LOMR

DUCK CREEK CHANNEL

LAS VEGAS BLVD. TO LOWER DUCK CREEK DETENTION BASIN

FEMA LETTER OF MAP REVISION APPLICATION

March 2010

prepared for REGIONAL FLOOD CONTROL DISTRICT

prepared by vtn

DUCK CREEK CHANNEL

LAS VEGAS BLVD. TO LOWER DUCK CREEK DETENTION BASIN

FEMA LETTER OF MAP REVISION APPLICATION

March 2010

Prepared for

REGIONAL FLOOD CONTROL DISTRICT

600 South Grand Central Parkway
Las Vegas, Nevada 89106-4511

Prepared by

2727 South Rainbow Boulevard
Las Vegas, Nevada 89146-5148
(702) 247-4020

W.O.#6657

CONSULTING ENGINEERS • PLANNERS • SURVEYORS
PROVIDING QUALITY PROFESSIONAL
SERVICES SINCE 1960

March 17, 2010
W.O.:#6657

Syed Qayum, CFM
LOMR Technical Manager
LOMC Clearinghouse
6730 Santa Barbara Court
Elkridge, MD 21075

Reference: **Case No.:** 09-09-3102P
Community: Clark County, NV
Community No.: 320003

Subject: REQUEST FOR LETTER OF MAP REVISION

Dear Mr. Blanton:

This letter has been prepared to address the January 26, 2010 FEMA response to the LOMR request for the Duck Creek Wash – Las Vegas Boulevard to Lower Duck Creek Detention Basin. Following are the issues listed in the FEMA letter and the steps taken to address each comment.

COMMENT #1
Our review revealed that the model parameters for the structures at cross sections 11510 and 4415 differ from the as-built plans entitled "Existing Culverts As-Builts Fig 2 and Fig 7," prepared by VTN, dated August 20, 2009. Please revise the submitted HEC-RAS models to reflect the correct as built parameters shown on the above-mentioned plans.

RESPONSE:
Culvert size for dual RCP crossing at cross section 11510 has been field verified as (2) 21" RCP. See revised as-built in Appendix C. Analysis and mapping has been revised accordingly. Culvert width data entered for (4) 8'x5' RCB at cross section 4415 has been revised in HEC-RAS model.

COMMENT#2
The downstream reach lengths shown in the submitted hydraulic analysis at Cross Sections 8400, 4200, and -6594.48 do not match the approximate downstream reach lengths shown on the submitted topographic work map entitled "Post Project Work Map," prepared by VTN, dated September 15, 2009. Please make the appropriate changes, or explain why this is not necessary.

RESPONSE:
Downstream reach lengths at cross sections 8400, 4200 and -6594.48 have been revised.

2727 SOUTH RAINBOW BOULEVARD LAS VEGAS, NEVADA 89146-5148
TEL. (702) 873-7550 FAX: 362-2597

COMMENT #3
The base floodplain top widths shown in the post-project hydraulic analysis at cross sections 2008.56, 2100, 5100, 5830, 7235, 10500, 400, -10100, -10154, -10223, -7548, -7610 and -7643 do not match the approximate base floodplain top widths shown on the above-referenced topographic work map. Please provide an explanation for these discrepancies, or make the appropriate changes.

RESPONSE:
The top width at cross section 10500 does not match the mapping because the inundation is not continuous across the cross section, however, the limits of flow are shown correctly and therefore were not revised.

The top widths at cross sections -10100, -10154, -10223, -7548, -7610 and -7643 do not match the mapping because these cross sections were taken at access ramp areas. These access ramps have a negligible affect on the channel hydraulics and were not included in the modeling. However, they were included in the mapping.

For all other cross sections listed, the top width shown in the mapping was revised.

COMMENT #4
Please submit data showing why the Zone A upstream of cross section 3460 of the Unnamed Tributary to Duck Creek South-Channel should be removed or explain why this is unnecessary.

RESPONSE:
Removal of the Zone A upstream of cross section 3460 was explained, reviewed and approved in the issuance of the CLOMR under Case No. 07-09-1205R. In a February 2008 response to a 316-AD letter dated November 6, 2007 new topography was used to develop a better model. The write-up in response to comment No. 2 explained that there were 3 consecutive sections with hydraulic depths <1' and the SFHA were terminated as shown.

COMMENT #5
From our technical review it appears as though the base floodplain delineation is not mapped correctly between Cross Sections 3900 and 4200, 2470 and 2700, and 5770 and 5830.

RESPONSE:
Floodplain delineation mapping has been revised for these reaches.

COMMENT #6
Many of the modeled structures do not follow the culvert/bridge modeling as described in the HEC-RAS Technical Reference Manual, prepared by the U.S. Army Corps of Engineers, dated November, 2002. For example, the manual recommends the use of ineffective flow areas upstream and downstream of the culvert at cross section 11510. Please revise the model to incorporate the manual's modeling recommendations.

RESPONSE:
Modeled structures at cross sections 11510, 10075, 8150, 7182.5, 5800, 5462.5, 4415, and 1700 have been revised to follow recommendations in the HEC-RAS Technical Reference Manual, including the use of ineffective flow areas upstream and downstream of the culvert/bridge.

COMMENT #7
Our review revealed that the HEC-RAS levee option was used in the submitted post-project conditions hydraulic analysis. Please remove the levee option for this model and revise the above referenced topographic work map accordingly.

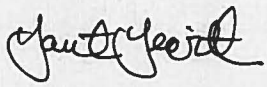
RESPONSE:
Levee option was used at cross section 9000 to prevent HEC-RAS from showing flow in an adjacent depression that is continuously blocked from the main wash by higher natural ground in between. Levee option has been removed and cross section trimmed to model flow in the correct part of the section.

COMMENT #8
Paragraph 65.6(a)(2) of the National Flood Insurance Program (NFIP) regulations states that to avoid discontinuities between revise4 and unrevised flood data, hydraulic analyses must have a logical transition between revised elevations of the base (l-percent-annual-chance) flood and those developed previously for areas not affected by the revision. Our review indicates that the post-project hydraulic analysis does not tie into the effective hydraulic analysis at the downstream ends of Duck Creek and Duck Creek South Tributary and at the upstream ends of Duck Creek Tributary and Duck Creek Please provide a revised post-project hydraulic analysis for these creeks that tie into the effective hydraulic analysis within 0.5 foot, or within 0.0 feet if practical.

RESPONSE:
Per email correspondence (see Appendix D) on February 25th, 2010, upstream and downstream tie-ins are acceptable at the upstream of Duck Creek and Duck Creek South Channel and at the downstream of Duck Creek South Channel. The boundary condition at the downstream of Duck Creek has been revised to a known water surface elevation of 2202 ft per FIRM Map No. 32003C2568E dated September 27, 2002. Addition of a known water surface elevation did not result in any changes to the mapping due to the flow at the downstream being contained in a culvert at a water surface elevation less than natural ground.

Revised maps and hydraulic modeling results have been included with this letter in Appendices A and B. If you have any questions or require additional information, please feel free to contact me.

Sincerely,



Lant Leavitt, P.E., CFM
VTN Nevada
2727 South Rainbow Boulevard
Las Vegas, NV 89146
lantl@vtnnv.com
(702) 253-2389

DUCK CREEK CHANNEL

LAS VEGAS BLVD. TO
LOWER DUCK CREEK DETENTION BASIN

FEMA LETTER OF MAP REVISION APPLICATION

January 2010
FEMA Response
to LOMR Request

NATIONAL FLOOD INSURANCE PROGRAM

FEMA PRODUCTION AND TECHNICAL SERVICES CONTRACTOR

mtg 2/17/10 LOMR

RECEIVED
VTN Nevada - Public Works
FEB 01 2010
16057 File: 114-CLOMR/10
Entered Date:
LL, KG, JG

January 26, 2010

Mr. Lant Leavitt, P.E., CFM
VTN Nevada
2727 South Rainbow Blvd.
Las Vegas, NV 89146

IN REPLY REFER TO:
Case No.: 09-09-3102P
Community: Clark County, NV
Community No.: 320003

316-AD

Dear Mr. Leavitt:

This responds to your request dated September 17, 2009, that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issue a revision to the Flood Insurance Rate Map (FIRM) for Clark County, Nevada and Incorporated Areas. Pertinent information about the request is listed below.

Identifier:	Duck Creek Channel – Las Vegas Blvd Lower Duck Creek Detention Basin
Flooding Source:	Duck Creek, Duck Creek South Channel, Duck Creek Tributary, and Unnamed Tributary to Duck Creek South Channel
FIRM Panel(s) Affected:	32003C2568 E and 32003C2910 E

The data required to complete our review, which must be submitted within 90 days of the date of this letter, are listed on the enclosed summary. (LOMR)

If we do not receive the required data within 90 days, we will suspend our processing of your request. Any data submitted after 90 days will be treated as an original submittal and will be subject to all submittal/payment procedures, including the flat review and processing fee for requests of this type established by the current fee schedule. A copy of the notice summarizing the current fee schedule, which was published in the *Federal Register,* is enclosed for your information.

FEMA receives a very large volume of requests and cannot maintain inactive requests for an indefinite period of time. Therefore, we are unable to grant extensions for the submission of required data/fee for revision requests. If a requester is informed by letter that additional data are required to complete our review of a request, the data/fee **must** be submitted within 90 days of the date of the letter. Any fees already paid will be forfeited for any request for which the requested data are not received within 90 days.

If you have general questions about your request, FEMA policy, or the National Flood Insurance Program, please call the FEMA Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627). If you have specific questions concerning your request, please contact your case reviewer, Mr. James Lindsay, by e-mail at JGLindsay@mbakercorp.com or by telephone at 720-514-1122, or the Revisions Coordinator for your request, Mr. Joseph Kuechenmeister, CFM, at jkuechenmeister@mbakercorp.com or at (720) 479-3181.

Sincerely,

Syed Qayum

Syed Qayum, CFM
LOMR Technical Manager
BakerAECOM

Enclosures

cc: Mr. W. Layne Weber, P.E., CFM
Principal Engineer
Civil Engineering Division
Department of Development Services
Clark County

Mr. Kevin Eubanks, P.E., CFM
Assistant General Manager
Clark County Regional Flood Control District

NATIONAL FLOOD INSURANCE PROGRAM

FEMA PRODUCTION AND TECHNICAL SERVICES CONTRACTOR

Summary of Additional Data Required to Support a
Letter of Map Revision (LOMR)

Case No.: 09-09-3102P

Requester: Mr. Lant Leavitt, P.E., CFM

Community: Clark County, NV

Community No.: 320003

The issues listed below must be addressed before we can continue the review of your request.

1. Our review revealed that the model parameters for the structures at cross sections 11510 and 4415 differ from the as-built plans entitled "Existing Culverts As-Builts Fig 2 and Fig 7," prepared by VTN, dated August 20, 2009. Please revise the submitted HEC-RAS models to reflect the correct as built parameters shown on the above-mentioned plans.

2. The downstream reach lengths shown in the submitted hydraulic analysis at Cross Sections 8400, 4200, and -6594.48 do not match the approximate downstream reach lengths shown on the submitted topographic work map entitled "Post Project Work Map," prepared by VTN, dated September 15, 2009. Please make the appropriate changes, or explain why this is not necessary.

3. The base floodplain top widths shown in the post-project hydraulic analysis at cross sections 2008.56, 2100, 5100, 5830, 7235, 10500, 400, -10100, -10154, -10223, -7548, -7610 and -7643 do not match the approximate base floodplain top widths shown on the above-referenced topographic work map. Please provide an explanation for these discrepancies, or make the appropriate changes.

4. Please submit data showing why the Zone A upstream of cross section 3460 of the Unnamed Tributary to Duck Creek South Channel should be removed or explain why this is unnecessary.

5. From our technical review it appears as though the base floodplain delineation is not mapped correctly between Cross Sections 3900 and 4200, 2470 and 2700, and 5770 and 5830.

6. Many of the modeled structures do not follow the culvert/bridge modeling as described in the HEC-RAS Technical Reference Manual, prepared by the U.S. Army Corps of Engineers, dated November, 2002. For example, the manual recommends the use of ineffective flow areas upstream and downstream of the culvert at cross section 11510. Please revise the model to incorporate the manual's modeling recommendations.

7. Our review revealed that the HEC-RAS levee option was used in the submitted post-project conditions hydraulic analysis. Please remove the levee option for this model and revise the above referenced topographic work map accordingly.

BakerAECOM, under contract with the FEDERAL EMERGENCY MANAGEMENT AGENCY, is a Production and Technical Services Contractor for the National Flood Insurance Program

8. Paragraph 65.6(a)(2) of the National Flood Insurance Program (NFIP) regulations states that to avoid discontinuities between revised and unrevised flood data, hydraulic analyses must have a logical transition between revised elevations of the base (1-percent-annual-chance) flood and those developed previously for areas not affected by the revision. Our review indicates that the post-project hydraulic analysis does not tie into the effective hydraulic analysis at the downstream ends of Duck Creek and Duck Creek South Tributary and at the upstream ends of Duck Creek Tributary and Duck Creek. Please provide a revised post-project hydraulic analysis for these creeks that tie into the effective hydraulic analysis within 0.5 foot, or within 0.0 feet if practical.

Please send the required data and/or fee directly to us at the address shown at the bottom of this page. For identification purposes, please include the case number referenced above on all correspondence.

DUCK CREEK CHANNEL

LAS VEGAS BLVD. TO
LOWER DUCK CREEK DETENTION BASIN

FEMA LETTER OF MAP REVISION APPLICATION

APPENDIX A

Maps

DUCK CREEK CHANNEL

LAS VEGAS BLVD. TO
LOWER DUCK CREEK DETENTION BASIN

FEMA LETTER OF MAP REVISION APPLICATION

APPENDIX A.1

Post-Project Work Map

LEGEND

- POST PROJECT ZONE AE FLOODPLAIN
- POST PROJECT ZONE AE FLOODWAY
- 100-YR FLOOD CONTAINMENT IN CULVERT
- POST PROJECT ZONE A FLOODPLAIN
- EXISTING FLOOD ZONE
- AREA REMOVED FROM EXISTING FLOOD ZONE
- EXISTING FLOODWAY TO REMAIN
- EXISTING SUBBASIN BOUNDARY
- D4B-4 SUBBASIN NAME

NORTH

GRAPHIC SCALE

250 0 125 250 500 1000

(IN FEET)

1 inch = 250 ft.

(VERIFY SCALE – PLANS MAY HAVE BEEN REDUCED)

LIMITS OF STUDY

LAS VEGAS BLVD.

D4B-1

D4B-2

D4B-3

D4B-4

D4B-5

HAVEN ST.

GILESPIE ST.

LA CIENEGA ST.

PLACID ST.

FAIRFIELD AVE.

BERMUDA RD.

E. STARR AVE.

CHARTAN AVE.

SIDDALL AVE.

ERIE AVE.

E. LEVI AVE.

E. CONN AVE.

E. CACTUS AVE.

E. FRIAS AVE.

E. PYLE AVE.

E. RICHMAR AVE.

IRVIN AVE.

E. SILVERADO RANCH BLVD.

"WEST BRANCH"

"EAST"

"EAST LOWER"

"EAST WEST BRANCH"

"EAST EAST BRANCH"

204 CFS

266 CFS

HEAVY RIPRAP

10' BOTTOM 2:1 SS, 7'-8" HIGH CONCRETE

2-18'X4' ARCH CULVERTS

13' CONCRETE BASE, 2:1 RIPRAP SS

12' BOTTOM 2:1 SS, ONE RIPRAP ONE CONCRETE

4-8'x5' RCBs

2-10'x4' RCBs

3-8'x4' RCBs

30' BASE 2:1 SS, CONCRETE

2-18'x4' RCBs

7'X3' RCB

4x4 RCB

2-21" RCPs

18-4x3 RCBs

10x4 RCB

SEE DUCK CREEK LOMR LIMITS OF STUDY

PROFESSIONAL ENGINEER-STATE OF NEVADA
LANT V. LEAVITT
EXP. 12/31/08
CIVIL
No. 18287

vtn nevada

DUCK CREEK
LOMR
POST PROJECT WORK MAP

Fig. 1

DUCK CREEK CHANNEL

LAS VEGAS BLVD. TO
LOWER DUCK CREEK DETENTION BASIN

FEMA LETTER OF MAP REVISION APPLICATION

APPENDIX **A.2**

Annotated
Flood Zone Map

LEGEND

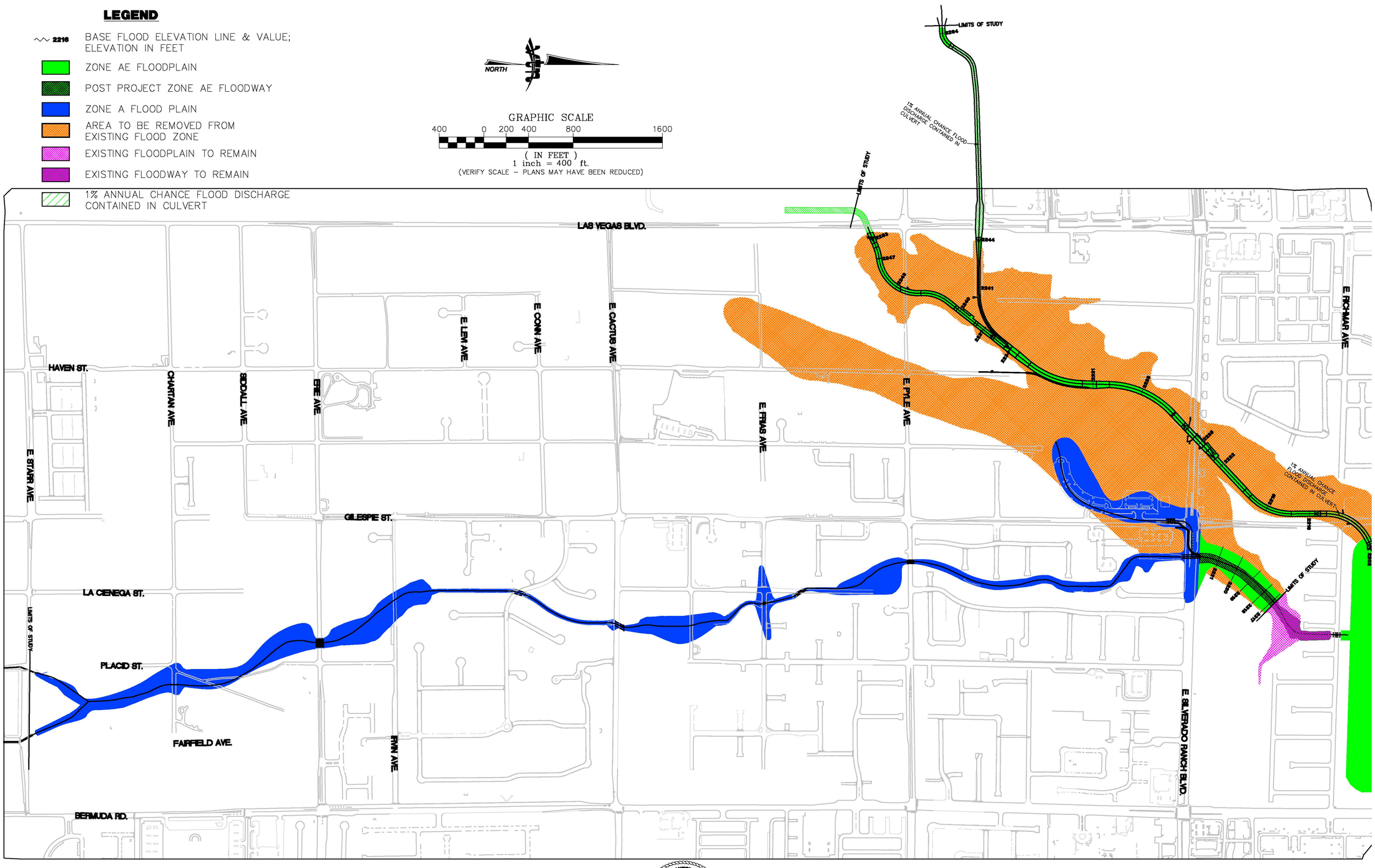
- 2216 — BASE FLOOD ELEVATION LINE & VALUE; ELEVATION IN FEET
- ZONE AE FLOODPLAIN
- POST PROJECT ZONE AE FLOODWAY
- ZONE A FLOOD PLAIN
- AREA TO BE REMOVED FROM EXISTING FLOOD ZONE
- EXISTING FLOODPLAIN TO REMAIN
- EXISTING FLOODWAY TO REMAIN
- 1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CULVERT

NORTH

GRAPHIC SCALE

400 0 200 400 800 1600

(IN FEET)
1 inch = 400 ft.
(VERIFY SCALE – PLANS MAY HAVE BEEN REDUCED)



PANEL 2910 OF 4090

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY, UNINCORPORATED AREAS	320003	2910	E
HENDERSON, CITY OF	320005	2910	E

MAP NUMBER 32003C2910E

PANEL 2568 OF 4090

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY, UNINCORPORATED AREAS	320003	2568	E

MAP NUMBER 32003C2568E

PROFESSIONAL ENGINEER-STATE OF NEVADA
LANT K. LEAVITT
EXP. 12/31/09
CIVIL
No. 18257

vtn nevada

DUCK CREEK
LOMR
ANNOTATED FLOOD ZONE MAP

Fig. 2

DUCK CREEK CHANNEL

LAS VEGAS BLVD. TO
LOWER DUCK CREEK DETENTION BASIN

FEMA LETTER OF MAP REVISION APPLICATION

APPENDIX B

Post Project
HEC-RAS Output

DUCK CREEK CHANNEL

LAS VEGAS BLVD. TO
LOWER DUCK CREEK DETENTION BASIN

FEMA LETTER OF MAP REVISION APPLICATION

APPENDIX **B.1**

Duck Creek Channel

HEC-RAS PROFILE OUTPUT TABLE

River	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
North box	-4947.21	2028	2261.44	2265.24	2265.24	2267.16	0.002585	11.12	182.38	48.00	1.01
North box	-4951.89	2028	2261.41	2265.05	2265.21	2267.14	0.002961	11.61	174.70	48.00	1.07
North box	-4967.12	2028	2261.30	2264.78	2265.10	2267.07	0.003419	12.15	166.93	48.00	1.15
North box	-4995.19	2028	2261.09	2264.40	2264.89	2266.93	0.004003	12.77	158.82	48.00	1.24
North box	-5039.61	2028	2260.77	2263.92	2264.57	2266.71	0.004666	13.40	151.34	48.00	1.33
North box	-5055.91	2028	2260.66	2264.11	2264.55	2266.62	0.004763	12.72	159.48	45.49	1.21
North box	-5105.91	2028	2259.40	2262.15	2263.32	2266.14	0.009708	16.02	126.60	44.91	1.70
North box	-5133.42	2028	2258.88	2261.52	2262.80	2265.83	0.010935	16.65	121.81	45.00	1.80
North box	-5168.74	2028	2258.20	2260.75	2262.12	2265.39	0.012262	17.28	117.38	45.07	1.91
North box	-5201.46	2028	2257.58	2260.06	2261.51	2264.95	0.013307	17.74	114.32	45.12	1.98
North box	-5231.46	2028	2257.00	2260.18	2261.37	2264.43	0.009590	16.54	122.61	36.99	1.64
North box	-5261.86	2028	2256.42	2259.47	2260.79	2264.07	0.010840	17.23	117.72	37.13	1.74
North box	-5301.48	2028	2255.66	2258.58	2260.00	2263.58	0.012269	17.95	112.99	37.26	1.85
North box	-5352.52	2028	2254.69	2257.50	2259.06	2262.89	0.013729	18.63	108.87	37.37	1.96
North box	-5356.13	2028	2254.62	2257.42	2258.96	2262.83	0.013817	18.67	108.64	37.38	1.97
North box	-5386.13	2028	2254.05	2256.81	2258.42	2262.39	0.014479	18.96	106.98	37.42	2.01
North box	-5515.9	2028	2253.65	2258.88	2258.02	2260.56	0.002548	10.41	194.78	32.19	0.80
North box	-5665.69	2028	2253.33	2257.67	2257.67	2260.02	0.004019	12.30	164.81	35.33	1.04
North box	-5682.16	2028	2253.24	2257.45	2257.61	2259.94	0.004337	12.65	160.38	35.77	1.09
North box	-5764.87	2028	2252.31	2255.79	2256.68	2259.36	0.007413	15.18	133.64	36.69	1.43
North box	-5895.57	2028	2250.60	2253.70	2254.97	2258.14	0.010269	16.92	119.85	37.07	1.69
North box	-5932.72	2028	2250.40	2253.70	2254.77	2257.65	0.008619	15.96	127.06	36.87	1.55
North box	-6682.72	2028	2245.25	2249.02	2249.62	2252.09	0.005900	14.05	144.33	36.39	1.28
North box	-6727.66	2028	2244.26	2247.46	2248.63	2251.64	0.009355	16.40	123.63	36.96	1.61
North box	-6784.58	2028	2243.00	2245.91	2247.37	2250.94	0.012390	18.01	112.62	37.27	1.86
North box	-6802.72	2028	2242.60	2245.45	2246.94	2250.69	0.013160	18.37	110.40	37.33	1.92
North box	-6839.34	2028	2242.49	2244.88	2246.41	2250.16	0.015581	18.44	110.00	43.90	2.10
North box	-6980.72	2028	2241.91	2245.11	2245.80	2248.12	0.006570	13.94	145.52	42.60	1.37
North box	-7001.77	2028	2241.70	2245.27	2245.61	2247.76	0.004989	12.68	159.98	41.69	1.18
North box	-7018.94	2028	2241.28	2244.47	2245.31	2247.60	0.005542	14.20	142.80	47.88	1.45
North box	-7053.89	2028	2240.43	2243.90	2244.83	2247.41	0.005741	15.03	134.92	41.54	1.47
North box	-7073.89	2028	2239.95	2243.46	2244.53	2247.29	0.006215	15.70	129.14	39.08	1.52
North box	-7120.03	2028	2238.83	2242.65	2243.86	2246.99	0.006559	16.73	121.24	33.36	1.55
North box	-7170.05	2028	2237.61	2242.13	2243.33	2246.68	0.005996	17.11	118.52	27.16	1.44
North box	-7211.77	2028	2236.60	2242.41	2243.11	2246.47	0.004523	16.17	125.45	22.00	1.19
North box	-7213.95	2028	2236.59	2242.48	2243.12	2246.46	0.004397	16.02	126.60	22.00	1.18
North box	-7260.56	2028	2236.35	2242.10	2242.86	2246.25	0.004668	16.34	124.08	22.00	1.21
North box	-7323.2	2028	2236.02	2241.69	2242.53	2245.96	0.004862	16.58	122.34	22.00	1.24
North box	-7380	2028	2235.72	2241.35	2242.23	2245.68	0.004975	16.71	121.37	22.00	1.25

HEC-RAS PROFILE OUTPUT TABLE

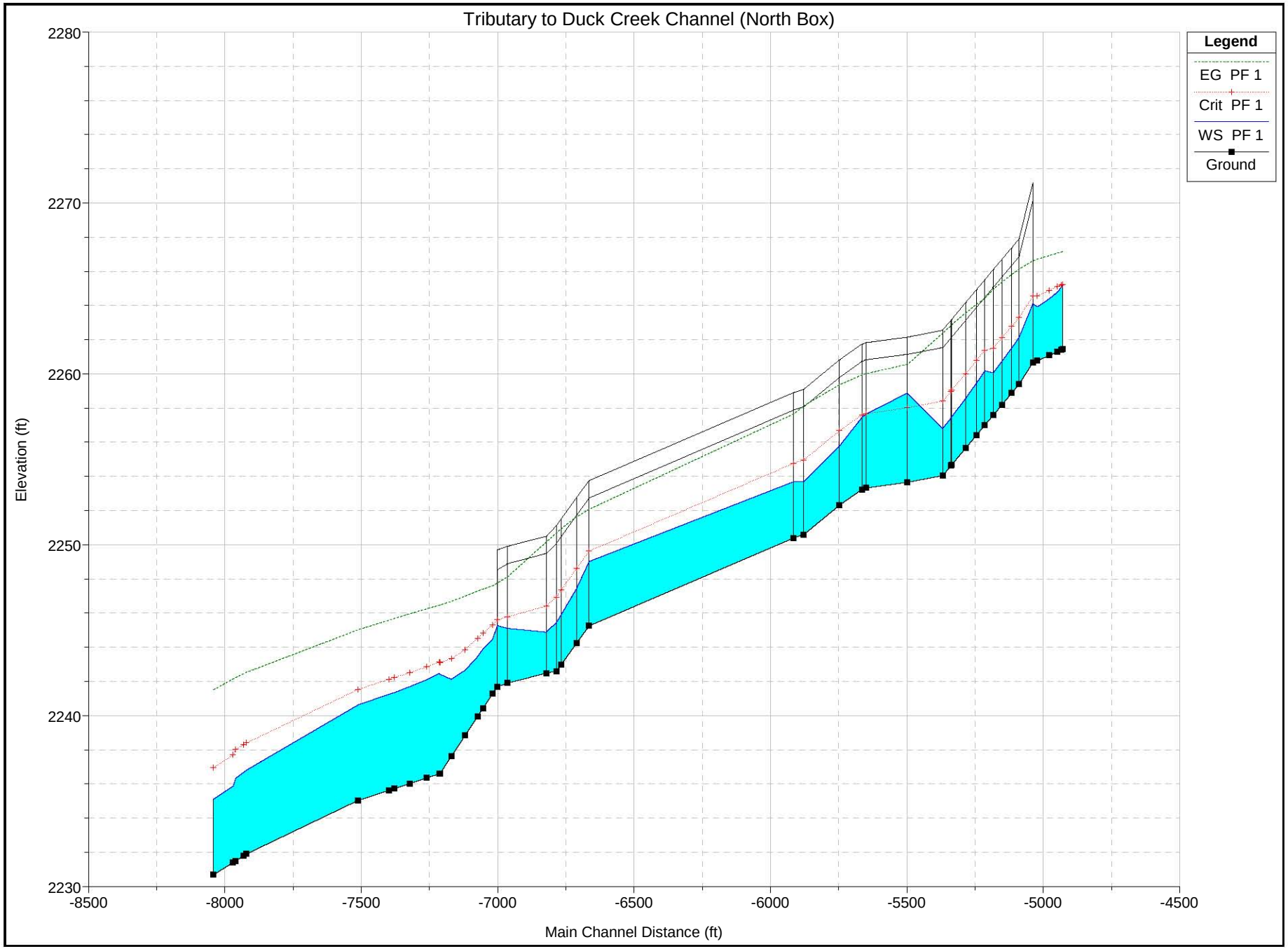
River	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
North box	-7400	2028	2235.62	2241.25	2242.13	2245.58	0.004971	16.71	121.40	22.00	1.25
North box	-7511.22	2028	2235.04	2240.63	2241.55	2245.03	0.005081	16.83	120.49	22.00	1.27
North box	-7920.83	2028	2231.90	2236.82	2238.40	2242.53	0.007431	19.18	105.71	22.00	1.54
North box	-7930.76	2028	2231.80	2236.69	2238.31	2242.46	0.007532	19.27	105.23	22.00	1.55
North box	-7960.42	2028	2231.50	2236.35	2238.01	2242.23	0.007757	19.47	104.18	22.00	1.58
North box	-7970.42	2028	2231.40	2235.87	2237.69	2242.15	0.008789	20.11	100.84	23.17	1.70
North box	-8042.05	2028	2230.68	2235.11	2236.97	2241.51	0.009044	20.31	99.87	23.17	1.72
duck creek2	-8042.05	4826	2230.68	2234.77	2236.49	2240.64	0.007500	19.43	248.39	66.00	1.76
duck creek2	-8092.05	4826	2230.19	2234.23	2236.00	2240.25	0.007822	19.69	245.15	66.00	1.80
duck creek2	-8177.05	4826	2229.35	2233.33	2235.17	2239.56	0.008268	20.03	240.93	66.00	1.85
duck creek2	-8216.49	4826	2228.97	2233.19	2234.98	2239.25	0.007482	19.76	244.25	62.56	1.76
duck creek2	-8314.85	4826	2228.00	2232.95	2234.53	2238.61	0.005799	19.09	252.86	54.00	1.55
duck creek2	-8335.65	4826	2227.92	2232.90	2234.45	2238.49	0.005694	18.97	254.34	54.00	1.54
duck creek2	-8452.33	4826	2227.45	2232.56	2233.98	2237.86	0.005236	18.47	261.25	54.00	1.48
duck creek2	-8613.65	4826	2226.81	2232.07	2233.34	2237.06	0.004765	17.92	269.24	54.00	1.41
duck creek2	-8797.97	4826	2226.07	2231.44	2232.60	2236.21	0.004441	17.52	275.38	54.00	1.37
duck creek2	-8828.39	4826	2225.95	2231.34	2232.48	2236.08	0.004398	17.47	276.25	54.00	1.36
duck creek2	-8954.39	4826	2225.44	2230.87	2231.97	2235.53	0.004286	17.33	278.54	54.00	1.34
duck creek2	-9069.7	4826	2224.02	2228.82	2230.55	2234.86	0.006427	19.72	244.71	54.00	1.63
duck creek2	-9330.7	4826	2223.06	2228.17	2229.59	2233.47	0.005232	18.47	261.31	54.00	1.48
duck creek2	-9404.95	4826	2222.76	2227.93	2229.29	2233.09	0.005018	18.22	264.82	54.00	1.45
duck creek2	-9414.95	4826	2222.72	2227.90	2229.25	2233.04	0.004990	18.19	265.29	54.00	1.45
duck creek2	-9722.78	4826	2221.51	2226.90	2228.04	2231.63	0.004380	17.45	276.62	54.00	1.36
duck creek2	-9724.14	4826	2221.50	2226.89	2228.03	2231.62	0.004394	17.46	276.33	54.00	1.36
duck creek2	-9734.14	4826	2221.43	2226.78	2227.96	2231.58	0.004483	17.58	274.56	54.00	1.37
duck creek2	-9761.58	4826	2221.23	2226.51	2227.76	2231.45	0.004695	17.84	270.53	54.00	1.40
duck creek2	-9871.58	4826	2220.46	2225.55	2226.99	2230.89	0.005293	18.54	260.35	54.00	1.49
duck creek2	-9922.82	4826	2220.10	2225.82	2226.94	2230.66	0.004239	17.64	273.52	50.00	1.33
duck creek2	-10032.2	4826	2219.09	2224.50	2225.93	2229.94	0.005097	18.73	257.73	50.00	1.45
duck creek2	-10100.1	4826	2218.61	2223.95	2225.48	2229.58	0.005376	19.06	253.27	50.00	1.49
duck creek2	-10153.8	4826	2218.24	2223.48	2225.08	2229.29	0.005631	19.34	249.59	50.00	1.53
duck creek2	-10223.1	4826	2217.77	2222.96	2224.61	2228.89	0.005811	19.53	247.07	50.00	1.55
duck creek2	-10292.1	4826	2217.29	2222.43	2224.13	2228.47	0.005989	19.72	244.69	50.00	1.57
duck creek2	-10361.1	4826	2216.82	2221.93	2223.66	2228.05	0.006119	19.86	243.01	50.00	1.59
duck creek2	-10477.9	4826	2216.22	2221.29	2223.06	2227.51	0.006271	20.02	241.10	50.00	1.61
duck creek2	-10529.1	4826	2215.87	2220.92	2222.71	2227.20	0.006352	20.10	240.11	50.00	1.62
duck creek2	-10668.4	4826	2214.90	2219.91	2221.74	2226.29	0.006523	20.27	238.07	50.00	1.64
duck creek2	-10743.4	4826	2214.38	2220.32	2221.72	2225.83	0.004753	18.84	256.14	45.00	1.39
duck creek2	-10906.8	4826	2213.26	2218.93	2220.60	2225.01	0.005519	19.78	243.96	45.00	1.50

HEC-RAS PROFILE OUTPUT TABLE

River	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
duck creek2	-11154	4826	2211.55	2217.03	2218.89	2223.56	0.006161	20.50	235.38	45.00	1.58
duck creek2	-11311.5	4826	2210.48	2215.90	2217.82	2222.58	0.006389	20.75	232.62	45.00	1.61
duck creek2	-11367.2	4826	2210.09	2215.49	2217.43	2222.23	0.006482	20.84	231.54	45.00	1.62
duck creek2	-11417.2	4826	2207.26	2211.54	2215.51	2221.75	0.015618	25.65	188.17	44.00	2.19
duck creek2	-11470.9	4826	2204.22	2208.05	2212.47	2220.77	0.021663	28.62	168.64	44.00	2.58
duck creek2	-11625.6	4826	2195.48	2198.72	2203.73	2216.52	0.035993	33.86	142.55	44.00	3.31
duck creek2	-11745	4826	2194.82	2198.44	2203.72	2212.71	0.025767	30.32	159.19	44.00	2.81
duck creek2	-11952.6	4826	2193.72	2197.93	2201.97	2208.49	0.016413	26.08	185.06	44.00	2.24
duck creek	-4414.11	3135	2259.43	2264.76	2264.50	2267.52	0.003984	13.34	234.97	36.15	1.02
duck creek	-4743.42	3135	2258.11	2263.41	2263.10	2266.20	0.004029	13.40	233.91	36.25	1.03
duck creek	-5163.42	3135	2256.43	2261.82	2261.52	2264.54	0.003897	13.22	237.16	35.63	1.00
duck creek	-5322.84	3135	2255.79	2260.78	2260.78	2263.87	0.004604	14.11	222.14	37.99	1.11
duck creek	-5375.42	3135	2254.11	2257.61	2259.10	2263.51	0.011474	19.49	160.86	43.83	1.84
duck creek	-5563.42	3135	2253.36	2257.50	2258.35	2261.81	0.007268	16.65	188.27	41.64	1.44
duck creek	-5963.42	3135	2251.76	2257.14	2256.75	2259.87	0.003910	13.24	236.80	35.72	1.01
duck creek	-6096.99	3135	2251.23	2256.23	2256.22	2259.31	0.004569	14.07	222.79	37.90	1.11
duck creek	-6240.52	3135	2250.58	2255.68	2255.57	2258.66	0.004389	13.86	226.26	37.39	1.08
duck creek	-6268.97	3135	2250.45	2255.89	2255.55	2258.54	0.003729	13.06	240.09	36.22	0.99
duck creek	-6318.97	3135	2250.23	2255.29	2255.29	2258.34	0.004563	14.01	223.81	36.87	1.10
duck creek	-6354.38	3135	2250.08	2254.93	2255.07	2258.17	0.004894	14.45	217.02	38.72	1.16
duck creek	-6359.92	3135	2250.06	2254.91	2255.15	2258.15	0.004877	14.44	217.17	38.83	1.15
duck creek	-6391.98	3135	2249.85	2254.53	2254.94	2257.98	0.005303	14.90	210.40	39.77	1.21
duck creek	-6402.45	3135	2249.34	2253.29	2254.60	2257.93	0.006344	17.29	181.35	49.00	1.58
duck creek	-6452.91	3135	2246.93	2250.14	2252.19	2257.36	0.012785	21.56	145.41	49.00	2.21
duck creek	-6492.45	3135	2244.98	2248.17	2250.53	2256.74	0.015399	23.50	133.42	45.00	2.40
duck creek	-6594.48	3135	2243.70	2246.95	2249.25	2255.20	0.014505	23.06	135.96	45.00	2.34
duck creek	-6631.75	3135	2243.19	2246.44	2248.74	2254.66	0.014405	23.01	136.26	45.00	2.33
duck creek	-6794.22	3135	2241.10	2244.40	2246.65	2252.38	0.013733	22.66	138.32	45.00	2.28
duck creek	-6904.94	3135	2239.68	2242.99	2245.20	2250.87	0.013479	22.53	139.16	45.00	2.26
duck creek	-6922	3135	2239.47	2242.87	2245.06	2250.62	0.015283	22.35	140.25	44.17	2.21
duck creek	-6942.61	3135	2239.36	2242.81	2244.98	2250.31	0.015081	21.97	142.66	44.17	2.15
duck creek	-7036.67	3135	2238.88	2242.47	2244.41	2249.13	0.010339	20.72	151.30	45.00	1.99
duck creek	-7056.34	3135	2238.78	2242.40	2244.31	2248.94	0.010031	20.52	152.76	45.00	1.96
duck creek	-7131.35	3135	2238.41	2242.16	2243.94	2248.23	0.008925	19.78	158.52	45.00	1.86
duck creek	-7357.19	3135	2237.28	2241.36	2242.83	2246.44	0.006741	18.09	173.33	45.00	1.62
duck creek	-7391.14	3135	2237.10	2241.20	2242.63	2246.22	0.006602	17.97	174.48	45.00	1.61
duck creek	-7416.14	3135	2236.86	2241.38	2242.66	2246.07	0.005580	17.37	180.43	42.00	1.48
duck creek	-7434.81	3135	2236.67	2241.13	2242.45	2245.96	0.005839	17.63	177.82	42.00	1.51
duck creek	-7500	3135	2236.03	2240.31	2241.79	2245.53	0.006600	18.33	170.99	42.00	1.60

HEC-RAS PROFILE OUTPUT TABLE

River	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
duck creek	-7515.42	3135	2235.88	2240.13	2241.65	2245.42	0.006741	18.46	169.84	42.00	1.62
duck creek	-7547.84	3135	2235.56	2239.76	2241.33	2245.20	0.007047	18.72	167.44	42.00	1.65
duck creek	-7610	3135	2234.94	2239.05	2240.70	2244.75	0.007574	19.16	163.62	42.00	1.71
duck creek	-7642.66	3135	2234.62	2238.69	2240.39	2244.50	0.007790	19.33	162.15	42.00	1.73
duck creek	-7700	3135	2234.06	2238.08	2239.82	2244.04	0.008115	19.59	160.04	42.00	1.77
duck creek	-7725	3135	2233.81	2237.81	2239.58	2243.83	0.008246	19.69	159.22	42.00	1.78
duck creek	-7757.55	3135	2233.49	2237.47	2239.25	2243.56	0.008392	19.80	158.33	42.00	1.80
duck creek	-7782.67	3135	2233.24	2237.20	2239.00	2243.34	0.008507	19.89	157.64	42.00	1.81
duck creek	-7891.36	3135	2232.17	2236.08	2237.93	2242.40	0.008890	20.17	155.44	42.00	1.85
duck creek	-7900	3135	2232.09	2236.00	2237.86	2242.32	0.008900	20.18	155.39	42.00	1.85
duck creek	-7920	3135	2231.89	2235.79	2237.65	2242.15	0.008979	20.23	154.95	42.00	1.86
duck creek	-7960.42	3135	2231.49	2235.38	2237.26	2241.78	0.009085	20.31	154.37	42.00	1.87
duck creek	-7970.42	3135	2231.39	2235.27	2237.17	2241.69	0.009116	20.33	154.20	42.00	1.87
duck creek	-8019.96	3135	2230.91	2234.78	2236.69	2241.25	0.009225	20.41	153.62	42.00	1.88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Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Elevation (ft)
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2270
2260
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2230
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-6500
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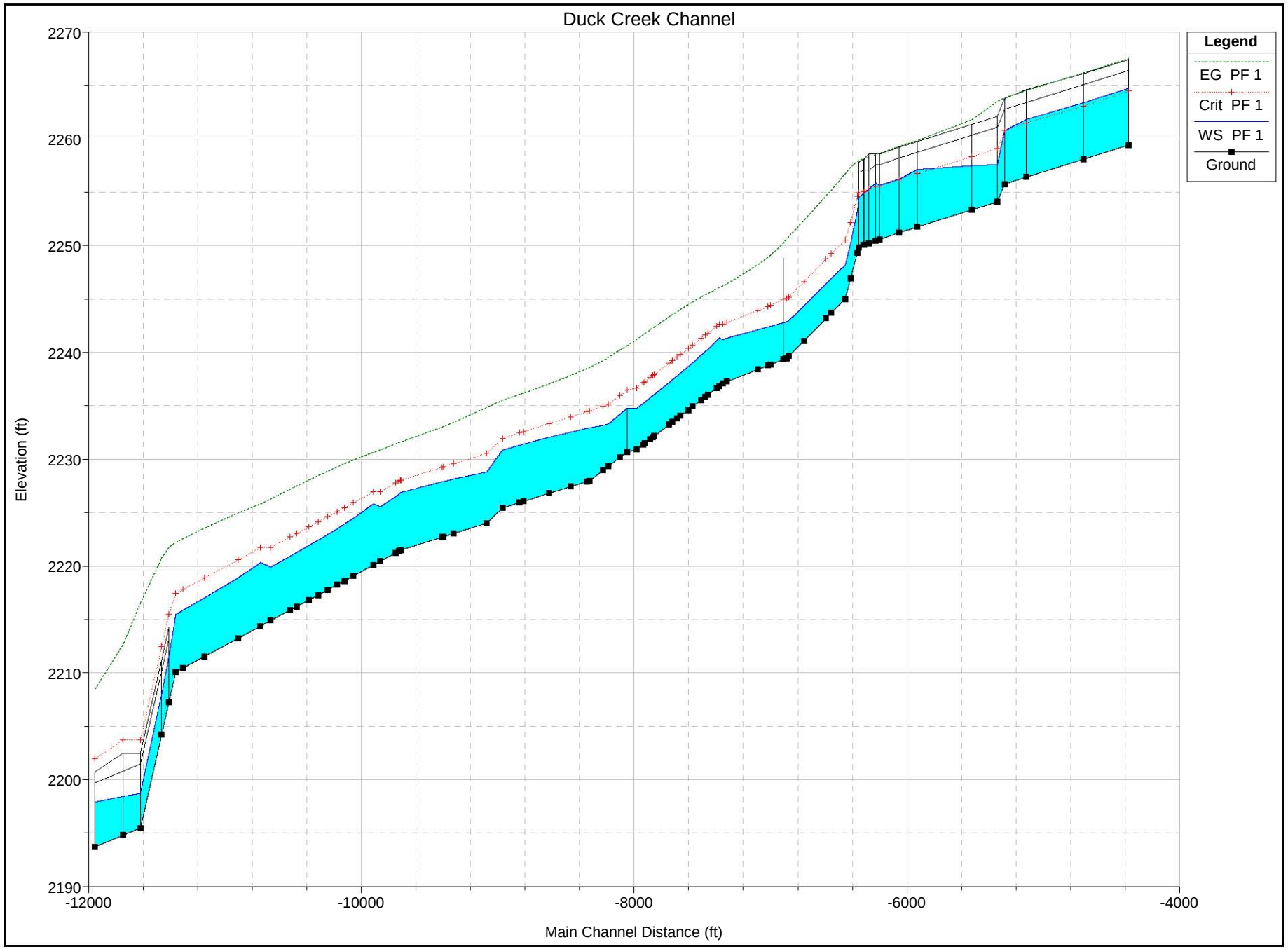
-5500
-5000
-4500
Main Channel Distance (ft)


Duck Creek Channel
Legend
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Crit PF 1
WS PF 1
Ground
Elevation (ft)
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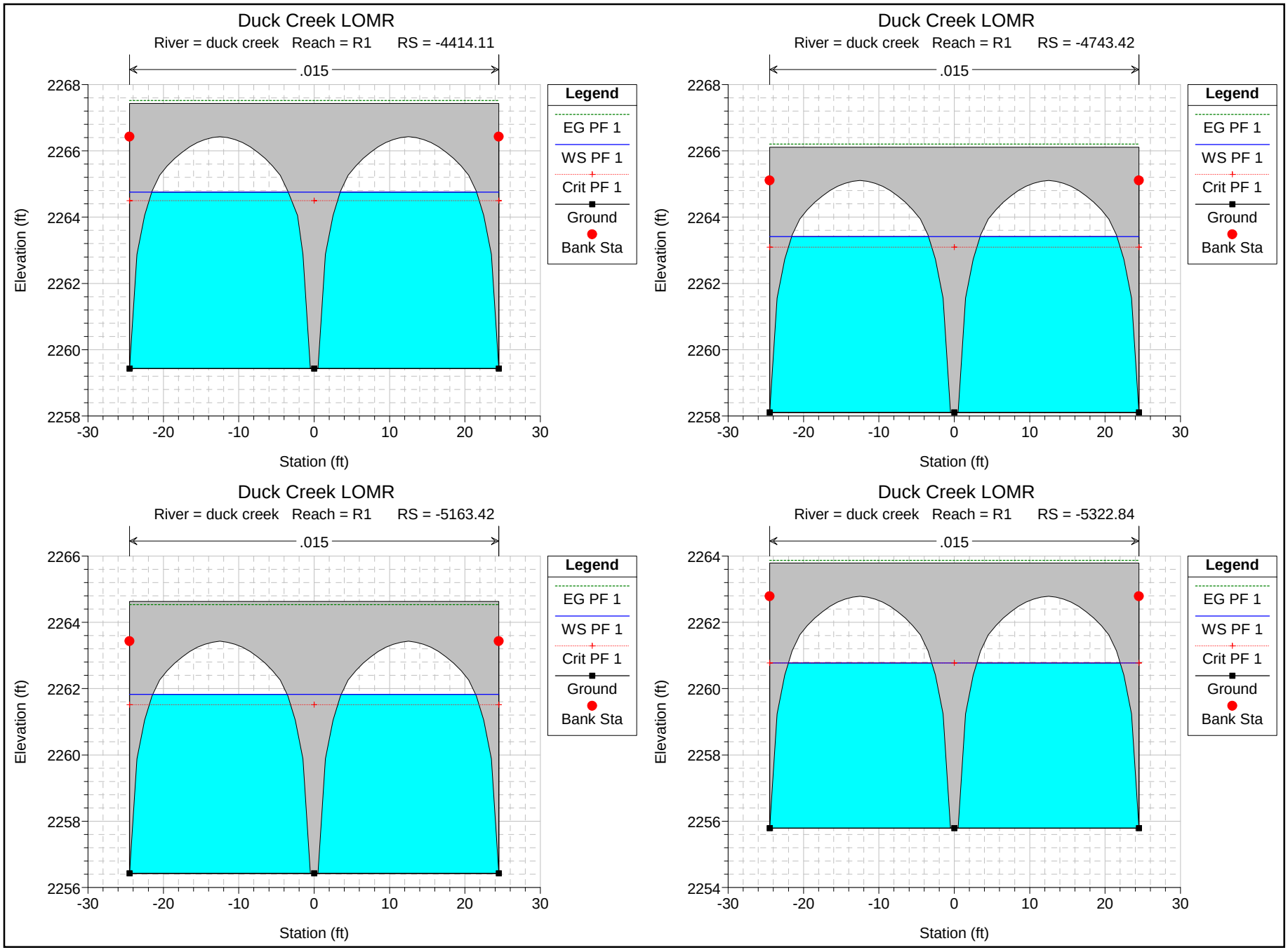
Main Channel Distance (ft)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WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
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Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
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Crit PF 1
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Bank Sta
Elevation (ft)
Station (ft)
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Crit PF 1
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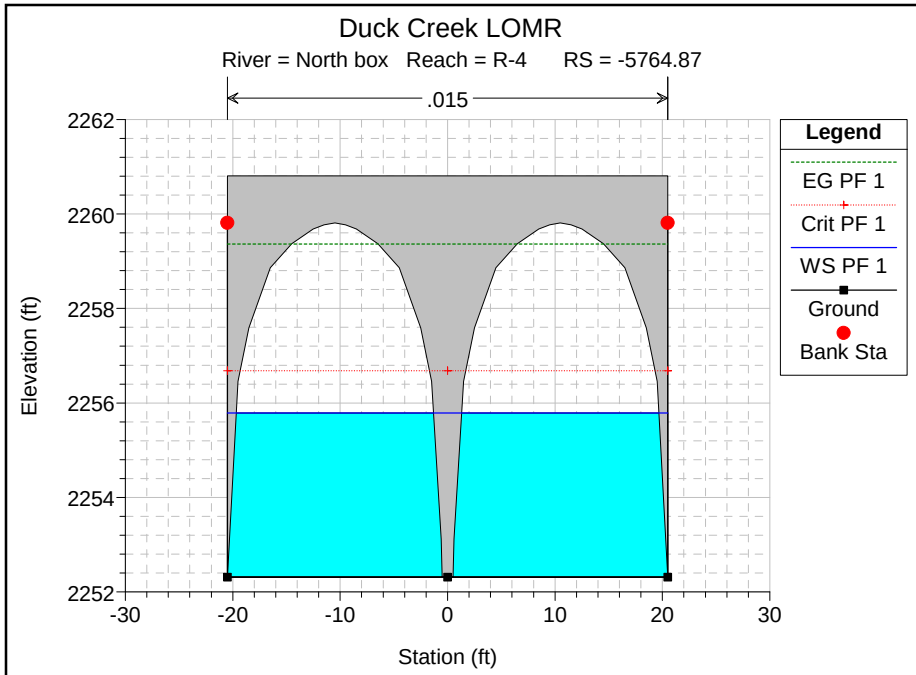
Bank Sta
Elevation (ft)
Station (ft)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Crit PF 1
WS PF 1
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2254
2252
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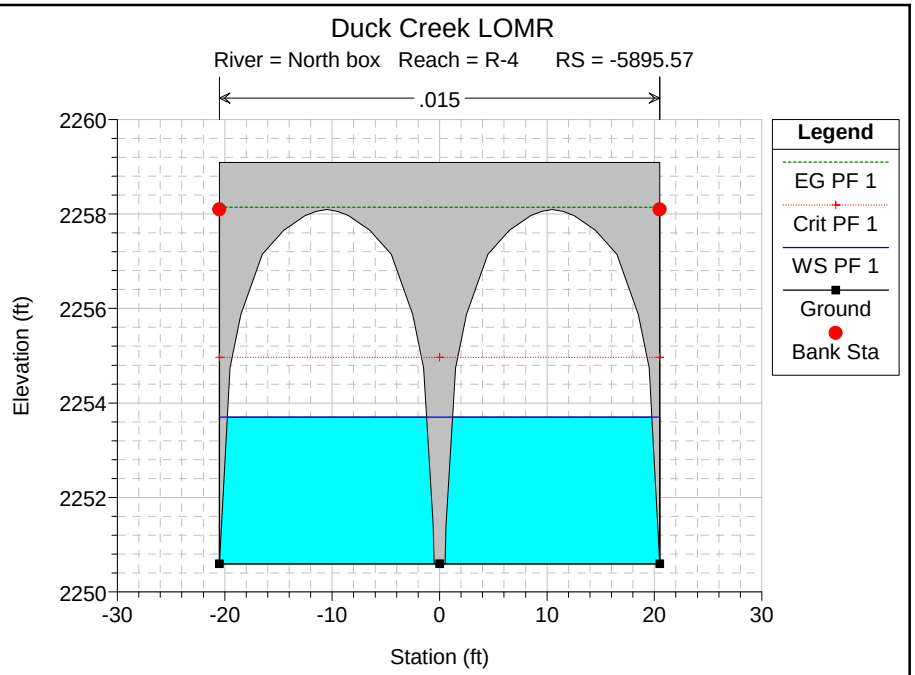
-20
-10
0
10
20
30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WS PF 1
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Bank Sta
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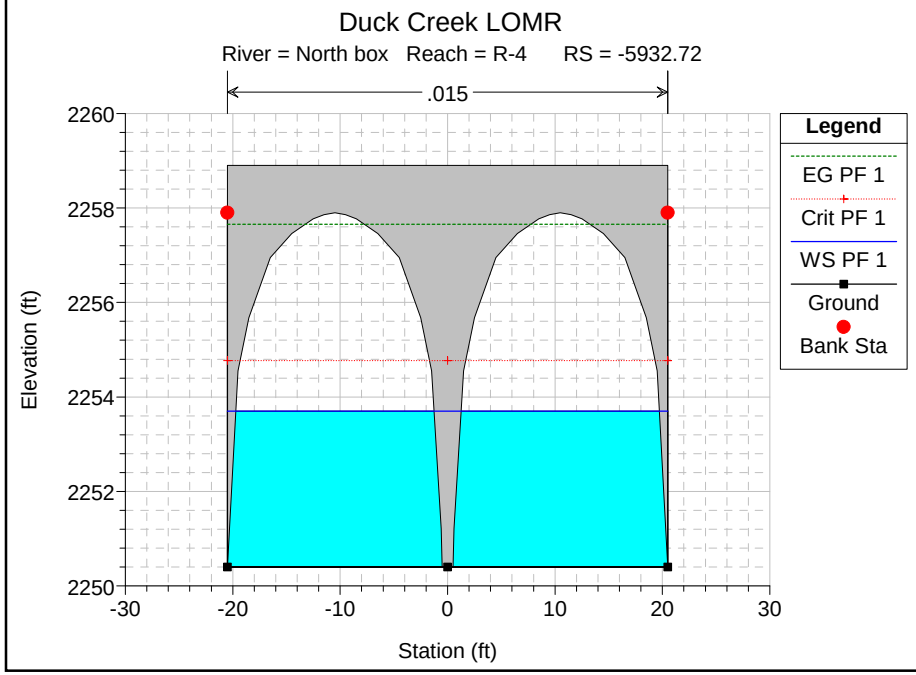
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Crit PF 1
WS PF 1
Ground
Bank Sta
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2250
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10
20
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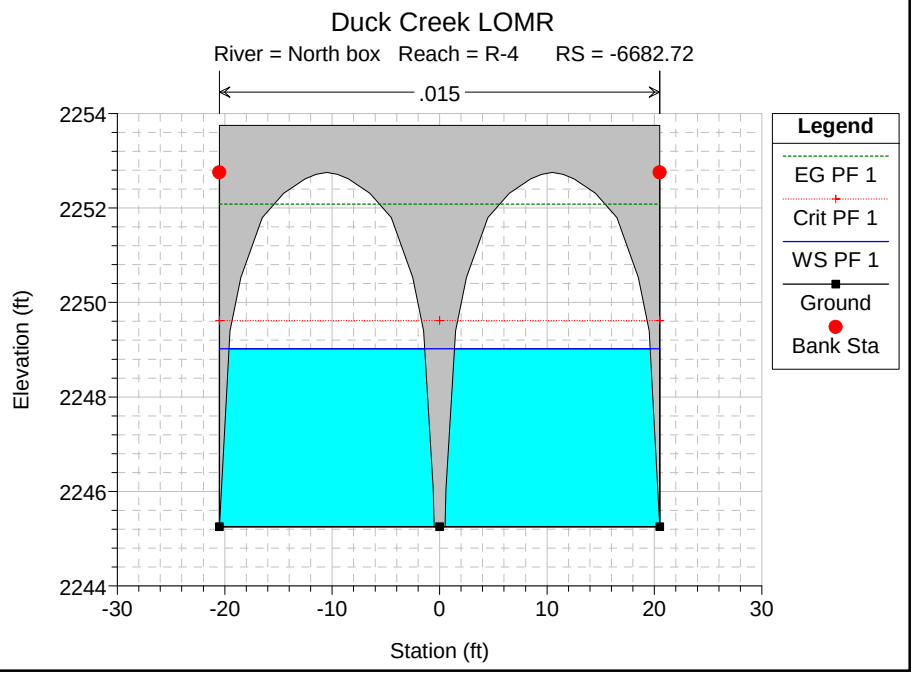
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Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
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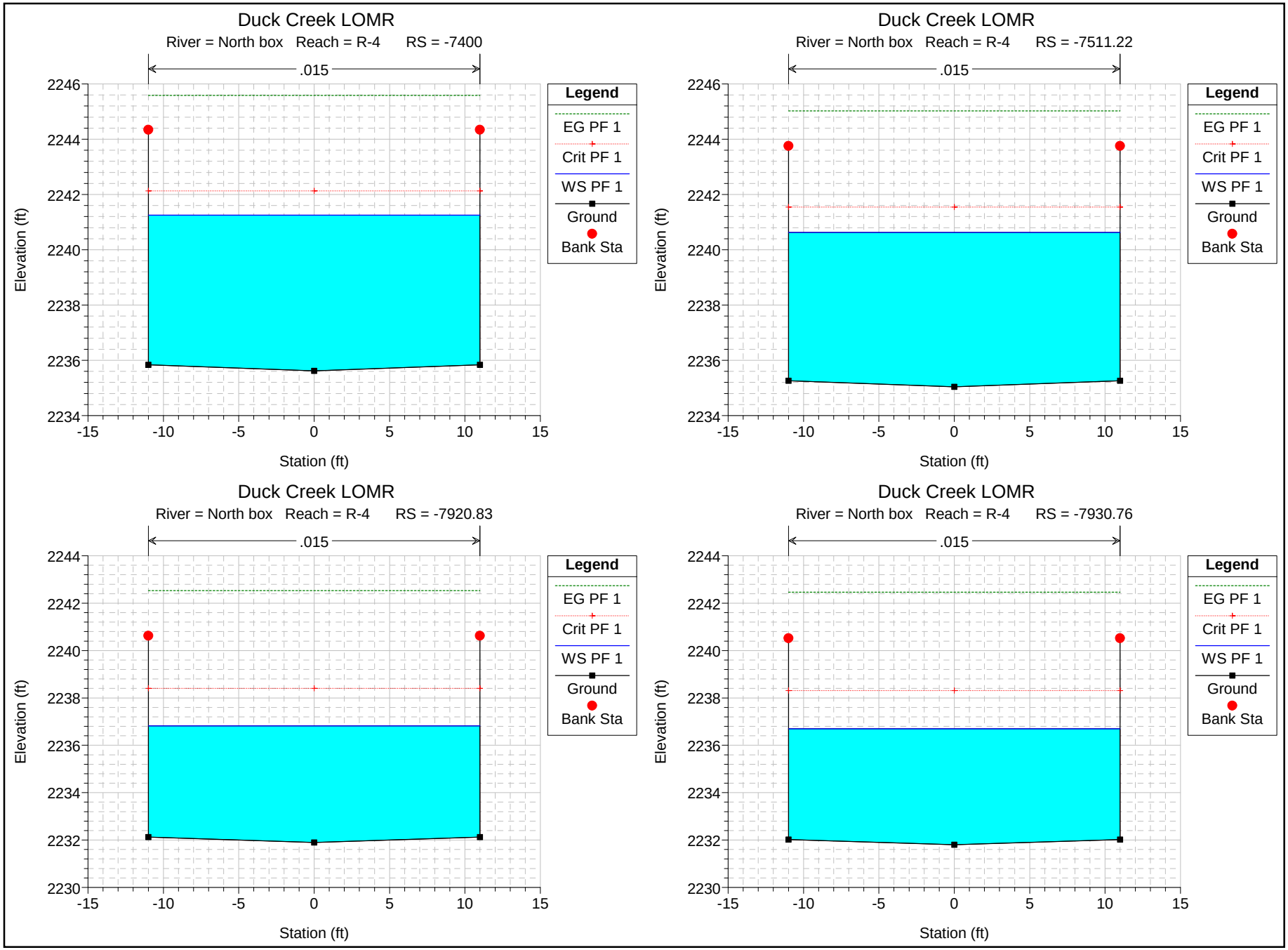
2252
2250
2248
2246
2244
-30
-20
-10
0
10
20
30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Legend
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Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -7511.22
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Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
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Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -7930.76
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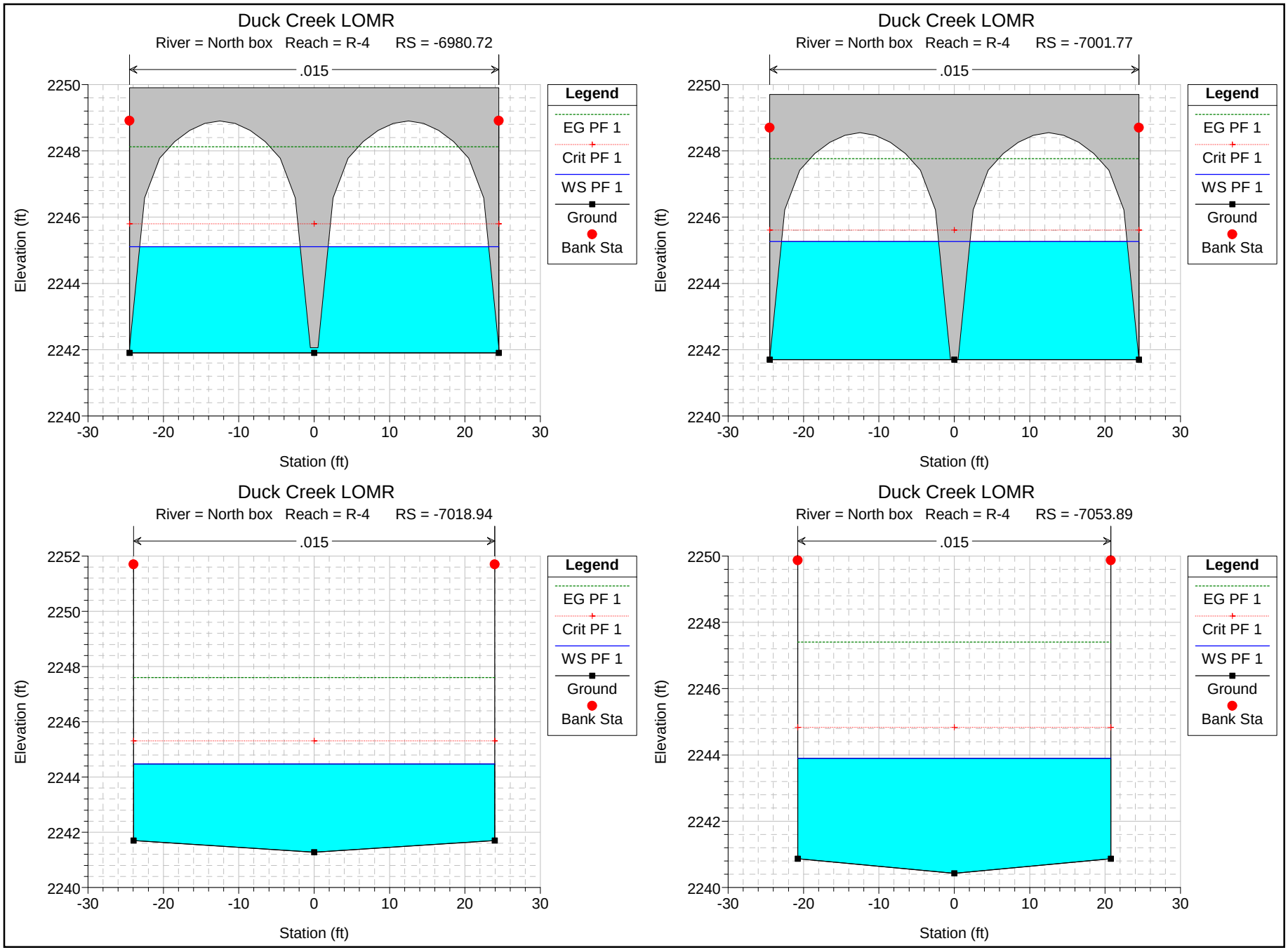
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)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Legend
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Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -7001.77
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Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
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Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
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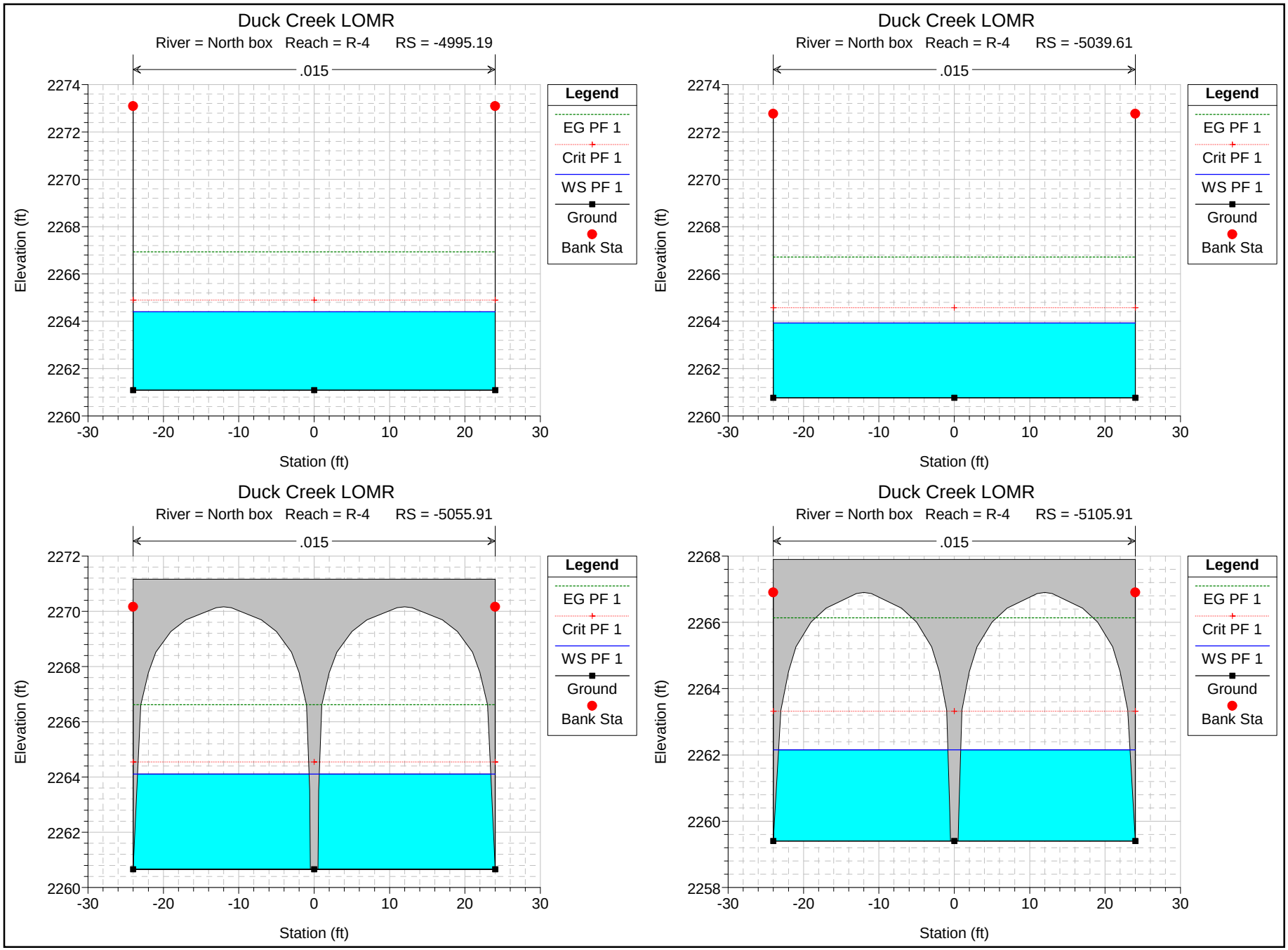
Elevation (ft)
Station (ft)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Bank Sta
Elevation (ft)
Station (ft)
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Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
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Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -5105.91
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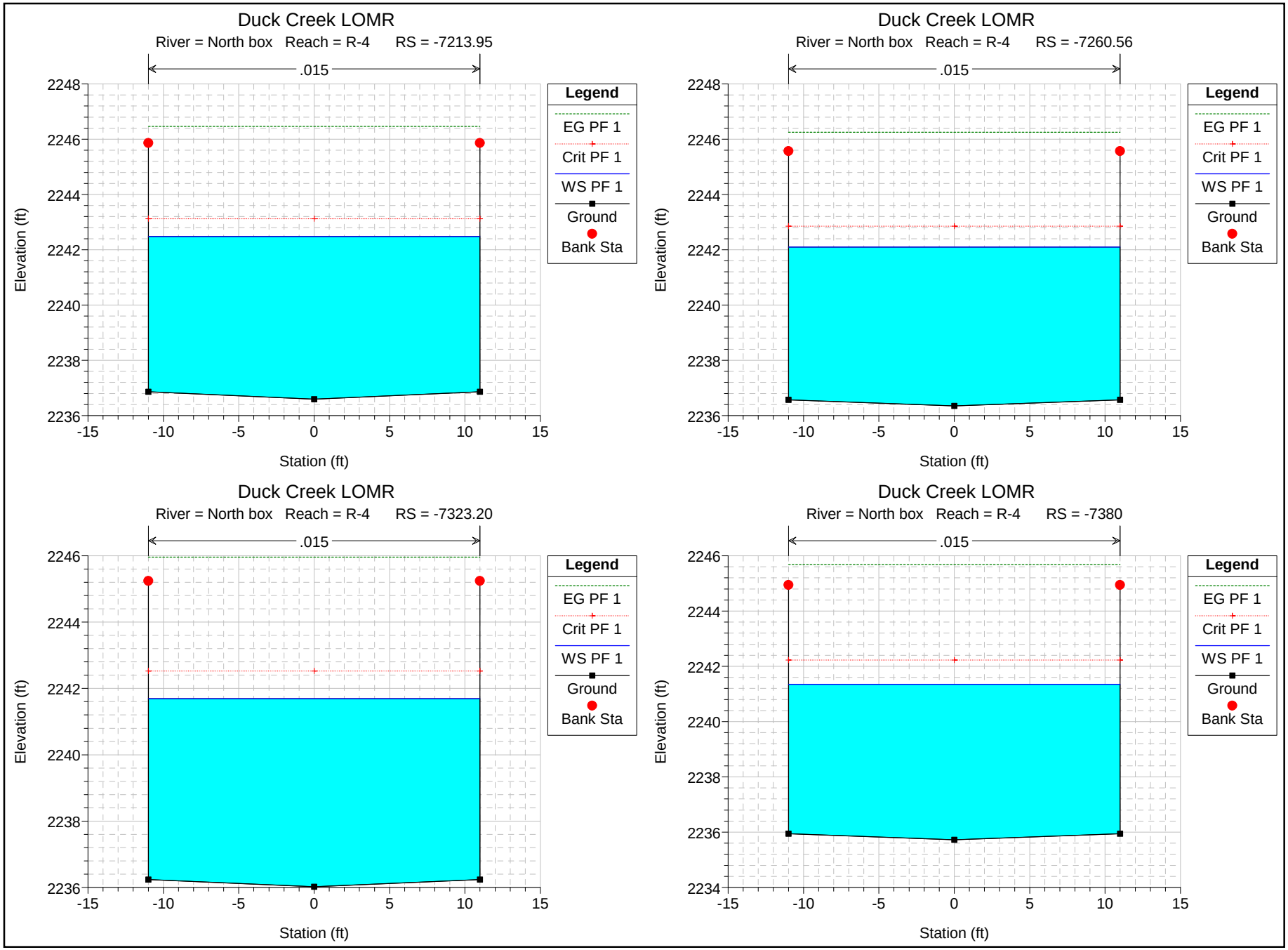
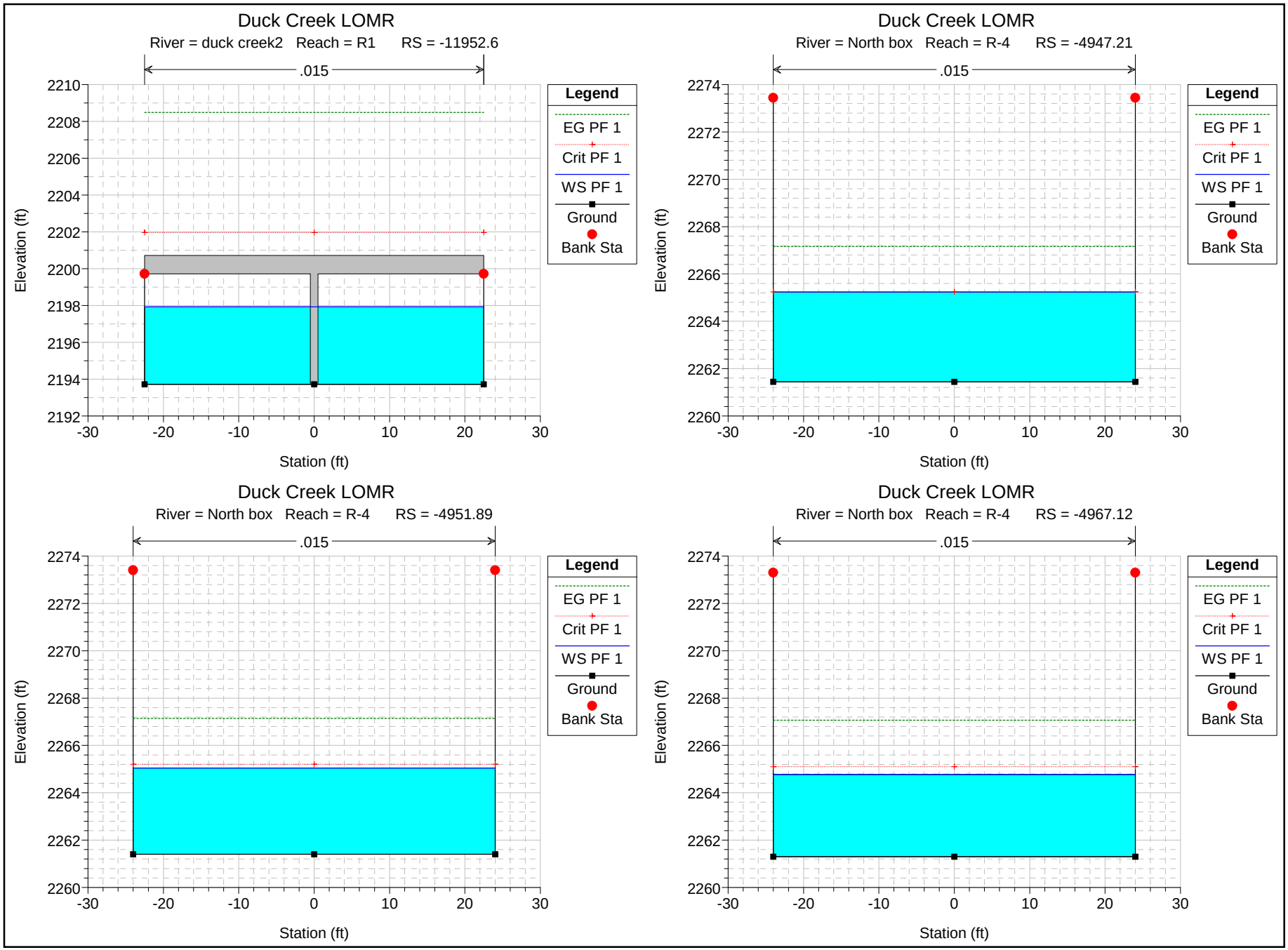
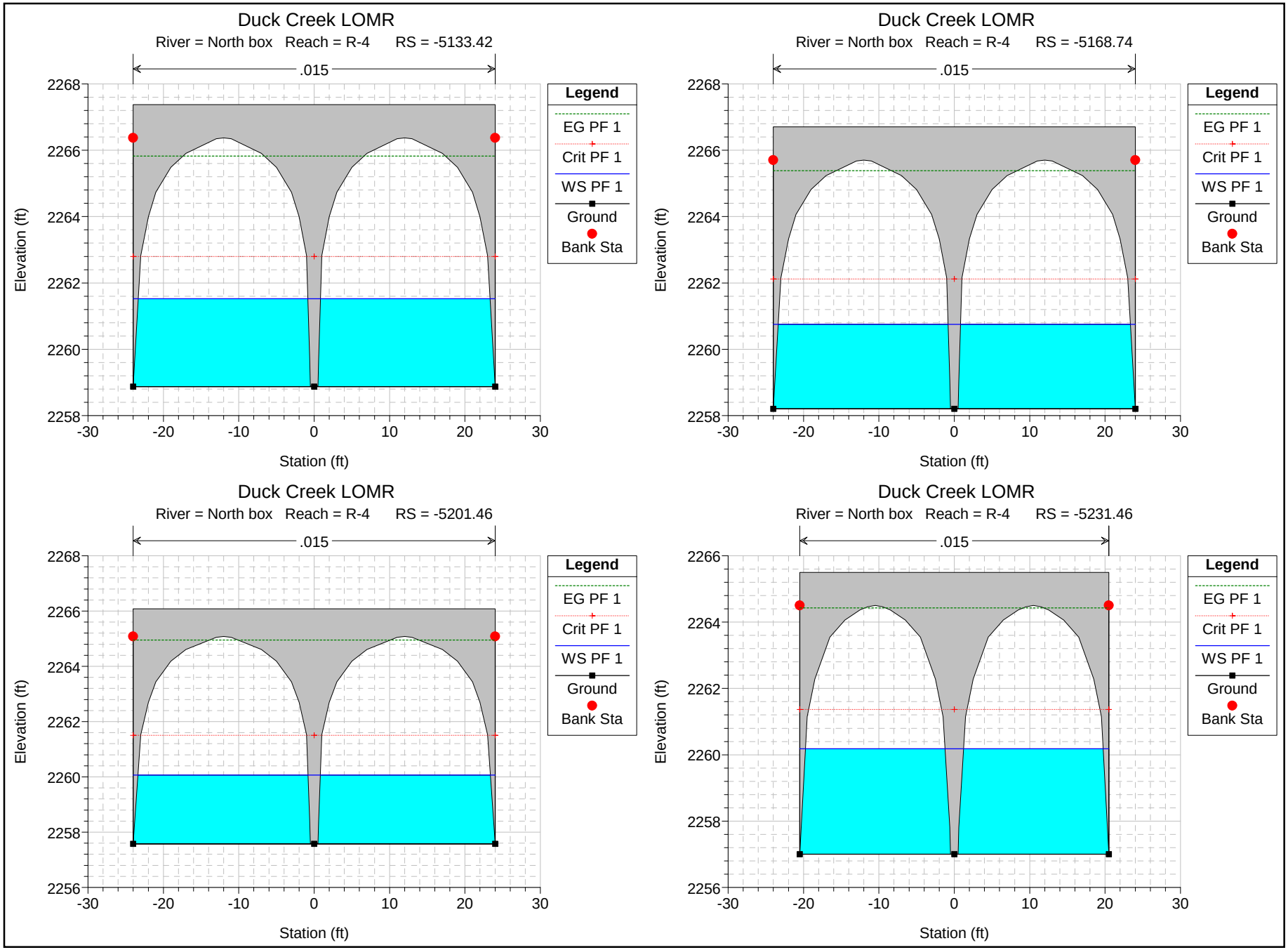
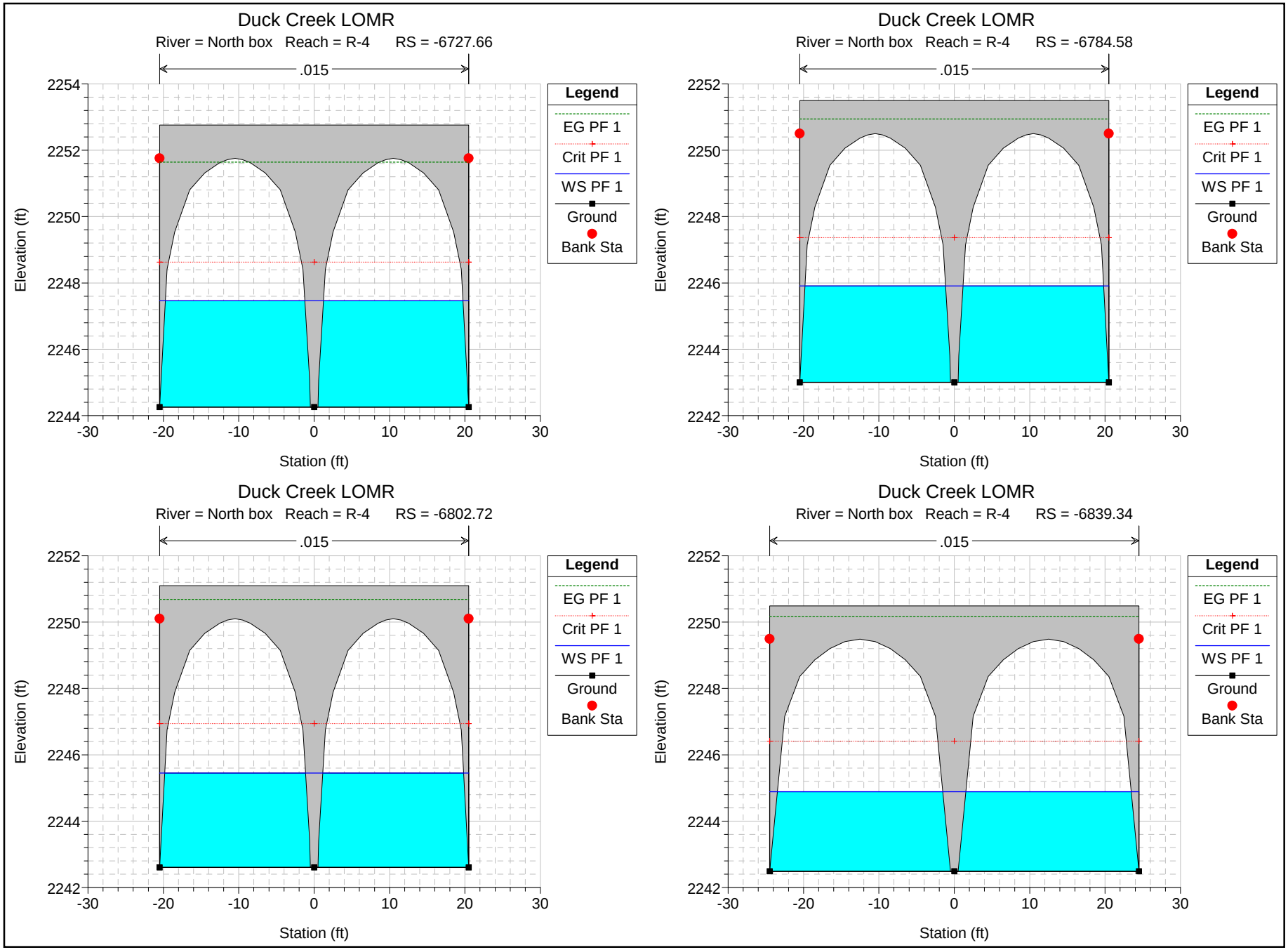
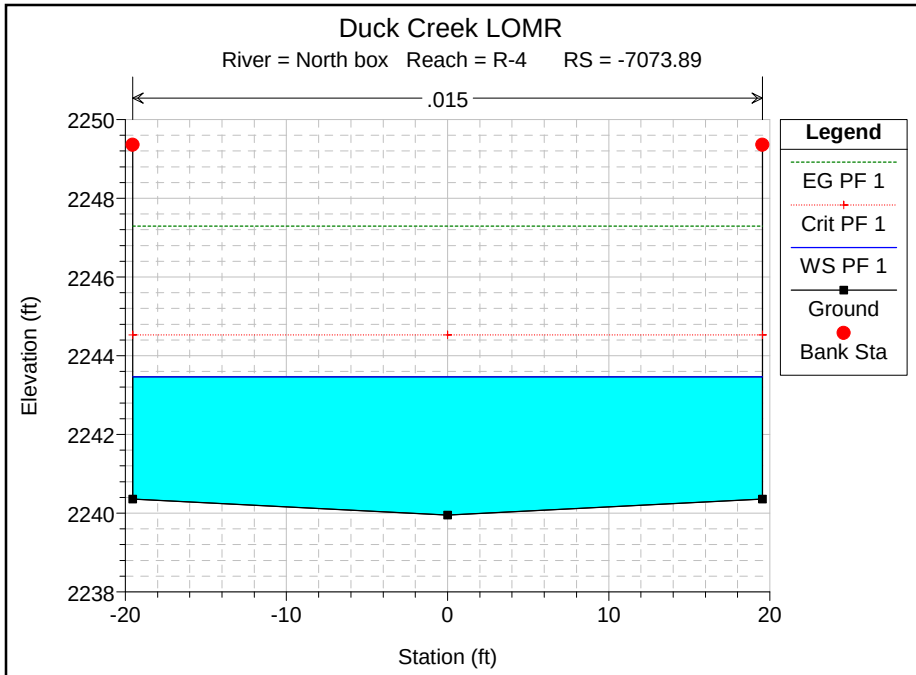
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = North box Reach = R-4 RS = -7213.95
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -7260.56
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -7323.20
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -7380
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -11952.6
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = North box Reach = R-4 RS = -4947.21
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = North box Reach = R-4 RS = -4951.89
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = North box Reach = R-4 RS = -4967.12
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


Duck Creek LOMR
River = North box Reach = R-4 RS = -5133.42
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -5168.74
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -5201.46
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -5231.46
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = North box Reach = R-4 RS = -6727.66
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = North box Reach = R-4 RS = -6784.58
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = North box Reach = R-4 RS = -6802.72
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = North box Reach = R-4 RS = -6839.34
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


Duck Creek LOMR
River = North box Reach = R-4 RS = -7073.89
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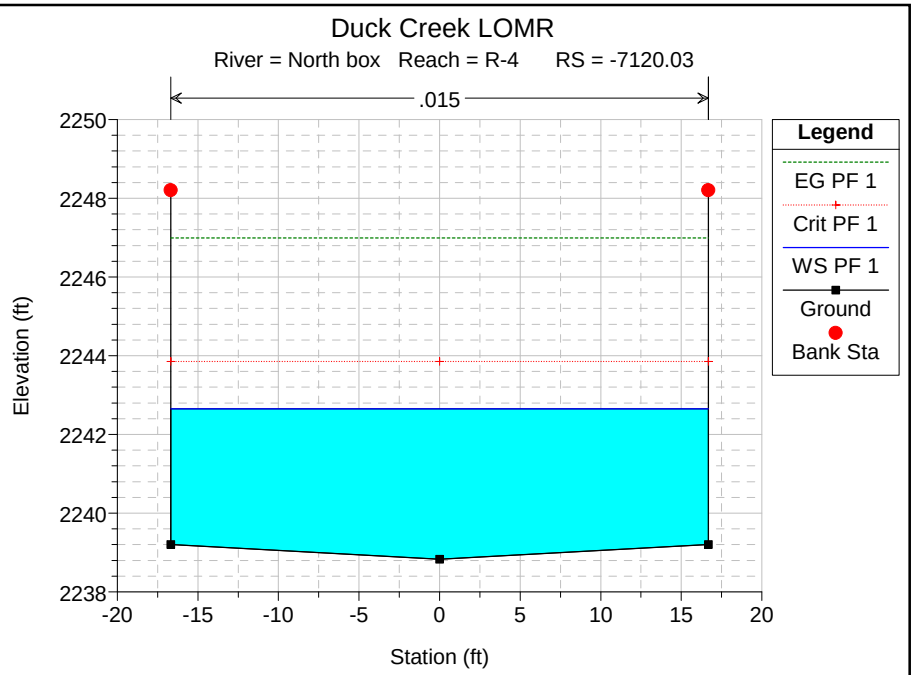
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = North box Reach = R-4 RS = -7120.03
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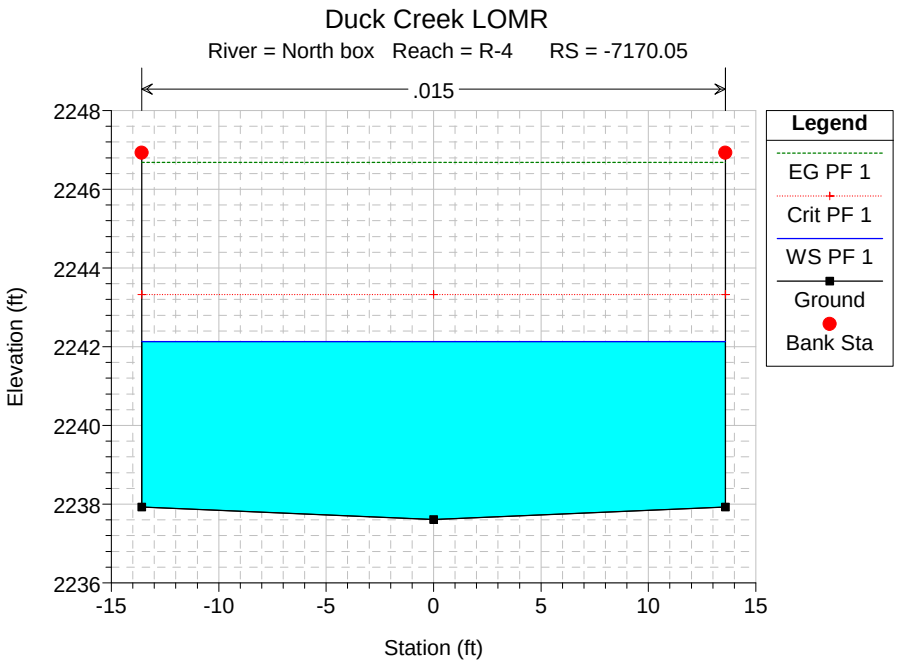
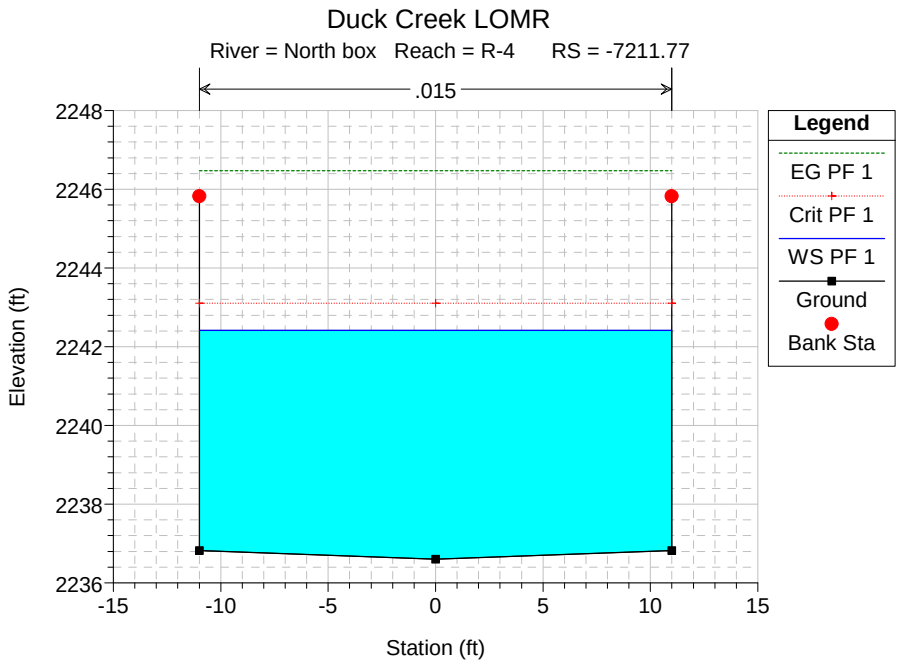
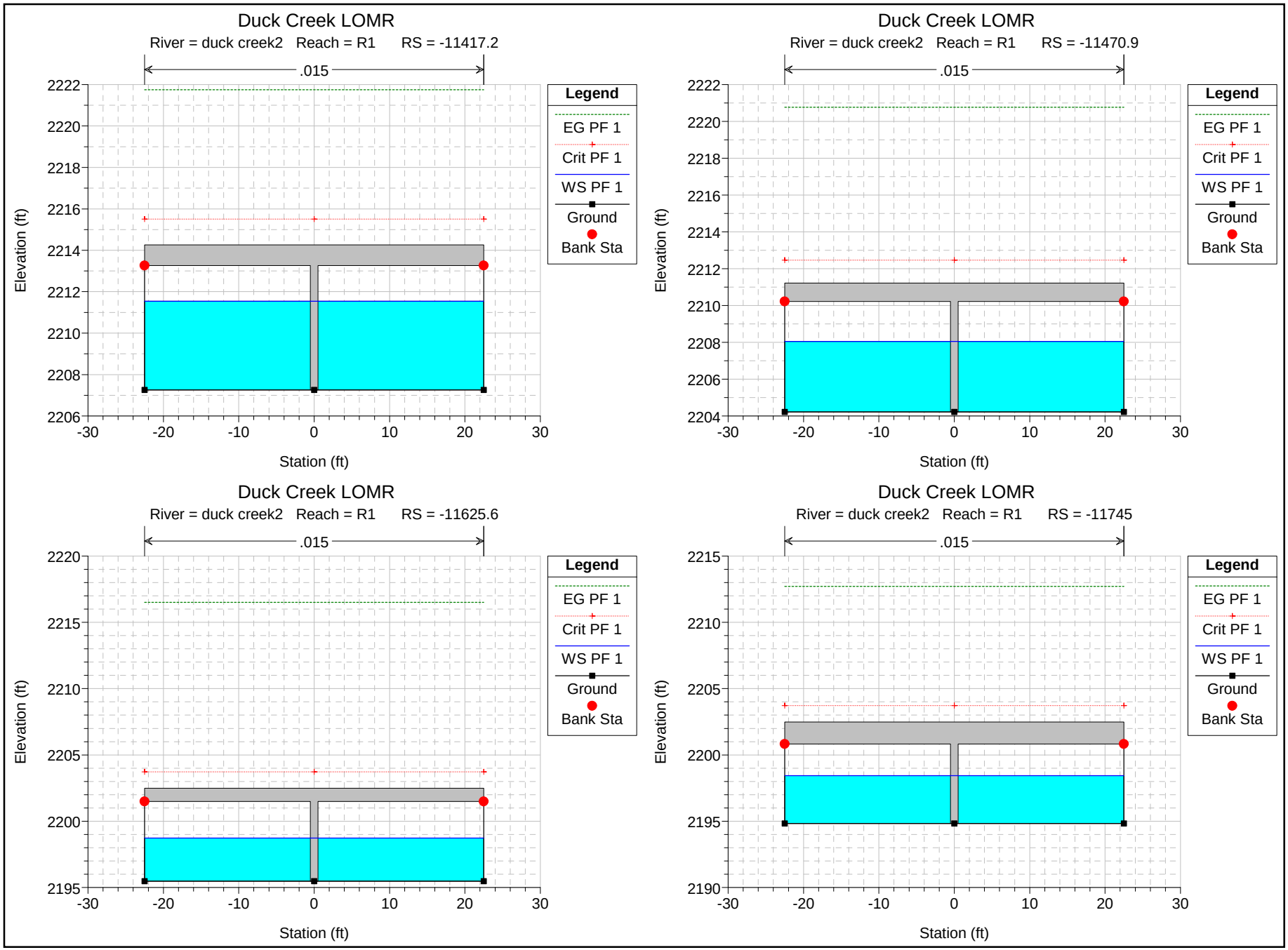
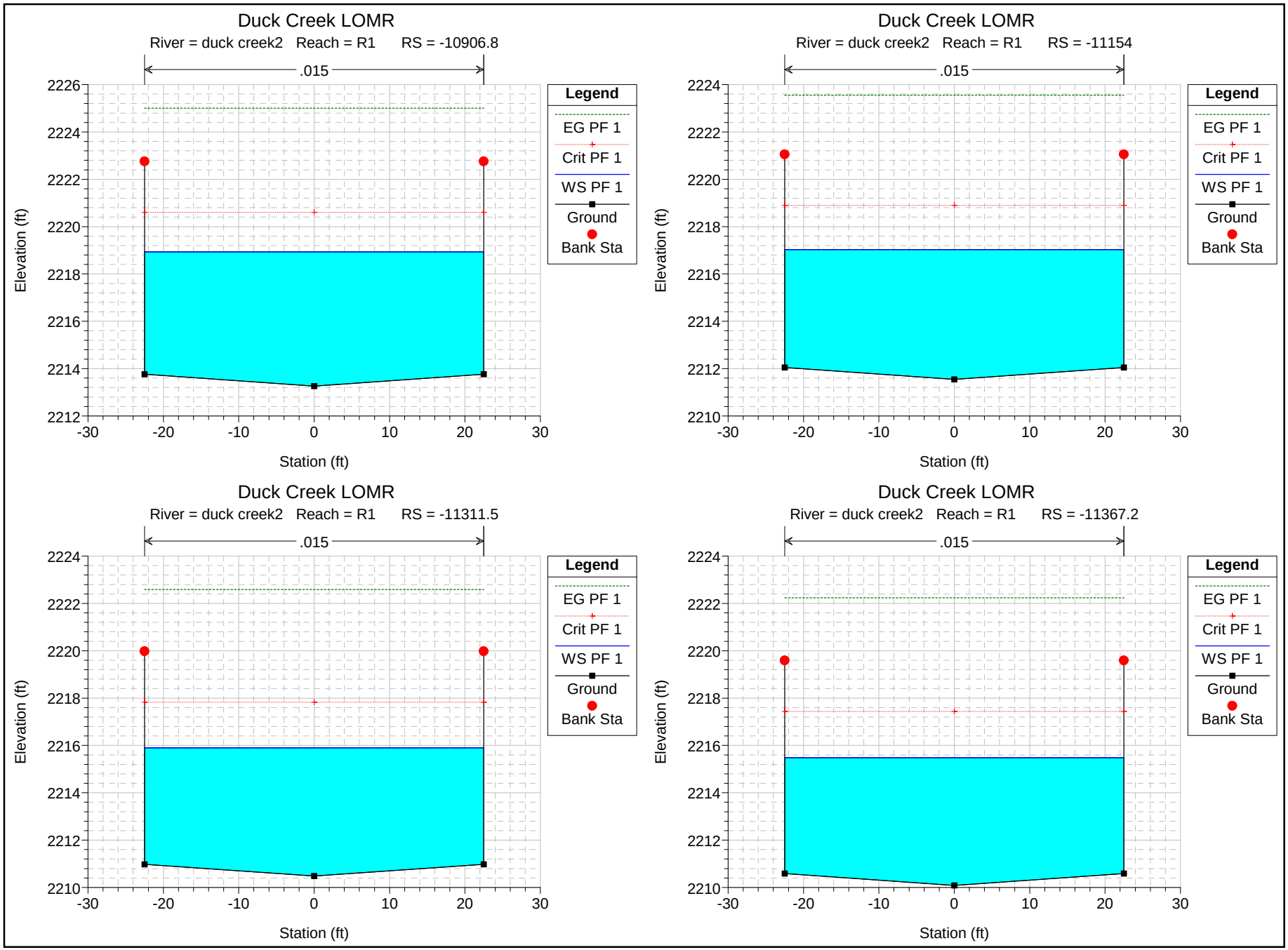
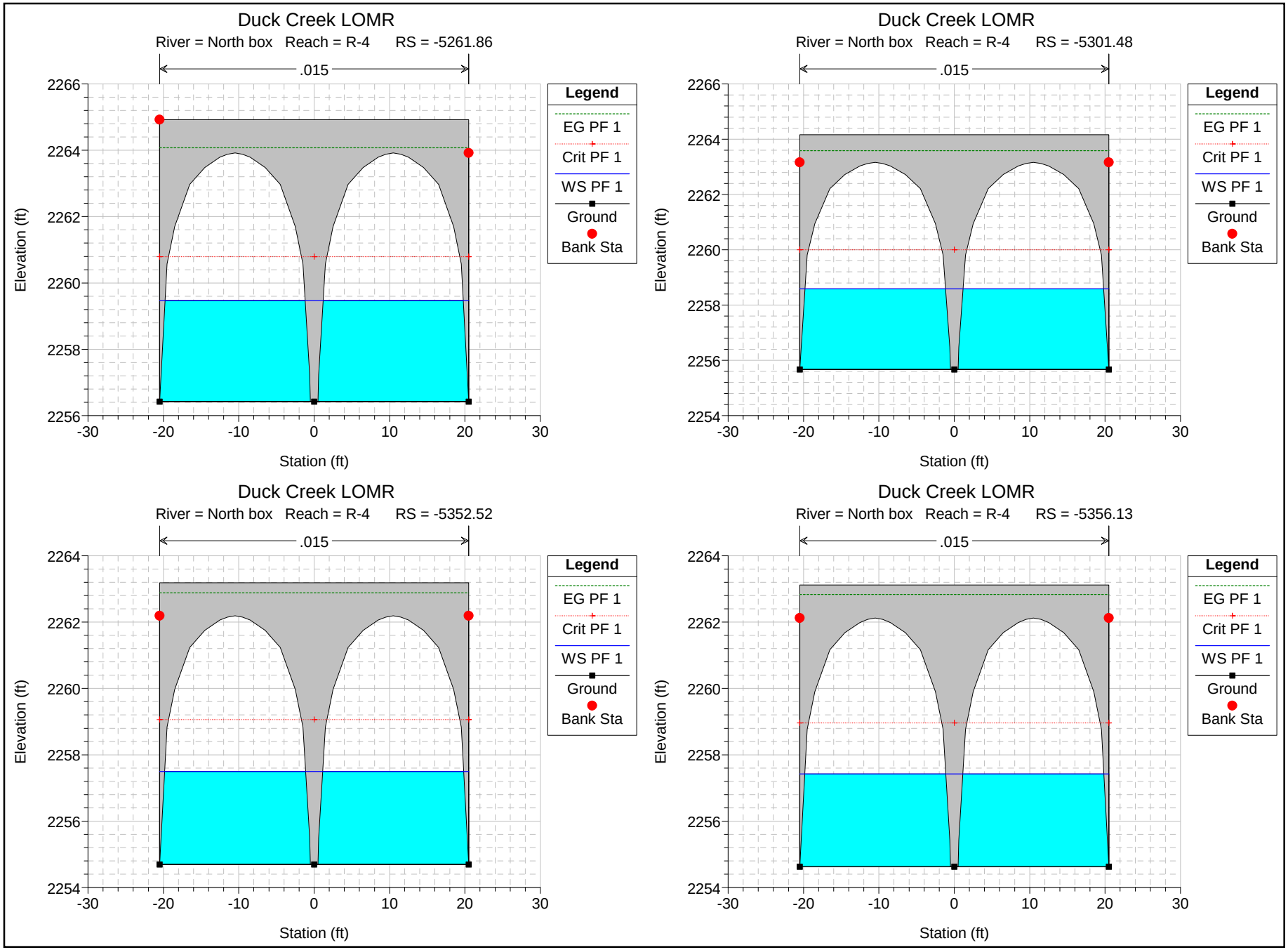
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

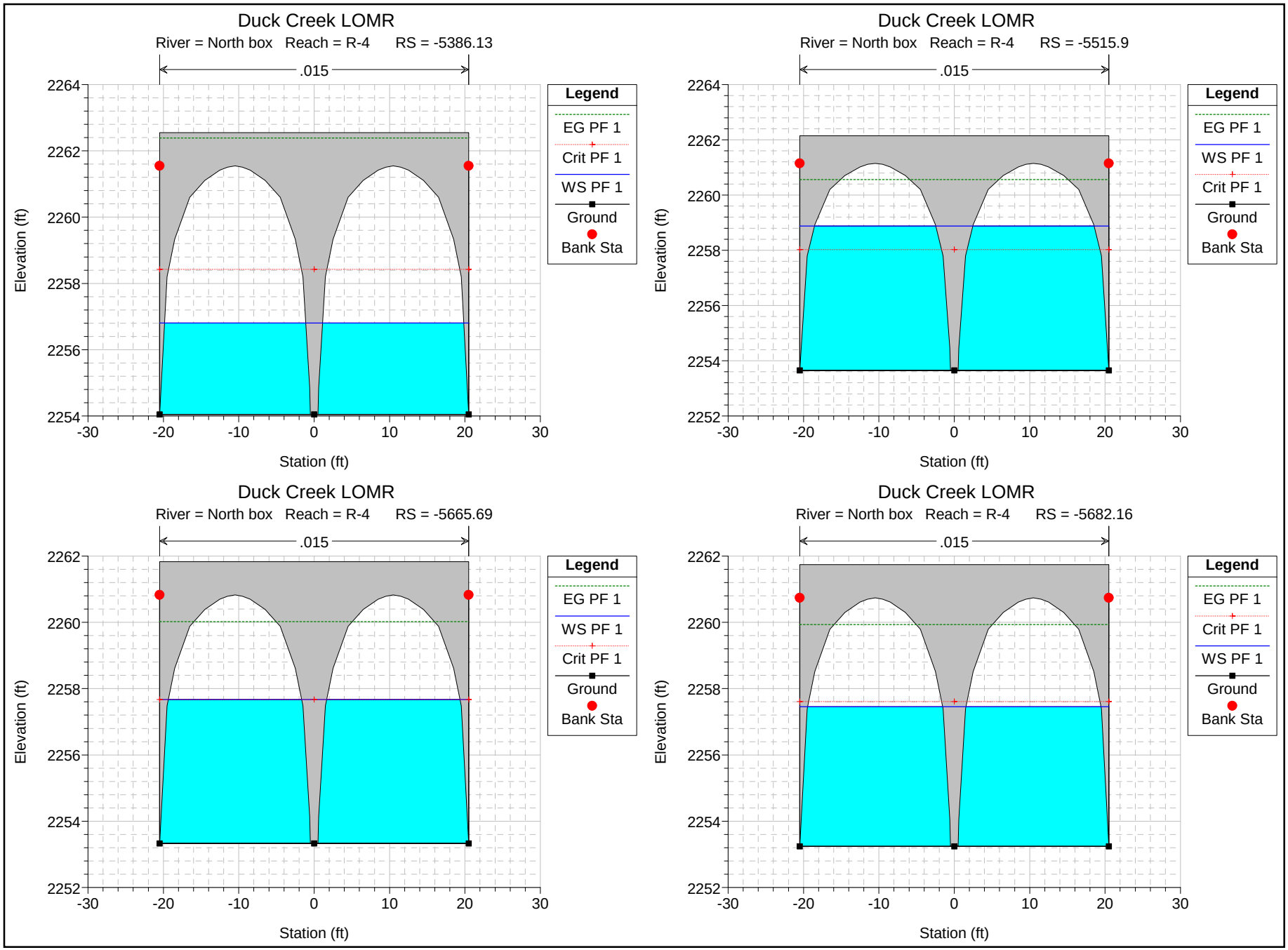

Duck Creek LOMR
River = North box Reach = R-4 RS = -7170.05
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = North box Reach = R-4 RS = -7211.77
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -11417.2
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -11470.9
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -11625.6
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -11745
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -10906.8
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -11154
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -11311.5
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -11367.2
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


Duck Creek LOMR
River = North box Reach = R-4 RS = -5261.86
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = North box Reach = R-4 RS = -5301.48
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = North box Reach = R-4 RS = -5352.52
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = North box Reach = R-4 RS = -5356.13
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


Duck Creek LOMR
River = North box Reach = R-4 RS = -5386.13
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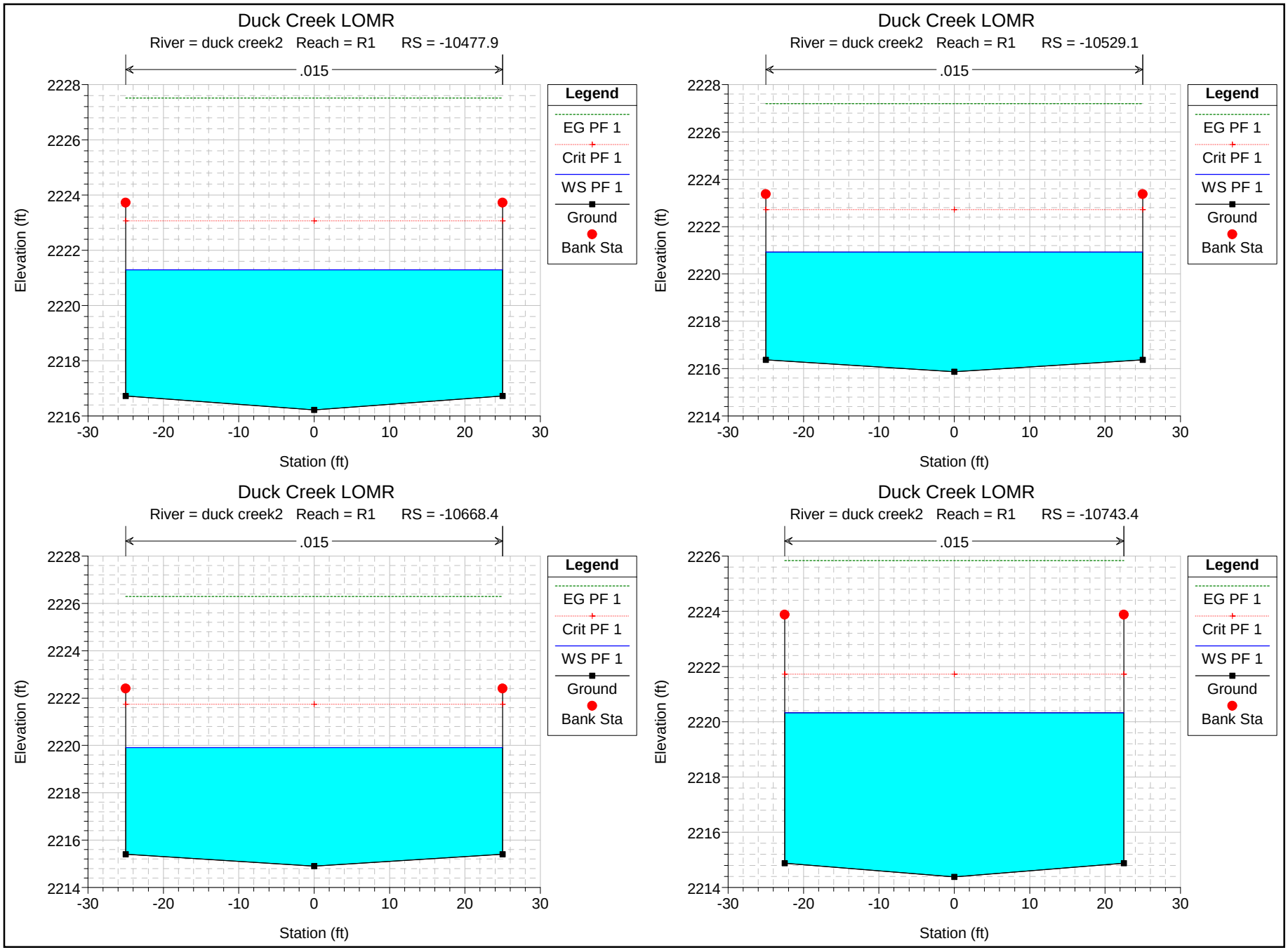
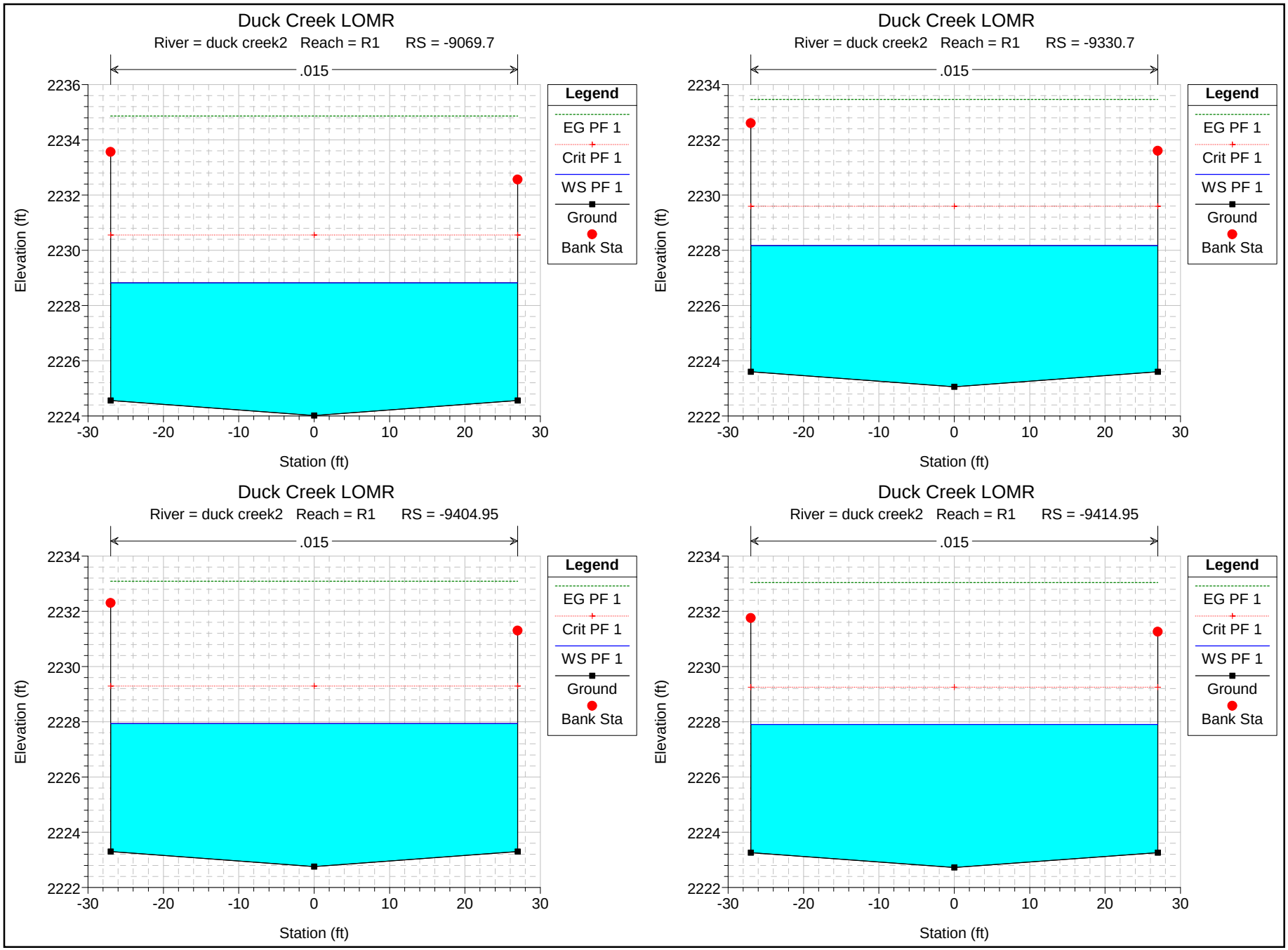
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -5515.9
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -5665.69
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = North box Reach = R-4 RS = -5682.16
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -10477.9
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -10529.1
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -10668.4
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -10743.4
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -9069.7
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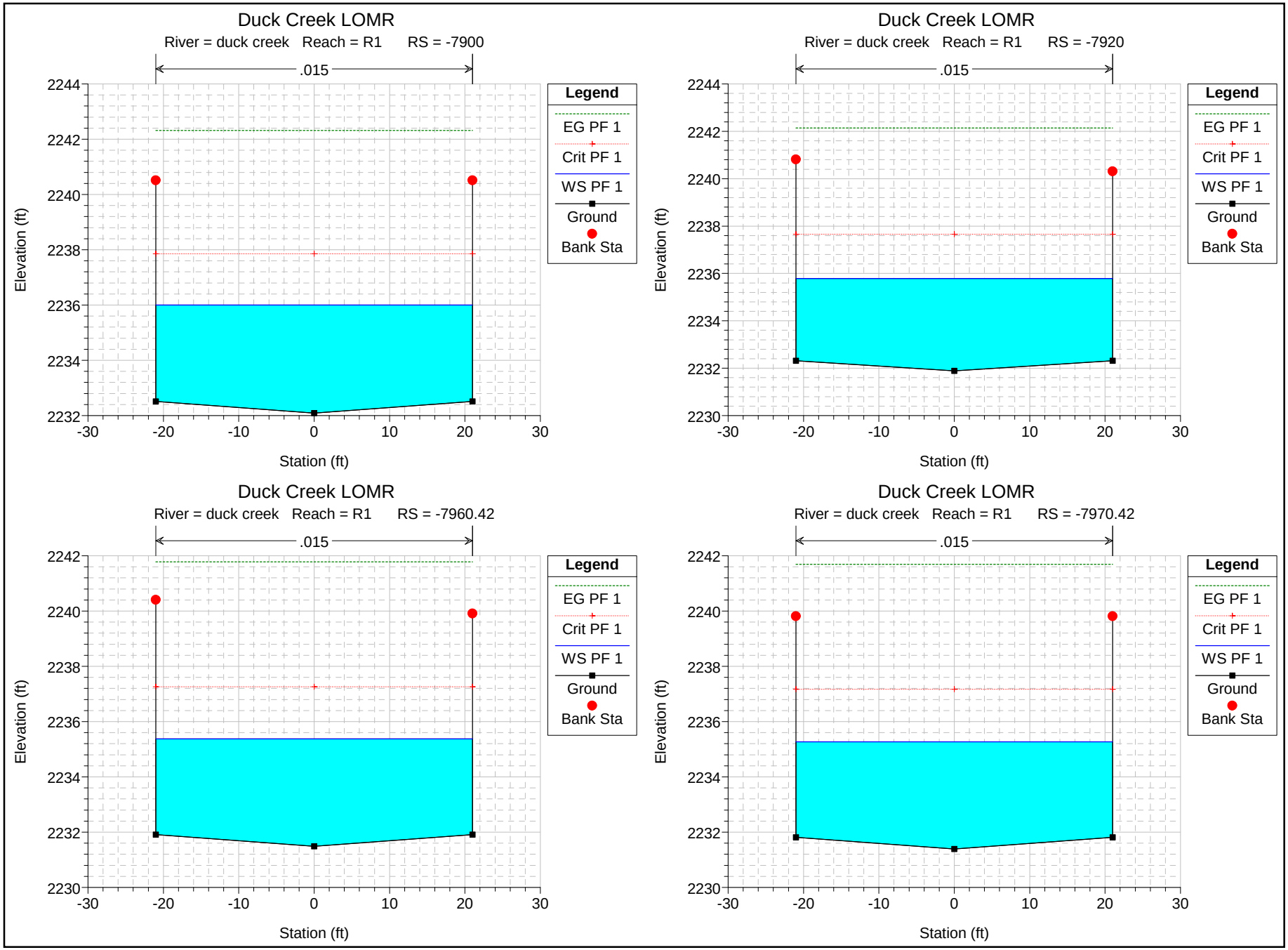
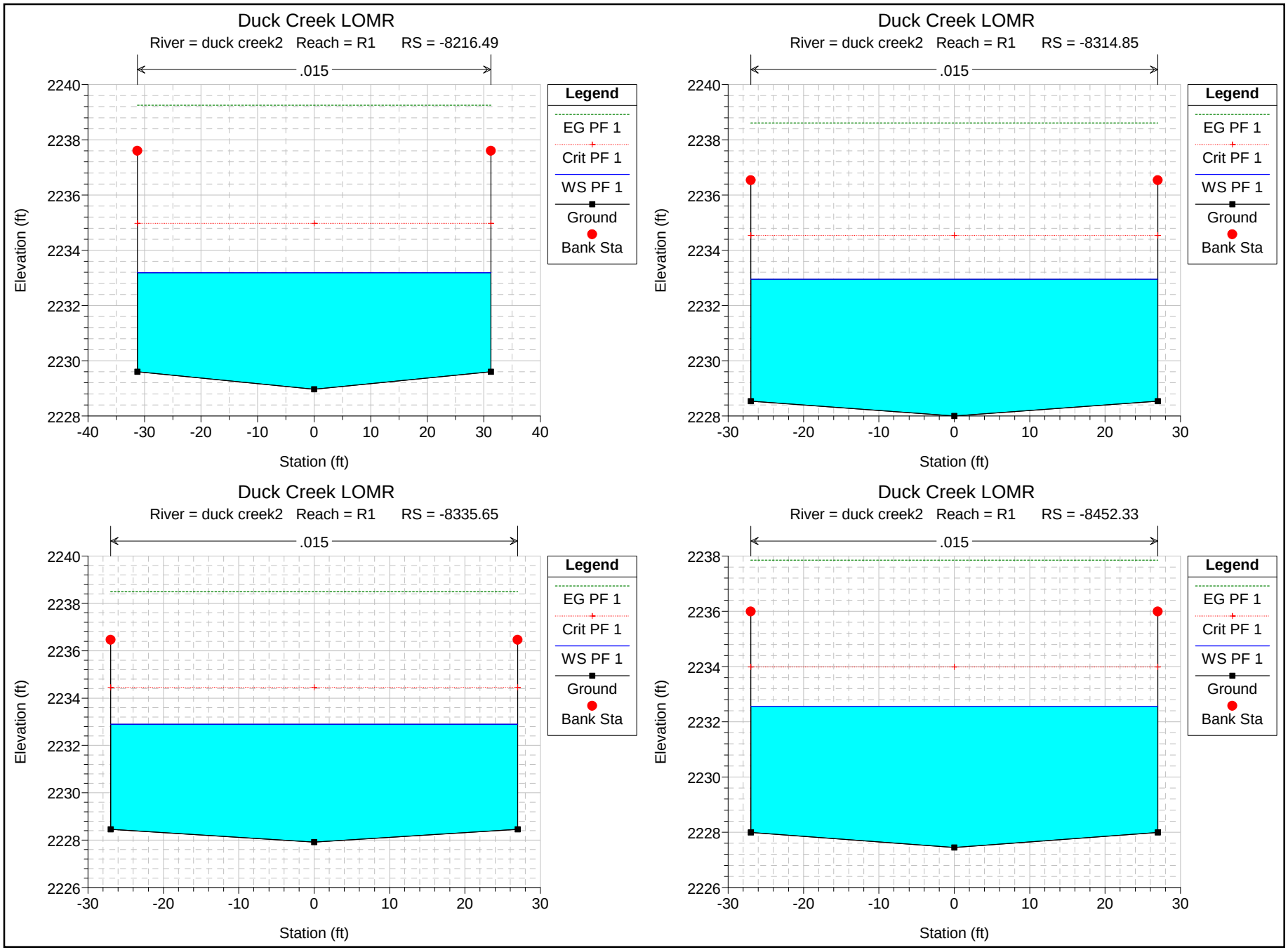
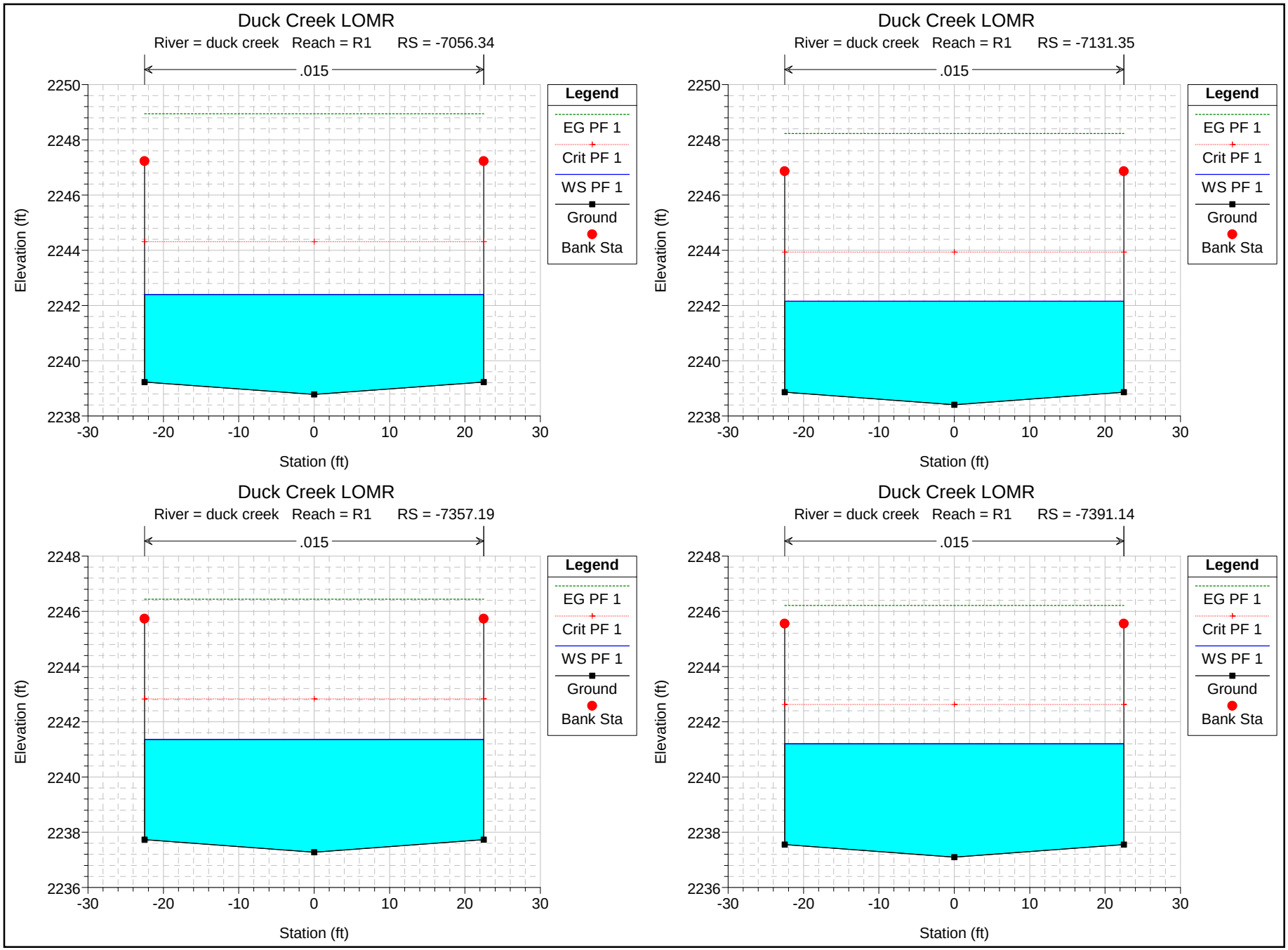
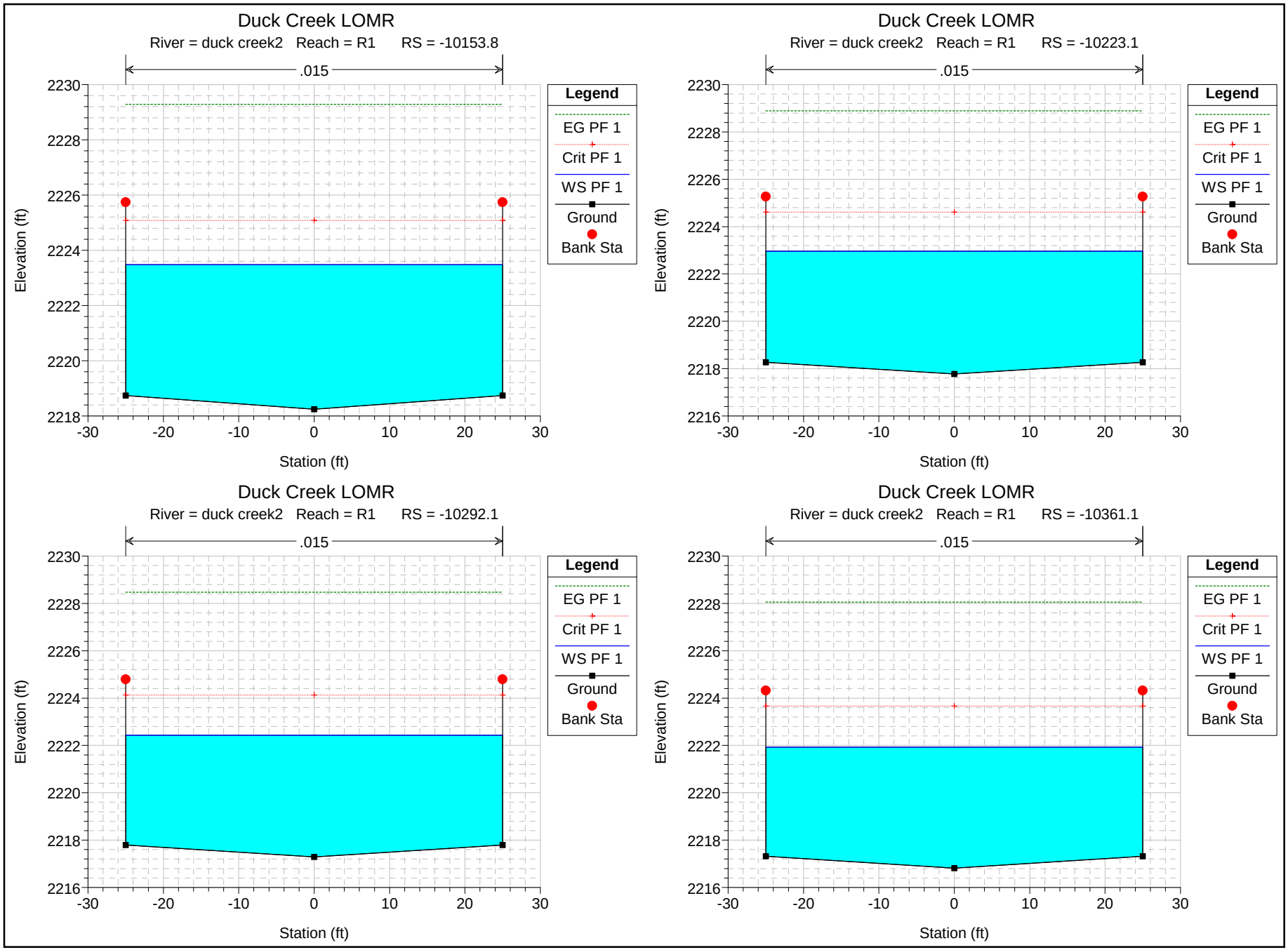
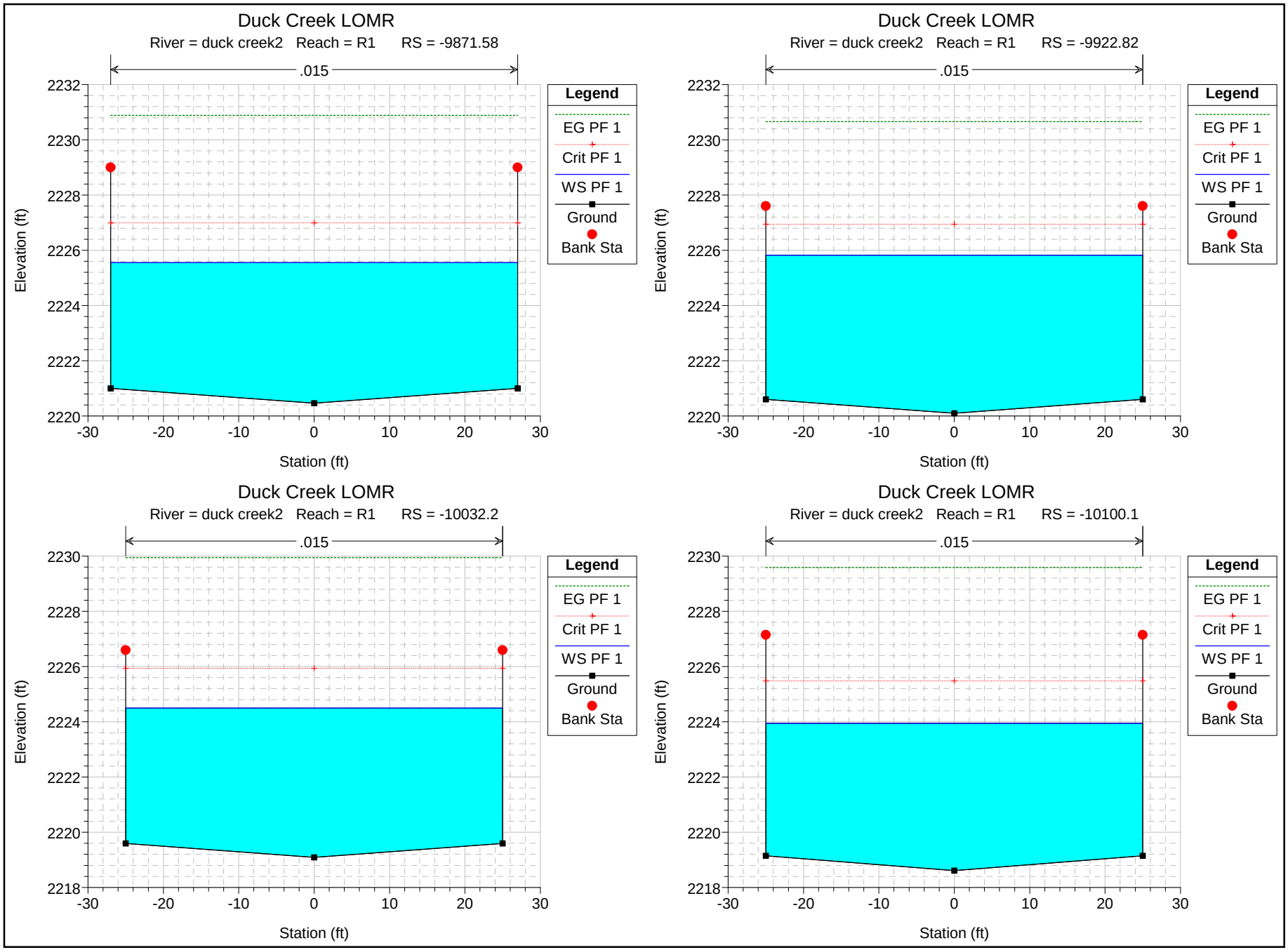
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -9330.7
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -9404.95
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -9414.95
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

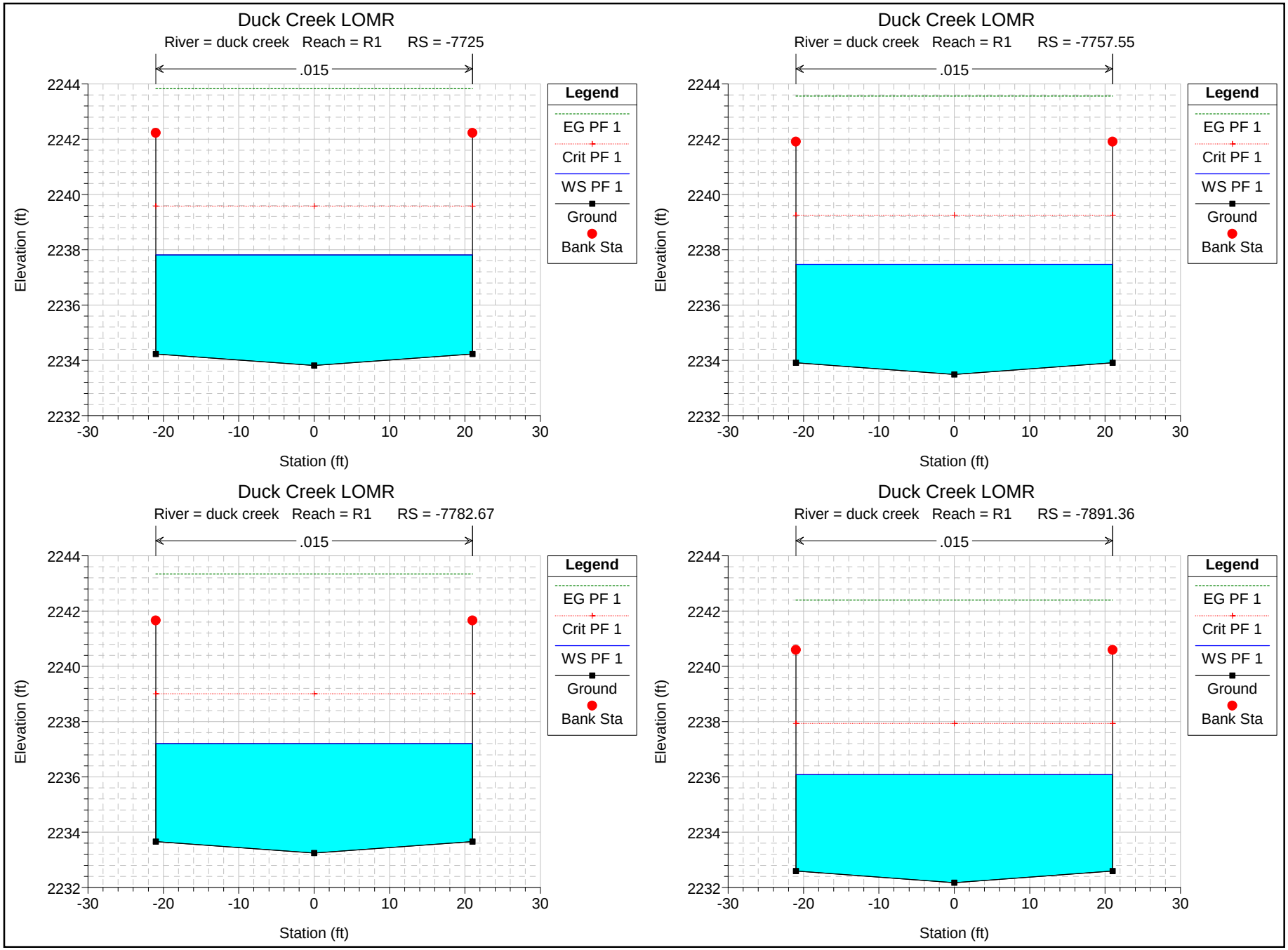

Duck Creek LOMR
River = duck creek Reach = R1 RS = -7900
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7920
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7960.42
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7970.42
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

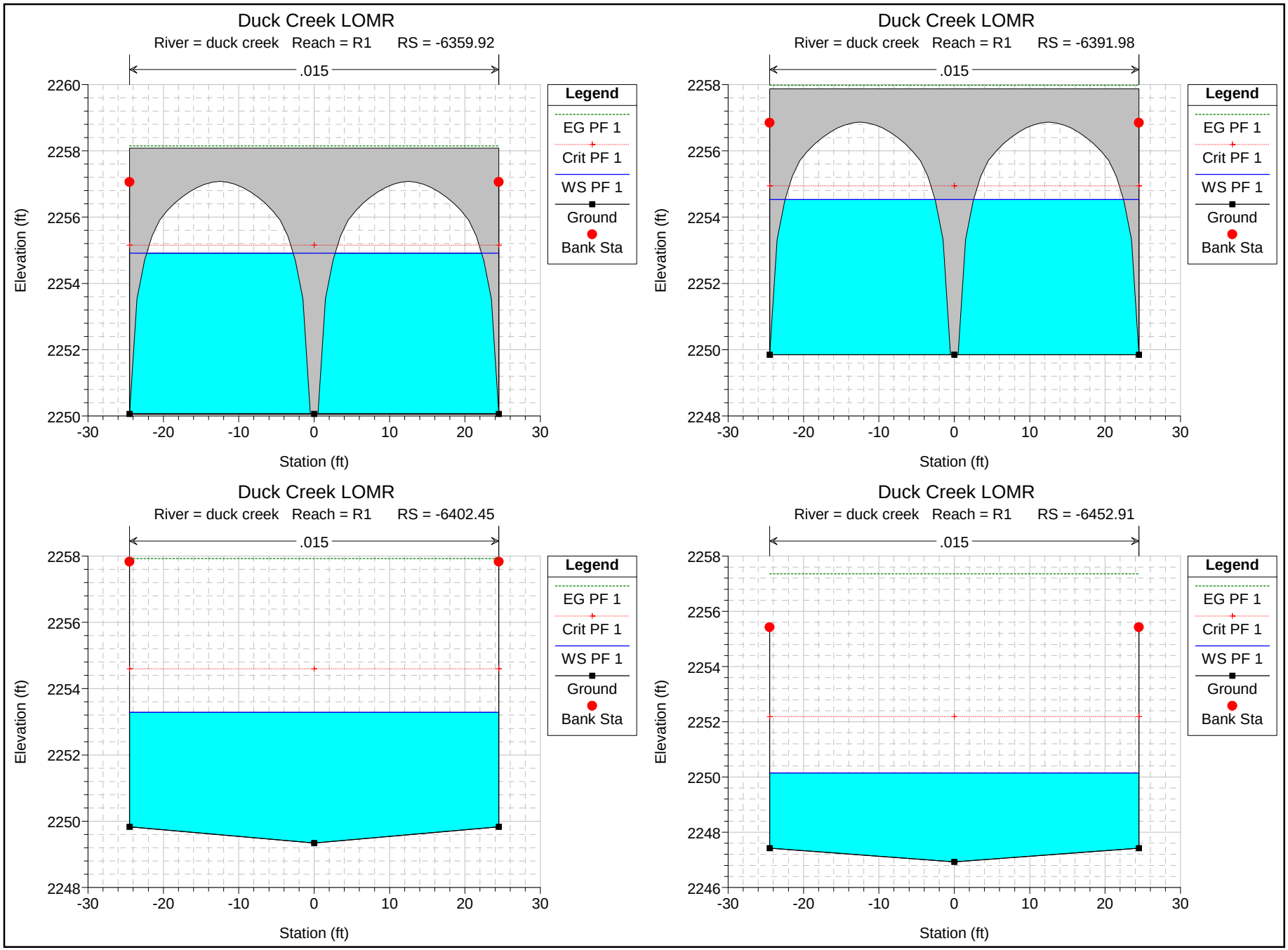

Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -8216.49
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -8314.85
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -8335.65
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -8452.33
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

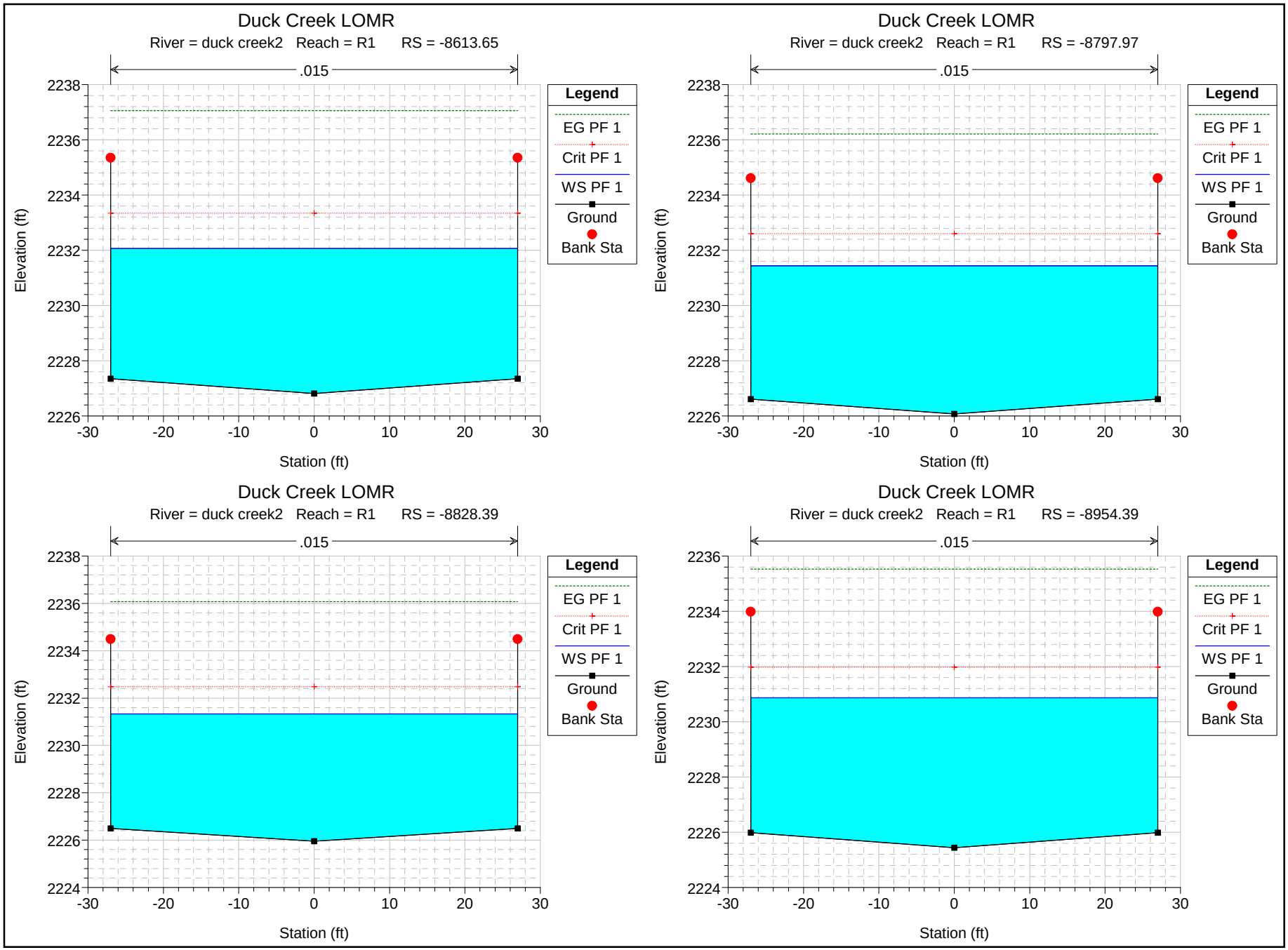

Duck Creek LOMR
River = duck creek Reach = R1 RS = -7056.34
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7131.35
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7357.19
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7391.14
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

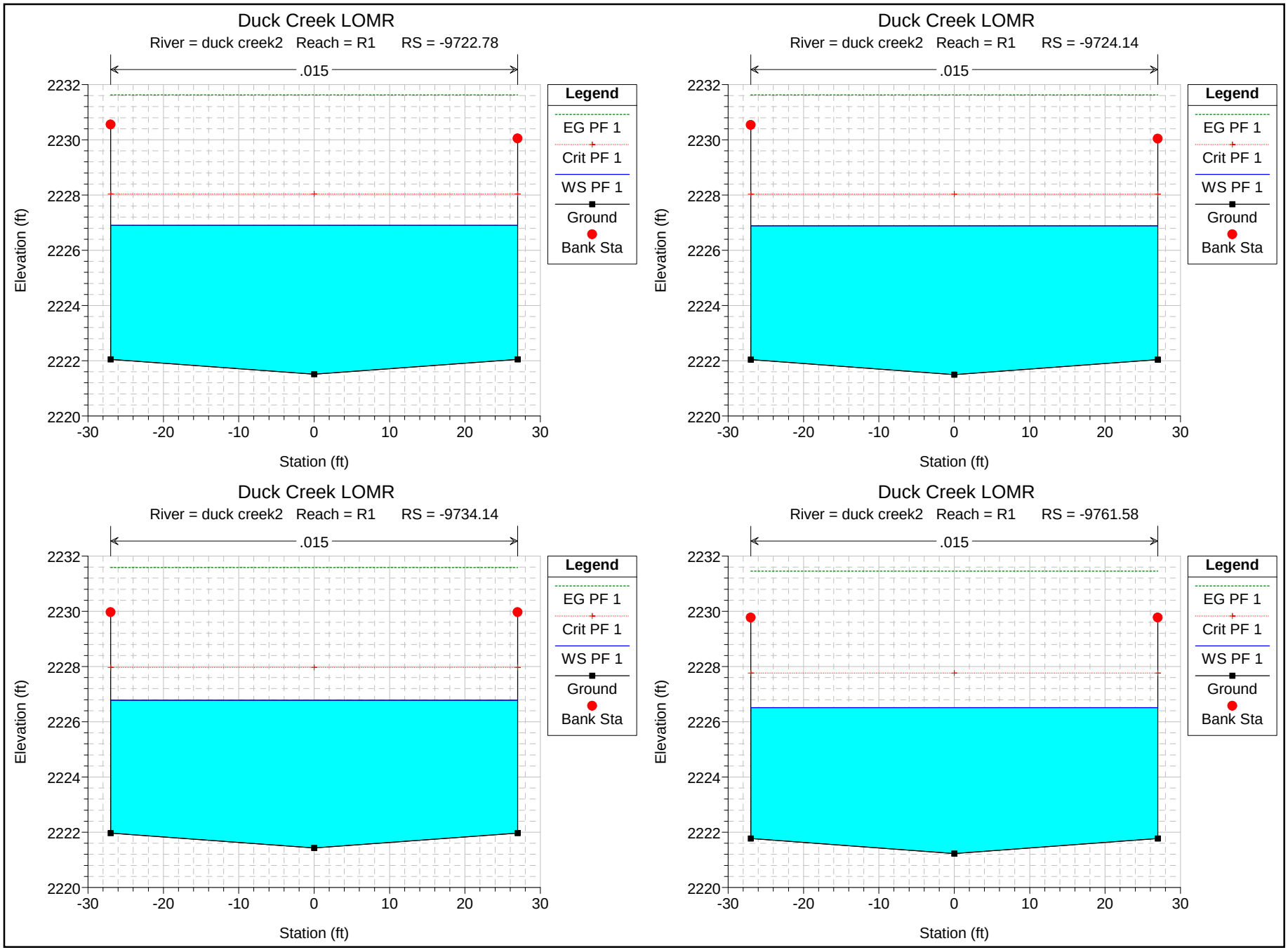

Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -10153.8
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -10223.1
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -10292.1
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -10361.1
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

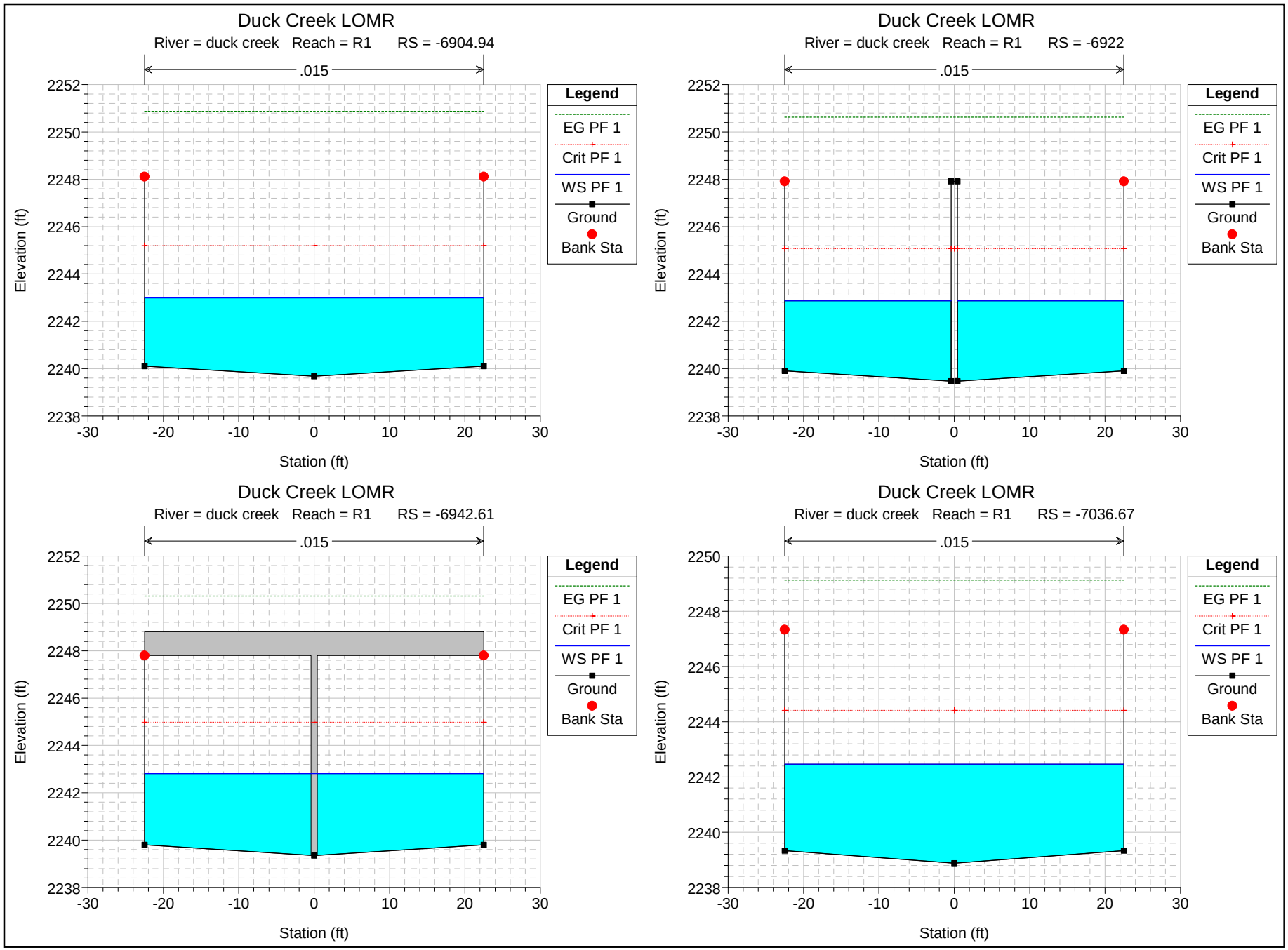

Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -9871.58
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -9922.82
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -10032.2
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -10100.1
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

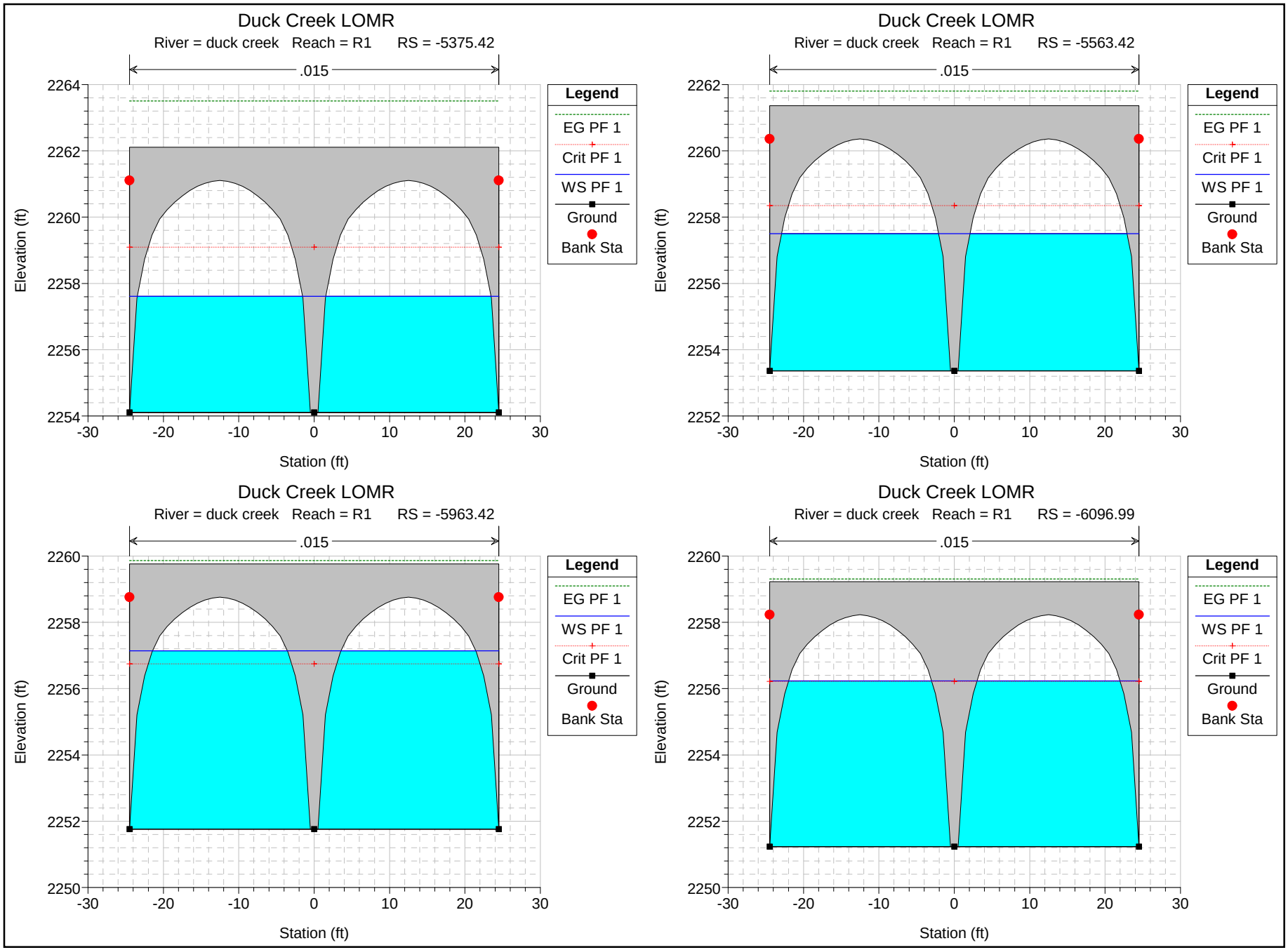

Duck Creek LOMR
River = duck creek Reach = R1 RS = -7725
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7757.55
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7782.67
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7891.36
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


Duck Creek LOMR
River = duck creek Reach = R1 RS = -6359.92
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek Reach = R1 RS = -6391.98
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek Reach = R1 RS = -6402.45
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek Reach = R1 RS = -6452.91
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -8613.65
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -8797.97
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -8828.39
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -8954.39
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -9722.78
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -9724.14
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -9734.14
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -9761.58
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


Duck Creek LOMR
River = duck creek Reach = R1 RS = -6904.94
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek Reach = R1 RS = -6922
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek Reach = R1 RS = -6942.61
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7036.67
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = duck creek Reach = R1 RS = -5375.42
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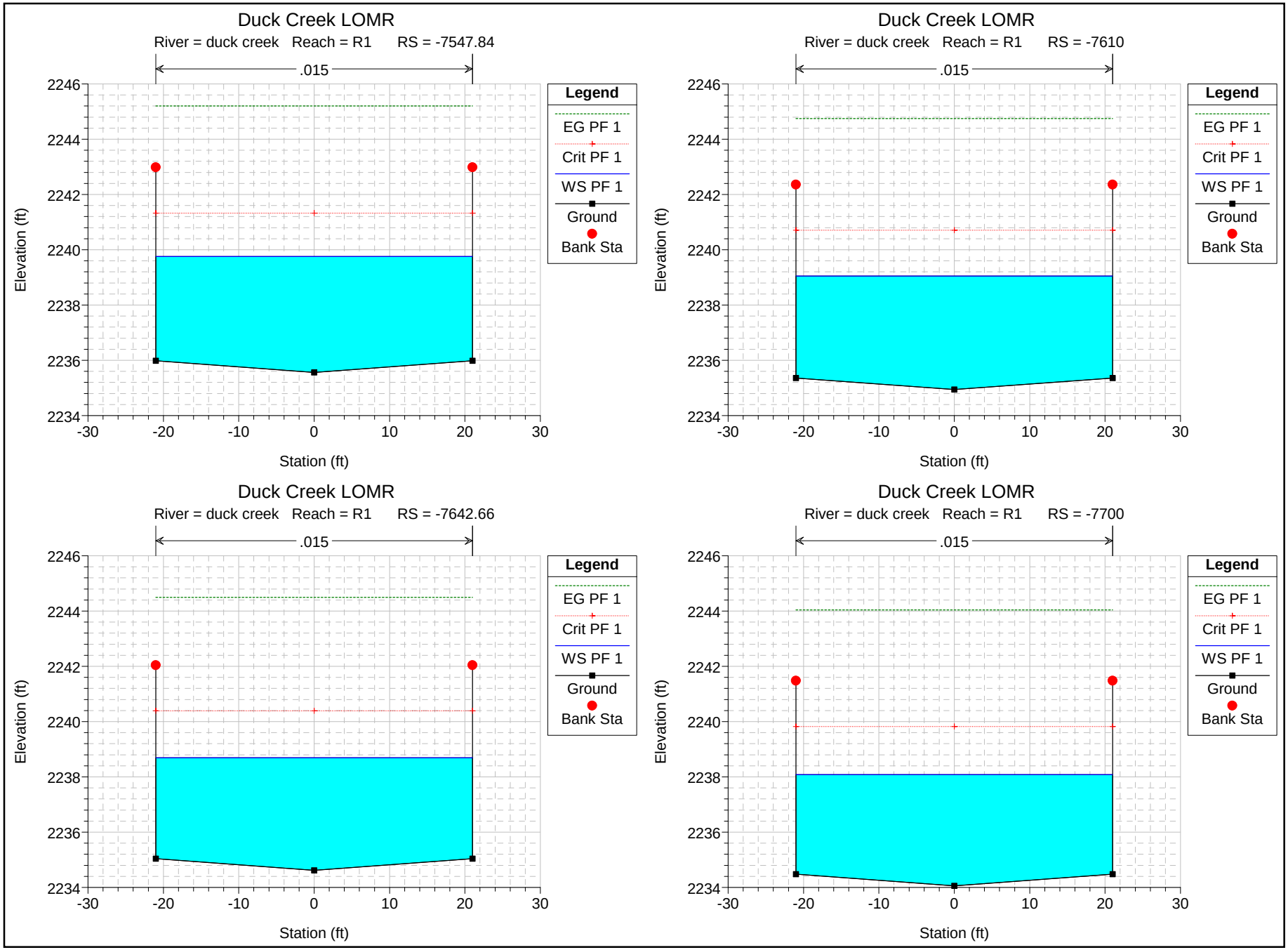
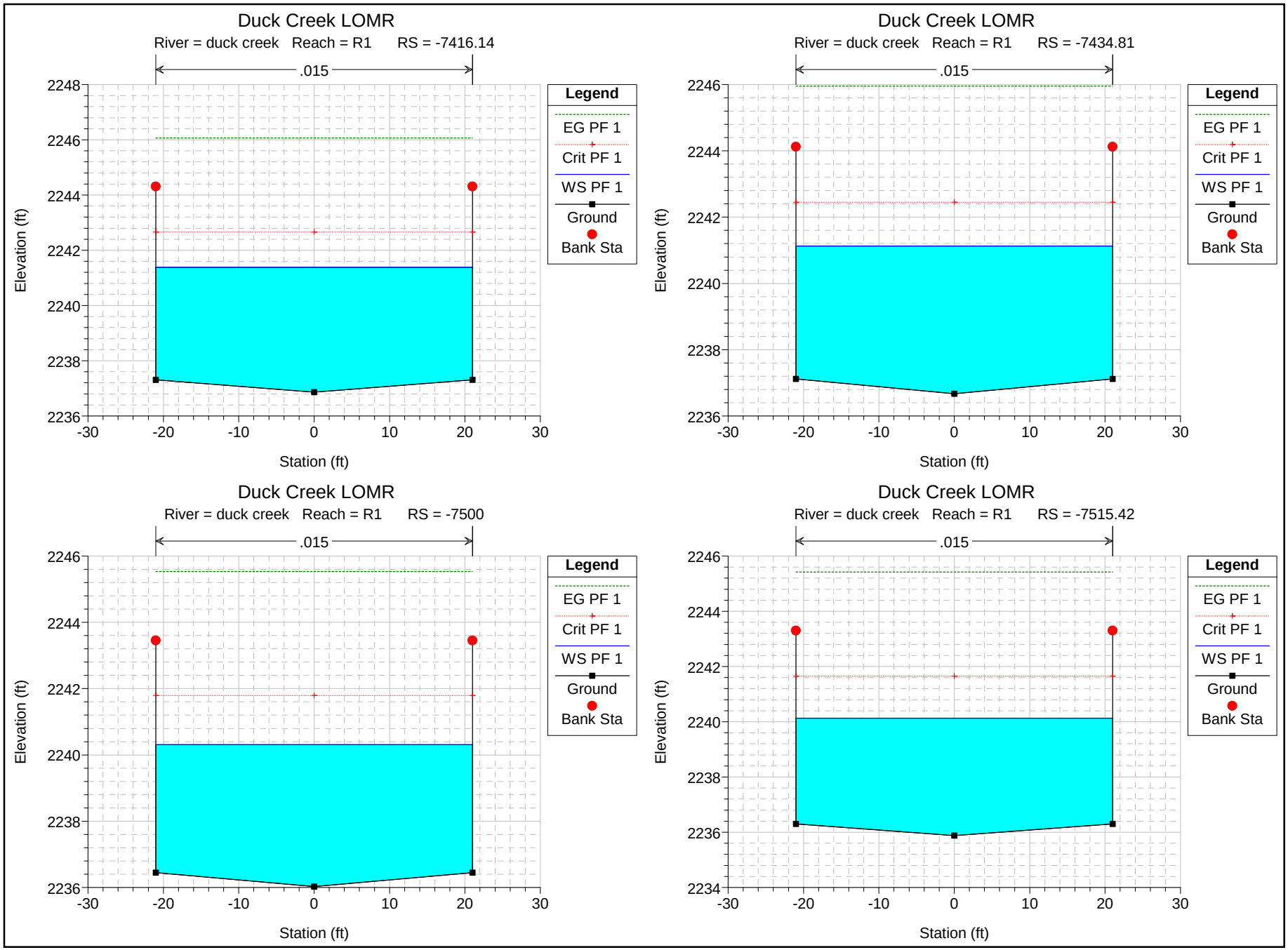
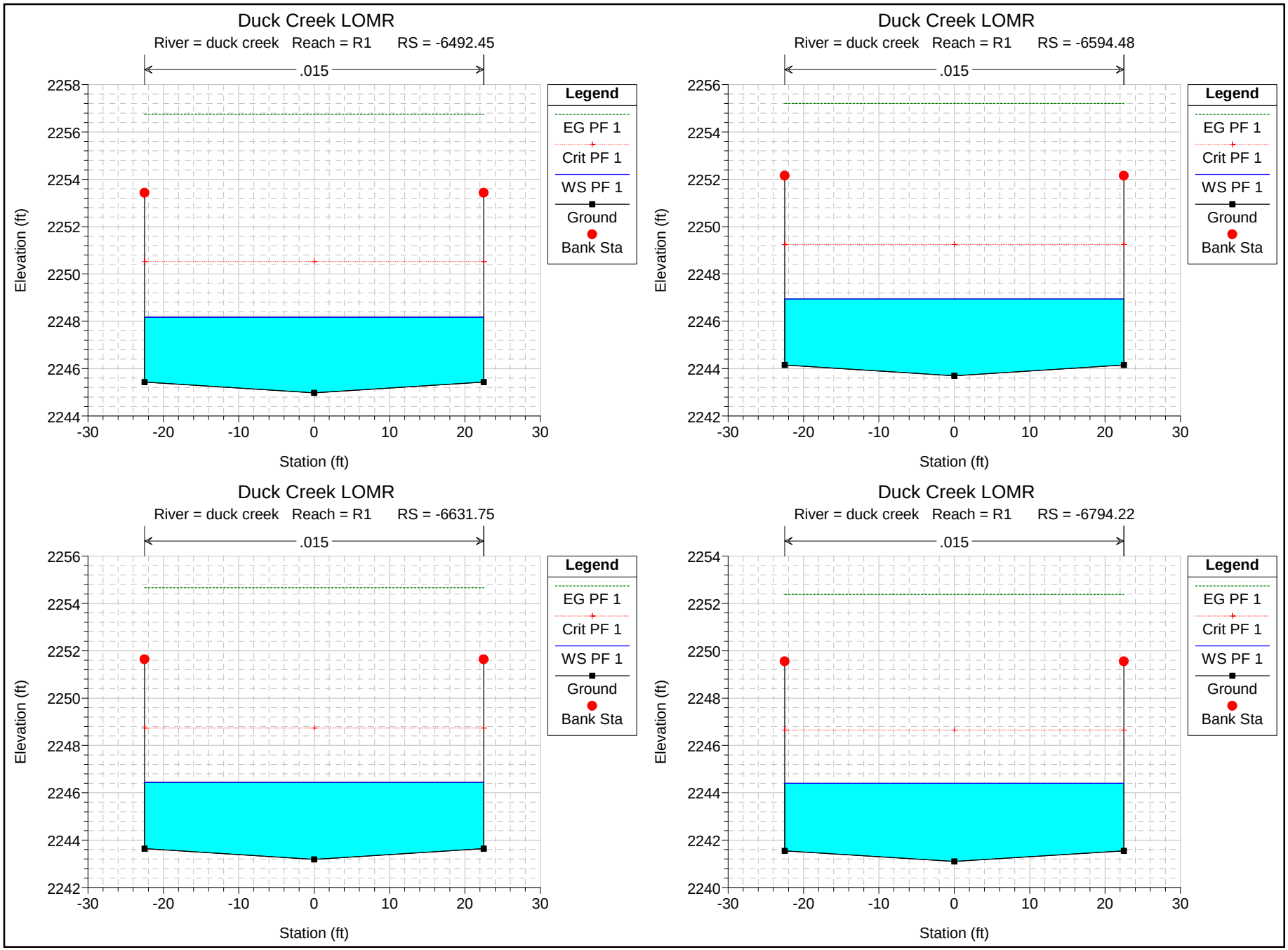
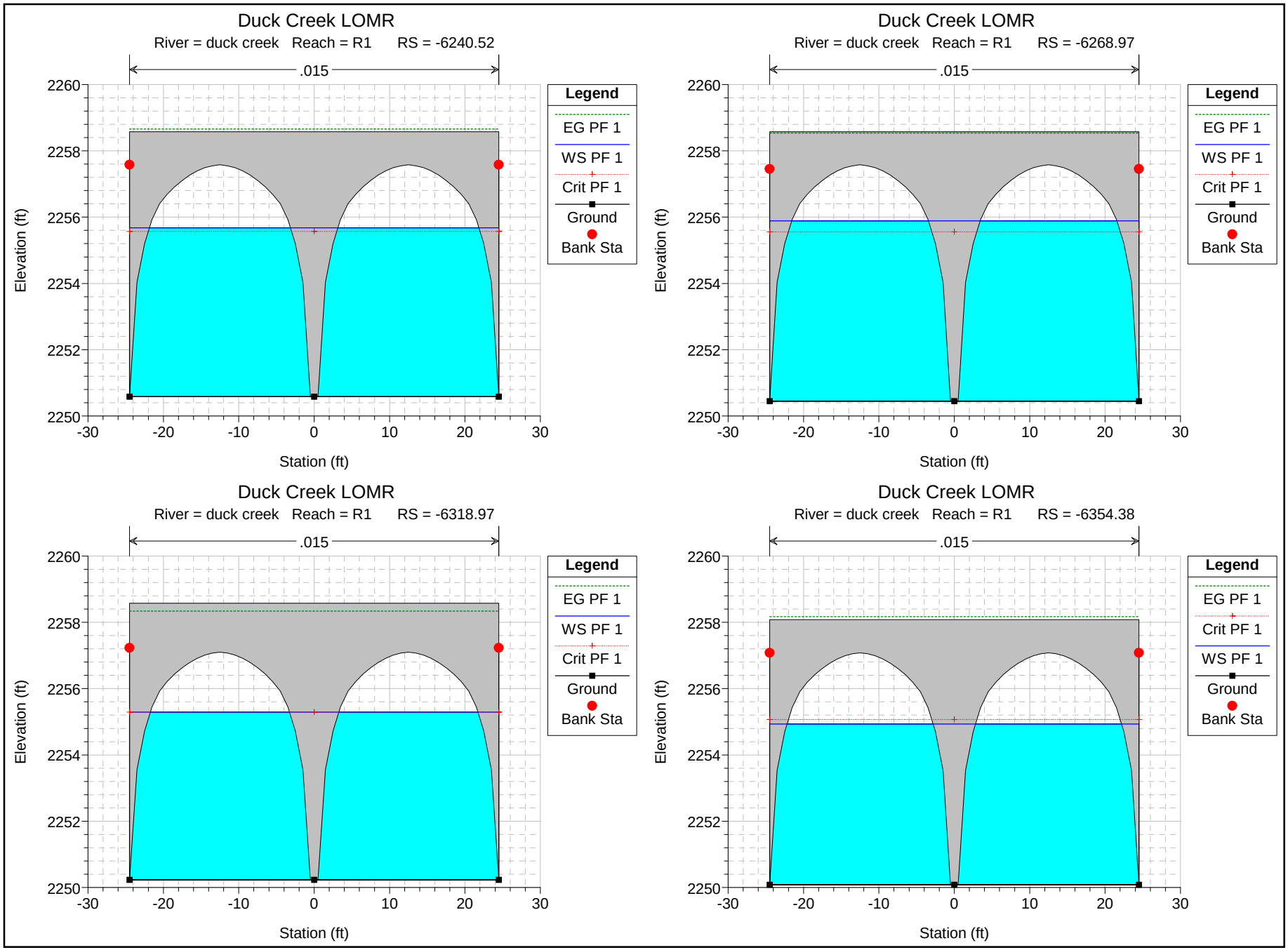
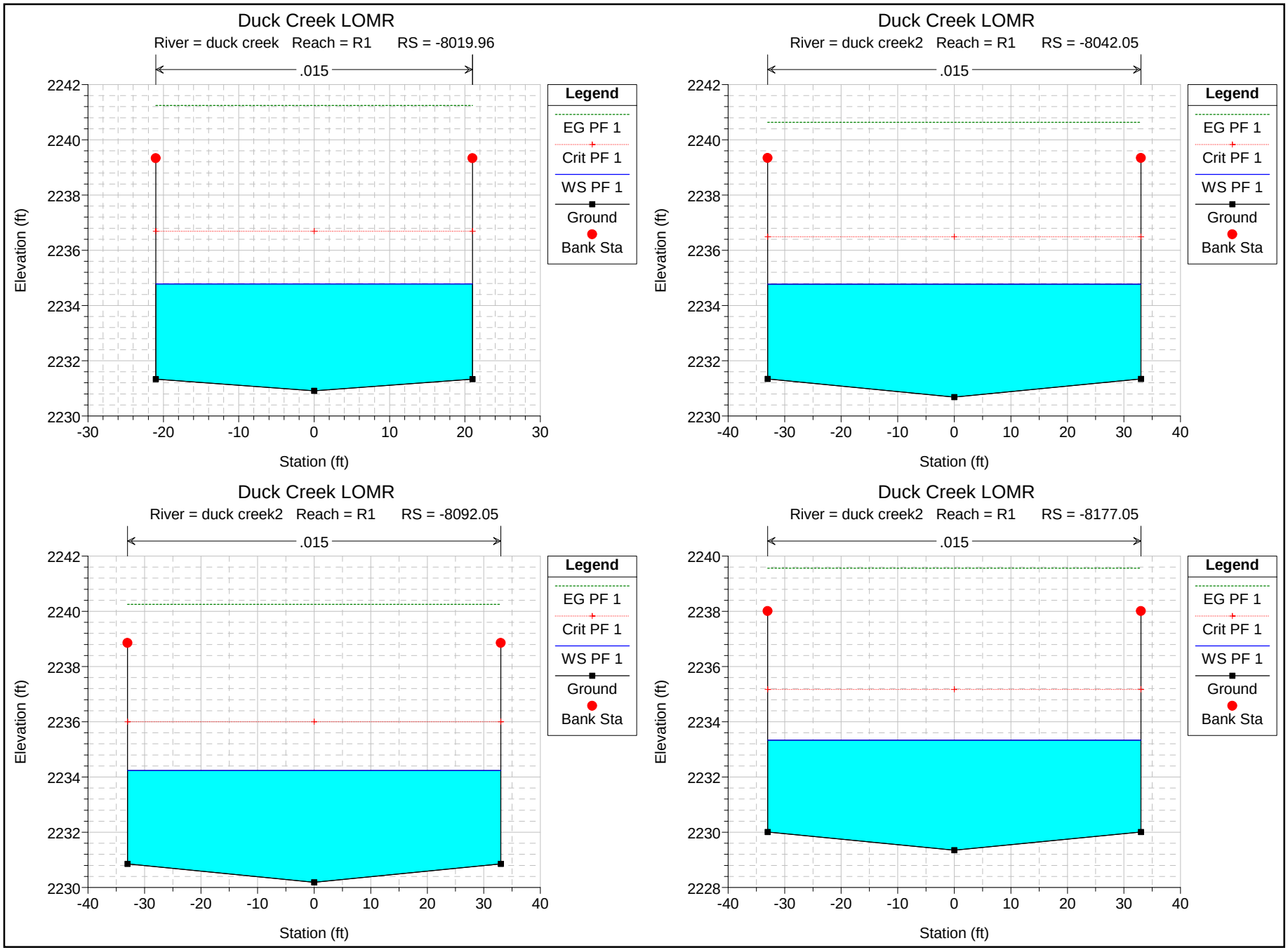
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -5563.42
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -5963.42
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -6096.99
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

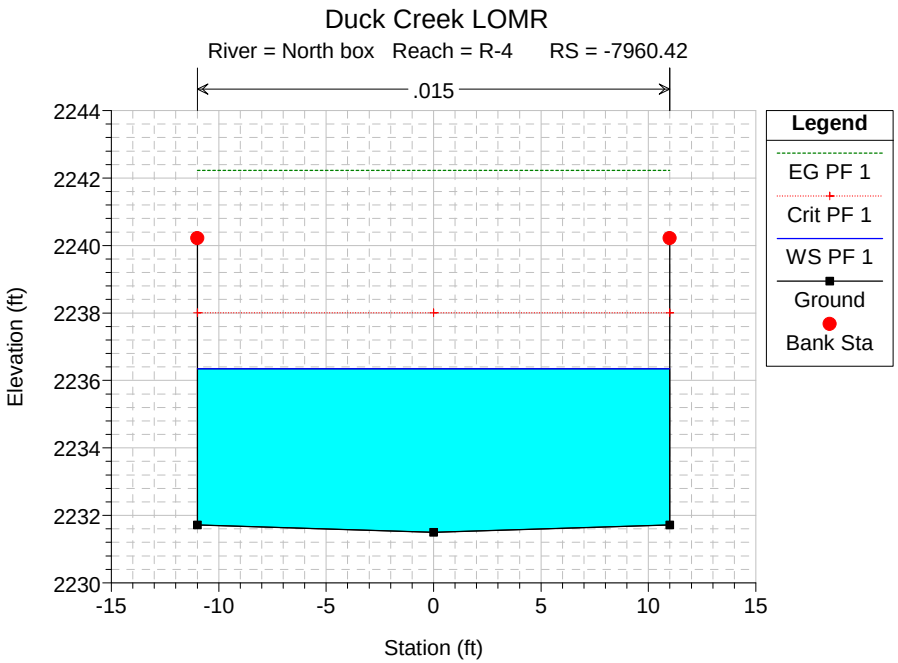

Duck Creek LOMR
River = duck creek Reach = R1 RS = -7547.84
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7610
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7642.66
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7700
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

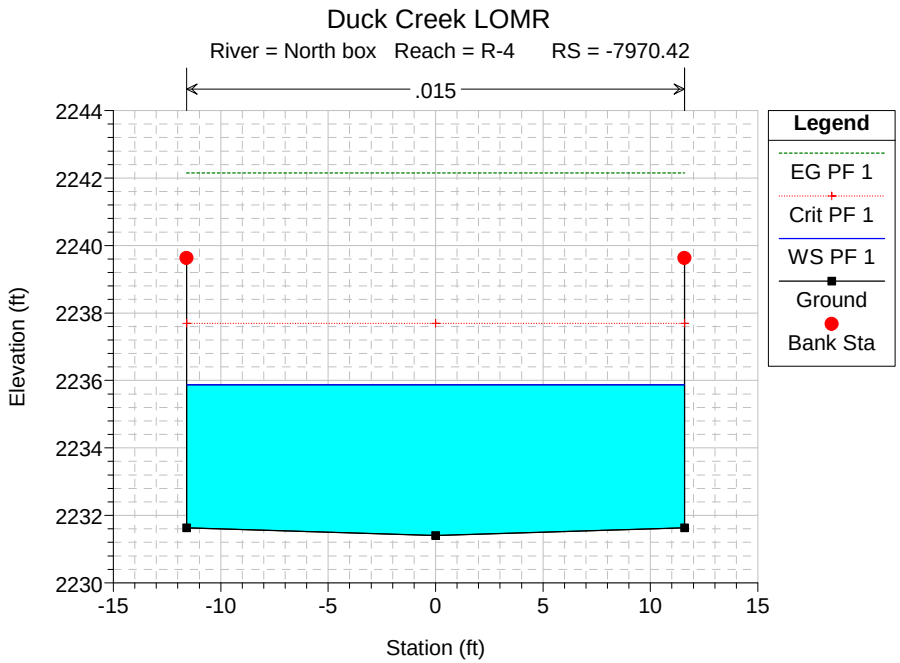

Duck Creek LOMR
River = duck creek Reach = R1 RS = -7416.14
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7434.81
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7500
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -7515.42
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

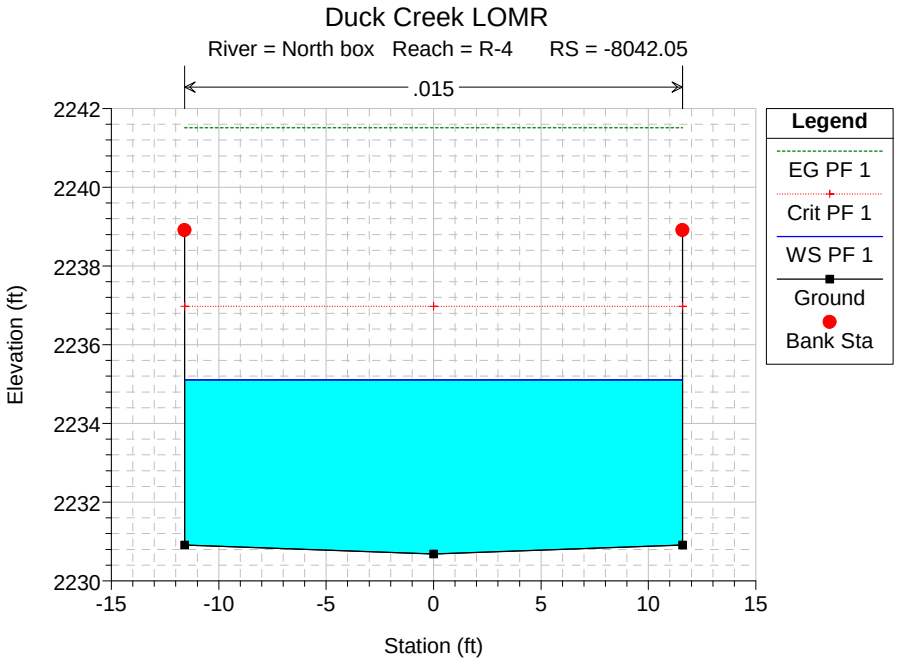

Duck Creek LOMR
River = duck creek Reach = R1 RS = -6492.45
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek Reach = R1 RS = -6594.48
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek Reach = R1 RS = -6631.75
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek Reach = R1 RS = -6794.22
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = duck creek Reach = R1 RS = -6240.52
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -6268.97
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -6318.97
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Duck Creek LOMR
River = duck creek Reach = R1 RS = -6354.38
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


Duck Creek LOMR
River = duck creek Reach = R1 RS = -8019.96
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -8042.05
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -8092.05
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Duck Creek LOMR
River = duck creek2 Reach = R1 RS = -8177.05
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Duck Creek LOMR
River = North box Reach = R-4 RS = -7960.42
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2244
2242
2240
2238
2236
2234
2232
2230
-15
-10
-5
0
5
10
15


Duck Creek LOMR
River = North box Reach = R-4 RS = -7970.42
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2244
2242
2240
2238
2236
2234
2232
2230
-15
-10
-5
0
5
10
15


Duck Creek LOMR
River = North box Reach = R-4 RS = -8042.05
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
2242
2240
2238
2236
2234
2232
2230
-15
-10
-5
0
5
10
15

HEC-RAS Version 3.1.3 May 2005
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
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PROJECT DATA
Project Title: Duck Creek LOMR
Project File : channel2.prj
Run Date and Time: 3/16/2010 8:53:39 PM

Project in English units

PLAN DATA

Plan Title: Plan 05
Plan File : J:\JOBS\6657\Hydrology and Hydraulics_ CLOMR_LOMR\HEC-RAS\LOMR Revisions March 2010\Duck Creek\channel2.p05

Geometry Title: 6657duckcreek2
Geometry File : J:\JOBS\6657\Hydrology and Hydraulics_ CLOMR_LOMR\HEC-RAS\LOMR Revisions March 2010\Duck Creek\channel2.g02

Flow Title : Updated Flow Data
Flow File : J:\JOBS\6657\Hydrology and Hydraulics_ CLOMR_LOMR\HEC-RAS\LOMR Revisions March 2010\Duck Creek\channel2.f05

Plan Summary Information:

Number of:	Cross Sections	= 131	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	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: Mixed Flow

FLOW DATA

Flow Title: Updated Flow Data
Flow File : J:\JOBS\6657\Hydrology and Hydraulics_ CLOMR_LOMR\HEC-RAS\LOMR Revisions March 2010\Duck Creek\channel2.f05

Flow Data (cfs)

River	Reach	RS	PF 1
duck creek	R1	-4414.11	3135
duck creek2	R1	-8042.05	4826
North box	R-4	-4947.21	2028

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
duck creek	R1	PF 1	Normal S = 0.004	
duck creek2	R1	PF 1	Known WS = 2202	
North box	R-4	PF 1		Critical

GEOMETRY DATA

Geometry Title: 6657duckcreek2
Geometry File : J:\JOBS\6657\Hydrology and Hydraulics_ CLOMR_LOMR\HEC-RAS\LOMR Revisions March 2010\Duck Creek\channel2.g02

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
duck creek	R1		J1
duck creek2	R1	J1	
North box	R-4		J1

JUNCTION INFORMATION

Name: J1
Description:
Energy computation Method

Length across Junction		Tributary			
River	Reach	River	Reach	Length	Angle
duck creek	R1	to duck creek2	R1	71.63	
North box	R-4	to duck creek2	R1	0	

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -4414.11

INPUT
Description: existing channel r10
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
   -24.5 2266.43   -24.5 2259.43       0 2259.43    24.5 2259.43    24.5 2266.43

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -24.5    .015   -24.5    .015    24.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -24.5    24.5           329.31  329.31  329.31              0        0
Cross Section Lid
    num=      50
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -24.5 2267.43 2259.43   -23.5 2267.43 2262.88   -22.5 2267.43 2264.05
   -21.5 2267.43 2264.78   -20.5 2267.43 2265.26   -19.5 2267.43 2265.54
   -18.5 2267.43 2265.77   -17.5 2267.43 2265.96   -16.5 2267.43 2266.12
   -15.5 2267.43 2266.25   -14.5 2267.43 2266.34   -13.5 2267.43  2266.4
   -12.5 2267.43 2266.43   -11.5 2267.43  2266.4   -10.5 2267.43 2266.34
    -9.5 2267.43 2266.25    -8.5 2267.43 2266.12    -7.5 2267.43 2265.96
    -6.5 2267.43 2265.77    -5.5 2267.43 2265.54    -4.5 2267.43 2265.26
    -3.5 2267.43 2264.78    -2.2 2267.43 2264.05    -1.5 2267.43 2262.88
     -.5 2267.43 2259.43      .5 2267.43 2259.43     1.5 2267.43 2262.88
     2.5 2267.43 2264.05     3.5 2267.43 2264.78     4.5 2267.43 2265.26
     5.5 2267.43 2265.54     6.5 2267.43 2265.77     7.5 2267.43 2265.96
     8.5 2267.43 2266.12     9.5 2267.43 2266.25    10.5 2267.43 2266.34
    11.5 2267.43  2266.4    12.5 2267.43 2266.43    13.5 2267.43  2266.4
    14.5 2267.43 2266.34    15.5 2267.43 2266.25    16.5 2267.43 2266.12
    17.5 2267.43 2265.96    18.5 2267.43 2265.77    19.5 2267.43 2265.54
    20.5 2267.43 2265.26    21.5 2267.43 2264.78    22.5 2267.43 2264.05
    23.5 2267.43 2262.88    24.5 2267.43 2259.43

CROSS SECTION


RIVER: duck creek
REACH: R1                 RS: -4743.42

INPUT
Description: existing channel r9
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -24.5 2265.11   -24.5 2258.11       0 2258.11    24.5 2258.11    24.5 2265.11

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -24.5    .015   -24.5    .015    24.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -24.5    24.5              420     420     420              0        0
Cross Section Lid
    num=      50
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -24.5 2266.11 2258.11   -23.5 2266.11 2261.56   -22.5 2266.11 2262.73
   -21.5 2266.11 2263.46   -20.5 2266.11 2263.94   -19.5 2266.11 2264.22
   -18.5 2266.11 2264.45   -17.5 2266.11 2264.64   -16.5 2266.11  2264.8
   -15.5 2266.11 2264.93   -14.5 2266.11 2265.02   -13.5 2266.11 2265.08
   -12.5 2266.11 2265.11   -11.5 2266.11 2265.08   -10.5 2266.11 2265.02
    -9.5 2266.11 2264.93    -8.5 2266.11  2264.8    -7.5 2266.11 2264.64
    -6.5 2266.11 2264.45    -5.5 2266.11 2264.22    -4.5 2266.11 2263.94
    -3.5 2266.11 2263.46    -2.5 2266.11 2262.73    -1.5 2266.11 2261.56
     -.5 2266.11 2258.11      .5 2266.11 2258.11     1.5 2266.11 2261.56
     2.5 2266.11 2262.73     3.5 2266.11 2263.46     4.5 2266.11 2263.94
     5.5 2266.11 2264.22     6.5 2266.11 2264.45     7.5 2266.11 2264.64
     8.5 2266.11  2264.8     9.5 2266.11 2264.93    10.5 2266.11 2265.02
    11.5 2266.11 2265.08    12.5 2266.11 2265.11    13.5 2266.11 2265.08
```

```
    14.5 2266.11 2265.02    15.5 2266.11 2264.93    16.5 2266.11  2264.8
    17.5 2266.11 2264.64    18.5 2266.11 2264.45    19.5 2266.11 2264.22
    20.5 2266.11 2263.94    21.5 2266.11 2263.46    22.5 2266.11 2262.73
    23.5 2266.11 2261.56    24.5 2266.11 2258.11

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -5163.42

INPUT
Description: existing channel r8
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -24.5 2263.43   -24.5 2256.43       0 2256.43    24.5 2256.43    24.5 2263.43

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -24.5    .015   -24.5    .015    24.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -24.5    24.5           159.42  159.42  159.42              0        0
Cross Section Lid
    num=      50
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -24.5 2264.63 2256.43   -23.5 2264.63 2259.88   -22.5 2264.63 2261.05
   -21.5 2264.63 2261.78   -20.5 2264.63 2262.26   -19.5 2264.63 2262.54
   -18.5 2264.63 2262.77   -17.5 2264.63 2262.96   -16.5 2264.63 2263.12
   -15.5 2264.63 2263.25   -14.5 2264.63 2263.34   -13.5 2264.63  2263.4
   -12.5 2264.63 2263.43   -11.5 2264.63  2263.4   -10.5 2264.63 2263.34
    -9.5 2264.63 2263.25    -8.5 2264.63 2263.12    -7.5 2264.63 2262.96
    -6.5 2264.63 2262.77    -5.5 2264.63 2262.54    -4.5 2264.63 2262.26
    -3.5 2264.63 2261.78    -2.5 2264.63 2261.05    -1.5 2264.63 2259.88
     -.5 2264.63 2256.43      .5 2264.63 2256.43     1.5 2264.63 2259.88
     2.5 2264.63 2261.05     3.5 2264.63 2261.78     4.5 2264.63 2262.26
     5.5 2264.63 2262.54     6.5 2264.63 2262.77     7.5 2264.63 2262.96
     8.5 2264.63 2263.12     9.5 2264.63 2263.25    10.5 2264.63 2263.34
    11.5 2264.63  2263.4    12.5 2264.63 2263.43    13.5 2264.63  2263.4
    14.5 2264.63 2263.34    15.5 2264.63 2263.25    16.5 2264.63 2263.12
    17.5 2264.63 2262.96    18.5 2264.63 2262.77    19.5 2264.63 2262.54
    20.5 2264.63 2262.26    21.5 2264.63 2261.78    22.5 2264.63 2261.05
    23.5 2264.63 2259.88    24.5 2264.63 2256.43

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -5322.84

INPUT
Description: existing channel r7
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -24.5 2262.79   -24.5 2255.79       0 2255.79    24.5 2255.79    24.5 2262.79

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -24.5    .015   -24.5    .015    24.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -24.5    24.5            52.58   52.58   52.58              0        0
Cross Section Lid
```

```
    num=      50
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -24.5 2263.79 2255.79   -23.5 2263.79 2259.24   -22.5 2263.79 2260.41
   -21.5 2263.79 2261.14   -20.5 2263.79 2261.62   -19.5 2263.79  2261.9
   -18.5 2263.79 2262.13   -17.5 2263.79 2262.32   -16.5 2263.79 2262.48
   -15.5 2263.79 2262.61   -14.5 2263.79  2262.7   -13.5 2263.79 2262.76
   -12.5 2263.79 2262.79   -11.5 2263.79 2262.76   -10.5 2263.79  2262.7
    -9.5 2263.79 2262.61    -8.5 2263.79 2262.48    -7.5 2263.79 2262.32
    -6.5 2263.79 2262.13    -5.5 2263.79  2261.9    -4.5 2263.79 2261.62
    -3.5 2263.79 2261.14    -2.5 2263.79 2260.41    -1.5 2263.79 2259.24
     -.5 2263.79 2255.79      .5 2263.79 2255.79     1.5 2263.79 2259.24
     2.5 2263.79 2260.41     3.5 2263.79 2261.14     4.5 2263.79 2261.62
     5.5 2263.79  2261.9     6.5 2263.79 2262.13     7.5 2263.79 2262.32
     8.5 2263.79 2262.48     9.5 2263.79 2262.61    10.5 2263.79  2262.7
    11.5 2263.79 2262.76    12.5 2263.79 2262.79    13.5 2263.79 2262.76
    14.5 2263.79  2262.7    15.5 2263.79 2262.61    16.5 2263.79 2262.48
    17.5 2263.79 2262.32    18.5 2263.79 2262.13    19.5 2263.79  2261.9
    20.5 2263.79 2261.62    21.5 2263.79 2261.14    22.5 2263.79 2260.41
    23.5 2263.79 2259.24    24.5 2263.79 2255.79

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -5375.42

INPUT
Description: existing channel r6
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -24.5 2261.11   -24.5 2254.11       0 2254.11    24.5 2254.11    24.5 2261.11

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -24.5    .015   -24.5    .015    24.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -24.5    24.5              188     188     188              0        0
Cross Section Lid
    num=      50
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -24.5 2262.11 2254.11   -23.5 2262.11 2257.56   -22.5 2262.11 2258.73
   -21.5 2262.11 2259.46   -20.5 2262.11 2259.94   -19.5 2262.11 2260.22
   -18.5 2262.11 2260.45   -17.5 2262.11 2260.64   -16.5 2262.11  2260.8
   -15.5 2262.11 2260.93   -14.5 2262.11 2261.02   -13.5 2262.11 2261.08
   -12.5 2262.11 2261.11   -11.5 2262.11 2261.08   -10.5 2262.11 2261.02
    -9.5 2262.11 2260.93    -8.5 2262.11  2260.8    -7.5 2262.11 2260.64
    -6.5 2262.11 2260.45    -5.5 2262.11 2260.22    -4.5 2262.11 2259.94
    -3.5 2262.11 2259.46    -2.5 2262.11 2258.73    -1.5 2262.11 2257.56
     -.5 2262.11 2254.11      .5 2262.11 2254.11     1.5 2262.11 2257.56
     2.5 2262.11 2258.73     3.5 2262.11 2259.46     4.5 2262.11 2259.94
     5.5 2262.11 2260.22     6.5 2262.11 2260.45     7.5 2262.11 2260.64
     8.5 2262.11  2260.8     9.5 2262.11 2260.93    10.5 2262.11 2261.02
    11.5 2262.11 2261.08    12.5 2262.11 2261.11    13.5 2262.11 2261.08
    14.5 2262.11 2261.02    15.5 2262.11 2260.93    16.5 2262.11  2260.8
    17.5 2262.11 2260.64    18.5 2262.11 2260.45    19.5 2262.11 2260.22
    20.5 2262.11 2259.94    21.5 2262.11 2259.46    22.5 2262.11 2258.73
    23.5 2262.11 2257.56    24.5 2262.11 2254.11

CROSS SECTION


RIVER: duck creek
```

REACH: R1 RS: -5563.42

INPUT
Description: existing channel r5
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24.5	2260.36	-24.5	2253.36	0	2253.36	24.5	2253.36	24.5	2260.36

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24.5	.015	-24.5	.015	24.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24.5	24.5	400	400	400	0	0

Cross Section Lid
num= 50

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-24.5	2261.36	2253.36	-23.5	2261.36	2256.81	-22.5	2261.36	2257.98
-21.5	2261.36	2258.71	-20.5	2261.36	2259.19	-19.5	2261.36	2259.47
-18.5	2261.36	2259.7	-17.5	2261.36	2259.89	-16.5	2261.36	2260.05
-15.5	2261.36	2260.18	-14.5	2261.36	2260.27	-13.5	2261.36	2260.33
-12.5	2261.36	2260.36	-11.5	2261.36	2260.33	-10.5	2261.36	2260.27
-9.5	2261.36	2260.18	-8.5	2261.36	2260.05	-7.5	2261.36	2259.89
-6.5	2261.36	2259.7	-5.5	2261.36	2259.47	-4.5	2261.36	2259.19
-3.5	2261.36	2258.71	-2.5	2261.36	2257.98	-1.5	2261.36	2256.81
-.5	2261.36	2253.36	.5	2261.36	2253.36	1.5	2261.36	2256.81
2.5	2261.36	2257.98	3.5	2261.36	2258.71	4.5	2261.36	2259.19
5.5	2261.36	2259.47	6.5	2261.36	2259.7	7.5	2261.36	2259.89
8.5	2261.36	2260.05	9.5	2261.36	2260.18	10.5	2261.36	2260.27
11.5	2261.36	2260.33	12.5	2261.36	2260.36	13.5	2261.36	2260.33
14.5	2261.36	2260.27	15.5	2261.36	2260.18	16.5	2261.36	2260.05
17.5	2261.36	2259.89	18.5	2261.36	2259.7	19.5	2261.36	2259.47
20.5	2261.36	2259.19	21.5	2261.36	2258.71	22.5	2261.36	2257.98
23.5	2261.36	2256.81	24.5	2261.36	2253.36			

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -5963.42

INPUT
Description: existing channel r4
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24.5	2258.76	-24.5	2251.76	0	2251.76	24.5	2251.76	24.5	2258.76

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24.5	.015	-24.5	.015	24.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24.5	24.5	133.57	133.57	133.57	0	0

Cross Section Lid
num= 50

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-24.5	2259.76	2251.76	-23.5	2259.76	2255.21	-22.5	2259.76	2256.38
-21.5	2259.76	2257.11	-20.5	2259.76	2257.59	-19.5	2259.76	2257.87
-18.5	2259.76	2258.1	-17.5	2259.76	2258.29	-16.5	2259.76	2258.45
-15.5	2259.76	2258.58	-14.5	2259.76	2258.67	-13.5	2259.76	2258.73
-12.5	2259.76	2258.76	-11.5	2259.76	2258.73	-10.5	2259.76	2258.67
-9.5	2259.76	2258.58	-8.5	2259.76	2258.45	-7.5	2259.76	2258.29
-6.5	2259.76	2258.1	-5.5	2259.76	2257.87	-4.5	2259.76	2257.59

```
    -3.5 2259.76 2257.11    -2.5 2259.76 2256.38    -1.5 2259.76 2255.21
     -.5 2259.76 2251.76      .5 2259.76 2251.76     1.5 2259.76 2255.21
     2.5 2259.76 2256.38     3.5 2259.76 2257.11     4.5 2259.76 2257.59
     5.5 2259.76 2257.87     6.5 2259.76  2258.1     7.5 2259.76 2258.29
     8.5 2259.76 2258.45     9.5 2259.76 2258.58    10.5 2259.76 2258.67
    11.5 2259.76 2258.73    12.5 2259.76 2258.76    13.5 2259.76 2258.73
    14.5 2259.76 2258.67    15.5 2259.76 2258.58    16.5 2259.76 2258.45
    17.5 2259.76 2258.29    18.5 2259.76  2258.1    19.5 2259.76 2257.87
    20.5 2259.76 2257.59    21.5 2259.76 2257.11    22.5 2259.76 2256.38
    23.5 2259.76 2255.21    24.5 2259.76 2251.76

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -6096.99

INPUT
Description: existing channel r3
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -24.5 2258.23   -24.5 2251.23       0 2251.23    24.5 2251.23    24.5 2258.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -24.5    .015   -24.5    .015    24.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -24.5    24.5           143.53  143.53  143.53              0        0
Cross Section Lid
    num=      50
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -24.5 2259.23 2251.23   -23.5 2259.23 2254.68   -22.5 2259.23 2255.85
   -21.5 2259.23 2256.58   -20.5 2259.23 2257.06   -19.5 2259.23 2257.34
   -18.5 2259.23 2257.57   -17.5 2259.23 2257.76   -16.5 2259.23 2257.92
   -15.5 2259.23 2258.05   -14.5 2259.23 2258.14   -13.5 2259.23  2258.2
   -12.5 2259.23 2258.23   -11.5 2259.23  2258.2   -10.5 2259.23 2258.14
    -9.5 2259.23 2258.05    -8.5 2259.23 2257.92    -7.5 2259.23 2257.76
    -6.5 2259.23 2257.57    -5.5 2259.23 2257.34    -4.5 2259.23 2257.06
    -3.5 2259.23 2256.58    -2.5 2259.23 2255.85    -1.5 2259.23 2254.68
     -.5 2259.23 2251.23      .5 2259.23 2251.23     1.5 2259.23 2254.68
     2.5 2259.23 2255.85     3.5 2259.23 2256.58     4.5 2259.23 2257.06
     5.5 2259.23 2257.34     6.5 2259.23 2257.57     7.5 2259.23 2257.76
     8.5 2259.23 2257.92     9.5 2259.23 2258.05    10.5 2259.23 2258.14
    11.5 2259.23  2258.2    12.5 2259.23 2258.23    13.5 2259.23  2258.2
    14.5 2259.23 2258.14    15.5 2259.23 2258.05    16.5 2259.23 2257.92
    17.5 2259.23 2257.76    18.5 2259.23 2257.57    19.5 2259.23 2257.34
    20.5 2259.23 2257.06    21.5 2259.23 2256.58    22.5 2259.23 2255.85
    23.5 2259.23 2254.68    24.5 2259.23 2251.23

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -6240.52

INPUT
Description: existing channel r2
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -24.5 2257.58   -24.5 2250.58       0 2250.58    24.5 2250.58    24.5 2257.58

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
   -24.5    .015   -24.5    .015    24.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -24.5    24.5             28.45   28.45   28.45              0        0
Cross Section Lid
    num=      50
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -24.5 2258.58 2250.58   -23.5 2258.58 2254.03   -22.5 2258.58  2255.2
   -21.5 2258.58 2255.93   -20.5 2258.58 2256.41   -19.5 2258.58 2256.69
   -18.5 2258.58 2256.92   -17.5 2258.58 2257.11   -16.5 2258.58 2257.27
   -15.5 2258.58  2257.4   -14.5 2258.58 2257.49   -13.5 2258.58 2257.55
   -12.5 2258.58 2257.58   -11.5 2258.58 2257.55   -10.5 2258.58 2257.49
    -9.5 2258.58  2257.4    -8.5 2258.58 2257.27    -7.5 2258.58 2257.11
    -6.5 2258.58 2256.92    -5.5 2258.58 2256.69    -4.5 2258.58 2256.41
    -3.5 2258.58 2255.93    -2.5 2258.58  2255.2    -1.5 2258.58 2254.03
     -.5 2258.58 2250.58      .5 2258.58 2250.58     1.5 2258.58 2254.03
     2.5 2258.58  2255.2     3.5 2258.58 2255.93     4.5 2258.58 2256.41
     5.5 2258.58 2256.69     6.5 2258.58 2256.92     7.5 2258.58 2257.11
     8.5 2258.58 2257.27     9.5 2258.58  2257.4    10.5 2258.58 2257.49
    11.5 2258.58 2257.55    12.5 2258.58 2257.58    13.5 2258.58 2257.55
    14.5 2258.58 2257.49    15.5 2258.58  2257.4    16.5 2258.58 2257.27
    17.5 2258.58 2257.11    18.5 2258.58 2256.92    19.5 2258.58 2256.69
    20.5 2258.58 2256.41    21.5 2258.58 2255.93    22.5 2258.58  2255.2
    23.5 2258.58 2254.03    24.5 2258.58 2250.58

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -6268.97

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -24.5 2257.45   -24.5 2250.45       0 2250.45    24.5 2250.45    24.5 2257.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -24.5    .015   -24.5    .015    24.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -24.5    24.5               50      50      50              0        0
Cross Section Lid
    num=      50
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -24.5 2258.58 2250.45   -23.5 2258.58 2254.03   -22.5 2258.58  2255.2
   -21.5 2258.58 2255.93   -20.5 2258.58 2256.41   -19.5 2258.58 2256.69
   -18.5 2258.58 2256.92   -17.5 2258.58 2257.11   -16.5 2258.58 2257.27
   -15.5 2258.58  2257.4   -14.5 2258.58 2257.49   -13.5 2258.58 2257.55
   -12.5 2258.58 2257.58   -11.5 2258.58 2257.55   -10.5 2258.58 2257.49
    -9.5 2258.58  2257.4    -8.5 2258.58 2257.27    -7.5 2258.58 2257.11
    -6.5 2258.58 2256.92    -5.5 2258.58 2256.69    -4.5 2258.58 2256.41
    -3.5 2258.58 2255.93    -2.5 2258.58  2255.2    -1.5 2258.58 2254.03
     -.5 2258.58 2250.45      .5 2258.58 2250.45     1.5 2258.58 2254.03
     2.5 2258.58  2255.2     3.5 2258.58 2255.93     4.5 2258.58 2256.41
     5.5 2258.58 2256.69     6.5 2258.58 2256.92     7.5 2258.58 2257.11
     8.5 2258.58 2257.27     9.5 2258.58  2257.4    10.5 2258.58 2257.49
    11.5 2258.58 2257.55    12.5 2258.58 2257.58    13.5 2258.58 2257.55
    14.5 2258.58 2257.49    15.5 2258.58  2257.4    16.5 2258.58 2257.27
    17.5 2258.58 2257.11    18.5 2258.58 2256.92    19.5 2258.58 2256.69
    20.5 2258.58 2256.41    21.5 2258.58 2255.93    22.5 2258.58  2255.2
```

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    23.5 2258.58 2254.03    24.5 2258.58 2250.45

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -6318.97

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -24.5 2257.23   -24.5 2250.23       0 2250.23    24.5 2250.23    24.5 2257.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -24.5    .015   -24.5    .015    24.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -24.5    24.5            35.41   35.41   35.41              0        0
Cross Section Lid
    num=      50
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -24.5 2258.58 2250.23   -23.5 2258.58 2253.55   -22.5 2258.58 2254.72
   -21.5 2258.58 2255.45   -20.5 2258.58 2255.93   -19.5 2258.58 2256.21
   -18.5 2258.58 2256.44   -17.5 2258.58 2256.63   -16.5 2258.58 2256.79
   -15.5 2258.58 2256.92   -14.5 2258.58 2257.01   -13.5 2258.58 2257.07
   -12.5 2258.58  2257.1   -11.5 2258.58 2257.07   -10.5 2258.58 2257.01
    -9.5 2258.58 2256.92    -8.5 2258.58 2256.79    -7.5 2258.58 2256.63
    -6.5 2258.58 2256.44    -5.5 2258.58 2256.21    -4.5 2258.58 2255.93
    -3.5 2258.58 2255.45    -2.5 2258.58 2254.72    -1.5 2258.58 2253.55
     -.5 2258.58 2250.23      .5 2258.58 2250.23     1.5 2258.58 2253.55
     2.5 2258.58 2254.72     3.5 2258.58 2255.45     4.5 2258.58 2255.93
     5.5 2258.58 2256.21     6.5 2258.58 2256.44     7.5 2258.58 2256.63
     8.5 2258.58 2256.79     9.5 2258.58 2256.92    10.5 2258.58 2257.01
    11.5 2258.58 2257.07    12.5 2258.58  2257.1    13.5 2258.58 2257.07
    14.5 2258.58 2257.01    15.5 2258.58 2256.92    16.5 2258.58 2256.79
    17.5 2258.58 2256.63    18.5 2258.58 2256.44    19.5 2258.58 2256.21
    20.5 2258.58 2255.93    21.5 2258.58 2255.45    22.5 2258.58 2254.72
    23.5 2258.58 2253.55    24.5 2258.58 2250.23

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -6354.38

INPUT
Description: existing channel r
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -24.5 2257.08   -24.5 2250.08       0 2250.08    24.5 2250.08    24.5 2257.08

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -24.5    .015   -24.5    .015    24.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -24.5    24.5            5.54    5.54    5.54              0        0
Cross Section Lid
    num=      50
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -24.5 2258.08 2250.08   -23.5 2258.08 2253.53   -22.5 2258.08  2254.7
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```
   -21.5 2258.08 2255.43   -20.5 2258.08 2255.91   -19.5 2258.08 2256.19
   -18.5 2258.08 2256.42   -17.5 2258.08 2256.61   -16.5 2258.08 2256.77
   -15.5 2258.08  2256.9   -14.5 2258.08 2256.99   -13.5 2258.08 2257.05
   -12.5 2258.08 2257.08   -11.5 2258.08 2257.05   -10.5 2258.08 2256.99
    -9.5 2258.08  2256.9    -8.5 2258.08 2256.77    -7.5 2258.08 2256.61
    -6.5 2258.08 2256.42    -5.5 2258.08 2256.19    -4.5 2258.08 2255.91
    -3.5 2258.08 2255.43    -2.5 2258.08  2254.7    -1.5 2258.08 2253.53
     -.5 2258.08 2250.08      .5 2258.08 2250.08     1.5 2258.08 2253.53
     2.5 2258.08  2254.7     3.5 2258.08 2255.43     4.5 2258.08 2255.91
     5.5 2258.08 2256.19     6.5 2258.08 2256.42     7.5 2258.08 2256.61
     8.5 2258.08 2256.77     9.5 2258.08  2256.9    10.5 2258.08 2256.99
    11.5 2258.08 2257.05    12.5 2258.08 2257.08    13.5 2258.08 2257.05
    14.5 2258.08 2256.99    15.5 2258.08  2256.9    16.5 2258.08 2256.77
    17.5 2258.08 2256.61    18.5 2258.08 2256.42    19.5 2258.08 2256.19
    20.5 2258.08 2255.91    21.5 2258.08 2255.43    22.5 2258.08  2254.7
    23.5 2258.08 2253.53    24.5 2258.08 2250.08

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -6359.92

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -24.5 2257.06   -24.5 2250.06       0 2250.06    24.5 2250.06    24.5 2257.06

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -24.5    .015   -24.5    .015    24.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -24.5    24.5            32.06   32.06   32.06              0        0
Cross Section Lid
    num=      50
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -24.5 2258.08 2250.06   -23.5 2258.08 2253.53   -22.5 2258.08  2254.7
   -21.5 2258.08 2255.43   -20.5 2258.08 2255.91   -19.5 2258.08 2256.19
   -18.5 2258.08 2256.42   -17.5 2258.08 2256.61   -16.5 2258.08 2256.77
   -15.5 2258.08  2256.9   -14.5 2258.08 2256.99   -13.5 2258.08 2257.05
   -12.5 2258.08 2257.08   -11.5 2258.08 2257.05   -10.5 2258.08 2256.99
    -9.5 2258.08  2256.9    -8.5 2258.08 2256.77    -7.5 2258.08 2256.61
    -6.5 2258.08 2256.42    -5.5 2258.08 2256.19    -4.5 2258.08 2255.91
    -3.5 2258.08 2255.43    -2.5 2258.08  2254.7    -1.5 2258.08 2253.53
     -.5 2258.08 2250.06      .5 2258.08 2250.06     1.5 2258.08 2253.53
     2.5 2258.08  2254.7     3.5 2258.08 2255.43     4.5 2258.08 2255.91
     5.5 2258.08 2256.19     6.5 2258.08 2256.42     7.5 2258.08 2256.61
     8.5 2258.08 2256.77     9.5 2258.08  2256.9    10.5 2258.08 2256.99
    11.5 2258.08 2257.05    12.5 2258.08 2257.08    13.5 2258.08 2257.05
    14.5 2258.08 2256.99    15.5 2258.08  2256.9    16.5 2258.08 2256.77
    17.5 2258.08 2256.61    18.5 2258.08 2256.42    19.5 2258.08 2256.19
    20.5 2258.08 2255.91    21.5 2258.08 2255.43    22.5 2258.08  2254.7
    23.5 2258.08 2253.53    24.5 2258.08 2250.06

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -6391.98

INPUT
```

Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24.5	2256.85	-24.5	2249.85	0	2249.85	24.5	2249.85	24.5	2256.85

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24.5	.015	-24.5	.015	24.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24.5	24.5	10.47	10.47	10.47	0	0

Cross Section Lid
num= 50

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-24.5	2257.87	2249.85	-23.5	2257.87	2253.32	-22.5	2257.87	2254.49
-21.5	2257.87	2255.22	-20.5	2257.87	2255.7	-19.5	2257.87	2255.98
-18.5	2257.87	2256.21	-17.5	2257.87	2256.4	-16.5	2257.87	2256.56
-15.5	2257.87	2256.69	-14.5	2257.87	2256.78	-13.5	2257.87	2256.84
-12.5	2257.87	2256.87	-11.5	2257.87	2256.84	-10.5	2257.87	2256.78
-9.5	2257.87	2256.69	-8.5	2257.87	2256.56	-7.5	2257.87	2256.4
-6.5	2257.87	2256.21	-5.5	2257.87	2255.98	-4.5	2257.87	2255.7
-3.5	2257.87	2255.22	-2.5	2257.87	2254.49	-1.5	2257.87	2253.32
-.5	2257.87	2249.85	.5	2257.87	2249.85	1.5	2257.87	2253.32
2.5	2257.87	2254.49	3.5	2257.87	2255.22	4.5	2257.87	2255.7
5.5	2257.87	2255.98	6.5	2257.87	2256.21	7.5	2257.87	2256.4
8.5	2257.87	2256.56	9.5	2257.87	2256.69	10.5	2257.87	2256.78
11.5	2257.87	2256.84	12.5	2257.87	2256.87	13.5	2257.87	2256.84
14.5	2257.87	2256.78	15.5	2257.87	2256.69	16.5	2257.87	2256.56
17.5	2257.87	2256.4	18.5	2257.87	2256.21	19.5	2257.87	2255.98
20.5	2257.87	2255.7	21.5	2257.87	2255.22	22.5	2257.87	2254.49
23.5	2257.87	2253.32	24.5	2257.87	2249.85			

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -6402.45

INPUT
Description: r2
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24.5	2257.83	-24.5	2249.83	0	2249.34	24.5	2249.83	24.5	2257.83

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24.5	.015	-24.5	.015	24.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24.5	24.5	50.46	50.46	50.46	.05	.05

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -6452.91

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24.5	2255.42	-24.5	2247.42	0	2246.93	24.5	2247.42	24.5	2255.42

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -24.5    .015   -24.5    .015    24.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -24.5    24.5            39.54   39.54   39.54            .05      .05

CROSS SECTION


RIVER: duck creek
REACH: R1                 RS: -6492.45

INPUT
Description: r3
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -22.5 2253.43   -22.5 2245.43       0 2244.98    22.5 2245.43    22.5 2253.43

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -22.5    .015   -22.5    .015    22.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -22.5    22.5          108.876  102.03  95.724            .05      .05

CROSS SECTION


RIVER: duck creek
REACH: R1                 RS: -6594.48

INPUT
Description: r4
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -22.5 2252.15   -22.5 2244.15       0  2243.7    22.5 2244.15    22.5 2252.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -22.5    .015   -22.5    .015    22.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -22.5    22.5            34.87   37.27   39.67              0        0

CROSS SECTION


RIVER: duck creek
REACH: R1                 RS: -6631.75

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -22.5 2251.64   -22.5 2243.64       0 2243.19    22.5 2243.64    22.5 2251.64

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -22.5    .015   -22.5    .015    22.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -22.5    22.5          152.03  162.47  172.91              0        0
```

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -6794.22

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-22.5	2249.55	-22.5	2241.55	0	2241.1	22.5	2241.55	22.5	2249.55

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-22.5	.015	-22.5	.015	22.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.5	22.5	103.6	110.72	117.84	0	0

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -6904.94

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-22.5	2248.11	-22.5	2240.11	0	2239.68	22.5	2240.11	22.5	2248.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-22.5	.015	-22.5	.015	22.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.5	22.5	15.96	17.06	18.16	0	0

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -6922

INPUT
Description: r4a
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-22.5	2247.91	-22.5	2239.91	-.41672	239.468	-.4167	2247.91	.4167	2247.91
.41672	239.468	22.5	2239.91	22.5	2247.91				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-22.5	.015	-22.5	.015	22.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.5	22.5	19.285	20.61	21.935	0	0

CROSS SECTION

RIVER: duck creek

REACH: R1 RS: -6942.61

INPUT
Description: r4b
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-22.5	2247.8	-22.5	2239.8	0	2239.35	22.5	2239.8	22.5	2247.8

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-22.5	.015	-22.5	.015	22.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.5	22.5	88.013	94.06 100.107	0	0

Cross Section Lid
num= 6

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-22.5	2248.8	2247.8	-.4167	2248.8	2247.8	-.4167	2248.8	2239.35
.4167	2248.8	2239.35	.4167	2248.8	2247.8	22.5	2248.8	2247.8

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -7036.67

INPUT
Description: r4c
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-22.5	2247.33	-22.5	2239.33	0	2238.88	22.5	2239.33	22.5	2247.33

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-22.5	.015	-22.5	.015	22.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.5	22.5	18.41	19.67 20.93	0	0

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -7056.34

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-22.5	2247.23	-22.5	2239.23	0	2238.78	22.5	2239.23	22.5	2247.23

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-22.5	.015	-22.5	.015	22.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.5	22.5	70.18	75.01 79.84	0	0

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -7131.35

INPUT
Description: r5
Station Elevation Data   num=   5
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-22.5	2246.86	-22.5	2238.86	0	2238.41	22.5	2238.86	22.5	2246.86

Manning's n Values   num=   3
Sta	n Val	Sta	n Val	Sta	n Val
-22.5	.015	-22.5	.015	22.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.5	22.5	240.23	225.84	211.21	.05	.05

CROSS SECTION

RIVER: duck creek
REACH: R1   RS: -7357.19

INPUT
Description: interpolated
Station Elevation Data   num=   5
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-22.5	2245.73	-22.5	2237.73	0	2237.28	22.5	2237.73	22.5	2245.73

Manning's n Values   num=   3
Sta	n Val	Sta	n Val	Sta	n Val
-22.5	.015	-22.5	.015	22.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.5	22.5	36.12	33.95	31.75	.05	.05

CROSS SECTION

RIVER: duck creek
REACH: R1   RS: -7391.14

INPUT
Description: r6
Station Elevation Data   num=   5
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-22.5	2245.55	-22.5	2237.55	0	2237.1	22.5	2237.55	22.5	2245.55

Manning's n Values   num=   3
Sta	n Val	Sta	n Val	Sta	n Val
-22.5	.015	-22.5	.015	22.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.5	22.5	25	25	25	.05	0

CROSS SECTION

RIVER: duck creek
REACH: R1   RS: -7416.14

INPUT
Description: r7
Station Elevation Data   num=   5
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-21	2244.31	-21	2237.31	0	2236.86	21	2237.31	21	2244.31

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -21      21            18.67   18.67   18.67            .05        0

CROSS SECTION


RIVER: duck creek
REACH: R1                 RS: -7434.81

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -21 2244.12     -21 2237.12       0 2236.67      21 2237.12      21 2244.12

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -21      21            65.19   65.19   65.19            .05        0

CROSS SECTION


RIVER: duck creek
REACH: R1                 RS: -7500

INPUT
Description: r8
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -21 2243.45     -21 2236.45       0 2236.03      21 2236.45      21 2243.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -21      21            15.42   15.42   15.42              0      .05

CROSS SECTION


RIVER: duck creek
REACH: R1                 RS: -7515.42

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -21  2243.3     -21  2236.3       0 2235.88      21  2236.3      21  2243.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

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

```
          -21      21            32.42   32.42   32.42              0      .05

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -7547.84

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -21 2242.98     -21 2235.98       0 2235.56      21 2235.98      21 2242.98

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -21      21            62.16   62.16   62.16              0      .05

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -7610

INPUT
Description: r9
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -21 2242.36     -21 2235.36       0 2234.94      21 2235.36      21 2242.36

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -21      21            32.66   32.66   32.66              0      .05

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -7642.66

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -21 2242.04     -21 2235.04       0 2234.62      21 2235.04      21 2242.04

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -21      21            57.34   57.34   57.34              0      .05

CROSS SECTION


RIVER: duck creek
```

REACH: R1 RS: -7700

INPUT
Description: r10
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-21	2241.48	-21	2234.48	0	2234.06	21	2234.48	21	2241.48

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-21	.015	-21	.015	21	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-21	21	25	25	25	0	.05

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -7725

INPUT
Description: r11
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-21	2242.23	-21	2234.23	0	2233.81	21	2234.23	21	2242.23

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-21	.015	-21	.015	21	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-21	21	32.55	32.55	32.55	0	0

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -7757.55

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-21	2241.91	-21	2233.91	0	2233.49	21	2233.91	21	2241.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-21	.015	-21	.015	21	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-21	21	25.12	25.12	25.12	0	0

CROSS SECTION

RIVER: duck creek
REACH: R1 RS: -7782.67

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
     -21 2241.66     -21 2233.66       0 2233.24      21 2233.66      21 2241.66

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -21      21           108.69  108.69  108.69              0        0

CROSS SECTION


RIVER: duck creek
REACH: R1                 RS: -7891.36

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -21 2240.59     -21 2232.59       0 2232.17      21 2232.59      21 2240.59

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -21      21             8.64    8.64    8.64              0        0

CROSS SECTION


RIVER: duck creek
REACH: R1                 RS: -7900

INPUT
Description: r11a
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -21 2240.51     -21 2232.51       0 2232.09      21 2232.51      21 2240.51

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -21      21               20      20      20              0        0

CROSS SECTION


RIVER: duck creek
REACH: R1                 RS: -7920

INPUT
Description: r12
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -21 2240.81     -21 2232.31       0 2231.89      21 2232.31      21 2240.31

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -21      21            40.42   40.42   40.42              0       0

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -7960.42

INPUT
Description: r13
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -21 2240.41     -21 2231.91       0 2231.49      21 2231.91      21 2239.91

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -21      21               10      10      10              0       0

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -7970.42

INPUT
Description: r14
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -21 2239.81     -21 2231.81       0 2231.39      21 2231.81      21 2239.81

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -21      21            49.54   49.54   49.54              0      .05

CROSS SECTION


RIVER: duck creek
REACH: R1                RS: -8019.96

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -21 2239.33     -21 2231.33       0 2230.91      21 2231.33      21 2239.33

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -21    .015     -21    .015      21    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -21      21            22.09   22.09   22.09              0      .05

CROSS SECTION
```

RIVER: duck creek2
REACH: R1 RS: -8042.05

INPUT
Description: r15
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-33	2239.34	-33	2231.34	0	2230.68	33	2231.34	33	2239.34

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-33	.015	-33	.015	33	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-33	33	50	50	50	0	.05

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -8092.05

INPUT
Description: r16
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-33	2238.85	-33	2230.85	0	2230.19	33	2230.85	33	2238.85

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-33	.015	-33	.015	33	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-33	33	85	85	85	0	0

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -8177.05

INPUT
Description: r17
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-33	2238.01	-33	2230.01	0	2229.35	33	2230.01	33	2238.01

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-33	.015	-33	.015	33	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-33	33	39.44	39.44	39.44	.05	0

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -8216.49

INPUT
Description: interpolated
Station Elevation Data num= 5

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  -31.28  2237.6  -31.28  2229.6       0 2228.97   31.28  2229.6   31.28  2237.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  -31.28    .015  -31.28    .015   31.28    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -31.28   31.28            98.36   98.36   98.36             .05       0

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -8314.85

INPUT
Description: r18
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27 2236.54     -27 2228.54       0    2228      27 2228.54      27 2236.54

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -27    .015     -27    .015      27    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -27      27             20.1    20.8    20.5              0       0

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -8335.65

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27 2236.46     -27 2228.46       0 2227.92      27 2228.46      27 2236.46

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -27    .015     -27    .015      27    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -27      27           112.74  116.68  120.62              0       0

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -8452.33

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27 2235.99     -27 2227.99       0 2227.45      27 2227.99      27 2235.99

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -27    .015     -27    .015      27    .015
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -27      27           155.87  161.32  166.77              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -8613.65

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27 2235.35     -27 2227.35       0 2226.81      27 2227.35      27 2235.35

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -27    .015     -27    .015      27    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -27      27           178.09  184.32  190.55              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -8797.97

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27 2234.61     -27 2226.61       0 2226.07      27 2226.61      27 2234.61

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -27    .015     -27    .015      27    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -27      27            29.12   30.42   31.19              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -8828.39

INPUT
Description: r19
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27 2234.49     -27 2226.49       0 2225.95      27 2226.49      27 2234.49

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -27    .015     -27    .015      27    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -27      27              126     126     126              0      .05

CROSS SECTION
```

RIVER: duck creek2
REACH: R1 RS: -8954.39

INPUT
Description: r20
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-27	2233.98	-27	2225.98	0	2225.44	27	2225.98	27	2233.98

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-27	.015	-27	.015	27	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-27	27	115.31	115.31	115.31	.05	0

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -9069.7

INPUT
Description: r21
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-27	2233.56	-27	2224.56	0	2224.02	27	2224.56	27	2232.56

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-27	.015	-27	.015	27	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-27	27	249.71	241.56	233.41	0	0

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -9330.7

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-27	2232.6	-27	2223.6	0	2223.06	27	2223.6	27	2231.6

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-27	.015	-27	.015	27	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-27	27	76.76	74.25	71.74	0	0

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -9404.95

INPUT
Description: r22

```
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27  2232.3     -27  2223.3       0 2222.76      27  2223.3      27  2231.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -27    .015     -27    .015      27    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -27      27            10.34      10    9.66              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                 RS: -9414.95

INPUT
Description: r23
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27 2231.76     -27 2223.26       0 2222.72      27 2223.26      27 2231.26

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -27    .015     -27    .015      27    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -27      27           314.72  304.45  294.18              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                 RS: -9722.78

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27 2230.55     -27 2222.05       0 2221.51      27 2222.05      27 2230.05

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -27    .015     -27    .015      27    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -27      27             1.41    1.36    1.31              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                 RS: -9724.14

INPUT
Description: r24
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27 2230.54     -27 2222.04       0  2221.5      27 2222.04      27 2230.04

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

```
     -27    .015     -27    .015      27    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -27      27             10.34      10    9.66              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -9734.14

INPUT
Description: r25
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27 2229.97     -27 2221.97       0 2221.43      27 2221.97      27 2229.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -27    .015     -27    .015      27    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -27      27             27.44   27.44   27.44              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -9761.58

INPUT
Description: r26
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27 2229.77     -27 2221.77       0 2221.23      27 2221.77      27 2229.77

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -27    .015     -27    .015      27    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -27      27              110     110     110             .05        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -9871.58

INPUT
Description: r27
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -27    2229     -27    2221       0 2220.46      27    2221      27    2229

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -27    .015     -27    .015      27    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -27      27             51.24   51.24   51.24             .05        0

CROSS SECTION
```

RIVER: duck creek2
REACH: R1 RS: -9922.82

INPUT
Description: r28
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	2227.6	-25	2220.6	0	2220.1	25	2220.6	25	2227.6

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.015	-25	.015	25	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-25	25	147.1	147.1	.05	0

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -10032.2

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	2226.59	-25	2219.59	0	2219.09	25	2219.59	25	2226.59

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.015	-25	.015	25	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-25	25	67.9	67.9	0	0

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -10100.1

INPUT
Description: r29
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	2227.15	-25	2219.15	0	2218.61	25	2219.15	25	2227.15

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.015	-25	.015	25	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-25	25	53.75	53.75	0	0

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -10153.8

INPUT

```
Description: r30
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -25 2225.74     -25 2218.74       0 2218.24      25 2218.74      25 2225.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -25    .015     -25    .015      25    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -25      25             69.3    69.3    69.3              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                 RS: -10223.1

INPUT
Description: r31
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -25 2225.27     -25 2218.27       0 2217.77      25 2218.27      25 2225.27

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -25    .015     -25    .015      25    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -25      25                69      69      69              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                 RS: -10292.1

INPUT
Description: r32
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -25 2224.79     -25 2217.79       0 2217.29      25 2217.79      25 2224.79

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -25    .015     -25    .015      25    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -25      25                69      69      69              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                 RS: -10361.1

INPUT
Description: r33
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -25 2224.32     -25 2217.32       0 2216.82      25 2217.32      25 2224.32

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
     -25    .015     -25    .015      25    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -25      25             86.8    86.8    86.8              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -10477.9

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -25 2223.72     -25 2216.72       0 2216.22      25 2216.72      25 2223.72

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -25    .015     -25    .015      25    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -25      25             51.2    51.2    51.2              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -10529.1

INPUT
Description: r34
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -25 2223.37     -25 2216.37       0 2215.87      25 2216.37      25 2223.37

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -25    .015     -25    .015      25    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -25      25           139.34  139.34  139.34              0        0

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -10668.4

INPUT
Description: r35
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -25  2222.4     -25  2215.4       0  2214.9      25  2215.4      25  2222.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -25    .015     -25    .015      25    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -25      25              75      75      75              0      .05
```

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -10743.4

INPUT
Description: r36
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-22.5	2223.88	-22.5	2214.88	0	2214.38	22.5	2214.88	22.5	2223.88

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-22.5	.015	-22.5	.015	22.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.5	22.5	161.9	161.9	161.9	0	0

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -10906.8

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-22.5	2222.76	-22.5	2213.76	0	2213.26	22.5	2213.76	22.5	2222.76

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-22.5	.015	-22.5	.015	22.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.5	22.5	248.73	248.73	248.73	0	0

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -11154

INPUT
Description: r37
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-22.5	2221.05	-22.5	2212.05	0	2211.55	22.5	2212.05	22.5	2221.05

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-22.5	.015	-22.5	.015	22.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.5	22.5	155.4	155.4	155.4	0	0

CROSS SECTION

RIVER: duck creek2
REACH: R1 RS: -11311.5

```
INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -22.5 2219.98   -22.5 2210.98       0 2210.48    22.5 2210.98    22.5 2219.98

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -22.5    .015   -22.5    .015    22.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -22.5    22.5             55.61   55.61   55.61              0       0

CROSS SECTION


RIVER: duck creek2
REACH: R1                 RS: -11367.2

INPUT
Description: r39
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -22.5 2219.59   -22.5 2210.59       0 2210.09    22.5 2210.59    22.5 2219.59

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -22.5    .015   -22.5    .015    22.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -22.5    22.5                50      50      50              0      .05

CROSS SECTION


RIVER: duck creek2
REACH: R1                 RS: -11417.2

INPUT
Description: r40
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -22.5 2213.26   -22.5 2207.26       0 2207.26    22.5 2207.26    22.5 2213.26

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -22.5    .015   -22.5    .015    22.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -22.5    22.5             53.72   53.72   53.72              0       0
Cross Section Lid
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -22.5 2214.26 2213.26     -.5 2214.26 2213.26     -.5 2214.26 2207.26
      .5 2214.26 2207.26      .5 2214.26 2213.26    22.5 2214.26 2213.26

CROSS SECTION


RIVER: duck creek2
REACH: R1                 RS: -11470.9

INPUT
```

```
Description: r41
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -22.5 2210.22   -22.5 2204.22       0 2204.22    22.5 2204.22    22.5 2210.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -22.5    .015   -22.5    .015    22.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -22.5    22.5           154.76  154.76  154.76              0        0
Cross Section Lid
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -22.5 2211.22 2210.22     -.5 2211.22 2210.22     -.5 2211.22 2204.22
      .5 2211.22 2204.22      .5 2211.22 2210.22    22.5 2211.22 2210.22

CROSS SECTION


RIVER: duck creek2
REACH: R1                 RS: -11625.6

INPUT
Description: r42
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -22.5 2201.48   -22.5 2195.48       0 2195.48    22.5 2195.48    22.5 2201.48

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -22.5    .015   -22.5    .015    22.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -22.5    22.5           125.7   125.7   125.7              0        0
Cross Section Lid
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -22.5 2202.48 2201.48     -.5 2202.48 2201.48     -.5 2202.48 2195.48
      .5 2202.48 2195.48      .5 2202.48 2201.48    22.5 2202.48 2201.48

CROSS SECTION


RIVER: duck creek2
REACH: R1                 RS: -11745

INPUT
Description: interpolated
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -22.5 2200.82   -22.5 2194.82       0 2194.82    22.5 2194.82    22.5 2200.82

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -22.5    .015   -22.5    .015    22.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -22.5    22.5           207.6   207.6   207.6              0        0
Cross Section Lid
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -22.5 2202.48 2200.82     -.5 2202.48 2200.82     -.5 2202.48 2194.82
```

```
      .5 2202.48 2194.82      .5 2202.48 2200.82    22.5 2202.48 2200.82

CROSS SECTION


RIVER: duck creek2
REACH: R1                RS: -11952.6

INPUT
Description: r43
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -22.5 2199.72   -22.5 2193.72       0 2193.72    22.5 2193.72    22.5 2199.72

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -22.5    .015   -22.5    .015    22.5    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
         -22.5    22.5             0        0
Cross Section Lid
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -22.5 2200.72 2199.72     -.5 2200.72 2199.72     -.5 2200.72 2193.72
      .5 2200.72 2193.72      .5 2200.72 2199.72    22.5 2200.72 2199.72

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -4947.21

INPUT
Description: c29
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -24 2273.44     -24 2261.44       0 2261.44      24 2261.44      24 2273.44

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -24    .015     -24    .015      24    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -24      24            4.686   4.686   4.686             .1       .3

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -4951.89

INPUT
Description: c28
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -242273.406     -242261.406       02261.406      242261.406      242273.406

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -24    .015     -24    .015      24    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -24      24           15.227  15.227  15.227             .1       .3
```

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -4967.12

INPUT
Description: c27
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-242273.297		-242261.297		02261.297		242261.297		242273.297	

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	28.067	28.067	28.067	.1 .3

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -4995.19

INPUT
Description: c26
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2273.09	-24	2261.09	0	2261.09	24	2261.09	24	2273.09

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	44.424	44.424	44.424	.1 .3

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -5039.61

INPUT
Description: c25
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2272.77	-24	2260.77	0	2260.77	24	2260.77	24	2272.77

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	16.296	16.296	16.296	.1 .3

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -5055.91

INPUT
Description: c24
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2270.16	-24	2260.66	0	2260.66	24	2260.66	24	2270.16

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	57.97	50	41.98	.1	.3

Cross Section Lid
num= 32

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-24	2271.16	2260.66	-23	2271.16	2266.61	-22	2271.16	2267.78
-21	2271.16	2268.52	-19	2271.16	2269.27	-17	2271.16	2269.69
-13	2271.16	2270.13	-12	2271.16	2270.16	-11	2271.16	2270.13
-7	2271.16	2269.69	-5	2271.16	2269.27	-3	2271.16	2268.52
-2	2271.16	2267.78	-1	2271.16	2266.61	-.6	2271.16	2263.51
-.5	2271.16	2260.67	.5	2271.16	2260.67	.6	2271.16	2263.51
1	2271.16	2266.61	2	2271.16	2267.78	3	2271.16	2268.52
5	2271.16	2269.27	7	2271.16	2269.69	11	2271.16	2270.13
12	2271.16	2270.16	13	2271.16	2270.13	17	2271.16	2269.69
19	2271.16	2269.27	21	2271.16	2268.52	22	2271.16	2267.78
23	2271.16	2266.61	24	2271.16	2260.66			

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -5105.91

INPUT
Description: c23
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2266.9	-24	2259.4	0	2259.4	24	2259.4	24	2266.9

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	31.9	27.516	23.1	.1	.3

Cross Section Lid
num= 32

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-24	2267.9	2259.4	-23	2267.9	2263.35	-22	2267.9	2264.52
-21	2267.9	2265.26	-19	2267.9	2266.01	-17	2267.9	2266.43
-13	2267.9	2266.87	-12	2267.9	2266.9	-11	2267.9	2266.87
-7	2267.9	2266.43	-5	2267.9	2266.01	-3	2267.9	2265.26
-2	2267.9	2264.52	-1	2267.9	2263.35	-.6	2267.9	2260.25
-.5	2267.9	2259.41	.5	2267.9	2259.41	.6	2267.9	2260.25
1	2267.9	2263.35	2	2267.9	2264.52	3	2267.9	2265.26
5	2267.9	2266.01	7	2267.9	2266.43	11	2267.9	2266.87
12	2267.9	2266.9	13	2267.9	2266.87	17	2267.9	2266.43
19	2267.9	2266.01	21	2267.9	2265.26	22	2267.9	2264.52
23	2267.9	2263.35	24	2267.9	2259.4			

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -5133.42

INPUT
Description: c22
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-242266.376		-242258.876		02258.876		242258.876		242266.376	

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	40.95 35.323	29.66	.1	.3

Cross Section Lid
num= 32

Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
-242267.3762258.876	-232267.3762262.826	-222267.3762263.996
-212267.3762264.736	-192267.3762265.486	-172267.3762265.906
-132267.3762266.346	-122267.3762266.376	-112267.3762266.346
-72267.3762265.906	-52267.3762265.486	-32267.3762264.736
-22267.3762263.996	-12267.3762262.826	-.62267.3762259.726
-.52267.3762258.886	.52267.3762258.886	.62267.3762259.726
12267.3762262.826	22267.3762263.996	32267.3762264.736
52267.3762265.486	72267.3762265.906	112267.3762266.346
122267.3762266.376	132267.3762266.346	172267.3762265.906
192267.3762265.486	212267.3762264.736	222267.3762263.996
232267.3762262.826	242267.3762258.876	

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -5168.74

INPUT
Description: c21
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-242265.703		-242258.203		02258.203		242258.203		242265.703	

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	37.93 32.711	27.46	.1	.3

Cross Section Lid
num= 32

Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
-242266.7032258.203	-232266.7032262.153	-222266.7032263.323
-212266.7032264.063	-192266.7032264.813	-172266.7032265.233
-132266.7032265.673	-122266.7032265.703	-112266.7032265.673
-72266.7032265.233	-52266.7032264.813	-32266.7032264.063
-22266.7032263.323	-12266.7032262.153	-.62266.7032259.053
-.52266.7032258.213	.52266.7032258.213	.62266.7032259.053
12266.7032262.153	22266.7032263.323	32266.7032264.063
52266.7032264.813	72266.7032265.233	112266.7032265.673
122266.7032265.703	132266.7032265.673	172266.7032265.233
192266.7032264.813	212266.7032264.063	222266.7032263.323
232266.7032262.153	242266.7032258.203	

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -5201.46

INPUT
Description: c20
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2265.08	-24	2257.58	0	2257.58	24	2257.58	24	2265.08

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	30	30	.1	.3

Cross Section Lid
num= 32

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-24	2266.08	2257.58	-23	2266.08	2261.53	-22	2266.08	2262.7
-21	2266.08	2263.44	-19	2266.08	2264.19	-17	2266.08	2264.61
-13	2266.08	2265.05	-12	2266.08	2265.08	-11	2266.08	2265.05
-7	2266.08	2264.61	-5	2266.08	2264.19	-3	2266.08	2263.44
-2	2266.08	2262.7	-1	2266.08	2261.53	-.6	2266.08	2258.43
-.5	2266.08	2257.592	.5	2266.08	2257.59	.6	2266.08	2258.43
1	2266.08	2261.53	2	2266.08	2262.7	3	2266.08	2263.44
5	2266.08	2264.19	7	2266.08	2264.61	11	2266.08	2265.05
12	2266.08	2265.08	13	2266.08	2265.05	17	2266.08	2264.61
19	2266.08	2264.19	21	2266.08	2263.44	22	2266.08	2262.7
23	2266.08	2261.53	24	2266.08	2257.58			

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -5231.46

INPUT
Description: c19
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20.5	2264.5	-20.5	2257	0	2257	20.5	2257	20.5	2264.5

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-20.5	.015	-20.5	.015	20.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20.5	20.5	30.406	30.406	.1	.3

Cross Section Lid
num= 32

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-20.5	2265.5	2257	-19.5	2265.5	2261.15	-18.5	2265.5	2262.28
-16.5	2265.5	2263.55	-14.5	2265.5	2264.06	-12.5	2265.5	2264.37
-11.5	2265.5	2264.46	-10.5	2265.5	2264.5	-9.5	2265.5	2264.46
-8.5	2265.5	2264.37	-6.5	2265.5	2264.06	-4.5	2265.5	2263.55
-2.5	2265.5	2262.28	-1.5	2265.5	2261.15	-.6	2265.5	2257.81
-.5	2265.5	2257	.5	2265.5	2257	.6	2265.5	2257.81
1.5	2265.5	2261.15	2.5	2265.5	2262.28	4.5	2265.5	2263.55
6.5	2265.5	2264.06	8.5	2265.5	2264.37	9.5	2265.5	2264.46

```
    10.5  2265.5  2264.5    11.5  2265.5 2264.46    12.5  2265.5 2264.37
    14.5  2265.5 2264.06    16.5  2265.5 2263.55    18.5  2265.5 2262.28
    19.5  2265.5 2261.15    20.5  2265.5    2257

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -5261.86

INPUT
Description: c18
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -20.5 2264.92   -20.5 2256.42       0 2256.42    20.5 2256.42    20.5 2263.92

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -20.5    .015   -20.5    .015    20.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -20.5    20.5           39.621  39.621  39.621             .1       .3
Cross Section Lid
    num=      32
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -20.5 2264.92 2256.42   -19.5 2264.92 2260.57   -18.5 2264.92  2261.7
   -16.5 2264.92 2262.97   -14.5 2264.92 2263.48   -12.5 2264.92 2263.79
   -11.5 2264.92 2263.88   -10.5 2264.92 2263.92    -9.5 2264.92 2263.88
    -8.5 2264.92 2263.79    -6.5 2264.92 2263.48    -4.5 2264.92 2262.97
    -2.5 2264.92  2261.7    -1.5 2264.92 2260.57     -.6 2264.92 2257.23
     -.5 2264.92 2256.42      .5 2264.92 2256.42      .6 2264.92 2257.23
     1.5 2264.92 2260.57     2.5 2264.92  2261.7     4.5 2264.92 2262.97
     6.5 2264.92 2263.48     8.5 2264.92 2263.79     9.5 2264.92 2263.88
    10.5 2264.92 2263.92    11.5 2264.92 2263.88    12.5 2264.92 2263.79
    14.5 2264.92 2263.48    16.5 2264.92 2262.97    18.5 2264.92  2261.7
    19.5 2264.92 2260.57    20.5 2264.92 2256.42

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -5301.48

INPUT
Description: c17
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -20.52263.163   -20.52255.663       02255.663    20.52255.663    20.52263.163

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -20.5    .015   -20.5    .015    20.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -20.5    20.5           51.04   51.04   51.04             .1       .3
Cross Section Lid
    num=      32
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -20.52264.1632255.663   -19.52264.1632259.813   -18.52264.1632260.943
   -16.52264.1632262.213   -14.52264.1632262.723   -12.52264.1632263.033
   -11.52264.1632263.123   -10.52264.1632263.163    -9.52264.1632263.123
    -8.52264.1632263.033    -6.52264.1632262.723    -4.52264.1632262.213
    -2.52264.1632260.943    -1.52264.1632259.813     -.62264.1632256.473
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```
     -.52264.1632255.663      .52264.1632255.663      .62264.1632256.473
     1.52264.1632259.813     2.52264.1632260.943     4.52264.1632262.213
     6.52264.1632262.723     8.52264.1632263.033     9.52264.1632263.123
    10.52264.1632263.163    11.52264.1632263.123    12.52264.1632263.033
    14.52264.1632262.723    16.52264.1632262.213    18.52264.1632260.943
    19.52264.1632259.813    20.52264.1632255.663

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -5352.52

INPUT
Description: c16
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -20.52262.189   -20.52254.689       02254.689    20.52254.689    20.52262.189

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -20.5    .015   -20.5    .015    20.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -20.5    20.5            3.603   3.603   3.603             .1       .3
Cross Section Lid
    num=      32
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -20.52263.1892254.689   -19.52263.1892258.839   -18.52263.1892259.969
   -16.52263.1892261.239   -14.52263.1892261.749   -12.52263.1892262.059
   -11.52263.1892262.149   -10.52263.1892262.189    -9.52263.1892262.149
    -8.52263.1892262.059    -6.52263.1892261.749    -4.52263.1892261.239
    -2.52263.1892259.969    -1.52263.1892258.839     -.62263.1892255.499
     -.52263.1892254.689      .52263.1892254.689      .62263.1892255.499
     1.52263.1892258.839     2.52263.1892259.969     4.52263.1892261.239
     6.52263.1892261.749     8.52263.1892262.059     9.52263.1892262.149
    10.52263.1892262.189    11.52263.1892262.149    12.52263.1892262.059
    14.52263.1892261.749    16.52263.1892261.239    18.52263.1892259.969
    19.52263.1892258.839    20.52263.1892254.689

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -5356.13

INPUT
Description: c15
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -20.5 2262.12   -20.5 2254.62       0 2254.62    20.5 2254.62    20.5 2262.12

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -20.5    .015   -20.5    .015    20.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -20.5    20.5            26.57      30    33.4             .1       .3
Cross Section Lid
    num=      32
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -20.5 2263.12 2254.62   -19.5 2263.12 2258.77   -18.5 2263.12  2259.9
   -16.5 2263.12 2261.17   -14.5 2263.12 2261.68   -12.5 2263.12 2261.99
```

```
   -11.5 2263.12 2262.08   -10.5 2263.12 2262.12    -9.5 2263.12 2262.08
    -8.5 2263.12 2261.99    -6.5 2263.12 2261.68    -4.5 2263.12 2261.17
    -2.5 2263.12  2259.9    -1.5 2263.12 2258.77     -.6 2263.12 2255.43
     -.5 2263.12 2254.62      .5 2263.12 2254.62      .6 2263.12 2255.43
     1.5 2263.12 2258.77     2.5 2263.12  2259.9     4.5 2263.12 2261.17
     6.5 2263.12 2261.68     8.5 2263.12 2261.99     9.5 2263.12 2262.08
    10.5 2263.12 2262.12    11.5 2263.12 2262.08    12.5 2263.12 2261.99
    14.5 2263.12 2261.68    16.5 2263.12 2261.17    18.5 2263.12  2259.9
    19.5 2263.12 2258.77    20.5 2263.12 2254.62

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -5386.13

INPUT
Description: c14
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -20.5 2261.55   -20.5 2254.05       0 2254.05    20.5 2254.05    20.5 2261.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -20.5    .015   -20.5    .015    20.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -20.5    20.5           114.93  129.77  144.48             .1       .3
Cross Section Lid
    num=      32
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -20.5 2262.55 2254.05   -19.5 2262.55  2258.2   -18.5 2262.55 2259.33
   -16.5 2262.55  2260.6   -14.5 2262.55 2261.11   -12.5 2262.55 2261.42
   -11.5 2262.55 2261.51   -10.5 2262.55 2261.55    -9.5 2262.55 2261.51
    -8.5 2262.55 2261.42    -6.5 2262.55 2261.11    -4.5 2262.55  2260.6
    -2.5 2262.55 2259.33    -1.5 2262.55  2258.2     -.6 2262.55 2254.86
     -.5 2262.55 2254.05      .5 2262.55 2254.05      .6 2262.55 2254.86
     1.5 2262.55  2258.2     2.5 2262.55 2259.33     4.5 2262.55  2260.6
     6.5 2262.55 2261.11     8.5 2262.55 2261.42     9.5 2262.55 2261.51
    10.5 2262.55 2261.55    11.5 2262.55 2261.51    12.5 2262.55 2261.42
    14.5 2262.55 2261.11    16.5 2262.55  2260.6    18.5 2262.55 2259.33
    19.5 2262.55  2258.2    20.5 2262.55 2254.05

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -5515.9

INPUT
Description: c13
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -20.5 2261.15   -20.5 2253.65       0 2253.65    20.5 2253.65    20.5 2261.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -20.5    .015   -20.5    .015    20.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -20.5    20.5          149.799 149.799 149.799             .1       .3
Cross Section Lid
    num=      32
```

```
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -20.5 2262.15 2253.65   -19.5 2262.15  2257.8   -18.5 2262.15 2258.93
   -16.5 2262.15  2260.2   -14.5 2262.15 2260.71   -12.5 2262.15 2261.02
   -11.5 2262.15 2261.11   -10.5 2262.15 2261.15    -9.5 2262.15 2261.11
    -8.5 2262.15 2261.02    -6.5 2262.15 2260.71    -4.5 2262.15  2260.2
    -2.5 2262.15 2258.93    -1.5 2262.15  2257.8     -.6 2262.15 2254.46
     -.5 2262.15 2253.65      .5 2262.15 2253.65      .6 2262.15 2254.46
     1.5 2262.15  2257.8     2.5 2262.15 2258.93     4.5 2262.15  2260.2
     6.5 2262.15 2260.71     8.5 2262.15 2261.02     9.5 2262.15 2261.11
    10.5 2262.15 2261.15    11.5 2262.15 2261.11    12.5 2262.15 2261.02
    14.5 2262.15 2260.71    16.5 2262.15  2260.2    18.5 2262.15 2258.93
    19.5 2262.15  2257.8    20.5 2262.15 2253.65

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -5665.69

INPUT
Description: c12
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -20.5 2260.83   -20.5 2253.33       0 2253.33    20.5 2253.33    20.5 2260.83

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -20.5    .015   -20.5    .015    20.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -20.5    20.5           16.461  16.461  16.461             .1       .3
Cross Section Lid
    num=      32
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -20.5 2261.83 2253.33   -19.5 2261.83 2257.48   -18.5 2261.83 2258.61
   -16.5 2261.83 2259.88   -14.5 2261.83 2260.39   -12.5 2261.83  2260.7
   -11.5 2261.83 2260.79   -10.5 2261.83 2260.83    -9.5 2261.83 2260.79
    -8.5 2261.83  2260.7    -6.5 2261.83 2260.39    -4.5 2261.83 2259.88
    -2.5 2261.83 2258.61    -1.5 2261.83 2257.48     -.6 2261.83 2254.14
     -.5 2261.83 2253.33      .5 2261.83 2253.33      .6 2261.83 2254.14
     1.5 2261.83 2257.48     2.5 2261.83 2258.61     4.5 2261.83 2259.88
     6.5 2261.83 2260.39     8.5 2261.83  2260.7     9.5 2261.83 2260.79
    10.5 2261.83 2260.83    11.5 2261.83 2260.79    12.5 2261.83  2260.7
    14.5 2261.83 2260.39    16.5 2261.83 2259.88    18.5 2261.83 2258.61
    19.5 2261.83 2257.48    20.5 2261.83 2253.33

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -5682.16

INPUT
Description: c11
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -20.5 2260.74   -20.5 2253.24       0 2253.24    20.5 2253.24    20.5 2260.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -20.5    .015   -20.5    .015    20.5    .015

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

```
        -20.5    20.5            82.71   82.71   82.71             .1       .3
Cross Section Lid
    num=      32
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -20.5 2261.74 2253.24   -19.5 2261.74 2257.39   -18.5 2261.74 2258.52
   -16.5 2261.74 2259.79   -14.5 2261.74  2260.3   -12.5 2261.74 2260.61
   -11.5 2261.74  2260.7   -10.5 2261.74 2260.74    -9.5 2261.74  2260.7
    -8.5 2261.74 2260.61    -6.5 2261.74  2260.3    -4.5 2261.74 2259.79
    -2.5 2261.74 2258.52    -1.5 2261.74 2257.39     -.6 2261.74 2254.05
     -.5 2261.74 2253.24      .5 2261.74 2253.24      .6 2261.74 2254.05
     1.5 2261.74 2257.39     2.5 2261.74 2258.52     4.5 2261.74 2259.79
     6.5 2261.74  2260.3     8.5 2261.74 2260.61     9.5 2261.74  2260.7
    10.5 2261.74 2260.74    11.5 2261.74  2260.7    12.5 2261.74 2260.61
    14.5 2261.74  2260.3    16.5 2261.74 2259.79    18.5 2261.74 2258.52
    19.5 2261.74 2257.39    20.5 2261.74 2253.24

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -5764.87

INPUT
Description: c10
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -20.5 2259.81   -20.5 2252.31       0 2252.31    20.5 2252.31    20.5 2259.81

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -20.5    .015   -20.5    .015    20.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -20.5    20.5          130.704 130.704 130.704             .1       .3
Cross Section Lid
    num=      32
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -20.5 2260.81 2252.31   -19.5 2260.81 2256.46   -18.5 2260.81 2257.59
   -16.5 2260.81 2258.86   -14.5 2260.81 2259.37   -12.5 2260.81 2259.68
   -11.5 2260.81 2259.77   -10.5 2260.81 2259.81    -9.5 2260.81 2259.77
    -8.5 2260.81 2259.68    -6.5 2260.81 2259.37    -4.5 2260.81 2258.86
    -2.5 2260.81 2257.59    -1.5 2260.81 2256.46     -.6 2260.81 2253.12
     -.5 2260.81 2252.31      .5 2260.81 2252.31      .6 2260.81 2253.12
     1.5 2260.81 2256.46     2.5 2260.81 2257.59     4.5 2260.81 2258.86
     6.5 2260.81 2259.37     8.5 2260.81 2259.68     9.5 2260.81 2259.77
    10.5 2260.81 2259.81    11.5 2260.81 2259.77    12.5 2260.81 2259.68
    14.5 2260.81 2259.37    16.5 2260.81 2258.86    18.5 2260.81 2257.59
    19.5 2260.81 2256.46    20.5 2260.81 2252.31

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -5895.57

INPUT
Description: c9
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -20.52258.095   -20.52250.595       02250.595    20.52250.595    20.52258.095

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

```
   -20.5    .015   -20.5    .015    20.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -20.5    20.5           37.146  37.146  37.146             .1       .3
Cross Section Lid
    num=      32
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -20.52259.0952250.595   -19.52259.0952254.745   -18.52259.0952255.875
   -16.52259.0952257.145   -14.52259.0952257.655   -12.52259.0952257.965
   -11.52259.0952258.055   -10.52259.0952258.095    -9.52259.0952258.055
    -8.52259.0952257.965    -6.52259.0952257.655    -4.52259.0952257.145
    -2.52259.0952255.875    -1.52259.0952254.745     -.62259.0952251.405
     -.52259.0952250.595      .52259.0952250.595      .62259.0952251.405
     1.52259.0952254.745     2.52259.0952255.875     4.52259.0952257.145
     6.52259.0952257.655     8.52259.0952257.965     9.52259.0952258.055
    10.52259.0952258.095    11.52259.0952258.055    12.52259.0952257.965
    14.52259.0952257.655    16.52259.0952257.145    18.52259.0952255.875
    19.52259.0952254.745    20.52259.0952250.595

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -5932.72

INPUT
Description: c8
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -20.5  2257.9   -20.5  2250.4       0  2250.4    20.5  2250.4    20.5  2257.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -20.5    .015   -20.5    .015    20.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -20.5    20.5             750     750     750             .1       .3
Cross Section Lid
    num=      32
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -20.5  2258.9  2250.4   -19.5  2258.9 2254.55   -18.5  2258.9 2255.68
   -16.5  2258.9 2256.95   -14.5  2258.9 2257.46   -12.5  2258.9 2257.77
   -11.5  2258.9 2257.86   -10.5  2258.9  2257.9    -9.5  2258.9 2257.86
    -8.5  2258.9 2257.77    -6.5  2258.9 2257.46    -4.5  2258.9 2256.95
    -2.5  2258.9 2255.68    -1.5  2258.9 2254.55     -.6  2258.9 2251.21
     -.5  2258.9  2250.4      .5  2258.9  2250.4      .6  2258.9 2251.21
     1.5  2258.9 2254.55     2.5  2258.9 2255.68     4.5  2258.9 2256.95
     6.5  2258.9 2257.46     8.5  2258.9 2257.77     9.5  2258.9 2257.86
    10.5  2258.9  2257.9    11.5  2258.9 2257.86    12.5  2258.9 2257.77
    14.5  2258.9 2257.46    16.5  2258.9 2256.95    18.5  2258.9 2255.68
    19.5  2258.9 2254.55    20.5  2258.9  2250.4

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -6682.72

INPUT
Description: c7
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -20.5 2252.75   -20.5 2245.25       0 2245.25    20.5 2245.25    20.5 2252.75
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-20.5	.015	-20.5	.015	20.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20.5	20.5	44.94	44.94	.1	.3

Cross Section Lid
num= 32

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-20.5	2253.75	2245.25	-19.5	2253.75	2249.4	-18.5	2253.75	2250.53
-16.5	2253.75	2251.8	-14.5	2253.75	2252.31	-12.5	2253.75	2252.62
-11.5	2253.75	2252.71	-10.5	2253.75	2252.75	-9.5	2253.75	2252.71
-8.5	2253.75	2252.62	-6.5	2253.75	2252.31	-4.5	2253.75	2251.8
-2.5	2253.75	2250.53	-1.5	2253.75	2249.4	-.6	2253.75	2246.06
-.5	2253.75	2245.25	.5	2253.75	2245.25	.6	2253.75	2246.06
1.5	2253.75	2249.4	2.5	2253.75	2250.53	4.5	2253.75	2251.8
6.5	2253.75	2252.31	8.5	2253.75	2252.62	9.5	2253.75	2252.71
10.5	2253.75	2252.75	11.5	2253.75	2252.71	12.5	2253.75	2252.62
14.5	2253.75	2252.31	16.5	2253.75	2251.8	18.5	2253.75	2250.53
19.5	2253.75	2249.4	20.5	2253.75	2245.25			

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -6727.66

INPUT
Description: c6
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20.52	251.758	-20.52	244.258	0	2244.258	20.52	244.258	20.52	251.758

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-20.5	.015	-20.5	.015	20.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20.5	20.5	56.926	56.926	.1	.3

Cross Section Lid
num= 32

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-20.52	252.758	2244.258	-19.52	252.758	2248.408	-18.52	252.758	2249.538
-16.52	252.758	2250.808	-14.52	252.758	2251.318	-12.52	252.758	2251.628
-11.52	252.758	2251.718	-10.52	252.758	2251.758	-9.52	252.758	2251.718
-8.52	252.758	2251.628	-6.52	252.758	2251.318	-4.52	252.758	2250.808
-2.52	252.758	2249.538	-1.52	252.758	2248.408	-.62	252.758	2245.068
-.52	252.758	2244.258	.52	252.758	2244.258	.62	252.758	2245.068
1.52	252.758	2248.408	2.52	252.758	2249.538	4.52	252.758	2250.808
6.52	252.758	2251.318	8.52	252.758	2251.628	9.52	252.758	2251.718
10.52	252.758	2251.758	11.52	252.758	2251.718	12.52	252.758	2251.628
14.52	252.758	2251.318	16.52	252.758	2250.808	18.52	252.758	2249.538
19.52	252.758	2248.408	20.52	252.758	2244.258			

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -6784.58

INPUT
Description: c5

Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20.5	2250.5	-20.5	2243	0	2243	20.5	2243	20.5	2250.5

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-20.5	.015	-20.5	.015	20.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20.5	20.5	18.134	18.134	18.134	.1	.3

Cross Section Lid
num= 32

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-20.5	2251.5	2243	-19.5	2251.5	2247.15	-18.5	2251.5	2248.28
-16.5	2251.5	2249.55	-14.5	2251.5	2250.06	-12.5	2251.5	2250.37
-11.5	2251.5	2250.46	-10.5	2251.5	2250.5	-9.5	2251.5	2250.46
-8.5	2251.5	2250.37	-6.5	2251.5	2250.06	-4.5	2251.5	2249.55
-2.5	2251.5	2248.28	-1.5	2251.5	2247.15	-.6	2251.5	2243.81
-.5	2251.5	2243	.5	2251.5	2243	.6	2251.5	2243.81
1.5	2251.5	2247.15	2.5	2251.5	2248.28	4.5	2251.5	2249.55
6.5	2251.5	2250.06	8.5	2251.5	2250.37	9.5	2251.5	2250.46
10.5	2251.5	2250.5	11.5	2251.5	2250.46	12.5	2251.5	2250.37
14.5	2251.5	2250.06	16.5	2251.5	2249.55	18.5	2251.5	2248.28
19.5	2251.5	2247.15	20.5	2251.5	2243			

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -6802.72

INPUT
Description: c4
c4
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20.5	2250.1	-20.5	2242.6	0	2242.6	20.5	2242.6	20.5	2250.1

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-20.5	.015	-20.5	.015	20.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20.5	20.5	36.62	36.62	36.62	.1	.3

Cross Section Lid
num= 32

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-20.5	2251.1	2242.6	-19.5	2251.1	2246.75	-18.5	2251.1	2247.88
-16.5	2251.1	2249.15	-14.5	2251.1	2249.66	-12.5	2251.1	2249.97
-11.5	2251.1	2250.06	-10.5	2251.1	2250.1	-9.5	2251.1	2250.06
-8.5	2251.1	2249.97	-6.5	2251.1	2249.66	-4.5	2251.1	2249.15
-2.5	2251.1	2247.88	-1.5	2251.1	2246.75	-.6	2251.1	2243.41
-.5	2251.1	2242.6	.5	2251.1	2242.6	.6	2251.1	2243.41
1.5	2251.1	2246.75	2.5	2251.1	2247.88	4.5	2251.1	2249.15
6.5	2251.1	2249.66	8.5	2251.1	2249.97	9.5	2251.1	2250.06
10.5	2251.1	2250.1	11.5	2251.1	2250.06	12.5	2251.1	2249.97
14.5	2251.1	2249.66	16.5	2251.1	2249.15	18.5	2251.1	2247.88
19.5	2251.1	2246.75	20.5	2251.1	2242.6			

CROSS SECTION

RIVER: North box

REACH: R-4 RS: -6839.34

INPUT
Description: c3
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24.5	2249.49	-24.5	2242.49	0	2242.49	24.5	2242.49	24.5	2249.49

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24.5	.015	-24.5	.015	24.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24.5	24.5	141.386	141.386 141.386	.1	.3

Cross Section Lid
num= 26

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-24.5	2250.49	2242.49	-22.5	2250.492	247.162	-20.5	2250.492	248.361
-18.5	2250.492	248.862	-16.5	2250.492	249.203	-14.5	2250.492	249.411
-12.5	2250.492	249.487	-10.5	2250.492	249.411	-8.5	2250.492	249.203
-6.5	2250.492	248.862	-4.5	2250.492	248.361	-2.5	2250.492	247.162
-.5	2250.49	2242.49	.5	2250.49	2242.49	2.5	2250.492	247.162
4.5	2250.492	248.361	6.5	2250.492	248.862	8.5	2250.492	249.203
10.5	2250.492	249.411	12.5	2250.492	249.487	14.5	2250.492	249.411
16.5	2250.492	249.203	18.5	2250.492	248.862	20.5	2250.492	248.361
22.5	2250.492	247.162	24.5	2250.49	2242.49			

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -6980.72

INPUT
Description: c2
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24.52	248.907	-24.52	241.907	0	2241.907	24.52	241.907	24.52	248.907

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24.5	.015	-24.5	.015	24.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24.5	24.5	38.214	38.214 38.214	.1	.3

Cross Section Lid
num= 26

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-24.52	249.907	2242.057	-22.52	249.907	2246.579	-20.52	249.907	2247.778
-18.52	249.907	2248.279	-16.52	249.907	2248.62	-14.52	249.907	2248.828
-12.52	249.907	2248.904	-10.52	249.907	2248.828	-8.52	249.907	2248.62
-6.52	249.907	2248.279	-4.52	249.907	2247.778	-2.52	249.907	2246.579
-.52	249.907	2242.057	.52	249.907	2242.057	2.52	249.907	2246.579
4.52	249.907	2247.778	6.52	249.907	2248.279	8.52	249.907	2248.62
10.52	249.907	2248.828	12.52	249.907	2248.904	14.52	249.907	2248.828
16.52	249.907	2248.62	18.52	249.907	2248.279	20.52	249.907	2247.778
22.52	249.907	2246.579	24.52	249.907	2242.057			

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -7001.77

INPUT
Description: c1
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24.5	2248.7	-24.5	2241.7	0	2241.7	24.5	2241.7	24.5	2248.7

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24.5	.015	-24.5	.015	24.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24.5	24.5	17.17	17.17	17.17	.1	.3

Cross Section Lid
num= 26

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-24.5	2249.7	2241.7	-22.5	2249.7	2246.22	-20.5	2249.7	2247.42
-18.5	2249.7	2247.92	-16.5	2249.7	2248.26	-14.5	2249.7	2248.47
-12.5	2249.7	2248.55	-10.5	2249.7	2248.47	-8.5	2249.7	2248.26
-6.5	2249.7	2247.92	-4.5	2249.7	2247.42	-2.5	2249.7	2246.22
-.5	2249.7	2241.7	.5	2249.7	2241.7	2.5	2249.7	2246.22
4.5	2249.7	2247.42	6.5	2249.7	2247.92	8.5	2249.7	2248.26
10.5	2249.7	2248.47	12.5	2249.7	2248.55	14.5	2249.7	2248.47
16.5	2249.7	2248.26	18.5	2249.7	2247.92	20.5	2249.7	2247.42
22.5	2249.7	2246.22	24.5	2249.7	2241.7			

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -7018.94

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-23.94	2251.7	-23.94	2241.7	0	2241.28	23.94	2241.7	23.94	2251.7

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-23.94	.015	-23.94	.015	23.94	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-23.94	23.94	34.95	34.95	34.95	0	0

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -7053.89

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20.77	2249.87	-20.77	2240.87	0	2240.43	20.77	2240.87	20.77	2249.87

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-20.77	.015	-20.77	.015	20.77	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20.77	20.77	20	20	20	0	0

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -7073.89

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-19.54	2249.36	-19.54	2240.36	0	2239.95	19.54	2240.36	19.54	2249.36

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-19.54	.015	-19.54	.015	19.54	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19.54	19.54	46.14	46.14	46.14	0	0

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -7120.03

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-16.68	2248.2	-16.68	2239.2	0	2238.83	16.68	2239.2	16.68	2248.2

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-16.68	.015	-16.68	.015	16.68	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-16.68	16.68	50.02	50.02	50.02	0	0

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -7170.05

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-13.58	2246.93	-13.58	2237.93	0	2237.61	13.58	2237.93	13.58	2246.93

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-13.58	.015	-13.58	.015	13.58	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-13.58	13.58	41.72	41.72	41.72	0	0

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -7211.77

INPUT
Description: 2
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-11	2245.82	-11	2236.82	0	2236.6	11	2236.82	11	2245.82

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-11	.015	-11	.015	11	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-11	11	2.18	2.18	2.18	0	0

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -7213.95

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-11	2245.86	-11	2236.86	0	2236.59	11	2236.86	11	2245.86

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-11	.015	-11	.015	11	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-11	11	46.61	46.61	46.61	0	0

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -7260.56

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-11	2245.57	-11	2236.57	0	2236.35	11	2236.57	11	2245.57

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-11	.015	-11	.015	11	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-11	11	62.64	62.64	62.64	0	0

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -7323.20

INPUT
Description: interpolated
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-11	2245.24	-11	2236.24	0	2236.02	11	2236.24	11	2245.24

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -11    .015     -11    .015      11    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -11      11             56.8    56.8    56.8              0        0

CROSS SECTION


RIVER: North box
REACH: R-4                RS: -7380

INPUT
Description: 3
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -11 2244.94     -11 2235.94       0 2235.72      11 2235.94      11 2244.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -11    .015     -11    .015      11    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -11      11                20      20      20              0        0

CROSS SECTION


RIVER: North box
REACH: R-4                RS: -7400

INPUT
Description: 4
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -11 2244.34     -11 2235.84       0 2235.62      11 2235.84      11 2244.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -11    .015     -11    .015      11    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -11      11           111.22  111.22  111.22              0        0

CROSS SECTION


RIVER: North box
REACH: R-4                RS: -7511.22

INPUT
Description: 5
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -11 2243.76     -11 2235.26       0 2235.04      11 2235.26      11 2243.76

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -11    .015     -11    .015      11    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
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          -11      11            400.6  409.61  418.62              0        0

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -7920.83

INPUT
Description: 6
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -11 2240.62     -11 2232.12       0  2231.9      11 2232.12      11 2240.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -11    .015     -11    .015      11    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -11      11             9.71    9.93   10.15              0        0

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -7930.76

INPUT
Description: 6a
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -11 2240.52     -11 2232.02       0  2231.8      11 2232.02      11 2240.52

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -11    .015     -11    .015      11    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -11      11           29.007   29.66  30.313              0        0

CROSS SECTION


RIVER: North box
REACH: R-4               RS: -7960.42

INPUT
Description: 7
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -11 2240.22     -11 2231.72       0  2231.5      11 2231.72      11 2240.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -11    .015     -11    .015      11    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -11      11             9.78      10   10.22              0        0

CROSS SECTION


RIVER: North box
```

REACH: R-4 RS: -7970.42

INPUT
Description: 8
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-11.5832	239.632	-11.5832	31.632	0	2231.4	11.5832	31.632	11.5832	39.632

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-11.583	.015	-11.583	.015	11.583	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-11.583	11.583	71.63	71.63	71.63	0	.05

CROSS SECTION

RIVER: North box
REACH: R-4 RS: -8042.05

INPUT
Description: 9
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-11.5832	38.912	-11.5832	30.912	0	2230.68	11.5832	30.912	11.5832	38.912

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-11.583	.015	-11.583	.015	11.583	.015

Bank Sta: Left	Right	Coeff Contr.	Expan.
-11.583	11.583	0	.05

SUMMARY OF MANNING'S N VALUES

River:duck creek

Reach	River Sta.	n1	n2	n3
R1	-4414.11	.015	.015	.015
R1	-4743.42	.015	.015	.015
R1	-5163.42	.015	.015	.015
R1	-5322.84	.015	.015	.015
R1	-5375.42	.015	.015	.015
R1	-5563.42	.015	.015	.015
R1	-5963.42	.015	.015	.015
R1	-6096.99	.015	.015	.015
R1	-6240.52	.015	.015	.015
R1	-6268.97	.015	.015	.015
R1	-6318.97	.015	.015	.015
R1	-6354.38	.015	.015	.015
R1	-6359.92	.015	.015	.015
R1	-6391.98	.015	.015	.015
R1	-6402.45	.015	.015	.015
R1	-6452.91	.015	.015	.015
R1	-6492.45	.015	.015	.015
R1	-6594.48	.015	.015	.015
R1	-6631.75	.015	.015	.015
R1	-6794.22	.015	.015	.015
R1	-6904.94	.015	.015	.015

R1	-6922	.015	.015	.015
R1	-6942.61	.015	.015	.015
R1	-7036.67	.015	.015	.015
R1	-7056.34	.015	.015	.015
R1	-7131.35	.015	.015	.015
R1	-7357.19	.015	.015	.015
R1	-7391.14	.015	.015	.015
R1	-7416.14	.015	.015	.015
R1	-7434.81	.015	.015	.015
R1	-7500	.015	.015	.015
R1	-7515.42	.015	.015	.015
R1	-7547.84	.015	.015	.015
R1	-7610	.015	.015	.015
R1	-7642.66	.015	.015	.015
R1	-7700	.015	.015	.015
R1	-7725	.015	.015	.015
R1	-7757.55	.015	.015	.015
R1	-7782.67	.015	.015	.015
R1	-7891.36	.015	.015	.015
R1	-7900	.015	.015	.015
R1	-7920	.015	.015	.015
R1	-7960.42	.015	.015	.015
R1	-7970.42	.015	.015	.015
R1	-8019.96	.015	.015	.015

River:duck creek2

Reach	River Sta.	n1	n2	n3
R1	-8042.05	.015	.015	.015
R1	-8092.05	.015	.015	.015
R1	-8177.05	.015	.015	.015
R1	-8216.49	.015	.015	.015
R1	-8314.85	.015	.015	.015
R1	-8335.65	.015	.015	.015
R1	-8452.33	.015	.015	.015
R1	-8613.65	.015	.015	.015
R1	-8797.97	.015	.015	.015
R1	-8828.39	.015	.015	.015
R1	-8954.39	.015	.015	.015
R1	-9069.7	.015	.015	.015
R1	-9330.7	.015	.015	.015
R1	-9404.95	.015	.015	.015
R1	-9414.95	.015	.015	.015
R1	-9722.78	.015	.015	.015
R1	-9724.14	.015	.015	.015
R1	-9734.14	.015	.015	.015
R1	-9761.58	.015	.015	.015
R1	-9871.58	.015	.015	.015
R1	-9922.82	.015	.015	.015
R1	-10032.2	.015	.015	.015
R1	-10100.1	.015	.015	.015
R1	-10153.8	.015	.015	.015
R1	-10223.1	.015	.015	.015
R1	-10292.1	.015	.015	.015
R1	-10361.1	.015	.015	.015
R1	-10477.9	.015	.015	.015
R1	-10529.1	.015	.015	.015
R1	-10668.4	.015	.015	.015
R1	-10743.4	.015	.015	.015
R1	-10906.8	.015	.015	.015
R1	-11154	.015	.015	.015

R1	-11311.5	.015	.015	.015
R1	-11367.2	.015	.015	.015
R1	-11417.2	.015	.015	.015
R1	-11470.9	.015	.015	.015
R1	-11625.6	.015	.015	.015
R1	-11745	.015	.015	.015
R1	-11952.6	.015	.015	.015

River:North box

Reach	River Sta.	n1	n2	n3
R-4	-4947.21	.015	.015	.015
R-4	-4951.89	.015	.015	.015
R-4	-4967.12	.015	.015	.015
R-4	-4995.19	.015	.015	.015
R-4	-5039.61	.015	.015	.015
R-4	-5055.91	.015	.015	.015
R-4	-5105.91	.015	.015	.015
R-4	-5133.42	.015	.015	.015
R-4	-5168.74	.015	.015	.015
R-4	-5201.46	.015	.015	.015
R-4	-5231.46	.015	.015	.015
R-4	-5261.86	.015	.015	.015
R-4	-5301.48	.015	.015	.015
R-4	-5352.52	.015	.015	.015
R-4	-5356.13	.015	.015	.015
R-4	-5386.13	.015	.015	.015
R-4	-5515.9	.015	.015	.015
R-4	-5665.69	.015	.015	.015
R-4	-5682.16	.015	.015	.015
R-4	-5764.87	.015	.015	.015
R-4	-5895.57	.015	.015	.015
R-4	-5932.72	.015	.015	.015
R-4	-6682.72	.015	.015	.015
R-4	-6727.66	.015	.015	.015
R-4	-6784.58	.015	.015	.015
R-4	-6802.72	.015	.015	.015
R-4	-6839.34	.015	.015	.015
R-4	-6980.72	.015	.015	.015
R-4	-7001.77	.015	.015	.015
R-4	-7018.94	.015	.015	.015
R-4	-7053.89	.015	.015	.015
R-4	-7073.89	.015	.015	.015
R-4	-7120.03	.015	.015	.015
R-4	-7170.05	.015	.015	.015
R-4	-7211.77	.015	.015	.015
R-4	-7213.95	.015	.015	.015
R-4	-7260.56	.015	.015	.015
R-4	-7323.20	.015	.015	.015
R-4	-7380	.015	.015	.015
R-4	-7400	.015	.015	.015
R-4	-7511.22	.015	.015	.015
R-4	-7920.83	.015	.015	.015
R-4	-7930.76	.015	.015	.015
R-4	-7960.42	.015	.015	.015
R-4	-7970.42	.015	.015	.015
R-4	-8042.05	.015	.015	.015

SUMMARY OF REACH LENGTHS

River: duck creek

Reach	River Sta.	Left	Channel	Right
R1	-4414.11	329.31	329.31	329.31
R1	-4743.42	420	420	420
R1	-5163.42	159.42	159.42	159.42
R1	-5322.84	52.58	52.58	52.58
R1	-5375.42	188	188	188
R1	-5563.42	400	400	400
R1	-5963.42	133.57	133.57	133.57
R1	-6096.99	143.53	143.53	143.53
R1	-6240.52	28.45	28.45	28.45
R1	-6268.97	50	50	50
R1	-6318.97	35.41	35.41	35.41
R1	-6354.38	5.54	5.54	5.54
R1	-6359.92	32.06	32.06	32.06
R1	-6391.98	10.47	10.47	10.47
R1	-6402.45	50.46	50.46	50.46
R1	-6452.91	39.54	39.54	39.54
R1	-6492.45	108.876	102.03	95.724
R1	-6594.48	34.87	37.27	39.67
R1	-6631.75	152.03	162.47	172.91
R1	-6794.22	103.6	110.72	117.84
R1	-6904.94	15.96	17.06	18.16
R1	-6922	19.285	20.61	21.935
R1	-6942.61	88.013	94.06	100.107
R1	-7036.67	18.41	19.67	20.93
R1	-7056.34	70.18	75.01	79.84
R1	-7131.35	240.23	225.84	211.21
R1	-7357.19	36.12	33.95	31.75
R1	-7391.14	25	25	25
R1	-7416.14	18.67	18.67	18.67
R1	-7434.81	65.19	65.19	65.19
R1	-7500	15.42	15.42	15.42
R1	-7515.42	32.42	32.42	32.42
R1	-7547.84	62.16	62.16	62.16
R1	-7610	32.66	32.66	32.66
R1	-7642.66	57.34	57.34	57.34
R1	-7700	25	25	25
R1	-7725	32.55	32.55	32.55
R1	-7757.55	25.12	25.12	25.12
R1	-7782.67	108.69	108.69	108.69
R1	-7891.36	8.64	8.64	8.64
R1	-7900	20	20	20
R1	-7920	40.42	40.42	40.42
R1	-7960.42	10	10	10
R1	-7970.42	49.54	49.54	49.54
R1	-8019.96	22.09	22.09	22.09

River: duck creek2

Reach	River Sta.	Left	Channel	Right
R1	-8042.05	50	50	50
R1	-8092.05	85	85	85
R1	-8177.05	39.44	39.44	39.44
R1	-8216.49	98.36	98.36	98.36
R1	-8314.85	20.1	20.8	20.5
R1	-8335.65	112.74	116.68	120.62

R1	-8452.33	155.87	161.32	166.77
R1	-8613.65	178.09	184.32	190.55
R1	-8797.97	29.12	30.42	31.19
R1	-8828.39	126	126	126
R1	-8954.39	115.31	115.31	115.31
R1	-9069.7	249.71	241.56	233.41
R1	-9330.7	76.76	74.25	71.74
R1	-9404.95	10.34	10	9.66
R1	-9414.95	314.72	304.45	294.18
R1	-9722.78	1.41	1.36	1.31
R1	-9724.14	10.34	10	9.66
R1	-9734.14	27.44	27.44	27.44
R1	-9761.58	110	110	110
R1	-9871.58	51.24	51.24	51.24
R1	-9922.82	147.1	147.1	147.1
R1	-10032.2	67.9	67.9	67.9
R1	-10100.1	53.75	53.75	53.75
R1	-10153.8	69.3	69.3	69.3
R1	-10223.1	69	69	69
R1	-10292.1	69	69	69
R1	-10361.1	86.8	86.8	86.8
R1	-10477.9	51.2	51.2	51.2
R1	-10529.1	139.34	139.34	139.34
R1	-10668.4	75	75	75
R1	-10743.4	161.9	161.9	161.9
R1	-10906.8	248.73	248.73	248.73
R1	-11154	155.4	155.4	155.4
R1	-11311.5	55.61	55.61	55.61
R1	-11367.2	50	50	50
R1	-11417.2	53.72	53.72	53.72
R1	-11470.9	154.76	154.76	154.76
R1	-11625.6	125.7	125.7	125.7
R1	-11745	207.6	207.6	207.6
R1	-11952.6			

River: North box

Reach	River Sta.	Left	Channel	Right
R-4	-4947.21	4.686	4.686	4.686
R-4	-4951.89	15.227	15.227	15.227
R-4	-4967.12	28.067	28.067	28.067
R-4	-4995.19	44.424	44.424	44.424
R-4	-5039.61	16.296	16.296	16.296
R-4	-5055.91	57.97	50	41.98
R-4	-5105.91	31.9	27.516	23.1
R-4	-5133.42	40.95	35.323	29.66
R-4	-5168.74	37.93	32.711	27.46
R-4	-5201.46	30	30	30
R-4	-5231.46	30.406	30.406	30.406
R-4	-5261.86	39.621	39.621	39.621
R-4	-5301.48	51.04	51.04	51.04
R-4	-5352.52	3.603	3.603	3.603
R-4	-5356.13	26.57	30	33.4
R-4	-5386.13	114.93	129.77	144.48
R-4	-5515.9	149.799	149.799	149.799
R-4	-5665.69	16.461	16.461	16.461
R-4	-5682.16	82.71	82.71	82.71
R-4	-5764.87	130.704	130.704	130.704
R-4	-5895.57	37.146	37.146	37.146
R-4	-5932.72	750	750	750
R-4	-6682.72	44.94	44.94	44.94

R-4	-6727.66	56.926	56.926	56.926
R-4	-6784.58	18.134	18.134	18.134
R-4	-6802.72	36.62	36.62	36.62
R-4	-6839.34	141.386	141.386	141.386
R-4	-6980.72	38.214	38.214	38.214
R-4	-7001.77	17.17	17.17	17.17
R-4	-7018.94	34.95	34.95	34.95
R-4	-7053.89	20	20	20
R-4	-7073.89	46.14	46.14	46.14
R-4	-7120.03	50.02	50.02	50.02
R-4	-7170.05	41.72	41.72	41.72
R-4	-7211.77	2.18	2.18	2.18
R-4	-7213.95	46.61	46.61	46.61
R-4	-7260.56	62.64	62.64	62.64
R-4	-7323.20	56.8	56.8	56.8
R-4	-7380	20	20	20
R-4	-7400	111.22	111.22	111.22
R-4	-7511.22	400.6	409.61	418.62
R-4	-7920.83	9.71	9.93	10.15
R-4	-7930.76	29.007	29.66	30.313
R-4	-7960.42	9.78	10	10.22
R-4	-7970.42	71.63	71.63	71.63
R-4	-8042.05			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: duck creek

Reach	River Sta.	Contr.	Expan.
R1	-4414.11	0	0
R1	-4743.42	0	0
R1	-5163.42	0	0
R1	-5322.84	0	0
R1	-5375.42	0	0
R1	-5563.42	0	0
R1	-5963.42	0	0
R1	-6096.99	0	0
R1	-6240.52	0	0
R1	-6268.97	0	0
R1	-6318.97	0	0
R1	-6354.38	0	0
R1	-6359.92	0	0
R1	-6391.98	0	0
R1	-6402.45	.05	.05
R1	-6452.91	.05	.05
R1	-6492.45	.05	.05
R1	-6594.48	0	0
R1	-6631.75	0	0
R1	-6794.22	0	0
R1	-6904.94	0	0
R1	-6922	0	0
R1	-6942.61	0	0
R1	-7036.67	0	0
R1	-7056.34	0	0
R1	-7131.35	.05	.05
R1	-7357.19	.05	.05
R1	-7391.14	.05	0
R1	-7416.14	.05	0
R1	-7434.81	.05	0

R1	-7500	0	.05
R1	-7515.42	0	.05
R1	-7547.84	0	.05
R1	-7610	0	.05
R1	-7642.66	0	.05
R1	-7700	0	.05
R1	-7725	0	0
R1	-7757.55	0	0
R1	-7782.67	0	0
R1	-7891.36	0	0
R1	-7900	0	0
R1	-7920	0	0
R1	-7960.42	0	0
R1	-7970.42	0	.05
R1	-8019.96	0	.05

River: duck creek2

Reach	River Sta.	Contr.	Expan.
R1	-8042.05	0	.05
R1	-8092.05	0	0
R1	-8177.05	.05	0
R1	-8216.49	.05	0
R1	-8314.85	0	0
R1	-8335.65	0	0
R1	-8452.33	0	0
R1	-8613.65	0	0
R1	-8797.97	0	0
R1	-8828.39	0	.05
R1	-8954.39	.05	0
R1	-9069.7	0	0
R1	-9330.7	0	0
R1	-9404.95	0	0
R1	-9414.95	0	0
R1	-9722.78	0	0
R1	-9724.14	0	0
R1	-9734.14	0	0
R1	-9761.58	.05	0
R1	-9871.58	.05	0
R1	-9922.82	.05	0
R1	-10032.2	0	0
R1	-10100.1	0	0
R1	-10153.8	0	0
R1	-10223.1	0	0
R1	-10292.1	0	0
R1	-10361.1	0	0
R1	-10477.9	0	0
R1	-10529.1	0	0
R1	-10668.4	0	.05
R1	-10743.4	0	0
R1	-10906.8	0	0
R1	-11154	0	0
R1	-11311.5	0	0
R1	-11367.2	0	.05
R1	-11417.2	0	0
R1	-11470.9	0	0
R1	-11625.6	0	0
R1	-11745	0	0
R1	-11952.6	0	0

River: North box

Reach	River Sta.	Contr.	Expan.
R-4	-4947.21	.1	.3
R-4	-4951.89	.1	.3
R-4	-4967.12	.1	.3
R-4	-4995.19	.1	.3
R-4	-5039.61	.1	.3
R-4	-5055.91	.1	.3
R-4	-5105.91	.1	.3
R-4	-5133.42	.1	.3
R-4	-5168.74	.1	.3
R-4	-5201.46	.1	.3
R-4	-5231.46	.1	.3
R-4	-5261.86	.1	.3
R-4	-5301.48	.1	.3
R-4	-5352.52	.1	.3
R-4	-5356.13	.1	.3
R-4	-5386.13	.1	.3
R-4	-5515.9	.1	.3
R-4	-5665.69	.1	.3
R-4	-5682.16	.1	.3
R-4	-5764.87	.1	.3
R-4	-5895.57	.1	.3
R-4	-5932.72	.1	.3
R-4	-6682.72	.1	.3
R-4	-6727.66	.1	.3
R-4	-6784.58	.1	.3
R-4	-6802.72	.1	.3
R-4	-6839.34	.1	.3
R-4	-6980.72	.1	.3
R-4	-7001.77	.1	.3
R-4	-7018.94	0	0
R-4	-7053.89	0	0
R-4	-7073.89	0	0
R-4	-7120.03	0	0
R-4	-7170.05	0	0
R-4	-7211.77	0	0
R-4	-7213.95	0	0
R-4	-7260.56	0	0
R-4	-7323.20	0	0
R-4	-7380	0	0
R-4	-7400	0	0
R-4	-7511.22	0	0
R-4	-7920.83	0	0
R-4	-7930.76	0	0
R-4	-7960.42	0	0
R-4	-7970.42	0	.05
R-4	-8042.05	0	.05

DUCK CREEK CHANNEL

LAS VEGAS BLVD. TO
LOWER DUCK CREEK DETENTION BASIN

FEMA LETTER OF MAP REVISION APPLICATION

APPENDIX **B.2**

Duck Creek
South Channel

HEC-RAS PROFILE OUTPUT TABLE

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East-West Branch	500	PF 1	204	2336	2338.93		2339.09	0.001054	3.21	63.6	28.4	0.38
East-West Branch	500	PF 2	204	2336	2338.93		2339.09	0.001054	3.21	63.6	28.4	0.38
East-West Branch	400	PF 1	204	2335.25	2338.31	2338.31	2338.82	0.009609	5.74	35.53	34.54	1
East-West Branch	400	PF 2	204	2335.25	2338.31	2338.31	2338.82	0.009609	5.74	35.53	34.54	1
East-West Branch	300	PF 1	204	2334.49	2337.22		2337.49	0.004202	4.15	49.21	41.28	0.67
East-West Branch	300	PF 2	204	2334.49	2337.22		2337.49	0.004202	4.15	49.21	41.28	0.67
East-West Branch	200	PF 1	204	2333.74	2336.54	2336.54	2336.81	0.0128	4.18	48.8	96.67	1.04
East-West Branch	200	PF 2	204	2333.74	2336.54	2336.54	2336.81	0.0128	4.18	48.8	96.67	1.04
East-West Branch	100	PF 1	204	2332.98	2334.94	2334.94	2335.29	0.010654	4.75	42.98	62.69	1.01
East-West Branch	100	PF 2	204	2332.98	2334.94	2334.94	2335.29	0.010654	4.75	42.98	62.69	1.01
East-East Branch	500	PF 1	266	2335	2336.62		2336.94	0.00394	4.52	59	45.85	0.69
East-East Branch	500	PF 2	266	2335	2336.62		2336.94	0.00394	4.52	59	45.85	0.69
East-East Branch	400	PF 1	266	2334.39	2336.1		2336.48	0.005217	4.95	53.72	43.11	0.78
East-East Branch	400	PF 2	266	2334.39	2336.1		2336.48	0.005217	4.95	53.72	43.11	0.78
East-East Branch	300	PF 1	266	2333.77	2335.28	2335.28	2335.78	0.009492	5.65	47.11	48.76	1.01
East-East Branch	300	PF 2	266	2333.77	2335.28	2335.28	2335.78	0.009492	5.65	47.11	48.76	1.01
East-East Branch	200	PF 1	266	2333.16	2334.65		2334.92	0.006255	4.18	63.7	75.95	0.8
East-East Branch	200	PF 2	266	2333.16	2334.65		2334.92	0.006255	4.18	63.7	75.95	0.8
East-East Branch	100	PF 1	266	2332.54	2333.78	2333.78	2334.1	0.011072	4.54	58.62	94.76	1.02
East-East Branch	100	PF 2	266	2332.54	2333.78	2333.78	2334.1	0.011072	4.54	58.62	94.76	1.02
East	12300	PF 1	464	2332	2333.42	2333.42	2333.83	0.010107	5.11	90.81	114.62	1.01
East	12300	PF 2	464	2332	2333.42	2333.42	2333.83	0.010107	5.11	90.81	114.62	1.01
East	12000	PF 1	464	2328.89	2330.26	2330.26	2330.63	0.010444	4.84	95.85	134.69	1.01
East	12000	PF 2	464	2328.89	2330.26	2330.26	2330.63	0.010444	4.84	95.85	134.69	1.01
East	11700	PF 1	464	2325.53	2326.89		2327.08	0.004716	3.42	135.84	177.36	0.69

HEC-RAS PROFILE OUTPUT TABLE

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East	11700	PF 2	464	2325.53	2326.89		2327.08	0.004716	3.42	135.84	177.36	0.69
East	11540	PF 1	464	2322.9	2326.98	2326.21	2327	0.000045	1.03	449.38	231.18	0.13
East	11540	PF 2	464	2322.9	2326.98	2326.21	2327	0.000045	1.03	449.38	231.18	0.13
East	11510		Culvert									
East	11480.*	PF 1	464	2322	2326.21	2326.21	2326.22	0.000039	0.92	502.97	275.22	0.12
East	11480.*	PF 2	464	2322	2326.21	2326.21	2326.22	0.000039	0.92	502.97	275.22	0.12
East	11400	PF 1	464	2321.9	2323.16	2323.16	2323.51	0.010663	4.72	98.24	145.46	1.01
East	11400	PF 2	464	2321.9	2323.16	2323.16	2323.51	0.010663	4.72	98.24	145.46	1.01
East	11100	PF 1	464	2318.24	2320.21	2320.17	2320.49	0.008822	4.28	108.52	161.78	0.92
East	11100	PF 2	464	2318.24	2320.21	2320.17	2320.49	0.008822	4.28	108.52	161.78	0.92
East	10800	PF 1	464	2314.36	2317.22	2317.22	2317.74	0.009352	5.8	79.96	78.37	1.01
East	10800	PF 2	464	2314.36	2317.22	2317.22	2317.74	0.009352	5.8	79.96	78.37	1.01
East	10500	PF 1	464	2312	2313.84		2313.99	0.003113	3.24	147.21	159.92	0.58
East	10500	PF 2	464	2312	2313.84		2313.99	0.003113	3.24	147.21	159.92	0.58
East	10200	PF 1	1008	2310	2311.59	2311.59	2312.03	0.00984	5.31	189.98	222.52	1.01
East	10200	PF 2	1008	2310	2311.59	2311.59	2312.03	0.00984	5.31	189.98	222.52	1.01
East	10110	PF 1	1008	2307	2309.82	2308.6	2310.07	0.000449	4.02	250.79	89	0.42
East	10110	PF 2	1008	2307	2309.82	2308.6	2310.07	0.000449	4.02	250.79	89	0.42
East	10075		Bridge									
East	10040	PF 1	1008	2306.7	2308.53	2308.29	2309.13	0.001839	6.19	162.9	89	0.81
East	10040	PF 2	1008	2306.7	2308.53	2308.29	2309.13	0.001839	6.19	162.9	89	0.81
East	9900	PF 1	1008	2306	2308.06	2308.06	2308.63	0.009019	6.01	167.79	158.44	1.01
East	9900	PF 2	1008	2306	2308.06	2308.06	2308.63	0.009019	6.01	167.79	158.44	1.01
East	9600	PF 1	1008	2303.81	2305.25	2305.25	2305.68	0.009766	5.25	191.92	226.96	1.01

HEC-RAS PROFILE OUTPUT TABLE

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East	9600	PF 2	1008	2303.81	2305.25	2305.25	2305.68	0.009766	5.25	191.92	226.96	1.01
East	9300	PF 1	1008	2299.18	2301	2300.85	2301.33	0.006346	4.58	220	231.08	0.83
East	9300	PF 2	1008	2299.18	2301	2300.85	2301.33	0.006346	4.58	220	231.08	0.83
East	9000	PF 1	1008	2295.39	2298.76	2298.69	2299.16	0.008292	5.06	199.4	220.56	0.94
East	9000	PF 2	1008	2295.39	2298.76	2298.69	2299.16	0.008292	5.06	199.4	220.56	0.94
East	8940	PF 1	1008	2295.5	2298.07	2297.84	2298.74	0.005295	6.56	153.55	80.01	0.84
East	8940	PF 2	1008	2295.5	2298.07	2297.84	2298.74	0.005295	6.56	153.55	80.01	0.84
East	8939	PF 1	1008	2295.5	2297.84	2297.84	2298.7	0.024972	7.46	135.21	80	1.01
East	8939	PF 2	1008	2295.5	2297.84	2297.84	2298.7	0.024972	7.46	135.21	80	1.01
East	8860	PF 1	1008	2289.1	2293.96	2293.96	2295.56	0.02093	10.18	99.07	30.81	1
East	8860	PF 2	1008	2289.1	2293.96	2293.96	2295.56	0.02093	10.18	99.07	30.81	1
East	8700	PF 1	1008	2287.9	2292.76	2292.76	2294.39	0.002465	10.25	98.35	30.51	1.01
East	8700	PF 2	1008	2287.9	2292.76	2292.76	2294.39	0.002465	10.25	98.35	30.51	1.01
East	8400	PF 1	1008	2282	2286.84	2286.84	2288.46	0.002469	10.23	98.52	30.73	1.01
East	8400	PF 2	1008	2282	2286.84	2286.84	2288.46	0.002469	10.23	98.52	30.73	1.01
East	8250	PF 1	1008	2277.8	2282.64	2282.64	2284.26	0.002471	10.23	98.5	30.73	1.01
East	8250	PF 2	1008	2277.8	2282.64	2282.64	2284.26	0.002471	10.23	98.5	30.73	1.01
East	8200	PF 1	1008	2277.1	2283.4	2279.91	2283.67	0.000201	4.21	240.13	42.88	0.3
East	8200	PF 2	1008	2277.1	2283.4	2279.91	2283.67	0.000201	4.21	240.13	42.88	0.3
East	8150		Bridge									
East	8100	PF 1	1008	2276.7	2281.96		2282.36	0.000365	5.04	199.97	38.11	0.39
East	8100	PF 2	1008	2276.7	2281.96		2282.36	0.000365	5.04	199.97	38.11	0.39
East	7800	PF 1	1008	2275.3	2280.15	2280.15	2281.76	0.002436	10.18	99.01	30.8	1
East	7800	PF 2	1008	2275.3	2280.15	2280.15	2281.76	0.002436	10.18	99.01	30.8	1

HEC-RAS PROFILE OUTPUT TABLE

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East	7500	PF 1	1008	2274	2278.85	2278.85	2280.46	0.00244	10.19	98.95	30.79	1
East	7500	PF 2	1008	2274	2278.85	2278.85	2280.46	0.00244	10.19	98.95	30.79	1
East	7235	PF 1	1008	2273.03	2278.51	2275.75	2278.84	0.000301	4.59	219.38	97.99	0.35
East	7235	PF 2	1008	2273.03	2278.51	2275.75	2278.84	0.000301	4.59	219.38	97.99	0.35
East	7182.5		Bridge									
East	7130	PF 1	1008	2272.75	2275.47	2275.47	2276.8	0.002736	9.27	108.73	40	0.99
East	7130	PF 2	1008	2272.75	2275.47	2275.47	2276.8	0.002736	9.27	108.73	40	0.99
East	6900	PF 1	1008	2272	2274.15	2274.15	2274.73	0.008911	6.11	165.08	145.34	1.01
East	6900	PF 2	1008	2272	2274.15	2274.15	2274.73	0.008911	6.11	165.08	145.34	1.01
East	6600	PF 1	1008	2269.73	2270.87	2270.87	2271.28	0.009908	5.1	197.67	247.01	1
East	6600	PF 2	1008	2269.73	2270.87	2270.87	2271.28	0.009908	5.1	197.67	247.01	1
East	6300	PF 1	1008	2265.16	2267.86	2267.86	2268.52	0.008367	6.53	154.3	116.84	1
East	6300	PF 2	1008	2265.16	2267.86	2267.86	2268.52	0.008367	6.53	154.3	116.84	1
East	6250	PF 1	1008	2257.78	2264.82		2265.17	0.000302	6.33	380.02	95.94	0.42
East	6250	PF 2	1008	2257.78	2264.82		2265.17	0.000302	6.33	380.02	95.94	0.42
East	6190	PF 1	1008	2257.7	2264.58		2265.13	0.000432	7.45	289.14	70.05	0.5
East	6190	PF 2	1008	2257.7	2264.58		2265.13	0.000432	7.45	289.14	70.05	0.5
East	6000	PF 1	1008	2257.47	2262.75	2262.75	2264.83	0.001815	12.8	127.2	36.17	0.98
East	6000	PF 2	1008	2257.47	2262.75	2262.75	2264.83	0.001815	12.8	127.2	36.17	0.98
East	5900	PF 1	1008	2256.97	2262.27	2262.27	2264.34	0.001827	12.78	126.98	36.2	0.98
East	5900	PF 2	1008	2256.97	2262.27	2262.27	2264.34	0.001827	12.78	126.98	36.2	0.98
East	5830	PF 1	1008	2256	2263.4	2260.17	2263.41	0.000014	1.24	1714.94	489.88	0.08
East	5830	PF 2	1008	2256	2263.4	2260.17	2263.41	0.000014	1.24	1714.94	489.88	0.08
East	5800		Bridge									

HEC-RAS PROFILE OUTPUT TABLE

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East	5770	PF 1	1008	2255.6	2263.33	2259.77	2263.39	0.000074	2.69	897.04	414.02	0.17
East	5770	PF 2	1008	2255.6	2263.33	2259.77	2263.39	0.000074	2.69	897.04	414.02	0.17
East	5700	PF 1	1008	2255.41	2260.69	2260.69	2262.77	0.001815	12.8	127.2	36.17	0.98
East	5700	PF 2	1008	2255.41	2260.69	2260.69	2262.77	0.001815	12.8	127.2	36.17	0.98
East	5545	PF 1	1008	2254.7	2259.97	2259.97	2262.03	0.001818	12.79	128	36.62	0.98
East	5545	PF 2	1008	2254.7	2259.97	2259.97	2262.03	0.001818	12.79	128	36.62	0.98
East	5530	PF 1	1008	2254.5	2260.54		2261.18	0.000629	6.42	157.17	28.84	0.46
East	5530	PF 2	1008	2254.5	2260.54		2261.18	0.000629	6.42	157.17	28.84	0.46
East	5505	PF 1	1008	2254.2	2260.55	2257.91	2261.15	0.000491	6.26	163.03	37.9	0.44
East	5505	PF 2	1008	2254.2	2260.55	2257.91	2261.15	0.000491	6.26	163.03	37.9	0.44
East	5462.5		Bridge									
East	5420	PF 1	1008	2253.9	2258.68	2257.61	2259.79	0.001385	8.43	119.56	25	0.68
East	5420	PF 2	1008	2253.9	2258.68	2257.61	2259.79	0.001385	8.43	119.56	25	0.68
East	5350	PF 1	1008	2253.16	2257.28	2257.28	2259.36	0.003209	11.58	87.08	21.16	1.01
East	5350	PF 2	1008	2253.16	2257.28	2257.28	2259.36	0.003209	11.58	87.08	21.16	1.01
East	5140	PF 1	1008	2250.4	2254.8	2254.8	2255.81	0.002992	8.07	126.2	64.58	0.99
East	5140	PF 2	1008	2250.4	2254.8	2254.8	2255.81	0.002992	8.07	126.2	64.58	0.99
East	4810	PF 1	1008	2248.7	2251.79		2252.07	0.004678	4.28	235.61	217.46	0.72
East	4810	PF 2	1008	2248.7	2251.79		2252.07	0.004678	4.28	235.61	217.46	0.72
East	4800	PF 1	1008	2248.5	2251.54	2251.54	2251.99	0.009973	5.38	187.4	216.46	1.02
East	4800	PF 2	1008	2248.5	2251.54	2251.54	2251.99	0.009973	5.38	187.4	216.46	1.02
East	4500	PF 1	1338	2245.79	2248.51	2248.51	2249.03	0.006521	5.95	247.71	250.86	0.89
East	4500	PF 2	1338	2245.79	2248.51	2248.51	2249.03	0.006521	5.95	247.71	250.86	0.89
East	4450	PF 1	1338	2239	2244.25	2242.38	2244.95	0.000696	6.71	199.41	38	0.52
East	4450	PF 2	1338	2239	2244.25	2242.38	2244.95	0.000696	6.71	199.41	38	0.52

HEC-RAS PROFILE OUTPUT TABLE

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude #
East	4415		Bridge									
East	4380	PF 1	1338	2238.3	2241.69	2241.69	2243.37	0.00268	10.38	128.93	38	0.99
East	4380	PF 2	1338	2238.3	2241.69	2241.69	2243.37	0.00268	10.38	128.93	38	0.99
East	4200	PF 1	1338	2232.88	2237.15		2237.67	0.003516	5.81	230.47	63.94	0.54
East	4200	PF 2	1338	2232.88	2237.15		2237.67	0.003516	5.81	230.47	63.94	0.54
East	3900	PF 1	1338	2232.2	2236.36		2236.89	0.002004	5.88	227.62	68.03	0.57
East	3900	PF 2	1338	2232.2	2236.36		2236.89	0.002004	5.88	227.62	68.03	0.57
East	3600	PF 1	1338	2231.75	2235.62		2236.22	0.002426	6.26	213.86	67.2	0.62
East	3600	PF 2	1338	2231.75	2235.62		2236.22	0.002426	6.26	213.86	67.2	0.62
East	3300	PF 1	1338	2231	2234.25		2235.2	0.004782	7.83	170.93	64.09	0.84
East	3300	PF 2	1338	2231	2234.25		2235.2	0.004782	7.83	170.93	64.09	0.84
East	3000	PF 1	1338	2230.49	2233.81		2234.22	0.001764	5.14	260.39	86.65	0.52
East	3000	PF 2	1338	2230.49	2233.81		2234.22	0.001764	5.14	260.39	86.65	0.52
East	2820.*	PF 1	1338	2230.04	2233.54		2233.91	0.001495	4.87	274.59	87.37	0.48
East	2820.*	PF 2	1338	2230.04	2233.54		2233.91	0.001495	4.87	274.59	87.37	0.48
East	2700	PF 1	1338	2229.8	2233.3		2233.64	0.003604	4.7	284.68	91.91	0.47
East	2700	PF 2	1338	2229.8	2233.3		2233.64	0.003604	4.7	284.68	91.91	0.47
East	2470.*	PF 1	1338	2227.88	2230.73	2230.73	2231.97	0.017835	8.93	149.78	61.06	1.01
East	2470.*	PF 2	1338	2227.88	2230.73	2230.73	2231.97	0.017835	8.93	149.78	61.06	1.01
East	2400	PF 1	1338	2227.01	2229.92	2229.92	2230.69	0.010031	6.12	191.84	124.05	0.74
East	2400	PF 2	1338	2227.01	2229.92	2229.92	2230.69	0.010031	6.12	191.84	124.05	0.74
East	2260.*	PF 1	1338	2226	2228.12	2228.12	2228.95	0.007719	7.32	183.19	119.3	1
East	2260.*	PF 2	1338	2226	2228.12	2228.12	2228.95	0.007719	7.32	183.19	119.3	1
East	2100	PF 1	1338	2224.04	2227.08	2227.08	2227.97	0.001798	8.08	239.88	170.82	0.87

HEC-RAS PROFILE OUTPUT TABLE

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East	2100	PF 2	1338	2224.04	2227.08	2227.08	2227.97	0.001798	8.08	239.88	170.82	0.87
East	2008.56	PF 1	1338	2223.08	2226.38	2226.38	2227.65	0.002216	9.04	150.38	74.67	0.96
East	2008.56	PF 2	1338	2223.08	2226.38	2226.38	2227.65	0.002216	9.04	150.38	74.67	0.96
East	1800	PF 1	1338	2217.41	2223.78		2224.08	0.00024	4.4	303.92	59	0.34
East	1800	PF 2	1338	2217.41	2223.85		2224.14	0.000231	4.35	307.86	59	0.34
East	1799.9	PF 1	1338	2217.4	2223.31	2221.13	2224.04	0.000676	6.86	194.95	33	0.5
East	1799.9	PF 2	1338	2217.4	2223.39	2221.13	2224.1	0.00065	6.77	197.57	33	0.49
East	1700		Bridge									
East	1641	PF 1	1338	2216	2221.76	2219.73	2222.53	0.00073	7.04	189.99	33	0.52
East	1641	PF 2	1338	2216	2221.82	2219.73	2222.58	0.000706	6.96	192.12	33	0.51
West Branch	3460	PF 1	692	2235.18	2236.2	2236.2	2236.43	0.006022	4.45	215.28	481.22	0.81
West Branch	3460	PF 2	692	2235.18	2236.2	2236.2	2236.43	0.006022	4.45	215.28	481.22	0.81
West Branch	3160	PF 1	692	2232	2232.92	2232.89	2233.19	0.008971	4.15	170.89	290.04	0.92
West Branch	3160	PF 2	692	2232	2232.92	2232.89	2233.19	0.008971	4.15	170.89	290.04	0.92
West Branch	2860	PF 1	692	2230	2231.36		2231.57	0.00346	4	206.53	276.22	0.64
West Branch	2860	PF 2	692	2230	2231.36		2231.57	0.00346	4	206.53	276.22	0.64
West Branch	2560	PF 1	692	2228	2229.44	2229.44	2230	0.008149	6.04	116.95	111.89	0.97
West Branch	2560	PF 2	692	2228	2229.44	2229.44	2230	0.008149	6.04	116.95	111.89	0.97
West Branch	2260	PF 1	789	2226	2227.63		2227.81	0.002409	3.91	255.68	276.62	0.55
West Branch	2260	PF 2	789	2226	2227.63		2227.81	0.002409	3.91	255.68	276.62	0.55
West Branch	2110	PF 1	589	2225.42	2226.91	2226.91	2227.25	0.007873	4.84	135.72	218.16	0.91
West Branch	2110	PF 2	589	2225.42	2226.91	2226.91	2227.25	0.007873	4.84	135.72	218.16	0.91
West Branch	1760	PF 1	589	2224	2224.45	2224.45	2224.64	0.004418	3.65	177.9	489.34	0.95
West Branch	1760	PF 2	589	2224	2224.45	2224.45	2224.64	0.004418	3.65	177.9	489.34	0.95

HEC-RAS PROFILE OUTPUT TABLE

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East-lower	1640	PF 1	1931	2216	2220.1	2220.1	2222.14	0.002531	11.49	168.58	42.22	1
East-lower	1640	PF 2	1931	2216	2221.1		2222.41	0.001214	9.2	211.96	44.47	0.72
East-lower	1500	PF 1	1931	2215.5	2220.93		2221.26	0.002265	4.86	480.73	216.13	0.4
East-lower	1500	PF 2	1931	2215.5	2221.52		2221.91	0.002123	5	386.15	71	0.38
East-lower	1200	PF 1	1931	2214.9	2219.42	2219.42	2220.2	0.005617	7.65	321.21	227.37	0.78
East-lower	1200	PF 2	1931	2214.9	2220.23		2221.05	0.003657	7.25	267.92	71	0.66
East-lower	900	PF 1	1931	2214.66	2217.35	2217.35	2218.09	0.007987	7.3	305.66	222.21	0.88
East-lower	900	PF 2	1931	2214.66	2217.82	2217.82	2219.27	0.010193	9.64	200.28	70	1
East-lower	800	PF 1	1931	2213.45	2216.42	2216.42	2217.24	0.007894	7.45	288.3	209.86	0.88
East-lower	800	PF 2	1931	2213.45	2216.79	2216.79	2218.23	0.010232	9.66	199.99	70	1.01
East-lower	750	PF 1	1931	2212	2214.7	2214.7	2215.7	0.008316	8.77	259.69	138.63	0.94
East-lower	750	PF 2	1931	2212	2214.7	2214.7	2215.7	0.008316	8.77	259.69	138.63	0.94
East-lower	700	PF 1	1931	2211.45	2214.18	2213.55	2214.66	0.003843	5.86	351.81	173.52	0.64
East-lower	700	PF 2	1931	2211.45	2214.18	2213.55	2214.66	0.003843	5.86	351.81	173.52	0.64
East-lower	600	PF 1	1931	2210.5	2214.12	2212.64	2214.37	0.001433	4.28	486.18	245.17	0.41
East-lower	600	PF 2	1931	2210.5	2214.12	2212.64	2214.37	0.001433	4.28	486.18	245.17	0.41
East-lower	500	PF 1	1931	2209.5	2213.85	2212	2214.22	0.001421	4.9	397.86	279.16	0.42
East-lower	500	PF 2	1931	2209.5	2213.85	2212	2214.22	0.001421	4.9	397.86	279.16	0.42
East-lower	475	PF 1	1931	2209.13	2213.97	2211.3	2214.13	0.000559	3.33	596.44	222.22	0.27
East-lower	475	PF 2	1931	2209.13	2213.97	2211.3	2214.13	0.000559	3.33	596.44	222.22	0.27
East-lower	430	PF 1	1931	2208.47	2212.29	2212.29	2213.92	0.010717	10.75	196.85	62.95	0.97
East-lower	430	PF 2	1931	2208.47	2212.29	2212.29	2213.92	0.010717	10.75	196.85	62.95	0.97
East-lower	370	PF 1	1931	2205.55	2210.56		2211.4	0.003989	7.85	275.6	70.1	0.62
East-lower	370	PF 2	1931	2205.55	2210.56		2211.4	0.003989	7.85	275.6	70.1	0.62
East-lower	300	PF 1	1931	2205.2	2210.38		2211.15	0.002585	7.54	287.75	71.13	0.58

HEC-RAS PROFILE OUTPUT TABLE

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
East-lower	300	PF 2	1931	2205.2	2210.38		2211.15	0.002585	7.54	287.75	71.13	0.58
East-lower	250	PF 1	1931	2204.95	2210.3		2211.01	0.002292	7.25	299.96	72.16	0.55
East-lower	250	PF 2	1931	2204.95	2210.3		2211.01	0.002292	7.25	299.96	72.16	0.55
East-lower	200	PF 1	1931	2204.7	2210.23		2210.89	0.002022	6.97	313.25	73.26	0.52
East-lower	200	PF 2	1931	2204.7	2210.23		2210.89	0.002022	6.97	313.25	73.26	0.52
East-lower	150	PF 1	1931	2204.45	2210.18		2210.78	0.00178	6.69	327.32	74.35	0.49
East-lower	150	PF 2	1931	2204.45	2210.18		2210.78	0.00178	6.69	327.32	74.35	0.49
East-lower	128	PF 1	1931	2204.34	2208.5	2208.5	2210.6	0.001544	11.62	166.29	39.98	1
East-lower	128	PF 2	1931	2204.34	2208.5	2208.5	2210.6	0.001544	11.62	166.29	39.98	1
East-lower	60	PF 1	1931	2204	2207.82	2207.82	2209.44	0.010685	10.73	197.47	63.35	0.97
East-lower	60	PF 2	1931	2204	2207.82	2207.82	2209.44	0.010685	10.73	197.47	63.35	0.97
East-lower	50	PF 1	1931	2203.75	2207.58	2207.58	2209.21	0.010675	10.74	196.95	62.82	0.97
East-lower	50	PF 2	1931	2203.75	2207.58	2207.58	2209.21	0.010675	10.74	196.95	62.82	0.97
East-lower	0	PF 1	1931	2202.5	2206.31	2206.31	2207.9	0.010655	10.68	198.95	64.55	0.96
East-lower	0	PF 2	1931	2202.5	2206.31	2206.31	2207.9	0.010655	10.68	198.95	64.55	0.96
East-lower	-50	PF 1	1931	2201.35	2204.59	2204.59	2204.84	0.004033	5.91	726.04	1005.92	0.58
East-lower	-50	PF 2	1931	2201.35	2204.59	2204.59	2204.84	0.004033	5.91	726.04	1005.92	0.58

HEC-RAS ENCROACHMENT TABLE 1

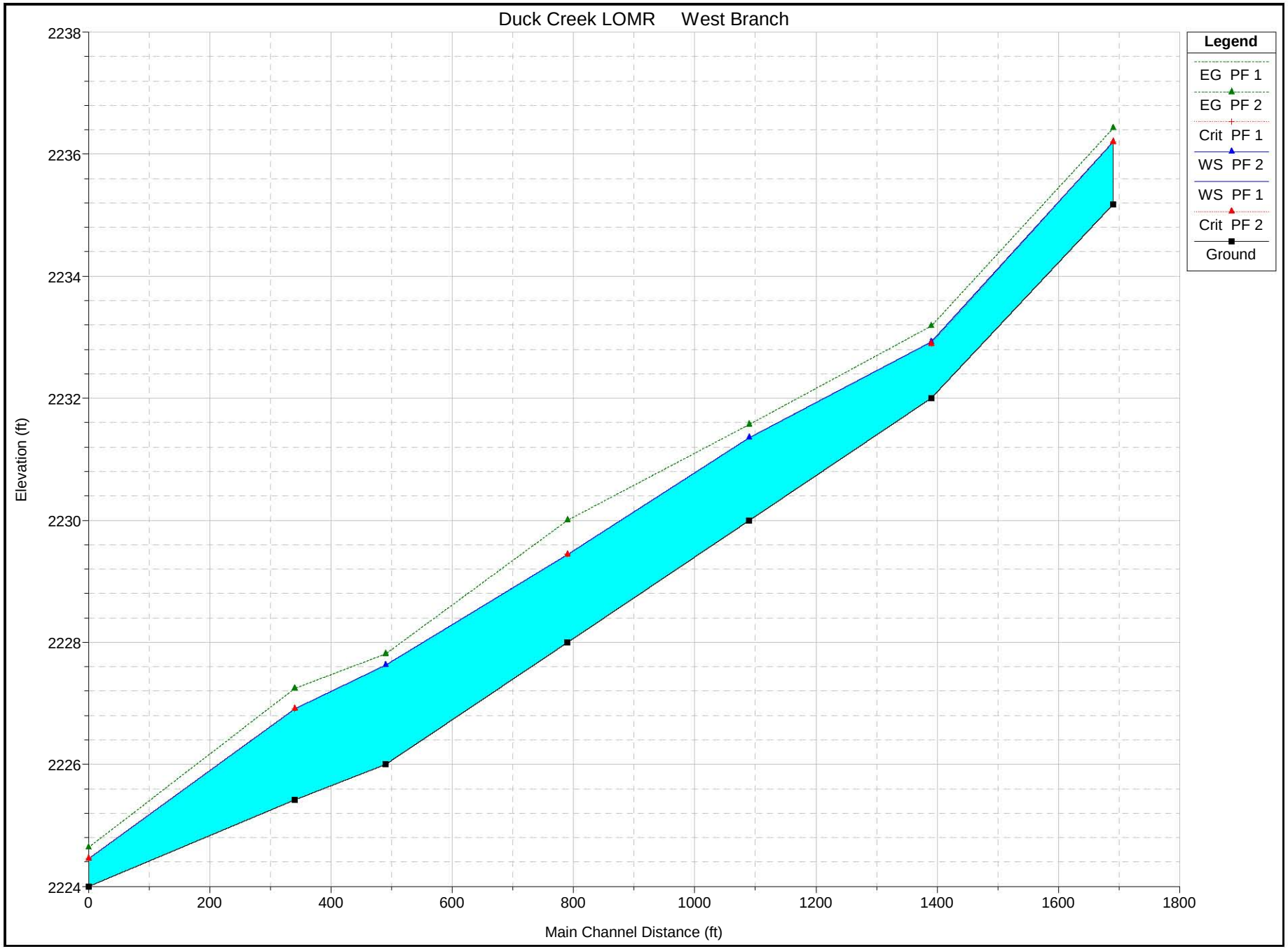
Reach	River	Profile	W.S. Elev	Prof Delta	E.G. Elev	Top Wdth	Q Left	Q Channel	Q Right	Enc Sta	Ch Sta L	Ch Sta R	Enc Sta
				WS		Act				L			R
	Sta		(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)
East-lower	1640	PF 1	2220.10		2222.14	42.22	1.59	1929.40	0.00		-32	9	
East-lower	1640	PF 2	2221.10	1.00	2222.41	44.47	6.22	1923.30	1.48		-32	9	
East-lower	1500	PF 1	2220.93		2221.26	216.13	139.27	1720.39	71.34		-38.33	38.33	
East-lower	1500	PF 2	2221.52	0.60	2221.91	71.00		1931.00		-35.5	-38.33	38.33	35.5
East-lower	1200	PF 1	2219.42		2220.20	227.37	155.75	1598.47	176.78		-21.89	48.29	
East-lower	1200	PF 2	2220.23	0.81	2221.05	71.00	2.49	1928.04	0.47	-22.5	-21.89	48.29	48.5
East-lower	900	PF 1	2217.35		2218.09	222.21	79.18	1667.67	184.15		-45.66	62.06	
East-lower	900	PF 2	2217.82	0.48	2219.27	70.00		1931.00		-26	-45.66	62.06	44
East-lower	800	PF 1	2216.42		2217.24	209.86	36.45	1805.66	88.90		934	1044	
East-lower	800	PF 2	2216.79	0.36	2218.23	70.00		1931.00		955	934	1044	1025

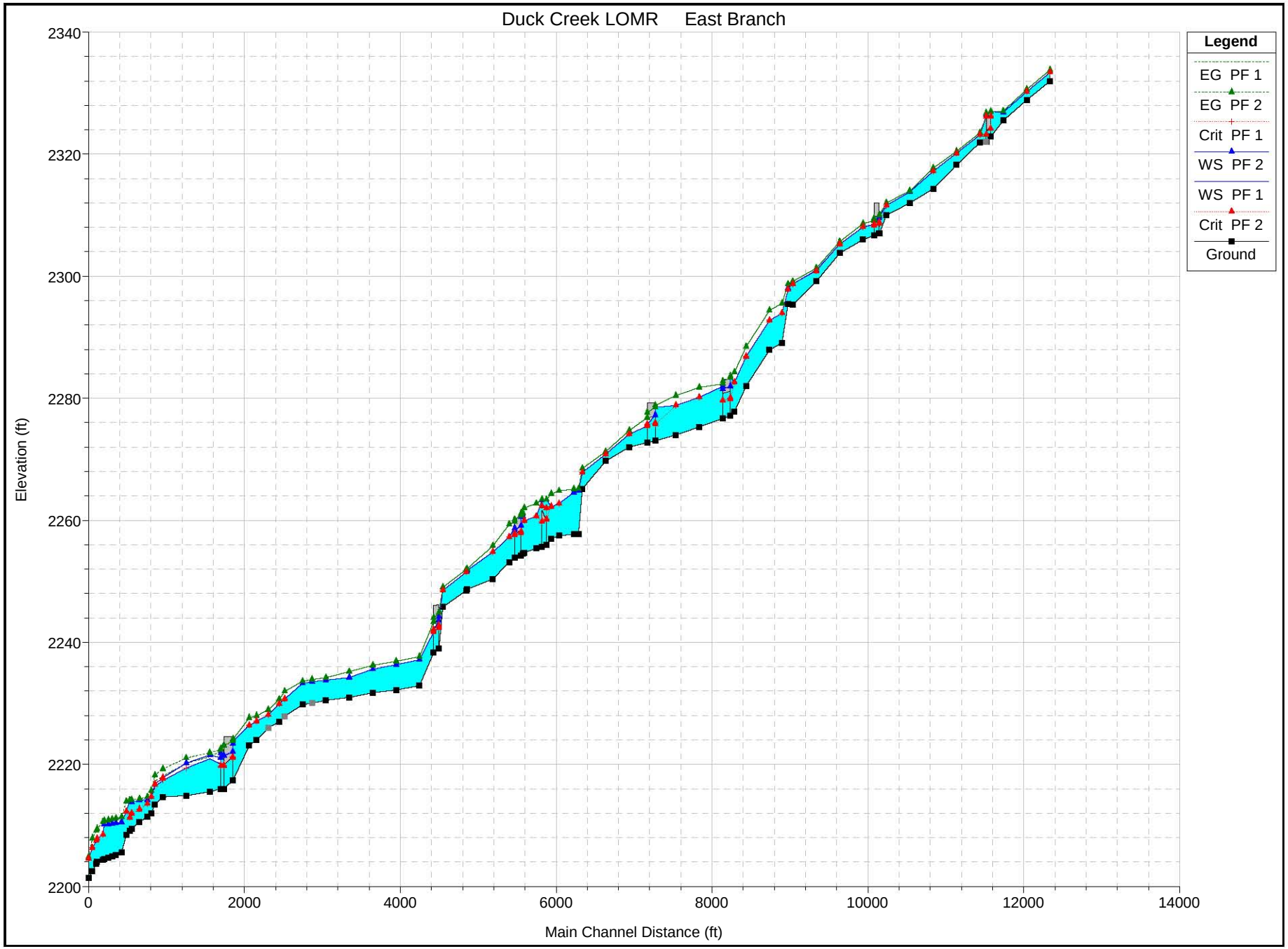
HEC-RAS ENCROACHMENT TABLE 2

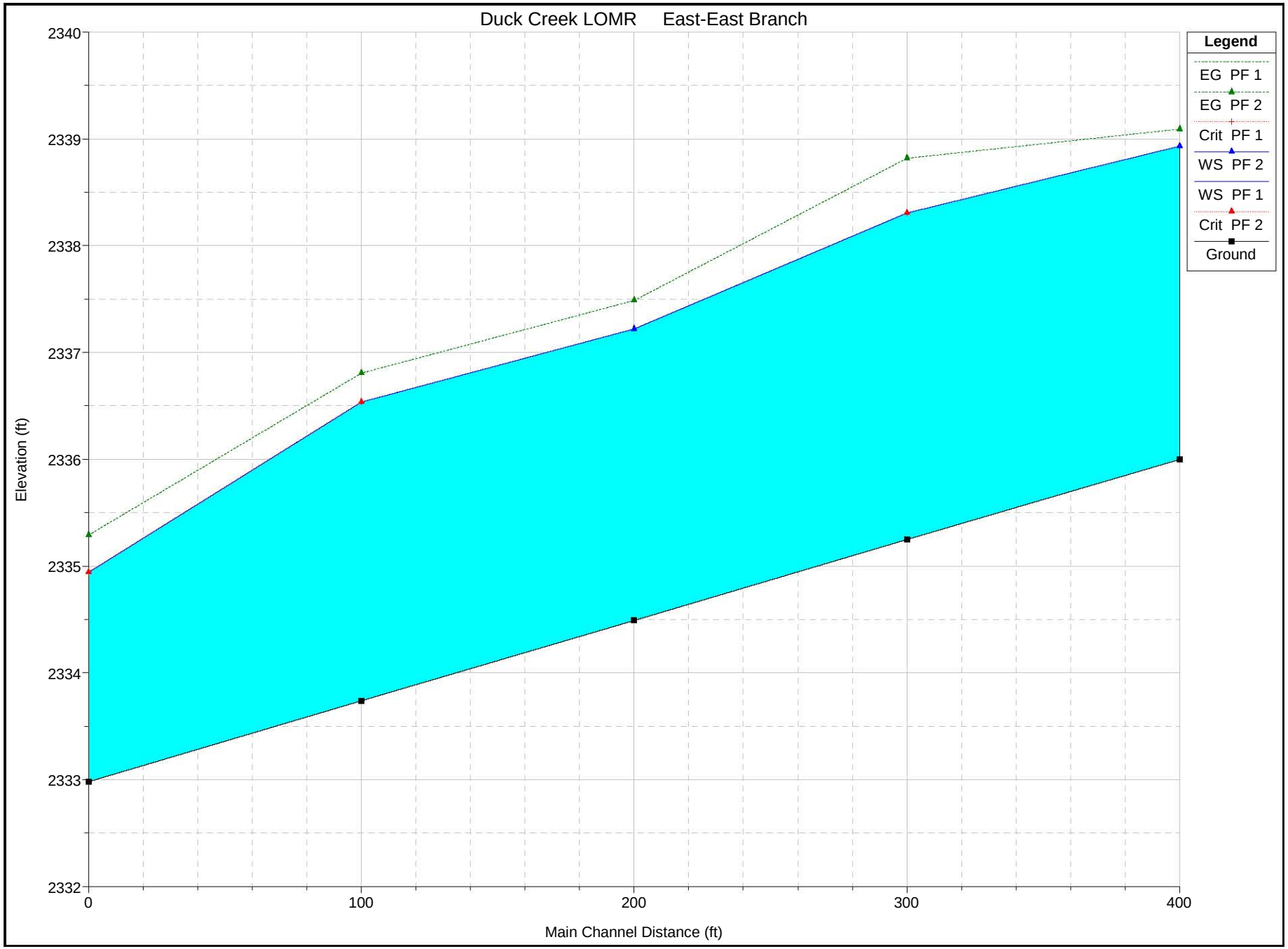
Reach	River Sta	Profile	Prof Delta WS (ft)	Top Wdth Act (ft)	K Perc L	Enc Sta L (ft)	Dist Center L (ft)	Center Station (ft)	Dist Center R (ft)	Enc Sta R (ft)	K Perc R	Enc WD (ft)
East-lower	1640	PF 1		42.22				-11.5				
East-lower	1640	PF 2	1	44.47				-11.5				
East-lower	1500	PF 1		216.13				0				
East-lower	1500	PF 2	0.6	71	11.55	-35.5	35.5	0	35.5	35.5	6.51	71
East-lower	1200	PF 1		227.37				13.2				
East-lower	1200	PF 2	0.81	71	15.54	-22.5	35.7	13.2	35.3	48.5	15.24	71
East-lower	900	PF 1		222.21				8.2				
East-lower	900	PF 2	0.48	70	6.09	-26	34.2	8.2	35.8	44	14.05	70
East-lower	800	PF 1		209.86				989				
East-lower	800	PF 2	0.36	70	4.39	955	34	989	36	1025	6.82	70

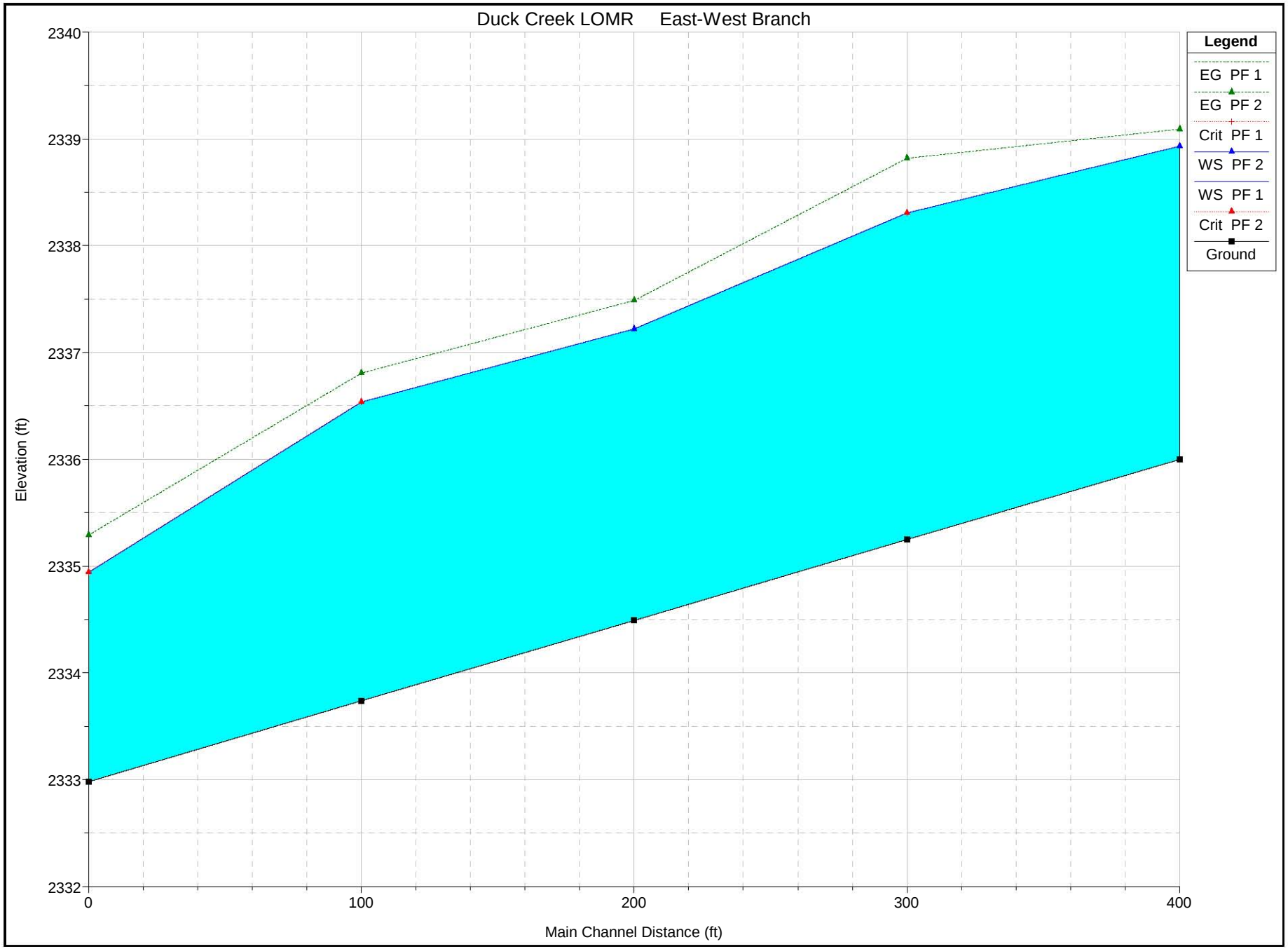
HEC-RAS ENCROACHMENT TABLE 3

Reach	River Sta	Profile	Top Wdth Act	Area	Vel Total	W.S. Elev	Base WS	Prof Delta WS
			(ft)	(sq ft)	(ft/s)	(ft)	(ft)	(ft)
East-lower	1640	PF 1	42.22	168.58	11.45	2220.1	2220.1	
East-lower	1640	PF 2	44.47	211.96	9.11	2221.1	2220.1	1
East-lower	1500	PF 1	216.13	480.73	4.02	2220.93	2220.93	
East-lower	1500	PF 2	71	386.15	5	2221.52	2220.93	0.6
East-lower	1200	PF 1	227.37	321.21	6.01	2219.42	2219.42	
East-lower	1200	PF 2	71	267.92	7.21	2220.23	2219.42	0.81
East-lower	900	PF 1	222.21	305.66	6.32	2217.35	2217.35	
East-lower	900	PF 2	70	200.28	9.64	2217.82	2217.35	0.48
East-lower	800	PF 1	209.86	288.3	6.7	2216.42	2216.42	
East-lower	800	PF 2	70	199.99	9.66	2216.79	2216.42	0.36


Duck Creek LOMR West Branch
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 2
WS PF 1
Crit PF 2
Ground
Elevation (ft)
2238
2236
2234
2232
2230
2228
2226
2224
0
200
400
600
800
1000
1200
1400
1600
1800
Main Channel Distance (ft)

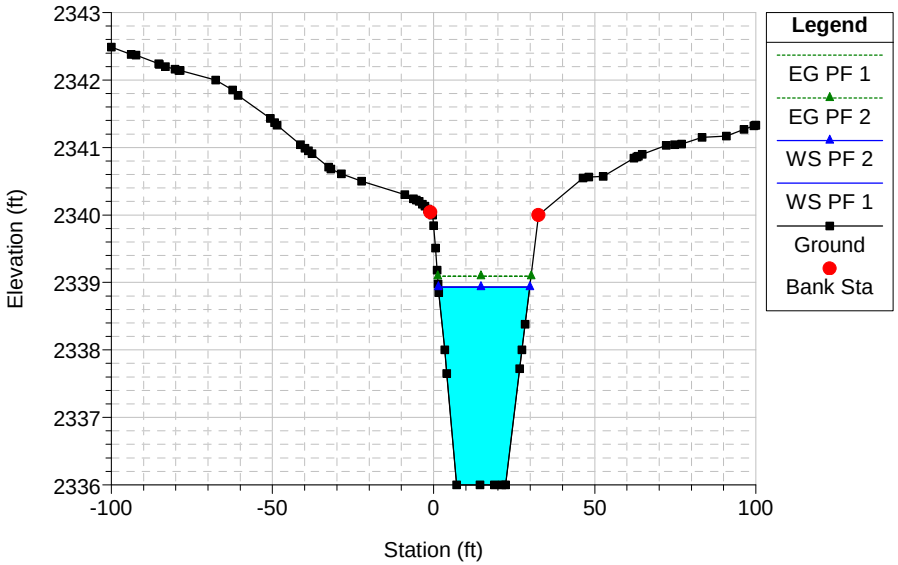

Duck Creek LOMR East Branch
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 2
WS PF 1
Crit PF 2
Ground
Elevation (ft)
2340
2320
2300
2280
2260
2240
2220
2200
0
2000
4000
6000
8000
10000
12000
14000
Main Channel Distance (ft)


Duck Creek LOMR East-East Branch
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 2
WS PF 1
Crit PF 2
Ground
Elevation (ft)
2340
2339
2338
2337
2336
2335
2334
2333
2332
0
100
200
300
400
Main Channel Distance (ft)


Duck Creek LOMR East-West Branch
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 2
WS PF 1
Crit PF 2
Ground
Elevation (ft)
2340
2339
2338
2337
2336
2335
2334
2333
2332
0
100
200
300
400
Main Channel Distance (ft)

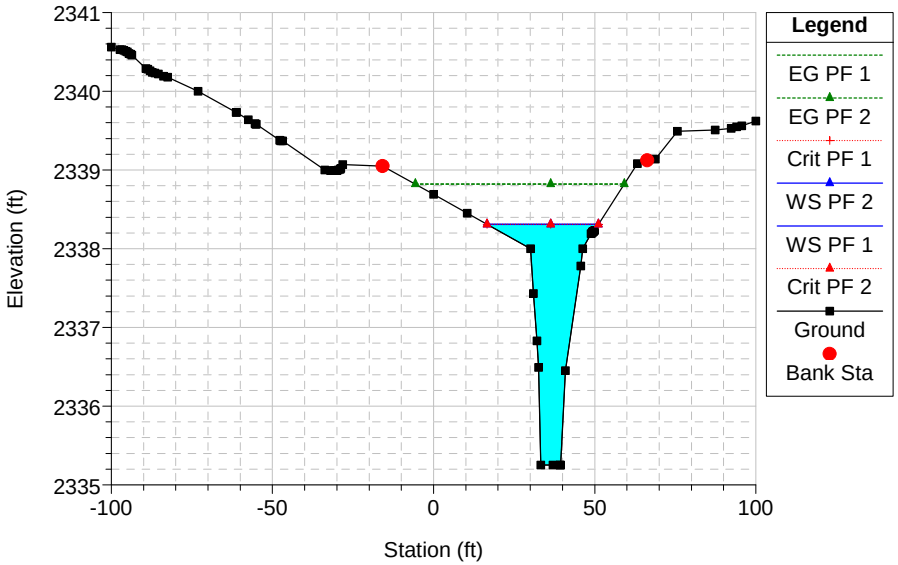
Duck Creek LOMR

River = Duck Creek Reach = East-West Branch RS = 500



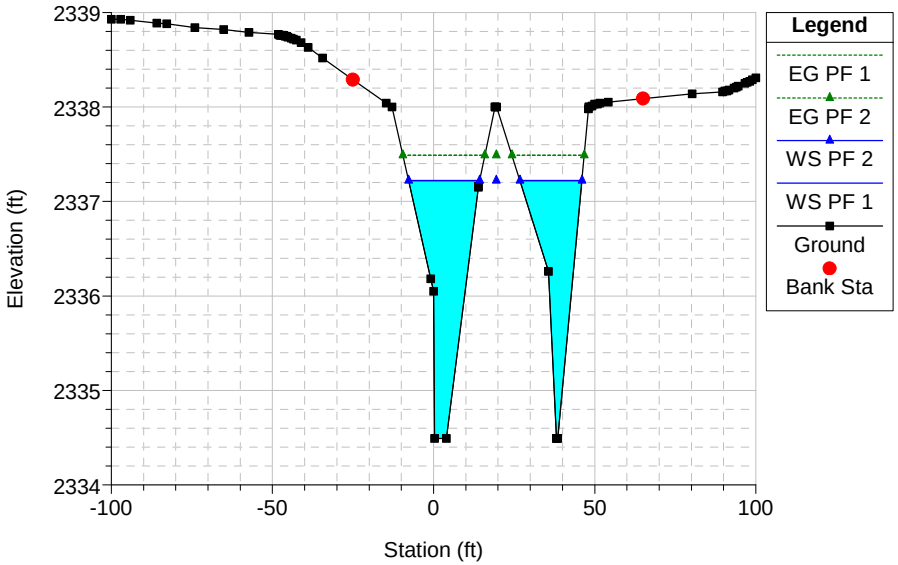
Duck Creek LOMR

River = Duck Creek Reach = East-West Branch RS = 400



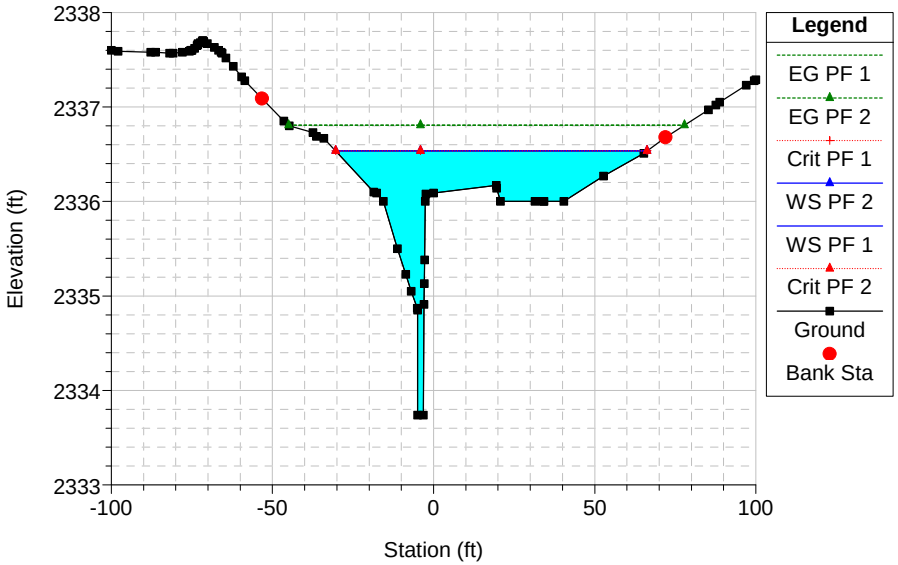
Duck Creek LOMR

River = Duck Creek Reach = East-West Branch RS = 300



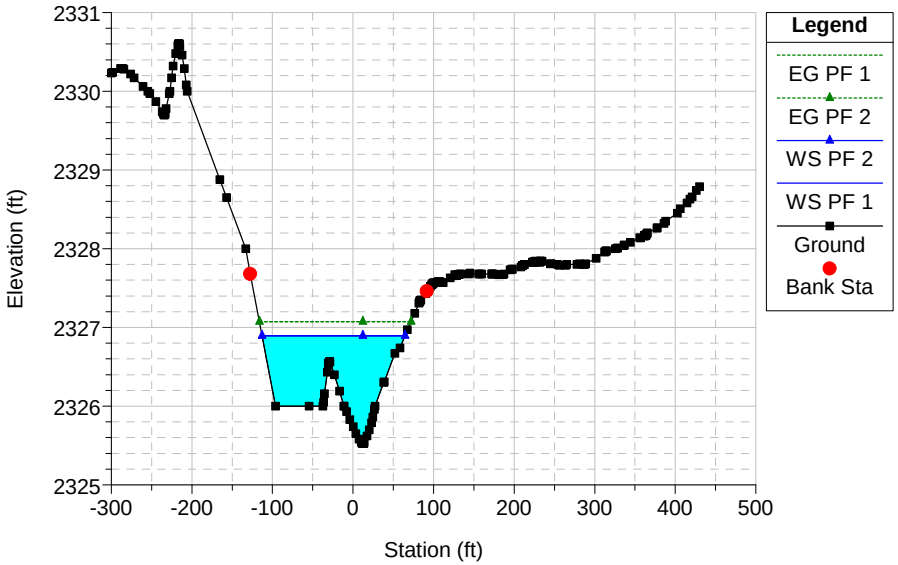
Duck Creek LOMR

River = Duck Creek Reach = East-West Branch RS = 200



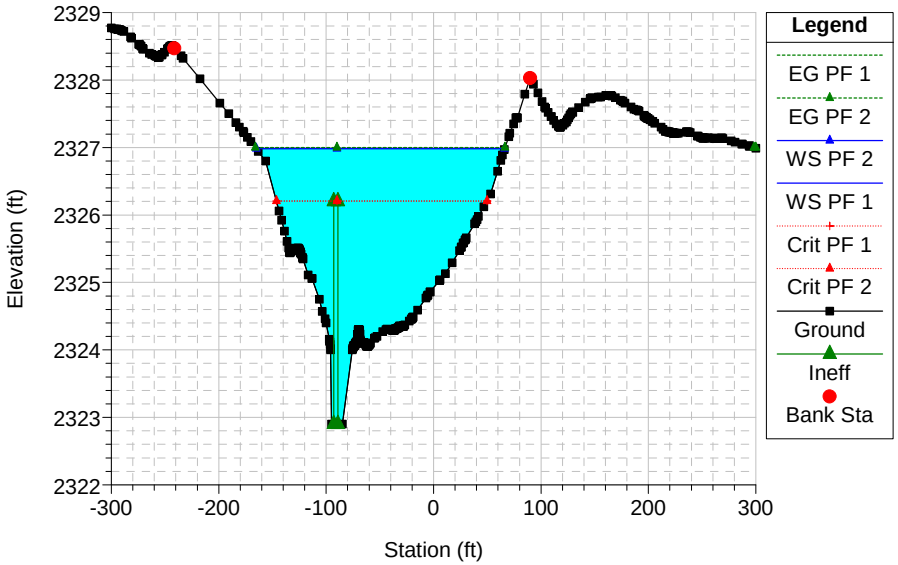
Duck Creek LOMR

River = Duck Creek Reach = East RS = 11700



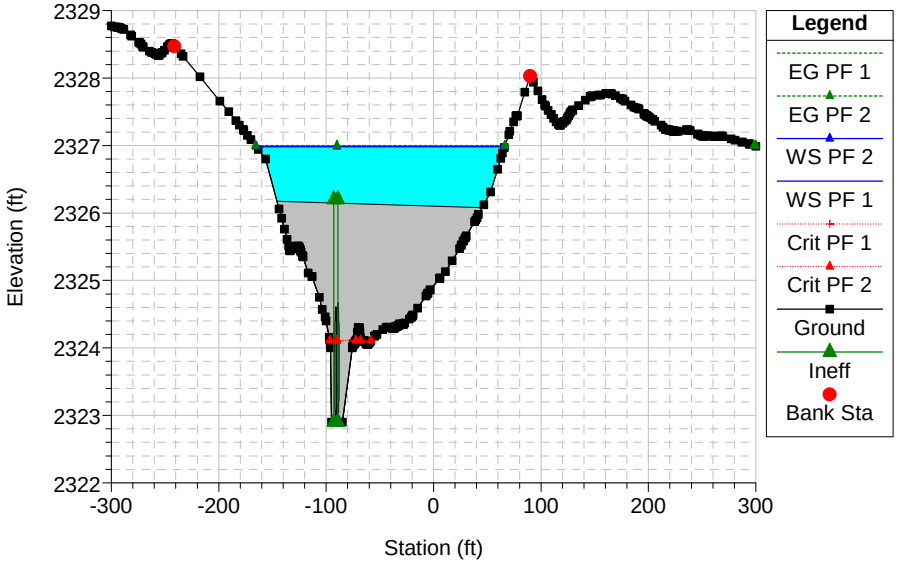
Duck Creek LOMR

River = Duck Creek Reach = East RS = 11540



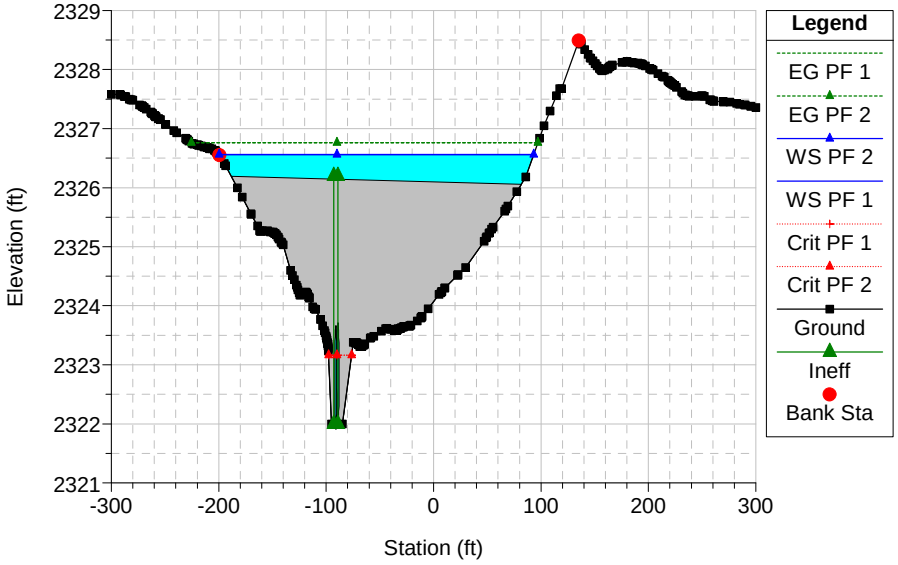
Duck Creek LOMR

River = Duck Creek Reach = East RS = 11510 Culv



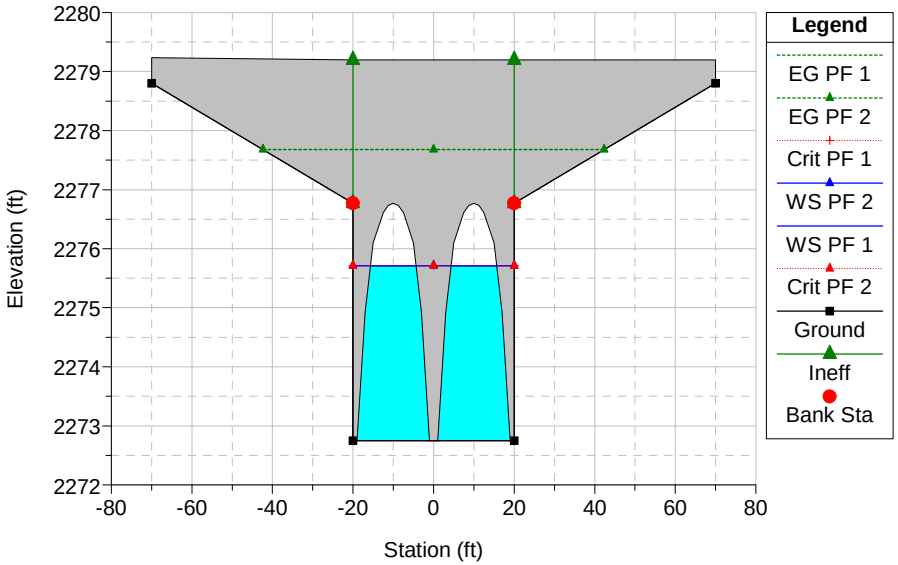
Duck Creek LOMR

River = Duck Creek Reach = East RS = 11510 Culv



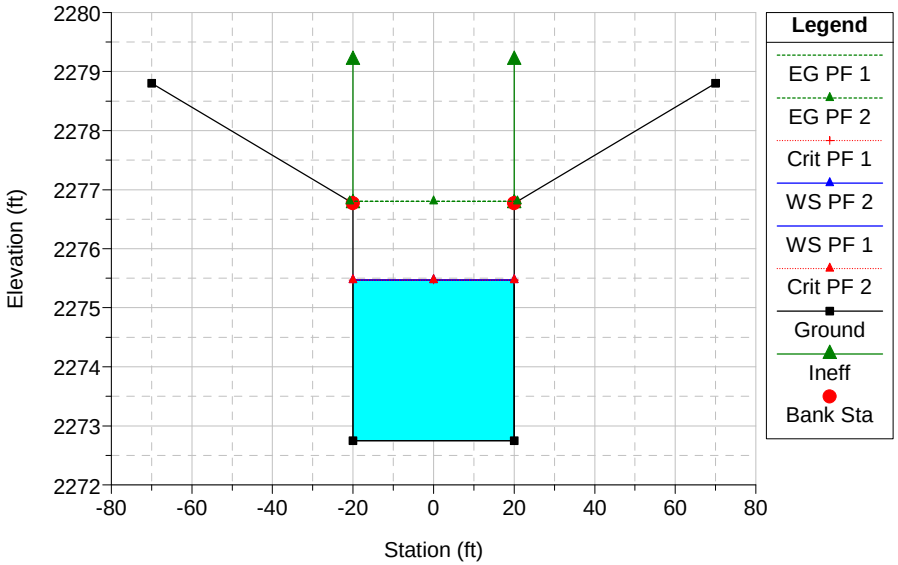
Duck Creek LOMR

River = Duck Creek Reach = East RS = 7182.5 BR



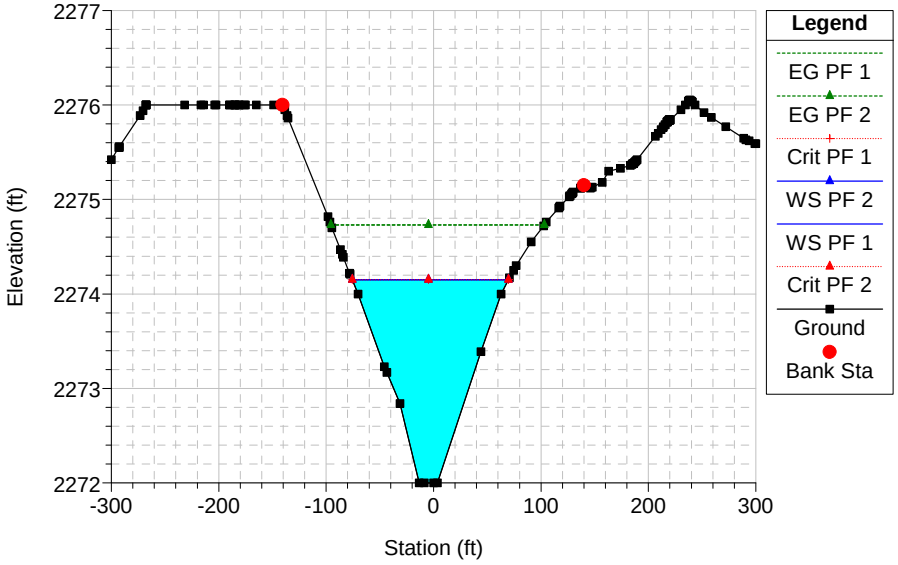
Duck Creek LOMR

River = Duck Creek Reach = East RS = 7130



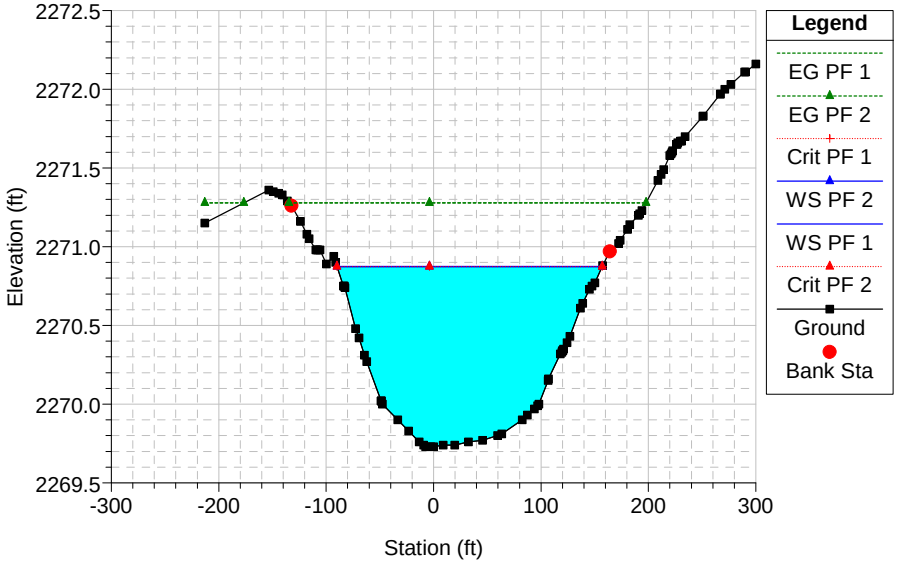
Duck Creek LOMR

River = Duck Creek Reach = East RS = 6900



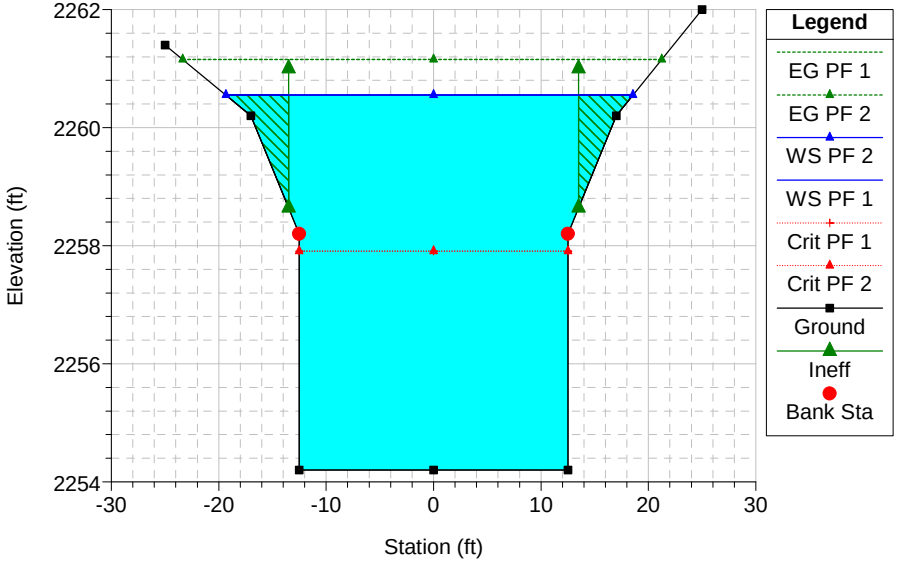
Duck Creek LOMR

River = Duck Creek Reach = East RS = 6600



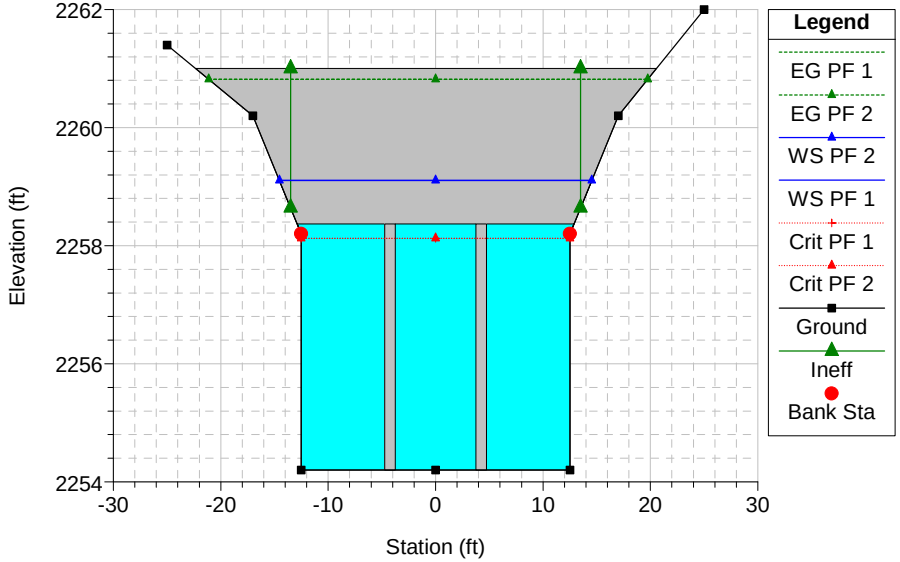
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5505



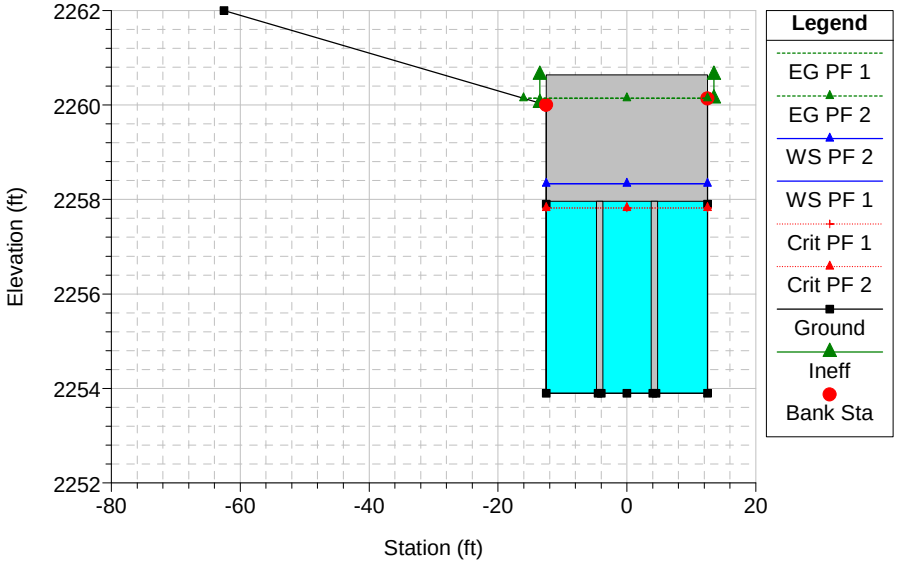
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5462.5 BR



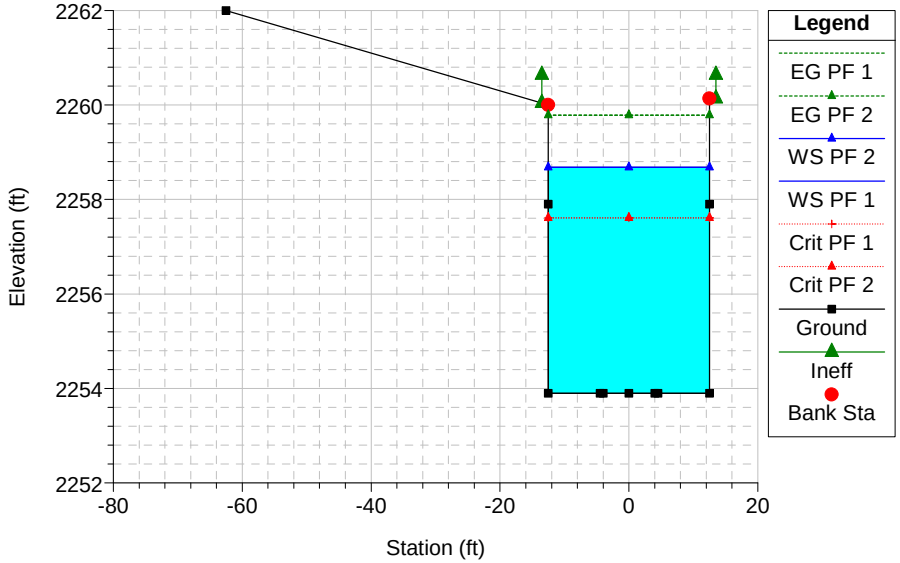
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5462.5 BR



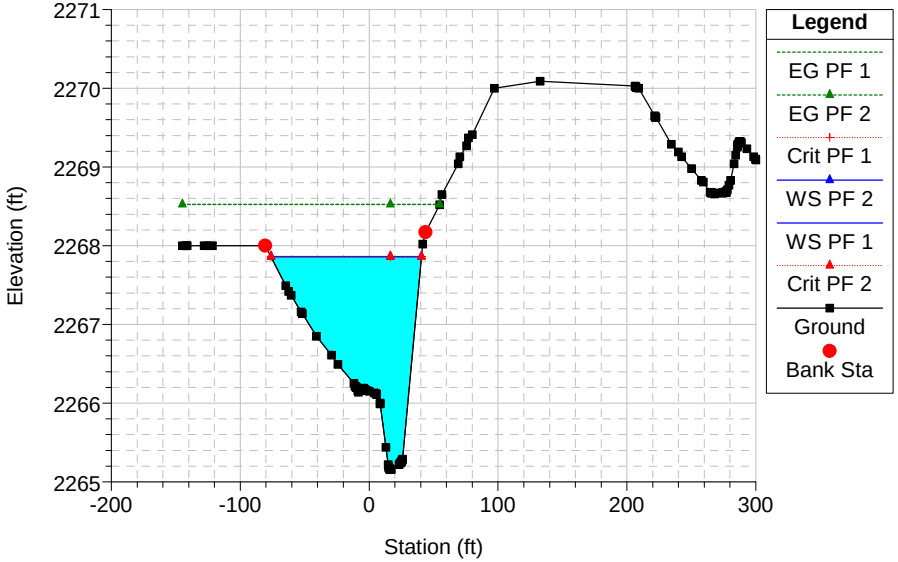
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5420



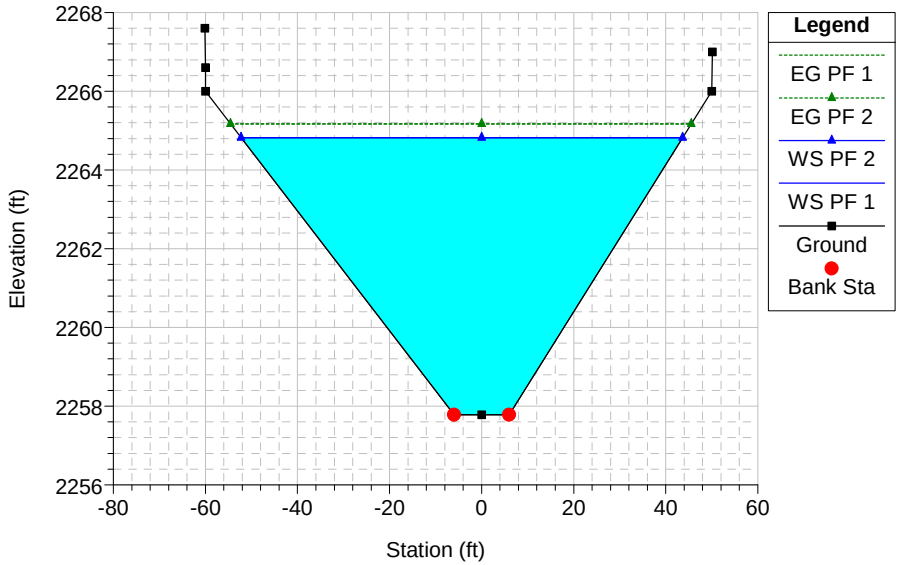
Duck Creek LOMR

River = Duck Creek Reach = East RS = 6300



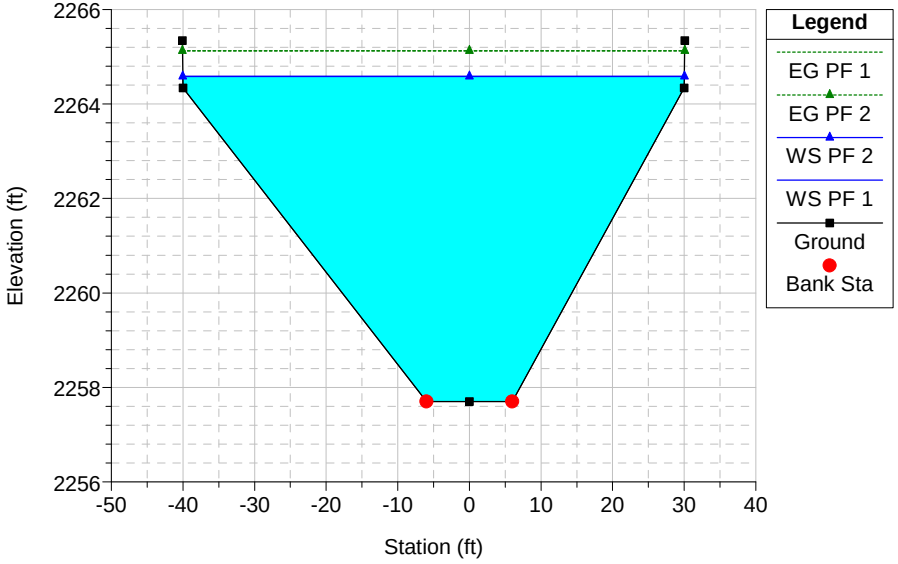
Duck Creek LOMR

River = Duck Creek Reach = East RS = 6250



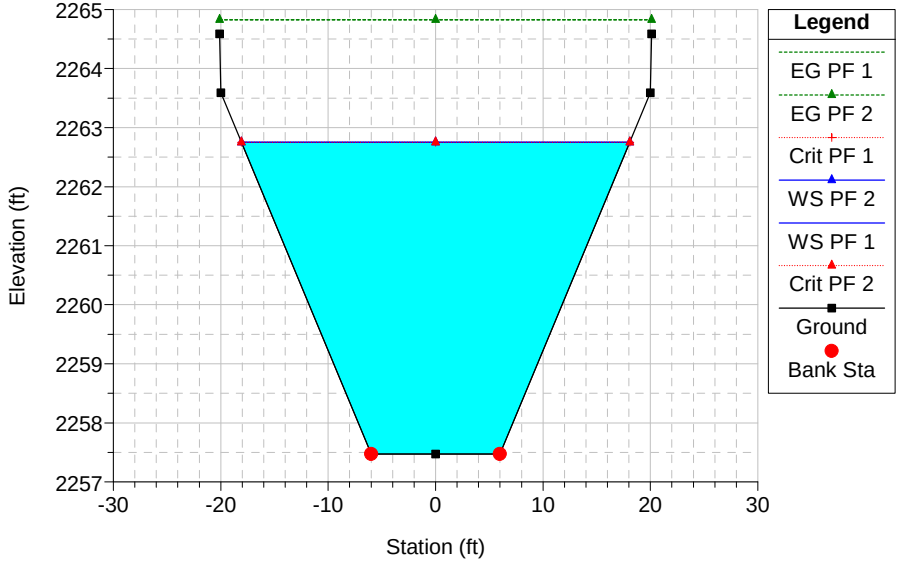
Duck Creek LOMR

River = Duck Creek Reach = East RS = 6190



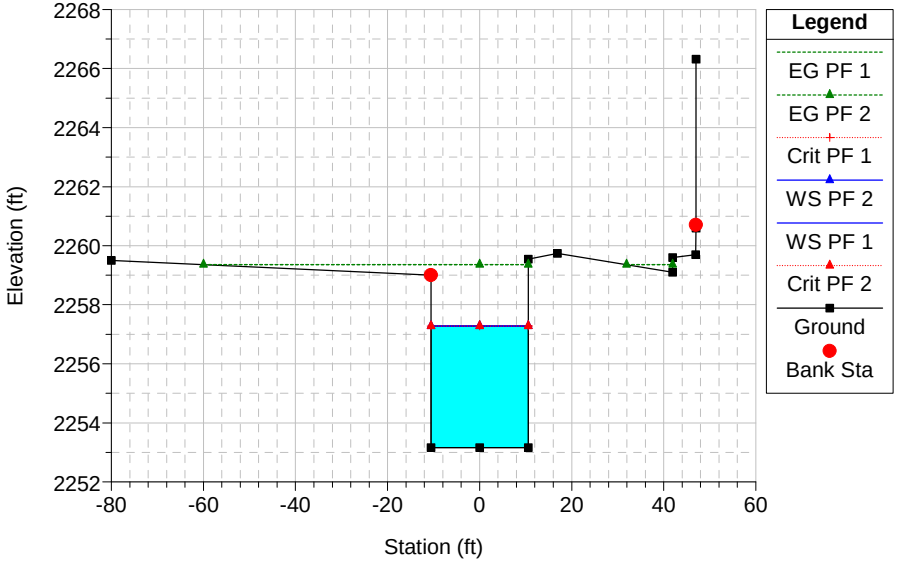
Duck Creek LOMR

River = Duck Creek Reach = East RS = 6000



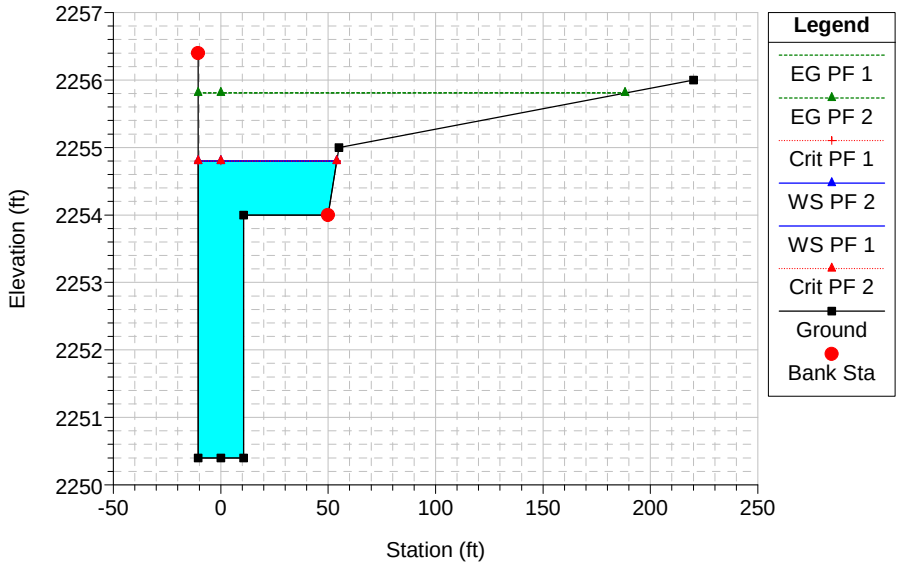
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5350



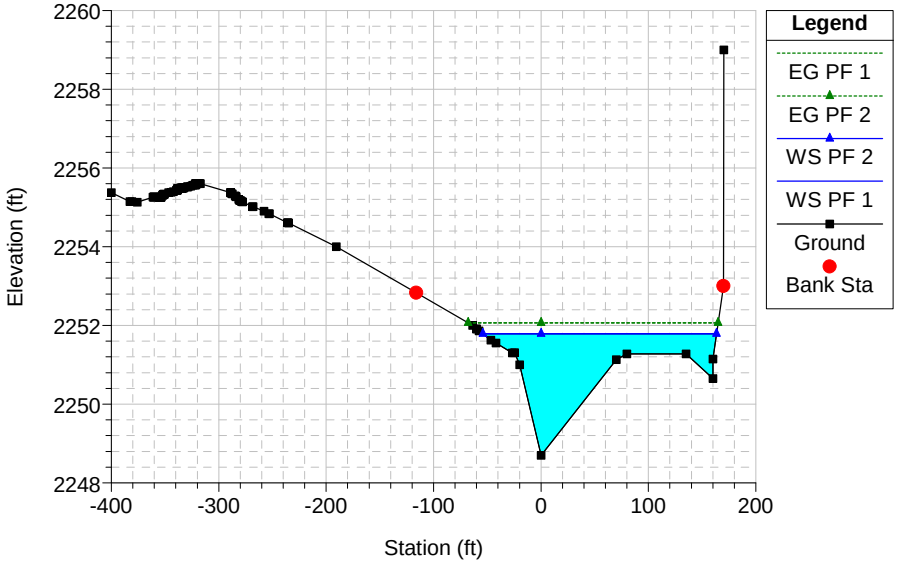
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5140



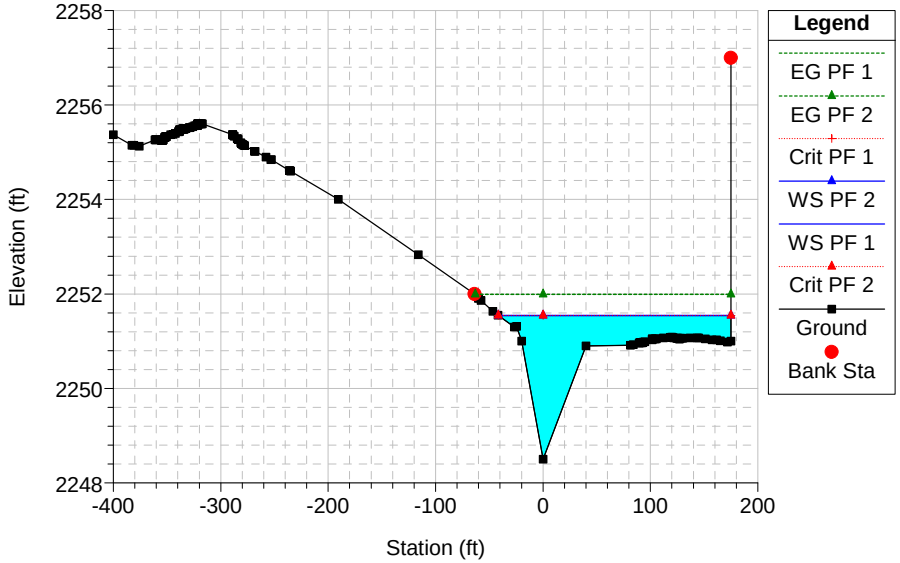
Duck Creek LOMR

River = Duck Creek Reach = East RS = 4810



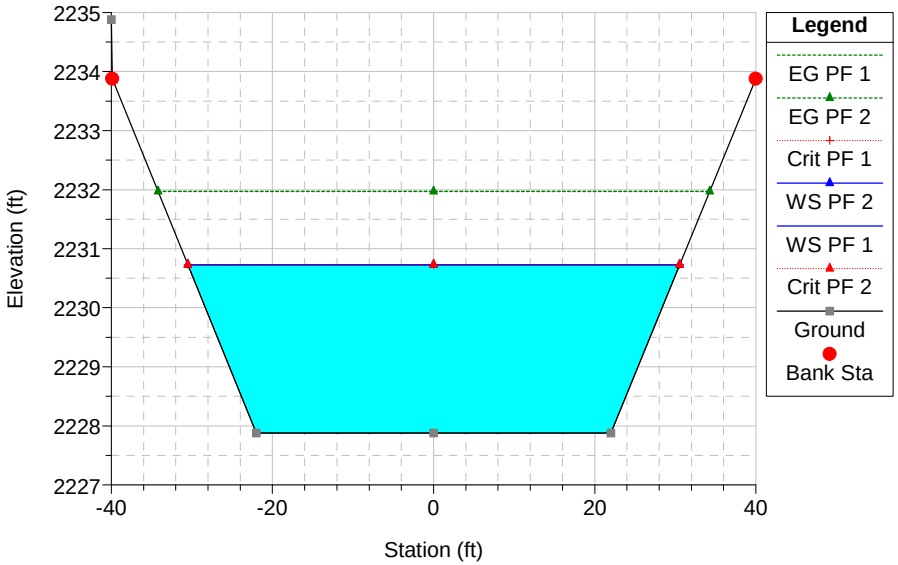
Duck Creek LOMR

River = Duck Creek Reach = East RS = 4800



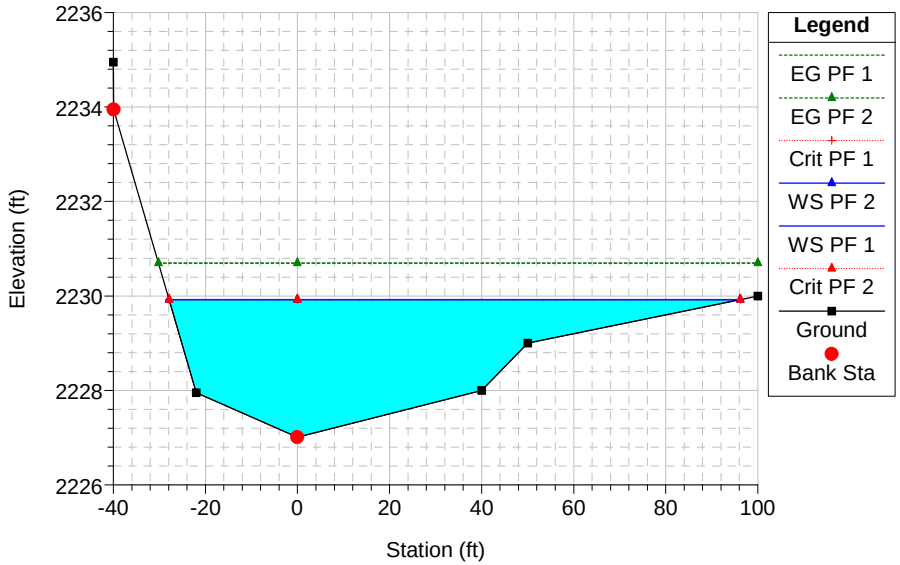
Duck Creek LOMR

River = Duck Creek Reach = East RS = 2470.*



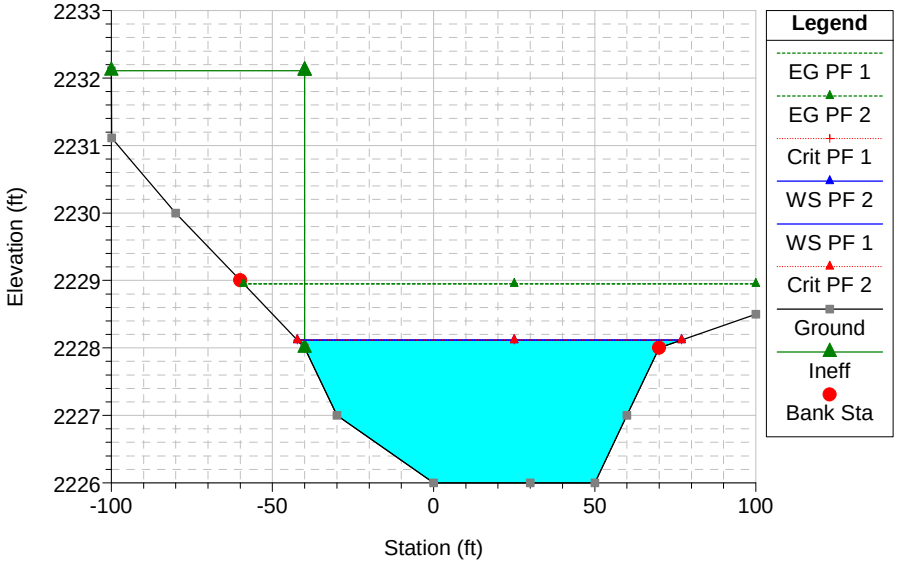
Duck Creek LOMR

River = Duck Creek Reach = East RS = 2400



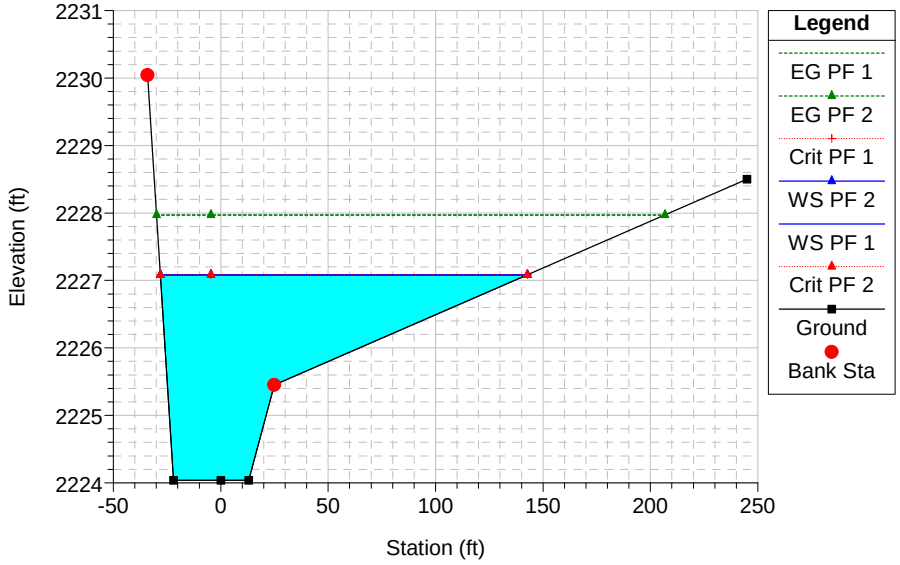
Duck Creek LOMR

River = Duck Creek Reach = East RS = 2260.*



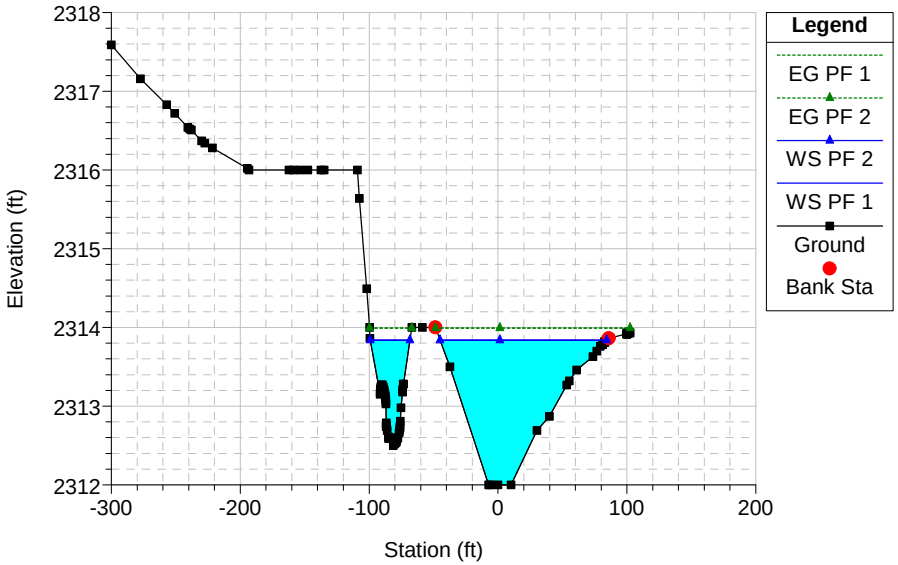
Duck Creek LOMR

River = Duck Creek Reach = East RS = 2100



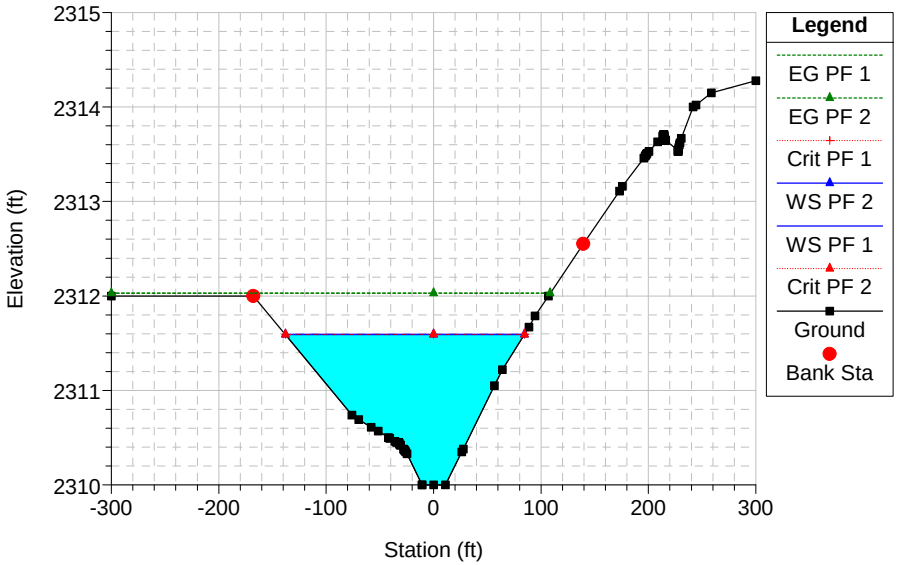
Duck Creek LOMR

River = Duck Creek Reach = East RS = 10500



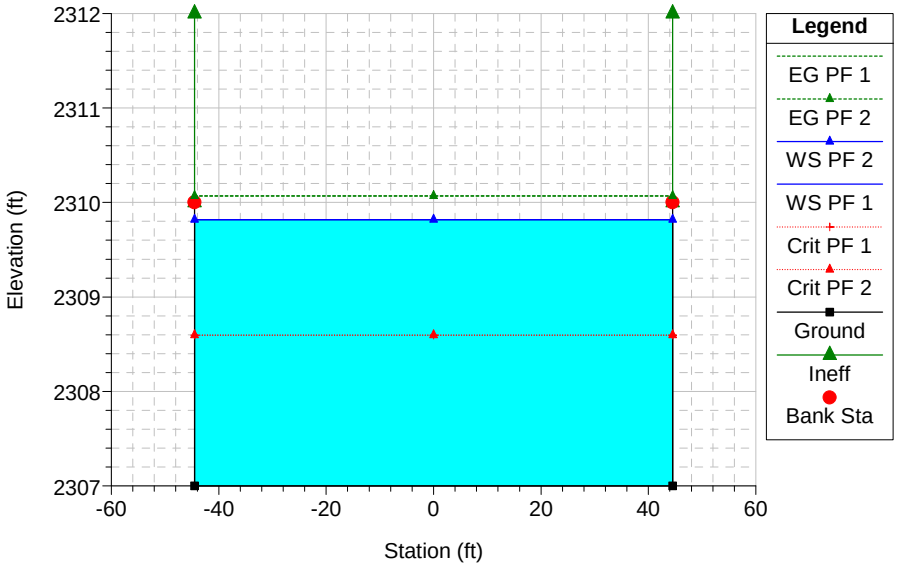
Duck Creek LOMR

River = Duck Creek Reach = East RS = 10200



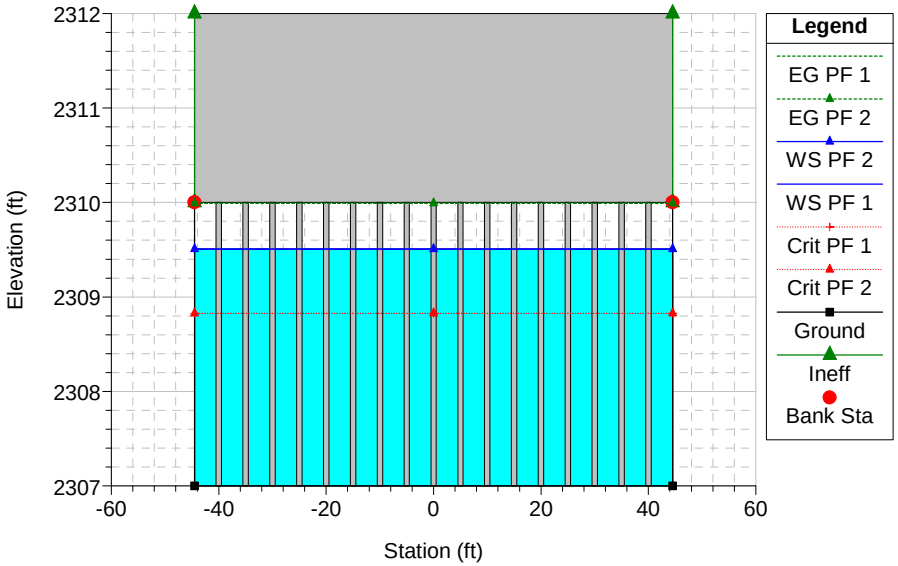
Duck Creek LOMR

River = Duck Creek Reach = East RS = 10110



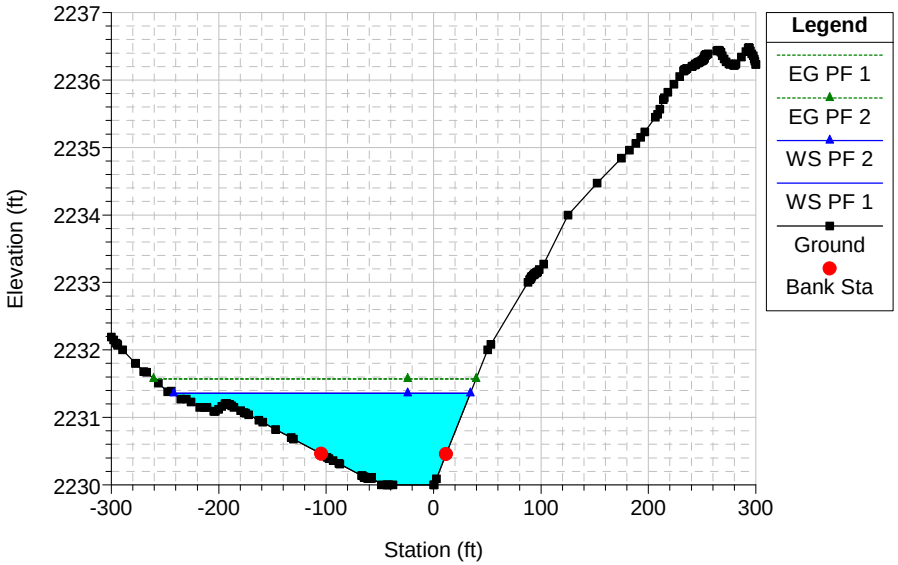
Duck Creek LOMR

River = Duck Creek Reach = East RS = 10075 BR



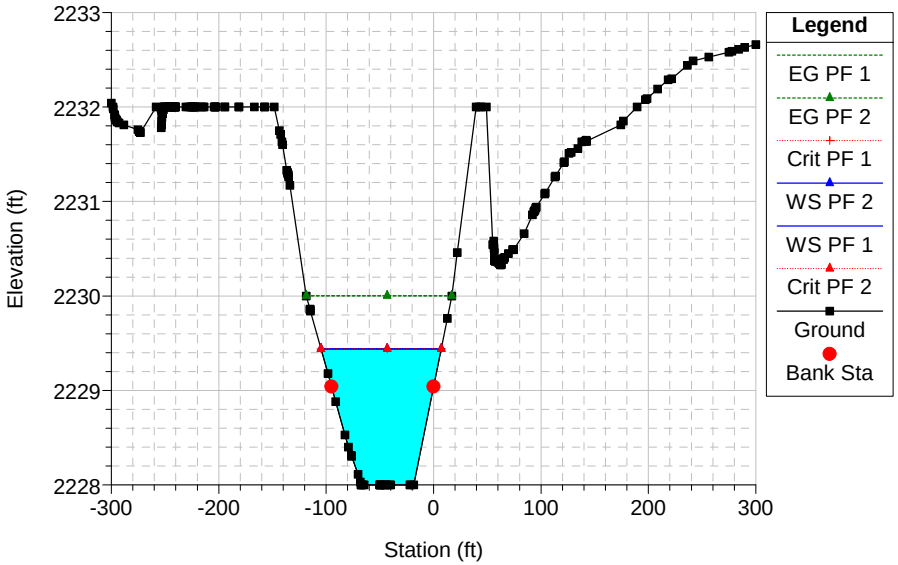
Duck Creek LOMR

River = Duck Creek Reach = West Branch RS = 2860



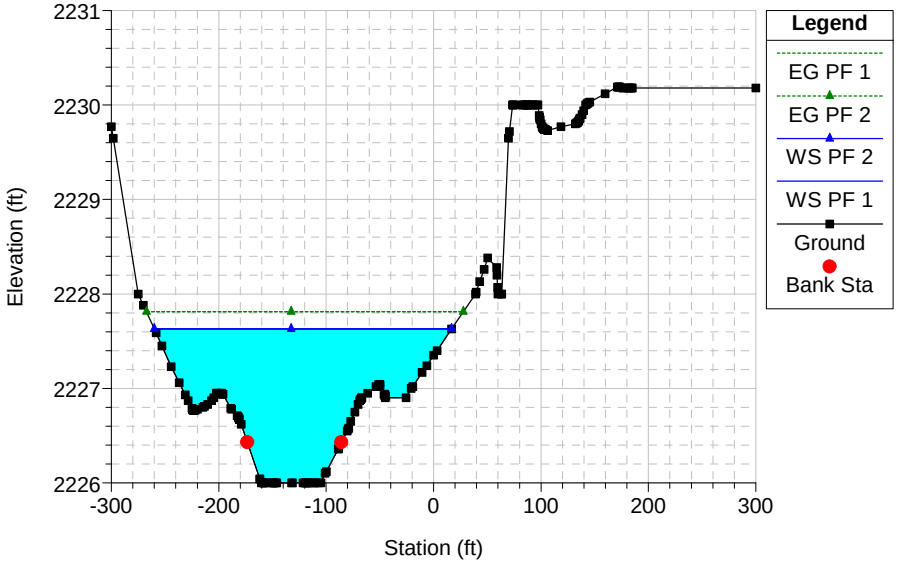
Duck Creek LOMR

River = Duck Creek Reach = West Branch RS = 2560



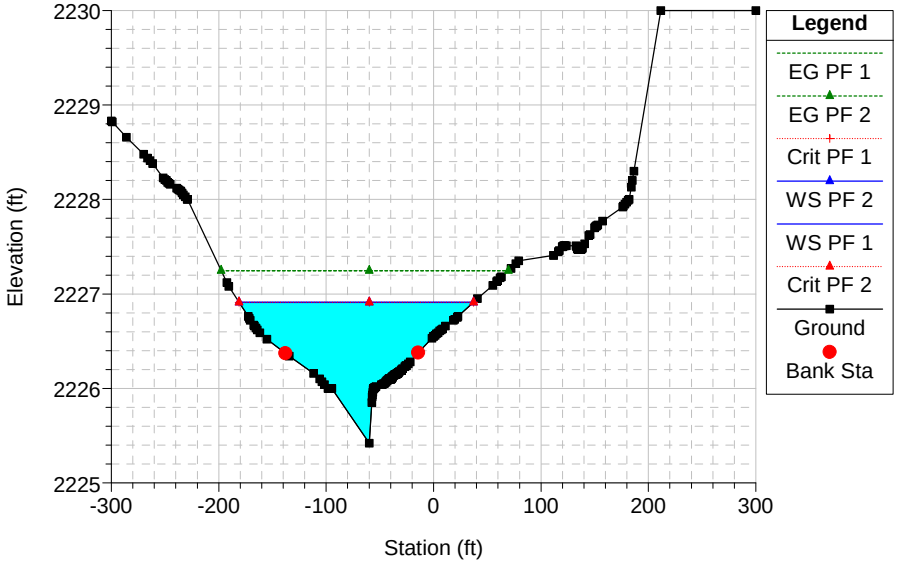
Duck Creek LOMR

River = Duck Creek Reach = West Branch RS = 2260



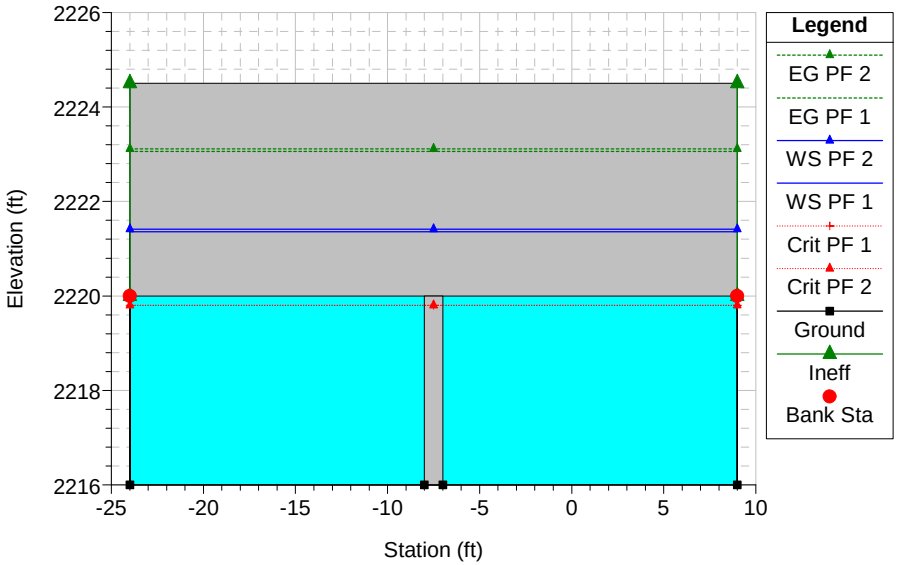
Duck Creek LOMR

River = Duck Creek Reach = West Branch RS = 2110



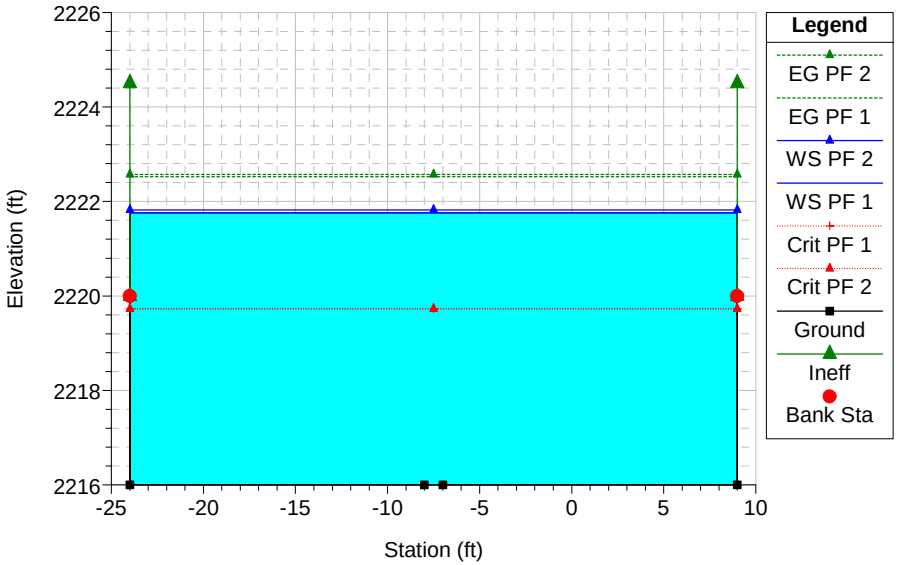
Duck Creek LOMR

River = Duck Creek Reach = East RS = 1700 BR



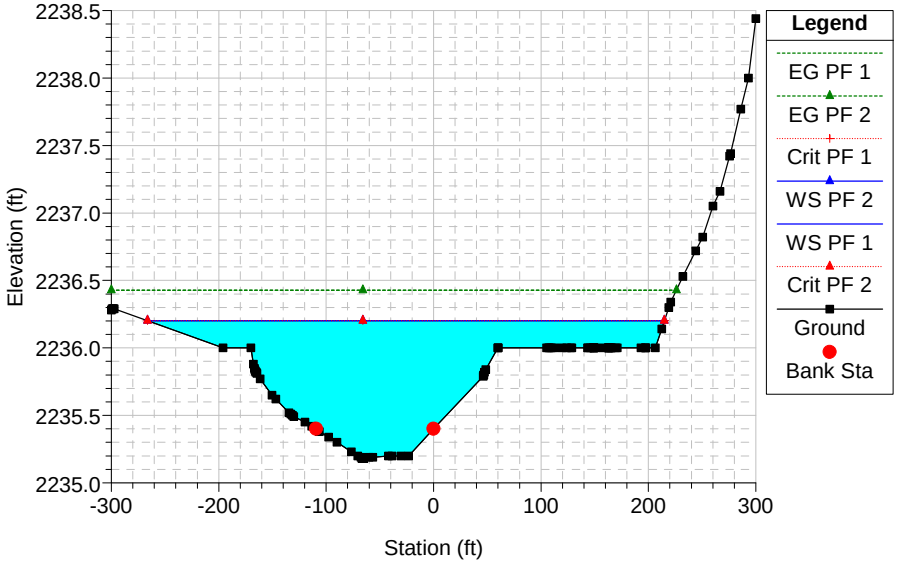
Duck Creek LOMR

River = Duck Creek Reach = East RS = 1641



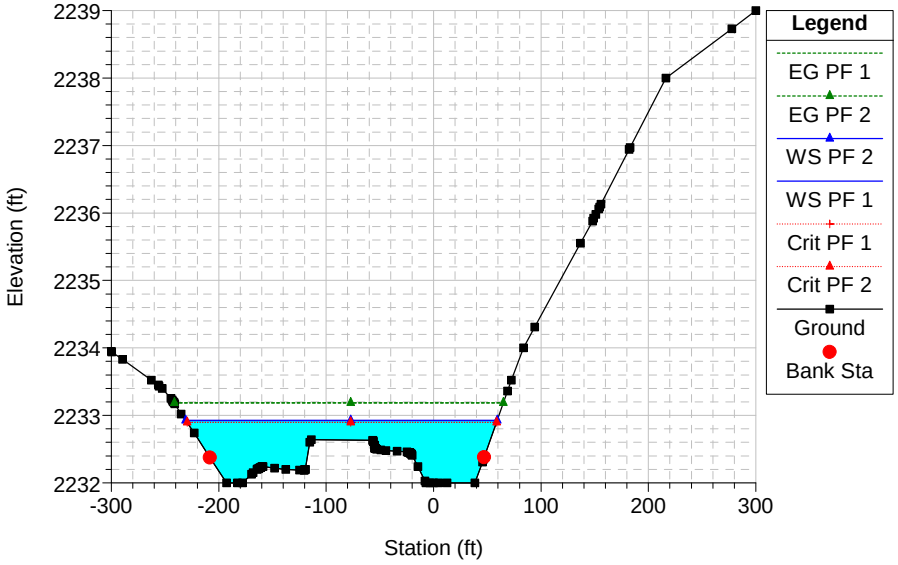
Duck Creek LOMR

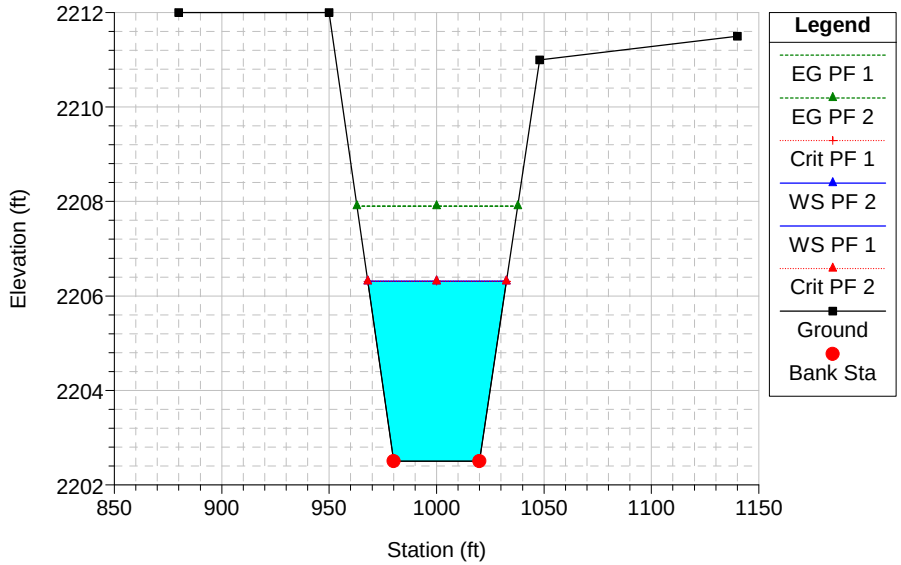
River = Duck Creek Reach = West Branch RS = 3460

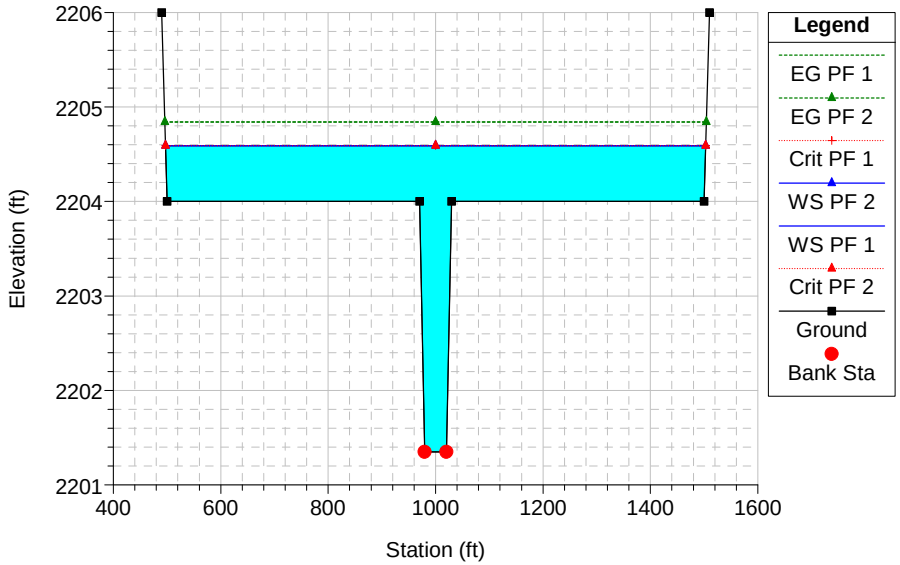


Duck Creek LOMR

River = Duck Creek Reach = West Branch RS = 3160

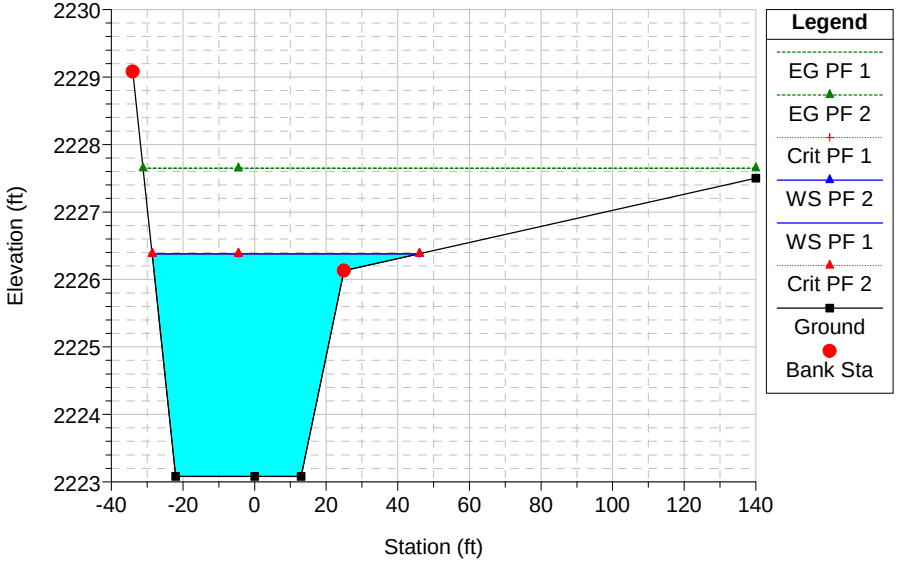



Duck Creek LOMR
River = Duck Creek Reach = East-lower RS = 0
Elevation (ft)
2212
2210
2208
2206
2204
2202
850
900
950
1000
1050
1100
1150
Station (ft)
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 2
WS PF 1
Crit PF 2
Ground
Bank Sta


Duck Creek LOMR
River = Duck Creek Reach = East-lower RS = -50
Elevation (ft)
2206
2205
2204
2203
2202
2201
400
600
800
1000
1200
1400
1600
Station (ft)
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 2
WS PF 1
Crit PF 2
Ground
Bank Sta

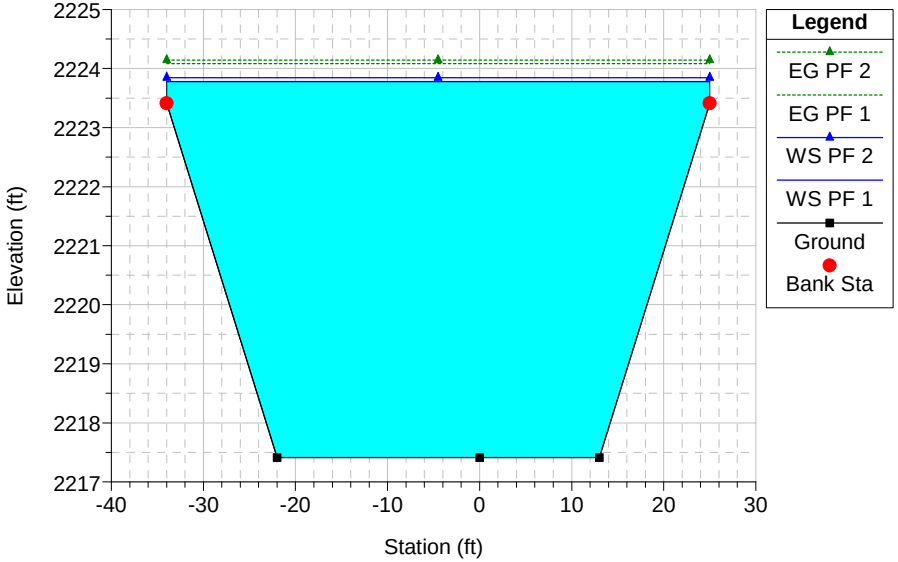
Duck Creek LOMR

River = Duck Creek Reach = East RS = 2008.56



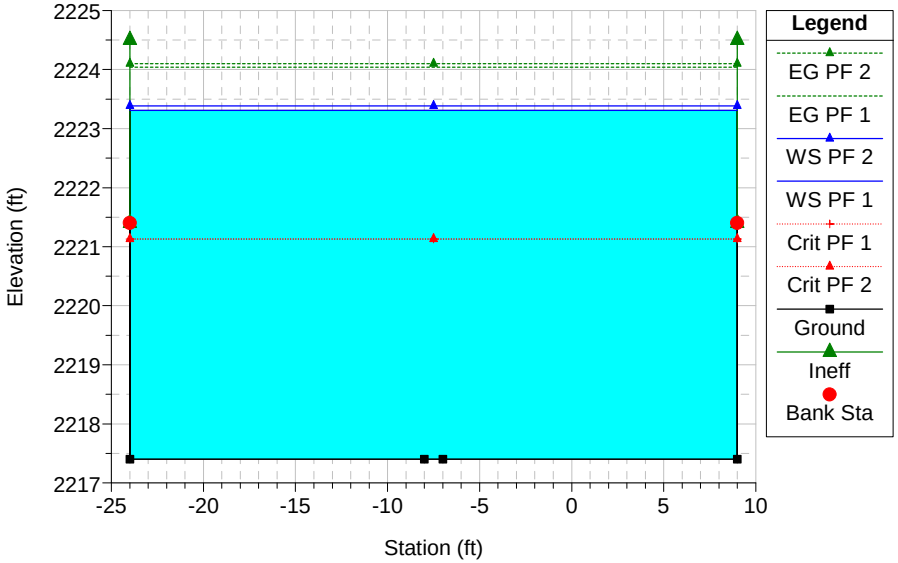
Duck Creek LOMR

River = Duck Creek Reach = East RS = 1800



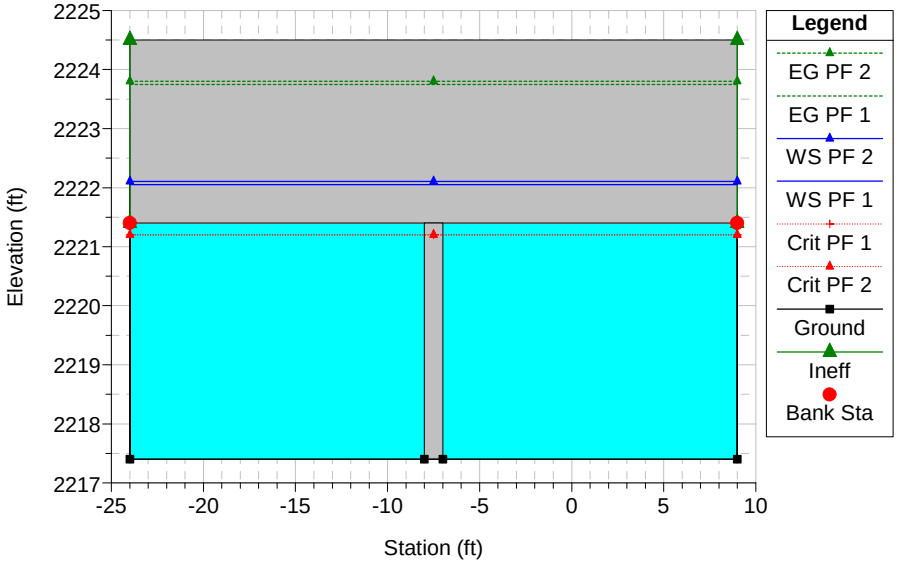
Duck Creek LOMR

River = Duck Creek Reach = East RS = 1799.9



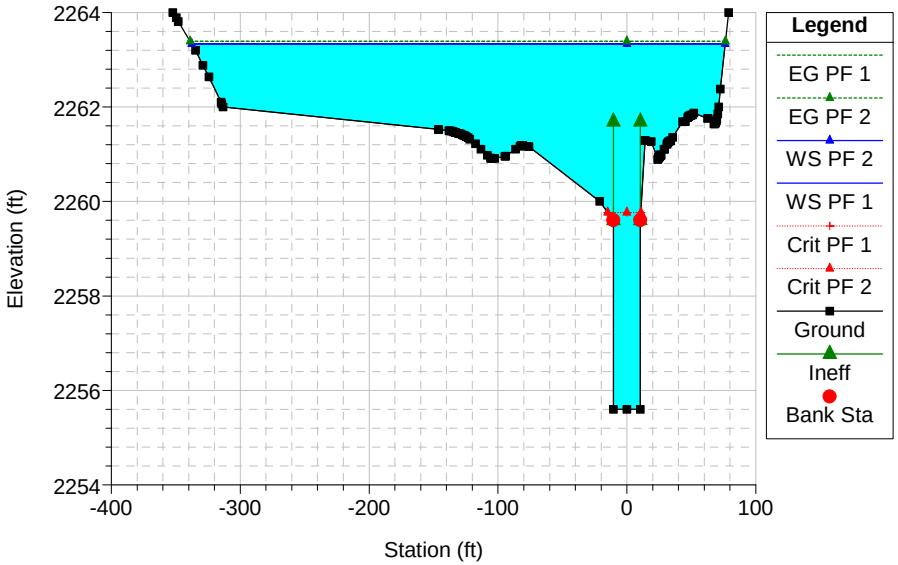
Duck Creek LOMR

River = Duck Creek Reach = East RS = 1700 BR



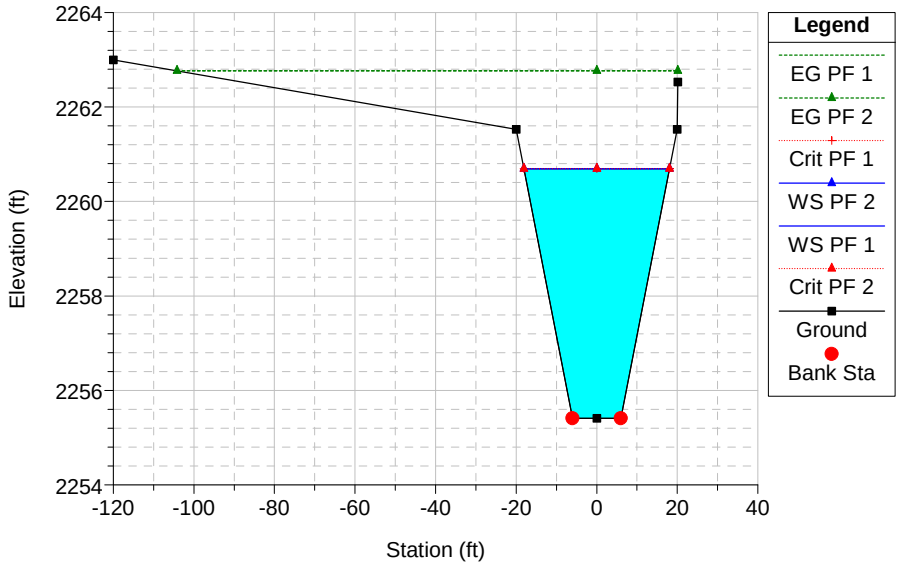
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5770



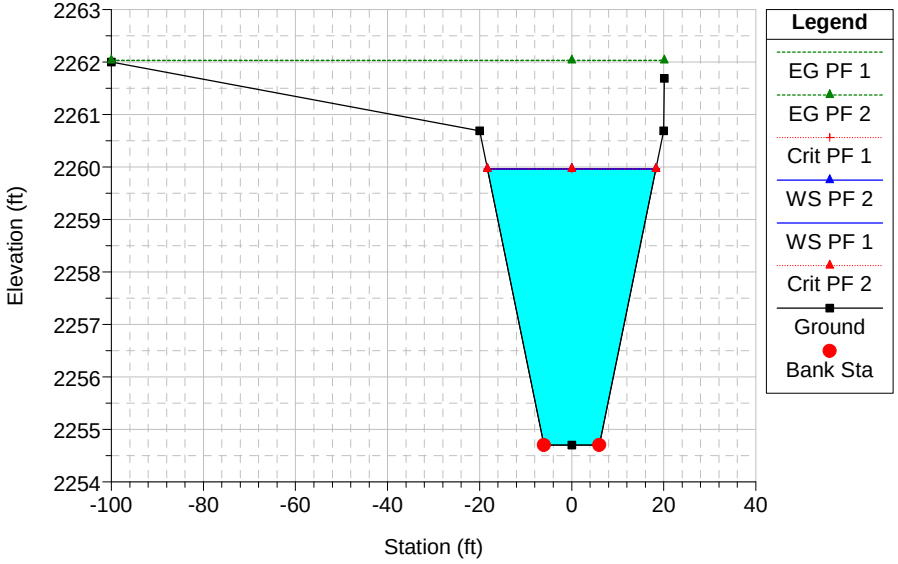
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5700



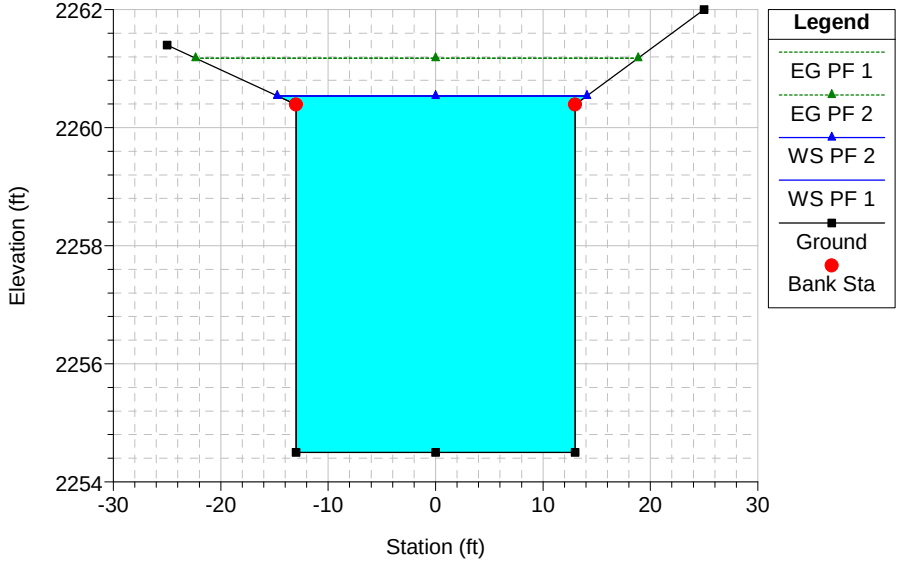
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5545



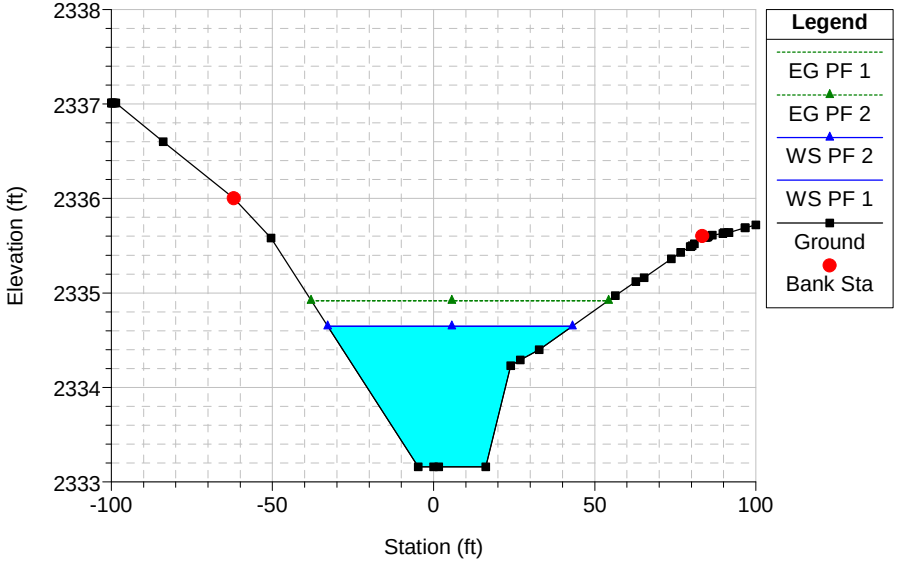
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5530



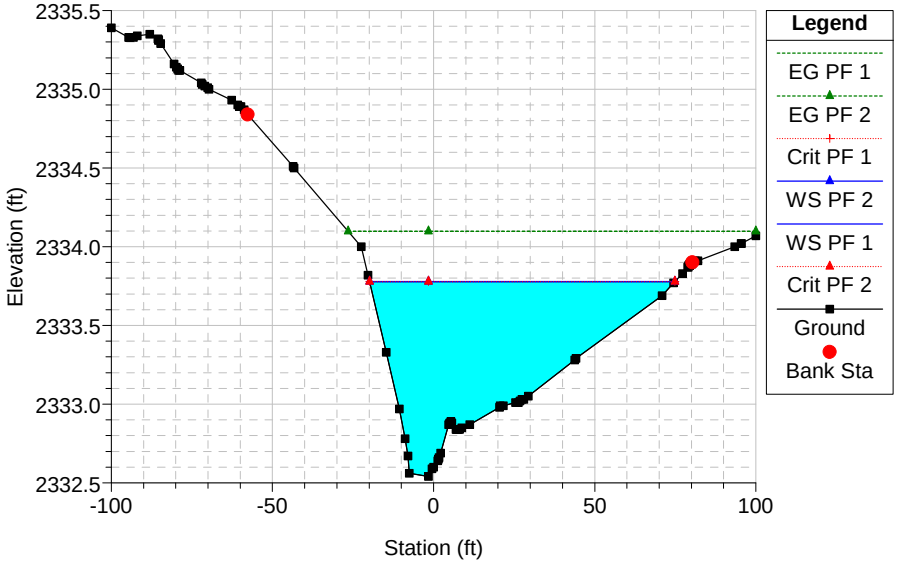
Duck Creek LOMR

River = Duck Creek Reach = East-East Branch RS = 200



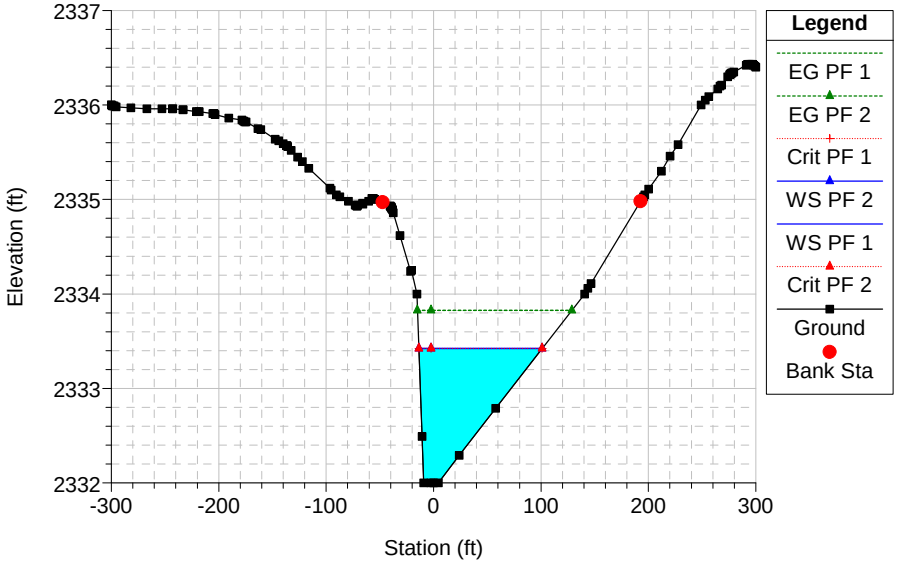
Duck Creek LOMR

River = Duck Creek Reach = East-East Branch RS = 100



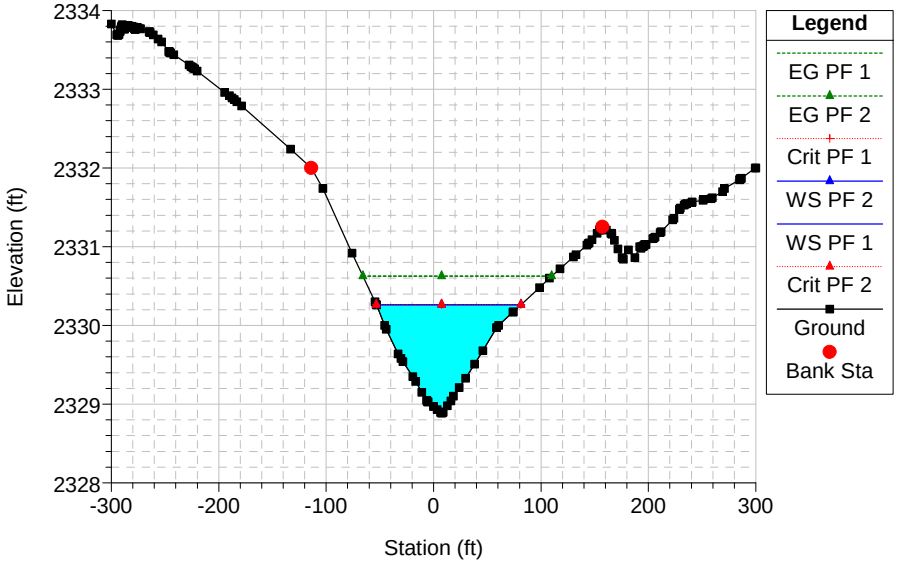
Duck Creek LOMR

River = Duck Creek Reach = East RS = 12300



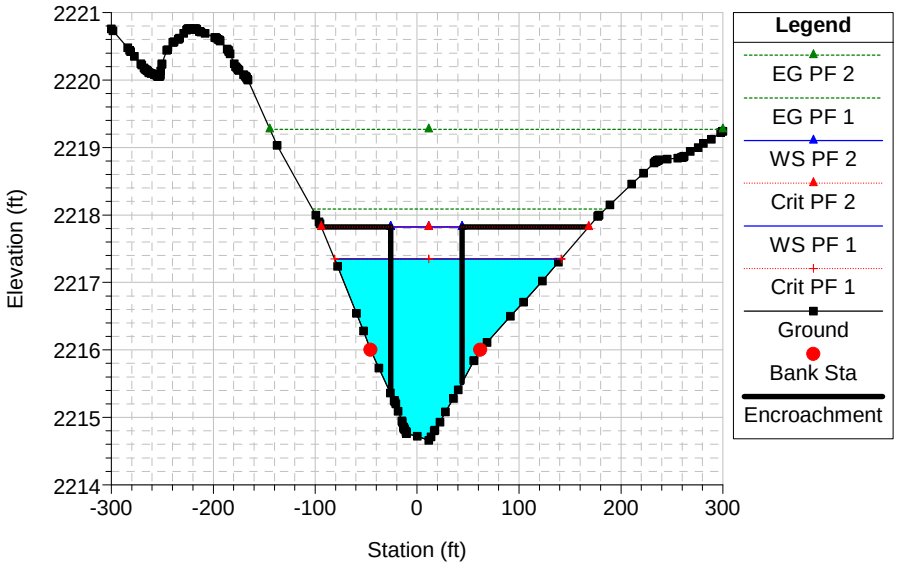
Duck Creek LOMR

River = Duck Creek Reach = East RS = 12000



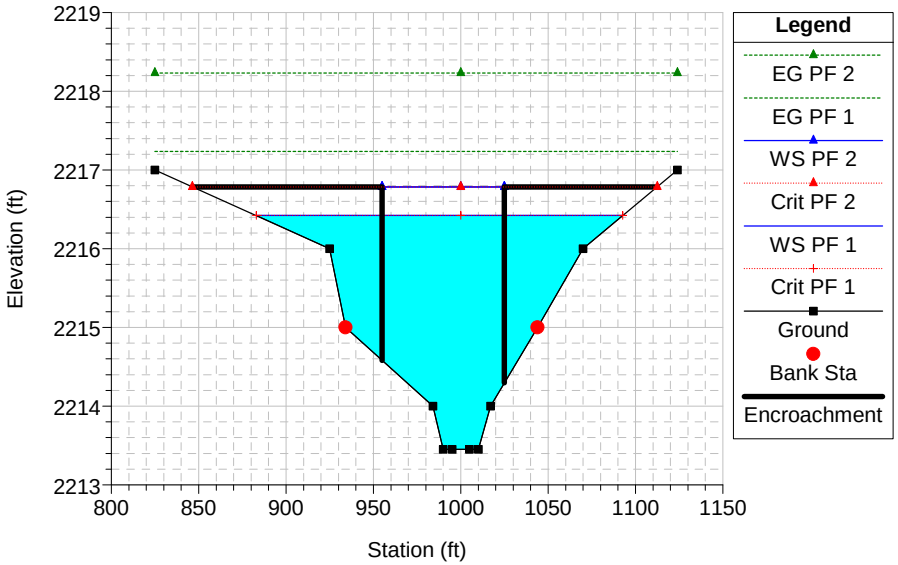
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 900



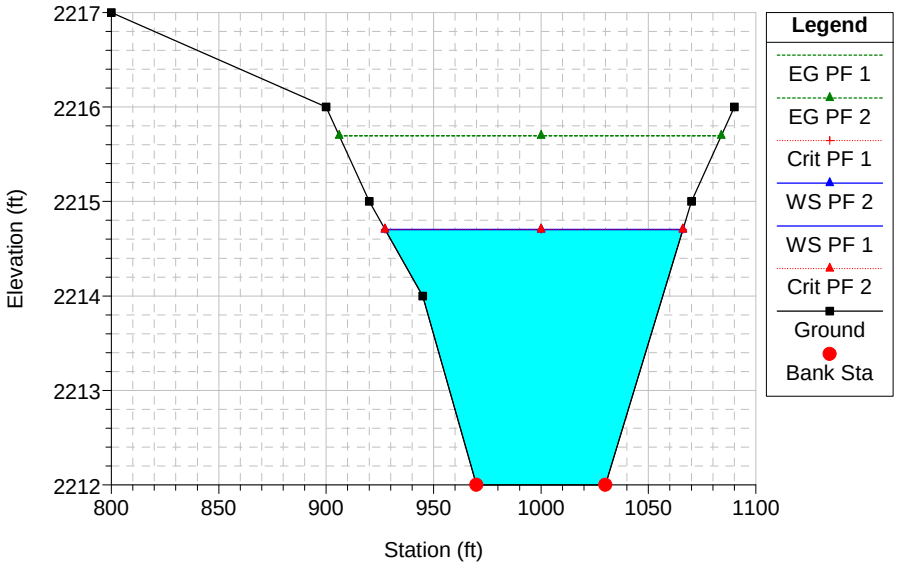
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 800



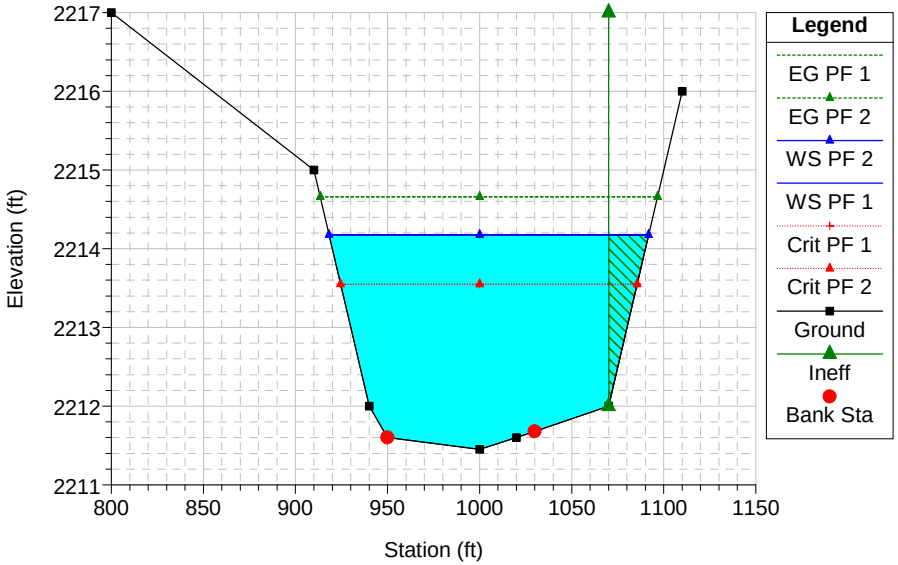
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 750



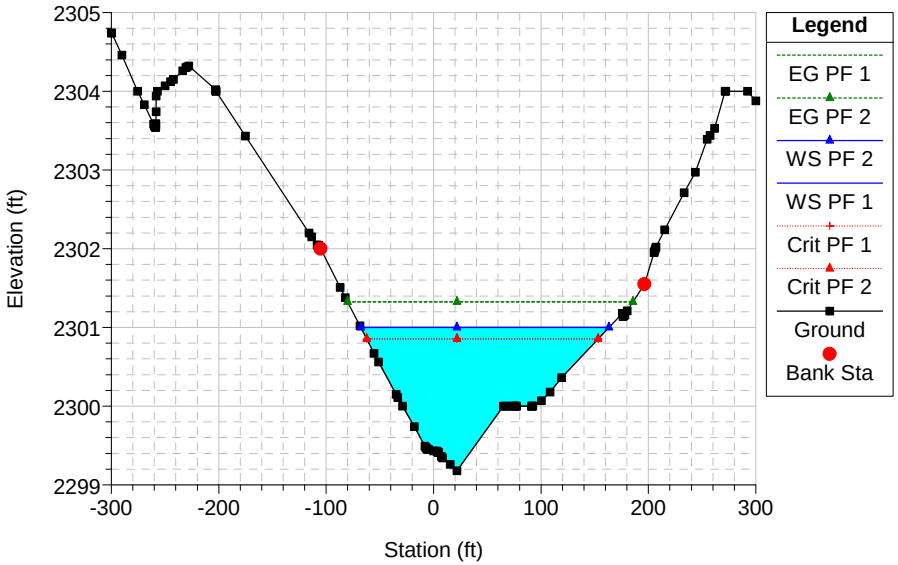
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 700



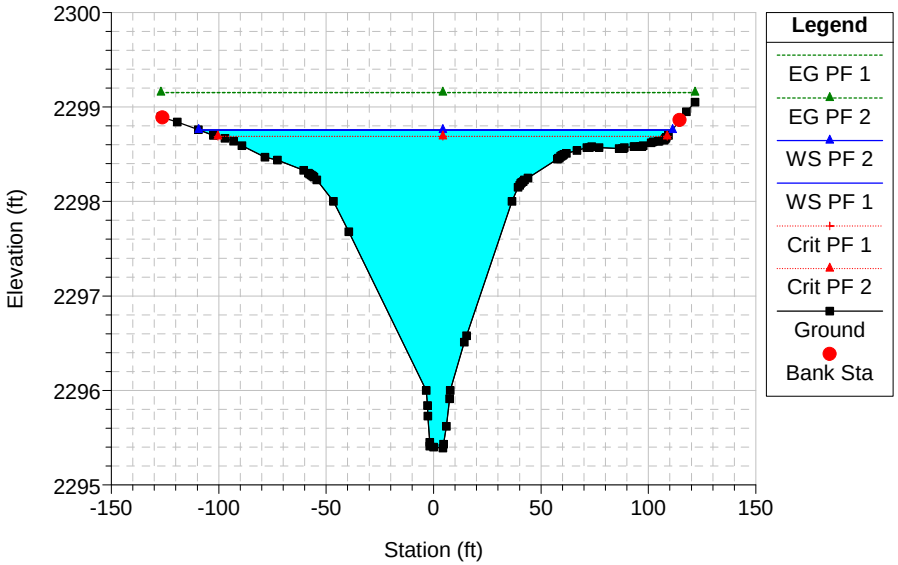
Duck Creek LOMR

River = Duck Creek Reach = East RS = 9300



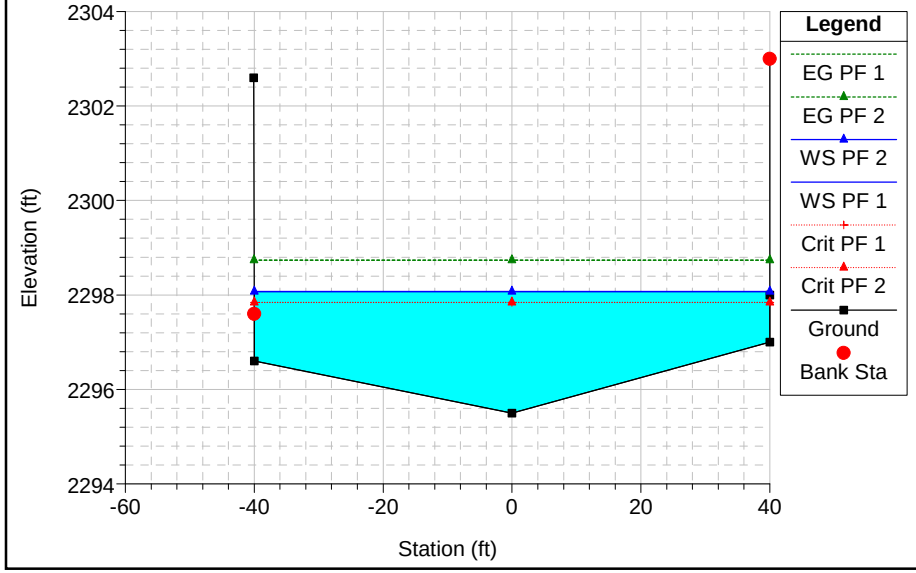
Duck Creek LOMR

River = Duck Creek Reach = East RS = 9000



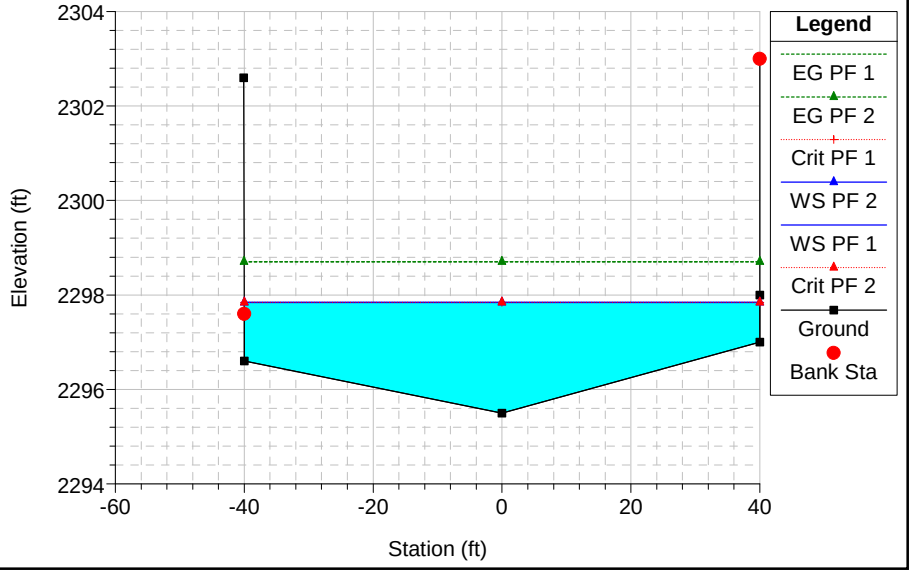
Duck Creek LOMR

River = Duck Creek Reach = East RS = 8940



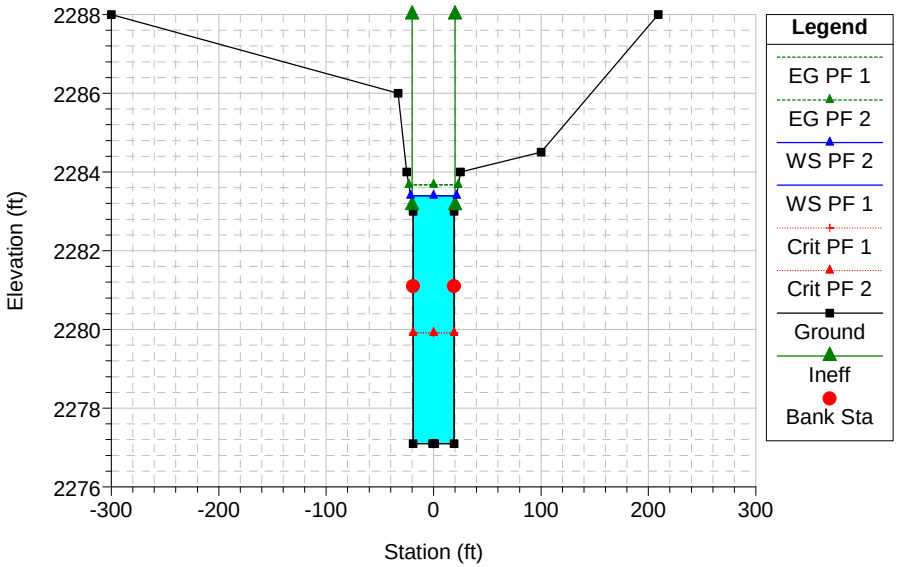
Duck Creek LOMR

River = Duck Creek Reach = East RS = 8939



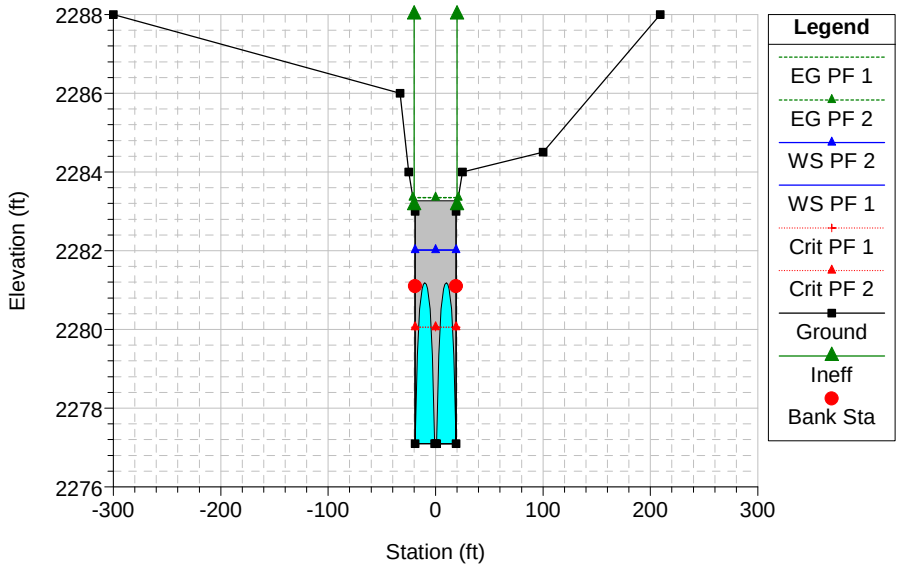
Duck Creek LOMR

River = Duck Creek Reach = East RS = 8200



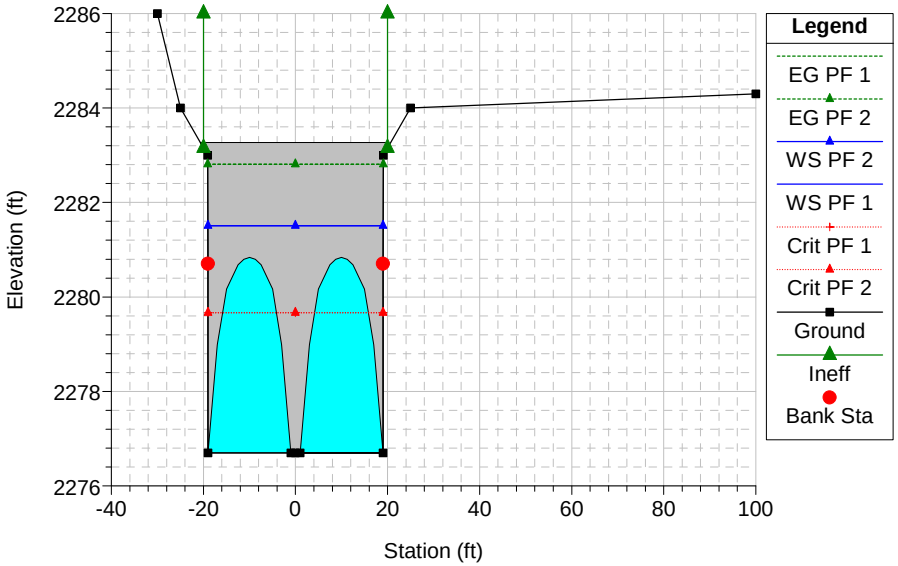
Duck Creek LOMR

River = Duck Creek Reach = East RS = 8150 BR



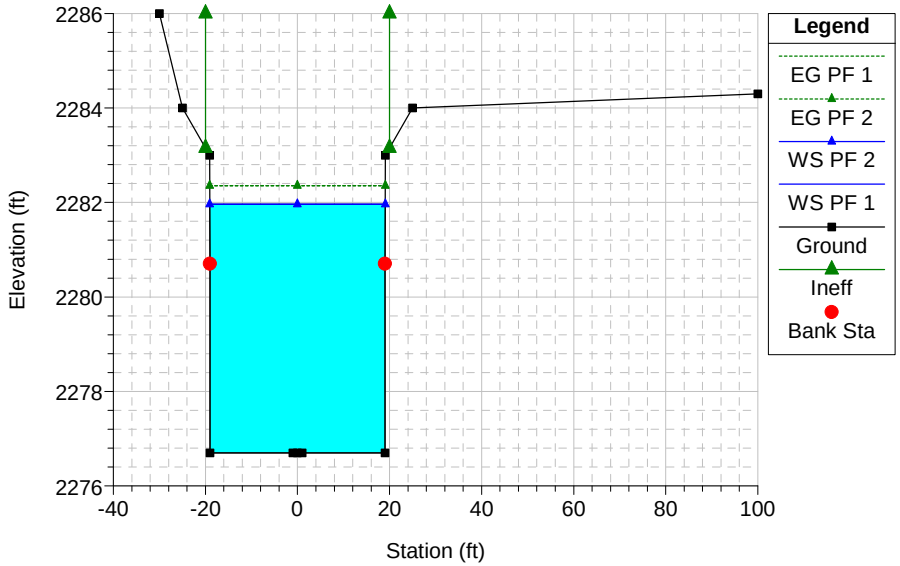
Duck Creek LOMR

River = Duck Creek Reach = East RS = 8150 BR



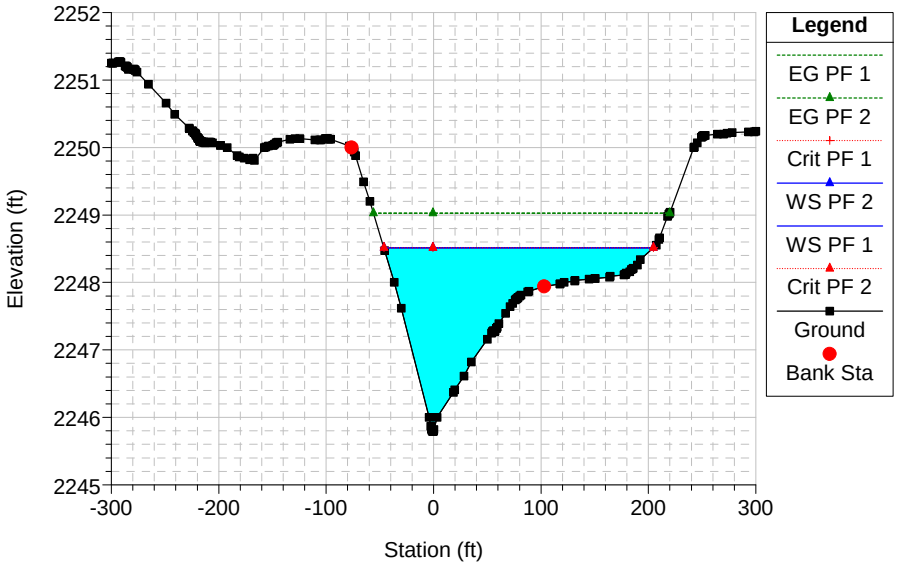
Duck Creek LOMR

River = Duck Creek Reach = East RS = 8100



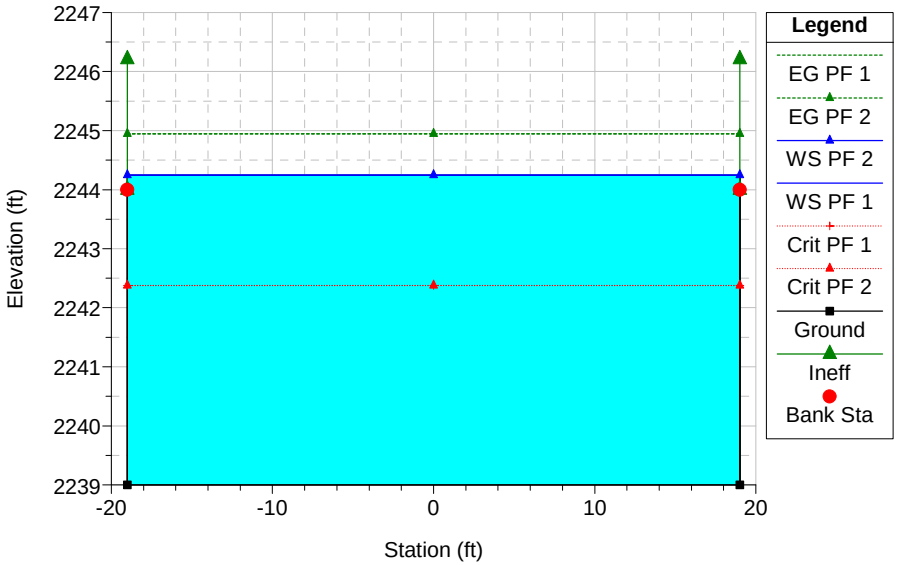
Duck Creek LOMR

River = Duck Creek Reach = East RS = 4500



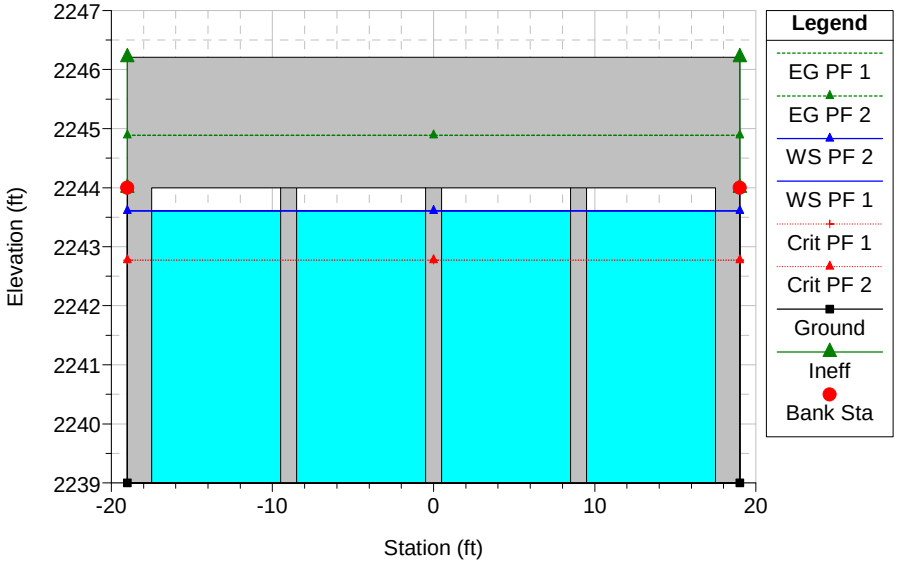
Duck Creek LOMR

River = Duck Creek Reach = East RS = 4450



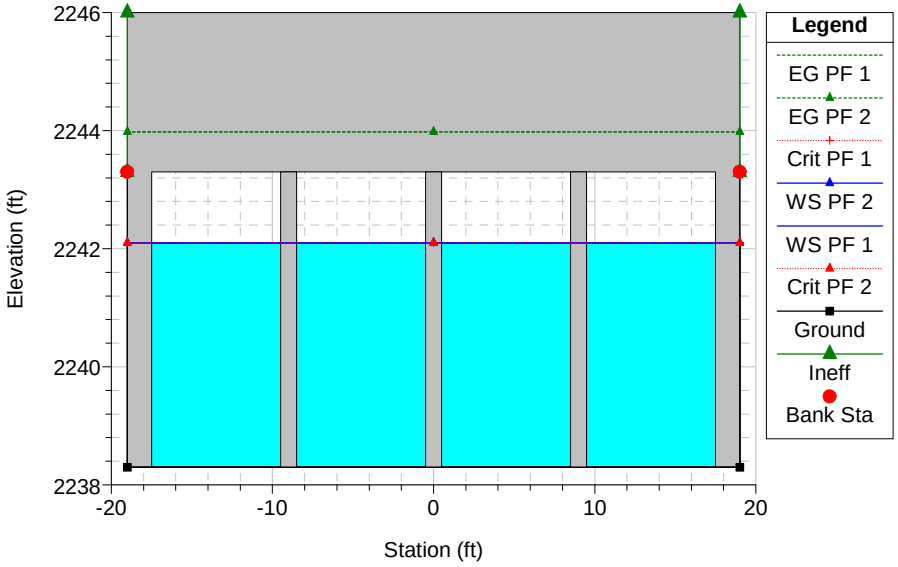
Duck Creek LOMR

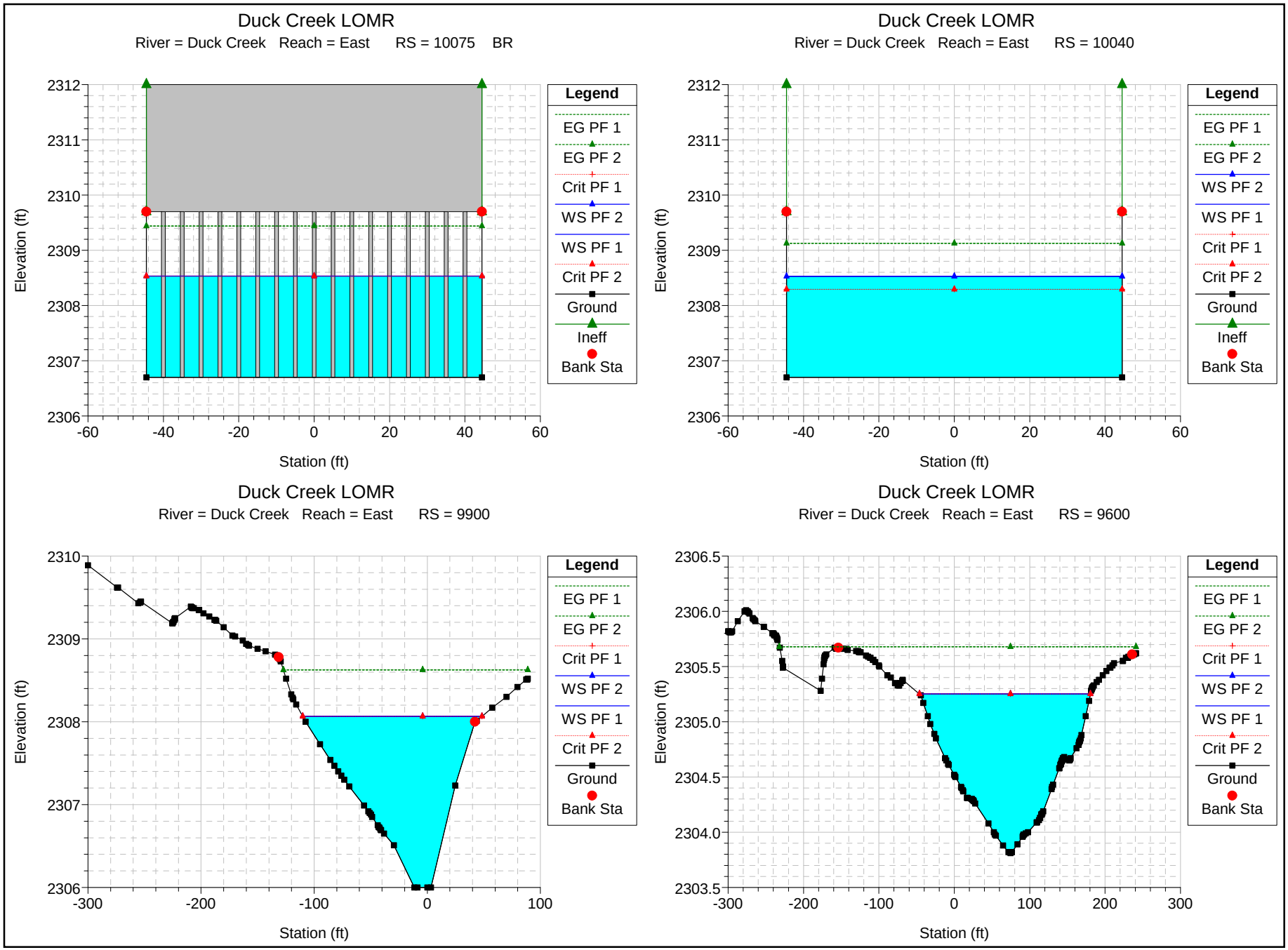
River = Duck Creek Reach = East RS = 4415 BR

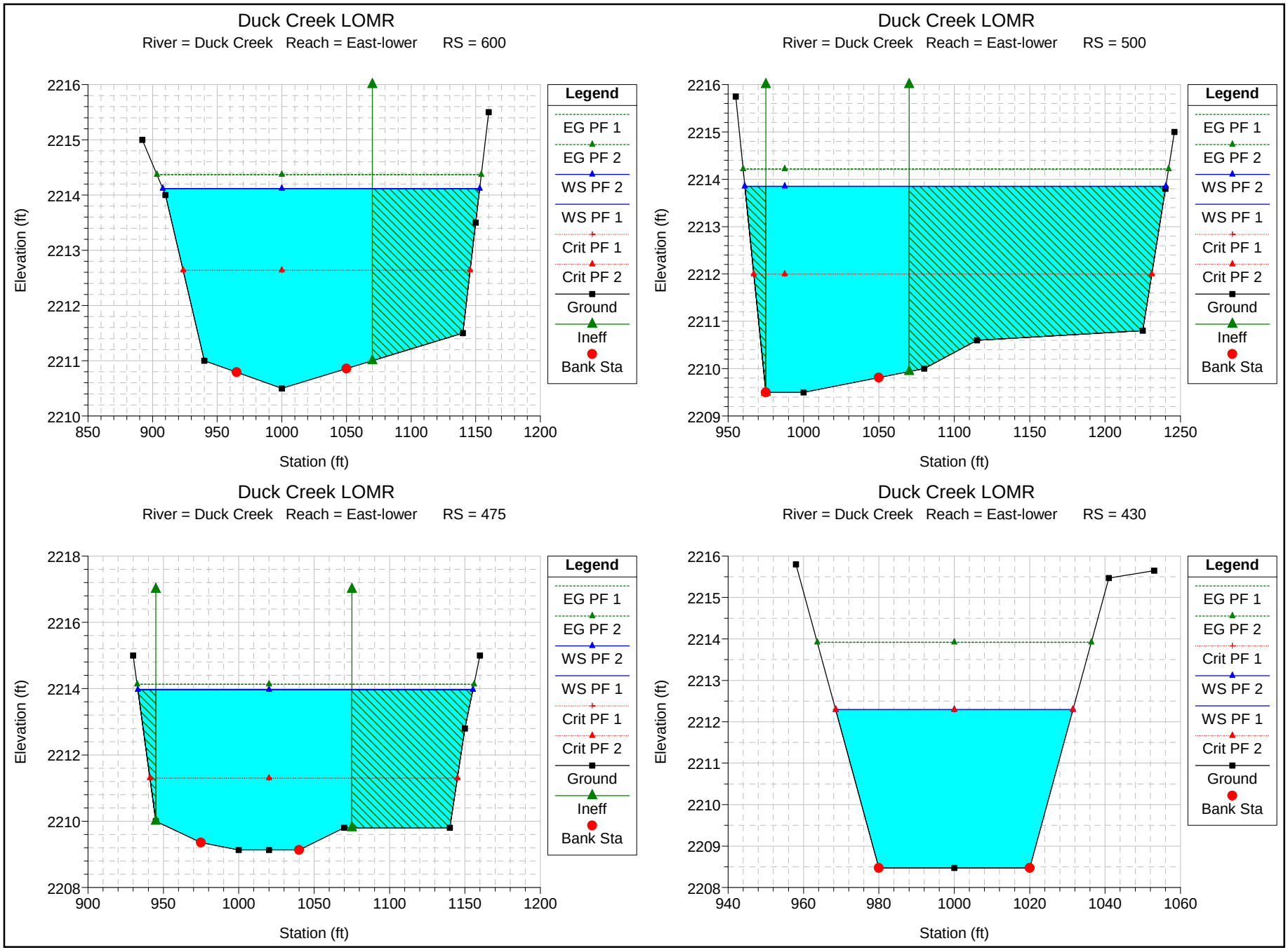


Duck Creek LOMR

River = Duck Creek Reach = East RS = 4415 BR

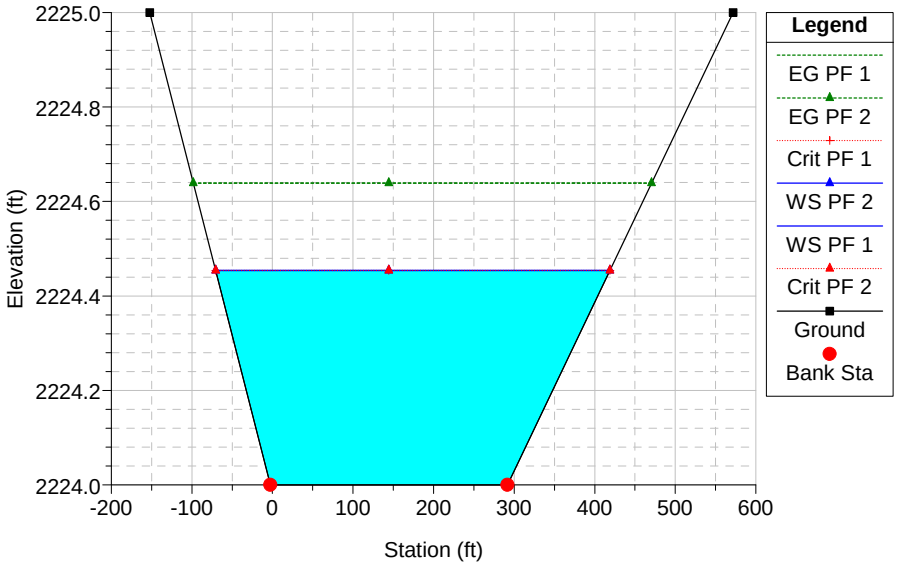



Duck Creek LOMR
River = Duck Creek Reach = East RS = 10075 BR
Elevation (ft)
Station (ft)
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 2
WS PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Duck Creek LOMR
River = Duck Creek Reach = East RS = 10040
Elevation (ft)
Station (ft)
Legend
EG PF 1
EG PF 2
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Duck Creek LOMR
River = Duck Creek Reach = East RS = 9900
Elevation (ft)
Station (ft)
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 2
WS PF 1
Crit PF 2
Ground
Bank Sta
Duck Creek LOMR
River = Duck Creek Reach = East RS = 9600
Elevation (ft)
Station (ft)
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 2
WS PF 1
Crit PF 2
Ground
Bank Sta


Duck Creek LOMR
River = Duck Creek Reach = East-lower RS = 600
Elevation (ft)
Station (ft)
Legend
EG PF 1
EG PF 2
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Duck Creek LOMR
River = Duck Creek Reach = East-lower RS = 500
Elevation (ft)
Station (ft)
Legend
EG PF 1
EG PF 2
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Duck Creek LOMR
River = Duck Creek Reach = East-lower RS = 475
Elevation (ft)
Station (ft)
Legend
EG PF 1
EG PF 2
WS PF 2
WS PF 1
Crit PF 1
Crit PF 2
Ground
Ineff
Bank Sta
Duck Creek LOMR
River = Duck Creek Reach = East-lower RS = 430
Elevation (ft)
Station (ft)
Legend
EG PF 1
EG PF 2
Crit PF 1
WS PF 2
WS PF 1
Crit PF 2
Ground
Bank Sta

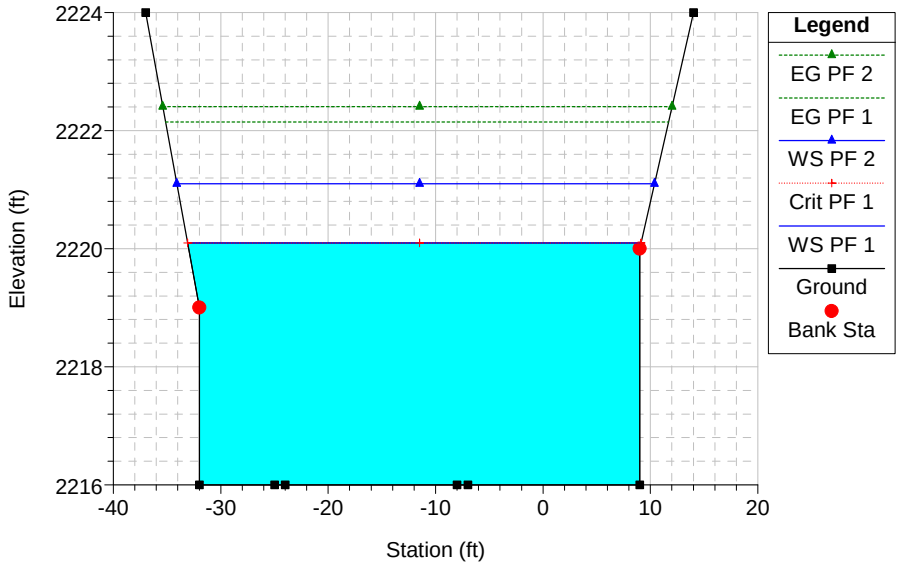
Duck Creek LOMR

River = Duck Creek Reach = West Branch RS = 1760



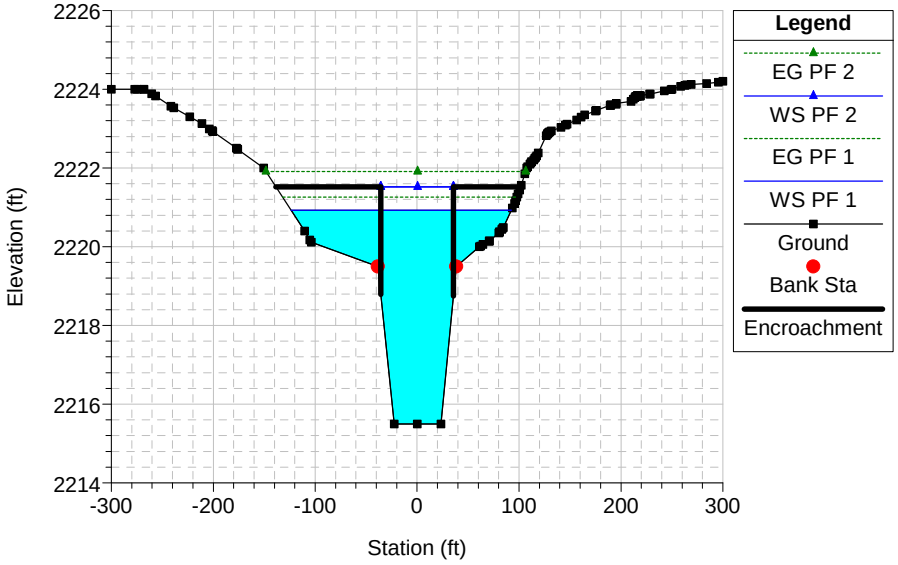
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 1640



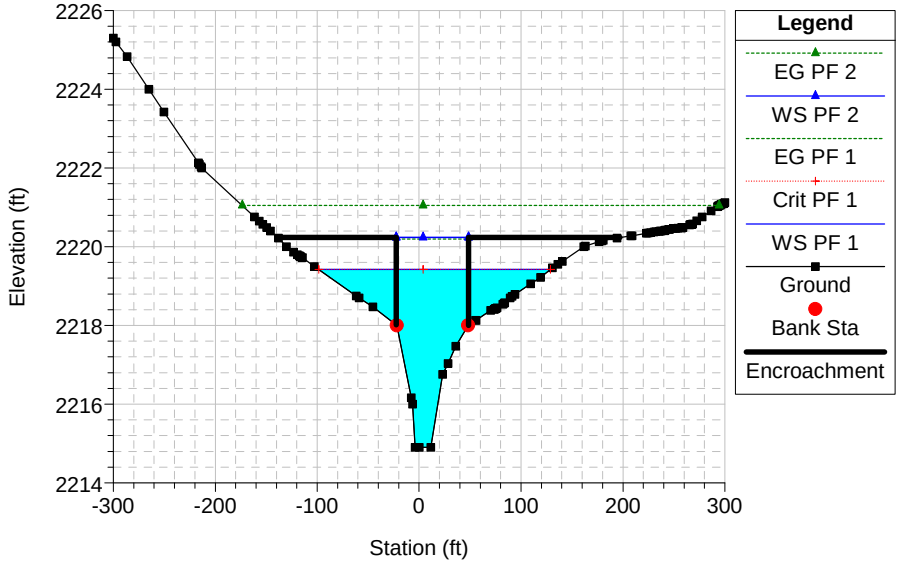
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 1500



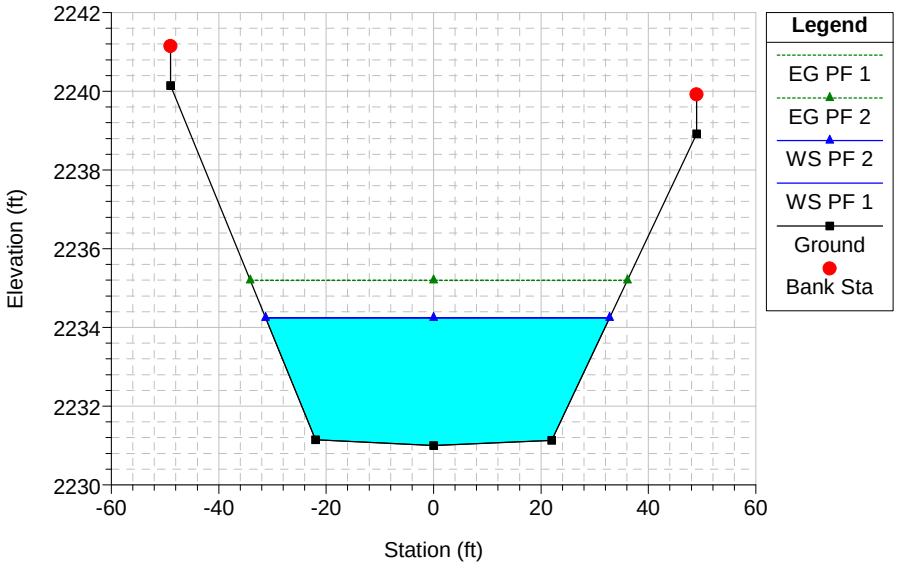
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 1200



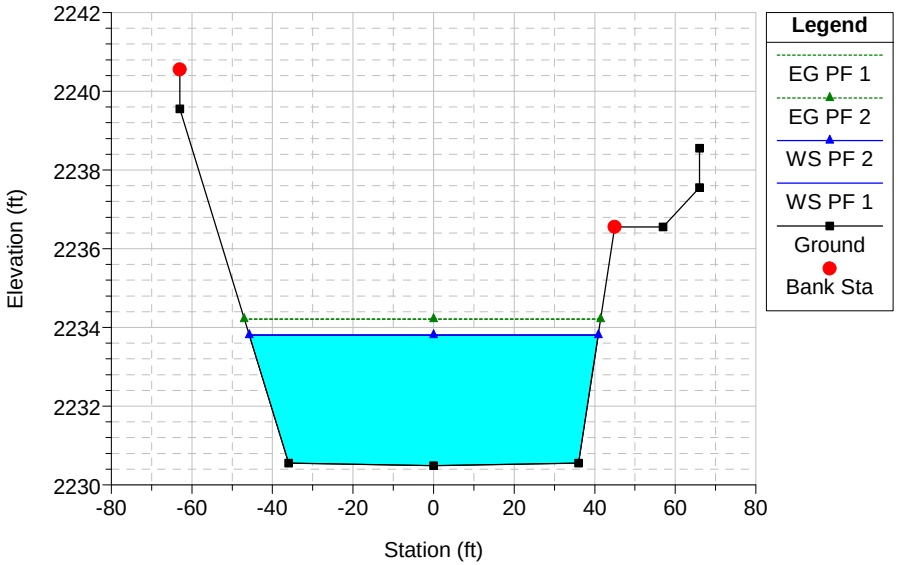
Duck Creek LOMR

River = Duck Creek Reach = East RS = 3300



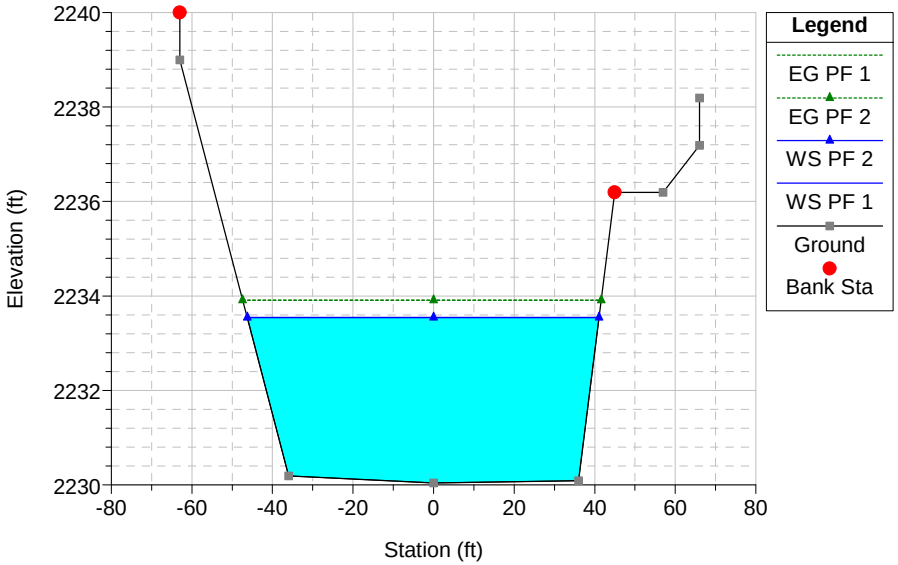
Duck Creek LOMR

River = Duck Creek Reach = East RS = 3000



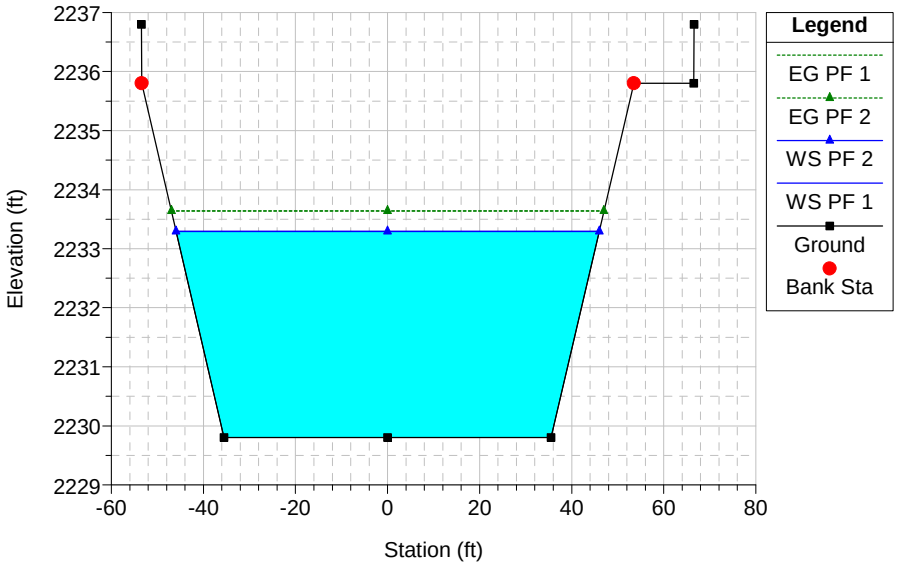
Duck Creek LOMR

River = Duck Creek Reach = East RS = 2820.*



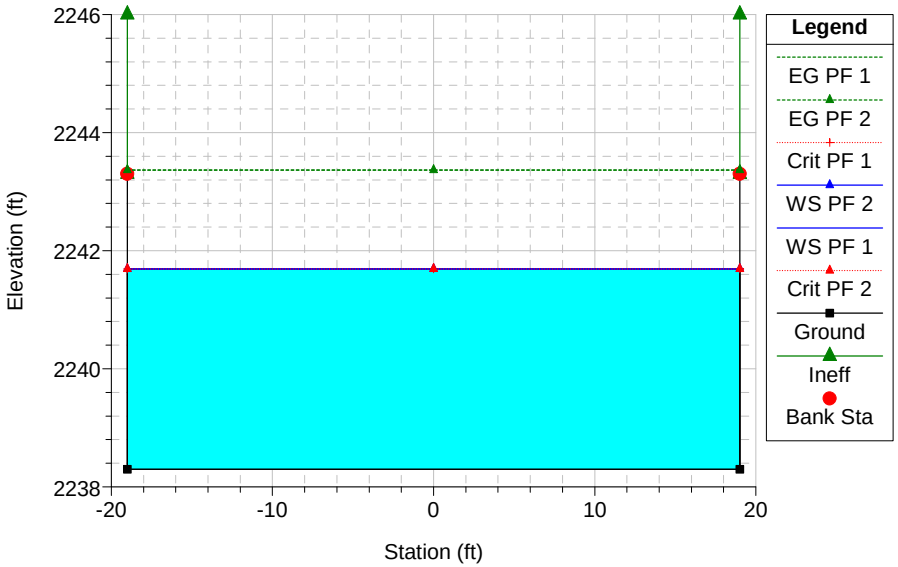
Duck Creek LOMR

River = Duck Creek Reach = East RS = 2700



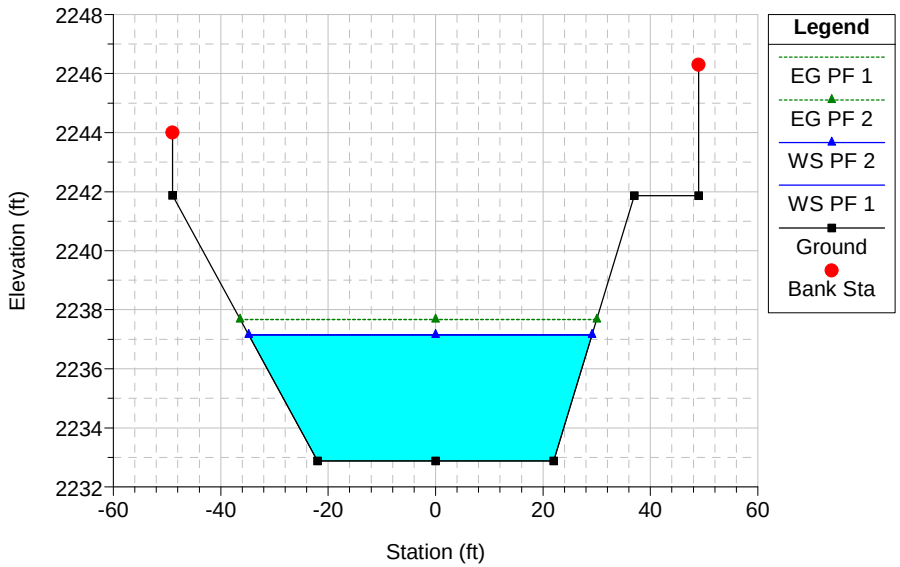
Duck Creek LOMR

River = Duck Creek Reach = East RS = 4380



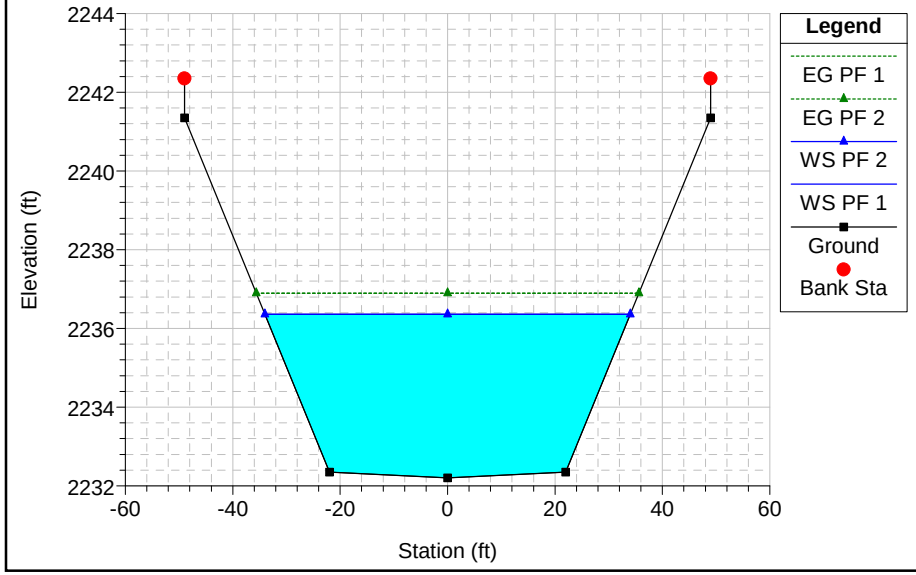
Duck Creek LOMR

River = Duck Creek Reach = East RS = 4200



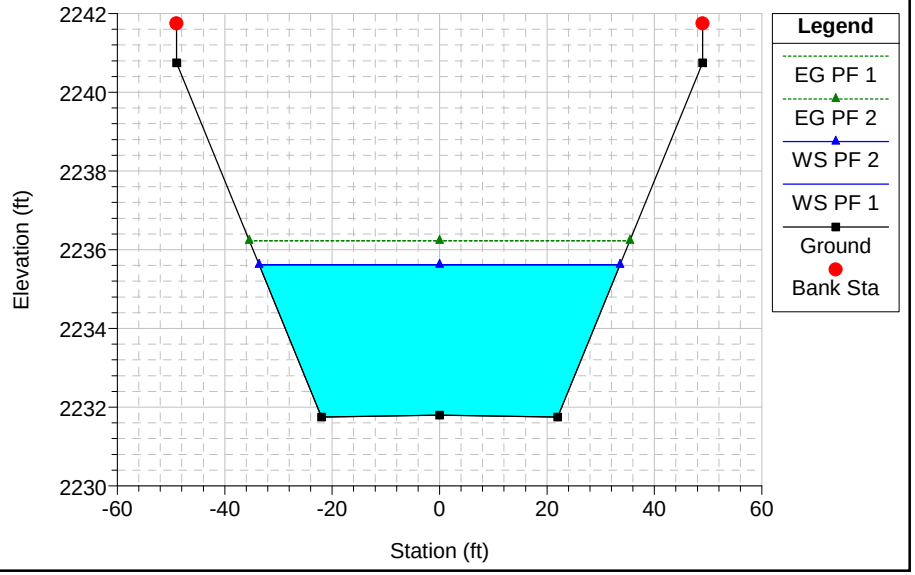
Duck Creek LOMR

River = Duck Creek Reach = East RS = 3900



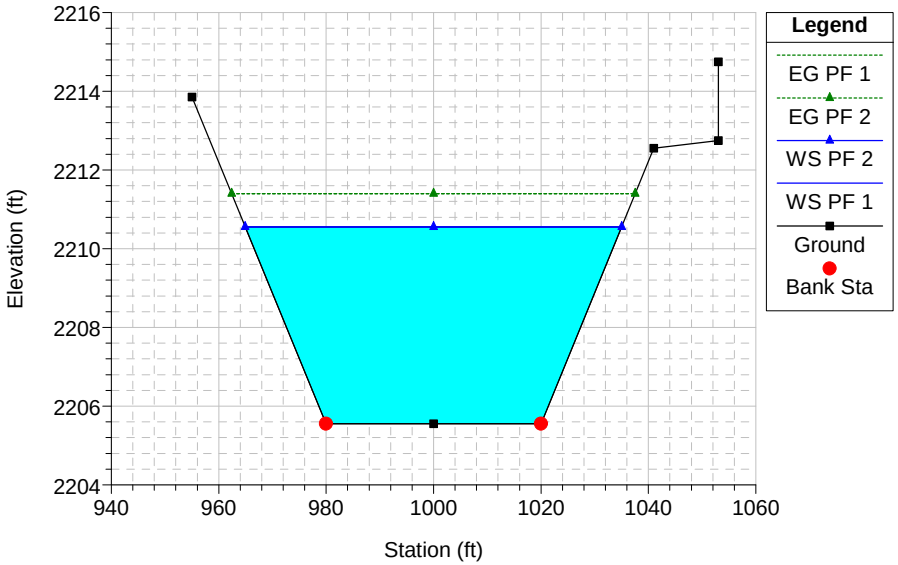
Duck Creek LOMR

River = Duck Creek Reach = East RS = 3600



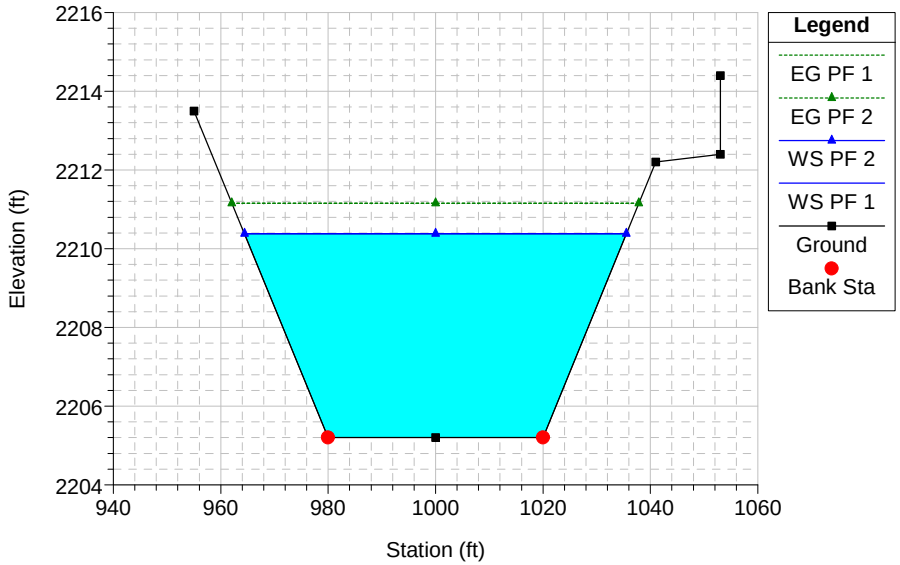
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 370



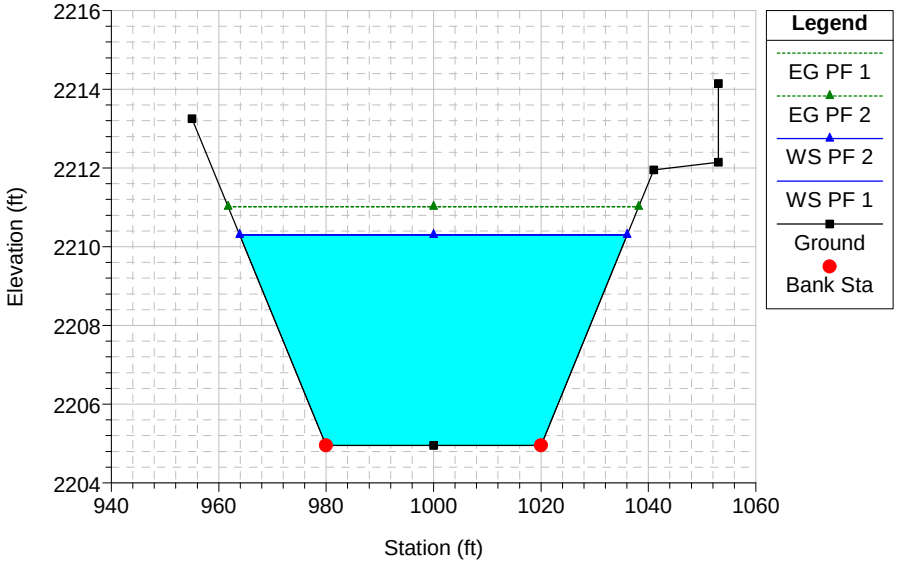
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 300



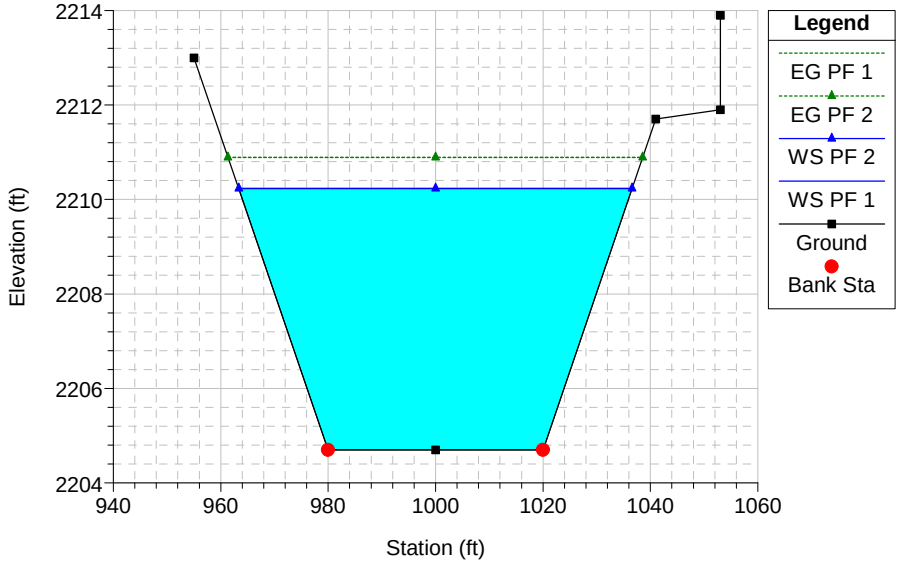
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 250



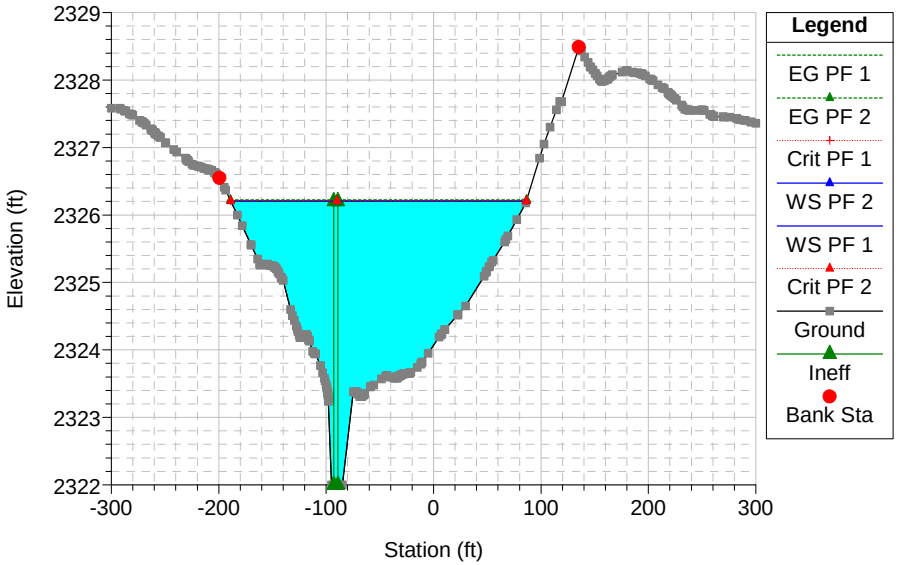
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 200



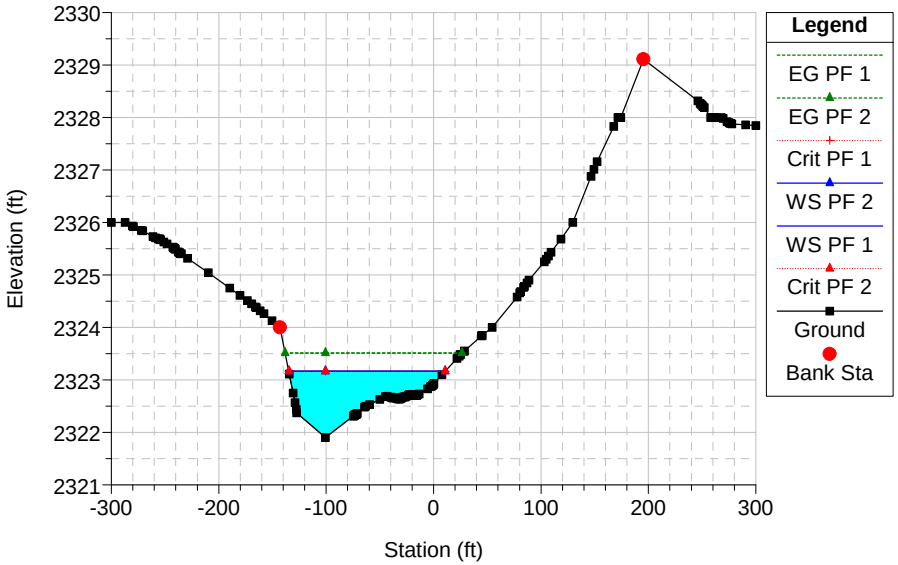
Duck Creek LOMR

River = Duck Creek Reach = East RS = 11480.*



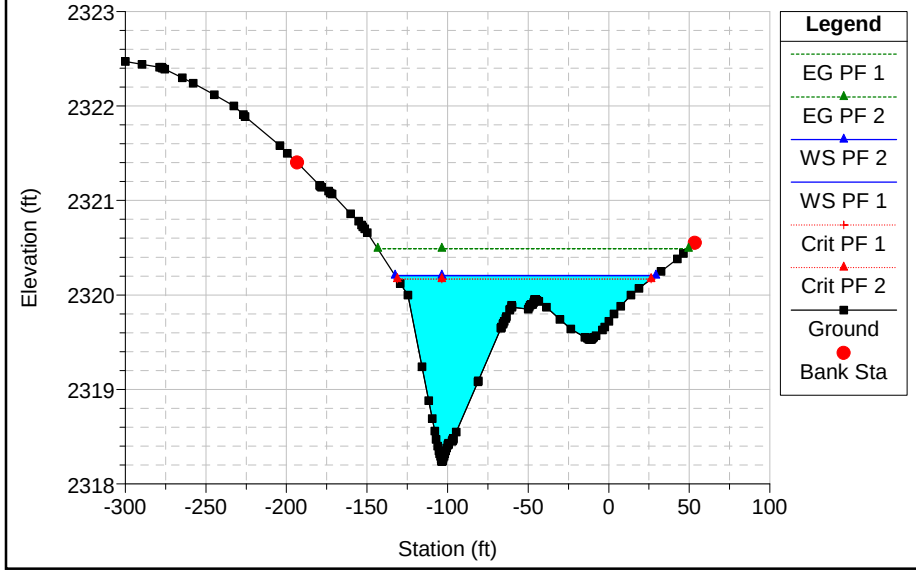
Duck Creek LOMR

River = Duck Creek Reach = East RS = 11400



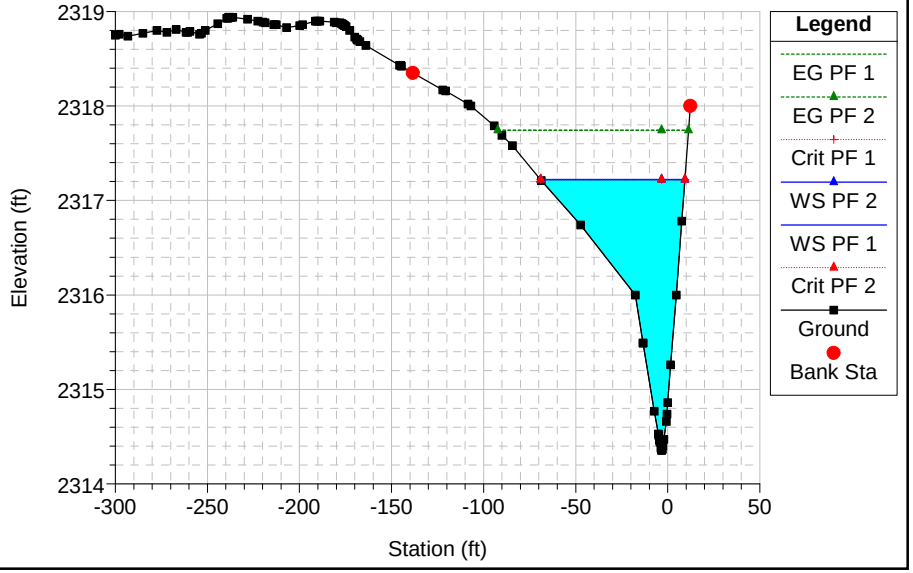
Duck Creek LOMR

River = Duck Creek Reach = East RS = 11100



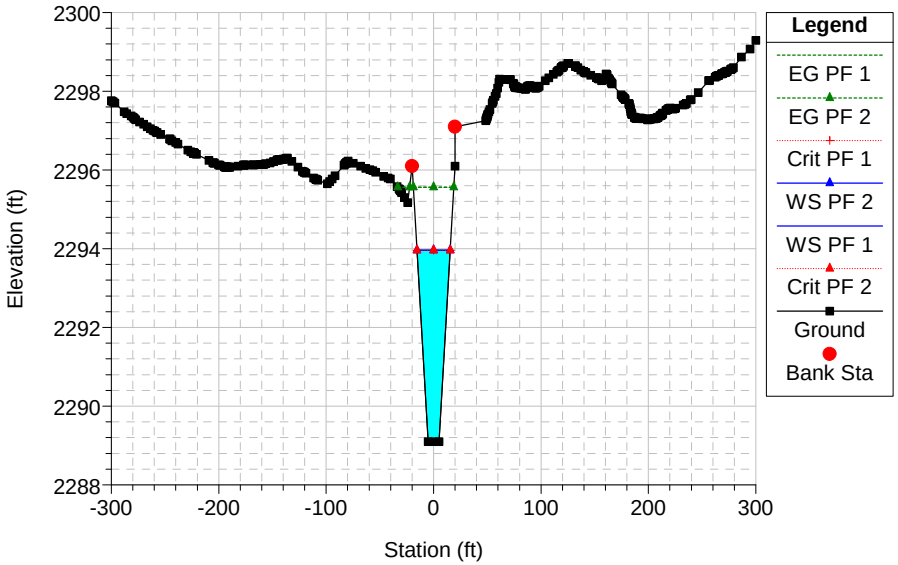
Duck Creek LOMR

River = Duck Creek Reach = East RS = 10800



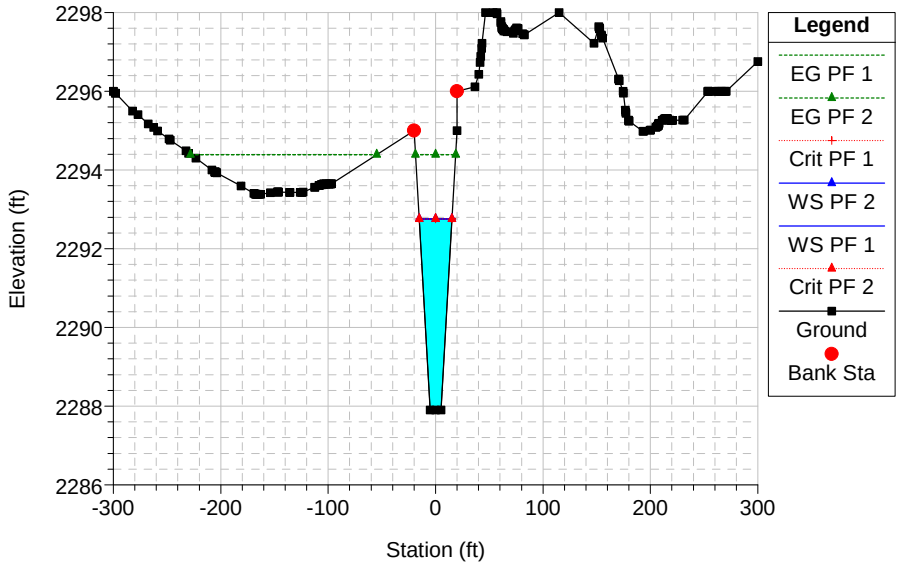
Duck Creek LOMR

River = Duck Creek Reach = East RS = 8860



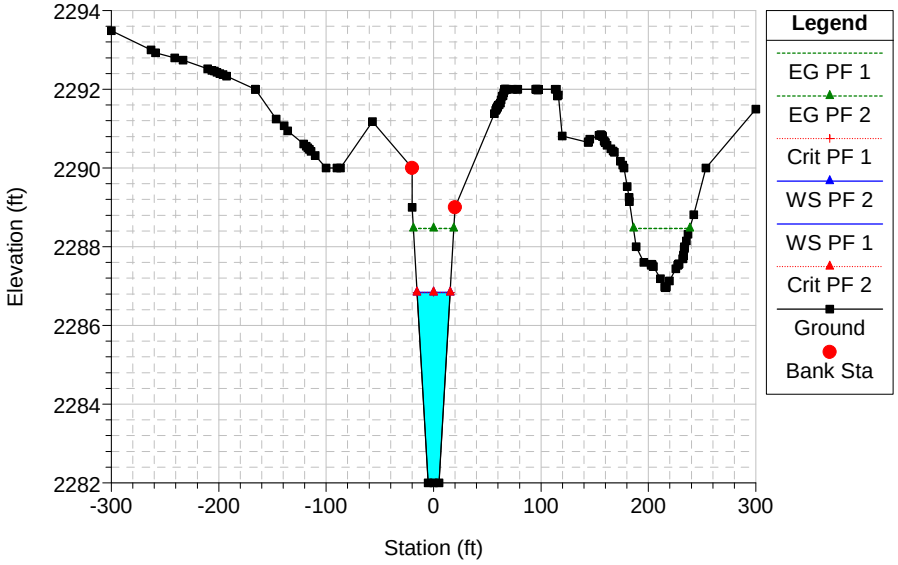
Duck Creek LOMR

River = Duck Creek Reach = East RS = 8700



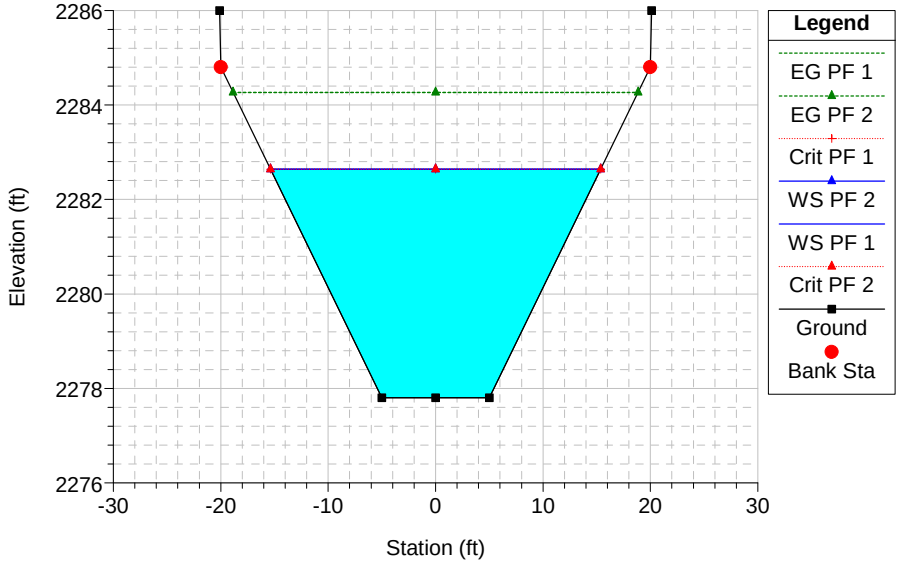
Duck Creek LOMR

River = Duck Creek Reach = East RS = 8400



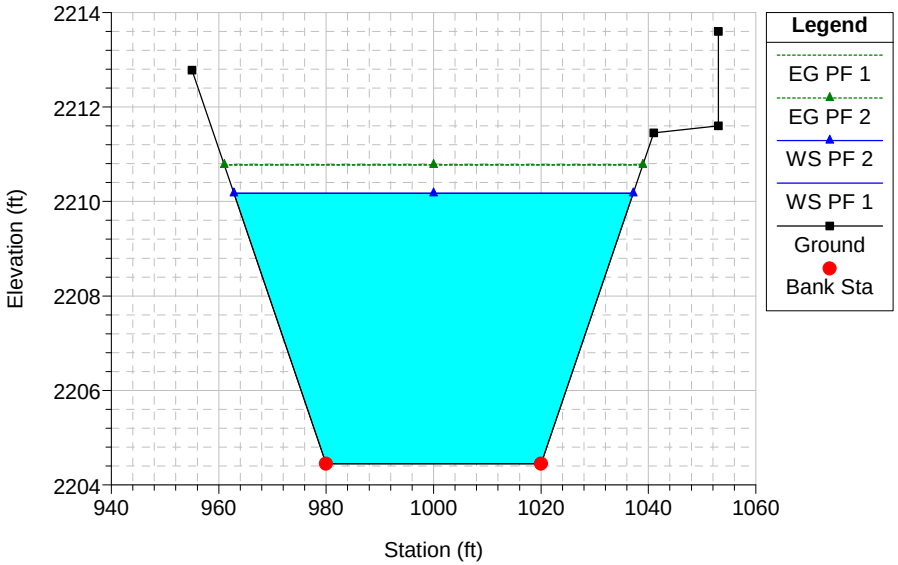
Duck Creek LOMR

River = Duck Creek Reach = East RS = 8250



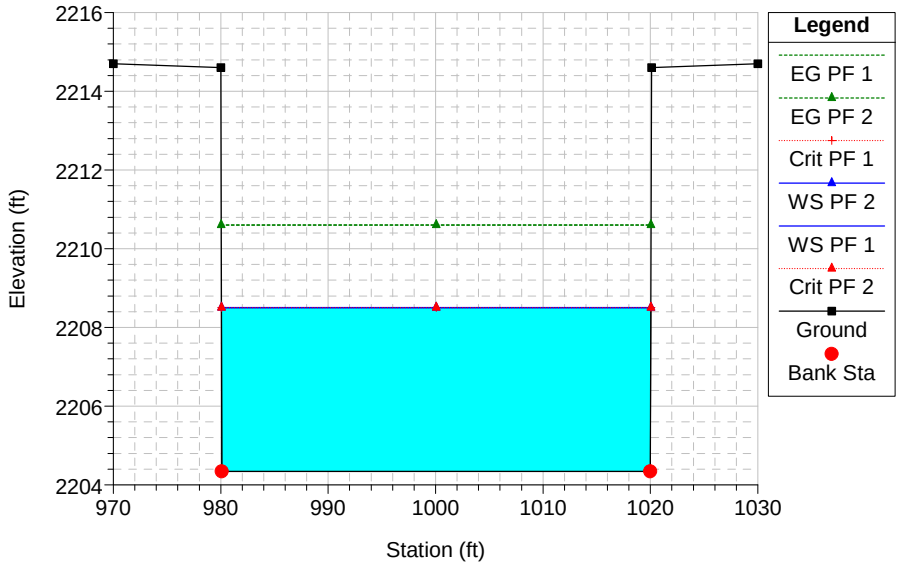
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 150



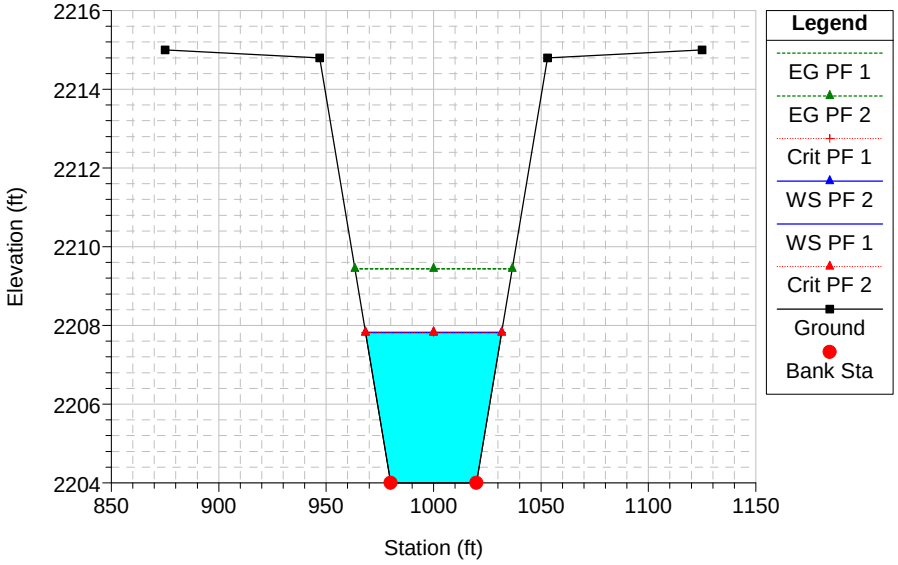
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 128



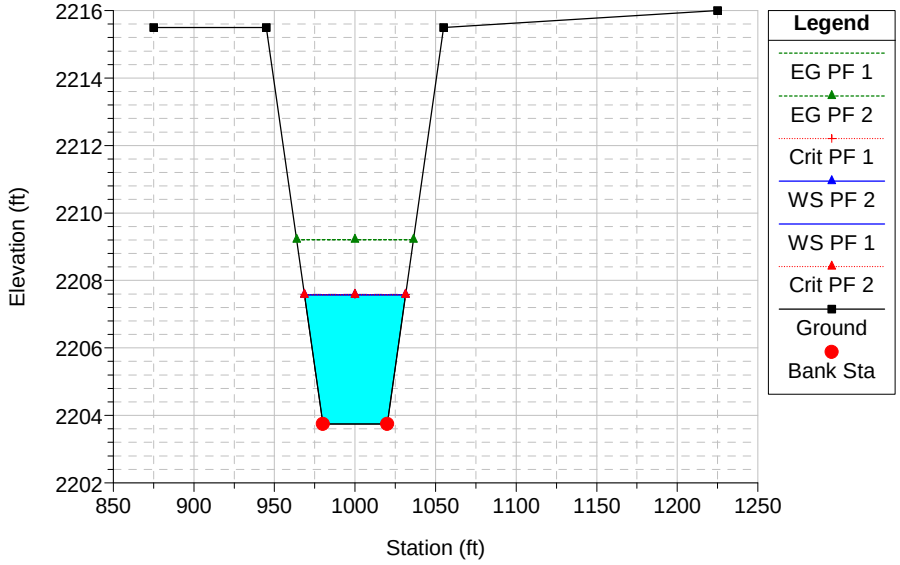
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 60



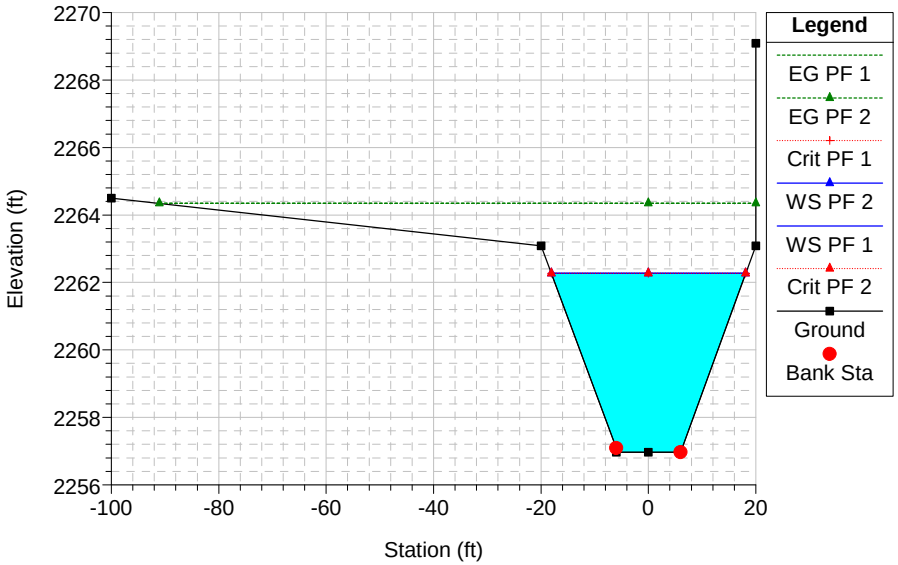
Duck Creek LOMR

River = Duck Creek Reach = East-lower RS = 50



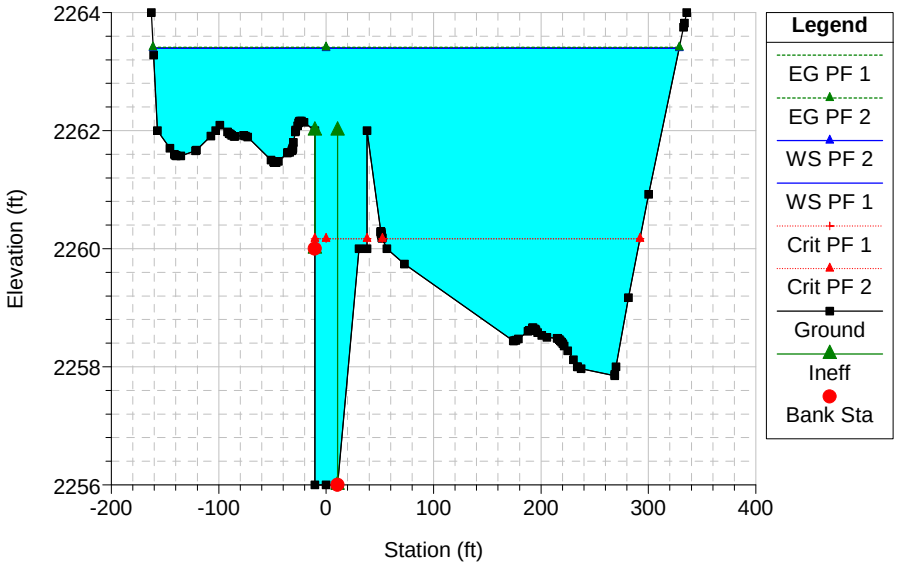
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5900



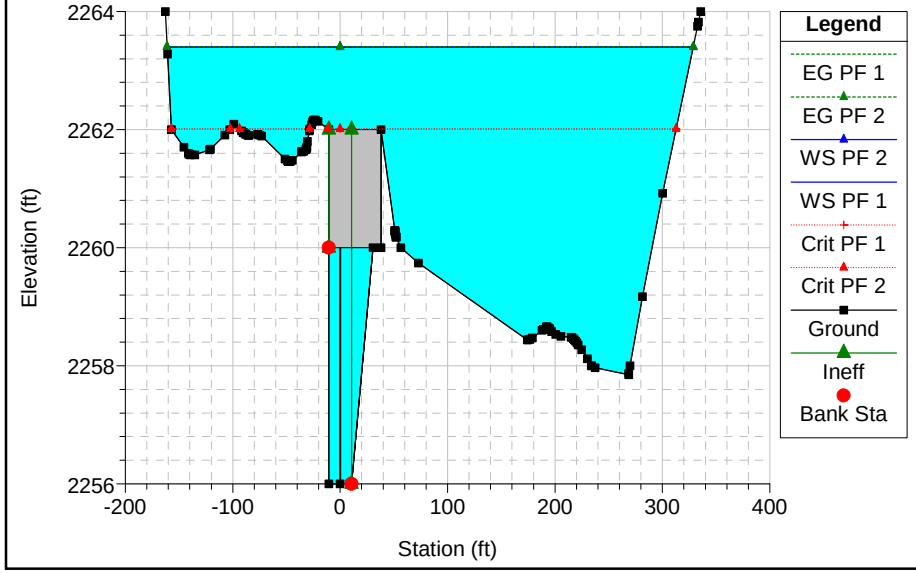
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5830



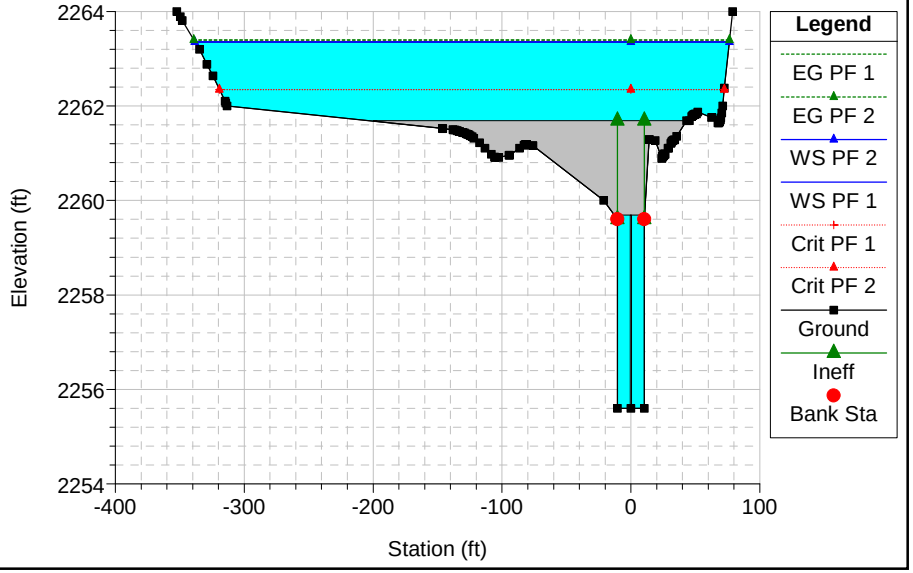
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5800 BR



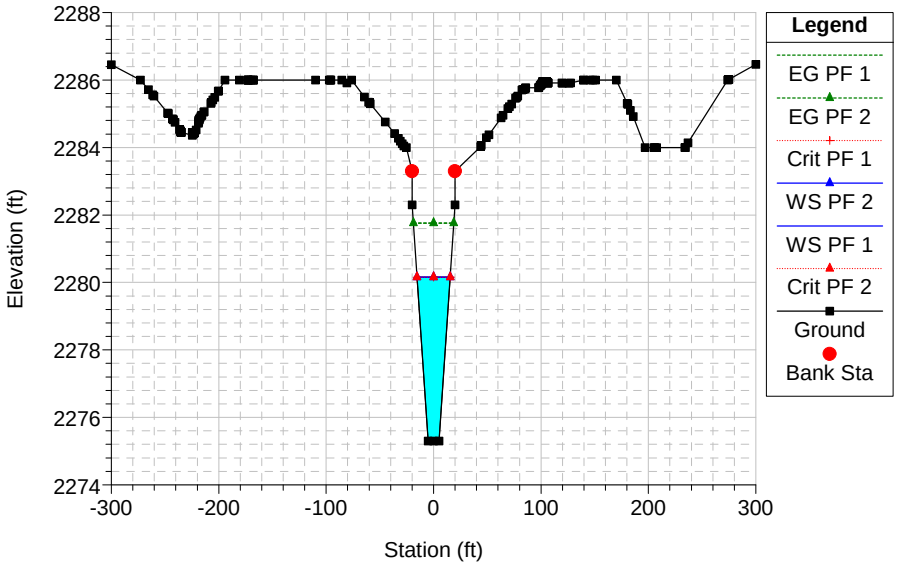
Duck Creek LOMR

River = Duck Creek Reach = East RS = 5800 BR



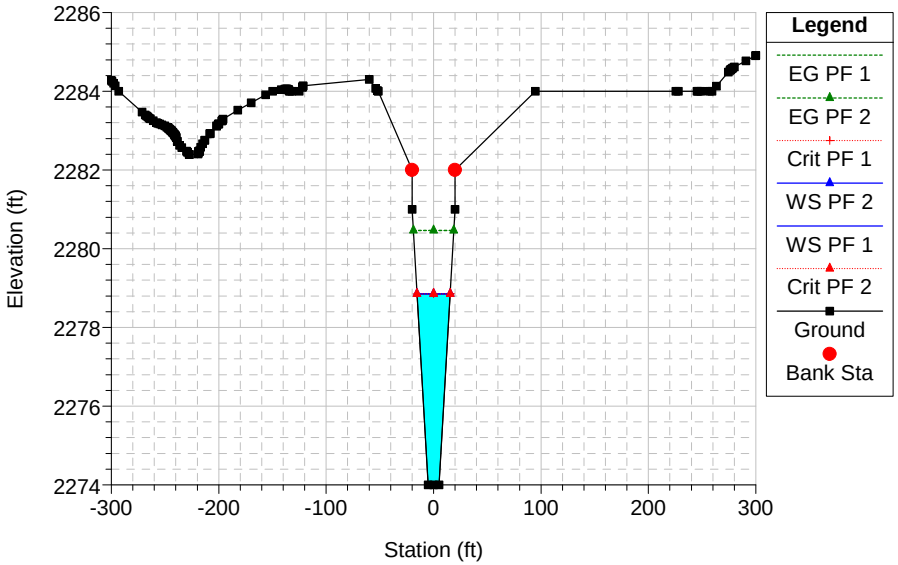
Duck Creek LOMR

River = Duck Creek Reach = East RS = 7800



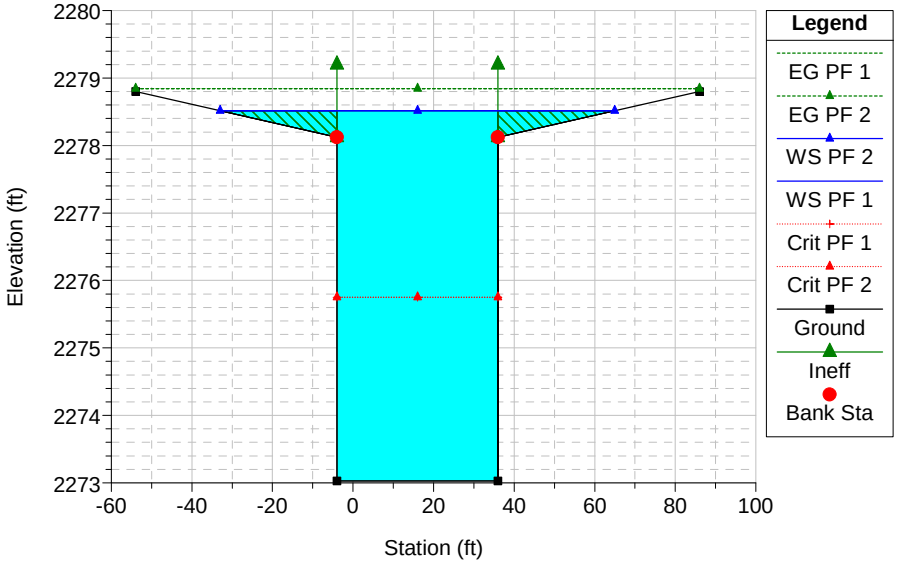
Duck Creek LOMR

River = Duck Creek Reach = East RS = 7500



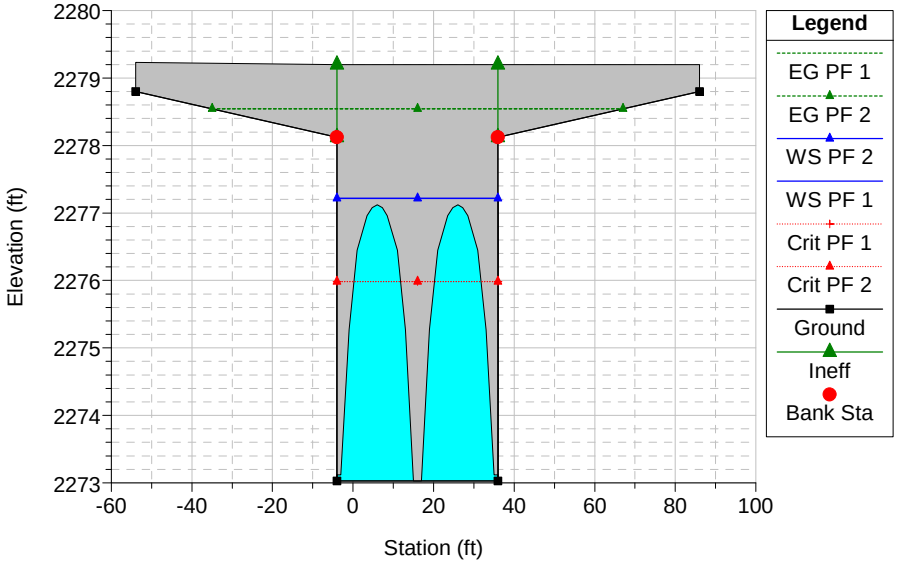
Duck Creek LOMR

River = Duck Creek Reach = East RS = 7235



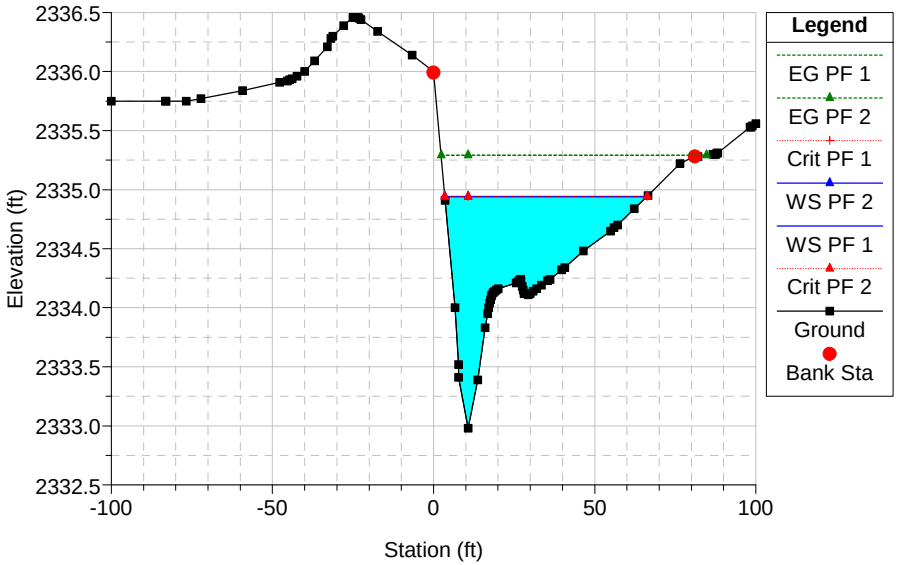
Duck Creek LOMR

River = Duck Creek Reach = East RS = 7182.5 BR



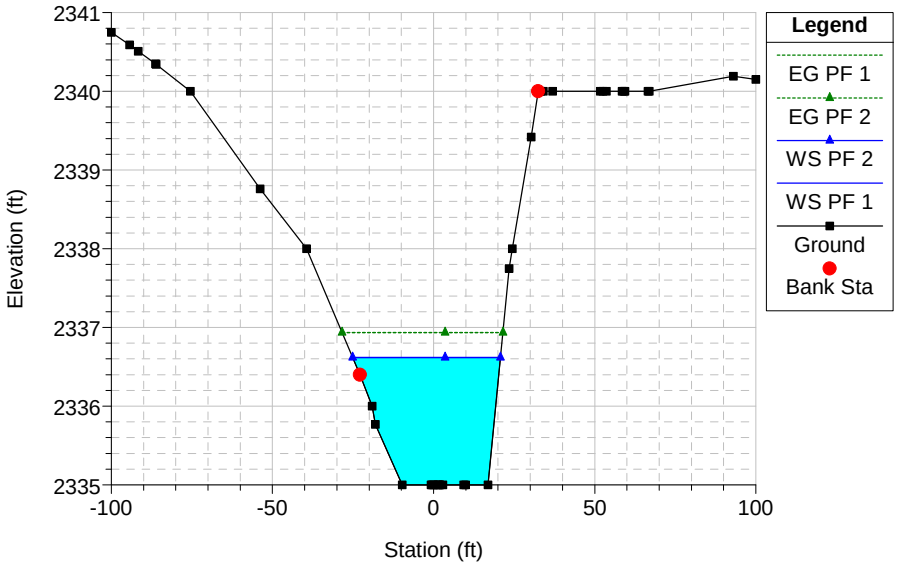
Duck Creek LOMR

River = Duck Creek Reach = East-West Branch RS = 100



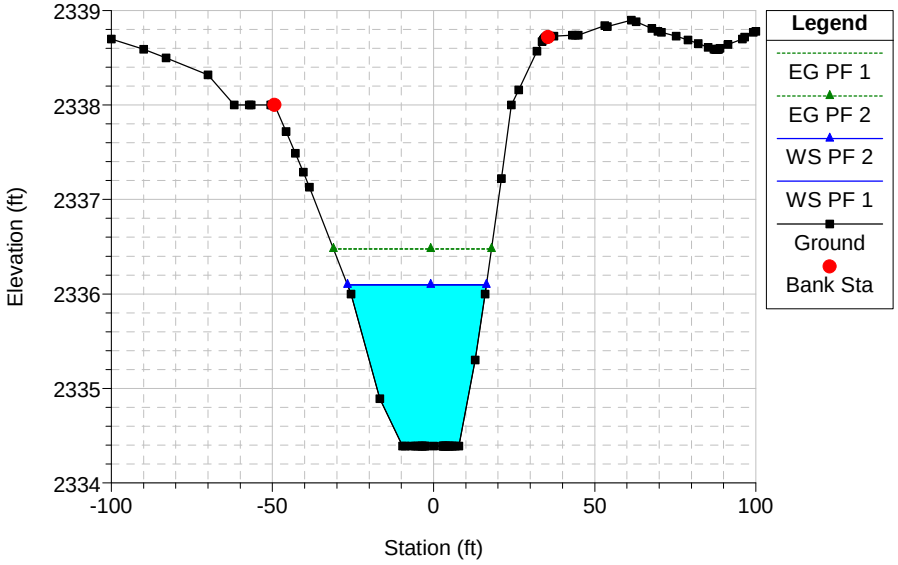
Duck Creek LOMR

River = Duck Creek Reach = East-East Branch RS = 500



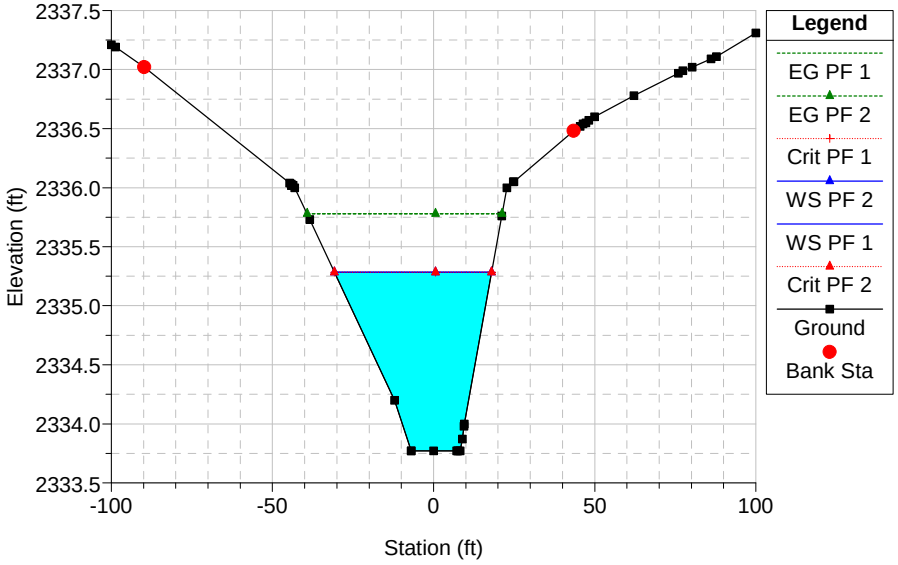
Duck Creek LOMR

River = Duck Creek Reach = East-East Branch RS = 400



Duck Creek LOMR

River = Duck Creek Reach = East-East Branch RS = 300



HEC-RAS Version 3.1.3 May 2005
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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PROJECT DATA
Project Title: Duck Creek LOMR
Project File : DCLOMR.prj
Run Date and Time: 3/22/2010 8:43:57 PM

Project in English units

PLAN DATA

Plan Title: Plan 01
Plan File : J:\JOBS\6657\Hydrology and Hydraulics_ CLOMR_LOMR\HEC-RAS\LOMR Revisions March 2010\South Channel\DCLOMR.p01

Geometry Title: East Existing Channel
Geometry File : J:\JOBS\6657\Hydrology and Hydraulics_ CLOMR_LOMR\HEC-RAS\LOMR Revisions March 2010\South Channel\DCLOMR.g03

Flow Title : Flow 01
Flow File : J:\JOBS\6657\Hydrology and Hydraulics_ CLOMR_LOMR\HEC-RAS\LOMR Revisions March 2010\South Channel\DCLOMR.f01

Plan Summary Information:

Number of:	Cross Sections	= 102	Multiple Openings	=	0
	Culverts	= 1	Inline Structures	=	0
	Bridges	= 7	Lateral Structures	=	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

Encroachment Data
Equal Conveyance = True
Left Offset = 0

Right Offset = 0

River = Duck Creek Reach = East-lower

RS	Profile	Method	Value1	Value2
1500	PF 2	1	-35.5	35.5
1200	PF 2	1	-22.5	48.5
900	PF 2	1	-26	44
800	PF 2	1	955	1025

FLOW DATA

Flow Title: Flow 01
Flow File : J:\JOBS\6657\Hydrology and Hydraulics_ CLOMR_LOMR\HEC-RAS\LOMR Revisions March 2010\South Channel\DCLOMR.f01

Flow Data (cfs)

River	Reach	RS	PF 1	PF 2
Duck Creek	East-West Branch	500	204	204
Duck Creek	East-East Branch	500	266	266
Duck Creek	East	12300	464	464
Duck Creek	East	10200	1008	1008
Duck Creek	East	4500	1338	1338
Duck Creek	West Branch	3460	692	692
Duck Creek	West Branch	2260	789	789
Duck Creek	West Branch	2110	589	589
Duck Creek	East-lower	1640	1931	1931

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Duck Creek	East-West Branch	PF 1	Normal S = 0.005	
Duck Creek	East-East Branch	PF 1	Normal S = 0.02	
Duck Creek	West Branch	PF 1	Normal S = 0.02	
Duck Creek	East-lower	PF 1		Normal S = 0.0109

GEOMETRY DATA

Geometry Title: East Existing Channel
Geometry File : J:\JOBS\6657\Hydrology and Hydraulics_ CLOMR_LOMR\HEC-RAS\LOMR Revisions March 2010\South Channel\DCLOMR.g03

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
Duck Creek	East-West Branch		Junction 1
Duck Creek	East-East Branch		Junction 1
Duck Creek	East	Junction 1	junction 3
Duck Creek	West Branch		junction 3
Duck Creek	East-lower	junction 3	

JUNCTION INFORMATION

Name: Junction 1
Description:
Energy computation Method

Length across Junction River	Reach	Tributary River	Reach	Length	Angle
Duck Creek	East-West Branch to Duck Creek	East		0	0
Duck Creek	East-East Branch to Duck Creek	East		0	0

Name: junction 3
Description:
Energy computation Method

Length across Junction River	Reach	Tributary River	Reach	Length	Angle
Duck Creek	East to Duck Creek	East-lower		1	0
Duck Creek	West Branch to Duck Creek	East-lower		0	0

CROSS SECTION

RIVER: Duck Creek
REACH: East-West Branch RS: 500

INPUT
Description: Sta 5+00
Station Elevation Data num= 64

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100	2342.49	-93.89	2342.38	-92.38	2342.37	-85.34	2342.24	-85.09	2342.23
-83.19	2342.2	-80.25	2342.16	-79.02	2342.14	-78.62	2342.14	-67.61	2342
-62.32	2341.85	-60.72	2341.77	-50.6	2341.43	-49.38	2341.37	-48.57	2341.33
-41.36	2341.04	-39.96	2340.99	-38.83	2340.95	-37.78	2340.91	-32.612	340.708
-31.9	2340.68	-28.63	2340.61	-22.33	2340.5	-8.95	2340.3	-6.26	2340.24
-5.35	2340.22	-4.43	2340.2	-3.51	2340.16	-2.69	2340.13	-1.86	2340.09
-1	2340.04	-.27	2340	0	2339.84	.58	2339.51	1.13	2339.18
1.42	2338.98	1.56	2338.85	3.49	2338	4.09	2337.65	7.15	2336
14.44	2336	18.83	2336	21.21	2336	22.3	2336	26.7	2337.72
27.45	2338	28.45	2338.38	32.61	2340	46.36	2340.55	48.15	2340.56
52.59	2340.57	62.16	2340.84	63.1	2340.86	63.53	2340.87	64.77	2340.9
72.19	2341.03	74.74	2341.04	76.96	2341.05	83.27	2341.15	90.87	2341.17
96.31	2341.27	99.38	2341.32	99.87	2341.33	100	2341.33		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100	.025	-1	.025	32.61	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-1	32.61	100	100	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-West Branch RS: 400

INPUT
Description: Sta 4+00
Station Elevation Data num= 67

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100	2340.56	-97.35	2340.53	-96.7	2340.53	-96.08	2340.52	-95.51	2340.51
-94.99	2340.5	-94.51	2340.48	-94.07	2340.47	-93.65	2340.46	-89.25	2340.29

```
  -88.66 2340.28     -88 2340.26  -87.27 2340.24  -86.48 2340.23  -85.42 2340.22
  -83.81 2340.19  -82.48 2340.18  -73.09    2340  -61.27 2339.73  -61.13 2339.73
  -57.54 2339.64  -55.41 2339.59  -55.19 2339.58  -54.97 2339.58  -47.76 2339.38
  -47.46 2339.37  -46.85 2339.37  -33.77    2339     -32 2338.99  -31.16 2338.99
  -30.77 2338.99  -30.42 2338.99  -30.11 2338.99  -29.59    2339  -29.02 2339.01
  -28.77 2339.02  -28.22 2339.07  -15.77 2339.05       0 2338.69   10.39 2338.45
   30.05    2338   31.02 2337.43   32.03 2336.83    32.6 2336.49   33.29 2335.25
   37.09 2335.25   39.23 2335.25    39.4 2335.25   40.96 2336.45   45.64 2337.78
   46.31    2338   48.88 2338.19   49.13  2338.2   49.27 2338.21    49.4 2338.21
   49.53 2338.22   49.66 2338.22   49.91 2338.23   63.29 2339.08   66.34 2339.12
   68.83 2339.14   75.68 2339.49   87.42 2339.51   92.34 2339.53   94.09 2339.55
   95.68 2339.56     100 2339.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -100    .025  -15.77    .025   66.34    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -15.77   66.34              100     100     100             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East-West Branch   RS: 300

INPUT
Description: Sta 3+00
Station Elevation Data    num=      60
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -100 2338.93  -97.16 2338.93  -94.13 2338.92   -85.9 2338.89  -82.78 2338.88
  -74.13 2338.84  -65.13 2338.82   -57.3 2338.79  -48.21 2338.77  -47.77 2338.76
  -47.33 2338.76  -46.96 2338.76  -46.59 2338.76  -46.11 2338.75  -45.63 2338.75
  -45.15 2338.74  -44.21 2338.73  -43.48 2338.72  -42.63 2338.71  -41.16 2338.68
  -38.94 2338.63  -34.41 2338.52  -24.99 2338.29  -14.73 2338.04  -12.88    2338
    -.87 2336.18       0 2336.05     .34 2334.49       4 2334.49   13.86 2337.15
   13.94 2337.16   19.05    2338    19.1    2338   19.61    2338   35.69 2336.26
    38.1 2334.49   38.14 2334.49   38.56 2334.49   48.11 2337.98   48.19    2338
   48.23    2338   49.12 2338.01   49.97 2338.03   50.82 2338.03   51.67 2338.04
   54.22 2338.05   65.09 2338.09   80.24 2338.14   89.63 2338.16   90.33 2338.17
   91.03 2338.17   91.65 2338.18   93.26  2338.2   93.93 2338.21   94.58 2338.22
   96.63 2338.25   97.35 2338.26   98.13 2338.27   98.88 2338.29     100 2338.31

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -100    .025  -24.99    .025   65.09    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -24.99   65.09              100     100     100             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East-West Branch   RS: 200

INPUT
Description: Sta 2+00
Station Elevation Data    num=      73
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -100  2337.6  -97.93 2337.59  -87.76 2337.58  -86.26 2337.58   -81.9 2337.57
  -80.79 2337.57  -77.97 2337.58  -75.77 2337.59  -75.38  2337.6  -75.27  2337.6
  -75.17  2337.6  -75.01  2337.6  -74.17 2337.62  -73.38 2337.65  -73.16 2337.66
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  -73.05 2337.67  -72.37 2337.68  -71.77  2337.7  -71.72  2337.7  -71.67  2337.7
  -71.62  2337.7  -71.57  2337.7  -71.52  2337.7  -71.47  2337.7  -71.41 2337.69
  -71.28 2337.69  -70.23 2337.67  -68.05 2337.63  -66.69  2337.6  -65.94 2337.58
  -65.68 2337.57   -64.4 2337.52  -62.17 2337.43  -59.58 2337.32  -58.55 2337.28
  -53.25 2337.09  -46.52 2336.85  -44.75  2336.8  -37.44 2336.73  -36.36 2336.69
  -34.04 2336.67  -18.56  2336.1  -17.63 2336.09  -15.64    2336  -11.18  2335.5
   -8.66 2335.23   -6.93 2335.05   -5.09 2334.87   -4.96 2334.85   -4.95 2333.74
   -3.21 2333.74   -2.97 2334.91   -2.91 2335.13   -2.82 2335.38   -2.56    2336
   -2.36 2336.08       0 2336.09   19.47 2336.17   19.59 2336.14    20.8    2336
   31.44    2336    34.1    2336   34.26    2336   40.45    2336   52.72 2336.27
   65.21 2336.51   71.97 2336.68   85.34 2336.97   87.56 2337.02   88.76 2337.05
   96.99 2337.23   99.53 2337.28     100 2337.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -100    .025  -53.25    .025   71.97    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -53.25   71.97              100     100     100             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East-West Branch   RS: 100

INPUT
Description: Sta 1+00
Station Elevation Data    num=      89
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -100 2335.75  -83.24 2335.75  -82.98 2335.75  -76.77 2335.75  -72.21 2335.77
  -59.33 2335.84  -47.75 2335.91  -45.41 2335.92  -44.64 2335.93   -43.9 2335.94
  -42.44 2335.96  -39.98    2336  -36.94 2336.09  -32.98 2336.21  -31.85 2336.28
  -31.33  2336.3  -27.94 2336.39  -24.98 2336.46  -24.74 2336.46  -24.48 2336.46
  -24.21 2336.46  -23.97 2336.46  -23.72 2336.46  -23.46 2336.46  -23.18 2336.45
  -22.53 2336.44  -17.37 2336.34   -6.66 2336.14    -.04    2336    -.03    2336
       0 2335.99    3.62 2334.91    6.65    2334    7.77 2333.52    7.79 2333.41
   10.68 2332.98   13.68 2333.39   16.03 2333.83   16.74 2333.95   17.08    2334
   17.37 2334.04   17.66 2334.07      18  2334.1   18.08 2334.11   18.46 2334.13
   18.93 2334.14   19.47 2334.15   20.05 2334.16   25.67 2334.21   26.17 2334.22
    26.6 2334.23   26.64 2334.23   26.97 2334.24   27.01 2334.24   27.09 2334.23
   27.51 2334.18   27.82 2334.15    28.1 2334.12   28.11 2334.12   29.43 2334.11
   29.98 2334.12   30.86 2334.14   31.98 2334.16    33.5 2334.19   35.35 2334.23
   36.11 2334.24   39.75 2334.32   40.72 2334.34   46.49 2334.48   54.91 2334.65
      56 2334.68   57.07  2334.7   62.31 2334.84   66.52 2334.95   76.51 2335.22
   80.84 2335.28   80.86 2335.28   80.98 2335.28   81.18 2335.28   82.01 2335.28
   86.65  2335.3   87.27  2335.3   87.59  2335.3   87.91 2335.31    88.2 2335.31
   98.25 2335.53   98.48 2335.53   98.94 2335.54     100 2335.56

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -100    .025       0    .025   81.18    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   81.18              100     100     100             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East-East Branch   RS: 500

INPUT
```

Description: Sta 5+00
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100	2340.75	-94.38	2340.59	-91.62	2340.51	-86.32	2340.35	-86.1	2340.34
-75.52	2340	-53.81	2338.76	-39.4	2338	-22.84	2336.4	-19.1	2336
-18.07	2335.77	-9.71	2335	-.83	2335	-.36	2335	0	2335
1.39	2335	1.75	2335	1.88	2335	2.87	2335	9.29	2335
9.98	2335	16.87	2335	23.48	2337.75	24.46	2338	30.31	2339.42
32.47	2340	32.48	2340	32.49	2340	32.62	2340	32.8	2340
33.26	2340	34.07	2340	36.97	2340	51.71	2340	52.56	2340
53.6	2340	58.46	2340	58.98	2340	59.4	2340	66.49	2340
66.91	2340	93.09	2340.19	100	2340.15				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100	.025	-22.84	.025	32.49	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-22.84	32.49	100	100	100	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-East Branch RS: 400

INPUT
Description: Sta 4+00
Station Elevation Data num= 87

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100	2338.7	-89.95	2338.59	-83.06	2338.5	-70.04	2338.32	-61.83	2338
-57.15	2338	-56.56	2338	-50.51	2338	-50.16	2338	-49.35	2338
-49.34	2338	-49.31	2338	-45.81	2337.72	-42.94	2337.49	-40.4	2337.29
-38.51	2337.13	-25.61	2336	-16.68	2334.89	-9.64	2334.39	-8.87	2334.39
-6.96	2334.39	-5.62	2334.39	-4.93	2334.39	-4.34	2334.39	-3.67	2334.39
-3.55	2334.39	-3.14	2334.39	-2.63	2334.39	-2.6	2334.39	0	2334.39
2.76	2334.39	2.89	2334.39	2.98	2334.39	3.19	2334.39	3.45	2334.39
3.66	2334.39	3.9	2334.39	4.42	2334.39	4.77	2334.39	5.17	2334.39
5.52	2334.39	5.85	2334.39	6.72	2334.39	7.8	2334.39	12.94	2335.3
15.99	2336	21.06	2337.22	24.14	2338	26.39	2338.16	32.07	2338.57
33.65	2338.67	34.09	2338.69	34.33	2338.7	34.6	2338.71	34.84	2338.72
35.19	2338.72	35.58	2338.72	36	2338.73	37.35	2338.73	43.06	2338.74
43.98	2338.74	44.92	2338.74	53.17	2338.84	53.96	2338.83	61.36	2338.9
62.87	2338.88	67.7	2338.81	69.66	2338.78	70.71	2338.77	75.29	2338.73
78.95	2338.69	82.16	2338.65	85.22	2338.61	86.95	2338.59	87.42	2338.59
87.58	2338.59	87.74	2338.59	87.91	2338.59	88.08	2338.59	88.26	2338.59
88.44	2338.59	88.83	2338.6	91.37	2338.64	95.79	2338.7	96.53	2338.72
99.23	2338.77	100	2338.78						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100	.025	-49.31	.025	35.58	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-49.31	35.58	100	100	100	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-East Branch RS: 300

INPUT

Description: Sta 3+00
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100	2337.21	-98.75	2337.19	-89.78	2337.02	-44.72	2336.04	-44.17	2336.03
-44.12	2336.02	-44.1	2336.02	-44.08	2336.02	-44.06	2336.02	-44.01	2336.02
-43.92	2336.02	-43.64	2336.02	-43.09	2336	-38.42	2335.73	-12.16	2334.2
-6.98	2333.77	-6.91	2333.77	0	2333.77	7.12	2333.77	7.44	2333.77
7.68	2333.77	8.23	2333.77	8.92	2333.87	9.47	2333.98	9.58	2334
21.15	2335.76	22.72	2336	24.76	2336.05	24.97	2336.05	43.53	2336.48
45.44	2336.52	46.34	2336.54	47.25	2336.55	48.16	2336.57	49.96	2336.6
62.13	2336.78	75.98	2336.97	77.34	2336.99	80.19	2337.02	86.05	2337.09
87.79	2337.11	100	2337.31						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100	.025	-89.78	.025	43.53	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-89.78	43.53	100	100	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-East Branch RS: 200

INPUT
Description: Sta 2+00
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100	2337.01	-99.97	2337.01	-99.69	2337.01	-99.36	2337.01	-98.97	2337.01
-98.58	2337.01	-83.91	2336.6	-61.98	2336	-50.48	2335.58	-4.78	2333.16
0	2333.16	1.54	2333.16	16.19	2333.16	23.94	2334.23	26.96	2334.29
32.81	2334.4	56.42	2334.97	62.81	2335.12	65.36	2335.16	73.74	2335.36
76.71	2335.43	79.65	2335.49	79.88	2335.49	80.23	2335.5	80.92	2335.52
83.34	2335.6	83.43	2335.6	83.52	2335.6	83.59	2335.6	83.66	2335.6
83.74	2335.6	83.82	2335.6	84.4	2335.59	84.52	2335.59	84.65	2335.59
84.8	2335.59	84.97	2335.59	85.33	2335.6	86.48	2335.61	89.82	2335.63
90.13	2335.64	91.41	2335.64	91.69	2335.64	96.63	2335.69	96.75	2335.69
100	2335.72								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100	.025	-61.98	.025	83.43	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-61.98	83.43	100	100	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-East Branch RS: 100

INPUT
Description: Sta 1+00
Station Elevation Data num= 93

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100	2335.39	-94.68	2335.33	-94.48	2335.33	-94.27	2335.33	-93.1	2335.33
-91.96	2335.34	-88.06	2335.35	-85.51	2335.32	-85.5	2335.32	-85.42	2335.31
-85.28	2335.31	-84.68	2335.29	-80.54	2335.16	-79.85	2335.14	-79.49	2335.13
-79.1	2335.12	-78.74	2335.12	-72.14	2335.04	-71.77	2335.03	-71	2335.02
-70.1	2335.01	-69.67	2335	-62.7	2334.93	-60.76	2334.9	-60.28	2334.89

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  -59.81 2334.89  -58.83 2334.87  -57.66 2334.84  -43.61 2334.51  -43.29  2334.5
  -22.43    2334  -20.33 2333.82   -14.7 2333.33  -10.61 2332.97   -8.84 2332.78
   -7.96 2332.67   -7.55 2332.56   -1.59 2332.54     -.5 2332.59       0  2332.6
    1.29 2332.64    1.45 2332.65    1.68 2332.66    2.15 2332.69    4.67 2332.87
    4.82 2332.87    4.98 2332.88    5.12 2332.88    5.27 2332.88    5.36 2332.89
    5.53 2332.88     5.7 2332.88    6.91 2332.84    7.13 2332.84    7.38 2332.84
    7.67 2332.84       8 2332.84    8.72 2332.85   11.21 2332.87   20.48 2332.98
   20.69 2332.99   21.63 2332.99   25.38 2333.01    26.3 2333.01   26.81 2333.02
   27.39 2333.03   28.01 2333.03   29.37 2333.05   43.81 2333.28   44.16 2333.29
   70.88 2333.69   74.51 2333.77    77.3 2333.83   78.88 2333.87   79.05 2333.87
   79.15 2333.88   79.26 2333.88    79.4 2333.88   79.43 2333.88   79.47 2333.88
   79.52 2333.89   79.57 2333.89   79.63 2333.89   79.76 2333.89   79.95 2333.89
   80.14 2333.89   80.38  2333.9   81.24 2333.91   82.01 2333.91   93.45    2334
   95.47 2334.02   95.58 2334.02     100 2334.07

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -100    .025  -57.66    .025   80.38    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -57.66   80.38              100     100     100             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 12300

INPUT
Description: Sta 123+00.00
Station Elevation Data    num=     114
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300    2336 -299.89    2336 -299.01 2335.99 -298.14 2335.99  -297.3 2335.99
 -295.64 2335.98 -281.95 2335.97 -267.02 2335.96 -253.06 2335.96 -243.03 2335.96
  -242.8 2335.96 -233.41 2335.95 -233.37 2335.95 -220.85 2335.93  -220.8 2335.93
 -218.49 2335.93  -218.3 2335.93 -205.47 2335.91 -204.78 2335.91 -204.64 2335.91
 -204.31 2335.91  -203.6  2335.9 -190.55 2335.86 -178.31 2335.84 -177.08 2335.83
 -175.63 2335.82 -174.53 2335.82 -163.65 2335.75 -160.88 2335.74 -147.57 2335.64
 -144.09 2335.62 -139.99 2335.59 -136.97 2335.57 -136.59 2335.57 -135.81 2335.56
 -132.59 2335.52 -126.76 2335.45 -122.08  2335.4  -116.1 2335.33  -96.65 2335.12
  -95.45  2335.1  -90.65 2335.05   -87.4 2335.03  -79.29 2334.98   -73.1 2334.94
  -71.96 2334.94  -71.59 2334.93  -71.24 2334.93  -70.55 2334.94  -66.14 2334.96
  -65.79 2334.95  -60.54 2334.98  -57.45 2335.01  -57.03    2335  -55.98 2335.01
  -54.95    2335  -47.36 2334.97  -40.58 2334.93  -40.18 2334.93   -39.8 2334.92
  -39.43 2334.92  -39.25 2334.91  -39.06 2334.91  -38.78  2334.9  -38.25 2334.89
  -37.48 2334.86  -31.16 2334.62  -21.55 2334.24  -20.44 2334.25  -15.64    2334
  -10.76 2332.49   -9.11    2332   -2.81    2332       0    2332    4.53    2332
   23.89 2332.29   57.65 2332.79  140.47    2334  143.57 2334.06  146.49 2334.11
  192.64 2334.98  195.41 2335.03  196.67 2335.05  200.11 2335.11     212  2335.3
  220.28 2335.46  227.74 2335.58  248.94    2336  252.84 2336.05  256.15 2336.09
  264.53 2336.17  266.75  2336.2  268.02 2336.21  273.93  2336.3  275.53 2336.32
  276.11 2336.33  276.71 2336.33  277.36 2336.34  278.03 2336.34  279.46 2336.35
  291.02 2336.42  292.37 2336.43  293.02 2336.43   293.6 2336.43  294.16 2336.43
   294.7 2336.43  295.23 2336.43  295.73 2336.43  296.21 2336.43  296.65 2336.43
  297.09 2336.43  297.86 2336.42  299.21 2336.41     300  2336.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .025  -47.36    .025  192.64    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -47.36  192.64              290     300     310             .1       .3
```

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 12000

INPUT
Description: Sta 120+00.00
Station Elevation Data num= 228

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2333.83	-294.91	2333.69	-294.62	2333.69	-294.31	2333.69	-294.04	2333.69
-293.81	2333.69	-293.77	2333.69	-293.72	2333.69	-293.67	2333.69	-293.46	2333.69
-292.96	2333.7	-292.08	2333.73	-291.61	2333.75	-291.16	2333.77	-290.7	2333.79
-290.39	2333.8	-289.9	2333.82	-288.35	2333.81	-288.19	2333.79	-287.94	2333.77
-287.91	2333.77	-287.9	2333.77	-287.88	2333.77	-287.86	2333.77	-287.84	2333.77
-287.82	2333.77	-287.32	2333.79	-286.86	2333.8	-286.82	2333.8	-286.66	2333.81
-286.64	2333.81	-286.61	2333.81	-286.57	2333.81	-286.53	2333.81	-286.48	2333.81
-286.42	2333.81	-286.36	2333.81	-286.17	2333.81	-285.9	2333.81	-285.77	2333.81
-285.71	2333.81	-285.65	2333.81	-285.59	2333.81	-285.35	2333.81	-285.29	2333.81
-285.24	2333.81	-285.18	2333.81	-285.12	2333.81	-285.06	2333.81	-285	2333.81
-284.74	2333.81	-284.53	2333.81	-284.12	2333.81	-282.69	2333.8	-281.06	2333.8
-279.68	2333.79	-279.15	2333.79	-279.08	2333.79	-279.02	2333.79	-278.95	2333.78
-278.88	2333.78	-278.81	2333.78	-278.69	2333.78	-278.52	2333.78	-278.08	2333.77
-278.03	2333.77	-277.99	2333.77	-277.96	2333.77	-277.93	2333.77	-277.88	2333.77
-277.83	2333.76	-277.79	2333.77	-277.74	2333.77	-277.7	2333.77	-277.18	2333.77
-276.48	2333.78	-276.37	2333.78	-276.3	2333.78	-276.23	2333.78	-276.15	2333.78
-276.06	2333.78	-275.85	2333.78	-275.29	2333.78	-273.1	2333.77	-272.91	2333.77
-264.93	2333.73	-264.46	2333.73	-264.12	2333.72	-263.81	2333.72	-260.96	2333.69
-256.56	2333.64	-253.22	2333.6	-246.35	2333.48	-246.28	2333.48	-246.08	2333.47
-245.77	2333.47	-245.37	2333.47	-244.9	2333.46	-241.97	2333.44	-227.74	2333.31
-225.74	2333.29	-224.68	2333.28	-223.59	2333.27	-222.45	2333.26	-220.03	2333.23
-194.54	2332.96	-190.06	2332.92	-187.8	2332.89	-185.57	2332.87	-183.34	2332.84
-178.8	2332.79	-133.3	2332.24	-113.8	2332	-103.19	2331.74	-76.07	2330.92
-54.46	2330.3	-53.54	2330.27	-53.14	2330.26	-45.69	2330	-43.97	2329.95
-32.93	2329.64	-30.35	2329.58	-28.74	2329.54	-19.27	2329.35	-16.63	2329.29
-10.94	2329.15	-6.55	2329.05	-6.03	2329.04	-5.67	2329.03	-5.08	2329.03
-.06	2328.97	0	2328.97	3.33	2328.93	6.47	2328.9	7	2328.89
7.26	2328.89	7.5	2328.89	7.74	2328.89	7.96	2328.89	8.18	2328.89
8.39	2328.9	8.99	2328.9	12.84	2328.98	16.02	2329.04	18.6	2329.1
23.98	2329.21	29.77	2329.33	38.07	2329.51	45.76	2329.68	58.81	2329.97
58.82	2329.97	60.39	2330	73.93	2330.17	74.21	2330.17	98.57	2330.48
107.93	2330.6	117.64	2330.72	130.31	2330.87	132.72	2330.9	142.68	2331.02
144	2331.04	144.82	2331.05	147.4	2331.09	152.12	2331.17	154.26	2331.21
154.7	2331.21	155.04	2331.22	155.54	2331.24	155.66	2331.24	155.8	2331.24
155.95	2331.24	156.14	2331.25	156.33	2331.25	156.55	2331.25	156.77	2331.25
157.22	2331.25	157.67	2331.24	161	2331.21	164.97	2331.17	165.58	2331.17
165.92	2331.16	168.31	2331.08	171.47	2330.97	175.46	2330.86	176.55	2330.84
181.41	2330.96	187.51	2330.86	191.71	2331	192.93	2330.98	193.56	2331
193.88	2331	194.2	2331	194.54	2331	194.73	2331.01	195.07	2331.01
195.59	2331.01	195.9	2331.02	196.71	2331.03	197.03	2331.03	197.69	2331.03
203.99	2331.1	205.02	2331.11	206.05	2331.12	211.06	2331.18	211.73	2331.19
222.42	2331.34	223.69	2331.36	228.72	2331.47	229.15	2331.48	229.58	2331.49
233.24	2331.53	234.45	2331.54	235.51	2331.55	240.39	2331.56	240.75	2331.57
250.74	2331.59	251.23	2331.6	258.23	2331.61	259.54	2331.62	268.91	2331.7
270.94	2331.74	284.87	2331.85	285.35	2331.86	285.48	2331.86	285.72	2331.86
286.58	2331.87	299.51	2332	300	2332				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.025	-113.8	.025	157.22	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-113.8	157.22	290	300	310	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 11700

INPUT
Description: Sta 117+00.00
Station Elevation Data num= 213

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2330.23	-298.6	2330.24	-288.54	2330.29	-287.99	2330.29	-287.45	2330.29
-286.9	2330.29	-286.33	2330.29	-285.75	2330.29	-284.59	2330.28	-276.13	2330.22
-271.86	2330.17	-260.75	2330.06	-254.74	2330	-252.18	2329.97	-244.85	2329.87
-236.75	2329.74	-235.26	2329.71	-234.92	2329.71	-234.59	2329.71	-234.28	2329.7
-234	2329.7	-233.76	2329.71	-233.54	2329.71	-233.34	2329.71	-231.88	2329.78
-228.11	2329.97	-227.46	2330	-225.5	2330.17	-223.28	2330.32	-220.13	2330.48
-217.35	2330.58	-216.95	2330.59	-216.67	2330.6	-216.49	2330.6	-216.31	2330.6
-216.12	2330.6	-215.95	2330.6	-215.78	2330.6	-215.61	2330.6	-214.82	2330.57
-212.3	2330.46	-209.56	2330.29	-207.01	2330.08	-206.05	2330	-165.46	2328.88
-157.06	2328.65	-133.3	2328	-127.59	2327.68	-96.15	2326	-54.57	2326
-37.58	2326	-36.73	2326.05	-35.29	2326.16	-31.86	2326.43	-30.71	2326.53
-30.59	2326.55	-29.07	2326.57	-28.52	2326.56	-23.15	2326.4	-16.8	2326.19
-11.08	2326	-11.07	2326	-7.95	2325.93	-4.03	2325.83	.2	2325.74
3.46	2325.65	7.53	2325.58	10.39	2325.54	11.33	2325.53	11.6	2325.53
11.88	2325.53	12.15	2325.53	12.42	2325.53	12.67	2325.53	12.89	2325.53
13.1	2325.53	13.3	2325.53	13.69	2325.54	17.35	2325.62	20.15	2325.7
22.96	2325.79	24.67	2325.86	26.57	2325.96	27.48	2326	38.17	2326.3
38.63	2326.31	51.77	2326.67	58.22	2326.74	67.56	2326.97	76.62	2327.18
81.91	2327.31	82.49	2327.32	82.79	2327.33	83.09	2327.34	83.38	2327.34
83.98	2327.35	89.99	2327.43	91.85	2327.46	95.9	2327.52	97.48	2327.54
97.85	2327.55	98.22	2327.55	98.73	2327.56	99.24	2327.56	99.58	2327.56
100.15	2327.57	102.36	2327.57	105.36	2327.58	106.37	2327.58	106.69	2327.58
107.78	2327.58	110.62	2327.57	111.91	2327.57	120.53	2327.63	126.37	2327.67
128.56	2327.66	129.84	2327.67	130.33	2327.67	130.97	2327.67	131.34	2327.67
132.59	2327.68	133.92	2327.68	143.51	2327.68	145.23	2327.69	156.2	2327.68
157.69	2327.68	159.63	2327.68	172.14	2327.68	172.38	2327.68	172.5	2327.68
175.13	2327.68	181.01	2327.67	184.27	2327.67	185.58	2327.67	186.25	2327.67
187.52	2327.68	194.9	2327.73	197.05	2327.74	197.16	2327.74	197.58	2327.74
208.62	2327.77	210.31	2327.79	210.48	2327.79	210.59	2327.79	210.76	2327.79
212.34	2327.8	212.91	2327.8	222.83	2327.83	222.96	2327.83	223.61	2327.83
223.67	2327.83	225.08	2327.83	225.2	2327.83	225.73	2327.83	225.91	2327.84
226.59	2327.84	231.47	2327.83	231.94	2327.83	232.36	2327.84	232.43	2327.84
232.48	2327.84	232.58	2327.84	233.62	2327.84	234.78	2327.84	244.87	2327.81
245.73	2327.81	253.56	2327.8	256.27	2327.79	263.85	2327.79	265.2	2327.8
277.77	2327.8	281.26	2327.81	285.3	2327.8	285.97	2327.8	286.63	2327.8
287.29	2327.8	288.61	2327.81	301.66	2327.88	312.36	2327.96	312.67	2327.96
314.12	2327.97	314.2	2327.97	314.46	2327.97	325.46	2328	328.2	2328.01
328.27	2328.01	336.5	2328.04	336.81	2328.05	344.28	2328.08	355.94	2328.14
357	2328.14	361.66	2328.16	361.93	2328.17	363.16	2328.17	363.31	2328.17
363.38	2328.17	363.45	2328.17	363.52	2328.17	363.59	2328.18	363.8	2328.18
365.05	2328.2	365.24	2328.2	377.17	2328.26	377.61	2328.27	385.9	2328.32
388.04	2328.35	402.65	2328.45	406.13	2328.51	414.48	2328.58	418.02	2328.63
421.06	2328.66	426.19	2328.74	430	2328.79				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.025	-127.59	.025	91.85	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-127.59	91.85	180	160	150	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 11540

INPUT
Description: Sta 115+40.00
Station Elevation Data num= 419

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2328.77	-297.05	2328.76	-295.05	2328.76	-294.07	2328.75	-293.1	2328.75
-292.12	2328.75	-291.17	2328.74	-290.23	2328.73	-288.39	2328.72	-282.1	2328.64
-281.11	2328.62	-274.42	2328.53	-274.28	2328.53	-273.44	2328.52	-273.37	2328.52
-272.34	2328.5	-270.93	2328.47	-270.59	2328.46	-270.5	2328.46	-264.65	2328.4
-262.48	2328.38	-259.82	2328.37	-259.17	2328.36	-258.99	2328.36	-258.82	2328.36
-258.65	2328.36	-257.92	2328.35	-256.28	2328.33	-255.42	2328.34	-253.25	2328.37
-252.56	2328.38	-250.55	2328.41	-247.79	2328.46	-247.74	2328.46	-247.06	2328.47
-246.74	2328.47	-246.43	2328.48	-246.12	2328.48	-245.77	2328.49	-245.44	2328.5
-244.13	2328.51	-243.68	2328.51	-243.25	2328.5	-242.92	2328.5	-242.5	2328.49
-242.06	2328.48	-241.68	2328.48	-241.27	2328.47	-240.41	2328.45	-235.15	2328.36
-233.32	2328.32	-217.37	2328.02	-199.08	2327.66	-190.55	2327.5	-184.11	2327.37
-180.74	2327.3	-177.34	2327.24	-176.65	2327.22	-173.31	2327.15	-170	2327.09
-163.22	2326.94	-156.41	2326.8	-143.82	2326.06	-141.51	2325.92	-138.94	2325.76
-136.49	2325.61	-134.83	2325.51	-134.06	2325.45	-134.01	2325.45	-133.97	2325.45
-133.93	2325.45	-133.88	2325.44	-133.86	2325.45	-133.24	2325.45	-132.28	2325.47
-131.57	2325.48	-130.54	2325.49	-127.47	2325.51	-126.43	2325.51	-125.9	2325.51
-125.61	2325.5	-125.5	2325.5	-125.15	2325.49	-124.77	2325.48	-124.35	2325.46
-124.13	2325.45	-123.94	2325.45	-123.81	2325.44	-123.39	2325.42	-122.19	2325.37
-121.96	2325.36	-121.66	2325.35	-116.89	2325.11	-113.22	2325.06	-113.18	2325.06
-106.37	2324.75	-103.64	2324.57	-101.1	2324.46	-100.11	2324.4	-97.13	2324.16
-96.87	2324.14	-96.76	2324.13	-96.6	2324.12	-96.28	2324.08	-95.87	2324.02
-95.78	2324	-95	2322.9	-85	2322.9	-75.54	2324	-75.29	2324.02
-74.98	2324.03	-74.72	2324.05	-74.54	2324.06	-74.47	2324.06	-74.42	2324.06
-74.37	2324.06	-74.32	2324.06	-74.26	2324.06	-74.21	2324.06	-73.6	2324.07
-73.33	2324.07	-73.08	2324.08	-72.89	2324.09	-72.72	2324.09	-72.56	2324.1
-72.19	2324.12	-70.95	2324.23	-70.19	2324.29	-70	2324.3	-69.9	2324.3
-69.79	2324.3	-69.7	2324.3	-69.6	2324.3	-69.54	2324.3	-69.43	2324.3
-69.32	2324.3	-69.21	2324.29	-69.11	2324.29	-69.01	2324.29	-68.93	2324.28
-68.87	2324.28	-68.63	2324.24	-68.52	2324.16	-68.42	2324.14	-68.35	2324.14
-68.25	2324.13	-68.12	2324.12	-67.97	2324.12	-67.79	2324.11	-67.54	2324.11
-67.25	2324.11	-66.94	2324.1	-66.61	2324.11	-66.29	2324.11	-66.23	2324.11
-65.9	2324.11	-65.58	2324.11	-65.52	2324.1	-65.22	2324.11	-65.09	2324.1
-64.89	2324.11	-64.48	2324.1	-64.35	2324.1	-63.31	2324.08	-62.48	2324.06
-62.38	2324.06	-62.32	2324.06	-62.23	2324.06	-61.57	2324.06	-61.45	2324.06
-61.32	2324.06	-61.26	2324.06	-61.2	2324.06	-61.15	2324.06	-61.09	2324.06
-60.97	2324.06	-60.49	2324.08	-60.43	2324.08	-60.36	2324.08	-60.3	2324.08
-60.23	2324.08	-59.9	2324.08	-59.83	2324.08	-59.5	2324.09	-59.43	2324.09
-59.09	2324.1	-59.03	2324.1	-55.25	2324.17	-54.61	2324.18	-52.69	2324.2
-47.36	2324.27	-44.45	2324.3	-43.47	2324.31	-41.56	2324.3	-41.06	2324.3
-40.67	2324.3	-40.59	2324.3	-40.48	2324.3	-38.4	2324.29	-38.03	2324.29
-37.35	2324.29	-37.25	2324.29	-37.15	2324.29	-37.04	2324.29	-36.94	2324.29
-36.84	2324.29	-36.72	2324.29	-36.6	2324.3	-36.14	2324.31	-36.01	2324.31
-35.88	2324.31	-35.74	2324.31	-35.6	2324.31	-34.39	2324.32	-34.23	2324.32
-34.08	2324.32	-33.93	2324.32	-33.47	2324.33	-32.51	2324.34	-32.23	2324.34
-32.19	2324.34	-32.03	2324.34	-31.87	2324.35	-31.74	2324.35	-31.61	2324.35
-31.36	2324.35	-30.47	2324.35	-28.74	2324.35	-28.46	2324.35	-28.38	2324.35
-28.3	2324.35	-28.13	2324.35	-27.97	2324.35	-27.79	2324.36	-27.61	2324.36
-26.84	2324.37	-22.53	2324.43	-20.99	2324.45	-20.47	2324.46	-19.99	2324.47
-19.78	2324.47	-19.54	2324.48	-19.33	2324.48	-19.08	2324.49	-14.96	2324.59
-7.19	2324.77	-6.07	2324.8	-5.46	2324.81	-5.35	2324.81	-3.4	2324.86
-3.28	2324.86	5.62	2325.03	5.68	2325.03	5.74	2325.03	5.92	2325.04
11.07	2325.13	17.33	2325.29	24.09	2325.47	25.5	2325.52	25.91	2325.53
27.46	2325.58	27.91	2325.59	29.31	2325.63	29.65	2325.64	30.29	2325.66
38.23	2325.87	39.3	2325.9	40.46	2325.93	41.8	2325.98	46.85	2326.12

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   53.12 2326.31   59.63 2326.65   62.63 2326.81   64.11 2326.89   65.77 2326.97
    69.9 2327.16   70.96 2327.21   74.39 2327.35   76.54 2327.44   77.11 2327.44
   77.22 2327.44   77.63 2327.44      78 2327.44   84.83 2327.79   89.88 2328.03
   93.04 2327.94   97.04 2327.81  100.92 2327.68  103.34  2327.6  104.18 2327.58
   106.8 2327.52  109.45 2327.46  109.56 2327.46  111.67  2327.4  114.25 2327.35
  116.04 2327.32  116.62 2327.31  116.79 2327.31  116.96 2327.31  117.13 2327.31
  117.29 2327.31  117.45  2327.3  117.59  2327.3  117.72  2327.3  117.84  2327.3
  118.07 2327.31   120.3 2327.33  121.98 2327.36  123.65 2327.38  124.65 2327.41
  125.76 2327.44  126.91 2327.48  127.79  2327.5  129.37 2327.53  129.58 2327.52
  134.96 2327.59  141.27 2327.67  145.59 2327.72   146.1 2327.73  146.36 2327.73
  146.63 2327.73  146.89 2327.73  147.43 2327.74  153.37 2327.75  155.41 2327.75
  160.21 2327.77  162.25 2327.77  162.75 2327.77  163.23 2327.77  163.93 2327.77
  164.64 2327.77  165.11 2327.77  165.92 2327.76  169.19 2327.74  174.02  2327.7
  175.76 2327.69  176.32 2327.68  178.29 2327.66  183.78  2327.6  186.47 2327.57
  188.89 2327.56  190.42 2327.55  191.38 2327.54  195.68 2327.48  196.46 2327.47
  196.74 2327.46  197.49 2327.45   198.2 2327.45  198.34 2327.44  199.36 2327.43
  199.48 2327.43  199.74 2327.43  201.27 2327.41  203.52 2327.39  204.08 2327.39
  205.92 2327.36  211.76  2327.3  213.59 2327.27  215.79 2327.24  215.95 2327.24
  217.07 2327.24  217.39 2327.24   218.6 2327.23  218.68 2327.23  218.96 2327.23
  219.93 2327.23  220.67 2327.22   221.5 2327.22   221.9 2327.22  222.23 2327.22
  222.76 2327.22  222.95 2327.21  223.33 2327.21  223.48 2327.21  223.55 2327.21
   223.7 2327.21  224.13 2327.21   224.5 2327.21  224.72 2327.21  225.13 2327.21
  226.72 2327.21  227.85 2327.21  235.31 2327.23  235.37 2327.23  236.09 2327.23
  236.61 2327.23  237.41 2327.23  238.78 2327.22  245.43 2327.17  246.34 2327.17
   248.5 2327.15  249.51 2327.15  249.86 2327.15  250.36 2327.14  250.42 2327.14
  250.84 2327.14  250.98 2327.14  251.29 2327.14  251.77 2327.14  252.68 2327.14
  255.21 2327.14  255.35 2327.14  256.42 2327.14  261.15 2327.14  261.65 2327.13
  264.85 2327.13  267.75 2327.14  268.24 2327.14   268.6 2327.14  269.36 2327.13
  277.18  2327.1  280.64 2327.08  286.81 2327.05  287.34 2327.05  293.77 2327.02
  293.97 2327.02  294.04 2327.02  294.22 2327.02     300 2326.99

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .015 -241.27    .015   89.88    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -241.27   89.88               60      60      60             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    -300     -93  2326.2       F
     -89     300  2326.2       F

CULVERT


RIVER: Duck Creek
REACH: East               RS: 11510

INPUT
Description:
Distance from Upstream XS =       2
Deck/Roadway Width        =      56
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    -200  2326.2             200    2326

Upstream Bridge Cross Section Data
Station Elevation Data    num=     419
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300 2328.77 -297.05 2328.76 -295.05 2328.76 -294.07 2328.75  -293.1 2328.75
 -292.12 2328.75 -291.17 2328.74 -290.23 2328.73 -288.39 2328.72  -282.1 2328.64
```

-281.11 2328.62 -274.42 2328.53 -274.28 2328.53 -273.44 2328.52 -273.37 2328.52
-272.34 2328.5 -270.93 2328.47 -270.59 2328.46 -270.5 2328.46 -264.65 2328.4
-262.48 2328.38 -259.82 2328.37 -259.17 2328.36 -258.99 2328.36 -258.82 2328.36
-258.65 2328.36 -257.92 2328.35 -256.28 2328.33 -255.42 2328.34 -253.25 2328.37
-252.56 2328.38 -250.55 2328.41 -247.79 2328.46 -247.74 2328.46 -247.06 2328.47
-246.74 2328.47 -246.43 2328.48 -246.12 2328.48 -245.77 2328.49 -245.44 2328.5
-244.13 2328.51 -243.68 2328.51 -243.25 2328.5 -242.92 2328.5 -242.5 2328.49
-242.06 2328.48 -241.68 2328.48 -241.27 2328.47 -240.41 2328.45 -235.15 2328.36
-233.32 2328.32 -217.37 2328.02 -199.08 2327.66 -190.55 2327.5 -184.11 2327.37
-180.74 2327.3 -177.34 2327.24 -176.65 2327.22 -173.31 2327.15   -170 2327.09
-163.22 2326.94 -156.41 2326.8 -143.82 2326.06 -141.51 2325.92 -138.94 2325.76
-136.49 2325.61 -134.83 2325.51 -134.06 2325.45 -134.01 2325.45 -133.97 2325.45
-133.93 2325.45 -133.88 2325.44 -133.86 2325.45 -133.24 2325.45 -132.28 2325.47
-131.57 2325.48 -130.54 2325.49 -127.47 2325.51 -126.43 2325.51 -125.9 2325.51
-125.61 2325.5 -125.5 2325.5 -125.15 2325.49 -124.77 2325.48 -124.35 2325.46
-124.13 2325.45 -123.94 2325.45 -123.81 2325.44 -123.39 2325.42 -122.19 2325.37
-121.96 2325.36 -121.66 2325.35 -116.89 2325.11 -113.22 2325.06 -113.18 2325.06
-106.37 2324.75 -103.64 2324.57 -101.1 2324.46 -100.11 2324.4 -97.13 2324.16
 -96.87 2324.14 -96.76 2324.13   -96.6 2324.12 -96.28 2324.08 -95.87 2324.02
 -95.78   2324   -95 2322.9   -85 2322.9 -75.54   2324 -75.29 2324.02
 -74.98 2324.03 -74.72 2324.05 -74.54 2324.06 -74.47 2324.06 -74.42 2324.06
 -74.37 2324.06 -74.32 2324.06 -74.26 2324.06 -74.21 2324.06   -73.6 2324.07
 -73.33 2324.07 -73.08 2324.08 -72.89 2324.09 -72.72 2324.09 -72.56 2324.1
 -72.19 2324.12 -70.95 2324.23 -70.19 2324.29   -70 2324.3   -69.9 2324.3
 -69.79 2324.3   -69.7 2324.3   -69.6 2324.3 -69.54 2324.3 -69.43 2324.3
 -69.32 2324.3 -69.21 2324.29 -69.11 2324.29 -69.01 2324.29 -68.93 2324.28
 -68.87 2324.28 -68.63 2324.24 -68.52 2324.16 -68.42 2324.14 -68.35 2324.14
 -68.25 2324.13 -68.12 2324.12 -67.97 2324.12 -67.79 2324.11 -67.54 2324.11
 -67.25 2324.11 -66.94 2324.1 -66.61 2324.11 -66.29 2324.11 -66.23 2324.11
  -65.9 2324.11 -65.58 2324.11 -65.52 2324.1 -65.22 2324.11 -65.09 2324.1
 -64.89 2324.11 -64.48 2324.1 -64.35 2324.1 -63.31 2324.08 -62.48 2324.06
 -62.38 2324.06 -62.32 2324.06 -62.23 2324.06 -61.57 2324.06 -61.45 2324.06
 -61.32 2324.06 -61.26 2324.06   -61.2 2324.06 -61.15 2324.06 -61.09 2324.06
 -60.97 2324.06 -60.49 2324.08 -60.43 2324.08 -60.36 2324.08   -60.3 2324.08
 -60.23 2324.08   -59.9 2324.08 -59.83 2324.08   -59.5 2324.09 -59.43 2324.09
 -59.09 2324.1 -59.03 2324.1 -55.25 2324.17 -54.61 2324.18 -52.69 2324.2
 -47.36 2324.27 -44.45 2324.3 -43.47 2324.31 -41.56 2324.3 -41.06 2324.3
 -40.67 2324.3 -40.59 2324.3 -40.48 2324.3   -38.4 2324.29 -38.03 2324.29
 -37.35 2324.29 -37.25 2324.29 -37.15 2324.29 -37.04 2324.29 -36.94 2324.29
 -36.84 2324.29 -36.72 2324.29   -36.6 2324.3 -36.14 2324.31 -36.01 2324.31
 -35.88 2324.31 -35.74 2324.31   -35.6 2324.31 -34.39 2324.32 -34.23 2324.32
 -34.08 2324.32 -33.93 2324.32 -33.47 2324.33 -32.51 2324.34 -32.23 2324.34
 -32.19 2324.34 -32.03 2324.34 -31.87 2324.35 -31.74 2324.35 -31.61 2324.35
 -31.36 2324.35 -30.47 2324.35 -28.74 2324.35 -28.46 2324.35 -28.38 2324.35
  -28.3 2324.35 -28.13 2324.35 -27.97 2324.35 -27.79 2324.36 -27.61 2324.36
 -26.84 2324.37 -22.53 2324.43 -20.99 2324.45 -20.47 2324.46 -19.99 2324.47
 -19.78 2324.47 -19.54 2324.48 -19.33 2324.48 -19.08 2324.49 -14.96 2324.59
  -7.19 2324.77   -6.07 2324.8   -5.46 2324.81   -5.35 2324.81   -3.4 2324.86
  -3.28 2324.86   5.62 2325.03   5.68 2325.03   5.74 2325.03   5.92 2325.04
  11.07 2325.13   17.33 2325.29   24.09 2325.47   25.5 2325.52   25.91 2325.53
  27.46 2325.58   27.91 2325.59   29.31 2325.63   29.65 2325.64   30.29 2325.66
  38.23 2325.87   39.3 2325.9   40.46 2325.93   41.8 2325.98   46.85 2326.12
  53.12 2326.31   59.63 2326.65   62.63 2326.81   64.11 2326.89   65.77 2326.97
   69.9 2327.16   70.96 2327.21   74.39 2327.35   76.54 2327.44   77.11 2327.44
  77.22 2327.44   77.63 2327.44   78 2327.44   84.83 2327.79   89.88 2328.03
  93.04 2327.94   97.04 2327.81 100.92 2327.68 103.34 2327.6 104.18 2327.58
  106.8 2327.52 109.45 2327.46 109.56 2327.46 111.67 2327.4 114.25 2327.35
 116.04 2327.32 116.62 2327.31 116.79 2327.31 116.96 2327.31 117.13 2327.31
 117.29 2327.31 117.45 2327.3 117.59 2327.3 117.72 2327.3 117.84 2327.3
 118.07 2327.31   120.3 2327.33 121.98 2327.36 123.65 2327.38 124.65 2327.41
 125.76 2327.44 126.91 2327.48 127.79 2327.5 129.37 2327.53 129.58 2327.52
 134.96 2327.59 141.27 2327.67 145.59 2327.72   146.1 2327.73 146.36 2327.73
 146.63 2327.73 146.89 2327.73 147.43 2327.74 153.37 2327.75 155.41 2327.75

```
  160.21 2327.77  162.25 2327.77  162.75 2327.77  163.23 2327.77  163.93 2327.77
  164.64 2327.77  165.11 2327.77  165.92 2327.76  169.19 2327.74  174.02  2327.7
  175.76 2327.69  176.32 2327.68  178.29 2327.66  183.78  2327.6  186.47 2327.57
  188.89 2327.56  190.42 2327.55  191.38 2327.54  195.68 2327.48  196.46 2327.47
  196.74 2327.46  197.49 2327.45   198.2 2327.45  198.34 2327.44  199.36 2327.43
  199.48 2327.43  199.74 2327.43  201.27 2327.41  203.52 2327.39  204.08 2327.39
  205.92 2327.36  211.76  2327.3  213.59 2327.27  215.79 2327.24  215.95 2327.24
  217.07 2327.24  217.39 2327.24   218.6 2327.23  218.68 2327.23  218.96 2327.23
  219.93 2327.23  220.67 2327.22   221.5 2327.22   221.9 2327.22  222.23 2327.22
  222.76 2327.22  222.95 2327.21  223.33 2327.21  223.48 2327.21  223.55 2327.21
   223.7 2327.21  224.13 2327.21   224.5 2327.21  224.72 2327.21  225.13 2327.21
  226.72 2327.21  227.85 2327.21  235.31 2327.23  235.37 2327.23  236.09 2327.23
  236.61 2327.23  237.41 2327.23  238.78 2327.22  245.43 2327.17  246.34 2327.17
   248.5 2327.15  249.51 2327.15  249.86 2327.15  250.36 2327.14  250.42 2327.14
  250.84 2327.14  250.98 2327.14  251.29 2327.14  251.77 2327.14  252.68 2327.14
  255.21 2327.14  255.35 2327.14  256.42 2327.14  261.15 2327.14  261.65 2327.13
  264.85 2327.13  267.75 2327.14  268.24 2327.14   268.6 2327.14  269.36 2327.13
  277.18  2327.1  280.64 2327.08  286.81 2327.05  287.34 2327.05  293.77 2327.02
  293.97 2327.02  294.04 2327.02  294.22 2327.02     300 2326.99

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .015 -241.27    .015   89.88    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
       -241.27   89.88             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    -300     -93  2326.2       F
     -89     300  2326.2       F

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    -200  2326.2             200    2326

Downstream Bridge Cross Section Data
Station Elevation Data    num=     302
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300 2327.58 -291.85 2327.58  -291.5 2327.57 -288.15 2327.55 -287.43 2327.54
 -286.47 2327.54 -283.23  2327.5 -281.94 2327.49  -281.3 2327.49 -280.07 2327.48
 -273.65  2327.4 -271.78 2327.39 -271.33 2327.38 -270.97 2327.38 -270.45 2327.37
 -269.27 2327.36 -267.57 2327.33  -263.3 2327.28 -262.82 2327.27  -262.6 2327.26
 -261.92 2327.26 -261.68 2327.25 -259.92 2327.22 -259.62 2327.22 -259.31 2327.21
 -259.04 2327.21 -258.76  2327.2 -258.15  2327.2 -256.08 2327.17 -255.84 2327.17
 -254.46 2327.15 -254.28 2327.15 -249.51 2327.07 -249.35 2327.07 -241.98 2326.97
 -239.31 2326.93 -231.02 2326.84  -229.9 2326.82 -229.59 2326.82  -229.3 2326.81
 -229.01 2326.81 -227.76 2326.79 -224.94 2326.75 -223.46 2326.74 -223.14 2326.74
 -219.74 2326.73 -218.62 2326.72 -218.55 2326.72 -216.25 2326.71 -213.87 2326.69
 -213.38 2326.69 -211.03 2326.68 -210.28 2326.68 -209.11 2326.67 -208.71 2326.67
 -208.56 2326.66 -206.33 2326.66 -204.08 2326.63 -203.31 2326.63 -202.57 2326.61
    -202  2326.6 -199.87 2326.57 -199.17 2326.55 -194.91 2326.41 -193.63 2326.37
 -182.53    2326 -178.13 2325.84 -169.98 2325.56  -169.8 2325.55 -163.86 2325.35
 -161.82 2325.27 -161.68 2325.27 -161.61 2325.26 -160.46 2325.26 -159.37 2325.27
 -154.66 2325.27 -154.18 2325.26 -151.85 2325.25 -149.55 2325.25 -149.08 2325.24
  -148.2 2325.23 -147.72 2325.22 -147.53 2325.22 -146.31  2325.2 -144.92 2325.16
  -144.7 2325.16 -144.01 2325.13    -142 2325.08 -141.62 2325.07 -141.12 2325.06
 -140.09 2325.03 -133.16  2324.6 -131.32 2324.51 -129.71 2324.44 -127.92 2324.35
 -127.01 2324.31 -126.22 2324.27 -125.06 2324.22 -124.53 2324.18 -123.95 2324.18
 -123.29  2324.2 -122.79  2324.2 -122.07 2324.21 -119.94 2324.22 -119.21 2324.23
 -118.84 2324.23 -118.64 2324.22 -118.32 2324.22 -118.06 2324.21 -117.76  2324.2
 -117.61 2324.19 -117.48  2324.2 -117.39 2324.19 -116.26 2324.15  -116.1 2324.15
 -115.89 2324.14 -115.58 2324.13 -112.57 2323.98 -111.02 2323.95 -109.99 2323.94
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 -105.25 2323.77 -105.11 2323.77 -103.35 2323.66 -101.58 2323.58 -100.89 2323.54
 -100.14 2323.49  -99.71 2323.46  -99.52 2323.44  -99.25 2323.42  -98.81 2323.38
  -98.73 2323.37  -98.63 2323.36  -98.55 2323.36  -98.44 2323.35  -98.22 2323.32
  -98.03 2323.29  -97.94 2323.27  -97.87 2323.24     -95    2322     -85    2322
  -74.77 2323.38  -72.95 2323.38  -72.87 2323.37  -72.47 2323.38   -72.3 2323.37
  -72.03 2323.38  -71.48 2323.37  -71.31 2323.37  -69.92 2323.34   -68.8 2323.31
  -66.78 2323.31  -66.14 2323.33  -65.26 2323.33  -64.81 2323.34  -64.72 2323.34
  -64.26 2323.35  -64.18 2323.35  -59.13 2323.45  -58.27 2323.46   -55.7 2323.48
  -48.56 2323.57  -44.67 2323.61  -43.36 2323.62   -40.8  2323.6  -39.36  2323.6
  -36.57 2323.58  -34.32 2323.58  -34.17 2323.59  -33.55  2323.6   -33.2  2323.6
  -33.01 2323.61   -31.2 2323.61  -30.99 2323.62  -30.58 2323.62  -29.97 2323.63
  -28.69 2323.64  -28.04 2323.64  -27.82 2323.65  -22.61 2323.65  -22.37 2323.66
  -22.13 2323.66  -21.09 2323.67  -15.33 2323.74  -11.93 2323.79  -11.64  2323.8
  -11.32 2323.81  -11.04 2323.81  -10.71 2323.82   -5.19 2323.95    5.21 2324.19
    6.71 2324.22    7.52 2324.24    7.67 2324.24   10.28  2324.3   10.44  2324.3
   22.35 2324.52   22.51 2324.52   22.75 2324.53   29.65 2324.65   47.07 2325.09
   48.96 2325.15   49.51 2325.17   51.58 2325.23   52.19 2325.24   54.06  2325.3
   55.37 2325.33   66.01  2325.6   67.43 2325.64   68.99 2325.69   77.55 2325.93
   85.93 2326.18   98.66 2326.84  102.86 2327.05  108.39  2327.3   114.4 2327.56
  117.28 2327.68  119.24 2327.68  135.13 2328.49  137.61 2328.43  140.75 2328.34
   143.8 2328.26   145.7  2328.2  146.35 2328.19  148.41 2328.15  150.49  2328.1
  150.58  2328.1  152.23 2328.06  154.26 2328.02  155.66    2328  156.11 2327.99
  156.64 2327.99  156.77 2327.98  157.07 2327.98  157.25 2327.99     159 2327.99
  161.63 2328.01  162.42 2328.02  163.29 2328.04  164.19 2328.05  164.88 2328.06
  166.12 2328.08  166.28 2328.07  175.46 2328.12  178.85 2328.13  179.87 2328.13
  180.29 2328.14  184.95 2328.12  186.55 2328.11  190.32 2328.11  191.92  2328.1
  193.24  2328.1  193.79 2328.09  194.16 2328.09   194.8 2328.08  197.36 2328.06
  201.15 2328.02  202.52 2328.01  202.96    2328   204.5 2327.99  208.81 2327.93
  212.82 2327.89  214.02 2327.88  214.78 2327.87  218.15 2327.82  218.76 2327.81
  218.98  2327.8  219.57 2327.79  220.12 2327.79  220.23 2327.78  221.04 2327.77
  221.33 2327.77  222.54 2327.75   224.3 2327.73  224.74 2327.73  226.18  2327.7
  230.76 2327.63   232.2  2327.6  233.93 2327.57  235.19 2327.57  236.13 2327.56
  237.17 2327.56  237.76 2327.55  243.39 2327.55  249.24 2327.56  250.26 2327.56
  250.89 2327.55  251.97 2327.55  257.18 2327.49   257.9 2327.49  259.59 2327.47
  260.66 2327.47  261.05 2327.46  269.52 2327.46  269.91 2327.45  275.96 2327.45
  282.09 2327.43  284.81 2327.41  289.65  2327.4  290.07  2327.4  295.11 2327.38
  295.46 2327.38     300 2327.36

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .015 -199.17    .015  135.13    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
       -199.17  135.13             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    -300     -93  2326.2       F
     -89     300  2326.2       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 =  2

Culvert Name     Shape      Rise    Span
Culvert #2      Circular    1.75
FHWA Chart # 1 - Concrete Pipe Culvert
FHWA Scale # 1 - Square edge entrance with headwall
```

Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length   Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef
                1   58   .015   .015   0   .2
1
Upstream   Elevation = 2322.86
           Centerline Station = -91
Downstream Elevation = 2321.91
           Centerline Station = -91

Culvert Name   Shape   Rise   Span
Culvert #1   Circular   1.75
FHWA Chart # 1 - Concrete Pipe Culvert
FHWA Scale # 1 - Square edge entrance with headwall
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist Length   Top n Bottom n Depth Blocked Entrance Loss Coef
Exit Loss Coef
                1   58   .015   .015   0   .2
1
Upstream   Elevation = 2322.92
           Centerline Station = -89
Downstream Elevation = 2321.96
           Centerline Station = -89

CROSS SECTION

RIVER: Duck Creek
REACH: East   RS: 11480.*

INPUT
Description: Sta 114+80.00
Station Elevation Data   num=   302
     Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev
    -300 2327.58 -291.85 2327.58 -291.5 2327.57 -288.15 2327.55 -287.43 2327.54
 -286.47 2327.54 -283.23 2327.5 -281.94 2327.49 -281.3 2327.49 -280.07 2327.48
 -273.65 2327.4 -271.78 2327.39 -271.33 2327.38 -270.97 2327.38 -270.45 2327.37
 -269.27 2327.36 -267.57 2327.33 -263.3 2327.28 -262.82 2327.27 -262.6 2327.26
 -261.92 2327.26 -261.68 2327.25 -259.92 2327.22 -259.62 2327.22 -259.31 2327.21
 -259.04 2327.21 -258.76 2327.2 -258.15 2327.2 -256.08 2327.17 -255.84 2327.17
 -254.46 2327.15 -254.28 2327.15 -249.51 2327.07 -249.35 2327.07 -241.98 2326.97
 -239.31 2326.93 -231.02 2326.84 -229.9 2326.82 -229.59 2326.82 -229.3 2326.81
 -229.01 2326.81 -227.76 2326.79 -224.94 2326.75 -223.46 2326.74 -223.14 2326.74
 -219.74 2326.73 -218.62 2326.72 -218.55 2326.72 -216.25 2326.71 -213.87 2326.69
 -213.38 2326.69 -211.03 2326.68 -210.28 2326.68 -209.11 2326.67 -208.71 2326.67
 -208.56 2326.66 -206.33 2326.66 -204.08 2326.63 -203.31 2326.63 -202.57 2326.61
    -202 2326.6 -199.87 2326.57 -199.17 2326.55 -194.91 2326.41 -193.63 2326.37
 -182.53   2326 -178.13 2325.84 -169.98 2325.56 -169.8 2325.55 -163.86 2325.35
 -161.82 2325.27 -161.68 2325.27 -161.61 2325.26 -160.46 2325.26 -159.37 2325.27
 -154.66 2325.27 -154.18 2325.26 -151.85 2325.25 -149.55 2325.25 -149.08 2325.24
  -148.2 2325.23 -147.72 2325.22 -147.53 2325.22 -146.31 2325.2 -144.92 2325.16
  -144.7 2325.16 -144.01 2325.13   -142 2325.08 -141.62 2325.07 -141.12 2325.06
 -140.09 2325.03 -133.16 2324.6 -131.32 2324.51 -129.71 2324.44 -127.92 2324.35
 -127.01 2324.31 -126.22 2324.27 -125.06 2324.22 -124.53 2324.18 -123.95 2324.18
 -123.29 2324.2 -122.79 2324.2 -122.07 2324.21 -119.94 2324.22 -119.21 2324.23
 -118.84 2324.23 -118.64 2324.22 -118.32 2324.22 -118.06 2324.21 -117.76 2324.2
 -117.61 2324.19 -117.48 2324.2 -117.39 2324.19 -116.26 2324.15 -116.1 2324.15
 -115.89 2324.14 -115.58 2324.13 -112.57 2323.98 -111.02 2323.95 -109.99 2323.94
 -105.25 2323.77 -105.11 2323.77 -103.35 2323.66 -101.58 2323.58 -100.89 2323.54
 -100.14 2323.49 -99.71 2323.46 -99.52 2323.44 -99.25 2323.42 -98.81 2323.38
  -98.73 2323.37 -98.63 2323.36 -98.55 2323.36 -98.44 2323.35 -98.22 2323.32
  -98.03 2323.29 -97.94 2323.27 -97.87 2323.24   -95   2322   -85   2322
  -74.77 2323.38 -72.95 2323.38 -72.87 2323.37 -72.47 2323.38   -72.3 2323.37

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  -72.03 2323.38  -71.48 2323.37  -71.31 2323.37  -69.92 2323.34   -68.8 2323.31
  -66.78 2323.31  -66.14 2323.33  -65.26 2323.33  -64.81 2323.34  -64.72 2323.34
  -64.26 2323.35  -64.18 2323.35  -59.13 2323.45  -58.27 2323.46   -55.7 2323.48
  -48.56 2323.57  -44.67 2323.61  -43.36 2323.62   -40.8  2323.6  -39.36  2323.6
  -36.57 2323.58  -34.32 2323.58  -34.17 2323.59  -33.55  2323.6   -33.2  2323.6
  -33.01 2323.61   -31.2 2323.61  -30.99 2323.62  -30.58 2323.62  -29.97 2323.63
  -28.69 2323.64  -28.04 2323.64  -27.82 2323.65  -22.61 2323.65  -22.37 2323.66
  -22.13 2323.66  -21.09 2323.67  -15.33 2323.74  -11.93 2323.79  -11.64  2323.8
  -11.32 2323.81  -11.04 2323.81  -10.71 2323.82   -5.19 2323.95    5.21 2324.19
    6.71 2324.22    7.52 2324.24    7.67 2324.24   10.28  2324.3   10.44  2324.3
   22.35 2324.52   22.51 2324.52   22.75 2324.53   29.65 2324.65   47.07 2325.09
   48.96 2325.15   49.51 2325.17   51.58 2325.23   52.19 2325.24   54.06  2325.3
   55.37 2325.33   66.01  2325.6   67.43 2325.64   68.99 2325.69   77.55 2325.93
   85.93 2326.18   98.66 2326.84  102.86 2327.05  108.39  2327.3   114.4 2327.56
  117.28 2327.68  119.24 2327.68  135.13 2328.49  137.61 2328.43  140.75 2328.34
   143.8 2328.26   145.7  2328.2  146.35 2328.19  148.41 2328.15  150.49  2328.1
  150.58  2328.1  152.23 2328.06  154.26 2328.02  155.66    2328  156.11 2327.99
  156.64 2327.99  156.77 2327.98  157.07 2327.98  157.25 2327.99     159 2327.99
  161.63 2328.01  162.42 2328.02  163.29 2328.04  164.19 2328.05  164.88 2328.06
  166.12 2328.08  166.28 2328.07  175.46 2328.12  178.85 2328.13  179.87 2328.13
  180.29 2328.14  184.95 2328.12  186.55 2328.11  190.32 2328.11  191.92  2328.1
  193.24  2328.1  193.79 2328.09  194.16 2328.09   194.8 2328.08  197.36 2328.06
  201.15 2328.02  202.52 2328.01  202.96    2328   204.5 2327.99  208.81 2327.93
  212.82 2327.89  214.02 2327.88  214.78 2327.87  218.15 2327.82  218.76 2327.81
  218.98  2327.8  219.57 2327.79  220.12 2327.79  220.23 2327.78  221.04 2327.77
  221.33 2327.77  222.54 2327.75   224.3 2327.73  224.74 2327.73  226.18  2327.7
  230.76 2327.63   232.2  2327.6  233.93 2327.57  235.19 2327.57  236.13 2327.56
  237.17 2327.56  237.76 2327.55  243.39 2327.55  249.24 2327.56  250.26 2327.56
  250.89 2327.55  251.97 2327.55  257.18 2327.49   257.9 2327.49  259.59 2327.47
  260.66 2327.47  261.05 2327.46  269.52 2327.46  269.91 2327.45  275.96 2327.45
  282.09 2327.43  284.81 2327.41  289.65  2327.4  290.07  2327.4  295.11 2327.38
  295.46 2327.38     300 2327.36

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .015 -199.17    .015  135.13    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -199.17  135.13              100      80      80             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    -300     -93  2326.2       F
     -89     300  2326.2       F

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 11400

INPUT
Description: Sta 114+00.00
Station Elevation Data    num=     174
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300    2326 -287.31    2326 -280.43 2325.93 -279.35 2325.92 -271.88 2325.85
 -270.89 2325.84 -261.35 2325.73 -258.98 2325.71 -256.07 2325.69 -255.36 2325.68
 -255.17 2325.68 -254.98 2325.68  -254.8 2325.68    -254 2325.67 -251.26 2325.63
 -248.14 2325.59 -242.87 2325.53 -242.12 2325.52 -241.78 2325.51 -241.44 2325.51
  -241.1  2325.5 -240.72  2325.5 -240.35 2325.49  -237.6 2325.44 -237.14 2325.43
 -236.66 2325.42 -236.24 2325.42  -235.8 2325.41 -234.85  2325.4 -229.11 2325.32
 -209.67 2325.04 -189.67 2324.75 -180.35 2324.61 -173.31 2324.51 -169.62 2324.45
 -165.91 2324.39 -165.15 2324.38  -161.5 2324.32 -157.88 2324.26 -150.47 2324.13
 -143.03    2324 -134.23 2323.11 -130.82 2322.75 -129.11 2322.57 -127.95 2322.44
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 -127.41 2322.37 -100.64  2321.9  -74.75 2322.31  -74.54 2322.31  -73.68 2322.33
  -73.57 2322.33  -73.45 2322.33  -73.34 2322.33  -73.22 2322.33  -72.62 2322.34
   -72.5 2322.34   -71.9 2322.35  -71.78 2322.35  -71.17 2322.36  -71.06 2322.36
   -64.3 2322.48  -63.16  2322.5  -59.72 2322.53  -50.17 2322.63  -44.96 2322.68
  -43.22 2322.69  -39.79 2322.67  -38.89 2322.67   -38.2 2322.66  -38.05 2322.66
  -37.86 2322.66  -34.13 2322.64  -33.47 2322.64  -32.25 2322.64  -32.08 2322.64
  -31.89 2322.64  -31.71 2322.64  -31.52 2322.64  -31.34 2322.64  -31.13 2322.64
  -30.92 2322.65  -30.09 2322.66  -29.86 2322.66  -29.63 2322.66  -29.38 2322.67
  -29.12 2322.67  -26.95 2322.67  -26.67 2322.68   -26.4 2322.68  -26.13 2322.68
  -25.31 2322.69   -23.6 2322.71  -23.02 2322.71  -22.73 2322.71  -22.44 2322.72
  -22.21 2322.72  -21.98 2322.72  -21.54 2322.72  -19.94 2322.72  -16.84 2322.71
  -16.34 2322.71   -16.2 2322.71  -16.05 2322.71  -15.76 2322.71  -15.47 2322.71
  -15.15 2322.72  -14.83 2322.72  -13.44 2322.73   -5.73 2322.83   -2.97 2322.87
   -2.04 2322.88   -1.18 2322.89     -.8  2322.9    -.37 2322.91       0 2322.92
     .44 2322.93    7.83  2323.1   21.73 2323.41   23.74 2323.45   24.82 2323.48
   25.03 2323.48   28.52 2323.55   28.73 2323.55   44.66 2323.84   44.76 2323.84
   44.87 2323.84   45.19 2323.85   54.42    2324   77.72 2324.58   80.24 2324.66
   80.98 2324.68   83.75 2324.76   84.56 2324.78   87.06 2324.85   88.82  2324.9
  103.04 2325.25  104.94  2325.3  107.03 2325.36  109.43 2325.43  118.47 2325.68
  129.68    2326  146.71 2326.88  149.35 2327.01  152.32 2327.16  167.75 2327.83
   171.6    2328  172.63    2328  172.82    2328  173.56    2328  174.22    2328
  195.48 2329.11  245.97 2328.32  248.11 2328.27  249.01 2328.25  249.94 2328.23
  250.89 2328.21  252.01 2328.19  258.11    2328  258.19    2328  258.75    2328
  258.91    2328  259.51    2328  260.17    2328  261.58    2328  262.26    2328
  267.85    2328  269.55 2327.98  273.31 2327.92  275.06  2327.9  275.77 2327.89
  276.46 2327.89  277.79 2327.88  290.37 2327.86     300 2327.85

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .025 -143.03    .025  195.48    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -143.03  195.48              280     300     310             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 11100

INPUT
Description: Sta 111+00.00
Station Elevation Data    num=     132
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300 2322.47  -289.7 2322.44 -278.81 2322.41 -277.51 2322.41 -276.87  2322.4
 -275.58 2322.39 -264.64  2322.3  -257.9 2322.24 -244.71 2322.12 -232.59    2322
 -226.63 2321.91 -225.64 2321.89 -204.17 2321.58 -199.55  2321.5 -193.39  2321.4
 -192.68 2321.39 -179.42 2321.16    -179 2321.15 -178.19 2321.14 -173.89  2321.1
 -172.96 2321.08 -171.73 2321.07 -160.12 2320.86 -155.23 2320.78 -153.48 2320.74
 -152.59 2320.72 -151.52  2320.7 -149.78 2320.66  -129.3 2320.12 -124.63    2320
  -115.8 2319.24 -111.75 2318.88 -109.46 2318.69 -108.02 2318.56  -107.1 2318.47
 -106.17  2318.4 -105.44 2318.35 -105.01 2318.32 -104.44 2318.29 -103.97 2318.26
 -103.56 2318.24 -103.54 2318.24 -103.52 2318.24  -103.5 2318.24 -103.48 2318.24
 -103.45 2318.24 -103.43 2318.24  -103.4 2318.24  -103.2 2318.25 -102.81 2318.27
 -102.27 2318.29 -101.82 2318.32 -101.14 2318.35 -100.51 2318.38  -99.76 2318.41
  -99.62 2318.42  -99.53 2318.42  -99.44 2318.42  -99.34 2318.43  -97.22 2318.45
  -96.92 2318.46  -96.78 2318.46  -96.66 2318.47  -96.55 2318.47  -96.35 2318.48
  -94.56 2318.55  -81.11 2319.08  -80.99 2319.09  -66.86 2319.65  -66.75 2319.65
  -66.56 2319.66  -65.68 2319.69  -65.51  2319.7  -64.75 2319.72  -63.95 2319.75
  -63.41 2319.77  -61.53 2319.84  -61.24 2319.85  -60.31 2319.89  -60.15 2319.88
   -60.1 2319.87  -49.97 2319.85  -49.34 2319.87  -48.73 2319.89  -48.15  2319.9
  -47.63  2319.9  -47.15  2319.9  -46.54 2319.92   -46.2 2319.93  -46.07 2319.94
  -45.89 2319.95  -45.78 2319.95  -45.71 2319.95  -45.39 2319.95  -45.38 2319.95
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  -45.36 2319.95  -45.35 2319.95  -45.34 2319.95   -45.3 2319.95  -45.28 2319.94
  -45.26 2319.94  -45.25 2319.94  -45.24 2319.94  -45.22 2319.94  -44.66 2319.94
  -44.65 2319.94  -43.46 2319.93  -38.67 2319.87  -30.19 2319.74  -23.56 2319.64
  -14.85 2319.55  -13.26 2319.54  -12.46 2319.53  -12.05 2319.53  -11.63 2319.53
  -11.21 2319.53  -10.89 2319.53  -10.54 2319.53  -10.04 2319.54   -9.53 2319.55
   -7.93 2319.57   -3.97 2319.63   -2.55 2319.66       0 2319.72    3.28  2319.8
    7.47 2319.88   13.81    2320   18.82 2320.07   32.54 2320.25   42.59 2320.38
   46.37 2320.44   53.44 2320.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .025 -193.39    .025   53.44    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -193.39   53.44              260     300     340             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 10800

INPUT
Description: Sta 108+00.00
Station Elevation Data    num=      95
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300 2318.75 -297.92 2318.76 -293.18 2318.74 -285.08 2318.77 -277.45  2318.8
 -272.01 2318.78 -267.04 2318.81 -261.68 2318.78 -260.79 2318.78 -259.45 2318.79
 -254.24 2318.76 -253.32 2318.77 -251.15  2318.8 -244.45 2318.87 -239.53 2318.93
 -238.83 2318.93 -238.47 2318.94 -238.23 2318.94 -237.82 2318.94 -237.43 2318.94
 -237.04 2318.94 -236.23 2318.94 -228.22 2318.92 -222.72  2318.9 -219.94 2318.89
 -218.72 2318.88 -213.98 2318.86 -213.54 2318.86 -212.65 2318.86 -207.05 2318.83
 -199.91 2318.85 -198.27 2318.86 -191.41  2318.9 -190.63  2318.9 -189.83  2318.9
    -189  2318.9  -181.2 2318.89 -179.85 2318.88 -178.05 2318.88 -177.19 2318.87
 -176.77 2318.87 -176.38 2318.86 -176.02 2318.86 -175.67 2318.85 -175.34 2318.85
 -174.71 2318.84 -172.87  2318.8 -170.04 2318.73 -169.05 2318.71 -168.67  2318.7
 -168.23  2318.7 -167.25 2318.68 -163.92 2318.64 -145.73 2318.43 -144.91 2318.43
  -144.7 2318.42  -138.3 2318.35 -122.23 2318.17 -120.64 2318.16 -108.42 2318.02
 -106.88    2318  -94.23 2317.79  -90.12 2317.69  -84.42 2317.58  -68.68 2317.21
  -47.27 2316.74  -17.58    2316  -13.45 2315.49  -13.43 2315.49   -7.41 2314.77
   -5.09 2314.53   -4.93 2314.51   -4.52 2314.46   -4.19 2314.44   -3.67 2314.38
   -3.52 2314.37   -3.46 2314.37   -3.41 2314.36    -3.4 2314.36   -3.36 2314.36
   -3.32 2314.36   -3.29 2314.36   -3.25 2314.36    -3.2 2314.36   -3.15 2314.37
   -3.04 2314.37   -2.69  2314.4   -2.07 2314.47    -.83 2314.66    -.44 2314.74
       0 2314.86    1.54 2315.26     4.6    2316    7.53 2316.78   12.31    2318

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .025  -138.3    .025   12.31    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -138.3   12.31              300     300     300             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 10500

INPUT
Description: Sta 105+00.00
Station Elevation Data    num=     133
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
    -300 2317.59  -277.5 2317.16 -256.94 2316.83 -250.74 2316.72 -240.64 2316.54
 -239.28 2316.52 -237.95 2316.51 -229.88 2316.37 -227.55 2316.34 -221.58 2316.28
 -194.58 2316.02 -193.17    2316  -162.1    2316 -158.85    2316  -153.6    2316
 -147.48    2316 -137.41    2316 -134.91    2316 -109.08    2316 -107.51 2315.64
 -101.88 2314.49  -99.54    2314   -99.3 2313.86  -91.43 2313.15  -91.39 2313.17
   -91.3  2313.2  -91.15 2313.22  -90.97 2313.24  -90.73 2313.26  -90.46 2313.27
  -90.23 2313.27  -90.01 2313.27  -89.78 2313.27  -89.54 2313.26  -89.38 2313.25
  -88.96 2313.24  -88.55 2313.21  -88.16 2313.19  -87.81 2313.16  -87.52 2313.13
  -87.28  2313.1  -87.14 2313.08  -87.04 2313.06  -86.96 2313.03  -86.84 2312.79
  -86.76 2312.77   -86.7 2312.75  -86.63 2312.74  -86.55 2312.74  -85.99 2312.69
  -84.92 2312.61  -84.84  2312.6  -84.77 2312.59  -84.75 2312.59  -81.38  2312.5
  -80.29 2312.52  -80.14 2312.53  -79.49 2312.54  -79.33 2312.54  -79.18 2312.54
  -79.05 2312.55  -78.93 2312.55  -78.46 2312.58  -78.33 2312.58  -77.91  2312.6
  -77.77  2312.6  -76.77 2312.66   -76.5 2312.68  -76.25 2312.71  -76.14 2312.72
  -75.95 2312.75  -75.71 2312.81  -75.23 2312.98   -74.2 2313.18  -74.01 2313.21
  -73.49 2313.28  -73.28 2313.28  -66.78    2314  -58.58    2314  -48.62    2314
  -37.22  2313.5   -7.36    2312   -5.85    2312       0    2312   10.11    2312
   30.17 2312.69   39.75 2312.87   53.35 2313.27   55.22 2313.32   60.85 2313.46
   73.67 2313.63   76.64  2313.7   79.23 2313.76   81.02 2313.78   82.52 2313.81
   82.78 2313.81    82.9 2313.82   82.99 2313.82   84.39 2313.84   85.03 2313.84
   86.04 2313.86   99.76 2313.92   99.81 2313.92   99.84 2313.92   99.87 2313.92
   99.89 2313.92    99.9 2313.92   99.92 2313.92   99.93 2313.92  100.01 2313.92
  100.03 2313.92  100.05 2313.92  100.07 2313.92  100.15 2313.92  100.65 2313.93
  100.71 2313.93  100.75 2313.93  100.77 2313.93  100.78 2313.93  100.79 2313.93
  100.81 2313.93  100.84 2313.93  100.92 2313.93  100.98 2313.93  101.01 2313.94
  101.06 2313.94  101.21 2313.94  101.28 2313.94  101.33 2313.94  101.76 2313.93
  102.23 2313.93  102.28 2313.93  102.33 2313.93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .025  -48.62    .025   86.04    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -48.62   86.04               400     300     200             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 10200

INPUT
Description: Sta 102+00.00
Station Elevation Data    num=      74
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300    2312 -167.64    2312  -76.01 2310.74   -69.8 2310.69  -58.04 2310.61
  -51.59 2310.57  -41.95  2310.5  -40.89 2310.49  -36.03 2310.46  -34.51 2310.45
  -34.11 2310.45  -32.54 2310.45  -31.93 2310.44  -31.76 2310.43  -31.13 2310.42
  -30.54 2310.42  -28.03 2310.38  -27.39 2310.37  -27.16 2310.37  -26.54 2310.36
  -25.93 2310.35   -24.7 2310.33  -10.87    2310  -10.73    2310       0    2310
   10.97    2310   26.15 2310.35   27.56 2310.38   56.73 2311.05   63.92 2311.22
    88.9 2311.67   94.56 2311.79  106.83    2312  139.48 2312.55  172.94 2313.11
  175.91 2313.16  195.61 2313.46  196.93 2313.48  197.57 2313.49  198.19  2313.5
  198.81 2313.51   200.6 2313.53   208.4 2313.63   213.2 2313.69  213.65  2313.7
  213.84  2313.7  214.02  2313.7  214.16 2313.71  214.27 2313.71  214.35 2313.71
  214.41  2313.7  214.54  2313.7  214.72 2313.69  214.94 2313.67  215.25 2313.65
  215.36 2313.65  215.43 2313.65  215.53 2313.65  215.66 2313.65  215.81 2313.65
  215.98 2313.65  227.58 2313.54  227.58 2313.53  227.59 2313.53  227.62 2313.53
  227.93 2313.55   228.3 2313.57   228.8  2313.6  229.37 2313.62  230.68 2313.67
  241.66    2314  244.35 2314.02  258.63 2314.15     300 2314.28

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

```
    -300    .025 -167.64    .025  139.48    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -167.64  139.48               50      90     120             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 10110

INPUT
Description: Sta 101+10.00
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -44.5    2310   -44.5    2307    44.5    2307    44.5    2310

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -44.5    .015   -44.5    .015    44.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -44.5    44.5               70      70      70             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   -44.5   -44.5    2312       F
    44.5    44.5    2312       F

BRIDGE


RIVER: Duck Creek
REACH: East               RS: 10075

INPUT
Description:
Distance from Upstream XS =       2
Deck/Roadway Width        =      66
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
    -150    2312             -53    2312    2310      53    2312    2310
     150    2312

Upstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -44.5    2310   -44.5    2307    44.5    2307    44.5    2310

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -44.5    .015   -44.5    .015    44.5    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
         -44.5    44.5             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   -44.5   -44.5    2312       F
    44.5    44.5    2312       F

Downstream  Deck/Roadway Coordinates
    num=       4
```

```
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    -150    2312             -53    2312  2309.7      53    2312  2309.7
     150    2312

Downstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -44.5  2309.7   -44.5  2306.7    44.5  2306.7    44.5  2309.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -44.5    .015   -44.5    .015    44.5    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
         -44.5    44.5             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   -44.5   -44.5    2312       F
    44.5    44.5    2312       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 Piers =  17

Pier Data
Pier Station     Upstream=     -40    Downstream=     -40
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=     -35    Downstream=     -35
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=     -30    Downstream=     -30
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=     -25    Downstream=     -25
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
```

```
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=     -20    Downstream=     -20
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=     -15    Downstream=     -15
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=     -10    Downstream=     -10
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=      -5    Downstream=      -5
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=       0    Downstream=       0
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=       5    Downstream=       5
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=      10    Downstream=      10
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
```

```
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=      15    Downstream=      15
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=      20    Downstream=      20
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=      25    Downstream=      25
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=      30    Downstream=      30
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=      35    Downstream=      35
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Pier Data
Pier Station     Upstream=      40    Downstream=      40
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2307.5       1  2310.5
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2307       1    2310

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer
```

High Flow Method
Energy Only

Additional Bridge Parameters
Add Friction component to Momentum
Do not add Weight component to Momentum
Class B flow critical depth computations use critical depth
inside the bridge at the upstream end
Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	2310.07	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2309.82	E.G. Elev (ft)	2309.99	2309.44
Q Total (cfs)	1008.00	W.S. Elev (ft)	2309.51	2308.53
Q Bridge (cfs)	1008.00	Crit W.S. (ft)	2308.83	2308.53
Q Weir (cfs)		Max Chl Dpth (ft)	2.51	1.83
Weir Sta Lft (ft)		Vel Total (ft/s)	5.58	7.64
Weir Sta Rgt (ft)		Flow Area (sq ft)	180.53	131.99
Weir Submerg		Froude # Chl	0.62	0.99
Weir Max Depth (ft)		Specif Force (cu ft)	401.11	360.05
Min El Weir Flow (ft)	2312.01	Hydr Depth (ft)	2.51	1.83
Min El Prs (ft)	2310.00	W.P. Total (ft)	162.26	138.00
Delta EG (ft)	0.94	Conv. Total (cfs)	19201.2	12693.5
Delta WS (ft)	1.29	Top Width (ft)	72.00	72.00
BR Open Area (sq ft)	216.00	Frctn Loss (ft)		
BR Open Vel (ft/s)	7.64	C & E Loss (ft)		
Coef of Q		Shear Total (lb/sq ft)	0.19	0.38
Br Sel Method	Momentum	Power Total (lb/ft s)	1.07	2.88

Warning: The flow regime calculated by the momentum equation shows class B flow. For the best
solution, this profile should be run as a mixed flow problem.
Warning: Pier drag coefficient of 2.0 assumed for Class B flow.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.
Warning: The energy equation could not be balanced within the specified number of iterations. The
program selected the water surface that had the least amount of error between computed and
assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there
is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	2310.07	Element	Inside BR US	Inside BR DS	
W.S. US. (ft)	2309.82	E.G. Elev (ft)	2309.99	2309.44	
Q Total (cfs)	1008.00	W.S. Elev (ft)	2309.51	2308.53	
Q Bridge (cfs)	1008.00	Crit W.S. (ft)	2308.83	2308.53	
Q Weir (cfs)		Max Chl Dpth (ft)	2.51	1.83	
Weir Sta Lft (ft)		Vel Total (ft/s)	5.58	7.64	
Weir Sta Rgt (ft)		Flow Area (sq ft)	180.53	131.99	
Weir Submerg		Froude # Chl	0.62	0.99	
Weir Max Depth (ft)		Specif Force (cu ft)	401.11	360.05	
Min El Weir Flow (ft)	2312.01	Hydr Depth (ft)	2.51	1.83	
Min El Prs (ft)	2310.00	W.P. Total (ft)	162.26	138.00	
Delta EG (ft)	0.94	Conv. Total (cfs)	19201.2	12693.5	
Delta WS (ft)	1.29	Top Width (ft)	72.00	72.00	
BR Open Area (sq ft)	216.00	Frctn Loss (ft)			
BR Open Vel (ft/s)	7.64	C & E Loss (ft)			
Coef of Q		Shear Total (lb/sq ft)	0.19	0.38	
Br Sel Method	Momentum	Power Total (lb/ft s)	1.07	2.88	

Warning: The flow regime calculated by the momentum equation shows class B flow. For the best
solution, this profile should be run as a mixed flow problem.
Warning: Pier drag coefficient of 2.0 assumed for Class B flow.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.
Warning: The energy equation could not be balanced within the specified number of iterations. The
program selected the water surface that had the least amount of error between computed and
assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

depth, the calculated water surface came back below critical depth. This indicates that there
is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 10040

INPUT
Description: Sta 100+40.00
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.5	2309.7	-44.5	2306.7	44.5	2306.7	44.5	2309.7

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.5	.015	-44.5	.015	44.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.5	44.5	200	140	80	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-44.5	-44.5	2312	F
44.5	44.5	2312	F

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 9900

INPUT
Description: Sta 99+00.00
Station Elevation Data num= 93

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2309.89	-274.26	2309.62	-274.12	2309.62	-273.98	2309.62	-273.85	2309.62
-273.71	2309.62	-273.44	2309.62	-255.56	2309.43	-253.87	2309.44	-253.5	2309.45
-253.34	2309.45	-253.19	2309.45	-225.57	2309.19	-225.32	2309.19	-225.08	2309.19
-224.86	2309.2	-224.25	2309.21	-223.57	2309.23	-223.32	2309.24	-223.24	2309.24
-223.19	2309.25	-223.18	2309.25	-209.02	2309.39	-208.51	2309.38	-208.32	2309.38
-208.12	2309.38	-207.68	2309.37	-206.52	2309.37	-202.09	2309.35	-201.61	2309.35
-197.92	2309.31	-192.83	2309.27	-188.13	2309.23	-187.51	2309.23	-186.58	2309.22
-180.07	2309.14	-172.28	2309.04	-169.88	2309.03	-163.08	2308.98	-160.16	2308.94
-158.64	2308.93	-157.64	2308.92	-149.97	2308.88	-142.85	2308.85	-134.63	2308.81
-132.9	2308.8	-132.37	2308.79	-131.87	2308.79	-131.42	2308.78	-131.05	2308.77
-130.72	2308.77	-130.43	2308.76	-130.17	2308.75	-129.68	2308.73	-124.81	2308.52
-120.19	2308.33	-119.16	2308.29	-118.47	2308.27	-115.98	2308.21	-107.46	2308
-94.89	2307.73	-85.79	2307.54	-82.08	2307.47	-78.83	2307.4	-75.98	2307.35
-73.44	2307.3	-69.01	2307.22	-55.99	2306.99	-52.18	2306.92	-50.98	2306.9
-49.81	2306.88	-48.68	2306.85	-43.74	2306.75	-42.92	2306.73	-42.14	2306.72
-41.41	2306.7	-40.72	2306.69	-38.22	2306.65	-29.52	2306.51	-11.51	2306
-8.62	2306	0	2306	3.36	2306	24.68	2307.23	42.23	2308
43.7	2308.01	57.57	2308.17	70.03	2308.3	79.73	2308.42	87.49	2308.51
87.96	2308.51	88.44	2308.51	88.9	2308.52				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.025	-131.42	.025	42.23	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-131.42 42.23 300 300 310 .1 .3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 9600

INPUT
Description: Sta 96+00.00
Station Elevation Data num= 213

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2305.82	-299.35	2305.82	-298.53	2305.81	-297.77	2305.81	-297.08	2305.81
-296.47	2305.81	-295.94	2305.81	-294.58	2305.82	-287.22	2305.91	-278.35	2306
-277.74	2306	-277.28	2306	-276.68	2306	-276.07	2306.01	-275.43	2306
-274.79	2306	-274.41	2306	-274.08	2306	-273.28	2305.99	-271.64	2305.98
-267.38	2305.94	-266.49	2305.93	-264.72	2305.92	-263.84	2305.91	-252.68	2305.86
-252.63	2305.86	-241.27	2305.8	-241.2	2305.8	-239.72	2305.8	-239.64	2305.79
-238.94	2305.79	-238.29	2305.78	-236.62	2305.78	-235.98	2305.77	-235.41	2305.76
-234.89	2305.75	-234.41	2305.74	-231.62	2305.67	-228.19	2305.55	-227.38	2305.5
-227.31	2305.5	-227.27	2305.49	-177.29	2305.28	-175.53	2305.39	-173.52	2305.52
-172.82	2305.56	-172.41	2305.58	-172.15	2305.58	-171.82	2305.59	-171.43	2305.6
-170.97	2305.6	-169.93	2305.61	-158.89	2305.67	-156.61	2305.66	-153.7	2305.67
-151.46	2305.66	-149.17	2305.66	-147.56	2305.66	-143.12	2305.66	-141.65	2305.65
-130.14	2305.64	-127.58	2305.64	-126.72	2305.63	-124.12	2305.63	-117	2305.6
-114.39	2305.59	-111.8	2305.58	-111.17	2305.58	-108.03	2305.56	-107.11	2305.56
-104.95	2305.54	-100.22	2305.51	-99.58	2305.5	-88.91	2305.42	-84.27	2305.4
-78.6	2305.35	-77.05	2305.35	-74.96	2305.33	-74	2305.33	-73.57	2305.33
-73.38	2305.33	-73.19	2305.33	-71.96	2305.35	-71.23	2305.35	-69.11	2305.37
-68.95	2305.37	-68.82	2305.37	-68.71	2305.37	-68.64	2305.37	-68.62	2305.38
-44.36	2305.24	-41.18	2305.17	-35.21	2305.05	-31.82	2304.98	-26.62	2304.89
-24.51	2304.85	-12.19	2304.67	-10.62	2304.65	-8.47	2304.62	-7.4	2304.61
-.32	2304.52	.63	2304.51	1.55	2304.5	8.79	2304.41	9.57	2304.4
11.2	2304.38	11.92	2304.37	16.55	2304.31	17.22	2304.31	17.9	2304.31
22.7	2304.3	23.44	2304.3	24.21	2304.29	25.02	2304.29	25.87	2304.28
27.65	2304.26	45.31	2304.08	52.49	2304	53.7	2303.98	54.98	2303.97
64.68	2303.88	71.88	2303.82	72.51	2303.82	73.13	2303.82	73.75	2303.82
74.37	2303.81	74.99	2303.82	75.6	2303.82	76.22	2303.82	83.83	2303.89
90.53	2303.96	91.18	2303.97	91.86	2303.98	92.54	2303.98	94.66	2303.99
97.75	2304	109.32	2304.09	109.42	2304.09	109.88	2304.09	112.2	2304.11
113.69	2304.13	113.84	2304.13	115.24	2304.16	115.59	2304.16	115.71	2304.16
115.83	2304.16	116.67	2304.17	118.1	2304.19	128.85	2304.39	129.63	2304.41
131.06	2304.43	139	2304.58	139.42	2304.58	140.57	2304.61	140.83	2304.61
141.36	2304.62	141.62	2304.62	142.12	2304.64	142.38	2304.64	142.84	2304.65
143.35	2304.65	143.76	2304.67	145.25	2304.66	145.64	2304.68	150.94	2304.66
152.38	2304.65	152.64	2304.65	152.91	2304.66	153.11	2304.66	153.31	2304.66
153.64	2304.66	154.36	2304.67	162.03	2304.76	164.65	2304.79	165.32	2304.81
165.84	2304.82	166.48	2304.83	166.98	2304.83	167.58	2304.85	168.72	2304.88
174.38	2305.05	178.7	2305.19	181.57	2305.28	182	2305.29	182.23	2305.3
182.47	2305.3	182.75	2305.3	183.04	2305.31	183.36	2305.31	183.7	2305.32
185.12	2305.33	188.96	2305.36	191.86	2305.38	196.92	2305.42	201.78	2305.46
205.9	2305.49	207.1	2305.49	209.59	2305.51	211.78	2305.53	223.4	2305.55
223.69	2305.55	227.47	2305.58	229.92	2305.58	230.89	2305.59	233.5	2305.6
235.79	2305.61	236.07	2305.61	236.09	2305.61	238.23	2305.61	238.62	2305.61
240.4	2305.62	240.67	2305.62	240.96	2305.62				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.025	-153.7	.025	236.07	.025

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

-153.7	236.07	300	300	300	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 9300

INPUT
Description: Sta 93+00.00
Station Elevation Data num= 108

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2304.74	-299.84	2304.74	-290.1	2304.46	-275.65	2304	-269.25	2303.83
-260.58	2303.58	-259.64	2303.56	-259.37	2303.55	-259.13	2303.55	-258.93	2303.54
-258.79	2303.54	-258.69	2303.55	-258.47	2303.59	-258.42	2303.74	-258.19	2303.94
-257.02	2304	-249.9	2304.07	-244.9	2304.12	-242.25	2304.15	-233.49	2304.26
-230.44	2304.3	-229.57	2304.31	-227.98	2304.32	-202.78	2304.02	-202.76	2304.01
-202.62	2304	-202.57	2304	-175.15	2303.43	-116.02	2302.2	-113.58	2302.15
-108.44	2302.05	-107.84	2302.04	-107.58	2302.04	-107.35	2302.04	-107.32	2302.04
-107.3	2302.03	-107.29	2302.03	-107.27	2302.03	-107.26	2302.03	-107.25	2302.03
-107.24	2302.03	-107.16	2302.04	-107.15	2302.04	-107.13	2302.04	-107.12	2302.03
-105.18	2302	-87.07	2301.51	-82.09	2301.38	-68.51	2301.02	-55.33	2300.67
-51.19	2300.56	-34.86	2300.15	-33.46	2300.11	-28.87	2300	-17.93	2299.74
-8.07	2299.49	-7.24	2299.47	-6.76	2299.47	-6.28	2299.46	-5.77	2299.45
-5.24	2299.45	-4.7	2299.45	0	2299.43	2.56	2299.43	3.6	2299.42
4.08	2299.42	4.47	2299.41	4.85	2299.41	7.16	2299.36	8.29	2299.34
15.51	2299.26	21.85	2299.18	64.96	2300	66.66	2300	68.04	2300
72.55	2300	74.83	2300	75.58	2300	75.75	2300	77.27	2300
77.29	2300	91.3	2300	91.31	2300	91.38	2300	92.29	2300
100.49	2300.07	108.49	2300.18	119.15	2300.36	175.75	2301.18	176.25	2301.14
177.23	2301.15	178.05	2301.16	180.26	2301.21	196.2	2301.55	205.32	2301.95
205.88	2301.97	206.41	2302	207.16	2302.02	215.07	2302.24	233.35	2302.71
243.62	2302.97	254.83	2303.39	257.31	2303.44	261.57	2303.53	271.41	2304
272.09	2304	292.27	2304	300	2303.88				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.025	-105.18	.025	196.2	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-105.18	196.2	350	300	250	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 9000

INPUT
Description: Sta 90+00.00
Station Elevation Data num= 77

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-126.97	2298.9	-126.17	2298.89	-119.25	2298.84	-109.55	2298.76	-102.42	2298.7
-97.11	2298.67	-93.17	2298.64	-89.19	2298.59	-78.44	2298.47	-72.74	2298.44
-60.41	2298.33	-58.27	2298.3	-57.58	2298.29	-56.92	2298.28	-56.27	2298.27
-55.65	2298.26	-54.44	2298.23	-46.55	2298	-39.41	2297.68	-3.45	2296
-2.78	2295.84	-2.74	2295.73	-1.79	2295.45	-1.77	2295.41	0	2295.4
4.28	2295.39	4.67	2295.43	5.9	2295.62	7.4	2295.91	7.82	2296
14.28	2296.51	15.29	2296.58	36.52	2298	39.36	2298.15	40.07	2298.17
40.5	2298.19	41	2298.2	41.64	2298.21	42.36	2298.23	43.94	2298.25
57.6	2298.45	58.09	2298.46	58.49	2298.46	59.07	2298.48	59.39	2298.48
59.75	2298.49	60.18	2298.49	60.67	2298.5	61.75	2298.51	66.8	2298.54
71.38	2298.57	72.5	2298.57	73.65	2298.58	76.97	2298.57	86.38	2298.56

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   87.94 2298.56    88.4 2298.56   88.82 2298.57   93.22 2298.58    93.6 2298.58
   96.09 2298.58   96.55 2298.58   96.79 2298.58   97.03 2298.58   97.52 2298.59
  101.36 2298.62  102.22 2298.63  104.56 2298.64  104.95 2298.64  107.25 2298.65
  107.63 2298.66     108 2298.67  108.35 2298.68  109.34  2298.7  114.57 2298.86
  117.73 2298.95  121.67 2299.05

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 -126.97    .025 -126.17    .025  114.57    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -126.17  114.57               80      60      50             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 8940

INPUT
Description: Sta 89+40.00 as-built 95-19705
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -40.1  2302.6     -40  2297.6     -40  2296.6       0  2295.5      40    2297
      40    2298      40    2303

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -40.1    .015     -40    .025      40    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -40      40                1       1       1             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 8939

INPUT
Description: Sta 89+40.00 as-built 95-19705
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -40.1  2302.6     -40  2297.6     -40  2296.6       0  2295.5      40    2297
      40    2298      40    2303

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -40.1    .044     -40    .044      40    .044

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -40      40               79      79      79             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 8860

INPUT
Description: Sta 88+60.00 as-built 95-19705
Station Elevation Data    num=     394
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
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```
   -300 2297.76 -299.91 2297.76 -298.55 2297.73 -298.21 2297.73 -296.83  2297.7
-288.17 2297.48 -285.64 2297.43 -281.44 2297.37 -279.62 2297.34 -278.46 2297.31
-277.26 2297.28 -273.81 2297.22 -269.81 2297.16 -266.78  2297.1 -263.56 2297.05
-261.16 2297.01 -259.89 2296.99 -258.16 2296.96 -257.39 2296.95 -254.18  2296.9
-245.92 2296.79 -245.54 2296.79 -245.33 2296.78 -243.62 2296.74 -240.22  2296.7
-238.03 2296.66 -228.66  2296.5 -226.03 2296.46 -223.76 2296.43 -223.71 2296.43
-223.66 2296.43 -223.64 2296.43 -223.58 2296.43 -223.56 2296.43 -223.53 2296.43
-223.47 2296.43 -223.45 2296.43 -223.43 2296.43  -223.4 2296.43 -223.34 2296.43
 -223.3 2296.43 -223.07 2296.43  -222.9 2296.43 -222.48 2296.42 -220.75  2296.4
-209.21 2296.24 -205.59 2296.19 -204.83 2296.18 -204.27 2296.18 -204.07 2296.17
 -200.1 2296.13 -199.38 2296.12 -198.65 2296.12  -194.7 2296.08 -194.65 2296.08
-193.98 2296.07 -193.76 2296.07 -193.33 2296.07 -192.92 2296.07  -192.5 2296.07
-192.48 2296.07 -192.09 2296.07 -191.27 2296.07 -190.48 2296.07 -189.89 2296.07
-189.64 2296.07 -182.15  2296.1 -176.89 2296.13 -176.57 2296.12 -176.24 2296.12
-176.08 2296.12 -174.75 2296.13 -167.86 2296.13  -167.7 2296.13 -167.55 2296.13
-161.35 2296.14 -159.84 2296.14 -158.94 2296.14 -158.51 2296.14 -157.78 2296.15
-156.28 2296.16 -152.31 2296.18 -149.04 2296.21 -148.91 2296.21 -145.74 2296.25
-145.63 2296.25 -145.52 2296.25 -144.13 2296.26  -143.9 2296.26 -143.79 2296.26
-143.69 2296.26 -143.32 2296.26 -143.15 2296.26 -142.66 2296.27 -142.56 2296.27
-142.06 2296.27 -141.96 2296.27 -140.51 2296.27 -140.42 2296.28 -138.12 2296.28
-137.93 2296.28 -137.12 2296.29 -136.67 2296.29 -136.31  2296.3 -136.07  2296.3
-132.05 2296.22 -126.21 2296.07 -122.16 2295.97 -121.02 2295.95 -120.36 2295.94
-120.34 2295.94 -119.01 2295.92 -111.58  2295.8 -110.04 2295.77  -109.2 2295.76
-108.86 2295.76 -107.88 2295.74  -98.85 2295.65  -96.71 2295.71  -94.45 2295.77
 -91.84 2295.85  -83.49 2296.12  -82.61 2296.15  -82.17 2296.16  -81.71 2296.17
 -81.44 2296.18  -81.16 2296.19  -80.66  2296.2  -79.65 2296.23  -74.83 2296.17
 -68.06  2296.1   -63.1 2296.04  -59.39 2296.01  -56.65 2295.98  -53.87 2295.94
 -46.38 2295.84  -42.41  2295.8  -40.31 2295.77  -33.82 2295.58  -32.32 2295.52
 -31.84 2295.51  -31.38 2295.49  -30.93 2295.47   -30.5 2295.46  -29.65 2295.42
 -27.01  2295.3  -24.16 2295.17     -20  2296.1      -5  2289.1       0  2289.1
      5  2289.1      20  2296.1    20.1  2297.1   48.64 2297.25   48.98 2297.28
  49.26  2297.3   49.47 2297.32   49.67 2297.34   49.89 2297.35   50.14 2297.37
  50.45  2297.4   50.79 2297.42   51.55 2297.48    52.4 2297.54   54.49 2297.69
  55.08 2297.73    55.7 2297.77   57.22 2297.87   58.29 2297.94   59.48 2298.08
  60.69 2298.23   61.36 2298.31    64.2  2298.3   68.06  2298.3   71.11  2298.3
  71.38 2298.29   74.15  2298.2   74.58 2298.19    74.8 2298.18   75.42 2298.13
  75.59 2298.12    75.8 2298.11   75.83 2298.11   76.09 2298.11   76.29  2298.1
  76.38  2298.1   76.62 2298.11   76.73 2298.11   76.81  2298.1   76.98  2298.1
  77.27 2298.09   77.65 2298.09   78.08 2298.09   79.91 2298.08   81.38 2298.08
  81.79 2298.07   84.42 2298.07   84.91 2298.06   85.16 2298.06   85.41 2298.06
  85.69 2298.06   85.93 2298.07   86.87  2298.1   87.22 2298.11   87.51 2298.12
  88.51 2298.14   89.23 2298.14    89.8 2298.14   89.99 2298.14    90.9 2298.13
  93.37  2298.1   93.79 2298.09   93.85 2298.09   95.11 2298.08    95.3 2298.08
  96.22 2298.09   96.62  2298.1   97.01 2298.11   97.38 2298.11   98.43 2298.13
 103.96 2298.27   107.3 2298.34  111.46 2298.43  114.69 2298.49  115.55 2298.51
 115.88 2298.52  116.72 2298.54  118.53 2298.59     119  2298.6  119.34 2298.61
 119.48 2298.61  119.64 2298.62  119.78 2298.62  120.09 2298.62  120.22 2298.62
  120.3 2298.62  120.33 2298.63  121.08 2298.65  124.89 2298.71  125.85 2298.71
 132.01 2298.64  132.02 2298.64  132.05 2298.64  132.11 2298.64   132.3 2298.63
  134.3  2298.6  137.12 2298.54   139.7  2298.5  140.47 2298.48  140.91 2298.48
 141.13 2298.47  141.37 2298.47  141.59 2298.47  141.83 2298.46  146.39 2298.41
 151.55 2298.35  152.78 2298.33  153.07 2298.33  153.32 2298.33  153.45 2298.33
 153.59 2298.32  153.73 2298.32  153.87 2298.32  156.26 2298.27  156.65 2298.29
  160.5 2298.44   160.8 2298.43  160.92 2298.43  161.08 2298.42  161.16 2298.42
 161.24 2298.41  161.41 2298.41  162.78 2298.33  163.09 2298.32  163.82 2298.29
 164.96 2298.24  165.57 2298.21   165.9  2298.2  166.25 2298.19  174.62 2297.91
 175.91 2297.87  176.32 2297.85  176.72 2297.84  177.48 2297.82  177.91 2297.81
 178.48 2297.79  181.61 2297.69  181.99 2297.68  182.28 2297.66  182.83 2297.59
 183.12 2297.55  183.55 2297.49  183.74 2297.46  183.98 2297.45   184.1 2297.44
  184.4 2297.42  184.82 2297.41  186.78 2297.34  186.97 2297.34  187.04 2297.33
 187.84 2297.32  188.23 2297.32  188.61 2297.32  188.96 2297.32  189.28 2297.31
 189.57 2297.31  189.86 2297.31  192.02 2297.32  192.37 2297.32  192.76 2297.32
 193.19 2297.31  194.12 2297.31  194.67  2297.3  199.28 2297.28  199.35 2297.28
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  199.97 2297.28  200.91 2297.29  201.46 2297.29  201.99 2297.29  202.54  2297.3
  205.24  2297.3  205.48  2297.3  206.13 2297.31  206.28 2297.31  206.77 2297.31
  207.26 2297.32  207.71 2297.32  208.16 2297.33  208.58 2297.33  209.01 2297.34
  210.64 2297.37  211.14 2297.38   211.6 2297.39  211.87 2297.39  212.35  2297.4
  212.56 2297.41  212.74 2297.41  212.93 2297.43  212.96 2297.43  213.05 2297.43
  213.21 2297.44  213.42 2297.45  216.16 2297.51  216.85 2297.52  217.66 2297.54
  218.49 2297.55  218.92 2297.56  219.33 2297.56  219.73 2297.57  220.01 2297.57
  220.11 2297.57  220.47 2297.57  220.83 2297.56  222.42 2297.55  222.85 2297.55
  223.57 2297.55  223.98 2297.56  224.42 2297.56  225.32 2297.57  232.46 2297.65
  234.09 2297.67  235.39 2297.69  239.02 2297.78  239.89 2297.79  246.51 2297.97
  256.25 2298.27  256.42 2298.28  256.45 2298.28  256.48 2298.28   256.7 2298.28
  262.03 2298.36  263.44 2298.38   264.1 2298.39  265.04  2298.4  265.49 2298.41
  268.08 2298.44   268.5 2298.45  269.05 2298.45  270.85 2298.47  270.87 2298.47
  271.48 2298.48  271.63 2298.49  271.89 2298.49  272.15 2298.49  272.33 2298.49
  272.96  2298.5  273.51 2298.51  276.54 2298.55  277.16 2298.57  277.82 2298.57
  279.21  2298.6  286.67 2298.87  294.77 2299.07     300 2299.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .044     -20    .044    20.1    .044

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -20    20.1               160     160     160             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 8700

INPUT
Description: Sta 87+00.00 as-built 95-19705
Station Elevation Data    num=     188
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300    2296 -299.89    2296  -298.2 2295.95 -297.78 2295.95 -282.17  2295.5
 -276.96 2295.41 -267.49 2295.17 -262.52 2295.08 -258.77 2294.99 -248.06 2294.79
 -247.11 2294.76  -232.4 2294.49 -230.02 2294.42 -223.08  2294.3 -208.18    2294
 -205.37 2293.94  -205.3 2293.94 -205.24 2293.94 -205.22 2293.94 -205.21 2293.94
 -205.14 2293.94 -205.12 2293.94 -205.11 2293.94 -205.09 2293.94 -205.08 2293.94
 -205.01 2293.94 -204.98 2293.94 -204.96 2293.94 -204.92 2293.94 -204.84 2293.94
 -204.51 2293.94  -204.3 2293.94 -203.77 2293.93 -181.17 2293.59 -169.23 2293.41
 -168.13 2293.39 -167.59 2293.39 -167.08 2293.38 -166.56 2293.38 -166.05 2293.38
 -165.04 2293.38 -164.05 2293.38 -163.01 2293.38 -153.71 2293.42 -147.19 2293.45
 -146.79 2293.44 -146.38 2293.44 -146.18 2293.44 -135.98 2293.43 -135.78 2293.43
 -135.59 2293.43 -126.02 2293.43 -124.91 2293.43 -124.37 2293.43 -123.47 2293.44
 -112.61 2293.56 -112.46 2293.56 -108.52 2293.61 -108.38 2293.61 -108.24 2293.61
 -106.24 2293.63  -106.1 2293.63 -105.97 2293.63 -105.31 2293.63 -104.69 2293.64
 -104.57 2293.64 -103.95 2293.64 -103.83 2293.64 -102.03 2293.64 -101.91 2293.65
  -99.06 2293.64  -98.82 2293.64  -97.82 2293.64  -97.26 2293.65  -96.81 2293.65
     -20    2295      -5  2287.9       0  2287.9       5  2287.9      20    2295
    20.1    2296   36.51 2296.11   40.32 2296.43   41.39 2296.73   42.01 2296.89
   42.79 2297.09   43.34 2297.22   46.59    2298   53.71    2298   56.95    2298
   57.24 2297.97   60.63 2297.77   60.87 2297.74   61.52 2297.64   61.71 2297.61
   61.96  2297.6   62.24 2297.59   62.54 2297.58    62.8 2297.58   62.99 2297.58
      63 2297.57   63.18 2297.56   63.49 2297.55   63.89 2297.54   64.35 2297.53
   66.29 2297.51   72.43 2297.47   73.68 2297.54   74.05 2297.55   74.36 2297.57
   75.42 2297.61   76.19  2297.6   76.79 2297.59    81.1 2297.46   82.43 2297.44
   82.63 2297.43  115.07    2298  147.37 2297.22  151.87 2297.64  152.19 2297.62
  152.48  2297.6  152.57  2297.6  152.66 2297.59  152.84 2297.58  154.29 2297.43
  154.62 2297.41  155.39 2297.35  170.35 2296.31  170.36 2296.31  170.96 2296.27
  174.69    2296     175 2295.95  176.55 2295.52  176.93 2295.47  177.24 2295.44
  179.77 2295.27  179.98 2295.25  180.04 2295.24  180.05 2295.24  193.12 2294.98
  193.78 2294.98  199.63 2295.01  200.32 2295.02  205.11 2295.08  206.13  2295.1
```

206.42	2295.11	206.93	2295.12	207.15	2295.12	207.34	2295.13	207.54	2295.16
207.57	2295.17	207.67	2295.17	207.84	2295.18	208.06	2295.19	210.97	2295.26
211.71	2295.27	212.57	2295.29	213.45	2295.3	213.9	2295.3	214.34	2295.31
214.76	2295.31	215.17	2295.31	215.55	2295.31	215.93	2295.3	218.08	2295.27
218.84	2295.26	219.28	2295.26	219.74	2295.26	220.7	2295.26	230.01	2295.27
231.39	2295.27	253.54	2295.99	253.54	2296	253.72	2296	253.76	2296
253.79	2296	254.02	2296	259.68	2296	261.88	2296	262.88	2296
263.35	2296	266.11	2296	266.55	2296	269.07	2296	269.72	2296
270.15	2296	270.43	2296	300	2296.76				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.025	-20	.015	20.1	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20	20.1	300	300	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 8400

INPUT
Description: Sta 84+00.00 as-built 95-19705
Station Elevation Data num= 141

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2293.49	-263.12	2293	-258.86	2292.93	-241.15	2292.8	-233.32	2292.74
-210.34	2292.52	-206.32	2292.48	-204.11	2292.46	-201.71	2292.43	-199.06	2292.4
-196.03	2292.37	-192.67	2292.33	-165.95	2292	-165.89	2292	-165.84	2292
-146.53	2291.24	-139.12	2291.07	-135.82	2290.94	-121.07	2290.61	-118.52	2290.55
-117.12	2290.51	-115.61	2290.47	-113.98	2290.42	-110.32	2290.32	-100.14	2290
-89.89	2290	-86.55	2290	-56.87	2291.18	-20.1	2290	-20	2289
-5	2282	0	2282	5	2282	20	2289	56.52	2291.38
57.85	2291.46	58.3	2291.49	58.69	2291.51	59.03	2291.53	59.33	2291.54
59.6	2291.56	60.29	2291.59	60.99	2291.61	62.17	2291.65	62.95	2291.73
63.83	2291.82	64.59	2291.84	65.24	2291.91	65.84	2291.97	66.24	2292
66.29	2292	66.31	2292	66.5	2292	66.56	2292	66.78	2292
66.86	2292	67.48	2292	68.16	2292	73.7	2292	77.65	2292
78.46	2292	95.03	2292	95.57	2292	95.59	2292	95.93	2292
95.94	2292	96.03	2292	96.52	2291.98	97.09	2291.98	97.66	2291.99
97.82	2292	113.29	2292	114.28	2292	115.41	2291.83	116.11	2291.85
119.65	2290.81	144.01	2290.65	144.07	2290.66	144.27	2290.67	145.27	2290.73
153.9	2290.83	155.14	2290.84	155.52	2290.84	155.87	2290.84	156.19	2290.84
156.37	2290.83	156.54	2290.83	156.78	2290.82	157	2290.81	157.21	2290.8
158.79	2290.69	159.39	2290.66	159.99	2290.64	161.57	2290.58	164.99	2290.49
167.14	2290.43	168.23	2290.4	173.95	2290.17	176.1	2290.07	177.4	2290
180.33	2289.53	181.91	2289.25	182.44	2289.15	188.58	2288	195.82	2287.6
202.62	2287.53	202.67	2287.55	202.8	2287.55	203	2287.55	203.25	2287.55
203.55	2287.54	204.55	2287.5	211.28	2287.19	215.28	2286.98	215.48	2286.97
215.61	2286.97	215.75	2286.96	215.89	2286.96	216.02	2286.96	216.16	2286.97
216.3	2286.97	216.55	2286.98	219.54	2287.13	225.41	2287.44	227.21	2287.53
227.56	2287.54	227.88	2287.55	228.16	2287.56	228.37	2287.56	231.93	2287.69
232.03	2287.7	232.6	2287.77	232.76	2287.79	233.32	2287.94	233.5	2287.97
233.7	2288	235.28	2288.15	236.99	2288.32	242.3	2288.81	253.63	2290
300	2291.5								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.015	-20.1	.015	20	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20.1	20	150	150	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 8250

INPUT
Description: Sta 82+50.00 as-built 95-19705
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20.1	2286	-20	2284.8	-5	2277.8	0	2277.8	5	2277.8
20	2284.8	20.1	2286						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-20.1	.015	-20	.015	20	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-20	20	80	50	30	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 8200

INPUT
Description: Sta 82+00.00 as-built 95-19705
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2288	-33	2286	-25	2284	-19.1	2283	-19	2281.1
-19	2277.1	-1	2277.1	0	2277.1	1	2277.1	19	2277.1
19	2281.1	19.1	2283	25	2284	100	2284.5	209	2288

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.015	-19	.015	19	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19	19	100	100	100	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-300	-20		F
20	209		F

BRIDGE

RIVER: Duck Creek
REACH: East RS: 8150

INPUT
Description:
Distance from Upstream XS = 2
Deck/Roadway Width = 96
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 26

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-310	2283.47	2281.19	-20	2283.27	2277.1	-19	2283.27	2277.1
-17	2283.27	2279.34	-15	2283.27	2280.52	-12.5	2283.27	2281.03
-11.25	2283.27	2281.15	-10	2283.27	2281.19	-8.75	2283.27	2281.15

```
    -7.5 2283.27 2281.03      -5 2283.27 2280.52      -3 2283.27 2279.34
      -1 2283.27  2277.1       0 2283.27  2277.1       1 2283.27  2277.1
       3 2283.27 2279.34       5 2283.27 2280.52     7.5 2283.27 2281.03
    8.75 2283.27 2281.15      10 2283.27 2281.19   11.25 2283.27 2281.15
    12.5 2283.27 2281.03      15 2283.27 2280.52      17 2283.27 2279.34
      19 2283.27  2277.1      20 2283.27  2277.1

Upstream Bridge Cross Section Data
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300    2288     -33    2286     -25    2284   -19.1    2283     -19  2281.1
     -19  2277.1      -1  2277.1       0  2277.1       1  2277.1      19  2277.1
      19  2281.1    19.1    2283      25    2284     100  2284.5     209    2288

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .015     -19    .015      19    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
           -19      19             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    -300     -20               F
      20     209               F

Downstream  Deck/Roadway Coordinates
    num=      26
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    -310 2283.47  2280.8     -20 2283.27  2276.7     -19 2283.27  2276.7
     -17 2283.27 2278.99     -15 2283.27 2280.17   -12.5 2283.27 2280.68
  -11.25 2283.27  2280.8     -10 2283.27 2280.84   -8.75 2283.27  2280.8
    -7.5 2283.27 2280.68      -5 2283.27 2280.17      -3 2283.27 2278.99
      -1 2283.27  2276.7       0 2283.27  2276.7       1 2283.27  2276.7
       3 2283.27 2278.99       5 2283.27 2280.17     7.5 2283.27 2280.68
    8.75 2283.27  2280.8      10 2283.27 2280.84   11.25 2283.27  2280.8
    12.5 2283.27 2280.68      15 2283.27 2280.17      17 2283.27 2278.99
      19 2283.27  2276.7      20 2283.27  2276.7

Downstream Bridge Cross Section Data
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -30    2286     -25    2284   -19.1    2283     -19  2280.7     -19  2276.7
      -1  2276.7       0  2276.7       1  2276.7      19  2276.7      19  2280.7
    19.1    2283      25    2284     100  2284.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -30    .025     -19    .015      19    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
           -19      19             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -30     -20               F
      20     100               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 Bridge Coefficient Sets = 1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	2283.67	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2283.40	E.G. Elev (ft)	2283.35	2282.81
Q Total (cfs)	1008.00	W.S. Elev (ft)	2282.02	2281.51
Q Bridge (cfs)	1008.00	Crit W.S. (ft)	2280.06	2279.67
Q Weir (cfs)		Max Chl Dpth (ft)	4.92	4.81
Weir Sta Lft (ft)		Vel Total (ft/s)	9.28	9.14
Weir Sta Rgt (ft)		Flow Area (sq ft)	108.65	110.25
Weir Submerg		Froude # Chl	0.74	0.73
Weir Max Depth (ft)		Specif Force (cu ft)	636.51	623.24
Min El Weir Flow (ft)	2283.28	Hydr Depth (ft)		
Min El Prs (ft)	2281.19	W.P. Total (ft)	77.53	77.68
Delta EG (ft)	1.32	Conv. Total (cfs)	13477.7	13793.0
Delta WS (ft)	1.44	Top Width (ft)		
BR Open Area (sq ft)	108.65	Frctn Loss (ft)	0.52	0.00
BR Open Vel (ft/s)	9.28	C & E Loss (ft)	0.02	0.45
Coef of Q		Shear Total (lb/sq ft)	0.49	0.47
Br Sel Method	Energy only	Power Total (lb/ft s)	4.54	4.33

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4. This may indicate the need for additional cross sections.

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	2283.67	Element	Inside BR US	Inside BR DS	
W.S. US. (ft)	2283.40	E.G. Elev (ft)	2283.35	2282.81	
Q Total (cfs)	1008.00	W.S. Elev (ft)	2282.02	2281.51	
Q Bridge (cfs)	1008.00	Crit W.S. (ft)	2280.06	2279.67	
Q Weir (cfs)		Max Chl Dpth (ft)	4.92	4.81	
Weir Sta Lft (ft)		Vel Total (ft/s)	9.28	9.14	
Weir Sta Rgt (ft)		Flow Area (sq ft)	108.65	110.25	
Weir Submerg		Froude # Chl	0.74	0.73	
Weir Max Depth (ft)		Specif Force (cu ft)	636.51	623.24	
Min El Weir Flow (ft)	2283.28	Hydr Depth (ft)			
Min El Prs (ft)	2281.19	W.P. Total (ft)	77.53	77.68	
Delta EG (ft)	1.32	Conv. Total (cfs)	13477.7	13793.0	
Delta WS (ft)	1.44	Top Width (ft)			
BR Open Area (sq ft)	108.65	Frctn Loss (ft)	0.52	0.00	
BR Open Vel (ft/s)	9.28	C & E Loss (ft)	0.02	0.45	
Coef of Q		Shear Total (lb/sq ft)	0.49	0.47	
Br Sel Method	Energy only	Power Total (lb/ft s)	4.54	4.33	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 8100

INPUT
Description: Sta 81+00.00 as-built
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-30	2286	-25	2284	-19.1	2283	-19	2280.7	-19	2276.7
-1	2276.7	0	2276.7	1	2276.7	19	2276.7	19	2280.7
19.1	2283	25	2284	100	2284.3				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-30	.025	-19	.015	19	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19	19	290	300	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-30	-20		F
20	100		F

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 7800

INPUT
Description: Sta 78+00.00 as-built 95-19705
Station Elevation Data num= 230

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2286.45	-272.92	2286	-265.45	2285.71	-261.47	2285.56	-260.51	2285.52
-247.62	2285.02	-247.22	2285.01	-246.89	2285	-243.07	2284.85	-242.43	2284.82
-242.17	2284.82	-240.76	2284.75	-236.54	2284.54	-236.17	2284.52	-235.87	2284.49
-235.79	2284.49	-235.36	2284.46	-235.28	2284.46	-235.11	2284.45	-235.04	2284.45
-234.99	2284.45	-234.97	2284.44	-224.69	2284.37	-224.67	2284.37	-224.6	2284.43
-224.58	2284.43	-224.55	2284.44	-224.51	2284.44	-224.43	2284.44	-224.34	2284.44
-223.5	2284.43	-223.37	2284.42	-223.25	2284.42	-223.14	2284.42	-223.09	2284.42
-222.98	2284.43	-222.88	2284.43	-222.78	2284.43	-222.57	2284.44	-221.15	2284.52
-219.02	2284.72	-218.95	2284.74	-218.8	2284.77	-218.68	2284.79	-218.51	2284.81
-218.33	2284.82	-218.1	2284.84	-217.55	2284.88	-216.61	2284.93	-215.99	2284.96
-215.75	2284.96	-213.8	2285.05	-213.49	2285.06	-207.46	2285.31	-207.14	2285.33
-205.43	2285.41	-203.67	2285.49	-200.37	2285.67	-200.16	2285.68	-194.35	2286
-180.91	2286	-173.2	2286	-172.93	2286	-172.65	2286	-172.35	2286
-172.06	2286	-170.13	2286	-167.89	2286	-167.75	2286	-167.63	2286
-109.84	2286	-97.23	2286	-96.37	2286	-95.97	2286	-95.57	2286
-85.46	2286	-80.78	2285.91	-76.37	2286	-64.22	2285.5	-60.45	2285.34
-59.66	2285.33	-58.86	2285.3	-45.03	2284.76	-36.29	2284.41	-32.75	2284.27
-30.97	2284.19	-29.26	2284.11	-27.72	2284.04	-25.38	2284	-20.1	2283.3
-20	2282.3	-5	2275.3	0	2275.3	5	2275.3	20	2282.3
20.1	2283.3	43.73	2284.03	44.52	2284.06	49.26	2284.29	51.44	2284.38
62.85	2284.88	64.64	2284.96	69.21	2285.15	70.57	2285.21	72.67	2285.29
76.34	2285.46	77.33	2285.49	78.27	2285.52	82.09	2285.7	82.91	2285.71
83.68	2285.72	85.17	2285.73	85.61	2285.76	85.86	2285.77	97.74	2285.77
97.93	2285.78	99.06	2285.83	99.17	2285.84	100.03	2285.87	100.19	2285.87
100.64	2285.89	100.86	2285.9	101.22	2285.91	101.28	2285.92	101.36	2285.92
101.44	2285.92	101.45	2285.92	101.47	2285.92	101.56	2285.92	101.59	2285.94
101.64	2285.94	101.65	2285.94	101.66	2285.94	101.69	2285.94	101.81	2285.94
101.86	2285.95	101.92	2285.95	101.93	2285.95	101.94	2285.95	101.95	2285.95
101.99	2285.95	102.04	2285.95	102.09	2285.95	102.11	2285.95	102.12	2285.95
103.28	2285.96	103.46	2285.96	103.73	2285.96	103.8	2285.96	103.91	2285.96
103.92	2285.96	103.94	2285.96	103.95	2285.96	103.96	2285.96	104.03	2285.96
104.13	2285.96	104.2	2285.95	104.21	2285.95	104.23	2285.95	104.24	2285.95
104.28	2285.95	104.47	2285.95	104.64	2285.96	104.65	2285.96	104.67	2285.95
104.68	2285.95	104.69	2285.95	104.7	2285.95	104.73	2285.95	104.76	2285.95
104.77	2285.95	104.78	2285.95	104.8	2285.95	104.81	2285.95	104.82	2285.95
104.84	2285.95	104.9	2285.95	104.93	2285.95	104.94	2285.95	105.07	2285.95
105.11	2285.95	105.12	2285.94	105.13	2285.94	105.15	2285.94	105.16	2285.94
105.19	2285.94	105.21	2285.94	105.25	2285.94	105.51	2285.94	105.83	2285.93
105.89	2285.93	105.91	2285.93	105.92	2285.93	105.95	2285.93	105.99	2285.93
106.19	2285.92	106.27	2285.92	106.28	2285.92	106.3	2285.91	106.32	2285.91
106.33	2285.91	106.36	2285.91	106.42	2285.91	119.36	2285.91	120.01	2285.9
125.92	2285.9	127.6	2285.91	139.3	2286	139.61	2286	145.83	2286
148.42	2286	150.83	2286	170.1	2286	180.32	2285.31	180.77	2285.28
183.36	2285.1	185.93	2284.92	196.83	2284	205.13	2284	205.74	2284
207.65	2284	234.11	2284	234.21	2284	234.28	2284	236.79	2284.14
273.65	2286	274.51	2286.02	274.6	2286.02	274.85	2286.02	300	2286.46

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
    -300    .015   -20.1    .015    20.1    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -20.1    20.1              300     300     310             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 7500

INPUT
Description: Sta 75+00.00 as built 95-19705
Station Elevation Data    num=     129
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300 2284.28 -299.36 2284.25 -297.99  2284.2 -296.47 2284.14 -293.13    2284
 -271.29 2283.47 -268.52  2283.4 -267.26 2283.37    -266 2283.35 -264.81 2283.32
 -263.69  2283.3 -260.85 2283.25 -257.93  2283.2 -256.77 2283.19 -254.87 2283.17
  -252.9 2283.15 -250.34 2283.12 -248.35 2283.09 -247.69 2283.08 -247.02 2283.07
 -246.59 2283.05 -245.92 2283.04 -245.53 2283.03 -245.06 2283.02  -244.6 2283.01
 -244.35    2283  -243.9 2282.99  -243.4 2282.97 -242.92 2282.96 -242.46 2282.94
 -241.63 2282.92 -241.26  2282.9 -240.95 2282.89 -240.67 2282.88 -240.43 2282.87
 -240.15 2282.86 -239.93 2282.84 -239.58 2282.82 -238.56 2282.73 -238.52 2282.72
 -236.66 2282.63 -234.32 2282.57 -230.11 2282.48  -229.7 2282.47 -229.06 2282.45
 -227.53  2282.4 -227.22 2282.39 -219.28 2282.41 -219.03 2282.44 -218.84 2282.46
 -218.78 2282.46  -218.7 2282.46 -218.62 2282.46 -218.54 2282.47 -218.26 2282.47
 -218.16 2282.47 -218.07 2282.47 -217.99 2282.48 -217.92 2282.48 -217.85 2282.49
 -216.81 2282.58 -215.14 2282.67 -213.04 2282.76 -212.98 2282.76 -208.39 2282.93
 -208.24 2282.92 -208.03 2282.93 -202.11 2283.11 -201.87 2283.12 -200.41 2283.16
 -200.18 2283.17 -199.94 2283.17  -197.2 2283.24 -196.95 2283.25  -196.7 2283.26
 -196.39 2283.27  -196.1 2283.29 -182.46 2283.52 -169.94 2283.71 -156.37 2283.91
 -149.71    2284 -141.91 2284.04 -138.49 2284.06 -137.31 2284.06 -136.76 2284.06
 -136.25 2284.06  -135.8 2284.05 -135.35 2284.05 -134.97 2284.04 -134.63 2284.02
 -134.31 2284.01 -134.12    2284 -132.11    2284 -125.15    2284 -122.01  2284.1
 -121.73 2284.11 -121.55 2284.13 -121.48 2284.14  -59.96  2284.3  -53.98 2284.07
  -52.52 2284.02  -51.94 2284.01  -51.65    2284   -20.1    2282     -20    2281
      -5    2274       0    2274       5    2274      20    2281    20.1    2282
   94.77    2284  225.42    2284  227.85    2284  245.33    2284  246.52    2284
  248.83    2284  256.85    2284  259.21    2284  263.31 2284.13  274.42 2284.49
  275.76 2284.53  276.43 2284.55  277.13 2284.56  277.86 2284.58  278.61 2284.59
  280.14 2284.62  290.74 2284.77  299.62  2284.9     300 2284.91

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .015   -20.1    .015    20.1    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -20.1    20.1              265     265     265             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 7235

INPUT
Description: Sta 72+35.00 as-built 95-19705
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -54  2278.8      -4 2278.12      -4 2273.03      36 2273.03      36 2278.12
      86  2278.8

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
     -54    .015      -4    .015      36    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -4      36              105     105     105             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -54      -4  2279.2       F
      36      86  2279.2       F

BRIDGE


RIVER: Duck Creek
REACH: East               RS: 7182.5

INPUT
Description:
Distance from Upstream XS =       1
Deck/Roadway Width        =     103
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=      27
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    -310  2279.4 2277.12      -4  2279.2 2273.12      -3  2279.2 2273.12
      -1  2279.2 2275.27       1  2279.2 2276.45     3.5  2279.2 2276.96
    4.75  2279.2 2277.08       6  2279.2 2277.12    7.25  2279.2 2277.08
     8.5  2279.2 2276.96      11  2279.2 2276.45      13  2279.2 2275.27
      15  2279.2 2273.03      16  2279.2 2273.03      17  2279.2 2273.03
      19  2279.2 2275.27      21  2279.2 2276.45    23.5  2279.2 2276.96
   24.75  2279.2 2277.08      26  2279.2 2277.12   27.25  2279.2 2277.08
    28.5  2279.2 2276.96      31  2279.2 2276.45      33  2279.2 2275.27
      35  2279.2 2273.12      36  2279.2 2273.12     100  2279.2

Upstream Bridge Cross Section Data
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -54  2278.8      -4 2278.12      -4 2273.03      36 2273.03      36 2278.12
      86  2278.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -54    .015      -4    .015      36    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
            -4      36             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -54      -4  2279.2       F
      36      86  2279.2       F

Downstream  Deck/Roadway Coordinates
    num=      27
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    -310  2279.4 2276.73      -20  2279.2 2272.77      -19  2279.2 2272.77
     -17  2279.2 2274.92      -15  2279.2  2276.1   -12.5  2279.2 2276.61
  -11.25  2279.2 2276.73      -10  2279.2 2276.77   -8.75  2279.2 2276.73
    -7.5  2279.2 2276.61       -5  2279.2  2276.1      -3  2279.2 2274.92
      -1  2279.2 2272.75        0  2279.2 2272.75       1  2279.2 2272.75
       3  2279.2 2274.92        5  2279.2  2276.1     7.5  2279.2 2276.61
    8.75  2279.2 2276.73       10  2279.2 2276.77   11.25  2279.2 2276.73
    12.5  2279.2 2276.61       15  2279.2  2276.1      17  2279.2 2274.92
      19  2279.2 2272.77       20  2279.2 2272.77     100  2279.2
```

Downstream Bridge Cross Section Data
Station Elevation Data   num=   6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-70	2278.8	-20	2276.77	-20	2272.75	20	2272.75	20	2276.77
70	2278.8								

Manning's n Values   num=   3

Sta	n Val	Sta	n Val	Sta	n Val
-70	.015	-20	.015	20	.015

Bank Sta: Left   Right   Coeff Contr.   Expan.
          -20   20   .3   .5
Ineffective Flow   num=   2

Sta L	Sta R	Elev	Permanent
-70	-20	2279.2	F
20	70	2279.2	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 Bridge Coefficient Sets = 1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #PF 1

			Inside BR US	Inside BR DS
E.G. US. (ft)	2278.84	Element		
W.S. US. (ft)	2278.51	E.G. Elev (ft)	2278.54	2277.68
Q Total (cfs)	1008.00	W.S. Elev (ft)	2277.21	2275.71
Q Bridge (cfs)	1008.00	Crit W.S. (ft)	2275.99	2275.71
Q Weir (cfs)		Max Chl Dpth (ft)	4.18	2.96
Weir Sta Lft (ft)		Vel Total (ft/s)	9.25	11.25
Weir Sta Rgt (ft)		Flow Area (sq ft)	109.01	89.61
Weir Submerg		Froude # Chl	0.80	1.15
Weir Max Depth (ft)		Specif Force (cu ft)	557.39	494.20

Min El Weir Flow (ft)	2279.21	Hydr Depth (ft)			3.96
Min El Prs (ft)	2277.12	W.P. Total (ft)	81.58		58.06
Delta EG (ft)	2.04	Conv. Total (cfs)	13100.7		11855.2
Delta WS (ft)	3.05	Top Width (ft)			22.62
BR Open Area (sq ft)	106.49	Frctn Loss (ft)	0.67		0.00
BR Open Vel (ft/s)	11.25	C & E Loss (ft)	0.19		0.32
Coef of Q		Shear Total (lb/sq ft)	0.49		0.70
Br Sel Method	Energy only	Power Total (lb/ft s)	4.57		7.84

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.

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

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

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

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	2278.84	Element	Inside BR US	Inside BR DS	
W.S. US. (ft)	2278.51	E.G. Elev (ft)	2278.54		2277.68
Q Total (cfs)	1008.00	W.S. Elev (ft)	2277.21		2275.71
Q Bridge (cfs)	1008.00	Crit W.S. (ft)	2275.99		2275.71
Q Weir (cfs)		Max Chl Dpth (ft)	4.18		2.96
Weir Sta Lft (ft)		Vel Total (ft/s)	9.25		11.25
Weir Sta Rgt (ft)		Flow Area (sq ft)	109.01		89.61
Weir Submerg		Froude # Chl	0.80		1.15
Weir Max Depth (ft)		Specif Force (cu ft)	557.39		494.20
Min El Weir Flow (ft)	2279.21	Hydr Depth (ft)			3.96

Min El Prs (ft)	2277.12	W.P. Total (ft)	81.58
58.06			
Delta EG (ft)	2.04	Conv. Total (cfs)	13100.7
11855.2			
Delta WS (ft)	3.05	Top Width (ft)	
22.62			
BR Open Area (sq ft)	106.49	Frctn Loss (ft)	0.67
0.00			
BR Open Vel (ft/s)	11.25	C & E Loss (ft)	0.19
0.32			
Coef of Q		Shear Total (lb/sq ft)	0.49
0.70			
Br Sel Method	Energy only	Power Total (lb/ft s)	4.57
7.84			

Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir
flow. The momentum answer has been disregarded.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there
is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 7130

INPUT
Description: Sta 71+30.00 as-built 95-19705
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-70	2278.8	-20	2276.77	-20	2272.75	20	2272.75	20	2276.77
70	2278.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-70	.015	-20	.015	20	.015

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

-20	20	230	230	230	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-70	-20	2279.2	F
20	70	2279.2	F

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 6900

INPUT
Description: Sta 69+00.00
Station Elevation Data num= 128

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2275.42	-293.18	2275.55	-292.67	2275.55	-292.42	2275.56	-273.06	2275.89
-270.42	2275.94	-267.79	2276	-267.73	2276	-267.55	2276	-267.44	2276
-231.7	2276	-216.7	2276	-214.22	2276	-203.92	2276	-202.73	2276
-190.12	2276	-189.65	2276	-185.41	2276	-184.98	2276	-184.5	2276
-181.38	2276	-180.91	2276	-176.14	2276	-175.19	2276	-165.08	2276
-148.99	2276	-140.56	2276	-138.46	2275.95	-136.42	2275.89	-135.63	2275.86
-98.42	2274.82	-96.62	2274.76	-94.6	2274.7	-86.66	2274.47	-84.94	2274.42
-84.08	2274.39	-78.3	2274.22	-78.07	2274.22	-77.87	2274.21	-70.37	2274
-45.8	2273.23	-43.51	2273.17	-31.29	2272.84	-13.29	2272	-8.74	2272
0	2272	3.46	2272	44.09	2273.39	62.76	2274	70.46	2274.17
74.34	2274.25	76.76	2274.3	90.95	2274.55	102.46	2274.72	104.81	2274.76
116.34	2274.91	117.18	2274.92	117.6	2274.93	126.29	2275.03	126.73	2275.04
127.18	2275.04	128.41	2275.06	129.33	2275.07	129.7	2275.07	129.94	2275.08
136.72	2275.12	136.96	2275.12	137.22	2275.13	138.65	2275.13	139.15	2275.15
140.03	2275.15	146.01	2275.12	146.9	2275.13	147.86	2275.13	156.99	2275.18
162.85	2275.3	174.05	2275.33	183.35	2275.36	184.69	2275.37	185.39	2275.38
186.13	2275.38	186.9	2275.39	187.7	2275.4	188.54	2275.41	189.41	2275.42
206.49	2275.67	209.04	2275.7	211.68	2275.74	213.53	2275.76	213.86	2275.77
215.35	2275.79	215.61	2275.79	217.21	2275.82	217.4	2275.82	217.49	2275.82
217.59	2275.82	217.78	2275.82	218.16	2275.83	219.05	2275.84	219.22	2275.84
219.29	2275.84	219.37	2275.84	219.43	2275.84	219.5	2275.84	219.55	2275.84
219.96	2275.84	220.01	2275.84	220.06	2275.84	220.11	2275.84	230.4	2275.95
234.4	2276	237.05	2276.04	237.54	2276.04	238.03	2276.05	238.52	2276.05
239.01	2276.05	239.51	2276.04	240.01	2276.04	241.02	2276.03	243.25	2276
251.86	2275.92	258.65	2275.87	271.98	2275.77	288.82	2275.65	290.63	2275.63
293.64	2275.62	299.05	2275.59	300	2275.59				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.025	-140.56	.025	140.03	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-140.56	140.03	300	300	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 6600

INPUT
Description: Sta 66+00.00
Station Elevation Data num= 92

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-213.06	2271.15	-153.34	2271.36	-149.16	2271.35	-144.31	2271.34	-141	2271.33
-136.27	2271.29	-132.35	2271.26	-123.84	2271.16	-118.02	2271.08	-115.79	2271.05
-109.49	2270.98	-108.34	2270.98	-107.59	2270.98	-105.71	2270.98	-99.73	2270.89
-93.09	2270.94	-91.15	2270.9	-84.11	2270.75	-83.54	2270.75	-83.24	2270.75
-82.64	2270.74	-72.65	2270.48	-69.34	2270.42	-64.28	2270.31	-62.23	2270.27
-48.76	2270.02	-48.74	2270.02	-48.7	2270.02	-47.67	2270	-33.48	2269.9
-23.18	2269.83	-13.29	2269.76	-9.34	2269.74	-7.52	2269.73	-2.8	2269.73
0	2269.73	8.89	2269.74	19.59	2269.74	32.54	2269.76	45.59	2269.77
59.72	2269.8	63.33	2269.81	82.47	2269.9	87.29	2269.93	93.86	2269.97

```
   96.69 2269.99   97.91    2270  106.65 2270.15  106.93 2270.16  118.08 2270.32
  119.46 2270.33   119.9 2270.34  120.21 2270.34  120.86 2270.35  124.28 2270.39
   126.9 2270.43  136.72 2270.61  138.68 2270.64  145.13 2270.73  147.36 2270.75
   150.2 2270.77  157.43 2270.88  164.17 2270.97  172.13 2271.02  173.57 2271.04
  180.56 2271.11  182.67 2271.14  190.63  2271.2  191.88 2271.21  193.88 2271.23
  208.93 2271.42   211.8 2271.46   214.1 2271.49  219.85 2271.58  221.12 2271.59
  221.95  2271.6  222.61 2271.61  225.98 2271.65   226.6 2271.65   227.2 2271.66
  229.58 2271.67  231.03 2271.67  234.15  2271.7  250.87 2271.83  250.94 2271.83
     267 2271.97  267.01 2271.97  271.09    2272  276.63 2272.03   289.7 2272.11
  290.46 2272.11     300 2272.16

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 -213.06    .025 -132.35    .025  164.17    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       -132.35  164.17               300     300     300             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 6300

INPUT
Description: Sta 63+00.00
Station Elevation Data    num=     131
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -145    2268 -141.97    2268 -141.63    2268 -141.13    2268 -128.06    2268
 -124.66    2268  -121.6    2268   -80.5    2268  -64.72 2267.49  -62.46 2267.42
  -60.41 2267.37  -52.77 2267.16  -51.74 2267.14  -40.79 2266.85  -29.13 2266.61
  -24.35 2266.49  -11.92 2266.25  -11.09 2266.22  -10.48 2266.21  -10.25 2266.21
  -10.15  2266.2   -9.95  2266.2   -8.87 2266.16    -8.4 2266.14   -4.63 2266.17
   -4.62 2266.17    -4.6 2266.18   -4.57 2266.18   -4.53 2266.18   -4.45 2266.18
    -4.3 2266.19   -3.85 2266.18   -3.74 2266.18   -3.24 2266.17   -2.11 2266.16
    -1.5 2266.16       0 2266.15    3.98 2266.13    5.22 2266.12    5.81 2266.11
    5.92 2266.11    8.44    2266    8.57 2265.99    8.58 2265.99   13.04 2265.44
   14.64 2265.22   14.97  2265.2   15.17 2265.18   15.41 2265.17   15.63 2265.17
   15.87 2265.16   16.13 2265.16    16.4 2265.16   16.75 2265.16   17.14 2265.16
   23.07 2265.22   23.99 2265.24   24.44 2265.24   24.86 2265.25   25.24 2265.26
    25.5 2265.27   25.75 2265.28   25.84 2265.29    41.6 2268.02   43.69 2268.17
   54.64 2268.52    56.4 2268.65   69.13 2269.04   70.28 2269.13   75.68 2269.27
   77.08 2269.37   79.96 2269.41   97.12    2270  132.79 2270.09  206.29 2270.03
  206.38 2270.02  206.53 2270.02  206.75 2270.02  207.45 2270.01  209.04    2270
  221.67 2269.65   221.8 2269.64  221.96 2269.64  222.12 2269.63  222.47 2269.63
  234.57 2269.29  239.86 2269.19  242.52 2269.13  250.09 2268.98  257.81 2268.83
  259.34 2268.81  264.61 2268.68  265.12 2268.67  265.38 2268.67  265.63 2268.67
  265.88 2268.67  266.39 2268.67  267.92 2268.66  272.82 2268.67  273.79 2268.67
  274.26 2268.67  274.73 2268.67  275.17 2268.68  275.68 2268.68  276.09 2268.68
  276.33 2268.68  276.56 2268.68  276.95 2268.69  277.16 2268.68  277.91 2268.71
  279.23 2268.77  280.33 2268.83  283.05 2269.04  284.47 2269.15  285.61 2269.25
  285.75 2269.27  285.94 2269.28  286.21 2269.29  286.81 2269.31  287.12 2269.31
  287.29 2269.32  287.46 2269.32  287.64 2269.32  287.84 2269.32  288.05 2269.32
  288.27 2269.31  288.74 2269.31  293.14 2269.23  298.18 2269.13  299.65  2269.1
     300 2269.09

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -145    .025   -80.5    .025   43.69    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -80.5   43.69               50      50      50             .1       .3
```

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 6250

INPUT
Description: Sta 62+50.00 as-built 98-13279
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60.1	2267.6	-60	2266.6	-60	2266	-6	2257.78	0	2257.78
6	2257.78	50	2266	50.1	2267				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-60.1	.037	-6	.015	6	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-6	6	30	60	90	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 6190

INPUT
Description: Sta 61+90.00 as-built 98-13279
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.1	2265.34	-40	2264.34	-6	2257.7	0	2257.7	6	2257.7
30	2264.34	30.1	2265.34						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.1	.037	-6	.015	6	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-6	6	200	190	180	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 6000

INPUT
Description: Sta 60+00.00 as-built 98-13279
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-20.1	2264.59	-20	2263.59	-6	2257.47	0	2257.47	6	2257.47
20	2263.59	20.1	2264.59						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-20.1	.037	-6	.015	6	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-6	6	120	100	80	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 5900

INPUT
Description: Sta 59+00.00 as-built 98-13279
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-100	2264.5	-20	2263.09	-6	2257.09	-6	2256.97	0	2256.97
6	2256.97	20	2263.09	20	2269.09				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-100	.037	-6	.015	6	.037

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-6	6	60	60	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 5830

INPUT
Description: Sta 58+30.00 as-built 98-13279
Station Elevation Data num= 102

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-162.85	2264	-160.82	2263.28	-157.14	2262	-145.4	2261.7	-141.18	2261.6
-140.6	2261.58	-139.95	2261.58	-139.57	2261.57	-135.49	2261.57	-121.58	2261.66
-120.63	2261.67	-107.33	2261.91	-102.91	2262	-98.91	2262.09	-91.78	2261.98
-90.38	2261.95	-89.14	2261.94	-87.88	2261.92	-85.89	2261.9	-85.06	2261.9
-76.92	2261.92	-75.18	2261.91	-73.19	2261.89	-51.27	2261.5	-49.04	2261.47
-48.38	2261.46	-46.71	2261.46	-44.48	2261.48	-36.14	2261.62	-35.72	2261.63
-33.92	2261.63	-31.92	2261.66	-31.59	2261.67	-31.32	2261.68	-31.1	2261.69
-30.94	2261.71	-30.42	2261.8	-28.71	2261.98	-28.48	2262	-28.36	2262.01
-26.72	2262.08	-25.64	2262.13	-25.25	2262.15	-24.85	2262.15	-24.41	2262.16
-22.93	2262.16	-20.65	2262.14	-10.6	2262	-10.5	2260	-10.5	2256
0	2256	10.5	2256	30.5	2260	38	2260	38	2262
50.79	2260.29	50.9	2260.28	51	2260.28	51.09	2260.27	51.26	2260.25
51.35	2260.24	51.43	2260.23	51.91	2260.19	52.07	2260.18	52.13	2260.18
56.36	2260	72.96	2259.74	174.3	2258.44	174.74	2258.44	176.5	2258.45
176.67	2258.45	178.93	2258.47	187.76	2258.6	189	2258.62	192.19	2258.66
192.67	2258.66	194.37	2258.64	194.77	2258.63	195.25	2258.61	196.96	2258.58
200.72	2258.53	205.6	2258.5	214.95	2258.48	215.58	2258.48	217.06	2258.46
217.93	2258.44	219.04	2258.42	220.28	2258.39	221.65	2258.35	224.74	2258.27
230.07	2258.12	233.85	2258	233.95	2258	237.25	2257.97	268.56	2257.85
268.64	2257.87	269.75	2258	281.34	2259.17	300.22	2260.92	332.77	2263.75
333.64	2263.82	335.77	2264						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-162.85	.025	-10.5	.015	10.5	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10.5	10.5	60	60	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-162.85	-10.5	2262	F
10.5	335.77	2262	F

BRIDGE

RIVER: Duck Creek
REACH: East RS: 5800

INPUT
Description:
Distance from Upstream XS = 2
Deck/Roadway Width = 56
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
-10.5	2262	2260	38	2262	2260

Upstream Bridge Cross Section Data
Station Elevation Data num= 102

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-162.85	2264	-160.82	2263.28	-157.14	2262	-145.4	2261.7	-141.18	2261.6
-140.6	2261.58	-139.95	2261.58	-139.57	2261.57	-135.49	2261.57	-121.58	2261.66
-120.63	2261.67	-107.33	2261.91	-102.91	2262	-98.91	2262.09	-91.78	2261.98
-90.38	2261.95	-89.14	2261.94	-87.88	2261.92	-85.89	2261.9	-85.06	2261.9
-76.92	2261.92	-75.18	2261.91	-73.19	2261.89	-51.27	2261.5	-49.04	2261.47
-48.38	2261.46	-46.71	2261.46	-44.48	2261.48	-36.14	2261.62	-35.72	2261.63
-33.92	2261.63	-31.92	2261.66	-31.59	2261.67	-31.32	2261.68	-31.1	2261.69
-30.94	2261.71	-30.42	2261.8	-28.71	2261.98	-28.48	2262	-28.36	2262.01
-26.72	2262.08	-25.64	2262.13	-25.25	2262.15	-24.85	2262.15	-24.41	2262.16
-22.93	2262.16	-20.65	2262.14	-10.6	2262	-10.5	2260	-10.5	2256
0	2256	10.5	2256	30.5	2260	38	2260	38	2262
50.79	2260.29	50.9	2260.28	51	2260.28	51.09	2260.27	51.26	2260.25
51.35	2260.24	51.43	2260.23	51.91	2260.19	52.07	2260.18	52.13	2260.18
56.36	2260	72.96	2259.74	174.3	2258.44	174.74	2258.44	176.5	2258.45
176.67	2258.45	178.93	2258.47	187.76	2258.6	189	2258.62	192.19	2258.66
192.67	2258.66	194.37	2258.64	194.77	2258.63	195.25	2258.61	196.96	2258.58
200.72	2258.53	205.6	2258.5	214.95	2258.48	215.58	2258.48	217.06	2258.46
217.93	2258.44	219.04	2258.42	220.28	2258.39	221.65	2258.35	224.74	2258.27
230.07	2258.12	233.85	2258	233.95	2258	237.25	2257.97	268.56	2257.85
268.64	2257.87	269.75	2258	281.34	2259.17	300.22	2260.92	332.77	2263.75
333.64	2263.82	335.77	2264						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-162.85	.025	-10.5	.015	10.5	.025

Bank Sta: Left Right Coeff Contr. Expan.
-10.5 10.5 .3 .5
Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-162.85	-10.5	2262	F
10.5	335.77	2262	F

Downstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
-200	2261.69	2259.69	43.07	2261.69	2259.69

Downstream Bridge Cross Section Data
Station Elevation Data num= 95

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-352.24	2264	-349.58	2263.89	-348.18	2263.81	-334.83	2263.2	-329.08	2262.88
-324.37	2262.64	-314.95	2262.1	-314.33	2262.06	-313.37	2262	-146.26	2261.53
-146.11	2261.52	-145.95	2261.52	-138.08	2261.5	-137.92	2261.49	-136.42	2261.49
-134.95	2261.48	-134.71	2261.47	-133.22	2261.46	-132.97	2261.46	-130.74	2261.44
-130.47	2261.44	-129.07	2261.43	-127.78	2261.41	-126.55	2261.4	-125.6	2261.39
-124.57	2261.37	-123.2	2261.35	-121.99	2261.32	-117.59	2261.22	-113.19	2261.11

```
 -108.37 2260.98 -105.93 2260.92 -105.59 2260.92 -105.41 2260.91 -102.64 2260.91
  -94.59 2260.96  -94.04 2260.96  -86.34 2261.11  -83.01 2261.17  -82.22 2261.18
  -81.75 2261.19  -81.07 2261.19  -76.38 2261.16  -76.14 2261.16  -21.23    2260
   -10.5  2259.6   -10.5  2255.6       0  2255.6    10.5  2255.6    10.5  2259.6
   14.22 2261.29   14.31 2261.29   18.94 2261.27   23.97  2260.9   24.04 2260.89
    24.4 2260.94   24.54 2260.93   24.76 2260.95   24.97 2260.94   25.22 2260.96
   25.47 2260.95   25.75 2260.97   26.06 2260.99   26.33 2260.98   26.57 2260.98
   28.87 2261.11   29.15 2261.11   30.88 2261.21   31.16 2261.22   31.66 2261.25
   32.54 2261.27   33.12 2261.28   33.98 2261.28   35.48 2261.36   43.07 2261.69
   45.31 2261.69   47.22 2261.78   47.89  2261.8   48.03  2261.8   48.71 2261.82
    49.4 2261.82   49.54 2261.83   50.92 2261.83   51.84 2261.87   62.58 2261.76
   67.48 2261.64   68.33 2261.64   68.72 2261.66   69.08 2261.68   69.43 2261.71
   69.76 2261.75   70.44 2261.85   71.22    2262   72.51 2262.38   78.86    2264

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 -352.24    .025   -10.5    .015    10.5    .025

Bank Sta: Left   Right    Coeff Contr.   Expan.
         -10.5    10.5             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 -352.24   -10.5 2261.69       F
    10.5   78.86 2261.69       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 Piers =  1

Pier Data
Pier Station     Upstream=       0    Downstream=       0
Upstream     num=       2
    Width   Elev    Width   Elev
       1    2256       1    2260
Downstream     num=       2
    Width   Elev    Width   Elev
       1 2255.69       1    2260

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF 1
```

E.G. US. (ft)	2263.41	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2263.40	E.G. Elev (ft)	2263.41	2263.40
Q Total (cfs)	1008.00	W.S. Elev (ft)	2263.40	2263.36
Q Bridge (cfs)	60.72	Crit W.S. (ft)	2262.01	2262.35
Q Weir (cfs)		Max Chl Dpth (ft)	7.40	7.76
Weir Sta Lft (ft)		Vel Total (ft/s)	0.62	1.39
Weir Sta Rgt (ft)		Flow Area (sq ft)	1614.30	724.42
Weir Submerg		Froude # Chl	0.04	0.09
Weir Max Depth (ft)		Specif Force (cu ft)	3539.27	1027.95
Min El Weir Flow (ft)	2262.01	Hydr Depth (ft)	3.30	1.75
Min El Prs (ft)	2260.00	W.P. Total (ft)	586.87	476.35
Delta EG (ft)	0.02	Conv. Total (cfs)	217390.5	63272.9
Delta WS (ft)	0.06	Top Width (ft)	489.89	414.67
BR Open Area (sq ft)	80.00	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	0.74	C & E Loss (ft)	0.01	0.01
Coef of Q		Shear Total (lb/sq ft)	0.00	0.02
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00	0.03

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	2263.41	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2263.40	E.G. Elev (ft)	2263.41	2263.40
Q Total (cfs)	1008.00	W.S. Elev (ft)	2263.40	2263.36
Q Bridge (cfs)	60.72	Crit W.S. (ft)	2262.01	2262.35
Q Weir (cfs)		Max Chl Dpth (ft)	7.40	7.76

Weir Sta Lft (ft)		Vel Total (ft/s)	0.62 1.39
Weir Sta Rgt (ft)		Flow Area (sq ft)	1614.30 724.42
Weir Submerg		Froude # Chl	0.04 0.09
Weir Max Depth (ft)		Specif Force (cu ft)	3539.27 1027.95
Min El Weir Flow (ft)	2262.01	Hydr Depth (ft)	3.30 1.75
Min El Prs (ft)	2260.00	W.P. Total (ft)	586.87 476.35
Delta EG (ft)	0.02	Conv. Total (cfs)	217390.5 63272.9
Delta WS (ft)	0.06	Top Width (ft)	489.89 414.67
BR Open Area (sq ft)	80.00	Frctn Loss (ft)	0.00 0.00
BR Open Vel (ft/s)	0.74	C & E Loss (ft)	0.01 0.01
Coef of Q		Shear Total (lb/sq ft)	0.00 0.02
Br Sel Method	Energy only	Power Total (lb/ft s)	0.00 0.03

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 5770

INPUT
Description: Sta 57+70.00 as-built 98-13279
Station Elevation Data num= 95

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-352.24	2264	-349.58	2263.89	-348.18	2263.81	-334.83	2263.2	-329.08	2262.88
-324.37	2262.64	-314.95	2262.1	-314.33	2262.06	-313.37	2262	-146.26	2261.53
-146.11	2261.52	-145.95	2261.52	-138.08	2261.5	-137.92	2261.49	-136.42	2261.49
-134.95	2261.48	-134.71	2261.47	-133.22	2261.46	-132.97	2261.46	-130.74	2261.44
-130.47	2261.44	-129.07	2261.43	-127.78	2261.41	-126.55	2261.4	-125.6	2261.39
-124.57	2261.37	-123.2	2261.35	-121.99	2261.32	-117.59	2261.22	-113.19	2261.11
-108.37	2260.98	-105.93	2260.92	-105.59	2260.92	-105.41	2260.91	-102.64	2260.91
-94.59	2260.96	-94.04	2260.96	-86.34	2261.11	-83.01	2261.17	-82.22	2261.18
-81.75	2261.19	-81.07	2261.19	-76.38	2261.16	-76.14	2261.16	-21.23	2260
-10.5	2259.6	-10.5	2255.6	0	2255.6	10.5	2255.6	10.5	2259.6
14.22	2261.29	14.31	2261.29	18.94	2261.27	23.97	2260.9	24.04	2260.89
24.4	2260.94	24.54	2260.93	24.76	2260.95	24.97	2260.94	25.22	2260.96

```
   25.47 2260.95   25.75 2260.97   26.06 2260.99   26.33 2260.98   26.57 2260.98
   28.87 2261.11   29.15 2261.11   30.88 2261.21   31.16 2261.22   31.66 2261.25
   32.54 2261.27   33.12 2261.28   33.98 2261.28   35.48 2261.36   43.07 2261.69
   45.31 2261.69   47.22 2261.78   47.89  2261.8   48.03  2261.8   48.71 2261.82
    49.4 2261.82   49.54 2261.83   50.92 2261.83   51.84 2261.87   62.58 2261.76
   67.48 2261.64   68.33 2261.64   68.72 2261.66   69.08 2261.68   69.43 2261.71
   69.76 2261.75   70.44 2261.85   71.22    2262   72.51 2262.38   78.86    2264

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 -352.24    .025   -10.5    .015    10.5    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -10.5    10.5               70      70      70             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 -352.24   -10.5 2261.69       F
    10.5   78.86 2261.69       F

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 5700

INPUT
Description: Sta 57+00.00 as-built 98-13279
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -120    2263     -20 2261.53      -6 2255.41       0 2255.41       6 2255.41
      20 2261.53    20.1 2262.53

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -120    .037      -6    .015       6    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -6       6              155     155     155             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 5545

INPUT
Description: Sta 55+45.00 as-built 98-13279
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -100    2262     -20 2260.69      -6  2254.7       0  2254.7       6  2254.7
      20 2260.69    20.1 2261.69

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -100    .037      -6    .015       6    .037

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -6       6               10      15      25             .1       .3

CROSS SECTION


RIVER: Duck Creek
```

REACH: East RS: 5530

INPUT
Description: Sta 55+30.00 as-built 98-13279
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	2261.4	-13	2260.39	-13	2254.5	0	2254.5	13	2254.5
13	2260.39	25	2262						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.025	-13	.015	13	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-13	13	20	25	35	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 5505

INPUT
Description: Sta 55+05.00 as-built 98-13279
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	2261.4	-17	2260.2	-12.5	2258.2	-12.5	2254.2	0	2254.2
12.5	2254.2	12.5	2258.2	17	2260.2	25	2262		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.015	-12.5	.015	12.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12.5	12.5	85	85	85	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-25	-13.5	2261	F
13.5	25	2261	F

BRIDGE

RIVER: Duck Creek
REACH: East RS: 5462.5

INPUT
Description:
Distance from Upstream XS = 1
Deck/Roadway Width = 83
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-30	2261	2258.37	30	2261	2258.37

Upstream Bridge Cross Section Data
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	2261.4	-17	2260.2	-12.5	2258.2	-12.5	2254.2	0	2254.2
12.5	2254.2	12.5	2258.2	17	2260.2	25	2262		

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
     -25    .015   -12.5    .015    12.5    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
         -12.5    12.5             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -25   -13.5    2261       F
    13.5      25    2261       F

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
   -12.5 2260.64 2257.96    12.5 2260.64 2257.96

Downstream Bridge Cross Section Data
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -62.5    2262   -12.5    2260   -12.5  2257.9   -12.5  2253.9    -4.5  2253.9
      -4  2253.9       0  2253.9       4  2253.9     4.5  2253.9    12.5  2253.9
    12.5  2257.9    12.5 2260.14

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -62.5    .015   -12.5    .015    12.5    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
         -12.5    12.5             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   -62.5   -13.5 2260.64       F
    13.5    12.5 2260.64       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 Piers =  2

Pier Data
Pier Station     Upstream=   -4.25    Downstream=   -4.25
Upstream     num=       2
    Width   Elev    Width   Elev
       1 2254.37       1 2258.37
Downstream     num=       2
    Width   Elev    Width   Elev
       1 2253.96       1 2257.96

Pier Data
Pier Station     Upstream=    4.25    Downstream=    4.25
Upstream     num=       2
    Width   Elev    Width   Elev
       1 2254.37       1 2258.37
Downstream     num=       2
    Width   Elev    Width   Elev
       1 2253.96       1 2257.96

Number of Bridge Coefficient Sets =  1
```

Low Flow Methods and Data
Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters
Add Friction component to Momentum
Do not add Weight component to Momentum
Class B flow critical depth computations use critical depth
inside the bridge at the upstream end
Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	2261.15	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2260.55	E.G. Elev (ft)	2260.82	2260.14
Q Total (cfs)	1008.00	W.S. Elev (ft)	2259.10	2258.33
Q Bridge (cfs)	1008.00	Crit W.S. (ft)	2258.12	2257.82
Q Weir (cfs)		Max Chl Dpth (ft)	4.90	4.43
Weir Sta Lft (ft)		Vel Total (ft/s)	10.50	10.79
Weir Sta Rgt (ft)		Flow Area (sq ft)	95.98	93.38
Weir Submerg		Froude # Chl	0.85	0.90
Weir Max Depth (ft)		Specif Force (cu ft)	599.29	562.22
Min El Weir Flow (ft)	2261.01	Hydr Depth (ft)		
Min El Prs (ft)	2258.37	W.P. Total (ft)	72.28	70.36
Delta EG (ft)	1.37	Conv. Total (cfs)	11646.6	11171.7
Delta WS (ft)	1.87	Top Width (ft)		
BR Open Area (sq ft)	93.38	Frctn Loss (ft)	0.65	0.00
BR Open Vel (ft/s)	10.79	C & E Loss (ft)	0.03	0.35
Coef of Q		Shear Total (lb/sq ft)	0.62	0.67
Br Sel Method	Energy only	Power Total (lb/ft s)	6.52	7.28

Warning: Pier drag coefficient of 2.0 assumed for Class B flow.
Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir
flow. The momentum answer has been disregarded.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than

0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	2261.15	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2260.55	E.G. Elev (ft)	2260.82	2260.14
Q Total (cfs)	1008.00	W.S. Elev (ft)	2259.10	2258.33
Q Bridge (cfs)	1008.00	Crit W.S. (ft)	2258.12	2257.82
Q Weir (cfs)		Max Chl Dpth (ft)	4.90	4.43
Weir Sta Lft (ft)		Vel Total (ft/s)	10.50	10.79
Weir Sta Rgt (ft)		Flow Area (sq ft)	95.98	93.38
Weir Submerg		Froude # Chl	0.85	0.90
Weir Max Depth (ft)		Specif Force (cu ft)	599.29	562.22
Min El Weir Flow (ft)	2261.01	Hydr Depth (ft)		
Min El Prs (ft)	2258.37	W.P. Total (ft)	72.28	70.36
Delta EG (ft)	1.37	Conv. Total (cfs)	11646.6	11171.7
Delta WS (ft)	1.87	Top Width (ft)		
BR Open Area (sq ft)	93.38	Frctn Loss (ft)	0.65	0.00
BR Open Vel (ft/s)	10.79	C & E Loss (ft)	0.03	0.35
Coef of Q		Shear Total (lb/sq ft)	0.62	0.67
Br Sel Method	Energy only	Power Total (lb/ft s)	6.52	7.28

Warning: Pier drag coefficient of 2.0 assumed for Class B flow.
Note: Momentum answer is not valid if the water surface is above the low chord or if there is weir
flow. The momentum answer has been disregarded.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 5420

INPUT
Description: Sta 54+20.00 as-built 98-13279
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-62.5	2262	-12.5	2260	-12.5	2257.9	-12.5	2253.9	-4.5	2253.9
-4	2253.9	0	2253.9	4	2253.9	4.5	2253.9	12.5	2253.9
12.5	2257.9	12.5	2260.14						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-62.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12.5	12.5	105	70	35	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-62.5	-13.5	2260.64	F
13.5	12.5	2260.64	F

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 5350

INPUT
Description: Sta 53+50.00 as-built 98-13279
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-80	2259.5	-10.58	2259	-10.58	2253.16	0	2253.16	10.58	2253.16
10.58	2259.54	16.92	2259.74	41.92	2259.1	41.92	2259.6	46.92	2259.7
47.01	2260.6	47.02	2260.7	47.03	2266.32				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-80	.025	-10.58	.015	47.02	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10.58	47.02	210	210	210	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 5140

INPUT
Description: Sta 51+00.00 as-built 98-13279
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10.58	2256.4	-10.58	2250.4	0	2250.4	10.58	2250.4	10.58	2254
50	2254	55	2255	220	2256				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10.58	.015	-10.58	.015	50	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10.58	50	330	330	330	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 4810

INPUT
Description: Sta 48+10.00 as-built 98-13279
Station Elevation Data num= 124

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2255.37	-382.69	2255.15	-381.02	2255.15	-375.87	2255.13	-361.41	2255.26
-360.64	2255.26	-360.4	2255.26	-360.18	2255.27	-355.34	2255.25	-355.13	2255.25
-354.37	2255.25	-354.16	2255.25	-353.98	2255.26	-353.81	2255.26	-353.67	2255.26
-352.35	2255.31	-351.97	2255.32	-351.82	2255.32	-351.65	2255.32	-351.47	2255.33
-351.28	2255.33	-351.07	2255.33	-350.63	2255.33	-346.63	2255.37	-344.67	2255.38
-342.3	2255.4	-339.15	2255.43	-338.9	2255.44	-338.8	2255.44	-338.73	2255.44
-338.7	2255.44	-338.65	2255.45	-338.56	2255.45	-338.54	2255.45	-338.53	2255.46
-338.44	2255.46	-338.4	2255.46	-338.36	2255.47	-338.3	2255.47	-338.2	2255.47
-338.08	2255.47	-337.8	2255.47	-335.89	2255.49	-335.25	2255.49	-335.04	2255.49
-334.92	2255.49	-334.81	2255.49	-334.68	2255.49	-334.3	2255.49	-334.18	2255.49
-334.05	2255.49	-333.92	2255.49	-333.79	2255.49	-332.99	2255.5	-332.69	2255.5
-332.36	2255.5	-329.45	2255.52	-329.06	2255.52	-328.57	2255.52	-326.26	2255.54
-324.28	2255.56	-322.62	2255.57	-321.69	2255.57	-321.59	2255.57	-321.52	2255.58
-321.48	2255.58	-321.46	2255.58	-321.44	2255.58	-321.44	2255.59	-321.41	2255.6
-321.37	2255.6	-321.32	2255.6	-321.25	2255.6	-321.17	2255.6	-321.08	2255.6
-320.97	2255.6	-320.71	2255.6	-318.99	2255.6	-318.54	2255.6	-318.02	2255.6
-317.43	2255.6	-317.2	2255.6	-288.91	2255.37	-288.9	2255.37	-288.85	2255.37
-288.77	2255.37	-288.48	2255.36	-287.37	2255.34	-284.59	2255.29	-284.26	2255.28
-283.87	2255.27	-281.51	2255.2	-280.88	2255.18	-279.84	2255.17	-279.2	2255.16
-278.82	2255.15	-277.98	2255.14	-268.56	2255.02	-268.01	2255.02	-258.04	2254.9
-253.45	2254.84	-252.97	2254.84	-236.05	2254.61	-235.64	2254.61	-234.81	2254.6
-190.53	2254	-116.2	2252.83	-63.58	2252	-60.19	2251.91	-60.13	2251.91
-57.64	2251.86	-46.59	2251.63	-42.03	2251.55	-26.79	2251.3	-24.65	2251.31
-19.96	2251	0	2248.7	70	2251.13	80	2251.28	135	2251.28
160	2250.65	160	2251.15	170	2253	170.1	2259		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-400	.025	-116.2	.025	170	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-116.2	170	1	10	20	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 4800

INPUT
Description: Sta 48+00.00 as-built 98-13279
Station Elevation Data num= 166

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-400	2255.37	-382.69	2255.15	-381.02	2255.15	-375.87	2255.13	-361.41	2255.26
-360.64	2255.26	-360.4	2255.26	-360.18	2255.27	-355.34	2255.25	-355.13	2255.25
-354.37	2255.25	-354.16	2255.25	-353.98	2255.26	-353.81	2255.26	-353.67	2255.26
-352.35	2255.31	-351.97	2255.32	-351.82	2255.32	-351.65	2255.32	-351.47	2255.33
-351.28	2255.33	-351.07	2255.33	-350.63	2255.33	-346.63	2255.37	-344.67	2255.38
-342.3	2255.4	-339.15	2255.43	-338.9	2255.44	-338.8	2255.44	-338.73	2255.44
-338.7	2255.44	-338.65	2255.45	-338.56	2255.45	-338.54	2255.45	-338.53	2255.46
-338.44	2255.46	-338.4	2255.46	-338.36	2255.47	-338.3	2255.47	-338.2	2255.47
-338.08	2255.47	-337.8	2255.47	-335.89	2255.49	-335.25	2255.49	-335.04	2255.49
-334.92	2255.49	-334.81	2255.49	-334.68	2255.49	-334.3	2255.49	-334.18	2255.49

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 -334.05 2255.49 -333.92 2255.49 -333.79 2255.49 -332.99  2255.5 -332.69  2255.5
 -332.36  2255.5 -329.45 2255.52 -329.06 2255.52 -328.57 2255.52 -326.26 2255.54
 -324.28 2255.56 -322.62 2255.57 -321.69 2255.57 -321.59 2255.57 -321.52 2255.58
 -321.48 2255.58 -321.46 2255.58 -321.44 2255.58 -321.44 2255.59 -321.41  2255.6
 -321.37  2255.6 -321.32  2255.6 -321.25  2255.6 -321.17  2255.6 -321.08  2255.6
 -320.97  2255.6 -320.71  2255.6 -318.99  2255.6 -318.54  2255.6 -318.02  2255.6
 -317.43  2255.6  -317.2  2255.6 -288.91 2255.37  -288.9 2255.37 -288.85 2255.37
 -288.77 2255.37 -288.48 2255.36 -287.37 2255.34 -284.59 2255.29 -284.26 2255.28
 -283.87 2255.27 -281.51  2255.2 -280.88 2255.18 -279.84 2255.17  -279.2 2255.16
 -278.82 2255.15 -277.98 2255.14 -268.56 2255.02 -268.01 2255.02 -258.04  2254.9
 -253.45 2254.84 -252.97 2254.84 -236.05 2254.61 -235.64 2254.61 -234.81  2254.6
 -190.53    2254  -116.2 2252.83  -63.58    2252  -60.19 2251.91  -60.13 2251.91
  -57.64 2251.86  -46.59 2251.63  -42.03 2251.55  -26.79  2251.3  -24.65 2251.31
  -19.96    2251       0  2248.5      40  2250.9   81.32 2250.91   84.08 2250.93
   89.41 2250.96   90.03 2250.97   90.33 2250.97   90.63 2250.97    90.9 2250.97
   91.68 2250.97   91.95 2250.97   92.18 2250.97   92.42 2250.97   92.66 2250.97
   93.25 2250.98   94.97 2250.99  101.62 2251.03  101.77 2251.05   101.8 2251.05
  103.98 2251.05  104.72 2251.05  105.49 2251.05  111.99 2251.07  118.74 2251.08
  119.43 2251.08  119.77 2251.08  120.11 2251.08  120.43 2251.08   121.7 2251.07
  124.23 2251.06  124.89 2251.06  125.23 2251.06  125.94 2251.06  126.02 2251.06
   126.8 2251.05  127.05 2251.05  127.32 2251.05  127.59 2251.06  129.15 2251.06
  130.38 2251.06  137.25 2251.07  143.82 2251.07  144.89 2251.07  151.06 2251.05
  157.41 2251.03  161.46 2251.03  165.06 2251.01  171.73 2250.98     175    2251
     175    2257

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -400    .025  -63.58    .025     175    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -63.58     175              320     300     150             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 4500

INPUT
Description: Sta 45+00.00
Station Elevation Data    num=     205
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300 2251.25 -298.75 2251.25 -298.59 2251.25 -293.34 2251.27 -292.52 2251.27
 -292.23 2251.27 -291.94 2251.27 -291.64 2251.27 -291.02 2251.26 -287.16 2251.21
 -286.44 2251.21 -286.15  2251.2  -285.8  2251.2 -285.44 2251.19 -285.08 2251.19
 -284.24 2251.16 -283.89 2251.16 -279.58 2251.16 -279.23 2251.16 -278.86 2251.16
 -278.47 2251.15 -278.05 2251.15 -277.61 2251.14 -276.16 2251.12 -265.46 2250.94
 -249.17 2250.66 -240.88 2250.49 -227.62 2250.29 -227.19 2250.28 -224.68 2250.25
 -224.36 2250.24 -223.18 2250.22 -222.08 2250.21  -221.7  2250.2 -220.97 2250.18
 -219.73 2250.15 -219.28 2250.14 -219.17 2250.13 -219.11 2250.13 -218.09 2250.11
 -217.46  2250.1 -217.42  2250.1 -217.38  2250.1 -217.34 2250.09  -217.3 2250.09
 -217.26 2250.09 -217.22 2250.09 -217.13 2250.09 -216.52 2250.09 -215.95 2250.09
 -215.25 2250.08 -214.64 2250.08 -213.92 2250.08 -213.83 2250.08 -213.13 2250.07
 -212.44 2250.07 -208.99 2250.08 -208.27 2250.08 -207.53 2250.08 -205.98 2250.07
 -198.55 2250.03 -198.52 2250.03 -192.29    2250 -183.06 2249.88 -180.75 2249.86
 -176.37 2249.84 -171.42 2249.82 -170.06 2249.83 -169.39 2249.83 -168.05 2249.84
 -166.95 2249.81 -157.61    2250 -156.25 2250.01 -153.66 2250.02 -149.82 2250.03
 -149.27 2250.03  -148.8 2250.04 -147.99 2250.05  -146.5 2250.07 -146.08 2250.07
 -145.03 2250.08 -133.65 2250.12 -128.92 2250.13 -124.52 2250.13 -110.62 2250.11
 -106.11 2250.11 -104.75 2250.11 -101.02 2250.13 -100.46 2250.13  -99.88 2250.13
  -99.25 2250.13  -98.51 2250.13  -97.72 2250.12  -96.01 2250.12  -78.37 2250.02
  -76.31    2250   -75.7    2250   -75.2 2249.98  -73.99 2249.93   -72.8 2249.88
  -65.25 2249.49   -59.4  2249.2  -45.47 2248.47  -36.61    2248  -30.21 2247.62
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   -4.24    2246   -2.62 2245.87   -1.98 2245.83   -1.66 2245.81   -1.32  2245.8
   -1.12  2245.8    -.91 2245.79    -.57 2245.79    -.39 2245.79    -.22  2245.8
       0  2245.8      .1 2245.81     .41 2245.82     3.2    2246   18.38 2246.37
   19.63 2246.41   28.24 2246.61   35.25 2246.82   50.07 2247.16   54.02 2247.25
   54.41 2247.26   54.77 2247.27    55.1 2247.27   55.38 2247.28    55.6 2247.28
    55.8 2247.28   56.35 2247.27   56.47 2247.27   56.61 2247.27   56.88 2247.27
   57.18 2247.28    58.4 2247.32   58.71 2247.32   59.41 2247.34    60.9 2247.39
   66.99 2247.54   71.16 2247.64   73.61 2247.69   76.08 2247.74    76.8 2247.75
    77.5 2247.76   78.22 2247.77   78.76 2247.78   80.19  2247.8   81.26 2247.81
    87.7 2247.86   88.68 2247.87  102.82 2247.94  102.92 2247.94     103 2247.94
  103.34 2247.94  117.67 2247.98  117.78 2247.98   121.6    2248  131.46 2248.02
  131.63 2248.03  144.79 2248.05  150.09 2248.06  150.31 2248.06   163.8 2248.08
  164.37 2248.09   177.3 2248.11  178.08 2248.12  178.27 2248.12  178.36 2248.12
   178.4 2248.12  178.44 2248.12  178.57 2248.12  179.37 2248.14  182.76 2248.16
  184.18 2248.19  185.42  2248.2  185.91 2248.21  189.64 2248.26  192.39 2248.34
  207.21 2248.55  209.78 2248.64  210.41 2248.66  217.75 2248.98  218.97 2249.01
  219.56 2249.02  220.14 2249.04  242.32    2250  242.66 2250.01  245.59 2250.07
  249.28 2250.15  249.88 2250.16  250.22 2250.17  250.61 2250.17  251.05 2250.17
  251.58 2250.18  252.17 2250.18   252.8 2250.18  264.23  2250.2  269.83  2250.2
  273.22 2250.21  277.95 2250.22  293.04 2250.23  298.43 2250.23     300 2250.24

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .025  -76.31    .025     103    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -76.31     103               50      50      50             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 4450

INPUT
Description: Sta 44+50.00as-built 97-10459
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -19    2244     -19    2239      19    2239      19    2244

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -19    .015     -19    .015      19    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -19      19               70      70      70             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -19     -19 2246.21       F
      19      19 2246.21       F

BRIDGE


RIVER: Duck Creek
REACH: East               RS: 4415

INPUT
Description:
Distance from Upstream XS =       2
Deck/Roadway Width        =      66
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
     -19 2246.21    2239   -17.5 2246.21    2239   -17.5 2246.21    2244
    17.5 2246.21    2244    17.5 2246.21    2239      19 2246.21    2239

Upstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -19    2244     -19    2239      19    2239      19    2244

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -19    .015     -19    .015      19    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
           -19      19             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -19     -19 2246.21       F
      19      19 2246.21       F

Downstream  Deck/Roadway Coordinates
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
     -19    2246  2238.3   -17.5    2246  2238.3   -17.5    2246  2243.3
    17.5    2246  2243.3    17.5    2246  2238.3      19    2246  2238.3

Downstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -19  2243.3     -19  2238.3      19  2238.3      19  2243.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -19    .015     -19    .015      19    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
           -19      19             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -19     -19    2246       F
      19      19    2246       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 Piers =  3

Pier Data
Pier Station     Upstream=      -9    Downstream=      -9
Upstream     num=       2
    Width   Elev    Width   Elev
       1 2243.82       1 2249.82
Downstream     num=       2
    Width   Elev    Width   Elev
       1 2241.07       1 2249.82

Pier Data
```

Pier Station   Upstream=   0   Downstream=   0
Upstream   num=   2
    Width   Elev   Width   Elev
       1 2243.82   1 2249.82
Downstream   num=   2
    Width   Elev   Width   Elev
       1 2241.07   1 2249.82

Pier Data
Pier Station   Upstream=   9   Downstream=   9
Upstream   num=   2
    Width   Elev   Width   Elev
       1 2243.82   1 2249.82
Downstream   num=   2
    Width   Elev   Width   Elev
       1 2241.07   1 2249.82

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	2244.95	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2244.25	E.G. Elev (ft)	2244.89	2243.98
Q Total (cfs)	1338.00	W.S. Elev (ft)	2243.61	2242.10
Q Bridge (cfs)	1338.00	Crit W.S. (ft)	2242.77	2242.10
Q Weir (cfs)		Max Chl Dpth (ft)	4.61	3.80
Weir Sta Lft (ft)		Vel Total (ft/s)	9.07	11.00
Weir Sta Rgt (ft)		Flow Area (sq ft)	147.45	121.59
Weir Submerg		Froude # Chl	0.75	0.99
Weir Max Depth (ft)		Specif Force (cu ft)	716.76	688.26
Min El Weir Flow (ft)	2246.22	Hydr Depth (ft)	4.61	3.80
Min El Prs (ft)	2244.00	W.P. Total (ft)	59.65	54.80
Delta EG (ft)	1.58	Conv. Total (cfs)	26703.5	20489.7
Delta WS (ft)	2.55	Top Width (ft)	32.00	32.00
BR Open Area (sq ft)	160.00	Frctn Loss (ft)		
BR Open Vel (ft/s)	11.00	C & E Loss (ft)		

Coef of Q		Shear Total (lb/sq ft)	0.39		0.59
Br Sel Method	Momentum	Power Total (lb/ft s)	3.52		6.50

Warning: The flow regime calculated by the momentum equation shows class B flow. For the best
solution, this profile should be run as a mixed flow problem.
Warning: Pier drag coefficient of 2.0 assumed for Class B flow.
Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there
is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.
Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there
is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	2244.95	Element	Inside BR US	Inside BR DS	
W.S. US. (ft)	2244.25	E.G. Elev (ft)	2244.89		2243.98
Q Total (cfs)	1338.00	W.S. Elev (ft)	2243.61		2242.10
Q Bridge (cfs)	1338.00	Crit W.S. (ft)	2242.77		2242.10
Q Weir (cfs)		Max Chl Dpth (ft)	4.61		3.80
Weir Sta Lft (ft)		Vel Total (ft/s)	9.07		11.00
Weir Sta Rgt (ft)		Flow Area (sq ft)	147.45		121.59
Weir Submerg		Froude # Chl	0.75		0.99
Weir Max Depth (ft)		Specif Force (cu ft)	716.76		688.26
Min El Weir Flow (ft)	2246.22	Hydr Depth (ft)	4.61		3.80
Min El Prs (ft)	2244.00	W.P. Total (ft)	59.65		54.80
Delta EG (ft)	1.58	Conv. Total (cfs)	26703.5		20489.7
Delta WS (ft)	2.55	Top Width (ft)	32.00		32.00

```
  BR Open Area (sq ft)         160.00    Frctn Loss (ft)
  BR Open Vel (ft/s)            11.00    C & E Loss (ft)
  Coef of Q                              Shear Total (lb/sq ft)         0.39
0.59
  Br Sel Method               Momentum    Power Total (lb/ft s)          3.52
6.50


Warning: The flow regime calculated by the momentum equation shows class B flow.  For
the best
         solution, this profile should be run as a mixed flow problem.
Warning: Pier drag coefficient of 2.0 assumed for Class B flow.
Warning: The energy equation could not be balanced within the specified number of
iterations.  The
         program used critical depth for the water surface and continued on with the
calculations.
Warning: During the standard step iterations, when the assumed water surface was set
equal to critical
         depth, the calculated water surface came back below critical depth.  This
indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.
Note:    Multiple critical depths were found at this location.  The critical depth
with the lowest, valid,
         energy was used.
Warning: The energy equation could not be balanced within the specified number of
iterations.  The
         program used critical depth for the water surface and continued on with the
calculations.
Warning: During the standard step iterations, when the assumed water surface was set
equal to critical
         depth, the calculated water surface came back below critical depth.  This
indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.
Note:    Multiple critical depths were found at this location.  The critical depth
with the lowest, valid,
         energy was used.

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 4380

INPUT
Description: Sta 43+80.00 as-built 97-10459
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -19  2243.3     -19  2238.3      19  2238.3      19  2243.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -19    .015     -19    .015      19    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -19      19             200     180     160             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -19     -19    2246       F
      19      19    2246       F

CROSS SECTION
```

RIVER: Duck Creek
REACH: East RS: 4200

INPUT
Description: Sta 42+00.00 as-built 97-10459
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49	2244	-49	2241.88	-22	2232.88	0	2232.88	22	2232.88
37	2241.86	49	2241.86	49	2246.3				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-49	.035	-49	.035	49	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-49	49	310	300	290	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 3900

INPUT
Description: Sta 39+00.00 as-built 97-10459
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49	2242.35	-49	2241.35	-22	2232.35	0	2232.2	22	2232.35
49	2241.35	49	2242.35						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-49	.025	-49	.025	49	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-49	49	280	300	320	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 3600

INPUT
Description: Sta 36+00.00 as built 97-10459
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49	2241.75	-49	2240.75	-22	2231.75	0	2231.8	22	2231.75
49	2240.75	49	2241.75						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-49	.025	-49	.025	49	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-49	49	280	300	320	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 3300

INPUT
Description: Sta 33+00.00 as-built 97-10459
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49	2241.15	-49	2240.15	-22	2231.15	0	2231	22	2231.13
49	2238.92	49	2239.92						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-49	.025	-49	.025	49	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-49	49	320	300	280	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 3000

INPUT
Description: Sta 30+00.00 as-built 97-10459
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-63	2240.55	-63	2239.55	-36	2230.55	0	2230.49	36	2230.55
45	2236.55	57	2236.55	66	2237.55	66	2238.55		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-63	.025	-63	.025	45	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-63	45	160	180	220	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 2820.*

INPUT
Description: Sta 28+20.00 as-built 97-10459
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-63	2240	-63	2239	-36	2230.19	0	2230.04	36	2230.09
45	2236.19	57	2236.19	66	2237.19	66	2238.19		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-63	.025	-63	.025	45	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-63	45	120	120	120	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 2700

INPUT
Description: Sta 27+00.00 as-built 01-33428
Station Elevation Data num= 8

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   -53.5  2236.8   -53.4  2235.8   -35.5  2229.8       0  2229.8    35.5  2229.8
    53.5  2235.8    66.5  2235.8    66.6  2236.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   -53.5    .015   -53.4     .04    53.5    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -53.4    53.5              160     230     280             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 2470.*

INPUT
Description: Sta 24+70.00 as-built 01-33428
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -40 2234.88   -39.9 2233.88     -22 2227.88       0 2227.88      22 2227.88
      40 2233.88

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -40     .04   -39.9     .04      40     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -39.9      40              70      70      70             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 2400

INPUT
Description: Sta 24+00.00 as-built 01-33428
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -40 2234.95   -39.9 2233.95     -22 2227.95       0 2227.01      40    2228
      50    2229     100    2230

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -40    .015   -39.9     .04       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -39.9       0              140     140     140             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 2260.*

INPUT
Description: Sta 22+60.00 as-built 01-33428
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -100 2232.11   -99.9 2231.11     -80    2230     -60    2229     -40    2228
     -30    2227       0    2226      30    2226      50    2226      60    2227
```

```
      70    2228     100  2228.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -100    .025     -60    .025      70    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -60      70              160     150     140             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
    -100     -40 2232.11       T

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 2100

INPUT
Description: Sta 21+00.00 as-built 01-33428
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -34 2230.04     -22 2224.04       0 2224.04      13 2224.04      25 2225.45
     245  2228.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -34    .015     -34    .015      25     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -34      25             94.1    94.1    94.1             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 2008.56

INPUT
Description: Sta 20+08.56 as-built L1704
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -34 2229.08     -22 2223.08       0 2223.08      13 2223.08      25 2226.13
     140  2227.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -34    .015     -34    .015      25    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -34      25           208.56  208.56  208.56             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 1800

INPUT
Description: Sta 18+00.00 as built L1704
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -34 2223.41     -22 2217.41       0 2217.41      13 2217.41      25 2223.41
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -34    .015     -34    .015      25    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -34      25               .1      .1      .1             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East               RS: 1799.9

INPUT
Description: 17+99.90 as-built L-1704
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -24  2221.4     -24  2217.4      -8  2217.4      -7  2217.4       9  2217.4
       9  2221.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -24    .015     -24    .015       9    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -24       9              159     159     159             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -24     -24  2224.5       F
       9       9  2224.5       F

BRIDGE


RIVER: Duck Creek
REACH: East               RS: 1700

INPUT
Description:
Distance from Upstream XS =       2
Deck/Roadway Width        =     116
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
     -24  2224.5  2221.4       9  2224.5  2221.4

Upstream Bridge Cross Section Data
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -24  2221.4     -24  2217.4      -8  2217.4      -7  2217.4       9  2217.4
       9  2221.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -24    .015     -24    .015       9    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
           -24       9             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -24     -24  2224.5       F
```

```
       9       9  2224.5       F

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
     -24  2224.5    2220       9  2224.5    2220

Downstream Bridge Cross Section Data
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -24    2220     -24    2216      -8    2216      -7    2216       9    2216
       9    2220

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -24    .015     -24    .015       9    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
           -24       9             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -24     -24  2224.5       F
       9       9  2224.5       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 Piers =  1

Pier Data
Pier Station     Upstream=    -7.5    Downstream=    -7.5
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2217.4       1  2221.4
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2216       1    2220

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #PF 1

  E.G. US. (ft)              2224.04    Element                Inside BR US  Inside
BR DS
```

W.S. US. (ft)	2223.31	E.G. Elev (ft)	2223.75
2223.06			
Q Total (cfs)	1338.00	W.S. Elev (ft)	2222.05
2221.36			
Q Bridge (cfs)	1338.00	Crit W.S. (ft)	2221.20
2219.80			
Q Weir (cfs)		Max Chl Dpth (ft)	4.65
5.36			
Weir Sta Lft (ft)		Vel Total (ft/s)	10.45
10.45			
Weir Sta Rgt (ft)		Flow Area (sq ft)	128.00
128.00			
Weir Submerg		Froude # Chl	0.85
0.80			
Weir Max Depth (ft)		Specif Force (cu ft)	773.54
864.39			
Min El Weir Flow (ft)	2224.51	Hydr Depth (ft)	
Min El Prs (ft)	2221.40	W.P. Total (ft)	80.00
80.00			
Delta EG (ft)	1.51	Conv. Total (cfs)	17345.8
17345.8			
Delta WS (ft)	1.55	Top Width (ft)	
BR Open Area (sq ft)	128.00	Frctn Loss (ft)	0.69
0.07			
BR Open Vel (ft/s)	10.45	C & E Loss (ft)	0.00
0.46			
Coef of Q		Shear Total (lb/sq ft)	0.59
0.59			
Br Sel Method	Energy only	Power Total (lb/ft s)	6.21
6.21			

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid,
energy was used.

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	2224.10	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2223.39	E.G. Elev (ft)	2223.80	2223.11
Q Total (cfs)	1338.00	W.S. Elev (ft)	2222.10	2221.41
Q Bridge (cfs)	1338.00	Crit W.S. (ft)	2221.20	2219.80
Q Weir (cfs)		Max Chl Dpth (ft)	4.70	5.41
Weir Sta Lft (ft)		Vel Total (ft/s)	10.45	10.45
Weir Sta Rgt (ft)		Flow Area (sq ft)	128.00	128.00

Weir Submerg		Froude # Chl	0.85
0.79			
Weir Max Depth (ft)		Specif Force (cu ft)	780.51
871.36			
Min El Weir Flow (ft)	2224.51	Hydr Depth (ft)	
Min El Prs (ft)	2221.40	W.P. Total (ft)	80.00
80.00			
Delta EG (ft)	1.52	Conv. Total (cfs)	17345.8
17345.8			
Delta WS (ft)	1.57	Top Width (ft)	
BR Open Area (sq ft)	128.00	Frctn Loss (ft)	0.69
0.06			
BR Open Vel (ft/s)	10.45	C & E Loss (ft)	0.00
0.47			
Coef of Q		Shear Total (lb/sq ft)	0.59
0.59			
Br Sel Method	Energy only	Power Total (lb/ft s)	6.21
6.21			

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: Duck Creek
REACH: East RS: 1641

INPUT
Description: Sta 16+41.00 as-built L1704
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2220	-24	2216	-8	2216	-7	2216	9	2216
9	2220								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	9	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	9	1	1	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-24	-24	2224.5	F
9	9	2224.5	F

CROSS SECTION

RIVER: Duck Creek
REACH: West Branch RS: 3460

INPUT
Description: Sta 34+60
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2236.28	-299.38	2236.29	-298.82	2236.29	-298.3	2236.29	-297.84	2236.29
-297.43	2236.29	-195.97	2236	-170.23	2236	-167.58	2235.88	-166.7	2235.85
-166.39	2235.84	-166.02	2235.83	-165.59	2235.82	-165.09	2235.82	-164.55	2235.81
-161.58	2235.77	-150.42	2235.65	-146.76	2235.62	-134.77	2235.52	-132.77	2235.51
-131.28	2235.5	-130.13	2235.49	-119.67	2235.45	-113.65	2235.42	-109.39	2235.4
-106.3	2235.38	-97.7	2235.34	-89.93	2235.3	-76.51	2235.23	-70.72	2235.2
-67.51	2235.19	-66.73	2235.18	-66.27	2235.18	-65.85	2235.18	-64.97	2235.18
-60.09	2235.19	-56.74	2235.19	-41.94	2235.2	-38.6	2235.2	-30.45	2235.2
-23.22	2235.2	0	2235.4	46.25	2235.79	46.39	2235.8	46.63	2235.8
47.23	2235.82	48.64	2235.84	59.76	2236	59.94	2236	60.07	2236
105.26	2236	106.84	2236	107.96	2236	109.6	2236	111.93	2236
119.61	2236	123.96	2236	127.48	2236	128.78	2236	143.29	2236
144	2236	145.83	2236	148.25	2236	149.14	2236	149.19	2236
149.27	2236	149.37	2236	149.51	2236	157.05	2236	162.56	2236
162.57	2236	162.59	2236	163.11	2236	163.57	2236	163.93	2236
164.99	2236	165.55	2236	169.45	2236	170.86	2236	193.04	2236
196.94	2236	197.34	2236	197.76	2236	206.6	2236	212.34	2236.14
218.96	2236.3	220.88	2236.34	232.1	2236.53	244.09	2236.72	250.51	2236.82
260.08	2237.05	266.69	2237.16	275.63	2237.42	276.45	2237.44	286.14	2237.77
293.03	2238	300	2238.44						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.025	-109.39	.025	0	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-109.39	0	295	300	305	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: West Branch RS: 3160

INPUT
Description: Sta 31+60
Station Elevation Data num= 95

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2233.95	-299.66	2233.94	-289.58	2233.83	-262.77	2233.52	-256.35	2233.45
-255.59	2233.43	-252.66	2233.4	-244.66	2233.25	-243.44	2233.23	-242.83	2233.21
-242.23	2233.2	-241.58	2233.19	-240.95	2233.17	-234.95	2233.02	-222.83	2232.74
-208.112	232.377	-192.85	2232	-182.49	2232	-177.95	2232	-169.57	2232.13
-167.98	2232.15	-164.59	2232.2	-163.82	2232.21	-163.05	2232.21	-162.28	2232.22
-161.54	2232.23	-160.83	2232.23	-160.09	2232.24	-159.39	2232.24	-158.72	2232.24
-147.94	2232.22	-137.6	2232.2	-124.71	2232.19	-120.74	2232.19	-120.25	2232.19
-120.22	2232.19	-119.84	2232.2	-119.82	2232.2	-119.6	2232.2	-119.57	2232.2
-115.25	2232.6	-113.95	2232.64	-56.61	2232.63	-56.55	2232.63	-56.44	2232.62
-55.99	2232.61	-54.93	2232.56	-54.78	2232.52	-54.76	2232.52	-54.68	2232.51
-54.6	2232.51	-54.43	2232.51	-54.21	2232.51	-53.95	2232.51	-52.94	2232.5
-49.21	2232.49	-44.36	2232.48	-33.97	2232.47	-24.67	2232.46	-23.46	2232.45
-22.88	2232.45	-22.39	2232.45	-21.93	2232.44	-21.5	2232.44	-21.19	2232.43
-20.88	2232.43	-20.53	2232.42	-19.88	2232.41	-14.54	2232.24	-8.13	2232.03
-7.13	2232	-3.54	2232	0	2232	4.74	2232	12.42	2232
38.56	2232	45.68	2232.31	46.46	2232.35	47.14	2232.38	68.91	2233.36
72.37	2233.52	83.78	2234	94.11	2234.31	136.74	2235.55	147.95	2235.88
149.08	2235.92	151.14	2235.98	153.64	2236.06	154.62	2236.09	155.76	2236.13
182.04	2236.94	182.91	2236.97	216.29	2238	277.55	2238.73	300	2239

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.025	-208.11	.025	47.14	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-208.11	47.14	340	300	260	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: West Branch RS: 2860

INPUT
Description: Sta 28+60
Station Elevation Data num= 211

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2232.19	-297.89	2232.15	-295.66	2232.1	-294.32	2232.08	-294.11	2232.07
-289.71	2232	-277.65	2231.8	-277.41	2231.8	-269.84	2231.68	-267.33	2231.67
-256.3	2231.51	-247.44	2231.38	-244.4	2231.39	-235.35	2231.27	-230.2	2231.27
-225.68	2231.23	-217.87	2231.15	-213.17	2231.15	-210.89	2231.15	-204.72	2231.09
-204.08	2231.09	-203.19	2231.09	-200.08	2231.12	-197.15	2231.16	-194.23	2231.2
-194.02	2231.2	-193.79	2231.2	-193.55	2231.2	-193.28	2231.2	-193	2231.2
-192.7	2231.2	-192.4	2231.2	-192.14	2231.2	-190.44	2231.19	-189.78	2231.19
-187.95	2231.17	-185.76	2231.15	-179.57	2231.1	-176.43	2231.07	-174.73	2231.06
-172.09	2231.04	-162.6	2230.96	-159.15	2230.93	-147.24	2230.82	-132.58	2230.7
-130.59	2230.68	-104.5	2230.46	-99.21	2230.41	-97.55	2230.39	-93.44	2230.36
-88.33	2230.32	-87.18	2230.31	-66.93	2230.14	-66.3	2230.14	-64.93	2230.12
-64.41	2230.12	-64.32	2230.11	-64.12	2230.11	-64.08	2230.11	-64.05	2230.11
-64.03	2230.11	-61.26	2230.1	-61.25	2230.1	-61.24	2230.1	-61.21	2230.1
-61.19	2230.1	-60.49	2230.1	-60.2	2230.1	-59.62	2230.1	-59.53	2230.1
-59.44	2230.1	-59.08	2230.1	-58.43	2230.1	-58.35	2230.1	-58.32	2230.1
-58.28	2230.1	-58.25	2230.1	-58.23	2230.1	-58.2	2230.1	-58.18	2230.1
-58.14	2230.1	-58.07	2230.1	-57.96	2230.11	-57.86	2230.11	-57.84	2230.11
-57.83	2230.11	-57.81	2230.11	-57.79	2230.11	-48.68	2230	-43.66	2230
-42.95	2230	-41.45	2230	-37.84	2230	0	2230	.63	2230
2.58	2230.09	11.712	230.454	50.49	2232	53.46	2232.08	87.8	2233
89.3	2233.04	89.92	2233.05	90.49	2233.06	90.99	2233.08	91.53	2233.09
92.9	2233.11	93.75	2233.12	94.16	2233.13	94.49	2233.13	95.84	2233.15
96.31	2233.15	96.82	2233.16	98.46	2233.19	102.59	2233.27	125.17	2234
152.19	2234.47	174.98	2234.84	182.35	2234.96	188.39	2235.06	192.89	2235.15
196.63	2235.23	206.6	2235.45	208.47	2235.49	210.68	2235.57	213.82	2235.71
214.66	2235.74	218.01	2235.82	223.85	2235.94	229.04	2236.05	232.66	2236.13
233.26	2236.14	233.59	2236.15	233.95	2236.15	234.2	2236.15	234.61	2236.16
235.05	2236.16	235.51	2236.17	235.99	2236.17	240.42	2236.2	240.91	2236.21
243.19	2236.22	243.61	2236.23	244.02	2236.23	244.4	2236.24	245.64	2236.25
246.08	2236.26	246.54	2236.26	247.01	2236.26	247.49	2236.27	247.96	2236.27
249.48	2236.28	249.79	2236.29	250.16	2236.29	250.5	2236.3	250.82	2236.3
251.12	2236.3	251.4	2236.31	251.65	2236.31	251.88	2236.32	252.06	2236.32
252.2	2236.33	252.43	2236.34	252.68	2236.36	252.76	2236.36	252.86	2236.36
253.01	2236.37	253.22	2236.37	253.5	2236.37	253.84	2236.38	254.22	2236.38
255.51	2236.39	263.68	2236.43	264.46	2236.44	264.81	2236.44	265.11	2236.44
265.32	2236.44	265.51	2236.44	265.82	2236.44	266.42	2236.43	267.48	2236.41
268.65	2236.36	270.46	2236.31	272.4	2236.27	274.95	2236.24	275.8	2236.23
278.81	2236.22	279.39	2236.22	279.64	2236.22	279.9	2236.22	280.15	2236.22
280.44	2236.22	280.74	2236.23	281.04	2236.23	281.58	2236.24	286.71	2236.34
290.84	2236.42	292.85	2236.47	293.02	2236.47	293.18	2236.47	293.33	2236.47
293.47	2236.48	293.58	2236.48	293.68	2236.48	293.76	2236.47	294.94	2236.43
296.26	2236.39	297.53	2236.36	298.52	2236.31	298.97	2236.28	299.88	2236.23
300	2236.23								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
    -300    .025  -104.5    .025   11.71    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -104.5   11.71              350     300     250             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: West Branch        RS: 2560

INPUT
Description: Sta 25+60
Station Elevation Data    num=     202
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300 2232.04 -298.63    2232 -298.21 2231.98 -297.09 2231.92 -296.73  2231.9
 -296.33 2231.88 -295.89 2231.87 -295.38 2231.86 -294.82 2231.85 -294.21 2231.84
 -292.92 2231.83 -288.33 2231.81 -275.33 2231.76 -273.97 2231.74 -273.35 2231.74
 -272.79 2231.73 -258.19    2232 -253.41 2231.78 -253.32 2231.81 -253.12 2231.85
 -252.83 2231.89 -252.42 2231.93  -252.4 2231.93 -251.84 2231.97 -251.83 2231.97
 -251.27    2232 -251.19    2232  -250.6    2232 -250.06    2232 -249.57    2232
  -247.4    2232 -245.41    2232 -245.16    2232 -244.74    2232 -244.53    2232
 -243.67    2232 -243.48    2232 -241.78    2232 -240.97    2232 -240.88    2232
  -240.8    2232 -240.62    2232 -240.22    2232 -240.12    2232 -230.65    2232
 -228.05    2232 -225.82    2232 -224.85    2232 -224.43    2232  -223.8    2232
 -223.36    2232 -222.61    2232 -221.66    2232  -221.4    2232 -216.29    2232
 -214.36    2232 -213.71    2232 -204.44    2232 -203.58    2232 -203.36    2232
 -203.16    2232 -202.89    2232 -194.59    2232 -194.32    2232 -181.34    2232
 -181.09    2232 -166.87    2232 -157.61    2232 -157.04    2232 -148.28    2232
  -143.5 2231.75 -142.43 2231.71 -141.25 2231.63 -140.54  2231.6 -136.79 2231.33
 -136.05 2231.31  -135.8  2231.3 -135.54 2231.29 -135.23 2231.28 -134.89 2231.26
 -133.68 2231.17 -118.57    2230  -115.1 2229.86 -115.03 2229.86 -114.93 2229.85
  -114.6 2229.84  -98.32 2229.18  -95.17 2229.04   -91.2 2228.88  -82.62 2228.53
  -79.25  2228.4  -76.53 2228.31  -76.32  2228.3  -70.36 2228.11  -68.36 2228.03
  -67.51    2228  -67.31    2228  -67.23    2228  -65.96    2228  -64.76    2228
  -50.43    2228  -50.19    2228   -49.7    2228  -49.47    2228  -49.05    2228
  -48.84    2228  -44.89    2228  -44.42    2228  -43.94    2228  -40.93    2228
  -39.96    2228  -21.97    2228  -21.64    2228  -18.59    2228       0 2229.04
   12.81 2229.76   16.96    2230      22 2230.46   39.49    2232    42.2    2232
   44.07    2232   49.11    2232   55.02 2230.54   55.35 2230.55   56.02 2230.58
   56.37  2230.5   56.53 2230.46   56.85 2230.39   56.95 2230.38   57.02 2230.37
   57.06 2230.37   57.11 2230.37   57.17 2230.37   57.25 2230.37   57.34 2230.37
   57.56 2230.37   59.32 2230.36   60.49 2230.35   61.46 2230.34   62.27 2230.33
   62.34 2230.33    62.4 2230.33   62.47 2230.33   62.55 2230.33   62.63 2230.33
   62.72 2230.33   62.81 2230.33   62.99 2230.34   64.84 2230.39   65.08 2230.39
   65.22 2230.39   65.37  2230.4   65.53  2230.4   65.69  2230.4   66.21 2230.41
    69.8 2230.45   73.48 2230.49   73.98 2230.49   74.21 2230.49   74.39 2230.49
   74.48 2230.49   74.57 2230.49   74.59 2230.49   74.61 2230.49   84.17 2230.66
   92.08 2230.86   93.21 2230.89    93.8  2230.9    94.4 2230.91   95.01 2230.93
   95.62 2230.94  103.37 2231.08  104.05 2231.09  112.89 2231.26  113.57 2231.27
  121.23 2231.41  121.92 2231.42  126.08 2231.51  128.24 2231.52  134.46 2231.56
  137.91 2231.63  140.83 2231.64  141.44 2231.64  141.96 2231.65  142.34 2231.64
  142.55 2231.64  174.33 2231.81  176.67 2231.85  189.38    2232  197.14 2232.08
  198.61 2232.09  208.52 2232.19  218.31 2232.29  221.74  2232.3   236.1 2232.44
  241.62 2232.49  256.12 2232.53  275.04 2232.58  277.71 2232.59  283.97 2232.61
  289.63 2232.63     300 2232.66

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300    .025  -95.17    .025       0    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -95.17       0              320     300     280             .1       .3
```

CROSS SECTION

RIVER: Duck Creek
REACH: West Branch RS: 2260

INPUT
Description: Sta 22+60
Station Elevation Data num= 193

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2229.77	-298.27	2229.65	-274.83	2228	-270.1	2227.88	-258.44	2227.59
-252.92	2227.45	-244.18	2227.23	-236.74	2227.06	-231.26	2226.93	-228.54	2226.87
-224.97	2226.79	-224.51	2226.78	-224.28	2226.78	-224.2	2226.78	-223.98	2226.77
-223.75	2226.77	-223.49	2226.77	-223.24	2226.77	-222.97	2226.77	-222.71	2226.77
-221.91	2226.77	-219.84	2226.78	-214.7	2226.8	-213.35	2226.81	-210.29	2226.83
-206.87	2226.87	-204.61	2226.9	-202.18	2226.95	-201.99	2226.95	-201.82	2226.95
-201.56	2226.95	-201.25	2226.95	-200.91	2226.95	-198.29	2226.95	-197.92	2226.95
-197.55	2226.95	-197.19	2226.95	-196.84	2226.94	-196.49	2226.94	-196.15	2226.94
-188.99	2226.79	-188.07	2226.78	-182.82	2226.71	-182.15	2226.7	-181.63	2226.69
-181.16	2226.68	-180.72	2226.67	-179.01	2226.62	-173.28	2226.43	-161.65	2226.04
-161.64	2226.04	-160.22	2226	-159.15	2226	-157.85	2226	-157.51	2226
-157.18	2226	-150.15	2226	-149.48	2226	-149.15	2226	-148.34	2226
-147.02	2226	-145.86	2226	-132.23	2226	-131.5	2226	-121.44	2226
-119.69	2226	-119.16	2226	-118.64	2226	-117.88	2226	-117.33	2226
-112.85	2226	-111.22	2226	-110.48	2226	-107.2	2226	-104.88	2226
-100.89	2226.1	-99.95	2226.12	-88.63	2226.36	-88.55	2226.36	-85.68	2226.43
-80.56	2226.55	-79.54	2226.57	-79.08	2226.58	-77.09	2226.65	-73.35	2226.75
-70.32	2226.83	-68.67	2226.87	-67.96	2226.88	-67.65	2226.89	-67.33	2226.89
-67.02	2226.9	-66.7	2226.9	-61.31	2226.95	-53.5	2227.02	-51.03	2227.04
-50.87	2227.04	-50.68	2227.04	-50.51	2227.04	-50.33	2227.04	-50.17	2227.04
-50.04	2227.04	-49.95	2227.03	-49.91	2227.03	-46.12	2226.94	-45.87	2226.94
-45.67	2226.94	-45.51	2226.93	-45.36	2226.93	-45.14	2226.92	-44.99	2226.92
-44.89	2226.91	-44.85	2226.9	-25.63	2226.9	-20.77	2227	-19.47	2227.02
-10.72	2227.17	-6.17	2227.24	0	2227.35	3.36	2227.4	16.7	2227.63
38.91	2228	39.61	2228.02	43.04	2228.13	47.11	2228.26	50.24	2228.38
58.56	2228.28	58.85	2228.2	59.51	2228.07	59.8	2228	62.87	2228
63.43	2228	69.85	2229.65	70.5	2229.72	73.62	2230	73.86	2230
73.95	2230	74.02	2230	81.33	2230	82.1	2230	84.44	2230
85.65	2230	86.3	2230	86.97	2230	87.44	2230	87.92	2230
89.6	2230	92.54	2230	93.06	2230	94.82	2230	96.82	2230
97.23	2230	98.23	2229.89	98.48	2229.87	98.81	2229.85	99.19	2229.84
100.05	2229.8	101	2229.77	101.5	2229.76	102.01	2229.75	102.55	2229.75
103.08	2229.74	103.64	2229.74	104.21	2229.74	105.95	2229.73	118.7	2229.77
132.01	2229.8	133.11	2229.81	133.66	2229.81	134.23	2229.82	134.97	2229.83
135.73	2229.85	136.51	2229.86	138.1	2229.9	139.72	2229.94	141.64	2230
142.56	2230.01	143.23	2230.02	143.95	2230.02	145.47	2230.03	159.63	2230.12
171.12	2230.19	171.72	2230.19	172.28	2230.19	172.79	2230.19	173.24	2230.19
176	2230.18	177.07	2230.18	180.86	2230.18	182.54	2230.18	184.02	2230.18
184.07	2230.18	184.94	2230.18	300	2230.18				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.025	-173.28	.025	-85.68	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-173.28	-85.68	150	150	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: West Branch RS: 2110

INPUT
Description: Sta 21+10
Station Elevation Data num= 203

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2228.83	-299.25	2228.82	-285.85	2228.66	-269.8	2228.48	-266.43	2228.44
-263.81	2228.41	-261.69	2228.38	-251.71	2228.23	-250.22	2228.21	-248.8	2228.2
-247.56	2228.18	-246.42	2228.17	-245.33	2228.16	-239.15	2228.12	-238	2228.11
-236.77	2228.1	-235.4	2228.09	-234.22	2228.07	-232.95	2228.05	-231.19	2228.03
-229.31	2228	-229.2	2228	-192.57	2227.12	-190.73	2227.08	-172.36	2226.76
-171.46	2226.74	-170.69	2226.72	-167.32	2226.67	-166.7	2226.66	-165.45	2226.64
-164.13	2226.62	-161.71	2226.59	-155.2	2226.52	-1382	2226.372	-134.35	2226.34
-111.82	2226.16	-106.11	2226.1	-103.96	2226.07	-101.47	2226.04	-98.19	2226
-98.03	2226	-96.93	2226	-96.39	2226	-94.73	2226	-59.83	2225.42
-57.54	2225.85	-57.11	2225.91	-56.91	2225.93	-56.57	2225.96	-56.16	2225.99
-55.9	2226	-55.52	2226	-55.05	2226.01	-54.61	2226.01	-53.71	2226.02
-48.44	2226.04	-47.59	2226.04	-46.74	2226.05	-45.89	2226.05	-45.06	2226.06
-44.25	2226.07	-43.47	2226.08	-43.39	2226.08	-42.62	2226.09	-42.41	2226.09
-41.66	2226.1	-41.08	2226.1	-41.03	2226.1	-41.01	2226.1	-41	2226.1
-40.99	2226.1	-40.71	2226.1	-40.64	2226.1	-40.28	2226.1	-39.91	2226.1
-39.86	2226.1	-39.82	2226.1	-39.78	2226.1	-39.73	2226.1	-39.68	2226.1
-39.63	2226.1	-39.58	2226.1	-39.53	2226.1	-39.43	2226.1	-39.29	2226.11
-39.17	2226.11	-39.02	2226.11	-38.59	2226.12	-38.31	2226.12	-38.24	2226.12
-38.17	2226.12	-38.1	2226.12	-38.05	2226.12	-36.98	2226.14	-36.93	2226.14
-35.92	2226.15	-35.86	2226.15	-35.8	2226.15	-35.73	2226.15	-35.68	2226.15
-35.35	2226.15	-35.2	2226.15	-35.15	2226.15	-35.08	2226.15	-35	2226.15
-34.91	2226.15	-34.25	2226.16	-33.93	2226.16	-33.83	2226.16	-33.61	2226.16
-33.47	2226.16	-33.37	2226.16	-33.26	2226.16	-33.02	2226.17	-32.47	2226.17
-31.81	2226.18	-30.32	2226.19	-29.92	2226.19	-29.69	2226.2	-28.79	2226.21
-26.74	2226.23	-25.89	2226.24	-25.59	2226.24	-25.34	2226.24	-23.59	2226.26
-21.84	2226.28	-14.2	2226.38	-1.55	2226.53	-.09	2226.55	0	2226.55
1.38	2226.56	2.8	2226.58	4.23	2226.59	5.66	2226.61	7.08	2226.62
8.47	2226.63	11.09	2226.66	18.44	2226.72	19.61	2226.73	21.98	2226.75
22.59	2226.76	40.95	2226.95	55.04	2227.09	58.6	2227.13	59.65	2227.14
61.97	2227.17	63.21	2227.18	71.95	2227.27	76.53	2227.32	79.14	2227.35
111.8	2227.41	111.81	2227.41	116.3	2227.45	117.18	2227.46	119.74	2227.5
120.11	2227.5	120.49	2227.5	120.98	2227.51	121.49	2227.51	122.02	2227.51
122.57	2227.51	123.7	2227.51	132.66	2227.51	133.07	2227.5	133.4	2227.5
133.63	2227.5	133.74	2227.49	133.84	2227.48	133.92	2227.48	134.05	2227.48
134.22	2227.47	134.71	2227.47	134.97	2227.47	135.56	2227.47	135.87	2227.47
136.14	2227.47	136.42	2227.47	136.78	2227.47	137.23	2227.47	137.68	2227.48
138.08	2227.48	138.33	2227.48	138.56	2227.49	140.62	2227.53	144.6	2227.62
145.54	2227.63	149.88	2227.7	150.5	2227.71	151.23	2227.72	152	2227.72
152.8	2227.73	157.16	2227.77	175.92	2227.92	176.67	2227.93	178.17	2227.95
179.67	2227.97	181.06	2227.99	182.04	2228	184.01	2228.13	184.99	2228.2
186.52	2228.3	211.49	2230	300	2230				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.025	-138	.025	-14.2	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-138	-14.2	330	340	350	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: West Branch RS: 1760

INPUT
Description: Sta 17+60
Station Elevation Data num= 4

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 -152.29    2225   -2.57    2224  291.63    2224  571.63    2225

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 -152.29    .016   -2.57    .016  291.63    .016

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -2.57  291.63              220     230     240             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East-lower         RS: 1640

INPUT
Description: Sta 16+40 as-built L-1704 7x3 joins in
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     -37    2224     -32    2219     -32    2216     -25    2216     -24    2216
      -8    2216      -7    2216       9    2216       9    2220      14    2224

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     -37    .015     -32    .015       9    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -32       9              150     140     125             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East-lower         RS: 1500

INPUT
Description: Sta 15+00 as-built L1704
Station Elevation Data    num=     113
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    -300    2224 -277.23    2224 -274.68    2224 -268.24    2224 -267.97    2224
 -260.35 2223.89 -256.82 2223.83 -241.68 2223.57 -238.86 2223.53 -222.92  2223.3
 -211.16 2223.13 -203.97 2222.99 -201.24 2222.95 -200.45 2222.93  -177.3  2222.5
 -176.76 2222.49 -175.89 2222.47 -150.52    2222 -110.45  2220.4 -105.23 2220.17
 -103.69 2220.11  -38.33  2219.5  -22.33  2215.5       0  2215.5   23.33  2215.5
   38.33  2219.5    61.2    2220   62.27 2220.02   64.49 2220.06   70.81 2220.14
   70.86 2220.15   70.92 2220.15   80.25 2220.35   80.39 2220.36   80.74 2220.38
    83.2 2220.44   83.95 2220.47   84.66 2220.49   93.45 2220.98    95.5  2221.1
   96.66 2221.17   97.91 2221.26   99.18 2221.34  100.56 2221.44  102.08 2221.56
  105.79 2221.85  107.63    2222  108.58 2222.03  110.65  2222.1  111.57 2222.13
   112.4 2222.16  114.34  2222.2  115.41 2222.24   116.4 2222.27  117.26 2222.31
  118.74 2222.38  126.83 2222.82  127.53 2222.85   127.9 2222.87  128.28 2222.88
  128.71 2222.89  129.17  2222.9  129.67 2222.91   130.2 2222.92  131.84 2222.94
  141.09 2223.03  145.64 2223.09   147.2 2223.11  156.49 2223.22  160.78 2223.29
  164.33 2223.35   175.1 2223.45  175.59 2223.46  175.81 2223.46  189.46 2223.59
  189.57 2223.59  189.68 2223.59  189.84  2223.6     190  2223.6  195.04 2223.62
  195.51 2223.64  209.74 2223.69  212.13 2223.75  213.69 2223.79  214.51 2223.81
  214.71 2223.82  214.99 2223.82   215.7 2223.83  215.83 2223.83   215.9 2223.83
  215.97 2223.83  216.03 2223.83   216.1 2223.83  216.17 2223.83  216.86 2223.84
  217.05 2223.84  218.12 2223.84  218.49 2223.83  218.61 2223.83  218.87 2223.83
  219.07 2223.84  227.98 2223.88  228.86 2223.88  242.59 2223.96  249.05 2223.99
  249.99    2224  258.46 2224.07   262.5  2224.1  264.39 2224.11  268.76 2224.12
  283.87 2224.15   295.6 2224.18     300  2224.2
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.04	-38.33	.04	38.33	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-38.33	38.33	320	300	280	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 1200

INPUT
Description: Sta 12+00 as-built L1704 new FL grades at 105+00
Station Elevation Data num= 108

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2225.3	-297.39	2225.2	-286.39	2224.83	-265.07	2224	-250.4	2223.42
-216.64	2222.13	-215.51	2222.09	-214.12	2222.03	-213.27	2222	-161.56	2220.76
-156.86	2220.65	-153.44	2220.57	-149.69	2220.49	-145.79	2220.4	-137.87	2220.22
-130.17	2220	-123.1	2219.86	-119.33	2219.8	-117.55	2219.77	-116.9	2219.76
-116.54	2219.75	-116.1	2219.74	-114.57	2219.72	-102.89	2219.5	-61.67	2218.75
-58.87	2218.7	-45.31	2218.47	-21.89	2218	-7.68	2216.16	-6.35	2216
-3.83	2214.9	0	2214.9	11.44	2214.9	22.98	2216.76	28.48	2217.03
35.91	2217.47	48.29	2218	55.43	2218.13	55.7	2218.13	70.11	2218.38
73.63	2218.41	74.49	2218.42	74.72	2218.42	74.94	2218.42	75.38	2218.43
76.58	2218.45	82.16	2218.54	83.3	2218.56	84.1	2218.58	89.37	2218.7
91.23	2218.74	94.1	2218.79	109.41	2219.06	119.09	2219.22	130.78	2219.46
136.09	2219.55	140.63	2219.63	161.48	2220	163.14	2220.02	176.6	2220.13
178.98	2220.15	180.62	2220.16	194.13	2220.22	207.71	2220.28	209.03	2220.28
223.06	2220.34	225	2220.35	227.05	2220.36	230.26	2220.37	232.3	2220.38
235.44	2220.39	236.12	2220.4	237.67	2220.4	240.51	2220.41	241.07	2220.41
241.66	2220.42	244.77	2220.44	245.63	2220.44	249.52	2220.46	251.55	2220.46
253.86	2220.47	257.24	2220.48	257.7	2220.48	257.9	2220.48	258.12	2220.49
258.33	2220.49	258.62	2220.49	258.91	2220.49	265.45	2220.55	266.19	2220.56
266.55	2220.56	266.89	2220.56	267.21	2220.57	267.5	2220.57	267.77	2220.57
268.26	2220.58	272.3	2220.66	277.61	2220.76	286.44	2220.91	292.72	2221.02
293.38	2221.03	294.08	2221.04	294.83	2221.06	295.65	2221.06	296.46	2221.08
298.12	2221.09	299.01	2221.1	300	2221.12				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-300	.03	-21.89	.03	48.29	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-21.89	48.29	275	300	325	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 900

INPUT
Description: Sta 9+00
Station Elevation Data num= 167

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-300	2220.76	-298.47	2220.73	-284.1	2220.48	-281.97	2220.44	-281.29	2220.42
-277.35	2220.35	-271.09	2220.24	-270.04	2220.22	-267.88	2220.18	-266.98	2220.16
-265.91	2220.15	-265.07	2220.14	-264.23	2220.13	-263.36	2220.11	-262.55	2220.11
-260.94	2220.1	-260.86	2220.1	-257.74	2220.08	-257.7	2220.08	-256.36	2220.08
-256.3	2220.08	-255.75	2220.08	-255.43	2220.07	-255.33	2220.07	-254.89	2220.06

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  -254.6 2220.06 -254.56 2220.06 -254.54 2220.06 -254.52 2220.06  -254.5 2220.06
 -254.48 2220.06  -254.2 2220.05 -254.05 2220.05 -253.69 2220.05 -253.57 2220.05
 -253.05 2220.05 -252.63 2220.06 -252.33 2220.06 -252.13 2220.07    -252 2220.08
 -251.72 2220.13 -250.39 2220.23 -250.38 2220.24 -245.83 2220.44 -244.87 2220.45
 -239.87 2220.56 -239.24 2220.56 -238.48 2220.57 -234.29  2220.6  -233.6 2220.61
 -233.02 2220.62 -229.07 2220.69 -226.35 2220.74 -225.64 2220.75 -225.35 2220.75
 -225.03 2220.76 -224.67 2220.76 -224.26 2220.76 -223.83 2220.76 -222.44 2220.76
  -218.6 2220.76 -218.14 2220.76 -217.69 2220.76 -217.26 2220.76 -216.89 2220.76
 -216.52 2220.75 -216.17 2220.75 -213.64 2220.72 -213.19 2220.72 -212.24 2220.71
 -208.11 2220.69 -198.73 2220.63 -197.66 2220.63 -196.68 2220.62 -195.29  2220.6
 -193.99 2220.59 -193.21 2220.58 -186.29 2220.46 -185.24 2220.44 -184.65 2220.42
 -183.49 2220.39 -179.34 2220.24 -178.07  2220.2 -176.91 2220.18 -175.96 2220.16
 -175.34 2220.15 -174.67 2220.14 -170.22 2220.08  -168.8 2220.06 -168.17 2220.05
 -167.64 2220.04 -167.16 2220.03 -166.31 2220.01 -165.95    2220  -137.5 2219.03
  -99.23    2218  -96.17  2217.9  -95.39 2217.87  -77.89 2217.24   -59.6 2216.54
   -52.6 2216.28  -45.66    2216   -37.4 2215.73  -26.13 2215.36  -22.53 2215.25
   -22.4 2215.25  -21.67 2215.23  -21.03  2215.2  -18.55 2215.09  -14.97 2214.95
  -14.51 2214.93  -13.44 2214.86  -13.18 2214.85  -13.03 2214.84  -12.85 2214.83
  -12.23 2214.82  -10.95 2214.79  -10.78 2214.78  -10.63 2214.78   -10.5 2214.77
  -10.42 2214.77  -10.39 2214.76       0 2214.72   11.55 2214.66   13.54 2214.71
   16.72  2214.8   17.38 2214.81    22.3 2214.93   27.83 2215.08   35.69 2215.28
   40.27 2215.41   55.79 2215.84   55.84 2215.84   62.06    2216   68.47 2216.11
   91.66  2216.5  104.31 2216.71  123.01 2217.02  138.66  2217.3  177.31 2217.98
  177.66 2217.99  178.35    2218  189.03 2218.15  210.64 2218.46  222.24 2218.62
  232.39 2218.77  233.74 2218.79  234.38 2218.79     235  2218.8   235.6 2218.81
  236.17 2218.81  236.72 2218.81  237.26 2218.82  245.35 2218.83   255.7 2218.84
  259.12 2218.85  260.07 2218.85  260.43 2218.86  261.35 2218.86  262.13 2218.87
  268.06 2218.94  275.78    2219  280.87 2219.06  288.79 2219.12  297.85 2219.22
  299.35 2219.24     300 2219.24

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    -300     .03  -45.66     .03   62.06     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -45.66   62.06               100     100     100             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East-lower         RS: 800

INPUT
Description: Silverado Pines Cross Section 12.0
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     825    2217     925    2216     934    2215     984    2214     990 2213.45
     995 2213.45    1005 2213.45    1010 2213.45    1017    2214    1044    2215
    1070    2216    1124    2217

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     825     .03     934     .03    1044     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           934    1044                50      50      50             .1       .3

CROSS SECTION


RIVER: Duck Creek
REACH: East-lower         RS: 750
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INPUT
Description: Silverado Pines Cross Section 11.5
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
800	2217	900	2216	920	2215	945	2214	970	2212
1030	2212	1070	2215	1090	2216				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
800	.03	970	.03	1030	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
970	1030	50	50	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 700

INPUT
Description: Silverado Pines Cross Section 11.0
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
800	2217	910	2215	940	2212	950	2211.6	1000	2211.45
1020	2211.6	1030	2211.68	1070	2212	1110	2216		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
800	.03	950	.03	1030	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
950	1030	100	100	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
1070	1110	2217	F

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 600

INPUT
Description: Silverado Pines Cross Section 10.0
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
892	2215	910	2214	940	2211	9652210.792		1000	2210.5
10502210.857		1140	2211.5	1150	2213.5	1160	2215.5		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
892	.03	965	.03	1050	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
965	1050	100	100	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
1070	1160	2216	F

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 500

INPUT
Description: Silverado Pines Cross Section 9.0
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
955	2215.75	975	2209.5	1000	2209.5	10502209.813		1080	2210
1115	2210.6	1225	2210.8	1240	2213.8	1246	2215		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
955	.03	975	.03	1050	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
975	1050	22	25	30 .1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
955	975	2216	F
1070	1246	2216	F

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 475

INPUT
Description: Silverado Pines Cross Section 8.75
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
930	2215	945	2210	9752209.356		1000 2209.13		1020 2209.13	
1040	2209.13	1070	2209.8	1140	2209.8	1150	2212.8	1160	2215

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
930	.03	975	.03	1040	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
975	1040	12	45	70 .1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
930	945	2217	F
1075	1160	2217	F

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 430

INPUT
Description: Silverado Pines Cross Section 8.3
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
958	2215.8	980	2208.47	1000	2208.47	1020	2208.47	1041	2215.47
1053	2215.65								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
958	.035	980	.035	1020	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
980 1020 60 60 60 .1 .3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 370

INPUT
Description: Silverado Pines Cross Section 7.71
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
955	2213.85	980	2205.55	1000	2205.55	1020	2205.55	1041	2212.55
1053	2212.75	1053	2214.75						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
955	.035	980	.035	1020	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
980 1020 71 71 71 .1 .3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 300

INPUT
Description: Silverado Pines Cross Section 7.0
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
955	2213.5	980	2205.2	1000	2205.2	1020	2205.2	1041	2212.2
1053	2212.4	1053	2214.4						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
955	.03	980	.03	1020	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
980 1020 50 50 50 .1 .3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 250

INPUT
Description: Silverado Pines Cross Section 6.5
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
955	2213.25	980	2204.95	1000	2204.95	1020	2204.95	1041	2211.95
1053	2212.15	1053	2214.15						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
955	.03	980	.03	1020	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
980 1020 50 50 50 .1 .3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 200

INPUT
Description: Silverado Pines Cross Section 6.0
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
955	2213	980	2204.7	1000	2204.7	1020	2204.7	1041	2211.7
1053	2211.9	1053	2213.9						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
955	.03	980	.03	1020	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
980	1020	50	50	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 150

INPUT
Description: Silverado Pines Cross Section 5.5
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
955	2212.78	980	2204.45	1020	2204.45	1041	2211.45	1053	2211.6
1053	2213.6								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
955	.03	980	.03	1020	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
980	1020	17	17	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 128

INPUT
Description: Silverado Pines Cross Section 5.28
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
970	2214.7	980	2214.6	980.1	2204.34	1020	2204.34	1020.1	2214.6
1030	2214.7								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
970	.013	980.1	.013	1020	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
980.1	1020	75	75	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 60

INPUT
Description: Silverado Pines Cross Section 4.6
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
875	2215	947	2214.8	980	2204	1020	2204	1053	2214.8
1125	2215								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
875	.035	980	.035	1020	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
980	1020	10	10	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 50

INPUT
Description: Silverado Pines Cross Section 4.5
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
875	2215.5	945	2215.5	980	2203.75	1020	2203.75	1055	2215.5
1225	2216								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
875	.035	980	.035	1020	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
980	1020	50	50	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: 0

INPUT
Description: Silverado Pines Cross Section 4.0
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
880	2212	950	2212	980	2202.5	1020	2202.5	1048	2211
1140	2211.5								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
880	.035	980	.035	1020	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
980	1020	50	50	.1	.3

CROSS SECTION

RIVER: Duck Creek
REACH: East-lower RS: -50

INPUT
Description: Silverado Pines Cross Section 3.5
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
490	2206	500	2204	970	2204	980	2201.35	1020	2201.35
1030	2204	1500	2204	1510	2206				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
490	.035	980	.035	1020	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
980	1020	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Duck Creek

Reach	River Sta.	n1	n2	n3
East-West Branch	500	.025	.025	.025
East-West Branch	400	.025	.025	.025
East-West Branch	300	.025	.025	.025
East-West Branch	200	.025	.025	.025
East-West Branch	100	.025	.025	.025
East-East Branch	500	.025	.025	.025
East-East Branch	400	.025	.025	.025
East-East Branch	300	.025	.025	.025
East-East Branch	200	.025	.025	.025
East-East Branch	100	.025	.025	.025
East	12300	.025	.025	.025
East	12000	.025	.025	.025
East	11700	.025	.025	.025
East	11540	.015	.015	.015
East	11510	Culvert		
East	11480.*	.015	.015	.015
East	11400	.025	.025	.025
East	11100	.025	.025	.025
East	10800	.025	.025	.025
East	10500	.025	.025	.025
East	10200	.025	.025	.025
East	10110	.015	.015	.015
East	10075	Bridge		
East	10040	.015	.015	.015
East	9900	.025	.025	.025
East	9600	.025	.025	.025
East	9300	.025	.025	.025
East	9000	.025	.025	.025
East	8940	.015	.025	.015
East	8939	.044	.044	.044
East	8860	.044	.044	.044
East	8700	.025	.015	.015
East	8400	.015	.015	.025
East	8250	.015	.015	.015
East	8200	.015	.015	.015
East	8150	Bridge		
East	8100	.025	.015	.025
East	7800	.015	.015	.015
East	7500	.015	.015	.015
East	7235	.015	.015	.015
East	7182.5	Bridge		

East	7130	.015	.015	.015
East	6900	.025	.025	.025
East	6600	.025	.025	.025
East	6300	.025	.025	.025
East	6250	.037	.015	.037
East	6190	.037	.015	.037
East	6000	.037	.015	.037
East	5900	.037	.015	.037
East	5830	.025	.015	.025
East	5800	Bridge		
East	5770	.025	.015	.025
East	5700	.037	.015	.037
East	5545	.037	.015	.037
East	5530	.025	.015	.025
East	5505	.015	.015	.015
East	5462.5	Bridge		
East	5420	.015	.015	.015
East	5350	.025	.015	.015
East	5140	.015	.015	.025
East	4810	.025	.025	.015
East	4800	.025	.025	.025
East	4500	.025	.025	.025
East	4450	.015	.015	.015
East	4415	Bridge		
East	4380	.015	.015	.015
East	4200	.035	.035	.035
East	3900	.025	.025	.025
East	3600	.025	.025	.025
East	3300	.025	.025	.025
East	3000	.025	.025	.025
East	2820.*	.025	.025	.025
East	2700	.015	.04	.025
East	2470.*	.04	.04	.04
East	2400	.015	.04	.025
East	2260.*	.025	.025	.025
East	2100	.015	.015	.03
East	2008.56	.015	.015	.015
East	1800	.015	.015	.015
East	1799.9	.015	.015	.015
East	1700	Bridge		
East	1641	.015	.015	.015
West Branch	3460	.025	.025	.025
West Branch	3160	.025	.025	.025
West Branch	2860	.025	.025	.025
West Branch	2560	.025	.025	.025
West Branch	2260	.025	.025	.025
West Branch	2110	.025	.025	.025
West Branch	1760	.016	.016	.016
East-lower	1640	.015	.015	.015
East-lower	1500	.04	.04	.04
East-lower	1200	.03	.03	.03
East-lower	900	.03	.03	.03
East-lower	800	.03	.03	.03
East-lower	750	.03	.03	.03
East-lower	700	.03	.03	.03
East-lower	600	.03	.03	.03
East-lower	500	.03	.03	.03
East-lower	475	.03	.03	.03
East-lower	430	.035	.035	.035
East-lower	370	.035	.035	.035
East-lower	300	.03	.03	.03
East-lower	250	.03	.03	.03
East-lower	200	.03	.03	.03

East-lower	150	.03	.03	.03
East-lower	128	.013	.013	.013
East-lower	60	.035	.035	.035
East-lower	50	.035	.035	.035
East-lower	0	.035	.035	.035
East-lower	-50	.035	.035	.035

SUMMARY OF REACH LENGTHS

River: Duck Creek

Reach	River Sta.	Left	Channel	Right
East-West Branch	500	100	100	100
East-West Branch	400	100	100	100
East-West Branch	300	100	100	100
East-West Branch	200	100	100	100
East-West Branch	100	100	100	100
East-East Branch	500	100	100	100
East-East Branch	400	100	100	100
East-East Branch	300	100	100	100
East-East Branch	200	100	100	100
East-East Branch	100	100	100	100
East	12300	290	300	310
East	12000	290	300	310
East	11700	180	160	150
East	11540	60	60	60
East	11510	Culvert		
East	11480.*	100	80	80
East	11400	280	300	310
East	11100	260	300	340
East	10800	300	300	300
East	10500	400	300	200
East	10200	50	90	120
East	10110	70	70	70
East	10075	Bridge		
East	10040	200	140	80
East	9900	300	300	310
East	9600	300	300	300
East	9300	350	300	250
East	9000	80	60	50
East	8940	1	1	1
East	8939	79	79	79
East	8860	160	160	160
East	8700	300	300	300
East	8400	150	150	150
East	8250	80	50	30
East	8200	100	100	100
East	8150	Bridge		
East	8100	290	300	300
East	7800	300	300	310
East	7500	265	265	265
East	7235	105	105	105
East	7182.5	Bridge		
East	7130	230	230	230
East	6900	300	300	300
East	6600	300	300	300
East	6300	50	50	50
East	6250	30	60	90
East	6190	200	190	180

East	6000	120	100	80
East	5900	60	60	60
East	5830	60	60	60
East	5800	Bridge		
East	5770	70	70	70
East	5700	155	155	155
East	5545	10	15	25
East	5530	20	25	35
East	5505	85	85	85
East	5462.5	Bridge		
East	5420	105	70	35
East	5350	210	210	210
East	5140	330	330	330
East	4810	1	10	20
East	4800	320	300	150
East	4500	50	50	50
East	4450	70	70	70
East	4415	Bridge		
East	4380	200	180	160
East	4200	310	300	290
East	3900	280	300	320
East	3600	280	300	320
East	3300	320	300	280
East	3000	160	180	220
East	2820.*	120	120	120
East	2700	160	230	280
East	2470.*	70	70	70
East	2400	140	140	140
East	2260.*	160	150	140
East	2100	94.1	94.1	94.1
East	2008.56	208.56	208.56	208.56
East	1800	.1	.1	.1
East	1799.9	159	159	159
East	1700	Bridge		
East	1641	1	1	1
West Branch	3460	295	300	305
West Branch	3160	340	300	260
West Branch	2860	350	300	250
West Branch	2560	320	300	280
West Branch	2260	150	150	150
West Branch	2110	330	340	350
West Branch	1760	220	230	240
East-lower	1640	150	140	125
East-lower	1500	320	300	280
East-lower	1200	275	300	325
East-lower	900	100	100	100
East-lower	800	50	50	50
East-lower	750	50	50	50
East-lower	700	100	100	100
East-lower	600	100	100	100
East-lower	500	22	25	30
East-lower	475	12	45	70
East-lower	430	60	60	60
East-lower	370	71	71	71
East-lower	300	50	50	50
East-lower	250	50	50	50
East-lower	200	50	50	50
East-lower	150	17	17	17
East-lower	128	75	75	75
East-lower	60	10	10	10
East-lower	50	50	50	50
East-lower	0	50	50	50
East-lower	-50	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Duck Creek

Reach	River Sta.	Contr.	Expan.
East-West Branch	500	.1	.3
East-West Branch	400	.1	.3
East-West Branch	300	.1	.3
East-West Branch	200	.1	.3
East-West Branch	100	.1	.3
East-East Branch	500	.1	.3
East-East Branch	400	.1	.3
East-East Branch	300	.1	.3
East-East Branch	200	.1	.3
East-East Branch	100	.1	.3
East	12300	.1	.3
East	12000	.1	.3
East	11700	.1	.3
East	11540	.1	.3
East	11510	Culvert	
East	11480.*	.1	.3
East	11400	.1	.3
East	11100	.1	.3
East	10800	.1	.3
East	10500	.1	.3
East	10200	.1	.3
East	10110	.1	.3
East	10075	Bridge	
East	10040	.1	.3
East	9900	.1	.3
East	9600	.1	.3
East	9300	.1	.3
East	9000	.1	.3
East	8940	.1	.3
East	8939	.1	.3
East	8860	.1	.3
East	8700	.1	.3
East	8400	.1	.3
East	8250	.1	.3
East	8200	.3	.5
East	8150	Bridge	
East	8100	.3	.5
East	7800	.1	.3
East	7500	.1	.3
East	7235	.3	.5
East	7182.5	Bridge	
East	7130	.3	.5
East	6900	.1	.3
East	6600	.1	.3
East	6300	.1	.3
East	6250	.1	.3
East	6190	.1	.3
East	6000	.1	.3
East	5900	.1	.3
East	5830	.3	.5
East	5800	Bridge	
East	5770	.3	.5
East	5700	.1	.3

East	5545		.1	.3
East	5530		.1	.3
East	5505		.3	.5
East	5462.5	Bridge		
East	5420		.3	.5
East	5350		.1	.3
East	5140		.1	.3
East	4810		.1	.3
East	4800		.1	.3
East	4500		.1	.3
East	4450		.3	.5
East	4415	Bridge		
East	4380		.3	.5
East	4200		.1	.3
East	3900		.1	.3
East	3600		.1	.3
East	3300		.1	.3
East	3000		.1	.3
East	2820.*		.1	.3
East	2700		.1	.3
East	2470.*		.1	.3
East	2400		.1	.3
East	2260.*		.1	.3
East	2100		.1	.3
East	2008.56		.1	.3
East	1800		.1	.3
East	1799.9		.3	.5
East	1700	Bridge		
East	1641		.3	.5
West Branch	3460		.1	.3
West Branch	3160		.1	.3
West Branch	2860		.1	.3
West Branch	2560		.1	.3
West Branch	2260		.1	.3
West Branch	2110		.1	.3
West Branch	1760		.1	.3
East-lower	1640		.1	.3
East-lower	1500		.1	.3
East-lower	1200		.1	.3
East-lower	900		.1	.3
East-lower	800		.1	.3
East-lower	750		.1	.3
East-lower	700		.1	.3
East-lower	600		.1	.3
East-lower	500		.1	.3
East-lower	475		.1	.3
East-lower	430		.1	.3
East-lower	370		.1	.3
East-lower	300		.1	.3
East-lower	250		.1	.3
East-lower	200		.1	.3
East-lower	150		.1	.3
East-lower	128		.1	.3
East-lower	60		.1	.3
East-lower	50		.1	.3
East-lower	0		.1	.3
East-lower	-50		.1	.3

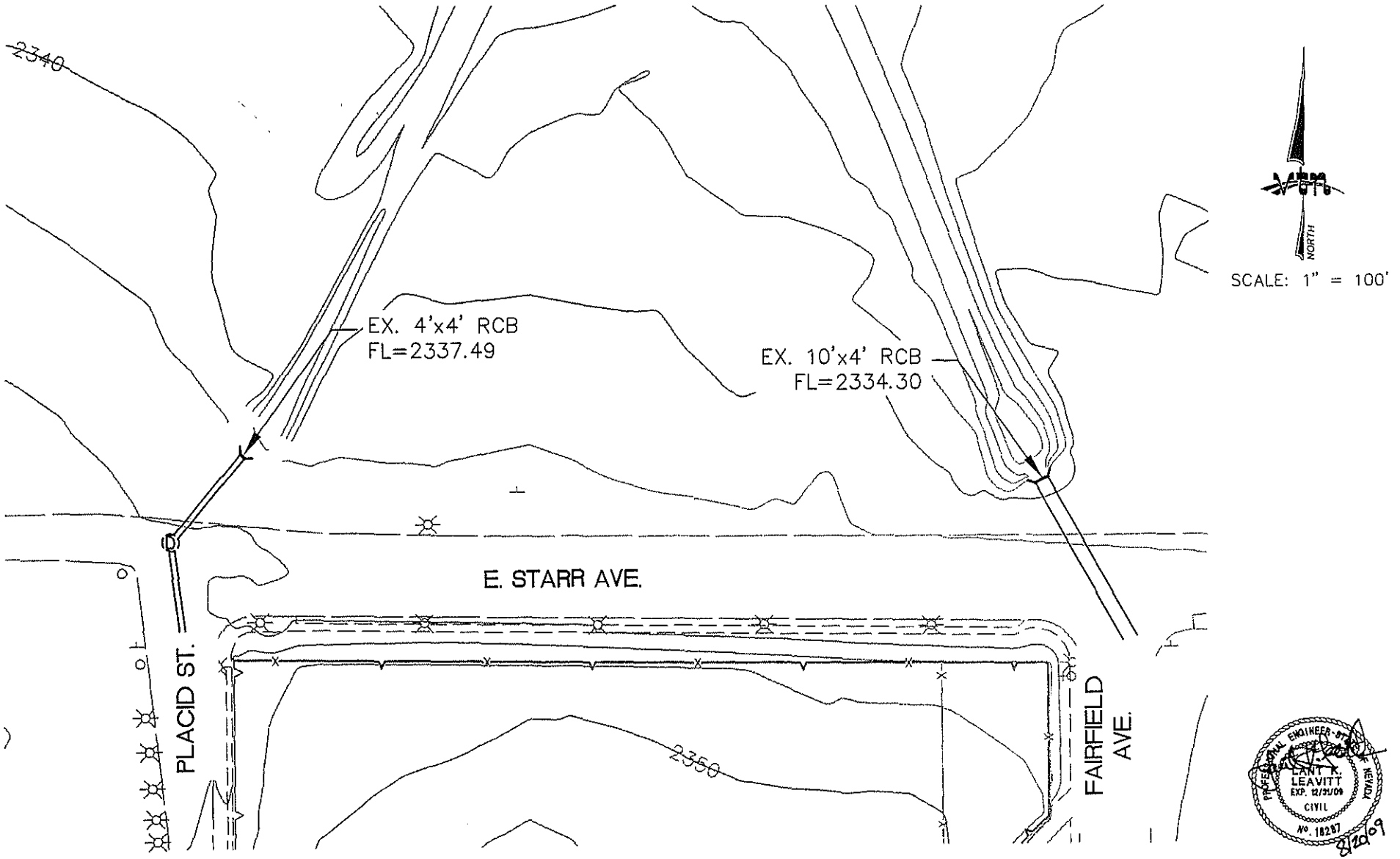
DUCK CREEK CHANNEL

LAS VEGAS BLVD. TO
LOWER DUCK CREEK DETENTION BASIN

FEMA LETTER OF MAP REVISION APPLICATION

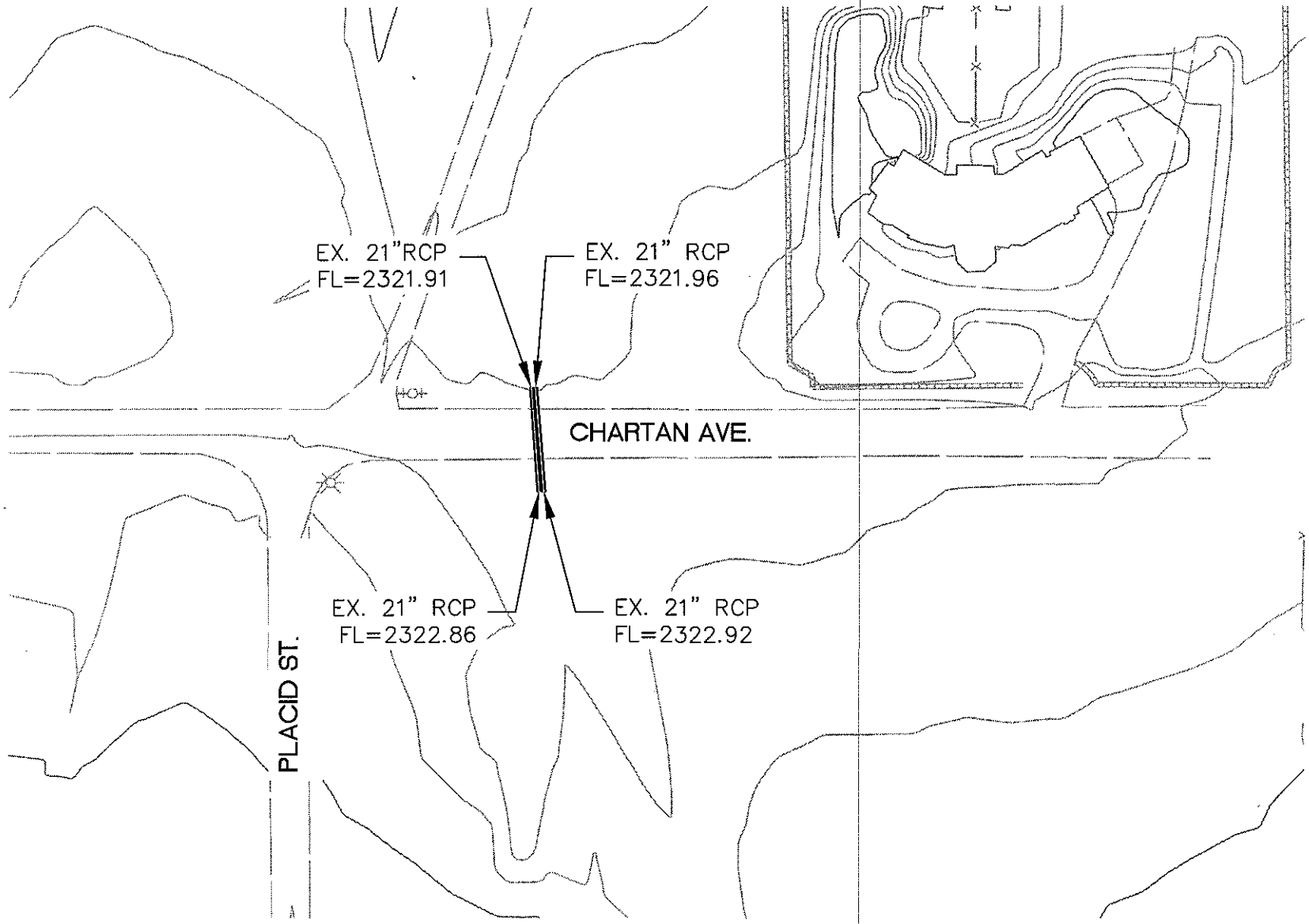
APPENDIX C

Existing Culverts As-Builts



DUCK CREEK CHANNEL LOMR-
LAS VEGAS BLVD. TO LOWER DUCK CREEK DETENTION BASIN
EXISTING CULVERT AS BUILTS - 4'x4' RCB AT PLACID ST./STARR AVE.
AND 10'x4' RCB AT FAIRFIELD AVE./STARR AVE.

Fig. 1

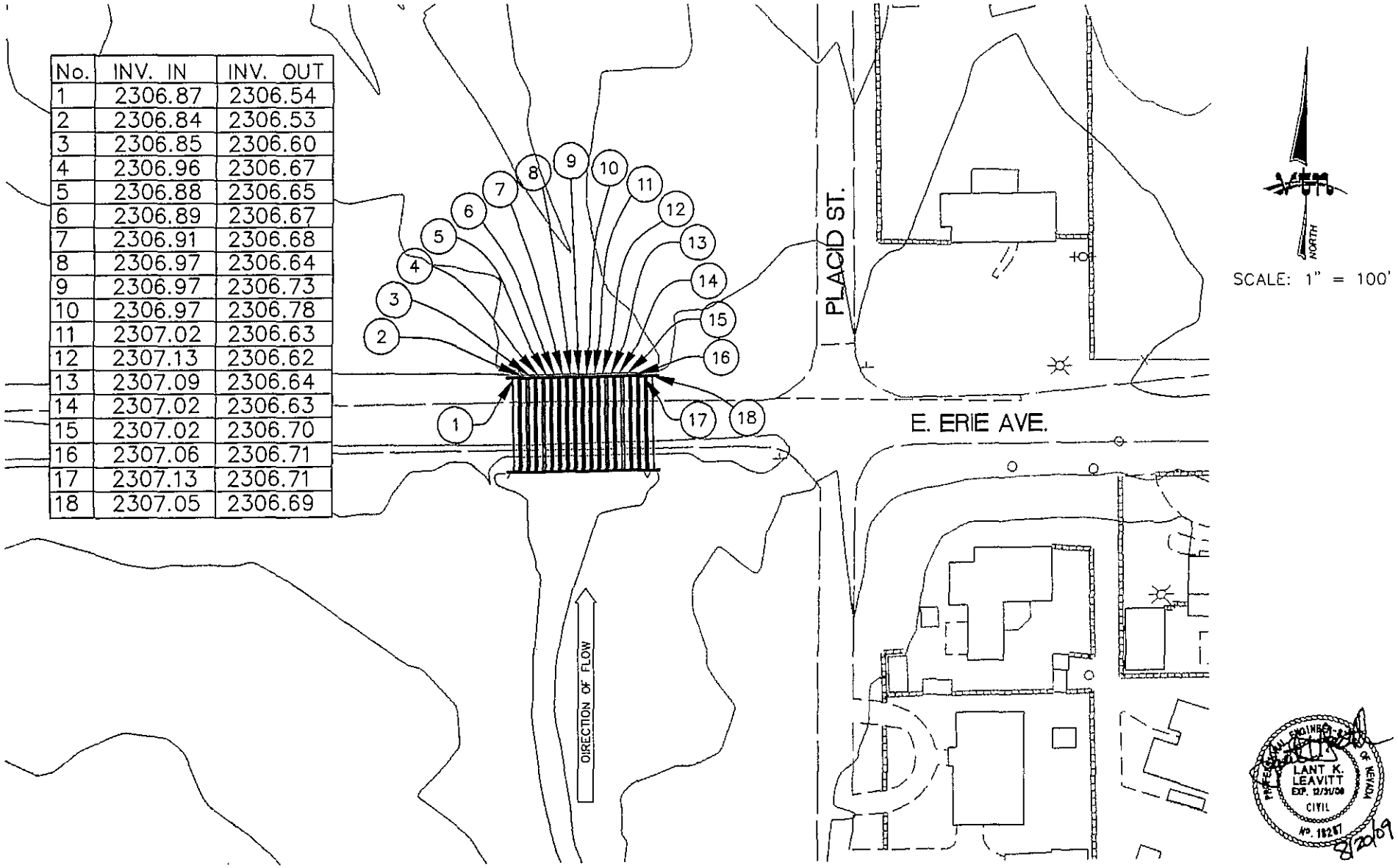


LANT K. LEAVITT
EXP. 12/31/11
CIVIL
No. 18287
3/18/10

DUCK CREEK CHANNEL LOMR-
LAS VEGAS BLVD. TO LOWER DUCK CREEK DETENTION BASIN
EXISTING CULVERT AS BUILTS - 2-21" RCPs AT
CHARTAN AVE./PLACID ST.

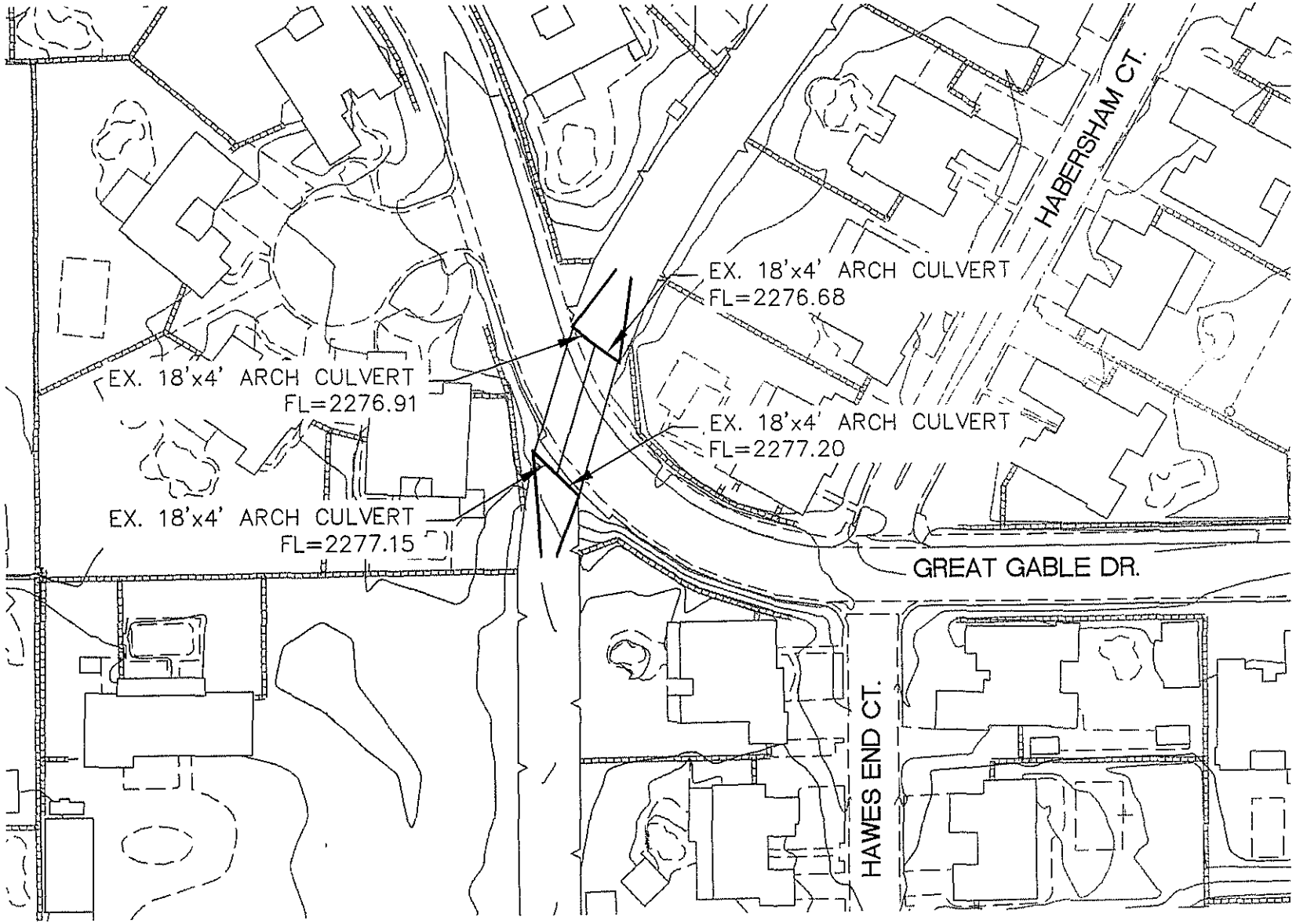
Fig. 2

No.	INV. IN	INV. OUT
1	2306.87	2306.54
2	2306.84	2306.53
3	2306.85	2306.60
4	2306.96	2306.67
5	2306.88	2306.65
6	2306.89	2306.67
7	2306.91	2306.68
8	2306.97	2306.64
9	2306.97	2306.73
10	2306.97	2306.78
11	2307.02	2306.63
12	2307.13	2306.62
13	2307.09	2306.64
14	2307.02	2306.63
15	2307.02	2306.70
16	2307.06	2306.71
17	2307.13	2306.71
18	2307.05	2306.69



DUCK CREEK CHANNEL LOMR-
LAS VEGAS BLVD. TO LOWER DUCK CREEK DETENTION BASIN
EXISTING CULVERT AS BUILTS - 18-4'x3' RCBs AT
E.ERIE AVE./PLACID ST..

Fig. 3



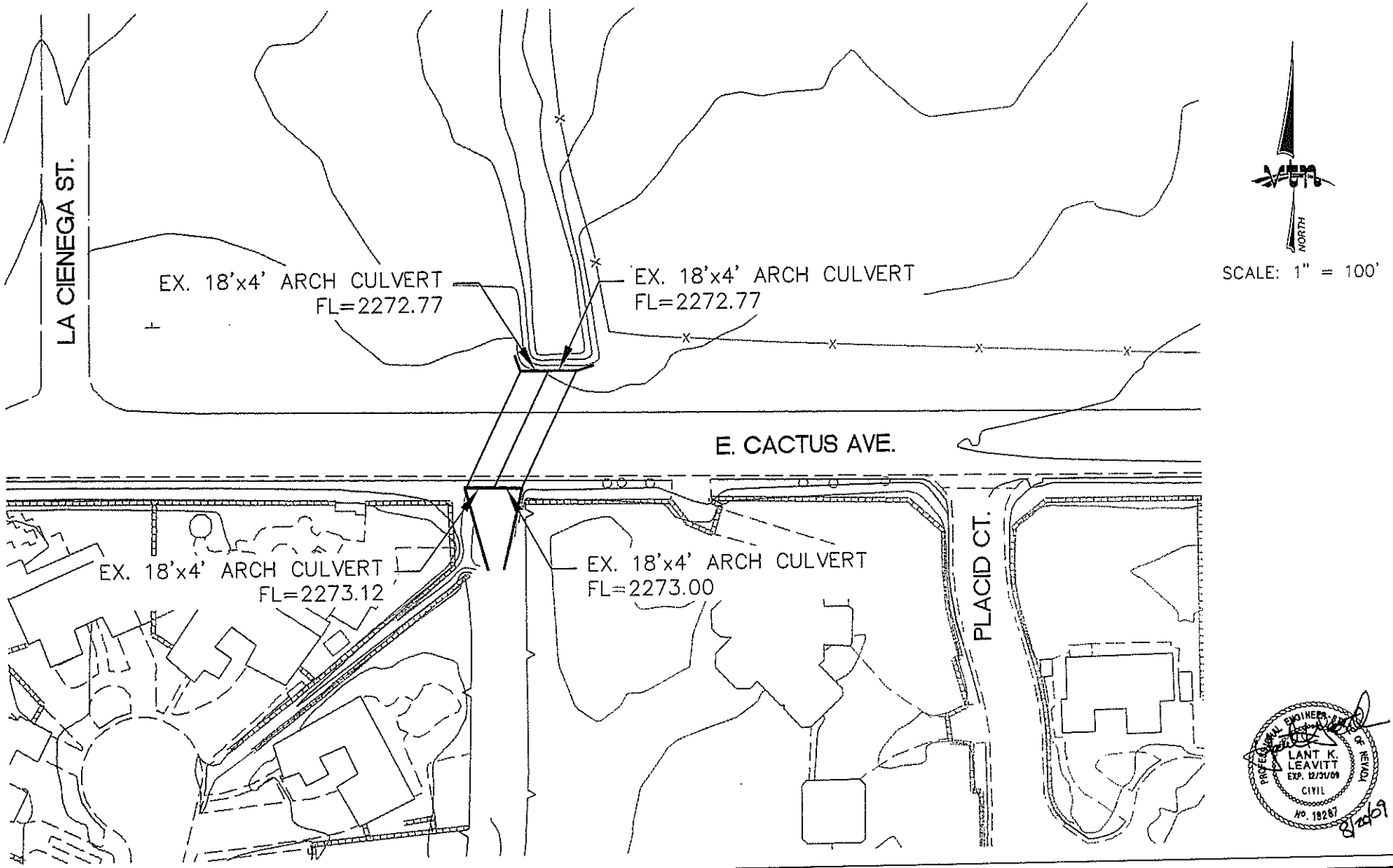
NORTH

SCALE: 1" = 100'

PROFESSIONAL ENGINEER STATE OF NEVADA
LANT K. LEAVITT
EXP. 12/31/09
CIVIL
No. 18287
12/2/09

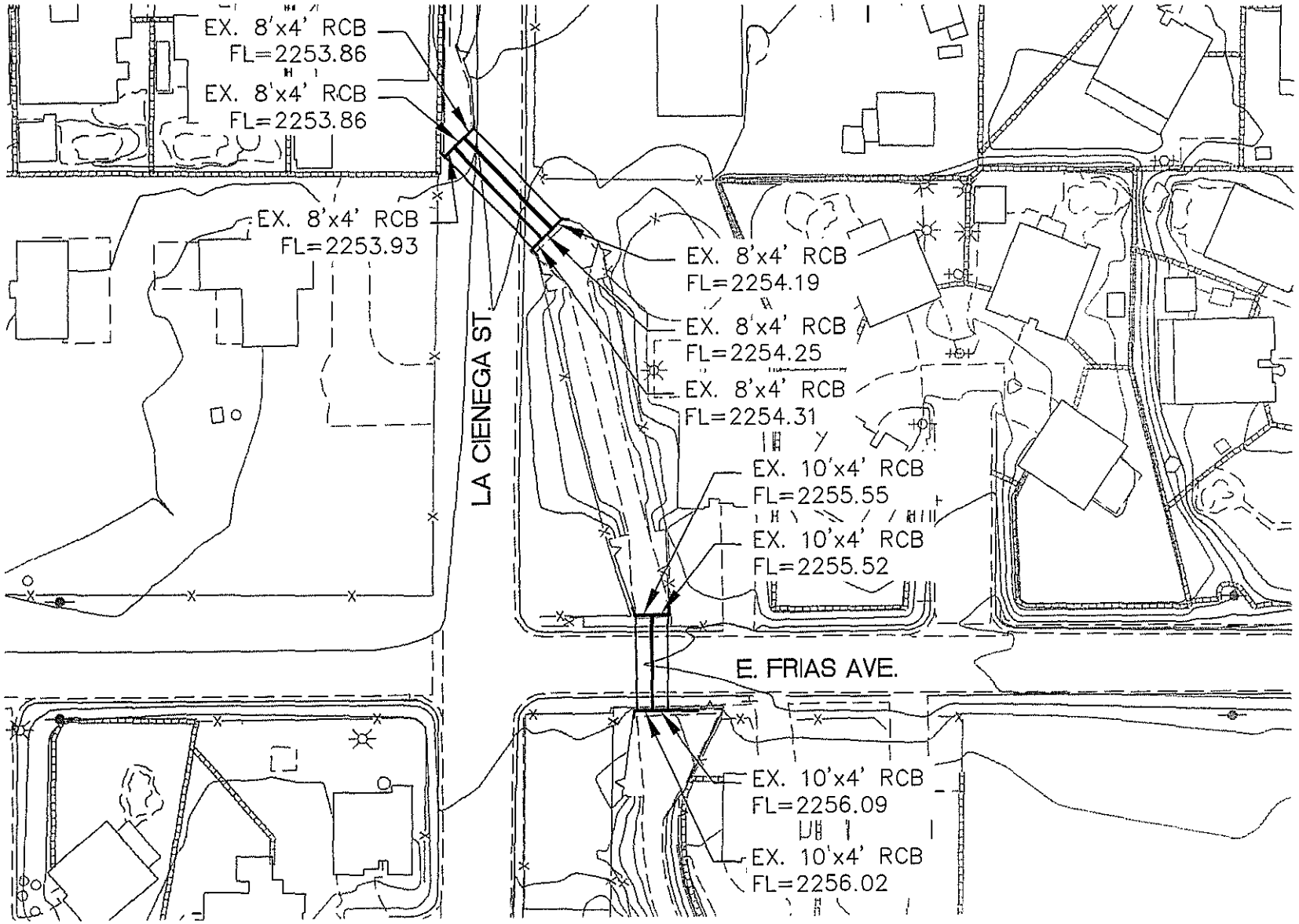
DUCK CREEK CHANNEL LOMR-
LAS VEGAS BLVD. TO LOWER DUCK CREEK DETENTION BASIN
EXISTING CULVERT AS BUILTS - 2-18'x4' ARCH CULVERTS
WEST OF GREAT GABLE DRIVE./HAWES END CT..

Fig. 4



DUCK CREEK CHANNEL LOMR-
LAS VEGAS BLVD. TO LOWER DUCK CREEK DETENTION BASIN
EXISTING CULVERT AS BUILTS - 2-18'x4' ARCH CULVERTS
WEST OF E. CACTUS AVE./PLACID CT..

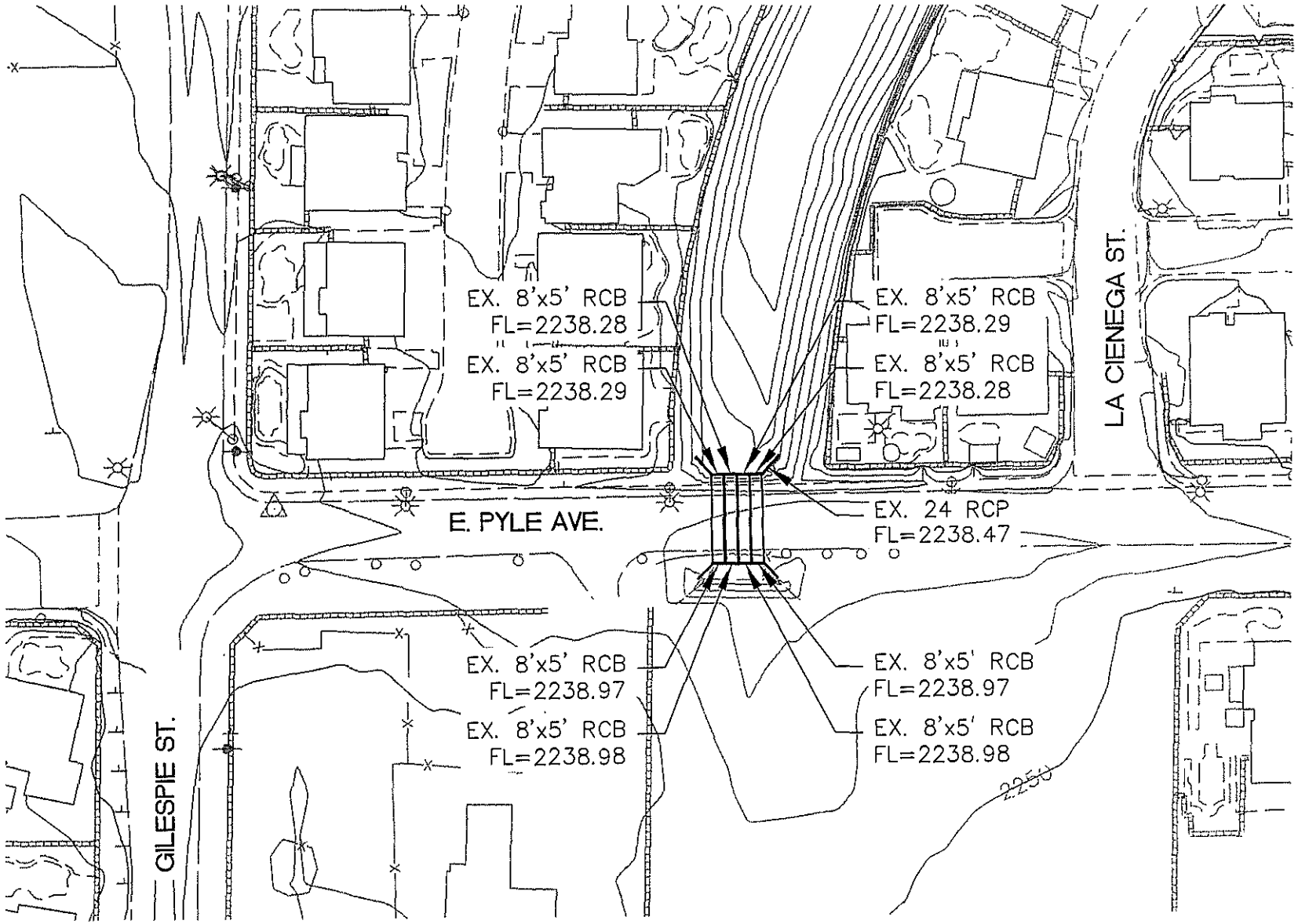
Fig. 5



PROFESSIONAL ENGINEER
STATE OF NEVADA
LANT K. LEAVITT
EXP. 12/31/09
CIVIL
No. 18287
2/9/09

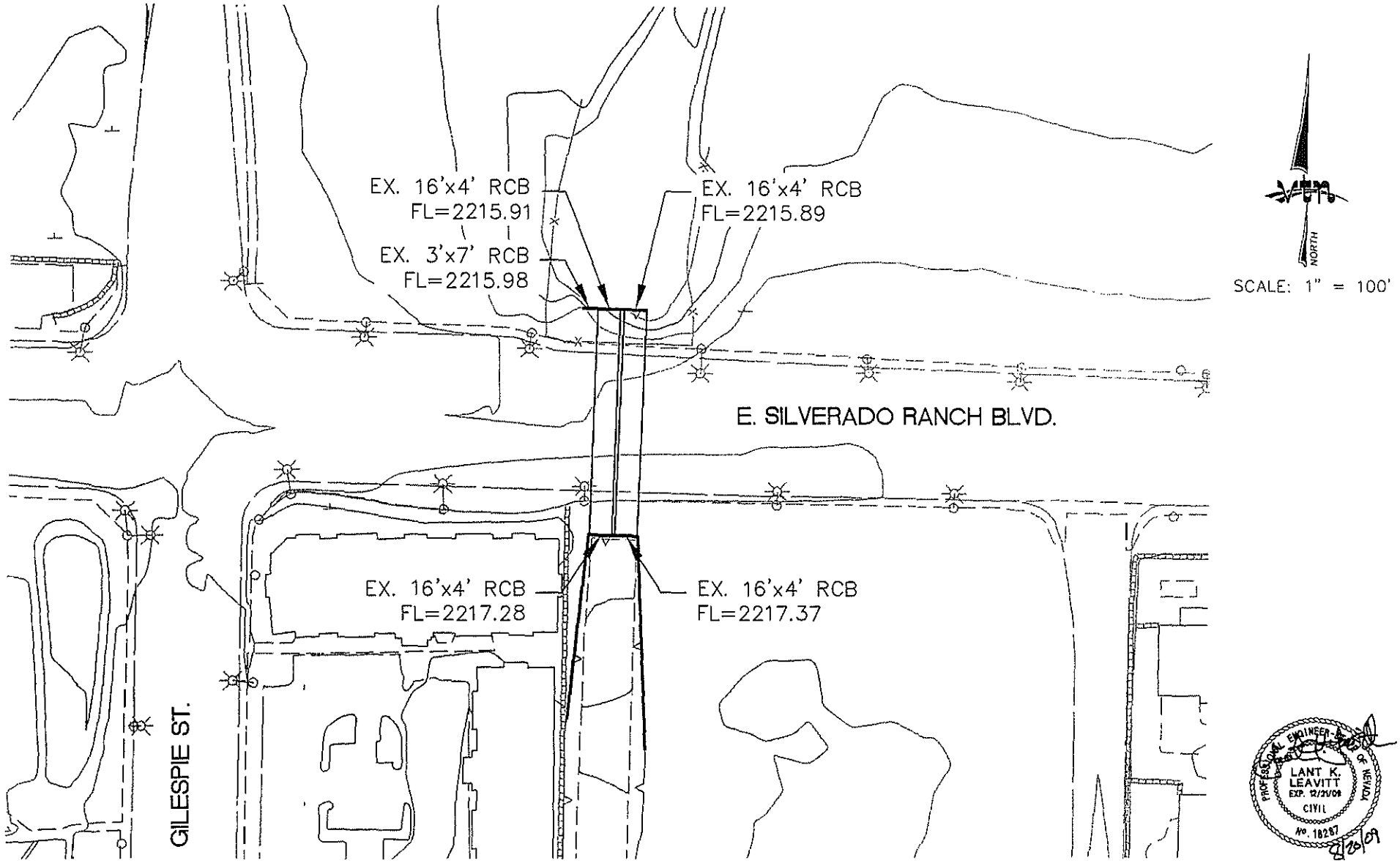
DUCK CREEK CHANNEL LOMR-
LAS VEGAS BLVD. TO LOWER DUCK CREEK DETENTION BASIN
EXISTING CULVERT AS BUILTS - 2-10'x4' RCBs EAST OF E. FRIAS AVE./LA CIENEGA ST. AND 3-8'x4' RCBs NORTH OF E. FRIAS AVE./LA CIENEGA ST.

Fig. 6



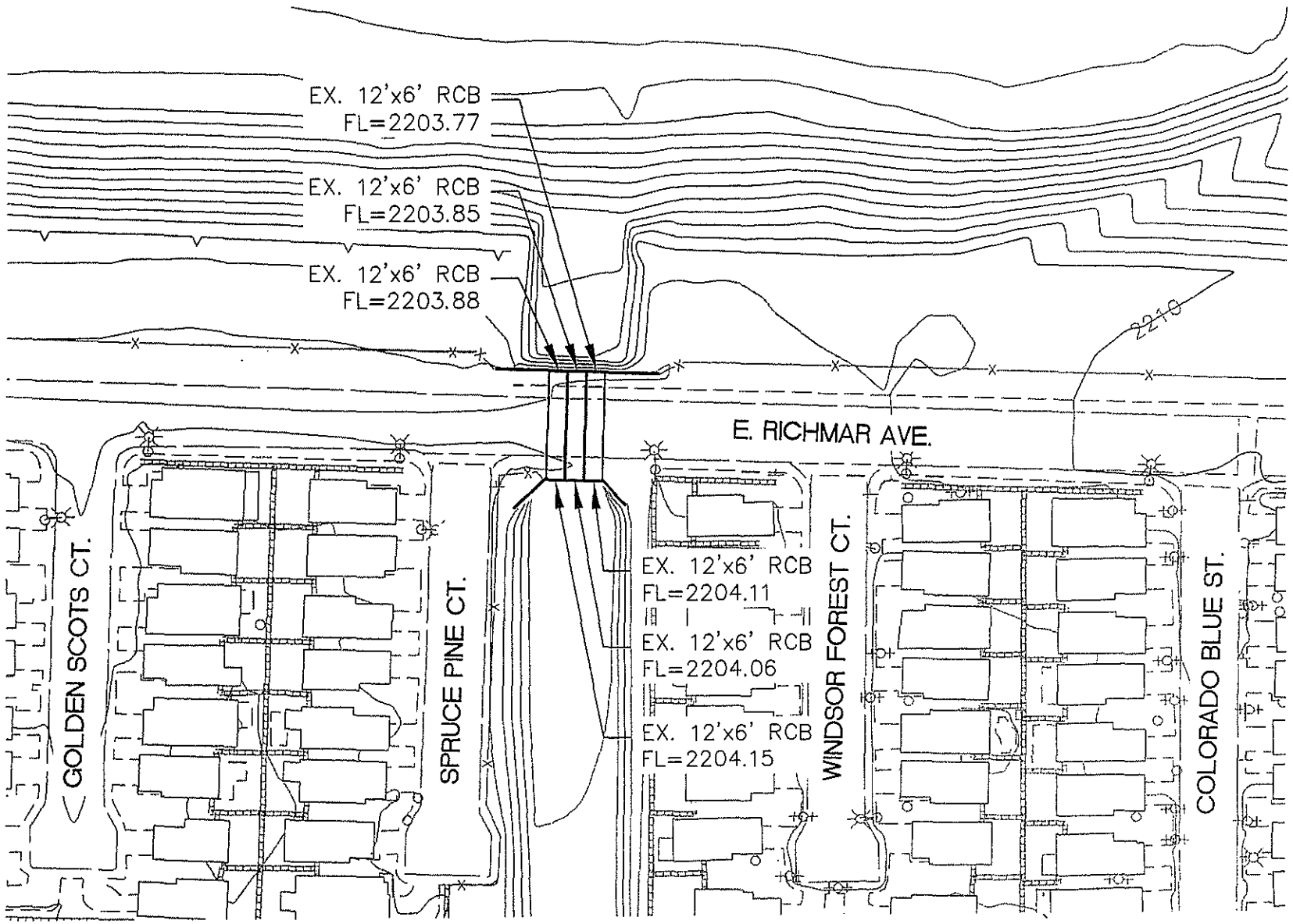
DUCK CREEK CHANNEL LOMR–
LAS VEGAS BLVD. TO LOWER DUCK CREEK DETENTION BASIN
EXISTING CULVERT AS BUILTS - 4-8'x5' RCBs EAST OF
E. PYLE AVE./GILESPIE ST..

Fig. 7



DUCK CREEK CHANNEL LOMR-
LAS VEGAS BLVD. TO LOWER DUCK CREEK DETENTION BASIN
EXISTING CULVERT AS BUILTS - 2-16'x4' RCBs EAST OF
E. SILVERADO RANCH BLVD./GILESPIE ST..

Fig. 8



DUCK CREEK CHANNEL LOMR-
LAS VEGAS BLVD. TO LOWER DUCK CREEK DETENTION BASIN
EXISTING CULVERT AS BUILTS - 3-12'x6' RCBs EAST OF
E. ROCHMAR AVE./SPRUCE PINE CT.

Fig. 9

DUCK CREEK CHANNEL

LAS VEGAS BLVD. TO
LOWER DUCK CREEK DETENTION BASIN

FEMA LETTER OF MAP REVISION APPLICATION

APPENDIX D

Data CD

CD CONTENTS:

- HEC-RAS (See Hard Copy of Report)
- GIS (See Hard Copy of Report)
- AS-BUILTS (See Hard Copy of Report)
- 7’x3’ RCB SYSTEM ANALYSIS (Included)
- CORRESPONDENCE (Included)
- AUTOCAD (See Hard Copy of Report)

7’x3’ RCB SYSTEM ANALYSIS

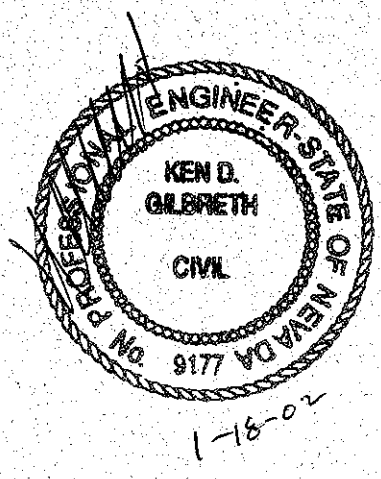
LIBRARY COPY
NTIN

SILVERADO RANCH IMPROVEMENTS
LAS VEGAS BOULEVARD
TO EASTERN AVENUE

FINAL DRAINAGE REPORT

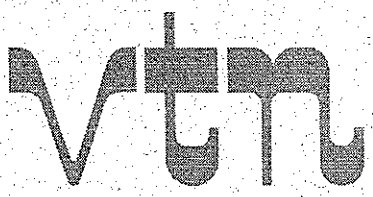
Submitted to:

CLARK COUNTY PUBLIC WORKS



1-18-02

Submitted by:



JANUARY 2002

Maryland/Silverado.

- East of Maryland, there is an existing drop inlet on the south side of Silverado that drains through a 24" RCP that crosses Silverado Ranch Boulevard and daylights to the north.
- There is an existing earthen trapezoidal channel south of Silverado Ranch Boulevard and east of Gilespie Road.
- There is a dip on Silverado Ranch Boulevard to accommodate the flows for Blue Diamond Wash, west of Gilespie Street.
- There are existing valley gutters at Spencer/Silverado, which convey the flows across Silverado to the north.

5.2 Proposed Drainage Systems

Proposed storm drain systems for this project will include 10-year drainage systems along Silverado Ranch Boulevard and two 100-year crossings. The longitudinal slope along Silverado does not have positive drainage, and there are several low points on Silverado Ranch Boulevard, therefore, the 10-year system will be divided into five separate systems.

1. System 1

System 1 extends from the west side of Las Vegas Boulevard, along Silverado Ranch Boulevard to the Duck Creek Crossing. This system ranges in size from a 36" RCP to a 48" RCP and has an average slope of 1.30%. This system will convey approximately 135 cfs.

2. System 2

System 2 is located between Gilespie Street and Placid Street and has two 10-year systems that both drain to the 100-year crossing (Gilespie East Crossing) just to the east of Gilespie Street. The first of the 10-year systems begins on south of the intersection of Gilespie Street and Silverado Ranch Boulevard. The system ranges in size from a 30" RCP to a 48" RCP and a 6'x3' RCB to a 7'x3' RCB. The drop inlet collection system on Gilespie Street does not collect the entire 10-year flows coming down Gilespie Street toward Silverado Ranch Boulevard, but the flows will continue to the low point on Silverado Ranch Boulevard, where drop inlets are designed to collect the excess flows from Gilespie Street. The 30" sewer line and the 24" waterline restricted the size of the system on Gilespie Street. The most cost effective option was to cross the 30" sewer with 24"x38" HERCPs in order to avoid relocating the sewer line. This system will convey approximately 200 cfs.

SYSTEM 2

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SILVERADO RANCH - STORM DRAIN SYSTEM

HEADING LINE NO 2 IS -

GILESPIE MAINLINE (SOUTHERN PORTION)

HEADING LINE NO 3 IS -

BY: T.H., VTN, 10/10/01 UPDATED WSPG FILE: GIL1.DAT

DATE: 1/15/2002
TIME: 17:58

F0515P

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD	SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	3	0	0.00	3.00	7.00	0.00	0.00	0.00										
CD	2	3	0	0.00	3.00	6.00	0.00	0.00	0.00										
CD	3	4			4.00														
CD	4	4			4.50														
CD	5	4			2.50														
CD	6	4			3.50														
CD	7	4			2.00														

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET

	STATION	INVERT	SECT	W S ELEV
U/S DATA	1000.00	2216.00	1	2219.24

ELEMENT NO 2 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	1010.00	2216.11	1	0.014	0.00	0.00	0.00	0

ELEMENT NO 3 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	1015.00	2216.16	1	5	0	0.014	28.0	0.0	2216.27	0.00	30.00	0.00

ELEMENT NO 4 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	1272.58	2219.00	1	0.014	0.00	90.00	0.00	1

ELEMENT NO 5 IS A TRANSITION

	STATION	INVERT	SECT	N
U/S DATA	1321.58	2219.21	2	0.013

ELEMENT NO 6 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	1336.58	2219.23	3	6	0	0.013	77.0	0.0	2219.23	0.00	30.00	0.00

ELEMENT NO 7 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	1403.58	2219.50	3	0.013	0.00	0.00	0.00	1

ELEMENT NO 8 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	1413.58	2219.54	3	0.013	0.00	0.00	35.00	0

ELEMENT NO 9 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	1418.58	2219.56	3	7	0	0.013	11.8	0.0	2221.06	0.00	35.00	0.00

ELEMENT NO 10 IS A REACH

	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	1428.58	2219.60	3	0.013	0.00	0.00	0.00	0

ELEMENT NO 11 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	1433.58	2219.62	3	7	0	0.013	17.8	0.0	2221.12	0.00	35.00	0.00

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A REACH

	STATION	INVERT	SECT			N				RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	1451.58	2219.70	3			0.013				0.00	0.00	0.00	0

ELEMENT NO 13 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	1456.58	2219.72	3	5	0	0.013	26.0	0.0	2221.22	0.00	35.00	0.00

ELEMENT NO 14 IS A REACH

	STATION	INVERT	SECT			N				RADIUS	ANGLE	ANG PT	MAN H
U/S DATA	1476.58	2219.80	3			0.013				0.00	0.00	0.00	0

ELEMENT NO 15 IS A JUNCTION

	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
U/S DATA	1481.58	2219.82	3	5	0	0.013	36.0	0.0	2221.32	0.00	35.00	0.00

ELEMENT NO 16 IS A SYSTEM HEADWORKS

	STATION	INVERT	SECT	W S ELEV
U/S DATA	1481.58	2219.82	3	0.00

NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING

** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

WATER SURFACE PROFILE LISTING

SILVERADO RANCH - STORM DRAIN SYSTEM
GILESPIE MAINLINE (SOUTHERN PORTION)
BY: T.H., VTN, 10/10/01 UPDATED WSPG FILE: GIL1.DAT

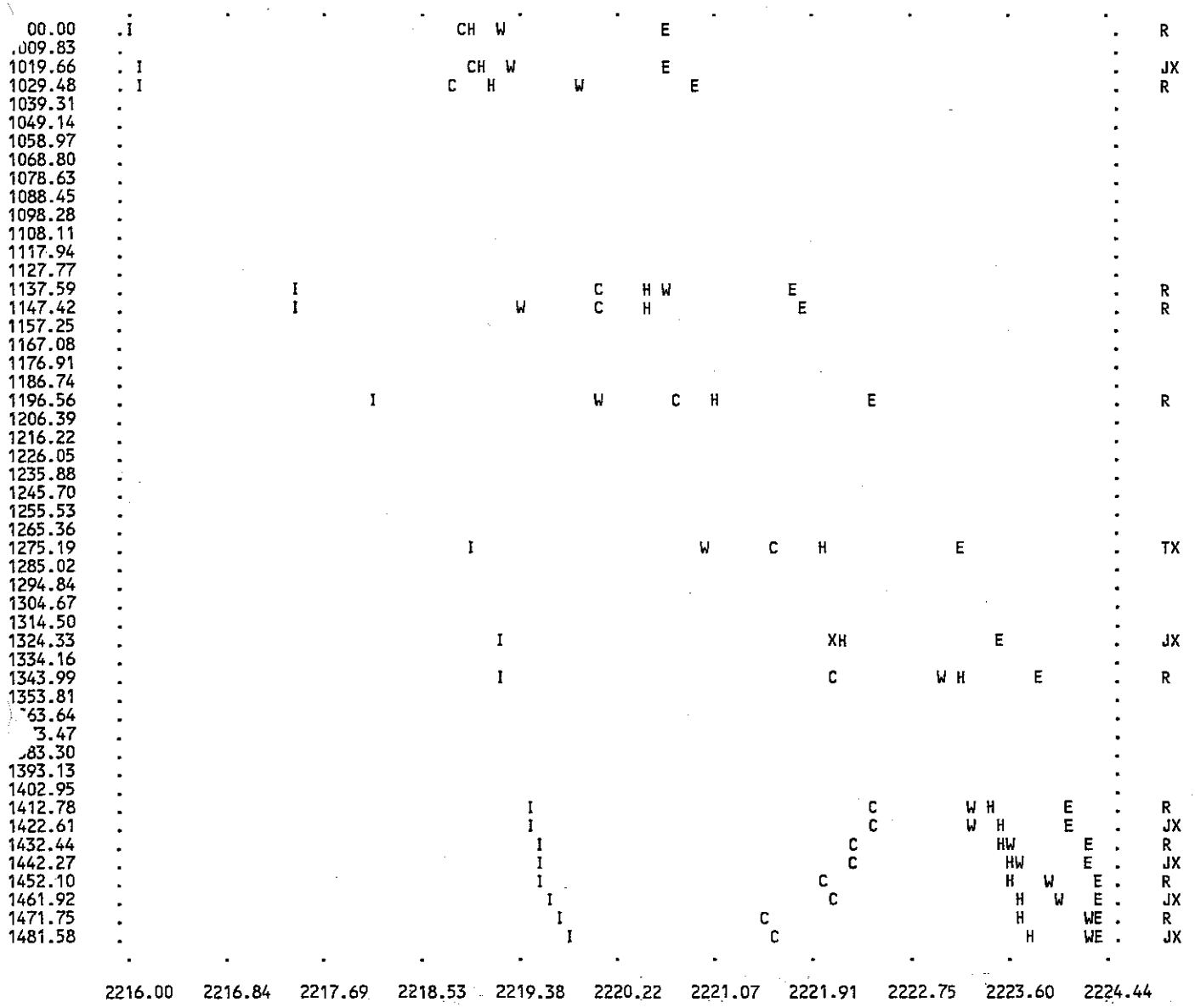
'ON	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
1000.00	2216.00	3.240	2219.240	197.6	9.52	1.408	2220.648	0.00	2.915		3.00	7.00	0.00	0	0.00
10.00	0.01100					.007664	0.08			2.111			0.00		
1010.00	2216.11	3.207	2219.317	197.6	9.52	1.408	2220.725	0.00	2.915		3.00	7.00	0.00	0	0.00
JUNCT STR	0.01000					.006655	0.03						0.00		
1015.00	2216.16	3.724	2219.884	169.6	8.17	1.037	2220.921	0.00	2.633		3.00	7.00	0.00	0	0.00
121.38	0.01103					.005646	0.69			1.894			0.00		
1136.38	2217.50	3.217	2220.715	169.6	8.17	1.037	2221.752	0.00	2.633		3.00	7.00	0.00	0	0.00
HYDRAULIC JUMP													0.00		
1136.38	2217.50	1.937	2219.435	169.6	12.51	2.431	2221.866	0.00	2.633		3.00	7.00	0.00	0	0.00
57.91	0.01103					.010232	0.59			1.894			0.00		
1194.29	2218.14	1.953	2220.090	169.6	12.41	2.390	2222.480	0.00	2.633		3.00	7.00	0.00	0	0.00
78.29	0.01103					.009468	0.74			1.894			0.00		
1272.58	2219.00	2.048	2221.048	169.6	11.83	2.173	2223.221	0.00	2.633		3.00	7.00	0.00	0	0.00
TRANS STR	0.00429					.005938	0.29						0.00		
1321.58	2219.21	2.918	2222.128	169.6	9.69	1.457	2223.585	0.00	2.918		3.00	6.00	0.00	0	0.00
JUNCT STR	0.00133					.003930	0.06						0.00		
.58	2219.23	3.802	2223.032	92.6	7.51	0.875	2223.907	0.00	2.918		4.00	0.00	0.00	0	0.00
.00	0.00403					.003596	0.24			3.336			0.00		
1403.58	2219.50	3.763	2223.263	92.6	7.55	0.885	2224.148	0.00	2.918		4.00	0.00	0.00	0	0.00
10.00	0.00400					.003592	0.04			3.352			0.00		
1413.58	2219.54	3.757	2223.297	92.6	7.56	0.887	2224.184	0.00	2.918		4.00	0.00	0.00	0	0.00
JUNCT STR	0.00400					.003378	0.02						0.00		

WATER SURFACE PROFILE LISTING

SILVERADO RANCH - STORM DRAIN SYSTEM
GILESPIE MAINLINE (SOUTHERN PORTION)
BY: T.H., VTN, 10/10/01 UPDATED WSPG FILE: GIL1.DAT

TION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
1418.58	2219.56	4.114	2223.674	80.8	6.43	0.642	2224.316	0.00	2.723		4.00	0.00	0.00	0	0.00
10.00	0.00400					.003164	0.03			2.937			0.00		
1428.58	2219.60	4.106	2223.706	80.8	6.43	0.642	2224.348	0.00	2.723		4.00	0.00	0.00	0	0.00
JUNCT STR	0.00400					.002544	0.01						0.00		
1433.58	2219.62	4.398	2224.018	63.0	5.01	0.390	2224.408	0.00	2.394		4.00	0.00	0.00	0	0.00
18.00	0.00444					.001924	0.03			2.367			0.00		
1451.58	2219.70	4.353	2224.053	63.0	5.01	0.390	2224.443	0.00	2.394		4.00	0.00	0.00	0	0.00
JUNCT STR	0.00400					.001293	0.01						0.00		
1456.58	2219.72	4.572	2224.292	37.0	2.94	0.135	2224.427	0.00	1.812		4.00	0.00	0.00	0	0.00
20.00	0.00400					.000663	0.01			1.777			0.00		
1476.58	2219.80	4.505	2224.305	37.0	2.94	0.135	2224.440	0.00	1.812		4.00	0.00	0.00	0	0.00
JUNCT STR	0.00400					.000331	0.00						0.00		
1481.58	2219.82	4.621	2224.441	1.0	0.08	0.000	2224.441	0.00	0.287		4.00	0.00	0.00	0	0.00

SILVERADO RANCH - STORM DRAIN SYSTEM
GILESPIE MAINLINE (SOUTHERN PORTION)
BY: T.H., VTN, 10/10/01 UPDATED WSPG FILE: GIL1.DAT



N O T E S
1. GLOSSARY
   I = INVERT ELEVATION
   C = CRITICAL DEPTH
   W = WATER SURFACE ELEVATION
   H = HEIGHT OF CHANNEL
   E = ENERGY GRADE LINE
   X = CURVES CROSSING OVER
   B = BRIDGE ENTRANCE OR EXIT
   Y = WALL ENTRANCE OR EXIT
2. STATIONS FOR POINTS AT A JUMP MAY NOT BE PLOTTED EXACTLY

INLET DESIGN

SILVERADO RANCH BOULEVARD IMPROVEM - LAS VEGAS BOULEVARD TO EASTERN

Determination of flow in...ception capacity of Drop Inlets

Calculations By: Todd Hayne
Date: 1-28-02

Checked By: L.M.
Date:1-29-02

All calculations are based on FHWA HEC-22 method

INPUT DATA:
n = 0.016
Splash-over velocity V_o = 8.0 ft/s (CHART 7)

INLET ID Type[1]	Location	Q cfs	$Q_{w/bypass}$ cfs	L_{grate} ft	$L_{curb\ opening}$ ft	S ft/ft	S_x ft/ft	L_T[2] ft	L_{eff}[3] ft	E[4]	T[5] ft	Q_s[6] cfs	Q_x[7] cfs	E_o[8]	V ft/s	R_f[9]	R_x[10]	Q_{grate} cfs	$Q_{curb\ opening}$	CLOGGING FACTOR	INTERCEPTION (cfs)	BYPASS (cfs)
System 1																						
10' "Type CM2"	"SRB" Sta. 9+38.25 RT	59.0	59.0	10.0	10.0	0.01	0.02	104.43	0.00	0.00	33.28	59.00	50.00	0.15	5.33	1	0.57	37.35	0.00	50%	18.7	40.3
15' "Type DM2"	"SRB" Sta. 10+67.64 RT	59.0	59.0	15.0	15.0	0.01	0.02	104.43	0.00	0.00	33.28	59.00	50.00	0.15	5.33	1	0.77	47.44	0.00	50%	23.7	35.3
5' "Type CM2"	"SRB" Sta. 14+11.22 LT	5.0	5.0	5.0	5.0	0.015	0.02	41.83	0.00	0.00	12.24	5.00	3.10	0.38	3.34	1	0.38	3.08	0.00	50%	1.5	3.5
5' "Type CM2"	"SRB" Sta. 22+97.24 LT	1.9	5.4	5.0	5.0	0.016	0.02	44.05	0.00	0.00	12.44	5.40	3.38	0.37	3.49	1	0.36	3.25	0.00	50%	1.6	3.8
10' "Type CM2"	"SRB" Sta. 29+78.57 LT	2.0	5.8	10.0	18.0	0.004	0.023	27.54	8.00	0.25	13.66	4.37	2.87	0.34	2.04	1	0.89	4.07	1.43	50%	3.5	2.3
20' "Type CM2"	"SRB" Sta. 16+36.07 RT	20.0	20.0	20.0	20.0	0.014	0.02	73.34	0.00	0.00	20.83	20.00	15.28	0.24	4.61	1	0.89	18.37	0.00	50%	9.2	10.8
20' "Type CM2"	"SRB" Sta. 22+86.21 RT	20.0	30.8	20.0	20.0	0.016	0.02	91.514	0.00	0.00	23.89	30.80	24.39	0.21	5.40	1	0.86	27.46	0.00	50%	13.7	17.1
20' "Type CM2"	"SRB" Sta. 29+30.00 RT	2.0	19.1	20	20	0.004	0.023	45.425	0.00	0.00	23.73	19.10	15.10	0.21	2.95	1	0.96	18.43	0.00	50%	9.2	9.9
System 2																						
10' "Type CM2"	"SRB" Sta. 35+81.02 RT	3.0	13.0	10	10	0.004	0.005	96.554	0.00	0.00	50.00	10.93	9.80	0.10	1.75	1	0.71	8.07	0.00	50%	4.0	9.0
10' "Type CM2"	"SRB" Sta. 36+04.40 LT	3.0	5.5	10	10	0.004	0.02	29.284	0.00	0.00	16.24	5.50	3.87	0.30	2.08	1	0.88	5.02	0.00	50%	2.5	3.0
20' "Type DM2"	"SD2W" Sta. 306+24.36 LT	109.5	109.5	20.0	20.0	0.005	0.020	109.98	0.00	0.00	47.76	109.50	97.68	0.11	4.80	1	0.89	98.38	0.00	50%	49.2	60.3
20' "Type DM2"	"SD2W" Sta. 306+23.08 LT	0.0	60.3	20.0	20.0	0.005	0.020	85.61	0.00	0.00	38.20	60.31	52.25	0.13	4.13	1	0.91	55.64	0.00	50%	27.8	32.5
10' "Type DM2"	"GS" 7+78.05 LT	109.5	109.5	10.0	10.0	0.005	0.020	109.98	0.00	0.00	47.76	109.50	97.68	0.11	4.80	1	0.61	71.64	0.00	50%	35.8	73.7
10' "Type CM2"	"GS" 7+97.58 LT	0.0	73.7	10.0	10.0	0.005	0.020	93.12	0.00	0.00	41.18	73.68	64.51	0.12	4.35	1	0.65	51.36	0.00	50%	25.7	48.0
10' "Type CM2"	"GS" 8+17.06 LT	0.0	48.0	10.0	10.0	0.005	0.004	204.30	0.00	0.00	50.00	8.42	7.55	0.10	1.68	1	0.68	5.97	0.00	50%	3.0	45.0
10' "Type CM2"	"GS" 8+36.58 LT	0.0	45.0	10.0	10.0	0.005	0.005	173.94	0.00	0.00	50.00	12.22	10.96	0.10	1.96	1	0.67	8.65	0.00	50%	4.3	40.7
15' "Type CM2"	"SRB" Sta. 49+76.75 RT	43.0	43.0	15.0	15.0	0.005	0.020	74.27	0.00	0.00	33.65	43.00	36.51	0.15	3.80	1	0.86	37.88	0.00	50%	18.9	24.1
System 3																						
10' "Type CM2"	"BR" Sta. 10+88.93 LT	40.0	40.0	10.0	10.0	0.007	0.020	80.71	0.00	0.00	30.51	40.00	33.38	0.17	4.30	1	0.66	28.61	0.00	50%	14.3	25.7
15' "Type DM2"	"BR" Sta. 11+01.75 RT	30.0	55.7	20.0	20.0	0.007	0.020	91.59	0.00	0.00	34.81	55.70	47.56	0.15	4.60	1	0.89	50.65	0.00	50%	25.3	30.4
15' "Type CM2"	"BR" Sta. 8+94.25 LT	20.0	20.0	15.0	15.0	0.004	0.020	50.36	0.00	0.00	26.34	20.00	16.20	0.19	2.88	1	0.91	18.54	0.00	50%	9.3	10.7
20' "Type DM2"	"BR" Sta. 9+09.40 RT	37.0	37.0	20.0	20.0	0.004	0.020	65.21	0.00	0.00	33.17	37.00	31.34	0.15	3.36	1	0.94	35.01	0.00	50%	17.5	19.5
10' "Type CM2"	"BR" 16+39.61 LT	15	15.0	10.0	10.0	0.0	0.019	47.150	0.00	0.00	24.44	15.00	11.94	0.20	2.68	1.00	0.81	12.71	0.00	50%	6.4	8.6
System 4																						
10' "Type DM2"	"SRB" Sta. 88+64.91 RT	50.0	50.0	10.0	10.0	0.013	0.020	104.66	0.00	0.00	29.91	50.00	41.56	0.17	5.59	1	0.55	31.12	0.00	50%	15.6	34.4
10' "Type DM2"	"SRB" Sta. 89+35.10 RT	50.0	50.0	10.0	10.0	0.013	0.020	104.66	0.00	0.00	29.91	50.00	41.56	0.17	5.59	1	0.55	31.12	0.00	50%	15.6	34.4
10' "Type DM2"	"SRB" Sta. 95+18.60 RT	25.0	25.0	10.0	10.0	0.004	0.020	55.31	0.00	0.00	28.64	25.00	20.61	0.18	3.05	1	0.78	20.50	0.00	50%	10.2	14.8
15' "Type DM2"	"SRB" Sta. 101+67.07 RT	40.0	40.0	15.0	15.0	0.004	0.020	67.38	0.00	0.00	34.15	40.00	34.05	0.15	3.43	1	0.88	35.92	0.00	50%	18.0	22.0
15' "Type DM2"	"SRB" Sta. 107+87.82 RT	1.5	23.5	15.0	15.0	0.004	0.020	53.89	0.00	0.00	27.98	23.50	19.28	0.18	3.00	1	0.90	21.64	0.00	50%	10.8	12.7
5' "Type DM2"	"SRB" Sta. 101+58.21 LT	5.0	5.0	5.0	5.0	0.004	0.020	28.13	0.00	0.00	15.67	5.00	3.47	0.31	2.04	1	0.60	3.61	0.00	50%	1.8	3.2
5' "Type DM2"	"SRB" Sta. 107+78.92 LT	1.5	4.7	5.0	5.0	0.004	0.020	27.41	0.00	0.00	15.32	4.70	3.23	0.31	2.00	1	0.61	3.43	0.00	50%	1.7	3.0
5' "Type DM2"	"SRB" Sta. 114+35.48 LT	1.5	4.5	5.0	5.0	0.004	0.020	26.92	0.00	0.00	15.07	4.50	3.08	0.32	1.98	1	0.61	3.31	0.00	50%	1.7	2.8

[1]Starts at the upstream end

[2]L_T = Curb opening length required to intercept 100% of the gutter flow
$L_T = KQ^{0.42}S^{0.3}(1/nS_x)^{0.6}$ K = 0.6

[3]Curb opening length upstream of the grate

[4]E = Curb opening inlet interception efficiency
$E = 1-(1-L/L_T)^{1.8}$

[5]T = Width of flow
$T = (Q/((0.56/n)S_x^{1.67}S^{0.5}))^{1/2.67}$

[6]Q_s = Gutter flow
$Q_s = (0.56/n)S_x^{1.67}T^{2.67}S^{0.5}$

[7]Q_x= Side flow
$Q_x = (0.56/n)S_x^{1.67}T_x^{2.67}S^{0.5}$

[8]E_o = Ratio of frontal flow to total gutter flow
$E_o = Q_o/Q_s$

[9]R_f = Frontal flow interception efficiency

[10]Rs = Side flow interception efficiency
$Rs = 1/(1+0.15V^{1.8}/S_xL^{2.3})$

SILVERADO RANCH BOULEVARD IMPROVEMENTS - LAS VEGAS BOULVEVARD TO EASTERN AVENUE

DETERMINATION OF FLOW INTERCEPTION CAPACITY OF COMBINATION D.I. IN SUMP CONDITION AND FLANKER INLETS

Calculations By: T.H.
Date: 1-28-02

Checked By: L.M.
Date: 1-29-02

(All calculations are in accordance to FHWA- HEC22)

A combination inlet will operate as a weir at a depth of 0.6 ft.

	D.I. Type	LOCATION	Inlet size (ft)	Curb opening (ft)	Q_{10} (cfs) + bypass	d (ft)[1]	Q_{grate} (cfs)[2]	$Q_{curb\ opening}$(cfs)[3]	Q_{grate} (cfs)[4]	$Q_{curb\ opening}$(cfs)[5]	$Q_{Captured}$ (cfs)
*	20' "DM2"	"SRB" Sta. 8+82.13 LT	1.5 x 20	20.0	30.0	0.60	16.0	13.9	31.2	10.4	30.0
*	10' "CM2"	"SRB" Sta. 39+68.71 LT	1.5 x 10	10.0	16.0	0.60	16.0	7.0	31.2	10.4	16.0
**	5' "CM2"	"SRB" Sta. 39+34.45 LT	1.5 x 5	5.0	16.0	0.60	11.2	7.0	31.2	10.4	16.0
**	5' "CM2"	"SRB" Sta. 40+00.00 LT	1.5 x 5	5.0	16.0	0.60	11.2	7.0	31.2	10.4	16.0
*	10' "CM2"	"SRB" Sta. 39+72.26 RT	1.5 x 10	10.0	38.0	0.60	36.9	7.0	62.5	20.8	38.0
*	10' "CM2"	"SRB" Sta. 39+57.00 RT	1.5 x 10	10.0	38.0	0.60	36.9	7.0	62.5	20.8	38.0
**	5' "CM2"	"SRB" Sta. 40+28.25 RT	1.5 x 5	5.0	38.0	0.60	11.2	7.0	31.2	10.4	18.1
*	15' "CM2"	"SRB" Sta. 48+80.07 RT	1.5 x 15	15.0	33.0	0.60	23.0	10.5	31.2	10.4	33.0
*	10' "CM2"	"SRB" Sta. 48+81.25 LT	1.5 x 10	10.0	10.0	0.60	16.0	7.0	31.2	10.4	10.0
*	TYPE 2A	SWC Silverado & Gilespie	2.0 x 2.0	0	15.0	1.00	18.0	0.0	21.5	0.0	15.0

* - in a sump condition - Assumes 50% clogging of both the grate and the curb opening
** - flanker inlets and are assumed to capture 0 (cfs), therefore are designed with 0% clogging factor

[1]Ponding depth over grate
[2]Capacity of grate inlet operating as a weir: $Q_i = C_w P d^{1.5}$
[3]Capacity of curb opening operating as a weir: $Q_i = C_w L d^{1.5}$
[4]Capacity of grate inlet operating as an orifice: $Q_i = C_o A_g (2gd)^{0.5}$
[5]Capacity of curb opening operating as an orifice: $Q_i = C_o h L (2g d_o)^{0.5}$

CORRESPONDENCE

Lant Leavitt

From: Lindsay, James [JGLindsay@mbakercorp.com]
Sent: Thursday, February 25, 2010 9:41 AM
To: Kevin Eubanks
Cc: jeffg@vtnnv.com; Lant Leavitt; Kuechenmeister, Joseph
Subject: RE: Duck Creek -09-09-3102P

Kevin,

After further review into Item 8 I have come to the conclusion that the upstream tie-ins are okay. The downstream tie-in on the Duck Creek South Channel is okay too. However we still feel that the downstream tie-in for Duck Creek needs to be revised. The model I have for it from the CLOMR shows the downstream starting conditions as normal slope. This is generating a BFE that is lower than the Detention Basins BFE. What we would like you to do is revise this to known water surface elevation so the downstream BFE is not lower than the Detention Basin.

James Lindsay
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165 South Union Blvd., Suite 200
Lakewood, CO 80228
720-514-1122
JGLindsay@mbakercorp.com

From: Kevin Eubanks [mailto:KEubanks@regionalflood.org]
Sent: Wednesday, February 24, 2010 2:24 PM
To: Lindsay, James
Cc: jeffg@vtnnv.com; Lant Leavitt; Kuechenmeister, Joseph
Subject: RE: Duck Creek -09-09-3102P

James,

Thanks for the response. Looks like we're on track. We'll wait to hear from you on Item 8. We'll contact you as we proceed if questions arise.

Thanks again.

Kevin Eubanks, P.E., CFM
Assistant General Manager
Clark County Regional Flood Control District
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From: Lindsay, James [mailto:JGLindsay@mbakercorp.com]
Sent: Wednesday, February 24, 2010 11:29 AM
To: Kevin Eubanks
Cc: jeffg@vtnnv.com; Lant Leavitt; Kuechenmeister, Joseph
Subject: RE: Duck Creek -09-09-3102P

Kevin,

Here are my comments. I will look further into the tie-in and get back to you.

James Lindsay

From: Kevin Eubanks [mailto:KEubanks@regionalflood.org]
Sent: Friday, February 19, 2010 1:08 PM
To: Lindsay, James
Cc: jeffg@vtnnv.com; Lant Leavitt; Kuechenmeister, Joseph
Subject: Duck Creek -09-09-3102P

James,

We've had a chance to go over the 316-AD letter for this case dated January 26, 2010. We may need some clarification. Below is an item by item statement of our understanding and proposed resolution or request for clarification as appropriate.

1. Structure parameters:
    a. 11510 The structure was modeled as an 18" per the design plans but shown as 24" on the as-built survey sketch. This discrepancy will be verified and appropriate revision performed or justification documentation submitted.
    b. 4415 The only discrepancy we could find between the model and survey was that the modeler used invert elevations of 39.00 and the survey shows 38.97 and 38.98. This is inconsistent but seems inconsequential. We would prefer to consider the model consistent with as-built conditions and make no revision here. Let me know if there is another discrepancy at this location that we are missing. I calculated the widths of the culverts to be 8.5 or 9 feet. When the survey showed 8 ft.
2. These reach lengths will be fixed and resubmitted
3. Top width discrepancies
    a. 2008.56 and 2100 should be shown wider graphically. These will be fixed on the exhibit and shape files
    b. 5100 we plan to move the section upstream slightly to the end of the improved channel, use the channel plans to describe the section and then re-delineate the SFHA.
    c. 5830 We'll want your opinion on how to proceed here. This is the section just upstream of a structure. There is overtopping of a nearly flat section of road. The modeler coded ineffective flow areas to contain the overtopping flow. We can widen these ineffective stations to the point where flow is <1' and calculate how much flow could escape east and west. I believe the possible outflow will be minimal. We can then widen the top width in the delineation here. Do you have any other suggestions? I would just map it to the extents of the ineffective flow.
    d. 7235 We can redraw this flare at the culvert entrance. But I think it is minimal It is minimal but it would more accurately show the floodplain.
    e. 10500 The difference here is the dry land between the 2 low points. The drafter decided not to show an "island" here. I presume this is OK.(?) It is more conservative. If you choose to leave it that's ok.
    f. 400 this will be redrawn to match the model
    g. -101000, -10154, -10223, -7548, -7610, -7643. These were all reviewed and approved in the issuance of the CLOMR under Case No. 07-09-1205R. These mapped top widths are larger than the model output because these are maintenance access ramp areas. The ramps are not included in the model sections as they will be ineffective, but they will be inundated, so they are mapped in the SFHA. I presume this is adequate explanation. That's fine.
4. This was explained, reviewed and approved in the issuance of the CLOMR under Case No. 07-09-1205R. In a February 2008 response to a 316-AD letter dated November 6, 2007 new topography was used to develop a better model. The write-up in response to comment No. 2 explained that there were 3 consecutive sections with hydraulic depths <1' and the SFHA was terminated as shown. No further action necessary. Thanks for the reference. This is ok.
5. These areas will be redrafted with closer attention to the topography between sections. New maps and shape files will be provided.
6. The models will be revised to more closely follow USACOE guidance
7. The only cross section that we could find that used the levee option was 90+00. In this location there is a small tributary with insignificant watershed area that would not be expected to convey main channel flow. It just can't get there. It would be inappropriate to include this area in the conveyance calculation. So the modeler used the levee option to "code out" this area. Another approach, if the levee option is undesirable, would be to just not include that part of the topography in the definition of the cross section. Is explanation

sufficient? Understandable if you would, please remove some of the topo.

8. Tie in at the upstream and downstream ends of the study area were of particular concern during the review of the CLOMR under Case No. 07-09-1205R. All issues were resolved and the CLOMR was issued. I would urge you to review this comment with the individuals who reviewed the CLOMR models before we take further action. The upstream ends tie to the effective data prepared under Case No. 06-09-B275P LOMR issued 10/31/06. The downstream end of the Duck Cr. Channel improvements discharge to a detention basin pool. The downstream end of the Duck Cr. S. channel ties into effective data for Case No. 05-09-1034P LOMR effective date 2/09/06. The models for this case 09-09-3102P use the sections from 05-09-1034P and match elevation exactly. Our model actually extends all the way to the DB using the effective sections. The graphic data submitted with 05-09-1034P may have not been developed with the best accuracy or digital technology. We could provide a smother delineation if that would be satisfactory. The delineation in the area does not affect any insurable structures and only affects undeveloped land. Further LOMC action would be required prior to development of this land and the flood risk is adequately represented based on the effective data and data submitted with this case. I will look further into this and get back to you.

If you can respond via e-mail and accept our approach or provide guidance as appropriate, that would be great. If you would like to set up a phone conference to discuss further, please let me know and we'll get it scheduled.

Thanks

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