

cluck	1	14753.77	2017.00	969.88	969.53	4.87	0.53	11.42	0.05
cluck	1	14753.77	2129.00	969.98	969.59	4.84	0.54	11.47	0.05
cluck	1	13364.95	1303.00	957.83		3.66	0.32	13.67	0.07
cluck	1	13364.95	1699.00	958.26		3.27	0.36	13.57	0.07
cluck	1	13364.95	1993.00	958.43		3.26	0.37	13.39	0.08
cluck	1	13364.95	2294.00	958.57	957.89	3.32	0.38	13.20	0.08
cluck	1	13364.95	2413.00	958.62	957.82	3.36	0.39	13.14	0.08
cluck	1	12213.24	1448.00	943.43	943.43	7.97	0.99	1.26	0.31
cluck	1	12213.24	1889.00	943.86	943.86	8.43	1.10	1.20	0.34
cluck	1	12213.24	2217.00	944.16	944.16	8.65	1.17	1.14	0.34
cluck	1	12213.24	2552.00	944.45	944.45	8.66	1.22	1.07	0.34
cluck	1	12213.24	2678.00	944.56	944.56	8.61	1.23	1.05	0.34
cluck	1	12136.57	1458.00	941.94	940.60	4.83	0.36		
cluck	1	12136.57	1902.00	942.59	940.99	5.28	0.43		
cluck	1	12136.57	2233.00	943.03	941.27	5.57	0.48		
cluck	1	12136.57	2570.00	943.47	941.52	5.84	0.53		
cluck	1	12136.57	2697.00	943.63	941.61	5.93	0.55		
cluck	1	12108.92	Culvert						
cluck	1	12081.26	1466.00	941.04	940.01	5.33	0.44	0.75	0.13
cluck	1	12081.26	1912.00	941.59	940.40	5.89	0.54	0.73	0.16
cluck	1	12081.26	2244.00	941.95	940.67	6.28	0.61	0.73	0.19
cluck	1	12081.26	2583.00	942.31	940.93	6.63	0.68	0.72	0.22
cluck	1	12081.26	2710.00	942.44	941.02	6.76	0.71	0.71	0.23
cluck	1	12001.26	1477.00	940.42		3.47	0.19	0.87	0.00
cluck	1	12001.26	1926.00	941.02		3.72	0.21	0.84	0.00
cluck	1	12001.26	2261.00	941.42		3.88	0.23	0.81	0.00
cluck	1	12001.26	2603.00	941.81		4.00	0.25	0.77	0.00
cluck	1	12001.26	2730.00	941.95		4.04	0.25	0.75	0.01
cluck	1	11878.23	1493.00	939.51		3.81	0.23	0.64	0.01
cluck	1	11878.23	1948.00	940.13		4.08	0.26	0.63	0.01
cluck	1	11878.23	2287.00	940.56		4.23	0.28	0.61	0.02
cluck	1	11878.23	2632.00	940.99		4.33	0.30	0.57	0.02
cluck	1	11878.23	2760.00	941.15		4.36	0.30	0.56	0.02
cluck	1	11798.23	1504.00	938.77	937.14	4.49	0.31		
cluck	1	11798.23	1962.00	939.35	937.55	5.04	0.39		
cluck	1	11798.23	2304.00	939.77	937.83	5.36	0.45		
cluck	1	11798.23	2652.00	940.21	938.10	5.63	0.49		
cluck	1	11798.23	2781.00	940.36	938.20	5.73	0.51		
cluck	1	11767.45	Culvert						
cluck	1	11736.66	1513.00	938.31	937.00	4.84	0.36	0.70	0.07
cluck	1	11736.66	1973.00	938.68	937.38	5.67	0.50	0.94	0.07
cluck	1	11736.66	2317.00	938.96	937.65	6.19	0.60	1.07	0.07
cluck	1	11736.66	2667.00	939.29	937.91	6.58	0.67	1.08	0.09
cluck	1	11736.66	2796.00	939.40	938.00	6.73	0.70	1.10	0.10
cluck	1	11656.66	1524.00	937.67		3.86	0.23	0.34	0.06
cluck	1	11656.66	1988.00	937.82		4.81	0.36	0.57	0.09
cluck	1	11656.66	2334.00	937.96		5.40	0.45	0.77	0.12
cluck	1	11656.66	2687.00	938.30		5.64	0.49	0.82	0.13
cluck	1	11656.66	2816.00	938.40		5.75	0.51	0.84	0.13
cluck	1	11091.76	1605.00	937.48		1.17	0.03	0.00	0.00
cluck	1	11091.76	2094.00	937.47		1.53	0.04	0.00	0.01
cluck	1	11091.76	2459.00	937.45		1.80	0.06	0.01	0.01
cluck	1	11091.76	2831.00	937.77		1.91	0.07	0.00	0.00
cluck	1	11091.76	2964.00	937.86		1.95	0.07	0.00	0.00
cluck	1	11083.21	1606.00	937.46	933.55	1.41	0.04		
cluck	1	11083.21	2095.00	937.44	934.07	1.85	0.06		
cluck	1	11083.21	2461.00	937.41	934.43	2.19	0.09		
cluck	1	11083.21	2834.00	937.76	934.78	1.85	0.07		
cluck	1	11083.21	2966.00	937.66	934.91	1.89	0.07		
cluck	1	11061.71	Culvert						
cluck	1	11040.21	1612.00	934.03	932.84	6.47	0.65	0.04	0.25
cluck	1	11040.21	2104.00	934.34	933.36	7.82	0.95	0.04	0.38
cluck	1	11040.21	2471.00	934.53	933.72	8.79	1.20	0.05	0.49
cluck	1	11040.21	2845.00	934.68	934.09	9.79	1.49	0.05	0.62
cluck	1	11040.21	2978.00	934.73	934.21	10.14	1.60	0.05	0.67
cluck	1	11031.65	1613.00	934.24		3.13	0.15	1.23	0.00
cluck	1	11031.65	2105.00	934.67		3.51	0.19	1.16	0.00
cluck	1	11031.65	2473.00	934.97		3.74	0.22	1.13	0.01
cluck	1	11031.65	2847.00	935.25		3.95	0.25	1.13	0.01
cluck	1	11031.65	2980.00	935.34		4.02	0.26	1.13	0.01
cluck	1	10672.54	1667.00	932.98		3.13	0.18	1.06	0.01
cluck	1	10672.54	2176.00	933.52		3.20	0.19	0.97	0.01
cluck	1	10672.54	2556.00	933.85		3.30	0.20	0.97	0.00
cluck	1	10672.54	2943.00	934.15		3.41	0.21	0.98	0.00
cluck	1	10672.54	3078.00	934.24		3.46	0.22	1.00	0.00
cluck	1	10378.57	1713.00	931.94		2.70	0.15	0.03	0.01
cluck	1	10378.57	2236.00	932.55		2.84	0.17	0.03	0.01

cluck	1	10378.57	2627.00	932.88		2.99	0.19	0.03	0.01
cluck	1	10378.57	3025.00	933.17		3.14	0.21	0.03	0.01
cluck	1	10378.57	3161.00	933.24		3.21	0.22	0.04	0.01
cluck	1	10367.84	1714.00	931.93	928.41	2.46	0.12		
cluck	1	10367.84	2238.00	932.54	929.01	2.63	0.15		
cluck	1	10367.84	2629.00	932.86	929.42	2.78	0.17		
cluck	1	10367.84	3028.00	933.14	929.79	2.94	0.19		
cluck	1	10367.84	3164.00	933.22	929.92	3.01	0.20		
cluck	1	10335.34	Culvert						
cluck	1	10302.84	1725.00	929.70	927.59	5.48	0.47	0.07	0.13
cluck	1	10302.84	2251.00	930.19	928.14	6.50	0.66	0.08	0.20
cluck	1	10302.84	2645.00	930.47	928.52	7.26	0.82	0.08	0.27
cluck	1	10302.84	3046.00	930.74	928.90	7.98	0.99	0.09	0.34
cluck	1	10302.84	3183.00	930.81	929.03	8.24	1.05	0.09	0.37
cluck	1	10292.10	1726.00	929.76	927.75	3.35	0.21	14.46	0.06
cluck	1	10292.10	2254.00	930.32	928.28	3.60	0.25	14.62	0.06
cluck	1	10292.10	2648.00	930.66	928.59	3.78	0.28	14.69	0.07
cluck	1	10292.10	3049.00	931.00	928.87	3.92	0.30	14.77	0.07
cluck	1	10292.10	3186.00	931.09	928.96	3.98	0.32	14.79	0.07
cluck	1	8975.730	1947.00	914.69	914.69	7.00	0.76	7.48	0.20
cluck	1	8975.730	2544.00	915.00	915.00	7.55	0.88	7.05	0.24
cluck	1	8975.730	2990.00	915.22	915.22	7.84	0.95	9.36	0.25
cluck	1	8975.730	3444.00	915.41	915.41	8.20	1.05	7.12	0.28
cluck	1	8975.730	3588.00	915.49	915.49	8.24	1.05	7.23	0.29
cluck	1	6924.104	2349.00	900.87		1.86	0.08	0.02	0.01
cluck	1	6924.104	3072.00	902.20		1.83	0.09	0.02	0.02
cluck	1	6924.104	3614.00	902.14		2.17	0.12	0.03	0.04
cluck	1	6924.104	4165.00	903.65		1.90	0.10	0.02	0.00
cluck	1	6924.104	4319.00	903.79		1.92	0.10	0.02	0.00
cluck	1	6911.914	2351.00	900.79	892.67	2.68	0.13		
cluck	1	6911.914	3076.00	902.07	893.37	2.94	0.17		
cluck	1	6911.914	3618.00	901.96	893.87	3.51	0.24		
cluck	1	6911.914	4170.00	903.62	894.34	1.91	0.11		
cluck	1	6911.914	4324.00	903.76	894.47	1.94	0.12		
cluck	1	6854.42	Culvert						
cluck	1	6796.914	2376.00	900.28	892.72	2.84	0.13	0.05	0.01
cluck	1	6796.914	3109.00	901.19	893.45	3.34	0.18	0.06	0.02
cluck	1	6796.914	3657.00	900.72	893.96	4.14	0.27	0.11	0.02
cluck	1	6796.914	4214.00	902.33	894.42	3.79	0.24	0.07	0.04
cluck	1	6796.914	4369.00	902.43	894.55	3.88	0.25	0.07	0.05
cluck	1	6784.729	2379.00	900.23		2.52	0.12	4.11	0.15
cluck	1	6784.729	3112.00	901.15		2.68	0.13	4.10	0.17
cluck	1	6784.729	3661.00	900.64		3.53	0.23	2.27	0.04
cluck	1	6784.729	4219.00	902.31		2.87	0.15	4.05	0.20
cluck	1	6784.729	4374.00	902.41		2.91	0.15	4.00	0.19
cluck	1	6366.212	3368.00	894.51	894.51	10.03	1.59	1.95	0.44
cluck	1	6366.212	4433.00	895.22	895.22	10.46	1.80	2.11	0.50
cluck	1	6366.212	5232.00	897.91		5.32	0.64	8.36	0.33
cluck	1	6366.212	6053.00	896.10	896.10	10.96	2.11	2.48	0.58
cluck	1	6366.212	6283.00	896.28	896.28	10.78	2.09	2.51	0.57
cluck	1	5296.272	3458.00	887.90	883.87	2.32	0.11		
cluck	1	5296.272	4559.00	888.69	885.06	2.54	0.14		
cluck	1	5296.272	5387.00	885.90	885.90	15.97	3.96		
cluck	1	5296.272	6237.00	889.50	887.01	2.92	0.19		
cluck	1	5296.272	6440.00	889.59	887.01	2.96	0.19		
cluck	1	5187	Culvert						
cluck	1	5078.904	3476.00	882.16		5.68	0.50	12.20	0.03
cluck	1	5078.904	4585.00	883.25		5.94	0.55	12.45	0.05
cluck	1	5078.904	5419.00	883.90		6.16	0.60	12.56	0.07
cluck	1	5078.904	6275.00	884.47		6.38	0.66	12.61	0.08
cluck	1	5078.904	6473.00	884.57		6.44	0.68	12.65	0.09
cluck	1	3250.959	3636.00	369.62		7.25	0.82	5.52	0.13
cluck	1	3250.959	4810.00	370.23		8.31	1.07	5.31	0.19
cluck	1	3250.959	5697.00	370.59		9.03	1.28	5.13	0.24
cluck	1	3250.959	6605.00	370.94		9.66	1.49	4.96	0.30
cluck	1	3250.959	6752.00	370.99		9.75	1.53	4.97	0.31
cluck	1	2365.973	3716.00	364.40		5.00	0.39	3.27	0.05
cluck	1	2365.973	4922.00	365.36		5.25	0.44	3.06	0.06
cluck	1	2365.973	5837.00	366.03		5.38	0.47	2.94	0.07
cluck	1	2365.973	6771.00	366.67		5.37	0.50	2.82	0.08
cluck	1	2365.973	6891.00	366.74		5.38	0.50	2.82	0.08
cluck	1	1692.796	3778.00	360.61		6.65	0.85	3.38	0.02
cluck	1	1692.796	5010.00	361.64		7.27	1.03	3.46	0.03
cluck	1	1692.796	5945.00	362.34		7.66	1.15	3.50	0.04
cluck	1	1692.796	6900.00	363.00		8.01	1.27	3.54	0.04
cluck	1	1692.796	6999.00	363.05		8.06	1.29	3.55	0.04
cluck	1	1212.638	3823.00	356.99	855.89	8.25	1.07		

cluck	1	1212.638	5073.00	857.85	856.67	9.12	1.33
cluck	1	1212.638	6024.00	858.44	857.23	9.66	1.51
cluck	1	1212.638	6993.00	858.99	857.76	10.15	1.69
cluck	1	1212.638	7077.00	859.04	857.80	10.19	1.71

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

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X   X   XXXXXX   XXXX   XXXX   XX   XXXX
X   X   X       X   X   X   X   X   X   X
X   X   X       X       X   X   X   X   X
XXXXXXXX XXXX   X       XXX XXXX XXXXXX XXXX
X   X   X       X       X   X   X   X   X
X   X   X       X   X   X   X   X   X   X
X   X   XXXXXX   XXXX   X   X   X   X   XXXXX
    
```

PROJECT DATA

Project Title: cluck  
 Project File : cluck.prj  
 Run Date and Time: 11/20/2002 4:23:46 PM

Project in English units

PLAN DATA

Plan Title: Plan 19  
 Plan File : p:\active\2000-43 Cdr Prk MDP\Hec-ras\Revised Models\cluck.pi9

Geometry Title: cluck improvements  
 Geometry File : p:\active\2000-43 Cdr Prk MDP\Hec-ras\Revised Models\cluck.g02

Flow Title : Flow 01  
 Flow File : p:\active\2000-43 Cdr Prk MDP\Hec-ras\Revised Models\cluck.f01

Plan Summary Information:

Number of: Cross Sections = 110    Multiple Openings = 0  
 Culverts        = 12        Inline Weirs        = 0  
 Bridges         = 0

Computational Information

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

Computation Options

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

FLOW DATA

Flow Title: Flow 01  
 Flow File : p:\active\2000-43 Cdr Prk MDP\Hec-ras\Revised Models\cluck.f01

Flow Data (cfs)

River	Reach	RS	10ext	25ext	50ext	100ext	100ult
cluckt1	1	7381.876	624	788	927	1056	973
cluckt1	1	6680.231	785	1004	1166	1329	1225
cluckt1	1	6570.908	814	1041	1209	1378	1269
cluckt1	1	4552.959	1248	1596	1853	2113	1946
cluckt1	1	4462.804	738	969	1149	1330	1250
cluckt1	1	2750.261	743	976	1157	1340	1258
cluckt1	1	637.664	850	1117	1324	1535	1426
cluck	1	19397.89	616	801	939	1080	1143
cluck	1	18470.38	707	920	1079	1241	1313
cluck	1	18278.76	729	947	1110	1277	1351
cluck	1	18007.91	758	986	1156	1330	1407
cluck	1	17927.05	767	998	1170	1346	1424
cluck	1	17702	793	1032	1210	1392	1473
cluck	1	17686.3	795	1035	1213	1395	1477
cluck	1	17512	816	1062	1245	1432	1516
cluck	1	17496.3	818	1065	1248	1435	1519
cluck	1	17253	848	1104	1294	1489	1575
cluck	1	17237	851	1107	1297	1492	1579
cluck	1	16990	883	1148	1346	1548	1639
cluck	1	16988	883	1149	1347	1549	1639
cluck	1	16820.92	905	1178	1381	1588	1681
cluck	1	16741.70	916	1192	1397	1607	1701
cluck	1	16091.92	1009	1313	1540	1771	1874
cluck	1	16082.92	1011	1315	1542	1773	1877
cluck	1	15997.13	1024	1332	1562	1796	1901
cluck	1	15982.92	1026	1335	1565	1800	1905

cluck	1	15925.92	1031	1342	1573	1810	1915
cluck	1	15911.71	1033	1344	1575	1812	1917
cluck	1	14753.77	1148	1495	1753	2017	2129
cluck	1	13364.95	1303	1699	1993	2294	2413
cluck	1	12213.24	1448	1889	2217	2552	2678
cluck	1	12136.57	1458	1902	2233	2570	2697
cluck	1	12081.26	1466	1912	2244	2583	2710
cluck	1	12001.26	1477	1926	2261	2603	2730
cluck	1	11878.23	1493	1948	2287	2632	2760
cluck	1	11798.23	1504	1962	2304	2652	2781
cluck	1	11736.66	1513	1973	2317	2667	2796
cluck	1	11656.66	1524	1988	2334	2687	2816
cluck	1	11091.76	1605	2094	2459	2831	2964
cluck	1	11083.21	1606	2095	2461	2834	2966
cluck	1	11040.21	1612	2104	2471	2845	2978
cluck	1	11031.65	1613	2105	2473	2847	2980
cluck	1	10672.54	1667	2176	2556	2943	3078
cluck	1	10378.57	1713	2236	2627	3025	3161
cluck	1	10367.94	1714	2238	2629	3028	3164
cluck	1	10302.84	1725	2251	2645	3046	3183
cluck	1	10292.10	1726	2254	2648	3049	3186
cluck	1	8975.730	1947	2544	2990	3444	3588
cluck	1	6924.104	2349	3072	3614	4165	4319
cluck	1	6911.914	2351	3076	3618	4170	4324
cluck	1	6796.914	2376	3109	3657	4214	4369
cluck	1	6784.729	2379	3112	3661	4219	4374
cluck	1	6366.212	3368	4433	5232	6053	6283
cluck	1	5296.272	3458	4559	5387	6237	6440
cluck	1	5078.904	3476	4585	5419	6275	6473
cluck	1	3250.959	3636	4810	5697	6605	6752
cluck	1	2365.973	3716	4922	5837	6771	6891
cluck	1	1692.796	3778	5010	5945	6900	6999
cluck	1	1212.638	3823	5073	6024	6993	7077

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
cluckt1	1	10ext		Normal S = .01
cluck	1	10ext		Normal S = .01

GEOMETRY DATA

Geometry Title: cluck\_improvements  
 Geometry File : p:\active\2000-43 Cdr Prk MDP\Hec-ras\Revised Models\cluck.g02

JUNCTION INFORMATION

CROSS SECTION RIVER: cluckt1  
 REACH: 1 RS: 7381.876

INPUT

Description:

Station	Elevation	Data	num=	63	Sta	Elev	Sta	Elev	Sta	Elev
0	956.74	36.53	956.03	37.74	956.02	45.96	955.43	59.88	954	
76.67	953.32	86.8	953.27	87.97	953.31	99.81	954	107.98	954.29	
112.13	954.41	187.27	954.97	233.93	954.53	268.09	954	311.73	954	
312.91	953.97	441.41	951.8	452.09	951.62	505.95	951.66	520.56	951.94	
530.51	952.05	602.05	950.32	627.63	950	644.62	950	720.35	947.95	
742.3	947.68	776.28	946.77	927.58	946	1028.98	946	1032.57	945.83	
1048.39	944.72	1057.14	944	1077.09	942	1078.72	941.9	1122.73	941.63	
1126.82	942	1138	944	1145.26	944.34	1146.34	944.35	1151.14	944.54	
1198.62	946	1258.63	948	1268.59	948	1331.48	948.98	1415.68	950	
1437.39	950.07	1493.87	950.86	1517.57	950.86	1622.74	952.98	1703.61	953.82	
1742.49	953.94	1746.38	954	1783.39	956	1797.1	956	1813.49	956.61	
1825.49	956.84	1827.49	956.67	1856.26	956.94	1877.8	956.8	1880.58	956.82	
1883.14	956.74	1924.16	956.67	2000	957.27					

Manning's n Values

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	1057.14	.05	1138	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1057.14	1138		713.78	701.64		.3	.5

CROSS SECTION RIVER: cluckt1  
 REACH: 1 RS: 6680.231

INPUT

Description:

Station	Elevation	Data	num=	45	Sta	Elev	Sta	Elev	Sta	Elev
0	943.97	101.59	942	119.47	942	121.77	942.21	124.31	942.09	
128.47	942.01	128.7	942	134.99	941.2	141.5	940.44	142.61	940.36	
146.13	940	147.66	939.3	151.68	939.5	153.15	939.35	158.39	939.16	
159.59	933.5	186.78	933.5	190.5	940	192.14	940.12	199.98	940.91	
207.69	941.79	209.44	942	223.99	942.4	225.06	942.41	232.73	942.62	
234.32	942.62	237.77	942.7	259.4	942.76	262.6	942.71	266.13	942.71	
272.1	942.84	275.19	942.91	277.83	942.89	284.83	943.03	301.68	943.04	
304.48	943.12	307.77	943.15	319.98	943.42	354.92	943.83	360.8	943.95	

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364.3    944 377.26    944 379.92 944.06 392.71 944.1 641.27    946

Manning's n Values      num=      3
Sta  n Val      Sta  n Val      Sta  n Val
0    .06 146.13    .05 190.5    .06

Bank Sta: Left  Right  Lengths: Left Channel  Right  Coeff Contr.  Expan.
146.13 190.5    109.42 109.32 109.23    .3    .5
Ineffective Flow      num=      2
Sta L  Sta R  Elev  Permanent
888    F
888    F

CULVERT          RIVER: cluckt1
REACH: 1         RS: 6625.57

INPUT
Description: Buttercup
Distance from Upstream XS = 12.66
Deck/Roadway Width      = 84
Weir Coefficient        = 2.6
Upstream Deck/Roadway Coordinates
num= 5
Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
-348.73 946 900      1.27 944 900      161.27 943 900
241.27 944 900      641.27 946 900

Upstream Bridge Cross Section Data
Station Elevation Data      num= 45
Sta Elev      Sta Elev      Sta Elev      Sta Elev      Sta Elev
0 943.97 101.59 942 118.47 942 121.77 942.21 124.31 942.09
128.47 942.01 128.7 942 134.99 941.2 141.5 940.44 142.61 940.36
146.13 940 147.66 939.8 151.68 939.5 153.15 939.35 158.39 939.16
159.59 933.5 186.78 933.5 190.5 940 192.14 940.12 199.98 940.91
207.69 941.79 209.44 942 223.99 942.4 225.06 942.41 232.73 942.62
234.32 942.62 237.77 942.7 259.4 942.76 262.6 942.71 266.13 942.71
273.1 942.84 275.19 942.91 277.83 942.89 284.83 943.03 301.68 943.04
304.48 943.12 307.77 943.15 319.98 943.42 354.92 943.83 360.8 943.95
364.3 944 377.26 944 379.92 944.06 392.71 944.1 641.27 946

Manning's n Values      num=      3
Sta  n Val      Sta  n Val      Sta  n Val
0    .06 146.13    .05 190.5    .06

Bank Sta: Left  Right  Coeff Contr.  Expan.
146.13 190.5    .3    .5
Ineffective Flow      num=      2
Sta L  Sta R  Elev  Permanent
888    F
888    F

Downstream Deck/Roadway Coordinates
num= 5
Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
-390.14 946 900      -40.14 944 900      119.86 943 900
199.86 944 900      599.86 946 900

Downstream Bridge Cross Section Data
Station Elevation Data      num= 34
Sta Elev      Sta Elev      Sta Elev      Sta Elev      Sta Elev
-390.14 946 38.67 942.47 74.56 942 87.65 940 88.44 939.83
89.05 939.68 96.22 938.01 102.27 936.84 106.98 933.5 133.97 933.5
137.63 936 140.57 936.57 143.4 937.24 147.84 938.03 149 938.29
155.39 939.78 156.47 940 160.68 940.66 163.06 940.84 166.09 941.27
169.89 941.39 171.45 941.57 175.52 941.59 176.55 941.69 181.04 941.72
186.62 941.82 192.2 941.89 203.11 942.02 241.06 942.57 244.03 942.58
247.36 942.67 274.08 943.11 319.24 944 599.86 946

Manning's n Values      num=      3
Sta  n Val      Sta  n Val      Sta  n Val
-390.14 .06 87.65    .05 156.47    .06

Bank Sta: Left  Right  Coeff Contr.  Expan.
87.65 156.47    .3    .5
Ineffective Flow      num=      2
Sta L  Sta R  Elev  Permanent
-888    F
888    F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name      Shape      Rise      Span
Buttercup         Box        7         9
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef

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12.66 84 .011 .4 1  
 Number of Barrels = 3  
 Upstream Elevation = 933.5  
 Centerline Stations  
 Sta. Sta. Sta.  
 164.22 173.72 183.22  
 Downstream Elevation = 933.5  
 Centerline Stations  
 Sta. Sta. Sta.  
 110.36 119.86 129.36

CROSS SECTION RIVER: cluckt1  
 REACH: 1 RS: 6570.908

INPUT  
 Description:  
 Station Elevation Data num= 34  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-390.14	946	38.67	942.47	74.56	942	87.65	940	88.44	939.83
89.05	939.68	96.22	938.01	102.27	936.84	106.98	933.5	133.97	933.5
137.63	936	140.57	936.57	143.4	937.24	147.84	938.03	149	938.29
155.39	939.78	156.47	940	160.68	940.66	163.06	940.84	166.09	941.27
169.89	941.39	171.45	941.57	175.52	941.59	176.55	941.69	181.04	941.72
186.62	941.82	192.2	941.89	203.11	942.02	241.06	942.57	244.03	942.58
247.36	942.67	274.08	943.11	319.24	944	599.86	946		

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
-390.14	.06	87.65	.05	156.47	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 87.65 156.47 2007.32 2017.95 2028.58 .3 .5  
 Ineffective Flow num= 2  

Sta L	Sta R	Elev	Permanent
-888	F		
888	F		

CROSS SECTION RIVER: cluckt1  
 REACH: 1 RS: 4552.959

INPUT  
 Description:  
 Station Elevation Data num= 63  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	927.49	31.86	927.29	44.12	926.93	63.59	926	174.51	926
175.93	925.95	181.01	925.78	183.03	925.74	225.76	924	237.4	922.43
240.93	922	248.75	920	253.03	918.43	254.34	918	258.23	916.94
261.07	913	283.48	913	285.15	915.28	297.06	915.84	298.25	915.93
300.68	916	304.01	916.36	312.13	917.05	314.95	917.21	316.58	917.41
320.24	917.49	321.38	917.57	325.29	917.56	335.74	917.85	341	918.05
346.11	918.3	359.01	918.95	371.57	919.26	381.66	919.38	386.73	919.49
391.85	919.76	394.63	920	400.47	920.25	416.09	920.84	421.99	920.96
424.35	921.11	426.58	921.14	430.12	921.31	431.86	921.33	435.3	921.69
441.52	921.88	442.58	921.9	446.35	922	589.03	922	626.97	923.99
705.83	924	717.68	924.65	724.17	924.62	726.03	924.87	737.29	924.88
739.45	924.84	741.71	924.95	749.32	925.09	757.72	925.44	762.74	925.82
764.8	926	779.48	926	835.17	927.59				

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	258.23	.05	312.13	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 258.23 312.13 90.92 90.15 89.39 .3 .5  
 Ineffective Flow num= 2  

Sta L	Sta R	Elev	Permanent
888	F		
888	F		

CULVERT RIVER: cluckt1  
 REACH: 1 RS: 4507.88

INPUT  
 Description: Cluck Creek Road  
 Distance from Upstream XS = 9.075  
 Deck/Roadway Width = 72  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates num= 7  

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-122.29	926	900	-13.29	924	900	177.71	922	900
271.71	922	900	548.71	924	900	660.71	925.75	900
835.17	927.59							

Upstream Bridge Cross Section Data  
 Station Elevation Data num= 63  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	927.49	31.86	927.29	44.12	926.93	63.59	926	174.51	926
175.93	925.95	181.01	925.78	183.03	925.74	225.76	924	237.4	922.43
240.93	922	248.75	920	253.03	918.43	254.34	918	258.23	916.94
261.07	913	283.48	913	285.15	915.28	297.06	915.84	298.25	915.93
300.68	916	304.01	916.36	312.13	917.05	314.95	917.21	316.58	917.41
320.24	917.49	321.38	917.57	325.29	917.56	335.74	917.85	341	918.05
346.11	918.3	359.01	918.95	371.57	919.26	381.66	919.38	386.73	919.49
391.85	919.76	394.63	920	400.47	920.25	416.09	920.84	421.99	920.96

424.35	921.11	426.58	921.14	430.12	921.31	431.86	921.33	435.8	921.69
441.52	921.88	442.58	921.9	446.35	922	589.03	922	626.97	923.99
705.83	924	717.68	924.65	724.17	924.62	726.03	924.87	737.29	924.88
739.45	924.84	741.71	924.95	749.32	925.09	757.72	925.44	762.74	925.82
764.8	926	779.48	926	835.17	927.59				

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .06 258.23 .05 312.13 .06

Bank Sta: Left Right Coeff Contr. Expan.  
 258.23 312.13 .3 .5

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

Downstream Deck/Roadway Coordinates num= 6  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 -248.68 926 900 -139.68 924 900 51.32 922 900  
 145.32 922 900 422.32 924 900 600 926 900

Downstream Bridge Cross Section Data Station Elevation Data num= 73  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 922.74 24.53 922.32 25.59 922.29 33.82 922.15 39.85 922.08  
 81.04 921.96 95.94 921.89 101.35 921.87 106.82 921.68 108.11 921.48  
 112.31 921.01 116.32 920.24 117.71 920 124.6 918 126.34 917.42  
 130.09 916.25 131.07 916 135.25 913 154.99 913 155.79 914.32  
 159.91 914.51 161.5 914.68 164.54 915.07 168.9 915.82 172.92 916.65  
 175.15 917.17 178.55 918 181.48 918.55 185.61 919.46 187.17 919.78  
 188.42 920 198.66 920.75 206.04 921.34 209.97 921.55 215.69 921.98  
 230.59 922 234.5 921.87 239.84 921.72 244.88 921.57 246 921.56  
 249.94 921.45 251.34 921.45 261.42 921.25 277.43 921.35 282.13 921.44  
 286.16 921.43 289.27 921.32 292.59 921.31 294.46 921.21 297.59 921.17  
 302.92 920.91 312.76 920.64 315.98 920.66 322.93 920.57 329.36 920.51  
 343.6 920.02 357.93 919.73 366.96 919.66 371.78 919.64 376.4 919.61  
 379.65 919.53 394.44 919.47 424.29 920 427.92 920.23 428.94 920.21  
 430.14 920.23 436.57 920.47 438.21 920.51 504.27 923.05 507.83 923.5  
 515 924 550 925 600 926

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .06 124.6 .05 178.55 .06

Bank Sta: Left Right Coeff Contr. Expan.  
 124.6 178.55 .3 .5

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

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span  
 CluckCrkRd Box 6 7  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - Wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef  
 9.075 72 .011 .4 1

Number of Barrels = 3

Upstream Elevation = 913

Centerline Stations  
 Sta. Sta. Sta.  
 266 273.5 281

Downstream Elevation = 913

Centerline Stations  
 Sta. Sta. Sta.  
 137.82 145.32 152.82

CROSS SECTION RIVER: clucktl  
 REACH: 1 RS: 4462.804

INPUT Description:  
 Station Elevation Data num= 73  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 922.74 24.53 922.32 25.59 922.29 33.82 922.15 39.85 922.08  
 81.04 921.96 95.94 921.89 101.35 921.87 106.82 921.68 108.11 921.48  
 112.31 921.01 116.32 920.24 117.71 920 124.6 918 126.34 917.42  
 130.09 916.25 131.07 916 135.25 913 154.99 913 155.79 914.32  
 159.91 914.51 161.5 914.68 164.54 915.07 168.9 915.82 172.92 916.65  
 175.15 917.17 178.55 918 181.48 918.55 185.61 919.46 187.17 919.78  
 188.42 920 198.66 920.75 206.04 921.34 209.97 921.55 215.69 921.98  
 230.59 922 234.5 921.87 239.84 921.72 244.88 921.57 246 921.56



249.94	921.45	251.34	921.45	261.42	921.25	277.43	921.35	282.13	921.44
286.16	921.43	289.27	921.32	292.59	921.31	294.46	921.21	297.59	921.17
302.92	920.91	312.76	920.64	315.98	920.66	322.93	920.57	329.36	920.51
343.6	920.02	357.93	919.73	366.96	919.86	371.78	919.64	376.4	919.61
379.65	919.53	394.44	919.47	424.29	920	427.92	920.23	428.94	920.21
430.14	920.23	436.57	920.47	438.21	920.51	504.27	923.05	507.83	923.5
515	924	550	925	600	926				

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .06 124.6 .05 178.55 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 124.6 178.55 1702.67 1712.54 1722.42 .3 .5

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

CROSS SECTION RIVER: cluckt1  
 REACH: 1 RS: 2750.261

INPUT Description:

Station Elevation Data num= 50
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 918.7 40.8 918.35 96.43 918 108.95 917.68 119 917.56
146.68 917.29 195.33 916 209.67 916 245.67 915.3 290.14 914.42
320.28 914.24 325.28 914.15 336.38 914 365.87 913.84 451.41 912.14
458.51 912 656.52 910.01 729.67 909.96 767.54 909.32 804.12 909.29
820.69 909.38 869.34 909.12 915.12 908 949.84 906 968.77 904
1062.77 904 1079.12 906 1090.89 908 1151.25 909.88 1155.37 910
1172.45 912 1194.69 912.89 1197.67 912.94 1202.8 913.17 1205.49 913.16
1232.35 913.41 1245.16 913.27 1276.6 912 1292.39 912 1326.22 911.1
1328.57 911.1 1358.81 912 1378.22 914 1395.72 915.95 1454.02 917.22
1479.14 917.46 1489.52 917.39 1512.8 917.86 1516.02 918 1527.43 918.26

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .06 949.84 .05 1079.12 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 949.84 1079.12 2111.67 2112.6 2113.52 .1 .3

CROSS SECTION RIVER: cluckt1  
 REACH: 1 RS: 637.664

INPUT Description:

Station Elevation Data num= 63
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 902.41 30.64 902 101.46 902 117.38 901.76 142.03 901.59
174.65 901.63 231.25 900.99 285.47 900 435.44 900 440.03 899.78
468.52 898 575.16 897.29 576.58 897.25 600.71 897.97 601.89 898
611.99 898 622.4 898.25 625.68 898.27 647.35 898 674.64 898
688.61 896 696.91 894 703.22 892 709.28 890 715.85 888
719.8 887.29 728.75 884.76 728.95 885.29 729.18 884.64 729.68 884.79
733.1 886 734.55 885.45 740.81 886.15 745.28 888 758.86 892
766.81 894 774.59 894.73 776.4 894.76 782.84 895.28 803.94 895.67
848.06 895.17 860.66 895.08 973.4 895.81 982.08 896 994.75 898
999.56 897.78 1010.27 897.75 1013.1 898 1023.25 896.53 1024.6 896.36
1027.92 896 1042.33 896 1063.33 898 1065.52 898.05 1163.36 899.92
1167.31 900 1170.29 900.4 1189.06 904 1202.71 906 1224.33 908
1252.71 910.07 1280.65 911.97 1314.04 913.85

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .06 715.85 .05 745.28 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 715.85 745.28 644.13 637.66 631.2 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 19397.69

INPUT Description:

Station Elevation Data num= 17
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
529.87 1020 650.36 1019.8 731.79 1019.64 803.12 1018.73 834.94 1018.79
841.46 1018.48 849.02 1018.21 859.12 1017.86 864.62 1017.71 876.93 1017.34
906.38 1017.09 917.46 1017.16 919.52 1017.2 970.21 1017.64 965.67 1018
1088.96 1018.79 1126.38 1020

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 529.87 .06 864.62 .05 985.67 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 864.62 985.67 921.73 927.51 933.32 .3 .5

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 18470.38

INPUT

Description:

Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	1008	27.68	1008	29.64	1007.95	37.28	1007.61	38.83	1007.58
71.89	1006	98.71	1006	99.99	1005.93	151.06	1004	179.12	1004
184.96	1003.7	186.09	1003.66	193.62	1003.16	199.22	1002.96	201.71	1002.78
214.77	1002.33	223.16	1002.02	237.04	1001.17	239.91	1001.03	242.24	1001.01
244.73	999	253	997.6	272.79	997.6	283.89	1002	398.4	1002
500	1003	530	1004	540	1005				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	223.16	.035	283.89	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

223.16	283.89	172.67	191.61	223.1	.3	.5
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Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
888	F		
888	F		

CULVERT RIVER: cluck  
REACH: 1 RS: 18374.57

INPUT

Description: Lake Line Blvd  
Distance from Upstream XS = 4.805  
Deck/Roadway Width = 182  
Weir Coefficient = 2.6  
Upstream Deck/Roadway Coordinates

num= 7

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
-98	1007	900	51.01	1006	900	221.01	1004	900						
261.01	1003.5	900	636.01	1004	900	886.01	1004	900						
921.01	1002	900												

Upstream Bridge Cross Section Data

Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	1008	27.68	1008	29.64	1007.95	37.28	1007.61	38.83	1007.58
71.89	1006	98.71	1006	99.99	1005.93	151.06	1004	179.12	1004
184.96	1003.7	186.09	1003.66	193.62	1003.16	199.22	1002.96	201.71	1002.78
214.77	1002.33	223.16	1002.02	237.04	1001.17	239.91	1001.03	242.24	1001.01
244.73	999	253	997.6	272.79	997.6	283.89	1002	398.4	1002
500	1003	530	1004	540	1005				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	223.16	.035	283.89	.04

Bank Sta: Left Right Coeff Contr. Expan.

223.16	283.89	.3	.5
--------	--------	----	----

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
888	F		
888	F		

Downstream Deck/Roadway Coordinates

num= 7

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
-131.5	1006.8	900	98.5	1006	900	268.5	1004	900						
308.5	1003.5	900	683.5	1004	900	933.5	1004	900						
965.5	1002	900												

Downstream Bridge Cross Section Data

Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-131.5	1006.8	8.5	1004.8	88.5	1002.8	198.5	1000.8	258.5	998.8
308.5	996.8	348.5	996.8	378.5	998.8	408.5	1000.8	768.5	1002.8

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-131.5	.01	198.5	.035	408.5	.04

Bank Sta: Left Right Coeff Contr. Expan.

198.5	408.5	.3	.5
-------	-------	----	----

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-888	F		
888	F		

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
Maximum allowable submergence for weir flow = .95  
Elevation at which weir flow begins =  
Energy head used in spillway design =  
Spillway height used in design =  
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
Lakeline	Box	4	9
FHWA Chart # 8 - flared wingwalls			
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.			

Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef  
 4.805 182 .011 .4 1

Number of Barrels = 3  
 Upstream Elevation = 997.6  
 Centerline Stations  
 Sta. Sta. Sta.  
 252.01 261.01 270.01  
 Downstream Elevation = 996.85  
 Centerline Stations  
 Sta. Sta. Sta.  
 319.5 328.5 337.5

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 18278.76

INPUT  
 Description:  
 Station Elevation Data num= 10  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-131.5	1006.8	8.5	1004.8	88.5	1002.8	198.5	1000.8	258.5	998.8
308.5	996.8	348.5	996.8	378.5	998.8	408.5	1000.8	768.5	1002.8

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
-131.5	.01	198.5	.035	408.5	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 198.5 408.5 287.82 270.85 241.3 .3 .5

Ineffective Flow num= 2  

Sta L	Sta R	Elev	Permanent
-888	F		
888	F		

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 18007.91

INPUT  
 Description:  
 Station Elevation Data num= 26  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	1003.49	53.1	1002	61.52	1002	115.24	1000.16	124.03	1000.01
143.62	1000	188.54	998.13	196.16	998	202.77	998	207.27	997.83
224.02	996.67	227.12	996.42	234.04	992.5	270.4	992.5	276.85	996
278.86	996	281.41	996.23	282.51	996.27	309.87	997.69	330.54	997.68
331.34	998	346.77	998.5	355.57	999.16	362.23	999.85	369.06	1000.44
379.07	1001.25								

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	224.02	.05	281.41	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 224.02 281.41 80.9 80.86 82.16 .3 .5

Ineffective Flow num= 2  

Sta L	Sta R	Elev	Permanent
888	F		
888	F		

CULVERT RIVER: cluck  
 REACH: 1 RS: 17967.48

INPUT  
 Description: Post Oak Dr  
 Distance from Upstream XS = 5.93  
 Deck/Roadway Width = 69  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates num= 5  

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
-6.06	1002	900	63.94	1000	900	173.94	998	900						
243.94	997.5	900	573.94	996	900									

Upstream Bridge Cross Section Data  
 Station Elevation Data num= 26  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	1003.49	53.1	1002	61.52	1002	115.24	1000.16	124.03	1000.01
143.62	1000	188.54	998.13	196.16	998	202.77	998	207.27	997.83
224.02	996.67	227.12	996.42	234.04	992.5	270.4	992.5	276.85	996
278.86	996	281.41	996.23	282.51	996.27	309.87	997.69	330.54	997.68
331.34	998	346.77	998.5	355.57	999.16	362.23	999.85	369.06	1000.44
379.07	1001.25								

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	224.02	.05	281.41	.06

Bank Sta: Left Right Coeff Contr. Expan.  
 224.02 281.41 .3 .5

Ineffective Flow num= 2  

Sta L	Sta R	Elev	Permanent
888	F		
888	F		

Downstream Deck/Roadway Coordinates

num= 5  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 7.5 1002 900 77.5 1000 900 187.5 998 900  
 257.5 997.5 900 587.5 996 900

Downstream Bridge Cross Section Data  
 Station Elevation Data num= 16  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 7.5 1002 57.5 1000 157.5 998 217.5 996 237.5 994  
 247.5 992.5 257.5 992.5 270.5 992.5 287.5 994 357.5 996  
 487.5 997 587.5 998 613.65 998.75 644.25 999.67 664.96 1000.47  
 685.67 1001.33

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 7.5 .06 217.5 .05 357.5 .06

Bank Sta: Left Right Coeff Contr. Expan.  
 217.5 357.5 .3 .5

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

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span  
 Post Oak Box 4 12  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - Wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef  
 5.93 69 .011 .4 1

Number of Barrels = 3  
 Upstream Elevation = 992.5  
 Centerline Stations  
 Sta. Sta. Sta.  
 237.94 250.94 263.94  
 Downstream Elevation = 992.5  
 Centerline Stations  
 Sta. Sta. Sta.  
 244.5 257.5 270.5

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17927.05

INPUT  
 Description:  
 Station Elevation Data num= 16  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 7.5 1002 57.5 1000 157.5 998 217.5 996 237.5 994  
 247.5 992.5 257.5 992.5 270.5 992.5 287.5 994 357.5 996  
 487.5 997 587.5 998 613.65 998.75 644.25 999.67 664.96 1000.47  
 685.67 1001.33

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 7.5 .06 217.5 .05 357.5 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 217.5 357.5 25 25 25 .3 .5

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

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17902.0\*

INPUT  
 Description:  
 Station Elevation Data num= 20  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 7.5 1002 57.5 1000.11 157.5 998.22 217.5 996.28 232 994.73  
 237.5 994.01 247.5 992.24 256.87 992.24 269.06 992.24 285.09 994.11  
 289.33 994.36 351.11 996.28 398.39 996.76 484.72 997.42 505.28 997.62  
 587.5 998.44 612.97 999.24 639.48 1000.18 673.72 1001.15 697.61 1002

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 7.5 .06 217.5 .05 351.11 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 217.5 351.11 25 25 25 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17877.0\*

INPUT  
 Description:  
 Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1000.22	157.5	998.44	217.5	996.56	232	994.92
237.5	994.02	247.5	991.99	256.24	991.99	267.61	991.99	282.68	994.21
286.66	994.59	344.72	996.56	393.28	997.16	481.94	997.85	503.06	998.04
587.5	998.89	616.38	999.77	655.4	1000.93	689.65	1001.93		

Manning's n Values num= 3

Sta	n Val	Sta	n Val
7.5	.06	217.5	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Contr.	Expan.
217.5	344.72	50	50	50		.1	.3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17827.0+

INPUT  
 Description:  
 Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1000.44	157.5	998.89	217.5	997.11	232	995.28
237.5	994.03	247.5	991.48	254.99	991.48	264.72	991.48	277.86	994.42
281.33	995.05	331.94	997.11	383.06	997.97	476.39	998.69	498.61	998.89
587.5	999.78	615.02	1000.52	650.63	1001.63	692.83	1002.33		

Manning's n Values num= 3

Sta	n Val	Sta	n Val
7.5	.06	217.5	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Contr.	Expan.
217.5	331.94	25	25	25		.1	.3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17802.0+

INPUT  
 Description:  
 Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1000.56	157.5	999.11	217.5	997.39	232	995.47
237.5	994.04	247.5	991.22	254.36	991.22	263.28	991.22	275.45	994.53
278.66	995.28	325.56	997.39	377.94	998.38	473.61	999.12	496.39	999.31
587.5	1000.22								

Manning's n Values num= 3

Sta	n Val	Sta	n Val
7.5	.06	217.5	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Contr.	Expan.
217.5	325.56	100	100	100		.1	.3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17702

INPUT  
 Description:  
 Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1001	157.5	1000	217.5	998.5	232	996.2
247.5	990.2	257.5	990.2	268	996.2	300	998.5	357.5	1000
487.5	1001	587.5	1002						

Manning's n Values num= 3

Sta	n Val	Sta	n Val
7.5	.06	217.5	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Contr.	Expan.
217.5	300	15.7	15.7	15.7		.1	.3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17686.3

INPUT  
 Description:  
 Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1001	157.5	1000	217.5	998.5	232	996.2
247.5	990.2	257.5	990.2	268	996.2	300	998.5	357.5	1000
487.5	1001	587.5	1002						

Manning's n Values num= 3

Sta	n Val	Sta	n Val
7.5	.06	217.5	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Contr.	Expan.
217.5	300	24.86	24.86	24.86		.1	.3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17661.3+

INPUT

Description:

Station Elevation Data		num= 16									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1000.86	157.5	999.71	217.5	998.14	232	995.96		
237.5	994.06	247.5	989.87	252.66	989.87	259.36	989.87	261.04	991.46		
271.43	995.95	308.21	998.14	364.07	999.48	466.07	1000.26	490.36	1000.46		
587.5	1001.43										

Manning's n Values

Sta	n Val	Sta	n Val	Sta	n Val
7.5	.06	217.5	.05	308.21	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	217.5	308.21		24.86	24.86		.1	.3

CROSS SECTION RIVER: cluck  
REACH: 1 RS: 17636.4\*

INPUT

Description:

Station Elevation Data		num= 16									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1000.71	157.5	999.43	217.5	997.79	232	995.73		
237.5	994.05	247.5	989.54	253.46	989.54	261.21	989.54	263.12	991.88		
274.86	995.7	316.43	997.79	370.64	998.96	469.64	999.72	493.21	999.91		
587.5	1000.86										

Manning's n Values

Sta	n Val	Sta	n Val	Sta	n Val
7.5	.06	217.5	.05	316.43	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	217.5	316.43		24.86	24.86		.1	.3

CROSS SECTION RIVER: cluck  
REACH: 1 RS: 17611.6\*

INPUT

Description:

Station Elevation Data		num= 16									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1000.57	157.5	999.14	217.5	997.43	232	995.49		
237.5	994.04	247.5	989.21	254.27	989.21	263.07	989.21	265.19	992.31		
278.28	995.45	324.64	997.43	377.21	998.44	473.21	999.18	496.07	999.37		
587.5	1000.29										

Manning's n Values

Sta	n Val	Sta	n Val	Sta	n Val
7.5	.06	217.5	.05	324.64	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	217.5	324.64		24.86	24.86		.1	.3

CROSS SECTION RIVER: cluck  
REACH: 1 RS: 17586.6\*

INPUT

Description:

Station Elevation Data		num= 16									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1000.43	157.5	998.86	217.5	997.07	232	995.26		
237.5	994.03	247.5	988.89	255.08	988.89	264.93	988.89	267.27	992.73		
281.71	995.19	332.86	997.07	383.79	997.92	476.79	998.63	498.93	998.83		
587.5	999.71										

Manning's n Values

Sta	n Val	Sta	n Val	Sta	n Val
7.5	.06	217.5	.05	332.86	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	217.5	332.86		24.86	24.86		.1	.3

CROSS SECTION RIVER: cluck  
REACH: 1 RS: 17561.7\*

INPUT

Description:

Station Elevation Data		num= 16									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1000.29	157.5	998.57	217.5	996.71	232	995.02		
237.5	994.02	247.5	988.56	255.89	988.56	266.79	988.56	269.35	993.15		
285.14	994.94	341.07	996.71	390.36	997.4	480.36	998.09	501.79	998.29		
587.5	999.14										

Manning's n Values

Sta	n Val	Sta	n Val	Sta	n Val
7.5	.06	217.5	.05	341.07	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	217.5	341.07		24.86	24.86		.1	.3

CROSS SECTION RIVER: cluck  
REACH: 1 RS: 17536.3\*

INPUT

Description:  
 Station Elevation Data num= 16  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1000.14	157.5	998.29	217.5	996.36	232	994.79
237.5	994.01	247.5	988.23	256.69	988.23	268.64	988.23	271.42	993.58
288.37	994.69	349.29	996.36	396.93	996.87	483.93	997.54	504.64	997.74
587.5	998.57								

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
7.5	.06	217.5	.05	349.29	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 217.5 349.29 24.86 24.86 24.86 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17512

INPUT Description:  
 Station Elevation Data num= 12  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1000	157.5	998	217.5	996	237.5	994
247.5	987.9	257.5	987.9	270.5	987.9	273.5	994	357.5	996
487.5	997	587.5	998						

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
7.5	.06	217.5	.05	357.5	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 217.5 357.5 15.7 15.7 15.7 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17496.3

INPUT Description:  
 Station Elevation Data num= 12  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.5	1002	57.5	1000	157.5	998	217.5	996	237.5	994
247.5	987.9	257.5	987.9	270.5	987.9	273.5	994	357.5	996
487.5	997	587.5	998						

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
7.5	.06	217.5	.05	357.5	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 217.5 357.5 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17486.5+

INPUT Description:  
 Station Elevation Data num= 23  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
7.2	1001.57	59.43	999.62	106.01	998.74	155.42	997.83	163.89	997.67
171.72	997.43	188.02	996.92	226.56	995.74	245.99	993.72	255.7	987.81
258.36	987.81	262.83	987.81	265.64	987.81	266.97	987.81	267.79	987.81
272.39	987.81	275.34	987.81	276.2	987.81	278.54	987.81	281.43	993.67
362.16	995.74	492.49	996.74	592.74	997.73				

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
7.2	.06	226.56	.05	362.16	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 226.56 362.16 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17476.8+

INPUT Description:  
 Station Elevation Data num= 23  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
6.9	1001.15	61.36	999.25	109.93	998.37	161.44	997.49	170.27	997.34
178.44	997.11	195.44	996.62	235.62	995.49	254.48	993.43	263.91	987.72
266.55	987.72	270.98	987.72	273.77	987.72	275.1	987.72	275.91	987.72
280.48	987.72	283.4	987.72	284.26	987.72	286.59	987.72	289.36	993.34
366.82	995.49	497.47	996.49	597.97	997.47				

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
6.9	.059	235.62	.05	366.82	.059

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 235.62 366.82 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17467.1+

INPUT

Description:

Station Elevation Data		num= 23									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
6.6	1000.72	63.29	998.87	113.84	998	167.46	997.16	176.66	997.01		
185.16	996.78	202.86	996.31	244.68	995.23	262.97	993.15	272.11	987.62		
274.73	987.62	279.14	987.62	281.91	987.62	283.23	987.62	284.03	987.62		
288.57	987.62	291.47	987.62	292.32	987.62	294.63	987.62	297.28	993.01		
371.48	995.23	502.46	996.23	603.21	997.2						

Manning's n Values		num= 3									
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
6.6	.059	244.68	.049	371.48	.059						

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	244.68	371.48		9.72	9.72		.1	.3

CROSS SECTION RIVER: cluck  
REACH: 1 RS: 17457.3\*

INPUT

Description:

Station Elevation Data		num= 23									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
6.3	1000.29	65.21	998.49	117.76	997.63	173.49	996.82	183.04	996.68		
191.88	996.46	210.27	996.01	253.74	994.98	271.46	992.87	280.32	987.53		
282.92	987.53	287.29	987.53	290.04	987.53	291.35	987.53	292.15	987.53		
296.66	987.53	299.54	987.53	300.39	987.53	302.68	987.53	305.21	992.68		
376.14	994.98	507.44	995.97	608.45	996.93						

Manning's n Values		num= 3									
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
6.3	.058	253.74	.049	376.14	.058						

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	253.74	376.14		9.72	9.72		.1	.3

CROSS SECTION RIVER: cluck  
REACH: 1 RS: 17447.6\*

INPUT

Description:

Station Elevation Data		num= 23									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
6	999.87	67.14	998.11	121.68	997.27	179.51	996.49	189.43	996.35		
198.6	996.14	217.69	995.7	262.8	994.72	279.95	992.59	288.52	987.44		
291.1	987.44	295.45	987.44	298.18	987.44	299.48	987.44	300.27	987.44		
304.74	987.44	307.61	987.44	308.45	987.44	310.72	987.44	313.14	992.35		
380.8	994.72	512.43	995.72	613.69	996.67						

Manning's n Values		num= 3									
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
6	.058	262.8	.049	380.8	.058						

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	262.8	380.8		9.72	9.72		.1	.3

CROSS SECTION RIVER: cluck  
REACH: 1 RS: 17437.9\*

INPUT

Description:

Station Elevation Data		num= 23									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5.7	999.44	69.07	997.74	125.59	996.9	185.54	996.16	195.81	996.02		
205.32	995.82	225.1	995.4	271.86	994.46	288.44	992.3	296.73	987.35		
299.29	987.35	303.6	987.35	306.31	987.35	307.6	987.35	308.39	987.35		
312.83	987.35	315.67	987.35	316.51	987.35	318.77	987.35	321.07	992.02		
385.46	994.46	517.42	995.46	618.92	996.4						

Manning's n Values		num= 3									
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
5.7	.058	271.86	.049	385.46	.058						

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	271.86	385.46		9.72	9.72		.1	.3

CROSS SECTION RIVER: cluck  
REACH: 1 RS: 17428.1\*

INPUT

Description:

Station Elevation Data		num= 23									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5.4	999.01	71	997.36	129.51	996.53	191.56	995.82	202.2	995.69		
212.04	995.5	232.52	995.09	280.32	994.21	296.93	992.02	304.93	987.26		
307.47	987.26	311.76	987.26	314.45	987.26	315.73	987.26	316.51	987.26		
320.92	987.26	323.74	987.26	324.57	987.26	326.81	987.26	329	991.69		
390.12	994.21	522.4	995.2	624.16	996.13						

Manning's n Values		num= 3									
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
5.4	.057	280.92	.049	390.12	.057						

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	280.92	390.12		9.72	9.72		.1	.3



CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17418.4\*

INPUT  
 Description:  
 Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5.1	998.59	72.93	996.98	133.42	996.16	197.59	995.49	208.59	995.36
218.76	995.17	239.93	994.79	289.98	993.95	305.42	991.74	313.14	987.16
315.66	987.16	319.91	987.16	322.58	987.16	323.85	987.16	324.63	987.16
329.01	987.16	331.81	987.16	332.63	987.16	334.86	987.16	336.92	991.36
394.78	993.95	527.39	994.94	629.4	995.87				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5.1	.057	289.98	.048	394.78	.057

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 289.98 394.78 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17408.7\*

INPUT  
 Description:  
 Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4.8	998.16	74.86	996.61	137.34	995.79	203.61	995.15	214.97	995.03
225.48	994.85	247.35	994.48	299.04	993.7	313.91	991.46	321.34	987.07
323.85	987.07	328.07	987.07	330.72	987.07	331.98	987.07	332.75	987.07
337.1	987.07	339.87	987.07	340.69	987.07	342.9	987.07	344.85	991.03
399.44	993.7	532.38	994.69	634.63	995.6				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4.8	.056	299.04	.048	399.44	.056

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 299.04 399.44 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17398.9\*

INPUT  
 Description:  
 Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4.5	997.73	76.79	996.23	141.26	995.42	209.64	994.82	221.36	994.7
232.2	994.53	254.76	994.18	308.1	993.44	322.4	991.17	329.54	986.98
332.03	986.98	336.22	986.98	338.85	986.98	340.11	986.98	340.87	986.98
345.18	986.98	347.94	986.98	348.75	986.98	350.95	986.98	352.78	990.7
404.1	993.44	537.36	994.43	639.87	995.33				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4.5	.056	308.1	.048	404.1	.056

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 308.1 404.1 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17389.2\*

INPUT  
 Description:  
 Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4.2	997.31	78.71	995.85	145.17	995.06	215.66	994.48	227.74	994.37
238.92	994.21	262.18	993.87	317.16	993.18	330.89	990.89	337.75	986.89
340.22	986.89	344.38	986.89	346.99	986.89	348.23	986.89	348.99	986.89
353.27	986.89	356.01	986.89	356.81	986.89	358.99	986.89	360.71	990.36
408.76	993.18	542.35	994.17	645.11	995.07				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
4.2	.056	317.16	.048	408.76	.056

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 317.16 408.76 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17379.5\*

INPUT  
 Description:  
 Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3.9	996.88	80.64	995.48	149.09	994.69	221.68	994.15	234.13	994.04
245.64	993.99	269.6	993.57	326.22	992.93	339.38	990.61	345.95	986.8
348.4	986.8	352.53	986.8	355.12	986.8	356.36	986.8	357.11	986.8
361.36	986.8	364.08	986.8	364.87	986.8	367.04	986.8	368.64	990.03
413.42	992.93	547.33	993.92	650.35	994.8				

Manning's n Values num= 3

Sta n Val Sta n Val Sta n Val  
 3.9 .055 326.22 .048 413.42 .055  
 Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 326.22 413.42 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17369.7\*

INPUT  
 Description:  
 Station Elevation Data num= 23  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3.6	996.45	82.57	995.1	153.01	994.32	227.71	993.81	240.51	993.71
252.36	993.56	277.01	993.26	335.28	992.67	347.86	990.33	354.16	986.7
356.59	986.7	360.68	986.7	363.26	986.7	364.48	986.7	365.23	986.7
369.45	986.7	372.14	986.7	372.94	986.7	375.08	986.7	376.57	989.7
418.08	992.67	552.32	993.66	655.58	994.53				

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
3.6	.055	335.28	.047	418.08	.055

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 335.28 418.08 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17360.0\*

INPUT  
 Description:  
 Station Elevation Data num= 23  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3.3	996.02	84.5	994.72	156.92	993.95	233.73	993.48	246.9	993.38
259.08	993.24	284.43	992.96	344.34	992.42	356.35	990.04	362.36	986.61
364.78	986.61	368.84	986.61	371.39	986.61	372.61	986.61	373.35	986.61
377.53	986.61	380.21	986.61	381	986.61	383.13	986.61	384.49	989.37
422.74	992.42	557.31	993.4	660.82	994.26				

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
3.3	.054	344.34	.047	422.74	.054

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 344.34 422.74 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17350.3\*

INPUT  
 Description:  
 Station Elevation Data num= 23  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3	995.6	86.43	994.34	160.84	993.58	239.76	993.14	253.29	993.05
265.8	992.92	291.84	992.65	353.4	992.16	364.84	989.76	370.57	986.52
372.96	986.52	376.99	986.52	379.53	986.52	380.73	986.52	381.47	986.52
385.62	986.52	388.28	986.52	389.06	986.52	391.17	986.52	392.42	989.04
427.4	992.16	562.29	993.15	666.06	994				

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
3	.054	353.4	.047	427.4	.054

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 353.4 427.4 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17340.3\*

INPUT  
 Description:  
 Station Elevation Data num= 23  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
2.7	995.17	88.36	993.97	164.75	993.21	245.78	992.81	259.67	992.72
272.52	992.6	299.26	992.35	362.46	991.9	373.33	989.48	378.77	986.43
381.15	986.43	385.15	986.43	387.66	986.43	388.86	986.43	389.59	986.43
393.71	986.43	396.35	986.43	397.12	986.43	399.22	986.43	400.35	988.71
432.06	991.9	567.28	992.89	671.3	993.73				

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
2.7	.054	362.46	.047	432.06	.054

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 362.46 432.06 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17330.8\*

INPUT  
 Description:  
 Station Elevation Data num= 23  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
2.4	994.74	90.29	993.59	168.67	992.85	251.31	992.48	266.06	992.39
279.24	992.28	306.67	992.04	371.52	991.65	381.82	989.19	386.97	986.34

389.33	986.34	393.3	986.34	395.8	986.34	396.98	986.34	397.71	986.34
401.8	986.34	404.41	986.34	405.18	986.34	407.26	986.34	408.28	986.38
436.72	991.65	572.27	992.63	676.53	993.46				

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 2.4 .053 371.52 .047 436.72 .053

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 371.52 436.72 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17321.1\*

INPUT  
 Description:  
 Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
2.1	994.32	92.21	993.21	172.59	992.48	257.83	992.14	272.44	992.06
285.96	991.95	314.09	991.74	380.58	991.39	390.31	988.91	395.18	986.24
397.52	986.24	401.46	986.24	403.93	986.24	405.11	986.24	405.83	986.24
409.89	986.24	412.48	986.24	413.24	986.24	415.31	986.24	416.21	988.05
441.38	991.39	577.25	992.36	681.77	993.2				

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 2.1 .053 380.58 .046 441.38 .053

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 380.58 441.38 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17311.3\*

INPUT  
 Description:  
 Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1.8	993.89	94.14	992.84	176.5	992.11	263.85	991.81	278.83	991.73
292.68	991.63	321.51	991.43	389.64	991.14	398.8	988.63	403.38	986.15
405.7	986.15	409.61	986.15	412.07	986.15	413.24	986.15	413.95	986.15
417.97	986.15	420.55	986.15	421.3	986.15	423.35	986.15	424.13	987.72
446.04	991.14	582.24	992.12	687.01	992.93				

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 1.8 .052 389.64 .046 446.04 .052

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 389.64 446.04 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17301.6\*

INPUT  
 Description:  
 Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1.5	993.46	96.07	992.46	180.42	991.74	269.88	991.47	285.21	991.4
299.4	991.31	328.92	991.13	398.7	990.88	407.29	988.35	411.59	986.06
413.89	986.06	417.77	986.06	420.2	986.06	421.36	986.06	422.07	986.06
426.06	986.06	428.61	986.06	429.36	986.06	431.4	986.06	432.06	987.39
450.7	990.88	587.22	991.86	692.24	992.66				

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 1.5 .052 398.7 .046 450.7 .052

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 398.7 450.7 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17291.9\*

INPUT  
 Description:  
 Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1.2	993.04	98	992.08	184.34	991.37	275.9	991.14	291.6	991.07
306.12	990.99	336.34	990.82	407.76	990.62	415.78	988.06	419.79	985.97
422.08	985.97	425.92	985.97	428.24	985.97	429.49	985.97	430.19	985.97
434.15	985.97	436.68	985.97	437.43	985.97	439.44	985.97	439.99	987.06
455.36	990.62	592.21	991.61	697.48	992.4				

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 1.2 .052 407.76 .046 455.36 .052

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 407.76 455.36 9.72 9.72 9.72 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17282.1\*

INPUT

Description:

Station Elevation Data											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.9	992.61	99.93	991.71	188.25	991.01	281.93	990.8	297.99	990.74		
312.84	990.67	343.75	990.52	416.82	990.37	424.27	987.78	428	985.88		
430.26	985.88	434.08	985.88	436.47	985.88	437.61	985.88	438.31	985.88		
442.24	985.88	444.75	985.88	445.49	985.88	447.49	985.88	447.92	986.73		
460.02	990.37	597.2	991.35	702.72	992.13						

Manning's n Values

Sta	n Val	Sta	n Val	Sta	n Val
.9	.051	416.82	.046	460.02	.051

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

416.82	460.02	9.72	9.72	9.72	.1	.3
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CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17272.4\*

INPUT Description:

Station Elevation Data											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.6	992.18	101.86	991.33	192.17	990.64	287.95	990.47	304.37	990.41		
319.56	990.34	351.17	990.21	425.88	990.11	432.76	987.5	436.2	985.78		
438.45	985.78	442.23	985.78	444.61	985.78	445.74	985.78	446.43	985.78		
450.32	985.78	452.82	985.78	453.55	985.78	455.53	985.78	455.85	986.4		
464.68	990.11	602.18	991.09	707.96	991.86						

Manning's n Values

Sta	n Val	Sta	n Val	Sta	n Val
.6	.051	425.88	.045	464.68	.051

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

425.88	464.68	9.72	9.72	9.72	.1	.3
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CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17262.7\*

INPUT Description:

Station Elevation Data											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
.3	991.76	103.79	990.95	196.08	990.27	293.98	990.13	310.76	990.08		
326.28	990.02	358.58	989.91	434.94	989.86	441.25	987.22	444.41	985.69		
446.63	985.69	450.39	985.69	452.74	985.69	453.86	985.69	454.55	985.69		
458.41	985.69	460.88	985.69	461.61	985.69	463.58	985.69	463.77	986.07		
469.34	989.86	607.17	990.83	713.19	991.6						

Manning's n Values

Sta	n Val	Sta	n Val	Sta	n Val
.3	.05	434.94	.045	469.34	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

434.94	469.34	9.72	9.72	9.72	.1	.3
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CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17253

INPUT Description:

Station Elevation Data											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	991.33	200	989.9	300	989.8	333	989.7	366	989.6		
444	989.6	452.61	985.6	454.82	985.6	458.54	985.6	461.99	985.6		
462.67	985.6	466.5	985.6	468.95	985.6	469.67	985.6	471.62	985.6		
474	989.6	718.43	991.33								

Manning's n Values

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	444	.045	474	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

444	474	16	16	16	.1	.3
-----	-----	----	----	----	----	----

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17237

INPUT Description:

Station Elevation Data											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	991.33	200	989.9	300	989.8	333	989.7	366	989.6		
444	989.6	452.61	985.6	454.82	985.6	458.54	985.6	461.99	985.6		
462.67	985.6	466.5	985.6	468.95	985.6	469.67	985.6	471.62	985.6		
474	989.6	718.43	991.33								

Manning's n Values

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	444	.045	474	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

444	474	27.44	27.44	27.44	.1	.3
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CROSS SECTION RIVER: cluck

REACH: 1 RS: 17209.5+

INPUT

Description:

Station Elevation Data num= 46									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	991.52	67.06	991.03	110.76	990.68	132.58	990.54	138.45	990.5
195.52	990.01	247.18	989.86	252.81	989.86	293.29	989.74	325.55	989.58
356.1	989.43	357.81	989.42	434.06	989.42	436.48	988.92	437.33	988.76
438.37	988.55	439.68	988.29	451.35	985.93	451.4	985.78	451.42	985.75
451.44	985.66	451.46	985.58	451.48	985.56	451.5	985.53	452.07	985.34
454.27	985.34	457.99	985.34	461.43	985.34	462.11	985.34	465.94	985.34
468.38	985.34	469.1	985.34	471.05	985.34	471.39	985.53	471.76	985.65
472.36	986.22	473.1	986.48	474.99	987.1	481.89	989.42	539.98	989.8
636.94	990.65	639.02	990.67	640.73	990.68	701.91	991.22	706.33	991.25
718.43	991.33								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	434.06	.045	481.89	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	434.06	481.89		27.44	27.44		.1	.3

CROSS SECTION

RIVER: cluck  
REACH: 1 RS: 17182.1+

INPUT

Description:

Station Elevation Data num= 46									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	991.71	65.52	991.23	108.23	990.85	129.54	990.72	135.28	990.67
191.05	990.12	241.53	989.88	247.03	989.88	286.57	989.67	318.1	989.45
347.95	989.25	349.62	989.24	424.13	989.24	427.8	988.78	429.1	988.64
430.68	988.46	432.67	988.22	450.43	986.1	450.52	985.8	450.55	985.76
450.58	985.57	450.6	985.42	450.63	985.39	450.66	985.34	451.53	985.09
453.73	985.09	457.44	985.09	460.88	985.09	461.56	985.09	465.38	985.09
467.82	985.09	468.54	985.09	470.48	985.09	471.08	985.34	471.74	985.45
472.82	986.35	474.13	986.61	477.49	987.15	489.78	989.24	545.93	989.57
639.65	990.57	641.67	990.58	643.32	990.61	702.46	991.23	706.74	991.26
718.43	991.33								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	424.13	.045	489.78	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	424.13	489.78		27.44	27.44		.1	.3

CROSS SECTION

RIVER: cluck  
REACH: 1 RS: 17154.6+

INPUT

Description:

Station Elevation Data num= 46									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	991.9	63.99	991.42	105.69	991.01	126.51	990.91	132.11	990.85
186.57	990.24	235.87	989.9	241.24	989.89	279.86	989.61	310.64	989.33
339.8	989.07	341.43	989.07	414.19	989.07	419.12	988.64	420.86	988.52
422.99	988.37	425.66	988.16	449.51	986.27	449.63	985.83	449.67	985.77
449.71	985.49	449.75	985.26	449.79	985.21	449.83	985.15	450.98	984.83
453.18	984.83	456.89	984.83	460.32	984.83	461	984.83	464.81	984.83
467.25	984.83	467.97	984.83	469.91	984.83	470.78	985.15	471.72	985.24
473.27	986.49	475.16	986.74	479.99	987.2	497.67	989.07	551.88	989.35
642.37	990.49	644.32	990.5	645.91	990.53	703.01	991.24	707.14	991.27
718.43	991.33								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	414.19	.045	497.67	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	414.19	497.67		27.44	27.44		.1	.3

CROSS SECTION

RIVER: cluck  
REACH: 1 RS: 17127.2+

INPUT

Description:

Station Elevation Data num= 46									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	992.09	62.45	991.62	103.16	991.18	123.47	991.09	128.95	991.03
182.1	990.35	230.21	989.92	235.45	989.91	273.15	989.54	303.19	989.21
331.64	988.39	333.24	988.89	404.26	988.89	410.45	988.5	412.63	988.41
415.3	988.27	418.65	988.09	448.59	986.44	448.74	985.86	448.79	985.78
448.84	985.11	448.89	985.1	448.94	985.04	448.99	984.96	450.44	984.58
452.64	984.58	456.34	984.58	459.77	984.58	460.44	984.58	464.25	984.58
466.69	984.58	467.41	984.58	469.34	984.58	470.47	984.96	471.71	985.03
472.73	986.62	476.19	986.86	482.49	987.25	505.56	988.89	557.83	989.12
645.09	990.41	646.97	990.42	648.5	990.45	703.57	991.25	707.54	991.29
718.43	991.33								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	404.26	.045	505.56	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 404.26 505.56 27.44 27.44 27.44 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17099.7\*

INPUT

Description:

Station	Elevation	Data	num=	46							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	992.28	60.92	991.81	100.62	991.34	120.44	991.27	125.78	991.21		
177.62	990.46	224.55	989.93	229.67	989.93	266.43	989.48	295.74	989.08		
323.49	988.71	325.05	988.71	394.32	988.71	401.77	988.36	404.4	988.29		
407.62	988.18	411.64	988.02	447.67	986.62	447.35	985.89	447.91	985.79		
447.97	985.33	448.03	984.94	448.09	984.87	448.15	984.77	449.9	984.32		
452.09	984.32	455.79	984.32	459.21	984.32	459.69	984.32	463.69	984.32		
466.12	984.32	466.84	984.32	468.78	984.32	470.17	984.77	471.69	984.83		
474.18	986.76	477.23	986.39	484.99	987.3	513.44	983.71	563.78	988.9		
647.81	990.33	649.62	990.33	651.09	990.38	704.12	991.27	707.95	991.3		
718.43	991.33										

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .05 394.32 .045 513.44 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 394.32 513.44 27.44 27.44 27.44 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17072.3\*

INPUT

Description:

Station	Elevation	Data	num=	46							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	992.47	59.38	992.01	98.09	991.51	117.4	991.45	122.61	991.39		
173.15	990.57	218.89	989.95	223.88	989.95	259.72	989.41	288.29	988.96		
315.34	988.54	316.86	988.53	384.39	988.53	393.09	988.21	396.17	988.17		
399.93	988.09	404.63	987.96	446.76	986.79	446.96	985.92	447.03	985.79		
447.1	985.25	447.17	984.78	447.24	984.7	447.31	984.58	449.36	984.07		
451.55	984.07	455.24	984.07	458.66	984.07	459.33	984.07	463.13	984.07		
465.56	984.07	466.27	984.07	468.21	984.07	469.86	984.57	471.67	984.62		
474.64	986.89	478.26	987.12	487.49	987.35	521.33	988.53	569.74	988.67		
650.53	990.24	652.27	990.25	653.69	990.3	704.67	991.28	708.35	991.31		
718.43	991.33										

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .05 384.39 .045 521.33 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 384.39 521.33 27.44 27.44 27.44 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17044.6\*

INPUT

Description:

Station	Elevation	Data	num=	46							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	992.66	57.85	992.2	95.55	991.67	114.37	991.64	119.44	991.56		
168.67	990.69	213.24	989.97	218.09	989.96	253.01	989.35	280.84	988.84		
307.19	988.36	308.67	988.36	374.45	988.36	384.41	988.07	387.93	988.05		
392.24	988	397.63	987.89	445.84	986.96	446.08	985.94	446.16	985.8		
446.24	985.16	446.32	984.62	446.4	984.52	446.48	984.38	448.81	983.81		
451	983.81	454.69	983.81	458.1	983.81	458.78	983.81	462.57	983.61		
464.99	983.81	465.71	983.81	467.64	983.81	469.56	984.38	471.65	984.41		
475.09	987.03	479.29	987.25	490	987.4	529.22	988.36	575.69	988.45		
653.24	990.16	654.91	990.17	656.28	990.22	705.22	991.29	708.75	991.32		
718.43	991.33										

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .05 374.45 .045 529.22 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 374.45 529.22 27.44 27.44 27.44 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 17017.4\*

INPUT

Description:

Station	Elevation	Data	num=	46							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	992.85	56.31	992.4	93.02	991.84	111.33	991.82	116.27	991.74		
164.2	990.8	207.58	989.98	212.31	989.98	246.29	989.28	273.39	988.71		
299.04	988.18	300.48	988.18	364.52	988.18	375.74	987.93	379.7	987.94		
384.55	987.9	390.62	987.83	444.92	987.13	445.19	985.97	445.28	985.81		
445.37	985.08	445.46	984.46	445.55	984.35	445.64	984.19	448.27	983.56		
450.46	983.56	454.14	983.56	457.55	983.56	458.22	983.56	462.01	983.56		
464.43	983.56	465.14	983.56	467.07	983.56	469.25	984.19	471.64	984.21		
475.55	987.16	480.32	987.37	492.5	987.45	537.11	988.18	561.64	988.22		
655.96	990.38	657.56	990.38	658.27	990.15	705.77	991.3	709.16	991.33		

718.43 991.33

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .05 364.52 .045 537.11 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 364.52 537.11 27.44 27.44 27.44 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16990

INPUT

Description:

Station Elevation Data num= 35  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 993.04 54.78 992.59 90.48 992 108.3 992 113.1 991.92  
 201.92 990 206.52 990 290.89 988 354.58 988 367.06 987.79  
 371.47 987.82 376.86 987.81 383.61 987.76 444 987.3 444.3 986  
 444.4 985.82 444.5 985 444.6 984.3 444.7 984.18 444.8 984  
 447.73 983.3 466.5 983.3 468.95 984 471.62 984 476 987.3  
 481.35 987.5 495 987.5 545 988 587.59 988 658.68 990  
 660.21 990 661.46 990.07 706.32 991.31 709.56 991.34 718.43 991.33

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .05 354.58 .045 545 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 354.58 545 2 2 2 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16988

INPUT

Description:

Station Elevation Data num= 35  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 993.04 54.78 992.59 90.48 992 108.3 992 113.1 991.92  
 201.92 990 206.52 990 290.89 988 354.58 988 367.06 987.79  
 371.47 987.82 376.86 987.81 383.61 987.76 444 987.3 444.3 986  
 444.4 985.82 444.5 985 444.6 984.3 444.7 984.18 444.8 984  
 447.73 983.3 466.5 983.3 468.95 984 471.62 984 476 987.3  
 495 987.5 515 987.5 555 988 587.59 988 658.68 990  
 660.21 990 661.46 990.07 706.32 991.31 709.56 991.34 718.43 991.33

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .05 354.58 .045 555 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 354.58 555 24 24 24 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16964.1\*

INPUT

Description:

Station Elevation Data num= 63  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 993.04 51.23 992.62 55.42 992.58 84.61 992.1 91.54 992  
 101.28 992 105.76 991.99 109.57 991.98 114.42 991.89 188.82 990.28  
 193.12 990.2 204.28 989.96 208.94 989.94 272.02 988.45 294.29 988  
 331.58 988 343.25 987.37 347.37 987.97 352.41 987.97 358.73 987.97  
 370.65 987.74 374.87 987.75 380.02 987.72 386.46 987.65 419.84 987.28  
 425.65 987.24 427.05 987.21 437.69 986.92 440.04 986.86 444.17 986.6  
 444.45 985.47 444.55 985.31 444.64 984.6 444.74 984 444.83 983.89  
 444.93 983.73 447.73 982.97 466.5 982.97 468.65 983.91 469.01 984  
 471 984 471.74 984.03 474.07 985.57 476.22 987 479.54 987.13  
 486.64 987.24 492.82 987.33 495.67 987.36 516.15 987.43 557.09 988  
 576.56 988 589.26 988.05 653.64 989.86 655.3 989.9 656.66 989.94  
 659.44 990.02 660.96 990.03 662.19 990.09 705.3 991.28 706.47 991.31  
 708.81 991.33 709.67 991.34 718.43 991.33

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .05 358.73 .045 557.09 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 358.73 557.09 24 24 24 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16940.2\*

INPUT

Description:

Station Elevation Data num= 63  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 993.04 51.82 992.61 56.06 992.57 85.59 992.08 92.6 992  
 102.45 992 106.99 991.98 110.83 991.95 115.75 991.86 191.01 990.24  
 193.36 990.17 206.64 989.92 211.35 989.89 275.17 988.37 297.69 988  
 335.41 988 347.22 987.94 351.39 987.95 356.49 987.95 362.87 987.93  
 374.24 987.68 378.26 987.67 383.17 987.62 389.32 987.53 421.14 987.07  
 426.67 987.03 428.01 986.97 438.16 986.48 440.4 986.38 444.33 985.9  
 444.61 984.94 444.7 984.8 444.79 984.2 444.88 983.69 444.97 983.59

445.06	983.45	447.73	982.64	466.5	982.64	468.7	983.93	469.07	984
471.1	984	471.86	984.05	474.25	985.43	476.45	986.7	479.84	986.93
487.11	987.07	493.43	987.18	496.35	987.23	517.29	987.36	559.18	988
578.39	988	590.94	988.09	654.48	989.88	656.12	989.92	657.46	989.96
660.21	990.04	661.7	990.05	662.92	990.11	705.47	991.29	706.63	991.31
708.94	991.33	709.79	991.34	718.43	991.33				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	362.87	.045	559.18	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

362.87	559.18	24	24	24	.1	.3
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CROSS SECTION RIVER: cluck  
REACH: 1 RS: 16916.3\*

INPUT Description:

Station	Elevation	Data	num=	63	Sta	Elev	Sta	Elev	Sta	Elev
0	993.04	52.41	992.61	56.7	992.56	86.57	992.06	93.65	992	
103.62	992	108.21	991.97	112.1	991.93	117.07	991.83	193.19	990.19	
197.59	990.14	209	989.88	213.77	989.83	278.31	988.3	301.1	988	
339.25	988	351.19	987.91	355.41	987.92	360.56	987.92	367.02	987.9	
377.83	987.63	381.66	987.6	386.33	987.53	392.17	987.42	422.44	986.85	
427.7	986.83	428.98	986.74	438.63	986.04	440.76	985.9	444.5	985.2	
444.76	984.41	444.84	984.29	444.93	983.8	445.02	983.39	445.1	983.3	
445.19	983.18	447.73	982.31	466.5	982.31	468.75	983.94	469.12	984	
471.2	984	471.98	984.08	474.42	985.29	476.67	986.4	480.15	986.73	
487.57	986.91	494.04	987.04	497.02	987.09	518.44	987.3	561.27	988	
580.23	988	592.61	988.14	655.32	989.91	656.94	989.93	658.26	989.96	
660.97	990.06	662.45	990.08	663.65	990.13	705.64	991.29	706.78	991.31	
709.06	991.34	709.9	991.34	718.43	991.33					

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	367.02	.045	561.27	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

367.02	561.27	24	24	24	.1	.3
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CROSS SECTION RIVER: cluck  
REACH: 1 RS: 16892.5\*

INPUT Description:

Station	Elevation	Data	num=	63	Sta	Elev	Sta	Elev	Sta	Elev
0	993.04	53	992.6	57.34	992.55	87.55	992.05	94.71	992	
104.79	992	109.43	991.95	113.37	991.9	118.39	991.81	195.37	990.14	
199.82	990.1	211.37	989.84	216.18	989.77	281.46	988.22	304.5	988	
343.08	988	355.16	987.88	359.42	987.9	364.64	987.89	371.17	987.86	
381.43	987.58	385.05	987.52	389.48	987.43	395.03	987.3	423.74	986.64	
428.73	986.62	429.94	986.51	439.1	985.61	441.12	985.43	444.66	984.49	
444.91	983.87	444.99	983.78	445.08	983.4	445.16	983.08	445.24	983.01	
445.32	982.91	447.73	981.99	466.5	981.99	468.8	983.96	469.18	984	
471.31	984	472.1	984.1	474.6	985.15	476.9	986.1	480.45	986.53	
488.04	986.74	494.65	986.9	497.69	986.95	519.58	987.23	563.37	988	
582.07	988	594.29	988.19	656.16	989.93	657.75	989.95	659.06	990.01	
661.74	990.08	663.19	990.1	664.38	990.15	705.81	991.3	706.94	991.32	
709.19	991.34	710.01	991.34	718.43	991.33					

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	371.17	.045	563.37	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

371.17	563.37	24	24	24	.1	.3
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CROSS SECTION RIVER: cluck  
REACH: 1 RS: 16868.6\*

INPUT Description:

Station	Elevation	Data	num=	63	Sta	Elev	Sta	Elev	Sta	Elev
0	993.04	53.6	992.6	57.98	992.54	88.52	992.03	95.77	992	
105.96	992	110.65	991.94	114.63	991.88	119.71	991.78	197.55	990.09	
202.05	990.07	213.73	989.8	218.6	989.71	284.6	988.15	307.9	988	
346.91	988	359.12	987.85	363.44	987.87	368.71	987.86	375.32	987.83	
385.02	987.52	388.45	987.45	392.64	987.34	397.88	987.19	425.04	986.43	
429.76	986.41	430.9	986.28	439.56	985.17	441.47	984.95	444.93	983.79	
445.06	983.34	445.14	983.26	445.22	983	445.3	982.78	445.37	982.72	
445.45	982.64	447.73	981.66	466.5	981.66	468.85	983.97	469.24	984	
471.41	984	472.22	984.13	474.77	985.01	477.12	985.8	480.75	986.33	
488.5	986.57	495.25	986.76	498.37	986.81	520.73	987.16	565.46	988	
583.91	988	595.96	988.24	657	989.95	658.57	989.97	659.86	990.03	
662.5	990.1	663.94	990.13	665.11	990.17	705.98	991.3	707.09	991.32	
709.21	991.34	710.13	991.34	718.43	991.33					

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	375.32	.045	565.46	.05



Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 375.32 565.46 24 24 24 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16844.7\*

INPUT

Description:

Station Elevation Data num= 63

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	993.04	54.19	992.59	58.62	992.53	89.5	992.02	96.83	992
107.13	992	111.88	991.93	115.9	991.86	121.04	991.75	199.74	990.05
204.29	990.03	216.09	989.76	221.01	989.66	287.75	988.07	311.3	988
350.75	988	363.09	987.82	367.45	987.85	372.79	987.84	379.46	987.79
388.61	987.47	391.84	987.37	395.79	987.24	400.74	987.08	426.34	986.21
430.79	986.21	431.87	986.05	440.03	984.74	441.83	984.48	445	983.09
445.22	982.81	445.29	982.75	445.36	982.6	445.44	982.47	445.51	982.42
445.58	982.36	447.73	981.33	466.5	981.33	468.9	983.99	469.3	984
471.52	984	472.35	984.15	474.95	984.87	477.35	985.5	481.05	986.13
488.97	986.41	495.86	986.61	499.04	986.68	521.88	987.09	567.55	988
585.75	988	597.64	988.28	657.84	989.98	659.39	989.98	660.66	990.05
663.27	990.12	664.68	990.15	665.83	990.19	706.15	991.31	707.25	991.32
709.44	991.34	710.24	991.34	718.43	991.33				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	379.46	.045	567.55	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 379.46 567.55 24 24 24 .3 .5

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16820.92

INPUT

Description:

Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	993.04	54.78	992.59	90.48	992	108.3	992	113.1	991.92
201.92	990	206.52	990	290.89	988	354.58	988	367.06	987.79
371.47	987.82	376.86	987.81	383.61	987.76	427.64	986	431.82	986
432.83	985.82	440.5	984.3	442.19	984	447.73	981	466.5	981
468.95	984	471.62	984	475.12	984.73	481.35	985.93	489.43	986.24
496.47	986.47	569.64	988	587.59	988	658.68	990	660.21	990
661.46	990.07	706.32	991.31	709.56	991.34	718.43	991.33		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	383.61	.045	569.64	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 383.61 569.64 80.14 79.22 78.3 .3 .5

CULVERT RIVER: cluck  
 REACH: 1 RS: 16781.31

INPUT

Description: Prize Oak Dr

Distance from Upstream XS = 13.61  
 Deck/Roadway Width = 52  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 4

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
182.19	990	900	282.19	988	900	442.19	988	900	
622.19	988	900							

Upstream Bridge Cross Section Data

Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	993.04	54.78	992.59	90.48	992	108.3	992	113.1	991.92
201.92	990	206.52	990	290.89	988	354.58	988	367.06	987.79
371.47	987.82	376.86	987.81	383.61	987.76	427.64	986	431.82	986
432.83	985.82	440.5	984.3	442.19	984	447.73	981	466.5	981
468.95	984	471.62	984	475.12	984.73	481.35	985.93	489.43	986.24
496.47	986.47	569.64	988	587.59	988	658.68	990	660.21	990
661.46	990.07	706.32	991.31	709.56	991.34	718.43	991.33		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	383.61	.045	569.64	.05

Bank Sta: Left Right Coeff Contr. Expan.  
 383.61 569.64 .3 .5

Downstream Deck/Roadway Coordinates

num= 4

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
-26.38	988.99	900	72.62	988	900	223.62	988	900	
430	988	900							

Downstream Bridge Cross Section Data

Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-26.38	988.99	14.52	986.99	42.51	986.99	103.96	985.17	111.36	985

131.07	984.99	167.59	984.68	193.28	983.76	194.64	983.8	197.2	983.52
198.38	983.53	199.89	983.51	204.61	983.07	217.68	980.99	221.1	980.6
224.77	980.3	243.24	980.3	247.46	982.54	249.54	982.99	254.68	983.72
258.69	984.5	261.42	984.99	329.75	985.96	402.25	986.99	409.93	987.3
415.63	987.63	439.9	988.53	441.1	988.59	445.55	988.65	447.14	988.72
450.44	988.72								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-26.38	.05	167.59	.045	261.42	.05

Bank Sta: Left Right Coeff Contr. Expan.

167.59	261.42	.3	.5
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Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span	
Prize Oak Dr	Box	6	9	
FHWA Chart # 8 - flared wingwalls				
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.				
Solution Criteria = Highest U.S. EG				
Culvert Upstrm Dist	Length	n Value	Entrance Loss Coef	Exit Loss Coef
13.61	52	.011	.4	1

Number of Barrels = 2  
 Upstream Elevation = 981

Centerline Stations

Sta.	Sta.
451.9	461.9

Downstream Elevation = 980.45

Centerline Stations

Sta.	Sta.
228.62	238.62

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16741.70

INPUT Description:

Station	Elevation	Data	num=	31					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-26.38	988.99	14.52	986.99	42.51	986.99	103.96	985.17	111.36	985
131.07	984.99	167.59	984.68	193.28	983.76	194.64	983.8	197.2	983.52
198.38	983.53	199.89	983.51	204.61	983.07	217.68	980.99	221.1	980.6
224.77	980.3	243.24	980.3	247.46	982.54	249.54	982.99	254.68	983.72
258.69	984.5	261.42	984.99	329.75	985.96	402.25	986.99	409.93	987.3
415.63	987.63	439.9	988.53	441.1	988.59	445.55	988.65	447.14	988.72
450.44	988.72								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-26.38	.05	167.59	.045	261.42	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

167.59	261.42	249.71	248.19	246.37	.3	.5
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CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16525.1\*

INPUT Description:

Station	Elevation	Data	num=	50					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25.38	988.22	-10.12	987.38	12.6	986.46	37.72	986.33	38.59	986.32
90.91	984.91	95.64	984.76	96.82	984.73	102.51	984.62	110.34	984.6
113.25	984.53	118.65	984.49	119.94	984.43	120.81	984.42	154.72	984.15
158.02	982.36	173.8	981.44	174.81	981.44	176.71	981.2	177.59	981.19
177.6	981.19	178.71	981.14	182.21	980.72	191.92	979	194.46	978.65
197.18	978.36	209.49	978.36	213.24	980.16	215.08	980.62	217.55	981.09
219.64	981.45	223.2	982.19	225.6	982.67	225.62	984.34	241.01	984.3
245.57	984.61	259.55	984.81	290.56	985.13	295.75	985.2	302.06	985.3
364.48	986.27	370.15	986.38	378.04	986.65	383.89	986.92	405.22	987.62
408.8	987.76	410.03	987.82	414.59	987.93	416.23	988	419.61	988.06

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25.38	.05	154.72	.045	225.62	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

154.72	225.62	249.71	248.19	246.37	.3	.5
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CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16308.5\*

INPUT Description:

Station	Elevation	Data	num=	49					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

-24.38	987.46	-10.3	986.58	10.67	985.94	33.86	985.66	34.66	985.65
82.95	984.51	87.32	984.35	88.41	984.31	93.67	984.24	100.89	984.2
103.57	984.06	108.56	984	109.75	983.86	110.56	983.86	141.86	983.63
144.01	980.2	154.22	979.12	154.98	979.08	156.22	978.89	156.79	978.84
157.52	978.76	159.81	978.37	166.15	977.01	167.81	976.7	169.59	976.41
175.75	976.41	179.01	977.79	180.62	978.25	182.77	978.8	184.6	979.17
187.7	979.89	189.8	980.36	189.81	983.69	205.6	983.8	210.28	983.96
224.61	984.15	256.43	984.36	261.74	984.45	268.22	984.55	332.24	985.64
338.06	985.76	346.14	986	352.14	986.21	374.03	986.84	377.69	986.99
378.95	987.05	383.64	987.21	385.31	987.29	388.79	987.39		

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 -24.38 .05 141.86 .045 189.81 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 141.86 189.81 249.71 248.19 246.37 .3 .5

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16091.92

INPUT  
 Description:  
 Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-23.38	986.69	-10.47	985.78	30	985	75	984.1	80	983.9
91.44	983.8	93.9	983.6	98.471	983.5	99.56	983.3	128.99	983.1
130	978.04	136	976.5	142	974.47	148	976.5	154	978.04
154.01	983.04	170.189	983.1	174.99	983.3	189.68	983.5	222.29	983.6
234.379	983.8	300	985	342.83	986.06	357.96	986.73		

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 -23.38 .05 128.99 .045 154.01 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 128.99 154.01 9 9 9 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16082.92

INPUT  
 Description:  
 Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	985	30	985	75	984.1	80	983.9	91.44	983.8
93.9	983.6	98.471	983.5	99.56	983.3	128.99	983.1	130	978
136	976.3	142	974.47	148	976.3	154	978	154.01	983.04
170.189	983.1	174.99	983.3	189.68	983.5	222.29	983.6	234.379	983.8
300	985	335	985						

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .05 128.99 .045 154.01 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 128.99 154.01 35.11 33.34 31.69 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16049.5+

INPUT  
 Description:  
 Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	983.33	29.03	983.33	47.2	983.08	72.57	982.48	77.4	982.29
88.47	982.11	90.85	981.96	95.27	981.84	96.33	981.7	98.02	981.68
105.55	981.61	124.8	981.45	125.62	977.93	130.47	976.08	135.32	974.15
149.3	974.15	154.35	975.81	159.39	977.39	159.4	980.75	174.31	980.88
178.73	981.04	192.27	981.25	222.32	981.5	233.46	981.7	260.2	982.22
293.93	982.67	297.58	982.67	298.35	982.73	321.27	982.97	324.75	983.03
326.18	983.07								

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .05 124.8 .045 159.4 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 124.8 159.4 35.11 33.34 21.69 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16016.2+

INPUT  
 Description:  
 Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	981.67	28.05	981.67	45.61	981.54	70.13	980.85	74.31	980.69
85.5	980.43	87.8	980.31	92.08	980.19	93.1	980.1	94.73	980.06
102.01	979.99	120.62	979.79	121.24	977.85	124.94	975.86	128.65	973.82
156.6	973.82	160.69	975.32	164.78	976.77	164.79	978.45	178.43	978.65
182.47	978.78	194.86	979.01	222.35	979.41	232.54	979.61	257	980.11
287.85	980.33	291.2	980.33	291.9	980.47	312.37	980.93	316.05	981.07
317.35	981.13								

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .05 120.62 .045 164.79 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 120.62 164.79 35.11 33.34 31.69 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 15982.92

INPUT  
 Description:  
 Station Elevation Data num= 14  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 980 44.03 980 91.44 978.45 98.47 978.37 116.43 978.14  
 121.97 973.5 163.9 973.5 170.18 976.16 253.8 978 284.81 978  
 285.45 978.2 304.46 978.9 307.35 979.1 308.53 979.2

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .05 116.43 .045 170.18 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 116.43 170.18 57 57 57 .3 .5

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

CULVERT RIVER: cluck  
 REACH: 1 RS: 15954.42

INPUT  
 Description: Cedar Park Dr  
 Distance from Upstream XS = 10  
 Deck/Roadway Width = 37  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates  
 num= 5  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 -446.64 980 900 73.36 978 900 143.36 978 900  
 373.36 978 900 623.36 980 900

Upstream Bridge Cross Section Data  
 Station Elevation Data num= 14  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 980 44.03 980 91.44 978.45 98.47 978.37 116.43 978.14  
 121.97 973.5 163.9 973.5 170.18 976.16 253.8 978 284.81 978  
 285.45 978.2 304.46 978.9 307.35 979.1 308.53 979.2

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .05 116.43 .045 170.18 .05

Bank Sta: Left Right Coeff Contr. Expan.  
 116.43 170.18 .3 .5

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

Downstream Deck/Roadway Coordinates  
 num= 5  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 119.87 980 900 639.87 978 900 709.87 978 900  
 939.87 978 900 1189.87 980 900

Downstream Bridge Cross Section Data  
 Station Elevation Data num= 43  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 983.18 50.42 982.98 139.58 982.13 166.75 981.97 188.26 981.84  
 196.04 981.76 239.5 981.37 319.64 980 331.46 980 418.97 978.64  
 461.43 978.47 468.92 978.31 489.57 978.29 543 978 578.67 977.47  
 601.06 977.3 605.43 977.19 622.82 977.19 624.59 977.12 627.36 977.13  
 635.13 976.9 637.53 976.88 640.77 976.76 642.88 976.74 646.52 976.6  
 648.19 976.58 652.33 976.41 654.47 976.39 658.72 976.19 663.04 976  
 665.03 976 665.43 973.5 710.56 973.5 713.03 976 862.2 978  
 884.06 978 965.41 980 994.76 981.37 1017.36 982.22 1023.54 982.47  
 1025.16 982.51 1029.75 982.7 1037.85 982.95

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .05 665.03 .045 713.03 .05

Bank Sta: Left Right Coeff Contr. Expan.  
 665.03 713.03 .3 .5

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

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =

Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span  
 CedarPark Dr Box 3 8  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - Wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef  
 10 37 .011 .04 1

Number of Barrels = 5  
 Upstream Elevation = 973.5  
 Centerline Stations  
 Sta. Sta. Sta. Sta. Sta.  
 125.36 134.36 143.36 152.36 161.36  
 Downstream Elevation = 973.5  
 Centerline Stations  
 Sta. Sta. Sta. Sta. Sta.  
 670.16 679.16 688.15 697.16 706.15

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 15925.92

INPUT  
 Description:  
 Station Elevation Data num= 43  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	983.18	50.42	982.98	139.58	982.13	166.75	981.97	188.26	981.84
196.04	981.76	239.5	981.37	319.64	980	331.46	980	418.97	978.64
461.43	978.47	468.92	978.31	489.57	978.29	543	978	578.67	977.47
601.06	977.3	605.43	977.19	622.82	977.19	624.59	977.12	627.36	977.13
635.13	976.9	637.53	976.88	640.77	976.76	642.88	976.74	646.52	976.6
648.19	976.58	652.33	976.41	654.47	976.39	658.72	976.19	663.04	976
665.03	976	665.43	973.5	710.56	973.5	713.03	976	862.2	978
884.06	978	965.41	980	994.76	981.37	1017.36	982.22	1023.54	982.47
1025.16	982.51	1029.75	982.7	1037.85	982.95				

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	665.03	.045	713.03	.05

  
 Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 665.03 713.03 19.54 14.21 9.285 .3 .5  
 Ineffective Flow num= 2  

Sta L	Sta R	Elev	Permanent
888	F		
888	F		

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 15911.71

INPUT  
 Description:  
 Station Elevation Data num= 44  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	983.18	50.42	982.98	139.58	982.13	166.75	981.97	188.26	981.84
196.04	981.76	239.5	981.37	319.64	980	331.46	980	418.97	978.64
461.43	978.47	468.92	978.31	489.57	978.29	543	978	578.67	977.47
601.06	977.3	605.43	977.19	622.82	977.19	624.59	977.12	627.36	977.13
635.13	976.9	637.53	976.88	640.77	976.76	642.88	976.74	646.52	976.6
648.19	976.58	652.33	976.41	654.47	976.39	658.72	976.19	663.04	976
665.03	976	665.43	973.5	710.56	973.5	713.03	976	862.2	978
880.74	978	884.06	980	994.76	981.37	1017.36	982.22	1023.54	982.47
1023.54	982.47	1025.16	982.51	1029.75	982.7	1037.85	982.95		

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	665.03	.045	713.03	.05

  
 Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 665.03 713.03 1148.5 1157.94 1167.38 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 14753.77

INPUT  
 Description:  
 Station Elevation Data num= 52  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	980.42	102.17	979.4	192.86	978	208.35	978	293.52	976
370.04	974.43	402.87	974.08	407.85	974	416.26	973.88	527.26	972.1
609.86	971.77	717.45	971.37	829.67	970.59	955.21	969.79	1032.74	968.04
1034.45	968	1059.49	968	1063.32	967.94	1068.28	967.95	1074.09	967.77
1100.44	966	1114.75	966	1136.97	968	1198.54	969.94	1201.39	970
1205.14	970.14	1210.74	970.38	1224.38	970.97	1249.05	972	1255.28	972.36
1256.41	972.41	1260.89	972.66	1262.7	972.72	1266.05	972.93	1268.86	973.01
1271.39	973.17	1284.96	973.61	1302.15	974.43	1315.83	975.39	1322.89	976
1325.6	976.18	1343.06	977.07	1346.11	977.27	1374.2	977.84	1380.37	978
1393.18	978	1396.97	978.05	1486.22	980	1565.97	982.1	1638.73	984
1640.96	984	1694.64	985.91						

Manning's n Values num= 3

Sta n Val Sta n Val Sta n Val  
 0 .06 1059.49 .05 1138.97 .06  
 Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 1059.49 1138.97 1381.6 1388.82 1396.04 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 13364.95

INPUT  
 Description:  
 Station Elevation Data num= 47  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	964.21	5.96	964.15	12.02	964	42.08	963.86	140.07	962
155.88	962	256.46	960	259	959.96	387.61	958.6	479.61	958.11
503.86	958.01	700.56	958	723.08	957.76	847.26	956	866.12	954
893.68	954	910.2	956	916.83	956.45	951.8	957.96	978.08	959.06
993.6	959.44	995.12	959.5	999.28	959.53	1000.41	959.59	1004.56	959.6
1009.33	959.65	1012.95	959.74	1017.52	959.76	1055.51	960.18	1060.91	960.29
1062.77	960.36	1068.32	960.68	1073.37	960.87	1087.75	962	1089.48	962
1150.95	964	1185.96	966	1203.71	966	1225.56	966.68	1253.01	967
1287.94	967.77	1293.55	968	1308.74	968	1338.08	968.43	1354.78	968.47
1417.81	968.58	1429.06	968.7						

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	847.26	.05	910.2	.06

  
 Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 847.26 910.2 1148.27 1151.71 1155.16 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 12213.24

INPUT  
 Description:  
 Station Elevation Data num= 38  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	952.84	51.83	952	67.64	952	88.29	951.03	98.83	950.71
102.13	950.55	118.82	950	137.23	950	278.78	948.01	478.37	948
481.22	948	484.79	947.89	489.71	947.52	492.78	947.42	496.65	947.09
499.15	947.07	501.86	946.85	505.26	946.79	523.27	946	527.81	946
537.36	945.78	543.62	945.74	547.55	945.65	548.37	945.66	555.07	945.53
592.42	944	607.29	942	622.44	940.86	633.58	940.3	640.39	940
650.19	940	661.12	941.29	666.45	942	699.07	944	699.96	944.01
818.5	945.96	937.1	946.19	1083.3	946				

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	592.42	.05	699.07	.06

  
 Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 592.42 699.07 75.37 76.67 77.97 .3 .5

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 12136.57

INPUT  
 Description:  
 Station Elevation Data num= 9  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	946	5	945	10	943	20	942	38	938.6
130	938.6	150	940	200	943	300	946		

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
0	.08	10	.07	200	.06

  
 Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 10 200 57.49 55.31 55.97 .3 .5

Ineffective Flow num= 2  

Sta L	Sta R	Elev	Permanent
888	F		
888	F		

CULVERT RIVER: cluck  
 REACH: 1 RS: 12108.92

INPUT  
 Description: Big Sur  
 Distance from Upstream XS = 1.655  
 Deck/Roadway Width = 52  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates  
 num= 4  

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	945.3	900	161.93	945.3	900	216.93	945.2	900						
300	945.5	900												

Upstream Bridge Cross Section Data  
 Station Elevation Data num= 9  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	946	5	945	10	943	20	942	38	938.6
130	938.6	150	940	200	943	300	946		

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .08 10 .07 200 .08

Bank Sta: Left Right Coeff Contr. Expan.  
 10 200 .3 .5

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

Downstream Deck/Roadway Coordinates num= 4  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 0 945.3 900 104.59 945.3 900 159.59 945.2 900  
 300 945.5 900

Downstream Bridge Cross Section Data Station Elevation Data num= 16  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 945.69 20 942 40 940 60 938 80 938  
 100 938 120 938 140 938 160 938 180 940  
 200 942 220 943 240 944 260 945 280 945.5  
 300 946

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .08 20 .07 200 .08

Bank Sta: Left Right Coeff Contr. Expan.  
 20 200 .3 .5

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

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span  
 Big Sur Box 5 10  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - Wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef  
 1.655 52 .011 .4 1

Number of Barrels = 8  
 Upstream Elevation = 938.6  
 Centerline Stations  
 Sta. Sta. Sta. Sta. Sta. Sta. Sta. Sta.  
 43.93 54.93 65.93 76.93 87.93 98.93 109.93 120.93  
 Downstream Elevation = 938  
 Centerline Stations  
 Sta. Sta. Sta. Sta. Sta. Sta. Sta. Sta.  
 66.59 77.59 88.59 99.59 110.59 121.59 132.59 143.59

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 12081.26

INPUT Description:  
 Station Elevation Data num= 16  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 945.69 20 942 40 940 60 938 80 938  
 100 938 120 938 140 938 160 938 180 940  
 200 942 220 943 240 944 260 945 280 945.5  
 300 946

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .08 20 .07 200 .08

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 20 200 80 80 20 .3 .5

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

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 12001.26

INPUT Description:  
 Station Elevation Data num= 16  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 945.69 20 942 40 940 60 936.96 80 936.96  
 100 936.96 120 936.96 140 936.96 160 936.96 180 940

200 942 220 943 240 944 260 945 280 945.5  
 300 946

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .08 20 .07 200 .08

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 20 200 121.34 123.04 121.89 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 11878.23

INPUT  
 Description:  
 Station Elevation Data num= 15  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -50 945 -40 942 -20 940 -10 938 0 935.8  
 20 935.8 40 935.8 60 935.8 80 935.8 100 938  
 120 940 140 942 160 944 180 945 200 946

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -50 .08 -20 .07 120 .08

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -20 120 80 80 80 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 11798.23

INPUT  
 Description:  
 Station Elevation Data num= 15  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -50 945 -40 942 -20 940 -10 938 0 935  
 20 935 40 935 60 935 80 935 100 938  
 120 940 140 942 160 944 180 945 200 946

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -50 .08 -20 .07 120 .08

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -20 120 61.69 61.56 61.44 .3 .5

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -8-88 F  
 888 F

CULVERT RIVER: cluck  
 REACH: 1 RS: 11767.45

INPUT  
 Description: Winecup  
 Winecup  
 Distance from Upstream XS = 3.78  
 Deck/Roadway Width = 54  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates  
 num= 7  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 -51.11 944.1 900 -1.11 944 900 34.89 943.9 900  
 47.89 943.8 900 97.89 943.5 900 147.89 943.7 900  
 160 943.6

Upstream Bridge Cross Section Data  
 Station Elevation Data num= 15  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -50 945 -40 942 -20 940 -10 938 0 935  
 20 935 40 935 60 935 80 935 100 938  
 120 940 140 942 160 944 180 945 200 946

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -50 .08 -20 .07 120 .08

Bank Sta: Left Right Coeff Contr. Expan.  
 -20 120 .3 .5

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -8-88 F  
 888 F

Downstream Deck/Roadway Coordinates  
 num= 6  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 -50 944.1 900 68.27 944 900 104.27 943.9 900  
 117.27 943.8 900 167.27 943.5 900 217.27 943.7 900

Downstream Bridge Cross Section Data  
 Station Elevation Data num= 15  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -50 945 -40 942 -20 940 -10 938 0 935  
 20 935 40 935 60 935 80 935 100 935



120 938 140 940 160 942 180 944 200 946

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -50 .08 -20 .07 140 .08

Bank Sta: Left Right Coeff Contr. Expan.  
 -20 140 .3 .5

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

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span  
 Winecup Box 6 10  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - Wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG

Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef  
 3.78 54 .011 .4 1

Number of Barrels = 6  
 Upstream Elevation = 935.2  
 Centerline Stations  
 Sta. Sta. Sta. Sta. Sta. Sta. Sta. Sta.  
 -3.11 7.89 18.89 29.89 40.89 51.89 62.89 73.89  
 Downstream Elevation = 935  
 Centerline Stations  
 Sta. Sta. Sta. Sta. Sta. Sta. Sta. Sta.  
 16.27 27.27 38.27 49.27 60.27 71.27 82.27 93.27

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 11736.66

INPUT  
 Description:  
 Station Elevation Data num= 15  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -50 945 -40 942 -20 940 -10 938 0 935  
 20 935 40 935 60 935 80 935 100 935  
 120 938 140 940 160 942 180 944 200 946

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -50 .08 -20 .07 140 .08

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -20 140 80 80 80 .3 .5

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

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 11656.66

INPUT  
 Description:  
 Station Elevation Data num= 15  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -50 945 -40 942 -20 940 -10 938 0 934.2  
 20 934.2 40 934.2 60 934.2 80 934.2 100 934.2  
 120 938 140 940 160 942 180 944 200 946

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -50 .08 -20 .07 140 .08

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -20 140 566.21 564.9 563.9 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 11091.76

INPUT  
 Description:  
 Station Elevation Data num= 21  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 938 20 936 40 935 60 934.7 80 934.5  
 100 934 120 933.5 140 933 160 932.5 180 932  
 200 931 220 931 240 931 260 931 280 932  
 300 934 320 936 340 937 360 937.5 380 937.8  
 400 938

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

0 .06 100 .05 300 .06  
 Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 100 300 8.51 8.555 8.6 .3 .5

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 11083.21

INPUT  
 Description:  
 Station Elevation Data num= 21  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 937.86 20 935.86 40 934.86 60 934.56 80 934.36  
 100 933.86 120 933.36 140 932.86 160 932.36 180 931.86  
 200 930.86 220 930.86 240 930.86 260 930.86 280 931.86  
 300 933.86 320 935.86 340 936.86 360 937.36 380 937.66  
 400 937.86

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .06 120 .05 300 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 120 300 43 43 43 .3 .5

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

CULVERT RIVER: cluck  
 REACH: 1 RS: 11061.71

INPUT  
 Description: Cardinal  
 Distance from Upstream XS = 10  
 Deck/Roadway Width = 23  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates  
 num= 5  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 0 936 900 63.69 936 900 208.69 937 900  
 224.69 937.5 900 400 938 900

Upstream Bridge Cross Section Data  
 Station Elevation Data num= 21  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 937.86 20 935.86 40 934.86 60 934.56 80 934.36  
 100 933.86 120 933.36 140 932.86 160 932.36 180 931.86  
 200 930.86 220 930.86 240 930.86 260 930.86 280 931.86  
 300 933.86 320 935.86 340 936.86 360 937.36 380 937.66  
 400 937.86

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .06 120 .05 300 .06

Bank Sta: Left Right Coeff Contr. Expan.  
 120 300 .3 .5

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

Downstream Deck/Roadway Coordinates  
 num= 4  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 156.87 936 900 301.87 937 900 317.87 937.5 900  
 600 938 900

Downstream Bridge Cross Section Data  
 Station Elevation Data num= 20  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 107.94 937.94 195.21 938.12 200.9 938.09 212.25 937.97 213.49 937.92  
 219.32 937.79 239.44 937.15 261.93 936.14 274.51 934.54 277.24 934.14  
 284.26 934.14 301.87 933.32 304.81 933.34 320 932.14 340 930.14  
 400 930.14 440 932.14 460 934.14 500 936.14 520 938.14

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 107.94 .06 320 .05 440 .06

Bank Sta: Left Right Coeff Contr. Expan.  
 320 440 .3 .5

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

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span  
 Cardinal Box 4 3  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - Wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef  
 10 23 .011 .4 1

Number of Barrels = 5  
 Upstream Elevation = 930.86  
 Centerline Stations  
 Sta. Sta. Sta. Sta. Sta.  
 212 221 230 239 248  
 Downstream Elevation = 930.14  
 Centerline Stations  
 Sta. Sta. Sta. Sta. Sta.  
 353.87 362.87 371.87 380.87 389.87

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 11040.21

INPUT  
 Description:  
 Station Elevation Data num= 20  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
107.94	937.94	195.21	938.12	200.9	938.09	212.25	937.97	213.49	937.92
219.32	937.79	239.44	937.15	261.93	936.14	274.51	934.54	277.24	934.14
284.26	934.14	301.87	933.32	304.81	933.34	320	932.14	340	930.14
400	930.14	440	932.14	460	934.14	500	936.14	520	938.14

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
107.94	.06	320	.05	440	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 320 440 8.51 8.555 8.6 .3 .5

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

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 11031.65

INPUT  
 Description:  
 Station Elevation Data num= 29  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	937.3	7.57	937.25	9.49	937.21	15.49	937.23	40.15	937.18
90.46	937.63	91.55	937.66	102.76	937.76	103.92	937.75	107.94	937.8
195.21	937.98	200.9	937.95	212.25	937.83	213.49	937.78	219.32	937.65
239.44	937.01	261.93	936	274.51	934.4	277.24	934	284.26	934
301.87	933.18	304.81	933.2	320	932	340	930	400	930
440	932	460	934	500	936	520	938		

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	277.24	.05	460	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 277.24 460 363.11 359.11 355.11 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 10672.54

INPUT  
 Description:  
 Station Elevation Data num= 30  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	940	7.44	940	103.92	938	110.68	937.08	115.53	936.29
116.37	936.17	117.31	936	125.44	934	131.26	932.38	132.61	932
140.57	930.32	142	930	204.9	930	207.3	930.05	214.33	930.18
237.54	930.56	267.22	931.03	269.61	931.92	348.44	931.57	352.28	931.55
354.45	931.56	360	931.7	385	932.8	400	933	405	933.4
410	933.6	420	934.5	425	934.7	427	934.9	430	935

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	131.26	.05	267.22	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 131.26 267.22 306.72 293.97 281.22 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 16378.57

INPUT  
 Description:  
 Station Elevation Data num= 39  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	934.85	104.44	934.98	165.34	935.58	134.77	936	521.48	935.11
553.19	934.44	576.4	934.03	580.45	934	593.39	933.61	595.37	933.52
603.51	933.3	606.91	933.13	613.87	932.92	631.68	932	640.3	930.78

643.13	930.39	645.31	930	651.06	928.82	654.72	928	667.92	926.02
679.86	925.36	688.63	925.4	695.6	925.7	699.15	926	700.53	926.15
702.4	926.36	714.94	928	725.92	928.86	735.76	929.37	745.47	930
793.21	930	867.76	932	869.81	932	943.63	934	946.12	934
1026.58	936	1028.01	936	1050.73	936.68	1050.75	936.68		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.08	645.31	.07	745.47	.08

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

645.31	745.47	10.68	10.735	10.785	.3	.5
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CROSS SECTION RIVER: cluck  
REACH: 1 RS: 10367.84

INPUT Description: num= 33

Station	Elevation	Data	num=	33	Sta	Elev	Sta	Elev	Sta	Elev
0	934.75	104.44	934.88	165.34	935.48	334.77	935.9	521.48	935.01	
553.19	934.34	576.4	933.93	580.45	933.9	593.39	933.51	595.37	933.42	
603.51	933.2	606.91	933.03	613.87	932.82	631.68	931.9	640.3	930.68	
643.13	930.29	645.31	929.9	651.06	928.72	654.72	925.26	702.4	925.26	
714.94	927.9	725.92	928.76	735.76	929.27	745.47	929.9	793.21	929.9	
867.76	931.9	869.81	931.9	943.63	933.9	946.12	933.9	1026.58	935.9	
1028.01	935.9	1050.73	936.58	1050.75	936.58					

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.08	645.31	.07	745.47	.08

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

645.31	745.47	65	65	65	.3	.5
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Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
888	F		
888	F		

CULVERT RIVER: cluck  
REACH: 1 RS: 10335.34

INPUT Description: West Park

Distance from Upstream XS = 10  
Deck/Roadway Width = 45  
Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates num= 5

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
558.89	934	900	616.89	932	900	679.89	931.5	900
859.89	932	900	896.02	932.58	900			

Upstream Bridge Cross Section Data num= 33

Station	Elevation	Data	num=	33	Sta	Elev	Sta	Elev	Sta	Elev
0	934.75	104.44	934.88	165.34	935.48	334.77	935.9	521.48	935.01	
553.19	934.34	576.4	933.93	580.45	933.9	593.39	933.51	595.37	933.42	
603.51	933.2	606.91	933.03	613.87	932.82	631.68	931.9	640.3	930.68	
643.13	930.29	645.31	929.9	651.06	928.72	654.72	925.26	702.4	925.26	
714.94	927.9	725.92	928.76	735.76	929.27	745.47	929.9	793.21	929.9	
867.76	931.9	869.81	931.9	943.63	933.9	946.12	933.9	1026.58	935.9	
1028.01	935.9	1050.73	936.58	1050.75	936.58					

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.08	645.31	.07	745.47	.08

Bank Sta: Left Right Coeff Contr. Expan.

645.31	745.47	.3	.5		
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Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
888	F		
888	F		

Downstream Deck/Roadway Coordinates num= 5

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
487.27	932.1	900	492.71	932	900	555.71	931.5	900
735.71	932	900	820.7	934.1	900			

Downstream Bridge Cross Section Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
0	934.14	50.31	934.41	102.62	934.7	131.03	935.01	273.52	934.65	
361.63	934.43	394.34	934.1	398.74	934.1	425.89	933.68	484.38	932.21	
487.27	932.1	506.11	930.1	516.35	928.1	518.35	927.68	526.06	926.1	
534.19	924.62	590.27	924.62	593.53	926.1	595.99	926.28	620.84	928.1	
651.37	928.1	698.4	930.1	709.26	930.1	724.21	930.83	728.19	930.92	
731.01	931.1	734.14	931.9	738.11	931.43	752.34	932.05	754.35	932.1	
776.9	932.1	785.07	932.45	790.36	932.56	793	932.7	798.98	932.9	
820.7	934.1	857.62	934.1	867.34	934.61	870.66	934.53	871.86	934.68	
875.39	934.68	877.08	934.78	879.37	933.34	882.1	934	885.35	935.03	
887.41	934.27	890.16	934.53	891.14	935.24	894.32	935.31	898.02	935.47	
907.73	935.57	909.05	935.82	912.68	935.58	920.78	935.56	941.13	935.96	

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .08 518.35 .07 620.84 .08

Bank Sta: Left Right Coeff Contr. Expan.  
 518.35 620.84 .3 .5

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

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span  
 W Park Box 4 8  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - Wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef  
 10 45 .011 .4 1

Number of Barrels = 5  
 Upstream Elevation = 925.26  
 Centerline Stations  
 Sta. Sta. Sta. Sta. Sta.  
 661.89 670.89 679.89 688.89 697.89  
 Downstream Elevation = 924.62  
 Centerline Stations  
 Sta. Sta. Sta. Sta. Sta.  
 537.71 546.71 555.71 564.71 573.71

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 10302.84

INPUT  
 Description:  
 Station Elevation Data num= 55  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 934.14 50.31 934.41 102.62 934.7 131.03 935.01 273.52 934.65  
 361.63 934.43 394.34 934.1 398.74 934.1 425.89 933.68 484.38 932.21  
 487.27 932.1 506.11 930.1 516.35 928.1 518.35 927.68 526.06 926.1  
 534.19 924.62 590.27 924.62 593.53 926.1 595.99 926.28 620.84 928.1  
 651.37 928.1 698.4 930.1 709.26 930.1 724.21 930.83 728.19 930.92  
 731.01 931.1 734.14 931.19 738.11 931.43 752.94 932.05 754.85 932.1  
 776.9 932.1 785.07 932.45 790.86 932.56 793 932.7 798.98 932.9  
 820.7 934.1 857.62 934.1 867.04 934.61 870.66 934.58 871.86 934.68  
 875.39 934.68 877.08 934.78 879.97 933.84 882.1 934 885.85 935.03  
 887.41 934.37 890.16 934.53 891.14 935.24 894.32 935.31 898.02 935.47  
 907.73 935.57 909.05 935.62 912.68 935.58 920.78 935.56 941.13 935.96

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .08 518.35 .07 620.84 .08

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 518.35 620.84 10.68 10.735 10.785 .3 .5

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

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 10292.10

INPUT  
 Description:  
 Station Elevation Data num= 63  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 934.04 50.31 934.31 102.62 934.6 131.03 934.91 273.52 934.55  
 361.63 934.33 394.34 934 398.74 934 425.89 933.58 484.38 932.11  
 487.27 932 506.11 930 516.35 928 518.35 927.58 526.06 926  
 538.5 924.97 541.19 924.81 546.4 924.59 550.55 924.52 554.3 924.59  
 555.71 924.57 559.03 924.71 562.36 924.67 565.32 924.83 567.27 924.81  
 590.27 925.78 595.99 926.18 620.84 928 651.37 928 698.4 930  
 709.26 930 724.21 930.73 728.19 930.82 731.01 931 734.14 931.09  
 738.11 931.33 752.94 931.95 754.85 932 776.9 932 785.07 932.35  
 790.86 932.46 793 932.6 798.98 932.8 820.7 934 857.62 934  
 867.04 934.51 870.66 934.48 871.86 934.58 875.39 934.58 877.08 934.68  
 879.97 933.74 882.1 933.9 885.85 934.93 887.41 934.27 890.16 934.43  
 891.14 935.14 894.32 935.21 898.02 935.37 907.73 935.47 909.05 935.52  
 912.68 935.48 920.78 935.46 941.13 935.86

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .08 518.35 .07 620.84 .08

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

518.35 620.84 1308.83 1316.37 1323.91 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 8975.730

INPUT

Description:

Station	Elevation	Data	num=	66
Sta	Elev	Sta	Elev	Sta Elev Sta Elev Sta Elev
0	929.48	30.63	929.08	32.32 929 43.98 929.35 45.2 929.32
61.47	929.79	63.33	929.81	92.94 930.88 94.08 930.9 98.2 930.89
128.86	930	135.92	930	157.96 928 212.24 926.24 231.03 926
250.3	926	342.73	925.26	345.8 925.31 347.21 925.26 350.14 925.29
355.98	925.13	358.91	925.12	382.31 924.55 384.63 924.45 387.75 924.49
391.76	924.48	399.49	924.3	403.43 924.33 411.66 924.38 469.16 924.25
490.14	924	506.55	924	563.59 923.24 606.21 922.3 645 922.05
647.1	922	656.96	921.91	664.36 921.77 681.01 921.28 713.71 920
742.38	918	785.11	914	787.84 914 877.55 912.23 893.48 912.47
895.76	912.53	899.26	912.53	953.43 914 956.7 914 982.74 916
994.51	918	1008.7	920	1012.02 920 1044 920 1060.69 920.4
1096.13	922	1161.93	922	1216.56 923.81 1223.34 923.93 1226 924
1240.37	924.03	1286.57	924	1289.28 924.13 1337.54 926 1341.67 926
1405.55	926.86			

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	713.71	.05	1012.02	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

713.71	1012.02	2048.71	2051.63	2054.54	.1	.3
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CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 6924.104

INPUT

Description:

Station	Elevation	Data	num=	31
Sta	Elev	Sta	Elev	Sta Elev Sta Elev Sta Elev
152.11	904	269.88	904	287.99 902.49 301.68 901.09 313.4 900.25
318.02	900	319.56	899.8	320.47 899.66 330.34 898.23 331.76 898
341.28	896	342.36	889	400.45 889 405.07 895.83 410.58 896.03
415.51	896.02	420.51	895.93	425.47 895.89 430.41 896 430.47 896
435.36	895.96	442.86	896	445.24 896.05 450.53 896.29 453.82 896.46
476.96	898	478.04	898.05	483.5 898.31 508.54 900 586.99 900
670.55	905			

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
152.11	.15	341.28	.1	430.47	.15

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

341.28	430.47	10.67	12.19	13.705	.3	.5
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CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 6911.914

INPUT

Description:

Station	Elevation	Data	num=	30
Sta	Elev	Sta	Elev	Sta Elev Sta Elev Sta Elev
152.11	904	269.88	904	287.99 902.49 301.68 901.09 313.4 900.25
318.02	900	319.56	899.8	320.47 899.66 330.34 898.23 331.76 898
341.28	896	342.36	889	400.45 889 405.07 895.83 410.58 896.03
415.51	896.02	420.51	895.93	425.47 895.89 430.41 896 435.36 895.96
442.86	896	445.24	896.05	450.53 896.29 453.82 896.46 476.96 898
478.04	898.05	483.5	898.31	508.54 900 586.99 900 670.55 905

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
152.11	.15	341.28	.1	405.07	.15

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

341.28	405.07	115	115	115	.3	.5
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Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 888 F  
 888 F

CULVERT RIVER: cluck  
 REACH: 1 RS: 6854.42

INPUT

Description: Buttercup

Distance from Upstream XS = 10
Deck/Roadway Width = 35
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates num= 6
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord
221.51 300 800 271.51 290.7 800 321.51 201.6 300
371.51 902.5 800 421.51 903.4 800 670.55 905 800

Upstream Bridge Cross Section Data  
 Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
221.51	300	800	271.51	290.7	800	321.51	201.6	300	
371.51	902.5	800	421.51	903.4	800	670.55	905	800	

152.11	904	269.88	904	287.99	902.49	301.68	901.09	313.4	900.25
318.02	900	319.56	899.8	320.47	899.66	330.34	898.23	331.76	898
341.28	896	342.36	889	400.45	889	405.07	895.83	410.58	896.03
415.51	896.02	420.51	895.93	425.47	895.89	430.41	896	435.36	895.96
442.86	896	445.24	896.05	450.53	896.29	453.82	896.46	476.96	898
478.04	898.05	483.5	898.31	508.54	900	586.99	900	670.55	905

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 152.11 .15 341.28 .1 405.07 .15

Bank Sta: Left Right Coeff Contr. Expan.  
 341.28 405.07 .3 .5

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

Downstream Deck/Roadway Coordinates  
 num= 6  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 331.11 900 800 381.11 900.7 800 431.11 901.6 800  
 481.11 902.5 800 531.11 903.4 800 714.23 905 800

Downstream Bridge Cross Section Data  
 Station Elevation Data num= 42  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 300.19 904 367.31 904 420.33 900 422.42 899.6 426.99 898.84  
 431.44 898 432.52 897.63 437.65 896 442.51 894 445.96 892.88  
 447.88 892.3 449.01 892 450.71 889 508.75 889 510.27 896  
 513.87 896.81 518.82 897.82 519.91 898 523.61 898.26 528.39 898.52  
 529.64 898.51 535.67 898.87 537.23 898.78 539.55 898.91 541.42 898.84  
 549.86 898.83 561.37 899.16 573.92 899.36 577.36 899.36 581.42 899.48  
 584.82 899.45 588.25 899.52 591.6 899.47 592.76 899.49 595.71 899.43  
 596.87 899.45 599.66 899.4 601.97 899.44 613.37 899.29 614.95 899.31  
 627.22 899.29 714.23 905

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 300.19 .1 437.65 .15 513.87 .1

Bank Sta: Left Right Coeff Contr. Expan.  
 437.65 513.87 .3 .5

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

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span  
 Buttercup Box 8 14  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - Wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length n Value Entrance Loss Coef Exit Loss Coef  
 10 95 .011 .4 1

Number of Barrels = 4  
 Upstream Elevation = 889  
 Centerline Stations  
 Sta. Sta. Sta. Sta.  
 349.01 364.01 379.01 394.01  
 Downstream Elevation = 889  
 Centerline Stations  
 Sta. Sta. Sta. Sta.  
 458.61 473.61 488.61 503.61

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 6796.914

INPUT  
 Description:  
 Station Elevation Data num= 42  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 300.19 904 367.31 904 420.33 900 422.42 899.6 426.99 898.84  
 431.44 898 432.52 897.63 437.65 896 442.51 894 445.96 892.88  
 447.88 892.3 449.01 892 450.71 889 508.75 889 510.27 896  
 513.87 896.81 518.82 897.82 519.91 898 523.61 898.26 528.39 898.52  
 529.64 898.51 535.67 898.87 537.23 898.78 539.55 898.91 541.42 898.84  
 549.86 898.83 561.37 899.16 573.92 899.36 577.36 899.36 581.42 899.48  
 584.82 899.45 588.25 899.52 591.6 899.47 592.76 899.49 595.71 899.43  
 596.87 899.45 599.66 899.4 601.97 899.44 613.37 899.29 614.95 899.31  
 627.22 899.29 714.23 905

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 300.19 .1 437.65 .15 513.87 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 437.65 513.87 10.67 12.19 13.705 .3 .5  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 888 F  
 888 F

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 6784.729

INPUT  
 Description:  
 Station Elevation Data num= 44  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
300.19	904	367.31	904	409.64	900.79	420.33	900	422.42	899.6
426.99	898.84	431.44	898	432.52	897.63	437.65	896	442.51	894
445.96	892.89	447.88	892.3	449.01	892	450.71	889	508.75	889
510.27	896	513.87	896.81	518.82	897.82	519.91	898	523.61	898.26
524.28	898.27	528.39	898.52	529.64	898.51	535.67	898.87	537.23	898.78
539.55	898.91	541.42	898.84	549.86	898.83	561.37	899.16	573.92	899.36
577.36	899.36	581.42	899.48	584.82	899.45	588.25	899.52	591.6	899.47
592.76	899.49	595.71	899.43	596.87	899.45	599.66	899.4	601.97	899.44
613.37	899.29	614.95	899.31	627.22	899.29	714.23	905		

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
300.19	.1	437.65	.15	510.27	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 437.65 510.27 428.47 418.52 408.56 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 6366.212

INPUT  
 Description:  
 Station Elevation Data num= 18  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	897.72	65.12	896	97.8	894.2	100.76	894	114.99	892
126.37	890	136.2	888	149.76	888	158.34	890.17	166.28	892
202.57	894	220.1	896	246.39	896.98	261.61	897.27	306.38	897.42
331.39	897.86	339.25	897.99	479.87	898				

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	100.76	.05	202.57	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 100.76 202.57 1041.75 1069.94 1098.13 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 5296.272

INPUT  
 Description:  
 Station Elevation Data num= 167  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	900	12.87	900	15.49	899.88	17.28	899.77	23.89	899.26
27.25	899.1	31.03	898.8	35.52	898.67	43.59	898.26	53.31	898.15
63.95	897.96	75.65	897.69	77.71	897.61	101.75	897.03	104.92	896.99
108.27	896.82	110.76	896.79	114.86	896.56	116.55	896.54	121.63	896.23
122.93	896.21	125.64	896	138.76	895.4	164.01	894.84	166.14	894.82
169.37	894.71	171.19	894.7	174.74	894.38	176.23	894.57	180.12	894.44
182.34	894.44	186.27	894.32	192.1	894.32	197.1	894.35	199.1	894.47
200.84	894.62	204.76	894.81	207.85	895.1	210.45	895.29	220.96	896.36
222.04	896.41	225.67	896.74	227.65	896.73	232.61	897.12	234.93	897.05
236.67	897.18	239.01	897.11	240.73	897.21	245.23	897.36	246.66	897.38
249.75	897.32	255.78	897.37	259.03	897.29	326.53	896	425	896
561.19	887.25	608.71	887	665.32	886.39	669.93	886.21	671.05	886.2
675.96	886	685.59	885.19	687.97	885.12	690.77	884.93	693.9	884.85
696.13	884.72	699.81	884.66	703.02	884.53	713.54	884.37	715.38	884.37
723.95	884.21	729.18	884.12	734.38	884.05	739.53	884	744.47	883.8
783.07	882.24	788.53	882.03	793.96	881.69	795.01	881.61	802.58	881.17
804.83	880.99	807.18	880.86	810.26	880.58	811.62	880.5	820.33	879.55
831.83	878.01	874.53	878	878.47	878.87	882.7	880	883.12	880.14
887.03	881.59	888.01	882	893.21	884	896.61	885.2	899.04	886
902.04	886.58	904.66	886.93	907.6	887.41	912.49	887.74	913.32	887.84
918.79	887.97	923.62	888.13	929.34	888.27	930.58	888.29	956.78	889.11
977.34	889.49	978.74	889.54	996.82	890	1010.51	890.69	1612.6	890.73
1018.78	890.99	1021.42	891.01	1028.21	891.19	1057.01	891.43	1059.34	891.46
1061.92	891.44	1063.26	891.47	1066.59	891.43	1067.86	891.46	1097.62	891.84
1127.27	892.76	1155.11	893.13	1167.1	893.57	1168.41	893.59	1174.39	893.8
1180.33	894	1212.05	894.2	1216.64	894.2	1217.76	894.27	1221.85	894.25
1226.83	894.31	1227.84	894.4	1232.47	894.53	1238.26	895.1	1241.49	895.31
1247.56	896	1253.71	897.25	1259.73	898.35	1267.19	899.59	1270.04	900
1273.04	900.36	1274.23	900.45	1278.18	900.34	1283.53	901.19	1294.27	901.64
1299.59	901.79	1304.92	901.96	1309.94	902.15	1319.65	902.59	1332.19	903.27
1347.38	904	1348.49	904.04	1358.64	904.43	1368.85	904.73	1399.11	904.95
1419.87	904.79	1430.51	904.58	1431.95	904.53	1451.81	904.13	1456.95	904
1462.06	903.8	1466.91	903.61	1467.94	903.59	1471.78	903.43	1473.29	903.39
1476.66	903.25	1489.37	902.79						

Manning's n Values num= 3  

Sta	n Val	Sta	n Val	Sta	n Val
-----	-------	-----	-------	-----	-------



0 .06 744.47 .05 893.21 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 744.47 893.21 227.51 217.37 207.22 .1 .3

Ineffective Flow num= 2

Sta L Sta R Elev Permanent

888 F

888 F

CULVERT RIVER: cluck  
 REACH: 1 RS: 5187

INPUT  
 Description: US Hwy 183  
 Distance from Upstream XS = 50  
 Deck/Roadway Width = 60  
 Weir Coefficient = 2.6  
 Upstream Deck/Roadway Coordinates

num= 10											
Sta	Hi	Cord	Lo	Sta	Hi	Cord	Lo	Sta	Hi	Cord	Lo
425	896	870	485	892	870	560	890	870			
675	888	870	790	887	870	880	888	870			
1000	890	870	1170	892	870	1550	894	870			
1800	896	870									

Upstream Bridge Cross Section Data

Station Elevation Data num= 167											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	900	12.87	900	15.49	899.88	17.28	899.77	23.89	899.26		
27.25	899.1	31.03	898.8	35.52	898.67	43.59	898.26	53.31	898.15		
63.95	897.96	75.65	897.69	77.71	897.61	101.75	897.03	104.92	896.99		
108.27	896.82	110.76	896.79	114.86	896.56	116.55	896.54	121.63	896.23		
122.93	896.21	125.64	896	138.76	895.4	164.01	894.84	166.14	894.82		
169.37	894.71	171.19	894.7	174.74	894.58	176.23	894.57	180.12	894.44		
182.34	894.44	186.27	894.32	192.1	894.32	197.1	894.35	199.1	894.47		
200.84	894.62	204.76	894.81	207.85	895.1	210.45	895.29	220.96	896.36		
222.04	896.41	225.87	896.74	227.65	896.73	232.61	897.12	234.93	897.05		
236.67	897.18	239.01	897.11	240.73	897.21	245.23	897.36	246.66	897.38		
249.75	897.32	255.78	897.37	259.03	897.29	326.53	896	425	896		
561.19	887.25	608.71	887	665.32	886.39	669.93	886.21	671.05	886.2		
675.96	886	685.59	885.19	687.97	885.12	690.77	884.93	693.9	884.85		
696.13	884.72	699.81	884.66	703.02	884.53	713.54	884.37	715.38	884.37		
723.95	884.21	729.18	884.12	734.38	884.05	739.53	884	744.47	883.8		
783.07	882.24	788.53	882.03	793.96	881.69	795.01	881.61	802.58	881.17		
804.83	880.99	807.18	880.86	810.26	880.58	811.62	880.5	820.33	879.55		
831.83	878.01	874.53	878	878.47	878.87	882.7	880	883.12	880.14		
887.03	881.59	888.01	882	893.21	884	896.61	885.2	899.04	886		
902.04	886.58	904.66	886.93	907.6	887.41	912.49	887.74	913.32	887.84		
918.79	887.97	923.62	888.13	929.04	888.27	930.58	888.29	956.78	889.11		
977.34	889.49	978.74	889.54	996.82	890	1010.51	890.69	1012.6	890.73		
1018.78	890.99	1021.42	891.01	1028.31	891.19	1057.01	891.43	1058.34	891.46		
1061.92	891.44	1063.26	891.47	1066.59	891.43	1067.86	891.46	1097.62	891.84		
1127.27	892.76	1153.11	893.13	1167.1	893.57	1168.41	893.59	1174.39	893.8		
1180.33	894	1212.05	894.2	1216.64	894.2	1217.76	894.27	1221.85	894.25		
1226.83	894.31	1227.84	894.4	1232.47	894.53	1238.26	895.1	1241.49	895.31		
1247.56	896	1253.71	897.25	1259.73	898.35	1267.19	899.59	1270.04	900		
1273.04	900.36	1274.23	900.45	1278.18	900.84	1283.53	901.19	1294.27	901.64		
1299.59	901.79	1304.92	901.96	1309.94	902.15	1319.65	902.59	1332.19	903.27		
1347.38	904	1348.49	904.04	1358.64	904.43	1368.85	904.73	1399.11	904.95		
1419.87	904.79	1430.51	904.58	1431.95	904.53	1451.91	904.13	1456.95	904		
1462.06	903.8	1466.91	903.61	1467.94	903.59	1471.78	903.43	1473.29	903.39		
1476.66	903.25	1489.37	902.79								

Manning's n Values num= 3

Sta	n	Sta	n	Sta	n
0	.06	744.47	.05	893.21	.06

Bank Sta: Left Right Coeff Contr. Expan.  
 744.47 893.21 .1 .3

Ineffective Flow num= 2

Sta L Sta R Elev Permanent

888 F

888 F

Downstream Deck/Roadway Coordinates

num= 10											
Sta	Hi	Cord	Lo	Sta	Hi	Cord	Lo	Sta	Hi	Cord	Lo
660	896	870	720	892	870	815	890	870			
910	888	870	1025	887	870	1115	888	870			
1235	890	870	1405	892	870	1785	894	870			
2035	896	870									

Downstream Bridge Cross Section Data

Station Elevation Data num= 65											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	901.41	132.49	900.71	199.74	900.62	355.58	900	413.49	898.7		
415.74	898.68	425.3	898.37	426.58	898.35	432.71	898.15	437.92	898		
448.58	898	525.68	896.85	528.02	896.79	566.52	896.45	594.87	896		
624.89	896	662.01	896	723.91	890.04	739.11	889.7	740.4	889.65		
852.15	886.87	885.3	886	897.63	885.52	921.84	884.73	938.31	884.55		
969.19	884	974.56	883.65	994.41	882	1035.59	878	1060.33	876		
1071.96	874.88	1079.74	874.01	1090.41	874	1094.88	874.64	1098.02	875.2		
1100.2	875.54	1102.63	876	1113.73	878.74	1120.31	880.22	1124.56	881.98		
1128.55	881.79	1152.27	885.78	1153.05	885.91	1171.93	888	1183.12	888.28		
1215.14	888.61	1265.18	888.92	1325.82	889.77	1326.91	889.8	1334.7	889.92		

1338	889.97	1433.85	890	1435.87	890.05	1457.63	890.26	1472.04	890.22
1498.14	890.27	1503.14	890.27	1523.01	890.38	1527.94	890.41	1528.95	890.4
1593.72	890.34	1600.69	890.39	1604.49	890.48	1607.88	890.47	1613.76	890.66

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	974.56	.05	1128.55	.06

Bank Sta: Left Right Coeff Contr. Expan.

974.56	1128.55	.1	.3
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Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .95  
 Elevation at which weir flow begins = 887  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span

US 183 Box 9 41

FHWA Chart # 10- 90 degree headwall; Chamfered or beveled inlet  
 FHWA Scale # 1 - Inlet edges chamfered 3/4 inch  
 Solution Criteria = Highest U.S. EG

Culvert	Upstrm	Dist	Length	n Value	Entrance Loss Coef	Exit Loss Coef
	50	60	.013	.5	1	

Upstream Elevation = 878  
 Centerline Station = 850  
 Downstream Elevation = 878  
 Centerline Station = 1085

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 5078.904

INPUT

Description:

Station	Elevation	Data	num=	65					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	901.41	132.49	900.71	199.74	900.62	355.58	900	413.49	898.7
415.74	898.68	425.3	898.37	426.58	898.35	432.71	898.15	437.92	898
448.58	898	525.68	896.85	528.02	896.79	566.52	896.45	594.87	896
624.89	896	662.01	896	723.91	890.04	739.11	889.7	740.4	889.65
852.15	886.87	885.3	886	897.63	885.52	921.84	884.73	938.31	884.55
969.19	884	974.56	883.65	994.41	882	1035.39	878	1060.33	876
1071.96	874.88	1079.74	874.01	1090.41	874	1094.88	874.64	1098.02	875.2
1100.2	875.54	1102.63	876	1113.73	878.74	1120.31	880.22	1124.56	881.08
1128.55	881.79	1152.27	885.78	1153.05	885.91	1171.93	888	1183.12	888.28
1215.14	888.61	1265.18	888.92	1325.82	889.77	1326.91	889.8	1334.7	889.92
1338	889.97	1433.85	890	1435.87	890.05	1457.63	890.26	1472.04	890.22
1498.14	890.27	1503.14	890.27	1523.01	890.38	1527.94	890.41	1528.95	890.4
1593.72	890.34	1600.69	890.39	1604.49	890.48	1607.88	890.47	1613.76	890.66

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	974.56	.05	1128.55	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

974.56	1128.55	1836.47	1827.94	1819.42	.1	.3
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CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 3250.959

INPUT

Description:

Station	Elevation	Data	num=	83					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	887.02	147.2	884	305.59	882	310.89	882	391.96	880
394.25	880	476.09	878	550.52	876	551.76	876	565.02	874.96
571.1	874.6	573.57	874.41	581.27	874	593.39	873.11	606.28	872.41
610.92	872.23	616.69	872.03	622.07	871.85	627.38	871.66	631.47	871.62
632.49	871.58	636.41	871.68	640.92	871.36	642.18	872	650.47	872.08
655.33	872.1	675.46	872.02	676.53	872	680.16	871.87	681.22	871.89
686.21	871.67	716.25	870.19	719.15	870	728.42	868	735.22	866
735.9	865.78	740.83	864	747.29	862	771.8	862	782.99	864
798.78	866	820.61	868	848.21	870	853.58	870.42	873	872
900.64	873.99	967.27	875.97	968.31	876	1079.36	878	1135.87	880
1170.6	881.84	1173.69	882	1287.71	888	1289.98	883.15	1326.88	890
1331.78	890.37	1388.25	894	1411.91	896.15	1418.5	896.72	1438.21	898.1
1460.15	899.61	1464.26	900	1476.98	902	1484.54	904	1491.08	906
1497.08	908	1503.7	910	1511.45	912	1524.25	914	1531.63	914
1543.11	912	1550.53	910	1559.49	908	1561.88	907.25	1563.7	906.86
1569.03	906.93	1570.93	906.76	1572.22	906.68	1573.32	906.64	1574.47	906.66
1576.02	906.74	1578.43	906.94	1598	908.9				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	719.15	.05	848.21	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

719.15	848.21	883.26	884.99	886.71	.1	.3
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CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 2365.973

INPUT  
 Description:  
 Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	867.05	45.26	866.11	56.19	866.06	62.06	866.11	67.79	866.21
124.92	867.65	129.2	867.67	134.37	867.7	144.11	867.75	214.33	868.14
260.57	868	265.49	867.77	266.34	867.67	276.27	866.49	279.83	866
286.18	864	294.9	860.78	296.92	860	302.37	858	310.56	856
328.05	856	349.72	858.37	366.77	860	410.2	862	472.46	864
495.18	865.49	509.82	866.33	514.09	866.49	515.15	866.48	533.31	866.94
535.79	866.97	546.65	866.89	549.15	866.93	575.11	868	577.74	868

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	286.18	.05	472.46	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 286.18 472.46 689.02 673.18 657.33 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 1692.796

INPUT  
 Description:  
 Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	875.68	9.36	874	18.46	872	31.03	870	46.91	868
60.55	866	70.14	864	77.33	862	90.88	858	98.77	856
110.34	854.44	114.02	854	136.18	852	137.95	852	154.41	854
165.37	856	178.48	858	193.21	860	199.46	861.36	202.43	862
210.12	864	218.58	866	234.83	868	298.24	870	357.22	870

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	110.34	.05	165.37	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 110.34 165.37 480.82 480.16 479.5 .1 .3

CROSS SECTION RIVER: cluck  
 REACH: 1 RS: 1212.638

INPUT  
 Description:  
 Station Elevation Data num= 71

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	903.97	1.81	903.91	22.46	903.16	48.07	902.02	58.05	901.73
65.2	901.57	72.77	901.29	85.33	900.68	87.26	900.62	97.91	900.17
138.02	898	142.21	897.83	182.34	896.03	196.23	895.43	209.43	895.07
211.8	894.97	214.16	895	216.75	894.9	218.97	894.91	229.99	894.46
236.6	894.07	237.64	894	256.38	892	351.03	886.03	387.43	884.14
433.64	882.07	471.4	880.36	477.7	880	478.78	880	576.5	878.04
578.38	878	582.81	878	622.01	877.44	623.61	877.39	687	876
691.11	876	699.49	875.85	719.57	875.59	720.64	875.59	724.75	875.53
725.96	875.53	800.31	874	863.58	872	903.75	870	924.24	868
934.51	866	935.23	865.77	941.11	864	941.43	863.98	945.99	862
953.23	858.97	955.67	858	959.33	856.64	961.7	856	969.69	854
980.13	852	991.53	850	1009.97	850	1025.64	852	1047.73	854
1059.33	856	1068.17	858	1079.25	860	1101.44	861.89	1131.08	864
1182.88	866	1350.54	868	1403.28	868	1541.47	866	1659.49	866
1731.44	866.21								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	961.7	.05	1059.33	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 961.7 1059.33 1202.07 1212.64 1223.2 .1 .3

Profile Output Table - Espey 1

River	Reach	River Sta	Q Total (cfs)	W.S. Elev (ft)	Crit W.S. (ft)	Vel Total (ft/s)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)
cluckt1	1	7381.876	624.00	944.11	943.38	4.12	0.26	5.77	0.10
cluckt1	1	7381.876	798.00	944.51	943.64	4.26	0.29	5.29	0.11
cluckt1	1	7381.876	927.00	944.86	943.82	4.11	0.28	5.01	0.13
cluckt1	1	7381.876	1056.00	945.20	943.98	3.95	0.28	4.74	0.14
cluckt1	1	7381.876	973.00	945.00	943.88	4.02	0.28	4.91	0.14
cluckt1	1	6680.231	785.00	937.93	936.41	6.13	0.58		
cluckt1	1	6680.231	1004.00	938.73	936.92	6.57	0.67		
cluckt1	1	6680.231	1166.00	939.29	937.27	6.83	0.72		
cluckt1	1	6680.231	1329.00	939.87	937.60	6.85	0.73		
cluckt1	1	6680.231	1225.00	939.50	937.39	6.86	0.73		
cluckt1	1	6625.57							
cluckt1	1	6570.908	814.00	936.42	936.42	8.91	1.23	7.50	0.46
cluckt1	1	6570.908	1041.00	936.90	936.20	9.48	1.40	2.24	0.66
cluckt1	1	6570.908	1299.00	937.28	937.28	9.62	1.44	2.20	0.68
cluckt1	1	6570.908	1378.00	937.61	937.61	9.79	1.49	2.25	0.71
cluckt1	1	6570.908	1269.00	937.40	937.40	9.68	1.46	2.20	0.69



cluckt1	1	4552.959	1248.00	921.23	917.18	4.46	0.32		
cluckt1	1	4552.959	1596.00	922.73	917.81	1.54	0.07		
cluckt1	1	4552.959	1853.00	923.14	918.26	1.56	0.07		
cluckt1	1	4552.959	2113.00	923.46	918.69	1.61	0.07		
cluckt1	1	4552.959	1946.00	923.27	918.43	1.57	0.07		
cluckt1	1	4507.88	Culvert						
cluckt1	1	4462.804	738.00	917.25	916.09	5.87	0.54	11.26	0.19
cluckt1	1	4462.804	969.00	917.75	916.61	6.66	0.69	11.58	0.25
cluckt1	1	4462.804	1149.00	918.06	916.96	7.28	0.82	11.69	0.30
cluckt1	1	4462.804	1330.00	918.34	917.31	7.88	0.96	11.78	0.37
cluckt1	1	4462.804	1250.00	918.23	917.16	7.60	0.90	11.76	0.34
cluckt1	1	2750.261	743.00	906.07	905.20	3.19	0.16	15.29	0.06
cluckt1	1	2750.261	976.00	906.42	905.42	3.49	0.19	14.89	0.07
cluckt1	1	2750.261	1157.00	906.67	905.58	3.67	0.21	14.62	0.08
cluckt1	1	2750.261	1340.00	906.91	905.74	3.82	0.23	14.38	0.09
cluckt1	1	2750.261	1258.00	906.80	905.67	3.76	0.23	14.51	0.08
cluckt1	1	637.664	850.00	390.14	889.24	6.53	0.74		
cluckt1	1	637.664	1117.00	390.76	889.83	7.03	0.89		
cluckt1	1	637.664	1324.00	391.20	890.27	7.35	0.99		
cluckt1	1	637.664	1535.00	391.60	890.66	7.63	1.09		
cluckt1	1	637.664	1426.00	391.39	890.46	7.49	1.04		
cluck	1	19397.89	1024.00	1018.72	1018.72	4.89	0.46	1.12	0.21
cluck	1	19397.89	1332.00	1018.96	1018.96	4.78	0.48	1.29	0.21
cluck	1	19397.89	1562.00	1019.09	1019.09	4.90	0.51	1.40	0.22
cluck	1	19397.89	1796.00	1019.19	1019.19	5.09	0.55	1.55	0.23
cluck	1	19397.89	1901.00	1019.24	1019.24	5.16	0.57	1.53	0.24
cluck	1	18470.38	1024.00	1003.95	1000.99	1.45	0.05		
cluck	1	18470.38	1332.00	1004.24	1001.55	1.63	0.07		
cluck	1	18470.38	1562.00	1004.43	1001.94	1.76	0.07		
cluck	1	18470.38	1796.00	1004.57	1002.33	1.90	0.08		
cluck	1	18470.38	1901.00	1004.69	1002.50	1.92	0.08		
cluck	1	18374.57	Culvert						
cluck	1	18278.76	1024.00	999.74	999.74	9.68	1.45	1.00	0.64
cluck	1	18278.76	1332.00	1000.29	1000.29	10.62	1.75	1.00	0.78
cluck	1	18278.76	1562.00	1000.67	1000.67	11.21	1.95	0.99	0.87
cluck	1	18278.76	1796.00	1001.06	1001.06	11.71	2.13	0.99	0.95
cluck	1	18278.76	1901.00	1001.22	1001.22	11.95	2.22	0.99	0.99
cluck	1	18007.91	1024.00	998.26	995.27	2.93	0.18		
cluck	1	18007.91	1332.00	998.85	995.76	2.97	0.20		
cluck	1	18007.91	1562.00	999.23	996.09	3.00	0.21		
cluck	1	18007.91	1796.00	999.56	996.43	3.06	0.22		
cluck	1	18007.91	1901.00	999.70	996.57	3.09	0.23		
cluck	1	17967.48	Culvert						
cluck	1	17927.05	1024.00	997.86	995.30	1.33	0.04	0.02	0.00
cluck	1	17927.05	1332.00	998.63	995.74	1.19	0.03	0.01	0.00
cluck	1	17927.05	1562.00	999.13	996.06	1.14	0.03	0.01	0.00
cluck	1	17927.05	1796.00	999.53	996.37	1.13	0.03	0.01	0.00
cluck	1	17927.05	1901.00	999.69	996.50	1.13	0.03	0.01	0.00
cluck	1	17902.0*	1024.00	997.82		1.62	0.06	0.03	0.00
cluck	1	17902.0*	1332.00	998.59		1.41	0.05	0.02	0.00
cluck	1	17902.0*	1562.00	999.10		1.32	0.04	0.01	0.00
cluck	1	17902.0*	1796.00	999.50		1.29	0.04	0.01	0.00
cluck	1	17902.0*	1901.00	999.67		1.28	0.04	0.01	0.00
cluck	1	17877.0*	1024.00	997.77		1.99	0.08	0.08	0.01
cluck	1	17877.0*	1332.00	998.55		1.70	0.07	0.06	0.01
cluck	1	17877.0*	1562.00	999.06		1.54	0.06	0.05	0.01
cluck	1	17877.0*	1796.00	999.47		1.48	0.05	0.04	0.01
cluck	1	17877.0*	1901.00	999.64		1.46	0.05	0.04	0.01
cluck	1	17827.0*	1024.00	997.63		2.89	0.14	0.07	0.00
cluck	1	17827.0*	1332.00	998.43		2.55	0.13	0.05	0.00
cluck	1	17827.0*	1562.00	998.96		2.27	0.12	0.04	0.00
cluck	1	17827.0*	1796.00	999.38		2.12	0.11	0.03	0.00
cluck	1	17827.0*	1901.00	999.55		2.06	0.11	0.03	0.00
cluck	1	17802.0*	1024.00	997.51		3.42	0.18	0.58	0.07
cluck	1	17802.0*	1332.00	998.33		3.12	0.17	0.47	0.07
cluck	1	17802.0*	1562.00	998.87		2.84	0.16	0.39	0.06
cluck	1	17802.0*	1796.00	999.29		2.63	0.16	0.36	0.06
cluck	1	17802.0*	1901.00	999.46		2.56	0.15	0.34	0.06
cluck	1	17702	1024.00	996.18		7.46	0.86	0.22	0.03
cluck	1	17702	1332.00	997.10		7.46	0.86	0.25	0.05
cluck	1	17702	1562.00	997.81		7.03	0.77	0.23	0.04
cluck	1	17702	1796.00	998.26		7.04	0.77	0.23	0.04
cluck	1	17702	1901.00	998.43		7.07	0.78	0.23	0.04
cluck	1	17686.3	1024.00	995.58		8.78	1.20	0.44	0.03
cluck	1	17686.3	1332.00	996.27		9.49	1.40	0.45	0.05
cluck	1	17686.3	1562.00	997.17		8.57	1.14	0.43	0.04
cluck	1	17686.3	1796.00	997.63		8.56	1.14	0.44	0.04
cluck	1	17686.3	1901.00	997.79		8.61	1.15	0.44	0.04

cluck	1	17661.3*	1024.00	995.20	8.45	1.11	0.42	0.02
cluck	1	17661.3*	1332.00	995.94	8.95	1.24	0.40	0.04
cluck	1	17661.3*	1562.00	996.83	8.09	1.02	0.40	0.03
cluck	1	17661.3*	1796.00	997.29	8.06	1.01	0.40	0.03
cluck	1	17661.3*	1901.00	997.45	8.10	1.02	0.40	0.03
cluck	1	17636.4*	1024.00	994.80	8.26	1.06	0.42	0.01
cluck	1	17636.4*	1332.00	995.63	8.49	1.12	0.37	0.03
cluck	1	17636.4*	1562.00	996.51	7.68	0.92	0.37	0.03
cluck	1	17636.4*	1796.00	996.97	7.62	0.90	0.37	0.03
cluck	1	17636.4*	1901.00	997.13	7.65	0.91	0.38	0.03
cluck	1	17611.6*	1024.00	994.40	8.15	1.03	0.41	0.01
cluck	1	17611.6*	1332.00	995.34	8.10	1.02	0.35	0.02
cluck	1	17611.6*	1562.00	996.21	7.32	0.83	0.35	0.02
cluck	1	17611.6*	1796.00	996.66	7.24	0.81	0.36	0.02
cluck	1	17611.6*	1901.00	996.82	7.26	0.82	0.36	0.02
cluck	1	17586.6*	1024.00	994.00	8.08	1.01	0.38	0.02
cluck	1	17586.6*	1332.00	995.04	7.79	0.94	0.34	0.02
cluck	1	17586.6*	1562.00	995.91	7.02	0.77	0.34	0.02
cluck	1	17586.6*	1796.00	996.36	6.91	0.74	0.34	0.02
cluck	1	17586.6*	1901.00	996.53	6.91	0.74	0.34	0.02
cluck	1	17561.7*	1024.00	993.67	7.83	0.95	0.29	0.04
cluck	1	17561.7*	1332.00	994.76	7.52	0.88	0.32	0.01
cluck	1	17561.7*	1562.00	995.61	6.78	0.71	0.33	0.01
cluck	1	17561.7*	1796.00	996.08	6.60	0.68	0.33	0.01
cluck	1	17561.7*	1901.00	996.24	6.59	0.67	0.33	0.02
cluck	1	17536.8*	1024.00	993.47	7.23	0.81	0.22	0.05
cluck	1	17536.8*	1332.00	994.47	7.31	0.83	0.28	0.02
cluck	1	17536.8*	1562.00	995.31	6.59	0.68	0.33	0.01
cluck	1	17536.8*	1796.00	995.79	6.36	0.63	0.32	0.01
cluck	1	17536.8*	1901.00	995.95	6.33	0.62	0.32	0.01
cluck	1	17512	1024.00	993.36	6.50	0.66	0.13	0.01
cluck	1	17512	1332.00	994.23	7.03	0.77	0.15	0.01
cluck	1	17512	1562.00	995.01	6.44	0.64	0.22	0.03
cluck	1	17512	1796.00	995.50	6.14	0.59	0.24	0.03
cluck	1	17512	1901.00	995.67	6.08	0.57	0.24	0.04
cluck	1	17496.3	1024.00	993.17	6.79	0.72	0.08	0.00
cluck	1	17496.3	1332.00	993.98	7.44	0.86	0.10	0.00
cluck	1	17496.3	1562.00	994.49	7.66	0.91	0.15	0.00
cluck	1	17496.3	1796.00	994.88	7.74	0.93	0.18	0.00
cluck	1	17496.3	1901.00	995.03	7.77	0.94	0.19	0.00
cluck	1	17486.5*	1024.00	993.06	6.85	0.73	0.09	0.00
cluck	1	17486.5*	1332.00	993.86	7.49	0.87	0.12	0.00
cluck	1	17486.5*	1562.00	994.33	7.65	0.91	0.17	0.00
cluck	1	17486.5*	1796.00	994.72	7.69	0.92	0.19	0.00
cluck	1	17486.5*	1901.00	994.85	7.74	0.93	0.19	0.00
cluck	1	17476.8*	1024.00	992.96	6.91	0.74	0.09	0.00
cluck	1	17476.8*	1332.00	993.73	7.49	0.87	0.14	0.00
cluck	1	17476.8*	1562.00	994.17	7.61	0.90	0.17	0.00
cluck	1	17476.8*	1796.00	994.55	7.63	0.90	0.18	0.00
cluck	1	17476.8*	1901.00	994.67	7.71	0.92	0.19	0.00
cluck	1	17467.1*	1024.00	992.85	6.96	0.75	0.09	0.00
cluck	1	17467.1*	1332.00	993.59	7.45	0.86	0.15	0.00
cluck	1	17467.1*	1562.00	994.01	7.55	0.89	0.17	0.00
cluck	1	17467.1*	1796.00	994.38	7.56	0.89	0.18	0.00
cluck	1	17467.1*	1901.00	994.50	7.64	0.91	0.18	0.00
cluck	1	17457.3*	1024.00	992.73	7.04	0.77	0.10	0.00
cluck	1	17457.3*	1332.00	993.44	7.42	0.85	0.16	0.00
cluck	1	17457.3*	1562.00	993.85	7.50	0.87	0.17	0.00
cluck	1	17457.3*	1796.00	994.22	7.50	0.87	0.18	0.00
cluck	1	17457.3*	1901.00	994.33	7.60	0.90	0.18	0.00
cluck	1	17447.6*	1024.00	992.62	7.07	0.78	0.12	0.00
cluck	1	17447.6*	1332.00	993.29	7.36	0.84	0.16	0.00
cluck	1	17447.6*	1562.00	993.69	7.44	0.86	0.17	0.00
cluck	1	17447.6*	1796.00	994.05	7.45	0.86	0.18	0.00
cluck	1	17447.6*	1901.00	994.16	7.55	0.89	0.18	0.00
cluck	1	17437.9*	1024.00	992.50	7.05	0.77	0.14	0.00
cluck	1	17437.9*	1332.00	993.15	7.29	0.82	0.17	0.00
cluck	1	17437.9*	1562.00	993.53	7.39	0.85	0.17	0.00
cluck	1	17437.9*	1796.00	993.88	7.41	0.85	0.17	0.00
cluck	1	17437.9*	1901.00	993.99	7.52	0.88	0.18	0.00
cluck	1	17428.1*	1024.00	992.38	6.98	0.76	0.14	0.01
cluck	1	17428.1*	1332.00	993.00	7.22	0.81	0.16	0.01
cluck	1	17428.1*	1562.00	993.37	7.34	0.84	0.17	0.01
cluck	1	17428.1*	1796.00	993.71	7.38	0.85	0.17	0.00
cluck	1	17428.1*	1901.00	993.82	7.51	0.88	0.17	0.00
cluck	1	17418.4*	1024.00	992.26	6.88	0.74	0.14	0.01
cluck	1	17418.4*	1332.00	992.66	7.11	0.78	0.15	0.01
cluck	1	17418.4*	1562.00	993.23	7.24	0.81	0.16	0.00
cluck	1	17418.4*	1796.00	993.55	7.36	0.84	0.16	0.00

cluck	1	17418.4*	1901.00	993.65		7.50	0.87	0.16	0.00
cluck	1	17408.7*	1024.00	992.15		6.77	0.71	0.14	0.01
cluck	1	17408.7*	1332.00	992.74		7.00	0.76	0.15	0.01
cluck	1	17408.7*	1562.00	993.09		7.17	0.80	0.15	0.00
cluck	1	17408.7*	1796.00	993.38		7.37	0.84	0.16	0.00
cluck	1	17408.7*	1901.00	993.48		7.52	0.88	0.16	0.00
cluck	1	17398.9*	1024.00	992.03		6.66	0.69	0.14	0.01
cluck	1	17398.9*	1332.00	992.61		6.89	0.74	0.14	0.01
cluck	1	17398.9*	1562.00	992.94		7.10	0.78	0.15	0.00
cluck	1	17398.9*	1796.00	993.21		7.38	0.85	0.15	0.00
cluck	1	17398.9*	1901.00	993.31		7.55	0.88	0.16	0.00
cluck	1	17389.2*	1024.00	991.92		6.52	0.66	0.13	0.01
cluck	1	17389.2*	1332.00	992.48		6.79	0.72	0.14	0.00
cluck	1	17389.2*	1562.00	992.80		7.05	0.77	0.14	0.00
cluck	1	17389.2*	1796.00	993.05		7.41	0.85	0.15	0.00
cluck	1	17389.2*	1901.00	993.14		7.59	0.89	0.16	0.00
cluck	1	17379.5*	1024.00	991.81		6.40	0.64	0.12	0.01
cluck	1	17379.5*	1332.00	992.36		6.73	0.70	0.13	0.00
cluck	1	17379.5*	1562.00	992.66		7.04	0.77	0.13	0.00
cluck	1	17379.5*	1796.00	992.88		7.48	0.87	0.15	0.00
cluck	1	17379.5*	1901.00	992.97		7.67	0.91	0.15	0.00
cluck	1	17369.7*	1024.00	991.71		6.26	0.61	0.11	0.01
cluck	1	17369.7*	1332.00	992.23		6.67	0.69	0.12	0.00
cluck	1	17369.7*	1562.00	992.52		7.04	0.77	0.13	0.00
cluck	1	17369.7*	1796.00	992.71		7.55	0.89	0.14	0.00
cluck	1	17369.7*	1901.00	992.80		7.71	0.94	0.14	0.00
cluck	1	17360.0*	1024.00	991.61		6.16	0.59	0.11	0.00
cluck	1	17360.0*	1332.00	992.10		6.66	0.69	0.12	0.00
cluck	1	17360.0*	1562.00	992.36		7.12	0.79	0.13	0.00
cluck	1	17360.0*	1796.00	992.55		7.62	0.91	0.14	0.00
cluck	1	17360.0*	1901.00	992.63	992.12	7.75	0.97	0.14	0.00
cluck	1	17350.3*	1024.00	991.51		6.09	0.58	0.10	0.00
cluck	1	17350.3*	1332.00	991.98		6.67	0.69	0.11	0.00
cluck	1	17350.3*	1562.00	992.19		7.25	0.82	0.13	0.00
cluck	1	17350.3*	1796.00	992.38	991.84	7.63	0.95	0.14	0.00
cluck	1	17350.3*	1901.00	992.46	991.97	7.72	1.00	0.14	0.00
cluck	1	17340.5*	1024.00	991.41		6.04	0.57	0.10	0.00
cluck	1	17340.5*	1332.00	991.84		6.73	0.70	0.11	0.00
cluck	1	17340.5*	1562.00	992.02		7.35	0.85	0.13	0.00
cluck	1	17340.5*	1796.00	992.21	991.69	7.57	0.98	0.14	0.00
cluck	1	17340.5*	1901.00	992.29	991.82	7.62	1.03	0.14	0.00
cluck	1	17330.8*	1024.00	991.30		6.05	0.57	0.09	0.00
cluck	1	17330.8*	1332.00	991.69		6.87	0.73	0.11	0.00
cluck	1	17330.8*	1562.00	991.85	991.23	7.41	0.90	0.12	0.00
cluck	1	17330.8*	1796.00	992.06	991.54	7.36	1.00	0.12	0.02
cluck	1	17330.8*	1901.00	992.14	991.66	7.32	1.04	0.12	0.05
cluck	1	17321.1*	1024.00	991.19		6.08	0.57	0.09	0.00
cluck	1	17321.1*	1332.00	991.52		6.98	0.78	0.11	0.01
cluck	1	17321.1*	1562.00	991.72	991.09	7.17	0.92	0.11	0.01
cluck	1	17321.1*	1796.00	991.98	991.95	6.61	0.94	0.10	0.07
cluck	1	17321.1*	1901.00	992.15	992.15	6.02	0.88	0.09	0.07
cluck	1	17311.3*	1024.00	991.08		6.19	0.59	0.09	0.00
cluck	1	17311.3*	1332.00	991.33	990.61	7.13	0.84	0.12	0.01
cluck	1	17311.3*	1562.00	991.62	990.98	6.55	0.89	0.10	0.04
cluck	1	17311.3*	1796.00	992.03	992.03	5.04	0.72	0.08	0.04
cluck	1	17311.3*	1901.00	992.18	992.18	4.60	0.66	0.07	0.02
cluck	1	17301.6*	1024.00	990.95		6.32	0.63	0.09	0.00
cluck	1	17301.6*	1332.00	991.14	990.51	7.18	0.92	0.12	0.00
cluck	1	17301.6*	1562.00	991.62	991.62	5.22	0.74	0.08	0.05
cluck	1	17301.6*	1796.00	991.93	991.93	4.25	0.60	0.07	0.01
cluck	1	17301.6*	1901.00	992.00	992.00	4.20	0.60	0.07	0.01
cluck	1	17291.3*	1024.00	990.82	989.84	6.19	0.66	0.08	0.01
cluck	1	17291.3*	1332.00	991.03	990.41	6.57	0.91	0.08	0.12
cluck	1	17291.3*	1562.00	991.58	991.58	4.05	0.56	0.07	0.01
cluck	1	17291.3*	1796.00	991.73	991.73	3.97	0.56	0.07	0.01
cluck	1	17291.3*	1901.00	991.78	991.78	3.98	0.57	0.07	0.01
cluck	1	17282.1*	1024.00	990.76	989.74	5.39	0.64	0.06	0.08
cluck	1	17282.1*	1332.00	991.22	991.22	3.88	0.52	0.06	0.01
cluck	1	17282.1*	1562.00	991.38	991.38	3.78	0.52	0.06	0.02
cluck	1	17282.1*	1796.00	991.51	991.51	3.76	0.53	0.07	0.01
cluck	1	17282.1*	1901.00	991.57	991.57	3.75	0.53	0.07	0.01
cluck	1	17272.4*	1024.00	990.88	989.68	3.25	0.39	0.07	0.06
cluck	1	17272.4*	1332.00	991.02	991.02	3.54	0.48	0.06	0.01
cluck	1	17272.4*	1562.00	991.18	991.18	3.45	0.47	0.06	0.00
cluck	1	17272.4*	1796.00	991.27	991.27	3.59	0.51	0.06	0.02
cluck	1	17272.4*	1901.00	991.35	991.35	3.52	0.49	0.07	0.01
cluck	1	17262.7*	1024.00	990.17	989.63	6.37	0.99	0.05	0.24
cluck	1	17262.7*	1332.00	990.79	990.79	3.35	0.45	0.04	0.08
cluck	1	17262.7*	1562.00	990.92	990.92	3.39	0.46		

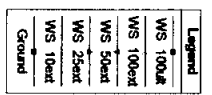
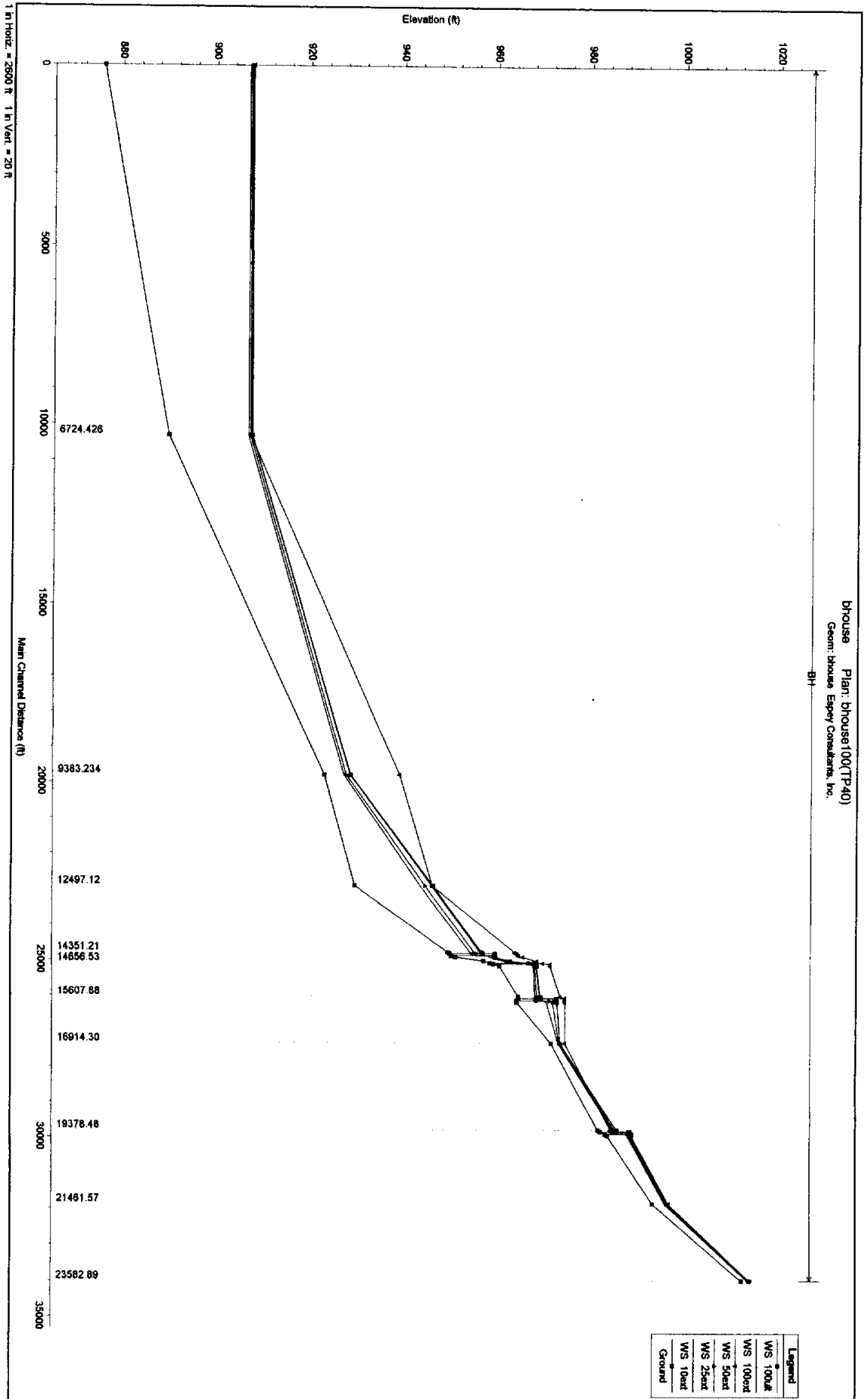
cluck	1	17262.7*	1796.00	991.05	991.05	3.39	0.45	0.04	0.08
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cluck	1	17253	1024.00	990.67		2.13	0.18	0.06	0.02
cluck	1	17253	1332.00	990.87		2.24	0.19	0.07	0.02
cluck	1	17253	1562.00	990.98		2.36	0.21	0.08	0.02
cluck	1	17253	1796.00	991.14		2.36	0.19	0.08	0.03
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cluck	1	17237	1024.00	990.35	990.35	3.15	0.41	0.24	0.05
cluck	1	17237	1332.00	990.54	990.54	3.21	0.42	0.19	0.01
cluck	1	17237	1562.00	990.65	990.65	3.30	0.44	0.20	0.01
cluck	1	17237	1796.00	990.69		3.65	0.53	0.22	0.01
cluck	1	17237	1901.00	990.71		3.78	0.57	0.23	0.01
cluck	1	17209.5*	1024.00	989.48	989.05	7.37	0.91	0.32	0.11
cluck	1	17209.5*	1332.00	990.21	990.21	3.83	0.49	0.24	0.02
cluck	1	17209.5*	1562.00	990.34	990.34	3.87	0.51	0.23	0.01
cluck	1	17209.5*	1796.00	990.49	990.49	3.81	0.50	0.22	0.01
cluck	1	17209.5*	1901.00	990.52	990.52	3.91	0.53		
cluck	1	17182.1*	1024.00	989.42	988.68	5.48	0.55	0.23	0.05
cluck	1	17182.1*	1332.00	989.66	989.63	5.47	0.67	0.26	0.06
cluck	1	17182.1*	1562.00	989.91	989.91	4.90	0.63	0.25	0.04
cluck	1	17182.1*	1796.00	990.12	990.12	4.52	0.59	0.24	0.02
cluck	1	17182.1*	1901.00	990.06		5.10	0.73	0.27	0.06
cluck	1	17154.6*	1024.00	989.30		4.58	0.39	0.19	0.03
cluck	1	17154.6*	1332.00	989.54		4.66	0.47	0.21	0.04
cluck	1	17154.6*	1562.00	989.72		4.64	0.50	0.21	0.04
cluck	1	17154.6*	1796.00	989.87		4.64	0.53	0.22	0.04
cluck	1	17154.6*	1901.00	989.93		4.63	0.54	0.22	0.04
cluck	1	17127.2*	1024.00	989.18		3.95	0.30	0.16	0.02
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cluck	1	17127.2*	1562.00	989.60		4.12	0.37	0.18	0.02
cluck	1	17127.2*	1796.00	989.75		4.19	0.40	0.18	0.02
cluck	1	17127.2*	1901.00	989.81		4.20	0.41	0.18	0.02
cluck	1	17099.7*	1024.00	989.07		3.52	0.24	0.15	0.01
cluck	1	17099.7*	1332.00	989.31		3.66	0.28	0.15	0.02
cluck	1	17099.7*	1562.00	989.48		3.74	0.30	0.15	0.02
cluck	1	17099.7*	1796.00	989.63		3.84	0.32	0.16	0.02
cluck	1	17099.7*	1901.00	989.70		3.86	0.32	0.16	0.02
cluck	1	17072.3*	1024.00	988.96		3.18	0.19	0.13	0.01
cluck	1	17072.3*	1332.00	989.21		3.33	0.22	0.13	0.01
cluck	1	17072.3*	1562.00	989.37		3.43	0.24	0.13	0.01
cluck	1	17072.3*	1796.00	989.52		3.55	0.26	0.14	0.01
cluck	1	17072.3*	1901.00	989.59		3.57	0.27	0.14	0.01
cluck	1	17044.8*	1024.00	988.85		2.93	0.16	0.12	0.01
cluck	1	17044.8*	1332.00	989.10		3.09	0.19	0.12	0.01
cluck	1	17044.8*	1562.00	989.27		3.19	0.20	0.12	0.01
cluck	1	17044.8*	1796.00	989.42		3.31	0.22	0.12	0.01
cluck	1	17044.8*	1901.00	989.49		3.34	0.22	0.12	0.01
cluck	1	17017.4*	1024.00	988.74		2.74	0.14	0.12	0.00
cluck	1	17017.4*	1332.00	989.01		2.87	0.16	0.11	0.01
cluck	1	17017.4*	1562.00	989.18		2.97	0.17	0.11	0.01
cluck	1	17017.4*	1796.00	989.32		3.10	0.18	0.11	0.01
cluck	1	17017.4*	1901.00	989.40		3.12	0.19	0.11	0.01
cluck	1	16990	1024.00	988.64		2.60	0.12	0.01	0.00
cluck	1	16990	1332.00	988.91		2.71	0.14	0.01	0.00
cluck	1	16990	1562.00	989.09		2.80	0.15	0.01	0.00
cluck	1	16990	1796.00	989.23		2.93	0.16	0.01	0.00
cluck	1	16990	1901.00	989.31		2.95	0.16	0.01	0.00
cluck	1	16988	1024.00	988.63		2.54	0.12	0.09	0.00
cluck	1	16988	1332.00	988.91		2.66	0.13	0.09	0.00
cluck	1	16988	1562.00	989.08		2.76	0.14	0.08	0.00
cluck	1	16988	1796.00	989.23		2.89	0.15	0.09	0.00
cluck	1	16988	1901.00	989.30		2.91	0.16	0.08	0.00
cluck	1	16964.1*	1024.00	988.55		2.54	0.12	0.08	0.00
cluck	1	16964.1*	1332.00	988.83		2.66	0.13	0.08	0.00
cluck	1	16964.1*	1562.00	989.00		2.76	0.14	0.08	0.00
cluck	1	16964.1*	1796.00	989.14		2.91	0.16	0.08	0.00
cluck	1	16964.1*	1901.00	989.22		2.93	0.16	0.08	0.00
cluck	1	16940.2*	1024.00	988.47		2.51	0.11	0.07	0.00
cluck	1	16940.2*	1332.00	988.75		2.65	0.13	0.07	0.00
cluck	1	16940.2*	1562.00	988.93		2.75	0.14	0.07	0.00
cluck	1	16940.2*	1796.00	989.06		2.90	0.16	0.08	0.00
cluck	1	16940.2*	1901.00	989.15		2.93	0.16	0.08	0.00
cluck	1	16916.3*	1024.00	988.40		2.48	0.11	0.07	0.00
cluck	1	16916.3*	1332.00	988.68		2.62	0.13	0.07	0.00
cluck	1	16916.3*	1562.00	988.87		2.72	0.14	0.07	0.00
cluck	1	16916.3*	1796.00	989.00		2.89	0.16	0.07	0.00
cluck	1	16916.3*	1901.00	989.08		2.91	0.16	0.07	0.00
cluck	1	16892.5*	1024.00	988.35		2.43	0.10	0.06	0.00
cluck	1	16892.5*	1332.00	988.62		2.59	0.12	0.06	0.00

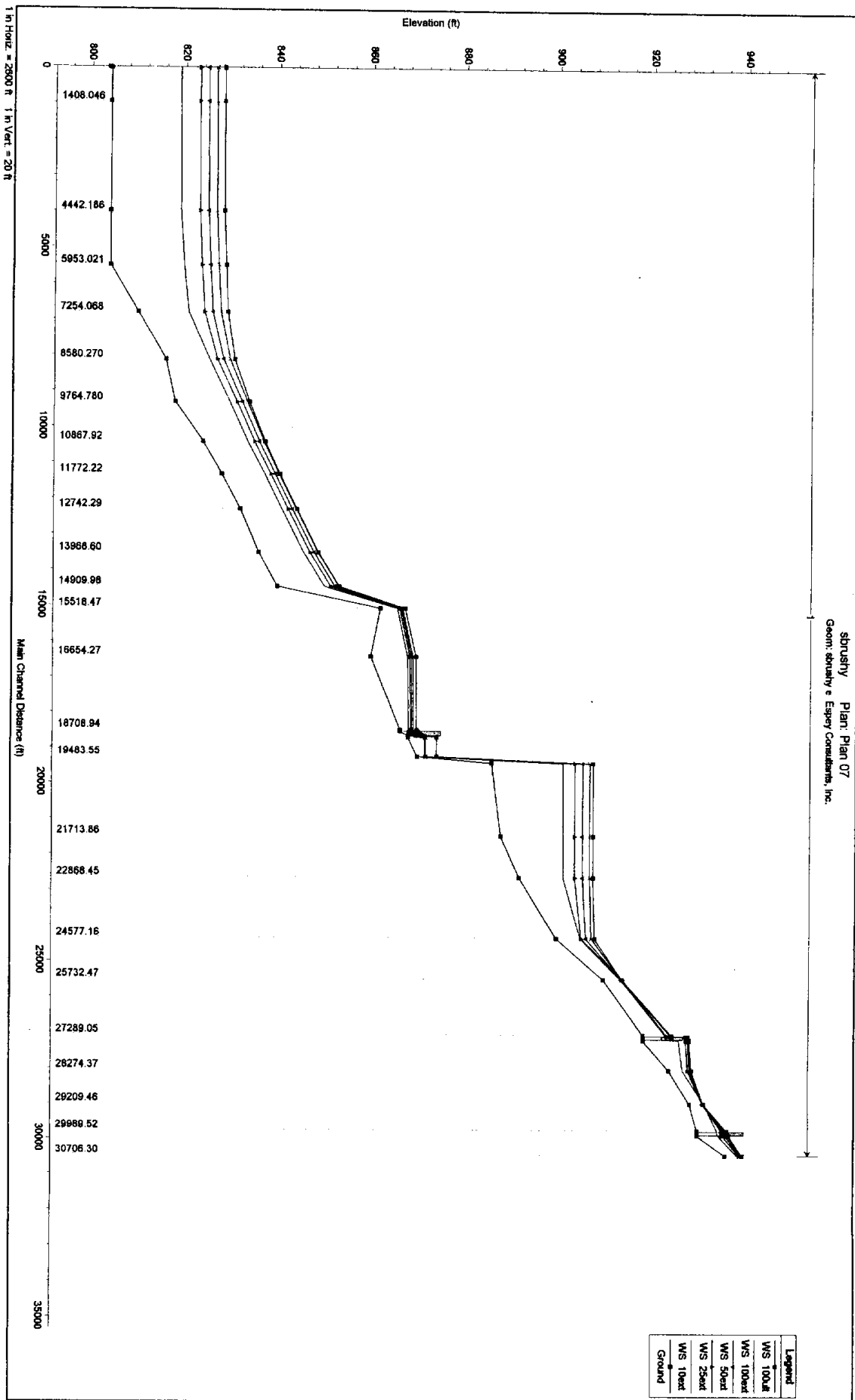


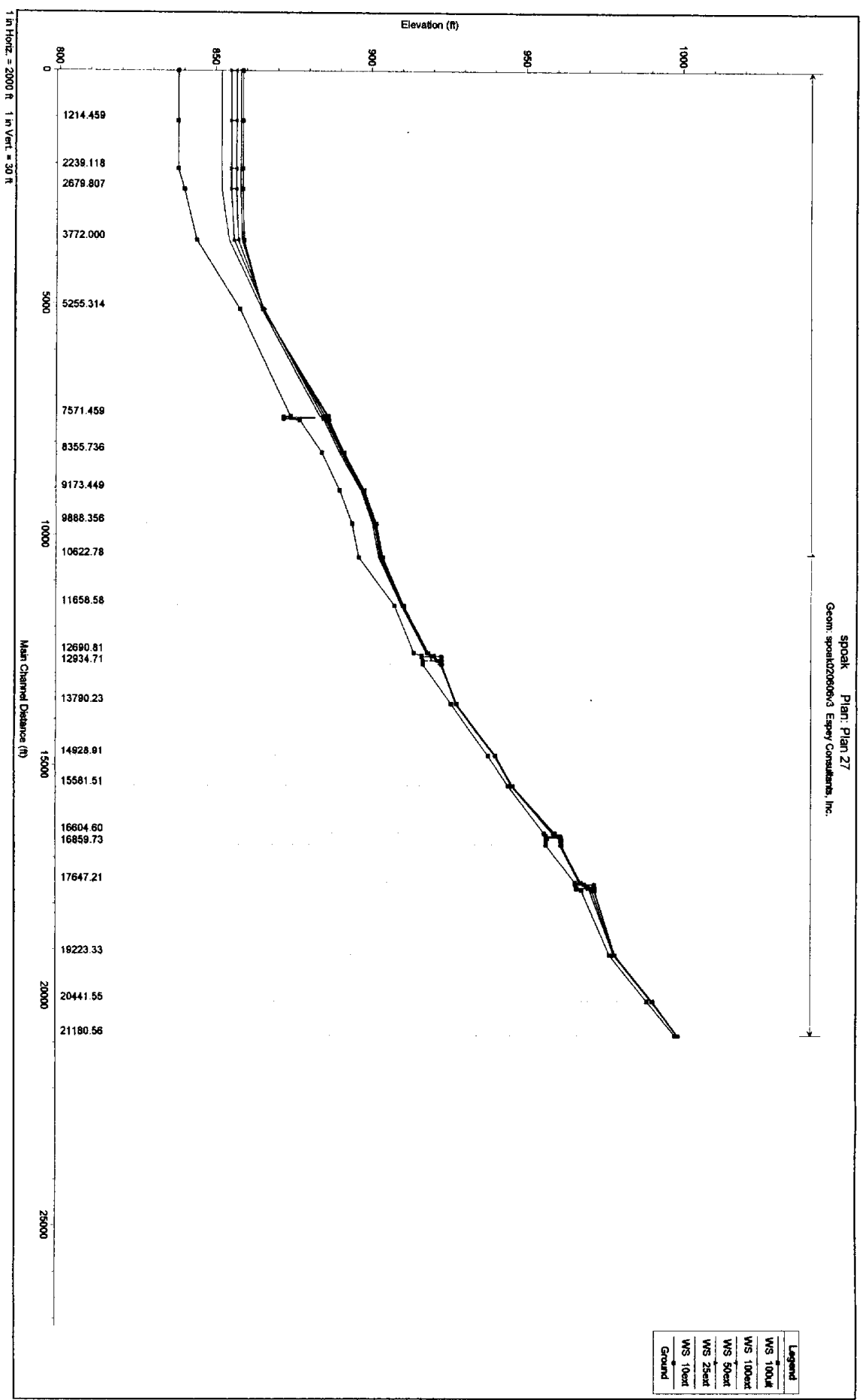
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cluck	1	16892.5*	1901.00	989.01		2.90	0.16	0.07	0.00
cluck	1	16868.6*	1024.00	988.29		2.37	0.10	0.05	0.00
cluck	1	16868.6*	1332.00	988.57		2.55	0.12	0.05	0.00
cluck	1	16868.6*	1562.00	988.76		2.66	0.13	0.06	0.00
cluck	1	16868.6*	1796.00	988.87		2.86	0.15	0.06	0.00
cluck	1	16868.6*	1901.00	988.95		2.88	0.16	0.06	0.00
cluck	1	16844.7*	1024.00	988.24		2.32	0.09	0.05	0.00
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cluck	1	16844.7*	1796.00	988.81		2.84	0.15	0.06	0.00
cluck	1	16844.7*	1901.00	988.90		2.86	0.15	0.06	0.00
cluck	1	16820.92	1024.00	988.19	985.18	2.27	0.09		
cluck	1	16820.92	1332.00	988.46	985.79	2.48	0.11		
cluck	1	16820.92	1562.00	988.65	986.59	2.60	0.12		
cluck	1	16820.92	1796.00	988.75	986.93	2.82	0.15		
cluck	1	16820.92	1901.00	988.84	987.08	2.85	0.15		
cluck	1	16781.31	Culvert						
cluck	1	16741.70	1024.00	985.04		4.28	0.30	0.94	0.03
cluck	1	16741.70	1332.00	985.72		3.61	0.26	0.65	0.01
cluck	1	16741.70	1562.00	986.17		3.25	0.23	0.51	0.01
cluck	1	16741.70	1796.00	986.62		2.92	0.19	0.40	0.01
cluck	1	16741.70	1901.00	986.82		2.78	0.18	0.36	0.01
cluck	1	16525.1*	1024.00	984.14		3.99	0.25	0.62	0.01
cluck	1	16525.1*	1332.00	985.08		3.46	0.23	0.49	0.02
cluck	1	16525.1*	1562.00	985.66		3.00	0.21	0.38	0.01
cluck	1	16525.1*	1796.00	986.22		2.62	0.17	0.30	0.00
cluck	1	16525.1*	1901.00	986.47		2.48	0.16	0.26	0.00
cluck	1	16308.5*	1024.00	983.47		4.27	0.28	1.19	0.34
cluck	1	16308.5*	1332.00	984.51		3.78	0.29	1.06	0.42
cluck	1	16308.5*	1562.00	985.23		3.07	0.24	0.88	0.49
cluck	1	16308.5*	1796.00	985.91		2.54	0.19	0.71	0.57
cluck	1	16308.5*	1901.00	986.21		2.35	0.16	0.63	0.60
cluck	1	16091.92	1024.00	980.79	980.21	9.60	1.43	0.18	0.05
cluck	1	16091.92	1332.00	981.62	980.94	10.49	1.71	0.18	0.06
cluck	1	16091.92	1562.00	982.20	981.45	11.04	1.89	0.18	0.06
cluck	1	16091.92	1796.00	982.72	981.94	11.63	2.10	0.18	0.07
cluck	1	16091.92	1901.00	982.98	982.16	11.82	2.17	0.18	0.07
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cluck	1	16082.92	1901.00	982.03	982.03	13.58	2.86	0.77	0.17
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cluck	1	16049.5*	1901.00	979.81	979.81	12.14	2.29	0.71	0.10
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cluck	1	16016.2*	1796.00	978.18	978.18	11.03	1.89	0.18	0.48
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cluck	1	15982.92	1026.00	978.19	976.04	3.11	0.21		
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cluck	1	15982.92	1905.00	979.19	977.37	3.52	0.29		
cluck	1	15954.42	Culvert						
cluck	1	15925.92	1031.00	977.38	975.99	4.45	0.37	0.06	0.01
cluck	1	15925.92	1342.00	977.70	976.73	5.13	0.48	0.07	0.06
cluck	1	15925.92	1573.00	978.03	977.03	3.34	0.33	0.06	0.01
cluck	1	15925.92	1810.00	978.28	977.29	3.22	0.32	0.06	0.02
cluck	1	15925.92	1915.00	978.36	977.40	3.21	0.32	0.06	0.02
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cluck	1	15911.71	1344.00	977.70		3.63	0.36	8.12	0.01
cluck	1	15911.71	1575.00	977.93		3.61	0.37	8.11	0.01
cluck	1	15911.71	1812.00	978.14	977.56	3.57	0.39	8.09	0.01
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cluck	1	14753.77	1148.00	969.14	968.83	4.58	0.43	11.39	0.03
cluck	1	14753.77	1495.00	969.45	969.13	4.75	0.48	11.28	0.04
cluck	1	14753.77	1753.00	969.66	969.34	4.87	0.51	11.34	0.04
cluck	1	14753.77	2017.00	969.88	969.53	4.87	0.53	11.42	0.05
cluck	1	14753.77	2129.00	969.98	969.59	4.84	0.54	11.47	0.05
cluck	1	13364.95	1303.00	957.83		3.66	0.32	13.67	0.07
cluck	1	13364.95	1699.00	958.26		3.27	0.26	13.57	0.07
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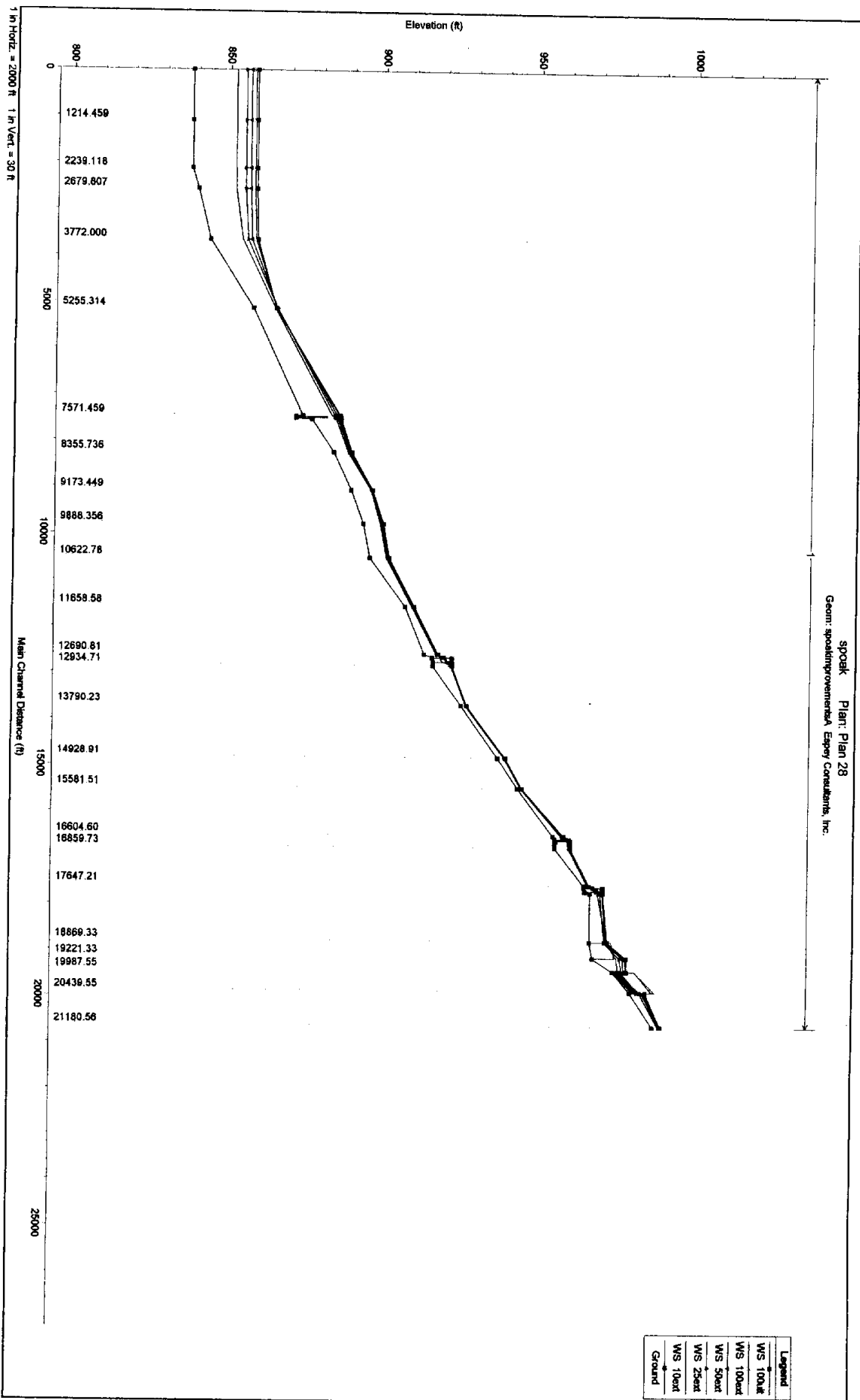
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cluck	1	12213.24	1448.00	943.43	943.43	7.97	0.99	1.26	0.31
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cluck	1	12213.24	2552.00	944.45	944.45	8.66	1.22	1.07	0.34
cluck	1	12213.24	2678.00	944.56	944.56	8.61	1.23	1.05	0.34
cluck	1	12136.57	1458.00	941.94	940.60	4.83	0.36		
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cluck	1	12136.57	2233.00	943.03	941.27	5.57	0.48		
cluck	1	12136.57	2570.00	943.47	941.52	5.84	0.53		
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cluck	1	12108.92	Culvert						
cluck	1	12081.26	1466.00	941.04	940.01	5.33	0.44	0.75	0.13
cluck	1	12081.26	1912.00	941.59	940.40	5.89	0.54	0.73	0.16
cluck	1	12081.26	2244.00	941.95	940.67	6.28	0.61	0.73	0.19
cluck	1	12081.26	2583.00	942.31	940.93	6.63	0.68	0.72	0.22
cluck	1	12081.26	2710.00	942.44	941.02	6.76	0.71	0.71	0.23
cluck	1	12001.26	1477.00	940.42		3.47	0.19	0.87	0.00
cluck	1	12001.26	1926.00	941.02		3.72	0.21	0.84	0.00
cluck	1	12001.26	2261.00	941.42		3.88	0.23	0.81	0.00
cluck	1	12001.26	2603.00	941.81		4.00	0.25	0.77	0.00
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cluck	1	11878.23	2632.00	940.99		4.33	0.30	0.57	0.02
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cluck	1	11798.23	1504.00	938.77	937.14	4.49	0.31		
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cluck	1	11798.23	2304.00	939.77	937.83	5.36	0.45		
cluck	1	11798.23	2652.00	940.21	938.10	5.63	0.49		
cluck	1	11798.23	2781.00	940.36	938.20	5.73	0.51		
cluck	1	11767.45	Culvert						
cluck	1	11736.66	1513.00	938.31	937.00	4.84	0.36	0.70	0.07
cluck	1	11736.66	1973.00	938.68	937.38	5.67	0.50	0.94	0.07
cluck	1	11736.66	2317.00	938.96	937.65	6.19	0.60	1.07	0.07
cluck	1	11736.66	2667.00	939.29	937.91	6.58	0.67	1.08	0.09
cluck	1	11736.66	2796.00	939.40	938.00	6.73	0.70	1.10	0.10
cluck	1	11656.66	1524.00	937.67		3.86	0.23	0.34	0.06
cluck	1	11656.66	1988.00	937.82		4.81	0.36	0.57	0.09
cluck	1	11656.66	2334.00	937.96		5.40	0.45	0.77	0.12
cluck	1	11656.66	2687.00	938.30		5.64	0.49	0.82	0.13
cluck	1	11656.66	2816.00	938.40		5.75	0.51	0.84	0.13
cluck	1	11091.76	1605.00	937.48		1.17	0.03	0.00	0.00
cluck	1	11091.76	2094.00	937.47		1.53	0.04	0.00	0.01
cluck	1	11091.76	2459.00	937.45		1.80	0.06	0.01	0.01
cluck	1	11091.76	2831.00	937.77		1.91	0.07	0.00	0.00
cluck	1	11091.76	2964.00	937.86		1.95	0.07	0.00	0.00
cluck	1	11083.21	1606.00	937.46	933.55	1.41	0.04		
cluck	1	11083.21	2095.00	937.44	934.07	1.85	0.06		
cluck	1	11083.21	2461.00	937.41	934.43	2.19	0.09		
cluck	1	11083.21	2834.00	937.76	934.78	1.85	0.07		
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cluck	1	11061.71	Culvert						
cluck	1	11040.21	1612.00	934.03	932.84	6.47	0.65	0.04	0.25
cluck	1	11040.21	2104.00	934.34	933.36	7.82	0.95	0.04	0.38
cluck	1	11040.21	2471.00	934.53	933.72	8.79	1.20	0.05	0.49
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cluck	1	11031.65	2105.00	934.67		3.51	0.19	1.16	0.00
cluck	1	11031.65	2473.00	934.97		3.74	0.22	1.13	0.01
cluck	1	11031.65	2847.00	935.25		3.95	0.25	1.13	0.01
cluck	1	11031.65	2980.00	935.34		4.02	0.26	1.13	0.01
cluck	1	10672.54	1667.00	932.98		3.13	0.18	1.06	0.01
cluck	1	10672.54	2176.00	933.52		3.20	0.19	0.97	0.01
cluck	1	10672.54	2556.00	933.85		3.30	0.20	0.97	0.00
cluck	1	10672.54	2943.00	934.15		3.41	0.21	0.98	0.00
cluck	1	10672.54	3078.00	934.24		3.46	0.22	1.00	0.00
cluck	1	10378.57	1713.00	931.94		2.70	0.15	0.03	0.01
cluck	1	10378.57	2236.00	932.55		2.84	0.17	0.03	0.01
cluck	1	10378.57	2627.00	932.88		2.99	0.19	0.03	0.01
cluck	1	10378.57	3025.00	933.17		3.14	0.21	0.03	0.01
cluck	1	10378.57	3161.00	933.24		3.21	0.22	0.04	0.01
cluck	1	10367.84	1714.00	931.93	928.41	2.46	0.12		
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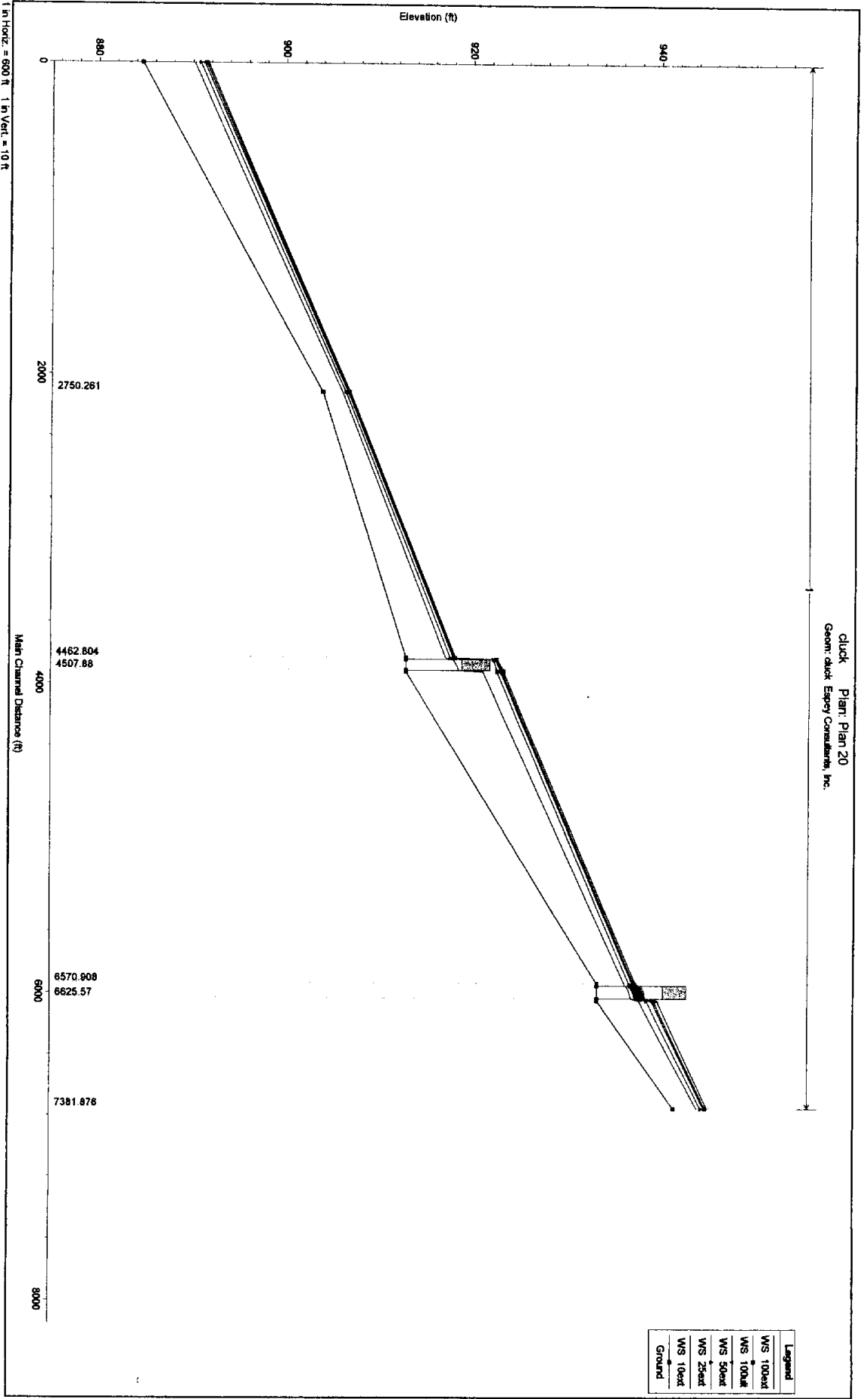
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cluck	1	10335.34	Culvert						
cluck	1	10302.84	1725.00	929.70	927.59	5.48	0.47	0.07	0.13
cluck	1	10302.84	2251.00	930.19	928.14	6.50	0.66	0.08	0.20
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cluck	1	10302.84	3046.00	930.74	928.90	7.98	0.99	0.09	0.34
cluck	1	10302.84	3183.00	930.81	929.03	8.24	1.05	0.09	0.37
cluck	1	10292.10	1726.00	929.76	927.75	3.35	0.21	14.46	0.06
cluck	1	10292.10	2254.00	930.32	928.28	3.60	0.25	14.62	0.06
cluck	1	10292.10	2648.00	930.66	928.59	3.78	0.28	14.69	0.07
cluck	1	10292.10	3049.00	931.00	928.87	3.92	0.30	14.77	0.07
cluck	1	10292.10	3186.00	931.09	928.96	3.98	0.32	14.79	0.07
cluck	1	8975.730	1947.00	914.69	914.69	7.00	0.76	7.48	0.20
cluck	1	8975.730	2544.00	915.00	915.00	7.55	0.88	7.05	0.24
cluck	1	8975.730	2990.00	915.22	915.22	7.84	0.95	9.36	0.25
cluck	1	8975.730	3444.00	915.41	915.41	8.20	1.05	7.12	0.28
cluck	1	8975.730	3588.00	915.49	915.49	8.24	1.05	7.23	0.29
cluck	1	6924.104	2349.00	900.87		1.86	0.08	0.02	0.01
cluck	1	6924.104	3072.00	902.20		1.83	0.09	0.02	0.02
cluck	1	6924.104	3614.00	902.14		2.17	0.12	0.03	0.04
cluck	1	6924.104	4165.00	903.65		1.90	0.10	0.02	0.00
cluck	1	6924.104	4319.00	903.79		1.92	0.10	0.02	0.00
cluck	1	6911.914	2351.00	900.79	892.67	2.68	0.13		
cluck	1	6911.914	3076.00	902.07	893.37	2.94	0.17		
cluck	1	6911.914	3618.00	901.96	893.87	3.51	0.24		
cluck	1	6911.914	4170.00	903.62	894.34	1.91	0.11		
cluck	1	6911.914	4324.00	903.76	894.47	1.94	0.12		
cluck	1	6854.42	Culvert						
cluck	1	6796.914	2376.00	900.28	892.72	2.84	0.13	0.05	0.01
cluck	1	6796.914	3109.00	901.19	893.45	3.34	0.18	0.06	0.02
cluck	1	6796.914	3657.00	900.72	893.96	4.14	0.27	0.11	0.02
cluck	1	6796.914	4214.00	902.33	894.42	3.79	0.24	0.07	0.04
cluck	1	6796.914	4369.00	902.43	894.55	3.88	0.25	0.07	0.05
cluck	1	6784.729	2379.00	900.23		2.52	0.12	4.11	0.15
cluck	1	6784.729	3112.00	901.15		2.68	0.13	4.10	0.17
cluck	1	6784.729	3661.00	900.64		3.53	0.23	2.27	0.04
cluck	1	6784.729	4219.00	902.31		2.87	0.15	4.05	0.20
cluck	1	6784.729	4374.00	902.41		2.92	0.15	4.00	0.19
cluck	1	6366.212	3368.00	894.51	894.51	10.03	1.59	1.95	0.44
cluck	1	6366.212	4433.00	895.22	895.22	10.46	1.80	2.11	0.50
cluck	1	6366.212	5232.00	897.91		5.32	0.64	8.36	0.33
cluck	1	6366.212	6053.00	896.10	896.10	10.96	2.11	2.48	0.58
cluck	1	6366.212	6283.00	896.28	896.28	10.78	2.09	2.52	0.57
cluck	1	5296.272	3458.00	887.90	883.87	2.32	0.11		
cluck	1	5296.272	4559.00	888.69	885.06	2.54	0.14		
cluck	1	5296.272	5387.00	885.90	885.90	15.97	3.96		
cluck	1	5296.272	6237.00	889.50	887.01	2.92	0.19		
cluck	1	5296.272	6440.00	889.58	887.01	2.96	0.19		
cluck	1	5187	Culvert						
cluck	1	5078.904	3476.00	882.16		5.68	0.50	12.20	0.03
cluck	1	5078.904	4585.00	883.25		5.94	0.55	12.45	0.05
cluck	1	5078.904	5419.00	883.90		6.16	0.60	12.56	0.07
cluck	1	5078.904	6275.00	884.47		6.38	0.66	12.61	0.08
cluck	1	5078.904	6473.00	884.57		6.44	0.68	12.65	0.09
cluck	1	3250.959	3636.00	369.62		7.25	0.82	5.52	0.13
cluck	1	3250.959	4810.00	370.23		8.31	1.07	5.31	0.19
cluck	1	3250.959	5697.00	370.59		9.03	1.28	5.13	0.24
cluck	1	3250.959	6605.00	370.94		9.66	1.49	4.96	0.30
cluck	1	3250.959	6752.00	370.99		9.75	1.53	4.97	0.31
cluck	1	2365.973	3716.00	364.40		5.00	0.39	3.27	0.05
cluck	1	2365.973	4922.00	365.36		5.25	0.44	3.06	0.06
cluck	1	2365.973	5837.00	366.03		5.38	0.47	2.94	0.07
cluck	1	2365.973	6771.00	366.67		5.27	0.50	2.82	0.08
cluck	1	2365.973	6891.00	366.74		5.38	0.50	2.82	0.08
cluck	1	1692.796	3778.00	360.61		6.65	0.85	3.38	0.02
cluck	1	1692.796	5010.00	361.84		7.27	1.03	3.46	0.03
cluck	1	1692.796	5945.00	362.34		7.66	1.15	3.50	0.04
cluck	1	1692.796	6900.00	363.00		8.01	1.27	3.54	0.04
cluck	1	1692.796	6999.00	363.05		8.06	1.29	3.55	0.04
cluck	1	1212.638	3823.00	356.99	355.89	8.25	1.07		
cluck	1	1212.638	5073.00	357.85	356.67	9.12	1.33		
cluck	1	1212.638	6024.00	358.44	357.23	9.66	1.51		
cluck	1	1212.638	6993.00	358.99	357.76	10.15	1.69		
cluck	1	1212.638	7077.00	359.04	357.80	10.19	1.71		











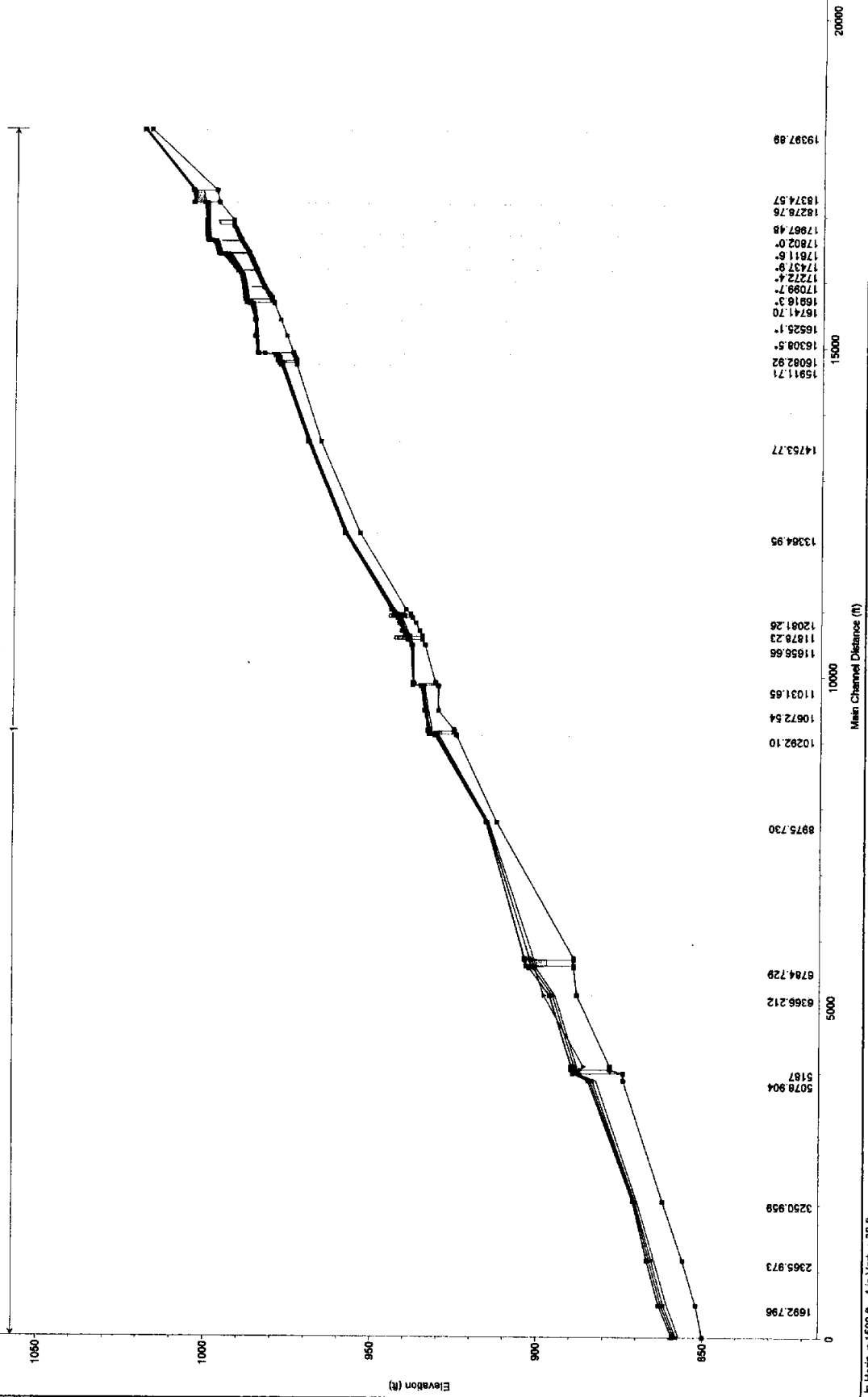
Legend	
WS 100eal	Water Surface Elevation 100
WS 100ak	Water Surface Elevation 100
WS 50eal	Water Surface Elevation 50
WS 25eal	Water Surface Elevation 25
WS 10eal	Water Surface Elevation 10
Ground	Ground

1 in Horiz. = 500 ft  
1 in Vert. = 10 ft



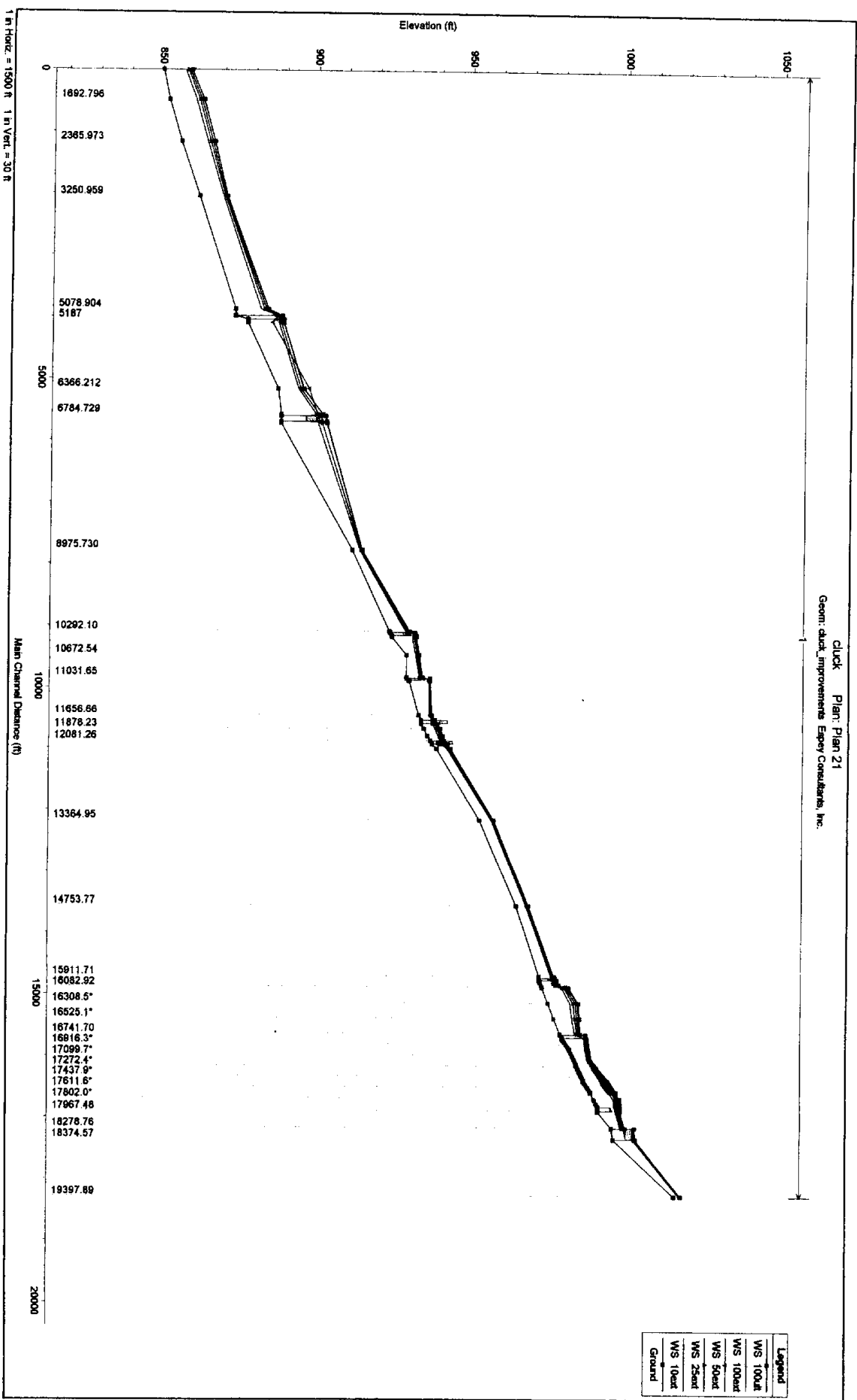
click Plan: Plan 20  
Geom: duct Espey Consultants, Inc.

Legend	
WS 1000ft	→
WS 1000ft	→
WS 500ft	→
WS 250ft	→
WS 100ft	→
Ground	→



1 in Horiz. = 1500 ft 1 in Vert. = 30 ft

Click Plan: Plan 21  
 Geom: duck improvements Epery Consultants, Inc.



**APPENDIX D – COMMENT RESPONSE LETTER**



**TEXAS WATER DEVELOPMENT BOARD**  
Review of the Draft Final Report: Contract No. 2000-483-358  
"Cedar Park Master Drainage Plan"

1. *List of References needed.*

A references section has been added to the report.

2. *Recommend a Summary or Conclusions section.*

A summary has been added as Section 1.4

3. *Table 1---10 yr, 5 min should be 0.034 instead of 0.34.*

Table 1 has been corrected.

4. *The design storms in this analysis uses a rainfall distribution with a 3-hr duration. The report should describe why 3-hr duration was selected.*

Section 2.2, paragraph 1 of the report has been updated to explain why a 3-hr duration storm was used.

5. *We recommend a footnote with Tables 2-2 thru 2-7 to indicate that the peak flow rates are computed from each specific design storm event (and does not necessarily correspond to a statistical 100- yr flood). This is understood if one reads the text, but if someone picked up the table alone it is not necessarily clear.*

A footnote has been added to Tables 2-2 thru 2-7 to indicated that the peak flow rates are computed for each specific design storm.

6. *In Section 4.4, mitigation alternatives have been recommended to relieve "nuisance flooding" and not intended to provide protection for flood events of 5-yr or greater frequency. Describe the damages associated with these high frequency but relatively small flooding events, which can be prevented from these recommended improvement measures. From the City's perspective, do these measures at \$30,000 to \$50,000 result in worthwhile benefits (cost-benefit analysis of proposed alternatives).*

Section 4.4 has been expanded to explain the problems and associated damages that is being caused by the nuisance flooding of this area.

7. *In Section 2, peak flows are computed for existing and ultimate conditions—what went into determination of ultimate conditions? It is not clear if existing or ultimate conditions (or both) were modeled with HEC-RAS (Section 3), so is the FPW 100 Yr floodplain of Figures 3a-3e existing or ultimate conditions (what does FPW stand for??).*

A table has been added to section 2.2.2 to include the impervious cover assumptions that were made for each land use (existing and proposed). The FPW-100 yr floodplain represents the ultimate conditions floodplain with out the associated improvements. A new floodplain has been added to represent the ultimate condition floodplain with the recommended improvements. The FPW notation has been fixed to read FPU, which stand for Floodplain Ultimate. Section 2.2.4 includes an explanation of how the lag time assumptions reflect developed conditions.

8. *Verify that the FPW 100 yr mapped model results include the recommended alternatives described in Section 4.*

A new floodplain has been added to the exhibits which represents the recommended improvements.

9. *Describe how the recommended alternatives were evaluated for effectiveness or compared to other measures not selected (ie. cost-benefit analysis?).*

Discussion of each recommendation has been updated to include explanations of alternative measures considered and why these measures were not recommended (See Section 4.0).

10. *It is not apparent from the discussion, to what level of flood protection do the recommended projects provide (ie. to the 100 yr flood, or lower?) This information is necessary to determine funding eligibility through the Boards' Water Development Fund loan program for proposed mitigation construction activities. (Recommended flood proofing and buyout activities for structures that suffer repetitive flood loss also are eligible for financing through the TWDB, as well as FEMA programs.)*

Updated text in section 4.0 describes what level of flood protection the recommended measures provide. Also the floodplain maps have been updated to show the new 100-yr resulting floodplains.

11. *Only in one spot, Section 4.2, 2<sup>nd</sup> paragraph, is there a mention that cost-benefit analyses were used in assessing potential mitigation measures. A more detailed discussion of the analysis is needed and maybe a tabulation of the overall results of the analysis for at least the recommended measures should be provided.*

Additional text has been added to Section 4 to describe the overall results associated with each recommendation.

12. *For Section 4.0, it seems that by not including an estimate of the cost for acquisition of right-of-way or easements, it could severely bias the assessment of alternatives (in the cost-benefit analysis).*

Cost estimates have been updated to include the cost of easements.

13. *Section 4.1, there is nothing that actually demonstrates the corresponding effects to flood flow or water surface elevation that the recommended measures will result.*

The updated floodplain maps show a new floodplain, which demonstrates the effects of the recommended improvements, and text includes corresponding discussion of the effects

14. *Section 4.2 and 4.6, how many houses are at risk and from which size flood; it is alluded to that these are repetitive loss structures, but the historical flooding discussion never mentions any houses that have actually suffered flood damage. (FEMA-NFIP information notes that there are 4 homes in Cedar Park that meet the FEMA definition of repetitive loss structure-2 or more flood insurance claims in 10 years.)*

*Clarification needed--provide more specific description of flood hazard areas indicated by model results under existing and ultimate conditions for various storm frequencies and compare to historical flooding areas. Suggestion-- Section 1.3 could provide more detail as to specific areas of town subject to flooding, ie homes, intersection, stream crossings and whether this is due to out-of-bank flooding, poor street or lot drainage, undersized culverts, ditches, bridges, etc. Section 3 could discuss problem areas indicated by the models. And then in Section 4 discuss the successful mitigation alternatives as shown by model results for the various frequencies plus the cost-benefit analysis*

Text has been added in a matter similar to the suggestion above to give a better description of problem areas.

