    0.7867    0.7913    0.7960
          0.8006    0.8053    0.8099    0.8146    0.8192
          0.8239    0.8270    0.8302    0.8333    0.8364
          0.8396    0.8427    0.8459    0.8490    0.8521
          0.8553    0.8584    0.8615    0.8647    0.8678
          0.8710    0.8741    0.8772    0.8804    0.8835
          0.8866    0.8898    0.8929    0.8961    0.8992
          0.9023    0.9055    0.9086    0.9118    0.9149
          0.9180    0.9194    0.9208    0.9221    0.9235
          0.9249    0.9262    0.9276    0.9290    0.9303
          0.9317    0.9331    0.9344    0.9358    0.9372
          0.9385    0.9399    0.9413    0.9426    0.9440
          0.9454    0.9467    0.9481    0.9495    0.9508
          0.9522    0.9535    0.9549    0.9563    0.9576
          0.9590    0.9604    0.9617    0.9631    0.9645
          0.9658    0.9672    0.9686    0.9699    0.9713
          0.9727    0.9740    0.9754    0.9768    0.9781
          0.9795    0.9809    0.9822    0.9836    0.9850
          0.9863    0.9877    0.9891    0.9904    0.9918
          0.9932    0.9945    0.9959    0.9973    0.9986
          1.0000
100_yr_sm             0.1
          0.0000    0.0014    0.0029    0.0043    0.0057
          0.0071    0.0086    0.0100    0.0114    0.0129
          0.0143    0.0157    0.0171    0.0186    0.0200
          0.0214    0.0229    0.0243    0.0257    0.0271
          0.0286    0.0300    0.0314    0.0329    0.0343
          0.0357    0.0372    0.0386    0.0400    0.0414
          0.0429    0.0443    0.0457    0.0472    0.0486
          0.0500    0.0514    0.0529    0.0543    0.0557
          0.0572    0.0586    0.0600    0.0614    0.0629
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0.0643	0.0657	0.0672	0.0686	0.0700
0.0714	0.0729	0.0743	0.0757	0.0772
0.0786	0.0800	0.0814	0.0829	0.0843
0.0857	0.0890	0.0923	0.0955	0.0988
0.1021	0.1054	0.1086	0.1119	0.1152
0.1185	0.1217	0.1250	0.1283	0.1315
0.1348	0.1381	0.1414	0.1446	0.1479
0.1512	0.1544	0.1577	0.1610	0.1643
0.1675	0.1708	0.1741	0.1773	0.1806
0.1839	0.1886	0.1934	0.1981	0.2029
0.2076	0.2123	0.2171	0.2218	0.2266
0.2313	0.2361	0.2408	0.2455	0.2503
0.2550	0.2594	0.2637	0.2680	0.2723
0.2767	0.2864	0.2961	0.3058	0.3155
0.3252	0.3444	0.3635	0.3907	0.4275
0.5000	0.5725	0.6093	0.6365	0.6556
0.6748	0.6845	0.6942	0.7039	0.7136
0.7233	0.7277	0.7320	0.7363	0.7406
0.7450	0.7497	0.7545	0.7592	0.7639
0.7687	0.7734	0.7782	0.7829	0.7877
0.7924	0.7971	0.8019	0.8066	0.8114
0.8161	0.8194	0.8227	0.8259	0.8292
0.8325	0.8357	0.8390	0.8423	0.8456
0.8488	0.8521	0.8554	0.8586	0.8619
0.8652	0.8685	0.8717	0.8750	0.8783
0.8815	0.8848	0.8881	0.8914	0.8946
0.8979	0.9012	0.9045	0.9077	0.9110
0.9143	0.9157	0.9171	0.9186	0.9200
0.9214	0.9228	0.9243	0.9257	0.9271
0.9286	0.9300	0.9314	0.9328	0.9343
0.9357	0.9371	0.9386	0.9400	0.9414
0.9428	0.9443	0.9457	0.9471	0.9486
0.9500	0.9514	0.9528	0.9543	0.9557
0.9571	0.9586	0.9600	0.9614	0.9628
0.9643	0.9657	0.9671	0.9686	0.9700
0.9714	0.9729	0.9743	0.9757	0.9771
0.9786	0.9800	0.9814	0.9829	0.9843
0.9857	0.9871	0.9886	0.9900	0.9914
0.9929	0.9943	0.9957	0.9971	0.9986
1.0000	1.0000	1.0000	1.0000	1.0000

500_yr_sm 0.1

0.0000	0.0016	0.0031	0.0047	0.0063
0.0079	0.0094	0.0110	0.0126	0.0141
0.0157	0.0173	0.0189	0.0204	0.0220
0.0236	0.0252	0.0267	0.0283	0.0299
0.0314	0.0330	0.0346	0.0362	0.0377
0.0393	0.0409	0.0424	0.0440	0.0456
0.0472	0.0487	0.0503	0.0519	0.0535
0.0550	0.0566	0.0582	0.0597	0.0613
0.0629	0.0645	0.0660	0.0676	0.0692
0.0707	0.0723	0.0739	0.0755	0.0770
0.0786	0.0802	0.0817	0.0833	0.0849
0.0865	0.0880	0.0896	0.0912	0.0928
0.0943	0.0979	0.1015	0.1051	0.1087
0.1123	0.1159	0.1195	0.1231	0.1267
0.1303	0.1340	0.1376	0.1412	0.1448
0.1484	0.1520	0.1556	0.1592	0.1628
0.1664	0.1700	0.1736	0.1772	0.1808
0.1844	0.1880	0.1916	0.1952	0.1988
0.2024	0.2073	0.2122	0.2172	0.2221
0.2270	0.2319	0.2368	0.2418	0.2467
0.2516	0.2565	0.2615	0.2664	0.2713
0.2762	0.2806	0.2849	0.2893	0.2936

0.2979	0.3081	0.3182	0.3283	0.3384
0.3486	0.3669	0.3853	0.4101	0.4419
0.5000	0.5581	0.5899	0.6147	0.6331
0.6514	0.6616	0.6717	0.6818	0.6919
0.7021	0.7064	0.7107	0.7151	0.7194
0.7238	0.7287	0.7336	0.7385	0.7435
0.7484	0.7533	0.7582	0.7632	0.7681
0.7730	0.7779	0.7828	0.7878	0.7927
0.7976	0.8012	0.8048	0.8084	0.8120
0.8156	0.8192	0.8228	0.8264	0.8300
0.8336	0.8372	0.8408	0.8444	0.8480
0.8516	0.8552	0.8588	0.8624	0.8660
0.8697	0.8733	0.8769	0.8805	0.8841
0.8877	0.8913	0.8949	0.8985	0.9021
0.9057	0.9072	0.9088	0.9104	0.9120
0.9135	0.9151	0.9167	0.9183	0.9198
0.9214	0.9230	0.9245	0.9261	0.9277
0.9293	0.9308	0.9324	0.9340	0.9355
0.9371	0.9387	0.9403	0.9418	0.9434
0.9450	0.9465	0.9481	0.9497	0.9513
0.9528	0.9544	0.9560	0.9576	0.9591
0.9607	0.9623	0.9638	0.9654	0.9670
0.9686	0.9701	0.9717	0.9733	0.9748
0.9764	0.9780	0.9796	0.9811	0.9827
0.9843	0.9859	0.9874	0.9890	0.9906
0.9921	0.9937	0.9953	0.9969	0.9984
1.0000				

GLOBAL OUTPUT:

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WinTR-20 Printed Page File End of Input Data List

Eccelston Mitigation POI 1-4 Existing

Name of printed page file:
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STORM 1_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA4	0.450		0.770		12.80	97.0	215.53

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.600	0.0	1.2	5.2	21.7	54.2	85.6	96.9
13.000	89.4	72.1	56.5	44.3	35.1	28.8	24.9
14.400	22.7	21.4	20.6	20.2	19.8	19.0	17.4

15.800	15.8	14.4	13.5	13.0	12.6	12.5	12.4
17.200	12.3	12.3	12.3	12.4	12.4	12.3	11.6
18.600	10.3	8.8	7.5	6.6	6.1	5.7	5.5
20.000	5.4	5.3	5.3	5.2	5.2	5.2	5.2
21.400	5.2	5.2	5.2	5.2	5.3	5.2	5.2
22.800	5.3	5.3	5.3	5.3	5.3	5.3	5.3
24.200	5.2	4.7	3.8	2.7	1.7	1.1	0.7
25.600	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA2	1.323		0.636		13.01	192.4	145.41

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.800	0.336E-01	4.1	24.5	69.7	131.5	176.2	192.0
13.200	182.4	155.8	127.4	104.4	87.1	74.4	65.8
14.600	60.4	57.0	54.8	53.2	51.2	48.3	44.7
16.000	41.0	37.9	35.6	34.2	33.3	32.8	32.5
17.400	32.4	32.3	32.3	32.4	32.2	31.2	29.0
18.800	25.9	22.7	19.9	17.8	16.4	15.5	14.9
20.200	14.5	14.2	14.0	13.9	13.8	13.8	13.8
21.600	13.7	13.7	13.8	13.8	13.8	13.8	13.8
23.000	13.9	13.9	13.9	13.9	14.0	14.0	13.8
24.400	13.1	11.4	9.1	6.7	4.7	3.2	2.2
25.800	1.5	1.0	0.7	0.0			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		0.443		12.94	86.3	93.76

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.800	0.0	0.6	8.7	30.1	60.3	80.9	86.2
13.200	79.4	66.5	54.8	45.3	38.3	33.5	30.7
14.600	29.1	28.3	27.8	27.4	26.6	25.0	22.9
16.000	21.0	19.5	18.7	18.2	17.9	17.7	17.7
17.400	17.7	17.7	17.8	17.9	17.8	17.1	15.5
18.800	13.6	11.7	10.3	9.3	8.7	8.3	8.1
20.200	7.9	7.8	7.7	7.7	7.7	7.7	7.7
21.600	7.7	7.7	7.7	7.8	7.8	7.8	7.8
23.000	7.8	7.9	7.9	7.9	7.9	7.9	7.8
24.400	7.3	6.1	4.6	3.1	2.0	1.3	0.9
25.800	0.6	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

CON-1	2.693	Upstream	0.592	362.79	12.95	369.8	137.30

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.600	0.0	1.3	10.3	55.0	154.8	277.3	353.8
13.000	367.4	333.2	278.9	226.6	184.9	154.2	132.9
14.400	119.3	110.9	105.9	102.8	100.4	96.8	90.7
15.800	83.4	76.4	70.9	67.2	65.0	63.7	62.9
17.200	62.5	62.4	62.4	62.5	62.6	62.2	59.9
18.600	54.9	48.3	41.9	36.8	33.2	30.9	29.4
20.000	28.4	27.7	27.3	27.0	26.8	26.8	26.7
21.400	26.6	26.6	26.7	26.7	26.8	26.8	26.8
22.800	26.9	27.0	27.1	27.1	27.1	27.2	27.2
24.200	26.8	25.0	21.2	16.3	11.6	7.8	5.2
25.600	3.4	2.1	1.0	0.7	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Downstream	0.592	362.74	13.23	339.2	125.93

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.800	0.0	2.2	16.3	60.3	142.5	238.7	310.3
13.200	338.2	325.2	287.6	242.7	201.6	168.3	143.8
14.600	126.9	116.0	109.1	104.7	101.3	97.3	91.8
16.000	85.3	78.8	73.3	69.1	66.3	64.5	63.5
17.400	62.9	62.6	62.5	62.5	62.5	61.9	59.6
18.800	55.4	49.8	44.0	38.9	34.9	32.1	30.2
20.200	29.0	28.1	27.5	27.2	26.9	26.8	26.7
21.600	26.7	26.6	26.7	26.7	26.8	26.8	26.8

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
23.000	26.9	27.0	27.0	27.1	27.1	27.2	27.1
24.400	26.6	24.9	21.7	17.5	13.2	9.4	6.5
25.800	4.3	2.7	1.6	0.8	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA1	0.090		0.768		12.21	45.3	503.39

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.400	0.0	0.7	2.4	12.4	45.2	26.3	13.9
12.800	7.8	6.8	4.8	3.5	3.4	3.7	3.8
14.200	3.8	3.8	3.9	3.9	4.0	3.1	2.5
15.600	2.4	2.4	2.4	2.4	2.4	2.4	2.5

17.000	2.5	2.5	2.5	2.5	2.5	2.5	1.7
18.400	1.1	1.1	1.0	1.0	1.0	1.0	1.0
19.800	1.0	1.0	1.0	1.0	1.1	1.0	1.0
21.200	1.0	1.0	1.1	1.1	1.0	1.0	1.0
22.600	1.1	1.1	1.1	1.1	1.1	1.1	1.1
24.000	1.1	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	2.783		0.597		13.23	343.4	123.38

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.400	0.0	0.7	2.4	14.6	61.5	86.7	156.5
12.800	246.4	317.1	343.0	328.7	291.0	246.4	205.3
14.200	172.1	147.6	130.8	119.9	113.0	107.7	103.7
15.600	99.7	94.2	87.7	81.2	75.7	71.6	68.8
17.000	67.0	65.9	65.3	65.0	65.0	65.0	64.2
18.400	63.0	60.7	56.4	50.9	45.0	39.9	36.0
19.800	33.2	31.3	30.0	29.1	28.6	28.2	28.0
21.200	27.9	27.8	27.8	27.7	27.7	27.8	27.8
22.600	27.9	27.9	28.0	28.0	28.1	28.2	28.2
24.000	28.2	27.5	26.6	24.9	21.7	17.5	13.2
25.400	9.4	6.5	4.3	2.7	1.6	0.8	0.0

STORM 2_yr_sm

Eccelston Mitigation POI 1-4 Existing

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA4	0.450		1.141		12.79	151.7	337.08

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.0	0.9	1.7	3.1	5.7	13.6	40.8
12.400	91.0	136.9	151.5	137.6	109.3	84.6	65.5
13.800	51.3	41.6	35.6	32.1	30.0	28.7	28.0
15.200	27.4	26.1	23.9	21.6	19.7	18.5	17.7
16.600	17.3	17.0	16.9	16.8	16.8	16.8	16.8
18.000	16.8	16.7	15.8	14.0	11.9	10.1	9.0
19.400	8.3	7.8	7.5	7.3	7.2	7.1	7.1
20.800	7.0	7.0	7.0	7.1	7.1	7.1	7.1
22.200	7.1	7.1	7.1	7.1	7.1	7.1	7.1
23.600	7.2	7.2	7.2	7.0	6.3	5.1	3.6
25.000	2.3	1.4	0.9	0.6	0.0		

Area or Reach	Drainage Area	Rain Gage ID or	Runoff Amount	Peak Flow Elevation	Peak Flow Time	Peak Flow Rate	Peak Flow Rate

Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA2	1.323		0.973		13.01	317.9	240.29

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.400	0.0	1.1	3.9	15.0	54.5	132.9	232.2
12.800	299.2	317.8	295.2	247.8	199.8	161.7	133.1
14.200	112.3	97.9	88.9	82.9	79.0	76.1	73.0
15.600	68.6	63.3	57.9	53.3	49.9	47.9	46.7
17.000	45.9	45.4	45.1	45.0	45.0	45.0	44.7
18.400	43.4	40.2	35.8	31.4	27.5	24.7	22.9
19.800	21.6	20.7	20.1	19.6	19.4	19.2	19.1
21.200	19.0	19.0	19.1	19.1	19.0	19.0	19.0
22.600	19.0	19.0	19.1	19.1	19.2	19.3	19.3
24.000	19.3	19.0	18.0	15.6	12.5	9.2	6.4
25.400	4.4	3.0	2.1	1.4	1.0	0.7	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		0.724		12.95	161.4	175.39

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.800	0.0	3.0	22.7	67.5	122.8	156.0	159.6
13.200	141.7	115.5	93.1	75.4	62.5	53.7	48.4

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
14.600	45.2	43.3	42.2	41.3	39.9	37.3	34.0
16.000	31.1	28.9	27.6	26.8	26.3	26.0	25.9
17.400	25.9	25.9	26.0	26.0	25.9	24.8	22.6
18.800	19.7	16.9	14.8	13.5	12.7	12.1	11.7
20.200	11.4	11.3	11.2	11.1	11.1	11.1	11.1
21.600	11.2	11.2	11.2	11.2	11.2	11.2	11.2
23.000	11.2	11.2	11.3	11.4	11.4	11.4	11.2
24.400	10.4	8.7	6.5	4.5	2.9	1.9	1.3
25.800	0.8	0.5	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Upstream	0.916	363.25	12.94	622.8	231.23

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.0	0.9	1.7	4.3	9.6	31.8	118.3
12.400	292.8	491.7	606.3	614.9	545.4	447.9	358.6

13.800	288.5	237.3	201.6	178.6	164.1	155.0	149.2
15.200	144.8	138.9	129.7	118.9	108.7	100.6	95.3
16.600	92.0	90.0	88.8	88.1	87.8	87.7	87.8
18.000	87.9	87.2	83.9	76.7	67.4	58.4	51.3
19.400	46.5	43.4	41.2	39.7	38.7	38.0	37.6
20.800	37.3	37.2	37.1	37.2	37.3	37.3	37.3
22.200	37.3	37.3	37.3	37.3	37.4	37.5	37.6
23.600	37.8	37.8	37.8	37.2	34.6	29.3	22.6
25.000	16.0	10.8	7.2	4.8	2.9	1.9	1.0
26.400	0.7	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Downstream	0.916	363.18	13.15	584.9	217.16

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.400	0.0	1.9	5.2	14.7	54.0	155.7	318.1
12.800	478.3	571.2	578.7	523.5	441.5	360.5	293.3
14.200	242.4	206.2	182.1	166.4	156.5	150.0	144.4
15.600	137.5	128.5	118.4	109.0	101.4	96.0	92.5
17.000	90.3	89.0	88.3	87.9	87.8	87.8	87.7
18.400	86.3	82.3	75.4	66.9	58.6	51.9	47.1
19.800	43.7	41.5	39.9	38.8	38.1	37.7	37.4
21.200	37.2	37.2	37.2	37.3	37.3	37.3	37.3
22.600	37.3	37.3	37.3	37.4	37.5	37.6	37.8

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
24.000	37.8	37.6	36.5	33.5	28.4	22.2	16.2
25.400	11.2	7.6	5.1	3.2	1.9	1.1	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA1	0.090		1.138		12.19	69.5	772.01

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.000	0.0	0.9	1.5	2.3	5.7	22.6	69.5
12.400	39.3	20.6	11.1	9.6	6.7	4.9	4.8
13.800	5.1	5.2	5.3	5.3	5.3	5.4	5.4
15.200	4.2	3.4	3.3	3.3	3.3	3.3	3.3
16.600	3.3	3.3	3.4	3.3	3.4	3.4	3.4
18.000	3.4	2.3	1.5	1.4	1.4	1.4	1.4
19.400	1.4	1.4	1.4	1.4	1.4	1.4	1.4
20.800	1.4	1.4	1.4	1.4	1.4	1.4	1.4
22.200	1.4	1.4	1.4	1.4	1.4	1.5	1.4
23.600	1.4	1.4	1.4	0.6	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	2.783		0.923		13.08	593.4	213.21

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.000	0.0	0.9	1.5	4.2	10.9	37.4	123.5
12.400	195.0	338.7	489.3	580.6	585.4	528.4	446.2
13.800	365.7	298.5	247.6	211.5	187.4	171.8	161.9
15.200	154.2	147.8	140.8	131.8	121.7	112.3	104.7
16.600	99.3	95.8	93.7	92.3	91.7	91.3	91.1
18.000	91.2	89.9	87.8	83.7	76.8	68.3	60.1
19.400	53.3	48.5	45.1	42.9	41.3	40.2	39.5
20.800	39.1	38.8	38.6	38.6	38.6	38.7	38.7
22.200	38.7	38.7	38.7	38.7	38.7	38.8	38.9
23.600	39.1	39.2	39.2	38.3	36.5	33.5	28.4
25.000	22.2	16.2	11.2	7.6	5.1	3.3	1.9
26.400	1.2	0.0					

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA4	0.450		1.825		12.75	243.7	541.36

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
9.800	0.4	1.1	1.8	2.7	3.7	4.7	5.6
11.200	6.7	8.6	11.9	18.0	33.7	78.9	157.1
12.600	225.3	243.0	218.2	172.7	133.1	102.4	79.8
14.000	64.1	54.0	48.0	44.4	42.1	40.7	39.6
15.400	37.6	34.6	31.5	28.9	27.2	26.2	25.6
16.800	25.2	25.0	24.9	24.8	24.8	24.9	24.9
18.200	24.6	23.4	20.8	17.9	15.3	13.6	12.5
19.600	11.9	11.5	11.2	11.0	10.9	10.9	10.8
21.000	10.8	10.8	10.8	10.8	10.8	10.8	10.9
22.400	10.9	10.9	10.9	10.9	10.9	10.9	10.9
23.800	10.9	10.9	10.7	9.7	7.8	5.5	3.5
25.200	2.2	1.4	0.9	0.6	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA2	1.323		1.609		12.92	541.1	409.03

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Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.200	0.0	0.8	1.9	3.4	5.2	7.6	11.0
11.600	16.6	26.7	53.1	126.6	259.7	417.7	518.5
13.000	539.2	493.5	410.6	329.0	264.3	215.4	179.5
14.400	154.4	138.2	127.3	120.0	114.6	109.2	102.4
15.800	94.6	86.9	80.2	75.4	72.6	70.8	69.6
17.200	68.9	68.5	68.3	68.2	68.2	67.7	65.7
18.600	61.1	54.7	48.1	42.4	38.3	35.5	33.6
20.000	32.3	31.4	30.9	30.5	30.2	30.0	29.9
21.400	29.9	29.8	29.8	29.8	29.8	29.9	29.9
22.800	29.9	30.0	30.0	30.0	30.1	30.1	30.1
24.200	29.7	28.1	24.5	19.6	14.5	10.1	6.9
25.600	4.7	3.2	2.2	1.5	1.0	0.7	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA3	0.920		1.276		12.86	306.1	332.62

Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.200	0.0	0.7	2.2	6.3	19.3	65.7	153.1
12.600	249.6	300.9	298.5	258.8	207.9	165.5	132.1
14.000	107.9	91.0	80.4	73.8	69.7	67.1	65.1
15.400	62.5	58.3	53.4	48.9	45.7	43.7	42.6
16.800	41.8	41.4	41.2	41.1	41.1	41.2	41.3
18.200	41.0	39.4	35.9	31.5	27.3	24.0	21.9
19.600	20.6	19.7	19.1	18.7	18.5	18.4	18.3
21.000	18.2	18.2	18.2	18.2	18.2	18.2	18.3
22.400	18.3	18.3	18.4	18.4	18.4	18.4	18.5
23.800	18.5	18.5	18.2	16.9	14.2	10.7	7.4
25.200	4.8	3.1	2.1	1.4	0.9	0.6	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Upstream	1.531	363.84	12.89	1079.0	400.62

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.800	0.4	1.1	1.9	3.6	5.6	8.0	10.8
11.200	14.3	20.3	30.7	51.2	107.3	272.6	570.4
12.600	892.2	1061.3	1053.4	924.7	751.8	596.9	476.8
14.000	387.4	324.8	283.1	256.4	239.1	227.9	219.2
15.400	209.3	195.3	179.5	164.8	153.2	145.3	140.7
16.800	137.8	136.0	135.0	134.5	134.3	134.3	134.4

18.200	133.3	128.4	117.8	104.1	90.8	80.1	72.7
19.600	67.9	64.8	62.6	61.2	60.3	59.7	59.3
21.000	59.1	59.0	58.9	58.9	58.9	58.9	59.0
22.400	59.0	59.1	59.2	59.3	59.3	59.4	59.5
23.800	59.5	59.6	58.6	54.7	46.4	35.8	25.5
25.200	17.2	11.4	7.7	5.2	3.1	2.1	1.0
26.600	0.7	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Downstream	1.531	363.78	13.03	1032.3	383.28

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
10.000	0.0	0.8	2.4	4.2	6.4	8.9	11.9
11.400	16.3	23.9	38.0	71.5	170.5	380.8	675.6
12.800	921.7	1027.2	990.4	861.5	706.6	567.8	457.2
14.200	375.0	317.2	278.8	253.7	237.4	226.2	216.4
15.600	204.7	190.3	175.3	161.9	151.6	144.6	140.3
17.000	137.6	135.9	135.0	134.5	134.3	134.3	133.9

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Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
18.400	131.4	124.4	113.1	100.1	88.1	78.6	71.9
19.800	67.4	64.4	62.4	61.1	60.2	59.6	59.3
21.200	59.1	58.9	58.9	58.9	58.9	58.9	59.0
22.600	59.1	59.1	59.2	59.3	59.4	59.4	59.5
24.000	59.6	59.2	57.1	51.6	42.8	32.7	23.3
25.400	16.0	10.8	7.2	4.7	3.0	1.9	1.1
26.800	0.7	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA1	0.090		1.823		12.20	107.0	1188.49

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
9.600	0.0	0.6	0.8	1.0	1.2	1.4	1.5
11.000	1.7	3.1	4.4	6.1	13.5	41.9	106.8
12.400	60.8	32.6	17.2	14.7	10.2	7.4	7.1
13.800	7.4	7.5	7.6	7.6	7.6	7.7	7.7
15.200	6.1	5.0	4.9	4.8	4.9	4.9	4.9
16.600	4.9	4.9	4.9	5.0	5.0	5.0	5.0
18.000	5.0	3.4	2.3	2.2	2.1	2.2	2.1
19.400	2.2	2.1	2.2	2.2	2.2	2.2	2.2
20.800	2.2	2.2	2.2	2.2	2.2	2.2	2.2
22.200	2.2	2.2	2.2	2.2	2.2	2.2	2.2
23.600	2.2	2.2	2.2	1.0	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	2.783		1.540		13.03	1046.7	376.06

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
9.600	0.0	0.6	0.8	1.8	3.7	5.6	7.9
11.000	10.6	15.0	20.7	30.0	51.5	113.4	277.3
12.400	441.7	708.2	939.0	1041.9	1000.6	868.9	713.7
13.800	575.2	464.7	382.6	324.8	286.5	261.4	245.1
15.200	232.3	221.5	209.6	195.2	180.2	166.8	156.5
16.600	149.6	145.2	142.5	140.9	139.9	139.4	139.3
18.000	139.3	137.3	133.7	126.6	115.2	102.3	90.2
19.400	80.7	74.0	69.6	66.6	64.6	63.2	62.4
20.800	61.8	61.5	61.2	61.1	61.1	61.1	61.1
22.200	61.1	61.2	61.3	61.3	61.4	61.5	61.6
23.600	61.6	61.7	61.7	60.2	57.1	51.6	42.8
25.000	32.7	23.4	16.0	10.8	7.2	4.7	3.0

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
26.400	1.9	1.1	0.7	0.0			

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA4	0.450		2.473		12.76	322.2	715.80

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
8.800	0.0	0.8	1.3	2.1	3.2	4.5	5.9
10.200	7.4	8.8	10.1	11.4	12.6	14.1	17.0
11.600	22.3	31.8	54.7	115.0	215.5	299.8	320.3
13.000	286.8	227.2	175.3	135.0	105.0	84.1	70.6
14.400	62.6	57.7	54.6	52.8	51.2	48.7	45.0
15.800	41.1	38.0	35.8	34.6	33.8	33.4	33.1
17.200	33.0	33.0	33.0	33.0	33.0	32.6	31.0
18.600	27.6	23.7	20.3	18.0	16.7	15.8	15.2
20.000	14.9	14.7	14.5	14.5	14.4	14.4	14.4
21.400	14.4	14.4	14.4	14.4	14.4	14.4	14.4
22.800	14.4	14.5	14.5	14.5	14.5	14.5	14.5
24.200	14.2	12.9	10.3	7.3	4.7	2.9	1.9
25.600	1.2	0.7	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

DA2	1.323	2.221	12.91	736.5	556.71

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
9.400	0.3	1.3	2.8	5.1	7.9	11.0	14.3
10.800	17.7	21.0	24.8	30.4	39.8	57.2	98.1
12.200	201.3	381.0	585.3	711.9	732.1	665.4	552.8
13.600	442.8	355.5	289.0	240.0	206.0	183.5	168.5
15.000	158.4	151.0	143.8	135.0	125.0	115.2	106.8
16.400	100.8	97.2	94.9	93.4	92.5	92.0	91.8
17.800	91.7	91.6	90.9	88.2	81.9	73.4	64.6
19.200	57.1	51.5	47.8	45.3	43.5	42.3	41.5
20.600	41.0	40.7	40.4	40.3	40.2	40.1	40.1
22.000	40.1	40.1	40.2	40.2	40.2	40.3	40.3
23.400	40.4	40.4	40.4	40.4	39.9	37.7	32.9
24.800	26.3	19.4	13.6	9.2	6.3	4.3	3.0
26.200	2.0	1.4	0.9	0.6	0.0		

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Eccelston Mitigation POI 1-4 Existing

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		1.824		12.86	439.0	477.07

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
10.400	0.3	1.3	2.4	3.9	5.9	8.9	14.0
11.800	23.6	47.2	117.4	240.5	369.7	433.9	424.5
13.200	365.1	292.5	232.0	184.5	150.0	125.8	110.6
14.600	101.0	94.9	91.0	88.1	84.5	79.0	72.6
16.000	66.8	62.7	60.1	58.6	57.6	57.1	56.8
17.400	56.7	56.7	56.8	56.8	56.4	54.1	49.3
18.800	43.3	37.6	33.1	30.3	28.4	27.2	26.4
20.200	25.9	25.5	25.3	25.2	25.1	25.1	25.1
21.600	25.1	25.1	25.1	25.2	25.2	25.2	25.3
23.000	25.3	25.3	25.4	25.4	25.4	25.4	25.0
24.400	23.2	19.4	14.6	10.1	6.6	4.3	2.9
25.800	1.9	1.2	0.8	0.5	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Upstream	2.127	364.30	12.90	1480.9	549.84

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
8.800	0.0	0.8	1.3	2.4	4.5	7.4	11.0
10.200	15.2	20.1	25.7	31.6	37.6	44.8	56.3
11.600	76.4	112.9	202.0	435.1	837.4	1254.2	1463.3
13.000	1439.9	1257.7	1020.6	810.4	645.8	523.2	436.7
14.400	379.2	342.3	318.1	302.2	290.3	277.1	259.0

15.800	238.7	220.1	205.4	195.5	189.7	186.0	183.7
17.200	182.3	181.7	181.4	181.4	181.5	179.9	173.2
18.600	158.8	140.4	122.5	108.2	98.4	92.0	87.7
20.000	84.8	82.9	81.6	80.9	80.3	80.0	79.7
21.400	79.6	79.5	79.6	79.7	79.7	79.8	79.8
22.800	79.9	80.1	80.2	80.2	80.3	80.3	80.3
24.200	79.0	73.8	62.6	48.2	34.3	23.1	15.4
25.600	10.3	6.9	4.4	2.8	1.8	0.9	0.6
27.000	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Downstream	2.127	364.23	12.98	1419.2	526.91

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
9.200	0.563E-01	1.5	3.3	5.6	8.8	12.7	17.1
10.600	22.3	27.9	33.8	40.3	49.5	64.8	91.7
12.000	151.0	304.7	608.4	1002.9	1307.5	1418.7	1343.3
13.400	1155.6	943.5	756.4	608.2	498.0	421.1	370.0
14.800	336.3	314.1	298.9	285.7	269.9	251.1	232.0
16.200	215.2	202.5	194.1	188.8	185.4	183.4	182.2
17.600	181.7	181.5	181.5	180.8	176.9	166.8	151.2
19.000	133.7	117.7	105.3	96.7	90.9	86.9	84.3
20.400	82.6	81.4	80.7	80.2	79.9	79.7	79.6
21.800	79.6	79.6	79.7	79.8	79.8	79.9	80.0
23.200	80.1	80.2	80.2	80.3	80.3	79.7	76.7
24.600	68.8	56.6	43.0	30.5	20.8	14.0	9.4
26.000	6.3	4.0	2.6	1.5	0.9	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA1	0.090		2.470		12.19	136.8	1519.45

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
8.800	0.0	0.5	0.9	1.3	1.6	1.9	2.2
10.200	2.4	2.7	2.9	3.0	3.2	5.7	7.8
11.600	10.3	21.6	59.5	136.4	78.5	42.9	22.8
13.000	19.4	13.5	9.7	9.2	9.7	9.7	9.8
14.400	9.8	9.9	9.9	10.0	8.0	6.6	6.5
15.800	6.4	6.5	6.5	6.5	6.5	6.5	6.6
17.200	6.5	6.6	6.6	6.6	6.6	4.5	3.1
18.600	2.8	2.9	2.8	2.9	2.8	2.9	2.8
20.000	2.9	2.9	2.8	2.9	2.8	2.9	2.8
21.400	2.9	2.9	2.9	2.9	2.9	2.9	2.9
22.800	2.9	2.9	2.9	2.9	2.9	2.9	3.0
24.200	1.3	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	2.783		2.138		12.98	1438.7	516.88

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.800	0.0	0.5	0.9	2.8	4.9	7.5	11.0
10.200	15.1	19.8	25.2	30.9	37.0	46.0	57.3
11.600	75.1	113.3	210.5	441.3	686.9	1045.9	1330.5
13.000	1438.2	1356.7	1165.2	952.6	766.0	617.9	507.8
14.400	431.0	379.9	346.2	324.1	306.9	292.2	276.4

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Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.800	257.6	238.5	221.7	209.1	200.7	195.3	192.0
17.200	189.9	188.9	188.3	188.1	188.1	185.2	180.0
18.600	169.6	154.1	136.5	120.6	108.2	99.6	93.7
20.000	89.8	87.2	85.4	84.4	83.5	83.1	82.7
21.400	82.6	82.5	82.5	82.5	82.6	82.6	82.7
22.800	82.8	82.9	83.0	83.0	83.2	83.2	83.3
24.200	81.0	76.7	68.8	56.6	43.0	30.5	20.8
25.600	14.0	9.5	6.3	4.0	2.6	1.5	0.9
27.000	0.0						

STORM 25_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA4	0.450		3.530		12.76	434.7	965.82

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.600	0.4	1.1	1.9	2.8	3.8	4.8	5.8
9.000	6.8	7.9	9.4	11.7	14.2	16.7	19.0
10.400	21.1	23.0	24.8	26.2	28.3	32.9	41.8
11.800	57.2	91.6	173.6	303.5	408.9	431.7	385.6
13.200	307.1	238.3	184.1	143.6	115.1	96.8	85.9
14.600	79.2	75.0	72.4	70.2	67.0	62.0	56.9
16.000	52.7	49.9	48.3	47.4	46.8	46.4	46.2
17.400	46.1	46.1	46.1	46.2	45.6	43.3	38.6
18.800	33.3	28.7	25.5	23.6	22.4	21.6	21.2
20.200	20.8	20.7	20.6	20.5	20.4	20.4	20.4
21.600	20.5	20.4	20.4	20.5	20.5	20.5	20.5
23.000	20.5	20.6	20.6	20.5	20.5	20.6	20.2
24.400	18.3	14.6	10.3	6.6	4.1	2.6	1.6
25.800	1.0	0.6	0.0				

Reach Identifier	Area (sq mi)	ID or Location	Amount (in)	Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA2	1.323		3.232		12.89	1024.4	774.30

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
8.000	0.0	0.9	2.0	3.5	5.5	7.8	10.3
9.400	13.5	17.8	22.9	28.6	34.5	40.2	45.7
10.800	50.8	55.5	60.9	69.8	86.1	115.7	179.2
12.200	328.2	573.1	840.3	1001.0	1014.6	920.3	765.4
13.600	616.1	495.6	402.9	334.8	287.7	256.2	235.0

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
15.000	220.9	210.4	200.5	188.5	175.0	161.8	150.5
16.400	142.5	137.7	134.6	132.6	131.3	130.5	130.1
17.800	130.0	130.0	129.0	124.9	116.3	104.4	92.1
19.200	81.5	73.6	68.4	65.0	62.6	60.9	59.8
20.600	59.1	58.6	58.2	58.0	57.8	57.8	57.7
22.000	57.7	57.7	57.8	57.8	57.9	57.9	58.0
23.400	58.1	58.0	58.1	58.1	57.4	54.2	47.3
24.800	37.7	27.9	19.4	13.1	9.0	6.2	4.2
26.200	2.9	2.0	1.3	0.9	0.6	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		2.750		12.82	640.5	696.00

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
9.200	0.0	1.2	2.7	4.9	7.5	10.5	13.6
10.600	16.7	19.8	22.7	26.1	31.9	42.3	60.5
12.000	103.0	206.5	382.2	557.2	636.6	616.1	527.6
13.400	423.4	335.9	267.5	216.7	181.9	159.5	145.5
14.800	136.5	130.7	126.3	121.3	113.6	104.6	96.7
16.200	90.9	87.5	85.4	84.0	83.2	82.7	82.5
17.600	82.5	82.6	82.7	82.0	78.8	71.8	63.2
19.000	55.0	48.5	44.4	41.8	40.1	38.9	38.2
20.400	37.7	37.4	37.2	37.1	37.0	37.0	37.0
21.800	37.0	37.0	37.1	37.2	37.2	37.2	37.3
23.200	37.3	37.4	37.4	37.4	37.4	36.8	34.2
24.600	28.6	21.5	14.9	9.7	6.4	4.2	2.8
26.000	1.8	1.2	0.8	0.0			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Upstream	3.117	364.92	12.83	2078.9	771.87

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.600	0.4	1.1	1.9	3.7	5.7	8.3	11.3
9.000	14.5	18.3	24.2	32.1	42.0	52.9	64.0
10.400	74.9	85.4	95.3	104.4	115.4	134.6	170.5
11.800	234.0	376.3	709.9	1258.9	1804.4	2063.1	2015.4
13.200	1754.3	1427.1	1136.9	906.8	735.7	613.9	533.1
14.600	480.9	446.8	424.0	407.0	388.7	364.0	336.6
16.000	311.3	291.4	278.3	270.5	265.5	262.2	260.2
17.400	259.1	258.7	258.8	258.8	256.5	247.0	226.7

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
18.800	200.8	175.8	155.5	141.5	132.6	126.7	122.7
20.200	119.9	118.2	117.1	116.3	115.7	115.4	115.3
21.600	115.3	115.2	115.2	115.3	115.5	115.6	115.6
23.000	115.7	115.9	116.0	116.0	116.0	116.1	114.3
24.400	106.6	90.4	69.5	49.4	33.3	22.2	14.9
25.800	10.0	6.7	4.4	2.7	1.8	0.9	0.6
27.200	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Downstream	3.117	364.84	12.97	1987.9	738.07

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.800	0.0	1.1	2.7	4.6	6.9	9.6	12.6
9.200	16.1	21.0	27.8	36.5	46.6	57.4	68.3
10.600	79.0	89.2	98.7	108.8	124.1	151.6	200.4
12.000	302.0	539.4	971.2	1494.0	1868.7	1983.6	1857.6
13.400	1596.1	1308.7	1054.4	851.5	699.2	592.2	520.6
14.800	473.0	441.4	419.4	400.4	378.1	352.4	326.6
16.200	304.2	287.5	276.5	269.4	264.8	261.8	260.0
17.600	259.1	258.9	258.9	257.7	251.7	236.9	214.8
19.000	190.5	168.4	151.2	139.2	131.2	125.7	122.0
20.400	119.5	118.0	116.9	116.1	115.6	115.4	115.3
21.800	115.3	115.2	115.2	115.4	115.5	115.6	115.7
23.200	115.8	115.9	116.0	116.0	116.1	115.2	110.4
24.600	98.6	80.8	61.2	43.6	29.8	20.2	13.7
26.000	9.2	6.1	3.9	2.5	1.4	0.9	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA1	0.090		3.528		12.19	177.5	1971.10

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)

7.400	0.0	0.6	0.8	1.0	1.2	1.4	1.6
8.800	1.8	2.0	2.9	3.7	4.1	4.5	4.9
10.200	5.2	5.5	5.8	5.8	6.0	10.5	14.0
11.600	17.9	35.2	85.4	176.8	103.1	58.4	31.7
13.000	27.2	18.7	13.3	12.8	13.2	13.4	13.5
14.400	13.5	13.5	13.6	13.7	11.1	9.3	9.1
15.800	9.1	9.1	9.2	9.1	9.1	9.2	9.2
17.200	9.2	9.3	9.2	9.2	9.2	6.3	4.4
18.600	4.1	4.0	4.0	4.0	4.2	4.1	4.0

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
20.000	4.0	4.2	4.1	4.1	4.1	4.1	4.1
21.400	4.1	4.1	4.1	4.2	4.1	4.1	4.1
22.800	4.2	4.1	4.1	4.1	4.1	4.2	4.1
24.200	1.8	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	2.783		3.130		12.98	2013.7	723.47

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.400	0.0	0.6	0.8	2.2	3.9	6.0	8.5
8.800	11.4	14.7	19.0	24.7	31.9	40.9	51.4
10.200	62.5	73.8	84.7	95.0	104.7	119.3	138.2
11.600	169.5	235.6	387.4	716.3	1075.0	1552.5	1900.5
13.000	2010.8	1876.2	1609.2	1321.4	1067.5	864.9	712.7
14.400	605.9	534.1	486.7	455.1	430.5	409.7	387.2
15.800	361.5	335.7	313.5	296.7	285.6	278.5	273.9
17.200	271.0	269.3	268.4	268.1	268.1	264.0	256.0
18.600	241.0	218.8	194.5	172.4	155.3	143.3	135.2
20.000	129.7	126.2	123.6	122.0	121.0	120.2	119.8
21.400	119.5	119.4	119.3	119.4	119.3	119.4	119.6
22.800	119.8	119.8	119.9	120.0	120.1	120.1	120.2
24.200	117.0	110.4	98.6	80.8	61.2	43.6	29.8
25.600	20.2	13.7	9.2	6.1	3.9	2.5	1.4
27.000	0.9	0.0					

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA4	0.450		4.512		12.75	526.7	1170.14

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.800	0.0	1.0	1.9	3.2	4.5	6.0	7.5

8.200	8.9	10.4	11.8	13.2	14.5	16.0	18.2
9.600	21.4	25.0	28.6	31.7	34.4	36.8	38.8
11.000	40.4	42.9	49.1	61.6	82.8	127.3	226.8
12.400	378.3	499.3	522.8	466.8	374.3	292.6	226.9
13.800	177.5	142.6	120.3	107.0	98.9	93.8	90.5
15.200	87.9	83.9	78.0	71.9	66.9	63.6	61.6
16.600	60.3	59.6	59.2	59.0	58.8	58.8	58.8
18.000	58.9	58.2	55.2	49.2	42.4	36.5	32.5

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
19.400	30.1	28.5	27.5	26.9	26.5	26.3	26.1
20.800	26.0	25.9	25.9	25.9	25.9	26.0	26.0
22.200	26.0	26.0	26.0	26.1	26.1	26.1	26.1
23.600	26.1	26.1	26.1	25.6	23.2	18.5	13.1
25.000	8.4	5.3	3.3	2.1	1.3	0.8	0.5
26.400	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA2	1.323		4.181		12.91	1269.6	959.64

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
7.200	0.0	1.1	2.6	4.8	7.6	10.9	14.4
8.600	18.1	21.7	25.4	29.4	34.3	40.8	48.7
10.000	57.2	65.7	73.6	80.8	87.2	92.9	99.6
11.400	111.6	134.5	176.2	261.8	446.1	740.1	1054.6
12.800	1239.4	1255.6	1137.3	950.2	767.2	618.8	504.2
14.200	419.4	360.7	322.1	296.1	278.5	265.5	253.2
15.600	238.5	222.0	206.1	192.4	182.6	176.7	172.9
17.000	170.4	168.9	168.0	167.5	167.2	167.1	165.8
18.400	160.7	149.5	134.2	118.3	104.7	94.6	87.9
19.800	83.4	80.3	78.1	76.7	75.7	75.0	74.5
21.200	74.2	74.0	73.9	73.9	73.9	73.9	74.0
22.600	74.0	74.1	74.1	74.2	74.2	74.3	74.3
24.000	74.4	73.3	69.3	60.4	48.3	35.7	24.9
25.400	16.9	11.6	8.0	5.4	3.7	2.5	1.7
26.800	1.1	0.8	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA3	0.920		3.637		12.88	812.6	883.04

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
8.200	0.2	1.3	2.5	4.1	6.0	8.2	11.0
9.600	14.7	19.1	23.9	28.7	33.2	37.5	41.6
11.000	45.1	49.5	57.8	73.6	101.1	159.2	294.9

12.400	509.9	717.3	811.1	778.8	668.2	538.9	429.1
13.800	341.9	277.7	232.8	204.6	186.8	175.4	167.9
15.200	162.4	155.9	146.3	135.3	125.6	118.5	114.1
16.600	111.4	109.7	108.8	108.2	108.0	107.9	107.9
18.000	108.0	107.2	102.8	93.9	82.4	71.7	63.3
19.400	57.9	54.5	52.2	50.7	49.7	49.1	48.7

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
20.800	48.4	48.2	48.1	48.0	48.1	48.1	48.2
22.200	48.2	48.3	48.3	48.4	48.4	48.5	48.5
23.600	48.5	48.6	48.6	47.8	44.4	37.1	27.9
25.000	19.3	12.5	8.2	5.4	3.6	2.3	1.5
26.400	1.0	0.6	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Upstream	4.050	365.26	12.82	2584.3	959.50

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.800	0.0	1.0	1.9	4.3	7.1	10.8	15.1
8.200	20.1	26.1	32.3	39.0	46.0	53.6	63.5
9.600	76.9	92.9	109.7	126.0	141.2	155.1	167.6
11.000	178.5	192.0	218.6	269.8	361.1	550.2	970.5
12.400	1628.2	2269.9	2569.8	2496.6	2179.5	1782.0	1423.6
13.800	1139.0	924.7	773.6	672.4	607.9	565.3	537.2
15.200	515.7	492.9	462.8	429.3	398.6	374.5	358.2
16.600	348.5	342.3	338.5	336.1	334.8	334.1	334.0
18.000	334.0	331.0	318.8	292.6	259.0	226.6	200.6
19.400	182.6	170.9	163.1	157.9	154.4	152.0	150.5
20.800	149.4	148.6	148.2	148.0	147.9	148.0	148.0
22.200	148.1	148.3	148.4	148.5	148.6	148.7	148.8
23.600	148.9	149.0	149.1	146.6	136.8	116.0	89.3
25.000	63.5	42.8	28.5	19.1	12.8	8.6	5.8
26.400	3.5	2.3	1.2	0.8	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Downstream	4.050	365.20	12.96	2482.1	921.56

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
7.000	0.0	1.2	3.1	5.7	8.9	12.9	17.5
8.400	23.0	29.0	35.5	42.2	49.5	58.4	70.2
9.800	84.7	100.8	117.1	132.8	147.3	160.5	172.2
11.200	184.7	205.7	245.5	317.4	460.0	774.5	1312.4
12.600	1938.3	2367.1	2472.9	2298.3	1969.4	1614.5	1302.8
14.000	1053.7	868.2	738.0	651.4	594.2	556.3	529.6

15.400	506.0	478.4	446.7	415.4	388.5	368.4	355.1
16.800	346.6	341.2	337.8	335.8	334.7	334.2	334.1
18.200	332.3	324.2	304.7	275.5	243.8	215.4	193.7
19.600	178.5	168.3	161.4	156.7	153.6	151.5	150.1

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
21.000	149.1	148.5	148.1	148.0	148.0	148.0	148.1
22.400	148.2	148.3	148.5	148.6	148.7	148.8	148.9
23.800	149.0	149.0	147.7	141.2	125.6	102.4	77.1
25.200	54.6	37.3	25.2	17.0	11.4	7.7	4.9
26.600	3.2	1.9	1.1	0.7	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA1	0.090		4.511		12.18	209.2	2323.11

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.600	0.0	0.6	1.0	1.3	1.6	1.9	2.2
8.000	2.5	2.8	3.0	3.3	3.5	3.8	5.1
9.400	6.3	6.8	7.3	7.7	8.1	8.4	8.7
10.800	8.6	8.8	15.4	20.5	25.5	47.9	106.9
12.200	208.2	123.0	71.5	40.0	34.5	23.5	16.6
13.600	15.9	16.6	16.8	16.9	16.9	17.0	17.0
15.000	17.1	14.0	11.9	11.7	11.7	11.6	11.6
16.400	11.7	11.8	11.7	11.7	11.8	11.8	11.7
17.800	11.8	11.8	8.1	5.5	5.2	5.2	5.1
19.200	5.2	5.2	5.1	5.2	5.2	5.1	5.2
20.600	5.2	5.2	5.1	5.2	5.2	5.2	5.2
22.000	5.2	5.2	5.3	5.2	5.2	5.3	5.2
23.400	5.2	5.3	5.3	5.2	2.3	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	2.783		4.065		12.97	2514.9	903.53

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.600	0.0	0.6	1.0	2.4	4.7	7.6	11.1
8.000	15.4	20.2	26.0	32.3	39.0	46.0	54.7
9.400	64.7	77.0	92.0	108.5	125.2	141.2	156.0
10.800	169.1	181.1	200.1	226.1	271.0	365.3	566.9
12.200	982.9	1435.5	2009.5	2407.1	2507.3	2321.7	1985.8
13.600	1630.4	1319.3	1070.5	885.1	754.9	668.4	611.2
15.000	573.4	543.6	517.9	490.1	458.4	427.0	400.1
16.400	380.1	366.9	358.2	352.9	349.5	347.6	346.4
17.800	346.0	345.9	340.4	329.7	309.9	280.7	248.9
19.200	220.6	198.9	183.7	173.5	166.6	161.9	158.8

20.600	156.7	155.3	154.3	153.7	153.3	153.1	153.2
22.000	153.2	153.3	153.5	153.6	153.6	153.8	153.9

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
23.400	154.0	154.1	154.2	154.2	150.0	141.2	125.6
24.800	102.4	77.2	54.6	37.3	25.2	17.0	11.4
26.200	7.7	4.9	3.2	1.9	1.1	0.7	0.0

STORM 100_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA4	0.450		5.658		12.72	622.1	1382.12

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.200	0.3	1.1	2.2	3.9	5.9	8.0	10.1
7.600	12.2	14.3	16.3	18.3	20.1	21.9	23.7
9.000	25.3	27.2	30.2	34.5	39.4	44.1	48.1
10.400	51.4	54.3	56.6	58.2	60.9	69.0	85.6
11.800	113.1	168.3	285.8	457.6	592.4	618.7	552.5
13.200	446.0	351.2	273.6	214.3	172.6	146.3	130.7
14.600	121.1	115.1	111.3	108.2	103.5	96.6	89.4
16.000	83.5	79.6	77.2	75.8	75.0	74.5	74.2
17.400	74.0	74.0	74.0	74.0	73.2	69.4	61.9
18.800	53.3	45.9	40.9	37.8	35.8	34.6	33.9
20.200	33.4	33.1	32.9	32.8	32.7	32.7	32.7
21.600	32.7	32.7	32.7	32.8	32.8	32.8	32.8
23.000	32.8	32.8	32.8	32.8	32.8	32.9	32.2
24.400	29.2	23.2	16.4	10.5	6.6	4.2	2.6
25.800	1.7	1.0	0.6	0.0			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA2	1.323		5.296		12.90	1526.6	1153.92

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.600	0.4	1.7	4.0	7.4	11.6	16.4	21.5
8.000	26.8	32.1	37.4	42.5	47.6	52.5	57.7
9.400	64.4	73.4	84.6	96.3	107.7	118.0	127.0
10.800	134.8	141.2	148.9	164.3	194.9	250.7	359.5
12.200	581.9	926.8	1287.1	1495.7	1507.4	1366.7	1146.7
13.600	930.5	753.1	614.9	512.7	442.3	396.1	365.2
15.000	344.2	328.7	314.0	296.5	276.9	257.9	241.7
16.400	230.1	223.1	218.6	215.7	213.8	212.7	212.0
17.800	211.7	211.6	210.0	203.5	189.3	169.9	149.8
19.200	132.6	119.8	111.3	105.7	101.7	99.0	97.1

Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
20.600	95.9	95.1	94.5	94.1	93.9	93.8	93.6
22.000	93.6	93.7	93.8	93.8	93.8	93.9	93.9
23.400	93.9	94.0	94.0	94.1	92.8	87.6	76.4
24.800	61.0	45.2	31.5	21.3	14.6	10.1	6.9
26.200	4.7	3.2	2.2	1.4	1.0	0.6	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		4.691		12.80	998.8	1085.30

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
7.200	0.0	0.6	1.7	3.4	5.8	8.5	11.5
8.600	14.5	17.6	20.7	24.0	28.3	34.1	40.8
10.000	47.8	54.5	60.6	66.1	71.1	75.1	80.3
11.400	91.3	113.8	152.0	229.1	395.9	652.3	893.3
12.800	997.5	954.7	820.5	665.0	531.5	424.6	345.2
14.200	290.1	255.6	234.0	220.1	211.0	204.2	196.4
15.600	184.8	171.5	159.8	151.2	146.0	142.7	140.7
17.000	139.5	138.8	138.5	138.4	138.4	138.6	137.4
18.400	131.9	120.3	105.7	91.9	81.2	74.3	69.9
19.800	66.9	65.0	63.7	62.9	62.4	62.1	61.9
21.200	61.8	61.7	61.7	61.7	61.7	61.8	61.9
22.600	62.0	62.0	62.0	62.0	62.1	62.1	62.2
24.000	62.2	61.1	56.8	47.4	35.7	24.7	16.0
25.400	10.6	7.0	4.6	3.0	1.9	1.3	0.8
26.800	0.5	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Upstream	5.150	365.63	12.87	3120.0	1158.38

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.200	0.3	1.1	2.6	5.6	9.9	15.3	22.3
7.600	30.3	39.3	48.9	58.9	69.0	79.0	88.9
9.000	98.5	109.1	122.9	142.1	164.8	188.2	210.2
10.400	230.0	247.4	262.5	274.5	290.2	325.2	395.0
11.800	515.8	757.1	1268.5	2036.9	2771.2	3109.6	3011.6
13.200	2632.0	2163.5	1736.9	1392.1	1133.1	950.0	829.2
14.600	751.5	700.5	666.6	641.1	613.8	577.8	537.8
16.000	501.2	472.6	453.5	441.7	434.2	429.7	426.8
17.400	425.2	424.4	424.2	424.2	420.4	404.6	371.4
18.800	328.8	287.5	254.7	232.0	217.1	207.2	200.5

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
20.200	196.1	193.1	191.2	190.0	189.1	188.6	188.3
21.600	188.1	188.0	188.1	188.3	188.4	188.6	188.6
23.000	188.7	188.8	188.8	188.9	189.1	189.1	186.0
24.400	173.3	147.0	113.1	80.4	54.2	36.1	24.3
25.800	16.3	10.9	7.3	4.6	3.0	1.9	1.0
27.200	0.6	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Downstream	5.150	365.55	12.94	3008.1	1116.84

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.400	0.0	1.5	4.2	7.9	12.8	19.0	26.5
7.800	35.0	44.2	54.0	64.0	74.0	83.9	93.7
9.200	103.8	116.4	133.2	154.1	176.8	199.2	219.8
10.600	238.3	254.6	268.0	282.4	309.7	364.5	462.2
12.000	650.2	1048.5	1696.0	2419.9	2902.3	2994.8	2765.5
13.400	2367.8	1945.1	1572.4	1275.2	1054.7	901.0	799.1
14.800	731.8	687.4	656.2	628.1	595.0	557.0	519.5
16.200	487.9	464.4	448.9	438.9	432.6	428.6	426.3
17.600	425.0	424.4	424.3	422.0	411.1	385.5	348.1
19.000	307.6	271.9	244.8	226.0	213.2	204.6	198.8
20.400	194.9	192.4	190.7	189.6	188.9	188.5	188.2
21.800	188.1	188.1	188.2	188.4	188.5	188.5	188.6
23.200	188.7	188.8	188.9	189.0	189.1	187.2	178.5
24.600	158.2	128.5	96.3	67.9	46.3	31.3	21.1
26.000	14.1	9.5	6.2	4.0	2.5	1.4	0.9
27.400	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA1	0.090		5.657		12.19	240.2	2667.58

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.000	0.0	0.6	1.2	1.7	2.2	2.7	3.0
7.400	3.5	3.8	4.2	4.6	4.9	5.3	5.5
8.800	5.9	6.1	8.1	9.7	10.3	10.8	11.3
10.200	11.8	12.1	12.4	12.0	12.1	21.4	28.2
11.600	34.4	62.2	129.6	238.7	143.5	85.7	49.1
13.000	42.7	29.0	20.1	19.4	20.5	20.7	20.9
14.400	20.9	20.9	21.0	21.1	17.4	14.9	14.7
15.800	14.6	14.7	14.7	14.6	14.8	14.7	14.8

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.200	14.8	14.8	14.8	14.9	14.9	10.1	7.1
18.600	6.5	6.6	6.5	6.5	6.5	6.5	6.6
20.000	6.4	6.6	6.5	6.5	6.5	6.5	6.6
21.400	6.5	6.6	6.5	6.6	6.6	6.5	6.6
22.800	6.5	6.6	6.5	6.6	6.7	6.5	6.6
24.200	2.8	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	2.783		5.166		12.94	3050.4	1095.92

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.000	0.0	0.6	1.2	3.3	6.4	10.6	15.9
7.400	22.5	30.3	39.2	48.8	58.9	69.2	79.5
8.800	89.8	99.8	111.9	126.0	143.5	165.0	188.2
10.200	211.0	231.9	250.7	266.5	280.1	303.7	337.9
11.600	398.9	524.7	779.9	1287.4	1839.7	2505.8	2951.4
13.000	3037.6	2794.5	2387.8	1964.4	1592.8	1295.9	1075.5
14.400	921.9	820.0	752.8	708.5	673.6	643.0	609.6
15.800	571.6	534.2	502.5	479.0	463.7	453.5	447.4
17.200	443.4	441.1	439.8	439.3	439.1	432.0	418.2
18.600	392.0	354.7	314.1	278.4	251.3	232.5	219.8
20.000	211.0	205.4	201.5	198.9	197.2	196.1	195.5
21.400	194.9	194.9	194.6	194.6	194.8	194.8	195.1
22.800	195.1	195.2	195.2	195.4	195.5	195.5	195.7
24.200	190.1	178.7	158.2	128.5	96.4	68.0	46.3
25.600	31.3	21.1	14.1	9.5	6.2	4.0	2.6
27.000	1.4	0.9	0.0				

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA4	0.450		9.089		12.71	853.7	1896.50

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.000	0.0	0.7	1.4	2.3	3.3	4.4	5.4
5.400	6.5	7.5	8.5	9.5	10.9	13.7	18.5
6.800	24.3	30.3	35.6	40.3	44.5	48.3	51.7
8.200	54.9	57.9	60.6	63.3	65.7	68.6	73.4
9.600	80.8	89.1	96.7	102.8	107.6	111.5	114.2
11.000	115.1	117.8	131.2	160.4	206.9	288.7	444.1

Line

Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
12.400	658.1	819.9	848.0	764.7	629.7	506.1	399.9
13.800	316.4	256.8	219.9	198.7	185.6	177.3	172.1
15.200	167.8	161.4	152.0	142.4	134.3	129.0	125.8
16.600	123.9	122.7	122.1	121.7	121.7	121.7	121.6
18.000	121.5	120.0	113.7	101.3	87.2	75.1	66.9
19.400	61.9	58.7	56.7	55.4	54.6	54.1	53.8
20.800	53.6	53.4	53.4	53.4	53.4	53.4	53.4
22.200	53.4	53.4	53.4	53.4	53.5	53.5	53.6
23.600	53.5	53.5	53.5	52.4	47.5	37.9	26.8
25.000	17.2	10.7	6.8	4.3	2.7	1.7	1.0
26.400	0.6	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA2	1.323		8.661		12.88	2165.1	1636.52

Line

Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
4.600	0.5	1.4	2.7	4.6	6.8	9.2	11.8
6.000	14.5	17.7	22.7	30.9	42.2	55.1	68.5
7.400	81.5	93.5	104.8	115.3	125.2	134.5	143.3
8.800	151.7	159.6	168.2	179.4	195.4	215.0	235.2
10.200	254.2	270.5	284.0	294.6	301.8	311.1	335.1
11.600	390.0	486.0	653.8	970.6	1421.9	1878.6	2132.8
13.000	2135.7	1950.5	1658.5	1366.9	1117.0	918.8	773.5
14.400	673.1	607.6	564.4	535.0	512.9	492.3	467.9
15.800	440.9	414.8	392.7	376.9	367.1	360.8	356.7
17.200	354.2	353.0	352.3	351.8	351.5	348.4	337.3
18.600	313.7	281.3	248.0	219.4	198.0	184.2	174.7
20.000	168.1	163.6	160.5	158.5	157.0	156.0	155.4
21.400	155.1	154.8	154.7	154.6	154.5	154.5	154.5
22.800	154.6	154.7	154.8	154.9	155.0	155.0	154.9
24.200	152.8	144.3	126.0	100.5	74.3	51.7	34.9
25.600	24.0	16.5	11.3	7.7	5.2	3.5	2.4
27.000	1.6	1.0	0.6	0.0			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		7.928		12.83	1471.9	1599.37

Line

Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
5.600	0.0	0.7	1.5	2.8	5.1	9.2	14.7
7.000	21.4	28.5	35.7	42.8	49.7	56.3	62.7

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Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						

8.400	68.8	74.7	80.3	85.7	91.6	99.6	111.0
9.800	124.2	137.4	149.3	159.4	168.0	174.8	179.3
11.200	185.8	205.4	247.7	318.3	445.5	684.0	1029.0
12.600	1344.5	1467.2	1406.1	1220.0	1005.4	813.7	655.2
14.000	535.8	453.9	402.9	371.9	351.5	338.1	328.1
15.400	316.6	300.2	281.5	265.2	253.0	245.7	241.0
16.800	238.1	236.5	235.6	235.4	235.3	235.3	235.2
18.200	232.8	223.6	203.5	178.7	155.4	137.3	125.6
19.600	118.0	113.0	109.7	107.5	106.1	105.3	104.7
21.000	104.3	104.1	104.0	104.0	104.0	104.0	104.0
22.400	104.1	104.1	104.1	104.2	104.3	104.4	104.5
23.800	104.5	104.4	102.7	95.1	79.6	59.9	41.4
25.200	27.0	17.7	11.7	7.7	5.0	3.3	2.1
26.600	1.4	0.8	0.5	0.0			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Upstream	8.482	366.39	12.85	4458.7	1655.42

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
4.000	0.0	0.7	1.4	2.8	4.7	7.1	10.0
5.400	13.3	16.7	21.1	25.5	31.5	41.6	58.6
6.800	81.3	106.8	132.7	157.5	180.8	202.7	223.4
8.200	242.8	261.2	278.6	295.2	311.1	328.4	352.7
9.600	387.2	428.3	469.4	506.3	537.5	563.4	583.5
11.000	596.1	614.9	672.8	798.6	1013.1	1389.4	2101.5
12.400	3109.1	4030.9	4443.1	4306.2	3800.2	3171.1	2581.4
13.800	2089.2	1712.3	1448.1	1275.3	1165.6	1093.5	1045.2
15.200	1008.8	970.2	920.1	864.9	814.3	774.8	748.4
16.600	732.1	721.7	715.2	711.6	710.0	709.3	708.7
18.000	708.1	701.2	674.3	618.4	547.3	478.6	423.5
19.400	385.7	361.0	344.5	333.2	325.7	320.7	317.5
20.800	315.2	313.7	312.9	312.4	312.3	312.1	311.9
22.200	311.9	312.1	312.1	312.2	312.4	312.6	312.9
23.600	313.0	313.0	312.9	308.0	286.9	243.2	187.2
25.000	133.0	89.5	59.6	40.1	26.9	18.0	12.0
26.400	8.0	5.1	3.2	2.0	1.0	0.6	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Downstream	8.482	366.32	12.92	4326.3	1606.27

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
4.200	0.0	0.8	2.1	3.9	6.1	8.8	11.9

5.600	15.3	19.3	23.6	29.0	37.6	52.1	72.4
7.000	96.4	121.8	146.8	170.6	193.1	214.3	234.3
8.400	253.1	271.0	288.0	304.2	321.0	342.9	373.6
9.800	411.8	452.1	490.1	523.4	551.5	574.1	589.7
11.200	606.7	651.4	752.1	931.7	1244.3	1834.3	2720.6
12.600	3646.6	4220.7	4295.2	3956.2	3407.5	2827.8	2308.2
14.000	1887.7	1577.4	1363.9	1223.8	1131.7	1070.6	1027.2
15.400	987.6	940.6	887.7	836.1	792.9	761.5	740.7
16.800	727.3	718.7	713.7	711.1	709.8	709.0	708.4
18.200	703.7	683.8	638.8	575.0	507.3	448.3	404.1
19.600	373.6	353.0	339.0	329.6	323.3	319.2	316.4
21.000	314.5	313.4	312.7	312.4	312.2	312.0	311.9
22.400	312.0	312.1	312.1	312.3	312.5	312.8	312.9
23.800	313.0	312.9	309.7	294.4	259.1	209.0	155.6
25.200	109.0	74.1	50.1	33.7	22.6	15.1	10.1
26.600	6.6	4.2	2.7	1.5	0.9	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA1	0.090		9.087		12.18	308.6	3427.49

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
4.000	0.0	0.7	0.9	1.1	1.4	1.6	1.8
5.400	2.0	2.2	2.4	2.6	4.9	6.9	7.9
6.800	8.7	9.4	10.2	10.8	11.4	11.9	12.4
8.200	12.9	13.4	13.9	14.3	14.7	18.2	21.0
9.600	21.8	22.4	23.0	23.5	24.0	24.0	22.4
11.000	22.3	39.9	52.3	61.7	101.6	184.0	306.4
12.400	192.8	123.0	75.6	67.2	44.9	30.7	29.4
13.800	31.7	32.6	32.5	32.8	32.6	32.7	32.8
15.200	27.8	24.5	24.1	24.1	24.1	24.1	24.1
16.600	24.2	24.2	24.3	24.4	24.3	24.3	24.3
18.000	24.3	16.4	11.5	10.6	10.8	10.5	10.7
19.400	10.6	10.7	10.7	10.5	10.8	10.6	10.7
20.800	10.7	10.7	10.7	10.8	10.7	10.6	10.8
22.200	10.6	10.7	10.7	10.8	10.7	10.8	10.7
23.600	10.6	10.8	10.6	4.7	0.6	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	2.783		8.502		12.92	4394.6	1578.84

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Eccelston Mitigation POI 1-4 Existing

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
4.000	0.0	0.7	1.7	3.3	5.3	7.7	10.6
5.400	13.9	17.5	21.7	26.2	33.9	44.6	60.0
6.800	81.1	105.8	132.0	157.5	182.0	205.0	226.7

8.200	247.2	266.5	284.8	302.3	318.8	339.2	364.0
9.600	395.4	434.2	475.2	513.6	547.4	575.6	596.5
11.000	612.0	646.6	703.7	813.8	1033.3	1429.4	2140.8
12.400	2913.4	3769.7	4296.3	4360.7	4001.0	3438.2	2857.1
13.800	2339.8	1920.6	1609.8	1396.6	1256.4	1164.4	1103.4
15.200	1055.0	1012.1	964.7	911.7	860.2	817.0	785.6
16.600	764.9	751.5	743.0	738.1	735.4	734.1	733.3
18.000	732.7	720.0	695.4	649.4	585.8	517.9	459.0
19.400	414.7	384.4	363.7	349.6	340.4	333.9	329.9
20.800	327.0	325.3	324.0	323.5	323.1	322.7	322.8
22.200	322.5	322.7	322.8	322.9	323.0	323.3	323.5
23.600	323.5	323.8	323.5	314.4	295.0	259.2	209.0
25.000	155.7	109.1	74.2	50.2	33.8	22.6	15.1
26.400	10.1	6.6	4.2	2.7	1.5	0.9	0.0

♀

Eccelston Mitigation POI 1-4 Existing

Area or Reach Identifier	Drainage Area (sq mi)	Peak Flow by Storm 1_yr_sm (cfs)	2_yr_sm (cfs)	5_yr_sm (cfs)	10_yr_sm (cfs)	25_yr_sm (cfs)
DA1	0.090	45.3	69.5	107.0	136.8	177.5
DA4	0.450	97.0	151.7	243.7	322.2	434.7
DA2	1.323	192.4	317.9	541.1	736.5	1024.4
DA3	0.920	86.3	161.4	306.1	439.0	640.5
CON-1	2.693	369.8	622.8	1079.0	1480.9	2078.9

DOWNSTREAM		339.2	584.9	1032.3	1419.2	1987.9
OUTLET	2.783	343.4	593.4	1046.7	1438.7	2013.7

Area or Reach Identifier	Drainage Area (sq mi)	Peak Flow by Storm 50_yr_sm (cfs)	100_yr_sm (cfs)	500_yr_sm (cfs)	(cfs)	(cfs)
DA1	0.090	209.2	240.2	308.6		
DA4	0.450	526.7	622.1	853.7		
DA2	1.323	1269.6	1526.6	2165.1		
DA3	0.920	812.6	998.8	1471.9		
CON-1	2.693	2584.3	3120.0	4458.7		
DOWNSTREAM		2482.1	3008.1	4326.3		
OUTLET	2.783	2514.9	3050.4	4394.6		

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WinTR-20: version 3.20                  0         0                    0
Eccelston Mitigation POI 5 Existing

SUB-AREA:
          DA5       OUTLET              0.13929843 73.       .609          YY


STORM ANALYSIS:
          1_yr_sm                       2.71      1_yr_sm   2          3.28
          2_yr_sm                       3.28      2_yr_sm   2          3.28
          5_yr_sm                       4.22      5_yr_sm   2          3.28
          10_yr_sm                      5.04      10_yr_sm  2          3.28
          25_yr_sm                      6.31      25_yr_sm  2          3.28
          50_yr_sm                      7.43      50_yr_sm  2          3.28
          100_yr_sm                     8.71      100_yr_sm 2          3.28
          500_yr_sm                     12.39     500_yr_sm 2          3.28



RAINFALL DISTRIBUTION:
          1_yr_sm             0.1
                    0.0000    0.0011    0.0022    0.0033    0.0044
                    0.0056    0.0067    0.0078    0.0089    0.0100
                    0.0111    0.0122    0.0133    0.0144    0.0155
                    0.0167    0.0178    0.0189    0.0200    0.0211
                    0.0222    0.0233    0.0244    0.0255    0.0267
                    0.0278    0.0289    0.0300    0.0311    0.0322
                    0.0333    0.0344    0.0355    0.0366    0.0378
                    0.0389    0.0400    0.0411    0.0422    0.0433
                    0.0444    0.0455    0.0466    0.0478    0.0489
                    0.0500    0.0511    0.0522    0.0533    0.0544
                    0.0555    0.0566    0.0578    0.0589    0.0600
                    0.0611    0.0622    0.0633    0.0644    0.0655
                    0.0666    0.0694    0.0721    0.0749    0.0776
                    0.0804    0.0831    0.0859    0.0886    0.0914
                    0.0941    0.0969    0.0996    0.1024    0.1051
                    0.1079    0.1106    0.1134    0.1161    0.1189
                    0.1216    0.1244    0.1271    0.1299    0.1326
                    0.1354    0.1381    0.1409    0.1436    0.1464
                    0.1491    0.1537    0.1584    0.1630    0.1677
                    0.1723    0.1770    0.1816    0.1863    0.1909
                    0.1956    0.2002    0.2049    0.2095    0.2142
                    0.2188    0.2230    0.2271    0.2312    0.2353
                    0.2394    0.2480    0.2566    0.2652    0.2738
```

	0.2824	0.2996	0.3169	0.3444	0.3880
	0.5000	0.6120	0.6556	0.6831	0.7004
	0.7176	0.7262	0.7348	0.7434	0.7520
	0.7606	0.7647	0.7688	0.7729	0.7770
	0.7812	0.7858	0.7905	0.7951	0.7998
	0.8044	0.8091	0.8137	0.8184	0.8230
	0.8277	0.8323	0.8370	0.8416	0.8463
	0.8509	0.8536	0.8564	0.8591	0.8619
	0.8646	0.8674	0.8701	0.8729	0.8756
	0.8784	0.8811	0.8839	0.8866	0.8894
	0.8921	0.8949	0.8976	0.9004	0.9031
	0.9059	0.9086	0.9114	0.9141	0.9169
	0.9196	0.9224	0.9251	0.9279	0.9306
	0.9334	0.9345	0.9356	0.9367	0.9378
	0.9389	0.9400	0.9411	0.9422	0.9434
	0.9445	0.9456	0.9467	0.9478	0.9489
	0.9500	0.9511	0.9522	0.9534	0.9545
	0.9556	0.9567	0.9578	0.9589	0.9600
	0.9611	0.9622	0.9634	0.9645	0.9656
	0.9667	0.9678	0.9689	0.9700	0.9711
	0.9722	0.9733	0.9745	0.9756	0.9767
	0.9778	0.9789	0.9800	0.9811	0.9822
	0.9833	0.9845	0.9856	0.9867	0.9878
	0.9889	0.9900	0.9911	0.9922	0.9933
	0.9944	0.9956	0.9967	0.9978	0.9989
	1.0000				
2_yr_sm		0.1			
	0.0000	0.0011	0.0022	0.0033	0.0044
	0.0055	0.0066	0.0077	0.0088	0.0099
	0.0110	0.0121	0.0132	0.0143	0.0154
	0.0166	0.0177	0.0188	0.0199	0.0210
	0.0221	0.0232	0.0243	0.0254	0.0265
	0.0276	0.0287	0.0298	0.0309	0.0320
	0.0331	0.0342	0.0353	0.0364	0.0375
	0.0386	0.0397	0.0408	0.0419	0.0430
	0.0441	0.0452	0.0463	0.0474	0.0486
	0.0497	0.0508	0.0519	0.0530	0.0541
	0.0552	0.0563	0.0574	0.0585	0.0596
	0.0607	0.0618	0.0629	0.0640	0.0651
	0.0662	0.0689	0.0717	0.0744	0.0771
	0.0799	0.0826	0.0853	0.0880	0.0908
	0.0935	0.0962	0.0990	0.1017	0.1044
	0.1072	0.1099	0.1126	0.1153	0.1181
	0.1208	0.1235	0.1263	0.1290	0.1317
	0.1344	0.1372	0.1399	0.1426	0.1454
	0.1481	0.1527	0.1573	0.1619	0.1665
	0.1711	0.1757	0.1802	0.1848	0.1894
	0.1940	0.1986	0.2032	0.2078	0.2124
	0.2170	0.2211	0.2252	0.2293	0.2334
	0.2375	0.2461	0.2547	0.2632	0.2718
	0.2803	0.2982	0.3160	0.3443	0.3888
	0.5000	0.6112	0.6557	0.6840	0.7018
	0.7197	0.7282	0.7368	0.7453	0.7539
	0.7625	0.7666	0.7707	0.7748	0.7789
	0.7830	0.7876	0.7922	0.7968	0.8014
	0.8060	0.8106	0.8152	0.8198	0.8243
	0.8289	0.8335	0.8381	0.8427	0.8473
	0.8519	0.8546	0.8574	0.8601	0.8628
	0.8656	0.8683	0.8710	0.8737	0.8765
	0.8792	0.8819	0.8847	0.8874	0.8901
	0.8928	0.8956	0.8983	0.9010	0.9038
	0.9065	0.9092	0.9120	0.9147	0.9174
	0.9201	0.9229	0.9256	0.9283	0.9311

0.9338 0.9349 0.9360 0.9371 0.9382
0.9393 0.9404 0.9415 0.9426 0.9437
0.9448 0.9459 0.9470 0.9481 0.9492
0.9503 0.9514 0.9526 0.9537 0.9548
0.9559 0.9570 0.9581 0.9592 0.9603
0.9614 0.9625 0.9636 0.9647 0.9658
0.9669 0.9680 0.9691 0.9702 0.9713
0.9724 0.9735 0.9746 0.9757 0.9768
0.9779 0.9790 0.9801 0.9812 0.9823
0.9834 0.9846 0.9857 0.9868 0.9879
0.9890 0.9901 0.9912 0.9923 0.9934
0.9945 0.9956 0.9967 0.9978 0.9989
1.0000

5_yr_sm 0.1

0.0000 0.0012 0.0023 0.0035 0.0047
0.0059 0.0070 0.0082 0.0094 0.0106
0.0117 0.0129 0.0141 0.0153 0.0164
0.0176 0.0188 0.0200 0.0211 0.0223
0.0235 0.0246 0.0258 0.0270 0.0282
0.0293 0.0305 0.0317 0.0329 0.0340
0.0352 0.0364 0.0376 0.0387 0.0399
0.0411 0.0422 0.0434 0.0446 0.0458
0.0469 0.0481 0.0493 0.0505 0.0516
0.0528 0.0540 0.0552 0.0563 0.0575
0.0587 0.0599 0.0610 0.0622 0.0634
0.0645 0.0657 0.0669 0.0681 0.0692
0.0704 0.0732 0.0760 0.0787 0.0815
0.0843 0.0871 0.0898 0.0926 0.0954
0.0982 0.1009 0.1037 0.1065 0.1093
0.1120 0.1148 0.1176 0.1204 0.1232
0.1259 0.1287 0.1315 0.1343 0.1370
0.1398 0.1426 0.1454 0.1481 0.1509
0.1537 0.1582 0.1626 0.1671 0.1716
0.1760 0.1805 0.1850 0.1894 0.1939
0.1984 0.2029 0.2073 0.2118 0.2163
0.2207 0.2249 0.2291 0.2333 0.2375
0.2416 0.2504 0.2592 0.2679 0.2767
0.2854 0.3043 0.3232 0.3524 0.3970
0.5000 0.6030 0.6476 0.6768 0.6957
0.7146 0.7233 0.7321 0.7408 0.7496
0.7584 0.7625 0.7667 0.7709 0.7751
0.7793 0.7837 0.7882 0.7927 0.7971
0.8016 0.8061 0.8106 0.8150 0.8195
0.8240 0.8284 0.8329 0.8374 0.8418
0.8463 0.8491 0.8519 0.8546 0.8574
0.8602 0.8630 0.8657 0.8685 0.8713
0.8741 0.8768 0.8796 0.8824 0.8852
0.8880 0.8907 0.8935 0.8963 0.8991
0.9018 0.9046 0.9074 0.9102 0.9129
0.9157 0.9185 0.9213 0.9240 0.9268
0.9296 0.9308 0.9319 0.9331 0.9343
0.9355 0.9366 0.9378 0.9390 0.9401
0.9413 0.9425 0.9437 0.9448 0.9460
0.9472 0.9484 0.9495 0.9507 0.9519
0.9531 0.9542 0.9554 0.9566 0.9578
0.9589 0.9601 0.9613 0.9624 0.9636
0.9648 0.9660 0.9671 0.9683 0.9695
0.9707 0.9718 0.9730 0.9742 0.9754
0.9765 0.9777 0.9789 0.9800 0.9812
0.9824 0.9836 0.9847 0.9859 0.9871
0.9883 0.9894 0.9906 0.9918 0.9930
0.9941 0.9953 0.9965 0.9977 0.9988
1.0000

10_yr_sm 0.1

0.0000	0.0012	0.0025	0.0037	0.0049
0.0061	0.0074	0.0086	0.0098	0.0110
0.0123	0.0135	0.0147	0.0159	0.0172
0.0184	0.0196	0.0208	0.0221	0.0233
0.0245	0.0257	0.0270	0.0282	0.0294
0.0306	0.0319	0.0331	0.0343	0.0355
0.0368	0.0380	0.0392	0.0404	0.0417
0.0429	0.0441	0.0453	0.0466	0.0478
0.0490	0.0502	0.0515	0.0527	0.0539
0.0552	0.0564	0.0576	0.0588	0.0601
0.0613	0.0625	0.0637	0.0650	0.0662
0.0674	0.0686	0.0699	0.0711	0.0723
0.0735	0.0764	0.0793	0.0822	0.0851
0.0879	0.0908	0.0937	0.0966	0.0995
0.1023	0.1052	0.1081	0.1110	0.1139
0.1167	0.1196	0.1225	0.1254	0.1283
0.1311	0.1340	0.1369	0.1398	0.1427
0.1455	0.1484	0.1513	0.1542	0.1570
0.1599	0.1644	0.1689	0.1734	0.1779
0.1824	0.1869	0.1914	0.1958	0.2003
0.2048	0.2093	0.2138	0.2183	0.2228
0.2273	0.2315	0.2357	0.2399	0.2441
0.2483	0.2573	0.2663	0.2752	0.2842
0.2931	0.3123	0.3315	0.3608	0.4041
0.5000	0.5959	0.6392	0.6685	0.6877
0.7069	0.7158	0.7248	0.7337	0.7427
0.7517	0.7559	0.7601	0.7643	0.7685
0.7727	0.7772	0.7817	0.7862	0.7907
0.7952	0.7997	0.8042	0.8086	0.8131
0.8176	0.8221	0.8266	0.8311	0.8356
0.8401	0.8430	0.8458	0.8487	0.8516
0.8545	0.8573	0.8602	0.8631	0.8660
0.8689	0.8717	0.8746	0.8775	0.8804
0.8833	0.8861	0.8890	0.8919	0.8948
0.8977	0.9005	0.9034	0.9063	0.9092
0.9121	0.9149	0.9178	0.9207	0.9236
0.9265	0.9277	0.9289	0.9301	0.9314
0.9326	0.9338	0.9350	0.9363	0.9375
0.9387	0.9399	0.9412	0.9424	0.9436
0.9448	0.9461	0.9473	0.9485	0.9498
0.9510	0.9522	0.9534	0.9547	0.9559
0.9571	0.9583	0.9596	0.9608	0.9620
0.9632	0.9645	0.9657	0.9669	0.9681
0.9694	0.9706	0.9718	0.9730	0.9743
0.9755	0.9767	0.9779	0.9792	0.9804
0.9816	0.9828	0.9841	0.9853	0.9865
0.9877	0.9890	0.9902	0.9914	0.9926
0.9939	0.9951	0.9963	0.9975	0.9988
1.0000				

25_yr_sm 0.1

0.0000	0.0013	0.0026	0.0039	0.0052
0.0065	0.0079	0.0092	0.0105	0.0118
0.0131	0.0144	0.0157	0.0170	0.0183
0.0196	0.0210	0.0223	0.0236	0.0249
0.0262	0.0275	0.0288	0.0301	0.0314
0.0327	0.0340	0.0354	0.0367	0.0380
0.0393	0.0406	0.0419	0.0432	0.0445
0.0458	0.0471	0.0485	0.0498	0.0511
0.0524	0.0537	0.0550	0.0563	0.0576
0.0589	0.0602	0.0616	0.0629	0.0642
0.0655	0.0668	0.0681	0.0694	0.0707
0.0720	0.0733	0.0746	0.0760	0.0773

0.0786	0.0816	0.0846	0.0876	0.0906
0.0937	0.0967	0.0997	0.1027	0.1057
0.1087	0.1118	0.1148	0.1178	0.1208
0.1238	0.1268	0.1299	0.1329	0.1359
0.1389	0.1419	0.1449	0.1480	0.1510
0.1540	0.1570	0.1600	0.1630	0.1661
0.1691	0.1737	0.1782	0.1828	0.1874
0.1920	0.1966	0.2011	0.2057	0.2103
0.2149	0.2195	0.2241	0.2286	0.2332
0.2378	0.2421	0.2464	0.2507	0.2549
0.2592	0.2685	0.2777	0.2869	0.2961
0.3054	0.3248	0.3441	0.3728	0.4138
0.5000	0.5862	0.6272	0.6559	0.6752
0.6946	0.7039	0.7131	0.7223	0.7315
0.7408	0.7451	0.7493	0.7536	0.7579
0.7622	0.7668	0.7714	0.7759	0.7805
0.7851	0.7897	0.7943	0.7989	0.8034
0.8080	0.8126	0.8172	0.8218	0.8263
0.8309	0.8339	0.8370	0.8400	0.8430
0.8460	0.8490	0.8520	0.8551	0.8581
0.8611	0.8641	0.8671	0.8701	0.8732
0.8762	0.8792	0.8822	0.8852	0.8882
0.8913	0.8943	0.8973	0.9003	0.9033
0.9063	0.9094	0.9124	0.9154	0.9184
0.9214	0.9227	0.9240	0.9254	0.9267
0.9280	0.9293	0.9306	0.9319	0.9332
0.9345	0.9358	0.9371	0.9384	0.9398
0.9411	0.9424	0.9437	0.9450	0.9463
0.9476	0.9489	0.9502	0.9515	0.9529
0.9542	0.9555	0.9568	0.9581	0.9594
0.9607	0.9620	0.9633	0.9646	0.9660
0.9673	0.9686	0.9699	0.9712	0.9725
0.9738	0.9751	0.9764	0.9777	0.9790
0.9804	0.9817	0.9830	0.9843	0.9856
0.9869	0.9882	0.9895	0.9908	0.9921
0.9935	0.9948	0.9961	0.9974	0.9987
1.0000				

50_yr_sm 0.1

0.0000	0.0014	0.0027	0.0041	0.0055
0.0068	0.0082	0.0095	0.0109	0.0123
0.0136	0.0150	0.0164	0.0177	0.0191
0.0205	0.0218	0.0232	0.0246	0.0259
0.0273	0.0286	0.0300	0.0314	0.0327
0.0341	0.0355	0.0368	0.0382	0.0396
0.0409	0.0423	0.0436	0.0450	0.0464
0.0477	0.0491	0.0505	0.0518	0.0532
0.0546	0.0559	0.0573	0.0587	0.0600
0.0614	0.0627	0.0641	0.0655	0.0668
0.0682	0.0696	0.0709	0.0723	0.0737
0.0750	0.0764	0.0777	0.0791	0.0805
0.0818	0.0850	0.0881	0.0913	0.0944
0.0976	0.1007	0.1039	0.1070	0.1102
0.1133	0.1165	0.1196	0.1227	0.1259
0.1290	0.1322	0.1353	0.1385	0.1416
0.1448	0.1479	0.1511	0.1542	0.1574
0.1605	0.1636	0.1668	0.1699	0.1731
0.1762	0.1809	0.1856	0.1903	0.1949
0.1996	0.2043	0.2089	0.2136	0.2183
0.2230	0.2276	0.2323	0.2370	0.2417
0.2463	0.2507	0.2550	0.2593	0.2636
0.2679	0.2774	0.2869	0.2964	0.3059
0.3154	0.3348	0.3541	0.3821	0.4210
0.5000	0.5790	0.6179	0.6459	0.6652

0.6846	0.6941	0.7036	0.7131	0.7226
0.7321	0.7364	0.7407	0.7450	0.7493
0.7537	0.7583	0.7630	0.7677	0.7724
0.7770	0.7817	0.7864	0.7911	0.7957
0.8004	0.8051	0.8097	0.8144	0.8191
0.8238	0.8269	0.8301	0.8332	0.8364
0.8395	0.8426	0.8458	0.8489	0.8521
0.8552	0.8584	0.8615	0.8647	0.8678
0.8710	0.8741	0.8773	0.8804	0.8835
0.8867	0.8898	0.8930	0.8961	0.8993
0.9024	0.9056	0.9087	0.9119	0.9150
0.9182	0.9195	0.9209	0.9223	0.9236
0.9250	0.9263	0.9277	0.9291	0.9304
0.9318	0.9332	0.9345	0.9359	0.9373
0.9386	0.9400	0.9413	0.9427	0.9441
0.9454	0.9468	0.9482	0.9495	0.9509
0.9523	0.9536	0.9550	0.9564	0.9577
0.9591	0.9604	0.9618	0.9632	0.9645
0.9659	0.9673	0.9686	0.9700	0.9714
0.9727	0.9741	0.9754	0.9768	0.9782
0.9795	0.9809	0.9823	0.9836	0.9850
0.9864	0.9877	0.9891	0.9905	0.9918
0.9932	0.9945	0.9959	0.9973	0.9986
1.0000				

100_yr_sm 0.1

0.0000	0.0014	0.0029	0.0043	0.0057
0.0071	0.0086	0.0100	0.0114	0.0128
0.0143	0.0157	0.0171	0.0185	0.0200
0.0214	0.0228	0.0243	0.0257	0.0271
0.0285	0.0300	0.0314	0.0328	0.0342
0.0357	0.0371	0.0385	0.0399	0.0414
0.0428	0.0442	0.0457	0.0471	0.0485
0.0499	0.0514	0.0528	0.0542	0.0556
0.0571	0.0585	0.0599	0.0613	0.0628
0.0642	0.0656	0.0671	0.0685	0.0699
0.0713	0.0728	0.0742	0.0756	0.0770
0.0785	0.0799	0.0813	0.0827	0.0842
0.0856	0.0889	0.0922	0.0954	0.0987
0.1020	0.1053	0.1086	0.1118	0.1151
0.1184	0.1217	0.1250	0.1282	0.1315
0.1348	0.1381	0.1414	0.1447	0.1479
0.1512	0.1545	0.1578	0.1611	0.1643
0.1676	0.1709	0.1742	0.1775	0.1807
0.1840	0.1888	0.1935	0.1983	0.2031
0.2078	0.2126	0.2174	0.2221	0.2269
0.2317	0.2364	0.2412	0.2459	0.2507
0.2555	0.2598	0.2641	0.2684	0.2727
0.2770	0.2867	0.2964	0.3062	0.3159
0.3256	0.3447	0.3638	0.3910	0.4277
0.5000	0.5723	0.6090	0.6362	0.6553
0.6744	0.6841	0.6938	0.7036	0.7133
0.7230	0.7273	0.7316	0.7359	0.7402
0.7445	0.7493	0.7541	0.7588	0.7636
0.7683	0.7731	0.7779	0.7826	0.7874
0.7922	0.7969	0.8017	0.8065	0.8112
0.8160	0.8193	0.8225	0.8258	0.8291
0.8324	0.8357	0.8389	0.8422	0.8455
0.8488	0.8521	0.8553	0.8586	0.8619
0.8652	0.8685	0.8718	0.8750	0.8783
0.8816	0.8849	0.8882	0.8914	0.8947
0.8980	0.9013	0.9046	0.9078	0.9111
0.9144	0.9158	0.9173	0.9187	0.9201
0.9215	0.9230	0.9244	0.9258	0.9272

0.9287 0.9301 0.9315 0.9329 0.9344
0.9358 0.9372 0.9387 0.9401 0.9415
0.9429 0.9444 0.9458 0.9472 0.9486
0.9501 0.9515 0.9529 0.9543 0.9558
0.9572 0.9586 0.9601 0.9615 0.9629
0.9643 0.9658 0.9672 0.9686 0.9700
0.9715 0.9729 0.9743 0.9757 0.9772
0.9786 0.9800 0.9815 0.9829 0.9843
0.9857 0.9872 0.9886 0.9900 0.9914
0.9929 0.9943 0.9957 0.9971 0.9986
1.0000

500_yr_sm 0.1

0.0000 0.0016 0.0031 0.0047 0.0063
0.0078 0.0094 0.0110 0.0126 0.0141
0.0157 0.0173 0.0188 0.0204 0.0220
0.0235 0.0251 0.0267 0.0283 0.0298
0.0314 0.0330 0.0345 0.0361 0.0377
0.0392 0.0408 0.0424 0.0439 0.0455
0.0471 0.0487 0.0502 0.0518 0.0534
0.0549 0.0565 0.0581 0.0596 0.0612
0.0628 0.0643 0.0659 0.0675 0.0691
0.0706 0.0722 0.0738 0.0753 0.0769
0.0785 0.0800 0.0816 0.0832 0.0848
0.0863 0.0879 0.0895 0.0910 0.0926
0.0942 0.0978 0.1014 0.1050 0.1086
0.1122 0.1158 0.1195 0.1231 0.1267
0.1303 0.1339 0.1375 0.1411 0.1447
0.1483 0.1520 0.1556 0.1592 0.1628
0.1664 0.1700 0.1736 0.1772 0.1809
0.1845 0.1881 0.1917 0.1953 0.1989
0.2025 0.2075 0.2124 0.2174 0.2223
0.2272 0.2322 0.2371 0.2421 0.2470
0.2520 0.2569 0.2618 0.2668 0.2717
0.2767 0.2810 0.2853 0.2896 0.2940
0.2983 0.3084 0.3185 0.3287 0.3388
0.3489 0.3673 0.3856 0.4104 0.4420
0.5000 0.5580 0.5896 0.6144 0.6327
0.6511 0.6612 0.6713 0.6815 0.6916
0.7017 0.7060 0.7104 0.7147 0.7190
0.7233 0.7283 0.7332 0.7382 0.7431
0.7480 0.7530 0.7579 0.7629 0.7678
0.7728 0.7777 0.7826 0.7876 0.7925
0.7975 0.8011 0.8047 0.8083 0.8119
0.8155 0.8191 0.8228 0.8264 0.8300
0.8336 0.8372 0.8408 0.8444 0.8480
0.8517 0.8553 0.8589 0.8625 0.8661
0.8697 0.8733 0.8769 0.8805 0.8842
0.8878 0.8914 0.8950 0.8986 0.9022
0.9058 0.9074 0.9090 0.9105 0.9121
0.9137 0.9152 0.9168 0.9184 0.9200
0.9215 0.9231 0.9247 0.9262 0.9278
0.9294 0.9309 0.9325 0.9341 0.9357
0.9372 0.9388 0.9404 0.9419 0.9435
0.9451 0.9466 0.9482 0.9498 0.9513
0.9529 0.9545 0.9561 0.9576 0.9592
0.9608 0.9623 0.9639 0.9655 0.9670
0.9686 0.9702 0.9717 0.9733 0.9749
0.9765 0.9780 0.9796 0.9812 0.9827
0.9843 0.9859 0.9874 0.9890 0.9906
0.9922 0.9937 0.9953 0.9969 0.9984
1.0000

GLOBAL OUTPUT:

.2 NN N NN N

WinTR-20 Printed Page File End of Input Data List

Eccelston Mitigation POI 5 Existing

Name of printed page file:
C:\Users\cwagner\Desktop\Eccelston POI 5 Existing.out

STORM 1_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.139		0.683		12.47	38.6	277.15

STORM 2_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.139		1.032		12.44	62.2	446.25

STORM 5_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.139		1.685		12.45	101.1	725.51

STORM 10_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.139		2.310		12.43	133.9	960.95

STORM 25_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.139		3.345		12.44	180.4	1295.19

STORM 50_yr_sm

Area or Reach	Drainage Area	Rain Gage ID or	Runoff Amount	Peak Flow Elevation	Time	Rate	Rate

Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.139		4.306		12.41	217.8	1563.43

STORM 100_yr_sm

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Eccelston Mitigation POI 5 Existing

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.139		5.442		12.41	256.2	1839.31

STORM 500_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.139		8.841		12.42	344.5	2473.35

Eccelston Mitigation POI 5 Existing

Area or Reach Identifier	Drainage Area (sq mi)	Peak Flow by Storm 1_yr_sm (cfs)	2_yr_sm (cfs)	5_yr_sm (cfs)	10_yr_sm (cfs)	25_yr_sm (cfs)
DA5	0.139	38.6	62.2	101.1	133.9	180.4
OUTLET	0.139	38.6	62.2	101.1	133.9	180.4

Area or Reach Identifier	Drainage Area (sq mi)	Peak Flow by Storm 50_yr_sm (cfs)	100_yr_sm (cfs)	500_yr_sm (cfs)	(cfs)	(cfs)
DA5	0.139	217.8	256.2	344.5		
OUTLET	0.139	217.8	256.2	344.5		

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WinTR-20: version 3.20                  0         0                    0
Eccelston Mitigation POI 1-4 Ultimate

SUB-AREA:
          DA1       OUTLET              0.0900312 77.       .260        YY
          DA4       CON-1               0.4501281 75.       1.13        YY
          DA2       CON-1               1.3229781 74.       1.377       YY
          DA3       CON-1               0.9202734 68.       1.241       YY


STREAM REACH:
          CON-1     OUTLET    XS1                1547.3143            YY   Y


STORM ANALYSIS:
          1_yr_sm                       2.7       1_yr_sm   2          3.27
          2_yr_sm                       3.27      2_yr_sm   2          3.27
          5_yr_sm                       4.21      5_yr_sm   2          3.27
          10_yr_sm                      5.03      10_yr_sm  2          3.27
          25_yr_sm                      6.29      25_yr_sm  2          3.27
          50_yr_sm                      7.41      50_yr_sm  2          3.27
          100_yr_sm                     8.68      100_yr_sm 2          3.27
          500_yr_sm                     12.35     500_yr_sm 2          3.27


STREAM CROSS SECTION:
          XS1       361.8
                    360.16    0.00      0.00      2.        .1
                    360.57    1.92      1.80      2.
                    360.98    11.84     6.44      2.
                    361.39    31.78     12.95     2.
                    361.80    63.07     21.08     2.
                    362.57    246.03    172.72    2.
                    363.35    678.76    348.03    2.
                    364.12    1313.55   539.74    2.
                    364.89    2034.29   766.67    2.
                    365.67    3178.49   1025.20   2.
                    366.44    4545.31   1296.17   2.
                    367.21    6128.84   1579.56   2.
                    367.99    7541.79   1894.24   2.
                    368.76    9145.25   2251.86   2.
                    369.53    11751.18  2644.71   2.
                    370.31    14631.71  3047.25   2.
                    371.08    17781.04  3459.48   2.
                    371.85    21194.89  3881.38   2.
                    372.63    24870.16  4312.97   2.
                    373.40    28804.62  4754.24   2.
```

RAINFALL DISTRIBUTION:

1_yr_sm 0.1

0.0000	0.0011	0.0022	0.0033	0.0044
0.0055	0.0067	0.0078	0.0089	0.0100
0.0111	0.0122	0.0133	0.0144	0.0155
0.0166	0.0178	0.0189	0.0200	0.0211
0.0222	0.0233	0.0244	0.0255	0.0266
0.0277	0.0289	0.0300	0.0311	0.0322
0.0333	0.0344	0.0355	0.0366	0.0377
0.0388	0.0399	0.0411	0.0422	0.0433
0.0444	0.0455	0.0466	0.0477	0.0488
0.0499	0.0510	0.0522	0.0533	0.0544
0.0555	0.0566	0.0577	0.0588	0.0599
0.0610	0.0621	0.0633	0.0644	0.0655
0.0666	0.0693	0.0721	0.0748	0.0776
0.0803	0.0830	0.0858	0.0885	0.0913
0.0940	0.0967	0.0995	0.1022	0.1050
0.1077	0.1105	0.1132	0.1159	0.1187
0.1214	0.1242	0.1269	0.1297	0.1324
0.1351	0.1379	0.1406	0.1434	0.1461
0.1488	0.1535	0.1581	0.1627	0.1674
0.1720	0.1766	0.1813	0.1859	0.1905
0.1951	0.1998	0.2044	0.2090	0.2137
0.2183	0.2224	0.2266	0.2307	0.2348
0.2390	0.2476	0.2562	0.2648	0.2734
0.2820	0.2992	0.3165	0.3440	0.3877
0.5000	0.6123	0.6560	0.6835	0.7008
0.7180	0.7266	0.7352	0.7438	0.7524
0.7610	0.7652	0.7693	0.7734	0.7776
0.7817	0.7863	0.7910	0.7956	0.8002
0.8049	0.8095	0.8141	0.8187	0.8234
0.8280	0.8326	0.8373	0.8419	0.8465
0.8512	0.8539	0.8566	0.8594	0.8621
0.8649	0.8676	0.8703	0.8731	0.8758
0.8786	0.8813	0.8841	0.8868	0.8895
0.8923	0.8950	0.8978	0.9005	0.9033
0.9060	0.9087	0.9115	0.9142	0.9170
0.9197	0.9224	0.9252	0.9279	0.9307
0.9334	0.9345	0.9356	0.9367	0.9379
0.9390	0.9401	0.9412	0.9423	0.9434
0.9445	0.9456	0.9467	0.9478	0.9490
0.9501	0.9512	0.9523	0.9534	0.9545
0.9556	0.9567	0.9578	0.9589	0.9601
0.9612	0.9623	0.9634	0.9645	0.9656
0.9667	0.9678	0.9689	0.9700	0.9711
0.9723	0.9734	0.9745	0.9756	0.9767
0.9778	0.9789	0.9800	0.9811	0.9822
0.9834	0.9845	0.9856	0.9867	0.9878
0.9889	0.9900	0.9911	0.9922	0.9933
0.9945	0.9956	0.9967	0.9978	0.9989
1.0000				

2_yr_sm 0.1

0.0000	0.0011	0.0022	0.0033	0.0044
0.0055	0.0066	0.0077	0.0088	0.0099
0.0110	0.0122	0.0133	0.0144	0.0155
0.0166	0.0177	0.0188	0.0199	0.0210
0.0221	0.0232	0.0243	0.0254	0.0265
0.0276	0.0287	0.0298	0.0309	0.0320
0.0331	0.0343	0.0354	0.0365	0.0376

	0.0387	0.0398	0.0409	0.0420	0.0431
	0.0442	0.0453	0.0464	0.0475	0.0486
	0.0497	0.0508	0.0519	0.0530	0.0541
	0.0552	0.0564	0.0575	0.0586	0.0597
	0.0608	0.0619	0.0630	0.0641	0.0652
	0.0663	0.0690	0.0717	0.0745	0.0772
	0.0799	0.0826	0.0853	0.0881	0.0908
	0.0935	0.0962	0.0989	0.1017	0.1044
	0.1071	0.1098	0.1125	0.1153	0.1180
	0.1207	0.1234	0.1261	0.1289	0.1316
	0.1343	0.1370	0.1397	0.1425	0.1452
	0.1479	0.1525	0.1571	0.1616	0.1662
	0.1708	0.1754	0.1799	0.1845	0.1891
	0.1937	0.1982	0.2028	0.2074	0.2120
	0.2165	0.2207	0.2248	0.2289	0.2330
	0.2372	0.2457	0.2543	0.2629	0.2714
	0.2800	0.2979	0.3158	0.3440	0.3886
	0.5000	0.6114	0.6560	0.6842	0.7021
	0.7200	0.7286	0.7371	0.7457	0.7543
	0.7628	0.7670	0.7711	0.7752	0.7793
	0.7835	0.7880	0.7926	0.7972	0.8018
	0.8063	0.8109	0.8155	0.8201	0.8246
	0.8292	0.8338	0.8384	0.8429	0.8475
	0.8521	0.8548	0.8575	0.8603	0.8630
	0.8657	0.8684	0.8711	0.8739	0.8766
	0.8793	0.8820	0.8847	0.8875	0.8902
	0.8929	0.8956	0.8983	0.9011	0.9038
	0.9065	0.9092	0.9119	0.9147	0.9174
	0.9201	0.9228	0.9255	0.9283	0.9310
	0.9337	0.9348	0.9359	0.9370	0.9381
	0.9392	0.9403	0.9414	0.9425	0.9436
	0.9448	0.9459	0.9470	0.9481	0.9492
	0.9503	0.9514	0.9525	0.9536	0.9547
	0.9558	0.9569	0.9580	0.9591	0.9602
	0.9613	0.9624	0.9635	0.9646	0.9657
	0.9669	0.9680	0.9691	0.9702	0.9713
	0.9724	0.9735	0.9746	0.9757	0.9768
	0.9779	0.9790	0.9801	0.9812	0.9823
	0.9834	0.9845	0.9856	0.9867	0.9878
	0.9890	0.9901	0.9912	0.9923	0.9934
	0.9945	0.9956	0.9967	0.9978	0.9989
	1.0000				
5_yr_sm		0.1			
	0.0000	0.0012	0.0024	0.0035	0.0047
	0.0059	0.0071	0.0082	0.0094	0.0106
	0.0118	0.0129	0.0141	0.0153	0.0165
	0.0176	0.0188	0.0200	0.0212	0.0223
	0.0235	0.0247	0.0259	0.0270	0.0282
	0.0294	0.0306	0.0317	0.0329	0.0341
	0.0353	0.0364	0.0376	0.0388	0.0400
	0.0411	0.0423	0.0435	0.0447	0.0458
	0.0470	0.0482	0.0494	0.0505	0.0517
	0.0529	0.0541	0.0552	0.0564	0.0576
	0.0588	0.0599	0.0611	0.0623	0.0635
	0.0646	0.0658	0.0670	0.0682	0.0693
	0.0705	0.0733	0.0761	0.0788	0.0816
	0.0844	0.0871	0.0899	0.0927	0.0954
	0.0982	0.1010	0.1037	0.1065	0.1093
	0.1120	0.1148	0.1176	0.1203	0.1231
	0.1259	0.1286	0.1314	0.1342	0.1369
	0.1397	0.1425	0.1452	0.1480	0.1508
	0.1535	0.1580	0.1624	0.1669	0.1713
	0.1758	0.1802	0.1847	0.1891	0.1936

	0.1981	0.2025	0.2070	0.2114	0.2159
	0.2203	0.2245	0.2287	0.2329	0.2371
	0.2413	0.2501	0.2588	0.2676	0.2763
	0.2851	0.3040	0.3229	0.3522	0.3968
	0.5000	0.6032	0.6478	0.6771	0.6960
	0.7149	0.7237	0.7324	0.7412	0.7499
	0.7587	0.7629	0.7671	0.7713	0.7755
	0.7797	0.7841	0.7886	0.7930	0.7975
	0.8019	0.8064	0.8109	0.8153	0.8198
	0.8242	0.8287	0.8331	0.8376	0.8420
	0.8465	0.8492	0.8520	0.8548	0.8575
	0.8603	0.8631	0.8658	0.8686	0.8714
	0.8741	0.8769	0.8797	0.8824	0.8852
	0.8880	0.8907	0.8935	0.8963	0.8990
	0.9018	0.9046	0.9073	0.9101	0.9129
	0.9156	0.9184	0.9212	0.9239	0.9267
	0.9295	0.9307	0.9318	0.9330	0.9342
	0.9354	0.9365	0.9377	0.9389	0.9401
	0.9412	0.9424	0.9436	0.9448	0.9459
	0.9471	0.9483	0.9495	0.9506	0.9518
	0.9530	0.9542	0.9553	0.9565	0.9577
	0.9589	0.9600	0.9612	0.9624	0.9636
	0.9647	0.9659	0.9671	0.9683	0.9694
	0.9706	0.9718	0.9730	0.9741	0.9753
	0.9765	0.9777	0.9788	0.9800	0.9812
	0.9824	0.9835	0.9847	0.9859	0.9871
	0.9882	0.9894	0.9906	0.9918	0.9929
	0.9941	0.9953	0.9965	0.9976	0.9988
	1.0000	1.0000	1.0000	1.0000	1.0000
10_yr_sm		0.1			
	0.0000	0.0012	0.0025	0.0037	0.0049
	0.0061	0.0074	0.0086	0.0098	0.0110
	0.0123	0.0135	0.0147	0.0159	0.0172
	0.0184	0.0196	0.0209	0.0221	0.0233
	0.0245	0.0258	0.0270	0.0282	0.0294
	0.0307	0.0319	0.0331	0.0344	0.0356
	0.0368	0.0380	0.0393	0.0405	0.0417
	0.0429	0.0442	0.0454	0.0466	0.0478
	0.0491	0.0503	0.0515	0.0528	0.0540
	0.0552	0.0564	0.0577	0.0589	0.0601
	0.0613	0.0626	0.0638	0.0650	0.0663
	0.0675	0.0687	0.0699	0.0712	0.0724
	0.0736	0.0765	0.0794	0.0822	0.0851
	0.0880	0.0908	0.0937	0.0966	0.0995
	0.1023	0.1052	0.1081	0.1110	0.1138
	0.1167	0.1196	0.1224	0.1253	0.1282
	0.1311	0.1339	0.1368	0.1397	0.1425
	0.1454	0.1483	0.1512	0.1540	0.1569
	0.1598	0.1642	0.1687	0.1732	0.1777
	0.1821	0.1866	0.1911	0.1956	0.2000
	0.2045	0.2090	0.2134	0.2179	0.2224
	0.2269	0.2311	0.2353	0.2395	0.2438
	0.2480	0.2570	0.2659	0.2749	0.2838
	0.2928	0.3120	0.3312	0.3606	0.4040
	0.5000	0.5960	0.6394	0.6688	0.6880
	0.7072	0.7162	0.7251	0.7341	0.7430
	0.7520	0.7562	0.7605	0.7647	0.7689
	0.7731	0.7776	0.7821	0.7866	0.7910
	0.7955	0.8000	0.8044	0.8089	0.8134
	0.8179	0.8223	0.8268	0.8313	0.8358
	0.8402	0.8431	0.8460	0.8488	0.8517
	0.8546	0.8575	0.8603	0.8632	0.8661
	0.8689	0.8718	0.8747	0.8776	0.8804

0.8833	0.8862	0.8890	0.8919	0.8948
0.8977	0.9005	0.9034	0.9063	0.9092
0.9120	0.9149	0.9178	0.9206	0.9235
0.9264	0.9276	0.9288	0.9301	0.9313
0.9325	0.9337	0.9350	0.9362	0.9374
0.9387	0.9399	0.9411	0.9423	0.9436
0.9448	0.9460	0.9472	0.9485	0.9497
0.9509	0.9522	0.9534	0.9546	0.9558
0.9571	0.9583	0.9595	0.9607	0.9620
0.9632	0.9644	0.9656	0.9669	0.9681
0.9693	0.9706	0.9718	0.9730	0.9742
0.9755	0.9767	0.9779	0.9791	0.9804
0.9816	0.9828	0.9841	0.9853	0.9865
0.9877	0.9890	0.9902	0.9914	0.9926
0.9939	0.9951	0.9963	0.9975	0.9988
1.0000				

25_yr_sm 0.1

0.0000	0.0013	0.0026	0.0039	0.0052
0.0066	0.0079	0.0092	0.0105	0.0118
0.0131	0.0144	0.0157	0.0170	0.0184
0.0197	0.0210	0.0223	0.0236	0.0249
0.0262	0.0275	0.0289	0.0302	0.0315
0.0328	0.0341	0.0354	0.0367	0.0380
0.0393	0.0407	0.0420	0.0433	0.0446
0.0459	0.0472	0.0485	0.0498	0.0511
0.0525	0.0538	0.0551	0.0564	0.0577
0.0590	0.0603	0.0616	0.0630	0.0643
0.0656	0.0669	0.0682	0.0695	0.0708
0.0721	0.0734	0.0748	0.0761	0.0774
0.0787	0.0817	0.0847	0.0877	0.0907
0.0937	0.0967	0.0997	0.1028	0.1058
0.1088	0.1118	0.1148	0.1178	0.1208
0.1238	0.1268	0.1298	0.1328	0.1358
0.1389	0.1419	0.1449	0.1479	0.1509
0.1539	0.1569	0.1599	0.1629	0.1659
0.1689	0.1735	0.1781	0.1826	0.1872
0.1918	0.1963	0.2009	0.2054	0.2100
0.2146	0.2191	0.2237	0.2283	0.2328
0.2374	0.2417	0.2460	0.2503	0.2546
0.2589	0.2681	0.2774	0.2866	0.2958
0.3050	0.3245	0.3439	0.3726	0.4137
0.5000	0.5863	0.6274	0.6561	0.6755
0.6950	0.7042	0.7134	0.7226	0.7319
0.7411	0.7454	0.7497	0.7540	0.7583
0.7626	0.7672	0.7717	0.7763	0.7809
0.7854	0.7900	0.7946	0.7991	0.8037
0.8082	0.8128	0.8174	0.8219	0.8265
0.8311	0.8341	0.8371	0.8401	0.8431
0.8461	0.8491	0.8521	0.8551	0.8581
0.8611	0.8642	0.8672	0.8702	0.8732
0.8762	0.8792	0.8822	0.8852	0.8882
0.8912	0.8942	0.8972	0.9003	0.9033
0.9063	0.9093	0.9123	0.9153	0.9183
0.9213	0.9226	0.9239	0.9252	0.9266
0.9279	0.9292	0.9305	0.9318	0.9331
0.9344	0.9357	0.9370	0.9384	0.9397
0.9410	0.9423	0.9436	0.9449	0.9462
0.9475	0.9489	0.9502	0.9515	0.9528
0.9541	0.9554	0.9567	0.9580	0.9593
0.9607	0.9620	0.9633	0.9646	0.9659
0.9672	0.9685	0.9698	0.9711	0.9725
0.9738	0.9751	0.9764	0.9777	0.9790
0.9803	0.9816	0.9830	0.9843	0.9856

```
          0.9869    0.9882    0.9895    0.9908    0.9921
          0.9934    0.9948    0.9961    0.9974    0.9987
          1.0000
50_yr_sm              0.1
          0.0000    0.0014    0.0027    0.0041    0.0055
          0.0068    0.0082    0.0096    0.0109    0.0123
          0.0137    0.0150    0.0164    0.0178    0.0191
          0.0205    0.0219    0.0232    0.0246    0.0260
          0.0273    0.0287    0.0301    0.0314    0.0328
          0.0342    0.0355    0.0369    0.0383    0.0396
          0.0410    0.0424    0.0437    0.0451    0.0465
          0.0478    0.0492    0.0505    0.0519    0.0533
          0.0546    0.0560    0.0574    0.0587    0.0601
          0.0615    0.0628    0.0642    0.0656    0.0669
          0.0683    0.0697    0.0710    0.0724    0.0738
          0.0751    0.0765    0.0779    0.0792    0.0806
          0.0820    0.0851    0.0882    0.0914    0.0945
          0.0977    0.1008    0.1039    0.1071    0.1102
          0.1134    0.1165    0.1196    0.1228    0.1259
          0.1290    0.1322    0.1353    0.1385    0.1416
          0.1447    0.1479    0.1510    0.1541    0.1573
          0.1604    0.1636    0.1667    0.1698    0.1730
          0.1761    0.1808    0.1854    0.1901    0.1947
          0.1994    0.2040    0.2087    0.2133    0.2180
          0.2227    0.2273    0.2320    0.2366    0.2413
          0.2459    0.2503    0.2546    0.2589    0.2633
          0.2676    0.2771    0.2866    0.2961    0.3056
          0.3151    0.3345    0.3538    0.3819    0.4208
          0.5000    0.5792    0.6181    0.6462    0.6655
          0.6849    0.6944    0.7039    0.7134    0.7229
          0.7324    0.7367    0.7411    0.7454    0.7497
          0.7541    0.7587    0.7634    0.7680    0.7727
          0.7773    0.7820    0.7867    0.7913    0.7960
          0.8006    0.8053    0.8099    0.8146    0.8192
          0.8239    0.8270    0.8302    0.8333    0.8364
          0.8396    0.8427    0.8459    0.8490    0.8521
          0.8553    0.8584    0.8615    0.8647    0.8678
          0.8710    0.8741    0.8772    0.8804    0.8835
          0.8866    0.8898    0.8929    0.8961    0.8992
          0.9023    0.9055    0.9086    0.9118    0.9149
          0.9180    0.9194    0.9208    0.9221    0.9235
          0.9249    0.9262    0.9276    0.9290    0.9303
          0.9317    0.9331    0.9344    0.9358    0.9372
          0.9385    0.9399    0.9413    0.9426    0.9440
          0.9454    0.9467    0.9481    0.9495    0.9508
          0.9522    0.9535    0.9549    0.9563    0.9576
          0.9590    0.9604    0.9617    0.9631    0.9645
          0.9658    0.9672    0.9686    0.9699    0.9713
          0.9727    0.9740    0.9754    0.9768    0.9781
          0.9795    0.9809    0.9822    0.9836    0.9850
          0.9863    0.9877    0.9891    0.9904    0.9918
          0.9932    0.9945    0.9959    0.9973    0.9986
          1.0000
100_yr_sm             0.1
          0.0000    0.0014    0.0029    0.0043    0.0057
          0.0071    0.0086    0.0100    0.0114    0.0129
          0.0143    0.0157    0.0171    0.0186    0.0200
          0.0214    0.0229    0.0243    0.0257    0.0271
          0.0286    0.0300    0.0314    0.0329    0.0343
          0.0357    0.0372    0.0386    0.0400    0.0414
          0.0429    0.0443    0.0457    0.0472    0.0486
          0.0500    0.0514    0.0529    0.0543    0.0557
          0.0572    0.0586    0.0600    0.0614    0.0629
```

	0.0643	0.0657	0.0672	0.0686	0.0700
	0.0714	0.0729	0.0743	0.0757	0.0772
	0.0786	0.0800	0.0814	0.0829	0.0843
	0.0857	0.0890	0.0923	0.0955	0.0988
	0.1021	0.1054	0.1086	0.1119	0.1152
	0.1185	0.1217	0.1250	0.1283	0.1315
	0.1348	0.1381	0.1414	0.1446	0.1479
	0.1512	0.1544	0.1577	0.1610	0.1643
	0.1675	0.1708	0.1741	0.1773	0.1806
	0.1839	0.1886	0.1934	0.1981	0.2029
	0.2076	0.2123	0.2171	0.2218	0.2266
	0.2313	0.2361	0.2408	0.2455	0.2503
	0.2550	0.2594	0.2637	0.2680	0.2723
	0.2767	0.2864	0.2961	0.3058	0.3155
	0.3252	0.3444	0.3635	0.3907	0.4275
	0.5000	0.5725	0.6093	0.6365	0.6556
	0.6748	0.6845	0.6942	0.7039	0.7136
	0.7233	0.7277	0.7320	0.7363	0.7406
	0.7450	0.7497	0.7545	0.7592	0.7639
	0.7687	0.7734	0.7782	0.7829	0.7877
	0.7924	0.7971	0.8019	0.8066	0.8114
	0.8161	0.8194	0.8227	0.8259	0.8292
	0.8325	0.8357	0.8390	0.8423	0.8456
	0.8488	0.8521	0.8554	0.8586	0.8619
	0.8652	0.8685	0.8717	0.8750	0.8783
	0.8815	0.8848	0.8881	0.8914	0.8946
	0.8979	0.9012	0.9045	0.9077	0.9110
	0.9143	0.9157	0.9171	0.9186	0.9200
	0.9214	0.9228	0.9243	0.9257	0.9271
	0.9286	0.9300	0.9314	0.9328	0.9343
	0.9357	0.9371	0.9386	0.9400	0.9414
	0.9428	0.9443	0.9457	0.9471	0.9486
	0.9500	0.9514	0.9528	0.9543	0.9557
	0.9571	0.9586	0.9600	0.9614	0.9628
	0.9643	0.9657	0.9671	0.9686	0.9700
	0.9714	0.9729	0.9743	0.9757	0.9771
	0.9786	0.9800	0.9814	0.9829	0.9843
	0.9857	0.9871	0.9886	0.9900	0.9914
	0.9929	0.9943	0.9957	0.9971	0.9986
	1.0000	1.0000	1.0000	1.0000	1.0000
500_yr_sm		0.1			
	0.0000	0.0016	0.0031	0.0047	0.0063
	0.0079	0.0094	0.0110	0.0126	0.0141
	0.0157	0.0173	0.0189	0.0204	0.0220
	0.0236	0.0252	0.0267	0.0283	0.0299
	0.0314	0.0330	0.0346	0.0362	0.0377
	0.0393	0.0409	0.0424	0.0440	0.0456
	0.0472	0.0487	0.0503	0.0519	0.0535
	0.0550	0.0566	0.0582	0.0597	0.0613
	0.0629	0.0645	0.0660	0.0676	0.0692
	0.0707	0.0723	0.0739	0.0755	0.0770
	0.0786	0.0802	0.0817	0.0833	0.0849
	0.0865	0.0880	0.0896	0.0912	0.0928
	0.0943	0.0979	0.1015	0.1051	0.1087
	0.1123	0.1159	0.1195	0.1231	0.1267
	0.1303	0.1340	0.1376	0.1412	0.1448
	0.1484	0.1520	0.1556	0.1592	0.1628
	0.1664	0.1700	0.1736	0.1772	0.1808
	0.1844	0.1880	0.1916	0.1952	0.1988
	0.2024	0.2073	0.2122	0.2172	0.2221
	0.2270	0.2319	0.2368	0.2418	0.2467
	0.2516	0.2565	0.2615	0.2664	0.2713
	0.2762	0.2806	0.2849	0.2893	0.2936

0.2979	0.3081	0.3182	0.3283	0.3384
0.3486	0.3669	0.3853	0.4101	0.4419
0.5000	0.5581	0.5899	0.6147	0.6331
0.6514	0.6616	0.6717	0.6818	0.6919
0.7021	0.7064	0.7107	0.7151	0.7194
0.7238	0.7287	0.7336	0.7385	0.7435
0.7484	0.7533	0.7582	0.7632	0.7681
0.7730	0.7779	0.7828	0.7878	0.7927
0.7976	0.8012	0.8048	0.8084	0.8120
0.8156	0.8192	0.8228	0.8264	0.8300
0.8336	0.8372	0.8408	0.8444	0.8480
0.8516	0.8552	0.8588	0.8624	0.8660
0.8697	0.8733	0.8769	0.8805	0.8841
0.8877	0.8913	0.8949	0.8985	0.9021
0.9057	0.9072	0.9088	0.9104	0.9120
0.9135	0.9151	0.9167	0.9183	0.9198
0.9214	0.9230	0.9245	0.9261	0.9277
0.9293	0.9308	0.9324	0.9340	0.9355
0.9371	0.9387	0.9403	0.9418	0.9434
0.9450	0.9465	0.9481	0.9497	0.9513
0.9528	0.9544	0.9560	0.9576	0.9591
0.9607	0.9623	0.9638	0.9654	0.9670
0.9686	0.9701	0.9717	0.9733	0.9748
0.9764	0.9780	0.9796	0.9811	0.9827
0.9843	0.9859	0.9874	0.9890	0.9906
0.9921	0.9937	0.9953	0.9969	0.9984
1.0000				

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Eccelston Mitigation POI 1-4 Ultimate

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STORM 1_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA4	0.450		0.770		12.80	97.0	215.53

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.600	0.0	1.2	5.2	21.7	54.2	85.6	96.9
13.000	89.4	72.1	56.5	44.3	35.1	28.8	24.9
14.400	22.7	21.4	20.6	20.2	19.8	19.0	17.4

15.800	15.8	14.4	13.5	13.0	12.6	12.5	12.4
17.200	12.3	12.3	12.3	12.4	12.4	12.3	11.6
18.600	10.3	8.8	7.5	6.6	6.1	5.7	5.5
20.000	5.4	5.3	5.3	5.2	5.2	5.2	5.2
21.400	5.2	5.2	5.2	5.2	5.3	5.2	5.2
22.800	5.3	5.3	5.3	5.3	5.3	5.3	5.3
24.200	5.2	4.7	3.8	2.7	1.7	1.1	0.7
25.600	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA2	1.323		0.724		12.99	228.3	172.56

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.600	0.0	1.3	7.6	34.2	90.7	163.0	213.2
13.000	227.9	213.1	180.2	146.3	119.4	98.8	83.9
14.400	73.8	67.4	63.3	60.6	58.6	56.3	53.0
15.800	49.0	44.9	41.3	38.8	37.3	36.3	35.7
17.200	35.4	35.2	35.1	35.1	35.1	34.9	33.8
18.600	31.4	28.0	24.5	21.5	19.2	17.8	16.8
20.000	16.1	15.7	15.3	15.1	15.0	14.9	14.9
21.400	14.8	14.8	14.8	14.8	14.9	14.9	14.9
22.800	14.9	15.0	15.0	15.0	15.0	15.0	15.1
24.200	14.9	14.1	12.3	9.8	7.2	5.0	3.4
25.600	2.3	1.6	1.1	0.8	0.5	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		0.478		12.99	96.7	105.07

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Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.800	0.0	0.8	10.3	35.6	69.5	91.3	96.4
13.200	87.7	72.9	59.8	49.2	41.3	36.1	32.9
14.600	31.1	30.1	29.5	29.1	28.2	26.4	24.2
16.000	22.1	20.6	19.7	19.2	18.8	18.7	18.6
17.400	18.6	18.6	18.7	18.8	18.7	18.0	16.3
18.800	14.3	12.3	10.7	9.8	9.1	8.7	8.5
20.200	8.3	8.2	8.1	8.1	8.1	8.1	8.1
21.600	8.0	8.1	8.1	8.1	8.1	8.1	8.2
23.000	8.2	8.2	8.2	8.2	8.3	8.3	8.2
24.400	7.6	6.3	4.8	3.3	2.1	1.4	0.9
25.800	0.6	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

CON-1	2.693	Upstream	0.647	362.88	12.95	416.3	154.55

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.600	0.0	2.5	13.7	67.8	180.6	317.8	401.4
13.000	412.7	372.9	309.7	250.4	203.7	169.0	145.0
14.400	129.5	119.9	114.0	110.4	107.5	103.4	96.9
15.800	89.0	81.4	75.5	71.5	69.1	67.6	66.8
17.200	66.3	66.1	66.1	66.2	66.3	65.8	63.4
18.600	58.0	51.1	44.4	38.9	35.1	32.6	31.0
20.000	30.0	29.3	28.8	28.5	28.3	28.2	28.2
21.400	28.1	28.1	28.1	28.2	28.2	28.3	28.3
22.800	28.3	28.4	28.5	28.5	28.5	28.6	28.7
24.200	28.2	26.3	22.3	17.2	12.2	8.3	5.5
25.600	3.6	2.2	1.1	0.8	0.5	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Downstream	0.647	362.81	13.23	381.8	141.77

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.800	0.0	3.7	22.2	75.9	172.1	280.0	356.0
13.200	381.6	362.3	317.2	266.0	220.0	183.2	156.1
14.600	137.4	125.2	117.4	112.4	108.4	103.8	97.7
16.000	90.6	83.7	77.7	73.3	70.4	68.5	67.3
17.400	66.6	66.3	66.2	66.2	66.2	65.4	62.9
18.800	58.4	52.4	46.2	40.9	36.8	33.8	31.9
20.200	30.5	29.6	29.0	28.6	28.4	28.3	28.2
21.600	28.1	28.1	28.1	28.2	28.2	28.2	28.3

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
23.000	28.3	28.4	28.5	28.5	28.5	28.6	28.5
24.400	27.9	26.0	22.6	18.2	13.6	9.7	6.7
25.800	4.4	2.8	1.7	1.0	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA1	0.090		0.866		12.20	52.5	582.75

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.200	0.0	0.8	1.4	3.7	15.8	52.4	29.6
12.600	15.4	8.5	7.4	5.2	3.8	3.7	4.0
14.000	4.1	4.1	4.2	4.2	4.3	4.3	3.3
15.400	2.7	2.6	2.6	2.6	2.6	2.6	2.6

16.800	2.7	2.7	2.6	2.7	2.7	2.7	2.7
18.200	1.8	1.2	1.1	1.1	1.1	1.1	1.1
19.600	1.1	1.1	1.1	1.1	1.1	1.1	1.1
21.000	1.1	1.1	1.1	1.2	1.1	1.1	1.1
22.400	1.1	1.2	1.1	1.1	1.1	1.1	1.2
23.800	1.1	1.1	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	2.783		0.654		13.17	387.2	139.11

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.200	0.0	0.8	1.4	3.7	19.5	74.6	105.5
12.600	187.5	288.6	363.4	386.9	366.1	320.9	270.0
14.000	224.1	187.3	160.2	141.6	129.5	121.7	115.7
15.400	111.1	106.4	100.3	93.2	86.3	80.3	76.0
16.800	73.0	71.1	70.0	69.3	69.0	68.9	68.9
18.200	67.9	66.6	64.1	59.5	53.5	47.3	42.0
19.600	37.9	34.9	33.0	31.6	30.8	30.2	29.7
21.000	29.5	29.4	29.3	29.3	29.2	29.2	29.3
22.400	29.3	29.4	29.4	29.5	29.5	29.6	29.7
23.800	29.7	29.7	29.0	27.9	26.0	22.6	18.2
25.200	13.6	9.7	6.7	4.4	2.8	1.7	1.0
26.600	0.0						

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA4	0.450		1.141		12.79	151.7	337.08

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.000	0.0	0.9	1.7	3.1	5.7	13.6	40.8
12.400	91.0	136.9	151.5	137.6	109.3	84.6	65.5
13.800	51.3	41.6	35.6	32.1	30.0	28.7	28.0
15.200	27.4	26.1	23.9	21.6	19.7	18.5	17.7
16.600	17.3	17.0	16.9	16.8	16.8	16.8	16.8
18.000	16.8	16.7	15.8	14.0	11.9	10.1	9.0
19.400	8.3	7.8	7.5	7.3	7.2	7.1	7.1
20.800	7.0	7.0	7.0	7.1	7.1	7.1	7.1
22.200	7.1	7.1	7.1	7.1	7.1	7.1	7.1
23.600	7.2	7.2	7.2	7.0	6.3	5.1	3.6
25.000	2.3	1.4	0.9	0.6	0.0		

Area or Reach	Drainage Area	Rain Gage ID or	Runoff Amount	Peak Flow Elevation	Peak Flow Time	Peak Flow Rate	Peak Flow Rate

Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA2	1.323		1.084		12.99	363.3	274.58

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.000	0.0	0.7	1.8	4.1	9.0	23.8	70.8
12.400	162.3	273.3	346.0	362.1	333.0	277.5	222.6
13.800	179.7	147.1	123.4	107.4	97.0	90.2	85.7
15.200	82.3	78.7	73.9	68.0	62.2	57.2	53.5
16.600	51.4	50.0	49.1	48.6	48.3	48.1	48.1
18.000	48.1	47.7	46.2	42.9	38.2	33.4	29.3
19.400	26.3	24.3	23.0	22.0	21.4	20.9	20.6
20.800	20.4	20.3	20.2	20.2	20.2	20.2	20.2
22.200	20.2	20.2	20.2	20.2	20.2	20.3	20.4
23.600	20.4	20.5	20.5	20.2	19.0	16.6	13.2
25.000	9.8	6.8	4.6	3.2	2.2	1.5	1.0
26.400	0.7	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		0.771		12.88	175.5	190.74

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Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.800	0.2	4.1	26.8	76.4	136.0	170.9	173.2
13.200	152.7	123.8	99.4	80.3	66.4	56.9	51.1
14.600	47.6	45.5	44.2	43.2	41.7	38.9	35.5
16.000	32.4	30.1	28.7	27.9	27.4	27.1	27.0
17.400	26.9	26.9	27.0	27.1	26.9	25.8	23.5
18.800	20.4	17.6	15.4	14.0	13.2	12.6	12.1
20.200	11.9	11.7	11.6	11.5	11.5	11.5	11.5
21.600	11.6	11.6	11.6	11.6	11.6	11.6	11.6
23.000	11.6	11.7	11.7	11.8	11.8	11.8	11.6
24.400	10.7	9.0	6.7	4.7	3.0	2.0	1.3
25.800	0.9	0.6	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Upstream	0.986	363.35	12.94	682.1	253.25

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						

11.000	0.0	1.5	3.5	7.2	14.9	41.5	139.9
12.400	330.6	545.7	667.5	672.3	594.6	486.1	387.8
13.800	311.4	255.1	216.1	190.7	174.7	164.5	158.0
15.200	152.9	146.4	136.7	125.2	114.4	105.8	100.0
16.600	96.5	94.4	93.1	92.3	92.0	91.8	91.9
18.000	92.0	91.2	87.8	80.3	70.6	61.2	53.7
19.400	48.6	45.3	43.1	41.5	40.4	39.7	39.2
20.800	38.9	38.8	38.7	38.8	38.9	38.9	38.9
22.200	38.9	38.8	38.9	38.9	38.9	39.0	39.2
23.600	39.4	39.4	39.4	38.7	36.1	30.6	23.6
25.000	16.8	11.3	7.5	5.1	3.0	2.1	1.0
26.400	0.7	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Downstream	0.986	363.29	13.08	645.7	239.72

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
11.200	0.0	1.7	4.3	8.9	21.5	69.1	186.0
12.600	367.3	540.6	634.6	634.6	567.7	474.3	385.1
14.000	312.1	257.3	218.5	192.8	176.0	165.4	158.3
15.400	152.2	144.7	134.9	124.1	114.1	106.1	100.5
16.800	96.9	94.6	93.2	92.4	92.0	91.9	91.9
18.200	91.7	90.2	85.9	78.4	69.5	60.8	53.9
19.600	48.9	45.5	43.2	41.6	40.5	39.8	39.3

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Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
21.000	39.0	38.8	38.8	38.8	38.9	38.9	38.9
22.400	38.9	38.9	38.9	38.9	39.0	39.1	39.2
23.800	39.3	39.4	39.2	38.0	34.7	29.3	22.8
25.200	16.5	11.4	7.8	5.1	3.3	2.0	1.2
26.600	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA1	0.090		1.259		12.19	77.9	865.40

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
10.400	0.0	0.5	0.6	0.7	1.5	2.2	3.2
11.800	7.4	26.9	77.9	43.1	22.4	12.0	10.3
13.200	7.2	5.2	5.1	5.5	5.6	5.6	5.7
14.600	5.7	5.7	5.8	4.5	3.6	3.5	3.5
16.000	3.5	3.5	3.5	3.5	3.5	3.6	3.5
17.400	3.6	3.6	3.6	3.6	2.4	1.6	1.5
18.800	1.5	1.5	1.5	1.5	1.5	1.5	1.5
20.200	1.5	1.5	1.5	1.5	1.5	1.5	1.5

21.600	1.5	1.5	1.5	1.5	1.5	1.5
23.000	1.5	1.5	1.5	1.5	1.5	0.7
24.400	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	2.783		0.995		13.08	655.4	235.47

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
10.400	0.0	0.5	0.6	0.7	1.5	4.0	7.5
11.800	16.4	48.5	147.0	229.2	389.7	552.6	644.6
13.200	641.8	572.9	479.4	390.5	317.7	262.9	224.2
14.600	198.4	181.8	171.1	162.7	155.8	148.1	138.4
16.000	127.6	117.5	109.6	104.0	100.4	98.2	96.8
17.400	96.0	95.6	95.5	95.5	94.1	91.8	87.3
18.800	79.9	70.9	62.3	55.4	50.4	47.0	44.7
20.200	43.1	42.0	41.2	40.8	40.5	40.3	40.3
21.600	40.3	40.4	40.4	40.4	40.4	40.3	40.4
23.000	40.4	40.5	40.6	40.7	40.9	40.9	39.8
24.400	38.0	34.7	29.3	22.8	16.5	11.4	7.8
25.800	5.1	3.3	2.0	1.2	0.0		

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA4	0.450		1.825		12.75	243.7	541.36

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
9.800	0.4	1.1	1.8	2.7	3.7	4.7	5.6
11.200	6.7	8.6	11.9	18.0	33.7	78.9	157.1
12.600	225.3	243.0	218.2	172.7	133.1	102.4	79.8
14.000	64.1	54.0	48.0	44.4	42.1	40.7	39.6
15.400	37.6	34.6	31.5	28.9	27.2	26.2	25.6
16.800	25.2	25.0	24.9	24.8	24.8	24.9	24.9
18.200	24.6	23.4	20.8	17.9	15.3	13.6	12.5
19.600	11.9	11.5	11.2	11.0	10.9	10.9	10.8
21.000	10.8	10.8	10.8	10.8	10.8	10.8	10.9
22.400	10.9	10.9	10.9	10.9	10.9	10.9	10.9
23.800	10.9	10.9	10.7	9.7	7.8	5.5	3.5
25.200	2.2	1.4	0.9	0.6	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA2	1.323		1.752		12.95	597.5	451.60

Line

Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.800	0.0	0.9	2.1	3.8	5.9	8.3	10.7
11.200	13.6	17.7	24.5	36.7	66.0	150.0	297.3
12.600	469.5	575.1	592.2	540.3	446.9	357.3	286.2
14.000	232.1	193.1	165.8	147.6	135.6	127.6	121.6
15.400	115.7	108.3	100.0	91.7	84.6	79.5	76.4
16.800	74.5	73.3	72.5	72.0	71.8	71.7	71.7
18.200	71.1	69.0	64.2	57.4	50.5	44.5	40.0
19.600	37.2	35.2	33.9	32.9	32.3	31.9	31.6
21.000	31.4	31.3	31.3	31.2	31.2	31.2	31.2
22.400	31.2	31.3	31.3	31.3	31.4	31.4	31.4
23.800	31.5	31.5	31.1	29.4	25.7	20.5	15.2
25.200	10.5	7.1	4.9	3.4	2.3	1.6	1.1
26.600	0.7	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		1.339		12.85	325.1	353.25

Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.200	0.0	1.5	3.7	8.8	23.8	73.2	166.3
12.600	268.1	320.2	316.8	273.2	218.7	173.7	138.4
14.000	112.7	94.9	83.7	76.7	72.3	69.5	67.4
15.400	64.6	60.3	55.2	50.6	47.2	45.2	43.9
16.800	43.1	42.7	42.5	42.4	42.4	42.4	42.5
18.200	42.2	40.6	37.0	32.4	28.1	24.7	22.6
19.600	21.2	20.3	19.7	19.3	19.0	18.9	18.8
21.000	18.7	18.7	18.7	18.7	18.7	18.8	18.8
22.400	18.8	18.8	18.9	18.9	18.9	18.9	19.0
23.800	19.0	19.0	18.7	17.4	14.5	11.0	7.6
25.200	4.9	3.2	2.1	1.4	0.9	0.6	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Upstream	1.623	363.93	12.89	1154.4	428.62

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.800	0.4	2.0	3.9	6.5	9.6	12.9	16.3
11.200	20.4	27.8	40.2	63.4	126.3	302.8	620.9
12.600	962.8	1135.9	1126.2	985.2	798.9	633.5	504.6
14.000	409.5	342.1	297.6	268.7	250.2	237.8	228.5
15.400	217.9	203.2	186.6	171.2	159.1	150.9	145.9
16.800	142.8	140.9	139.8	139.3	139.0	139.0	139.0

18.200	137.9	132.8	121.9	107.7	93.9	82.9	75.2
19.600	70.2	66.9	64.7	63.3	62.3	61.7	61.3
21.000	61.0	60.9	60.8	60.8	60.8	60.8	60.9
22.400	60.9	61.0	61.1	61.1	61.2	61.3	61.3
23.800	61.4	61.4	60.5	56.5	48.0	36.9	26.3
25.200	17.7	11.8	7.9	5.3	3.2	2.2	1.1
26.600	0.7	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Downstream	1.623	363.87	13.03	1106.3	410.76

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
9.800	0.0	0.9	2.6	4.8	7.6	10.7	14.0
11.200	17.6	23.2	32.3	48.8	87.3	196.2	424.2
12.600	739.2	996.0	1102.0	1056.0	914.3	747.3	599.0
14.000	481.4	394.0	332.8	292.0	265.3	247.8	235.8
15.400	225.3	212.8	197.6	181.9	167.9	157.2	149.9
16.800	145.4	142.5	140.8	139.8	139.2	139.0	139.0

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Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
18.200	138.6	135.9	128.6	116.8	103.3	90.8	81.0
19.600	74.2	69.6	66.5	64.4	63.1	62.2	61.6
21.000	61.2	61.0	60.9	60.8	60.8	60.8	60.8
22.400	60.9	61.0	61.0	61.1	61.1	61.2	61.3
23.800	61.4	61.4	61.0	58.8	53.1	44.0	33.5
25.200	23.9	16.3	11.0	7.4	4.8	3.1	1.9
26.600	1.1	0.7	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA1	0.090		1.975		12.19	116.5	1293.98

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
9.200	0.0	0.6	0.8	1.1	1.3	1.5	1.7
10.600	1.9	2.0	2.2	3.9	5.5	7.3	15.8
12.000	47.4	116.2	65.3	34.7	18.3	15.5	10.8
13.400	7.8	7.5	7.8	7.9	8.0	8.0	8.0
14.800	8.1	8.1	6.4	5.3	5.1	5.1	5.1
16.200	5.1	5.1	5.2	5.2	5.2	5.2	5.2
17.600	5.2	5.2	5.2	3.6	2.4	2.3	2.2
19.000	2.3	2.2	2.3	2.2	2.3	2.2	2.3
20.400	2.2	2.3	2.2	2.3	2.3	2.3	2.3
21.800	2.3	2.3	2.3	2.3	2.3	2.3	2.3
23.200	2.3	2.3	2.3	2.3	2.3	1.0	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	2.783		1.634		13.03	1121.1	402.77

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
9.200	0.0	0.6	0.8	1.1	2.2	4.2	6.6
10.600	9.5	12.7	16.2	21.6	28.7	39.7	64.7
12.000	134.7	312.4	489.6	774.0	1014.3	1117.5	1066.8
13.400	922.1	754.8	606.7	489.3	402.0	340.8	300.0
14.800	273.4	255.9	242.1	230.6	217.9	202.7	187.0
16.200	173.0	162.3	155.1	150.6	147.7	146.0	145.0
17.600	144.4	144.3	144.3	142.2	138.3	130.8	119.0
19.000	105.5	93.1	83.3	76.4	71.8	68.7	66.7
20.400	65.3	64.4	63.8	63.5	63.2	63.1	63.0
21.800	63.1	63.1	63.1	63.1	63.2	63.3	63.4
23.200	63.4	63.5	63.6	63.7	63.7	62.0	58.8
24.600	53.1	44.0	33.6	23.9	16.3	11.0	7.4

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Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
26.000	4.8	3.1	1.9	1.1	0.7	0.0	

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA4	0.450		2.473		12.76	322.2	715.80

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
8.800	0.0	0.8	1.3	2.1	3.2	4.5	5.9
10.200	7.4	8.8	10.1	11.4	12.6	14.1	17.0
11.600	22.3	31.8	54.7	115.0	215.5	299.8	320.3
13.000	286.8	227.2	175.3	135.0	105.0	84.1	70.6
14.400	62.6	57.7	54.6	52.8	51.2	48.7	45.0
15.800	41.1	38.0	35.8	34.6	33.8	33.4	33.1
17.200	33.0	33.0	33.0	33.0	33.0	32.6	31.0
18.600	27.6	23.7	20.3	18.0	16.7	15.8	15.2
20.000	14.9	14.7	14.5	14.5	14.4	14.4	14.4
21.400	14.4	14.4	14.4	14.4	14.4	14.4	14.4
22.800	14.4	14.5	14.5	14.5	14.5	14.5	14.5
24.200	14.2	12.9	10.3	7.3	4.7	2.9	1.9
25.600	1.2	0.7	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)

DA2	1.323	2.388	12.91	798.4	603.48

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
8.800	0.0	0.5	1.3	2.6	4.7	7.4	10.7
10.200	14.4	18.1	21.9	25.6	29.2	33.2	39.4
11.600	50.1	69.7	115.5	228.7	423.2	641.6	774.2
13.000	791.7	716.4	592.9	473.5	379.2	307.5	254.7
14.400	218.0	193.8	177.5	166.5	158.5	150.8	141.4
15.800	130.8	120.5	111.6	105.2	101.4	99.0	97.4
17.200	96.4	95.9	95.6	95.5	95.4	94.6	91.7
18.600	85.2	76.4	67.2	59.3	53.5	49.6	47.0
20.000	45.2	44.0	43.1	42.6	42.2	42.0	41.8
21.400	41.7	41.6	41.6	41.6	41.6	41.7	41.7
22.800	41.7	41.8	41.8	41.8	41.9	41.9	41.9
24.200	41.3	39.1	34.1	27.2	20.1	14.1	9.5
25.600	6.5	4.5	3.1	2.1	1.4	1.0	0.6
27.000	0.0						

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		1.901		12.82	459.7	499.57

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
10.200	0.3	1.3	2.5	4.1	5.9	8.1	11.4
11.600	17.1	27.3	53.8	126.0	256.7	391.8	456.1
13.000	444.9	381.1	304.6	241.0	191.7	155.2	130.2
14.400	114.2	104.2	97.8	93.7	90.6	86.9	81.2
15.800	74.6	68.7	64.3	61.7	60.1	59.1	58.6
17.200	58.2	58.1	58.1	58.2	58.3	57.8	55.5
18.600	50.6	44.3	38.4	33.9	31.0	29.1	27.8
20.000	27.0	26.5	26.1	25.9	25.8	25.7	25.7
21.400	25.6	25.6	25.7	25.7	25.7	25.8	25.8
22.800	25.8	25.9	25.9	25.9	26.0	26.0	26.0
24.200	25.5	23.7	19.8	14.9	10.3	6.7	4.4
25.600	2.9	1.9	1.3	0.8	0.5	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Upstream	2.236	364.39	12.90	1565.7	581.33

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
8.800	0.0	1.3	2.6	4.7	7.8	11.9	16.7
10.200	22.0	28.2	34.6	41.2	47.7	55.4	67.8
11.600	89.8	129.6	224.8	471.5	895.8	1330.9	1548.5
13.000	1520.2	1324.6	1072.8	850.1	676.4	547.2	455.9
14.400	394.9	355.8	330.0	313.1	300.3	286.4	267.6

15.800	246.5	227.1	211.8	201.5	195.4	191.5	189.1
17.200	187.7	187.0	186.7	186.6	186.6	184.9	178.2
18.600	163.3	144.3	126.0	111.2	101.1	94.5	90.1
20.000	87.0	85.1	83.8	83.0	82.4	82.1	81.8
21.400	81.7	81.6	81.7	81.7	81.8	81.9	81.9
22.800	82.0	82.1	82.2	82.3	82.3	82.3	82.3
24.200	81.0	75.6	64.2	49.4	35.2	23.7	15.8
25.600	10.6	7.1	4.6	2.9	1.9	1.0	0.6
27.000	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Downstream	2.235	364.32	12.98	1500.7	557.16

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Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.000	0.2	1.7	3.4	6.0	9.5	13.8	18.7
10.400	24.5	30.7	37.1	43.6	50.6	60.5	77.2
11.800	106.8	170.8	334.9	657.9	1072.8	1388.8	1499.3
13.200	1413.7	1212.8	988.5	791.7	636.2	520.4	439.3
14.600	385.2	349.5	325.9	309.6	295.5	278.8	259.2
16.000	239.4	221.9	208.8	200.1	194.5	191.0	188.8
17.400	187.6	187.0	186.7	186.6	185.9	181.8	171.4
18.800	155.3	137.3	120.9	108.2	99.4	93.4	89.3
20.200	86.6	84.8	83.6	82.9	82.3	82.0	81.8
21.600	81.7	81.7	81.7	81.8	81.8	81.9	81.9
23.000	82.0	82.1	82.2	82.3	82.3	82.3	81.7
24.400	78.5	70.4	57.9	44.0	31.2	21.3	14.4
25.800	9.7	6.5	4.1	2.7	1.5	0.9	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA1	0.090		2.645		12.19	146.8	1630.38

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.400	0.0	0.6	0.8	0.9	1.4	1.9	2.2
9.800	2.5	2.8	3.1	3.3	3.6	3.6	3.8
11.200	6.7	9.1	11.8	24.3	65.4	146.4	83.1
12.600	45.1	24.0	20.3	14.1	10.1	9.7	10.1
14.000	10.1	10.2	10.3	10.3	10.3	10.4	8.3
15.400	6.9	6.8	6.7	6.7	6.8	6.8	6.8
16.800	6.8	6.9	6.8	6.9	6.8	6.9	6.9
18.200	4.6	3.2	2.9	3.0	2.9	3.0	2.9
19.600	3.0	2.9	3.0	3.0	2.9	3.0	2.9
21.000	3.0	2.9	3.0	3.0	3.0	3.0	3.0
22.400	3.0	3.0	3.0	3.0	3.0	3.0	3.0
23.800	3.0	3.0	1.3	0.0			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	2.783		2.249		12.97	1520.5	546.28

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
8.400	0.0	0.6	0.8	1.1	3.1	5.4	8.3
9.800	12.1	16.6	21.8	27.8	34.2	40.7	47.5
11.200	57.3	69.6	89.1	131.1	236.2	481.6	741.3
12.600	1118.0	1412.9	1519.7	1427.5	1222.8	998.0	801.7
14.000	646.2	530.6	449.5	395.5	359.8	336.2	317.9

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Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
15.400	302.4	285.6	265.9	246.1	228.7	215.6	206.9
16.800	201.3	197.8	195.6	194.5	193.8	193.6	193.5
18.200	190.5	185.0	174.3	158.3	140.2	123.9	111.1
19.600	102.3	96.3	92.2	89.6	87.7	86.6	85.8
21.000	85.4	84.9	84.8	84.6	84.6	84.7	84.8
22.400	84.8	84.9	85.0	85.0	85.2	85.2	85.3
23.800	85.3	85.4	83.0	78.5	70.4	58.0	44.0
25.200	31.3	21.4	14.4	9.7	6.5	4.1	2.7
26.600	1.5	0.9	0.0				

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA4	0.450		3.530		12.76	434.7	965.82

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.600	0.4	1.1	1.9	2.8	3.8	4.8	5.8
9.000	6.8	7.9	9.4	11.7	14.2	16.7	19.0
10.400	21.1	23.0	24.8	26.2	28.3	32.9	41.8
11.800	57.2	91.6	173.6	303.5	408.9	431.7	385.6
13.200	307.1	238.3	184.1	143.6	115.1	96.8	85.9
14.600	79.2	75.0	72.4	70.2	67.0	62.0	56.9
16.000	52.7	49.9	48.3	47.4	46.8	46.4	46.2
17.400	46.1	46.1	46.1	46.2	45.6	43.3	38.6
18.800	33.3	28.7	25.5	23.6	22.4	21.6	21.2
20.200	20.8	20.7	20.6	20.5	20.4	20.4	20.4
21.600	20.5	20.4	20.4	20.5	20.5	20.5	20.5
23.000	20.5	20.6	20.6	20.5	20.5	20.6	20.2
24.400	18.3	14.6	10.3	6.6	4.1	2.6	1.6
25.800	1.0	0.6	0.0				

Reach Identifier	Area (sq mi)	ID or Location	Amount (in)	Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA2	1.323		3.430		12.92	1093.4	826.46

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
7.600	0.0	0.9	2.1	3.9	6.0	8.5	11.1
9.000	13.8	16.8	20.5	25.4	31.3	37.8	44.3
10.400	50.6	56.4	61.7	66.5	72.1	81.8	99.6
11.800	131.5	201.3	359.8	617.5	899.5	1064.6	1080.5
13.200	977.4	810.7	650.3	521.2	423.3	351.2	300.5

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Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
14.600	267.3	244.9	229.7	218.5	208.0	195.4	181.2
16.000	167.4	155.6	147.2	142.3	139.1	136.9	135.5
17.400	134.7	134.2	134.1	134.0	132.9	128.8	119.8
18.800	107.5	94.9	83.9	75.8	70.5	66.9	64.4
20.200	62.7	61.5	60.8	60.3	59.9	59.6	59.5
21.600	59.4	59.4	59.3	59.3	59.4	59.5	59.5
23.000	59.5	59.6	59.6	59.6	59.7	59.7	58.9
24.400	55.7	48.6	38.7	28.6	19.9	13.5	9.3
25.800	6.4	4.4	3.0	2.0	1.4	0.9	0.6
27.200	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		2.845		12.83	665.3	722.99

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
9.000	0.1	1.2	2.5	4.4	7.0	10.1	13.3
10.400	16.6	19.9	23.1	26.0	29.6	35.6	46.6
11.800	65.9	110.6	218.3	400.6	581.0	661.3	638.5
13.200	545.6	437.1	346.4	275.4	222.9	186.8	163.6
14.600	149.2	139.8	133.7	129.2	123.9	116.0	106.8
16.000	98.7	92.8	89.2	87.1	85.7	84.9	84.4
17.400	84.1	84.1	84.2	84.3	83.6	80.3	73.2
18.800	64.3	56.0	49.4	45.2	42.5	40.8	39.6
20.200	38.8	38.4	38.1	37.9	37.7	37.7	37.7
21.600	37.7	37.7	37.7	37.7	37.8	37.8	37.9
23.000	37.9	38.0	38.0	38.0	38.0	38.1	37.5
24.400	34.7	29.0	21.8	15.1	9.8	6.5	4.3
25.800	2.8	1.8	1.2	0.8	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
CON-1	2.693	Upstream	3.247	364.98	12.83	2173.2	806.86

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.600	0.4	2.1	4.0	6.7	9.8	13.3	16.9
9.000	20.8	25.9	32.4	41.5	52.6	64.6	76.7
10.400	88.3	99.3	109.5	118.8	129.9	150.3	188.0
11.800	256.1	403.6	754.2	1321.6	1885.4	2157.1	2100.7
13.200	1829.9	1486.1	1181.0	941.3	761.9	635.2	550.0
14.600	495.9	459.8	435.9	417.9	398.9	373.4	345.1
16.000	318.9	298.4	284.8	276.8	271.6	268.2	266.0

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Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.400	264.8	264.4	264.4	264.5	262.0	252.4	231.5
18.800	205.1	179.6	158.8	144.6	135.4	129.4	125.2
20.200	122.4	120.6	119.5	118.7	118.0	117.7	117.6
21.600	117.6	117.5	117.4	117.5	117.7	117.8	117.9
23.000	118.0	118.2	118.2	118.2	118.2	118.3	116.5
24.400	108.7	92.1	70.9	50.4	34.0	22.6	15.2
25.800	10.2	6.8	4.5	2.8	1.9	0.9	0.6
27.200	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Downstream	3.247	364.92	12.97	2076.7	771.04

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.600	0.0	1.0	2.9	5.2	8.0	11.3	14.8
9.000	18.5	23.1	28.8	36.6	46.5	57.8	69.6
10.400	81.4	92.6	103.3	113.1	123.4	139.5	168.6
11.800	220.9	327.8	579.0	1029.1	1571.2	1959.4	2071.6
13.200	1936.6	1659.9	1357.6	1092.1	880.3	722.1	610.5
14.600	536.3	486.7	453.7	430.7	410.8	387.7	361.1
16.000	334.4	311.4	294.1	282.8	275.5	270.8	267.7
17.400	265.8	264.9	264.6	264.5	263.2	257.0	241.8
18.800	219.1	194.3	171.7	154.2	142.0	133.8	128.2
20.200	124.4	121.9	120.3	119.3	118.5	118.0	117.7
21.600	117.6	117.5	117.5	117.5	117.6	117.7	117.8
23.000	117.9	118.1	118.2	118.2	118.2	118.3	117.3
24.400	112.4	100.3	82.1	62.2	44.2	30.3	20.5
25.800	13.9	9.3	6.2	3.9	2.6	1.5	0.9
27.200	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA1	0.090		3.731		12.19	187.5	2082.06

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Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
7.000	0.0	0.6	0.9	1.1	1.3	1.6	1.8
8.400	2.0	2.2	2.4	2.6	3.6	4.5	5.0
9.800	5.3	5.7	6.0	6.4	6.6	6.6	6.8
11.200	11.7	15.6	19.7	38.5	91.8	186.5	107.9
12.600	60.8	32.9	28.2	19.3	13.8	13.2	13.7
14.000	13.9	13.9	13.9	13.9	14.1	14.1	11.4
15.400	9.6	9.3	9.3	9.3	9.5	9.4	9.4

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Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
16.800	9.4	9.4	9.4	9.6	9.5	9.5	9.5
18.200	6.4	4.5	4.2	4.1	4.1	4.1	4.3
19.600	4.2	4.1	4.1	4.3	4.2	4.2	4.2
21.000	4.2	4.2	4.2	4.2	4.2	4.3	4.2
22.400	4.2	4.2	4.3	4.2	4.2	4.2	4.2
23.800	4.3	4.2	1.8	0.0			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	2.783		3.262		12.98	2103.7	755.80

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
7.000	0.0	0.6	0.9	1.1	2.3	4.4	7.0
8.400	10.0	13.5	17.2	21.1	26.7	33.3	41.5
9.800	51.8	63.5	75.6	87.7	99.3	109.9	119.9
11.200	135.2	155.1	188.3	259.4	419.7	765.6	1137.5
12.600	1632.2	1992.4	2099.8	1955.9	1673.4	1370.7	1105.7
14.000	894.1	736.0	624.7	550.2	500.7	467.8	442.1
15.400	420.4	397.0	370.4	343.7	320.9	303.6	292.2
16.800	284.9	280.2	277.1	275.4	274.4	274.0	274.0
18.200	269.6	261.5	246.0	223.3	198.4	175.8	158.5
19.600	146.2	138.0	132.4	128.7	126.1	124.5	123.4
21.000	122.7	122.2	121.9	121.8	121.7	121.8	121.7
22.400	121.8	121.9	122.1	122.1	122.3	122.4	122.4
23.800	122.5	122.5	119.2	112.4	100.3	82.2	62.2
25.200	44.2	30.3	20.5	13.9	9.3	6.2	4.0
26.600	2.6	1.5	0.9	0.0			

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA4	0.450		4.512		12.75	526.7	1170.14

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						

6.800	0.0	1.0	1.9	3.2	4.5	6.0	7.5
8.200	8.9	10.4	11.8	13.2	14.5	16.0	18.2
9.600	21.4	25.0	28.6	31.7	34.4	36.8	38.8
11.000	40.4	42.9	49.1	61.6	82.8	127.3	226.8
12.400	378.3	499.3	522.8	466.8	374.3	292.6	226.9
13.800	177.5	142.6	120.3	107.0	98.9	93.8	90.5
15.200	87.9	83.9	78.0	71.9	66.9	63.6	61.6

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Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
16.600	60.3	59.6	59.2	59.0	58.8	58.8	58.8
18.000	58.9	58.2	55.2	49.2	42.4	36.5	32.5
19.400	30.1	28.5	27.5	26.9	26.5	26.3	26.1
20.800	26.0	25.9	25.9	25.9	25.9	26.0	26.0
22.200	26.0	26.0	26.0	26.1	26.1	26.1	26.1
23.600	26.1	26.1	26.1	25.6	23.2	18.5	13.1
25.000	8.4	5.3	3.3	2.1	1.3	0.8	0.5
26.400	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA2	1.323		4.401		12.93	1337.3	1010.82

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.800	0.0	0.8	2.1	4.3	7.1	10.5	14.3
8.200	18.3	22.3	26.3	30.2	34.1	38.3	43.6
9.600	50.7	59.4	68.8	77.9	86.3	93.8	100.5
11.000	106.2	113.0	125.9	150.7	194.6	285.5	481.3
12.400	788.6	1118.2	1306.8	1320.1	1196.0	995.4	802.5
13.800	644.9	525.0	436.5	374.3	333.6	306.4	287.7
15.200	273.9	260.9	245.6	228.5	212.0	197.9	187.6
16.600	181.5	177.6	175.0	173.3	172.4	171.8	171.5
18.000	171.3	170.0	164.8	153.3	137.5	121.2	107.1
19.400	96.8	90.0	85.4	82.2	80.0	78.5	77.5
20.800	76.7	76.2	75.9	75.7	75.6	75.6	75.6
22.200	75.6	75.6	75.7	75.8	75.8	75.8	75.9
23.600	75.9	76.0	76.0	74.9	70.8	61.8	49.3
25.000	36.5	25.4	17.2	11.8	8.1	5.5	3.8
26.400	2.6	1.7	1.2	0.8	0.5	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		3.744		12.84	840.4	913.21

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
8.000	0.1	1.3	2.5	4.2	6.2	8.3	10.7

9.400	13.6	17.7	22.4	27.5	32.5	37.2	41.6
10.800	45.7	49.3	53.8	62.5	78.8	107.6	168.1
12.200	306.6	527.9	743.4	835.6	804.7	688.0	554.0
13.600	440.8	350.6	284.3	238.2	209.0	190.8	178.9
15.000	171.2	165.4	158.7	148.9	137.7	127.8	120.5
16.400	116.1	113.3	111.6	110.6	110.0	109.7	109.6

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Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
17.800	109.6	109.7	108.8	104.5	95.3	83.7	72.8
19.200	64.3	58.8	55.3	52.9	51.4	50.4	49.8
20.600	49.4	49.1	48.9	48.8	48.7	48.7	48.8
22.000	48.9	48.9	49.0	49.0	49.0	49.1	49.1
23.400	49.2	49.2	49.2	49.3	48.4	44.9	37.6
24.800	28.3	19.5	12.8	8.4	5.5	3.6	2.4
26.200	1.5	1.0	0.6	0.0			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Upstream	4.195	365.33	12.82	2676.1	993.58

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.800	0.0	1.8	4.1	7.4	11.7	16.6	22.0
8.200	28.5	35.2	42.3	49.5	56.9	65.0	75.4
9.600	89.8	106.9	124.8	142.0	157.9	172.2	185.0
11.000	196.0	209.8	237.6	291.2	386.2	583.6	1017.3
12.400	1694.9	2359.2	2662.8	2586.7	2256.3	1842.0	1470.4
13.800	1174.5	952.6	795.1	690.8	623.4	579.1	549.5
15.200	527.2	503.4	472.5	438.1	406.8	382.1	365.3
16.600	355.1	348.8	344.8	342.3	340.9	340.2	340.0
18.000	339.9	336.9	324.3	297.8	263.6	230.5	204.1
19.400	185.7	173.8	165.9	160.5	156.9	154.6	153.0
20.800	151.8	151.0	150.6	150.4	150.3	150.4	150.4
22.200	150.5	150.6	150.7	150.8	151.0	151.1	151.2
23.600	151.3	151.4	151.3	148.8	138.8	117.8	90.7
25.000	64.5	43.5	28.9	19.5	13.1	8.8	5.8
26.400	3.6	2.4	1.2	0.8	0.5	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Downstream	4.195	365.26	12.96	2574.1	955.72

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.800	0.0	0.9	2.9	5.8	9.6	14.1	19.2
8.200	25.2	31.7	38.5	45.7	53.0	60.7	70.1
9.600	82.7	98.3	115.5	132.8	149.2	164.3	177.9
11.000	189.8	202.5	224.3	266.0	341.4	490.5	818.0

12.400	1374.1	2021.3	2459.9	2563.9	2379.1	2034.6	1665.3
13.800	1341.9	1084.1	891.9	757.4	667.8	608.6	569.2
15.200	541.4	516.8	488.3	455.8	423.7	396.2	375.6
16.600	361.9	353.1	347.6	344.0	341.9	340.7	340.2

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Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
18.000	340.0	338.3	329.9	309.8	280.1	247.7	218.9
19.400	196.8	181.4	171.1	164.0	159.3	156.1	154.0
20.800	152.6	151.5	150.9	150.5	150.4	150.4	150.4
22.200	150.5	150.6	150.7	150.8	150.9	151.0	151.1
23.600	151.2	151.3	151.3	149.9	143.2	127.4	103.8
25.000	78.2	55.3	37.8	25.5	17.2	11.6	7.8
26.400	4.9	3.2	1.9	1.1	0.7	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA1	0.090		4.734		12.19	218.5	2427.19

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.400	0.2	0.9	1.2	1.6	1.9	2.3	2.6
7.800	2.9	3.2	3.5	3.7	4.0	4.2	4.5
9.200	6.0	7.3	7.8	8.3	8.7	9.1	9.4
10.600	9.7	9.5	9.7	16.8	22.3	27.5	51.4
12.000	113.4	217.3	127.7	73.9	41.2	35.5	24.2
13.400	17.1	16.4	17.1	17.3	17.4	17.4	17.4
14.800	17.4	17.5	14.3	12.2	11.9	12.0	11.9
16.200	11.9	12.0	12.0	11.9	12.0	12.0	12.1
17.600	12.0	12.1	12.0	8.2	5.6	5.3	5.3
19.000	5.2	5.3	5.3	5.2	5.3	5.3	5.2
20.400	5.3	5.3	5.3	5.2	5.3	5.3	5.3
21.800	5.3	5.3	5.3	5.4	5.3	5.3	5.4
23.200	5.3	5.3	5.4	5.4	5.3	2.3	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	2.783		4.213		12.96	2609.6	937.56

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.400	0.2	0.9	1.2	2.5	4.8	8.1	12.1
7.800	17.0	22.3	28.7	35.4	42.5	49.9	57.4
9.200	66.7	77.4	90.5	106.6	124.2	141.9	158.6
10.600	174.0	187.4	199.5	219.3	246.6	293.6	392.8
12.000	604.0	1035.4	1502.2	2095.3	2501.2	2599.4	2403.2
13.400	2051.5	1681.6	1358.9	1101.2	909.2	774.8	685.2
14.800	626.0	586.6	555.7	528.9	500.2	467.7	435.5
16.200	408.1	387.5	373.9	365.0	359.5	356.1	354.0

17.600	352.7	352.3	352.1	346.5	335.5	315.1	285.4
19.000	253.0	224.2	202.1	186.7	176.4	169.3	164.5

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Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
20.400	161.5	159.3	157.9	156.8	156.2	155.8	155.6
21.800	155.7	155.7	155.7	155.9	156.0	156.0	156.3
23.200	156.3	156.4	156.6	156.7	156.6	152.3	143.2
24.600	127.4	103.8	78.2	55.3	37.8	25.6	17.2
26.000	11.6	7.8	4.9	3.2	1.9	1.1	0.7
27.400	0.0						

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA4	0.450		5.658		12.72	622.1	1382.12

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.200	0.3	1.1	2.2	3.9	5.9	8.0	10.1
7.600	12.2	14.3	16.3	18.3	20.1	21.9	23.7
9.000	25.3	27.2	30.2	34.5	39.4	44.1	48.1
10.400	51.4	54.3	56.6	58.2	60.9	69.0	85.6
11.800	113.1	168.3	285.8	457.6	592.4	618.7	552.5
13.200	446.0	351.2	273.6	214.3	172.6	146.3	130.7
14.600	121.1	115.1	111.3	108.2	103.5	96.6	89.4
16.000	83.5	79.6	77.2	75.8	75.0	74.5	74.2
17.400	74.0	74.0	74.0	74.0	73.2	69.4	61.9
18.800	53.3	45.9	40.9	37.8	35.8	34.6	33.9
20.200	33.4	33.1	32.9	32.8	32.7	32.7	32.7
21.600	32.7	32.7	32.7	32.8	32.8	32.8	32.8
23.000	32.8	32.8	32.8	32.8	32.8	32.9	32.2
24.400	29.2	23.2	16.4	10.5	6.6	4.2	2.6
25.800	1.7	1.0	0.6	0.0			

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA2	1.323		5.538		12.89	1593.4	1204.38

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.200	0.0	1.0	2.6	5.4	9.5	14.3	19.7
7.600	25.4	31.2	36.9	42.5	48.1	53.4	58.6
9.000	63.6	69.0	76.0	85.8	97.7	110.2	122.3
10.400	133.1	142.4	150.3	156.7	164.5	180.3	213.1
11.800	272.0	385.7	621.0	980.4	1353.7	1567.3	1570.2
13.200	1421.4	1189.4	964.7	779.5	635.3	529.3	456.1
14.600	407.7	375.3	353.5	337.2	321.9	303.7	283.6

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Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
16.000	264.0	247.3	235.4	228.1	223.4	220.4	218.4
17.400	217.2	216.5	216.1	216.0	214.3	207.6	193.1
18.800	173.3	152.7	135.1	122.0	113.5	107.7	103.6
20.200	100.9	99.0	97.7	96.9	96.3	95.9	95.6
21.600	95.5	95.4	95.3	95.4	95.5	95.5	95.5
23.000	95.6	95.6	95.6	95.7	95.7	95.7	94.4
24.400	89.2	77.8	62.1	46.0	32.0	21.6	14.9
25.800	10.2	7.0	4.8	3.2	2.2	1.5	1.0
27.200	0.6	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA3	0.920		4.812		12.81	1025.9	1114.81

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
7.200	0.3	1.4	3.1	5.4	8.2	11.3	14.4
8.600	17.7	20.9	24.0	27.4	31.9	37.9	45.0
10.000	52.3	59.2	65.4	71.1	76.1	80.1	85.4
11.400	96.7	120.0	159.5	239.4	410.4	673.2	919.4
12.800	1024.0	978.8	840.0	680.0	542.8	433.3	352.0
14.200	295.6	260.2	238.1	223.8	214.4	207.4	199.4
15.600	187.6	174.0	162.1	153.4	148.0	144.7	142.6
17.000	141.4	140.7	140.4	140.2	140.3	140.4	139.1
18.400	133.6	121.8	107.0	93.0	82.2	75.2	70.7
19.800	67.7	65.8	64.5	63.7	63.2	62.8	62.6
21.200	62.5	62.4	62.4	62.4	62.5	62.5	62.6
22.600	62.7	62.7	62.7	62.8	62.8	62.8	62.9
24.000	62.9	61.8	57.4	47.9	36.1	25.0	16.2
25.400	10.7	7.0	4.6	3.0	2.0	1.3	0.8
26.800	0.5	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Upstream	5.310	365.69	12.87	3215.2	1193.73

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.200	0.3	2.0	4.9	9.3	15.3	22.6	31.3
7.600	40.8	50.9	61.5	72.1	82.6	93.0	103.1
9.000	113.0	123.7	138.1	158.2	182.1	206.6	229.6
10.400	249.9	267.8	283.0	295.0	310.7	346.9	418.8
11.800	544.7	793.5	1322.7	2110.6	2862.3	3207.4	3099.1
13.200	2706.9	2221.4	1781.6	1427.4	1160.2	972.2	847.2

Eccelston Mitigation POI 1-4 Ultimate

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
14.600	767.3	714.3	679.3	652.8	624.6	587.9	547.0
16.000	509.5	480.4	460.7	448.7	441.0	436.3	433.3
17.400	431.6	430.7	430.4	430.3	426.4	410.5	376.8
18.800	333.5	291.6	258.2	235.3	220.1	210.0	203.3
20.200	198.8	195.7	193.8	192.5	191.6	191.1	190.7
21.600	190.6	190.5	190.5	190.7	190.8	191.0	191.0
23.000	191.1	191.2	191.2	191.3	191.4	191.5	188.2
24.400	175.5	148.9	114.6	81.5	54.9	36.6	24.6
25.800	16.5	11.0	7.4	4.7	3.0	1.9	1.0
27.200	0.6	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Downstream	5.310	365.62	12.94	3101.4	1151.47

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.200	0.0	1.0	3.5	7.3	12.6	19.2	27.3
7.600	36.3	46.0	56.3	66.9	77.4	87.9	98.1
9.000	108.1	118.5	131.4	149.1	171.0	194.9	218.2
10.400	239.6	258.6	275.1	288.6	303.0	331.2	387.8
11.800	489.7	684.9	1098.2	1765.3	2507.7	2998.1	3085.1
13.200	2843.9	2430.4	1993.9	1610.4	1304.7	1078.3	920.4
14.600	815.7	746.3	700.5	668.2	639.2	605.2	566.3
16.000	528.1	495.8	471.8	456.0	445.7	439.2	435.1
17.400	432.7	431.3	430.7	430.4	428.0	417.0	390.9
18.800	352.9	311.7	275.5	248.1	229.0	216.0	207.3
20.200	201.5	197.5	195.0	193.3	192.1	191.4	190.9
21.600	190.7	190.5	190.5	190.6	190.8	190.9	190.9
23.000	191.0	191.1	191.2	191.3	191.4	191.4	189.5
24.400	180.7	160.0	129.9	97.4	68.6	46.8	31.6
25.800	21.3	14.3	9.6	6.3	4.0	2.6	1.4
27.200	0.9	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA1	0.090		5.897		12.19	249.3	2768.55

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.800	0.0	0.6	1.2	2.0	2.5	3.0	3.5
7.200	3.9	4.3	4.7	5.1	5.4	5.7	6.1
8.600	6.3	6.7	7.0	9.1	10.8	11.5	12.0
10.000	12.5	12.9	13.2	13.5	13.0	13.1	23.0

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
11.400	30.2	36.7	65.9	135.9	247.6	148.0	88.1
12.800	50.4	43.8	29.7	20.6	19.8	21.0	21.2
14.200	21.3	21.4	21.4	21.5	21.5	17.8	15.2
15.600	15.0	14.9	15.0	15.0	14.9	15.1	14.9
17.000	15.0	15.0	15.1	15.1	15.1	15.1	10.2
18.400	7.2	6.6	6.7	6.6	6.6	6.6	6.6
19.800	6.7	6.5	6.7	6.6	6.6	6.6	6.6
21.200	6.7	6.6	6.7	6.6	6.7	6.7	6.6
22.600	6.7	6.6	6.7	6.6	6.7	6.8	6.6
24.000	6.7	2.9	0.0				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	2.783		5.329		12.94	3144.3	1129.65

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.800	0.0	0.6	1.2	3.0	6.1	10.3	16.1
7.200	23.1	31.6	41.0	51.1	61.8	72.6	83.5
8.600	94.2	104.8	115.0	127.6	142.3	160.5	183.0
10.000	207.3	231.1	252.8	272.1	288.0	301.6	326.0
11.400	361.4	424.5	555.7	820.8	1346.0	1913.5	2595.9
12.800	3048.5	3128.9	2873.5	2450.8	2013.5	1631.3	1325.9
14.200	1099.6	941.7	837.0	767.8	722.1	686.0	654.4
15.600	620.1	581.2	543.0	510.7	486.7	471.0	460.6
17.000	454.3	450.2	447.8	446.4	445.8	445.5	438.3
18.400	424.2	397.4	359.5	318.3	282.1	254.6	235.6
19.800	222.7	213.9	208.2	204.2	201.6	199.8	198.8
21.200	198.1	197.5	197.4	197.2	197.2	197.4	197.3
22.600	197.6	197.6	197.7	197.7	197.8	198.0	198.0
24.000	198.2	192.4	180.9	160.1	129.9	97.4	68.6
25.400	46.8	31.6	21.3	14.3	9.6	6.3	4.0
26.800	2.6	1.4	0.9	0.0			

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Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
DA4	0.450		9.089		12.71	853.7	1896.50

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
4.000	0.0	0.7	1.4	2.3	3.3	4.4	5.4
5.400	6.5	7.5	8.5	9.5	10.9	13.7	18.5

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Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
6.800	24.3	30.3	35.6	40.3	44.5	48.3	51.7
8.200	54.9	57.9	60.6	63.3	65.7	68.6	73.4
9.600	80.8	89.1	96.7	102.8	107.6	111.5	114.2
11.000	115.1	117.8	131.2	160.4	206.9	288.7	444.1
12.400	658.1	819.9	848.0	764.7	629.7	506.1	399.9
13.800	316.4	256.8	219.9	198.7	185.6	177.3	172.1
15.200	167.8	161.4	152.0	142.4	134.3	129.0	125.8
16.600	123.9	122.7	122.1	121.7	121.7	121.7	121.6
18.000	121.5	120.0	113.7	101.3	87.2	75.1	66.9
19.400	61.9	58.7	56.7	55.4	54.6	54.1	53.8
20.800	53.6	53.4	53.4	53.4	53.4	53.4	53.4
22.200	53.4	53.4	53.4	53.4	53.5	53.5	53.6
23.600	53.5	53.5	53.5	52.4	47.5	37.9	26.8
25.000	17.2	10.7	6.8	4.3	2.7	1.7	1.0
26.400	0.6	0.0					

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA2	1.323		8.948		12.92	2229.0	1684.87

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Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
4.200	0.4	1.4	2.9	4.9	7.3	10.0	12.8
5.600	15.6	18.5	21.4	25.0	30.6	40.2	53.2
7.000	67.9	82.8	96.9	109.7	121.5	132.3	142.4
8.400	151.8	160.6	168.8	176.7	185.2	196.6	213.1
9.800	233.4	254.4	273.9	290.6	304.1	314.5	321.2
11.200	330.1	355.0	411.2	509.9	686.6	1008.7	1470.5
12.600	1936.0	2193.8	2199.4	2004.5	1702.1	1399.9	1141.5
14.000	939.6	789.6	685.3	619.0	574.6	544.0	521.4
15.400	500.1	475.2	447.5	420.9	398.3	382.0	372.2
16.800	365.7	361.5	359.0	357.6	356.9	356.4	355.8
18.200	352.6	341.6	317.4	284.7	251.0	222.0	200.7
19.600	186.5	176.8	170.1	165.5	162.3	160.3	158.8
21.000	157.8	157.2	156.8	156.6	156.4	156.3	156.2
22.400	156.2	156.2	156.3	156.3	156.4	156.5	156.6
23.800	156.6	156.5	154.3	145.9	127.2	101.5	75.1
25.200	52.3	35.5	24.3	16.7	11.4	7.8	5.3
26.600	3.6	2.4	1.6	1.0	0.6	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA3	0.920		8.077		12.84	1497.0	1626.71

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Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						

5.400	0.0	0.8	1.7	2.9	4.5	7.3	11.9
6.800	18.1	25.4	33.0	40.5	47.9	54.9	61.7
8.200	68.1	74.3	80.2	85.8	91.2	97.2	105.2
9.600	116.9	130.5	144.0	156.2	166.3	174.9	181.8
11.000	186.1	192.5	212.5	255.6	328.4	457.3	700.8
12.400	1049.8	1368.9	1493.1	1430.6	1239.6	1020.8	825.7
13.800	664.1	543.0	459.4	407.8	376.1	355.2	341.7
15.200	331.4	319.7	303.1	284.2	267.6	255.4	247.9
16.600	243.2	240.2	238.5	237.7	237.4	237.3	237.2
18.000	237.1	234.7	225.3	205.1	180.1	156.7	138.3
19.400	126.6	118.9	113.9	110.5	108.3	106.9	106.0
20.800	105.4	105.0	104.9	104.8	104.8	104.7	104.7
22.200	104.8	104.8	104.9	104.9	105.0	105.1	105.2
23.600	105.2	105.2	105.2	103.4	95.8	80.2	60.3
25.000	41.7	27.2	17.8	11.8	7.7	5.0	3.3
26.400	2.1	1.4	0.9	0.5	0.0		

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Upstream	8.674	366.44	12.85	4550.9	1689.65

Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
4.000	0.0	1.2	2.9	5.2	8.2	11.7	15.4
5.400	19.2	24.0	28.8	33.9	40.5	51.8	70.6
6.800	95.7	123.5	151.4	177.7	202.0	224.6	245.7
8.200	265.4	283.9	301.4	317.9	333.7	351.0	375.4
9.600	410.9	453.0	495.1	532.9	564.4	590.5	610.3
11.000	622.4	640.8	698.8	828.7	1047.2	1432.9	2153.6
12.400	3178.8	4116.4	4531.6	4392.5	3871.9	3229.7	2626.7
13.800	2123.4	1739.8	1469.3	1293.2	1180.9	1107.5	1057.9
15.200	1020.6	981.3	930.3	874.2	822.9	782.8	756.0
16.600	739.4	728.7	722.1	718.4	716.7	715.8	715.2
18.000	714.5	707.3	680.0	623.7	552.1	482.9	427.4
19.400	389.2	364.2	347.4	336.0	328.4	323.4	320.1
20.800	317.8	316.3	315.4	314.9	314.7	314.5	314.4
22.200	314.3	314.5	314.5	314.6	314.8	315.0	315.3
23.600	315.4	315.4	315.2	310.2	289.0	244.9	188.6
25.000	134.1	90.3	60.2	40.5	27.2	18.2	12.1
26.400	8.1	5.1	3.3	2.0	1.0	0.7	0.0

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
CON-1	2.693	Downstream	8.674	366.37	12.92	4417.7	1640.22

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Line Start Time (hr)	Flow Values @ time increment of 0.200 hr (cfs)						
4.200	0.5	2.2	4.3	7.0	10.3	13.9	17.6

5.600	22.1	26.8	31.7	37.8	47.4	63.4	85.9
7.000	112.2	139.7	166.4	191.4	214.8	236.5	256.8
8.400	275.8	293.8	310.7	326.8	343.7	365.7	397.1
9.800	436.2	477.6	516.5	550.3	578.6	601.0	616.3
11.200	632.8	677.6	781.4	964.8	1285.8	1884.3	2787.5
12.600	3728.9	4307.8	4382.5	4030.7	3469.6	2876.7	2345.3
14.000	1917.4	1600.3	1383.1	1240.0	1146.2	1083.7	1039.4
15.400	998.9	951.0	897.2	844.9	801.0	769.1	748.0
16.800	734.4	725.7	720.5	717.8	716.4	715.5	714.8
18.200	709.9	689.6	644.1	579.8	511.6	452.1	407.6
19.600	376.9	356.0	341.9	332.3	326.0	321.8	319.0
21.000	317.1	315.9	315.2	314.9	314.6	314.5	314.4
22.400	314.5	314.5	314.6	314.7	314.9	315.2	315.3
23.800	315.3	315.3	312.0	296.4	260.8	210.3	156.7
25.200	109.7	74.7	50.5	34.0	22.8	15.2	10.2
26.600	6.6	4.2	2.7	1.5	0.9	0.0	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
DA1	0.090		9.368		12.18	315.9	3508.55

Line Start Time (hr) — Flow Values @ time increment of 0.200 hr (cfs)

3.600	0.0	0.7	1.0	1.2	1.5	1.7	2.0
5.000	2.1	2.4	2.6	2.8	3.0	3.2	5.8
6.400	8.2	9.2	10.0	10.7	11.5	12.1	12.6
7.800	13.2	13.7	14.2	14.6	15.0	15.4	15.8
9.200	19.6	22.5	23.2	23.9	24.4	24.9	25.4
10.600	25.3	23.5	23.4	41.7	54.5	64.0	105.1
12.000	189.5	313.3	196.7	125.2	76.8	68.2	45.6
13.400	31.2	29.9	32.2	33.0	32.9	33.2	33.0
14.800	33.1	33.2	28.1	24.8	24.4	24.4	24.4
16.200	24.4	24.4	24.4	24.5	24.6	24.7	24.5
17.600	24.5	24.5	24.6	16.5	11.7	10.7	10.9
19.000	10.6	10.8	10.7	10.8	10.8	10.6	10.9
20.400	10.7	10.8	10.8	10.8	10.8	10.9	10.8
21.800	10.7	10.9	10.7	10.8	10.8	10.9	10.8
23.200	10.9	10.8	10.7	10.9	10.7	4.7	0.6
24.600	0.0						

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	2.783		8.696		12.93	4484.3	1611.09

♀

Line Start Time (hr) — Flow Values @ time increment of 0.200 hr (cfs)

3.600	0.0	0.7	1.0	1.7	3.6	6.0	9.0
5.000	12.4	16.2	20.2	24.8	29.7	34.9	43.6
6.400	55.6	72.7	95.9	123.0	151.2	178.4	204.0

7.800	227.9	250.2	270.9	290.4	308.8	326.2	342.6
9.200	363.2	388.2	420.3	460.0	502.0	541.3	575.6
10.600	603.9	624.6	639.6	674.6	732.1	845.5	1069.9
12.000	1475.9	2197.7	2984.3	3854.2	4384.7	4450.7	4076.1
13.400	3500.6	2906.4	2377.4	1950.4	1633.3	1416.2	1272.9
14.800	1179.3	1116.9	1067.5	1023.7	975.4	921.5	869.2
16.200	825.4	793.5	772.5	758.8	750.2	745.2	742.3
17.600	740.9	740.1	739.4	726.4	701.2	654.9	590.7
19.000	522.3	462.9	418.3	387.7	366.8	352.5	343.2
20.400	336.7	332.6	329.7	327.9	326.7	326.1	325.7
21.800	325.3	325.4	325.0	325.3	325.3	325.4	325.5
23.200	325.8	326.0	326.0	326.3	326.0	316.6	297.0
24.600	260.9	210.4	156.8	109.9	74.8	50.5	34.0
26.000	22.8	15.3	10.2	6.6	4.2	2.7	1.5
27.400	0.9	0.0					

♀

Eccelston Mitigation POI 1-4 Ultimate

Area or Reach Identifier	Drainage Area (sq mi)	Peak Flow by Storm 1_yr_sm (cfs)	2_yr_sm (cfs)	5_yr_sm (cfs)	10_yr_sm (cfs)	25_yr_sm (cfs)
DA1	0.090	52.5	77.9	116.5	146.8	187.5
DA4	0.450	97.0	151.7	243.7	322.2	434.7
DA2	1.323	228.3	363.3	597.5	798.4	1093.4
DA3	0.920	96.7	175.5	325.1	459.7	665.3
CON-1	2.693	416.3	682.1	1154.4	1565.7	2173.2

DOWNSTREAM		381.8	645.7	1106.3	1500.7	2076.7
OUTLET	2.783	387.2	655.4	1121.1	1520.5	2103.7

Area or Reach Identifier	Drainage Area (sq mi)	Peak Flow by Storm 50_yr_sm (cfs)	100_yr_sm (cfs)	500_yr_sm (cfs)	(cfs)	(cfs)
DA1	0.090	218.5	249.3	315.9		
DA4	0.450	526.7	622.1	853.7		
DA2	1.323	1337.3	1593.4	2229.0		
DA3	0.920	840.4	1025.9	1497.0		
CON-1	2.693	2676.1	3215.2	4550.9		
DOWNSTREAM		2574.1	3101.4	4417.7		
OUTLET	2.783	2609.6	3144.3	4484.3		

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WinTR-20: version 3.20                  0         0                    0
Eccelston Mitigation POI 5

SUB-AREA:
          DA5       OUTLET              0.1392984374.       .609           Y


STORM ANALYSIS:
          1_yr_sm                       2.71      1_yr_sm   2          3.28
          2_yr_sm                       3.28      2_yr_sm   2          3.28
          5_yr_sm                       4.22      5_yr_sm   2          3.28
          10_yr_sm                      5.04      10_yr_sm  2          3.28
          25_yr_sm                      6.31      25_yr_sm  2          3.28
          50_yr_sm                      7.43      50_yr_sm  2          3.28
          100_yr_sm                     8.71      100_yr_sm 2          3.28
          500_yr_sm                     12.39     500_yr_sm 2          3.28



RAINFALL DISTRIBUTION:
          1_yr_sm             0.1
                    0.0000    0.0011    0.0022    0.0033    0.0044
                    0.0056    0.0067    0.0078    0.0089    0.0100
                    0.0111    0.0122    0.0133    0.0144    0.0155
                    0.0167    0.0178    0.0189    0.0200    0.0211
                    0.0222    0.0233    0.0244    0.0255    0.0267
                    0.0278    0.0289    0.0300    0.0311    0.0322
                    0.0333    0.0344    0.0355    0.0366    0.0378
                    0.0389    0.0400    0.0411    0.0422    0.0433
                    0.0444    0.0455    0.0466    0.0478    0.0489
                    0.0500    0.0511    0.0522    0.0533    0.0544
                    0.0555    0.0566    0.0578    0.0589    0.0600
                    0.0611    0.0622    0.0633    0.0644    0.0655
                    0.0666    0.0694    0.0721    0.0749    0.0776
                    0.0804    0.0831    0.0859    0.0886    0.0914
                    0.0941    0.0969    0.0996    0.1024    0.1051
                    0.1079    0.1106    0.1134    0.1161    0.1189
                    0.1216    0.1244    0.1271    0.1299    0.1326
                    0.1354    0.1381    0.1409    0.1436    0.1464
                    0.1491    0.1537    0.1584    0.1630    0.1677
                    0.1723    0.1770    0.1816    0.1863    0.1909
                    0.1956    0.2002    0.2049    0.2095    0.2142
                    0.2188    0.2230    0.2271    0.2312    0.2353
                    0.2394    0.2480    0.2566    0.2652    0.2738
```

	0.2824	0.2996	0.3169	0.3444	0.3880
	0.5000	0.6120	0.6556	0.6831	0.7004
	0.7176	0.7262	0.7348	0.7434	0.7520
	0.7606	0.7647	0.7688	0.7729	0.7770
	0.7812	0.7858	0.7905	0.7951	0.7998
	0.8044	0.8091	0.8137	0.8184	0.8230
	0.8277	0.8323	0.8370	0.8416	0.8463
	0.8509	0.8536	0.8564	0.8591	0.8619
	0.8646	0.8674	0.8701	0.8729	0.8756
	0.8784	0.8811	0.8839	0.8866	0.8894
	0.8921	0.8949	0.8976	0.9004	0.9031
	0.9059	0.9086	0.9114	0.9141	0.9169
	0.9196	0.9224	0.9251	0.9279	0.9306
	0.9334	0.9345	0.9356	0.9367	0.9378
	0.9389	0.9400	0.9411	0.9422	0.9434
	0.9445	0.9456	0.9467	0.9478	0.9489
	0.9500	0.9511	0.9522	0.9534	0.9545
	0.9556	0.9567	0.9578	0.9589	0.9600
	0.9611	0.9622	0.9634	0.9645	0.9656
	0.9667	0.9678	0.9689	0.9700	0.9711
	0.9722	0.9733	0.9745	0.9756	0.9767
	0.9778	0.9789	0.9800	0.9811	0.9822
	0.9833	0.9845	0.9856	0.9867	0.9878
	0.9889	0.9900	0.9911	0.9922	0.9933
	0.9944	0.9956	0.9967	0.9978	0.9989
	1.0000				
2_yr_sm		0.1			
	0.0000	0.0011	0.0022	0.0033	0.0044
	0.0055	0.0066	0.0077	0.0088	0.0099
	0.0110	0.0121	0.0132	0.0143	0.0154
	0.0166	0.0177	0.0188	0.0199	0.0210
	0.0221	0.0232	0.0243	0.0254	0.0265
	0.0276	0.0287	0.0298	0.0309	0.0320
	0.0331	0.0342	0.0353	0.0364	0.0375
	0.0386	0.0397	0.0408	0.0419	0.0430
	0.0441	0.0452	0.0463	0.0474	0.0486
	0.0497	0.0508	0.0519	0.0530	0.0541
	0.0552	0.0563	0.0574	0.0585	0.0596
	0.0607	0.0618	0.0629	0.0640	0.0651
	0.0662	0.0689	0.0717	0.0744	0.0771
	0.0799	0.0826	0.0853	0.0880	0.0908
	0.0935	0.0962	0.0990	0.1017	0.1044
	0.1072	0.1099	0.1126	0.1153	0.1181
	0.1208	0.1235	0.1263	0.1290	0.1317
	0.1344	0.1372	0.1399	0.1426	0.1454
	0.1481	0.1527	0.1573	0.1619	0.1665
	0.1711	0.1757	0.1802	0.1848	0.1894
	0.1940	0.1986	0.2032	0.2078	0.2124
	0.2170	0.2211	0.2252	0.2293	0.2334
	0.2375	0.2461	0.2547	0.2632	0.2718
	0.2803	0.2982	0.3160	0.3443	0.3888
	0.5000	0.6112	0.6557	0.6840	0.7018
	0.7197	0.7282	0.7368	0.7453	0.7539
	0.7625	0.7666	0.7707	0.7748	0.7789
	0.7830	0.7876	0.7922	0.7968	0.8014
	0.8060	0.8106	0.8152	0.8198	0.8243
	0.8289	0.8335	0.8381	0.8427	0.8473
	0.8519	0.8546	0.8574	0.8601	0.8628
	0.8656	0.8683	0.8710	0.8737	0.8765
	0.8792	0.8819	0.8847	0.8874	0.8901
	0.8928	0.8956	0.8983	0.9010	0.9038
	0.9065	0.9092	0.9120	0.9147	0.9174
	0.9201	0.9229	0.9256	0.9283	0.9311

	0.9338	0.9349	0.9360	0.9371	0.9382
	0.9393	0.9404	0.9415	0.9426	0.9437
	0.9448	0.9459	0.9470	0.9481	0.9492
	0.9503	0.9514	0.9526	0.9537	0.9548
	0.9559	0.9570	0.9581	0.9592	0.9603
	0.9614	0.9625	0.9636	0.9647	0.9658
	0.9669	0.9680	0.9691	0.9702	0.9713
	0.9724	0.9735	0.9746	0.9757	0.9768
	0.9779	0.9790	0.9801	0.9812	0.9823
	0.9834	0.9846	0.9857	0.9868	0.9879
	0.9890	0.9901	0.9912	0.9923	0.9934
	0.9945	0.9956	0.9967	0.9978	0.9989
	1.0000				
5_yr_sm		0.1			
	0.0000	0.0012	0.0023	0.0035	0.0047
	0.0059	0.0070	0.0082	0.0094	0.0106
	0.0117	0.0129	0.0141	0.0153	0.0164
	0.0176	0.0188	0.0200	0.0211	0.0223
	0.0235	0.0246	0.0258	0.0270	0.0282
	0.0293	0.0305	0.0317	0.0329	0.0340
	0.0352	0.0364	0.0376	0.0387	0.0399
	0.0411	0.0422	0.0434	0.0446	0.0458
	0.0469	0.0481	0.0493	0.0505	0.0516
	0.0528	0.0540	0.0552	0.0563	0.0575
	0.0587	0.0599	0.0610	0.0622	0.0634
	0.0645	0.0657	0.0669	0.0681	0.0692
	0.0704	0.0732	0.0760	0.0787	0.0815
	0.0843	0.0871	0.0898	0.0926	0.0954
	0.0982	0.1009	0.1037	0.1065	0.1093
	0.1120	0.1148	0.1176	0.1204	0.1232
	0.1259	0.1287	0.1315	0.1343	0.1370
	0.1398	0.1426	0.1454	0.1481	0.1509
	0.1537	0.1582	0.1626	0.1671	0.1716
	0.1760	0.1805	0.1850	0.1894	0.1939
	0.1984	0.2029	0.2073	0.2118	0.2163
	0.2207	0.2249	0.2291	0.2333	0.2375
	0.2416	0.2504	0.2592	0.2679	0.2767
	0.2854	0.3043	0.3232	0.3524	0.3970
	0.5000	0.6030	0.6476	0.6768	0.6957
	0.7146	0.7233	0.7321	0.7408	0.7496
	0.7584	0.7625	0.7667	0.7709	0.7751
	0.7793	0.7837	0.7882	0.7927	0.7971
	0.8016	0.8061	0.8106	0.8150	0.8195
	0.8240	0.8284	0.8329	0.8374	0.8418
	0.8463	0.8491	0.8519	0.8546	0.8574
	0.8602	0.8630	0.8657	0.8685	0.8713
	0.8741	0.8768	0.8796	0.8824	0.8852
	0.8880	0.8907	0.8935	0.8963	0.8991
	0.9018	0.9046	0.9074	0.9102	0.9129
	0.9157	0.9185	0.9213	0.9240	0.9268
	0.9296	0.9308	0.9319	0.9331	0.9343
	0.9355	0.9366	0.9378	0.9390	0.9401
	0.9413	0.9425	0.9437	0.9448	0.9460
	0.9472	0.9484	0.9495	0.9507	0.9519
	0.9531	0.9542	0.9554	0.9566	0.9578
	0.9589	0.9601	0.9613	0.9624	0.9636
	0.9648	0.9660	0.9671	0.9683	0.9695
	0.9707	0.9718	0.9730	0.9742	0.9754
	0.9765	0.9777	0.9789	0.9800	0.9812
	0.9824	0.9836	0.9847	0.9859	0.9871
	0.9883	0.9894	0.9906	0.9918	0.9930
	0.9941	0.9953	0.9965	0.9977	0.9988
	1.0000				

10_yr_sm 0.1

0.0000	0.0012	0.0025	0.0037	0.0049
0.0061	0.0074	0.0086	0.0098	0.0110
0.0123	0.0135	0.0147	0.0159	0.0172
0.0184	0.0196	0.0208	0.0221	0.0233
0.0245	0.0257	0.0270	0.0282	0.0294
0.0306	0.0319	0.0331	0.0343	0.0355
0.0368	0.0380	0.0392	0.0404	0.0417
0.0429	0.0441	0.0453	0.0466	0.0478
0.0490	0.0502	0.0515	0.0527	0.0539
0.0552	0.0564	0.0576	0.0588	0.0601
0.0613	0.0625	0.0637	0.0650	0.0662
0.0674	0.0686	0.0699	0.0711	0.0723
0.0735	0.0764	0.0793	0.0822	0.0851
0.0879	0.0908	0.0937	0.0966	0.0995
0.1023	0.1052	0.1081	0.1110	0.1139
0.1167	0.1196	0.1225	0.1254	0.1283
0.1311	0.1340	0.1369	0.1398	0.1427
0.1455	0.1484	0.1513	0.1542	0.1570
0.1599	0.1644	0.1689	0.1734	0.1779
0.1824	0.1869	0.1914	0.1958	0.2003
0.2048	0.2093	0.2138	0.2183	0.2228
0.2273	0.2315	0.2357	0.2399	0.2441
0.2483	0.2573	0.2663	0.2752	0.2842
0.2931	0.3123	0.3315	0.3608	0.4041
0.5000	0.5959	0.6392	0.6685	0.6877
0.7069	0.7158	0.7248	0.7337	0.7427
0.7517	0.7559	0.7601	0.7643	0.7685
0.7727	0.7772	0.7817	0.7862	0.7907
0.7952	0.7997	0.8042	0.8086	0.8131
0.8176	0.8221	0.8266	0.8311	0.8356
0.8401	0.8430	0.8458	0.8487	0.8516
0.8545	0.8573	0.8602	0.8631	0.8660
0.8689	0.8717	0.8746	0.8775	0.8804
0.8833	0.8861	0.8890	0.8919	0.8948
0.8977	0.9005	0.9034	0.9063	0.9092
0.9121	0.9149	0.9178	0.9207	0.9236
0.9265	0.9277	0.9289	0.9301	0.9314
0.9326	0.9338	0.9350	0.9363	0.9375
0.9387	0.9399	0.9412	0.9424	0.9436
0.9448	0.9461	0.9473	0.9485	0.9498
0.9510	0.9522	0.9534	0.9547	0.9559
0.9571	0.9583	0.9596	0.9608	0.9620
0.9632	0.9645	0.9657	0.9669	0.9681
0.9694	0.9706	0.9718	0.9730	0.9743
0.9755	0.9767	0.9779	0.9792	0.9804
0.9816	0.9828	0.9841	0.9853	0.9865
0.9877	0.9890	0.9902	0.9914	0.9926
0.9939	0.9951	0.9963	0.9975	0.9988
1.0000				

25_yr_sm 0.1

0.0000	0.0013	0.0026	0.0039	0.0052
0.0065	0.0079	0.0092	0.0105	0.0118
0.0131	0.0144	0.0157	0.0170	0.0183
0.0196	0.0210	0.0223	0.0236	0.0249
0.0262	0.0275	0.0288	0.0301	0.0314
0.0327	0.0340	0.0354	0.0367	0.0380
0.0393	0.0406	0.0419	0.0432	0.0445
0.0458	0.0471	0.0485	0.0498	0.0511
0.0524	0.0537	0.0550	0.0563	0.0576
0.0589	0.0602	0.0616	0.0629	0.0642
0.0655	0.0668	0.0681	0.0694	0.0707
0.0720	0.0733	0.0746	0.0760	0.0773

0.0786	0.0816	0.0846	0.0876	0.0906
0.0937	0.0967	0.0997	0.1027	0.1057
0.1087	0.1118	0.1148	0.1178	0.1208
0.1238	0.1268	0.1299	0.1329	0.1359
0.1389	0.1419	0.1449	0.1480	0.1510
0.1540	0.1570	0.1600	0.1630	0.1661
0.1691	0.1737	0.1782	0.1828	0.1874
0.1920	0.1966	0.2011	0.2057	0.2103
0.2149	0.2195	0.2241	0.2286	0.2332
0.2378	0.2421	0.2464	0.2507	0.2549
0.2592	0.2685	0.2777	0.2869	0.2961
0.3054	0.3248	0.3441	0.3728	0.4138
0.5000	0.5862	0.6272	0.6559	0.6752
0.6946	0.7039	0.7131	0.7223	0.7315
0.7408	0.7451	0.7493	0.7536	0.7579
0.7622	0.7668	0.7714	0.7759	0.7805
0.7851	0.7897	0.7943	0.7989	0.8034
0.8080	0.8126	0.8172	0.8218	0.8263
0.8309	0.8339	0.8370	0.8400	0.8430
0.8460	0.8490	0.8520	0.8551	0.8581
0.8611	0.8641	0.8671	0.8701	0.8732
0.8762	0.8792	0.8822	0.8852	0.8882
0.8913	0.8943	0.8973	0.9003	0.9033
0.9063	0.9094	0.9124	0.9154	0.9184
0.9214	0.9227	0.9240	0.9254	0.9267
0.9280	0.9293	0.9306	0.9319	0.9332
0.9345	0.9358	0.9371	0.9384	0.9398
0.9411	0.9424	0.9437	0.9450	0.9463
0.9476	0.9489	0.9502	0.9515	0.9529
0.9542	0.9555	0.9568	0.9581	0.9594
0.9607	0.9620	0.9633	0.9646	0.9660
0.9673	0.9686	0.9699	0.9712	0.9725
0.9738	0.9751	0.9764	0.9777	0.9790
0.9804	0.9817	0.9830	0.9843	0.9856
0.9869	0.9882	0.9895	0.9908	0.9921
0.9935	0.9948	0.9961	0.9974	0.9987
1.0000				

50_yr_sm 0.1

0.0000	0.0014	0.0027	0.0041	0.0055
0.0068	0.0082	0.0095	0.0109	0.0123
0.0136	0.0150	0.0164	0.0177	0.0191
0.0205	0.0218	0.0232	0.0246	0.0259
0.0273	0.0286	0.0300	0.0314	0.0327
0.0341	0.0355	0.0368	0.0382	0.0396
0.0409	0.0423	0.0436	0.0450	0.0464
0.0477	0.0491	0.0505	0.0518	0.0532
0.0546	0.0559	0.0573	0.0587	0.0600
0.0614	0.0627	0.0641	0.0655	0.0668
0.0682	0.0696	0.0709	0.0723	0.0737
0.0750	0.0764	0.0777	0.0791	0.0805
0.0818	0.0850	0.0881	0.0913	0.0944
0.0976	0.1007	0.1039	0.1070	0.1102
0.1133	0.1165	0.1196	0.1227	0.1259
0.1290	0.1322	0.1353	0.1385	0.1416
0.1448	0.1479	0.1511	0.1542	0.1574
0.1605	0.1636	0.1668	0.1699	0.1731
0.1762	0.1809	0.1856	0.1903	0.1949
0.1996	0.2043	0.2089	0.2136	0.2183
0.2230	0.2276	0.2323	0.2370	0.2417
0.2463	0.2507	0.2550	0.2593	0.2636
0.2679	0.2774	0.2869	0.2964	0.3059
0.3154	0.3348	0.3541	0.3821	0.4210
0.5000	0.5790	0.6179	0.6459	0.6652

0.6846	0.6941	0.7036	0.7131	0.7226
0.7321	0.7364	0.7407	0.7450	0.7493
0.7537	0.7583	0.7630	0.7677	0.7724
0.7770	0.7817	0.7864	0.7911	0.7957
0.8004	0.8051	0.8097	0.8144	0.8191
0.8238	0.8269	0.8301	0.8332	0.8364
0.8395	0.8426	0.8458	0.8489	0.8521
0.8552	0.8584	0.8615	0.8647	0.8678
0.8710	0.8741	0.8773	0.8804	0.8835
0.8867	0.8898	0.8930	0.8961	0.8993
0.9024	0.9056	0.9087	0.9119	0.9150
0.9182	0.9195	0.9209	0.9223	0.9236
0.9250	0.9263	0.9277	0.9291	0.9304
0.9318	0.9332	0.9345	0.9359	0.9373
0.9386	0.9400	0.9413	0.9427	0.9441
0.9454	0.9468	0.9482	0.9495	0.9509
0.9523	0.9536	0.9550	0.9564	0.9577
0.9591	0.9604	0.9618	0.9632	0.9645
0.9659	0.9673	0.9686	0.9700	0.9714
0.9727	0.9741	0.9754	0.9768	0.9782
0.9795	0.9809	0.9823	0.9836	0.9850
0.9864	0.9877	0.9891	0.9905	0.9918
0.9932	0.9945	0.9959	0.9973	0.9986
1.0000				

100_yr_sm

	0.1			
0.0000	0.0014	0.0029	0.0043	0.0057
0.0071	0.0086	0.0100	0.0114	0.0128
0.0143	0.0157	0.0171	0.0185	0.0200
0.0214	0.0228	0.0243	0.0257	0.0271
0.0285	0.0300	0.0314	0.0328	0.0342
0.0357	0.0371	0.0385	0.0399	0.0414
0.0428	0.0442	0.0457	0.0471	0.0485
0.0499	0.0514	0.0528	0.0542	0.0556
0.0571	0.0585	0.0599	0.0613	0.0628
0.0642	0.0656	0.0671	0.0685	0.0699
0.0713	0.0728	0.0742	0.0756	0.0770
0.0785	0.0799	0.0813	0.0827	0.0842
0.0856	0.0889	0.0922	0.0954	0.0987
0.1020	0.1053	0.1086	0.1118	0.1151
0.1184	0.1217	0.1250	0.1282	0.1315
0.1348	0.1381	0.1414	0.1447	0.1479
0.1512	0.1545	0.1578	0.1611	0.1643
0.1676	0.1709	0.1742	0.1775	0.1807
0.1840	0.1888	0.1935	0.1983	0.2031
0.2078	0.2126	0.2174	0.2221	0.2269
0.2317	0.2364	0.2412	0.2459	0.2507
0.2555	0.2598	0.2641	0.2684	0.2727
0.2770	0.2867	0.2964	0.3062	0.3159
0.3256	0.3447	0.3638	0.3910	0.4277
0.5000	0.5723	0.6090	0.6362	0.6553
0.6744	0.6841	0.6938	0.7036	0.7133
0.7230	0.7273	0.7316	0.7359	0.7402
0.7445	0.7493	0.7541	0.7588	0.7636
0.7683	0.7731	0.7779	0.7826	0.7874
0.7922	0.7969	0.8017	0.8065	0.8112
0.8160	0.8193	0.8225	0.8258	0.8291
0.8324	0.8357	0.8389	0.8422	0.8455
0.8488	0.8521	0.8553	0.8586	0.8619
0.8652	0.8685	0.8718	0.8750	0.8783
0.8816	0.8849	0.8882	0.8914	0.8947
0.8980	0.9013	0.9046	0.9078	0.9111
0.9144	0.9158	0.9173	0.9187	0.9201
0.9215	0.9230	0.9244	0.9258	0.9272

0.9287	0.9301	0.9315	0.9329	0.9344
0.9358	0.9372	0.9387	0.9401	0.9415
0.9429	0.9444	0.9458	0.9472	0.9486
0.9501	0.9515	0.9529	0.9543	0.9558
0.9572	0.9586	0.9601	0.9615	0.9629
0.9643	0.9658	0.9672	0.9686	0.9700
0.9715	0.9729	0.9743	0.9757	0.9772
0.9786	0.9800	0.9815	0.9829	0.9843
0.9857	0.9872	0.9886	0.9900	0.9914
0.9929	0.9943	0.9957	0.9971	0.9986
1.0000				

500_yr_sm 0.1

0.0000	0.0016	0.0031	0.0047	0.0063
0.0078	0.0094	0.0110	0.0126	0.0141
0.0157	0.0173	0.0188	0.0204	0.0220
0.0235	0.0251	0.0267	0.0283	0.0298
0.0314	0.0330	0.0345	0.0361	0.0377
0.0392	0.0408	0.0424	0.0439	0.0455
0.0471	0.0487	0.0502	0.0518	0.0534
0.0549	0.0565	0.0581	0.0596	0.0612
0.0628	0.0643	0.0659	0.0675	0.0691
0.0706	0.0722	0.0738	0.0753	0.0769
0.0785	0.0800	0.0816	0.0832	0.0848
0.0863	0.0879	0.0895	0.0910	0.0926
0.0942	0.0978	0.1014	0.1050	0.1086
0.1122	0.1158	0.1195	0.1231	0.1267
0.1303	0.1339	0.1375	0.1411	0.1447
0.1483	0.1520	0.1556	0.1592	0.1628
0.1664	0.1700	0.1736	0.1772	0.1809
0.1845	0.1881	0.1917	0.1953	0.1989
0.2025	0.2075	0.2124	0.2174	0.2223
0.2272	0.2322	0.2371	0.2421	0.2470
0.2520	0.2569	0.2618	0.2668	0.2717
0.2767	0.2810	0.2853	0.2896	0.2940
0.2983	0.3084	0.3185	0.3287	0.3388
0.3489	0.3673	0.3856	0.4104	0.4420
0.5000	0.5580	0.5896	0.6144	0.6327
0.6511	0.6612	0.6713	0.6815	0.6916
0.7017	0.7060	0.7104	0.7147	0.7190
0.7233	0.7283	0.7332	0.7382	0.7431
0.7480	0.7530	0.7579	0.7629	0.7678
0.7728	0.7777	0.7826	0.7876	0.7925
0.7975	0.8011	0.8047	0.8083	0.8119
0.8155	0.8191	0.8228	0.8264	0.8300
0.8336	0.8372	0.8408	0.8444	0.8480
0.8517	0.8553	0.8589	0.8625	0.8661
0.8697	0.8733	0.8769	0.8805	0.8842
0.8878	0.8914	0.8950	0.8986	0.9022
0.9058	0.9074	0.9090	0.9105	0.9121
0.9137	0.9152	0.9168	0.9184	0.9200
0.9215	0.9231	0.9247	0.9262	0.9278
0.9294	0.9309	0.9325	0.9341	0.9357
0.9372	0.9388	0.9404	0.9419	0.9435
0.9451	0.9466	0.9482	0.9498	0.9513
0.9529	0.9545	0.9561	0.9576	0.9592
0.9608	0.9623	0.9639	0.9655	0.9670
0.9686	0.9702	0.9717	0.9733	0.9749
0.9765	0.9780	0.9796	0.9812	0.9827
0.9843	0.9859	0.9874	0.9890	0.9906
0.9922	0.9937	0.9953	0.9969	0.9984
1.0000				

GLOBAL OUTPUT:

.2 NN N NN N

WinTR-20 Printed Page File End of Input Data List

Eccelston Mitigation POI 5

Name of printed page file:
C:\Users\cwagner\Desktop\Eccelston POI 5 Ultimate.out

STORM 1_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.139		0.728		12.46	42.0	301.19

STORM 2_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.139		1.088		12.44	66.3	475.87

STORM 5_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.139		1.757		12.44	106.0	761.04

STORM 10_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.139		2.393		12.44	138.9	997.17

STORM 25_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.139		3.445		12.43	186.0	1335.10

STORM 50_yr_sm

Area or Reach	Drainage Area	Rain Gage ID or	Runoff Amount	Peak Flow Elevation	Time	Rate	Rate

Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.139		4.417		12.41	223.3	1603.02

STORM 100_yr_sm

♀

Eccelston Mitigation POI 5

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.139		5.563		12.43	261.2	1875.46

STORM 500_yr_sm

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
OUTLET	0.139		8.984		12.42	349.2	2507.02

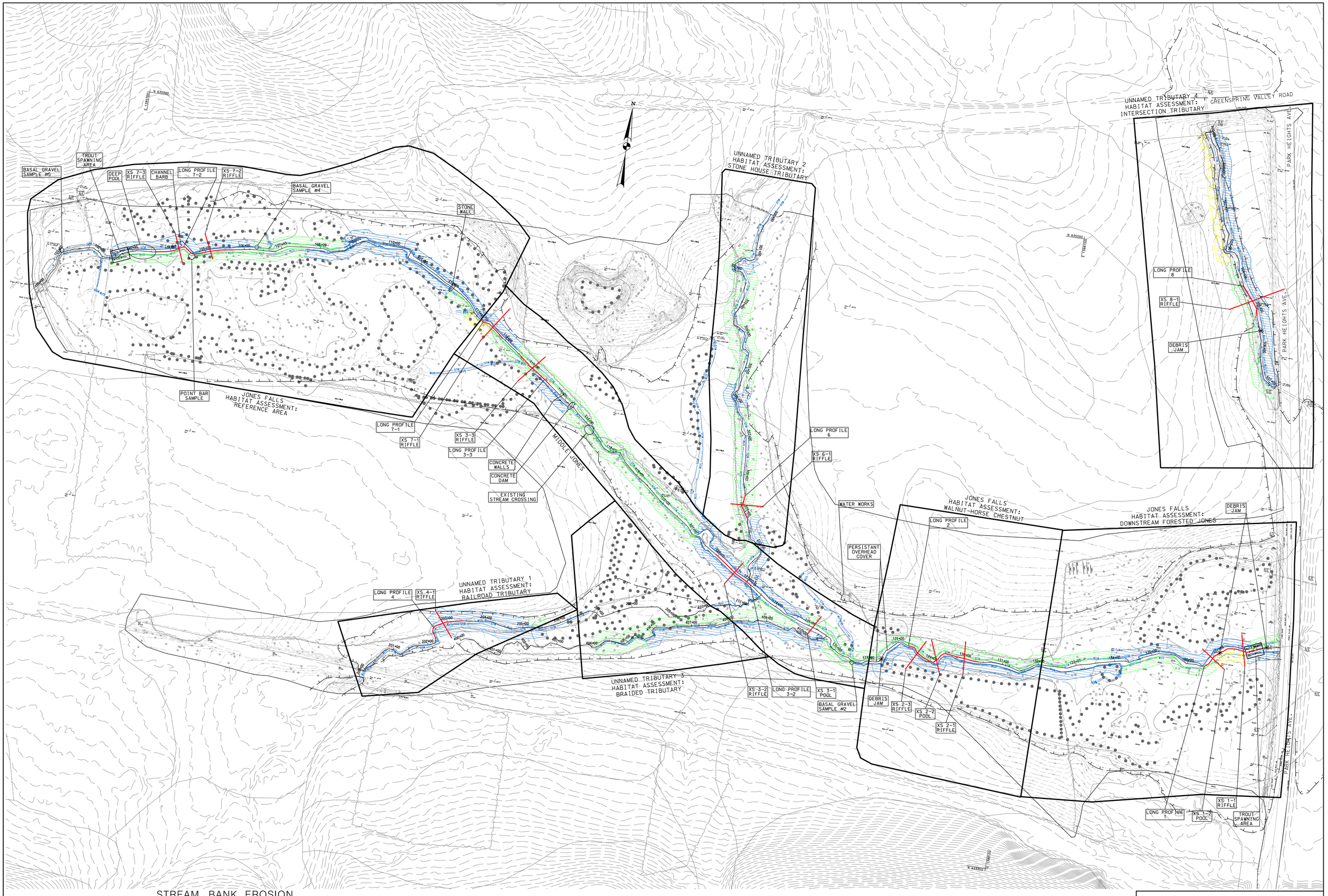
Eccelston Mitigation POI 5

Area or Reach Identifier	Drainage Area (sq mi)	Peak Flow by Storm 1_yr_sm (cfs)	2_yr_sm (cfs)	5_yr_sm (cfs)	10_yr_sm (cfs)	25_yr_sm (cfs)
DA5	0.139	42.0	66.3	106.0	138.9	186.0
OUTLET	0.139	42.0	66.3	106.0	138.9	186.0

Area or Reach Identifier	Drainage Area (sq mi)	Peak Flow by Storm 50_yr_sm (cfs)	100_yr_sm (cfs)	500_yr_sm (cfs)	(cfs)	(cfs)
DA5	0.139	223.3	261.2	349.2		
OUTLET	0.139	223.3	261.2	349.2		

♀

APPENDIX D
Existing Conditions Geomorphic Data



STREAM BANK EROSION RATES (TON/YEAR/FT)

- 0.00 – 0.09
- 0.10 – 0.49
- 0.50 – 0.99
- 1.00 – 1.50

80' 0 80' 160'
SCALE: 1" = 80'

JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®

BY: RBucci

ECCELSTON MITIGATION BANK

REVISIONS

CONCEPT SUBMISSION

NOT FOR CONSTRUCTION

SITE ASSESSMENT MAP

SCALE AS SHOWN DATE MAY, 2018 CONTRACT NO.

DESIGNED BY MRG COUNTY

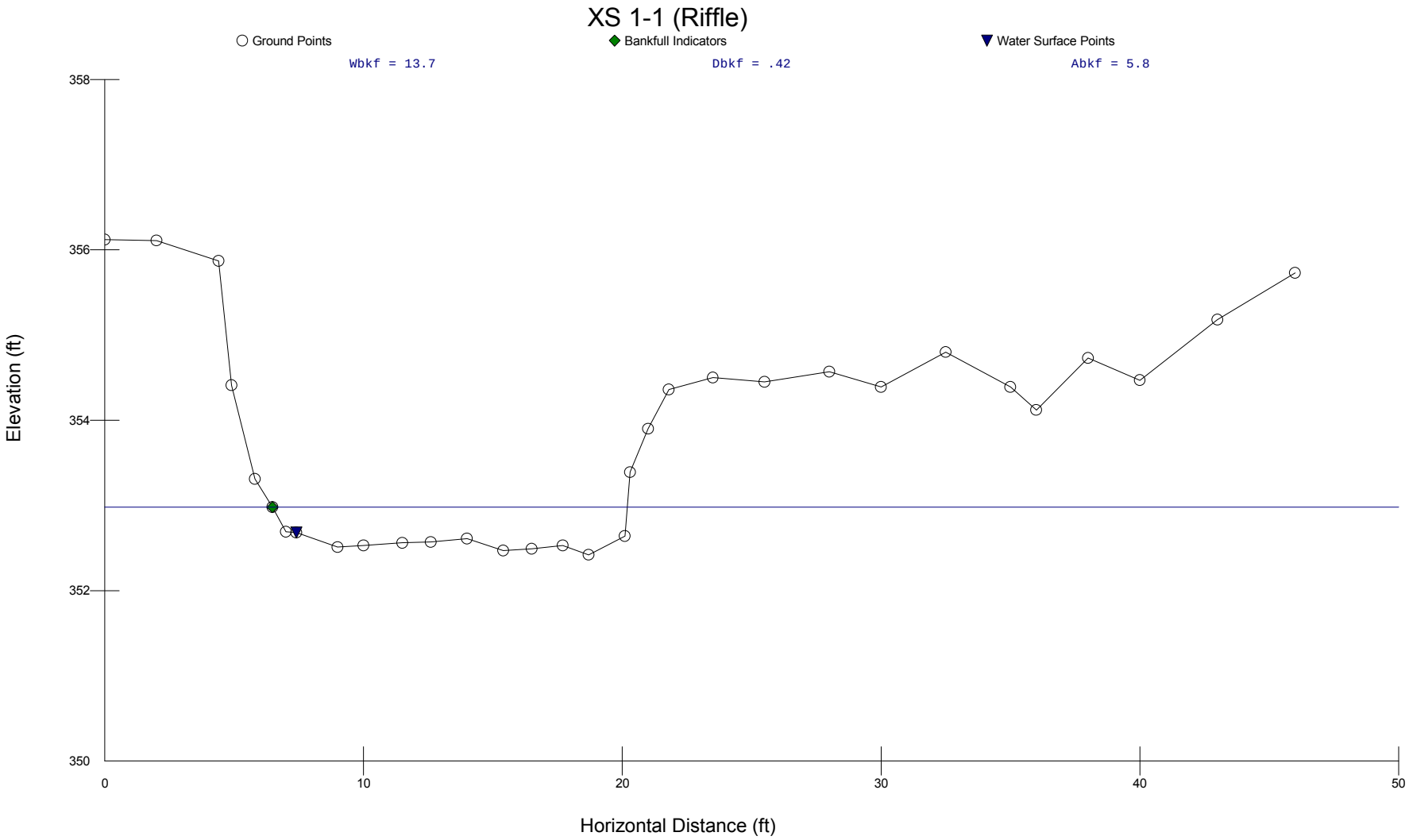
DRAWN BY MRG LOGMILE

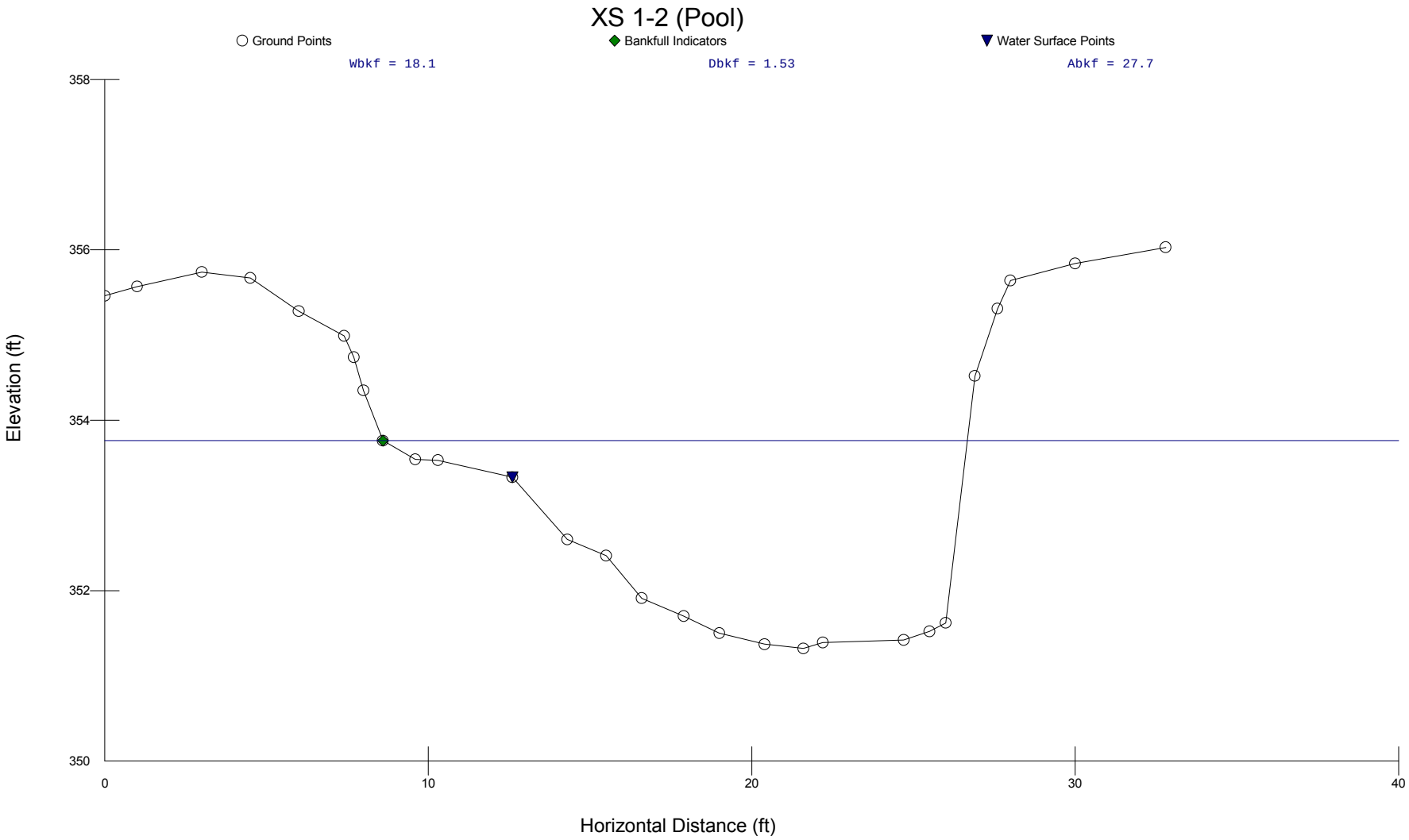
CHECKED BY FAB HORIZONTAL SCALE N/A

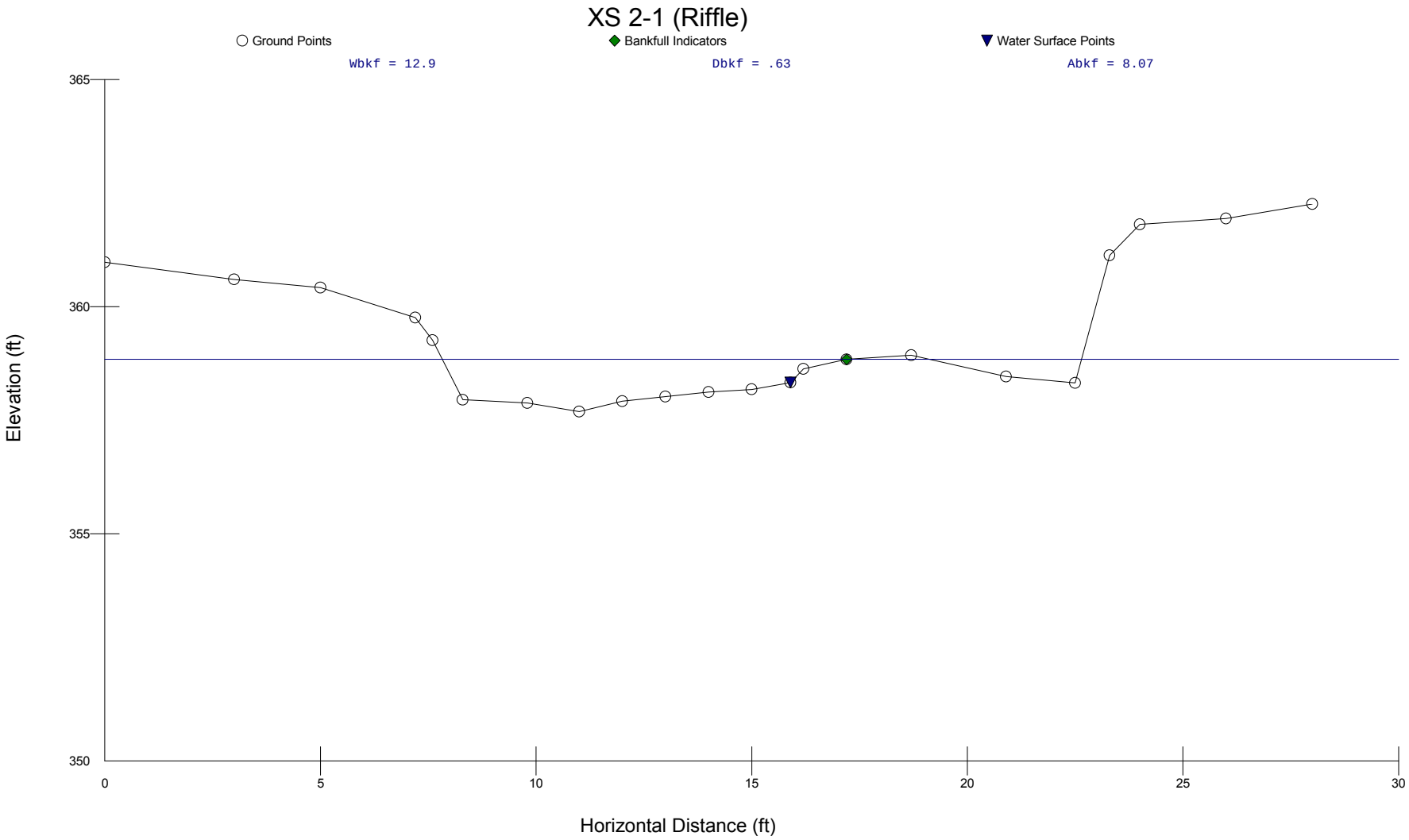
F.A.P. NO. SEE TITLE SHEET VERTICAL SCALE N/A

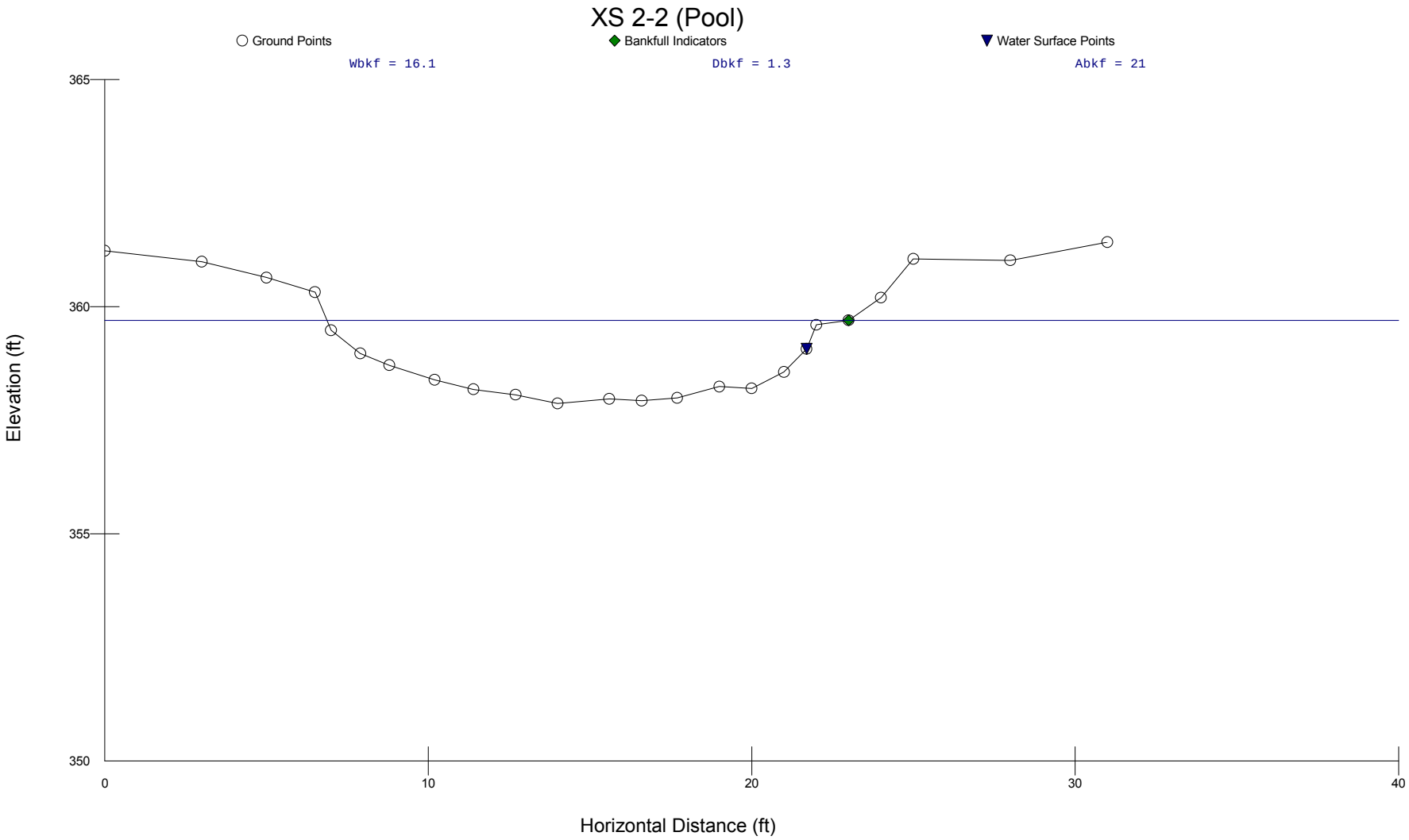
DRAWING NO. SAM – 1 OF 1 SHEET NO. OF XX

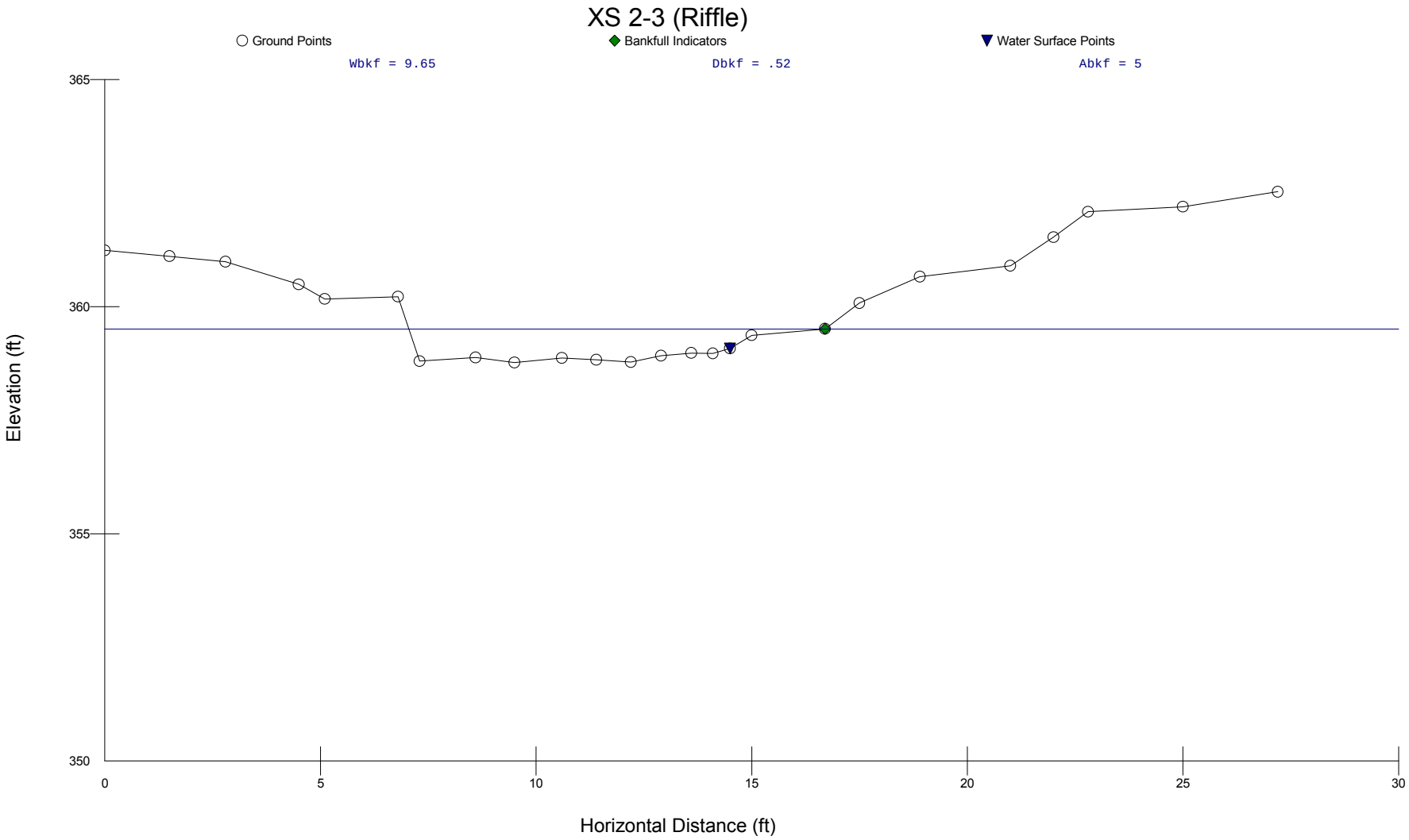
PLOTTED: Wednesday, November 07, 2018 AT 02:57 PM
FILE: Q:\2017\1710977_001_Eccleston_Mitigation\CADD\plRollmap-E001_Eccleston.dgn

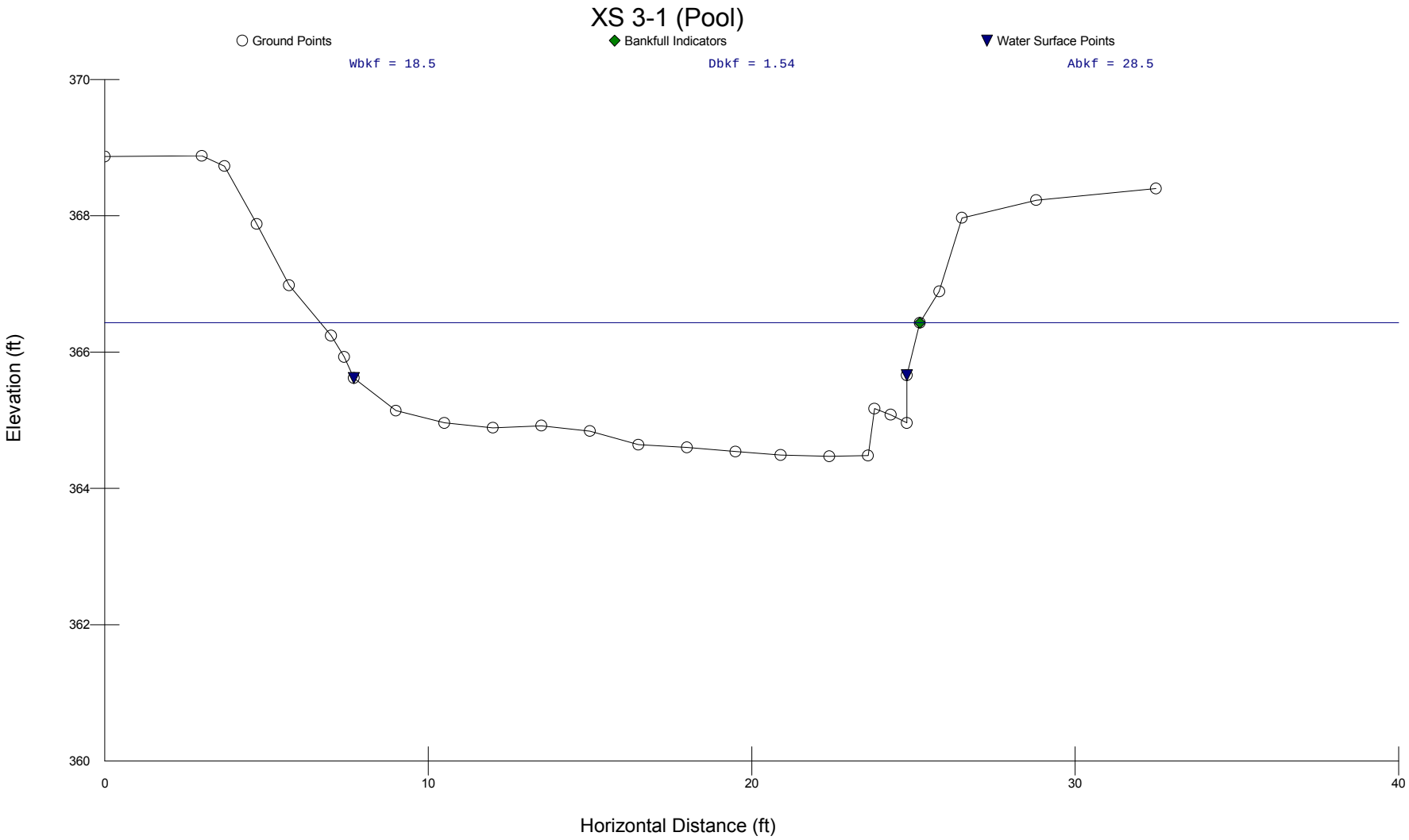

XS 1-1 (Riffle)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 13.7
Dbkf = .42
Abkf = 5.8
Elevation (ft)
358
356
354
352
350
0
10
20
30
40
50
Horizontal Distance (ft)

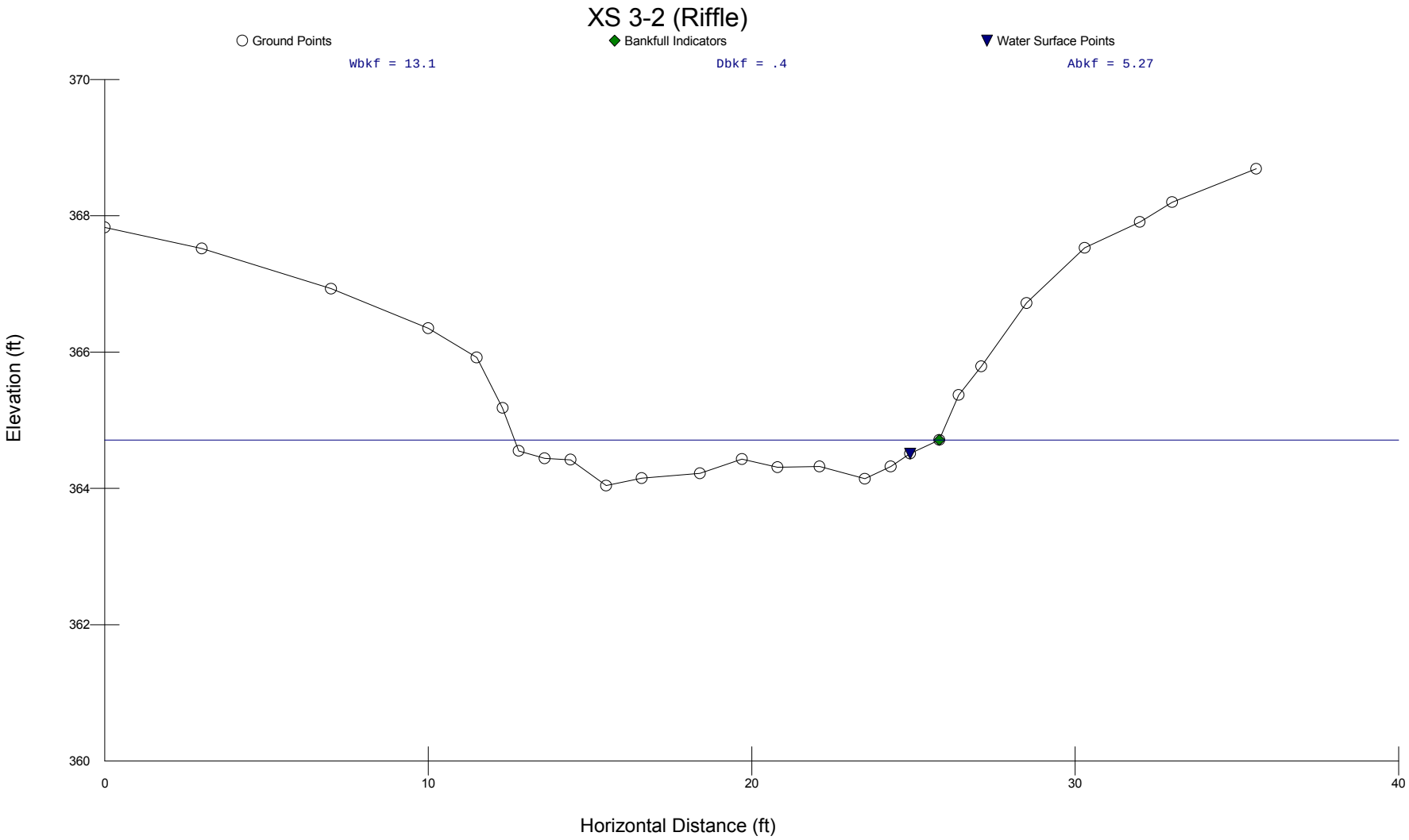

XS 1-2 (Pool)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 18.1
Dbkf = 1.53
Abkf = 27.7
358
356
354
352
350
Elevation (ft)
0
10
20
30
40
Horizontal Distance (ft)

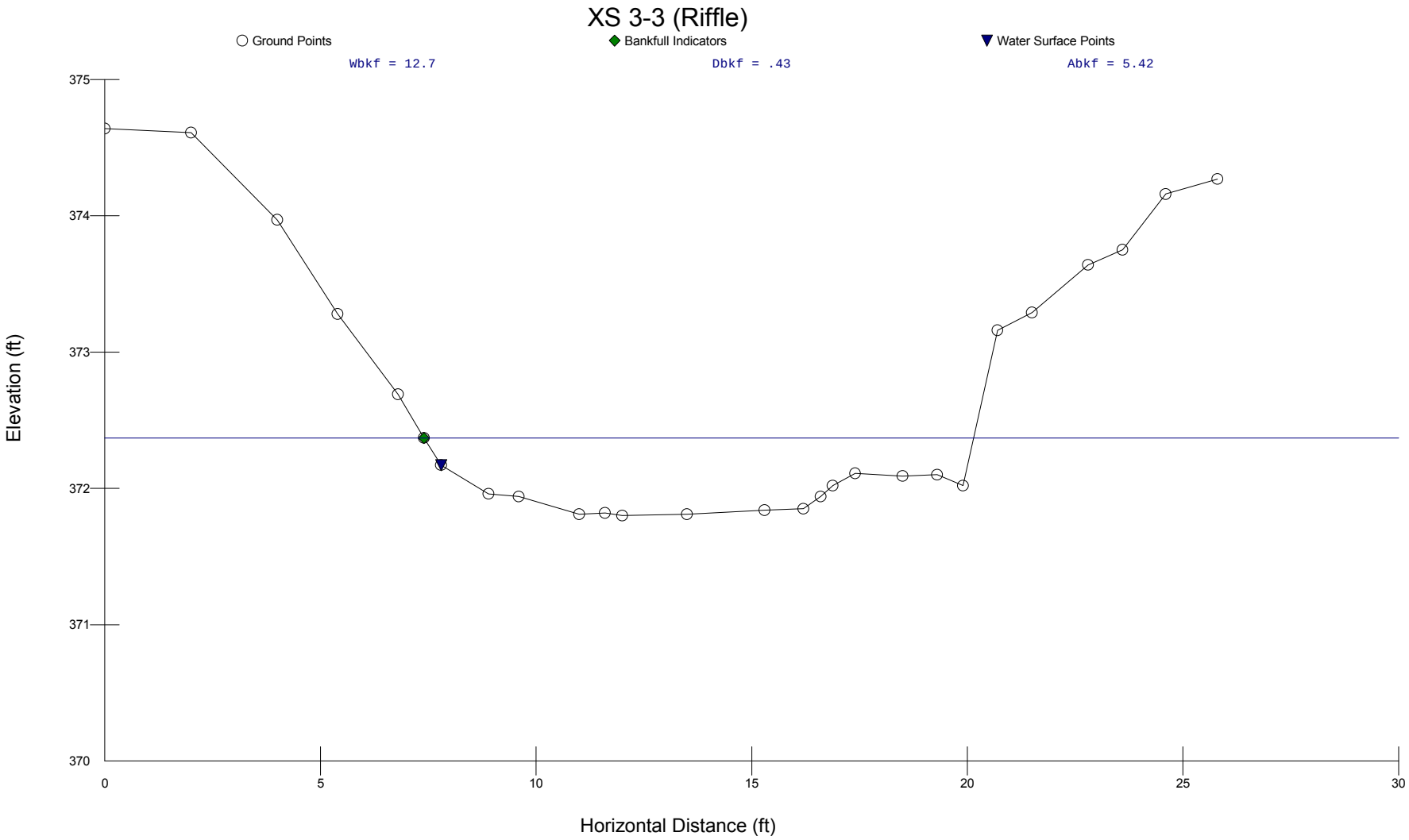

XS 2-1 (Riffle)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 12.9
Dbkf = .63
Abkf = 8.07
365
360
355
350
Elevation (ft)
0
5
10
15
20
25
30
Horizontal Distance (ft)

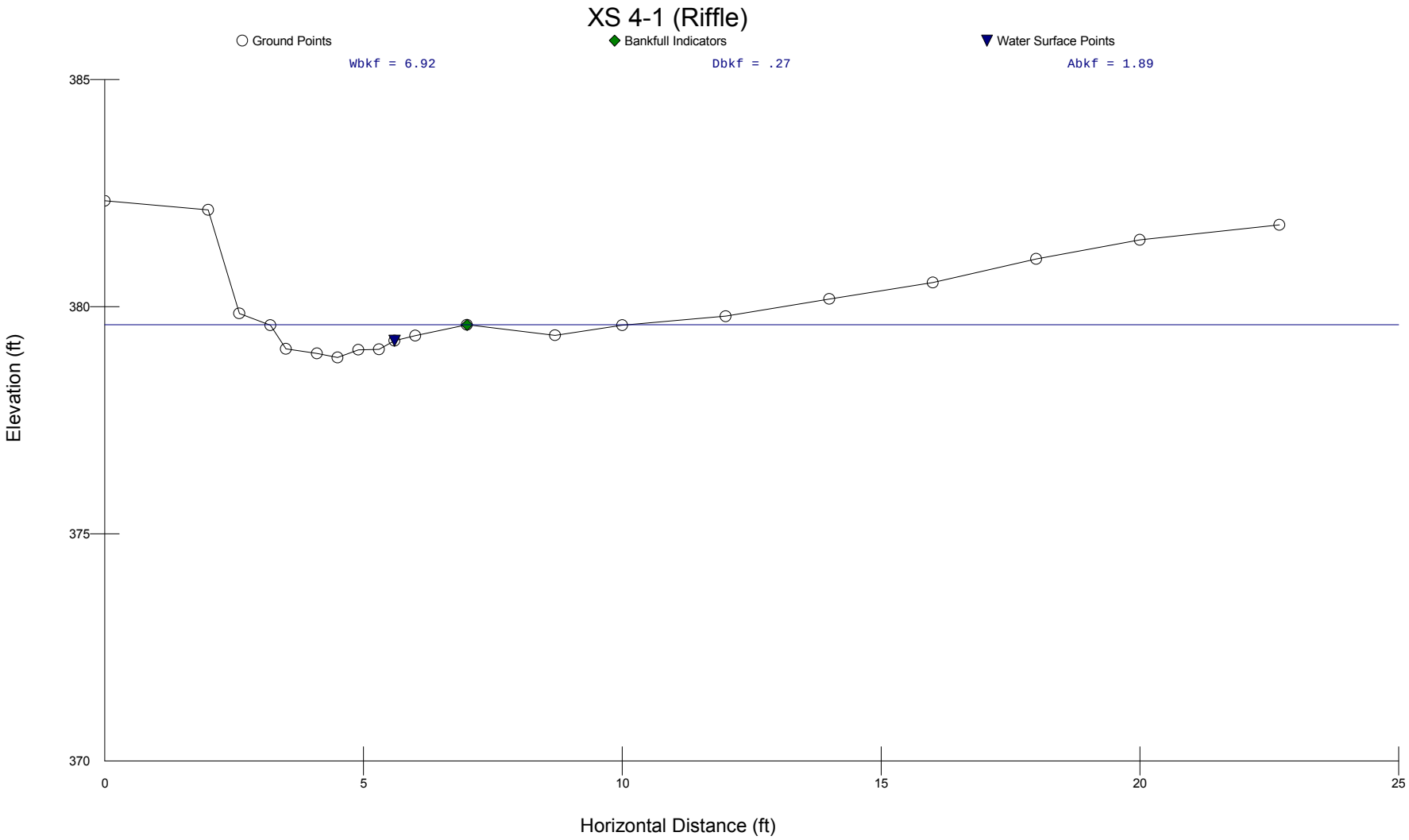

XS 2-2 (Pool)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 16.1
Dbkf = 1.3
Abkf = 21
365
360
355
350
Elevation (ft)
0
10
20
30
40
Horizontal Distance (ft)

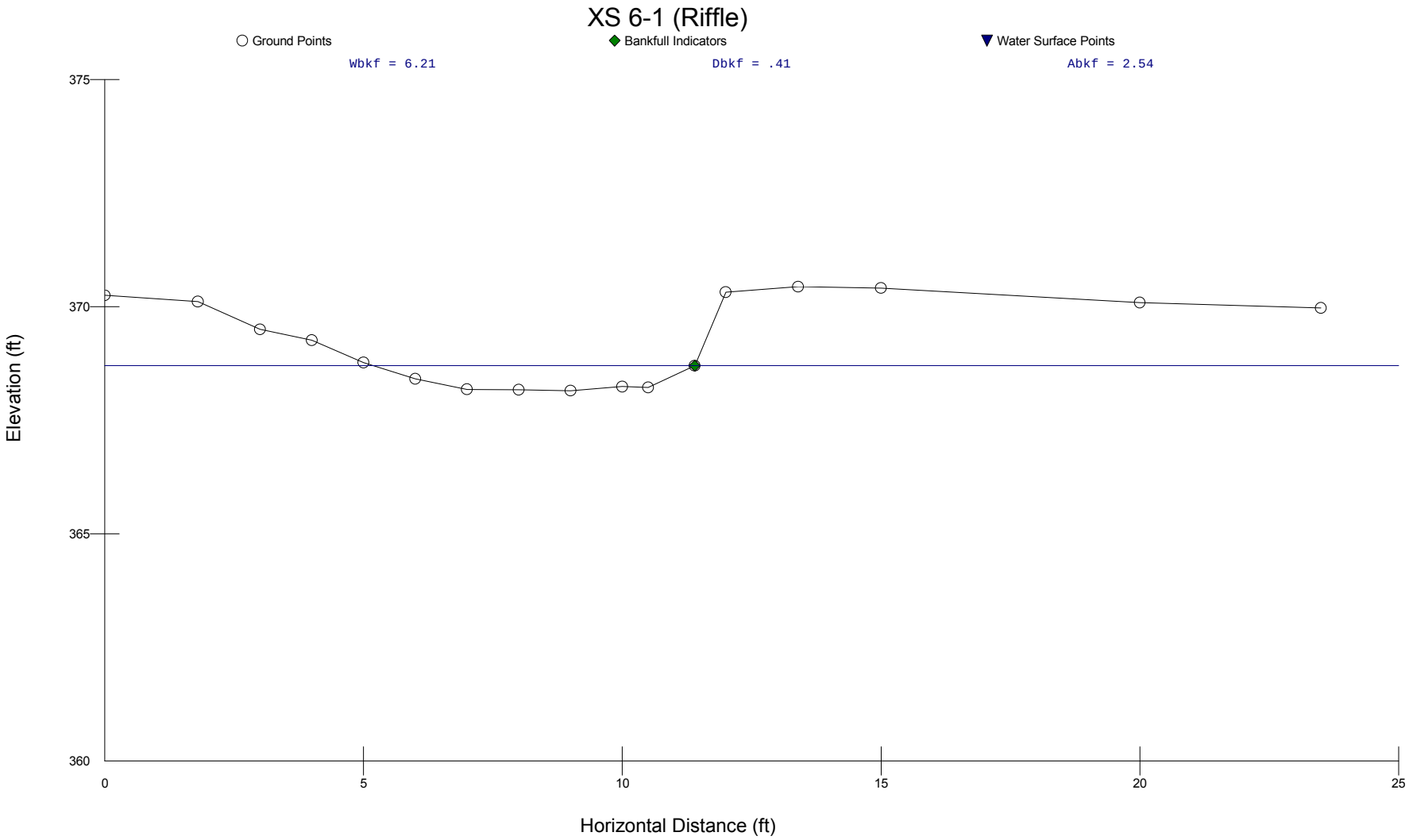

XS 2-3 (Riffle)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 9.65
Dbkf = .52
Abkf = 5
365
360
355
350
Elevation (ft)
0
5
10
15
20
25
30
Horizontal Distance (ft)

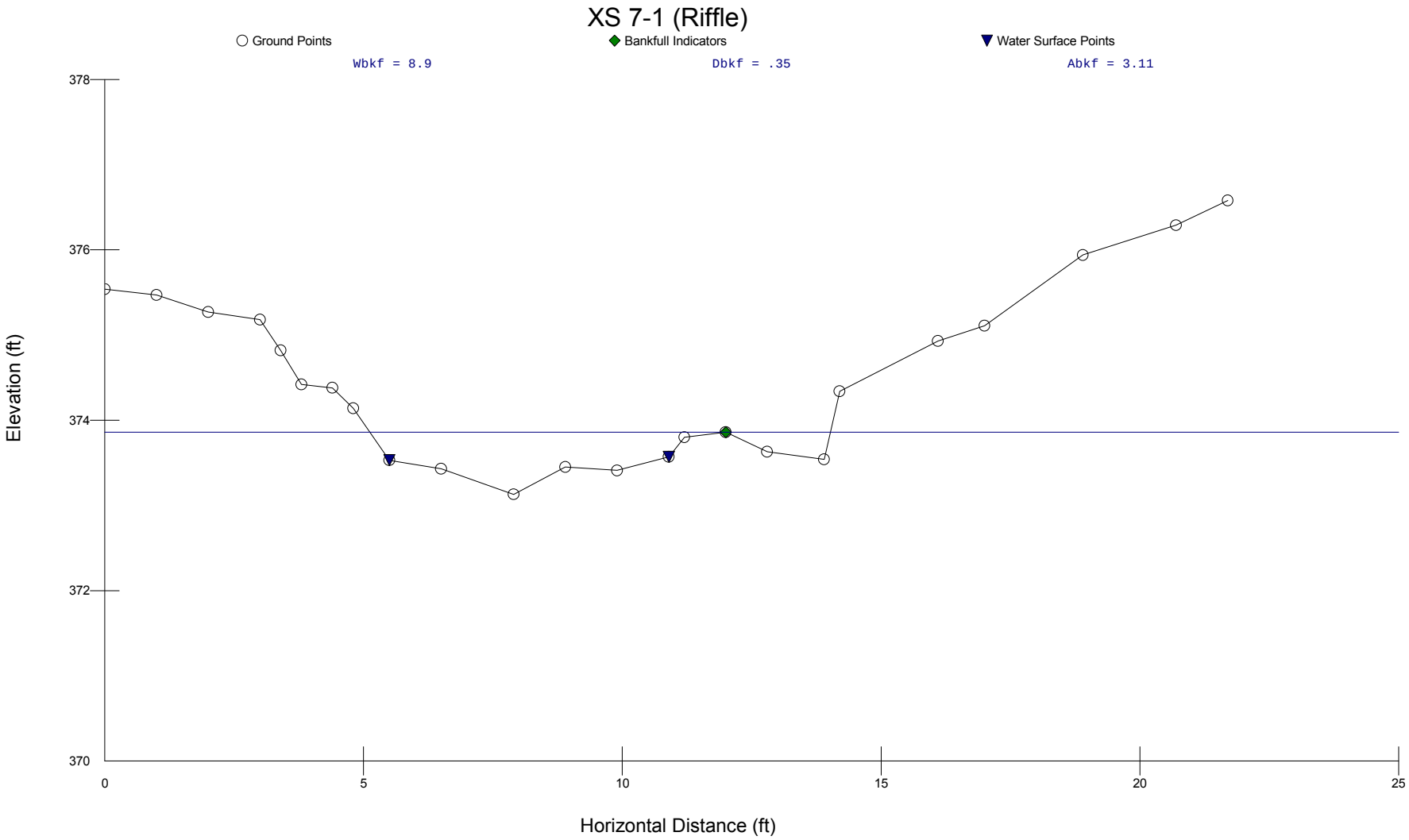

XS 3-1 (Pool)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 18.5
Dbkf = 1.54
Abkf = 28.5
370
368
366
364
362
360
Elevation (ft)
0
10
20
30
40
Horizontal Distance (ft)

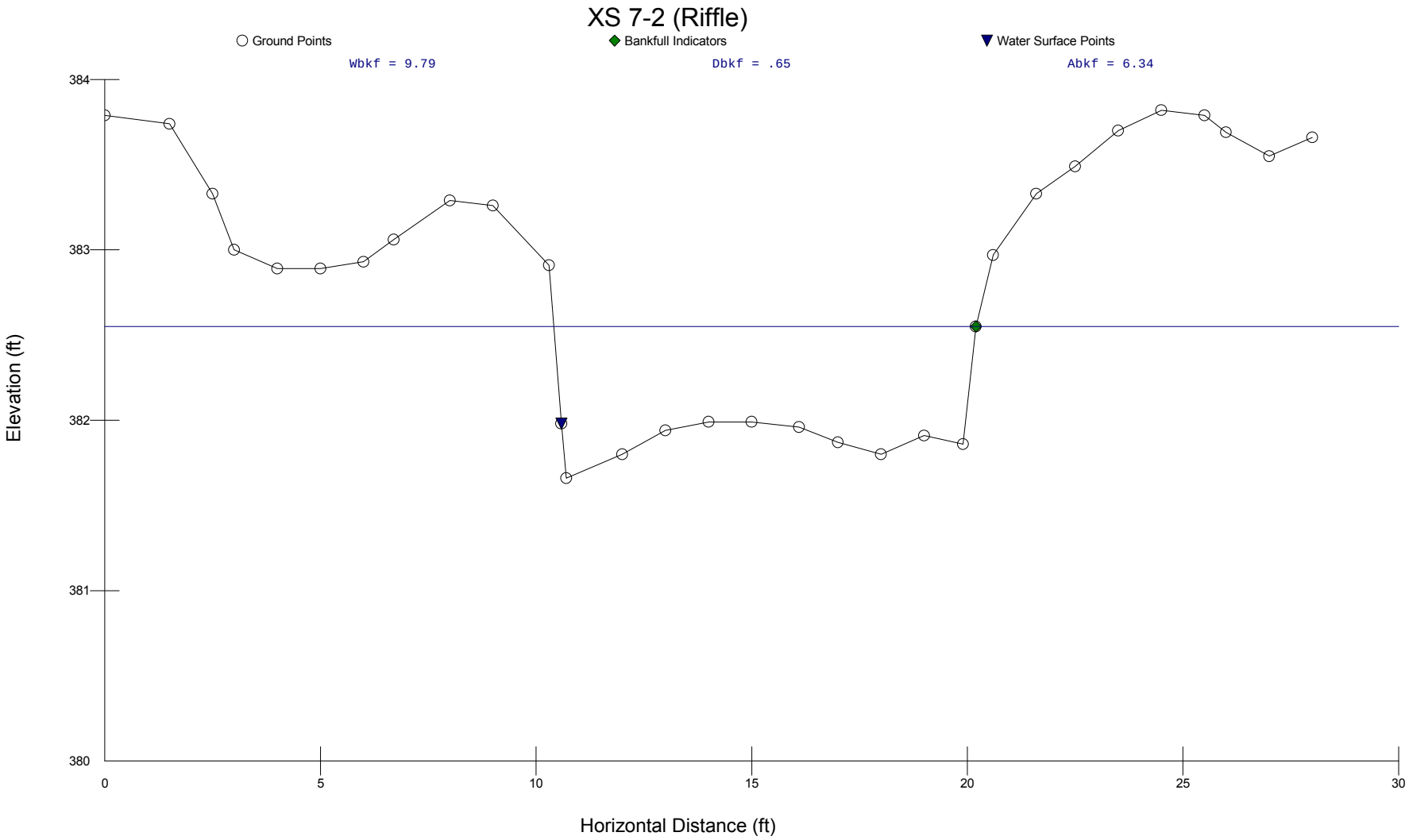

XS 3-2 (Riffle)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 13.1
Dbkf = .4
Abkf = 5.27
370
368
366
364
362
360
Elevation (ft)
0
10
20
30
40
Horizontal Distance (ft)

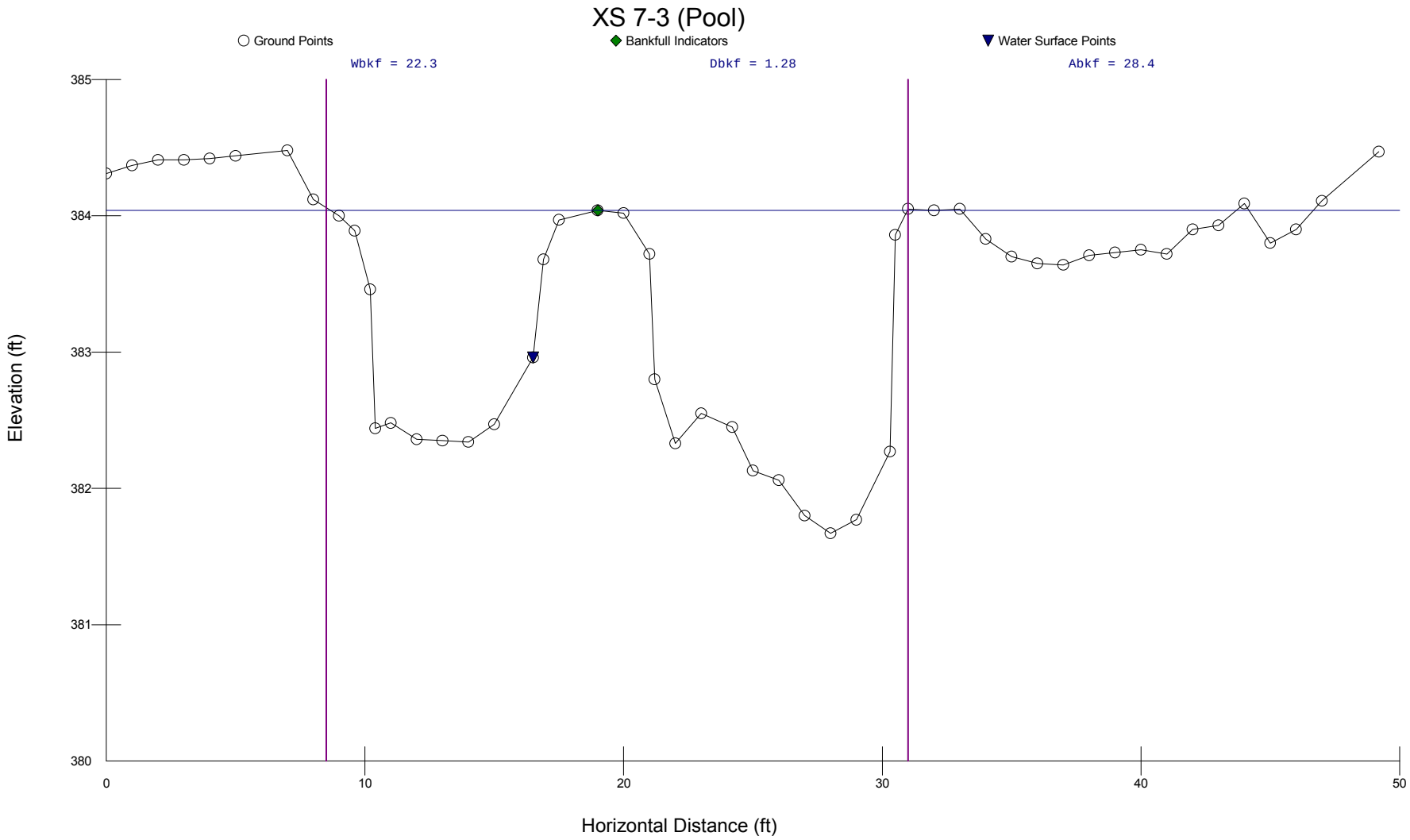

XS 3-3 (Riffle)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 12.7
Dbkf = .43
Abkf = 5.42
Elevation (ft)
375
374
373
372
371
370
0
5
10
15
20
25
30
Horizontal Distance (ft)

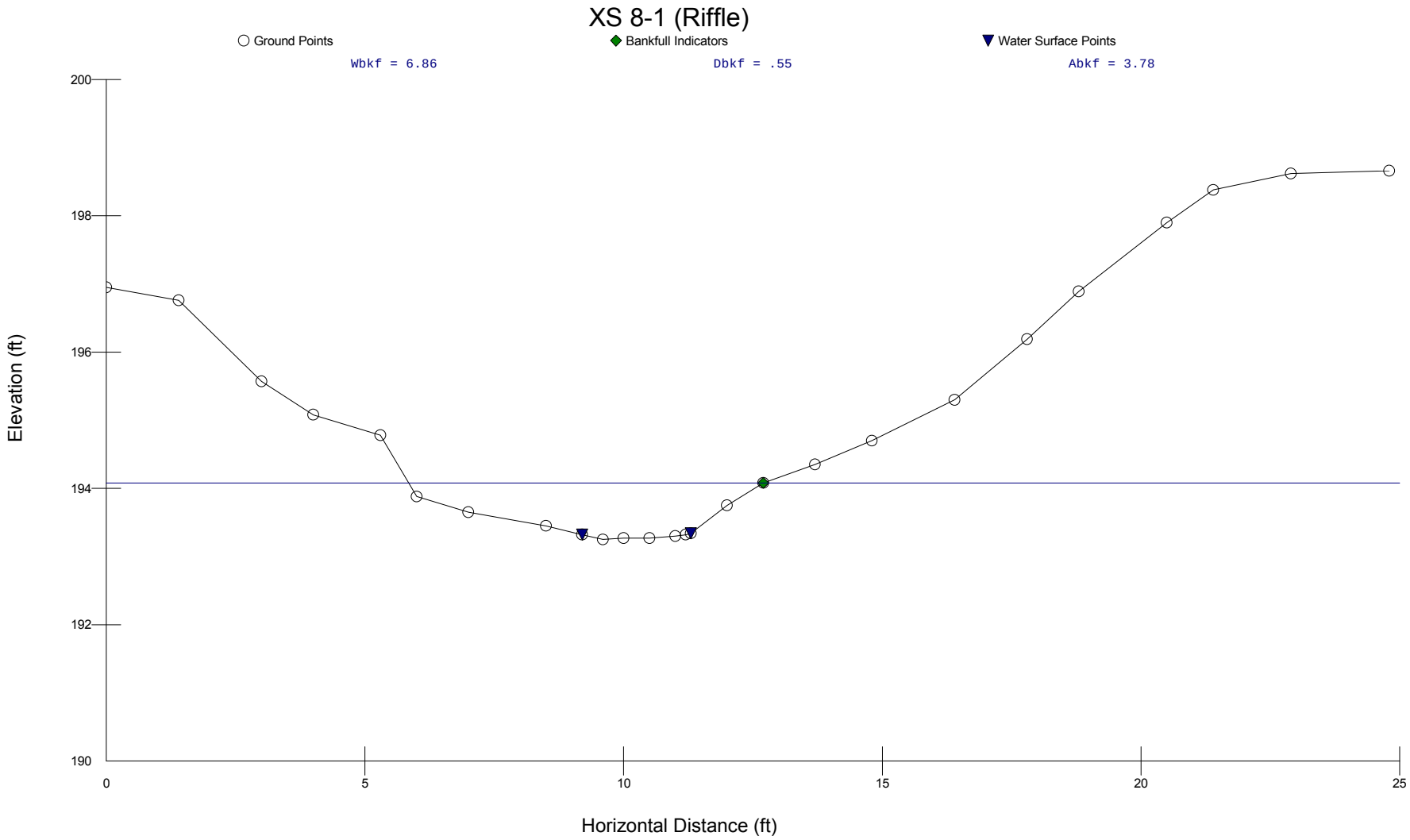

XS 4-1 (Riffle)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 6.92
Dbkf = .27
Abkf = 1.89
385
380
375
370
Elevation (ft)
0
5
10
15
20
25
Horizontal Distance (ft)

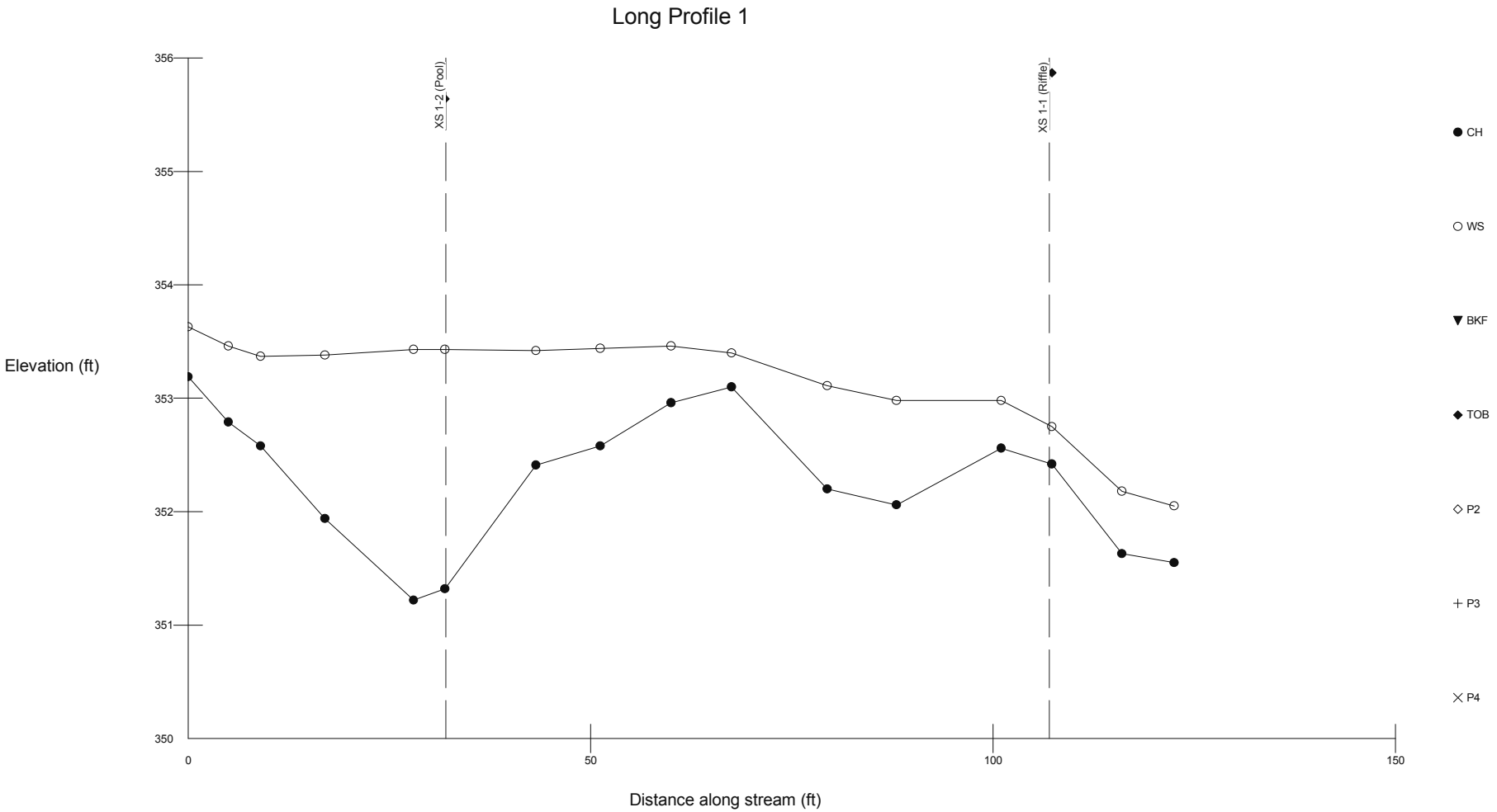

XS 6-1 (Riffle)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 6.21
Dbkf = .41
Abkf = 2.54
375
370
365
360
Elevation (ft)
0
5
10
15
20
25
Horizontal Distance (ft)

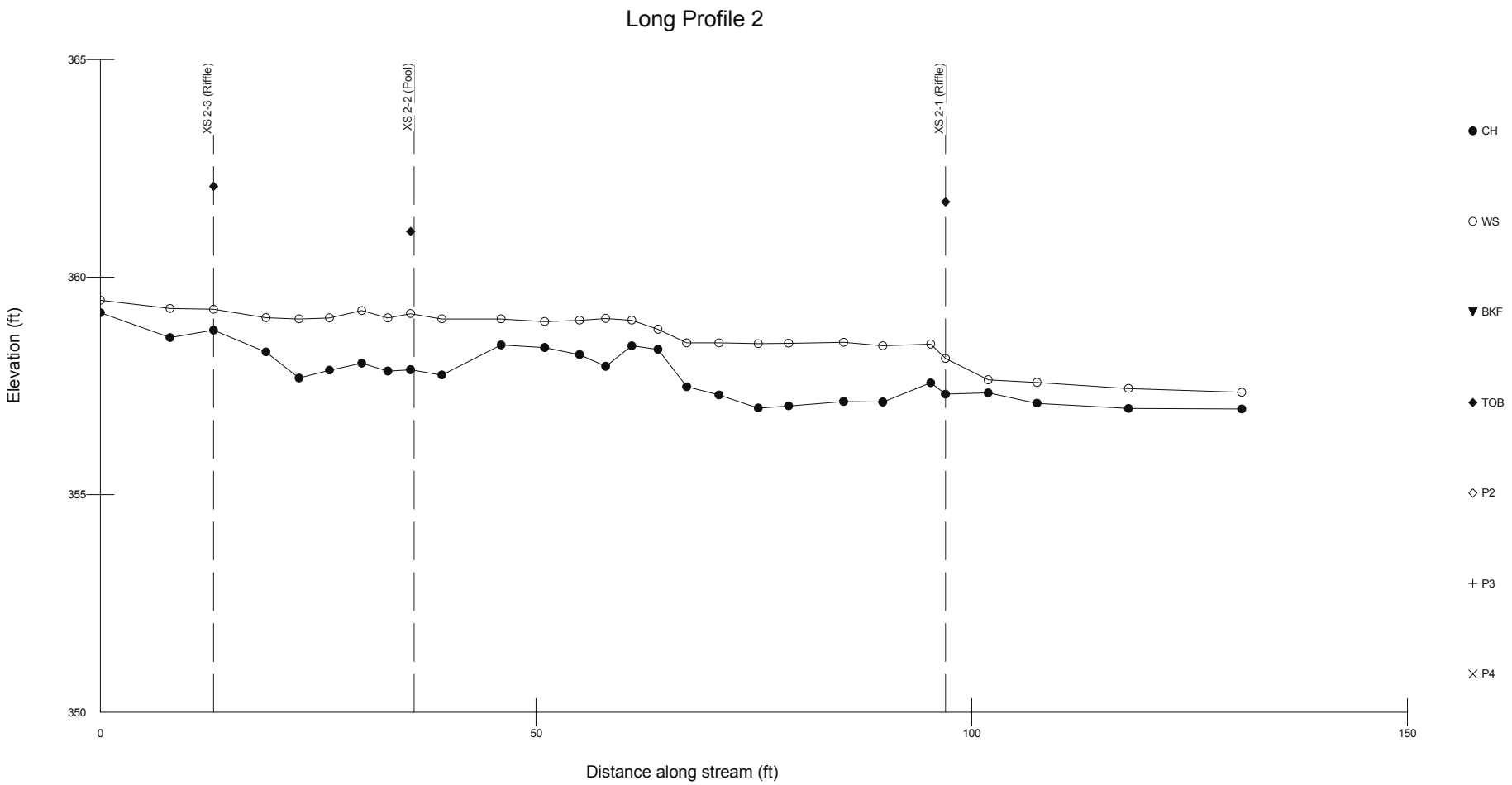

XS 7-1 (Riffle)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 8.9
Dbkf = .35
Abkf = 3.11
Elevation (ft)
378
376
374
372
370
0
5
10
15
20
25
Horizontal Distance (ft)


XS 7-2 (Riffle)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 9.79
Dbkf = .65
Abkf = 6.34
384
383
382
381
380
Elevation (ft)
0
5
10
15
20
25
30
Horizontal Distance (ft)

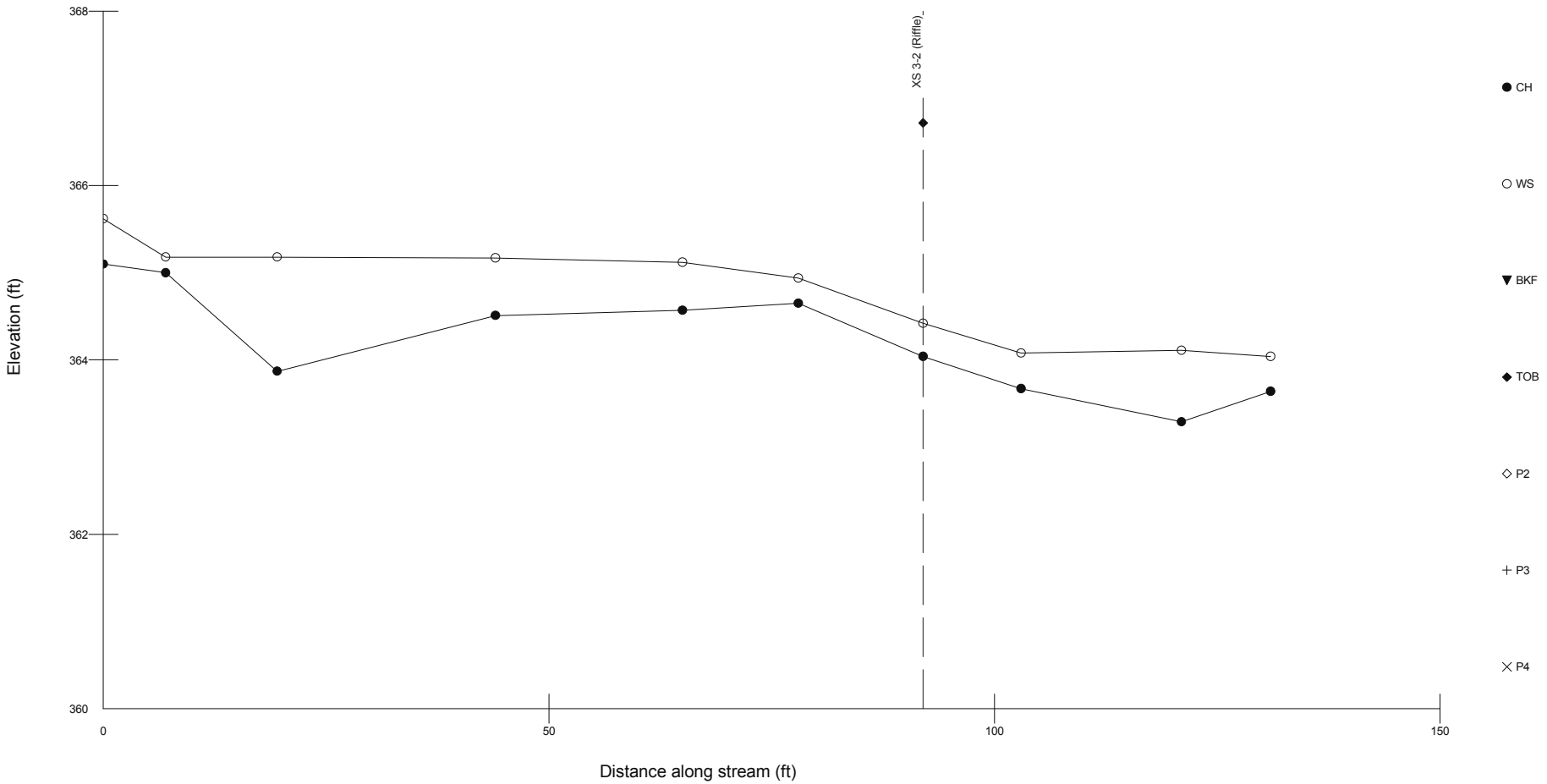

XS 7-3 (Pool)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 22.3
Dbkf = 1.28
Abkf = 28.4
385
384
383
382
381
380
Elevation (ft)
0
10
20
30
40
50
Horizontal Distance (ft)


XS 8-1 (Riffle)
Ground Points
Bankfull Indicators
Water Surface Points
Wbkf = 6.86
Dbkf = .55
Abkf = 3.78
200
198
196
194
192
190
Elevation (ft)
0
5
10
15
20
25
Horizontal Distance (ft)

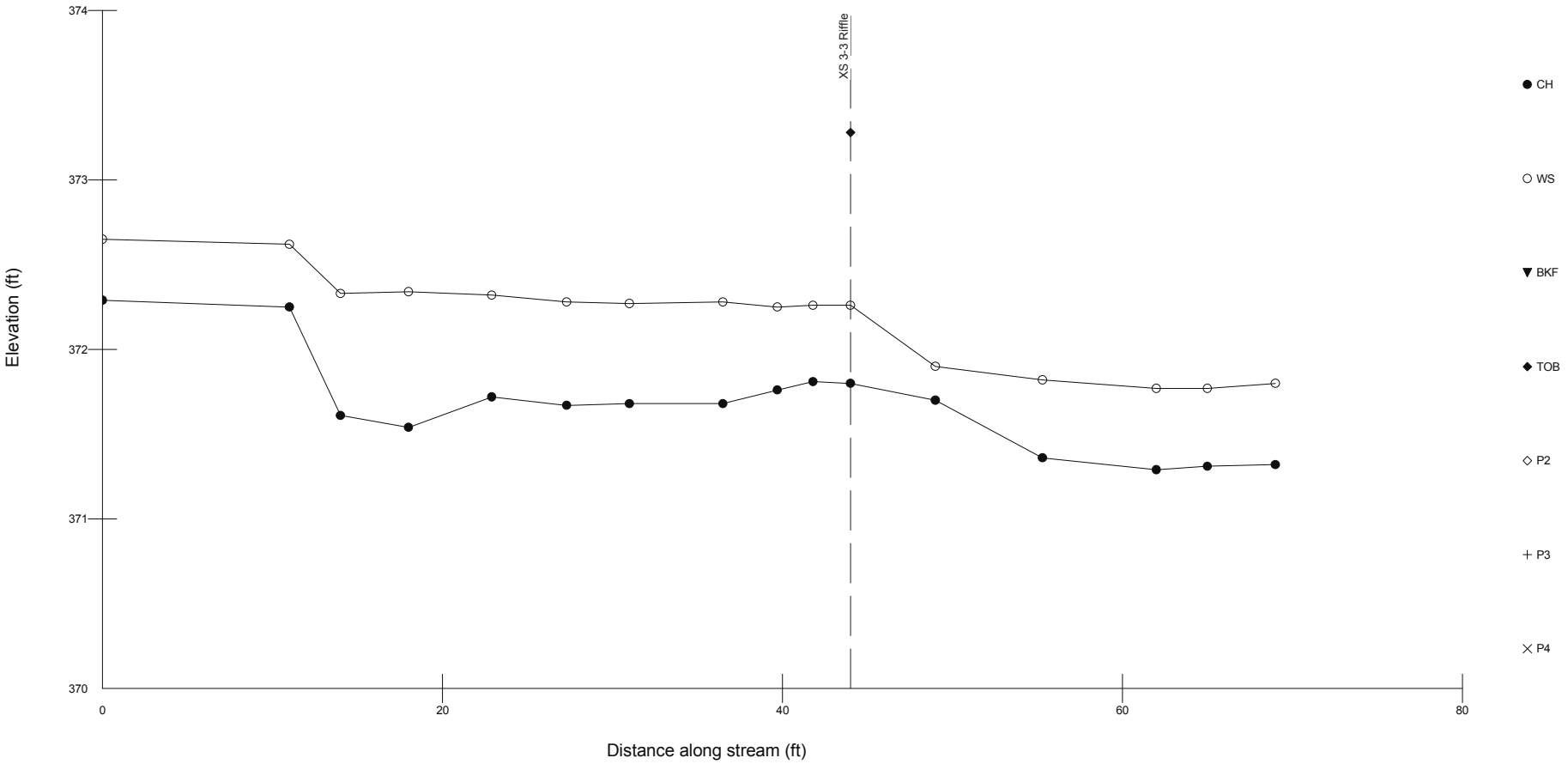

Long Profile 1
Elevation (ft)
356
355
354
353
352
351
350
0
50
100
150
Distance along stream (ft)
XS 1-2 (Pool)
XS 1-1 (Riffle)
CH
WS
BKF
TOB
P2
P3
P4


Long Profile 2
365
360
355
350
Elevation (ft)
XS 2-3 (Riffle)
XS 2-2 (Pool)
XS 2-1 (Riffle)
0
50
100
150
Distance along stream (ft)
CH
WS
BKF
TOB
P2
P3
P4

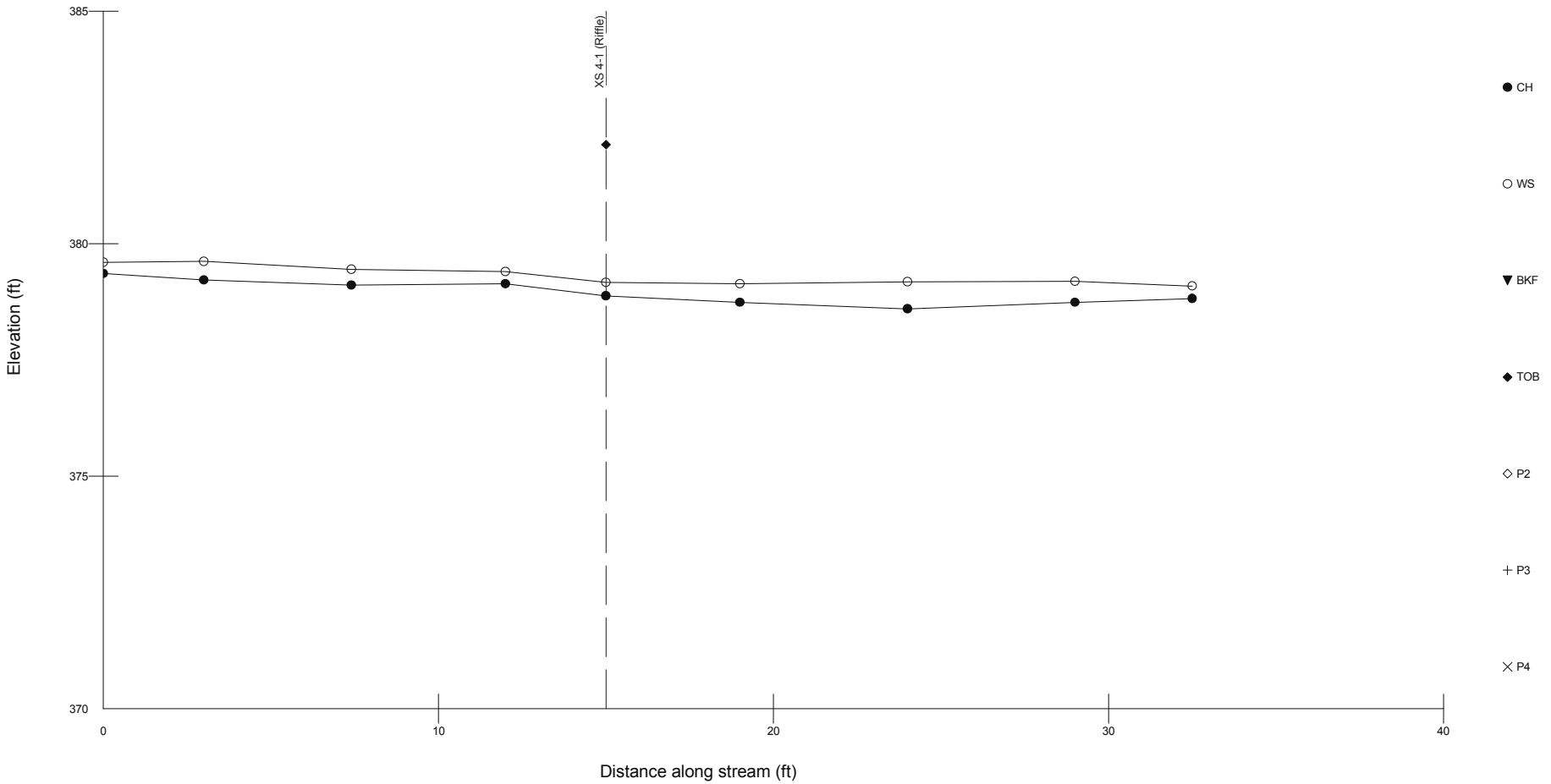
Long Profile 3-2



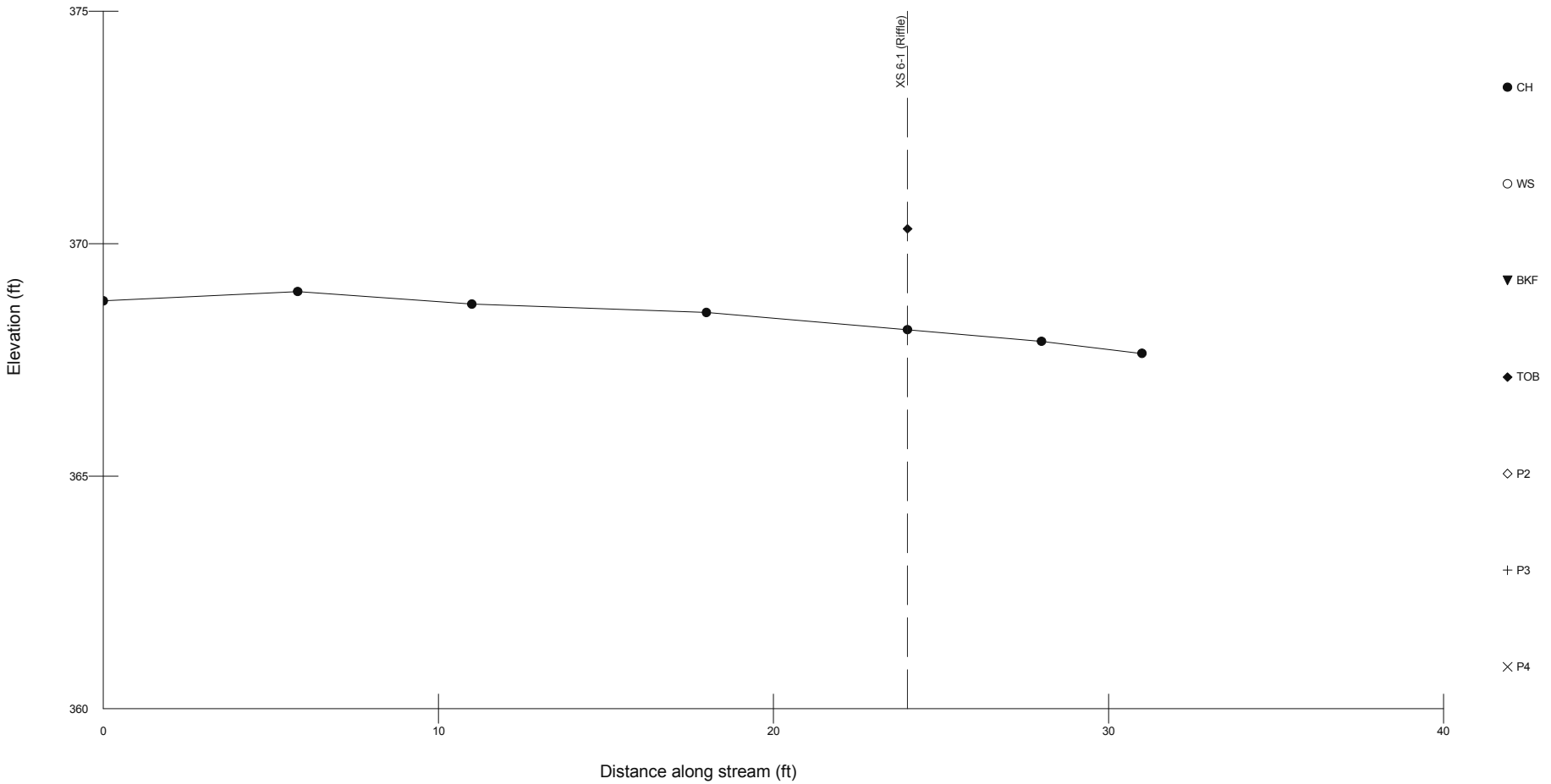
Long Profile 3-3



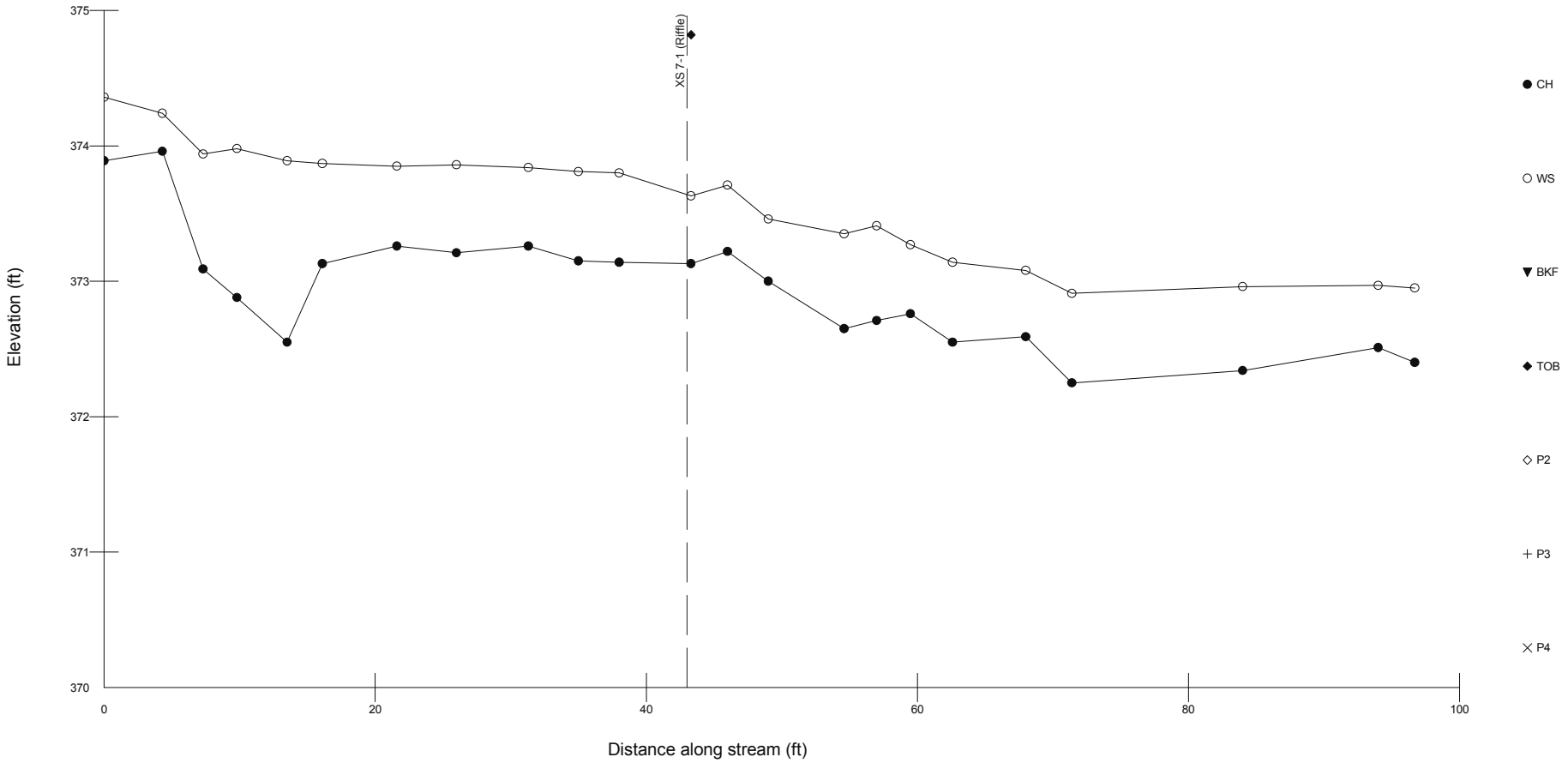
Long Profile 4



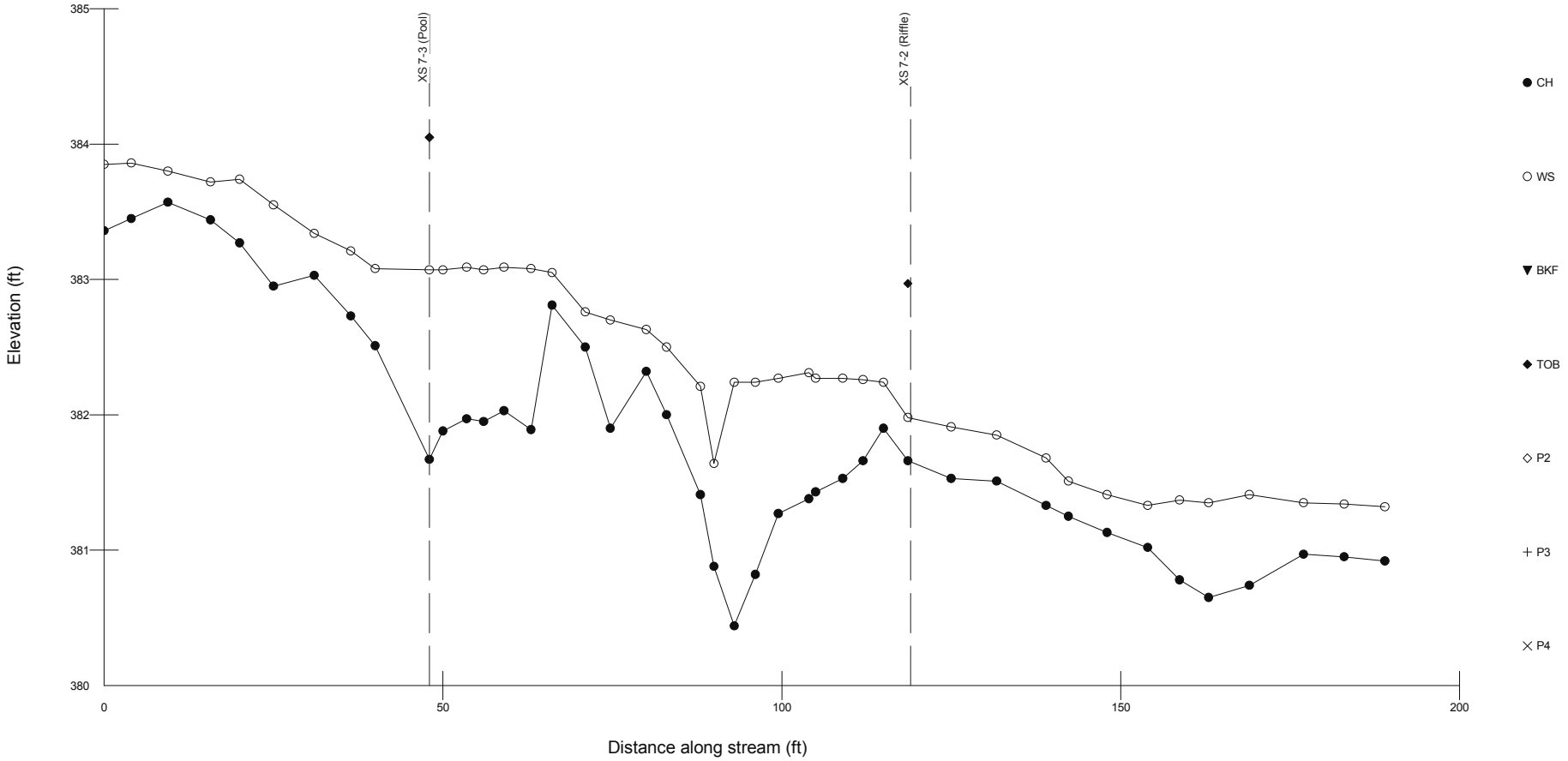
Long Profile 6



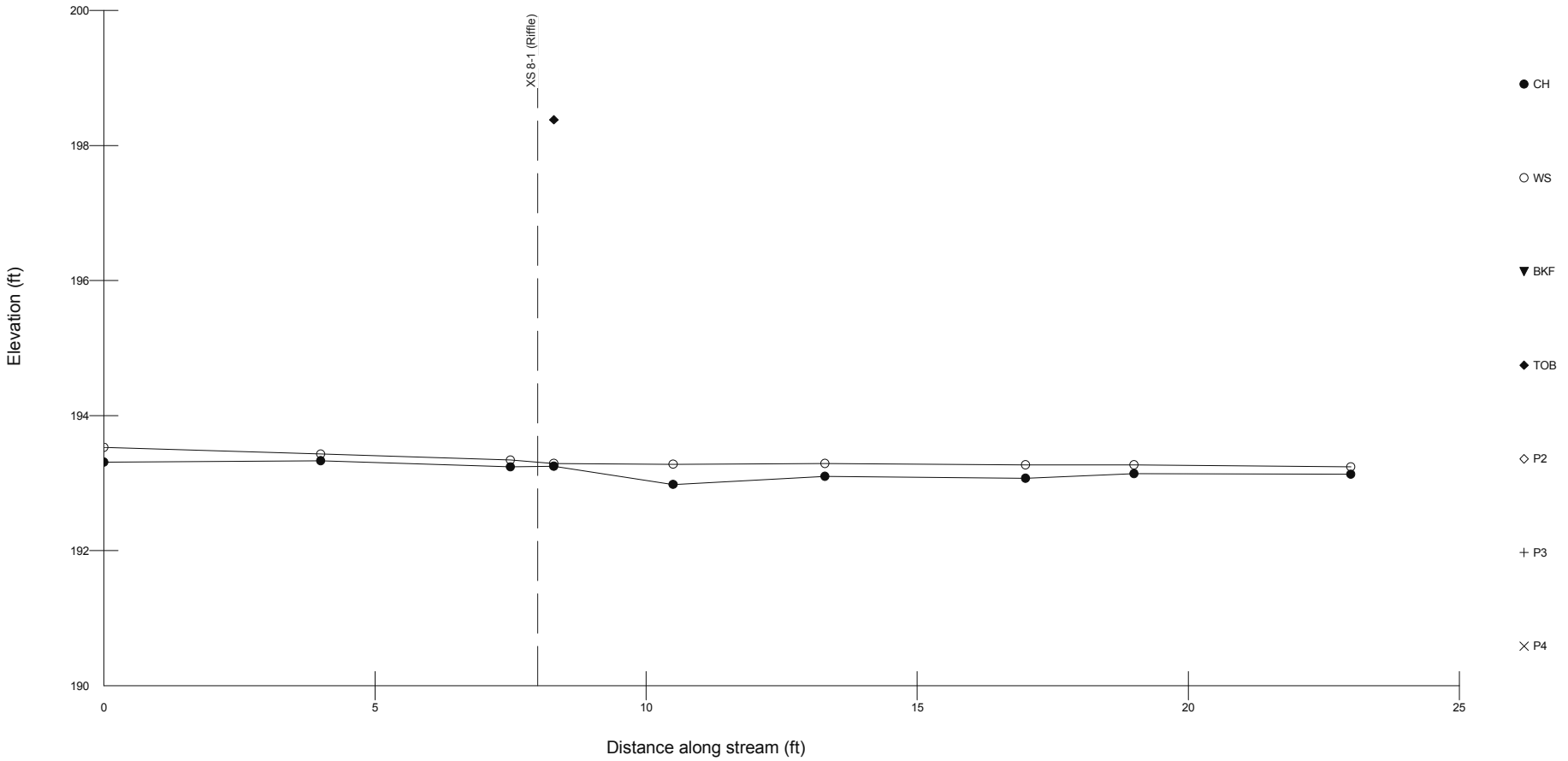
Long Profile 7-1



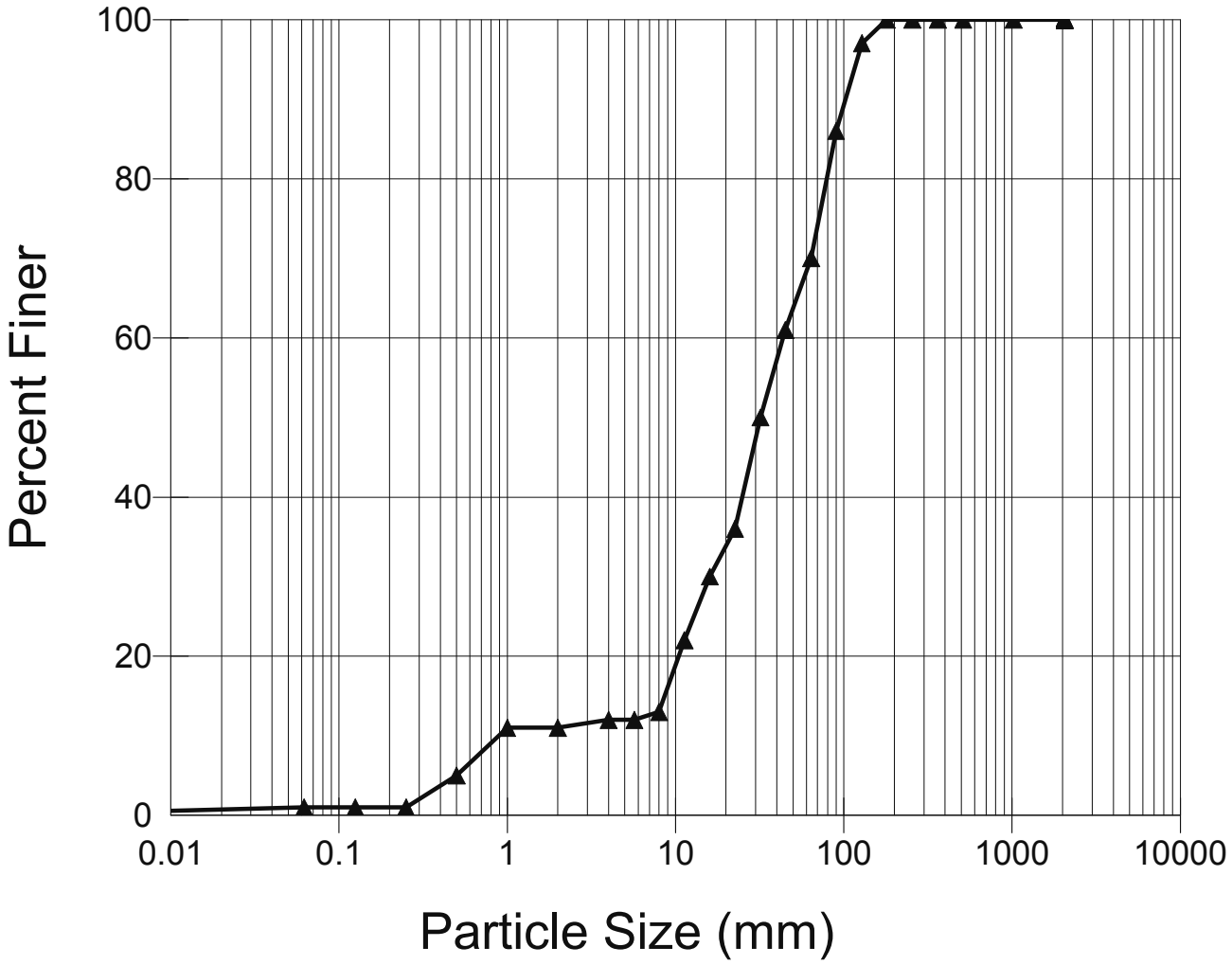
Long Profile 7-2



Long Profile 8



XS 1-1 (Riffle)

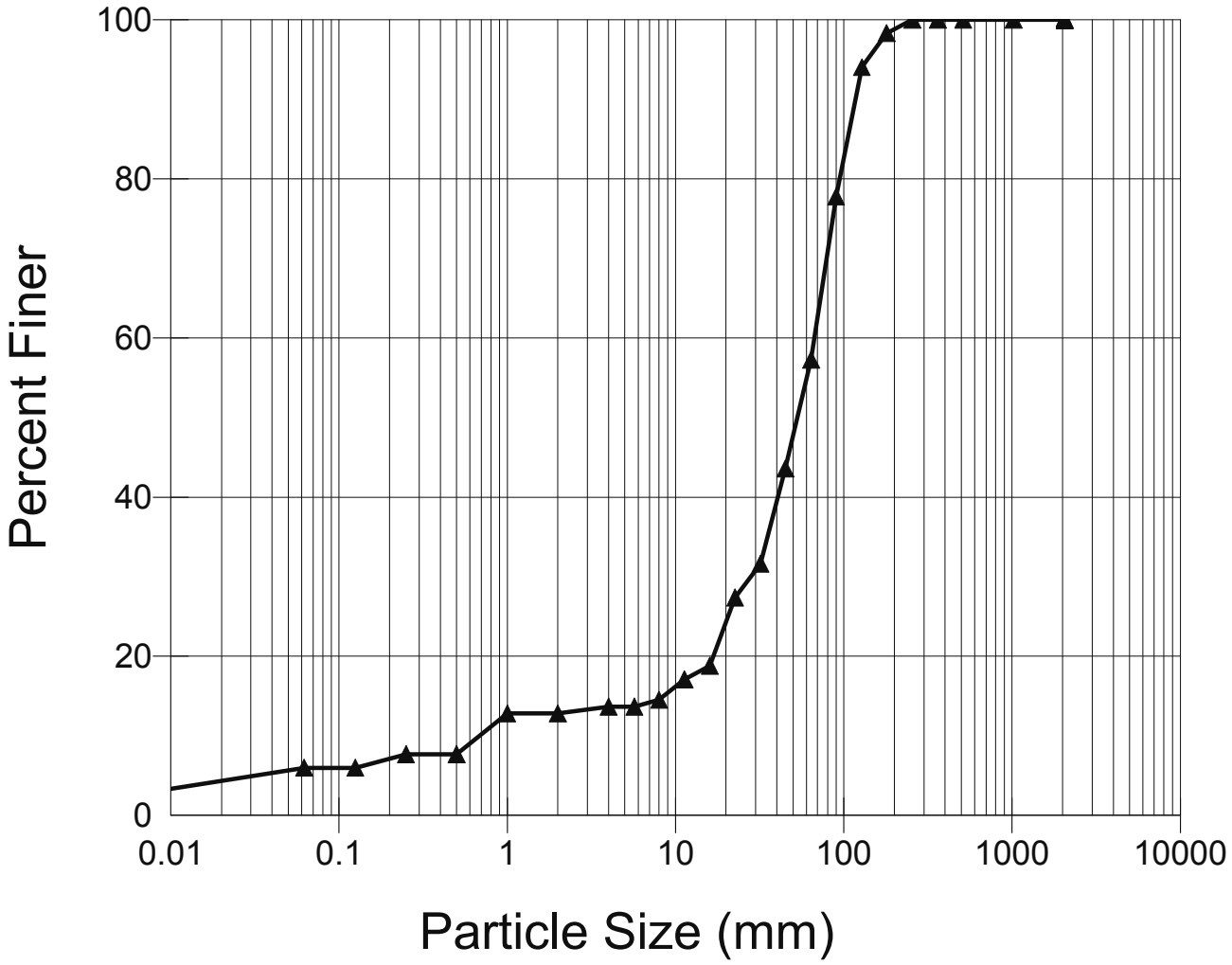


Particle Size Analysis

D16 (mm)	9.1
D35 (mm)	21.5
D50 (mm)	32
D84 (mm)	86.75
D95 (mm)	121.09
D100 (mm)	180
Silt/Clay (%)	1
Sand (%)	10
Gravel (%)	59
Cobble (%)	30
Boulder (%)	0
Bedrock (%)	0

Total Particles = 100

XS 3-2 (Riffle)

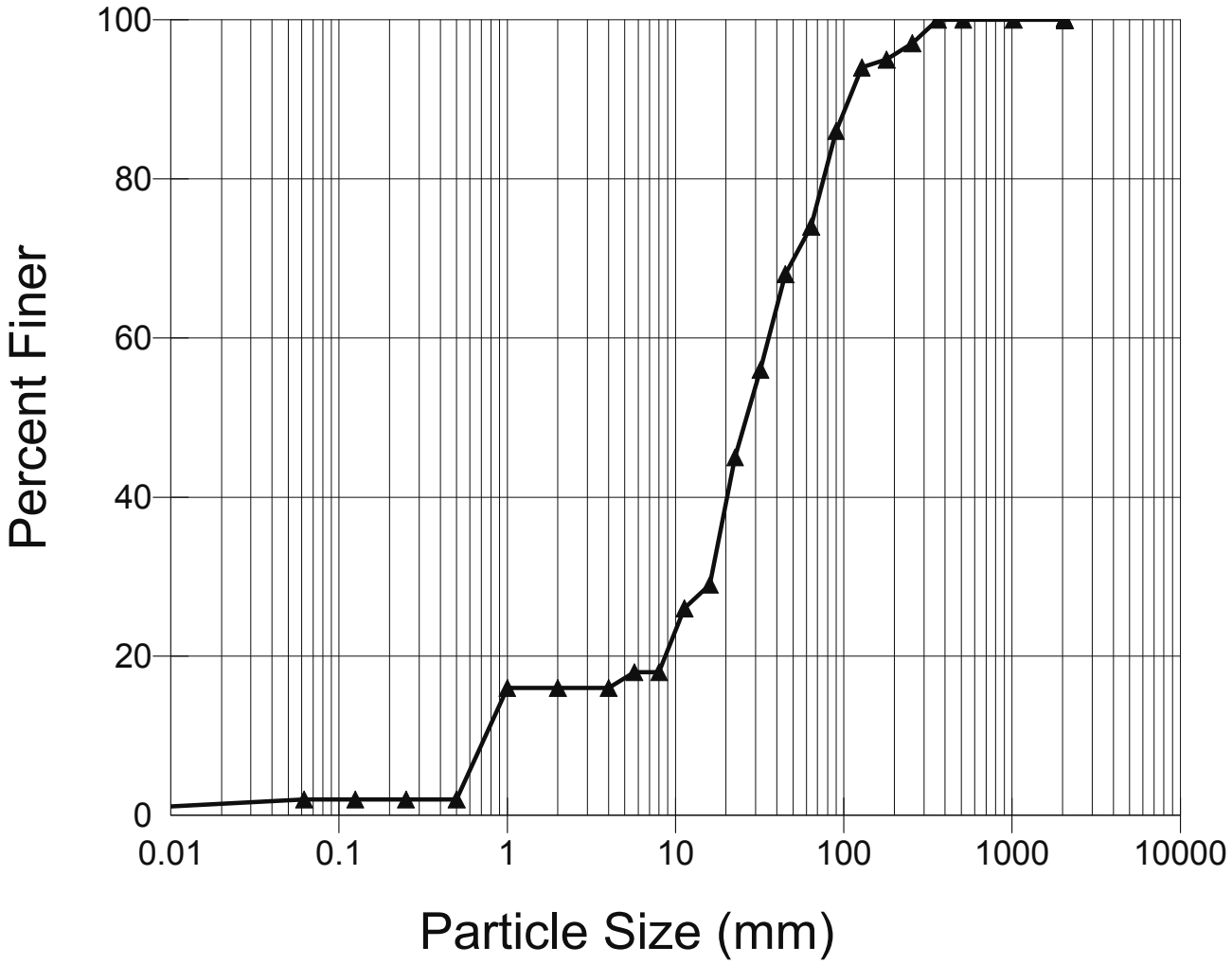


Particle Size Analysis

D16 (mm)	9.89
D35 (mm)	35.67
D50 (mm)	53.91
D84 (mm)	104.55
D95 (mm)	139.93
D100 (mm)	256
Silt/Clay (%)	5.98
Sand (%)	6.84
Gravel (%)	44.44
Cobble (%)	42.74
Boulder (%)	0
Bedrock (%)	0

Total Particles = 117

XS 3-3 (Riffle)

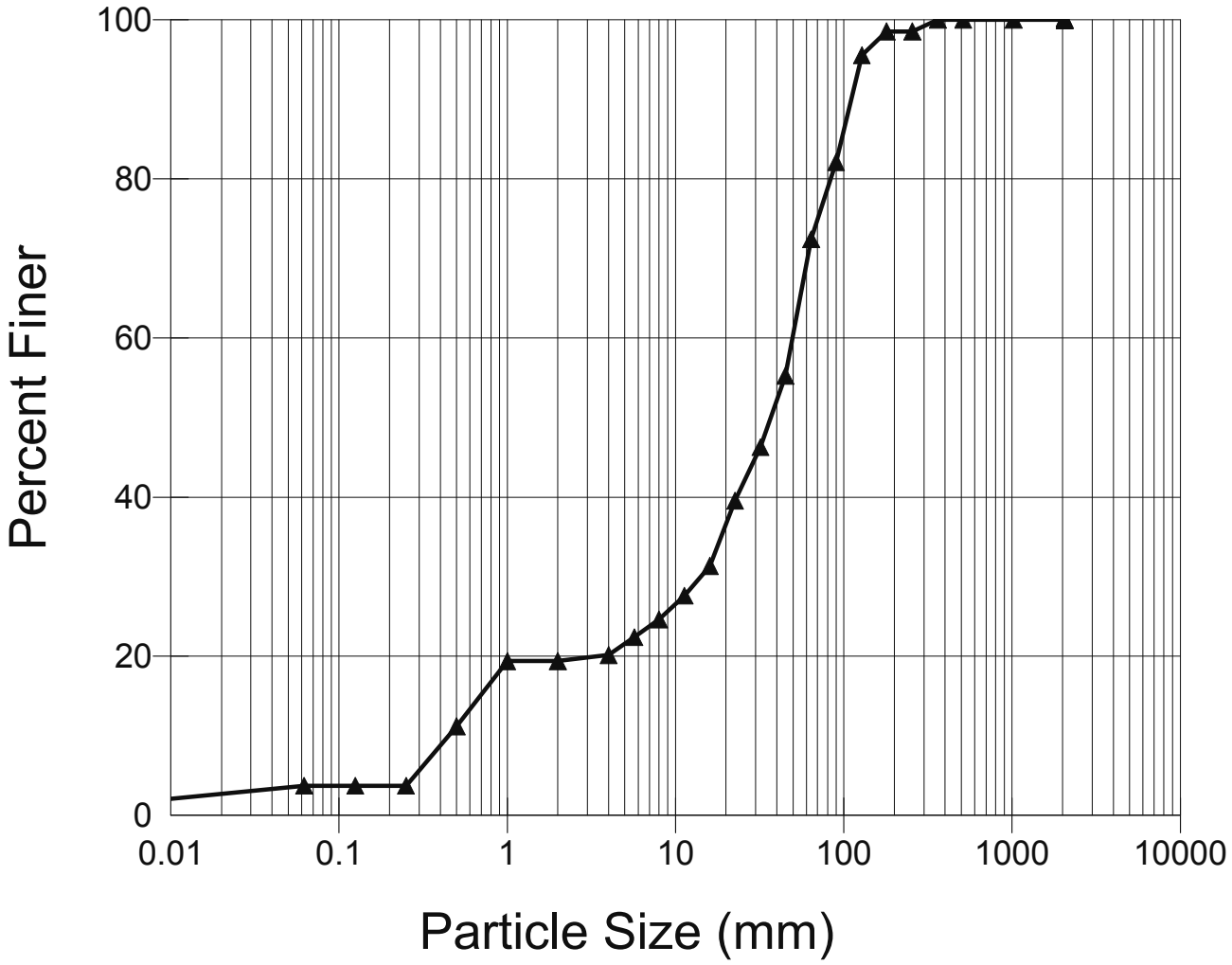


Particle Size Analysis

D16 (mm)	1
D35 (mm)	18.48
D50 (mm)	26.87
D84 (mm)	85.67
D95 (mm)	180
D100 (mm)	362
Silt/Clay (%)	2
Sand (%)	14
Gravel (%)	58
Cobble (%)	23
Boulder (%)	3
Bedrock (%)	0

Total Particles = 100

XS 4-1 (Riffle)

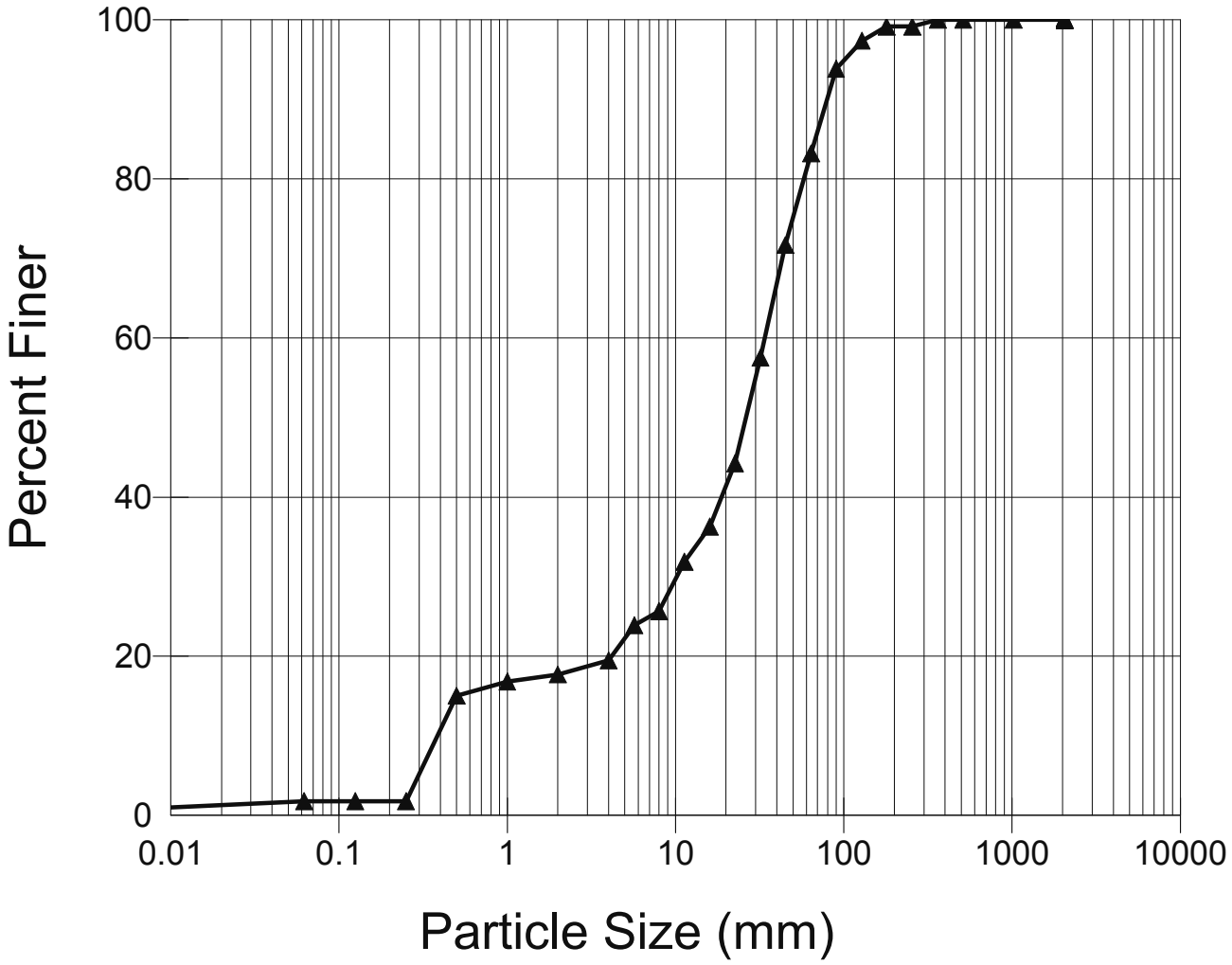


Particle Size Analysis

D16 (mm)	0.79
D35 (mm)	18.94
D50 (mm)	37.42
D84 (mm)	95.4
D95 (mm)	126.53
D100 (mm)	361.99
Silt/Clay (%)	3.73
Sand (%)	15.67
Gravel (%)	52.99
Cobble (%)	26.12
Boulder (%)	1.49
Bedrock (%)	0

Total Particles = 134

XS 6-1 (Riffle)

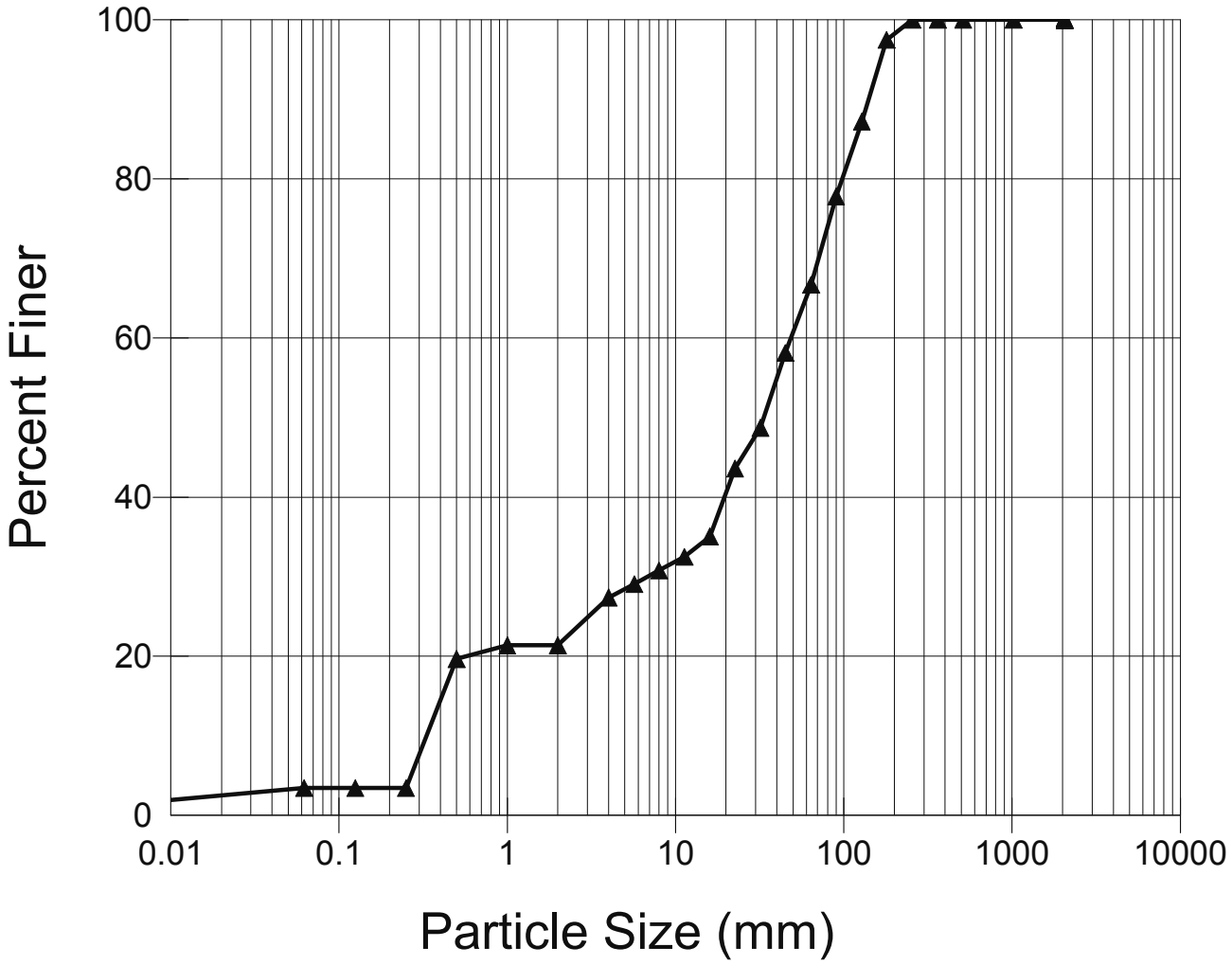


Particle Size Analysis

D16 (mm)	0.77
D35 (mm)	14.64
D50 (mm)	26.67
D84 (mm)	65.98
D95 (mm)	102.77
D100 (mm)	361.99
Silt/Clay (%)	1.77
Sand (%)	15.93
Gravel (%)	65.49
Cobble (%)	15.93
Boulder (%)	0.88
Bedrock (%)	0

Total Particles = 113

XS 7-1 (Riffle)

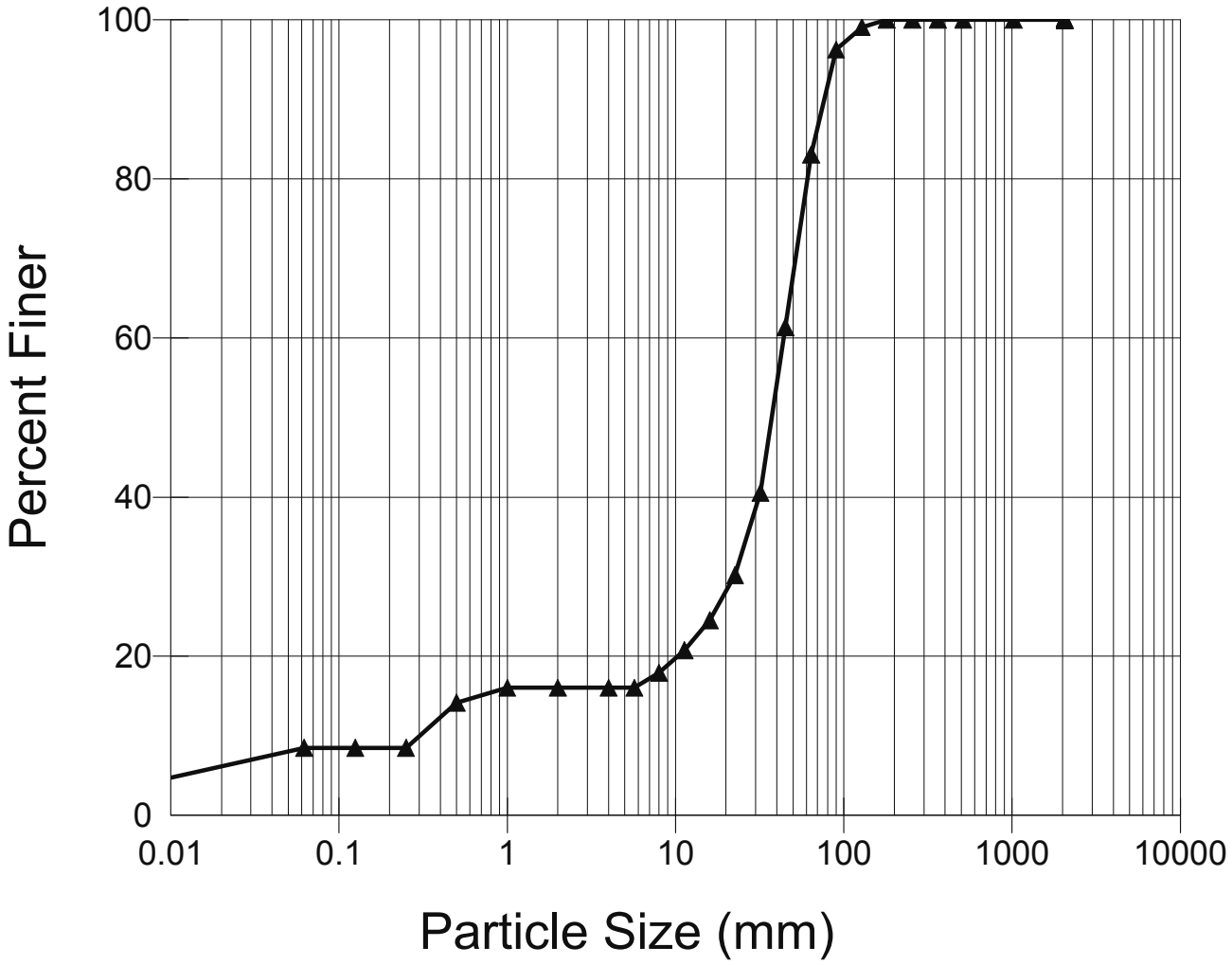


Particle Size Analysis

D16 (mm)	0.44
D35 (mm)	15.93
D50 (mm)	33.77
D84 (mm)	115.14
D95 (mm)	167.63
D100 (mm)	256
Silt/Clay (%)	3.42
Sand (%)	17.95
Gravel (%)	45.3
Cobble (%)	33.33
Boulder (%)	0
Bedrock (%)	0

Total Particles = 117

XS 7-2 (Riffle)

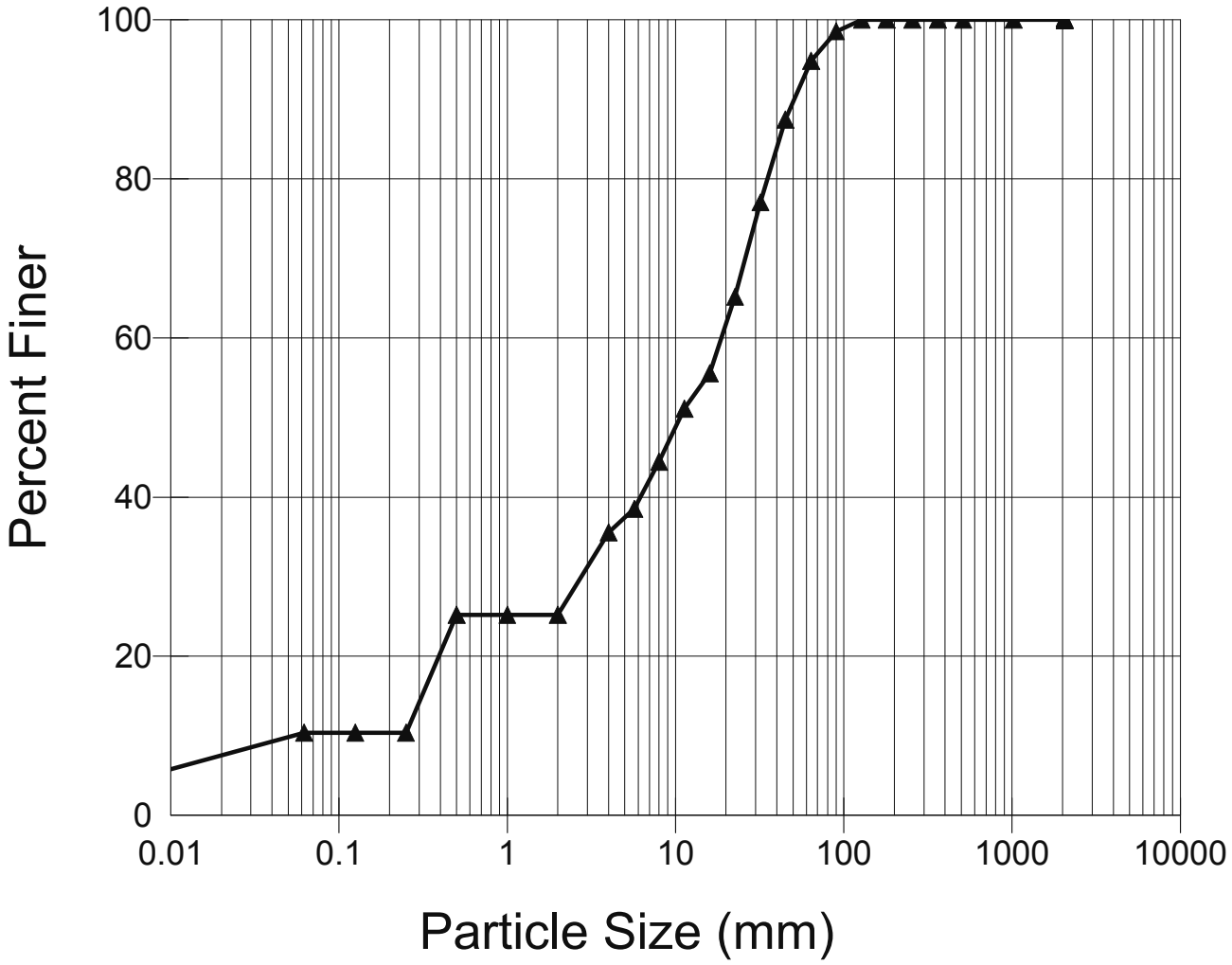


Particle Size Analysis

D16 (mm)	0.99
D35 (mm)	26.96
D50 (mm)	37.91
D84 (mm)	65.93
D95 (mm)	87.58
D100 (mm)	179.99
Silt/Clay (%)	8.49
Sand (%)	7.55
Gravel (%)	66.98
Cobble (%)	16.98
Boulder (%)	0
Bedrock (%)	0

Total Particles = 106

XS 8-1 (Riffle)

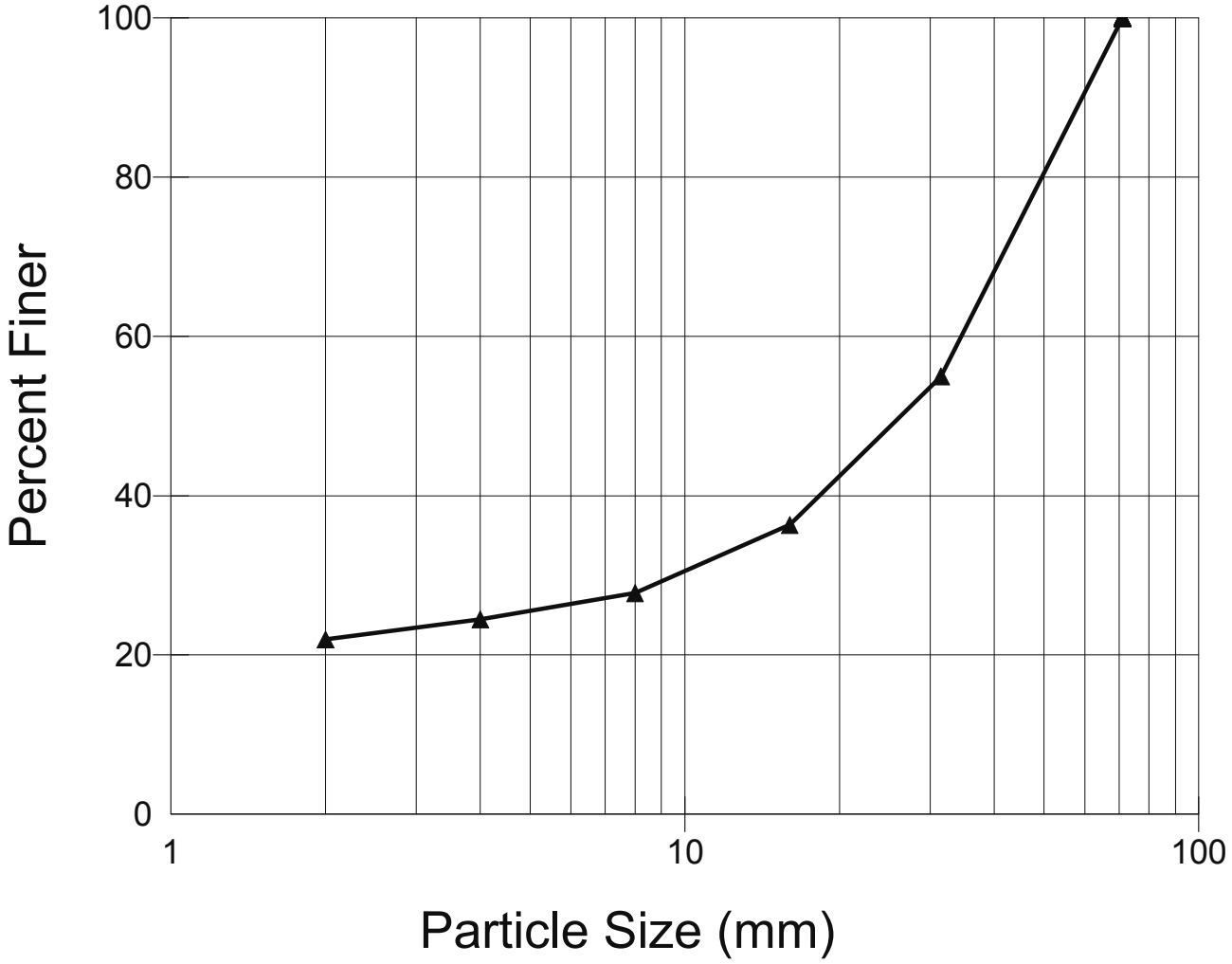


Particle Size Analysis

D16 (mm)	0.34
D35 (mm)	3.89
D50 (mm)	10.75
D84 (mm)	40.73
D95 (mm)	65.33
D100 (mm)	128
Silt/Clay (%)	10.37
Sand (%)	14.82
Gravel (%)	69.62
Cobble (%)	5.19
Boulder (%)	0
Bedrock (%)	0

Total Particles = 135

Basal Gravel 2

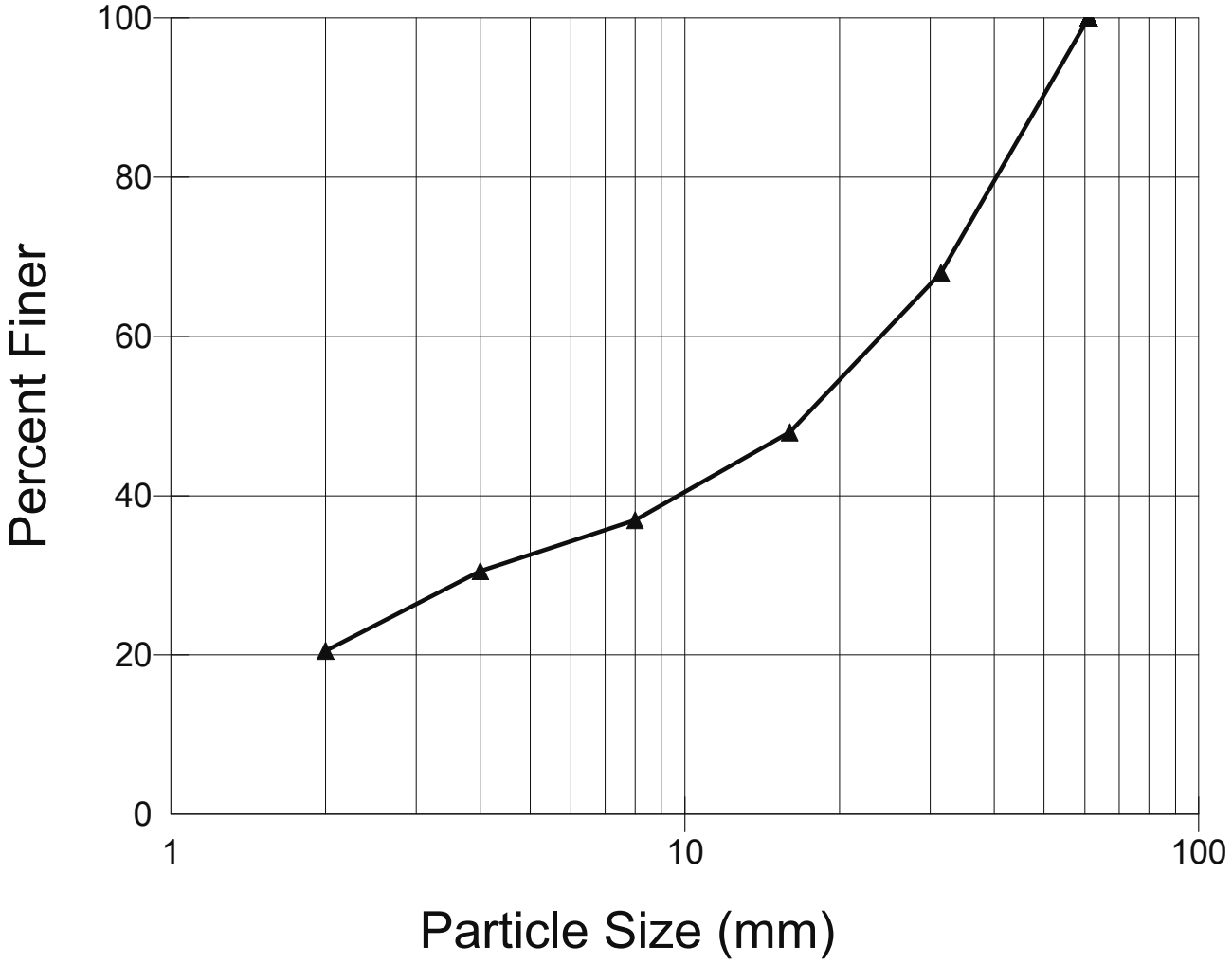


Particle Size Analysis

D16 (mm)	0
D35 (mm)	14.77
D50 (mm)	27.38
D84 (mm)	56.97
D95 (mm)	66.62
D100 (mm)	71
Silt/Clay (%)	0
Sand (%)	21.94
Gravel (%)	72.3
Cobble (%)	5.75
Boulder (%)	0
Bedrock (%)	0

Total Weight = 10.30

Basal Gravel 4

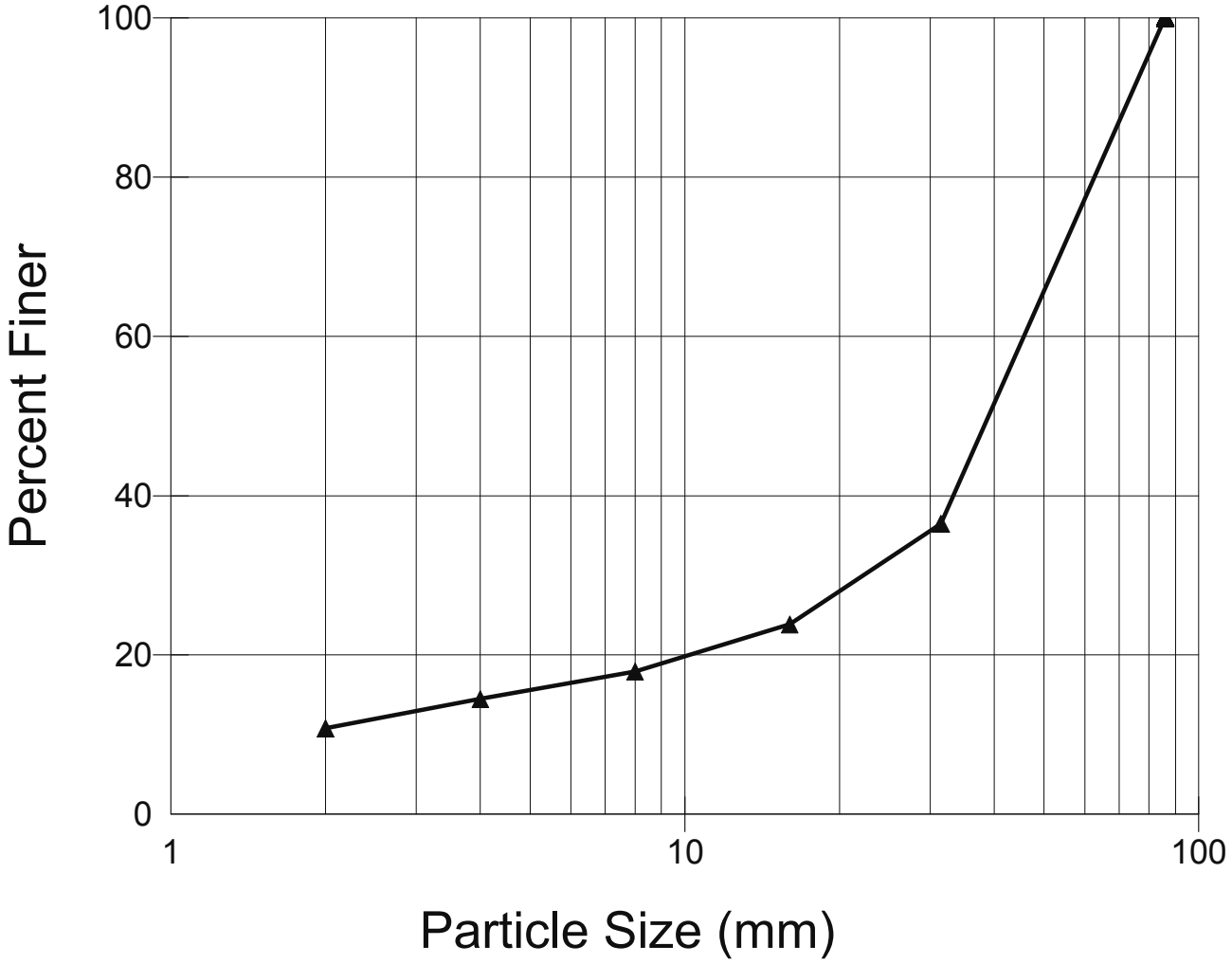


Particle Size Analysis

D16 (mm)	0
D35 (mm)	6.8
D50 (mm)	17.59
D84 (mm)	46.27
D95 (mm)	56.4
D100 (mm)	64
Silt/Clay (%)	0
Sand (%)	20.51
Gravel (%)	79.49
Cobble (%)	0
Boulder (%)	0
Bedrock (%)	0

Total Weight = 7.80

Basal Gravel 5

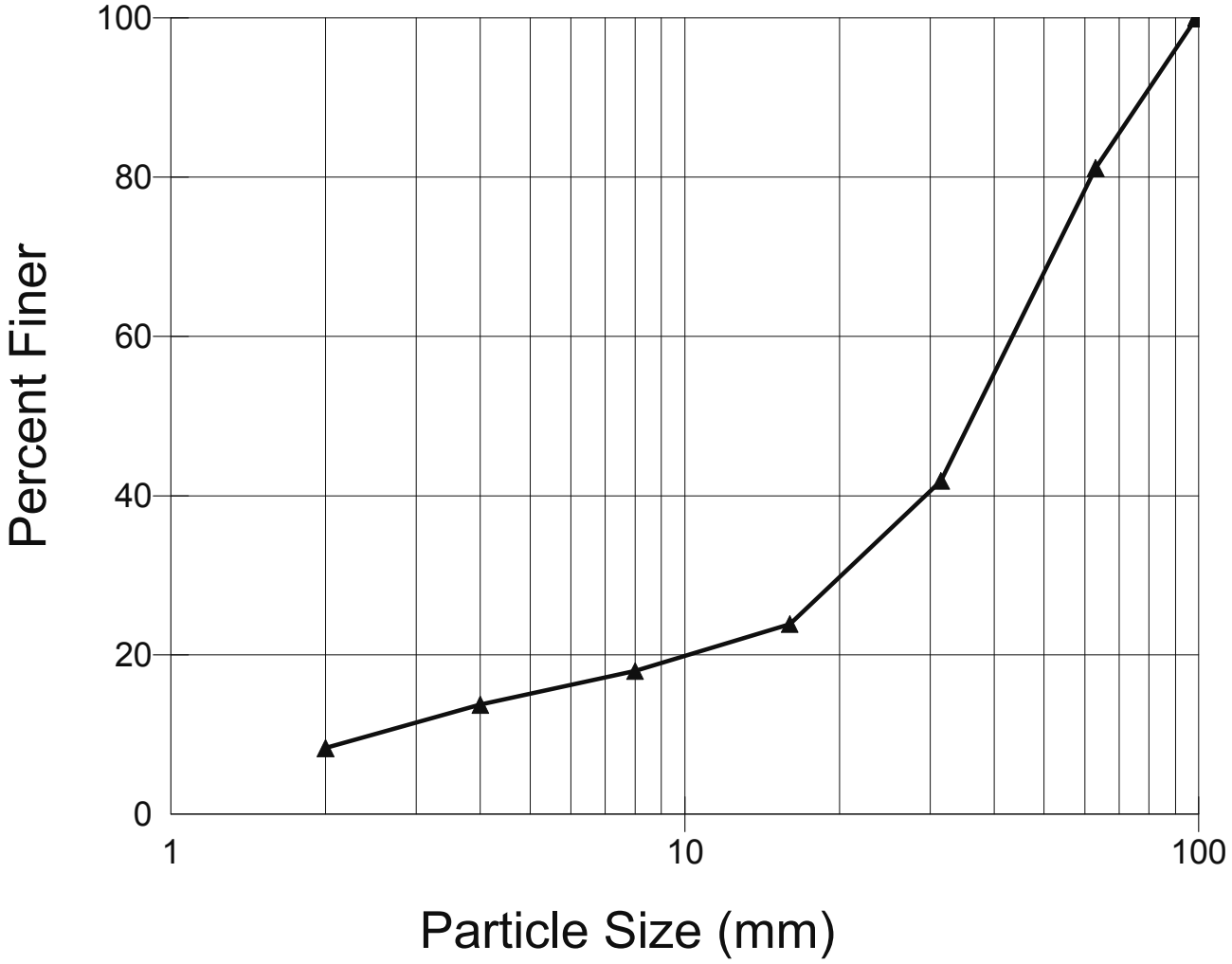


Particle Size Analysis

D16 (mm)	5.78
D35 (mm)	29.71
D50 (mm)	43.12
D84 (mm)	72.28
D95 (mm)	81.71
D100 (mm)	86
Silt/Clay (%)	0
Sand (%)	10.79
Gravel (%)	70.51
Cobble (%)	18.69
Boulder (%)	0
Bedrock (%)	0

Total Weight = 9.82

Point Bar



Particle Size Analysis

D16 (mm)	6.13
D35 (mm)	25.6
D50 (mm)	38.04
D84 (mm)	68.5
D95 (mm)	89.47
D100 (mm)	99
Silt/Clay (%)	0
Sand (%)	8.31
Gravel (%)	73.47
Cobble (%)	18.22
Boulder (%)	0
Bedrock (%)	0

Total Weight = 13.24

RIVERMORPH PARTICLE SUMMARY

River Name: Eccleston Mitigation Bank
Reach Name: Basal Gravel Samples
Sample Name: Combined Basal Gravel
Survey Date: 11/06/2018

SIEVE (mm)	NET WT
31.5	10.18
16	4.72
8	2.32
4	1.18
2	1.4
PAN	4.92
D16 (mm)	0
D35 (mm)	13.81
D50 (mm)	26.84
D84 (mm)	66.44
D95 (mm)	79.89
D100 (mm)	86
Silt/Clay (%)	0
Sand (%)	18.75
Gravel (%)	68.13
Cobble (%)	13.12
Boulder (%)	0
Bedrock (%)	0

Total Weight = 26.2400.

Largest Surface Particles:

	Size(mm)	Weight
Particle 1:	86	0.52
Particle 2:	74	1

RIVERMORPH PARTICLE SUMMARY

River Name: Eccleston Mitigation Bank
Reach Name: Combined MainStem
Sample Name: Combined Riffle Pebble Count
Survey Date: 11/07/2018

Size (mm)	TOT #	ITEM %	CUM %
0 - 0.062	23	4.26	4.26
0.062 - 0.125	0	0.00	4.26
0.125 - 0.25	2	0.37	4.63
0.25 - 0.50	29	5.37	10.00
0.50 - 1.0	30	5.56	15.56
1.0 - 2.0	0	0.00	15.56
2.0 - 4.0	9	1.67	17.22
4.0 - 5.7	4	0.74	17.96
5.7 - 8.0	6	1.11	19.07
8.0 - 11.3	25	4.63	23.70
11.3 - 16.0	20	3.70	27.41
16.0 - 22.6	48	8.89	36.30
22.6 - 32.0	47	8.70	45.00
32 - 45	70	12.96	57.96
45 - 64	64	11.85	69.81
64 - 90	79	14.63	84.44
90 - 128	52	9.63	94.07
128 - 180	22	4.07	98.15
180 - 256	7	1.30	99.44
256 - 362	3	0.56	100.00
362 - 512	0	0.00	100.00
512 - 1024	0	0.00	100.00
1024 - 2048	0	0.00	100.00
Bedrock	0	0.00	100.00

D16 (mm)	2.53
D35 (mm)	21.63
D50 (mm)	37.02
D84 (mm)	89.22
D95 (mm)	139.85
D100 (mm)	361.98
Silt/Clay (%)	4.26
Sand (%)	11.3
Gravel (%)	54.25
Cobble (%)	29.63
Boulder (%)	0.56
Bedrock (%)	0

Total Particles = 540.

APPENDIX E
TMDL and NPDES Credit Calculations

Only enter data in the green cells. All other cells are either linked to other worksheets or have equations.

Project Name	Eccleston Mitigation Bank										
Feature	Lat/Long		Length, ft (Bank or deposition)	Height, ft (Bank or Headcut)	BEHI Rating	NBS Rating	Predicted Rate of Bank Erosion (ft/year)	Predicted Erosion Amount (ft^3/year)	Predicted Erosion Amount (tons/year)	Predicted Erosion Rate (tons/year/ft)	Comments
Feature I.D. (Bank., Headcut or Deposition I.D.)	Start (Headcut Location or Start of Bank/Deposition)	End (For Banks or Deposition only)									
Left Bank, LB1	137+81.38 to 138+57.64		79	5.00	High	Low	0.40	158.00	7.61	0.096	Jones Falls - Main Stem
Right Bank, RB1	137+75.04 to 138+58.10		81	5.00	Very High	Very High	1.75	708.75	34.13	0.421	Jones Falls - Main Stem
Left Bank, LB2	136+80.59 to 137+81.38		109	4.00	High	Extreme	2.50	1090.00	52.48	0.481	Jones Falls - Main Stem
Right Bank, RB2	136+68.35 to 137+75.04		101	3.00	Extreme	Extreme	4.50	1363.50	65.65	0.650	Jones Falls - Main Stem
Left Bank, LB3	135+84.96 to 136+80.59		90	2.70	Very High	High	1.00	243.00	11.70	0.130	Jones Falls - Main Stem
Right Bank, RB3	135+92.67 to 136+68.35		87	4.30	High	Low	0.40	149.64	7.20	0.083	Jones Falls - Main Stem
Left Bank, LB4	135+2.07 to 135+84.96		87	3.20	Extreme	High	2.50	696.00	33.51	0.385	Jones Falls - Main Stem
Right Bank, RB4	135+7.97 to 135+92.67		83	2.20	High	Low	0.40	73.04	3.52	0.042	Jones Falls - Main Stem
Left Bank, LB5	133+88.95 to 135+2.07		133	4.00	Very High	Very High	1.75	931.00	44.83	0.337	Jones Falls - Main Stem
Right Bank, RB5	134+20.79 to 135+7.97		88	2.50	High	Low	0.40	88.00	4.24	0.048	Jones Falls - Main Stem
Right Bank, RB6	133+33.43 to 134+20.79		92	4.00	Very High	High	1.00	368.00	17.72	0.193	Jones Falls - Main Stem
Left Bank, LB6	132+65.40 to 133+88.95		124	4.00	High	Low	0.40	198.40	9.55	0.077	Jones Falls - Main Stem
Right Bank, RB7	126+61.74 to 133+33.43		686	3.50	Extreme	High	2.50	6002.50	289.01	0.421	Jones Falls - Main Stem
Left Bank, LB7	126+57.48 to 132+65.40		621	4.50	High	Low	0.40	1117.80	53.82	0.087	Jones Falls - Main Stem
Right Bank, RB8	123+57.45 to 126+61.74		301	3.50	Very High	Low	0.40	421.40	20.29	0.067	Jones Falls - Main Stem
Left Bank, LB8	124+88.11 to 126+57.48		194	3.00	High	Low	0.40	232.80	11.21	0.058	Jones Falls - Main Stem
Right Bank, RB9	121+21.11 to 123+57.45		239	5.00	High	Moderate	0.64	764.80	36.82	0.154	Jones Falls - Main Stem
Left Bank, LB9	121+23.56 to 124+88.11		409	3.50	Very High	Moderate	0.64	916.16	44.11	0.108	Jones Falls - Main Stem
Right Bank, RB10	119+64.19 to 121+21.11		160	2.50	High	Moderate	0.64	256.00	12.33	0.077	Jones Falls - Main Stem

Feature	Lat/Long		Length, ft (Bank or deposition)	Height, ft (Bank or Headcut)	BEHI Rating	NBS Rating	Predicted Rate of Bank Erosion (ft/year)	Predicted Erosion Amount (ft^3/year)	Predicted Erosion Amount (tons/year)	Predicted Erosion Rate (tons/year/ft)	Comments
Feature I.D. (Bank., Headcut or Deposition I.D.)	Start Headcut Location or Start of Bank/Deposition	End For Banks or Deposition only									
Left Bank, LB10	120+25.66 to 121+23.56		97	3.00	Very High	Moderate	0.64	186.24	8.97	0.092	Jones Falls - Main Stem
Right Bank, RB11	116+39.48 to 119+64.19		325	4.50	High	Low	0.40	585.00	28.17	0.087	Jones Falls - Main Stem
Left Bank, LB11	114+61.16 to 120+25.66		595	4.50	High	Low	0.40	1071.00	51.57	0.087	Jones Falls - Main Stem
Right Bank, RB12	115+14.22 to 116+39.48		124	5.50	High	Low	0.40	272.80	13.13	0.106	Jones Falls - Main Stem
Left Bank, LB12	111+99.76 to 114+61.16		246	3.00	High	Extreme	2.50	1845.00	88.83	0.361	Jones Falls - Main Stem
Right Bank, RB13	113+44.63 to 115+14.22		160	2.20	Very High	Moderate	0.64	225.28	10.85	0.068	Jones Falls - Main Stem
Left Bank, LB13	110+41.23 to 111+99.76		147	3.50	High	Moderate	0.64	329.28	15.85	0.108	Jones Falls - Main Stem
Right Bank, RB14	112+84.76 to 113+44.63		76	2.50	Extreme	Extreme	4.50	855.00	41.17	0.542	Jones Falls - Main Stem
Left Bank, LB14	108+67.52 to 110+41.23		188	3.00	Extreme	Moderate	1.75	987.00	47.52	0.253	Jones Falls - Main Stem
Right Bank, RB15	112+3.47 to 112+84.76		79	3.00	Very High	Moderate	0.64	151.68	7.30	0.092	Jones Falls - Main Stem
Left Bank, LB15	107+61.02 to 108+67.52		103	2.50	Very High	Low	0.40	103.00	4.96	0.048	Jones Falls - Main Stem
Right Bank, RB16	110+65.05 to 112+3.47		140	3.50	High	Moderate	0.64	313.60	15.10	0.108	Jones Falls - Main Stem
Left Bank, LB16	106+23.76 to 107+61.02		138	2.50	Very High	Low	0.40	138.00	6.64	0.048	Jones Falls - Main Stem
Right Bank, RB17	107+61.59 to 110+65.05		298	2.00	Very High	Very High	1.75	1043.00	50.22	0.169	Jones Falls - Main Stem
Left Bank, LB17	102+41.73 to 106+23.76		419	2.50	High	High	1.00	1047.50	50.44	0.120	Jones Falls - Main Stem
Right Bank, RB18	106+3.93 to 107+61.59		157	2.50	High	Low	0.40	157.00	7.56	0.048	Jones Falls - Main Stem
Right Bank, RB19	102+40.18 to 106+3.93		362	2.50	Very High	Low	0.40	362.00	17.43	0.048	Jones Falls - Main Stem
Left Bank, LB18	202+64.02 to 205+15.89		279	3.50	Extreme	Low	1.30	1269.45	61.12	0.219	Rail Road Tributary
Left Bank, LB19	205+15.89 to 205+62.34		43	2.00	Very High	Low	0.40	34.40	1.66	0.039	Rail Road Tributary
Right Bank, RB20	202+64.58 to 205+11.94		244	3.00	Very High	Extreme	2.50	1830.00	88.11	0.361	Rail Road Tributary
Right Bank, RB21	205+11.94 to 205+58.48		47	2.00	Very High	Extreme	2.50	235.00	11.31	0.241	Rail Road Tributary

Feature	Lat/Long		Length, ft (Bank or deposition)	Height, ft (Bank or Headcut)	BEHI Rating	NBS Rating	Predicted Rate of Bank Erosion (ft/year)	Predicted Erosion Amount (ft^3/year)	Predicted Erosion Amount (tons/year)	Predicted Erosion Rate (tons/year/ft)	Comments
Feature I.D. (Bank., Headcut or Deposition I.D.)	Start: Headcut Location or Start of Bank/Deposition	End: For Banks or Deposition only									
Left Bank, LB20	404+4.57 to 405+60.53		155	0.50	High	Low	0.40	31.00	1.49	0.010	Braided Tributary
Left Bank, LB21	405+60.53 to 410+65.09		517	2.80	High	Low	0.40	579.04	27.88	0.054	Braided Tributary
Right Bank, RB22	404+7.41 to 405+56.34		147	0.50	High	Extreme	2.50	183.75	8.85	0.060	Braided Tributary
Right Bank, RB23	405+56.34 to 410+65.81		516	2.00	High	Extreme	2.50	2580.00	124.22	0.241	Braided Tributary
Left Bank, LB22	309+20.39 to 311+1.38		178	2.50	Extreme	Low	1.30	578.50	27.85	0.156	Stone House Tributary
Left Bank, LB23	307+55.25 to 309+20.39		163	2.50	Very High	Low	0.40	163.00	7.85	0.048	Stone House Tributary
Right Bank, RB24	306+16.05 to 310+97.33		486	2.50	High	Low	0.40	486.00	23.40	0.048	Stone House Tributary
Left Bank, LB24	306+18.16 to 307+55.25		137	2.50	High	Low	0.40	137.00	6.60	0.048	Stone House Tributary
Right Bank, RB25	305+52.82 to 306+16.05		62	2.50	Extreme	Low	1.30	201.50	9.70	0.156	Stone House Tributary
Left Bank, LB25	305+51.43 to 306+18.16		65	2.50	Extreme	Low	1.30	211.25	10.17	0.156	Stone House Tributary
Right Bank, RB26	302+31.22 to 305+52.82		335	2.50	High	Low	0.40	335.00	16.13	0.048	Stone House Tributary
Left Bank, LB26	302+30.62 to 305+51.43		322	2.50	High	Low	0.40	322.00	15.50	0.048	Stone House Tributary
Right Bank, RB27	301+33.97 to 302+31.22		111	4.00	High	Low	0.40	177.60	8.55	0.077	Stone House Tributary
Left Bank, LB27	301+25.14 to 302+30.62		107	2.00	Very High	Very High	1.75	374.50	18.03	0.169	Stone House Tributary
Right Bank, RB28	500+3.19 to 503+63.08		345	6.00	Very High	Very High	1.75	3622.50	174.42	0.506	Intersection Tributary
Left Bank, LB28	500+2.38 to 503+65.54		367	6.00	Very High	Moderate	0.64	1409.28	67.85	0.185	Intersection Tributary
Right Bank, RB29	503+63.08 to 507+15.6		358	5.00	Very High	Low	0.40	716.00	34.47	0.096	Intersection Tributary
Left Bank, LB29	503+65.54 to 507+20.72		352	5.00	Very High	Moderate	0.64	1126.40	54.23	0.154	Intersection Tributary
TOTAL OF ALL GRIDS			**12754.0**	**N/A**	**N/A**	**N/A**	**64.1**	**42054.3**	**2024.8**	**9.4**	

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**	**39.88**			
Reach:	137+81.38 to 138+57.64	**Comments:**							**High**			
Location:	Left Bank 1	**Bank Length**	79					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables

Bank Height / Bankfull Height Ratio

Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
5.00	1.50	3.33	10.00	Extreme	

Root Depth / Bank Height Ratio

Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.25	5.00	0.05	9.00	Very High	

Weighted Root Density

Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
70.00	0.05	3.50	10.00	Extreme	

Bank Angle

Bank Angle (°)		Index	Bank Erosion Potental	Notes
45.00		3.17	Low	

Surface Protection

Surface Protection (%)		Index	Bank Erosion Potental	Notes
70.00		2.71	Low	

	Adjustment		Notes
Bank Materials	5.00		
	Adjustment		Notes
Bank Stratification	0.00		
TOTAL SCORE	**39.88**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Adjustments

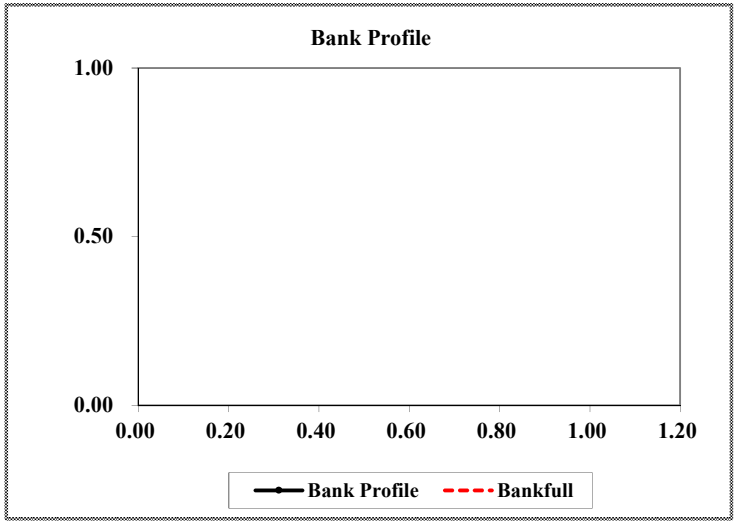
Bank Material	
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile		
Horizontal Distance	**Vertical Height**	**Notes**

Bankfull		
Horizontal Distance	**Vertical Height**	**Notes**



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Left Bank 1**

Station: **137+81.38 to 138+57.64** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{hb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I

(1)

Transverse and/or central bars-short and/or discontinuous……..NBS = High / Very High
Extensive deposition (continuous, cross-channel)……..NBS = Extreme
Chute cutoffs, down-valley meander migration, converging flow……..NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	**5**
Dominant Near-Bank Stress	
Low	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
0.47	**0.39**	**1.2051282**	**Low**

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV

(7)

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40

Overall Near-Bank Stress (NBS) rating **Low**

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**44.04**		
Reach:	137+75.04 to 138+58.10	**Comments:**								**Very High**		
Location:	Right Bank 1	**Bank Length**	81					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables

Bank Height / Bankfull Height Ratio

Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
5.00	1.50	3.33	10.00	Extreme	

Root Depth / Bank Height Ratio

Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.33	5.00	0.07	8.82	Very High	

Weighted Root Density

Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
60.00	0.07	3.96	10.00	Extreme	

Bank Angle

Bank Angle (°)		Index	Bank Erosion Potental	Notes
80.00		5.90	Moderate	

Surface Protection

Surface Protection (%)		Index	Bank Erosion Potental	Notes
50.00		4.32	Moderate	rip rap

	Adjustment		Notes
Bank Materials	5.00		
	Adjustment		Notes
Bank Stratification	0.00		
TOTAL SCORE	**44.04**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Adjustments

Bank Material	
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

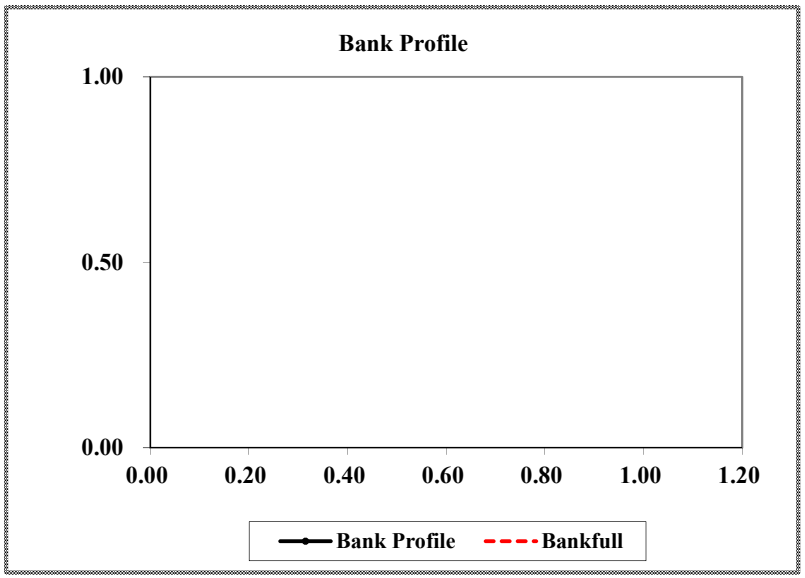
Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile

Horizontal Distance	Vertical Height	Notes

Bankfull

Horizontal Distance	Vertical Height	Notes



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Right Bank 1**

Station: **137+75.04 to 138+58.10** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I **(1)**

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	1
Dominant Near-Bank Stress	
Very High	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV

(7)

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40
	Overall Near-Bank Stress (NBS) rating					**Very High**	

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**39.85**			
Reach:	136+80.59 to 137+81.38	**Comments:**								**High**			
Location:	Left Bank 2	**Bank Length**	109					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables

Bank Height / Bankfull Height Ratio

Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
4.00	1.50	2.67	8.81	Very High	

Root Depth / Bank Height Ratio

Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.33	4.00	0.08	8.64	Very High	

Weighted Root Density

Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
50.00	0.08	4.13	10.00	Extreme	

Bank Angle

Bank Angle (°)		Index	Bank Erosion Potental	Notes
60.00		3.90	Low	

Surface Protection

Surface Protection (%)		Index	Bank Erosion Potental	Notes
60.00		3.50	Low	

	Adjustment		Notes
Bank Materials	5.00		
	Adjustment		Notes
Bank Stratification	0.00		
TOTAL SCORE	**39.85**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Erodibility Variables

Adjustments

Bank Material

Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

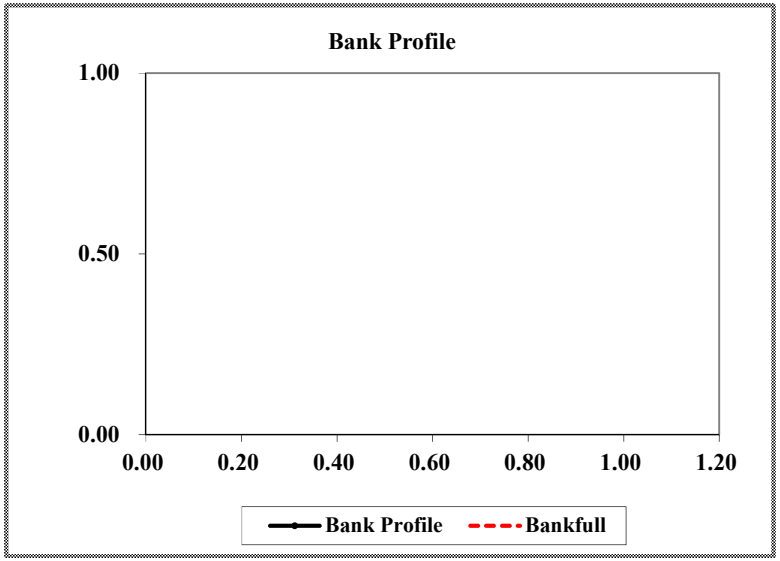
Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile

Horizontal Distance	Vertical Height	Notes

Bankfull

Horizontal Distance	Vertical Height	Notes



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Left Bank 2**

Station: **136+80.59 to 137+81.38** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I

(1)

Transverse and/or central bars-short and/or discontinuous…… ……..…..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….…….…… ……...NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……..NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)
0.36	**6.83**	**0.0527086**	**Extreme**

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	2
Dominant Near-Bank Stress	
Extreme	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV

(7)

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40
	Overall Near-Bank Stress (NBS) rating					**Extreme**	

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**48.00**			
Reach:	136+68.35 to 137+75.04	**Comments:**								**Extreme**			
Location:	Right Bank 2	**Bank Length**	101					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables					
Bank Height / Bankfull Height Ratio					
Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
3.00	1.00	3.00	10.00	Extreme	
Root Depth / Bank Height Ratio					
Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.17	3.00	0.06	8.93	Very High	
Weighted Root Density					
Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
30.00	0.06	1.70	10.00	Extreme	
Bank Angle					
Bank Angle (°)			Index	Bank Erosion Potental	Notes
45.00			3.17	Low	
Surface Protection					
Surface Protection (%)			Index	Bank Erosion Potental	Notes
30.00			5.90	Moderate	
			Adjustment		Notes
Bank Materials			10.00		
			Adjustment		Notes
Bank Stratification			0.00		
		TOTAL SCORE	**48.00**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

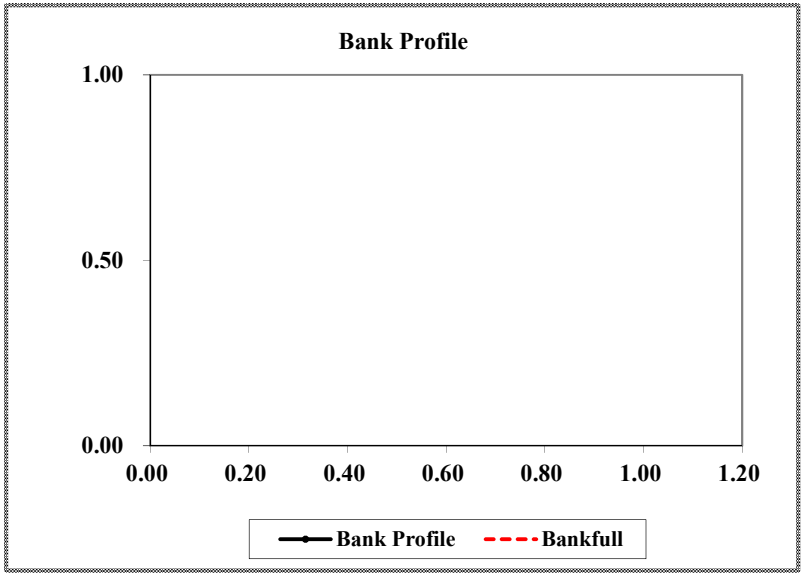
Adjustments

Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile		
Horizontal Distance	**Vertical Height**	**Notes**
Bankfull		
Horizontal Distance	**Vertical Height**	**Notes**



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Right Bank 2**

Station: **136+68.35 to 137+75.04** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I

(1)

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)
0.42	**6.88**	**0.0610465**	**Extreme**

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	2
Dominant Near-Bank Stress	
Extreme	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV

(7)

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40
	Overall Near-Bank Stress (NBS) rating					**Extreme**	

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**	**40.81**			
Reach:	135+84.96 to 136+80.59	**Comments:**							**Very High**			
Location:	Left Bank 3	**Bank Length**	90					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables

Bank Height / Bankfull Height Ratio

Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
2.70	1.50	1.80	6.95	High	

Root Depth / Bank Height Ratio

Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.17	2.70	0.06	8.86	Very High	

Weighted Root Density

Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
30.00	0.06	1.89	10.00	Extreme	

Bank Angle

Bank Angle (°)		Index	Bank Erosion Potental	Notes
70.00		4.90	Moderate	

Surface Protection

Surface Protection (%)		Index	Bank Erosion Potental	Notes
40.00		5.11	Moderate	

	Adjustment		Notes
Bank Materials	5.00		
	Adjustment		Notes
Bank Stratification	0.00		
TOTAL SCORE	**40.81**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Adjustments

Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

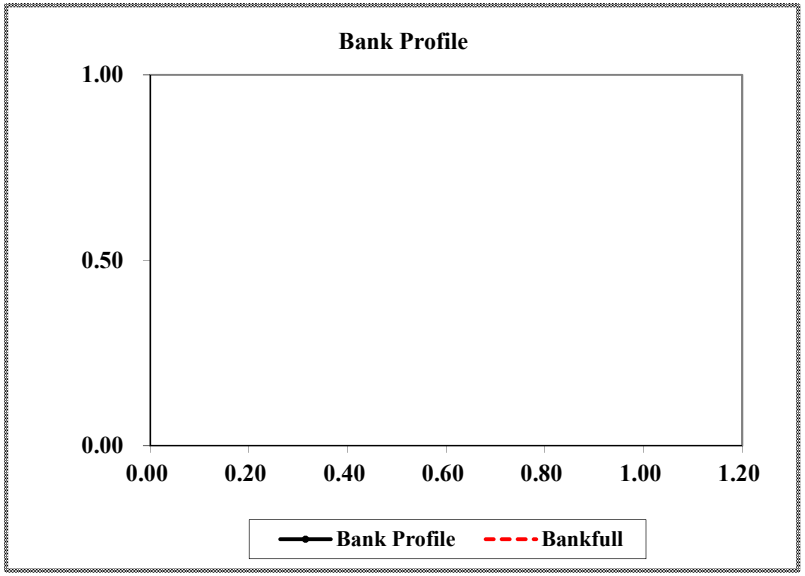
Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile

Horizontal Distance	Vertical Height	Notes

Bankfull

Horizontal Distance	Vertical Height	Notes



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Left Bank 3**

Station: **135+84.96 to 136+80.59** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I **(1)**

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	5
Dominant Near-Bank Stress	
High	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
1.98	**0.81**	**2.4444444**	**High**

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV **(7)**

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40
		Overall Near-Bank Stress (NBS) rating				**High**	

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**37.87**			
Reach:	135+92.67 to 136+68.35	**Comments:**								**High**			
Location:	Right Bank 3	**Bank Length**	87					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables

Bank Height / Bankfull Height Ratio

Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
4.30	3.00	1.43	5.48	Moderate	

Root Depth / Bank Height Ratio

Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.50	4.30	0.12	8.26	Very High	

Weighted Root Density

Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
50.00	0.12	5.81	8.91	Very High	

Bank Angle

Bank Angle (°)		Index	Bank Erosion Potental	Notes
80.00		5.90	Moderate	

Surface Protection

Surface Protection (%)		Index	Bank Erosion Potental	Notes
50.00		4.32	Moderate	

	Adjustment		Notes
Bank Materials	5.00		
	Adjustment		Notes
Bank Stratification	0.00		
TOTAL SCORE	**37.87**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Adjustments

Bank Material	
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

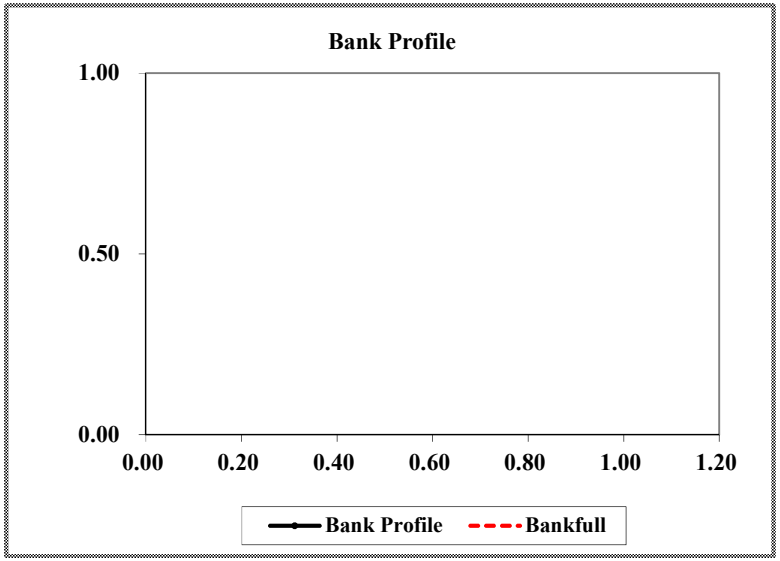
Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile

Horizontal Distance	Vertical Height	Notes

Bankfull

Horizontal Distance	Vertical Height	Notes



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Right Bank 3**

Station: **135+92.67 to 136+68.35** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I **(1)**

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	5
Dominant Near-Bank Stress	
Low	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
2.44	**2.21**	**1.1040724**	**Low**

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV **(7)**

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40
	Overall Near-Bank Stress (NBS) rating					**Low**	

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**51.00**			
Reach:	135+2.07 to 135+84.96	**Comments:**								**Extreme**			
Location:	Left Bank 4	**Bank Length**	87					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables

Bank Height / Bankfull Height Ratio

Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
3.20	1.00	3.20	10.00	Extreme	

Root Depth / Bank Height Ratio

Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.42	3.20	0.13	8.10	Very High	

Weighted Root Density

Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
5.00	0.13	0.66	10.00	Extreme	

Bank Angle

Bank Angle (°)		Index	Bank Erosion Potental	Notes
90.00		7.90	High	

Surface Protection

Surface Protection (%)		Index	Bank Erosion Potental	Notes
5.00		10.00	Extreme	

	Adjustment		Notes
Bank Materials	5.00		
	Adjustment		Notes
Bank Stratification	0.00		
TOTAL SCORE	**51.00**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Adjustments

Bank Material	
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

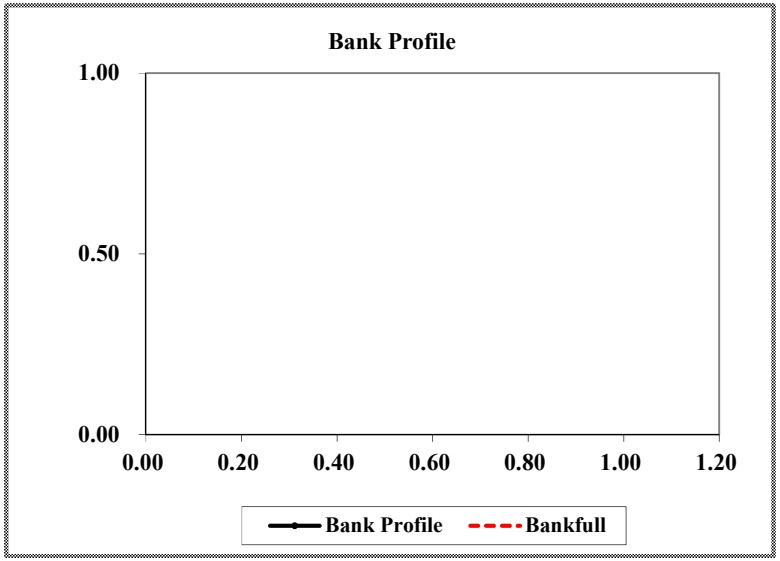
Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile

Horizontal Distance	Vertical Height	Notes

Bankfull

Horizontal Distance	Vertical Height	Notes



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Left Bank 4**

Station: **135+2.07 to 135+84.96** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I

(1) Transverse and/or central bars-short and/or discontinuous……..NBS = High / Very High
Extensive deposition (continuous, cross-channel)……..NBS = Extreme
Chute cutoffs, down-valley meander migration, converging flow……..NBS = Extreme

Level II

(2) Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3) Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4) Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	**5**
Dominant Near-Bank Stress	
High	

Level III

(5) Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
1.98	**0.81**	**2.4444444**	**High**

(6) Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV

(7) Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40

Overall Near-Bank Stress (NBS) rating **High**

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**35.95**		
Reach:	135+7.97 to 135+92.67	**Comments:**								**High**		
Location:	Right Bank 4	**Bank Length**	83					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables

Bank Height / Bankfull Height Ratio					
Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
2.20	1.00	2.20	8.14	Very High	
Root Depth / Bank Height Ratio					
Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.17	2.20	0.08	8.70	Very High	
Weighted Root Density					
Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
70.00	0.08	5.41	8.95	Very High	
Bank Angle					
Bank Angle (°)			Index	Bank Erosion Potental	Notes
30.00			2.44	Low	
Surface Protection					
Surface Protection (%)			Index	Bank Erosion Potental	Notes
70.00			2.71	Low	
			Adjustment		Notes
Bank Materials			5.00		
			Adjustment		Notes
Bank Stratification			0.00		
		TOTAL SCORE	**35.95**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Adjustments

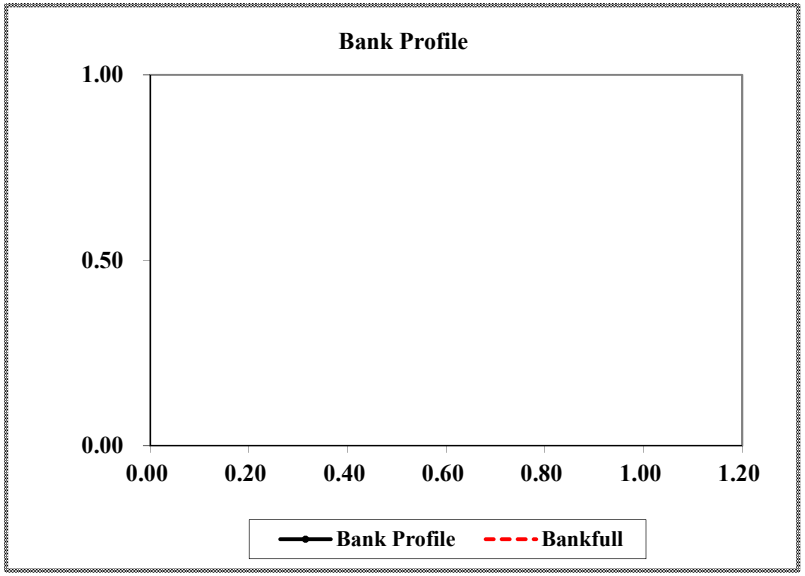
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Bank Material

Stratification

Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile		
Horizontal Distance	**Vertical Height**	**Notes**
Bankfull		
Horizontal Distance	**Vertical Height**	**Notes**



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Right Bank 4**

Station: **135+7.97 to 135+92.67** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I **(1)**

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	5
Dominant Near-Bank Stress	
Low	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
2.44	**2.21**	**1.1040724**	**Low**

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV **(7)**

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40
	Overall Near-Bank Stress (NBS) rating					**Low**	

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**41.13**			
Reach:	133+88.95 to 135+2.07	**Comments:**								**Very High**			
Location:	Left Bank 5	**Bank Length**	133					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables					
Bank Height / Bankfull Height Ratio					
Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
4.00	1.40	2.86	10.00	Extreme	
Root Depth / Bank Height Ratio					
Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.17	4.00	0.04	10.00	Extreme	
Weighted Root Density					
Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
70.00	0.04	2.98	10.00	Extreme	
Bank Angle					
Bank Angle (°)			Index	Bank Erosion Potental	Notes
50.00			3.41	Low	
Surface Protection					
Surface Protection (%)			Index	Bank Erosion Potental	Notes
70.00			2.71	Low	
			Adjustment		Notes
Bank Materials			5.00		
			Adjustment		Notes
Bank Stratification			0.00		
		TOTAL SCORE	**41.13**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

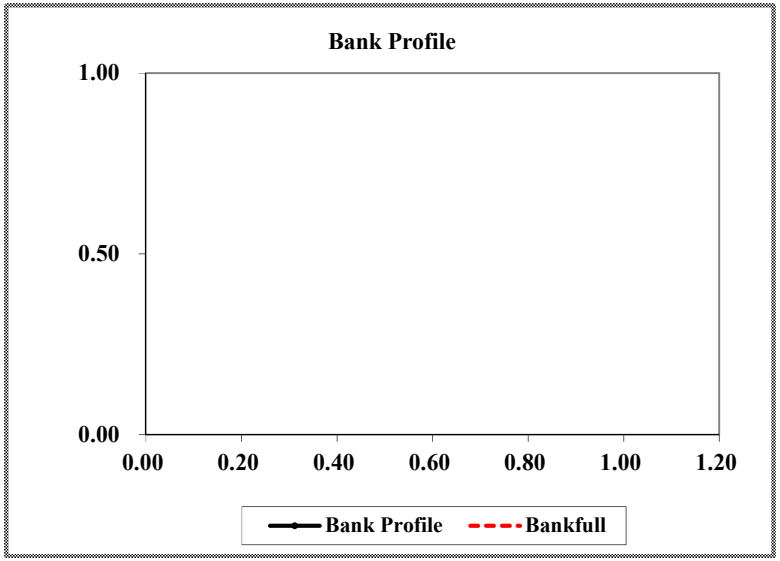
Adjustments

Bank Material	
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile		
Horizontal Distance	**Vertical Height**	**Notes**
Bankfull		
Horizontal Distance	**Vertical Height**	**Notes**



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Left Bank 5**

Station: **133+88.95 to 135+2.07** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I **(1)**

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	1
Dominant Near-Bank Stress	
Very High	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV **(7)**

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40
	Overall Near-Bank Stress (NBS) rating					**Very High**	

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**37.00**			
Reach:	134+20.79 to 135+7.97	**Comments:**								**High**			
Location:	Right Bank 5	**Bank Length**	88					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables					
Bank Height / Bankfull Height Ratio					
Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
2.50	1.50	1.67	6.32	High	
Root Depth / Bank Height Ratio					
Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.42	2.50	0.17	7.66	High	
Weighted Root Density					
Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
40.00	0.17	6.72	8.81	Very High	
Bank Angle					
Bank Angle (°)			Index	Bank Erosion Potental	Notes
70.00			4.90	Moderate	
Surface Protection					
Surface Protection (%)			Index	Bank Erosion Potental	Notes
50.00			4.32	Moderate	
			Adjustment		Notes
Bank Materials			5.00		
			Adjustment		Notes
Bank Stratification			0.00		
		TOTAL SCORE	**37.00**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

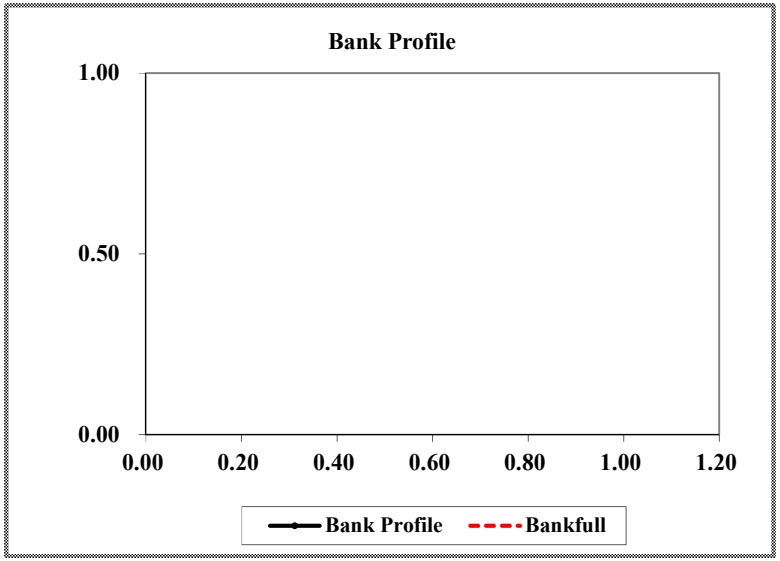
Adjustments

Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile		
Horizontal Distance	**Vertical Height**	**Notes**
Bankfull		
Horizontal Distance	**Vertical Height**	**Notes**



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Right Bank 5**

Station: **134+20.79 to 135+7.97** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I **(1)**

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	5
Dominant Near-Bank Stress	
Low	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
2.44	**2.21**	**1.1040724**	**Low**

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV **(7)**

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40
	Overall Near-Bank Stress (NBS) rating					**Low**	

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**41.31**		
Reach:	133+33.43 to 134+20.79	**Comments:**								**Very High**		
Location:	Right Bank 6	**Bank Length**	92					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables

Bank Height / Bankfull Height Ratio

Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
4.00	1.40	2.86	10.00	Extreme	

Root Depth / Bank Height Ratio

Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.50	4.00	0.13	8.17	Very High	

Weighted Root Density

Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
45.00	0.13	5.63	8.93	Very High	

Bank Angle

Bank Angle (°)		Index	Bank Erosion Potental	Notes
70.00		4.90	Moderate	

Surface Protection

Surface Protection (%)		Index	Bank Erosion Potental	Notes
50.00		4.32	Moderate	

	Adjustment		Notes
Bank Materials	5.00		
	Adjustment		Notes
Bank Stratification	0.00		
TOTAL SCORE	**41.31**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Adjustments

Bank Material	
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

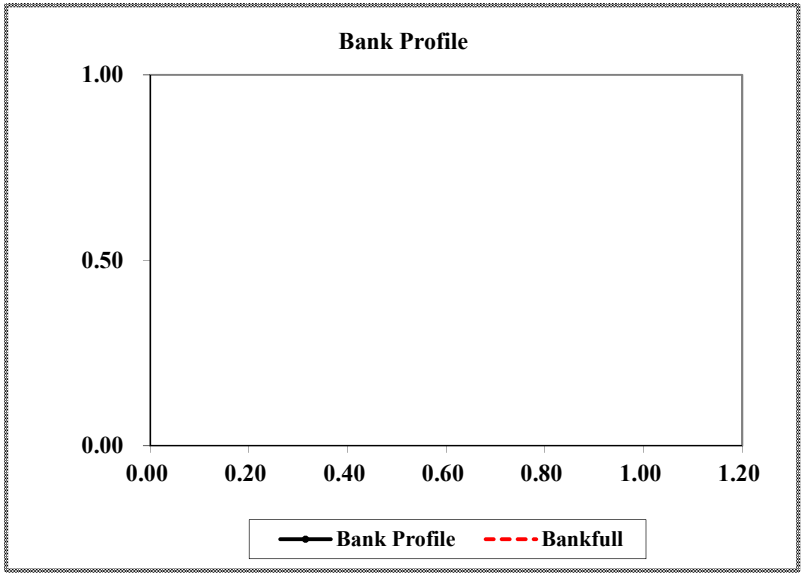
Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile

Horizontal Distance	Vertical Height	Notes

Bankfull

Horizontal Distance	Vertical Height	Notes



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Right Bank 6**

Station: **133+33.43 to 134+20.79** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I

(1) Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High
Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme
Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	5
Dominant Near-Bank Stress	
High	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
0.77	**0.4**	**1.925**	**High**

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV

(7)

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40
		Overall Near-Bank Stress (NBS) rating				**High**	

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**36.22**		
Reach:	132+65.40 to 133+88.95	**Comments:**								**High**		
Location:	Left Bank 6	**Bank Length**	124					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables

Bank Height / Bankfull Height Ratio					
Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
4.00	2.00	2.00	7.90	High	
Root Depth / Bank Height Ratio					
Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.67	4.00	0.17	7.66	High	
Weighted Root Density					
Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
70.00	0.17	11.73	8.25	Very High	
Bank Angle					
Bank Angle (°)			Index	Bank Erosion Potental	Notes
60.00			3.90	Low	
Surface Protection					
Surface Protection (%)			Index	Bank Erosion Potental	Notes
60.00			3.50	Low	
			Adjustment		Notes
Bank Materials			5.00		
			Adjustment		Notes
Bank Stratification			0.00		
		TOTAL SCORE	**36.22**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Adjustments

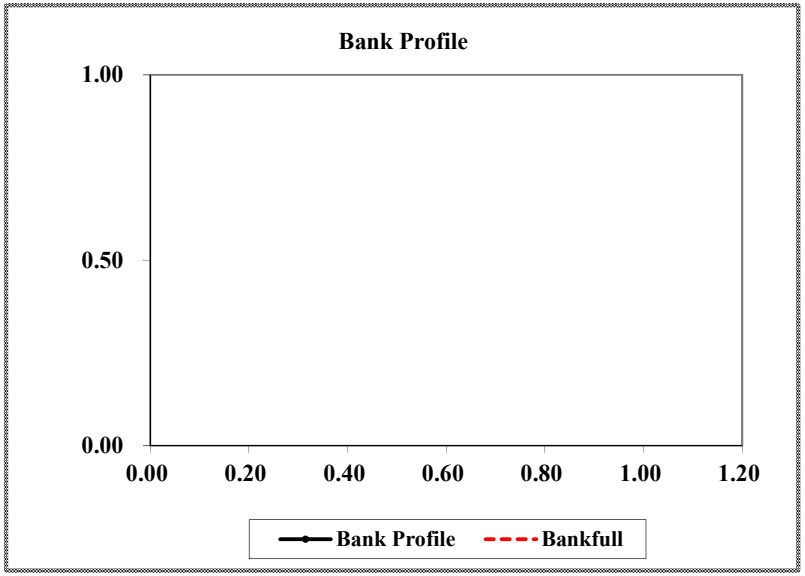
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Bank Material

Stratification

Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile		
Horizontal Distance	**Vertical Height**	**Notes**
Bankfull		
Horizontal Distance	**Vertical Height**	**Notes**



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Left Bank 6**

Station: **133+88.95 to 135+2.07** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I **(1)**

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	5
Dominant Near-Bank Stress	
Low	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
1.15	**0.91**	**1.2637363**	**Low**

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV **(7)**

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40

Overall Near-Bank Stress (NBS) rating **Low**

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**49.12**			
Reach:	126+61.74 to 133+33.43	**Comments:**								**Extreme**			
Location:	Right Bank 7	**Bank Length**	686					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables					
Bank Height / Bankfull Height Ratio					
Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
3.50	1.00	3.50	10.00	Extreme	
Root Depth / Bank Height Ratio					
Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.42	3.50	0.12	8.22	Very High	
Weighted Root Density					
Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
10.00	0.12	1.20	10.00	Extreme	
Bank Angle					
Bank Angle (°)			Index	Bank Erosion Potental	Notes
80.00			5.90	Moderate	
Surface Protection					
Surface Protection (%)			Index	Bank Erosion Potental	Notes
5.00			10.00	Extreme	
			Adjustment		Notes
Bank Materials			0.00		
			Adjustment		Notes
Bank Stratification			5.00		
		TOTAL SCORE	**49.12**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

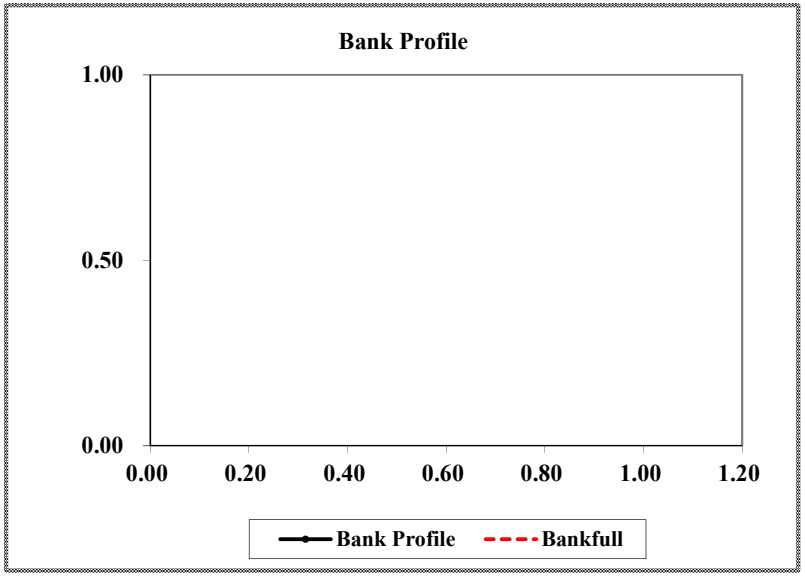
Adjustments

Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile		
Horizontal Distance	**Vertical Height**	**Notes**
Bankfull		
Horizontal Distance	**Vertical Height**	**Notes**



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Right Bank 7**

Station: **126+61.74 to 133+33.43** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I

(1)

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	5
Dominant Near-Bank Stress	
High	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
0.77	**0.4**	**1.925**	**High**

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV

(7)

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40
		Overall Near-Bank Stress (NBS) rating				**High**	

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**38.69**		
Reach:	126+57.48 to 132+65.40	**Comments:**								**High**		
Location:	Left Bank 7	**Bank Length**	621					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables

Bank Height / Bankfull Height Ratio

Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
4.50	1.40	3.21	10.00	Extreme	

Root Depth / Bank Height Ratio

Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.50	4.50	0.11	8.32	Very High	

Weighted Root Density

Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
65.00	0.11	7.22	8.75	Very High	

Bank Angle

Bank Angle (°)		Index	Bank Erosion Potental	Notes
60.00		3.90	Low	

Surface Protection

Surface Protection (%)		Index	Bank Erosion Potental	Notes
70.00		2.71	Low	

	Adjustment		Notes
Bank Materials	5.00		
	Adjustment		Notes
Bank Stratification	0.00		
TOTAL SCORE	**38.69**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Adjustments

Bank Material	
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

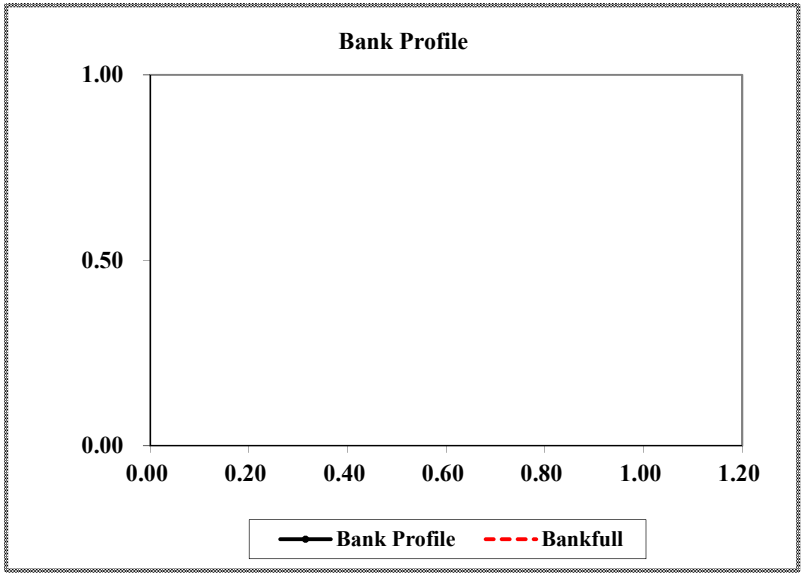
Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile

Horizontal Distance	Vertical Height	Notes

Bankfull

Horizontal Distance	Vertical Height	Notes



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Left Bank 7**

Station: **126+57.48 to 132+65.40** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I **(1)**

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	5
Dominant Near-Bank Stress	
Low	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
1.15	**0.91**	**1.2637363**	**Low**

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV

(7)

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40

Overall Near-Bank Stress (NBS) rating **Low**

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**44.96**		
Reach:	123+57.45 to 126+61.74	**Comments:**								**Very High**		
Location:	Right Bank 8	**Bank Length**	301					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables

Bank Height / Bankfull Height Ratio

Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
3.50	1.50	2.33	8.33	Very High	

Root Depth / Bank Height Ratio

Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.33	3.50	0.09	8.51	Very High	

Weighted Root Density

Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
15.00	0.09	1.41	10.00	Extreme	

Bank Angle

Bank Angle (°)		Index	Bank Erosion Potental	Notes
80.00		5.90	Moderate	

Surface Protection

Surface Protection (%)		Index	Bank Erosion Potental	Notes
20.00		7.22	High	

	Adjustment		Notes
Bank Materials	5.00		
	Adjustment		Notes
Bank Stratification	0.00		
TOTAL SCORE	**44.96**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Adjustments

Bank Material	
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

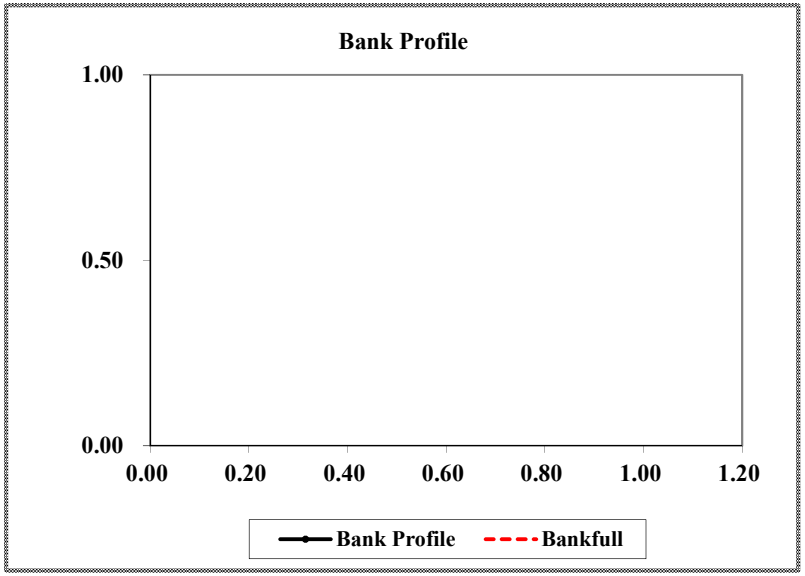
Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile

Horizontal Distance	Vertical Height	Notes

Bankfull

Horizontal Distance	Vertical Height	Notes



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Right Bank 8**

Station: **123+57.45 to 126+61.74** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I

(1) Transverse and/or central bars-short and/or discontinuous……..NBS = High / Very High
Extensive deposition (continuous, cross-channel)……..NBS = Extreme
Chute cutoffs, down-valley meander migration, converging flow……..NBS = Extreme

Level II

(2) Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3) Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4) Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	**5**
Dominant Near-Bank Stress	
Low	

Level III

(5) Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
1.96	**1.76**	**1.1136364**	**Low**

(6) Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV

(7) Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40

Overall Near-Bank Stress (NBS) rating **Low**

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**38.63**			
Reach:	124+88.11 to 126+57.48	**Comments:**								**High**			
Location:	Left Bank 8	**Bank Length**	194					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables

Bank Height / Bankfull Height Ratio

Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
3.00	1.00	3.00	10.00	Extreme	

Root Depth / Bank Height Ratio

Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.42	3.00	0.14	8.00	Very High	

Weighted Root Density

Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
60.00	0.14	8.40	8.62	Very High	

Bank Angle

Bank Angle (°)		Index	Bank Erosion Potental	Notes
60.00		3.90	Low	

Surface Protection

Surface Protection (%)		Index	Bank Erosion Potental	Notes
65.00		3.11	Low	

	Adjustment		Notes
Bank Materials	5.00		
	Adjustment		Notes
Bank Stratification	0.00		
TOTAL SCORE	**38.63**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Adjustments

Bank Material	
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

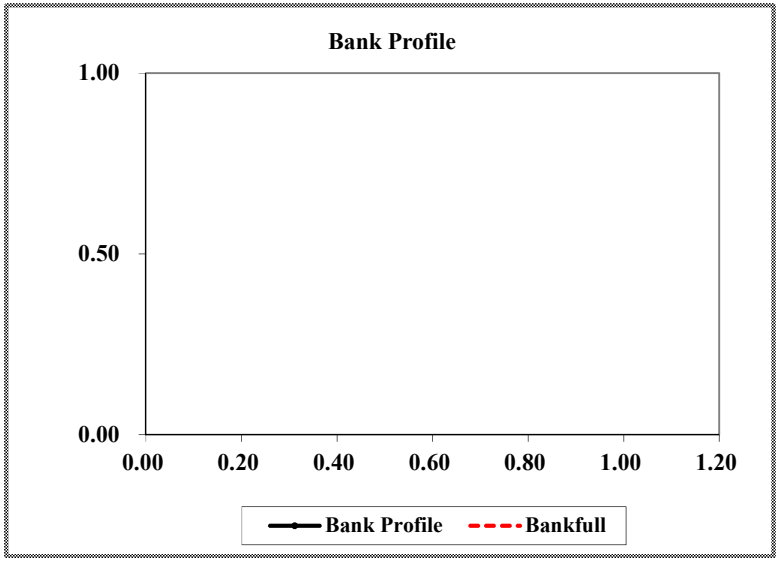
Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile

Horizontal Distance	Vertical Height	Notes

Bankfull

Horizontal Distance	Vertical Height	Notes



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Left Bank 8**

Station: **124+88.11 to 126+57.48** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I **(1)**

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	5
Dominant Near-Bank Stress	
Low	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
1.69	**1.31**	**1.2900763**	**Low**

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV **(7)**

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40

Overall Near-Bank Stress (NBS) rating **Low**

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**39.71**		
Reach:	121+21.11 to 123+57.45	**Comments:**								**High**		
Location:	Right Bank 9	**Bank Length**	239					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables					
Bank Height / Bankfull Height Ratio					
Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
5.00	2.00	2.50	8.57	Very High	
Root Depth / Bank Height Ratio					
Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.33	5.00	0.07	8.82	Very High	
Weighted Root Density					
Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
50.00	0.07	3.30	10.00	Extreme	
Bank Angle					
Bank Angle (°)			Index	Bank Erosion Potental	Notes
50.00			3.41	Low	
Surface Protection					
Surface Protection (%)			Index	Bank Erosion Potental	Notes
55.00			3.90	Low	
			Adjustment		Notes
Bank Materials			5.00		
			Adjustment		Notes
Bank Stratification			0.00		
		TOTAL SCORE	**39.71**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

Adjustments

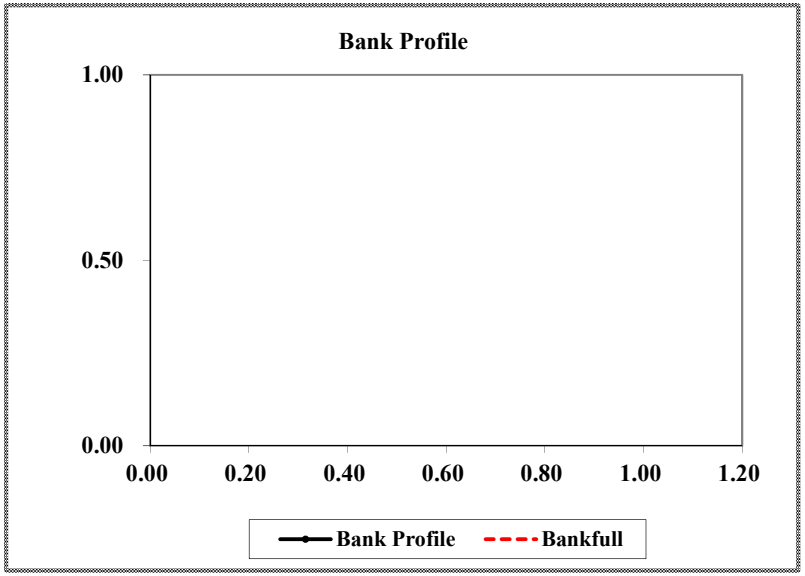
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Bank Material

Stratification

Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile		
Horizontal Distance	**Vertical Height**	**Notes**
Bankfull		
Horizontal Distance	**Vertical Height**	**Notes**



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Right Bank 9**

Station: **121+21.11 to 123+57.45** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I **(1)**

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	5
Dominant Near-Bank Stress	
Moderate	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
0.57	**0.36**	**1.5833333**	**Moderate**

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV

(7)

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40

Overall Near-Bank Stress (NBS) rating **Moderate**

BANK EROSION HAZARD INDEX

Stream:	Eccleston Mitigation Bank	**Observer(s):**	PVC	**Data:**	SH	**QA/QC:**		**Total Score:**		**40.66**			
Reach:	121+23.56 to 124+88.11	**Comments:**								**Very High**			
Location:	Left Bank 9	**Bank Length**	409					**Total Score Values:**	**Very Low**	**Low**	**Moderate**	**High**	**Very High**	**Extreme**
Date:	5/4/2018								5-10	10-20	20-30	30-40	40-45	45-50

Erodibility Variables					
Bank Height / Bankfull Height Ratio					
Bank Height	Bankfull Height	Value	Index	Bank Erosion Potental	Notes
3.50	1.20	2.92	10.00	Extreme	
Root Depth / Bank Height Ratio					
Root Depth	Bank Height	Value	Index	Bank Erosion Potental	Notes
0.50	3.50	0.14	8.00	High	
Weighted Root Density					
Root Density (%)	Root Depth / Bank Height	Value	Index	Bank Erosion Potental	Notes
50.00	0.14	7.14	8.76	Very High	
Bank Angle					
Bank Angle (°)			Index	Bank Erosion Potental	Notes
75.00			5.40	Moderate	
Surface Protection					
Surface Protection (%)			Index	Bank Erosion Potental	Notes
60.00			3.50	Low	
			Adjustment		Notes
Bank Materials			5.00		
			Adjustment		Notes
Bank Stratification			0.00		
		TOTAL SCORE	**40.66**		

Bank Erosion Potential

		Very Low	Low	Moderate	High	Very High	Extreme
Erodibility Variables							
Bank Height / Bankfull Height	Value	1.00-1.10	1.11-1.19	1.20-1.50	1.60-2.00	2.10-2.80	>2.80
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Root Depth / Bank Height	Value	1.00-0.90	0.89-0.50	0.49-0.30	0.29-0.15	0.14-0.05	<0.05
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Weighted Root Density	Value	100-80	79-55	54-30	29-15	14-5	<5
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Bank Angle	Value	0-20	21-60	61-80	81-90	91-119	>119
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10
Surface Protection	Value	100-80	79-55	54-30	29-15	14-10	<10
	Index	1.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.0	10

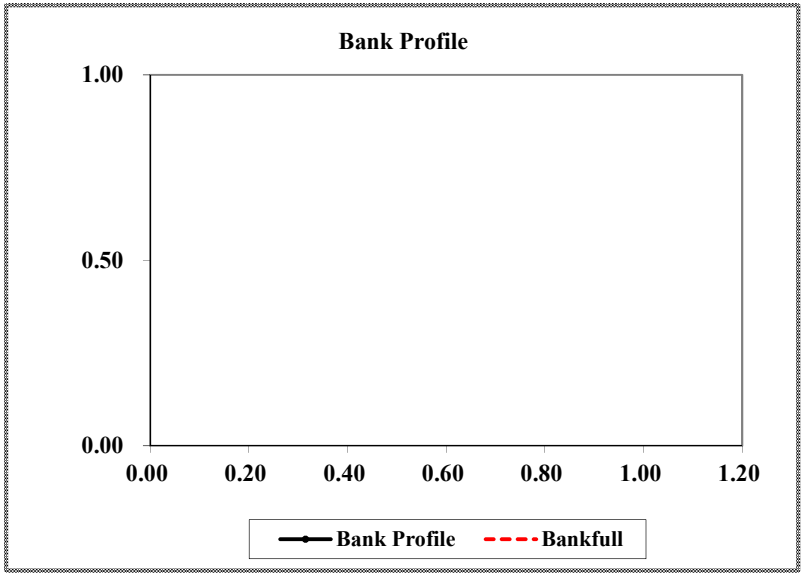
Adjustments

Bank Material	
Bedrock	Bedrock banks have a very low erosion potential.
Boulders	Boulder banks have a low erosion potential.
Cobble	Substract 10 points. No adjustment if sand/gravel compose greater than 50% of bank.
Clay/Silt Loam	Add 5 points.
Gravel	Add 5-10 points depending on percentage of bank material composed of sand.
Sand	Add 10 points.
Silt / Clay	No adjustment.

Stratification

Add 5-10 points depending on position of unstable layers in relation to bankfull stage.

Bank Profile		
Horizontal Distance	**Vertical Height**	**Notes**
Bankfull		
Horizontal Distance	**Vertical Height**	**Notes**



Estimating Near-Bank Stress (NBS)

Stream: **Eccleston** Location: **Left Bank 9**

Station: **121+23.56 to 124+88.11** Stream Type: Valley Type:

Observers: Date: **5/4/2018**

Methods for Estimating Near-Bank Stress (NBS)

(1) Channel pattern, transverse bar or split channel/central bar creating NBS	Level I	Reconaissance
(2) Ratio of radius of curvature to bankfull width (R_c / W_{bkf})	Level II	General prediction
(3) Ratio of pool slope to average water surface slope (S_p / S)	Level II	General prediction
(4) Ratio of pool slope to riffle slope (S_p / S_{rif})	Level II	General prediction
(5) Ratio of near-bank maximum depth to bankfull mean depth (d_{nb} / d_{bkf})	Level III	Detailed prediction
(6) Ratio of near-bank shear stress to bankfull shear stress (τ_{nb} / τ_{bkf})	Level III	Detailed prediction
(7) Velocity profiles / Isovels / Velocity gradient	Level IV	Validation

Level I

(1)

Transverse and/or central bars-short and/or discontinuous…… ……..NBS = High / Very High

Extensive deposition (continuous, cross-channel)…….. ……..NBS = Extreme

Chute cutoffs, down-valley meander migration, converging flow…… ……NBS = Extreme

Level II

(2)

Radius of Curvature R_c (ft)	Bankfull Width W_{bkf} (ft)	*Ratio* R_c / W_{bkf}	Near-Bank Stress (NBS)

(3)

Pool Slope S_p	Average Slope S	*Ratio* S_p / S	Near-Bank Stress (NBS)

(4)

Pool Slope S_p	Riffle Slope S_{rif}	*Ratio* S_p / S_{rif}	Near-Bank Stress (NBS)

Method	5
Dominant Near-Bank Stress	
Moderate	

Level III

(5)

Near-Bank Max Depth d_{nb} (ft)	Mean Depth d_{bkf} (ft)	*Ratio* d_{nb} / d_{bkf}	Near-Bank Stress (NBS)
0.67	**0.44**	**1.5227273**	**Moderate**

(6)

Near-Bank Max Depth d_{nb} (ft)	Near-Bank Slope S_{nb}	Near-Bank Shear Stress τ_{nb} (lb/ft^2)	Mean Depth d_{bkf} (ft)	Average Slope S	Bankfull Shear Stress τ_{bkf} (lb/ft^2)	Ratio τ_{nb} / τ_{bkf}	Near-Bank Stress (NBS)

Level IV

(7)

Velocity Gradient (ft / sec / ft)	Near-Bank Stress (NBS)

Converting Values to a Near-Bank Stress (NBS) Rating

Near-Bank Stress (NBS) ratings	Method number (1)	(2)	(3)	(4)	(5)	(6)	(7)
Very Low	N / A	> 3.00	< 0.20	< 0.40	< 1.00	< 0.80	< 0.50
Low	N / A	2.21 – 3.00	0.20 – 0.40	0.41 – 0.60	1.00 – 1.50	0.80 – 1.05	0.50 – 1.00
Moderate	N / A	2.01 – 2.20	0.41 – 0.60	0.61 – 0.80	1.51 – 1.80	1.06 – 1.14	1.01 – 1.60
High	See	1.81 – 2.00	0.61 – 0.80	0.81 – 1.00	1.81 – 2.50	1.15 – 1.19	1.61 – 2.00
Very High	(1)	1.50 – 1.80	0.81 – 1.00	1.01 – 1.20	2.51 – 3.00	1.20 – 1.60	2.01 – 2.40
Extreme	Above	< 1.50	> 1.00	> 1.20	> 3.00	> 1.60	> 2.40

Overall Near-Bank Stress (NBS) rating **Moderate**