Hydrology and Hydraulics Report

Merrill East Hastings Bridge #3150

WIN 022252.00

WIN:	22252.00	**Project Name:**	
Town:	Merrill	**Stream Name:**	East Hastings Brook
Route No.	ME-212	**Bridge Name:**	East Hastings Bridge
Asset ID:	3150	**Analysis by:**	csh
Lat:	46.2021 **Long:** -68.28539	**Date:**	5/29/2018

Peak Flow Calculations by USGS Regression Equations (Hodgkins, 1999 & Lombard/Hodgkins, 2015)

Enter data in blue cells only!

	km^2	mi^2	ac	***Enter data in [mi^2]***
A	26.16	10.10	6464.0	Watershed Area *DRNAREA*
W	3.18	1.2	785.4	Wetlands area (by NWI)
P_c	553171	5119329		watershed centroid (E, N; UTM 19N; meters)
County	Aroostook C			*choose county from drop-down menu*
pptA	36.1			mean annual precipitation (inches; by look-up)
SG	0.00			sand & gravel aquifer as decimal fraction of watershed A

A (km^2)	26.16	**Conf Lvl**	0.67
W (%)	12.15		NWI Wetlands % *STORNWI*

Ret Pd	**Peak Flow Estimate**			
T (yr)	**Lower**	**Q_T (m^3/s)**	**Upper**	**Q_T (ft^3/s)**
1.1		3.71		131.1
2		7.65		270.1
5		12.06		426.0
10		15.11		533.6
25		19.88		701.8
50		23.08		814.9
100		27.05		955.2
500		36.31		1282.2

Worksheet prepared by:
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207-557-1052
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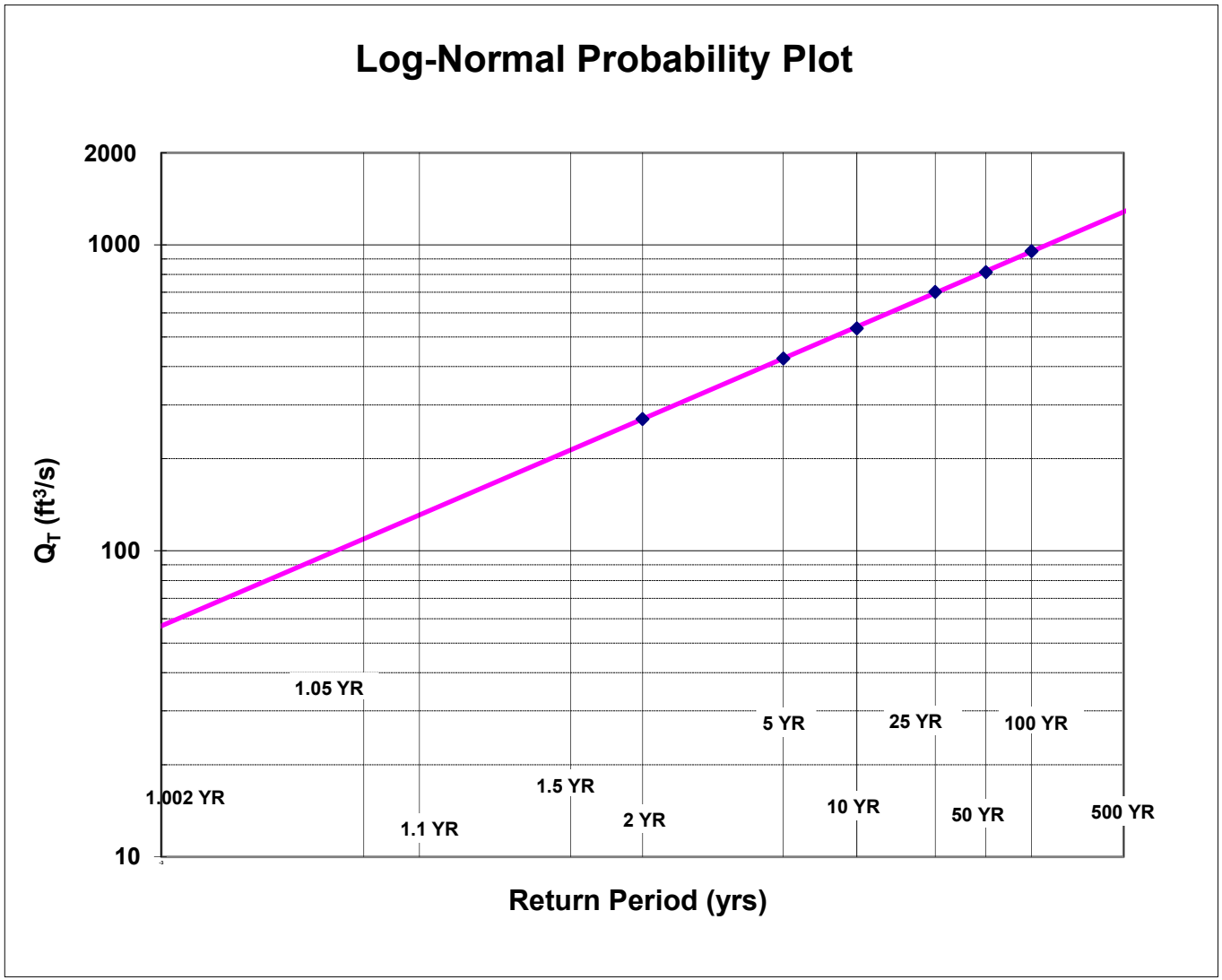
ver. 2017 Jun. 09

References:

Hodgkins, G.A., 1999.
Estimating the magnitude of peak flows for streams in Maine for selected recurrence intervals
WRIR 99-4008, USGS Augusta, ME

Lombard, P.J. & G.A. Hodgkins, 2015.
Peak flow regression equations for small, ungaged streams in Maine - Comparing map-based to field-based variables
SIR 2015-4059, USGS, Augusta, ME

$Q_T = b \times A^a \times 10^{-wW}$


Log-Normal Probability Plot
2000
1000
100
10
Q_T (ft^3/s)
1.05 YR
5 YR
25 YR
100 YR
1.002 YR
1.5 YR
10 YR
1.1 YR
2 YR
50 YR
500 YR
Return Period (yrs)

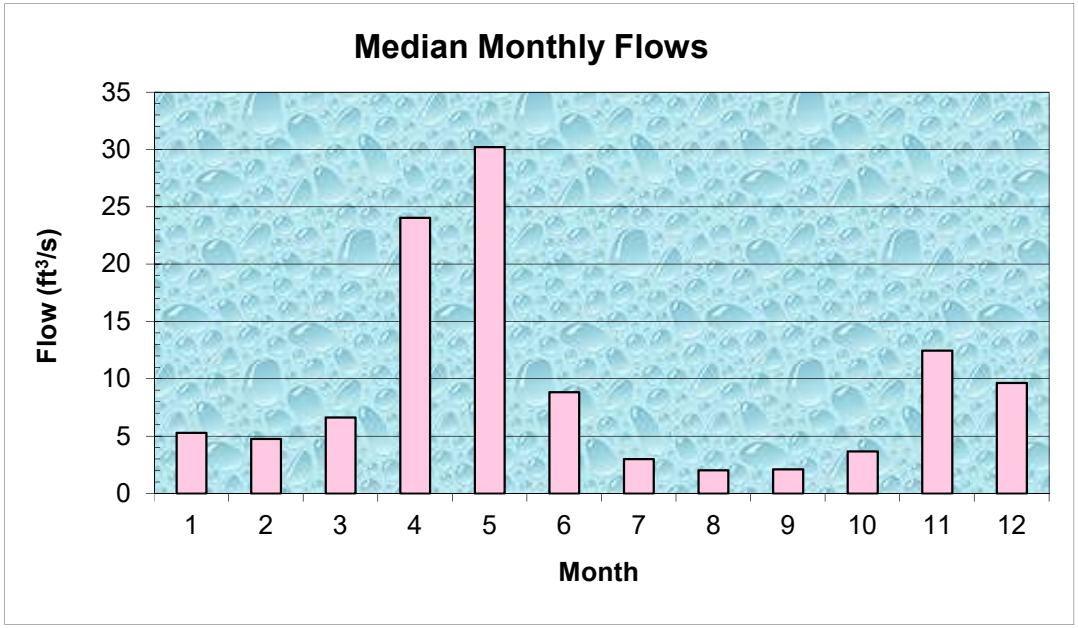
WIN:	22252.00	**Project Name:**	0
Town:	Merrill	**Stream Name:**	East Hastings Brook
Route No.	ME-212	**Bridge Name:**	East Hastings Bridge
Asset ID:	3150	**Analysis by:**	csh
Lat:	46.20214 **Long:** -68.28539	**Date:**	5/29/2018

DO NOT ENTER ANY DATA ON THIS PAGE; EVERYTHING IS CALCULATED

MAINE MONTHLY MEDIAN FLOWS and HYDRAULIC GEOMETRY BY USGS REGRESSION EQUATIONS (2004, 2013)

	Value	Variable	Explanation
	10.10	*A*	Area (mi^2)
553170.6	5119329	P_c	Watershed centroid (E,N; UTM; Zone 19; meters)
	138.47	*DIST*	Distance from Coastal reference line (mi)
	36.1	*pptA*	Mean Annual Precipitation (inches)
	0.00	*SG*	Sand & Gravel Aquifer (decimal fraction of watershed area)

Month	Q_{median} (ft3/s)	(m^3/s)
Jan	**5.31**	0.1504
Feb	**4.77**	0.1351
Mar	**6.64**	0.1881
Apr	**24.05**	0.6817
May	**30.21**	0.8560
Jun	**8.84**	0.2505
Jul	**2.99**	0.0848
Aug	**2.03**	0.0574
Sep	**2.12**	0.0600
Oct	**3.68**	0.1043
Nov	**12.46**	0.3530
Dec	**9.66**	0.2738



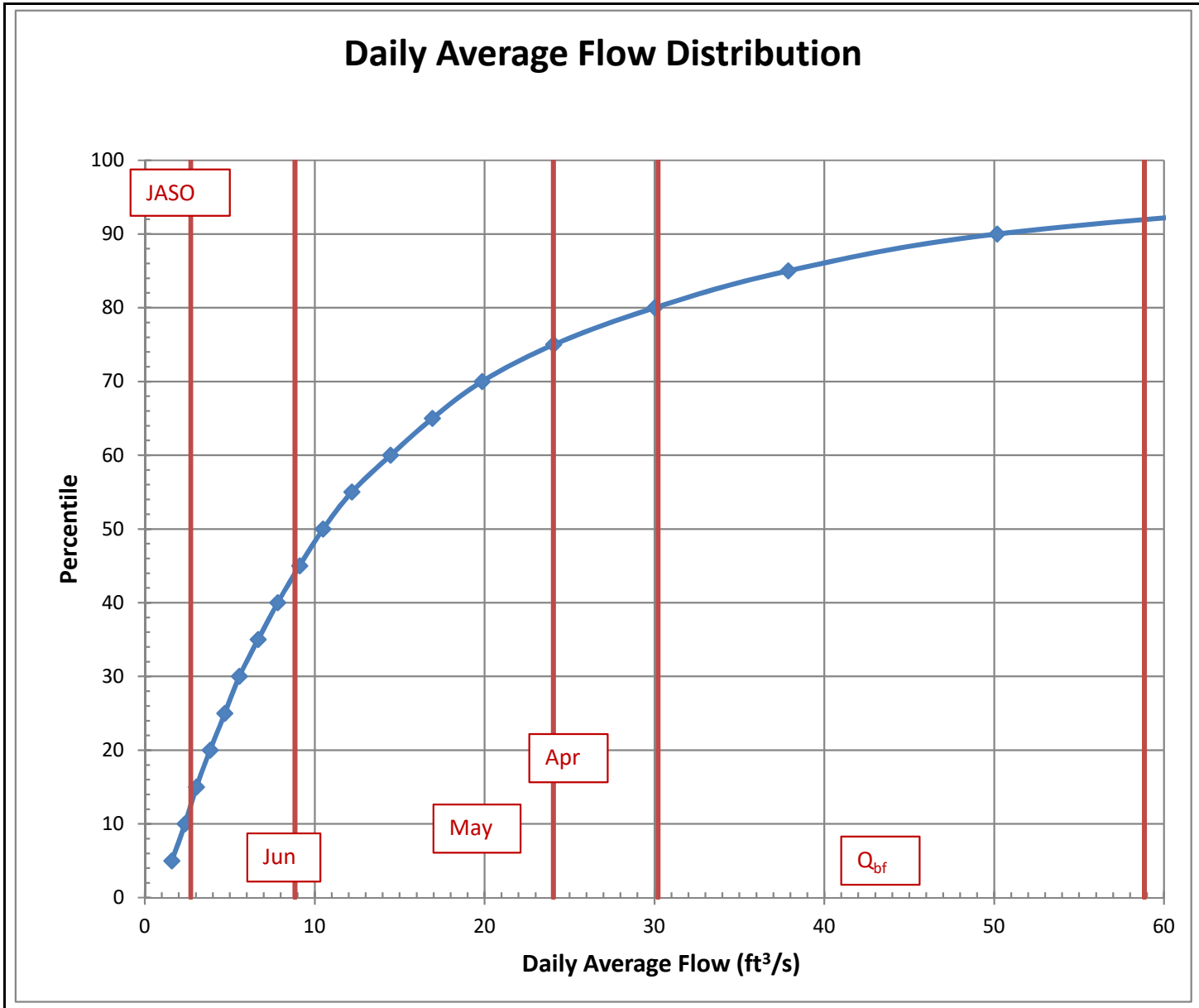
Q_{bf}	**58.8**	
ann avg	**18.4**	
ann med	**8.0**	
$Q_{1.002}$	**56.8**	
$Q_{1.01}$	**76.5**	
$Q_{1.05}$	**109.4**	
Q_{bf}	**149.2**	assume v = 4ft/s

W_{bf}	**28.6**	estimated bankfull width (ft)
d_{bf}	**1.3**	estimated bankfull depth (ft)
A_{bf}	**33.2**	estimated bankfull flow area (ft^2)

References

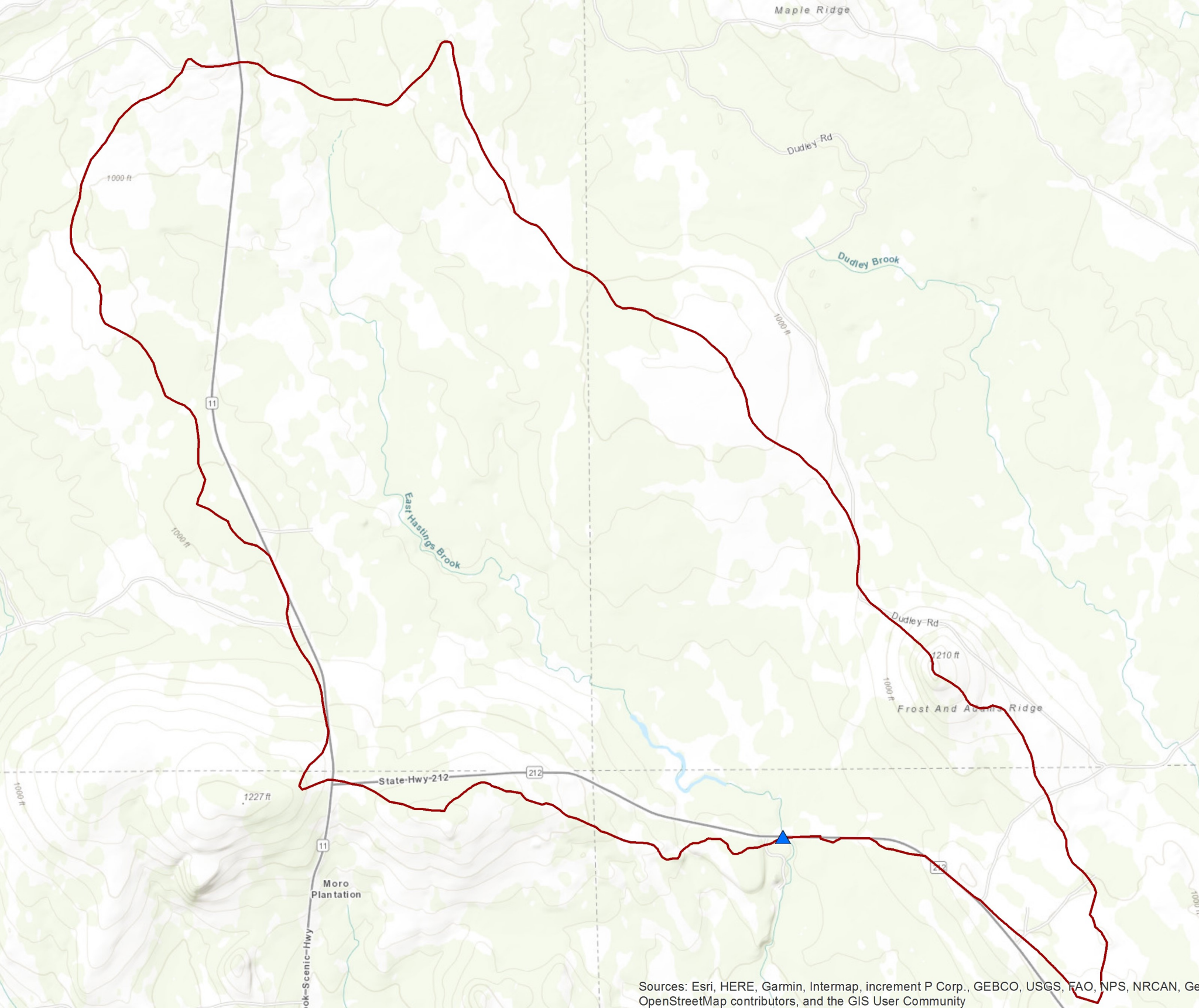
Dudley, R.W., 2013. FY2013 Progress Report - Phase 1 …, USFWS QRP Project

Dudley, R.W., 2004. Estimating Monthly Streamflows … , SIR 2004-5026



Daily Avg Flow Dist		
A_{ws} = (mi^2)		10.1
Q (ft^3/s)		
Pctl	**Median**	**84th pctl**
5	1.59	2.56
10	2.36	3.55
15	3.04	4.43
20	3.84	5.38
25	4.70	6.30
30	5.56	7.18
35	6.67	8.20
40	7.82	9.43
45	9.11	10.67
50	10.49	12.59
55	12.18	14.66
60	14.47	17.21
65	16.93	20.05
70	19.86	23.39
75	24.07	28.12
80	30.02	33.58
85	37.88	43.03
90	50.17	57.78
95	74.46	89.86

Q_{bf}	58.8
$Q_{1.002}$	56.8
$Q_{1.1}$	131.1
Q_2	270.1


Maple Ridge
Dudley Rd
1000 ft
Dudley Brook
East Hastings Brook
Dudley Rd
1210 ft
Frost And Acorn Ridge
State Hwy 212
212
1227 ft
11
Moro Plantation
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Ge
OpenStreetMap contributors, and the GIS User Community

Merrill 22252 East Hastings Bridge #3150

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Workspace ID: ME20180530190339529000
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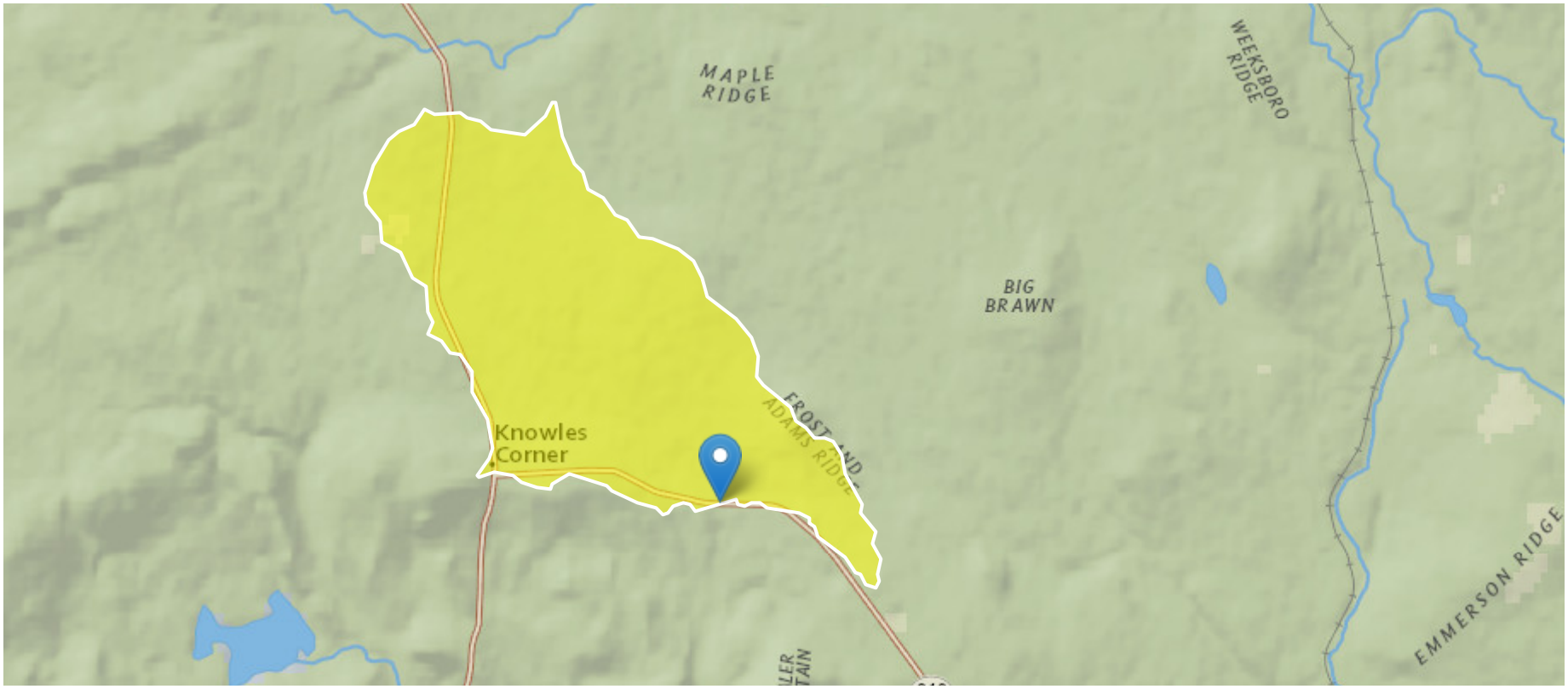
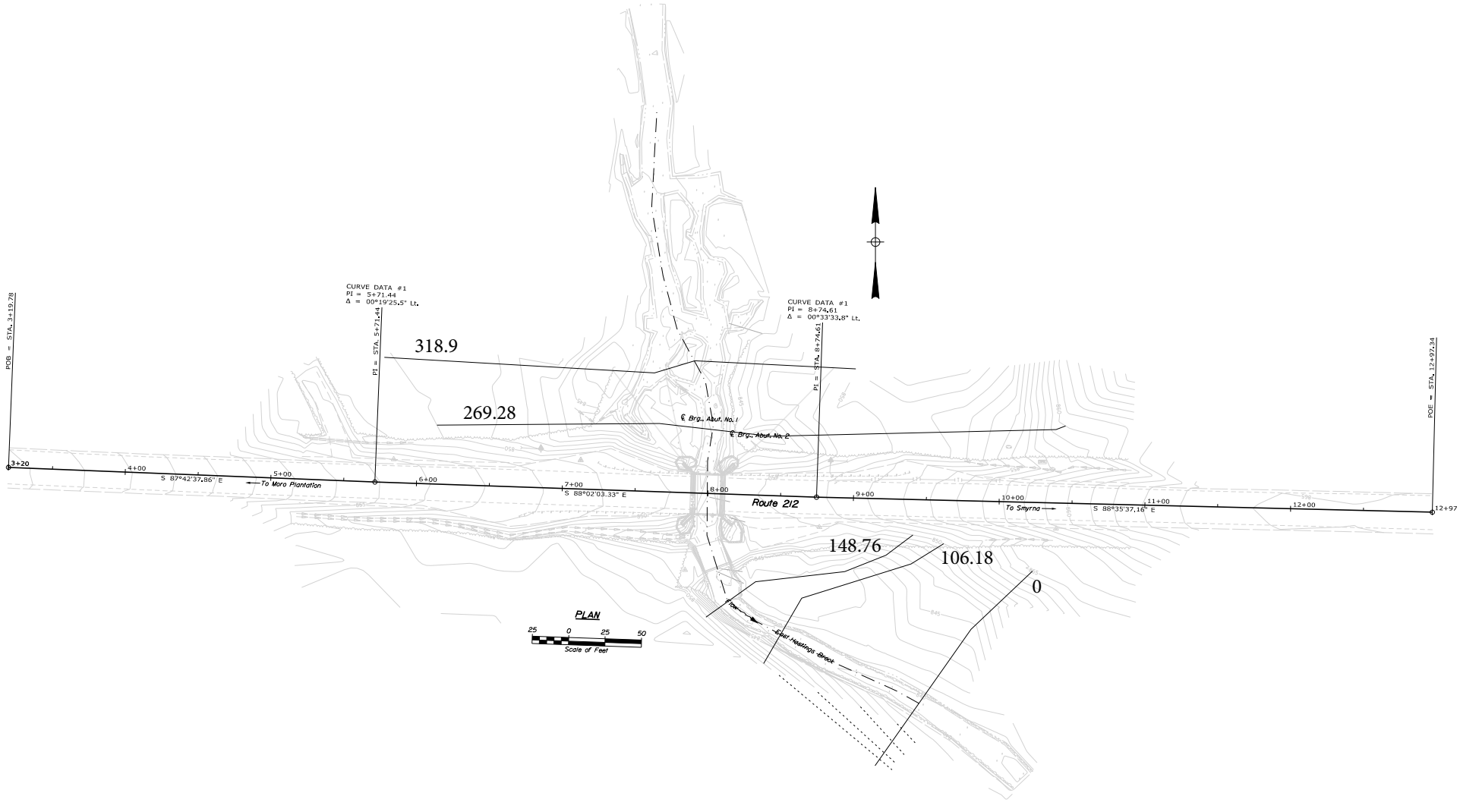
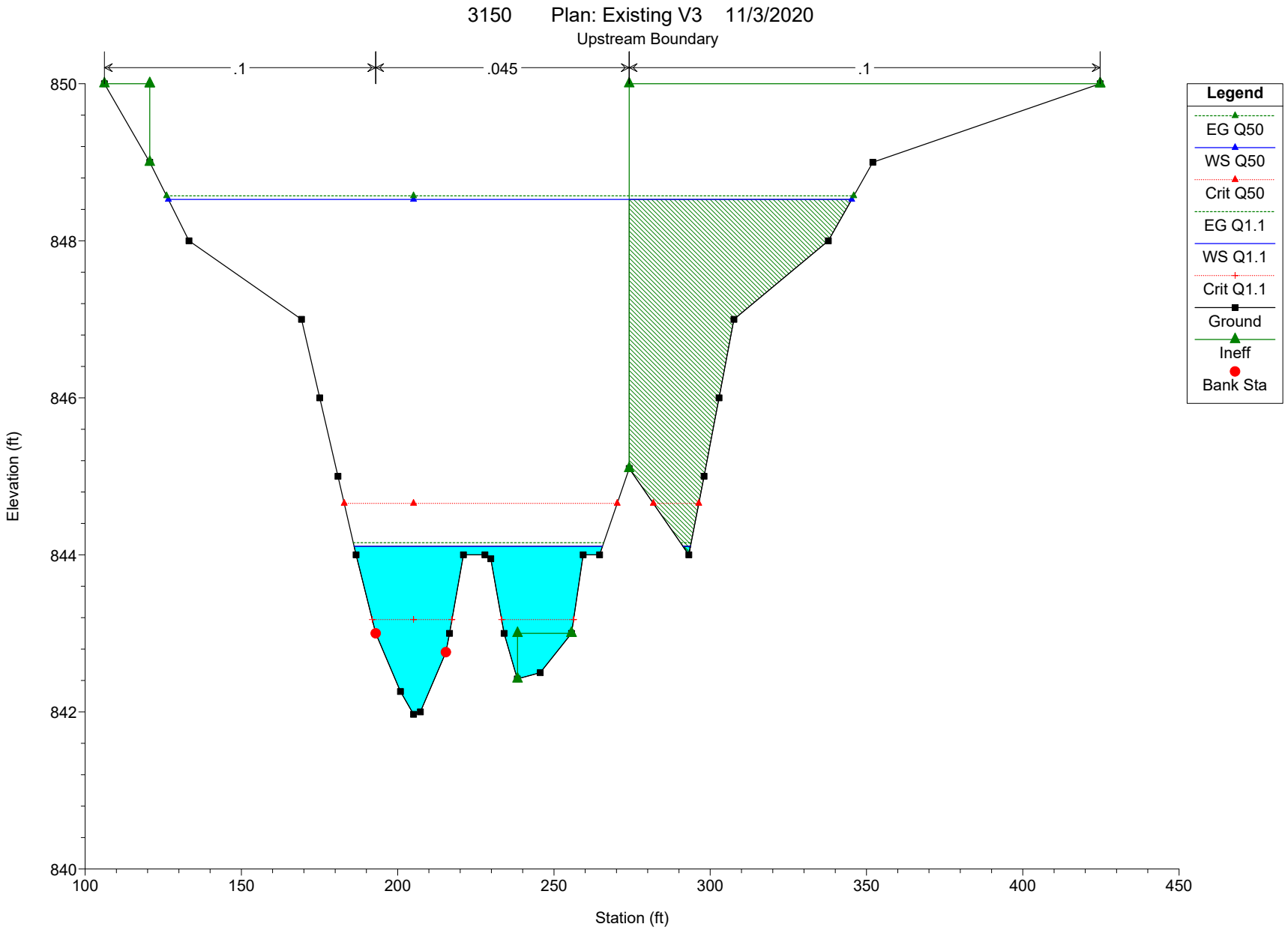


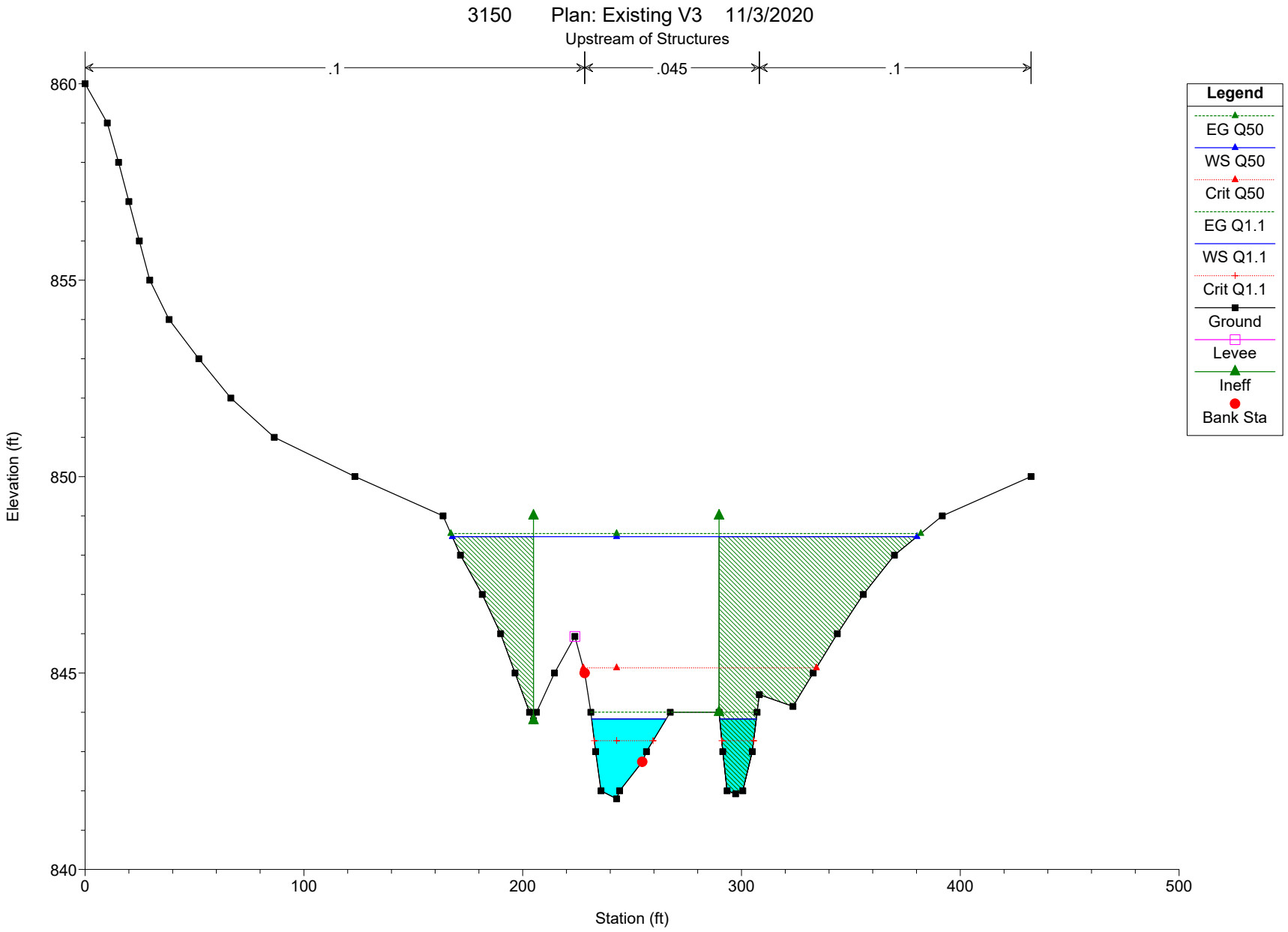
Basin Characteristics

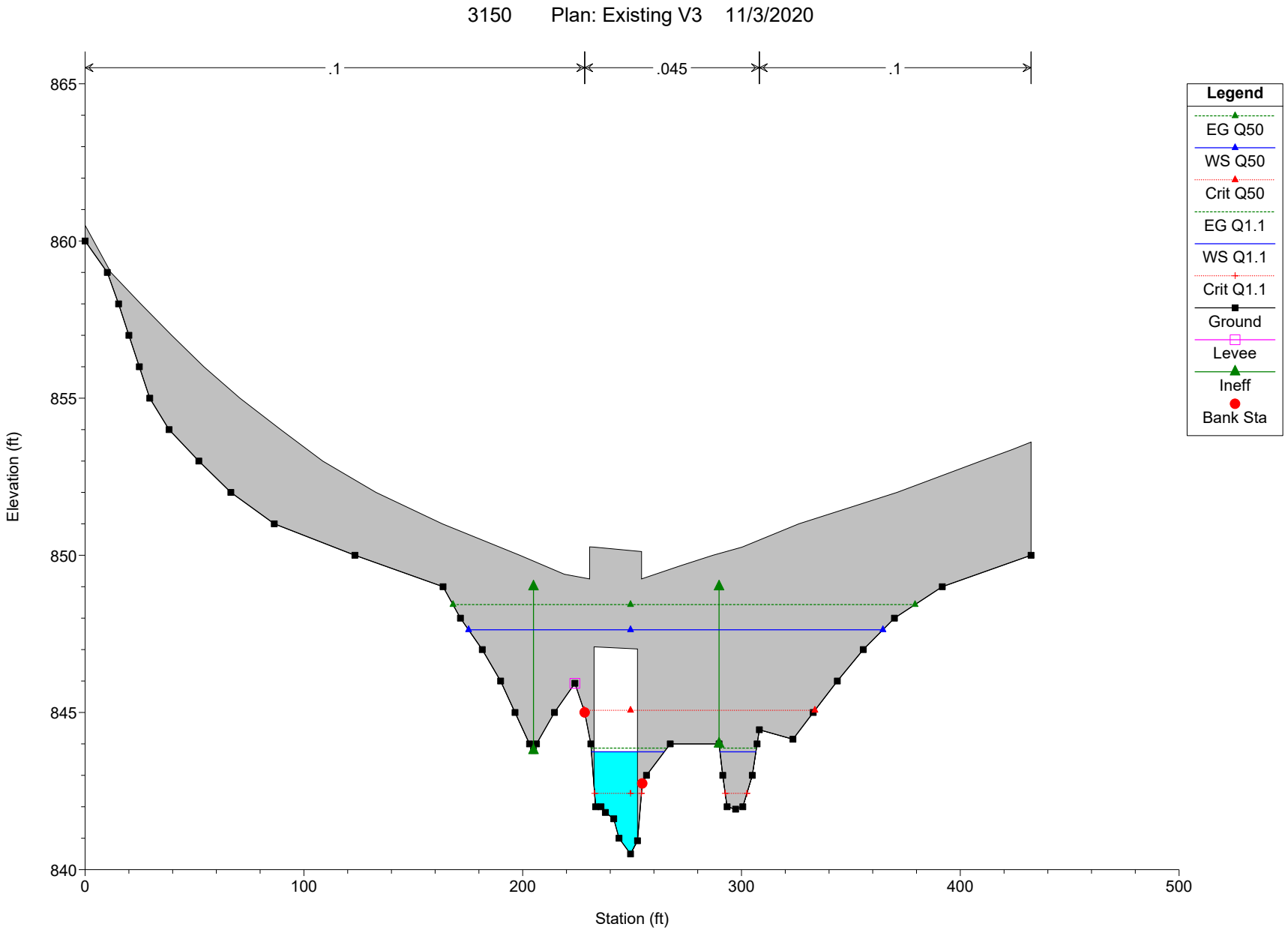
Existing Bridge

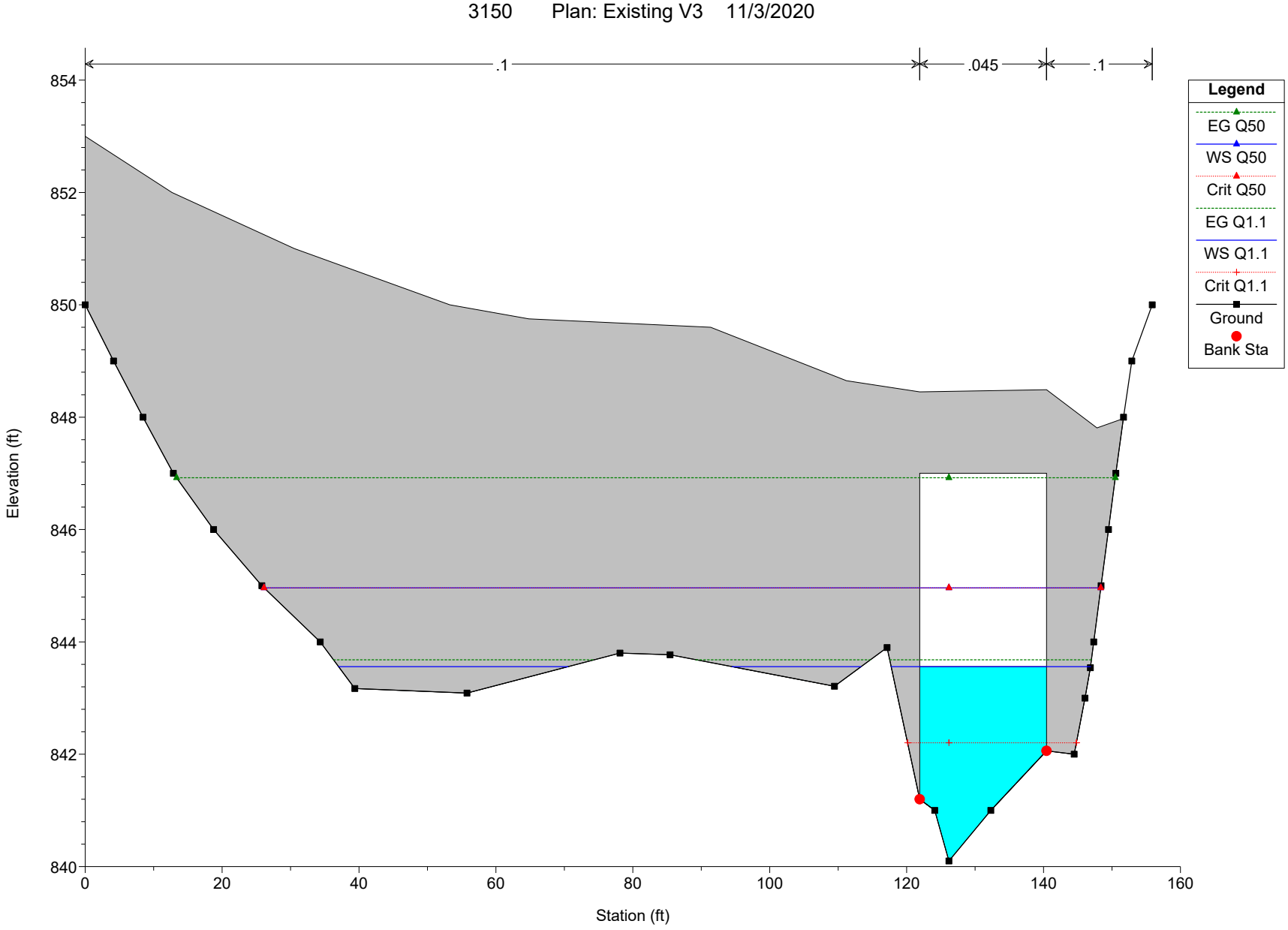


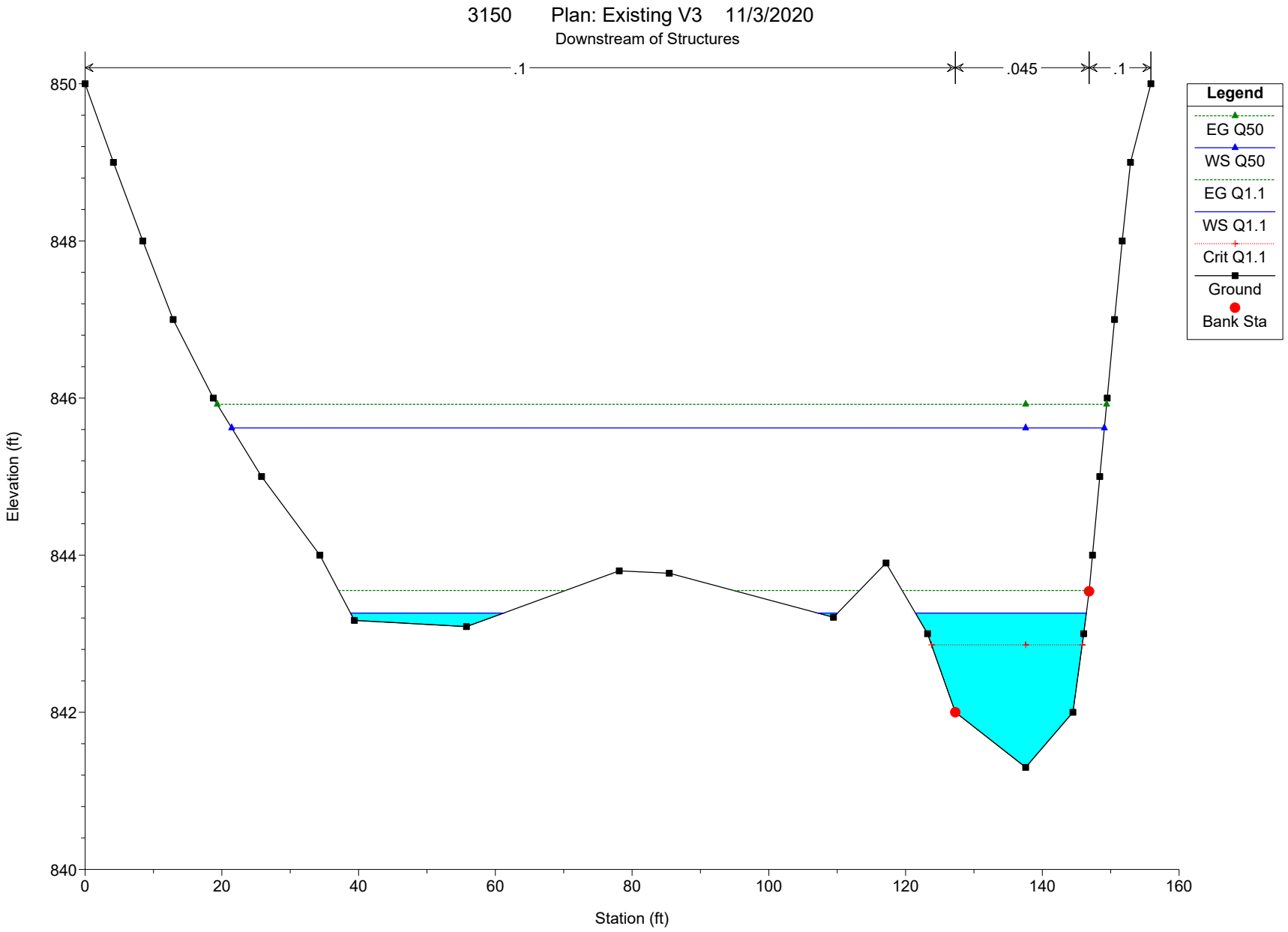
Merrill Existing Cross-Sections

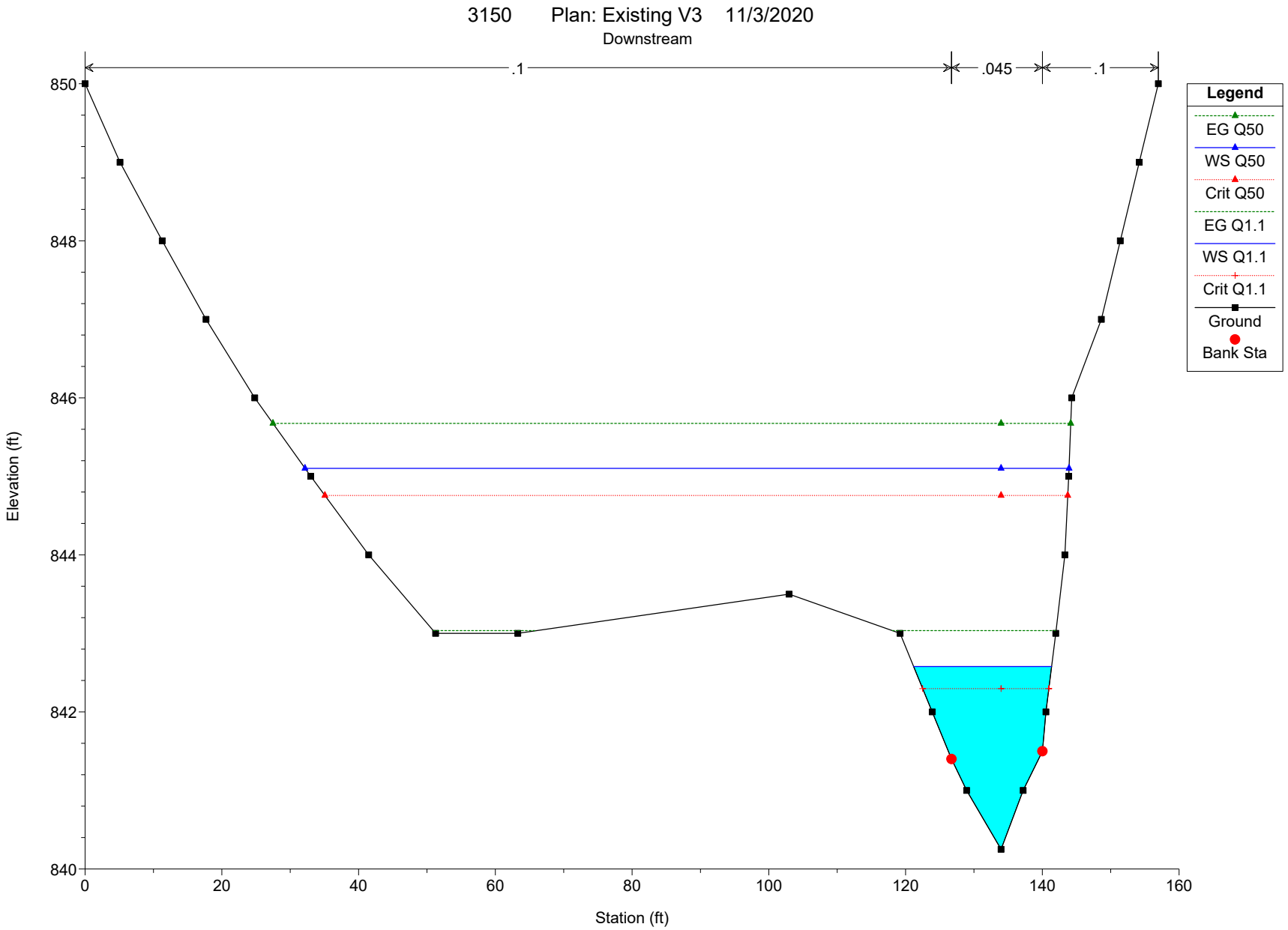

3150 Plan: Existing V3 11/3/2020
Upstream Boundary
.1
.045
.1
850
848
846
844
842
840
Elevation (ft)
100
150
200
250
300
350
400
450
Station (ft)
Legend
EG Q50
WS Q50
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Ineff
Bank Sta

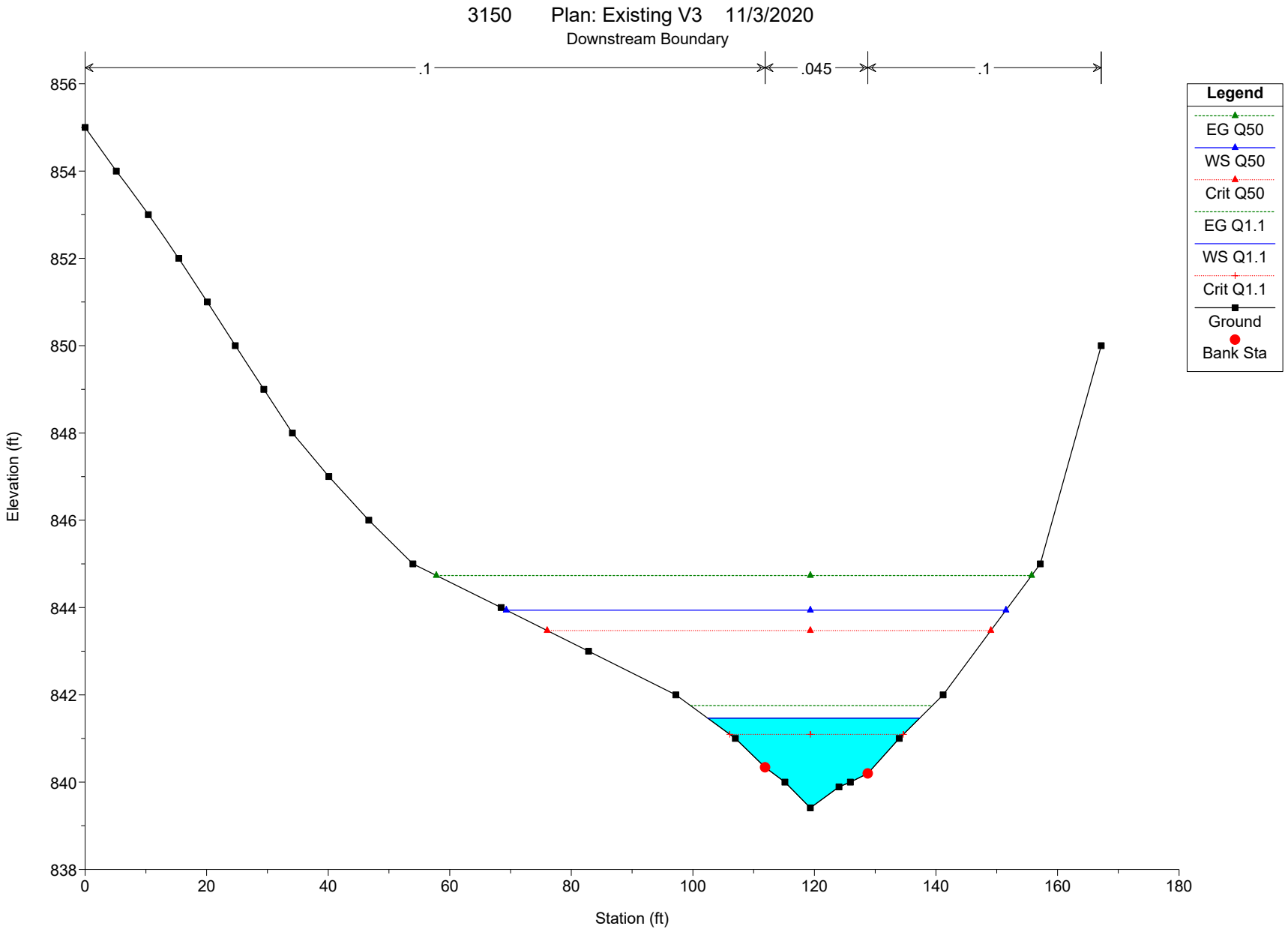

3150 Plan: Existing V3 11/3/2020
Upstream of Structures
.1
.045
.1
860
855
850
845
840
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG Q50
WS Q50
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Levee
Ineff
Bank Sta

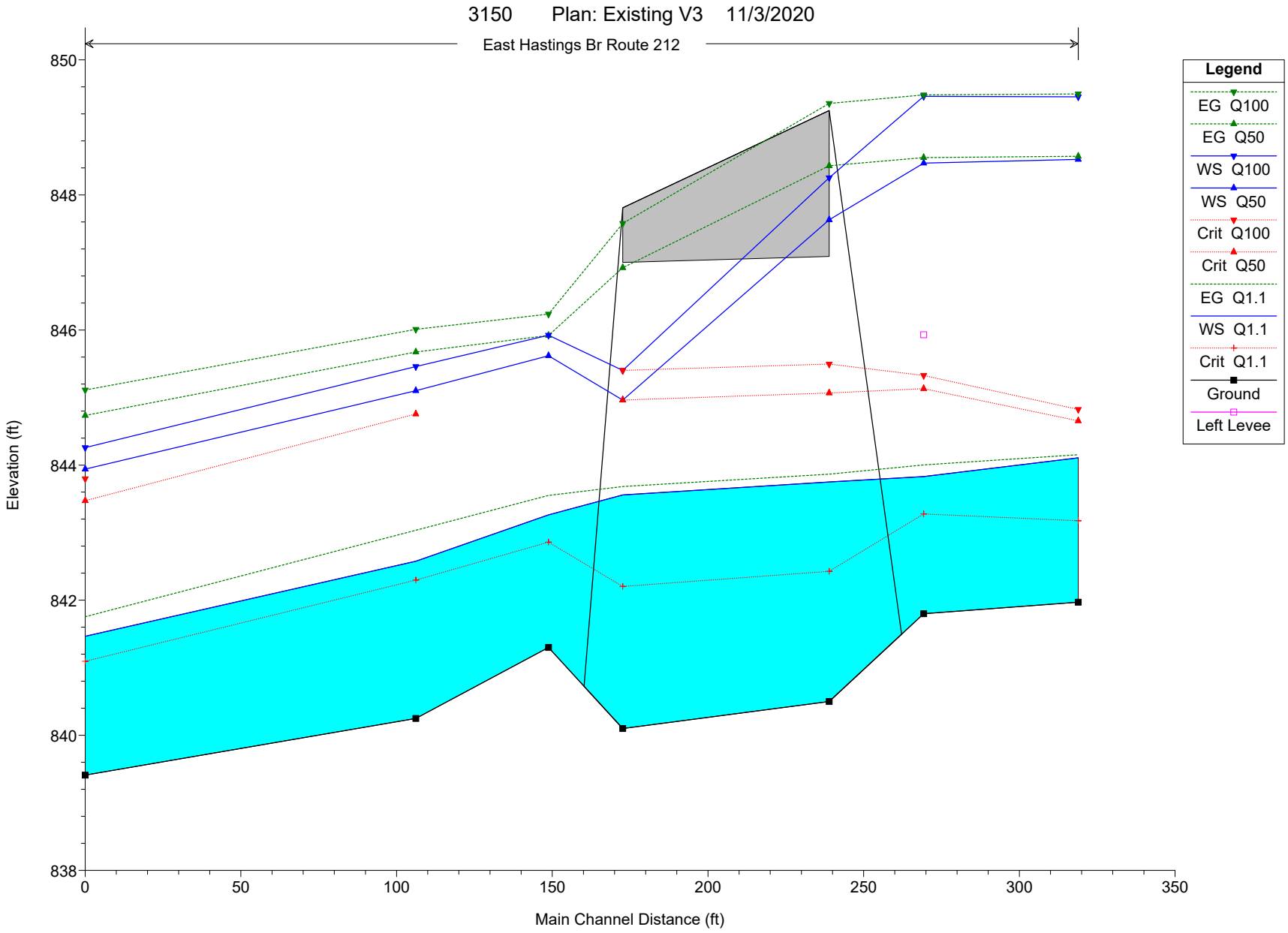

3150 Plan: Existing V3 11/3/2020
.1
.045
.1
865
860
855
850
845
840
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG Q50
WS Q50
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Levee
Ineff
Bank Sta


3150 Plan: Existing V3 11/3/2020
.1
.045
.1
Legend
EG Q50
WS Q50
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Bank Sta
Elevation (ft)
Station (ft)
854
852
850
848
846
844
842
840
0
20
40
60
80
100
120
140
160


3150 Plan: Existing V3 11/3/2020
Downstream of Structures
.1
.045
.1
Legend
EG Q50
WS Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Bank Sta
Elevation (ft)
850
848
846
844
842
840
0
20
40
60
80
100
120
140
160
Station (ft)


3150 Plan: Existing V3 11/3/2020
Downstream
.1
.045
.1
Legend
EG Q50
WS Q50
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Bank Sta
Elevation (ft)
850
848
846
844
842
840
0
20
40
60
80
100
120
140
160
Station (ft)

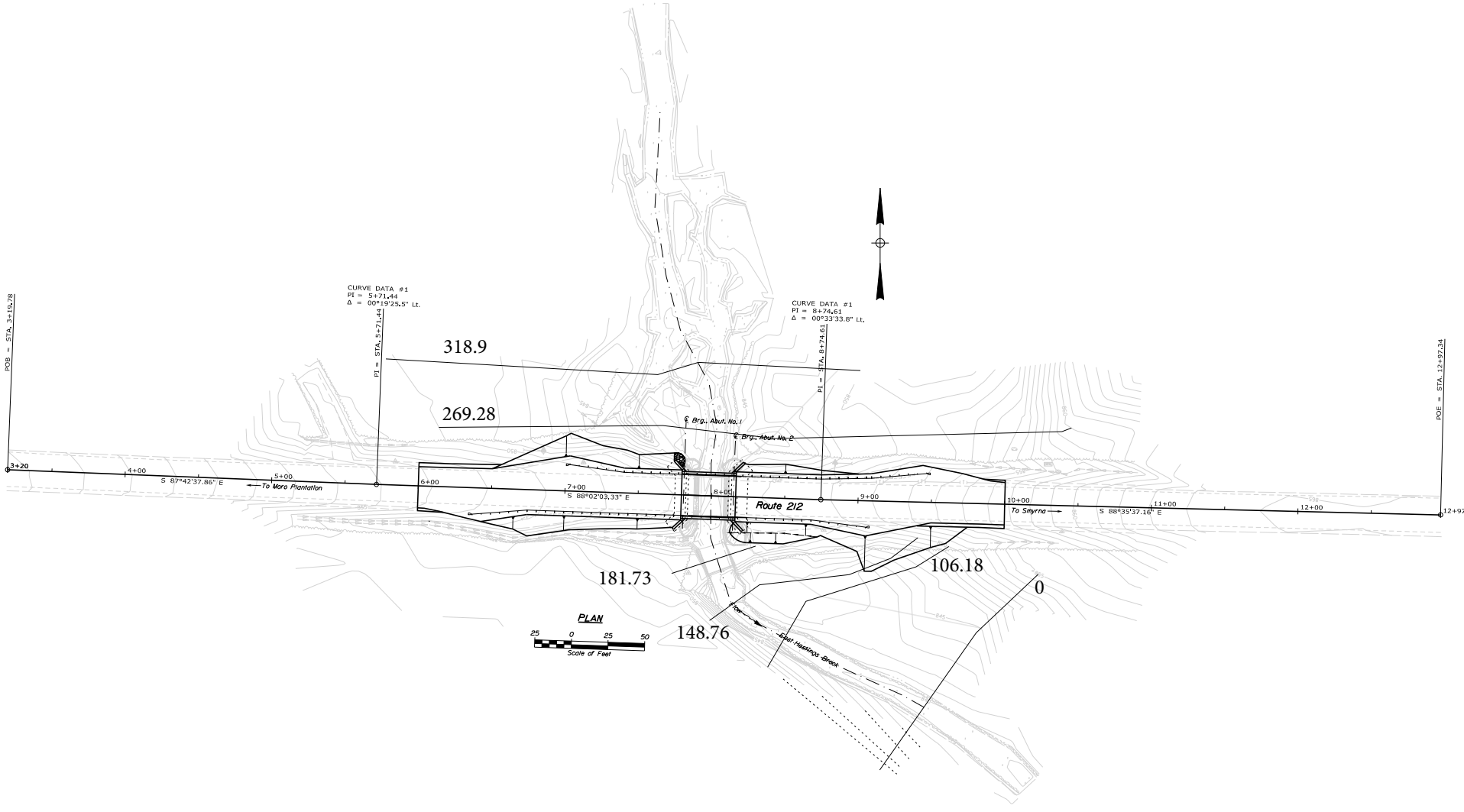

3150 Plan: Existing V3 11/3/2020
Downstream Boundary
.1
.045
.1
Legend
EG Q50
WS Q50
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Bank Sta
Elevation (ft)
Station (ft)
856
854
852
850
848
846
844
842
840
838
0
20
40
60
80
100
120
140
160
180


3150 Plan: Existing V3 11/3/2020
East Hastings Br Route 212
Elevation (ft)
Main Channel Distance (ft)
850
848
846
844
842
840
838
0
50
100
150
200
250
300
350
Legend
EG Q100
EG Q50
WS Q100
WS Q50
Crit Q100
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Left Levee

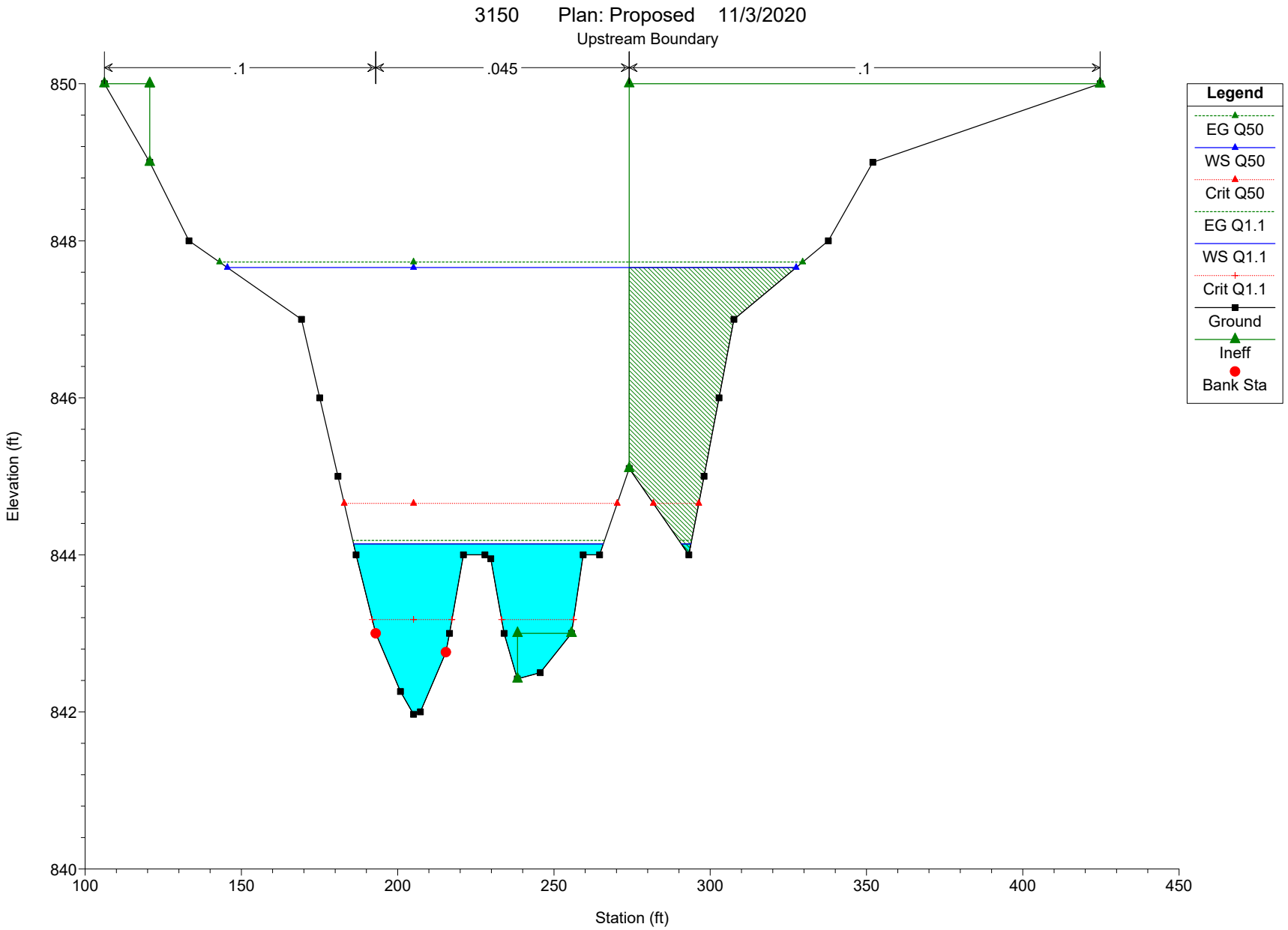
HEC-RAS Plan: E3 River: East Hastings Br Reach: Route 212

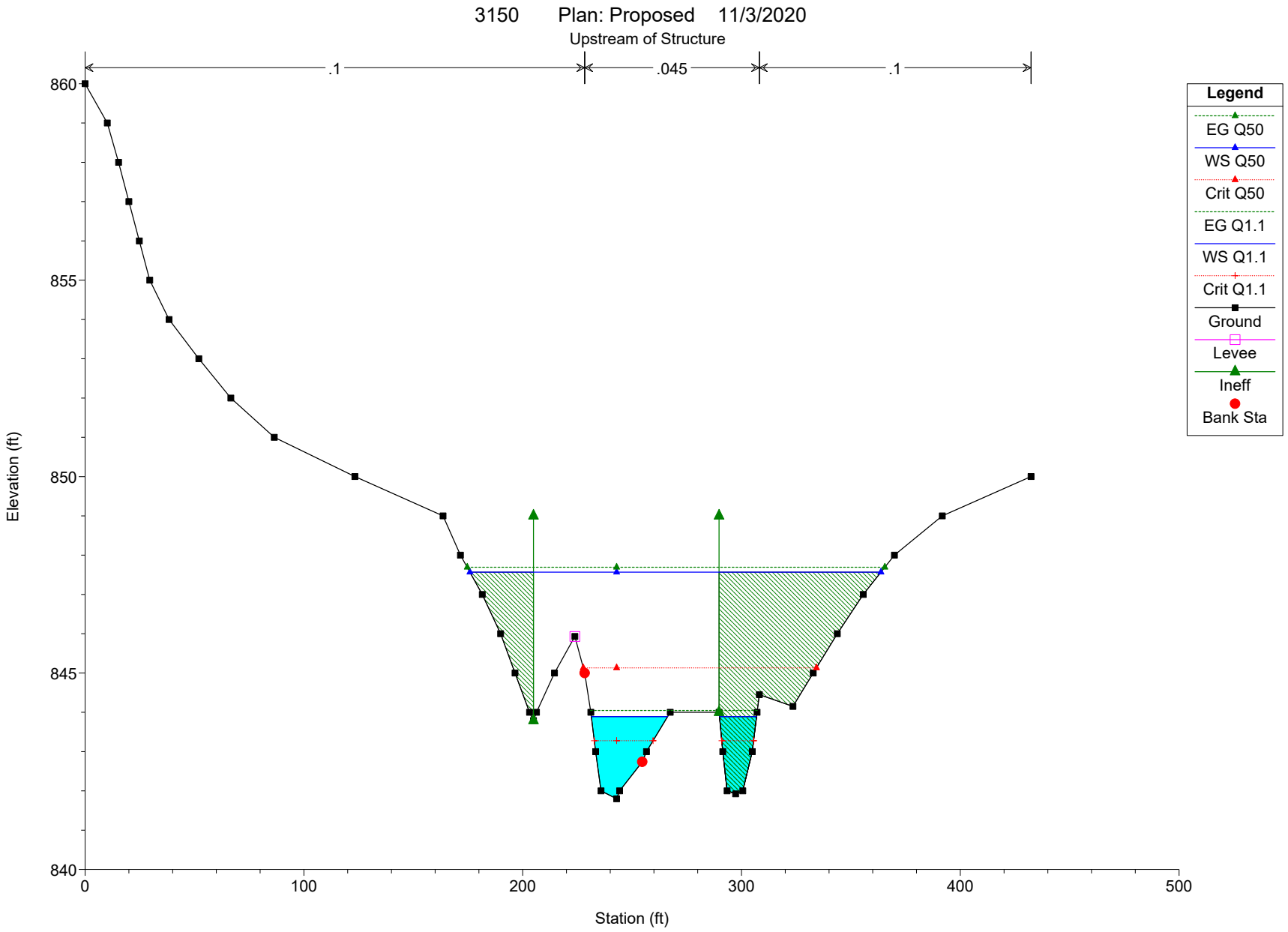
Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Crit W.S.	Frctn Loss	C & E Loss	Top Width	Q Left	Q Channel	Q Right	Vel Chnl
			(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft/s)
Route 212	318.9	August	842.41	842.41	842.19	0.33	0.01	12.30		2.03		0.65
Route 212	318.9	May	843.10	843.08	842.73	0.32	0.02	46.68	0.00	21.05	9.16	1.34
Route 212	318.9	Q1.1	844.15	844.11	843.18	0.14	0.01	81.88	1.62	77.38	52.09	1.99
Route 212	318.9	Q10	846.54	846.49	844.26	0.04	0.01	132.93	20.35	200.14	313.10	2.17
Route 212	318.9	Q25	847.50	847.44	844.50	0.03	0.00	167.40	27.60	245.77	428.42	2.16
Route 212	318.9	Q50	848.57	848.53	844.66	0.02	0.00	218.64	47.94	265.87	501.09	1.93
Route 212	318.9	Q100	849.50	849.45	844.82	0.01	0.01	270.85	80.75	294.11	580.33	1.85
Route 212	318.9	Q500	851.74	851.72	845.21	0.00	0.00	318.57	149.02	300.76	832.42	1.43
Route 212	269.28	August	842.08	842.02	842.02	0.01	0.02	16.19		2.03		1.96
Route 212	269.28	May	842.77	842.55	842.55	0.12	0.06	28.17		30.21		3.79
Route 212	269.28	Q1.1	844.00	843.83	843.28	0.12	0.02	50.79		121.87	9.23	3.43
Route 212	269.28	Q10	846.50	846.39	844.70	0.08	0.04	161.72	21.29	299.90	212.41	2.97
Route 212	269.28	Q25	847.46	847.36	844.98	0.06	0.06	182.87	43.37	360.81	297.63	2.85
Route 212	269.28	Q50	848.55	848.47	845.13	0.05	0.07	212.39	63.85	392.08	358.96	2.51
Route 212	269.28	Q100	849.48	849.46	845.33	0.02	0.11	265.29	89.95	290.87	574.39	1.60
Route 212	269.28	Q500	851.73	851.72	845.73	0.01	0.13	360.14	162.35	335.45	784.40	1.39
Route 212	225 BR U	August	841.66	841.66	840.82	1.78	0.00	11.67		2.03		0.23
Route 212	225 BR U	May	842.52	842.49	841.47			19.65		30.21		1.31
Route 212	225 BR U	Q1.1	843.87	843.75	842.43	0.18	0.00	19.82		131.10		2.73
Route 212	225 BR U	Q10	846.37	845.81	844.15	0.67	0.04	19.82		533.60		6.00
Route 212	225 BR U	Q25	847.34	846.66	844.72	0.87	0.11	19.82		701.80		6.64
Route 212	225 BR U	Q50	848.43	847.63	845.07	1.39	0.12			814.90		7.18
Route 212	225 BR U	Q100	849.35	848.25	845.50	1.67	0.11			955.20		8.41
Route 212	225 BR U	Q500	851.59	850.25	846.40	2.46	0.13	105.28	44.14	1144.83	93.23	9.75
Route 212	225 BR D	August	841.66	841.66	840.52	3.48	0.00	15.45		2.03		0.17
Route 212	225 BR D	May	842.44	842.42	841.32	2.44	0.01	18.53		30.21		1.19
Route 212	225 BR D	Q1.1	843.68	843.56	842.20	0.12	0.02	18.53		131.10		2.81
Route 212	225 BR D	Q10	845.67	844.70	843.99	0.19	0.21	18.53		533.60		7.87
Route 212	225 BR D	Q25	846.36	844.60	844.60	0.25	0.44	18.53		701.80		10.67
Route 212	225 BR D	Q50	846.92	844.96	844.96	0.25	0.50	18.53		814.90		11.23
Route 212	225 BR D	Q100	847.58	845.40	845.40	0.24	0.56	18.53		955.20		11.83
Route 212	225 BR D	Q500	848.99	846.35	846.35	0.23	0.69	18.53		1282.20		13.05
Route 212	148.76	August	841.65	841.58	841.58	0.72	0.01	6.81		2.03		2.15
Route 212	148.76	May	842.37	842.22		0.59	0.01	18.44	0.05	30.16		3.06
Route 212	148.76	Q1.1	843.55	843.26	842.86	0.50	0.02	50.35	4.44	126.66		4.37
Route 212	148.76	Q10	845.26	845.01		0.26	0.04	122.67	213.90	318.90	0.80	5.06
Route 212	148.76	Q25	845.66	845.37		0.23	0.03	125.60	309.73	390.59	1.48	5.57
Route 212	148.76	Q50	845.92	845.62		0.22	0.03	127.64	377.92	434.90	2.08	5.80
Route 212	148.76	Q100	846.24	845.92		0.20	0.02	130.10	464.61	487.64	2.96	6.02
Route 212	148.76	Q500	846.92	846.59		0.18	0.02	134.81	672.58	604.10	5.52	6.43
Route 212	106.18	August	840.82	840.80	840.63	0.94	0.00	6.06		2.03		1.22
Route 212	106.18	May	841.77	841.64		1.10	0.01	14.57	0.05	30.16	0.00	2.88
Route 212	106.18	Q1.1	843.03	842.58	842.30	1.23	0.05	20.17	3.95	126.55	0.60	5.52
Route 212	106.18	Q10	844.96	844.27	844.27	1.08	0.01	104.30	162.83	362.50	8.27	7.97
Route 212	106.18	Q25	845.39	844.78		0.97	0.01	108.89	274.34	415.69	11.77	7.95
Route 212	106.18	Q50	845.67	845.10	844.76	0.92	0.02	111.74	351.15	449.66	14.09	7.96
Route 212	106.18	Q100	846.01	845.46		0.87	0.03	114.82	446.10	492.16	16.93	8.03
Route 212	106.18	Q500	846.72	846.17		0.81	0.04	121.48	668.33	591.57	22.30	8.36

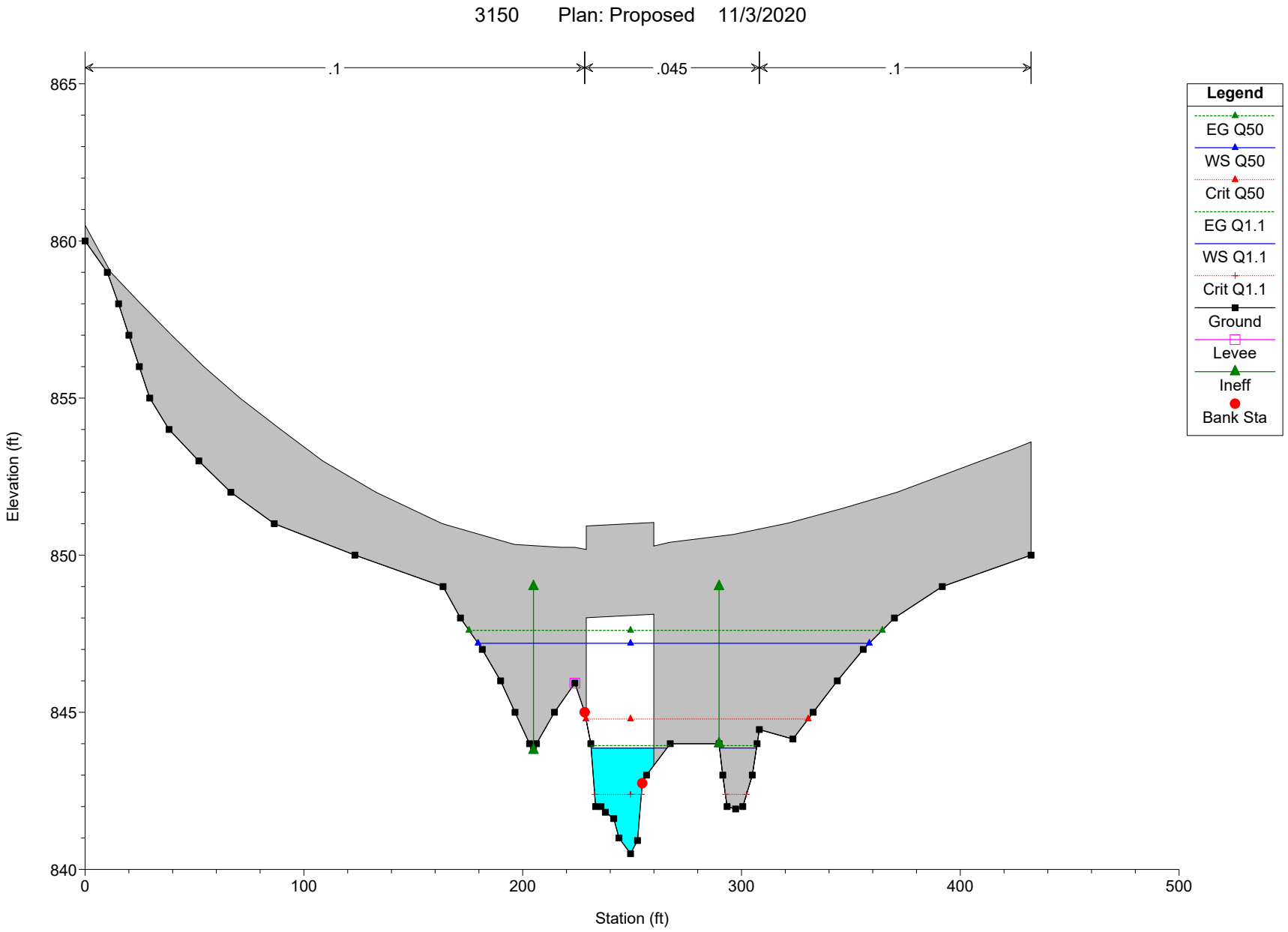
Proposed Bridge

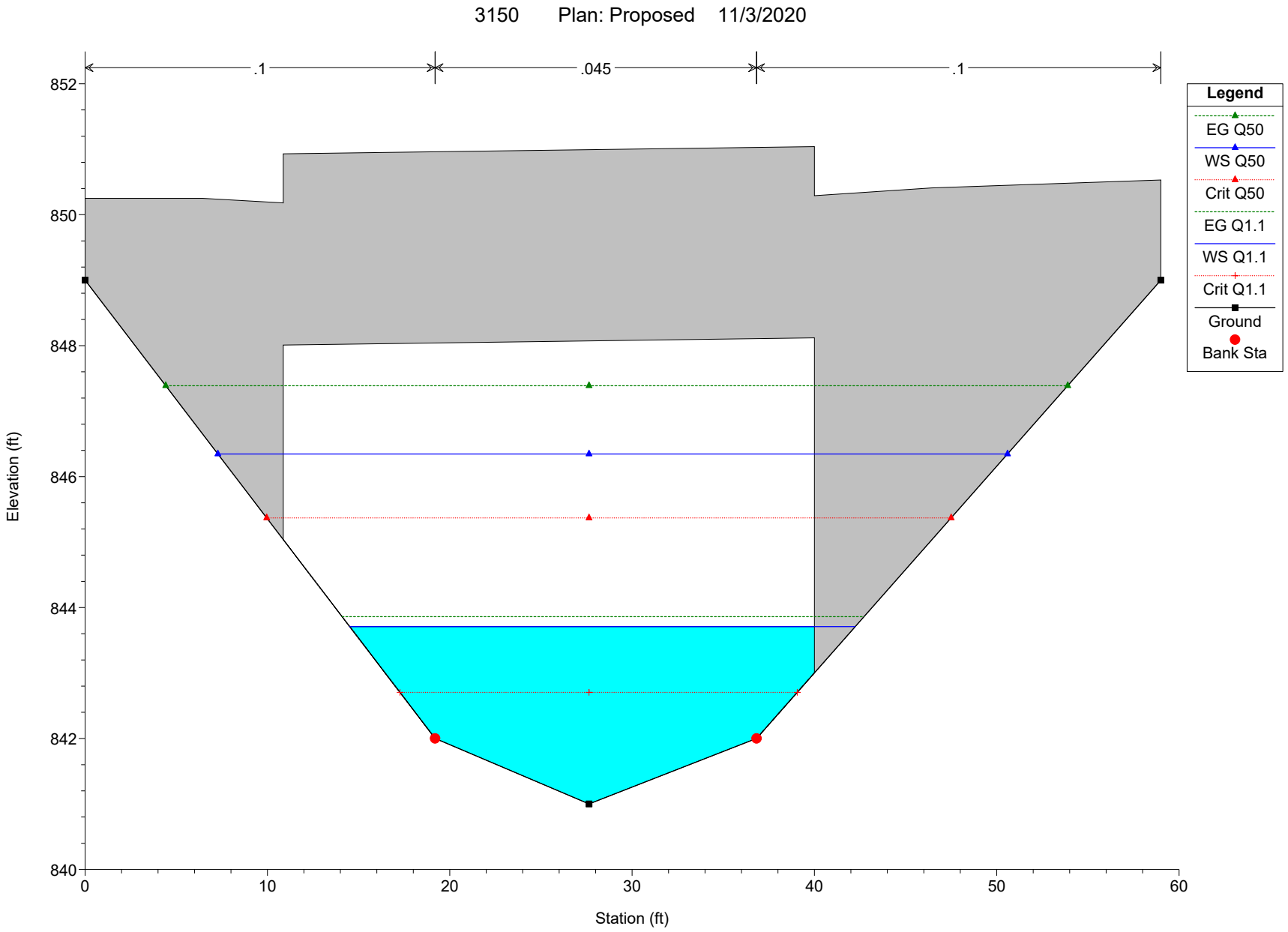


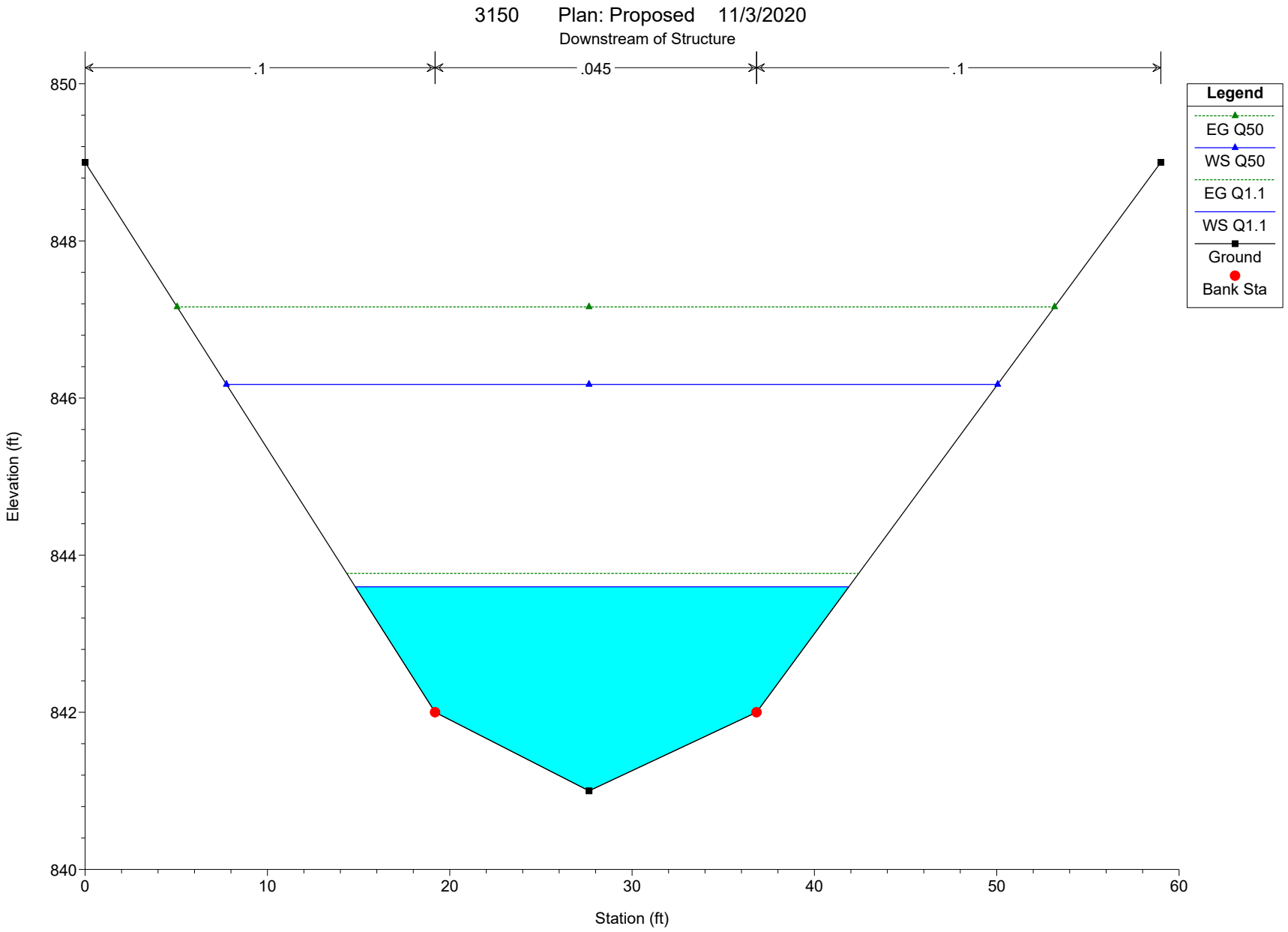
Merrill Proposed Cross-Sections

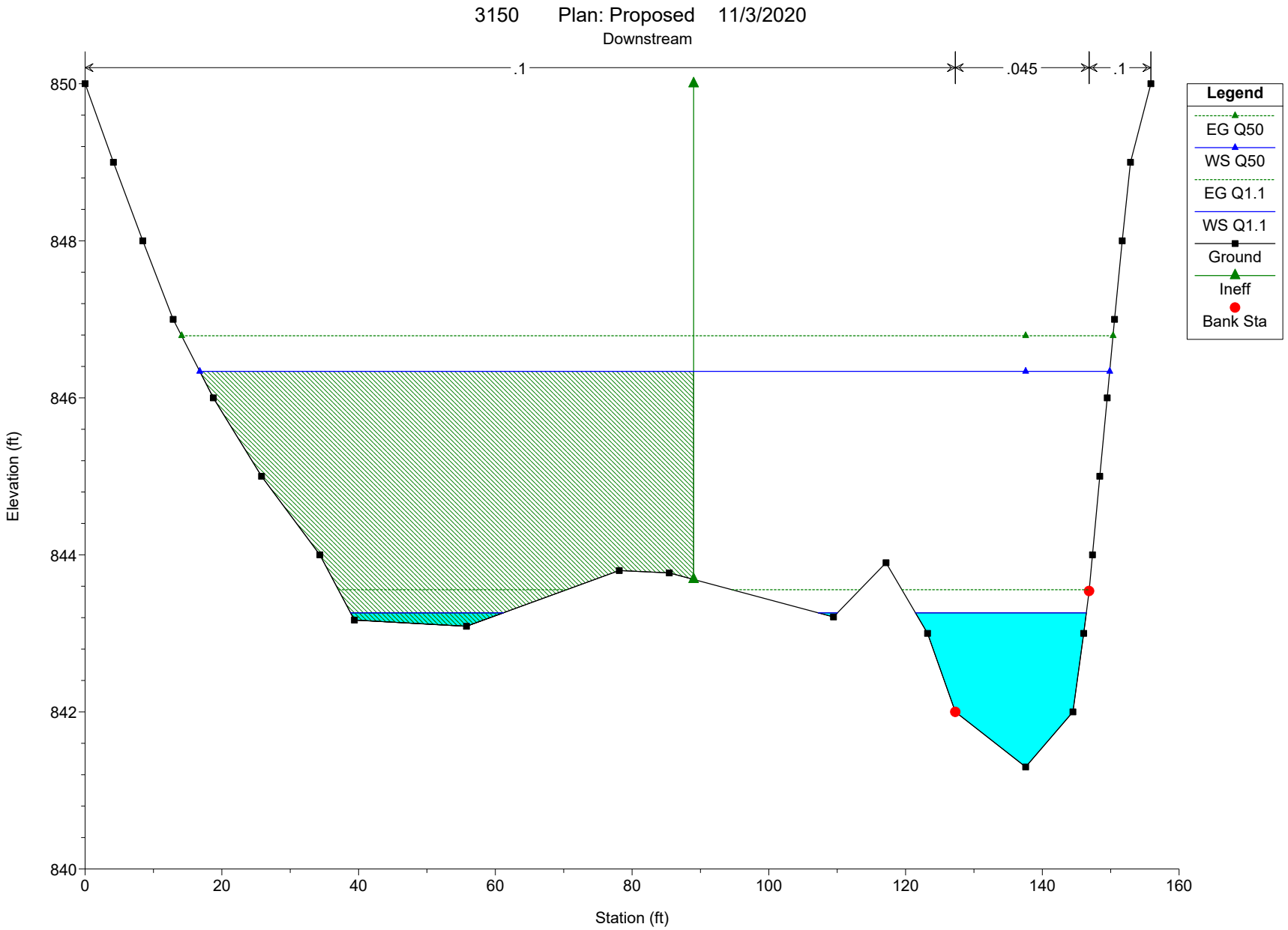

3150 Plan: Proposed 11/3/2020
Upstream Boundary
.1
.045
.1
Legend
EG Q50
WS Q50
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Ineff
Bank Sta
Elevation (ft)
850
848
846
844
842
840
100
150
200
250
300
350
400
450
Station (ft)

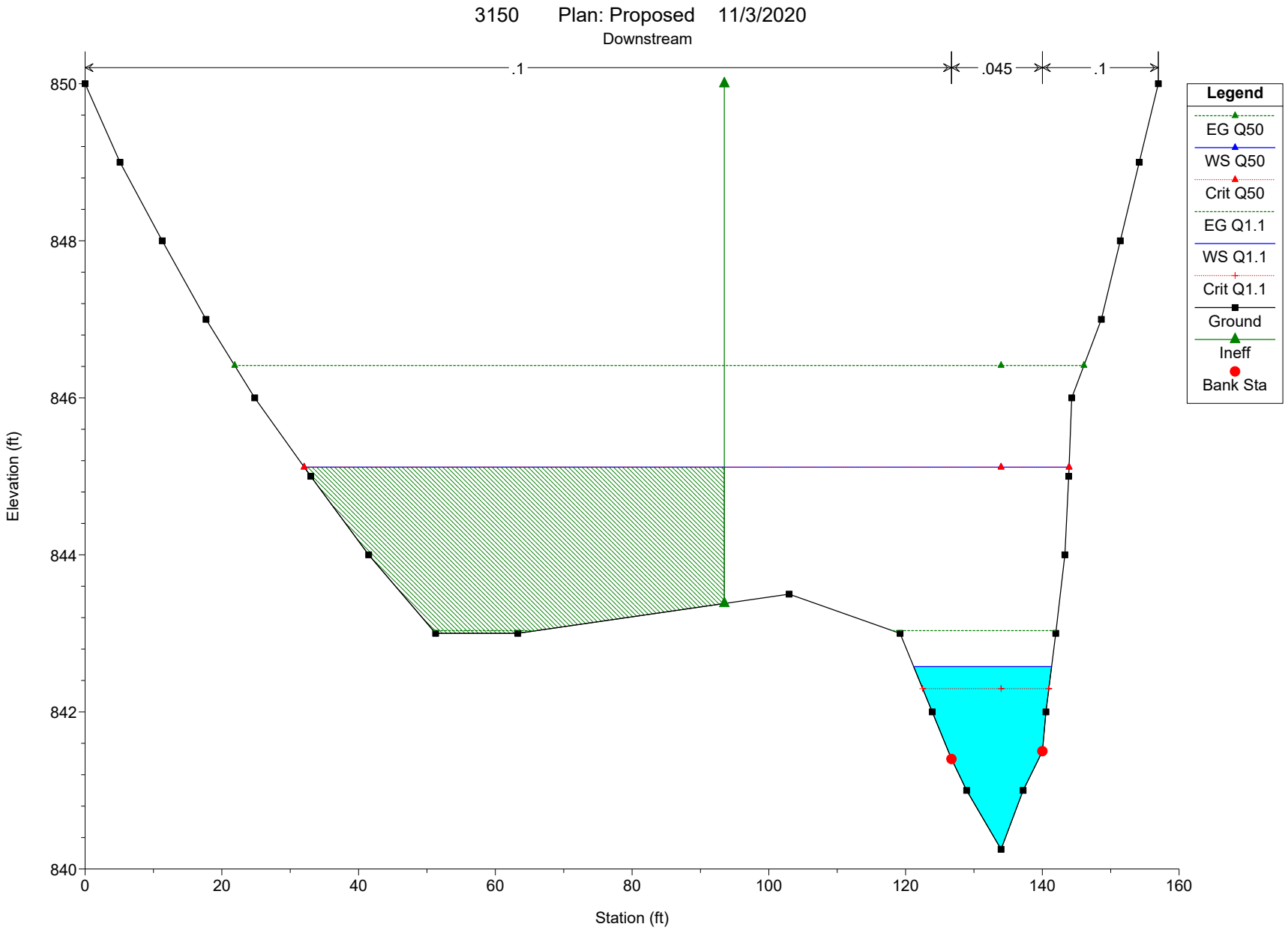

3150 Plan: Proposed 11/3/2020
Upstream of Structure
.1
.045
.1
860
855
850
845
840
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG Q50
WS Q50
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Levee
Ineff
Bank Sta

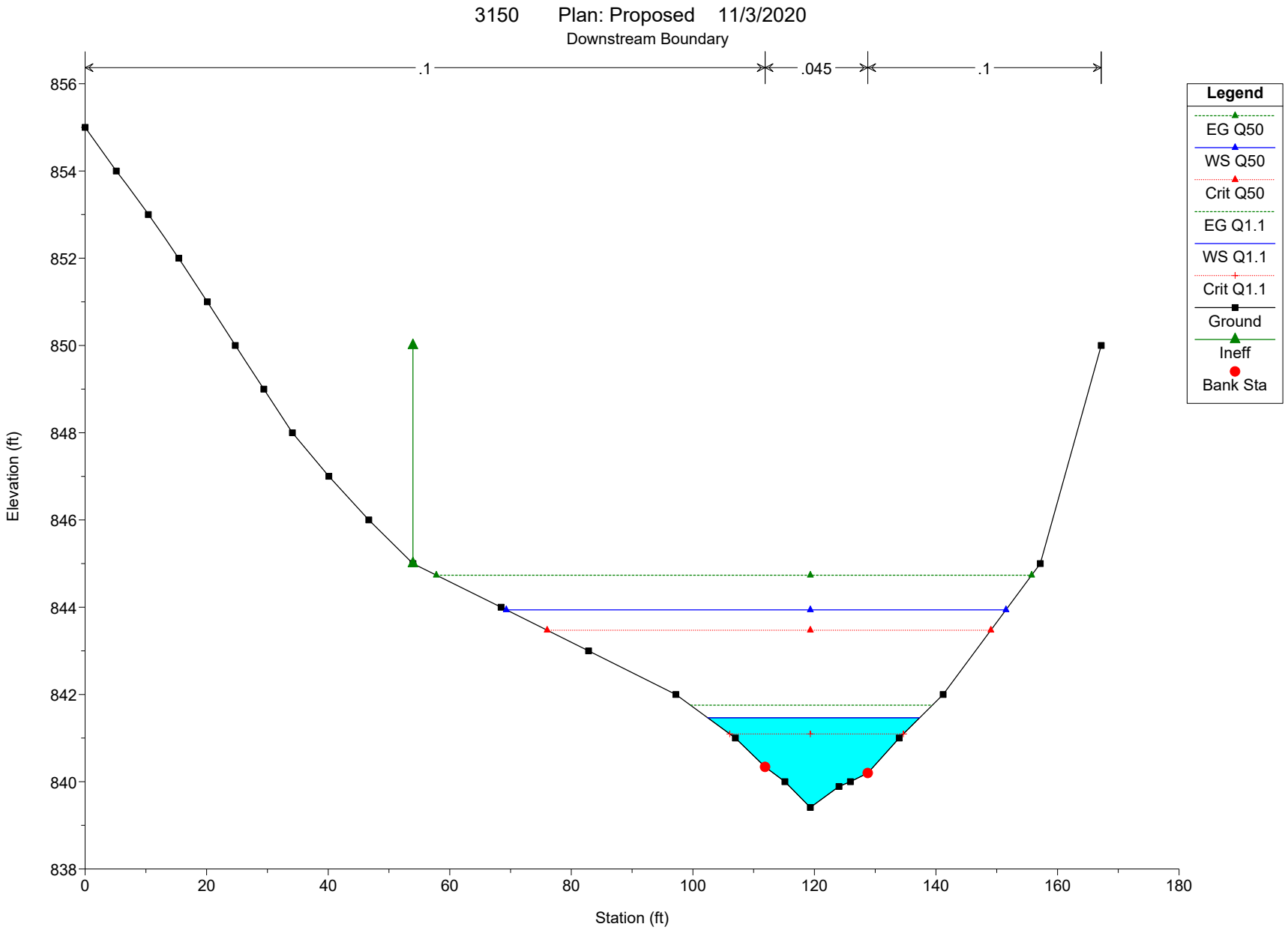

3150 Plan: Proposed 11/3/2020
.1
.045
.1
865
860
855
850
845
840
Elevation (ft)
0
100
200
300
400
500
Station (ft)
Legend
EG Q50
WS Q50
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Levee
Ineff
Bank Sta

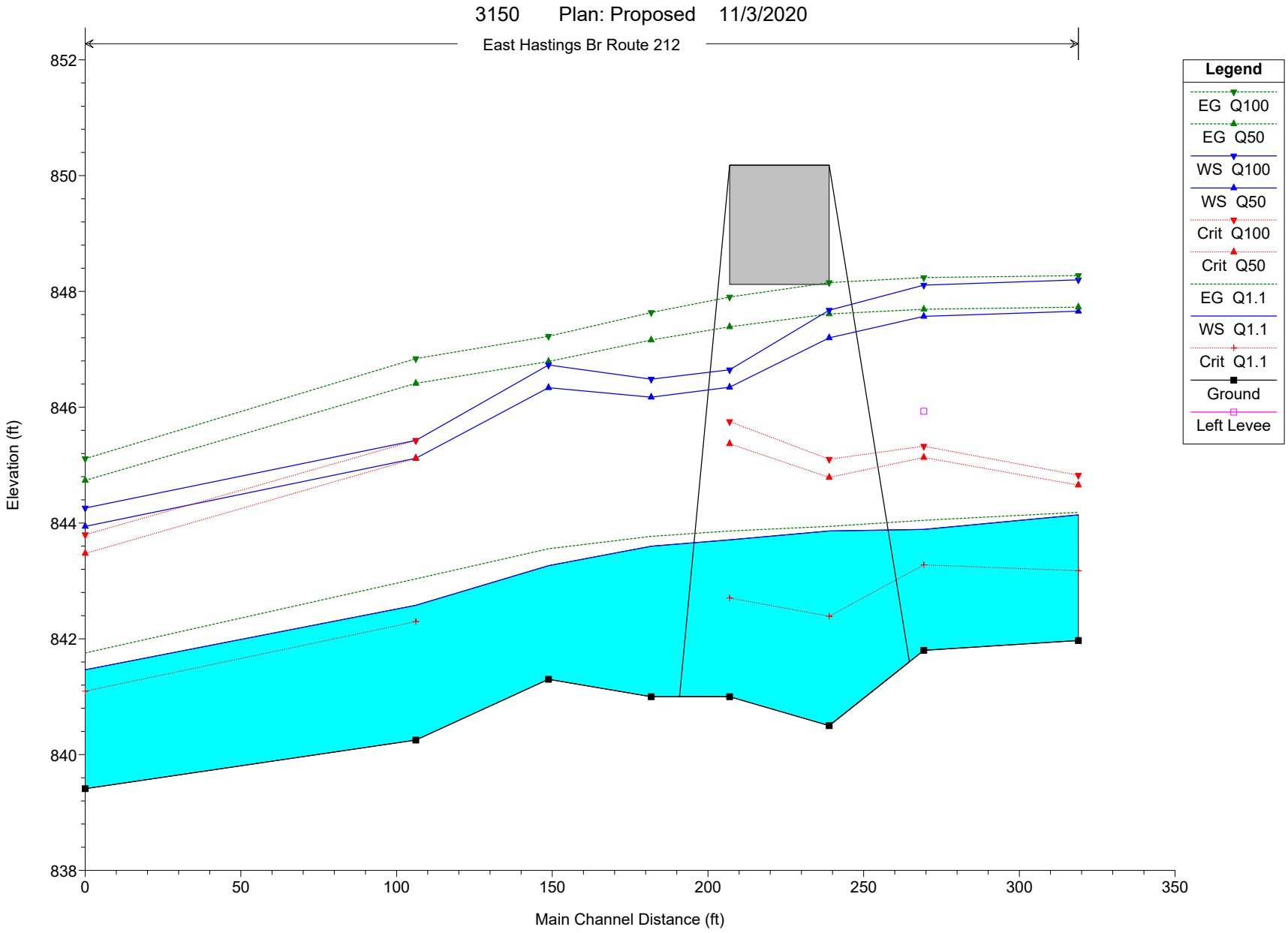

3150 Plan: Proposed 11/3/2020
.1
.045
.1
Legend
EG Q50
WS Q50
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Bank Sta
Elevation (ft)
852
850
848
846
844
842
840
0
10
20
30
40
50
60
Station (ft)


3150 Plan: Proposed 11/3/2020
Downstream of Structure
.1
.045
.1
Legend
EG Q50
WS Q50
EG Q1.1
WS Q1.1
Ground
Bank Sta
Elevation (ft)
850
848
846
844
842
840
0
10
20
30
40
50
60
Station (ft)


3150 Plan: Proposed 11/3/2020
Downstream
.1
.045
.1
Legend
EG Q50
WS Q50
EG Q1.1
WS Q1.1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
850
848
846
844
842
840
0
20
40
60
80
100
120
140
160


3150 Plan: Proposed 11/3/2020
Downstream
.1
.045
.1
Legend
EG Q50
WS Q50
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Ineff
Bank Sta
Elevation (ft)
850
848
846
844
842
840
0
20
40
60
80
100
120
140
160
Station (ft)


3150 Plan: Proposed 11/3/2020
Downstream Boundary
.1
.045
.1
Legend
EG Q50
WS Q50
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
856
854
852
850
848
846
844
842
840
838
0
20
40
60
80
100
120
140
160
180


3150 Plan: Proposed 11/3/2020
East Hastings Br Route 212
Elevation (ft)
852
850
848
846
844
842
840
838
0
50
100
150
200
250
300
350
Main Channel Distance (ft)
Legend
EG Q100
EG Q50
WS Q100
WS Q50
Crit Q100
Crit Q50
EG Q1.1
WS Q1.1
Crit Q1.1
Ground
Left Levee

HEC-RAS Plan: P1 River: East Hastings Br Reach: Route 212

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Crit W.S.	Frctn Loss	C & E Loss	Top Width	Q Left	Q Channel	Q Right	Vel Chnl
			(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft/s)
Route 212	318.9	August	842.41	842.41	842.19	0.33	0.01	12.30		2.03		0.65
Route 212	318.9	May	843.10	843.07	842.73	0.30	0.02	46.59	0.00	21.09	9.12	1.35
Route 212	318.9	Q1.1	844.18	844.14	843.18	0.12	0.01	83.05	1.68	76.48	52.94	1.93
Route 212	318.9	Q10	846.54	846.48	844.26	0.04	0.01	132.85	20.32	200.28	313.00	2.17
Route 212	318.9	Q25	847.27	847.21	844.50	0.03	0.01	151.94	27.95	249.10	424.75	2.30
Route 212	318.9	Q50	847.73	847.66	844.66	0.03	0.01	181.97	33.16	281.60	500.15	2.37
Route 212	318.9	Q100	848.27	848.20	844.82	0.03	0.01	209.88	48.06	318.60	588.54	2.44
Route 212	318.9	Q500	849.63	849.55	845.21	0.01	0.01	279.53	112.06	392.48	777.66	2.44
Route 212	269.28	August	842.08	842.02	842.02	0.01	0.02	16.19		2.03		1.96
Route 212	269.28	May	842.78	842.60	842.55	0.07	0.05	29.42		30.21		3.37
Route 212	269.28	Q1.1	844.05	843.89	843.28	0.08	0.02	51.81		121.05	10.05	3.27
Route 212	269.28	Q10	846.49	846.38	844.70	0.06	0.02	161.57	21.18	300.16	212.26	2.98
Route 212	269.28	Q25	847.23	847.11	844.98	0.05	0.02	176.82	39.99	367.84	293.96	3.06
Route 212	269.28	Q50	847.69	847.57	845.13	0.05	0.03	187.87	53.31	412.90	348.69	3.12
Route 212	269.28	Q100	848.24	848.11	845.33	0.05	0.03	201.56	70.36	468.29	416.54	3.20
Route 212	269.28	Q500	849.60	849.56	845.73	0.03	0.07	273.75	120.98	388.88	772.34	2.10
Route 212	225 BR U	August	841.75	841.75	840.82	1.78	0.00	14.35		2.03		0.20
Route 212	225 BR U	May	842.66	842.64	841.46	0.04	0.00	21.92		30.21		1.09
Route 212	225 BR U	Q1.1	843.94	843.86	842.39	0.07	0.01	28.67		126.50	4.60	2.27
Route 212	225 BR U	Q10	846.42	846.14	844.02	0.13	0.04	30.86		488.80	44.80	4.33
Route 212	225 BR U	Q25	847.15	846.79	844.51	0.15	0.05	30.86		639.95	61.85	4.94
Route 212	225 BR U	Q50	847.61	847.20	844.79	0.16	0.06	30.86		741.62	73.28	5.30
Route 212	225 BR U	Q100	848.15	847.68	845.10	0.17	0.08	30.86		867.81	87.39	5.70
Route 212	225 BR U	Q500	849.50	848.76	845.78	0.37	0.11			1147.88	134.32	7.09
Route 212	225 BR D	August	841.75	841.74	841.32	1.77	0.00	13.09		2.03		0.42
Route 212	225 BR D	May	842.62	842.58	841.94	0.06	0.00	21.04	0.13	29.93	0.15	1.58
Route 212	225 BR D	Q1.1	843.86	843.71	842.70	0.09	0.00	25.48	2.96	124.98	3.16	3.21
Route 212	225 BR D	Q10	846.25	845.61	844.46	0.17	0.00	29.13	30.97	486.28	16.34	6.71
Route 212	225 BR D	Q25	846.95	846.08	845.01	0.20	0.01	29.13	45.79	634.61	21.40	7.87
Route 212	225 BR D	Q50	847.39	846.35	845.37	0.21	0.02	29.13	55.90	734.29	24.72	8.60
Route 212	225 BR D	Q100	847.90	846.65	845.75	0.23	0.03	29.13	68.56	857.88	28.76	9.46
Route 212	225 BR D	Q500	849.03	847.22	846.57	0.28	0.10	29.13	98.13	1146.14	37.93	11.37
Route 212	181.73	August	841.73	841.73		0.07	0.01	12.80		2.03		0.44
Route 212	181.73	May	842.56	842.51		0.18	0.01	20.67	0.11	29.98	0.12	1.68
Route 212	181.73	Q1.1	843.77	843.60		0.20	0.01	27.07	2.70	125.25	3.15	3.39
Route 212	181.73	Q10	846.09	845.44		0.19	0.09	37.96	27.61	473.79	32.20	6.82
Route 212	181.73	Q25	846.75	845.90		0.20	0.13	40.68	41.47	611.96	48.37	7.89
Route 212	181.73	Q50	847.16	846.17		0.21	0.16	42.30	51.63	703.06	60.21	8.53
Route 212	181.73	Q100	847.64	846.49		0.21	0.20	44.14	65.05	814.28	75.87	9.27
Route 212	181.73	Q500	848.65	847.17	846.57	0.22	0.27	48.17	100.23	1065.07	116.89	10.66
Route 212	148.76	August	841.65	841.58	841.58	0.72	0.01	6.81		2.03		2.15
Route 212	148.76	May	842.37	842.22		0.59	0.01	18.44	0.05	30.16		3.06
Route 212	148.76	Q1.1	843.56	843.26		0.50	0.02	50.15	3.46	127.64		4.41
Route 212	148.76	Q10	845.81	845.45		0.30	0.07	126.26	137.12	394.86	1.62	5.51
Route 212	148.76	Q25	846.42	846.00		0.30	0.08	130.75	202.07	496.55	3.19	6.02
Route 212	148.76	Q50	846.79	846.34		0.29	0.08	133.08	246.60	563.82	4.48	6.33
Route 212	148.76	Q100	847.22	846.73		0.29	0.09	135.80	302.77	646.08	6.35	6.68
Route 212	148.76	Q500	848.16	847.58		0.30	0.12	140.90	436.67	833.71	11.82	7.36