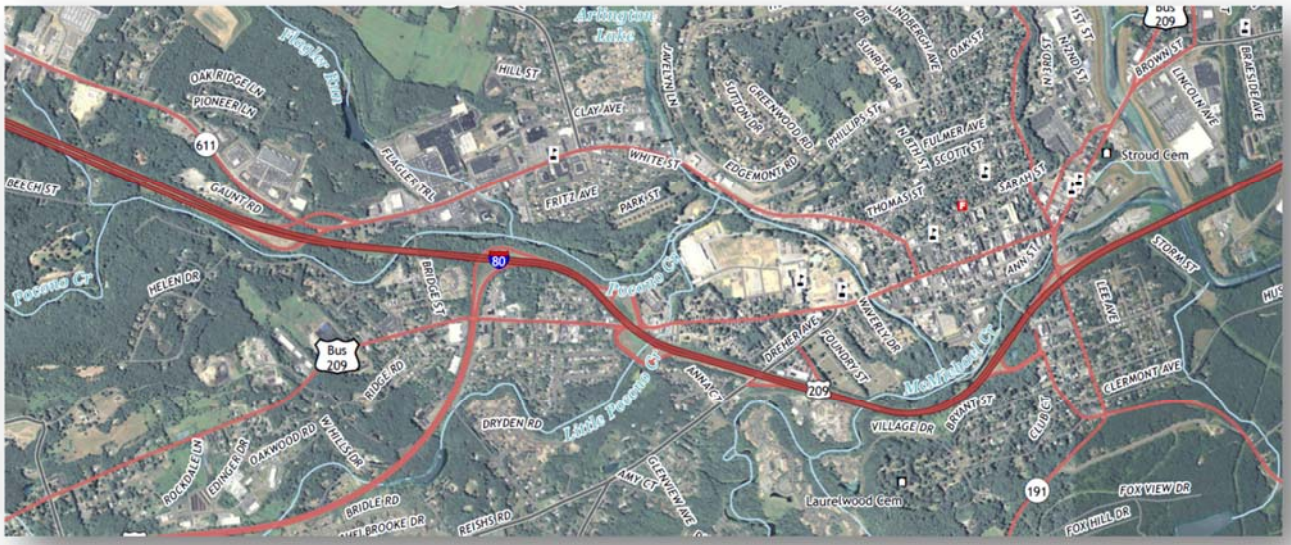
ALTERNATIVES ANALYSIS - HYDROLOGY & HYDRAULICS

Interstate 80 Reconstruction over Brodhead Creek, McMichael Creek, Pocono Creek, & Little Pocono Creek,

Borough of East Stroudsburg,
Borough of Stroudsburg, &
Stroud Township,
Monroe County, Pennsylvania



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MONROE COUNTY | PENNDOT DISTRICT 5-0

I. INTRODUCTION AND PROJECT DESCRIPTION

This report describes the alternative analysis and results of a hydrologic and hydraulic study that was performed on Interstate-80 (I-80) from Segment 3034 in Stroud Township to Segment 3074 in East Stroudsburg Borough to the east. The limits of the project include stream crossings over Brodhead, McMichael, Pocono and Little Pocono Creeks as well as encroachments on Pocono Creek and McMichael Creek as they parallel I-80. The project site is located within the Boroughs of Stroudsburg and East Stroudsburg as well as Stroud Township in Monroe County, Pennsylvania. The project is located on the USGS quadrangle map entitled Stroudsburg, PA. with the extents shown in **Figure 1** and **Appendix A**.

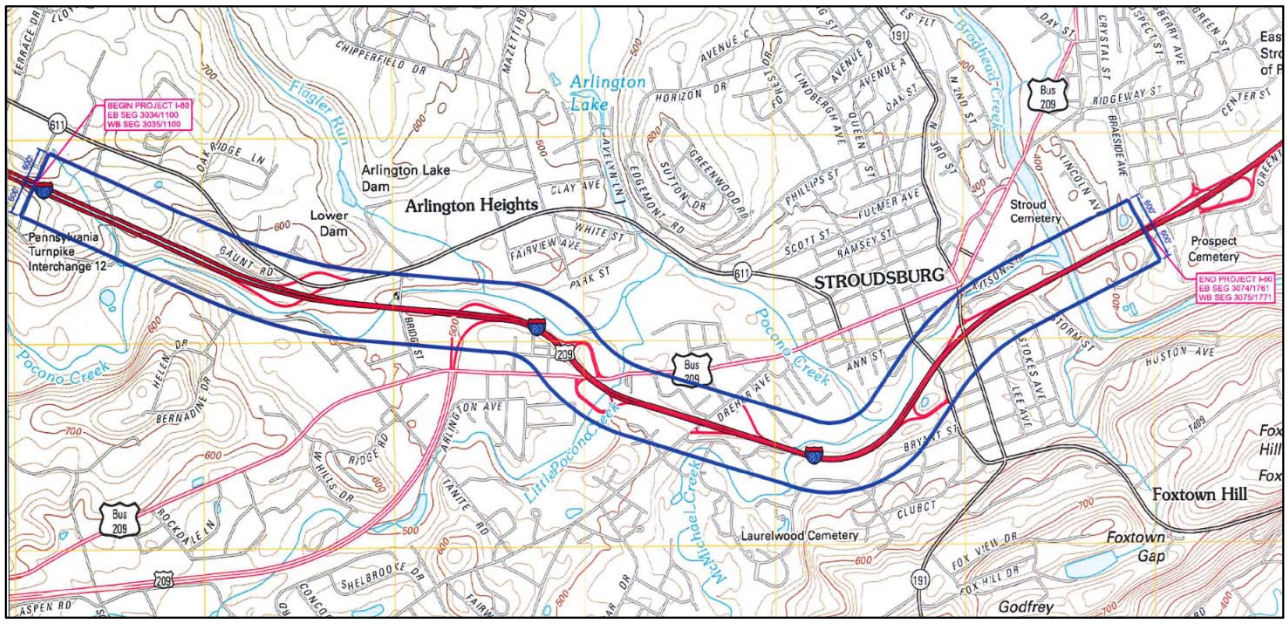

Figure 1: Project Location and Extents

A topographic survey was conducted by Susquehanna Civil, Inc. All elevations in this report are referenced to the NAVD 1988 datum, unless noted otherwise. NTM conducted a field view on May 10, 2013 to collect information relevant to the H&H study.

The existing I-80 corridor, between Segment 3034 in Stroud Township and Segment 3074 in East Stroudsburg, consists of 2 lanes in each direction. The I-80 corridor parallels Pocono Creek along mile 303 in Stroud Township, then Pocono Creek crosses I-80 through a four span bridge and flows parallel to I-80 from miles 304 through 305. At mile 305, Little Pocono Creek crosses under I-80

through a culvert which then joins Pocono Creek further downstream. McMichael Creek crosses I-80 at mile 306 with a four span bridge and parallels the corridor until its confluence with Brodhead Creek at mile 307. Just before the end of the project extents, I-80 crosses over Brodhead Creek with a three span bridge at Segment 3074.

II. HYDROLOGIC ANALYSIS

The limits of the project include crossings over four streams; Brodhead Creek, McMichael Creek, Pocono Creek, and Little Pocono Creek. The hydrologic analysis for each stream was performed using applicable methods per DM-2 Chapter 10. The drainage area, as delineated with the USGS StreamStats website[1], for each stream crossing along I-80 is shown in **Table 1**.

Table 1: Drainage Areas at the I-80 crossing

Water Body	Drainage Area (mi^2)
Brodhead Creek	258.1
McMichael Creek	65.3
Pocono Creek	42.1
Little Pocono Creek	1.5

All except the Little Pocono Creek crossings are located in a detailed FEMA floodway. The Little Pocono Creek crossings are located in an approximate FEMA floodplain. An Act 167 stormwater management plan has been approved by PADEP and includes all watersheds in this study.

Act 167

An Act 167 (Stormwater Management Plan) for the Brodhead Creek watershed was published on June 11, 1991, by the Monroe County Planning Commission. Because DEP commissioned the Brodhead Creek Act 167 study separately from the McMichael Creek study, the peak flows on Brodhead Creek do not include the flows from McMichael Creek. However, an Act 167 (Stormwater Management Plan) for the McMichael Creek watershed was published in 1988, by the Monroe County Planning Commission. The Act 167 plan for McMichael Creek includes peak flows for the Little Pocono Creek and Pocono Creek watersheds. The design discharges for Brodhead, McMichael and Pocono Creeks throughout the watershed were determined using the Penn State Runoff Model (PSRM). The resulting flows for Brodhead Creek were calibrated using regression methods and gage data available at the time of the 1991 study. An update to both Act 167 plans was approved by PADEP in 2006; however, the updated study did not include any new hydrologic modeling. The Act 167 Plan peak flows of interest are shown in **Table 2**.

[1] http://streamstats.usgs.gov/pastreamstats/index.asp

FEMA Flows

The Federal Emergency Management Agency (FEMA) published a Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM) for Monroe County on May 2, 2013. All but the Little Pocono Creek crossings are located in an area studied by detailed methods with published peak flows and base flood (100-year) elevations. The Brodhead Creek hydrology contained in the FEMA FIS was based on a Log Pearson Type III (LP-III) statistical analysis of discharge records at the Minisink Hills and Analomink USGS gaging stations, using regional analyses to develop the LP-III parameters. The McMichael Creek hydrology contained in the FEMA FIS was based on regional regression equations developed by the USACE. The Pocono Creek flows in the FEMA FIS were estimated using the results of the Act 167 Stormwater Management Plans for Brodhead and McMichael Creeks and compared against flows developed using the WRI Report 00-4189, "Techniques for Estimating Magnitude and Frequency of Peak Flows in Pennsylvania" and other previous studies. The FIS peak flows at different locations along the I-80 project are shown in **Table 2**. The flows in bold type in **Table 2** were modeled in HEC-RAS. The FEMA flows were used in the FEMA HEC-RAS and HEC-2 models (Pocono Creek was a HEC-RAS model) and in the HEC-RAS models developed for this study. FEMA maps of the project and excerpts of the FEMA FIS and hydraulic backup data are included in **Appendix B**.

Table 2: FEMA & Act 167 Published 100-Year Flood Discharges

		Published Discharges (cfs)	
Water Body	Location	FEMA	Act 167
Brodhead Creek	I-80 crossing	**36,780**	32,196*
McMichael Creek	Upstream of Confluence with Brodhead Creek	**15,340**	N/A
	Downstream of Confluence with Pocono Creek	**15,200**	N/A
	Upstream of Confluence with Pocono Creek	**9,060**	6,777
	At USGS Gage # 01441500	**8,880**	6,777
Pocono Creek	I-80 crossing	**7,748**	7,887
	Flagler Run confluence	**8,000**	8,150
Little Pocono Creek	I-80 crossing	-	**446**

*Does not include flows from McMichael Creek

III. FEMA EFFECTIVE MODELS

According to the FEMA FIRM for Monroe County, the Brodhead, McMichael, and Pocono Creek bridges are located in a FEMA Zone AE flood area, indicating the streams were mapped using detailed hydraulic methods. These crossings are located in a detailed FEMA floodway. Per Federal regulations,

the allowable increase in the 100-year flood profile is 0.00 feet. The Little Pocono Creek crossing is located in an approximate FEMA study area; therefore, per Federal regulations, the allowable increase in the 100-year flood profile is 1.00 feet. At all locations, the FEMA flows are greater than or within two percent of the Act 167 flows; therefore, the 100-year peak discharge published in the FEMA FIS was used in the existing condition model.

FEMA developed HEC-2 hydraulic models for Brodhead Creek and McMichael Creek to produce the 100-year flood elevations in the FIS. NTM Engineering obtained a paper copy of the Brodhead Creek and an electronic copy of the McMichael Creek HEC-2 model data from FEMA. The FEMA FIS is based on the NAVD 1988 datum and the HEC-2 data is based on the NGVD 1929 datum. The existing condition model, including all survey data, is based on the NAVD 1988 datum, which is 0.59 feet lower than elevations based on the NGVD 1929 datum. Therefore, 0.59 feet must be subtracted from all elevations contained in the FEMA HEC-2 models to compare elevations using the project datum. For McMichael Creek, the duplicate effective model generated by importing the HEC-2 geometry into HEC-RAS produced results that were within 0.3 feet of FEMA's published Base Flood Elevations. Because the HEC-2 data for Brodhead Creek was not available in electronic format, a duplicate effective model was not generated; however, as shown in **Table 3**, the results of the existing hydraulic analysis correlate well with FEMA's published Base Flood Elevations for the cross sections included in the hydraulic model. .

FEMA developed a HEC-RAS hydraulic model for Pocono Creek to produce the 100-year flood elevations in the FIS. NTM obtained electronic copies of the HEC-RAS input/output from FEMA. The FEMA FIS and HEC-RAS data are based on the NAVD 1988 datum; therefore, a datum conversion was not required. For Pocono Creek, the FEMA effective and the duplicate effective hydraulic models are the same since FEMA used the HEC-RAS software in their study. Therefore, the results between the duplicate effective hydraulic model and the published base flood elevations for the 100-year are the same.

Where applicable, NTM compared the FEMA model and flood profiles in the FIS to the existing condition model. It should be noted that FEMA studies have a very different objective compared to PennDOT hydraulic studies and generally do not contain the same level of detail and accuracy.

IV. EXISTING CONDITIONS MODELS

The hydraulic analysis for all crossings was performed using the U.S. Army Corps of Engineers HEC-RAS River Analysis System program (Version 4.1.0). Existing and proposed conditions were modeled based on the surveyed cross sections, FEMA HEC-2 and HEC-RAS models, proposed site modifications, and peak discharge calculations.

Ineffective flow areas were included in the hydraulic models where appropriate. For the parallel sections of McMichael Creek and Pocono Creek, the cross section geometry was the same as FEMA and no levees or ineffective flow areas were added for consistency. However, for the hydraulic models that use updated survey information, the current analysis assumed that modeled flows will not flood the overbanks unless the bank is overtopped. Therefore, levees were used in the immediate overbanks to contain flood events in the channel. Unlike the FEMA hydraulic model, none of the modeled events overtop the upstream right overbank of I-80 over Pocono Creek.

It should be noted that the bank stations for the FEMA hydraulic model may not accurately represent the channel extents; however, to maintain consistency between FEMA and the current analysis no change was made to the cross sections.

Brodhead Creek:

Detailed survey in the channel and for the bridges and LiDAR data in the overbanks was used to generate hydraulic cross sections and to determine bridge dimensions for the Brodhead Creek model. The locations of cross sections used for the hydraulic models are depicted on maps in **Appendices D, E,** and **F**. The model extends approximately 500 feet upstream and downstream of the existing I-80 bridge over Brodhead Creek. Steady flow analysis was performed using a subcritical flow regime for all profiles. For the downstream boundary condition, a known water surface elevation of 392.24 feet, which was obtained from the FEMA 100-year FIS profile for Brodhead Creek. Although one cross section is located upstream of the McMichael Creek confluence, a single peak flow was calculated at the I-80 bridge and was applied to the reach (i.e., no flow changes).

The existing I-80 bridge over Brodhead Creek was coded into HEC-RAS using recent survey data. Abutment and pier locations, bridge top of deck elevations and low chord elevations were obtained directly from the survey. The existing I-80 structure is a three span steel two-girder floor beam bridge. The beams are set on top of concrete abutments and the bridge is oriented on a 90 degree skew (angle between abutments and roadway centerline). The normal clear dimension for spans 1, 2, and 3 are 118.3, 160.1, and 118.4 feet, respectively. The piers are located at the left and right edges of the channel and are aligned with the stream flow. The concrete piers are 3.75 feet wide with semicircular noses. The out-to-out structure width is 66.1 feet measured along the stream centerline. The minimum low chord elevation is 413.65 feet, which is located at the upstream right abutment. The internal bridge sections were further modified to reflect the geometry directly beneath the bridge. For low flows, the Energy (standard step), Yarnell, and Momentum methods were selected and the method that calculated the highest energy used. The pier shape coefficient of 0.9 and a 1.2 coefficient of drag were used to model the semicircular nose of the pier. The Energy (standard step) method was also selected as the high flow computational method because the low chord of the bridge is not submerged during flood events.

McMichael Creek

Due to a lack of survey data in the reaches of McMichael Creek that parallel I-80, the model was generated based on the FEMA HEC-2 model for the reach. The FEMA HEC-2 model was imported into HEC-RAS and adjusted by -0.59 feet to the NAVD 88 datum. The Village Drive and SR 0611 (Seventh Street) bridges were not surveyed and will not be modified as part of the proposed project; dimensions for these bridges were obtained directly from the FEMA HEC-2 model. The I-80 and SR 0191 (Fifth Street) bridges will be replaced as part of this project. The existing dimensions, including span, pier width, low chord elevations, and skew, of these bridges were measured using detailed survey data of the bridges. The Fifth Street Dam did not import correctly from the FEMA HEC-2 model, so it was entered as an inline structure using the geometric data from the HEC-2 model.

In the McMichael Creek HEC-RAS model, the following modifications were made to the bridges throughout the model to make the HEC-2 geometry consistent with current HEC-RAS modeling procedures: the bridge widths were reduced by up to 0.1' to provide a non-zero distance to the upstream cross section; the bridge calculation methods were updated to include Yarnell, momentum, and energy methods for all bridges with existing piers; and piers at the SR 0611 and SR 0191 bridges that were coded into the low chord or ground data were deleted and re-entered in the pier data editor. Additionally, the following cross sections were interpolated between the FEMA HEC-2 model cross sections for additional modeling accuracy in areas where the I-80 embankment will encroach on the floodplain: 5360, 4440, 4020, 3850, 3680, and 3510. These cross sections were supplemented with survey and LiDAR data in the overbanks as needed to accurately model the ground elevations at the cross section. The locations of cross sections used for the hydraulic models are depicted on maps in **Appendices D, E,** and **F**. Steady flow analysis was performed using a mixed flow regime for all profiles. Normal depth boundary conditions were used at the upstream and downstream limits of the model. The downstream slope of 0.165 percent was obtained from the FEMA HEC-2 model and the upstream slope of 0.3 percent was chosen based on the slope of the streambed at the upstream limit of the model. Flow changes were used at cross sections 10670, 5680, 5040, and 4190 for consistency with the FEMA FIS.

The existing I-80 bridge over McMichael Creek was coded into HEC-RAS based on the FEMA HEC-2 model and updated for consistency with recent survey data. Abutment and pier locations, bridge top of deck elevations and low chord elevations were obtained directly from the survey. A 30 degree skew was applied to the internal and bounding bridge cross sections. The internal bridge sections were further modified to reflect the geometry directly beneath the bridge. The existing I-80 structure is a four span bridge. The beams are set on top of concrete abutments and the bridge is oriented on a 60 degree skew (angle between abutments and roadway centerline). The normal clear dimension for spans 1, 2, and 3 are 62.5, 70.6, 72.3, and 48.2 feet, respectively. The piers are aligned with the stream flow. The concrete piers are 4.5 feet wide with triangular noses. The out-to-out structure width is 75.63 feet measured along the stream centerline. The minimum low chord elevation is 413.65 feet,

which is located at the downstream right pier. For low flows, the Energy (standard step), Yarnell, and Momentum methods were selected and the method that calculated the highest energy used. The pier shape coefficient of 1.05 and a 1.6 coefficient of drag were used to model the 90-degree triangular nose of the pier. The Pressure/Weir method was also selected as the high flow computational method.

The existing SR 0191 bridge over McMichael Creek was coded into HEC-RAS using recent survey data. Abutment and pier locations, bridge top of deck elevations and low chord elevations were obtained directly from the survey. The existing SR 0191 structure is a two span bridge. The bridge is oriented on a 20 degree skew to the flow direction. The pier is reinforced concrete with triangular noses. The pier is located on the left side of the channel and is 3.9 feet wide. The normal clear dimension for spans 1 and 2 are 49.0 and 109.9. The out-to-out structure width is 44.7 feet measured along the stream centerline. The minimum low chord elevation is 402.39 feet, which is located at the upstream right abutment. For low flows, the Energy (standard step), Yarnell, and Momentum methods were selected and the method that calculated the highest energy used. The pier shape coefficient of 1.05 and a 1.6 coefficient of drag were used to model the triangular nose of the pier.

Pocono Creek

Three separate reaches were used for the Pocono Creek hydraulic model. The upstream and downstream Pocono Creek reaches that parallel I-80 were modeled separately from the I-80 bridge crossing since new survey data was obtained at the bridge. The locations of cross sections used for the hydraulic models are depicted on maps in **Appendices D, E,** and **F.**

The Pocono Creek reaches that parallel I-80 were modeled based on the FEMA HEC-RAS study without any modifications. FEMA cross sections AA through AL were used to model the parallel section of Pocono Creek downstream of the I-80 crossing. Furthermore, FEMA cross sections AV through BP were used for the parallel section upstream of the I-80 crossing. A known water surface elevation was used as the downstream boundary conditions for each reach. The known water surface elevation was obtained from the FEMA hydraulic model for the 100-year event. Flow change locations were applied to the hydraulic model to match the FEMA hydraulic model where applicable.

The existing I-80 bridge over Pocono Creek was coded into HEC-RAS using recent detailed survey in the channel and LiDAR data in the overbanks. Abutment and pier locations, bridge top of deck elevations and low chord elevations were obtained directly from the survey. The existing I-80 structure is a four span steel beam bridge. The bridge is oriented on a 35 degree skew to the flow direction. The piers are reinforced concrete with semicircular noses. The left and middle piers are aligned with the flow direction and are 3.0 feet wide. The right pier is 3.5 feet wide; however, it is not aligned with the flow direction. The projected width of the right pier according to the flow direction is approximately 35.9 feet. The normal clear dimension for spans 1 and 2 are 54.8 and 80.5, respectively. The normal clear span for spans 3 and 4 vary due to the skewed pier and abutment (not aligned with

the flow direction). The out-to-out structure width is 79.40 feet measured along the stream centerline. The minimum low chord elevation is 499.95 feet, which is located at the upstream right abutment.

The model used a steady flow analysis in a subcritical flow regime. Though some of the cross sections reach a Froude number of 1.0, the subcritical flow regime is consistent with FEMA's approach. A known water surface elevation was used as the downstream boundary conditions for the FEMA 100-year event from the FEMA hydraulic model. For low flows, the Energy (standard step), Yarnell, and Momentum methods were selected and the method that calculated the highest energy used. The pier shape coefficient of 1.05 and a 1.6 coefficient of drag were used to model the semi-circular nose of the pier. The Energy (standard step) method was also selected as the high flow bridge modeling method because the bridge low chord does not come in contact with any of the flood events and there is no overtopping.

Little Pocono Creek:

The Little Pocono Creek hydraulic model was generated using detailed survey in the channel and LiDAR data in the overbanks. The locations of cross sections used for the hydraulic models are depicted on maps in **Appendices D, E,** and **F.** Steady flow analysis was performed using a mixed flow regime. Normal depth boundary conditions was applied using an average downstream stream bottom slope of 0.004 feet per feet and an average upstream stream bottom slope of 0.006 feet per feet. The existing structure span, rise, invert and low chord elevations were obtained directly from the survey.

The existing I-80 culvert over Little Pocono Creek was coded into HEC-RAS using recent survey data. The normal clear span is 18.0 feet and the rise is 8.0 feet; however stream bed material provide a natural bottom cover with upstream and downstream inverts of 449.61 and 448.63 feet, respectively. The out-to-out structure width is 185.0 feet measured along the stream centerline. The upstream and downstream low chord elevations are 457.61 and 456.63 feet, respectively.

Comparison of Existing HEC-RAS and Published FEMA BFE's

A comparison was made between the base flood elevations (BFEs) published in the FEMA FIS with the current existing HEC-RAS hydraulic model. According to DM2, Chapter 10, Appendix C, the new model water surface elevations must be within 6 inches (0.5 feet) of the FEMA FIS model to be considered an acceptable duplicate effective model.

The 100-year water surface elevations (WSE) for Brodhead Creek, McMichael Creek and Pocono Creek for FEMA cross sections within the project limits are compared in **Tables 3**, **4** and **5**, respectively. The water surface elevations in the tables are rounded to the nearest one tenth foot.

Table 3: FEMA vs. Existing Condition Model WSE Comparison for Brodhead Creek

FEMA Regulatory		Current HEC-RAS		Difference (feet)
Cross Section	WSE (feet)	Cross Section	WSE (feet)	
3.92 (I)	392.3	3	392.4	+0.1
4.03	393.9	8	394.1	+0.2

The difference in 100-year WSEs at Sections 3 and 8 do not exceed 0.5 feet; therefore, the existing HEC-RAS model is considered consistent with the FEMA HEC-2 model.

Table 4: FEMA vs. Existing Condition Model WSE Comparison for McMichael Creek

FEMA Regulatory		Current HEC-RAS		Difference (feet)
Cross Section	WSE (feet)	Cross Section	WSE (feet)	
J	424.3	10670	424.5	+0.2
I	417.8	7030	417.9	+0.1
H	416.2	6655	416.1	-0.1
G	416.0	6070	416.1	+0.1
F	416.0	5680	416.0	0.0
E	414.9	4690	414.7	-0.2
D	414.8	4190	414.7	-0.1
C	414.0	3005	413.5	-0.5
B	392.1	1585	392.2	+0.1
A	385.9	495	385.9	0.0

The difference in 100-year WSEs equals or exceeds 0.5 feet only at FEMA cross section C. There are several factors that may contribute to the differences in WSEs between the two models. In particular, the changes made to the Fifth Street dam may contribute to the difference in water surface elevations at cross section 3005 (C).

Table 5: FEMA vs. Existing Condition Model 100-year WSE Comparison for Pocono Creek

FEMA Regulatory		Existing Condition HEC-RAS		Difference (feet)
Cross Section	WSE (feet)	Cross Section	WSE (feet)	
AU	484.0	21	483.2	-0.8
AT	482.7	19	482.0	-0.7
AS	481.0	17	481.8	0.8
I-80 Bridge				
AR	480.3	14	478.1	-2.2
AQ	480.0	13	477.5	-2.5
AP	479.9	12	478.2	0.3
SR 2009 Bridge				
AO	475.4	7	475.9	0.5
AN	472.3	4	471.8	-0.5
AM	470.9	1	470.9	0.0

The difference in 100-year WSEs equals or exceeds 0.5 feet at several cross sections; there are several factors that may contribute to these differences in WSEs between the two models. In general, the FEMA cross sections have higher channel elevations than those in the current survey, which result in higher water surface elevations. The FEMA I-80 bridge opening is similar to the current hydraulic study; however, the ground elevations at the channel are approximately 0.5 feet higher than the surveyed elevations. The clear spans and out-to-out widths are similar; but, the right pier in the FEMA model was not skewed. Since none of the flows overtop the bridge, the superstructure depth does not affect the hydraulic model at all. Figures depicting the geometric differences between the FEMA and current HEC-RAS cross sections can be found in **Appendix B**.

It should also be noted that the FEMA model utilized a channel Manning's 'n' value of 0.045, whereas for the current study, the HEC-RAS model utilized a value of 0.04. The roughness coefficient used in the FEMA model is very conservative for this reach of the Pocono Creek, since the channel is fairly straight without deep pools or boulders. The roughness coefficient used in the current study provides a better approximation to the roughness coefficient per the HEC-RAS Hydraulic Reference Manual.

Another discrepancy between the FEMA model and the current hydraulic model is the right overbank area upstream of the I-80 bridge. Instead of using a levee to contain the flow within the channel, FEMA used ineffective flow areas on the right overbank and allowed flow to inundate the developed overbank. Therefore, the FEMA FIRM shows a wide floodplain in the upstream right overbank, but the current 100-year floodplain extents are contained within the channel banks. It is appropriate to use the HEC-RAS levee tool in the current model because water surface elevations do not overtop the streambank and it provides a conservative water surface elevation and velocity.

A duplicate effective hydraulic model was created to verify that the discrepancies shown in **Table 5** are mainly due to the geometric differences and not due to the modeling approach. The duplicate effective hydraulic model assumed that the existing right pier is not skewed, and levees are not used to contain flow in the channel (similar to FEMA's approach). Furthermore, the Manning's n values from the FEMA hydraulic model were used in the duplicate effective hydraulic model to match FEMA's approach. However, the results show that the discrepancies in water surface elevation are similar to the discrepancies with the existing condition model. For instance, at cross section 13 (FEMA cross section AS, upstream of the I-80 crossing) the water surface elevation from the duplicate effective hydraulic model is 482.5 feet. This proves that the discrepancies with the FEMA hydraulic model are due to the geometric differences and not the modeling approach. Results from the duplicate effective hydraulic model are provided in **Appendix B**.

The parallel sections of I-80 and Pocono Creek were analyzed using the same FEMA geometry and peak flows from the FEMA HEC-RAS model. Therefore, the water surface elevations between the existing condition model and the FEMA published water surface elevations are the same.

V. PROPOSED ALTERNATIVE A MODEL

Proposed I-80 Corridor

The existing I-80 corridor will be reconstructed with 3 lanes in each direction. The proposed extension will be even on the north and south sides. Therefore, the proposed roadway alignment will be similar to the existing alignment. Alternative A includes modifications to the configuration of all interchanges within the project limits. Each interchange will be different than the existing with some proposed encroachments into the floodplain. Furthermore, all waterway crossings in the Alternative A scenario will be reconstructed with changes to the hydraulic opening. Therefore, a detailed hydraulic analysis was performed for all encroachments as well as waterway crossings. The replacement structure for the I-80 bridge over Brodhead Creek is the same for Alternatives A, B, and D, therefore, the results of the hydraulic analysis of Brodhead Creek will be reported in the Alternative A section only.

Proposed Lateral Floodplain Encroachments

As previously indicated, Alternative A includes modifications to all interchanges within the project limits. These changes as well as the roadway widening result in encroachments to the existing floodplain at several locations.

Between mile markers 302 and 303, I-80 parallels Pocono Creek for 3500 feet before I-80 crosses the Creek. Alternative A includes minor changes to the roadway embankment which encroach into the existing floodplain. At mile marker 303, I-80 has ramps that connect SR 0611 with the interstate. Alternative A includes changes to the existing 303 exit eastbound. This change will reduce the impact of the ramp on Pocono Creek. However, Alternative A also includes adding an entrance ramp near the

mile marker 303 which will connect SR 0611 to I-80 east bound. This new ramp encroaches into the Pocono Creek floodplain for 1200 feet. Alternative A also includes changes to the westbound ramps but it does not affect the hydraulic model.

Between the I-80 bridge over Pocono Creek and mile marker 304, I-80 parallels Pocono Creek for 3000 feet. Alternative A includes roadway encroachments on the Pocono Creek floodplain due to the wider roadway. Near mile marker 304, SR 0209 connects with I-80 through eastbound and westbound ramps. These ramps will have a different configuration than the existing condition. The westbound ramp includes a new ramp alignment with piers encroaching in the Pocono Creek floodplain. Changes to the eastbound ramp are also included in Alternative A but do not affect the hydraulic model.

The ramps located near mile marker 305 will be relocated with a new geometry for Alternative A. This new interchange configuration affects the Little Pocono Creek crossing. Encroachment into the Little Pocono Creek is minor but the new geometry affects the hydraulic characteristics of the crossing. The proposed entrance ramp that connects SR 2012 with I-80 westbound will encroach into the existing floodplain but the new configuration will reduce the existing encroachment due to the ramp downstream.

The existing ramps located near mile marker 306 will be removed. However, they do not affect any of the waterways within the project limits.

Between the McMichael Creek crossing and the Brodhead Creek crossing, I-80 parallels McMichael Creek for 5500 feet. Some of the proposed roadway widening in Alternative A will encroach into the McMichael Creek floodplain. Furthermore, the interchange located near mile marker 307 will be improved for Alternative A. Only the changes to the westbound ramps encroach into the McMichael Creek crossing; therefore, they were included in the hydraulic model. The SR 0191 and I-80 bridges over McMichael Creek will be replaced.

Proposed Structures

As previously indicated, Alternative A includes new replacement of the following bridges and culverts: I-80 over Pocono Creek, I-80 over McMichael Creek, SR 0191 over McMichael Creek, and I-80 over Brodhead Creek. These changes include new hydraulic openings for all bridges with slightly different span configurations. It will also include the construction of two new culverts under ramps over Little Pocono Creek.

The existing I-80 bridge over Brodhead Creek will be replaced with a three-span bridge. The proposed bridge is oriented perpendicular to flow. The piers will be 5 feet wide and will be shifted to the west of the existing piers. The normal clear span for spans 1, 2, and 3 are 115.5 feet, 145.0 feet and 100.5 feet, respectively. The out-to-out structure width is 150.4 feet measured along the stream centerline. A

minimum low chord elevation of 413.95 feet was assumed, which is above the 100-year event. For low flows, the Energy (standard step), Yarnell, and Momentum methods were selected and the method that calculated the highest energy used. Pier shape coefficients of 0.9 and a 1.2 coefficient of drag were used, assuming that the proposed piers will have round noses.

The existing SR 191 bridge over McMichael Creek will be replaced with a single span bridge. The proposed bridge is oriented on the same 20 degree skew as the existing bridge and will have a normal clear span of 175.3 feet. The out-to-out structure width is 85.7 feet and a low chord of 401.07 feet was assumed. The assumed low chord is above the 100-year flood elevation. For low flows, the Energy method was selected.

The existing I-80 bridge over McMichael Creek will be replaced with a two span bridge. The proposed bridge is oriented on the same 30 degree skew as the existing bridge. The pier will be 5 feet wide and will be placed near the center of the channel. The normal clear spans of the bridge will be 143.3 feet and 130.3 feet. The out-to-out width of the bridge will be 195 feet and a low chord of 427.1 feet was assumed. The assumed low chord is above the 100-year flood elevation. For low flows, the Energy (standard step), Yarnell, and Momentum methods were selected and the method that calculated the highest energy used. Pier shape coefficients of 1.6 and a 1.05 coefficient of drag were used, assuming that the proposed piers will have triangular noses.

The existing I-80 bridge over Pocono Creek will be replaced with a two-span structure. The proposed bridge is oriented on a 30 degree skew to the flow direction; however, the existing skew angle (35 degrees) was applied to the internal and bounding cross sections for consistency with the existing hydraulic model. Furthermore, using the existing skew was a conservative approach as the proposed skew results in improved water surface elevations. The proposed pier will be 5.0 feet wide and will be located outside of the 100-year floodplain for Pocono Creek. The normal clear dimension for span 1 is 137.3 feet. The normal clear span for span 2 varies due to the skewed abutment (not aligned with the flow direction). The out-to-out structure width is 197.0 feet measured along the stream centerline. The minimum low chord elevation was assumed to be 502.2 feet, which is located above the 100-year water surface elevation. For low flows, the Energy (standard step), Yarnell, and Momentum methods were selected and the method that calculated the highest energy used. The same existing pier shape coefficients of 1.05 and a 1.6 coefficient of drag were used, assuming the same characteristics as the existing condition. The bridge low chord does not come in contact with any of the flood events and there is no overtopping.

The existing Little Pocono Creek crossing includes structures over I-80, SR 2009 and adjacent ramps. The proposed condition for Alternative A includes modifications to all structures as well as additions of new structure due to the new proposed ramps. All proposed structures were assumed to be box culverts with depressed inlets for fish baffles. The proposed structure sizes, from upstream to

downstream, are shown in **Table 6**.

Table 6: Alternative A Structure Sizes over Little Pocono Creek from upstream to downstream

Location	Rise (ft)	Span (ft)
I-80 Ramp	4.5	18
I-80 Ramp	7	17
I-80	7	18
I-80 Ramp	6	16
West Main St.	4.5	16

Proposed Alternative A Results

Results of the hydraulic analysis of Alternative A are included in **Appendix D**.

VI. PROPOSED ALTERNATIVE D MODEL

Proposed I-80 Corridor

The existing I-80 corridor will be reconstructed with 3 lanes on each direction. The proposed extension will be even on the north and south sides. Therefore, the proposed roadway alignment will be similar to the existing alignment. Alternative D includes modifications to the configuration of all interchanges within the project limits. Each interchange will be different than the existing configuration with some proposed encroachments into the floodplain. Furthermore, all waterway crossings in the Alternative D scenario will be reconstructed with changes to the hydraulic opening. Therefore, a detailed hydraulic analysis was performed for all encroachments as well as waterway crossings.

Proposed Lateral Floodplain Encroachments

As previously indicated, Alternative D includes modifications to all interchanges within the project limits. These changes as well as the roadway widening result in encroachments to the existing floodplain at several locations.

Between mile markers 302 and 303, I-80 parallels Pocono Creek for 3500 feet before crossing I-80. Alternative D includes minor changes to the roadway embankment. At mile marker 303, I-80 has ramps that connect SR 0611 with the interstate. Alternative D includes changes to the existing 303 exit eastbound and westbound ramps but they do not encroach into the 100-year floodplain.

Between the I-80 bridge over Pocono Creek and mile marker 304, I-80 parallels Pocono Creek for 3000 feet. Alternative D includes roadway encroachments on the Pocono Creek floodplain due to the wider roadway. Furthermore, the SR 209 ramps H and I will have different configuration than the existing

condition. The ramp work includes a new ramp alignment with piers encroaching in the Pocono Creek floodplain. Ramps H and I are included in the hydraulic model for Pocono Creek downstream. The piers in the overbank were modeled as 5.0 feet wide obstructions in the right overbank. Furthermore, the abutments and fill placed in the overbank were modeled by modifying the geometry at the applicable cross sections.

The ramps located near mile marker 305 will be relocated with a new geometry for Alternative D. This new interchange configuration affects the Little Pocono Creek crossing. Encroachment into the Little Pocono Creek is minor but the new geometry affects the hydraulic characteristics of the crossing. The proposed entrance ramp that connects SR 2012 with I-80 will encroach into the existing floodplain.

The existing ramps located near mile marker 306 will be removed. However, they do not affect any of the waterways within the project limits.

Between the McMichael Creek crossing and the Brodhead Creek crossing, I-80 parallels McMichael Creek for 5500 feet. Some of the proposed roadway widening in Alternative D will encroach into the McMichael Creek floodplain. Furthermore, the interchange located near mile marker 307 will be improved for Alternative D. Only the changes to the westbound ramps encroach into the McMichael Creek crossing; therefore, they were included in the hydraulic model. The eastbound ramp changes do not affect the hydraulic modeling. The SR 0191 and I-80 bridges over McMichael Creek will be replaced.

Proposed Structures

As previously indicated, Alternative D includes new proposed structures for all hydraulic crossings. These changes include new hydraulic openings for all bridges with slightly different span configurations.

The proposed I-80 bridge over Brodhead Creek will be identical to the bridge proposed in Alternative A. There are no other impacts to Brodhead Creek from the project; see **Appendix D** for the results of the hydraulic analysis of Brodhead Creek.

The existing SR 191 bridge over McMichael Creek will be replaced with a single span bridge. The proposed bridge is oriented on the same 20 degree skew as the existing bridge and will have a normal clear span of 176.2 feet. The out-to-out structure width is 85.7 feet and a low chord of 401.07 was assumed. The assumed low chord is above the 100-year flood elevation. For low flows, the Energy method was selected.

The existing I-80 bridge over McMichael Creek will be replaced with a two span bridge. The proposed bridge is oriented on the same 30 degree skew as the existing bridge. The pier will be 5 feet wide and

will be placed near the center of the channel. The normal clear spans of the bridge will be 143.3 feet each. The out-to-out width of the bridge will be 179 feet and a low chord of 427.72 feet was assumed. The assumed low chord is above the 100-year flood elevation. For low flows, the Energy (standard step), Yarnell, and Momentum methods were selected and the method that calculated the highest energy used. Pier shape coefficients of 1.6 and a 1.05 coefficient of drag were used, assuming that the proposed piers will have triangular noses. High flow doesn't affect bridge.

The existing I-80 bridge over Pocono Creek will be replaced with a two-span structure. The proposed bridge is oriented on a 30 degree skew to the flow direction; however, the existing skew angle (35 degrees) was applied to the internal and bounding cross sections for consistency with the existing hydraulic model. Furthermore, using the existing skew was a conservative approach as the proposed skew results in improved water surface elevations. The proposed pier will be 5.0 feet wide and will be located outside of the 100-year floodplain for Pocono Creek. The normal clear dimension for span 1 is 137.3 feet. The normal clear span for span 2 varies due to the skewed abutment (not aligned with the flow direction). The out-to-out structure width is 197.0 feet measured along the stream centerline. The minimum low chord elevation is located above the 100-year water surface elevation. For low flows, the Energy (standard step), Yarnell, and Momentum methods were selected and the method that calculated the highest energy used. The same existing pier shape coefficients of 1.05 and a 1.6 coefficient of drag were used, assuming the same characteristics as the existing condition. The bridge low chord does not come in contact with any of the flood events and there is no overtopping.

The existing Little Pocono Creek crossing includes structures over I-80, SR 2009 and adjacent ramps. The proposed condition for Alternative D includes modifications to all structures. All proposed structures were assumed to be box culverts with depressed inlets for fish baffles. The proposed structure sizes, from upstream to downstream, are shown in **Table 7**.

Table 7: Alternative D Structure Sizes over Little Pocono Creek from upstream to downstream

Location	Rise (ft)	Span (ft)
I-80 Ramp	4	20
I-80	4	22
West Main St.	4	18

Proposed Alternative D Results

Results of the hydraulic analysis of Alternative D are included in **Appendix E**.

VII. PROPOSED ALTERNATIVE B MODEL

Proposed I-80 Corridor

The existing I-80 corridor will be reconstructed with 3 lanes on each direction. The proposed extension will be even on the north and south sides. Therefore, the proposed roadway alignment will be similar to the existing alignment. Alternative B includes modifications to the configuration of all interchanges within the project limits. Each interchange will be different than the existing configuration with some proposed encroachments into the floodplain. Furthermore, all waterway crossings in the Alternative B scenario will be reconstructed with changes to the hydraulic opening. Therefore, a detailed hydraulic analysis was performed for all encroachments as well as waterway crossings.

Proposed Lateral Floodplain Encroachments

As previously indicated, Alternative B includes modifications to all interchanges within the project limits. These changes as well as the roadway widening result in encroachments to the existing floodplain at several locations.

Between mile markers 302 and 303, I-80 parallels Pocono Creek for 3500 feet before crossing I-80. Alternative B includes changes to the roadway embankment which encroach into the existing floodplain and floodway. At mile marker 303, I-80 has ramps that connect SR 0611 with the interstate. Alternative B includes changes to the existing ramps. This change includes placing fill into the Pocono Creek floodplain and floodway. Alternative B also includes adding an entrance ramp near the mile marker 303 which will connect SR 0611 to I-80 east bound. This new ramp encroaches into the Pocono Creek floodplain for 800 feet. Alternative B also includes changes to the westbound ramps but it does not affect the hydraulic model.

Between the I-80 bridge over Pocono Creek and mile marker 304, I-80 parallels Pocono Creek for 3000 feet. Alternative B includes roadway encroachments on the Pocono Creek floodplain and floodway due to the wider roadway. Near mile marker 304, SR 0209 connects with I-80 through eastbound and westbound ramps (ramps E, G and H). These ramps will have different configuration than the existing condition. The ramps include a new alignment with piers encroaching in the Pocono Creek floodplain. Changes to the eastbound ramp are also included in Alternative B but do not affect the hydraulic model. Ramps E, G and H are included in the hydraulic model for Pocono Creek downstream. The piers in the overbank were modeled as 5.0 feet wide obstructions in the right overbank. Furthermore, the abutments and fill placed in the overbank were modeled by modifying the geometry at the nearest cross section.

The ramps located near mile marker 305 will be relocated with a new geometry for Alternative B. This new interchange configuration affects the Little Pocono Creek crossing. The geometry of Alternative B

is the same as the geometry configuration of Alternative D for Little Pocono Creek, see **Appendix E** for the results of Alternative D over Little Pocono Creek.

The existing ramps located near mile marker 306 will be removed. However, they do not affect any of the waterways within the project limits.

Between the McMichael Creek crossing and the Brodhead Creek crossing, I-80 parallels McMichael Creek for 5500 feet. Some of the proposed roadway widening in Alternative B will encroach into the McMichael Creek floodplain. Furthermore, the interchange located near mile marker 307 will be improved for Alternative B. Only the changes to the westbound ramps encroach into the McMichael Creek crossing; therefore, they were included in the hydraulic model. The eastbound ramp changes do not affect the hydraulic modeling. The SR 0191 bridge over McMichael Creek will be replaced.

Proposed Structures

As previously indicated, Alternative B includes new proposed structures for all hydraulic crossings. These changes include new hydraulic openings for all bridges with slightly different span configurations.

The proposed I-80 bridge over Brodhead Creek will be identical to the bridge proposed in Alternative A. There are no other impacts to Brodhead Creek from the project; see **Appendix D** for the results of the hydraulic analysis of Brodhead Creek.

The existing SR 191 bridge over McMichael Creek will be replaced with a single span bridge. The proposed bridge is oriented on the same 20 degree skew as the existing bridge and will have a normal clear span of 176.7 feet. The out-to-out structure width is 85.7 feet and a low chord of 401.07 was assumed. The assumed low chord is above the 100-year flood elevation. For low flows, the Energy method was selected.

The existing I-80 bridge over McMichael Creek will be replaced with a two span bridge. The proposed bridge is oriented on the same 30 degree skew as the existing bridge. The pier will be 5 feet wide and will be placed near the center of the channel. The normal clear spans of the bridge will be 143.3 feet each. The out-to-out width of the bridge will be 179 feet and a low chord of 427.46 feet was assumed. The assumed low chord is above the 100-year flood elevation. For low flows, the Energy (standard step), Yarnell, and Momentum methods were selected and the method that calculated the highest energy used. Pier shape coefficients of 1.6 and a 1.05 coefficient of drag were used, assuming that the proposed piers will have triangular noses.

The existing I-80 bridge over Pocono Creek will be replaced with a two-span structure. Furthermore, additional ramps (ramps B, C, E, and F) on the upstream and downstream sides of the proposed bridge

will be provided. The ramps and proposed I-80 bridge were analyzed as one structure due to their close proximity. The proposed bridges are oriented on a 30 degree skew to the flow direction; however, the existing skew angle (35 degrees) was applied to the internal and bounding cross sections for consistency with the existing hydraulic model. Furthermore, using the existing skew was a conservative approach as the proposed skew results in improved water surface elevations. The proposed pier will be 5.0 feet wide and will be located outside of the 100-year floodplain for Pocono Creek. The minimum normal clear span is 131.9 feet for span 1. The normal clear span for span 2 varies due to the skewed abutment (not aligned with the flow direction).

The out-to-out structure width (including the upstream and downstream ramps) is 310.0 feet measured along the stream centerline. The minimum low chord elevation is located above the 100-year water surface elevation. For low flows, the Energy (standard step), Yarnell, and Momentum methods were selected and the method that calculated the highest energy used. The same existing pier shape coefficients of 1.05 and a 1.6 coefficient of drag were used, assuming the same characteristics as the existing condition. The bridge low chord does not come in contact with any of the flood events and there is no overtopping.

The geometry for Alternative B along Little Pocono Creek is the same as Alternative D. Therefore, the same structure sizes were assumed for Alternative B, see **Appendix E** for the results of Alternative D along Little Pocono Creek.

Proposed Alternative B Results

Results of the hydraulic analysis of Alternative A are included in **Appendix F**.

VIII. SUMMARY OF PROPOSED ALTERNATIVES

A location hydraulic study for the Brodhead, McMichael, Pocono and Little Pocono, Creeks in the vicinity of the proposed I-80 reconstruction project was performed for this Alternatives Analysis. The FEMA regulatory 100-year event is used to evaluate risk and demonstrate consistency with the National Flood Insurance Program. Zero increases are allowed in the floodway which pertains to bridges; a one foot increase is allowed for encroachments in the flood fringe area (between the floodway and the outer extent of the floodplain). The following table provides a summary of the results for each alternative and their impact in the 100-year floodplain. Increases in bold text indicate increases that would require either engineering revisions to eliminate the increases or a Conditional Letter of Map Revision (CLOMR) from FEMA.

Table 8: Proposed Alternatives – Summary of Hydraulic Results

Proposed Alternative	Maximum Increase in Water Surface Elevation (feet)				
	Brodhead*	McMichael	Pocono (Parallel)	Pocono (Bridge)	Little Pocono
A	**+0.1**	**+0.2**	+0.1	0.0	+0.3
D		**+0.2**	0.0	+0.1	+0.6
B		**+0.2**	**+0.9**	**+0.8**	+0.6

The Brodhead Creek model is affected only by the proposed changes to the I-80 bridge. Only one alternative is proposed for this structure. The proposed bridge geometry causes water surface elevations upstream of the bridge to increase by 0.1 feet. The project encroaches on the FEMA floodway of Brodhead Creek, so any increase greater than 0.00 feet in water surface elevations will require a CLOMR.

Although the bridge configurations and slope encroachments are slightly different along McMichael Creek for each alternative, the impact of each alternative on water surface elevations on McMichael Creek are generally the same. Alternative A presents a slightly greater encroachment into the floodplain of McMichael Creek between the I-80 and SR 0191 bridges and causes slightly greater increases to the upstream water surface elevations. All three alternatives encroach on the FEMA floodway of McMichael Creek, so any increase greater than 0.00 feet in water surface elevations will require a CLOMR.

Along Pocono Creek, there are small increases at the parallel encroachments for Alternative A, with no increase from the replacement of the I-80 bridge. Alternative B causes significant increases in water surface elevation at both the parallel encroachments and the proposed I-80 bridge. Alternative B encroaches on the FEMA floodway of Pocono Creek, so any increase greater than 0.00 feet in water surface elevations will require a CLOMR. Alternative D shows minor increases at the Pocono (Bridge) hydraulic model due to a downstream encroachment into the floodplain; however, there are no increases due to the Alternative D bridge. The upstream or downstream (parallel) hydraulic models show no increases for Alternative D.

The Little Pocono Creek model shows increases in water surface elevations for all modeled alternatives, however, the increases are within the 1.0 feet allowed in Approximate FEMA study areas. The increases in water surface elevation are largest for Alternatives D and B and smaller for Alternative A.

REFERENCES

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4. Commonwealth of Pennsylvania, Department of Transportation. (December 2010). *PennDOT Drainage Manual.*

5. Monroe County Planning Commission. (2006). *Brodhead and McMichael Creeks Act 167 Stormwater Management Plan Update.*

6. Monroe County Planning Commission. (1991). *Brodhead Creek Act 167 Stormwater Management Plan.*

7. Monroe County Planning Commission. (1988). *McMichael Creek Act 167 Stormwater Management Plan.*

8. Federal Emergency Management Agency. (2013). *Flood Insurance Study Monroe County, Pennsylvania.*

9. U.S. Army Corps of Engineers, Hydrologic Engineering Center. (2010). HEC-RAS River Analysis System Version 4.1.0.

I-80 Alternatives Analysis

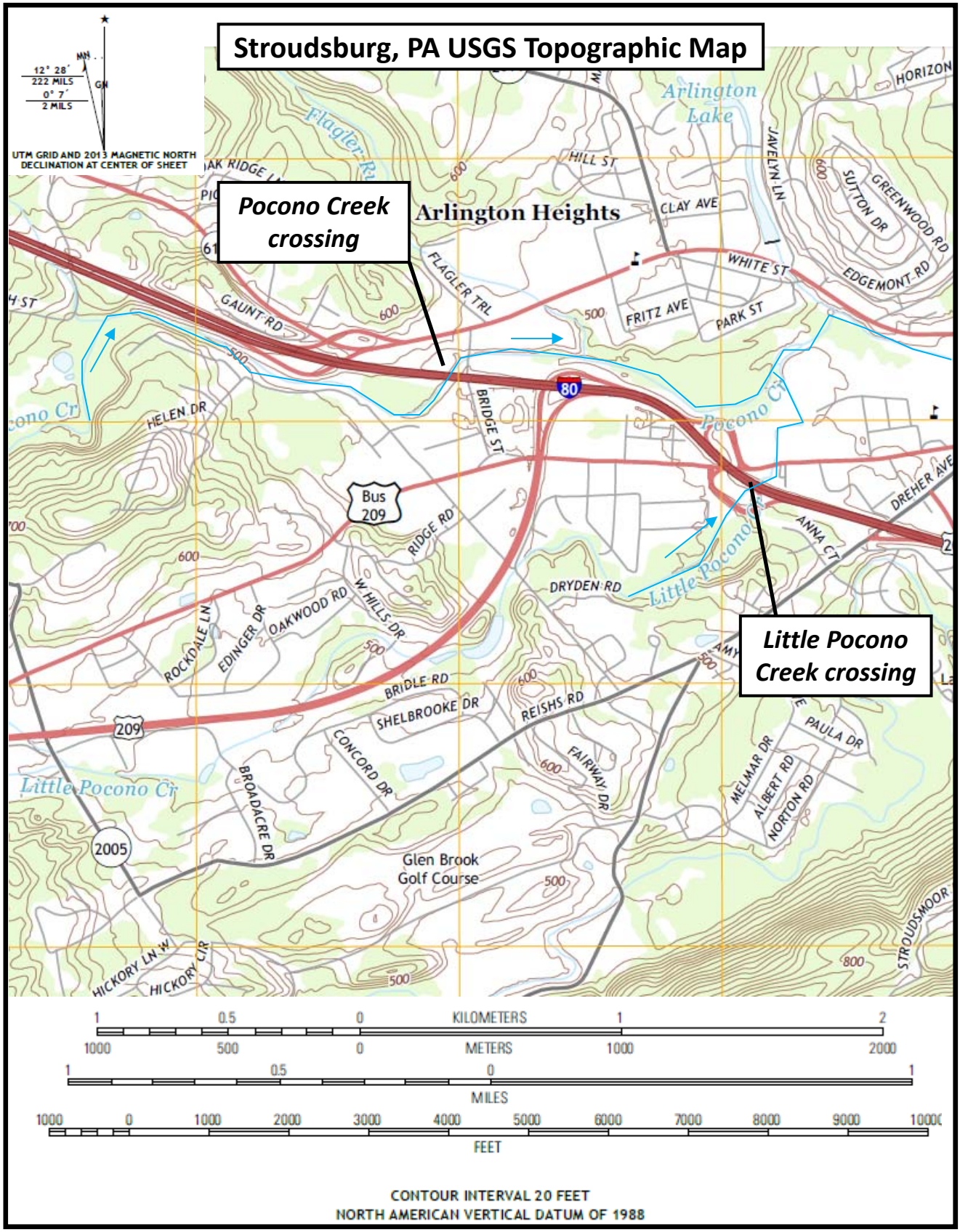
APPENDIX A

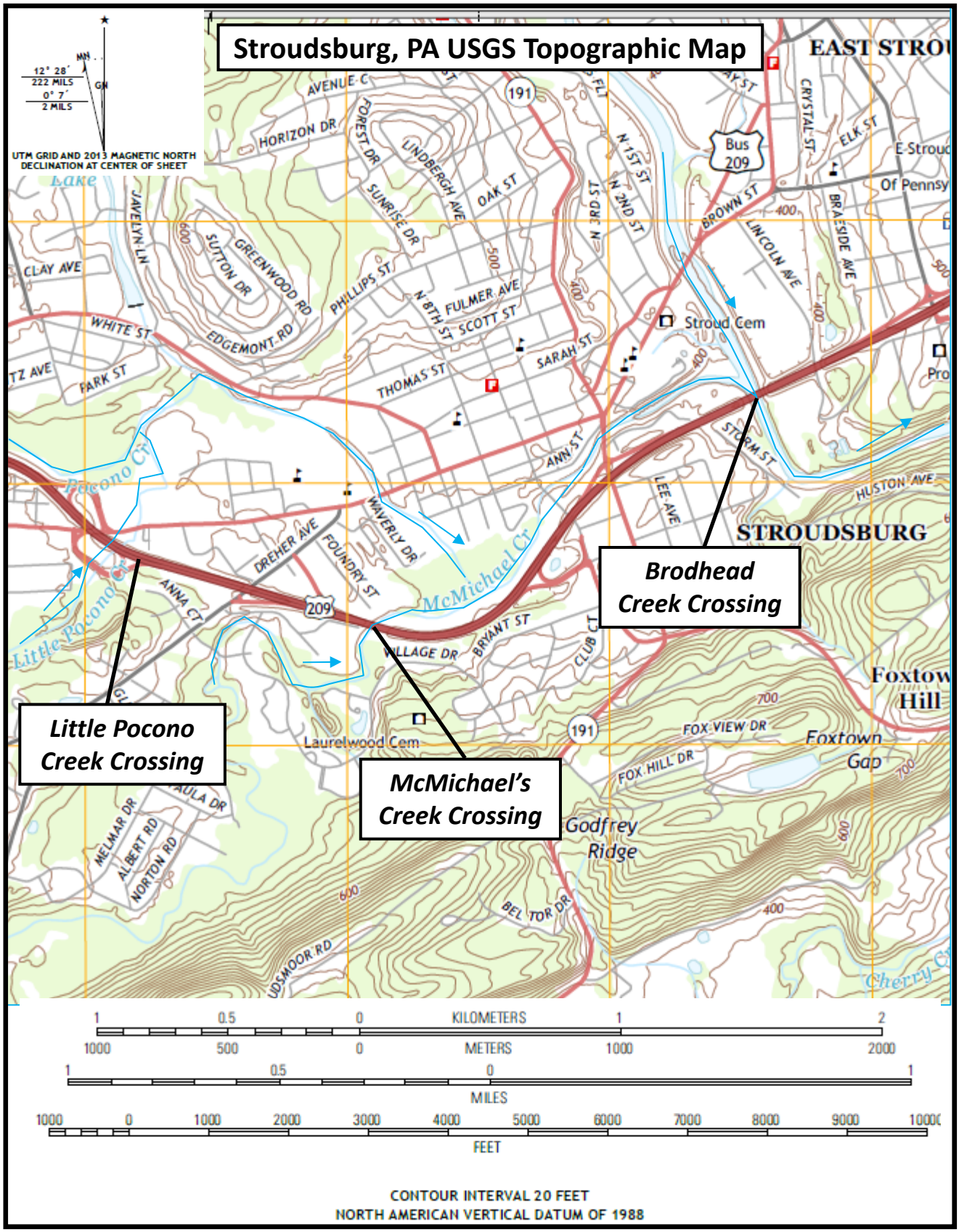
Location Maps and Figures

Monroe County
PennDOT District 5-0

NEWELL TERESKA & MACKAY ENGINEERING

Stroudsburg, PA USGS Topographic Map




Stroudsburg, PA USGS Topographic Map
UTM GRID AND 2013 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
12° 28'
222 MILS
0° 7'
2 MILS
MN
GN
Brodhead Creek Crossing
Little Pocono Creek Crossing
McMichael's Creek Crossing
STROUDSBURG
EAST STROU
Foxtown Hill
Foxtown Gap
Godfrey Ridge
Stroud Cem
Laurelwood Cem
Pocono Cr
Little Pocono Cr
McMichael Cr
Cherry Cr
Lake
191
209
Bus 209
HORIZON DR
AVENUE C
FOREST DR
LINDBERGH AVE
SUNRISE DR
OAK ST
N 1ST ST
N 2ND ST
N 3RD ST
BROWN ST
CRYSTAL ST
ELK ST
BRADSIDE AVE
LINCOLN AVE
JAVELYN LN
CLAY AVE
SUTTON DR
GREENWOOD RD
PHILLIPS ST
N 8TH ST
FULMER AVE
SCOTT ST
SARAH ST
THOMAS ST
WHITE ST
EDGEMONT RD
FARK ST
ANN ST
STORM ST
HUSTON AVE
LEE AVE
WAVERLY DR
DREHER AVE
FOUNDRY ST
ANNA CT
VILLAGE DR
BRYANT ST
CLUB CT
FOX VIEW DR
FOX HILL DR
MELMAR DR
ALBERT RD
NORTON RD
AULA DR
BEL TOR DR
UDSMOOR RD
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1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
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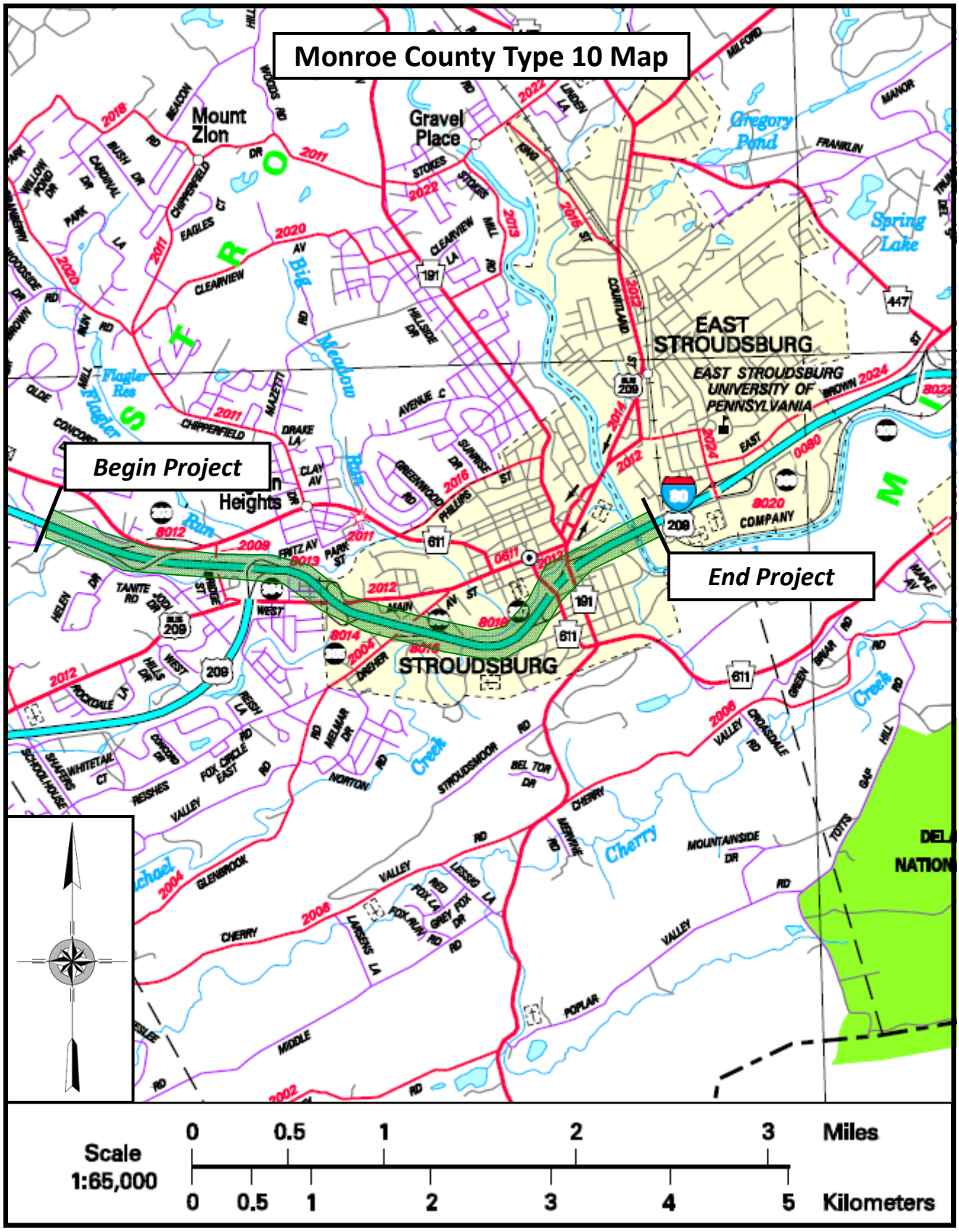
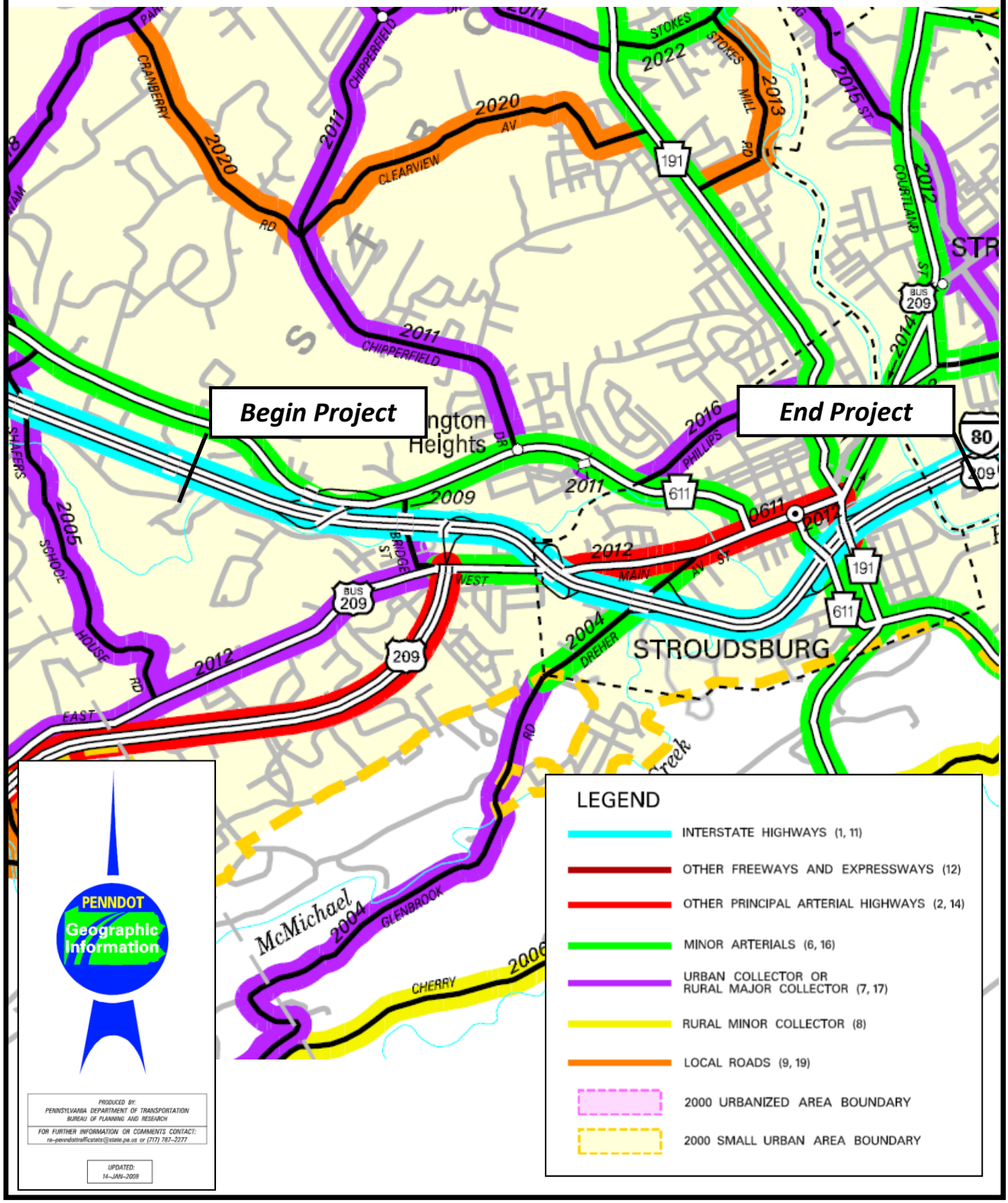
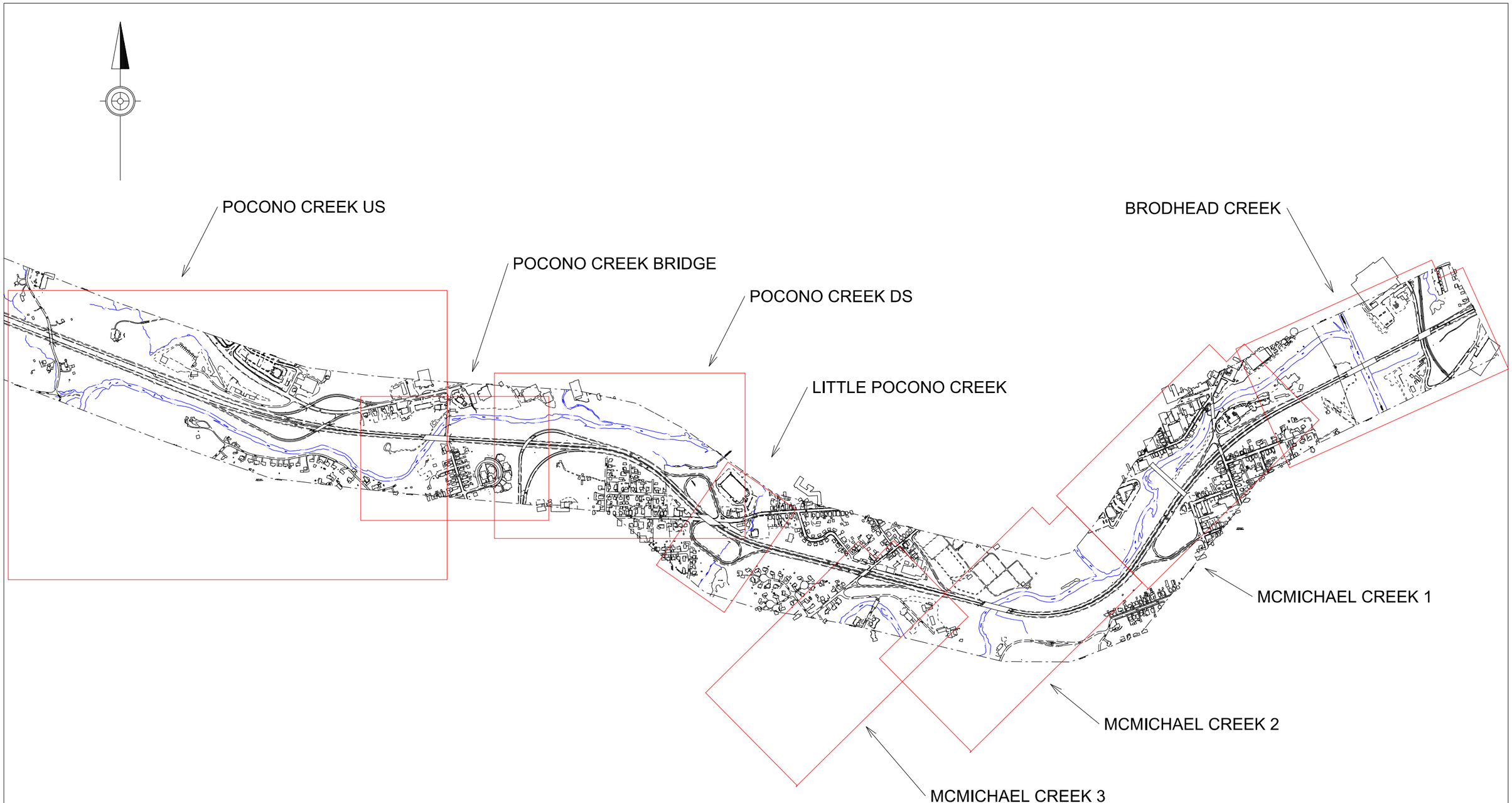
FEET
CONTOUR INTERVAL 20 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988


Monroe County Type 10 Map
Begin Project
End Project
Mount Zion
Gravel Place
Gregory Pond
Spring Lake
EAST STROUDSBURG
EAST STROUDSBURG UNIVERSITY OF PENNSYLVANIA
STROUDSBURG
Heights
Flagler Res
Big Meadow Run
Cherry Creek
Scale 1:65,000
0 0.5 1 2 3 Miles
0 0.5 1 2 3 4 5 Kilometers

Monroe County Federal Functional Classification Map





SCALE IN FEET

0 1200 2400

NEWELL TERESKA & MACKAY ENGINEERING

130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 CORRIDOR ALTERNATIVES ANALYSIS H&H SUMMARY MAP

COUNTY: MONROE

I-80 Alternatives Analysis

APPENDIX B

FEMA Information

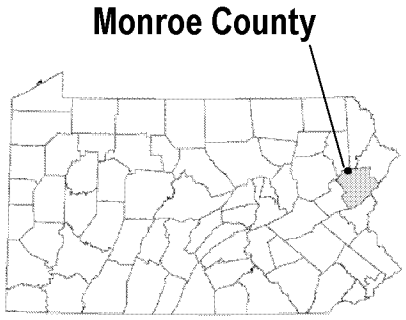
Monroe County
PennDOT District 5-0

NEWELL TERESKA & MACKAY ENGINEERING

FLOOD INSURANCE STUDY

VOLUME 1 OF 4

MONROE COUNTY, PENNSYLVANIA
(ALL JURISDICTIONS)



COMMUNITY NAME	COMMUNITY NUMBER
BARRETT, TOWNSHIP OF	421884
CHESTNUTHILL, TOWNSHIP OF	421885
COOLBAUGH, TOWNSHIP OF	421886
DELAWARE WATER GAP, BOROUGH OF	420690
EAST STROUDSBURG, BOROUGH OF	420691
ELDRED, TOWNSHIP OF	421887
HAMILTON, TOWNSHIP OF	421888
JACKSON, TOWNSHIP OF	421889
MIDDLE SMITHFIELD, TOWNSHIP OF	421890
MOUNT POCONO, BOROUGH OF	420692
PARADISE, TOWNSHIP OF	421891
POCONO, TOWNSHIP OF	421892
POLK, TOWNSHIP OF	421893
PRICE, TOWNSHIP OF	421894
ROSS, TOWNSHIP OF	421895
SMITHFIELD, TOWNSHIP OF	421896
STROUD, TOWNSHIP OF	420693
STROUDSBURG, BOROUGH OF	420694
TOBYHANNA, TOWNSHIP OF	421897
TUNKHANNOCK, TOWNSHIP OF	421898

EFFECTIVE: MAY 2, 2013

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
42089CV001A

01442500 on Brodhead Creek at Minisink Hills in the Township of Smithfield; stream gage No. 01440200 on the Delaware River at Tocks Island in the Township of Smithfield; and stream gage No. 01496500 on the Delaware River at Belvidere.

For Brodhead Creek within the Township of Smithfield, a log-Pearson Type III analysis of the gage record was performed by the USGS (U.S. Department of the Interior, 1975). The results provided the four recurrence interval floods for the gage. Extrapolation using an equation similar to the procedure used for the Delaware River was used to include the area downstream of the gage.

For the remaining streams studied by detailed methods within the Township of Smithfield, which are ungaged, PSU-IV was used to determine peak discharge values. By the use of coefficients, the basic equations can be modified to account for attenuation of flows by lakes and swamps, such as on Marshalls Creek and Shawnee Creek, or to account for drainage areas less than 1.5 square miles, such as Little Sambo Creek Tributary.

In the Township of Smithfield's December 6, 1999, revision, the hydrologic analysis for the Delaware River was prepared by the USACE in the "Delaware River Basin Study Survey Report" (USACE, 1984). Flood discharges for the detailed study of Sambo Creek were calculated from data presented in the USGS Open-File Report 76-391, Floods in Pennsylvania: A Manual for Estimation of Their Magnitude and Frequency, which is a regional method using regression equations relating drainage area, channel slope, percent area of storage and an index of average annual excess precipitation (U.S. Department of the Interior, 1976).

The flood-flow frequency analyses for all detailed and approximately studied streams within the Township of Stroud, except McMichaels Creek, and in the Borough of Stroudsburg were performed by following the procedures outlined in the USACE's "Regional Frequency Study, Upper Delaware and Hudson River Basins, New York District" (USACE, 1974). The USACE regional study used the log-Pearson Type III method to analyze peak yearly flows for all gages in the Delaware and Hudson River Basins (Water Resources Council, 1967). The USACE regional study provides log-Pearson Type III parameters for stream gaging stations and equations for translating frequency-discharge relationships from the gage locations to other desired points upstream and downstream of the gage locations. The study also provides additional parameters for use in determining discharge-frequency relationships for ungaged streams in the study area.

The stream flow analyses for Brodhead, Pocono, and Paradise Creeks in the Township of Stroud and the Borough of Stroudsburg were performed by using the adopted log-Pearson Type III parameters from the USACE regional study. The parameters for Gage No. 01440400, located near Analomink, and Gage No. 01442500, located at Minisink Hills, were used to analyze the Brodhead Creek flows. The parameters for Gage No. 01440400 on Brodhead Creek were also used to determine the Paradise Creek flows. The Pocono Creek flows were based upon the parameters for Gage No. 01441500 located near the Borough of Stroudsburg. The parameters for Gage No. 01441000 located in Stroudsburg were used to

analyze the McMichaels Creek flows upstream of the Pocono Creek confluence. Discharges for the 0.2-percent annual chance floods of Brodhead, Pocono, and Paradise Creeks were developed using the log-Pearson Type III method and K values from tables in "Technical Release No. 38" (U.S. Department of Agriculture, 1968).

The report entitled "Basin-Wide Program for Flood Plain Delineation" was also used in the analyses of the study flows (Anderson-Nichols & Company, Inc., 1973) within the Township of Stroud and Borough of Stroudburg. The report describes a method to determine flood flows for uncontrolled watersheds and for watersheds for which dams, ponds, swamps, etc., do not control more than 27 percent of the total watershed. The referenced report was used only for comparison of flood flows determined by the method described in the preceding paragraphs.

Estimates of the 10-, 2-, 1-, and 0.2-percent annual chance frequency floods along McMichaels Creek in the Township of Stroud and Borough of Stroudsburg were adopted from the regional regression equations developed by the USACE, Philadelphia District. The regression equations were developed by using Bulletin 17B to compute the discharges at 27 unregulated USGS gage sites (U.S. Department of the Interior, 1981). From this data, a log-log plot of the drainage area versus discharge was created for each discharge. The regional regression equations were used in lieu of the Gage No. 01441500 data on McMichaels Creek. It was determined through several hydraulic computations that the backwater effect from the Fifth Street dam rendered the gage unreliable.

Data from USGS gaging station No. 01447720 on Tobyhanna Creek near Blakeslee were statistically analyzed for the Francis E. Walter Dam Modification (USACE, 1985). The hydrology developed for that General Design Memorandum was used for the lower portion of Tobyhanna Creek within the Township of Tobyhanna.

The peak discharges for the Lehigh River within the Township of Tobyhanna were determined from the log-Pearson Type III flood-frequency curves (U.S. Department of the Interior, 1978).

Revised Analyses

Information on the methods used to determine peak discharge-frequency relationships for the streams restudied as part of this countywide FIS is shown below.

The peak flows for streams in Monroe County, Pennsylvania, were developed using WRI Report 00-4189, "Techniques for Estimating Magnitude and Frequency of Peak Flows in Pennsylvania" and Act 167 Stormwater Management Plans for Brodhead and McMichaels Creeks. The streams included in this study include Appenzell Creek, Aquashicola Creek, Buck Hill Creek, Bushkill Creek, Cherry Creek, Cranberry Creek, Marshalls Creek, Pocono Creek, and Swiftwater Creek.

Flows for Appenzell Creek, Buck Hill Creek, Cranberry Creek, Marshalls Creek, Pocono Creek, and Swiftwater Creek were estimated using the results of the Act 167 Stormwater Management Plans for Brodhead and McMichaels Creeks. The Act 167 plan breaks the Brodhead and McMichaels Watersheds into numerous sub areas. Each sub area has a calculated flow which includes all of the upstream drainage area to that point. The flows estimated using the Act 167 Stormwater Management Plan were independently verified using the WRI Report. This comparison was conducted to verify that the Act 167 flow estimates are reasonable for use in this study. This was also accomplished by comparing the results to previous studies.

Flows for Aquashicola Creek and Bushkill Creek were estimated using the WRI Report for streams near a gaging station, and flows for Cherry Creek were estimated using the WRI Report for ungaged streams. The variables used in the WRI Report are forested area, urban area, carbonate area, and controlled area. All of the variables were delineated using USGS topographic maps and other more detailed data, where available.

For the Delaware River, the USGS developed flood magnitude and frequency values, including 10-, 2-, 1-, and 0.2-percent annual chance floods, for eight active USGS streamflow gaging stations on the main stem of the Delaware River. The eight active gages include stations from Trenton, NJ to Callicoon, NY. This data was developed in collaboration with USACE Philadelphia District, New Jersey Department of Environmental Protection (NJDEP), FEMA Regions II and III, and Delaware Basin Commission (DRBC). The hydrologic analysis was performed in accordance with guidelines published by the Interagency Advisory Committee on Water Data in its Bulletin 17B. This involved the analysis of peak-flow gage data records utilizing the PEAKFQ program. Five additional flow locations were established between USGA gaging stations to provide better flow distribution along the main stem. These flow locations are placed in the vicinity of tributaries with significant drainage area contribution. The discharges, including 10-, 2-, 1-, and 0.2-percent annual chance floods, were estimated per linear-interpolation of a discharge-frequency relationship as a function of drainage area for the eight active USGS gaging stations.

A summary of the drainage area-peak discharge relationships for all the streams studied by detailed methods is shown in Table 5, "Summary of Discharges."

TABLE 5 – SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
APPENZELL CREEK					
Confluence with McMichaels Creek	21.7	1480	2618	3165	4800
Upstream of confluence with Kettle Creek	16.1	993	1778	2178	3220

TABLE 5 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
APPENZELL CREEK (continued)					
Upstream of confluence with unnamed tributary	12.9	772	1403	1692	2580
Upstream of confluence with unnamed tributary	11.0	614	1185	1447	2220
Upstream of confluence with tributary to Lake Akiba	5.1	311	539	653	960
AQUASHICOLA CREEK					
At Carbon/Monroe County border	19.8	2143	3695	4527	6906
At Chestnut Ridge Road	16.1	1856	3210	3937	6013
At Ross Township Corporate Limits	12.0	1570	2747	3387	5229
BRODHEAD CREEK					
At confluence with the Delaware River	287	21,200	42,900	54,100	104,500
Approximately 0.66 miles downstream of I-80	260	14,680	28,115	36,780	69,420
At USGS gage No. 01442500	259	19,500	39,500	49,800	96,300
Approximately 425 feet downstream of I-80**	255	14,500	28,000	36,500	69,000
Approximately 0.49 miles upstream of U.S. Route 209**	140	9,400	20,250	77,500	53,000
Approximately 1.74 miles upstream of Washington Street	128	9,005	19,505	26,780	56,500
Approximately 3.83 miles downstream of Alpine Mtn. Ski Area Access Road	68.9	*	*	16,400	*
Upstream of confluence with Unnamed Tributary	66.8	*	*	15,700	*
Upstream of confluence with Pine Mountain Run	61.2	*	*	14,600	*
Upstream of confluence with Poplar Run	57.8	*	*	13,800	*
Upstream of confluence with Stony Run	46.9	*	*	11,250	*
Approximately 0.76 miles downstream of Legislative Route 45029	43.2	*	*	10,380	*

*Data not available

**Data interpolated from 1976 FIS, "Frequency – Discharge, Drainage Area Curves"

TABLE 5 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
LAKE CREEK (continued)					
Approximately 500 feet downstream of Old State Route 15	4.0	*	*	580	*
Upstream of confluence of Lake Creek Tributary	2.1	*	*	310	*
LAKE CREEK TRIBUTARY					
At confluence with Lake Creek	1.2	*	*	180	*
LEHIGH RIVER					
At USGS gage No. 4475 at Stoddartsville	91.7	*	*	22,676	*
Downstream of downstream corporate limits	75.4	*	*	19,230	*
LITTLE SAMBO CREEK					
At confluence of Sambo Creek	4.8	600	975	1,160	1,660
At Valhalla Road	4.1	525	855	1,020	1,460
At Delaware Avenue	0.8	160	255	305	440
LITTLE SAMBO CREEK TRIBUTARY					
At confluence with Little Sambo Creek	0.7	105	175	210	295
MARSHALLS CREEK					
Upstream of Newtown Run	12.1	1,716	2,873	3,404	4,850
Downstream of unnamed tributary	8.1	1,217	2,059	2,439	3,500
Upstream of confluence with Bear Swamp Run	4.4	708	1,242	1,445	2,100
Downstream of Wooddale Road (T-556)	3.0	471	815	1,005	1,425
Upstream of Tributary to Long Swamp	1.1	186	340	416	590
McMICHAELS CREEK					
Upstream of confluence with Brodhead Creek	113.0	9,420	12,540	15,340	25,190
Downstream of confluence of Pocono Creek	111.9	9,330	12,430	15,200	24,950

*Data not available

TABLE 5 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
McMICHAELS CREEK (continued)					
Upstream of confluence of Pocono Creek	66.0	5,590	7,430	9,060	14,870
At USGS Gage No. 01441500	64.6	5,470	7,270	8,880	14,560
Downstream of confluence of Appenzell Creek	58.4	4,960	6,590	8,100	13,190
Upstream of confluence of Appenzell Creek	36.5	3,140	4,170	5,000	8,320
Downstream of confluence of Lake Creek	35.9	3,090	4,100	4,990	8,190
Upstream of confluence of Lake Creek	26.4	2,290	3,040	3,700	6,060
Approximately .92 miles downstream of Kennel Road T-434	21.5	*	*	3,000	*
Approximately 200 feet upstream of Green View Drive	20.8	1,820	2,410	2,930	4,800
Upstream of Private Road	19.0	*	*	2,680	*
Upstream of Silver Valley Drive	15.3	*	*	2,160	*
Upstream of Evergreen Hollow Road	13.2	*	*	1,870	*
Upstream of State Route 715	10.3	*	*	1,470	*
MIDDLE BRANCH TRIBUTARY					
At downstream corporate limits	21.3	*	*	2,995	*
Upstream of Unnamed Tributary	12.2	*	*	1,730	*
Upstream of confluence with Levitt Branch	5.2	*	*	755	*
MIDDLE CREEK					
At confluence with Dotters Creek	6.1	*	*	900	*
Downstream of Whispering Pine Road	5.5	*	*	800	*
Downstream of Dorshimer Road	2.7	*	*	400	*

*Data not available

TABLE 5 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
MILL CREEK					
At downstream corporate limits of the Township of Barrett	5.3	*	*	2,770	*
Upstream of confluence of Rattlesnake Creek	1.8	*	*	875	*
PARADISE CREEK					
Downstream of cross section A (Cross Section A is located approximately 425 feet downstream of Sylvan Cascades Road (T-572)	37.7	*	*	5,230	*
Upstream of confluence of Cranberry Creek	31.0	*	*	4,330	*
Upstream of confluence of Forest Hills Run	14.1	*	*	2,000	*
Downstream of Old Mill Road	11.3	*	*	1,610	*
Upstream of confluence of Devils Hole Creek	3.2	*	*	465	*
PINE CREEK					
At confluence with Princess Run	2.7	*	*	400	*
POCONO CREEK					
Downstream of confluence of Big Meadow Run	49.3	3699	6828	8399	11400
Downstream of confluence with Flagler Run	45.9	3,559	6,537	8,000	10,800
Downstream of confluence with Wigwam Run	44.0	3,451	6,304	7,748	10,600
Downstream of Tributary to Laurel Lake	38.7	3,148	5,710	7,008	9,600
Downstream of confluence with Reeders Run	31.9	2,649	4,885	6,001	8,300
Downstream of confluence with Bulgers Run	26.4	2,239	4,161	5,108	7,050
Downstream of Tributary to Highwood Lake	20.9	2,018	3,700	4,543	6,200
Downstream of confluence with Scot Run	19.3	1,774	3,245	3,975	5,400

*Data not available

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Brodhead Creek Reach 1								
A	1,650	590	5,031	10.8	323.4	308.7[2]	309.3	0.6
B	1,940	903	7,900	6.8	323.4	313.1[2]	313.1	0.0
C	2,660	550	6,603	8.2	323.4	313.6[2]	313.6	0.0
D	3,490	349	3,762	14.4	323.4	314.0[2]	314.1	0.1
E	4,460	159	2,298	21.7	323.4	317.3[2]	317.4	0.1
Brodhead Creek Reach 2								
F	17,757	153	3,975	9.3	389.2	389.2	390.2	1.0
G	19,621	203	4,433	8.3	391.5	391.5	392.1	0.6
H	20,112	250	5,853	6.3	392.1	392.1	392.9	0.8
I	20,708	242	4,853	7.6	392.3	392.3	393.0	0.7
J	22,519	401	4,898	5.7	394.2	394.2	394.9	0.7
K	24,283	489	4,262	6.5	396.4	396.4	396.8	0.4
L	25,392	407	3,015	9.2	397.4	397.4	397.7	0.3
M	26,184	504	3,505	7.9	399.4	399.4	399.5	0.1
N	27,298	340	2,482	11.2	402.3	402.3	402.4	0.1
O	28,692	233	1,651	16.2	410.3	410.3	410.3	0.0
P	30,096	131	1,417	18.9	424.3	424.3	424.3	0.0
Q	32,340	250	2,127	12.6	433.9	433.9	433.9	0.0
R	33,502	240	2,877	9.3	440.6	440.6	440.7	0.1
S	35,260	280	1,726	15.5	446.7	446.7	446.8	0.1
T	36,321	291	1,924	13.9	457.1	457.1	457.4	0.3
U	37,763	312	2,786	9.6	465.7	465.7	466.7	1.0
V	39,516	281	2,398	10.8	470.5	470.5	471.5	1.0
W	41,010	229	2,115	12.3	479.2	479.2	478.8	-0.4
X	42,847	199	1,882	13.8	487.7	487.7	488.1	0.4
Y	45,440	161	1,904	13.6	499.6	499.6	499.6	0.0

[1]Feet above confluence with Delaware River
[2]Elevation computed without consideration of backwater effects from Delaware River

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, PA
(ALL JURISDICTIONS)

FLOODWAY DATA

BRODHEAD CREEK REACH 1 – BRODHEAD CREEK REACH 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Marshalls Creek (continued)								
GU	68,390[1]	67	115	3.6	1,120.2	1,120.2	1,121.1	0.9
GV	68,651[1]	30	68	6.2	1,123.7	1,123.7	1,124.4	0.7
GW	68,765[1]	40	115	3.6	1,124.7	1,124.7	1,125.7	1.0
GX	68,987[1]	14	42	10.0	1,126.9	1,126.9	1,127.8	0.9
GY	69,106[1]	22	62	6.8	1,129.3	1,129.3	1,130.2	0.9
GZ	69,176[1]	24	55	7.6	1,130.7	1,130.7	1,131.7	1.0
HA	69,595[1]	26	52	8.0	1,142.5	1,142.5	1,142.7	0.2
HB	69,688[1]	13	41	10.2	1,144.3	1,144.3	1,144.9	0.6
McMichaels Creek								
A	495[2]	309	2,896	5.3	393.8	385.9[3]	386.6	0.7
B	1,585[2]	132	1,480	10.4	393.8	392.1[3]	392.6	0.5
C	3,005[2]	267	3,580	4.3	414.0	414.0	414.0	0.0
D	4,190[2]	363	3,799	4.0	414.8	414.8	414.8	0.0
E	4,690[2]	463	2,281	6.7	414.9	414.9	415.1	0.2
F	5,680[2]	230	2,840	3.2	416.0	416.0	416.6	0.6
G	6,070[2]	170	2,100	4.2	416.0	416.0	416.6	0.6
H	6,655[2]	130	1,089	8.2	416.2	416.2	417.0	0.8
I	7,030[2]	150	1,733	5.1	417.8	417.8	418.4	0.6
J	10,670[2]	142	1,464	6.1	424.3	424.3	424.8	0.5
K	12,720[2]	210	871	10.2	429.8	429.8	429.8	0.0
L	13,600[2]	200	1,785	5.0	433.8	433.8	433.9	0.1
M	15,370[2]	200	980	9.1	436.1	436.1	436.7	0.6
N	16,340[2]	200	1,053	8.4	438.8	438.8	439.3	0.5
O	17,890[2]	141	1,221	7.3	443.5	443.5	444.0	0.5
P	19,800[2]	250	1,584	5.6	447.3	447.3	447.4	0.1

[1]Feet above confluence with Brodhead Creek Reach 1
[2]Feet above confluence with Brodhead Creek Reach 2
[3]Elevation computed without consideration of backwater effects from Brodhead Creek Reach 2

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, PA
(ALL JURISDICTIONS)

FLOODWAY DATA

MARSHALLS CREEK – McMICHAELS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
McMichaels Creek (continued)								
Q	20,750	250	1,625	5.5	448.9	448.9	449.2	0.3
R	22,710	350	1,804	4.9	452.6	452.6	453.0	0.4
S	24,390	280	1,742	5.1	455.2	455.2	456.1	0.9
T	25,920	270	1,735	5.1	458.5	458.5	458.7	0.2
U	26,820	250	1,522	5.8	459.9	459.9	460.4	0.5
V	27,960	200	1,682	5.3	461.8	461.8	462.2	0.4
W	29,050	250	1,541	5.8	463.3	463.3	463.7	0.4
X	30,060	290	2,298	3.9	470.3	470.3	470.3	0.0
Y	30,830	252	1,617	5.5	470.7	470.7	470.8	0.1
Z	32,107	300	2,006	4.4	474.9	474.9	475.0	0.1
AA	33,680	274	2,254	3.9	476.6	476.6	476.7	0.1
AB	34,760	500	4,592	1.9	477.2	477.2	477.4	0.2
AC	36,630	400	2,881	3.1	477.5	477.5	478.1	0.6
AD	38,480	500	2,462	3.6	478.8	478.8	479.4	0.6
AE	39,930	500	3,642	2.4	483.7	483.7	484.1	0.4
AF	40,830	500	2,648	3.1	484.1	484.1	484.8	0.7
AG	42,430	400	1,933	2.6	485.4	485.4	486.3	0.9
AH	46,070	400	1,181	4.2	495.6	495.6	496.1	0.5
AI	47,037	500	1,480	3.4	501.5	501.5	501.5	0.0
AJ	48,110	473	1,546	3.2	505.3	505.3	505.4	0.1
AK	49,440	250	1,658	3.0	511.1	511.1	511.3	0.2
AL	49,920	200	1,267	3.9	511.2	511.2	511.5	0.3
AM	51,290	350	2,303	2.2	514.1	514.1	514.5	0.4
AN	54,044	200	1,104	4.5	521.7	521.7	522.1	0.4
AO	56,044	300	1,390	3.6	526.4	526.4	527.1	0.7
AP	57,624	62	387	12.9	530.8	530.8	531.3	0.5
AQ	59,370	120	647	7.7	545.8	545.8	545.8	0.0

[1]Feet above confluence with Brodhead Creek Reach 2

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, PA
(ALL JURISDICTIONS)

FLOODWAY DATA

McMICHAELS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Paradise Creek Reach 2 (continued)								
Z	29,475[1]	*	*	*	1,052.1	*	*	*
AA	30,550[1]	*	*	*	1,063.2	*	*	*
AB	31,425[1]	*	*	*	1,076.1	*	*	*
AC	32,250[1]	*	*	*	1,091.1	*	*	*
AD	33,225[1]	*	*	*	1,120.2	*	*	*
AE	34,000[1]	*	*	*	1,140.5	*	*	*
Pine Creek								
A	600[2]	*	*	*	694.7	*	*	*
B	1,175[2]	*	*	*	706.5	*	*	*
C	2,550[2]	*	*	*	743.5	*	*	*
D	4,025[2]	*	*	*	767.1	*	*	*
E	5,950[2]	*	*	*	798.7	*	*	*
Pocono Creek								
A	200[3]	373	1,664.0	5.1	414.9	410.1[4]	411.1	1.0
B	445[3]	322	1,224.3	6.9	414.9	411.4[4]	412.3	0.9
C	667[3]	258	1,170.7	7.2	414.9	413.3[4]	414.0	0.7
D	889[3]	142	1,102.9	7.6	415.2	415.2	415.9	0.7
E	1,086[3]	150	854.3	9.8	416.1	416.1	416.4	0.3
F	1,453[3]	180	1,307.4	6.4	418.7	418.7	419.6	0.9
G	1,752[3]	83	702.9	12.0	419.3	419.3	420.2	0.9
H	1,842[3]	89	927.4	9.1	422.0	422.0	422.5	0.5
I	2,106[3]	361	2,103.2	4.0	424.8	424.8	425.6	0.8
J	2,352[3]	460	1,930.1	4.4	425.0	425.0	425.9	0.9
K	2,653[3]	150	1,378.3	6.1	425.5	425.5	426.5	1.0

[1]Feet above Limit of Detailed Study (Limit of Detailed Study is approximately 4,224 feet above Butz Run)

*Floodway data not available

[2]Feet above confluence with Princess Run Reach 1

[3]Feet above confluence with McMichaels Creek

[4]Elevation computed without consideration of backwater effects from McMichaels Creek

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, PA
(ALL JURISDICTIONS)

FLOODWAY DATA

PARADISE CREEK REACH 2 – PINE CREEK – POCONO CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pocono Creek (continued)								
L	2,823	105	1,014.5	8.3	425.5	425.5	426.5	1.0
M	3,103	107	975.6	8.6	426.6	426.6	427.5	0.9
N	3,297	117	1,007.3	8.3	427.7	427.7	428.4	0.7
O	3,614	99	793.1	10.6	429.1	429.1	429.7	0.6
P	3,965	116	1,048.5	8.0	431.8	431.8	432.3	0.5
Q	4,073	154	1,425.5	5.9	432.6	432.6	433.0	0.4
R	4,302	108	763.4	11.0	432.6	432.6	433.2	0.6
S	4,435	148	858.9	9.8	435.7	435.7	435.7	0.0
T	4,653	225	1,382.0	5.8	438.2	438.2	439.0	0.8
U	4,962	280	1,438.7	5.6	439.4	439.4	440.1	0.7
V	5,344	331	1,257.3	6.4	440.9	440.9	441.9	1.0
W	5,577	551	2,626.5	3.1	443.4	443.4	443.9	0.5
X	5,913	503	2,426.1	3.3	444.2	444.2	444.8	0.6
Y	6,204	337	1,009.3	7.9	444.6	444.6	445.6	1.0
Z	6,306	328	954.8	8.4	446.5	446.5	447.4	0.9
AA	6,417	330	937.6	8.5	448.7	448.7	449.3	0.6
AB	6,597	350	1,448.6	5.5	451.1	451.1	452.0	0.9
AC	6,748	373	1,433.1	5.6	452.0	452.0	452.9	0.9
AD	6,849	411	1,505.9	5.3	452.7	452.7	453.6	0.9
AE	6,916	436	1,504.4	5.3	453.0	453.0	453.9	0.9
AF	7,153	288	1,241.1	6.5	454.4	454.4	455.4	1.0
AG	7,460	263	1,089.6	7.3	457.1	457.1	457.8	0.7
AH	7,891	212	1,029.8	7.8	461.0	461.0	461.5	0.5
AI	8,245	104	752.8	10.6	463.4	463.4	464.4	1.0
AJ	8,553	120	789.7	9.8	466.5	466.5	467.2	0.7
AK	8,806	151	1,173.0	6.6	469.8	469.8	470.2	0.4
AL	9,004	180	1,236.9	6.3	470.6	470.6	471.0	0.4

[1]Feet above confluence with McMichaels Creek

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, PA
(ALL JURISDICTIONS)

FLOODWAY DATA

POCONO CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pocono Creek (continued)								
AM	9,133	165	1,287.0	6.0	470.9	470.9	471.8	0.9
AN	9,442	140	886.9	8.7	472.3	472.3	472.7	0.4
AO	9,754	135	762.1	10.2	475.4	475.4	475.5	0.1
AP	9,977	86	967.0	8.0	479.9	479.9	479.9	0.0
AQ	10,052	86	859.4	9.0	480.0	479.8	480.0	0.2
AR	10,096	102	1,001.0	7.7	480.3	480.3	480.5	0.2
AS	10,316	123	942.0	8.2	481.0	481.0	481.2	0.2
AT	10,571	500	1,804.7	4.3	482.7	482.7	482.7	0.0
AU	10,781	204	863.1	9.0	484.0	484.0	484.0	0.0
AV	10,889	159	932.6	8.3	484.6	484.6	485.6	1.0
AW	11,201	181	1,006.2	7.7	488.0	488.0	488.4	0.4
AX	11,509	170	771.8	10.0	489.1	489.1	489.8	0.7
AY	11,818	130	994.1	7.8	492.1	492.1	492.9	0.8
AZ	12,066	85	732.7	10.6	492.8	492.8	493.8	1.0
BA	12,367	62	498.6	15.5	495.2	495.2	495.5	0.3
BB	12,789	103	1,022.5	7.6	500.2	500.2	501.2	1.0
BC	13,128	66	513.0	15.1	501.1	501.1	501.3	0.2
BD	13,404	76	731.1	10.6	505.4	505.4	505.9	0.5
BE	13,665	81	770.8	10.1	507.1	507.1	507.6	0.5
BF	13,869	62	579.7	13.4	507.6	507.6	508.3	0.7
BG	14,089	65	700.2	11.1	510.6	510.6	511.1	0.5
BH	14,283	69	505.3	15.3	513.9	513.9	514.2	0.3
BI	14,532	95	873.2	8.9	518.0	518.0	518.9	0.9
BJ	14,705	77	536.9	14.4	518.6	518.6	518.8	0.2
BK	14,805	93	556.0	13.9	522.6	522.6	522.6	0.0
BL	14,876	127	872.7	8.9	525.0	525.0	525.3	0.3
BM	14,927	158	954.3	8.1	532.7	532.7	532.7	0.0

[1]Feet above confluence with McMichaels Creek

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, PA
(ALL JURISDICTIONS)

FLOODWAY DATA

POCONO CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pocono Creek (continued)								
BN	15,069	272	1,399.9	5.5	533.9	533.9	533.9	0.0
BO	15,191	496	2,962.2	2.6	534.7	534.7	534.7	0.0
BP	15,311	477	2,402.9	3.2	534.7	534.7	534.7	0.0
BQ	15,597	413	2,174.5	3.6	535.5	535.5	535.5	0.0
BR	15,763	429	2,166.6	3.6	535.9	535.9	535.9	0.0
BS	15,894	381	2,149.0	3.6	536.1	536.1	536.2	0.1
BT	16,127	240	957.3	8.1	536.2	536.2	536.5	0.3
BU	16,400	109	620.5	12.5	538.5	538.5	539.4	0.9
BV	16,472	122	697.3	11.1	541.1	541.1	541.2	0.1
BW	16,593	493	2,496.8	3.1	543.8	543.8	544.4	0.6
BX	16,847	427	1,331.7	5.8	544.3	544.3	544.7	0.4
BY	17,139	275	1,420.1	5.5	545.7	545.7	546.6	0.9
BZ	17,509	394	1,159.3	6.7	548.5	548.5	549.1	0.6
CA	17,915	734	2,365.0	3.3	551.7	551.7	552.6	0.9
CB	18,011	598	2,319.6	3.3	552.1	552.1	553.1	1.0
CC	18,156	524	1,840.0	4.2	552.4	552.4	553.3	0.9
CD	18,388	386	1,325.4	5.9	553.3	553.3	554.2	0.9
CE	18,949	221	1,297.1	6.0	556.6	556.6	557.6	1.0
CF	19,243	119	718.7	10.8	558.2	558.2	558.6	0.4
CG	19,611	198	1,077.3	7.2	562.0	562.0	562.4	0.4
CH	19,907	173	834.7	9.3	563.9	563.9	564.1	0.2
CI	20,292	139	784.3	9.9	567.5	567.5	567.8	0.3
CJ	20,688	154	717.1	10.8	571.9	571.9	572.2	0.3
CK	21,046	147	696.4	11.1	577.1	577.1	577.4	0.3
CL	21,522	166	882.5	8.8	583.0	583.0	583.3	0.3
CM	21,761	105	589.1	13.2	585.5	585.5	586.5	1.0
CN	22,129	95	1,104.4	6.4	594.8	594.8	595.6	0.8

[1]Feet above confluence with McMichaels Creek

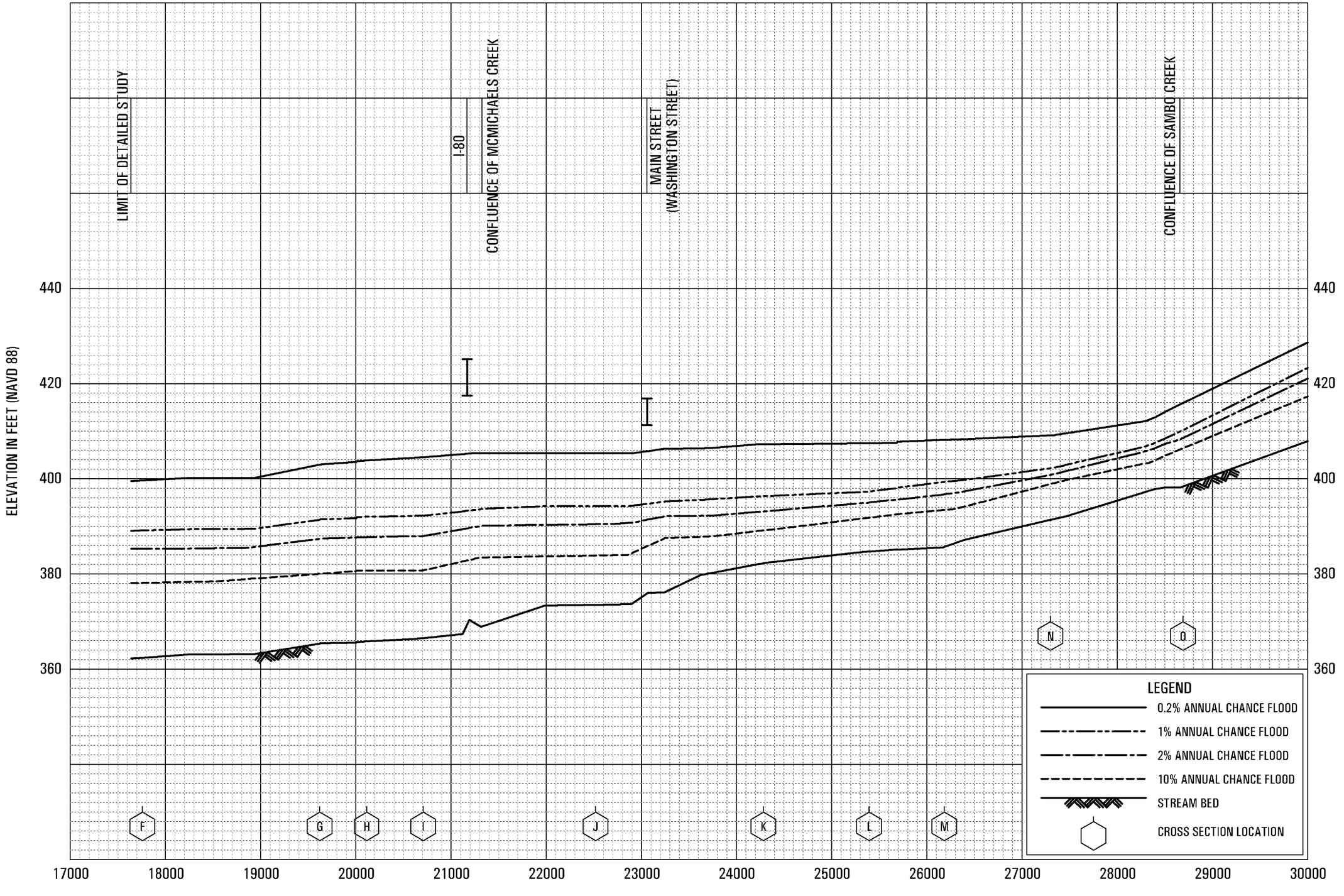
TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, PA
(ALL JURISDICTIONS)

FLOODWAY DATA

POCONO CREEK



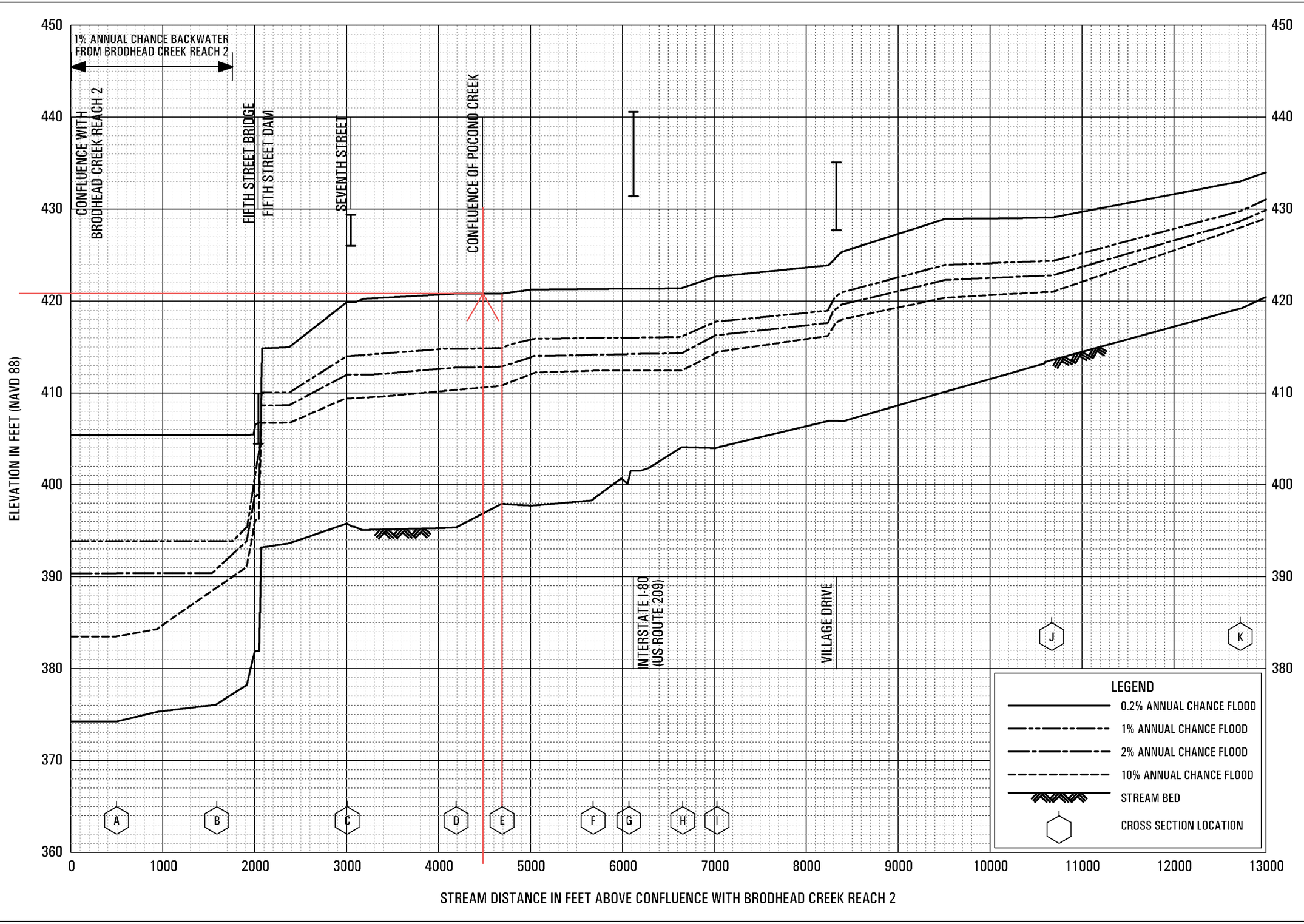
FLOOD PROFILES

BRODHEAD CREEK REACH 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, PA

(ALL JURISDICTIONS)



FLOOD PROFILES

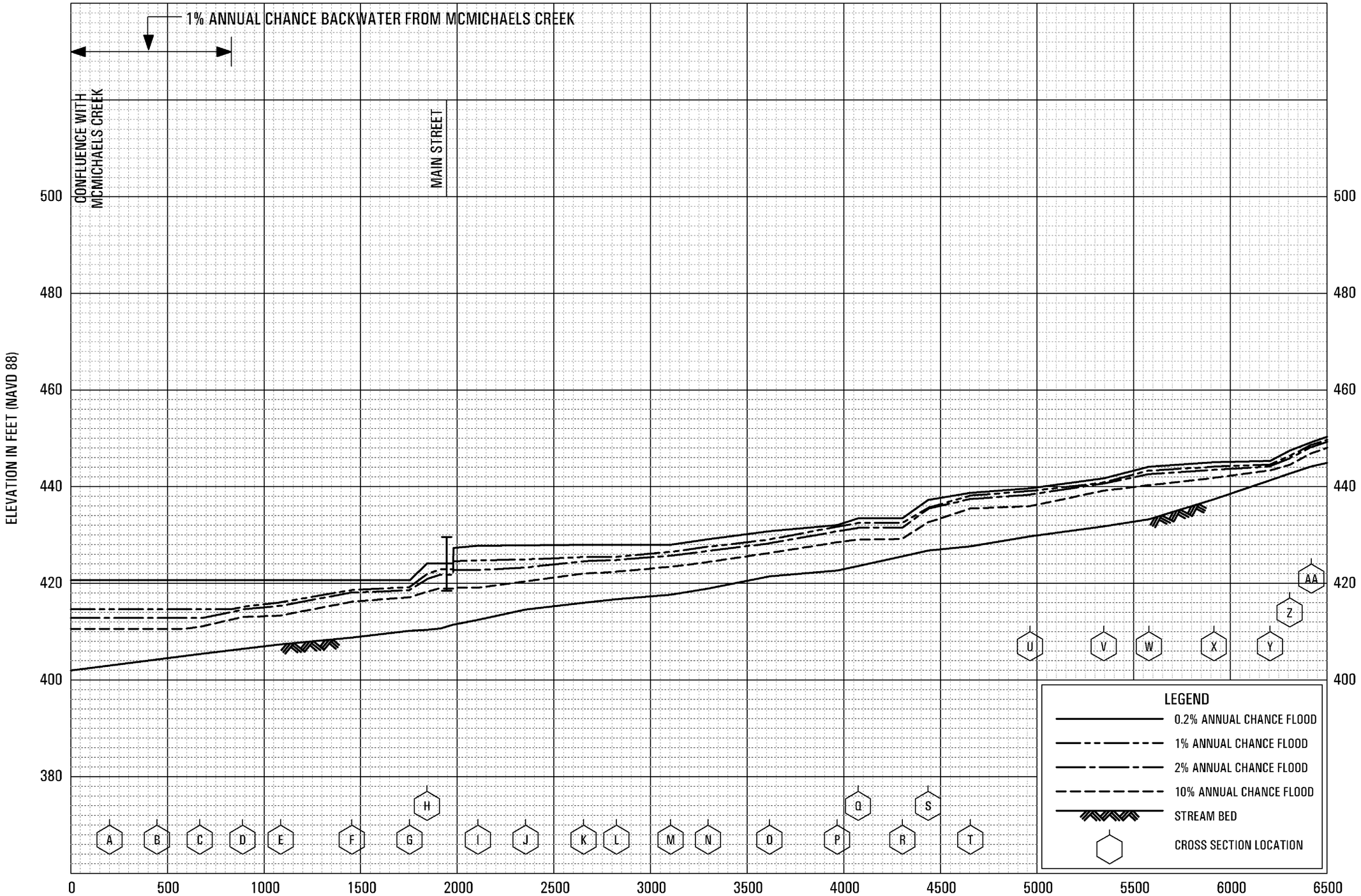
MCMICHAELS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, PA

(ALL JURISDICTIONS)

166P



FLOOD PROFILES

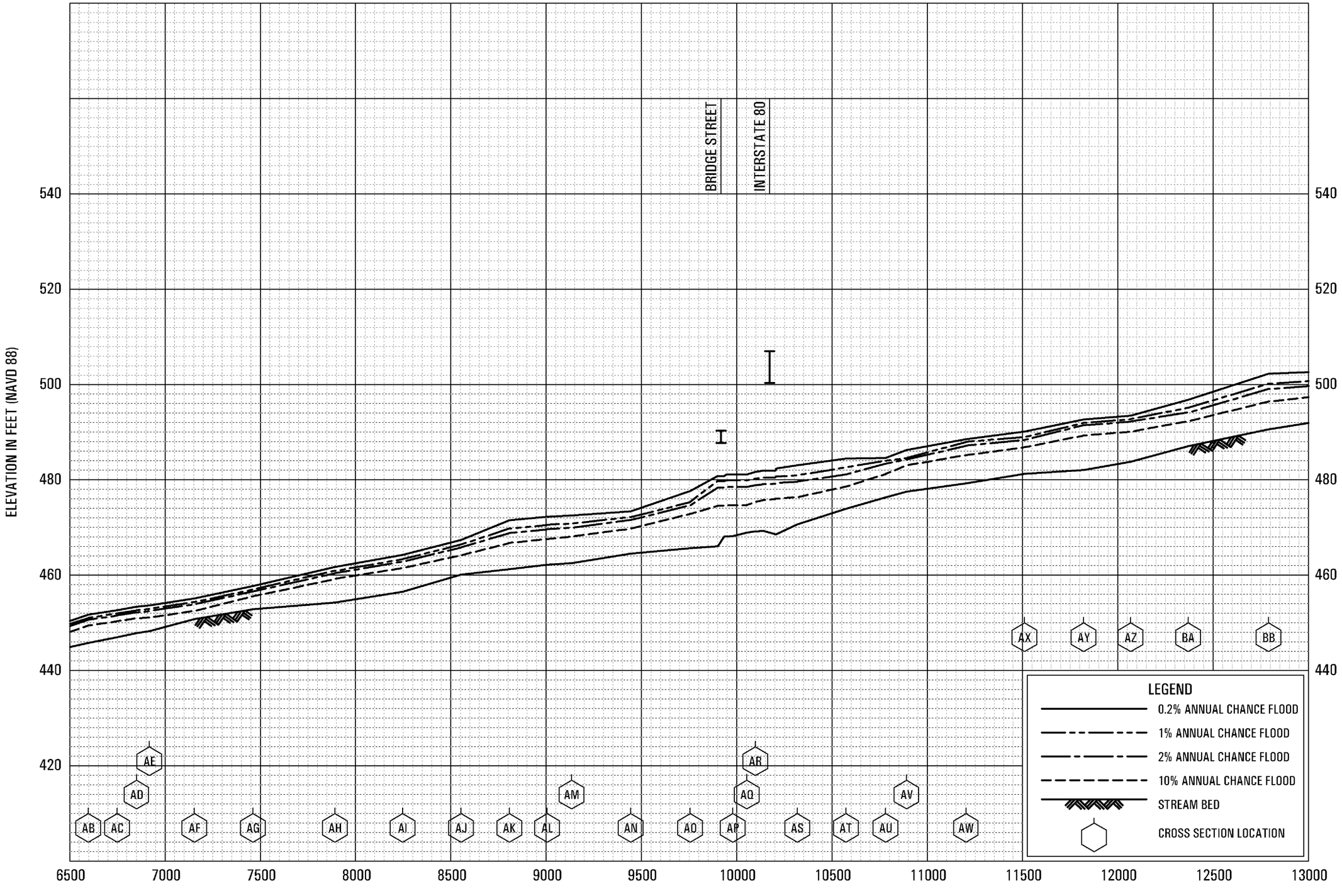
POCONO CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, PA

(ALL JURISDICTIONS)

195P



FLOOD PROFILES

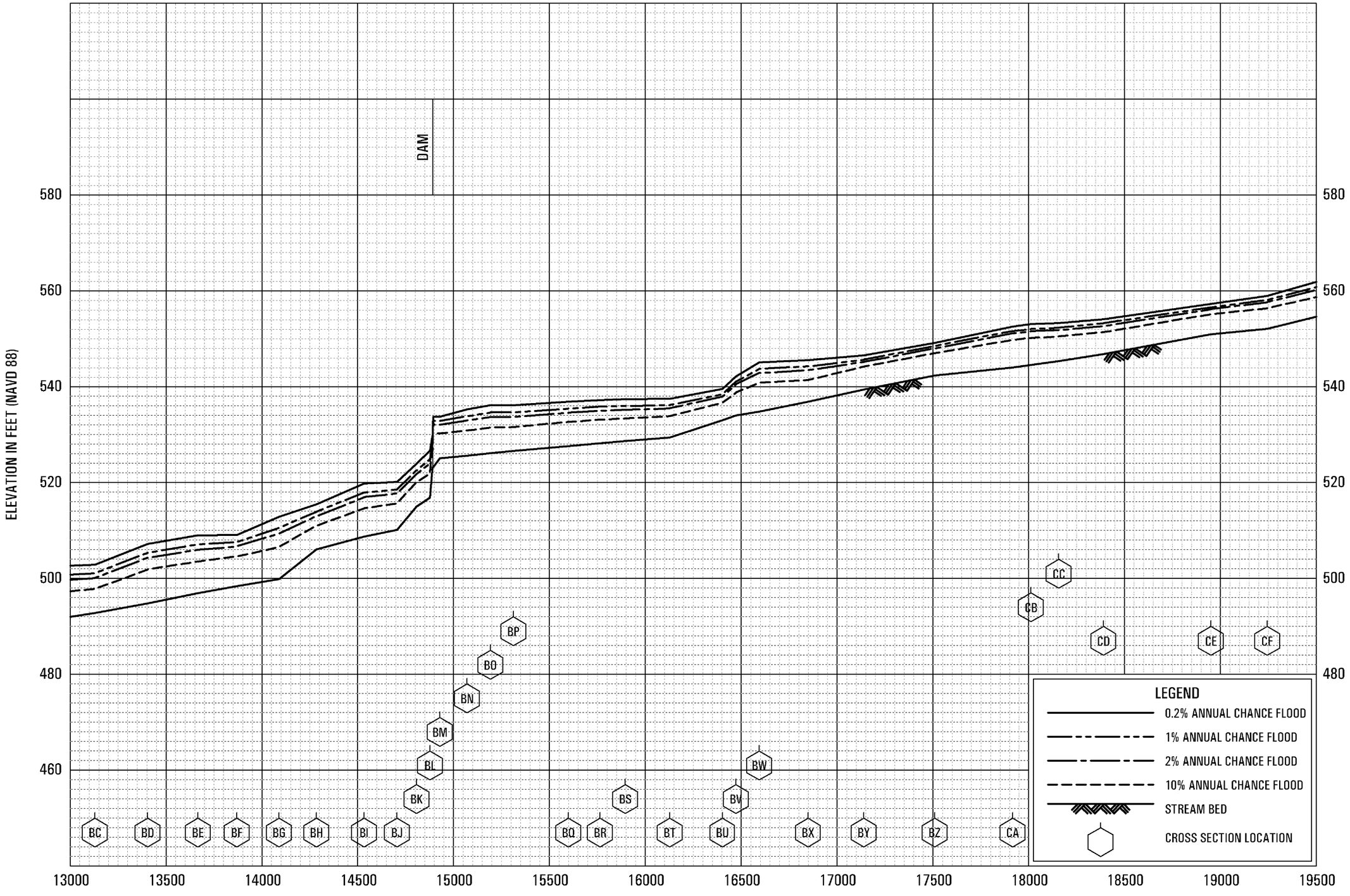
POCONO CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, PA

(ALL JURISDICTIONS)

196P



FLOOD PROFILES

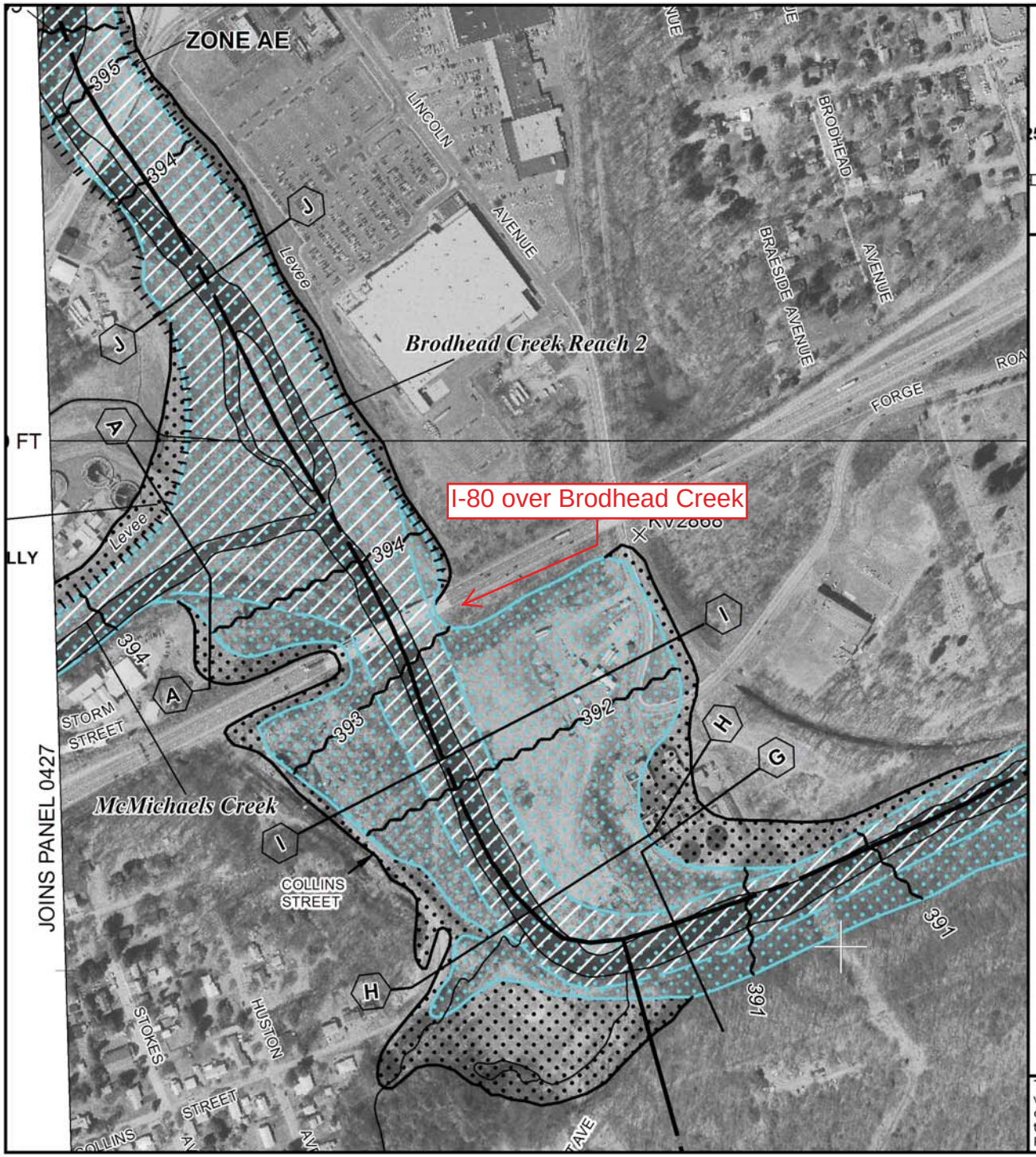
POCONO CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

MONROE COUNTY, PA

(ALL JURISDICTIONS)

197P



MAP SCALE 1" = 500'

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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0431E

FIRM

FLOOD INSURANCE RATE MAP

MONROE COUNTY, PENNSYLVANIA
(ALL JURISDICTIONS)

PANEL 431 OF 535

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DELAWARE WATER GAP, BOROUGH OF	420690	0431	E
EAST STROUDSBURG, BOROUGH OF	420691	0431	E
SMITHFIELD, TOWNSHIP OF	421896	0431	E
STROUD, TOWNSHIP OF	420693	0431	E
STROUDSBURG, BOROUGH OF	420694	0431	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
42089C0431E

EFFECTIVE DATE
MAY 2, 2013

Federal Emergency Management Agency

NOTE: THIS A
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MAP SCALE 1" = 500'

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JOINS PANEL 0431

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0427E

FIRM

FLOOD INSURANCE RATE MAP

MONROE COUNTY, PENNSYLVANIA
(ALL JURISDICTIONS)

PANEL 427 OF 535
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EAST STROUDSBURG, BOROUGH OF	420691	0427	E
STROUD, TOWNSHIP OF	420693	0427	E
STROUDSBURG, BOROUGH OF	420694	0427	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

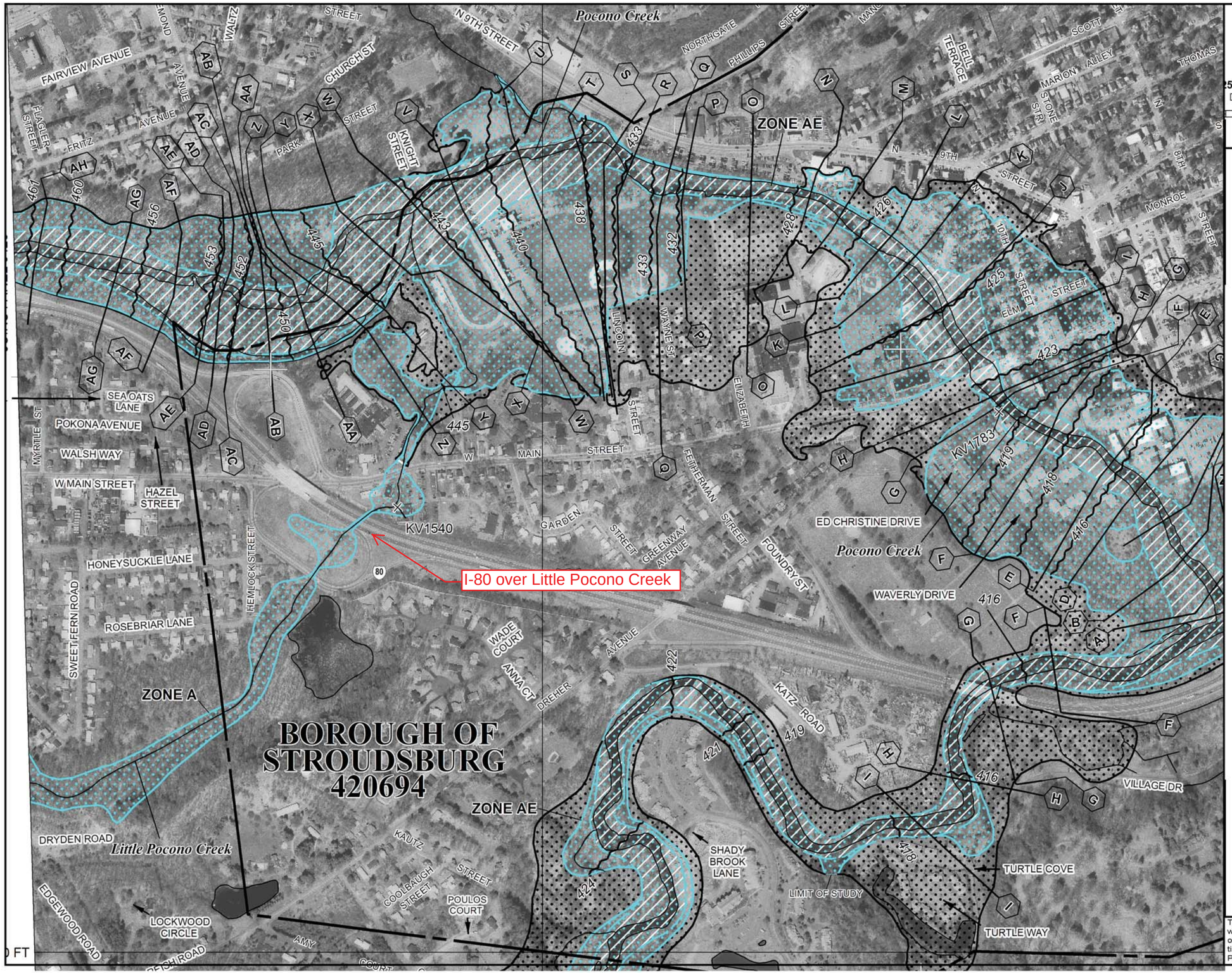
MAP NUMBER
42089C0427E

EFFECTIVE DATE
MAY 2, 2013

Federal Emergency Management Agency

I-80 over McMichael's Creek

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 500'

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METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0427E

FIRM

FLOOD INSURANCE RATE MAP

MONROE COUNTY, PENNSYLVANIA
(ALL JURISDICTIONS)

PANEL 427 OF 535

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

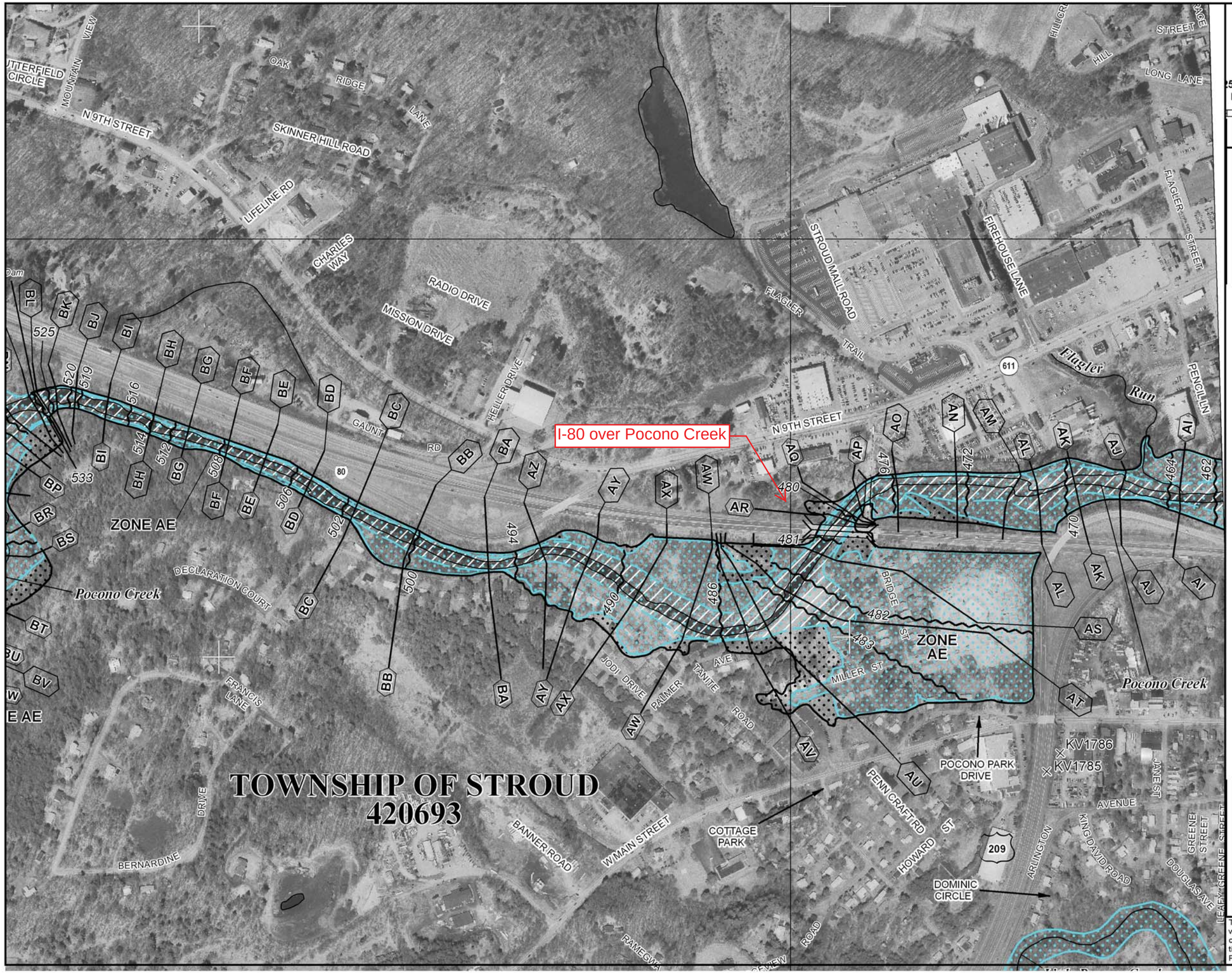
COMMUNITY	NUMBER	PANEL	SUFFIX
EAST STROUDSBURG, BOROUGH OF	420691	0427	E
STROUD, TOWNSHIP OF	420693	0427	E
STROUDSBURG, BOROUGH OF	420694	0427	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
42089C0427E

EFFECTIVE DATE
MAY 2, 2013

Federal Emergency Management Agency



MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0426E

FIRM

FLOOD INSURANCE RATE MAP

MONROE COUNTY, PENNSYLVANIA
(ALL JURISDICTIONS)

PANEL 426 OF 535
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HAMILTON, TOWNSHIP OF	421888	0426	E
STROUD, TOWNSHIP OF	420693	0426	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
42089C0426E

EFFECTIVE DATE
MAY 2, 2013

Federal Emergency Management Agency

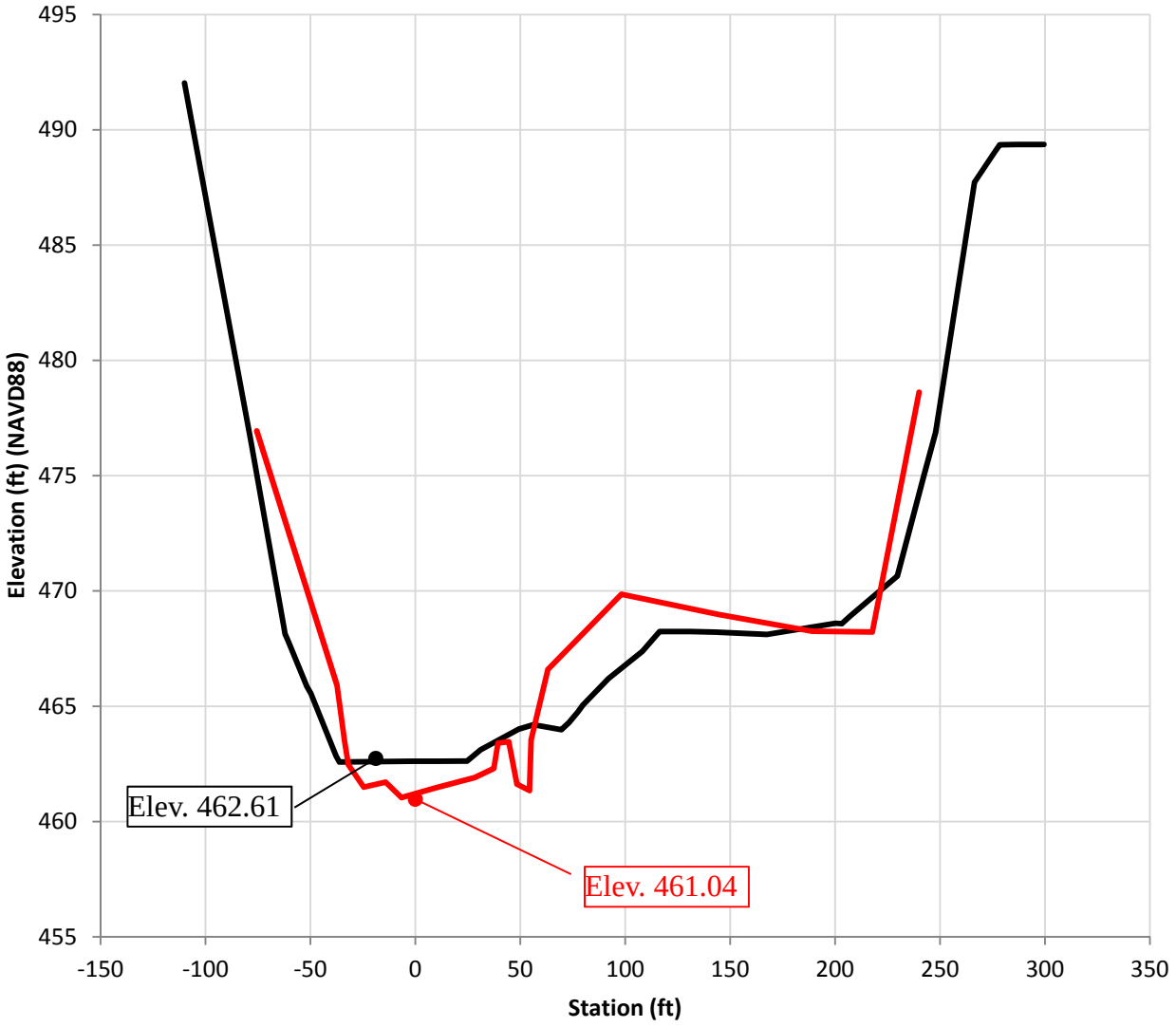
APPENDIX D

Pocono Creek
FEMA HEC-RAS vs. Existing Condition Model
Geometry Comparison

NEWELL TERESKA & MACKAY
ENGINEERING

Monroe County FIS Pocono Creek Cross Section Comparison

FEMA XS AM vs. Survey XS 1

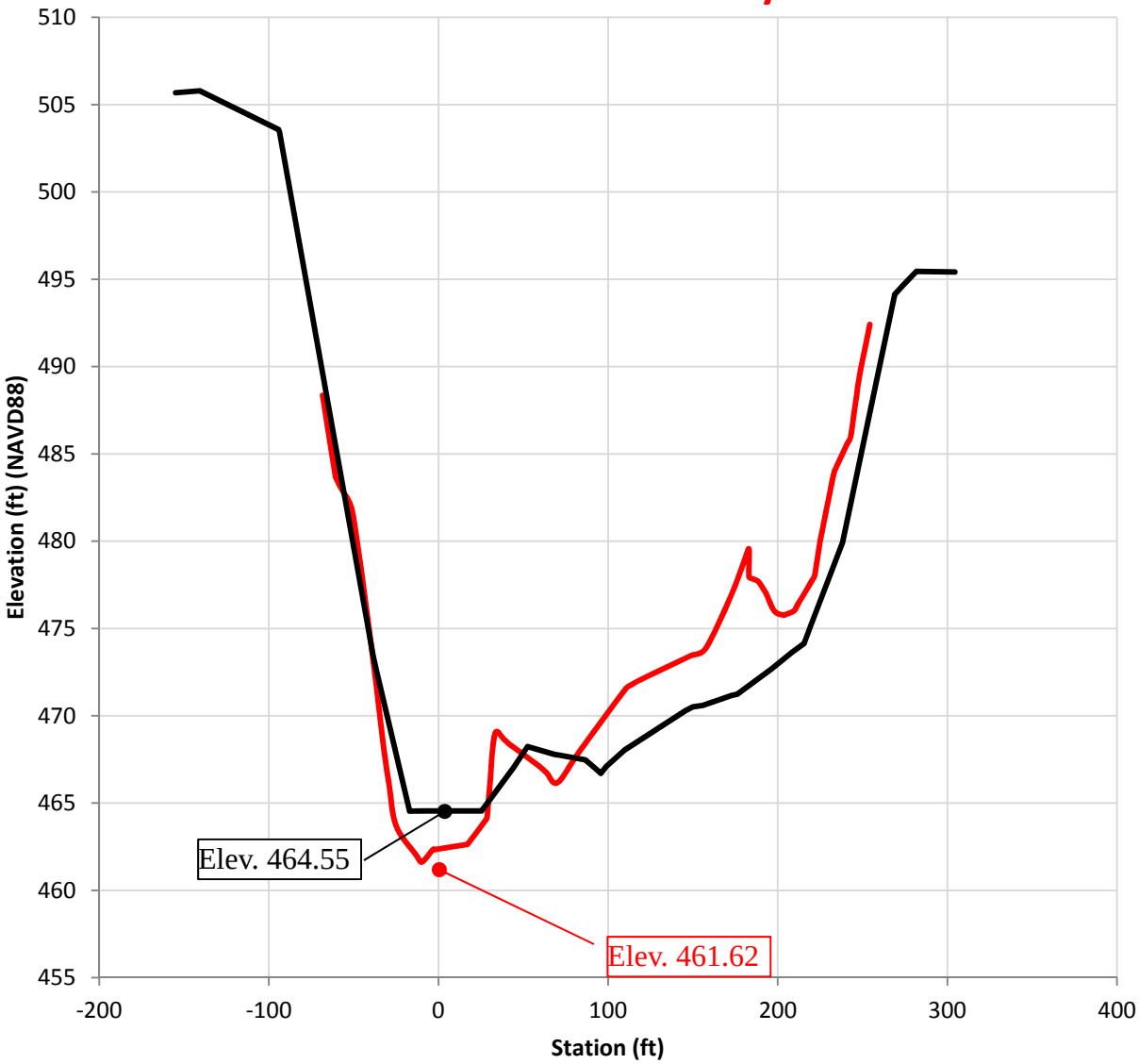


FEMA cross section AM is located approximately 760 feet downstream of the existing SR 2009 bridge. Surveyed cross section 1 is located 770 feet downstream of the existing SR 2009 bridge. There are significant geometric differences between these cross sections, as shown on the topographic survey. The FEMA cross section at this location shows a higher channel and banks that are slightly different than indicated by the survey.

NEWELL TERESKA & MACKAY ENGINEERING

Monroe County FIS Pocono Creek Cross Section Comparison

FEMA XS AN vs. Survey XS 4

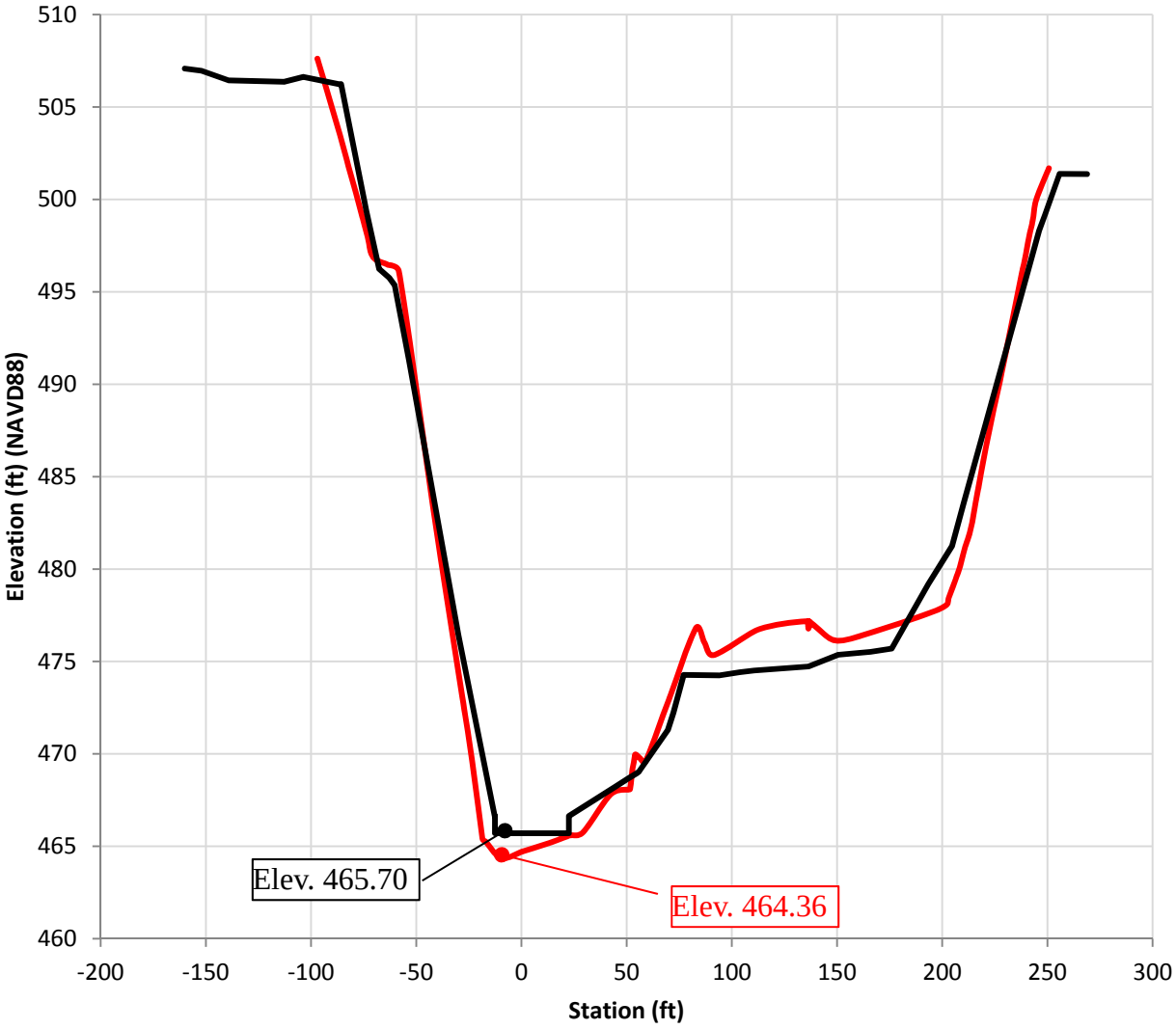


FEMA cross section AN is located approximately 455 feet downstream of the existing SR 2009 bridge. Surveyed cross section 4 is located 430 feet downstream of the existing SR 2009 bridge. There are significant geometric differences between these cross sections, as shown on the topographic survey. The FEMA cross section at this location shows a higher channel and banks that are slightly different than indicated by the survey.

NEWELL TERESKA & MACKAY ENGINEERING

Monroe County FIS Pocono Creek Cross Section Comparison

FEMA XS AO vs. Survey XS 7

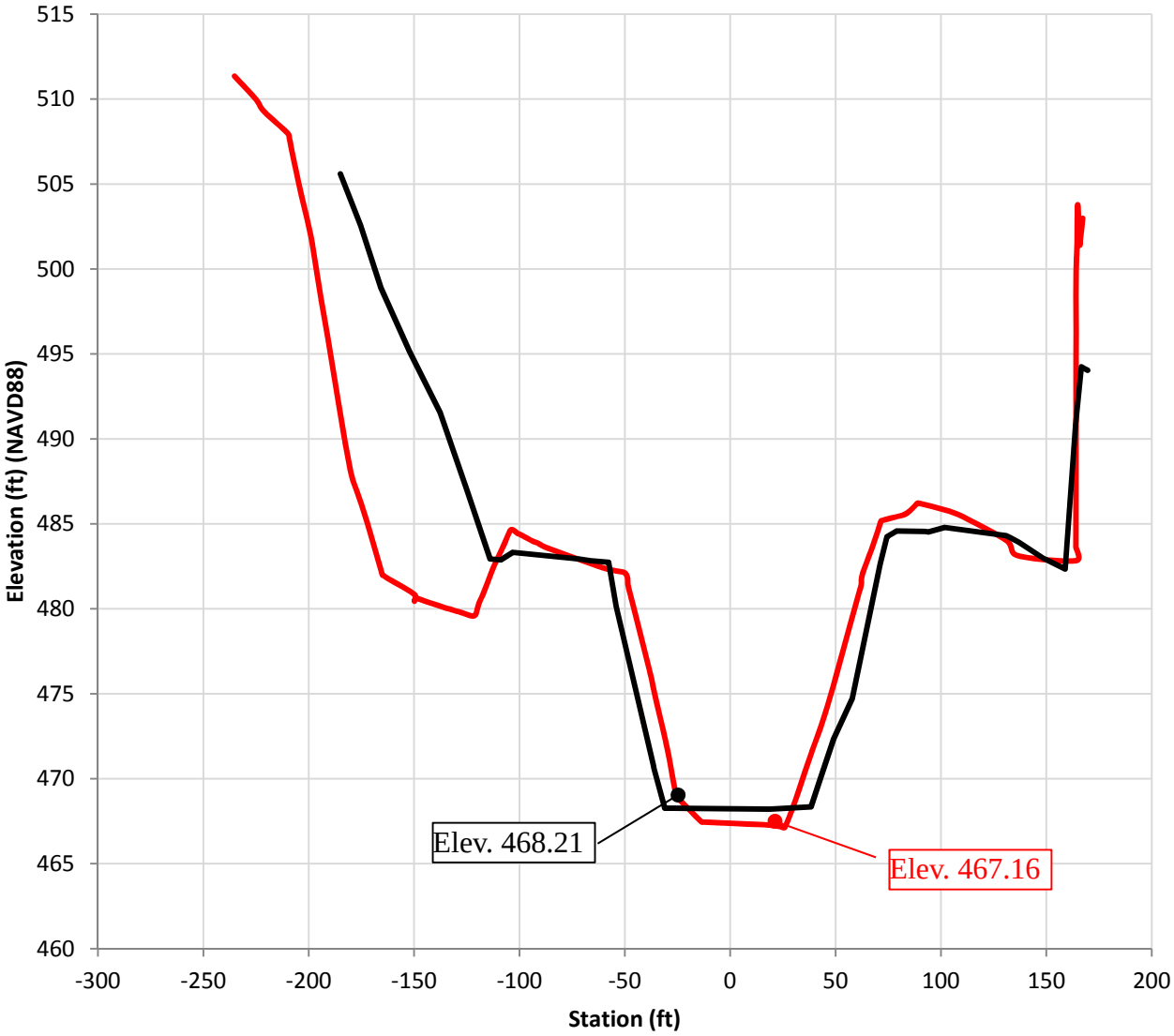


FEMA cross section AO is located approximately 140 feet downstream of the existing SR 2009 bridge. Surveyed cross section 7 is located 140 feet downstream of the existing SR 2009 bridge. There are no significant geometric differences between these cross sections, as shown on the topographic survey. The FEMA cross section at this location shows a higher channel and banks that are slightly different than indicated by the survey.

NEWELL TERESKA & MACKAY ENGINEERING

Monroe County FIS Pocono Creek Cross Section Comparison

FEMA XS AP vs. Survey XS 12

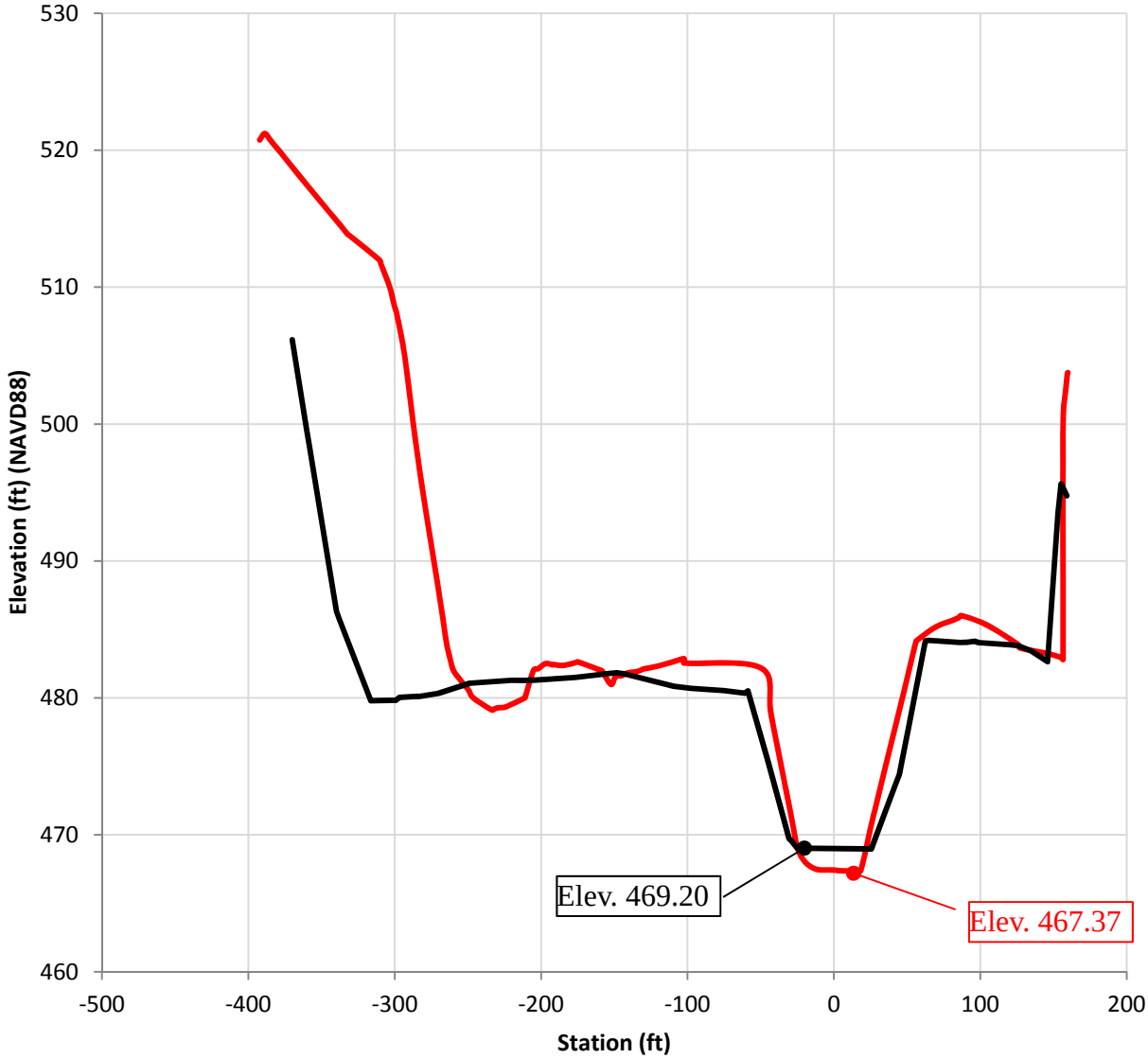


FEMA cross section AP is located approximately 45 feet upstream of the existing SR 2009 bridge. Surveyed cross section 12 is located 65 feet upstream of the existing SR 2009 bridge. There are no significant geometric differences between these cross sections, as shown on the topographic survey. The FEMA cross section at this location shows a higher channel and banks that are slightly different than indicated by the survey.

NEWELL TERESKA & MACKAY ENGINEERING

Monroe County FIS Pocono Creek Cross Section Comparison

FEMA XS AQ vs. Survey XS 13

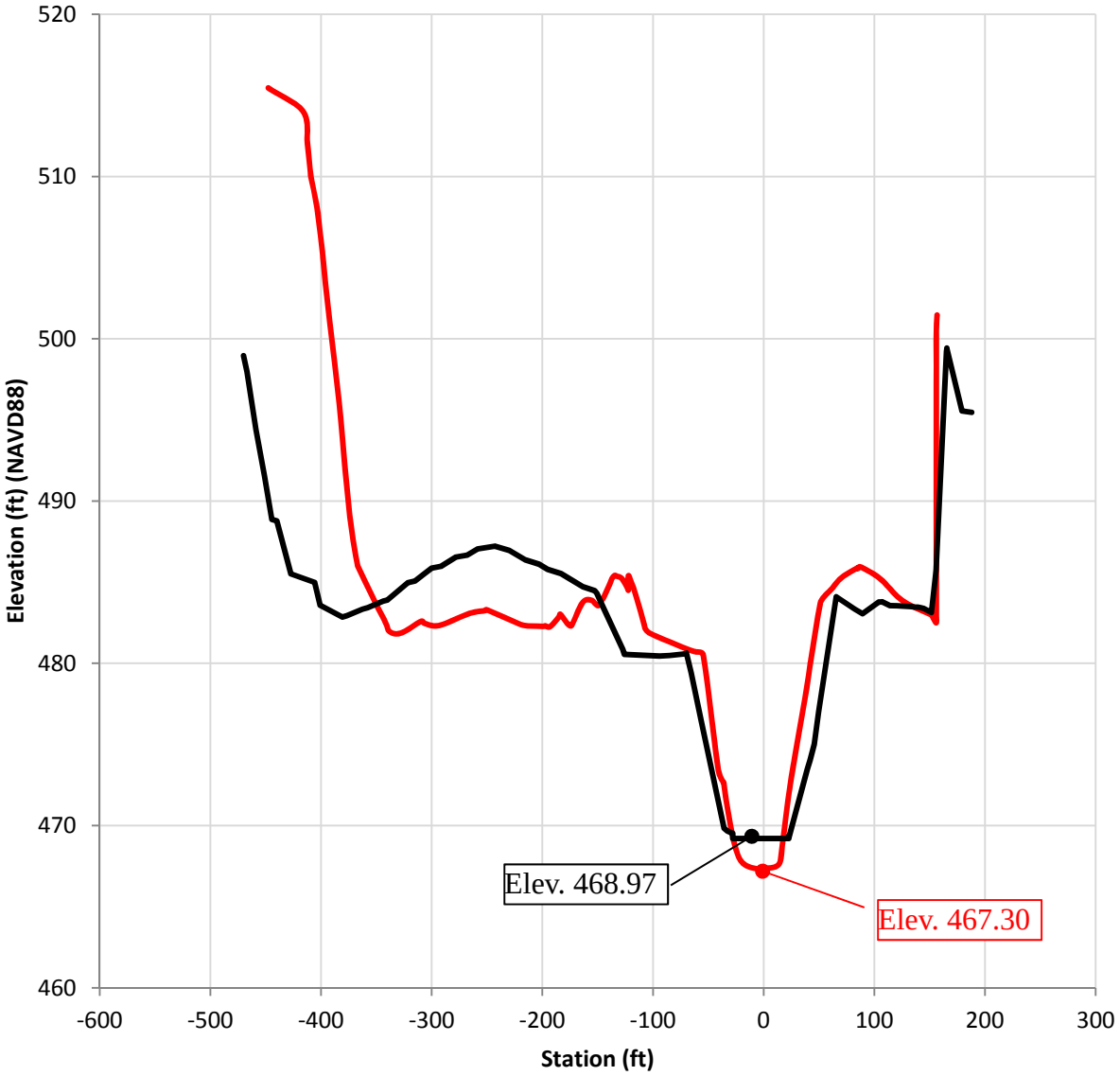


FEMA cross section AQ is located approximately 120 feet upstream of the existing SR 2009 bridge. Surveyed cross section 13 is located 95 feet upstream of the existing SR 2009 bridge. There are significant geometric differences between these cross sections, as shown on the topographic survey. The FEMA cross section at this location shows a higher channel and banks that are slightly different than indicated by the survey.

NEWELL TERESKA & MACKAY ENGINEERING

Monroe County FIS Pocono Creek Cross Section Comparison

FEMA XS AR vs. Survey XS 14

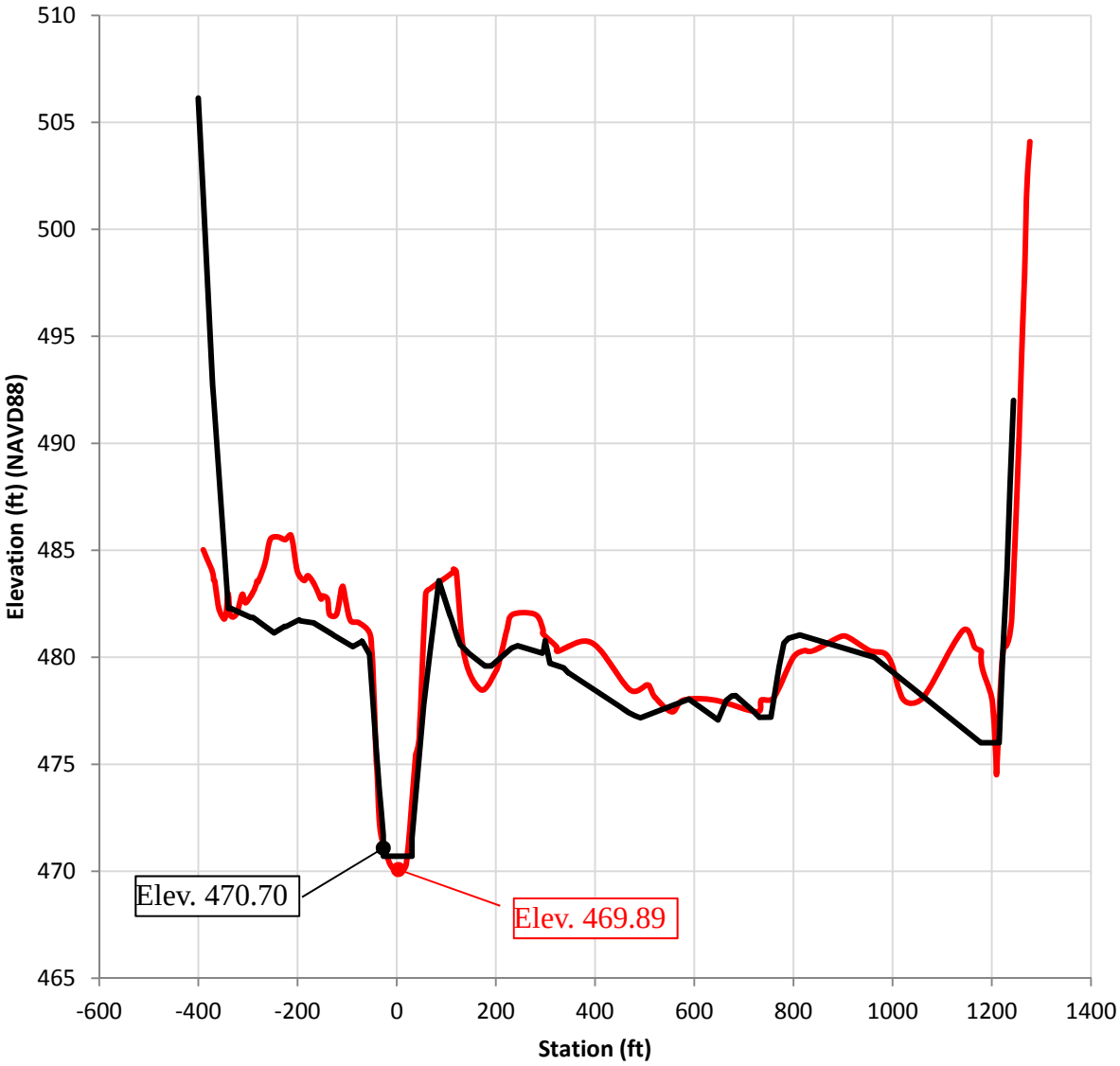


FEMA cross section AR is located approximately 160 feet upstream of the existing SR 2009 bridge. Surveyed cross section 15 is located 130 feet upstream of the existing SR 2009 bridge. There are significant geometric differences between these cross sections, as shown on the topographic survey. The FEMA cross section at this location shows a higher channel and banks that are slightly different than indicated by the survey.

NEWELL TERESKA & MACKAY ENGINEERING

Monroe County FIS Pocono Creek Cross Section Comparison

FEMA XS AS vs. Survey XS 17

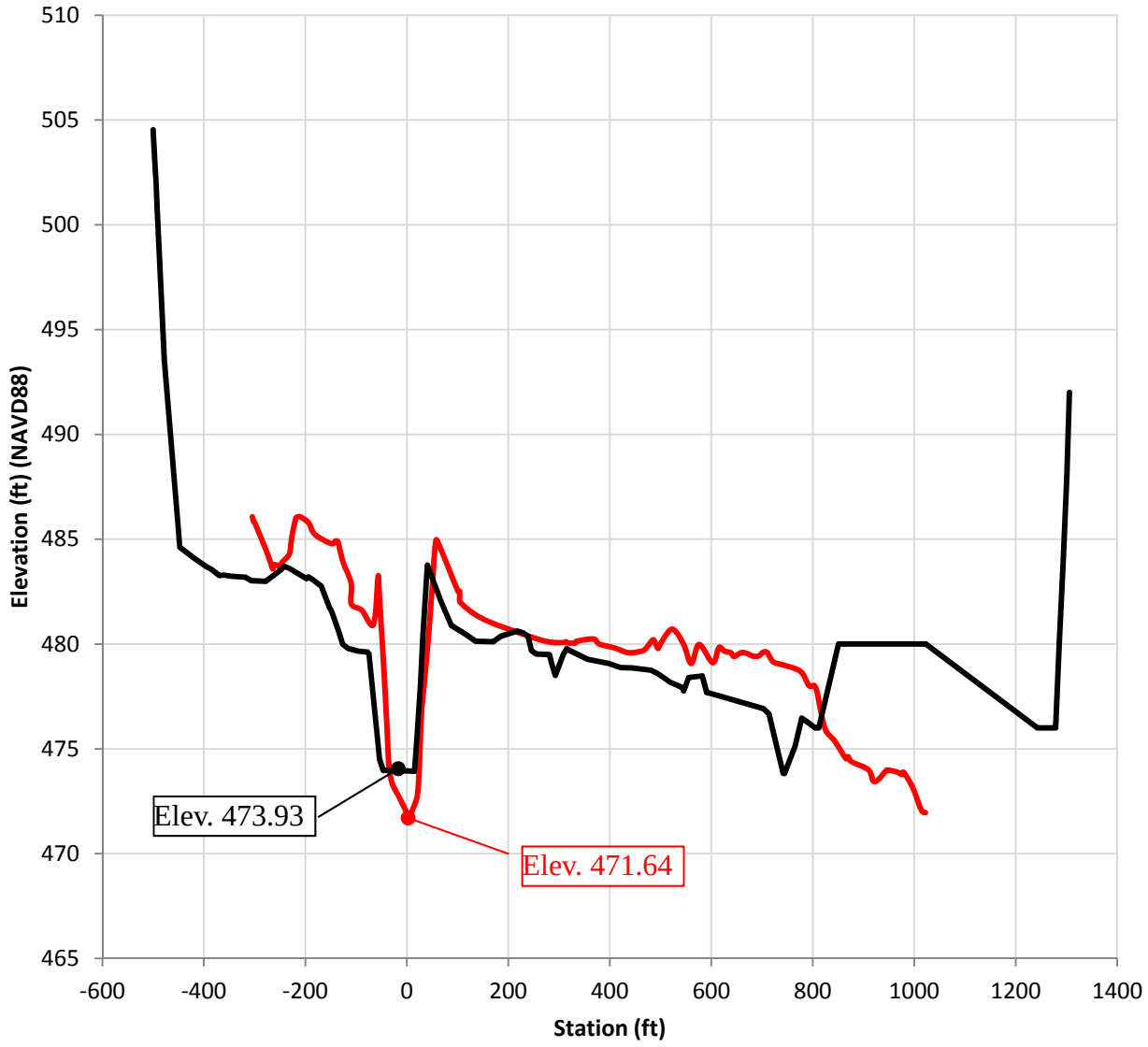


FEMA cross section AS is located approximately 380 feet upstream of the existing SR 2009 bridge. Surveyed cross section 18 is located 400 feet upstream of the existing SR 2009 bridge. There are no significant geometric differences between these cross sections, as shown on the topographic survey. The FEMA cross section at this location shows a higher channel and banks that are slightly different than indicated by the survey.

NEWELL TERESKA & MACKAY ENGINEERING

Monroe County FIS Pocono Creek Cross Section Comparison

FEMA XS AT vs. Survey XS 19

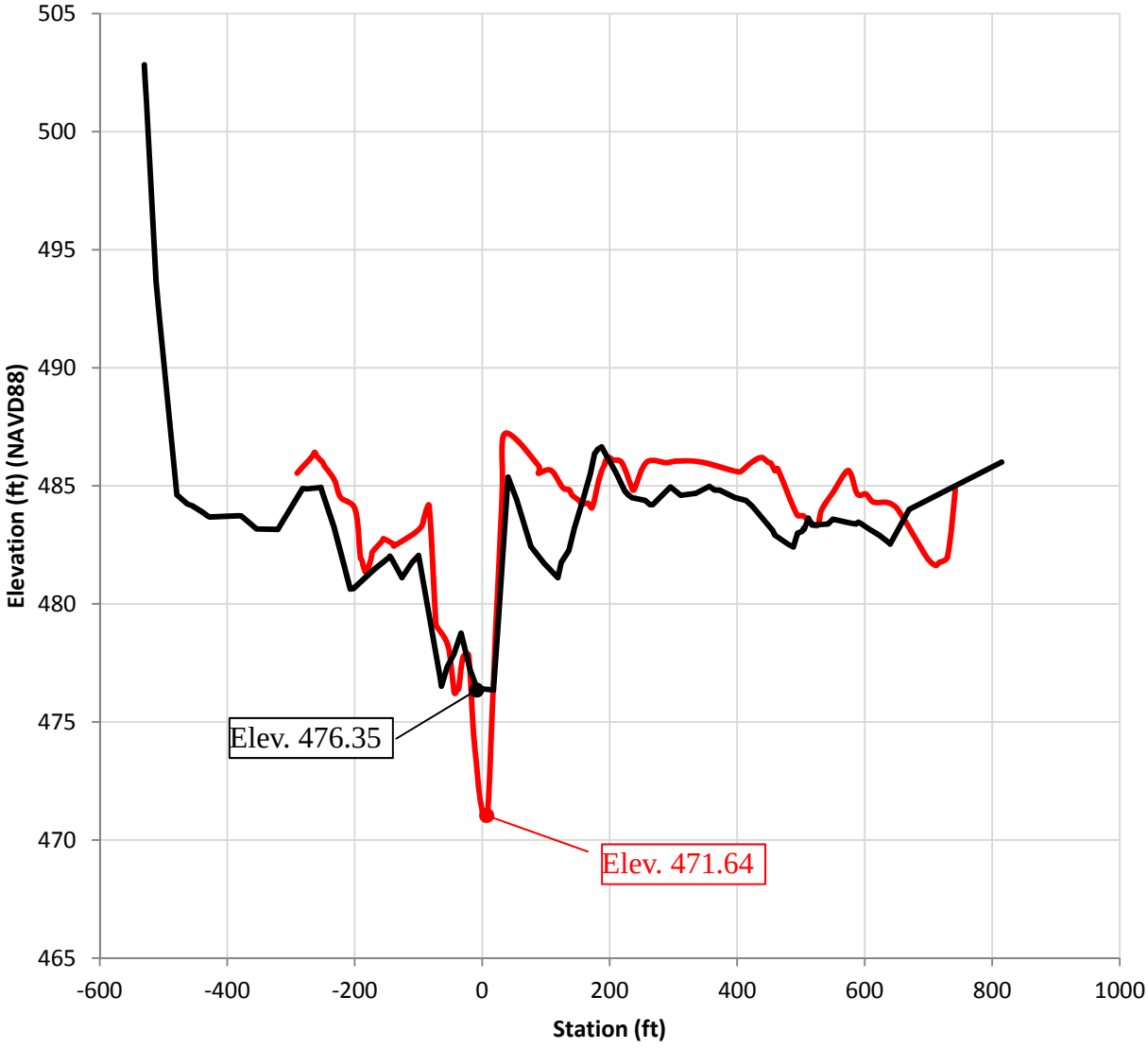


FEMA cross section AT is located approximately 640 feet upstream of the existing SR 2009 bridge. Surveyed cross section 20 is located 615 feet upstream of the existing SR 2009 bridge. There are significant geometric differences between these cross sections, as shown on the topographic survey. The FEMA cross section at this location shows a higher channel and banks that are slightly different than indicated by the survey.

NEWELL TERESKA & MACKAY ENGINEERING

Monroe County FIS Pocono Creek Cross Section Comparison

FEMA XS AU vs. Survey XS 21

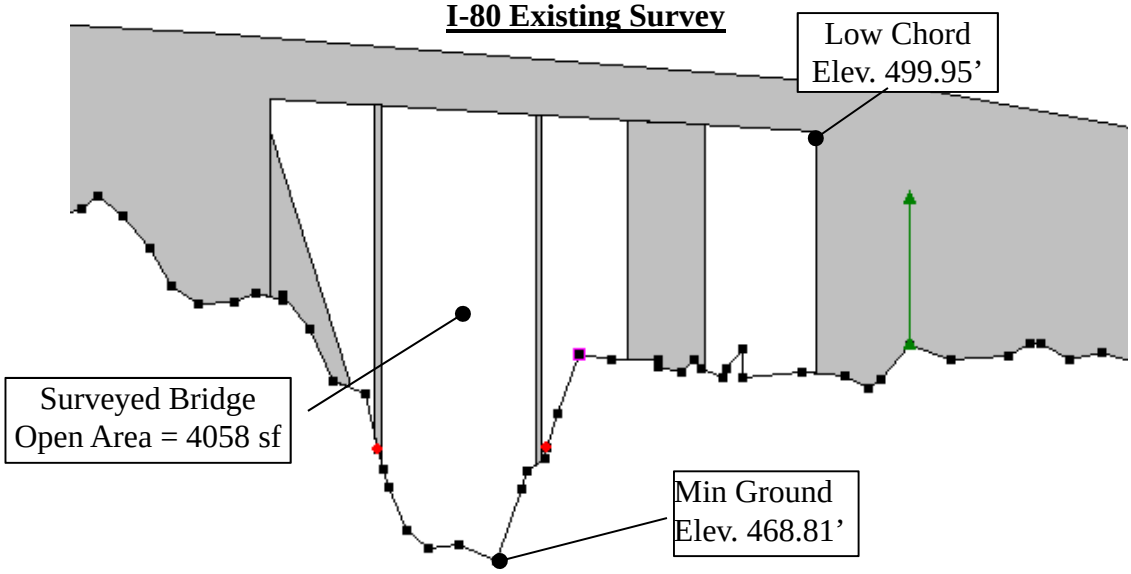


FEMA cross section AU is located approximately 830 feet upstream of the existing SR 2009 bridge. Surveyed cross section 22 is located 790 feet upstream of the existing SR 2009 bridge. There are significant geometric differences between these cross sections, as shown on the topographic survey. The FEMA cross section at this location shows a higher channel and banks that are slightly different than indicated by the survey.

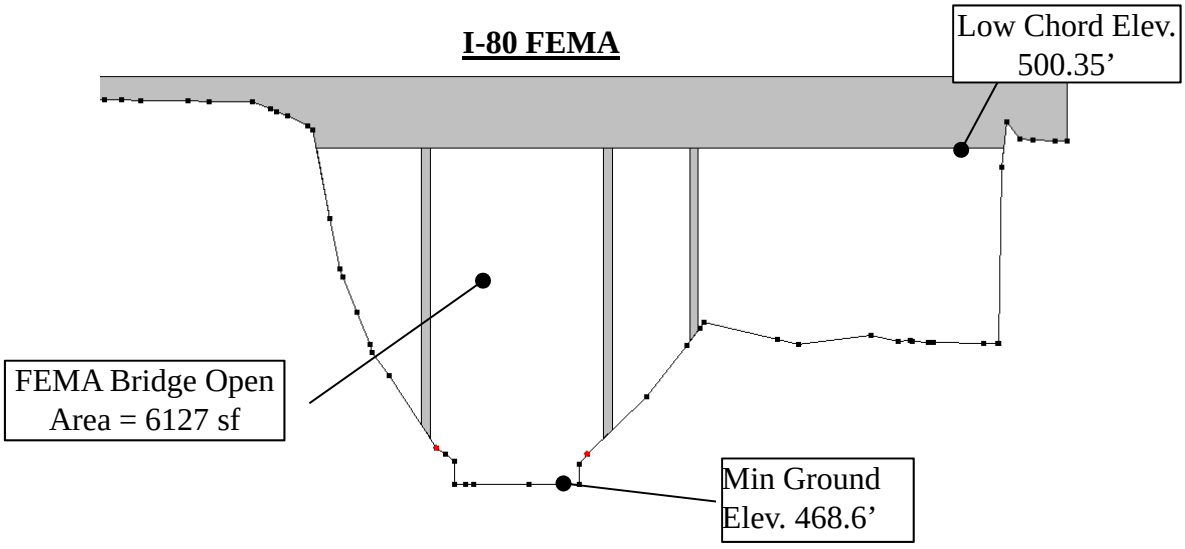
NEWELL TERESKA & MACKAY ENGINEERING

Monroe County FIS I-80 over Pocono Creek Bridge Comparison

I-80 Existing Survey



I-80 FEMA



The FEMA I-80 bridge opening is similar to the current hydraulic study; however, the ground elevations at the channel are approximately 0.5 feet higher than the surveyed elevations. The clear spans and out-to-out widths are similar; but, the right pier in the FEMA model was not skewed. Since none of the flows overtop the bridge, the superstructure depth does not affect the hydraulic model at all.

NEWELL TERESKA & MACKAY
ENGINEERING

APPENDIX C

I-80 over Pocono Creek
Corrected Effective Model

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HEC-RAS Plan: Corrected Eff. M River: Stream Reach: Reach Profile: 100-year

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 # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach	21	100-year	7748.00	470.96	483.49	481.93	485.19	0.007285	10.59	846.89	298.71	0.68
Reach	20	100-year	7748.00	471.05	482.72	480.84	484.53	0.006671	10.93	814.74	784.22	0.66
Reach	19	100-year	7748.00	471.64	483.07	481.36	483.84	0.003275	7.94	1604.64	1023.32	0.45
Reach	18	100-year	7748.00	471.00	482.72	479.33	483.51	0.002540	7.67	1491.35	1160.73	0.42
Reach	17	100-year	7748.00	469.89	482.51	478.04	483.27	0.002212	7.35	1405.61	1274.55	0.40
Reach	16	100-year	7748.00	468.81	481.90	477.84	483.01	0.003089	8.50	962.98	623.08	0.47
Reach	15.5		Bridge									
Reach	15	100-year	7748.00	467.46	478.68		480.90	0.006889	12.02	687.09	87.87	0.68
Reach	14	100-year	7748.00	467.30	478.51		480.69	0.006751	11.93	696.36	89.69	0.68
Reach	13	100-year	7748.00	467.37	477.95		480.44	0.007997	12.73	645.19	83.67	0.74
Reach	12	100-year	7748.00	467.16	478.46		479.99	0.004504	9.98	817.01	98.10	0.56
Reach	11	100-year	7748.00	467.24	478.53	474.88	479.75	0.003539	8.89	907.46	105.77	0.50
Reach	10.5		Bridge									
Reach	10	100-year	7748.00	466.30	476.49	473.89	478.03	0.005153	9.96	802.97	116.37	0.59
Reach	9	100-year	7748.00	465.52	476.60	473.05	477.68	0.003397	8.39	954.40	113.13	0.48
Reach	8	100-year	7748.00	464.65	476.45	472.67	477.58	0.003309	8.60	950.74	152.90	0.48
Reach	7	100-year	7748.00	464.36	476.03	472.78	477.40	0.004023	9.54	913.37	127.92	0.53
Reach	6	100-year	7748.00	463.15	473.30	473.30	476.72	0.014490	15.10	579.27	95.60	0.96
Reach	5	100-year	7748.00	461.90	473.07		475.20	0.007497	11.90	751.86	122.47	0.71
Reach	4	100-year	7748.00	461.62	472.22		474.18	0.007202	11.92	901.68	159.59	0.69
Reach	3	100-year	7748.00	461.67	471.84	469.96	473.56	0.006319	11.06	981.69	224.00	0.65
Reach	2	100-year	7748.00	460.87	471.18	469.91	473.15	0.007256	11.81	911.43	190.70	0.70
Reach	1	100-year	7748.00	461.04	470.88	467.90	471.85	0.003627	8.20	1261.68	277.92	0.49

I-80 Alternatives Analysis

APPENDIX C

Preliminary Bridge Elevations

Monroe County
PennDOT District 5-0

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APPENDIX C

Alternative A

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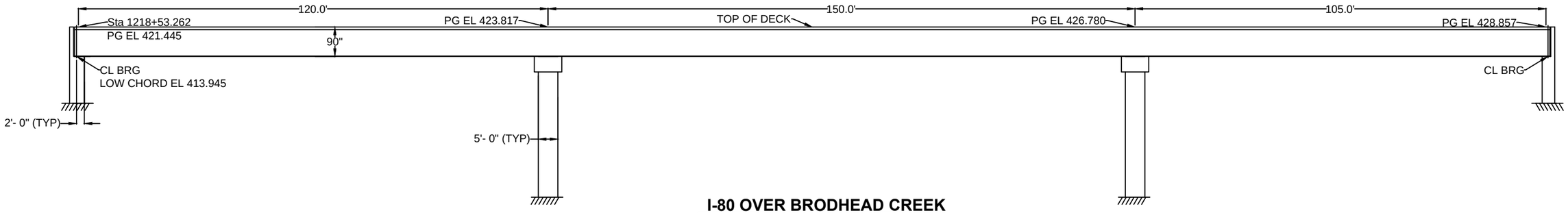
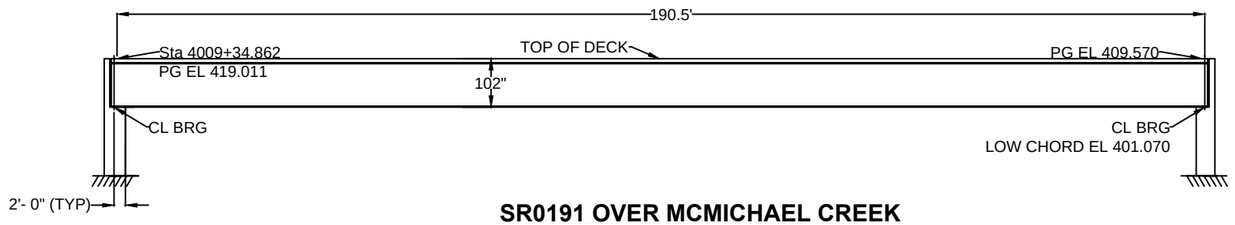


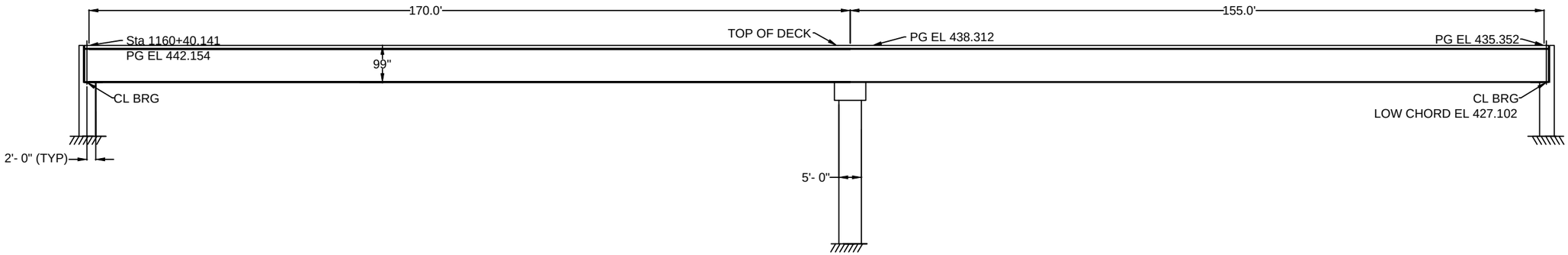
I-80 OVER BRODHEAD CREEK



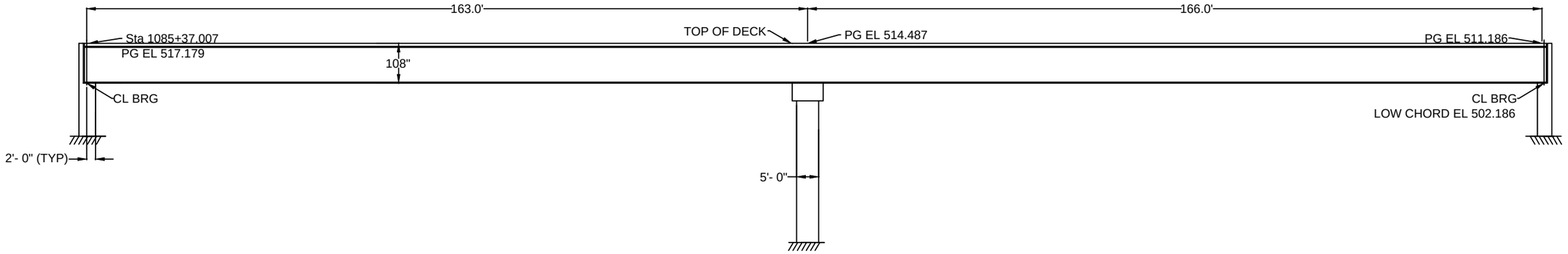
SR0191 OVER MCMICHAEL CREEK

SPAN LENGTHS ARE MEASURED ALONG BASELINE

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2A	CREATED BY: DMF 06/19/2014 CHECKED BY: RK 06/19/2014 SHEET 1 of 2



I-80 OVER MCMICHAEL CREEK



I-80 OVER POCONO CREEK

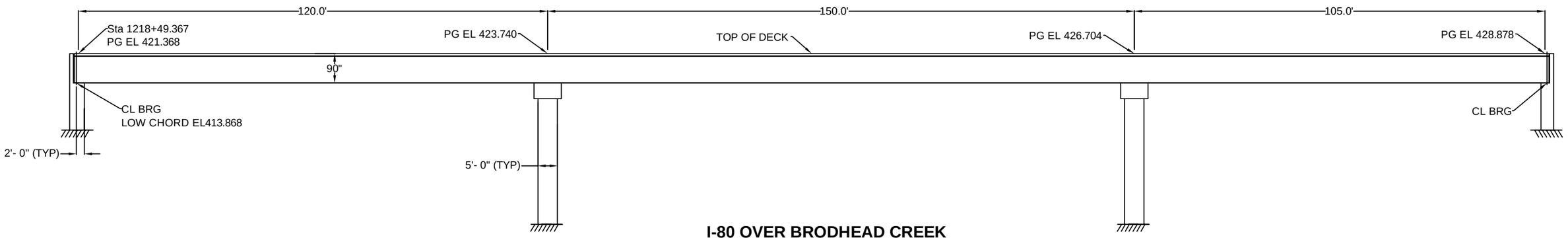
SPAN LENGTHS ARE MEASURED ALONG BASELINE

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2A	CREATED BY: DMF 06/19/2014 CHECKED BY: RK 06/19/2014 SHEET 2 of 2

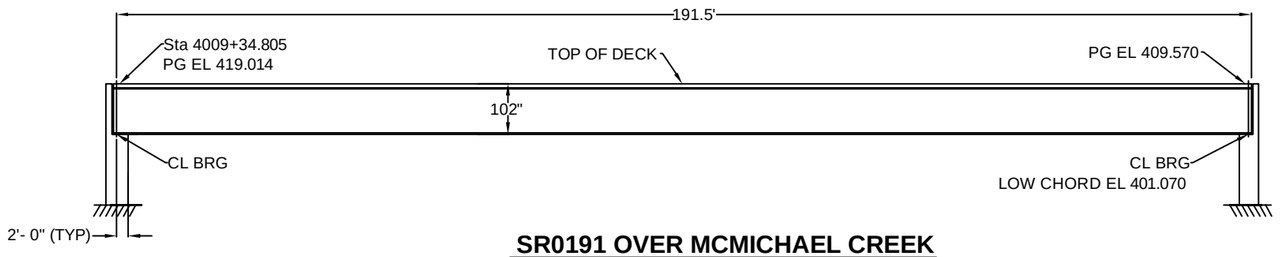
APPENDIX C

Alternative D

NEWELL TERESKA & MACKAY ENGINEERING



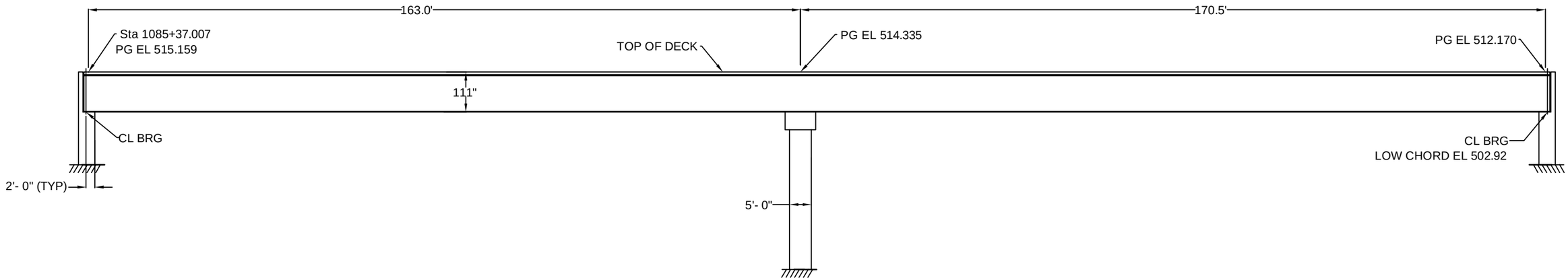
I-80 OVER BRODHEAD CREEK



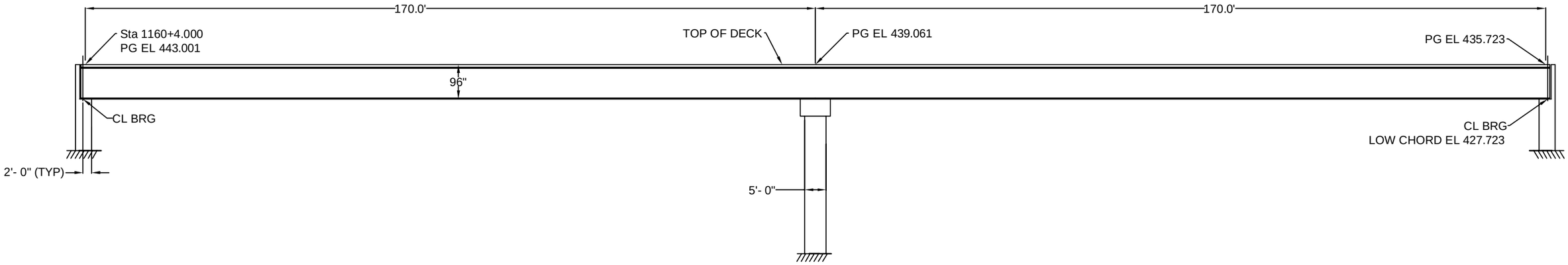
SR0191 OVER MCMICHAEL CREEK

SPAN LENGTHS ARE MEASURED ALONG BASELINE

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2D	CREATED BY: DMF 07/13/2014 CHECKED BY: RK 07/16/2014 SHEET 1 of 4



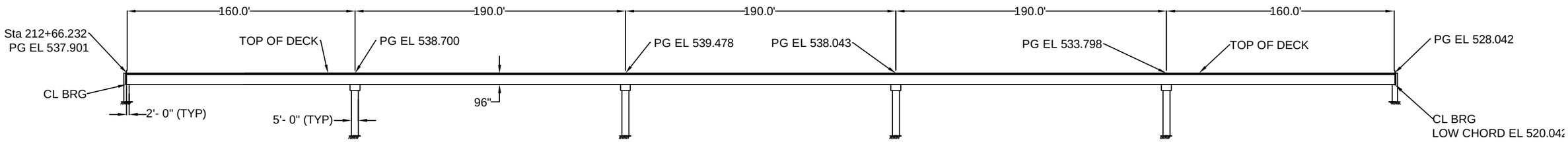
I-80 OVER POCONO CREEK



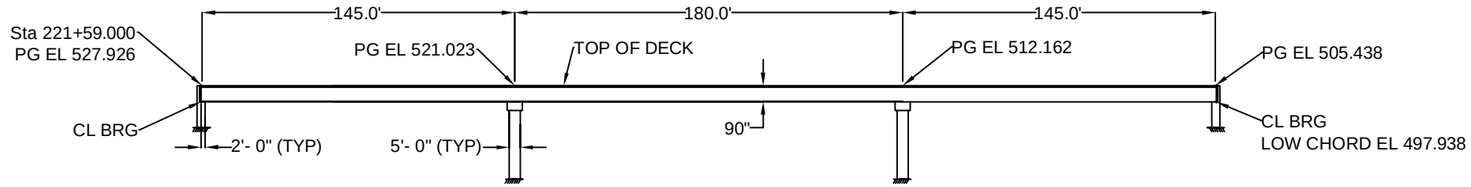
SPAN LENGTHS ARE MEASURED ALONG BASELINE

I-80 OVER MCMICHAEL CREEK

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2D	CREATED BY: DMF 07/13/2014 CHECKED BY: RK 07/16/2014 SHEET 2 of 4



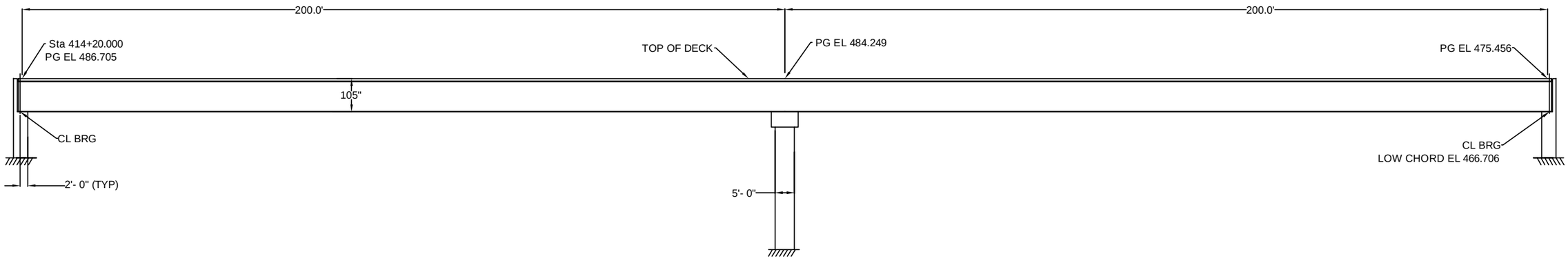
RAMP I UNIT 2 OVER POCONO CREEK



RAMP I UNIT 3 OVER POCONO CREEK AND RAMP H

SPAN LENGTHS ARE MEASURED ALONG BASELINE

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2D	CREATED BY: DMF 7/13/2014 CHECKED BY: RK 07/16/2014 SHEET 3 of 4



RAMP H OVER POCONO CREEK AND UNDER RAMP I

SPAN LENGTHS ARE MEASURED ALONG BASELINE

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2D	CREATED BY: DMF 07/13/2014 CHECKED BY: RK 07/16/2014 SHEET 4 of 4

APPENDIX C

Alternative B

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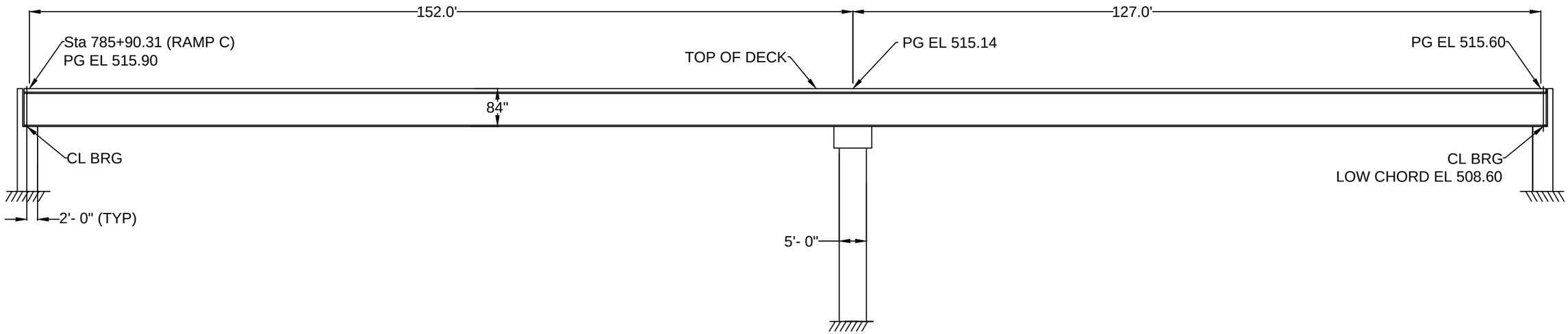
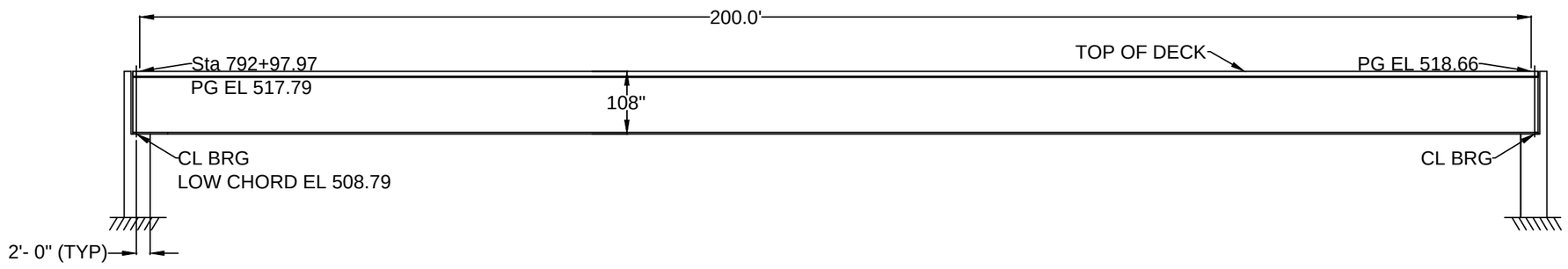


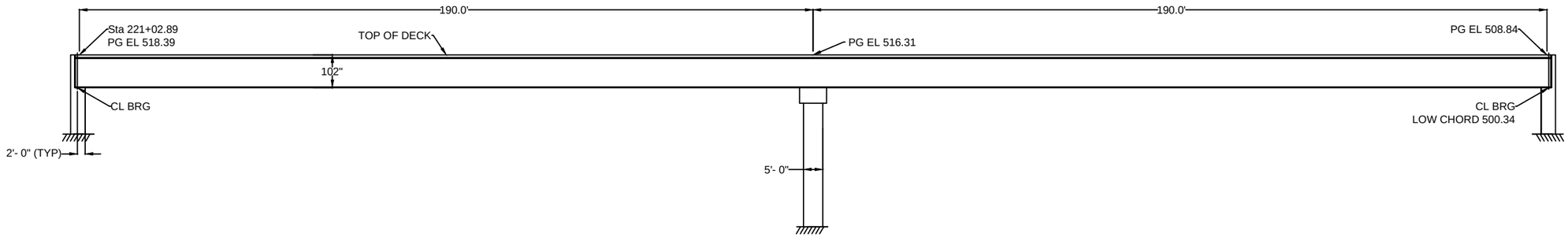
RAMPS C AND E OVER POCONO CREEK AND BRIDGE STREET



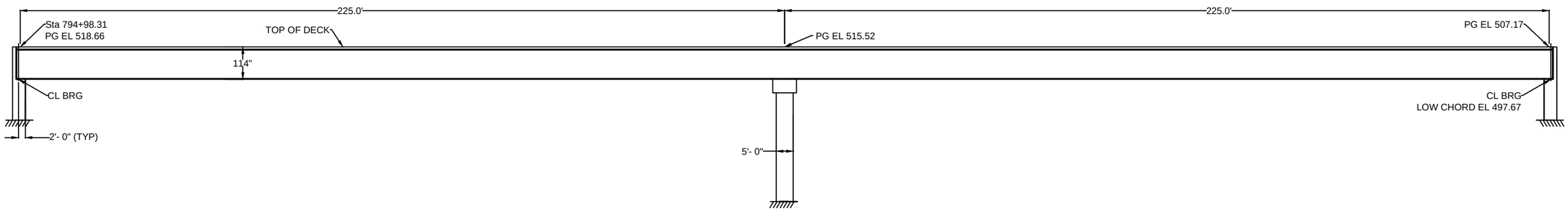
RAMPS C AND E OVER POCONO CREEK

SPAN LENGTHS ARE MEASURED ALONG BASELINE

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2B	CREATED BY: DMF 07/31/2014 CHECKED BY: RK 08/01/2014 SHEET 1 of 8



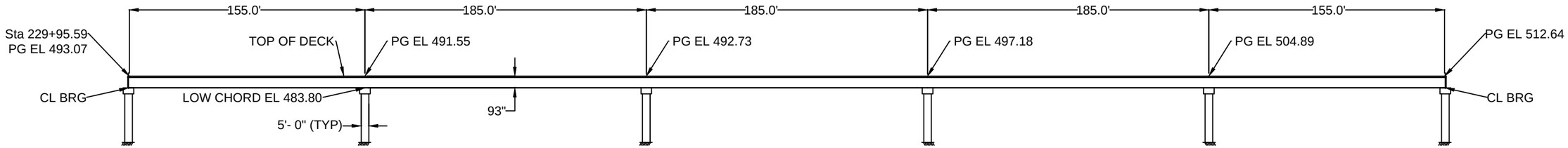
RAMP E UNIT 1 OVER POCONO CREEK



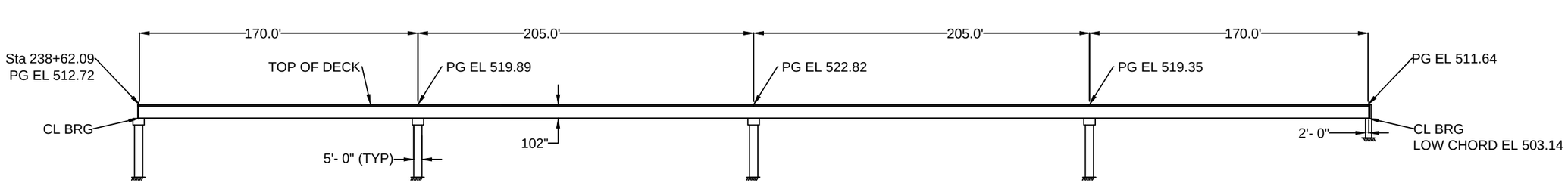
RAMP C OVER POCONO CREEK AND I-80

SPAN LENGTHS ARE MEASURED ALONG BASELINE

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2B	CREATED BY: DMF 07/31/2014 CHECKED BY: RK 08/01/2014 SHEET 2 of 8



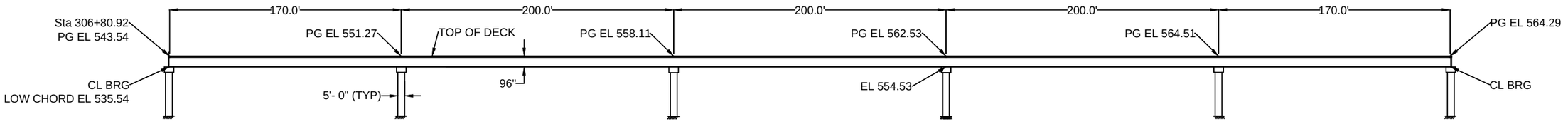
RAMP E UNIT 2 OVER POCONO CREEK



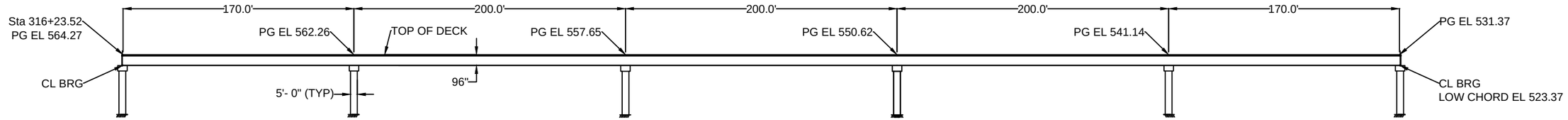
RAMP E UNIT 3 OVER POCONO CREEK AND RAMP H

SPAN LENGTHS ARE MEASURED ALONG BASELINE

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2B	CREATED BY: DMF 07/31/2014 CHECKED BY: RK 08/01/2014 SHEET 3 of 8

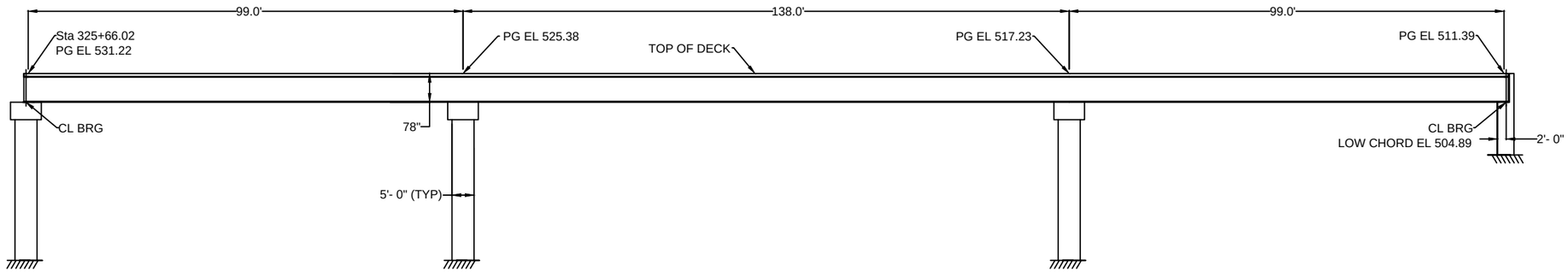


RAMP G UNIT 2 OVER I-80, RAMP E, AND POCONO CREEK

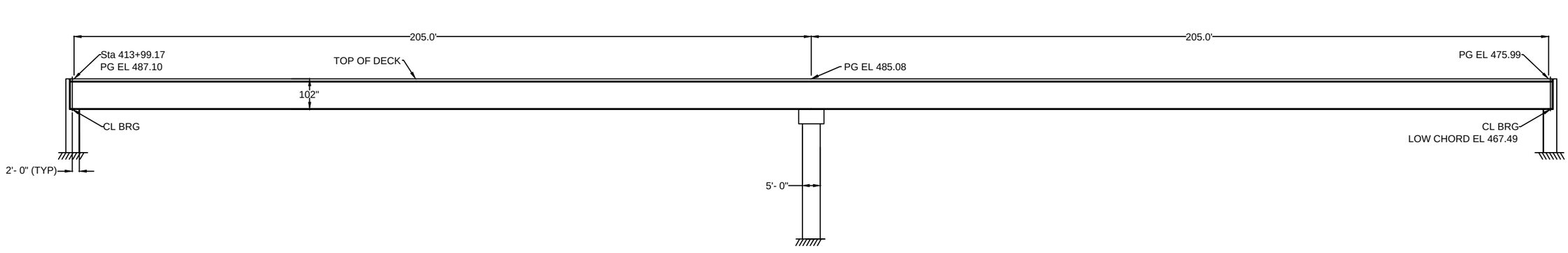


RAMP G UNIT 3 OVER POCONO CREEK

SPAN LENGTHS ARE MEASURED ALONG BASELINE



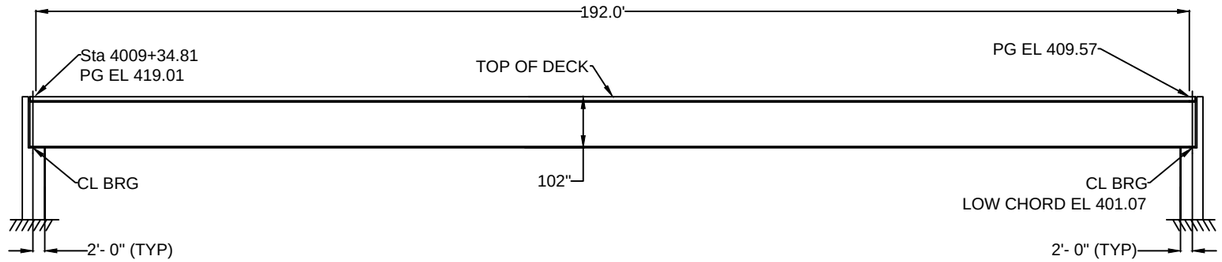
RAMP G UNIT 4 OVER POCONO CREEK AND RAMP H



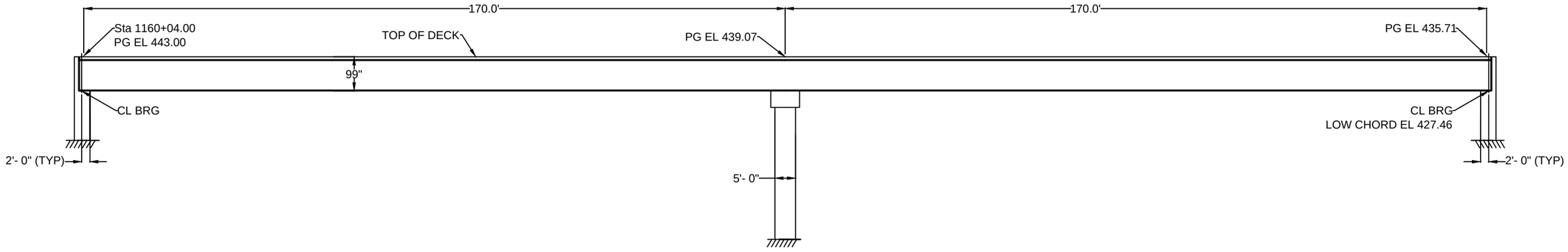
RAMP H OVER POCONO CREEK

SPAN LENGTHS ARE MEASURED ALONG BASELINE

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2B	CREATED BY: DMF 07/31/2014 CHECKED BY: RK 08/01/2014 SHEET 5 of 8



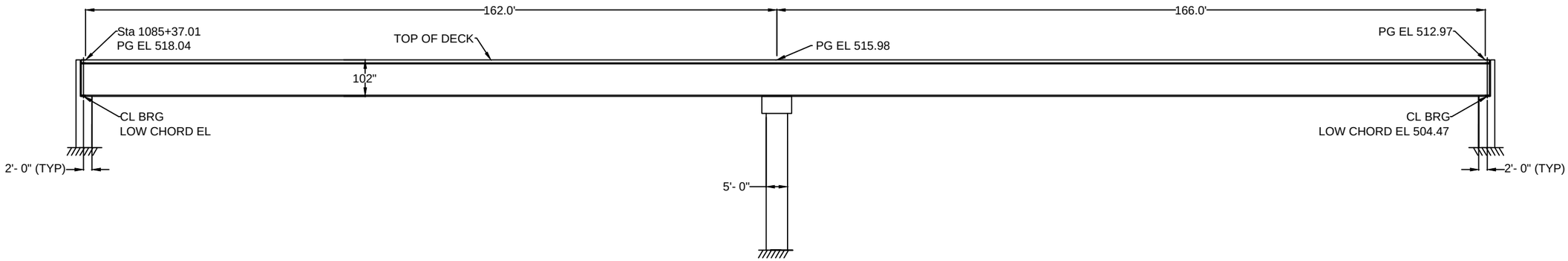
SR0191 OVER MCMICHAEL CREEK



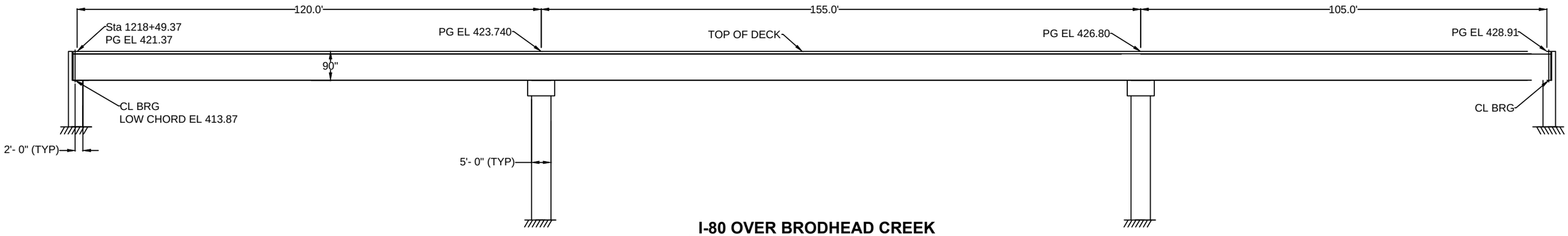
I-80 OVER MCMICHAEL CREEK

SPAN LENGTHS ARE MEASURED ALONG BASELINE

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2B	CREATED BY: DMF 07/31/2014 CHECKED BY: RK 08/01/2014 SHEET 6 OF 8



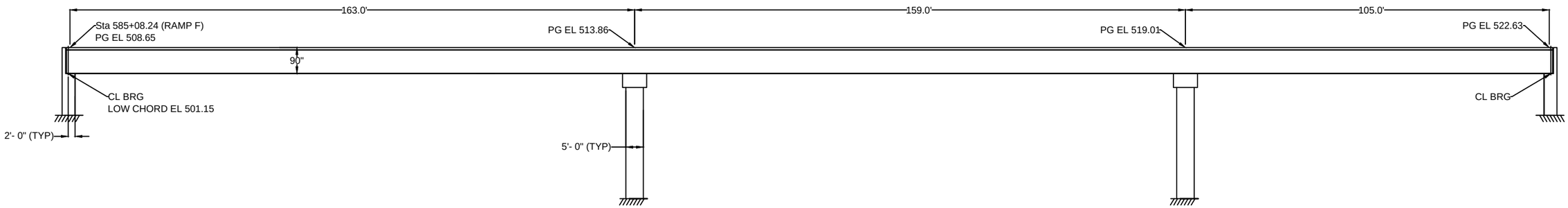
I-80 OVER POCONO CREEK



I-80 OVER BRODHEAD CREEK

SPAN LENGTHS ARE MEASURED ALONG BASELINE

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2B	CREATED BY: DMF 07/31/2014 CHECKED BY: RK 08/01/2014 SHEET 7 OF 8



SPAN LENGTHS ARE MEASURED ALONG BASELINE

RAMPS B AND F OVER POCONO CREEK AND BRIDGE STREET

I-80 RECONSTRUCTION AECOM	PROJECT 60248333	PRELIMINARY STRUCTURE ELEVATIONS ALTERNATE - 2B	CREATED BY: DMF 07/31/2014 CHECKED BY: RK 08/01/2014 SHEET 8 OF 8

I-80 Alternatives Analysis

APPENDIX D

Alternative A Results

Monroe County
PennDOT District 5-0

NEWELL TERESKA & MACKAY
ENGINEERING

Proposed Alternative A Results

Water surface elevations at the hydraulic sections in the Brodhead, McMichael, Pocono, and Little Pocono Creek HEC-RAS models are compared with existing conditions in tables below for the 100-year event.

Flood maps for every study area are also attached. The flood profiles include the calculated 100-year elevations as well as the FEMA 100-year floodplain and floodway. The FEMA floodplain may not follow the provided contours as it was mapped using outdated data. Furthermore, note that the proposed contours may end abruptly due to the preliminary stages of the project.

Table 1: Brodhead Creek Existing vs. Alternative A FEMA 100-year Flood Elevations

Cross Section	Water Surface Elevations		Difference (Ex-Alt.A)
	Existing	Alternative A	
14	394.9	395.0	0.1
13	394.9	395.0	0.1
12	394.7	394.8	0.1
11	394.6	394.7	0.1
10	394.5	394.6	0.1
9	394.3	394.4	0.1
8	394.1	394.2	0.1
7	392.6	392.6	0.0
6	392.6	392.6	0.0
5	392.6	392.6	0.0
4	392.6	392.6	0.0
3	392.4	392.4	0.0
2	392.4	392.4	0.0
1	392.2	392.2	0.0

The bridge configuration proposed in Alternative A causes an increase in upstream water surface elevations of 0.1 feet, which propagates upstream beyond the limits of the model. Although there are no structures in the 100-year floodplain upstream of the bridge, an increase of 0.1 feet within the floodway will require a CLOMR. Additionally, increases in water surface elevations upstream of the bridge have the potential to impact the levee in the upstream right overbank.

Table 2: McMichael Creek Existing vs. Alternative A FEMA 100-year Flood Elevations

Cross Section	Water Surface Elevations		Difference (Ex-Alt.A)
	Existing	Alternative A	
10670	424.5	424.5	0.0
9535	424.1	424.1	0.0
8400	421.2	421.2	0.0
8341	420.8	420.8	0.0
8320.5	Village Drive Bridge		
8300	420.5	420.5	0.0
8250	417.9	417.9	0.0
7030	417.9	417.9	0.0
6655	416.1	416.1	0.0
6295	416.8	416.8	0.0
6142.5	I-80 Bridge		
6100	416.5	N/A	N/A
6070	416.1	N/A	N/A
6015	416.0	416.2	+0.2
5680	416.0	416.1	+0.1
5360	416.0	416.1	+0.1
5040	415.7	415.8	+0.1
4690	414.7	414.9	+0.2
4440	414.5	414.4	-0.1
4190	414.7	414.7	0.0
4020	414.3	414.3	0.0
3850	414.1	414.1	0.0
3680	413.8	413.8	0.0
3510	413.9	413.9	0.0
3170	413.7	413.7	0.0
3095	413.7	413.7	0.0

Table 3: McMichael Creek Existing vs. Alternative A FEMA 100-year Flood Elevations (continued)

Cross Section	Water Surface Elevations		Difference (Ex-Alt.A)
	Existing	Alternative A	
3075	SR 0611 Bridge		
3055	413.5	413.5	0.0
3005	413.5	413.5	0.0
2385	408.8	408.8	0.0
2150	410.3	410.3	0.0
2085	410.2	410.2	0.0
2082.5	Fifth Street Dam		
2080	404.8	404.8	0.0
2055.1	N/A	392.3	N/A
2055	392.4	N/A	N/A
2035	SR 0191 Bridge		
2015.1	N/A	400.5	N/A
2015	400.6	N/A	N/A
1930	395.6	395.6	0.0
1585	392.2	392.2	0.0
940	387.2	387.2	0.0
495	385.9	385.9	0.0
0	385.0	385.0	0.0

Small increases in water surface elevations are expected in the area between the SR 0611 bridge and the I-80 bridge over McMichael Creek due to the floodplain encroachment from the roadway embankment. No water surface elevations are expected upstream of the I-80 bridge.

Table 4: Pocono Creek (upstream) Existing vs. Alternative A FEMA 100-year Flood Elevations

Cross Section	Water Surface Elevations		Difference (Ex-Alt.A)
	Existing	Alternative A	
BP	534.7	534.7	0.0
BO	534.7	534.7	0.0
BN	533.9	533.9	0.0
BM	532.7	532.7	0.0
BL	525.0	525.0	0.0
BK	522.6	522.6	0.0
BJ	518.6	518.6	0.0
BI	518.0	518.0	0.0
BH	513.9	513.9	0.0
BG	510.6	510.6	0.0
BF	507.6	507.6	0.0
BE	507.1	507.1	0.0
BD	505.4	505.4	0.0
BC	501.1	501.1	0.0
BB	500.2	500.2	0.0
BA	495.2	495.2	0.0
AZ	492.7	492.7	0.0
AY	491.7	491.8	+0.1
AX	489.5	489.4	-0.1
AW	487.7	487.7	0.0
AV	485.0	485.0	0.0

Minor increases in the 100-year water surface elevation. Increases are within the allowable water surface elevation increase by FEMA.

Table 5: Pocono Creek (bridge) Existing vs. Alternative A FEMA 100-year Flood Elevations

Cross Section	Water Surface Elevations		Difference (Ex-Alt.A)
	Existing	Alternative A	
21	483.2	483.1	-0.1
20	482.6	482.5	-0.1
19	482.0	481.9	-0.2
18	481.9	481.7	-0.2
17	481.8	481.6	-0.2
16	481.6	481.4	-0.1
15	478.3	478.3	0.0
14	478.1	478.1	0.0
13	477.5	477.5	0.0
12	478.2	478.2	0.0
11	478.3	478.3	0.0
10	476.3	476.3	0.0
9	476.5	476.5	0.0
8	476.3	476.3	0.0
7	475.9	475.9	0.0
6	473.3	473.3	0.0
5	472.6	472.6	0.0
4	471.8	471.8	0.0
3	471.5	471.5	0.0
2	470.9	470.9	0.0
1	470.9	470.9	0.0

No increases in the FEMA 100-year water surface elevation.

Table 6: Pocono Creek (downstream) Existing vs. Alternative A FEMA 100-year Flood Elevations

Cross Section	Water Surface Elevations		Difference (Ex-Alt.A)
	Existing	Alternative A	
AL	470.6	470.6	0.0
AK	469.8	469.8	0.0
AJ	466.5	466.5	0.0
AI	463.4	463.4	0.0
AH	461.0	461.0	0.0
AG	457.1	457.1	0.0
AF	454.4	454.4	0.0
AE	453.0	453.0	0.0
AD	452.7	452.7	0.0
AC	452.0	452.0	0.0
AB	451.1	451.1	0.0
AA	448.7	448.7	0.0

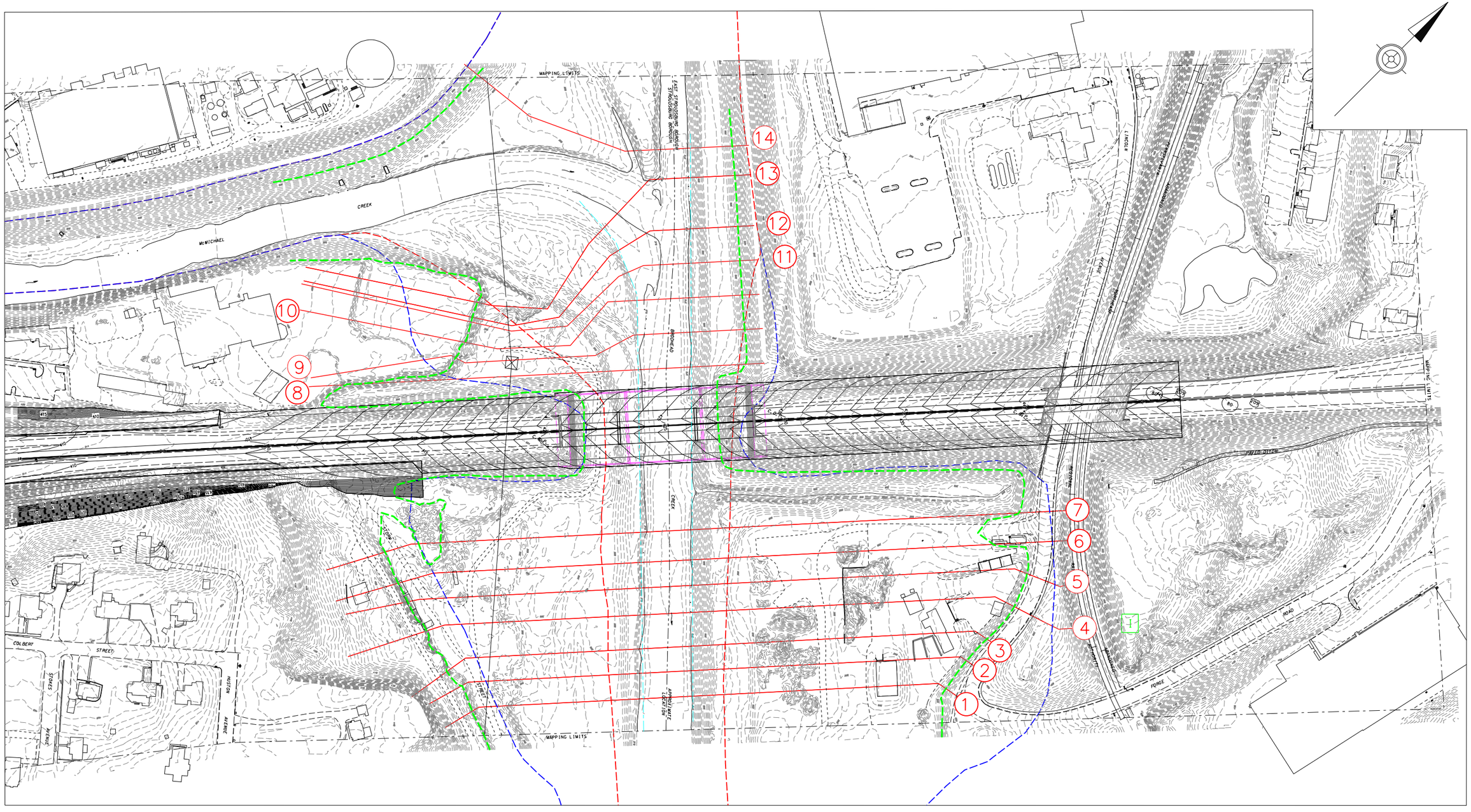
No increases in the FEMA 100-year water surface elevation.

Table 7: Little Pocono Creek Existing vs. Alternative A FEMA 100-year Flood Elevations

Cross Section	Water Surface Elevations		Difference (Ex-Alt.A)
	Existing	Alternative A	
24	459.6	459.6	0.0
23	459.0	458.9	-0.1
22	459.1	459.1	0.0
21	458.1	458.1	0.0
20	457.1	457.5	+0.3
19	456.8	456.8	0.0
18	456.6	456.6	0.0
17	456.5	456.5	0.0
16	455.9	456.0	+0.1
15	455.4	455.6	+0.2
14	455.2	455.5	+0.3
13	455.4	N/A	N/A
12	455.3	N/A	N/A
11	454.6	454.8	+0.2
10	454.1	454.2	+0.1
9	454.3	453.5	-0.8
8	454.3	N/A	N/A
7	453.6	453.6	0.0
6	452.3	452.3	0.0
5	453.0	452.6	-0.4
4	451.5	451.5	0.0
2	450.1	450.1	0.0
1	449.0	449.0	0.0

Minor increases in the 100-year water surface elevation. Increases are within the allowable water surface elevation increase for approximate study areas.

Structure sizes were assumed for the proposed Little Pocono Creek configuration. The structures span and out-to-out were provided but the structure rise was assumed with a minimum cover of 2 feet below grade.



LEGEND

- EXISTING & PROPOSED 100-YEAR FLOOD ELEVATION
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- 9 - EXISTING & PROPOSED HYDRAULIC CROSS-SECTION
- C - FEMA SECTION IDENTIFICATION
- EDGE OF WATER
- BUILDING OBSTRUCTION (FROM AERIAL IMAGERY)

SCALE IN FEET

0 200 400

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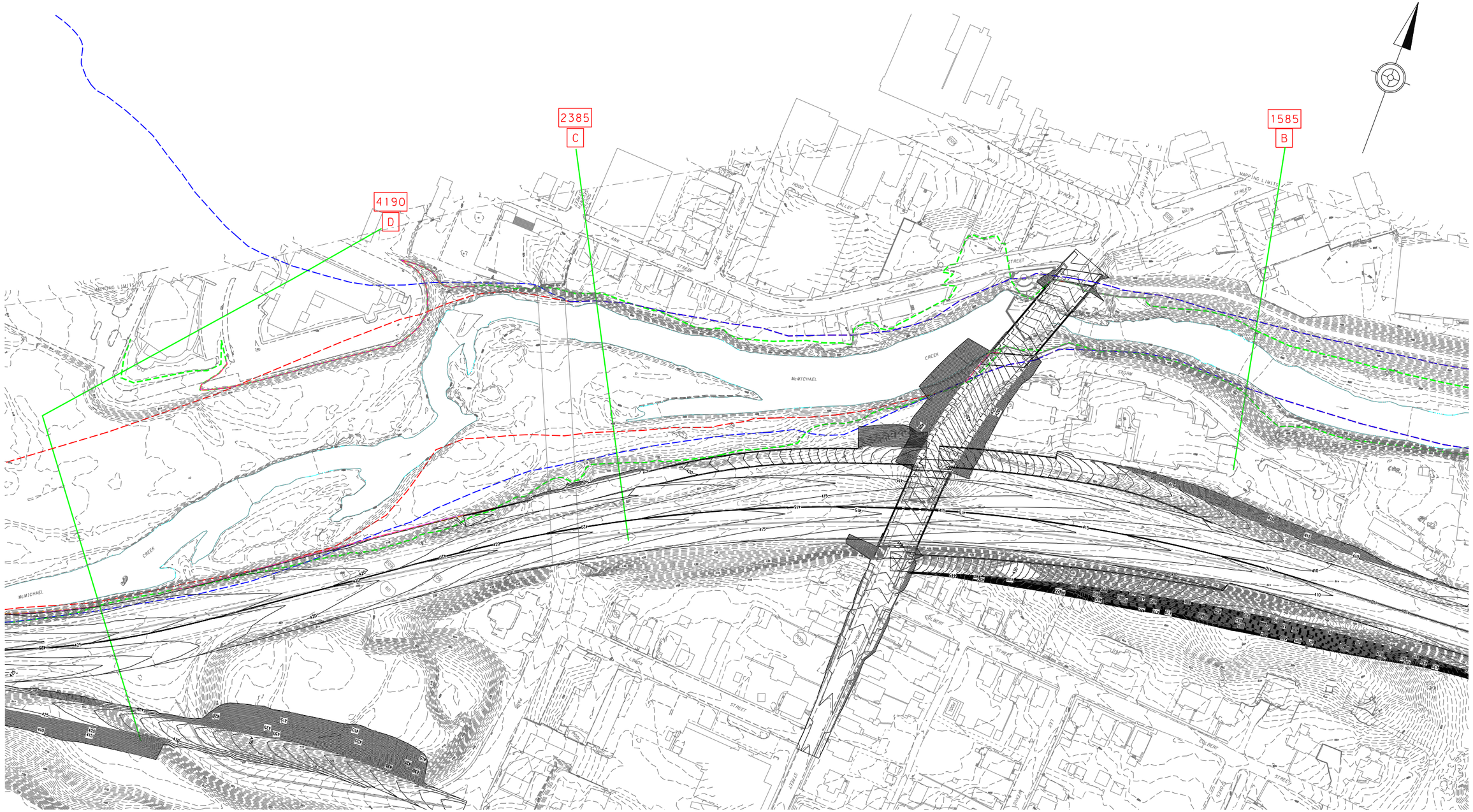
130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER BRODHEAD CREEK
EXISTING AND ALTERNATIVE A
HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE
MUNICIPALITY: EAST STROUDSBURG BOROUGH



LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (PROPOSED FLOODPLAIN IS THE SAME AS EXISTING EXCEPT WHERE SHOWN)
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- C — FEMA HYDRAULIC CROSS-SECTION
- EDGE OF WATER

NOTE: ONLY CROSS SECTIONS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAPS ARE DISPLAYED.

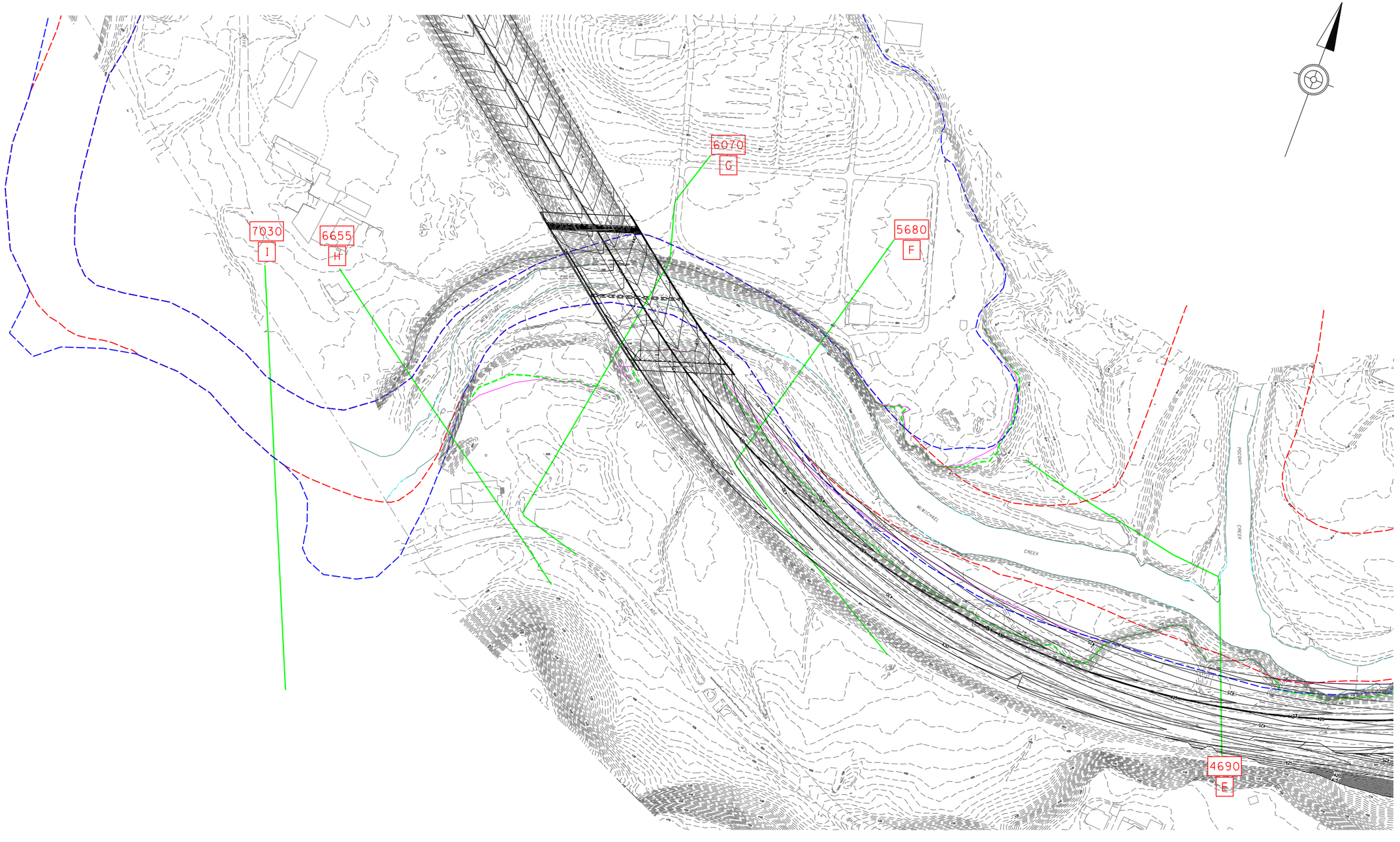
SCALE IN FEET

0 200 400

NEWELL TERESKA & MACKAY ENGINEERING
130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER MCMICHAEL CREEK EXISTING AND ALTERNATIVE A HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE
MUNICIPALITY: STROUDSBURG BOROUGH



LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (PROPOSED FLOODPLAIN IS THE SAME AS EXISTING EXCEPT WHERE SHOWN)
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- C — FEMA HYDRAULIC CROSS-SECTION
- EDGE OF WATER

NOTE: ONLY CROSS SECTIONS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAPS ARE DISPLAYED.

SCALE IN FEET

0 200 400

NEWELL TERESKA & MACKAY ENGINEERING
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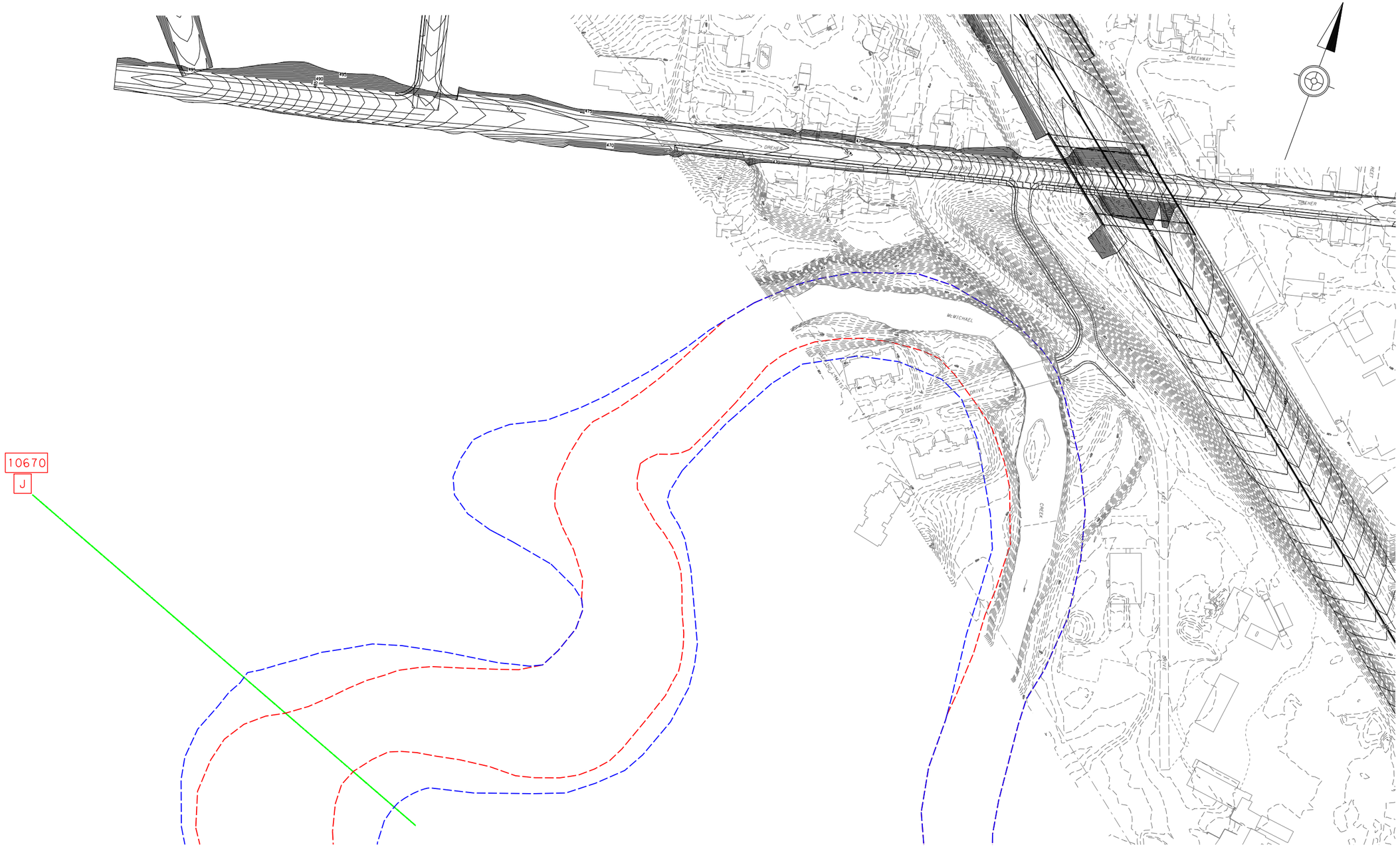
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER MCMICHAEL CREEK EXISTING AND ALTERNATIVE A HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE
MUNICIPALITY: STROUDSBURG BOROUGH



LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (PROPOSED FLOODPLAIN IS THE SAME AS EXISTING EXCEPT WHERE SHOWN)
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- FEMA HYDRAULIC CROSS-SECTION
- EDGE OF WATER

NOTE: ONLY CROSS SECTIONS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAPS ARE DISPLAYED.

SCALE IN FEET

0 200 400

NEWELL TERESKA & MACKAY ENGINEERING
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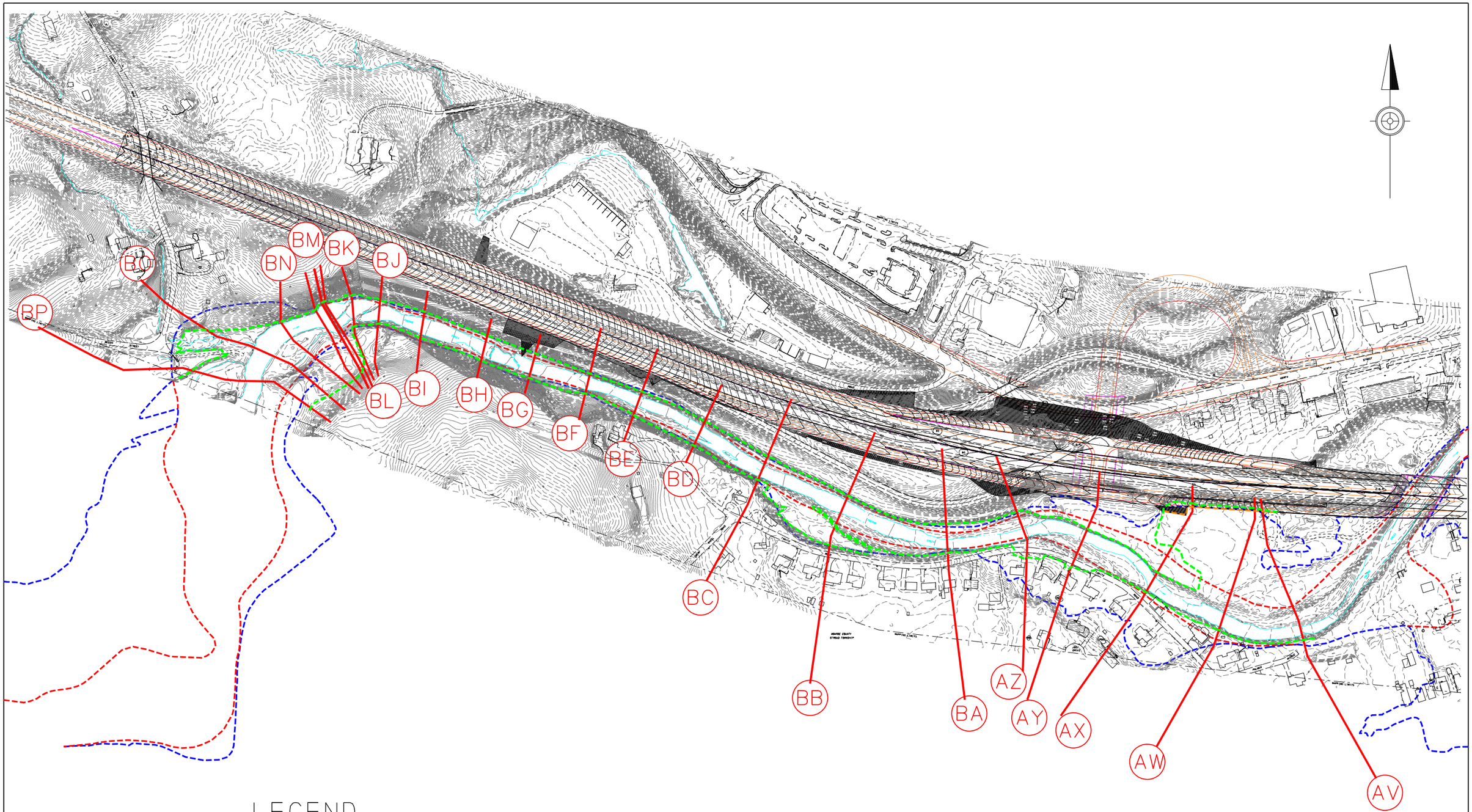
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER MCMICHAEL CREEK EXISTING AND ALTERNATIVE A HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE
MUNICIPALITY: STROUDSBURG BOROUGH



LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (proposed floodplain same as existing unless noted)
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- AV - FEMA SECTION IDENTIFICATION
- EDGE OF WATER

SCALE IN FEET

0 350 700

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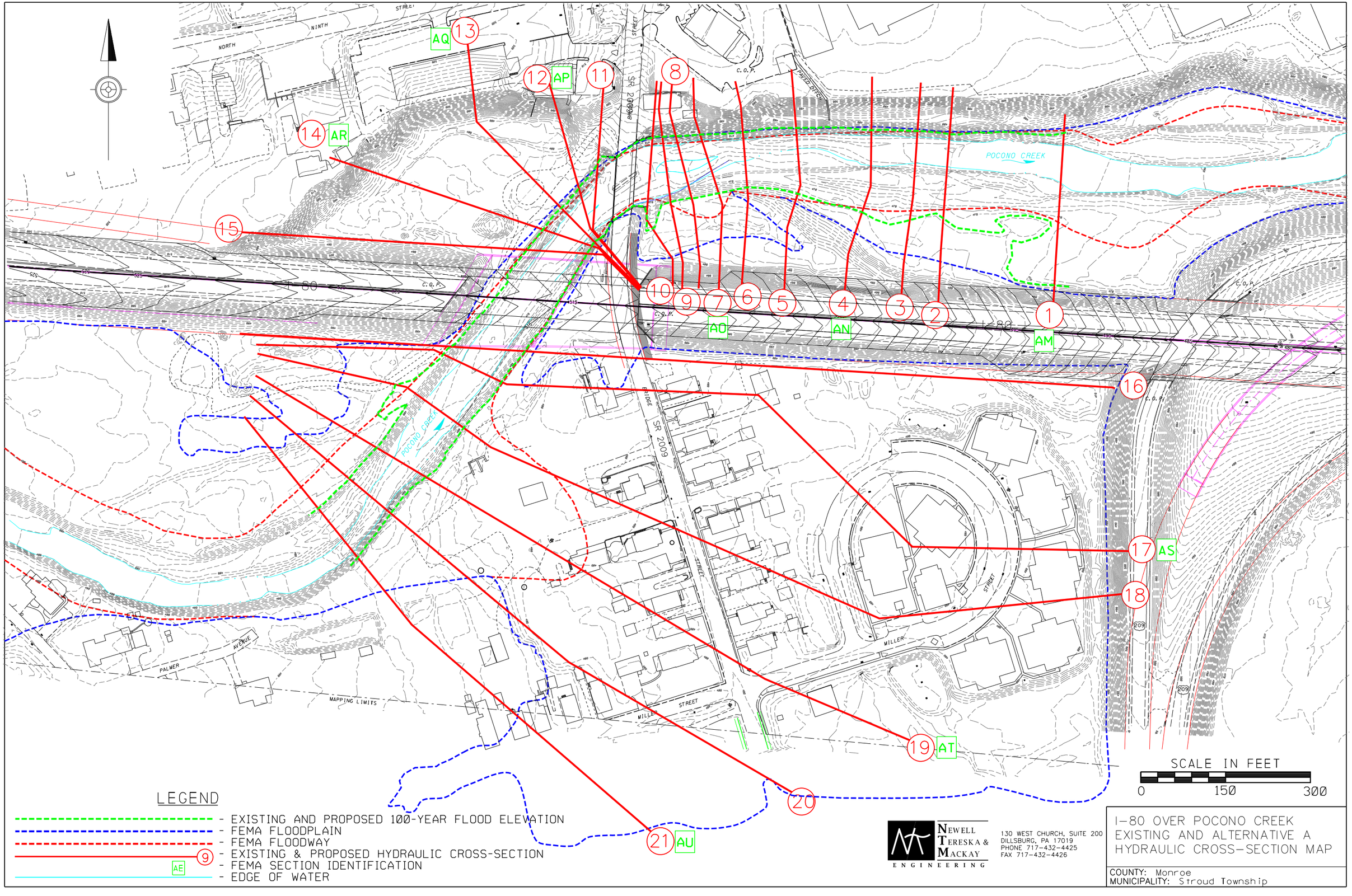
FAX 717-432-4426

I-80 OVER POCONO CREEK
EXISTING AND ALTERNATIVE A
HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE CO.
MUNICIPALITY: STROUD TWP.



LEGEND

- EXISTING AND PROPOSED 100-YEAR FLOOD ELEVATION
- FEMA FLOODPLAIN
- FEMA FLOODWAY
- (9) - EXISTING & PROPOSED HYDRAULIC CROSS-SECTION
- AE - FEMA SECTION IDENTIFICATION
- EDGE OF WATER

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FAX 717-432-4426

I-80 OVER POCONO CREEK
EXISTING AND ALTERNATIVE A
HYDRAULIC CROSS-SECTION MAP

COUNTY: Monroe
MUNICIPALITY: Stroud Township

AL AK AJ AI AH AG AF AE AD AC AB AA

CREEK

POCONO

CREEK

MARPLE LIMITS

STROUD TOWNSHIP
STROUDSBURG BOROUGH

STREET

POOL

MAPLE COURT

PEARL ALLEY

POKONA AVENUE

ZEL STREET

SCALE IN FEET

0 200 400

LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION
  (proposed floodplain same as existing unless noted)
- FEMA FLOODPLAIN
- FEMA FLOODWAY
- AA - FEMA HYDRAULIC CROSS-SECTION
- EDGE OF WATER

NEWELL TERESKA & MACKAY ENGINEERING
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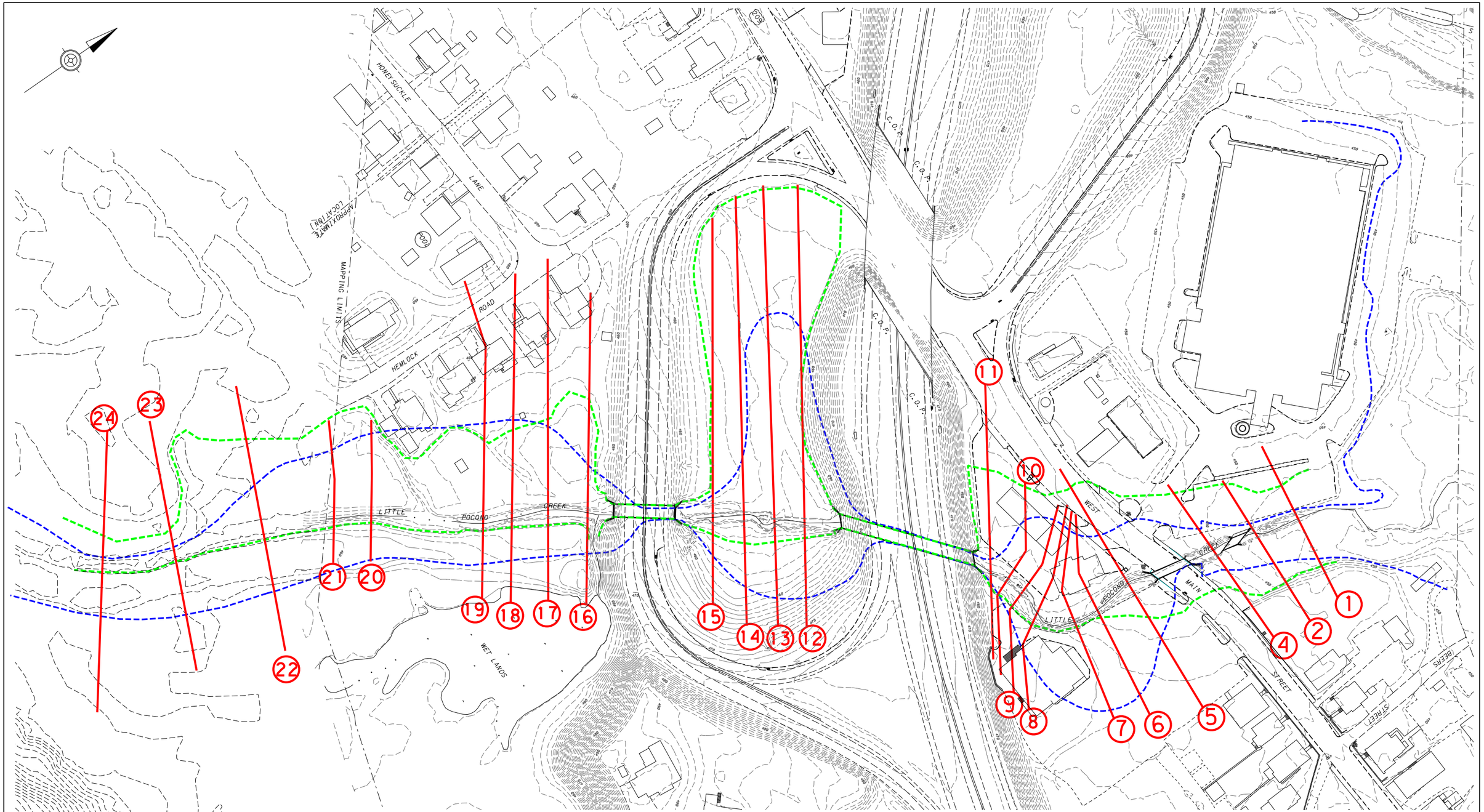
FAX 717-432-4426

I-80 OVER POCONO CREEK
EXISTING AND ALTERNATIVE A
HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE
MUNICIPALITY: STROUD



SCALE IN FEET

0 125 250

LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- FEMA FLOODPLAIN
- HYDRAULIC CROSS-SECTION
- EDGE OF WATER

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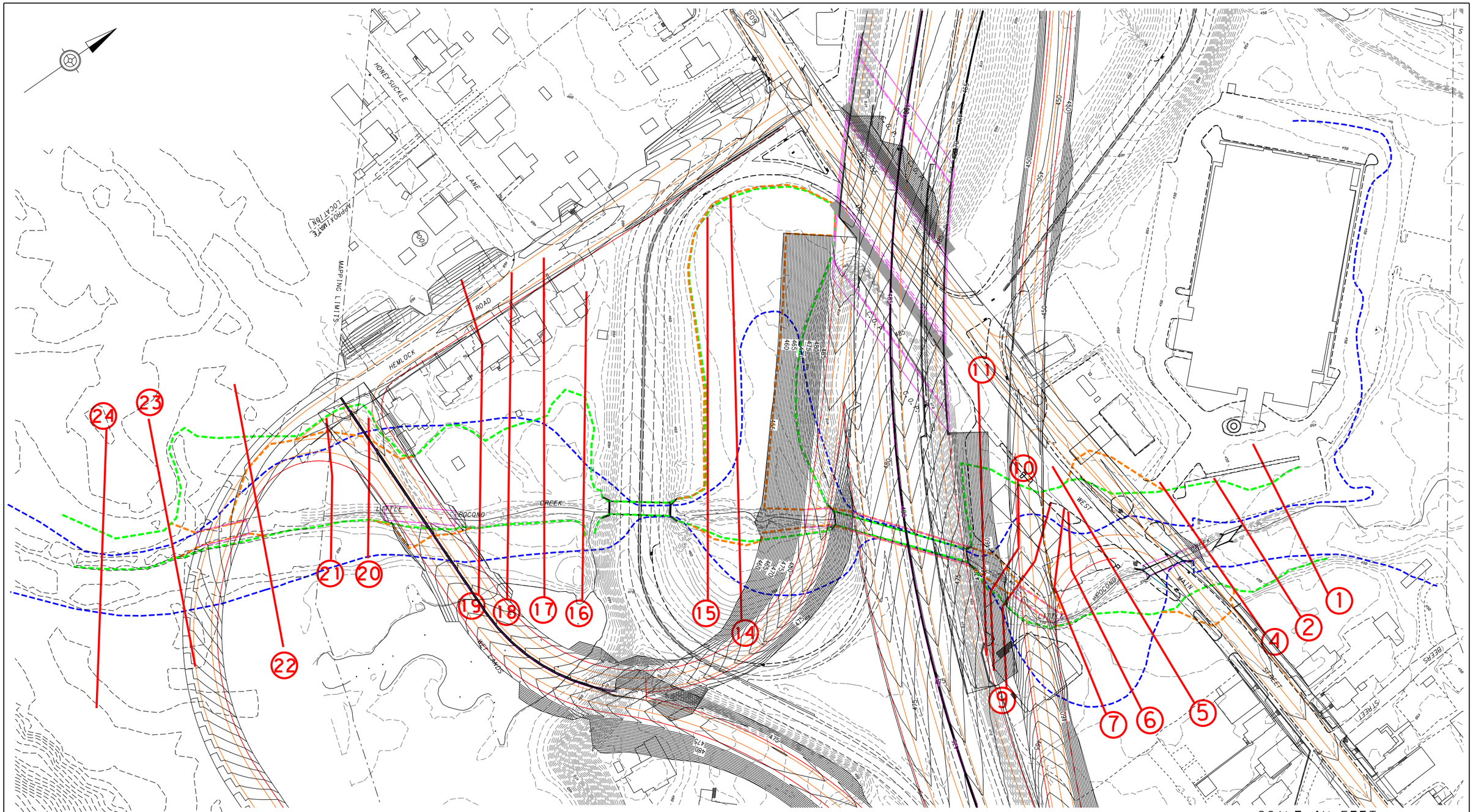
FAX 717-432-4426

I-80 OVER LITTLE POCONO CREEK
EXISTING
HYDRAULIC CROSS-SECTION MAP

COUNTY: Monroe Co.
MUNICIPALITY: Stroudsburg Borough



SCALE IN FEET

0 125 250

LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION
- FEMA FLOODPLAIN
- HYDRAULIC CROSS-SECTION
- EDGE OF WATER

NEWELL TERESKA & MACKAY ENGINEERING

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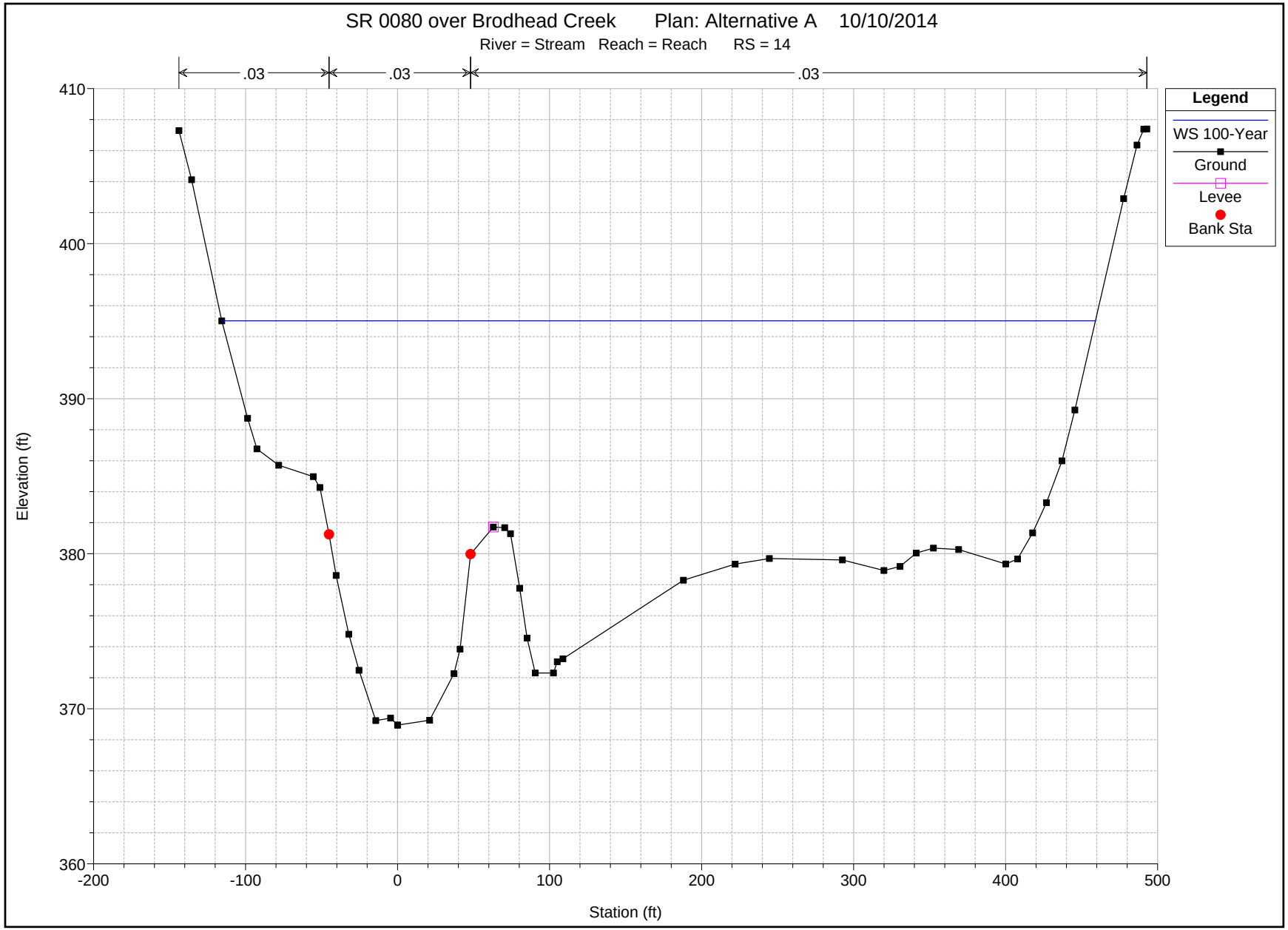
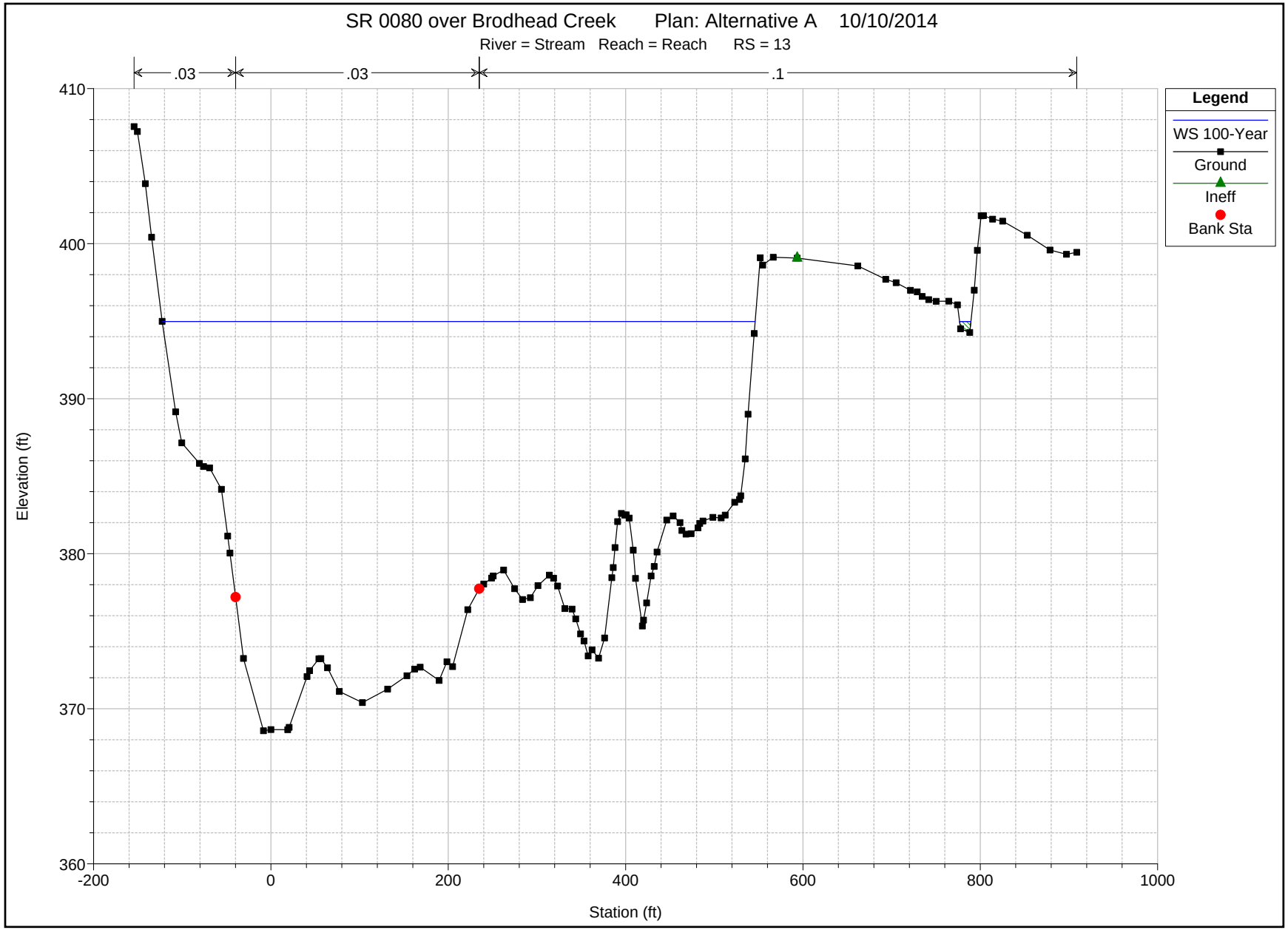
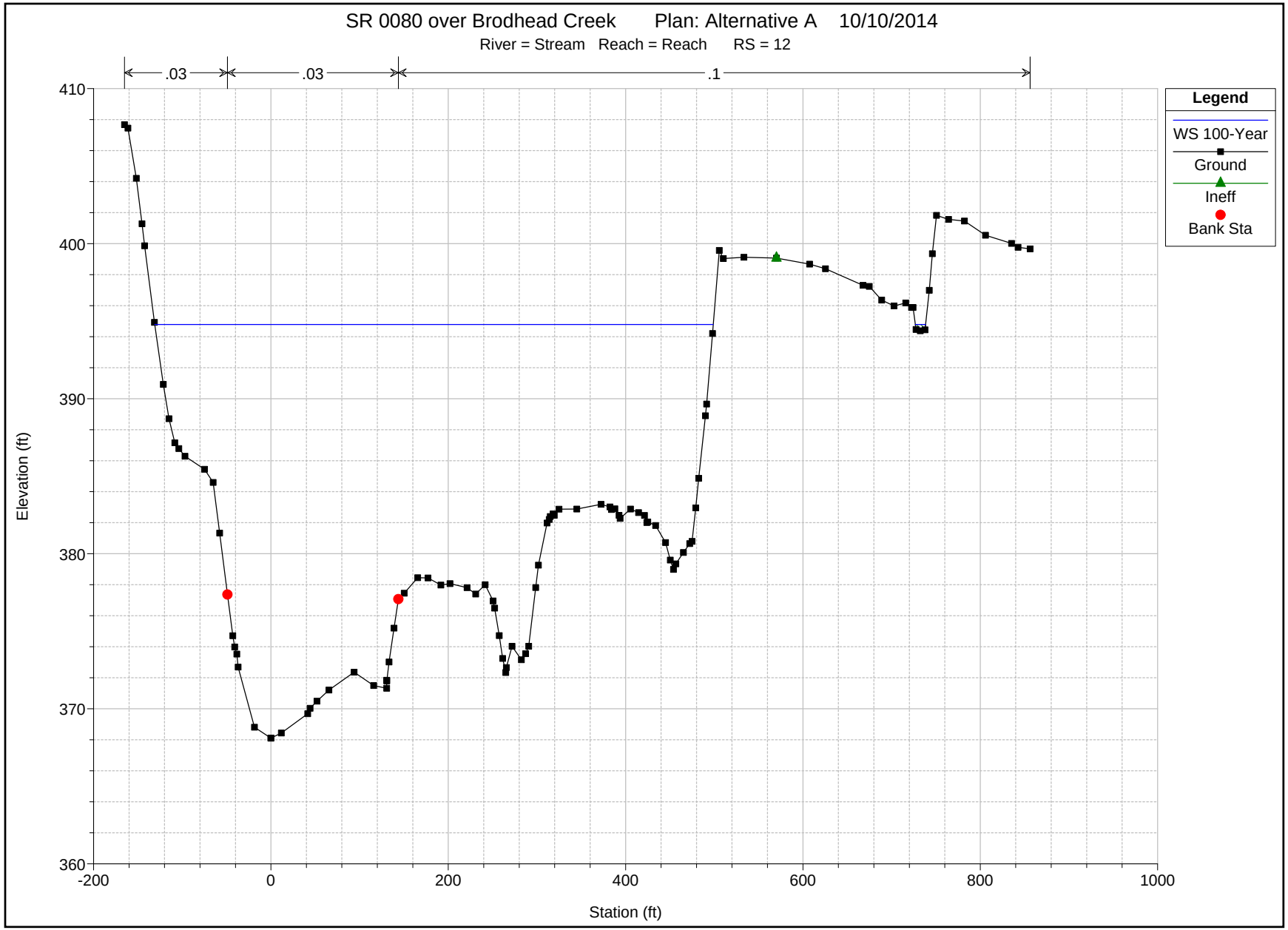
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

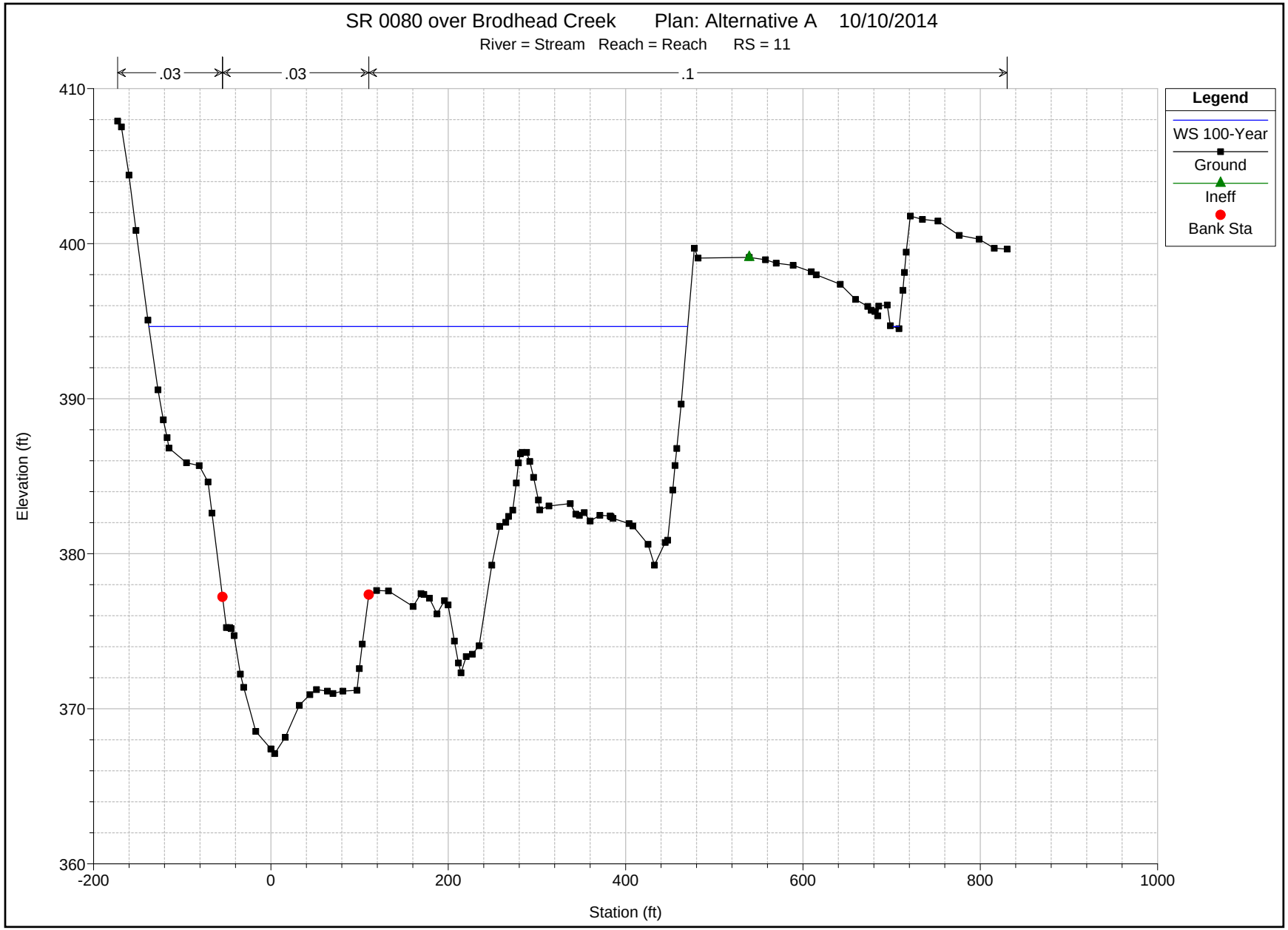
I-80 OVER LITTLE POCONO CREEK
ALTERNATIVE A
HYDRAULIC CROSS-SECTION MAP

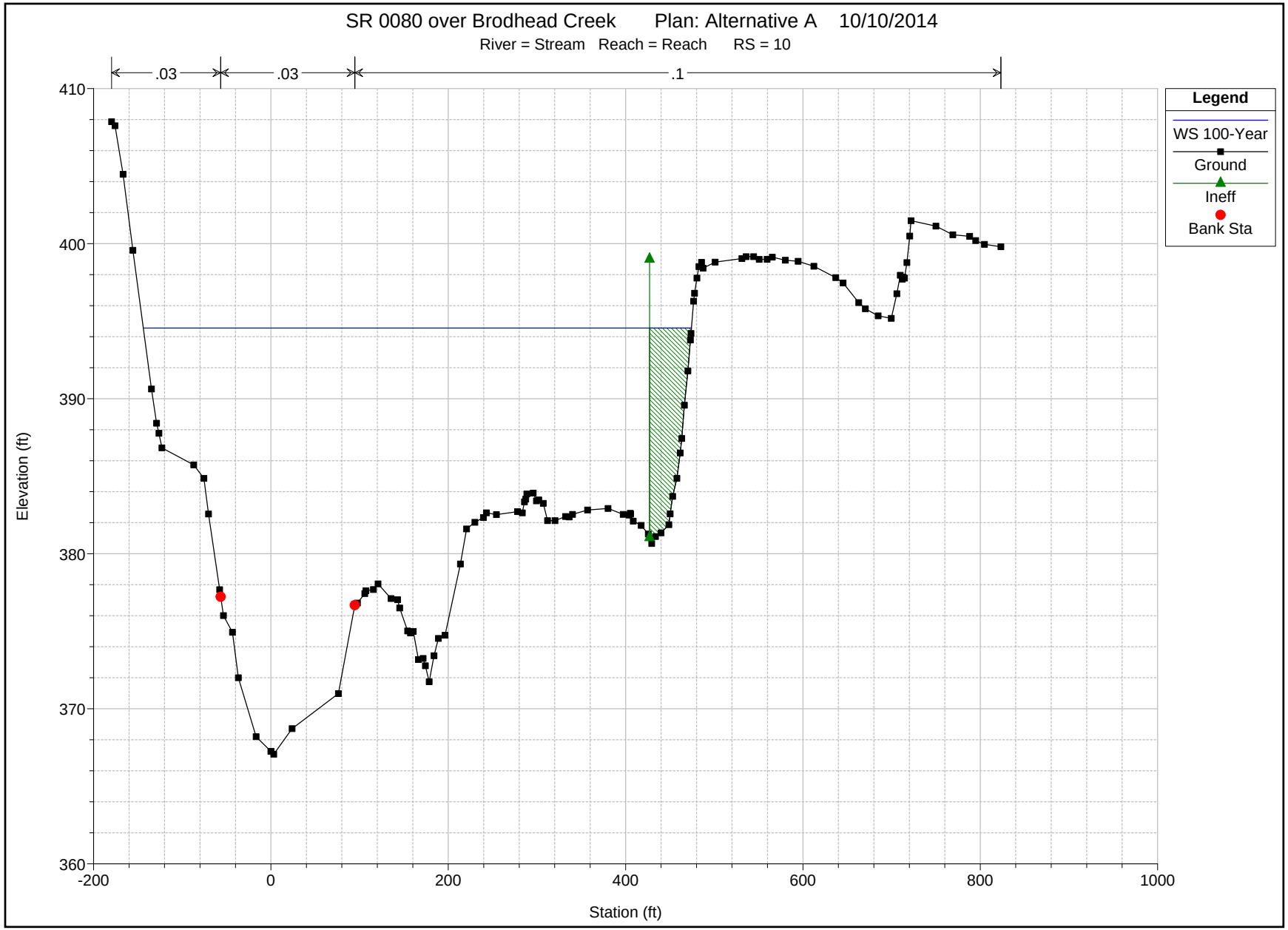
COUNTY: Monroe Co.
MUNICIPALITY: Stroudsburg Borough

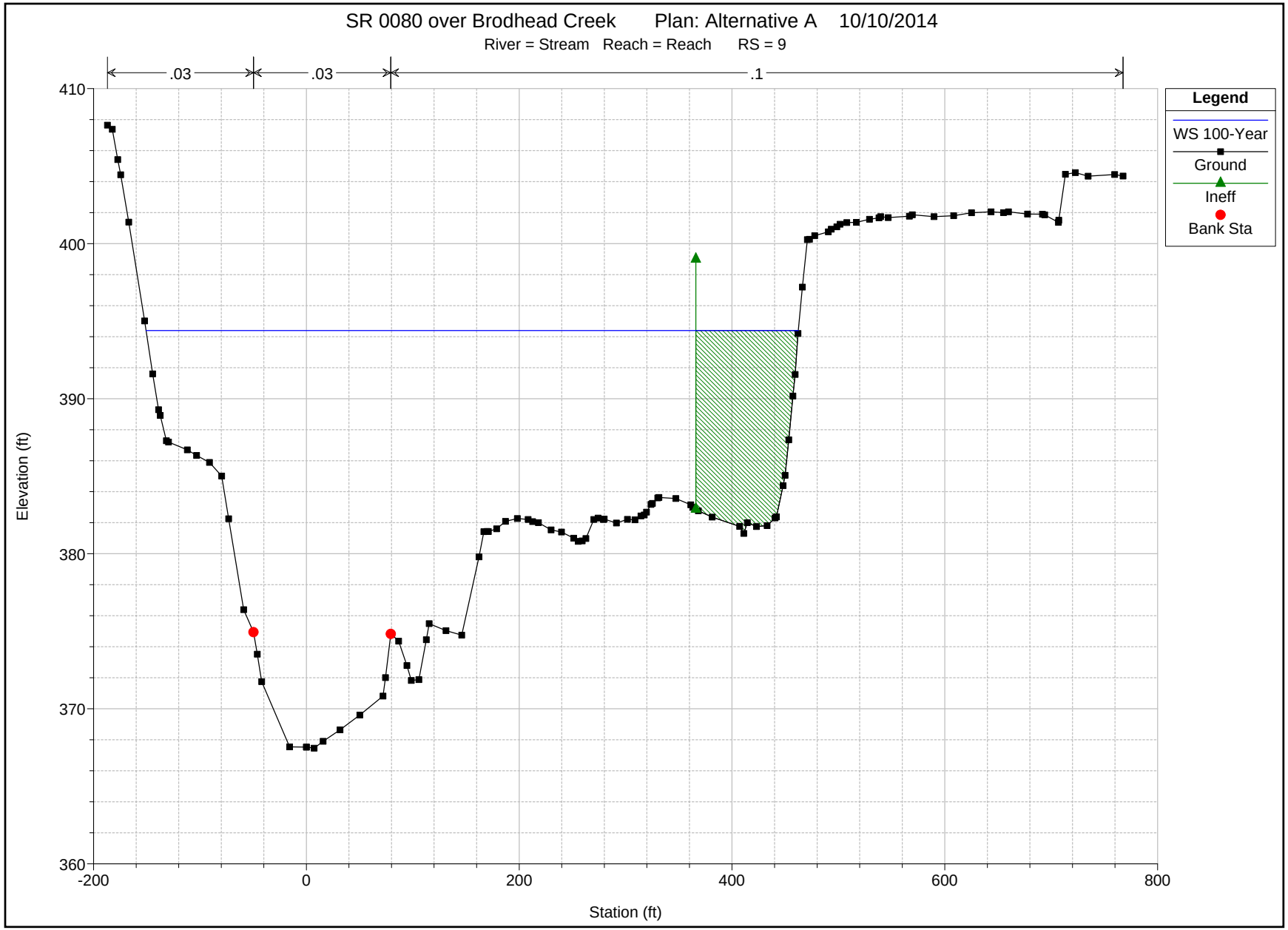

SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 14
.03
.03
.03
Legend
WS 100-Year
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
410
400
390
380
370
360
-200
-100
0
100
200
300
400
500

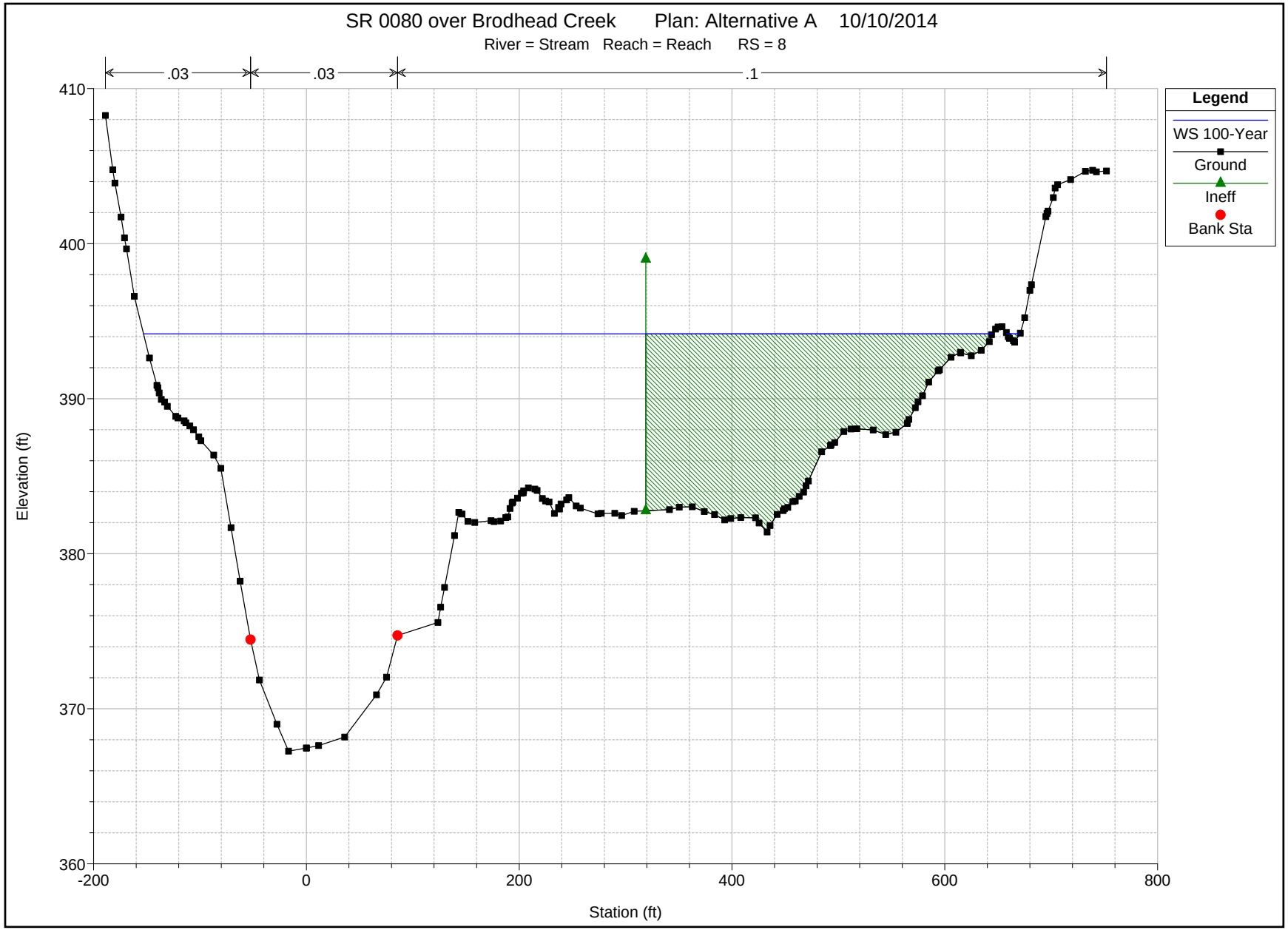

SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 13
.03
.03
.1
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
410
400
390
380
370
360
-200
0
200
400
600
800
1000

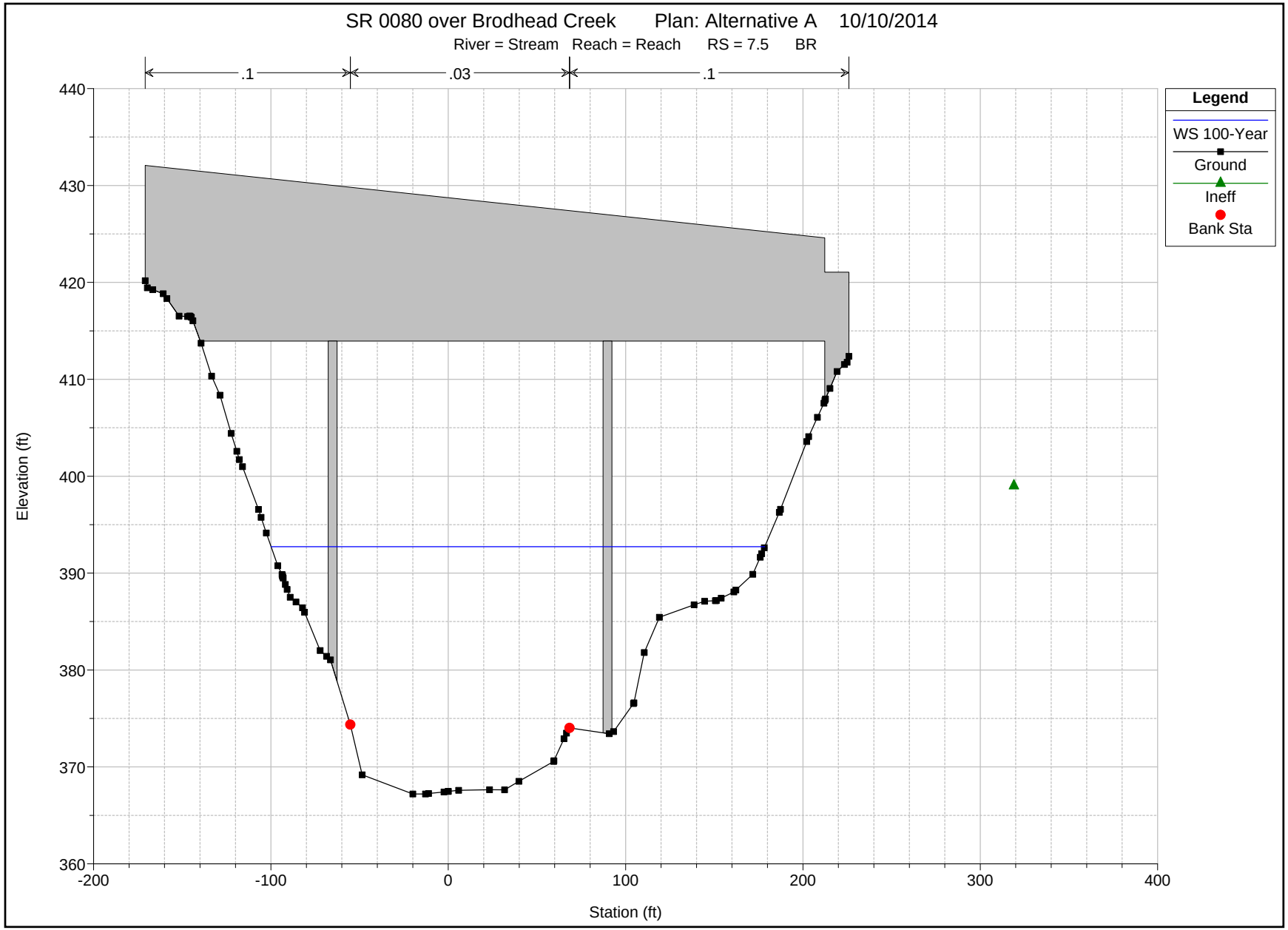

SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 12
.03
.03
.1
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
410
400
390
380
370
360
-200
0
200
400
600
800
1000


SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 11
.03
.03
.1
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
410
400
390
380
370
360
-200
0
200
400
600
800
1000


SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 10
.03
.03
.1
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
410
400
390
380
370
360
-200
0
200
400
600
800
1000


SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 9
.03
.03
.1
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
410
400
390
380
370
360
-200
0
200
400
600
800


SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 8
.03
.03
.1
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
410
400
390
380
370
360
-200
0
200
400
600
800


SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 7.5 BR
.1
.03
.1
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
440
430
420
410
400
390
380
370
360
-200
-100
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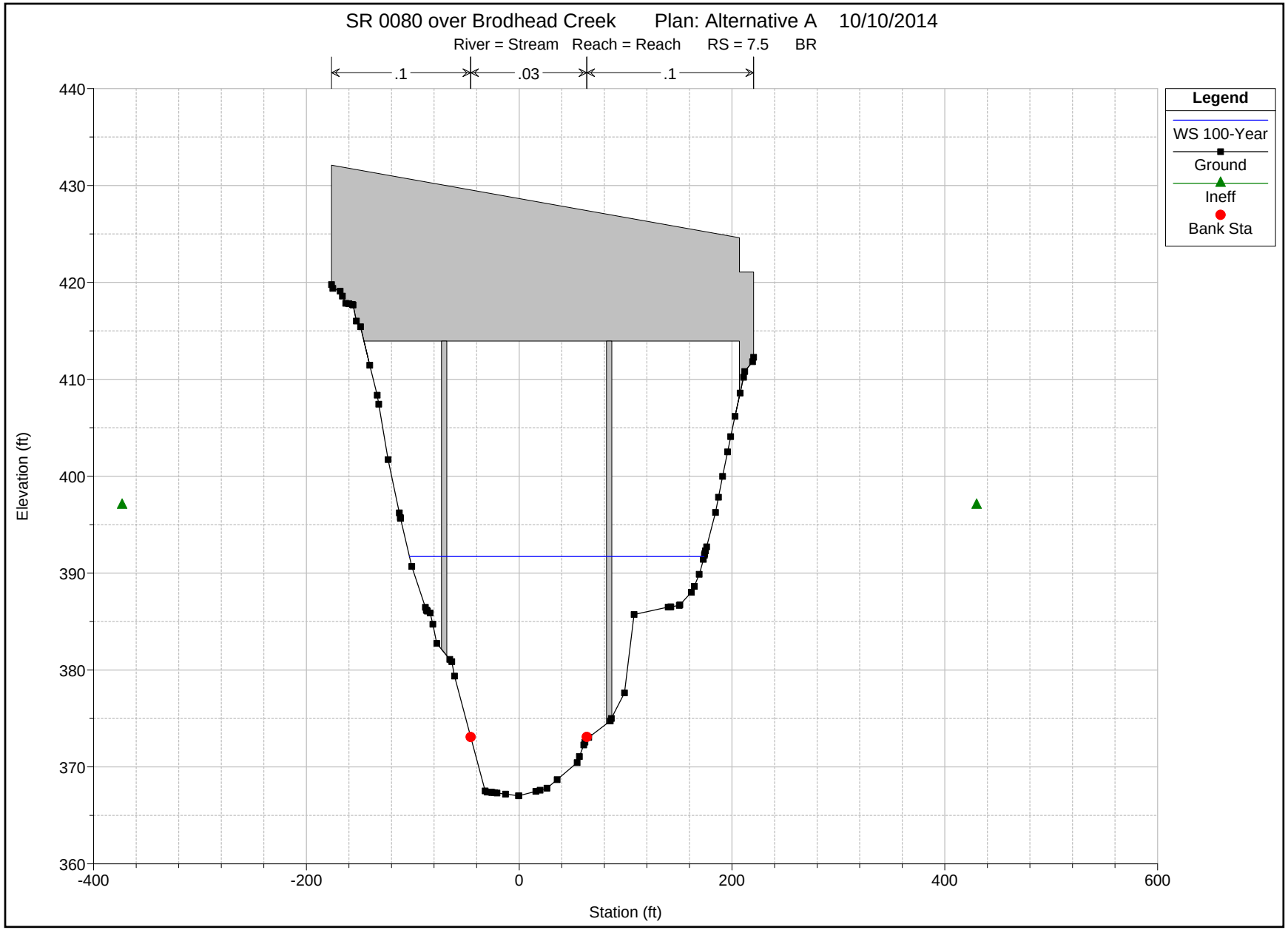
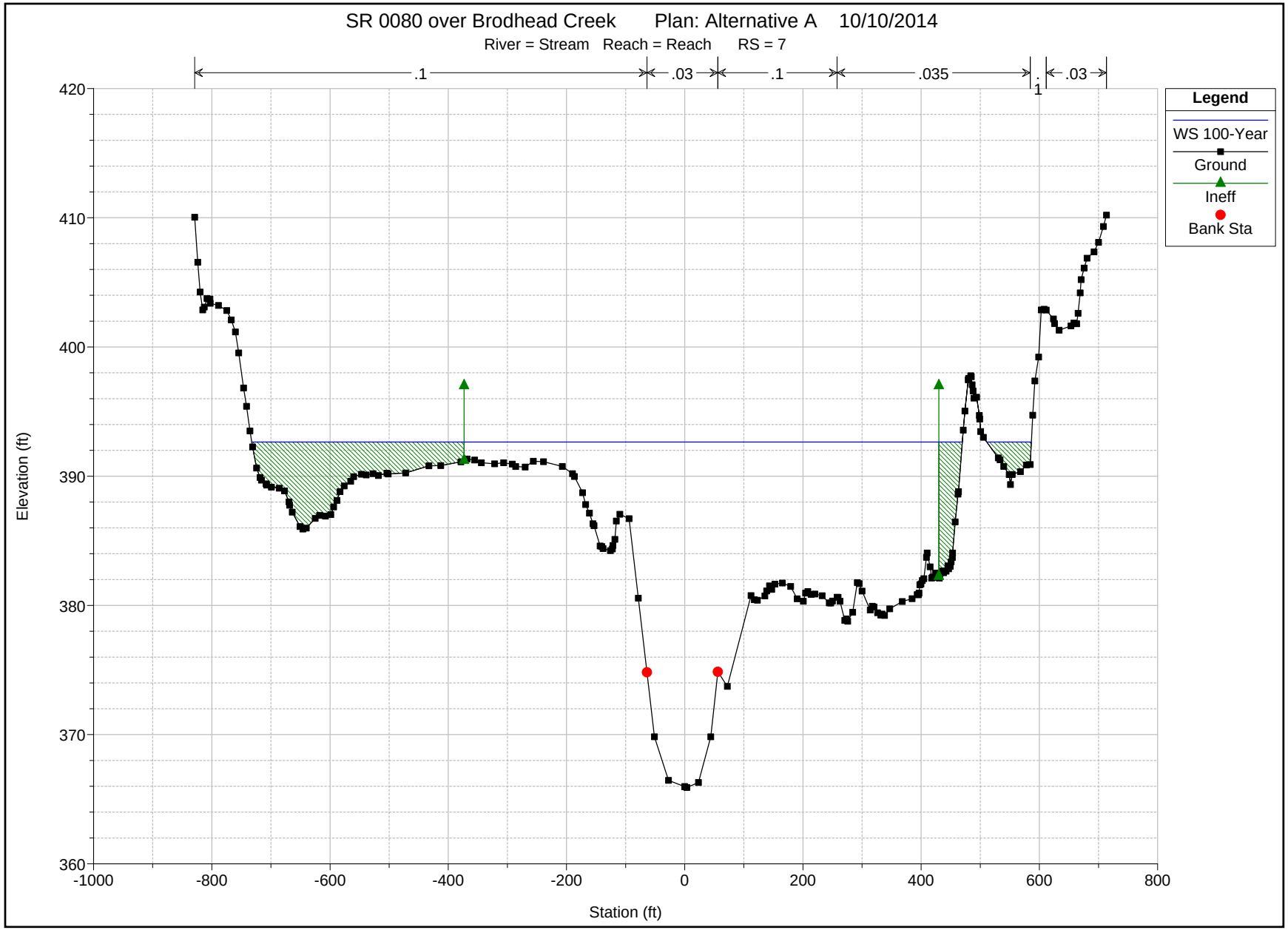
100
200
300
400


SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 7.5 BR
.1
.03
.1
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
440
430
420
410
400
390
380
370
360
-400
-200
0
200
400
600


SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 7
.1
.03
.1
.035
.
1
.03
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
420
410
400
390
380
370
360
-1000
-800
-600
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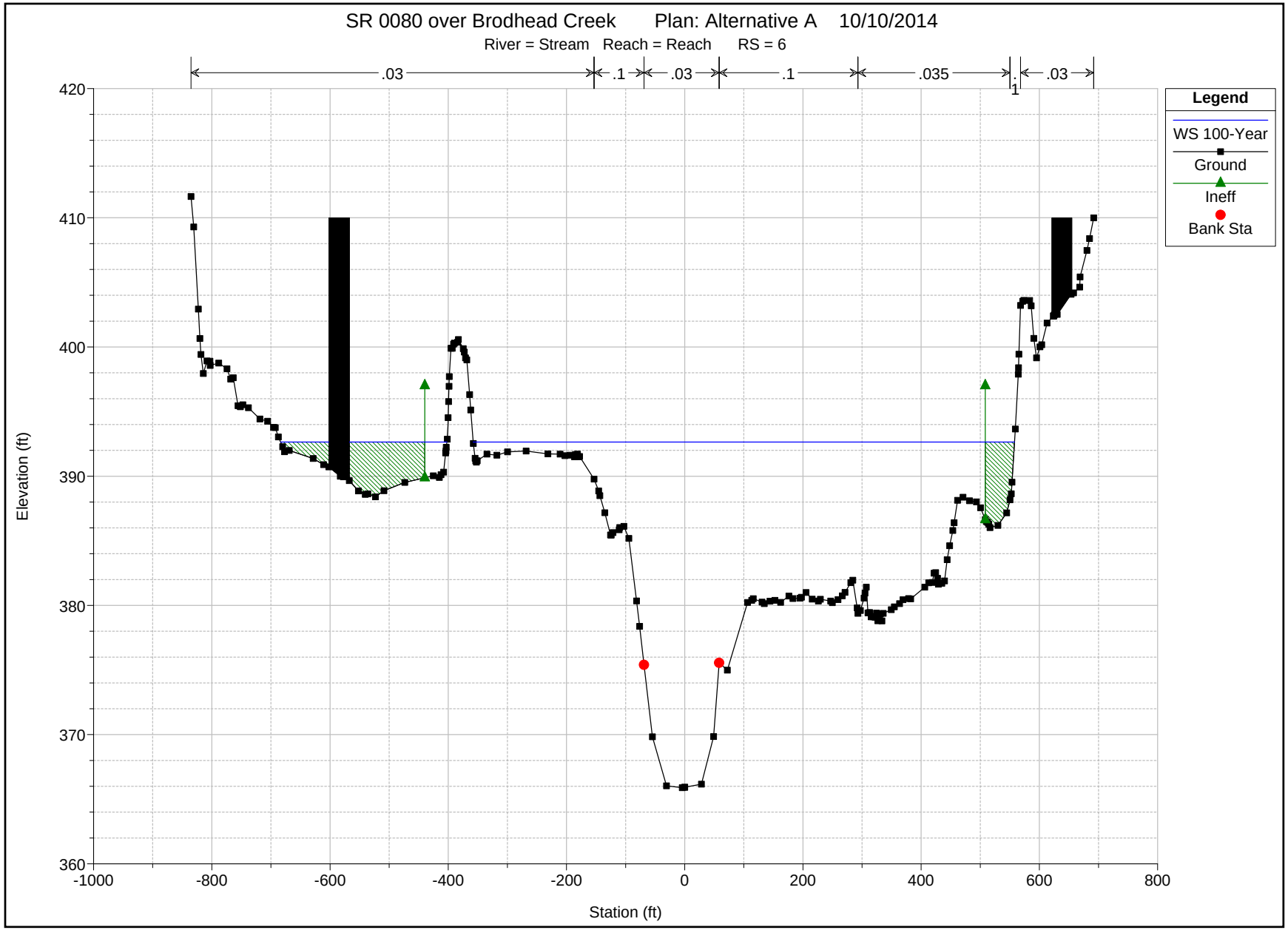
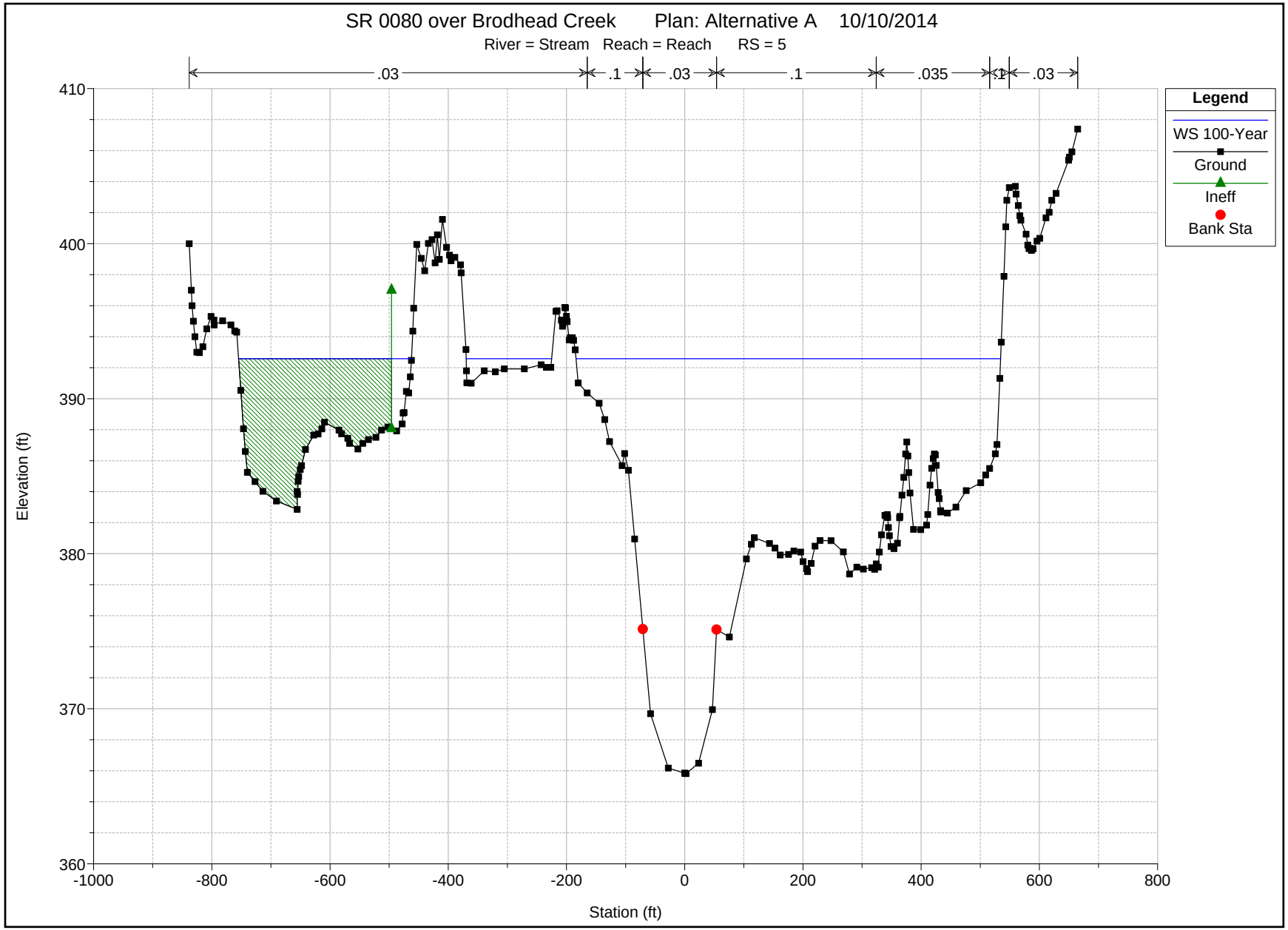
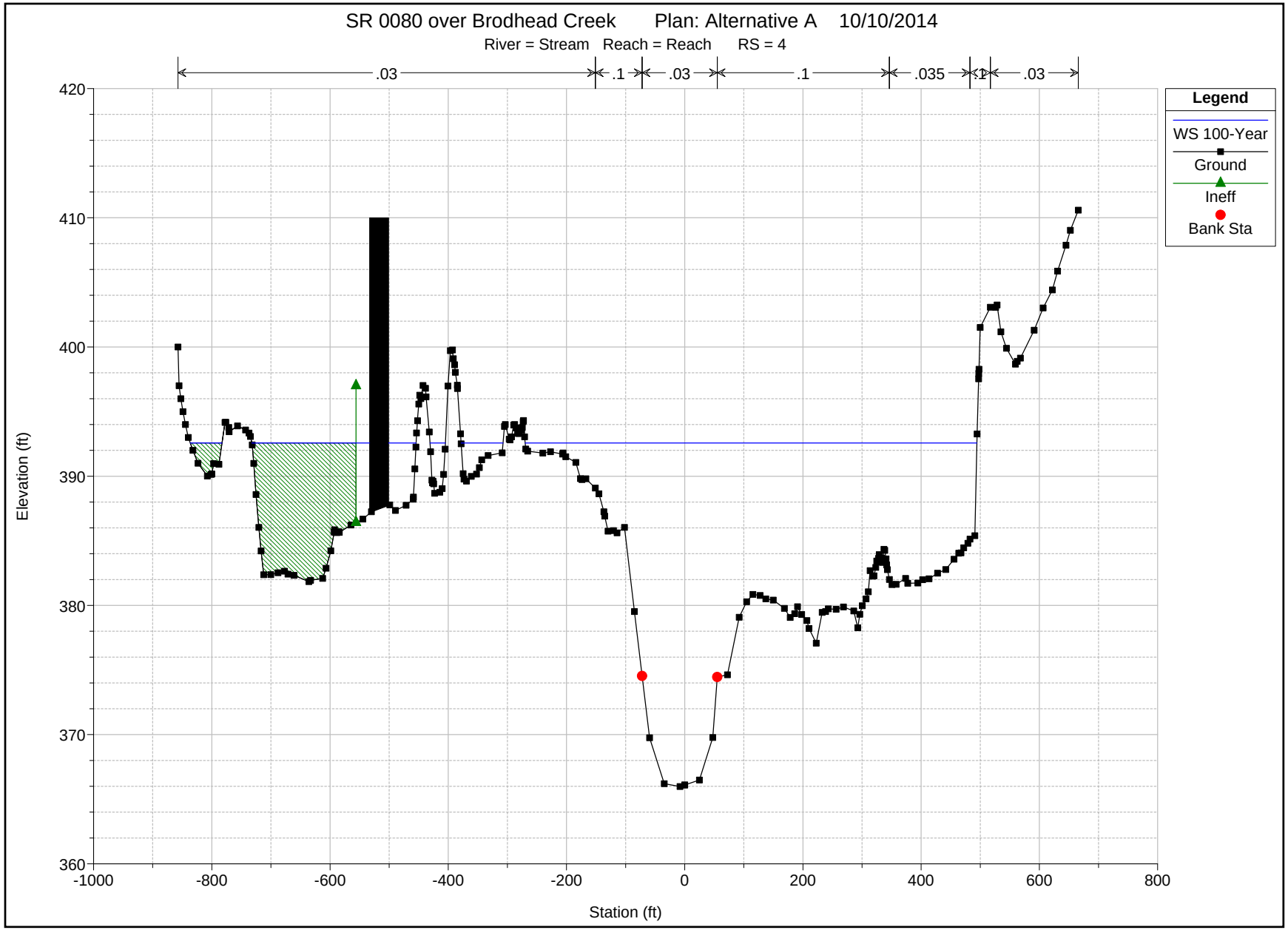
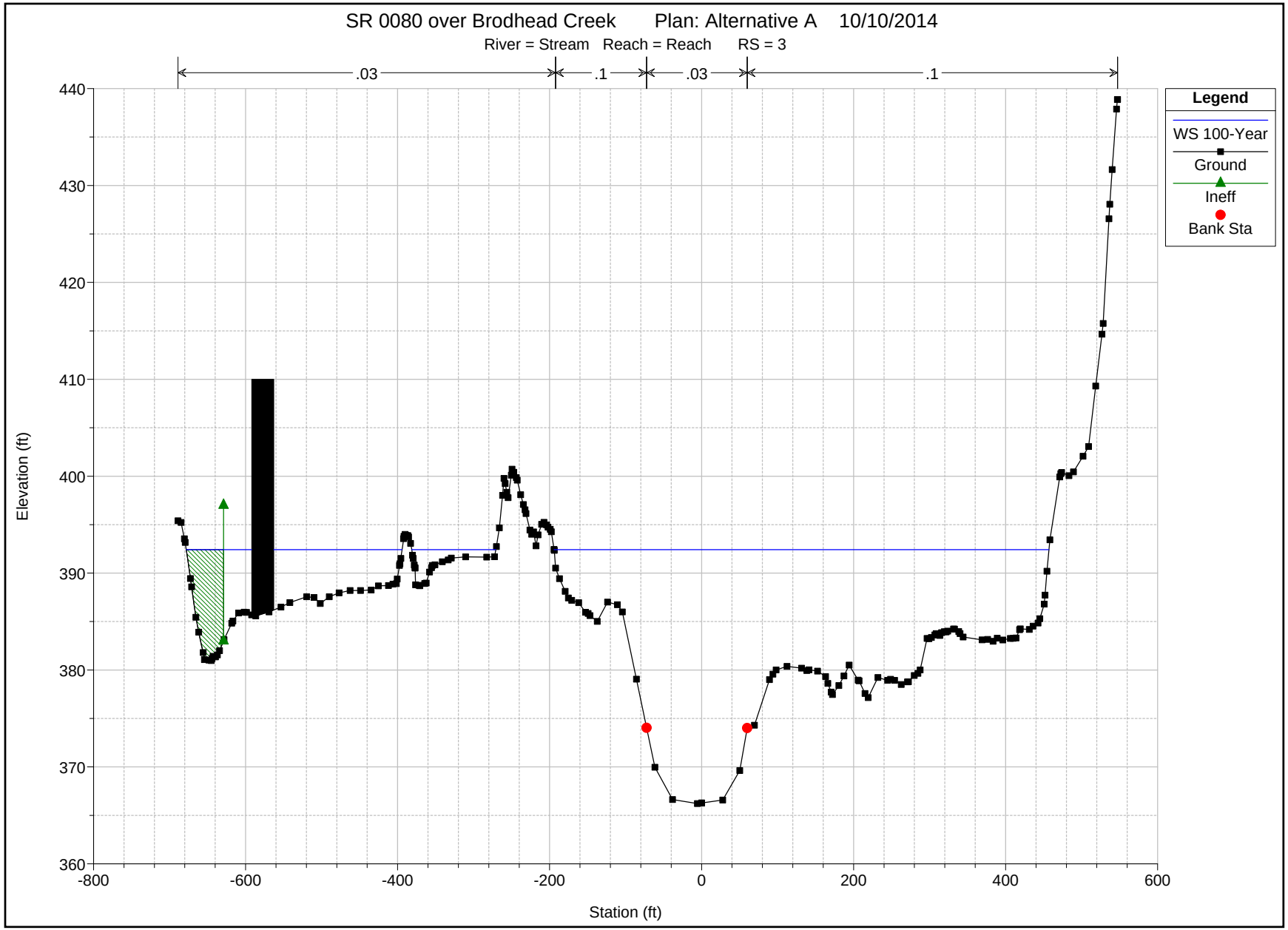
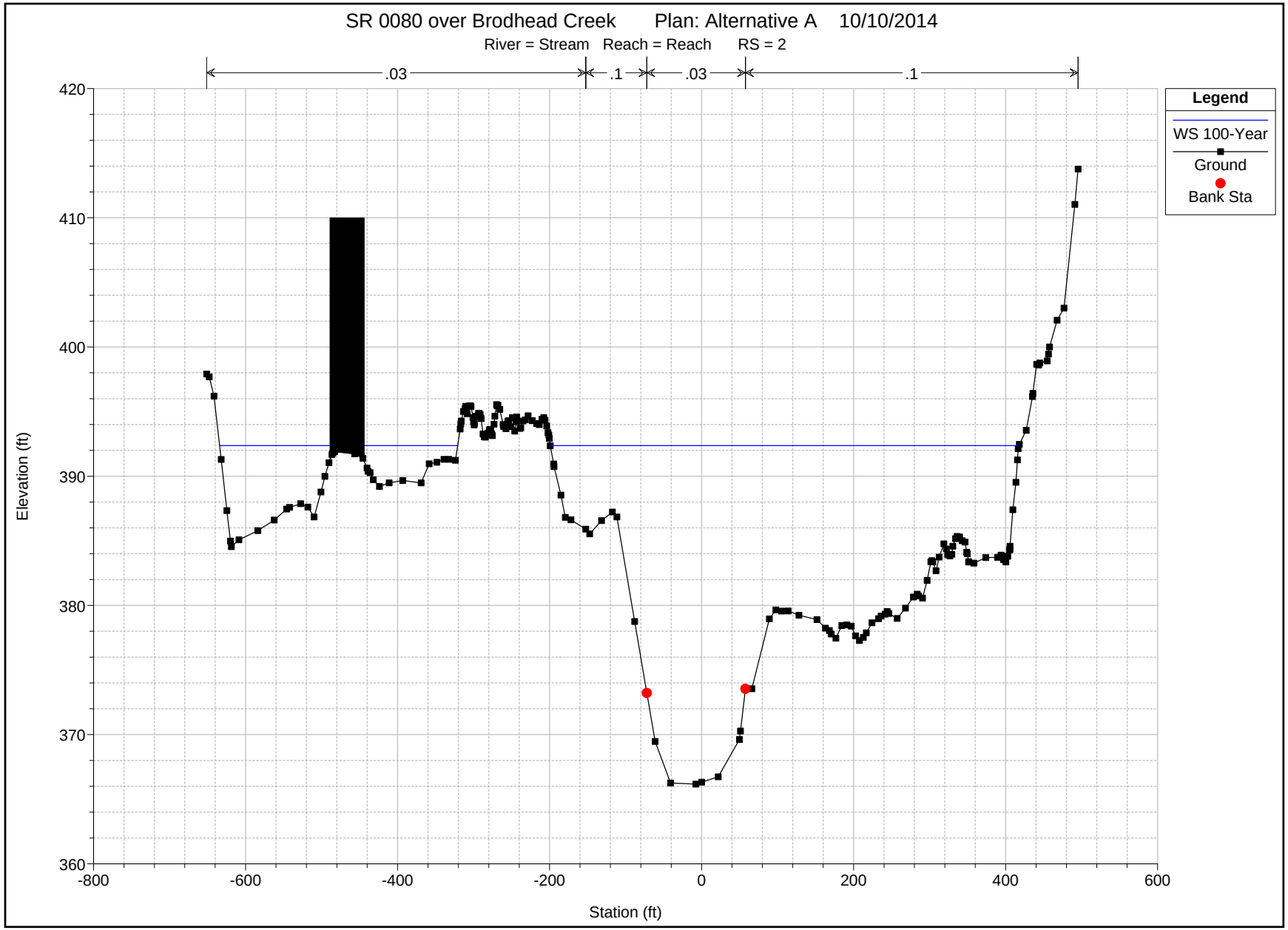
-200
0
200
400
600
800
Station (ft)

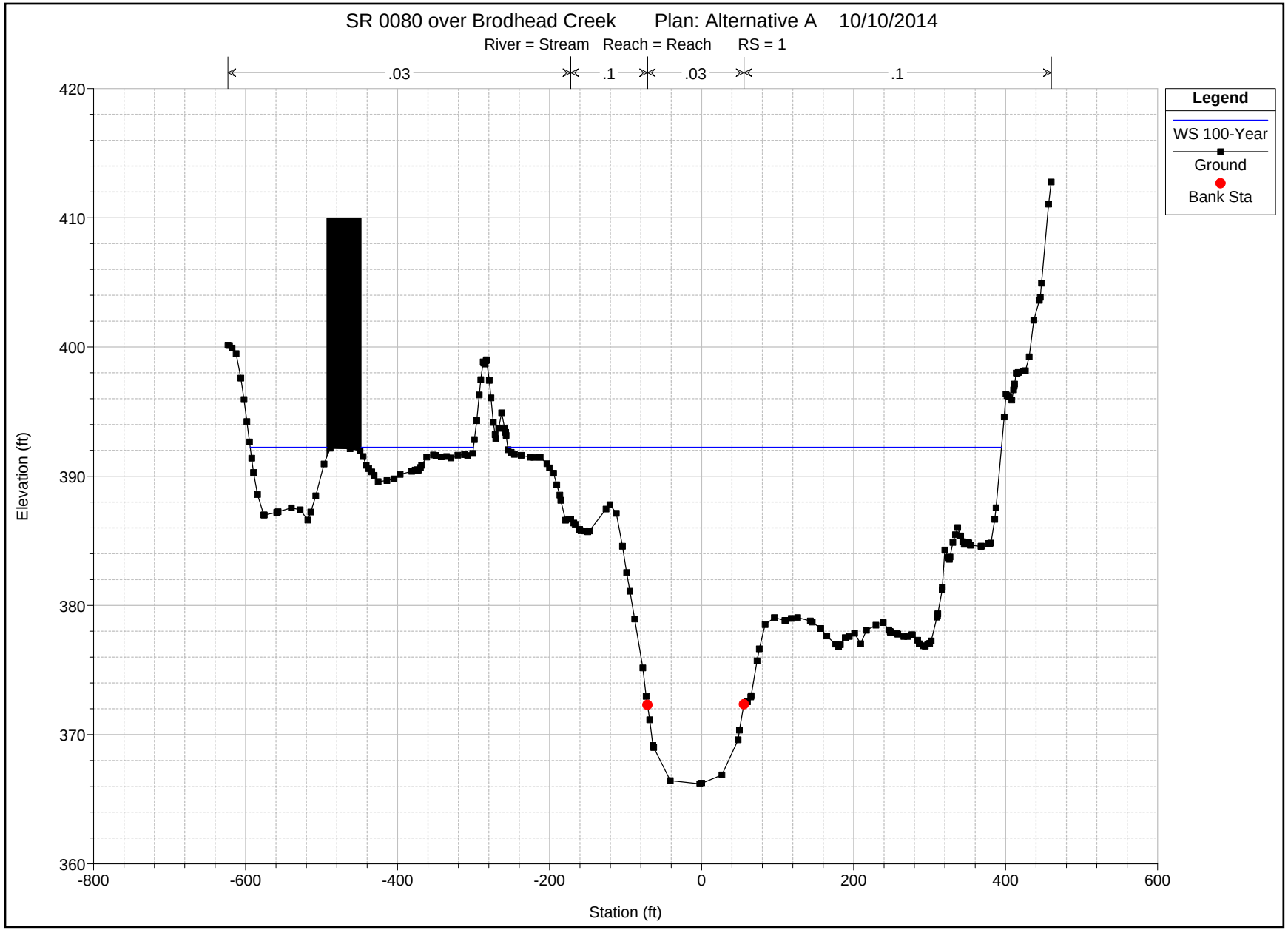

SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 6
.03
.1
.03
.1
.035
.1
.03
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
420
410
400
390
380
370
360
-1000
-800
-600
-400
-200
0
200
400
600
800
Station (ft)

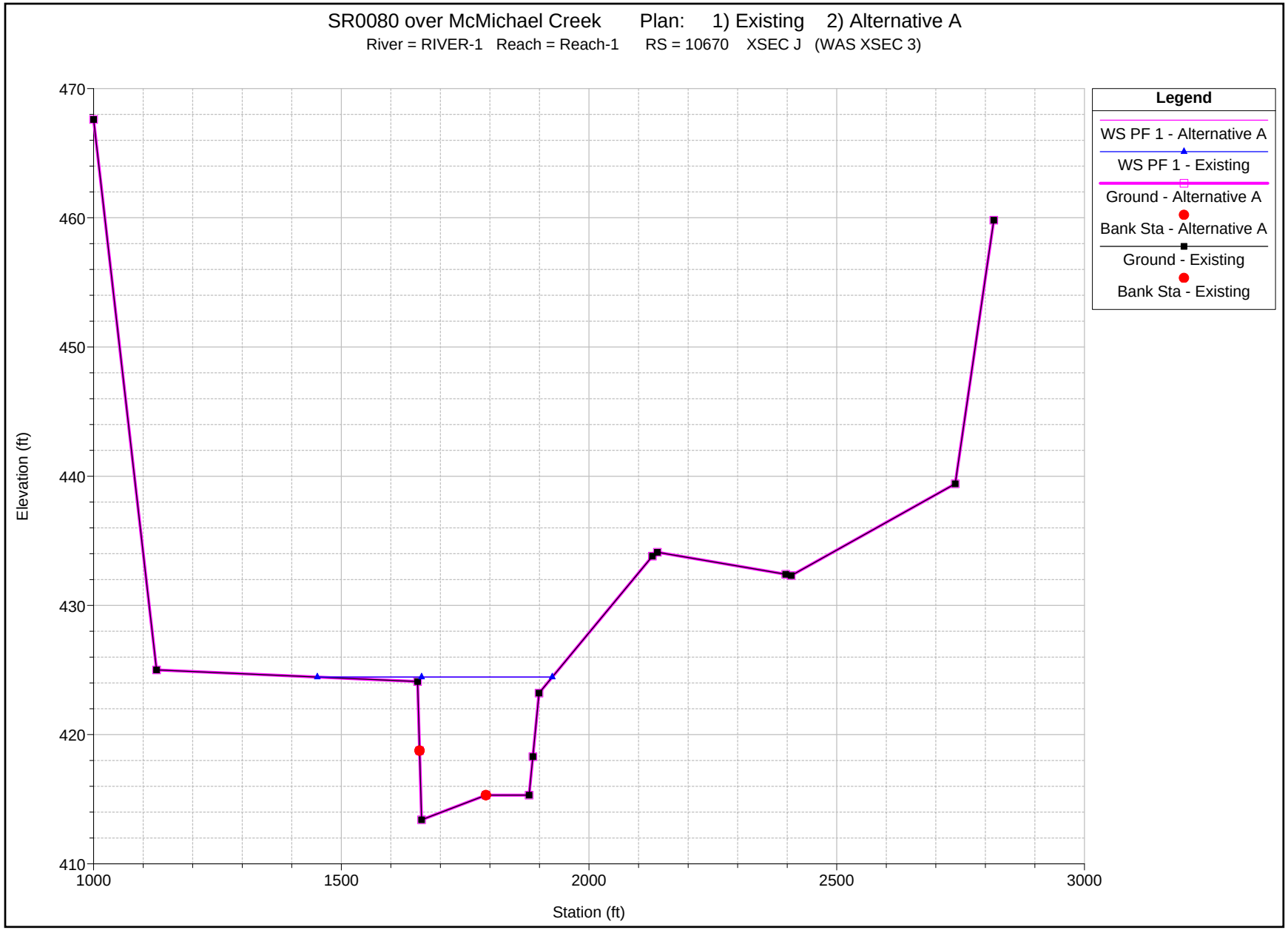

SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 5
.03
.1
.03
.1
.035
.1
.03
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
410
400
390
380
370
360
-1000
-800
-600
-400
-200
0
200
400
600
800

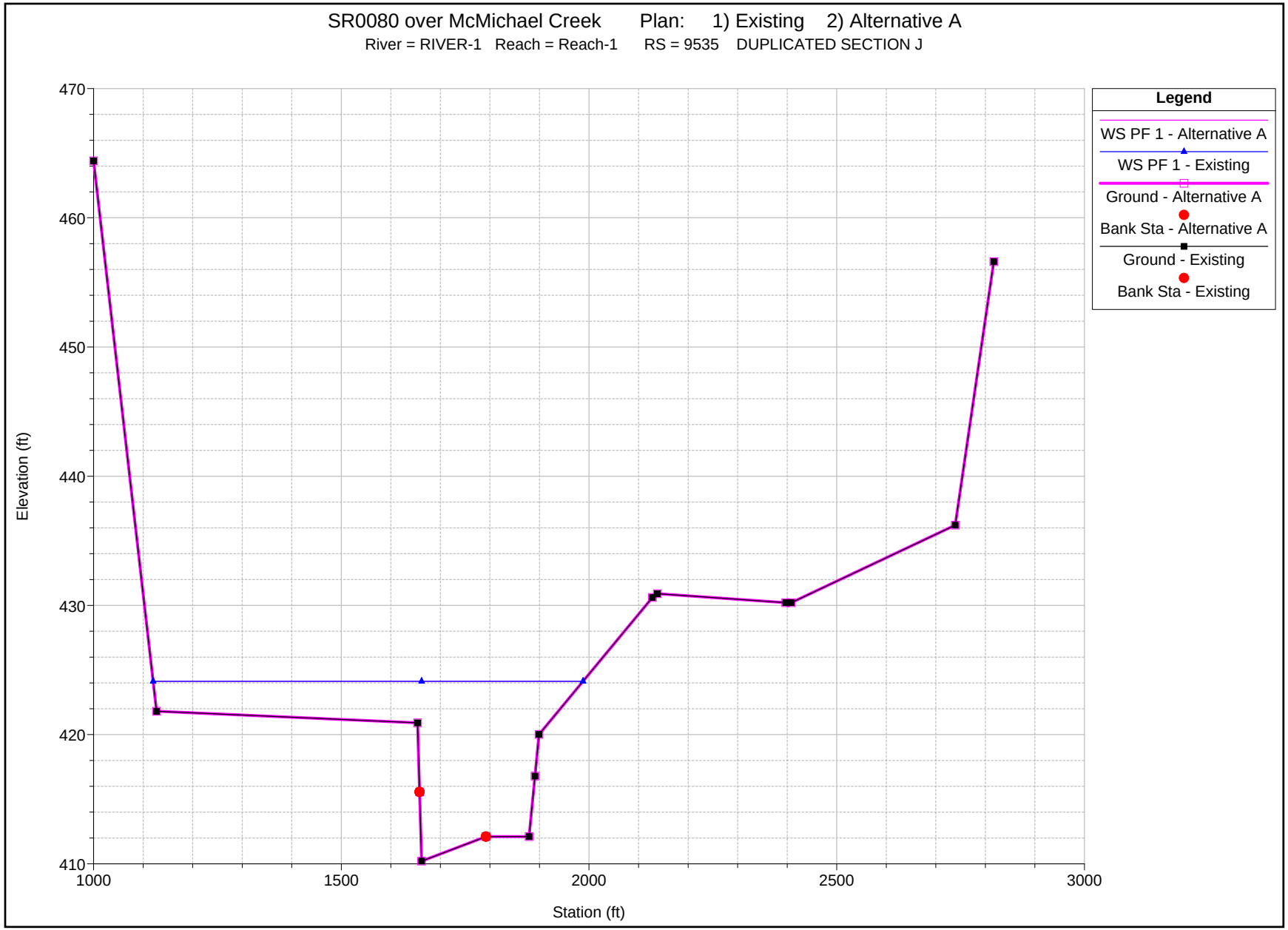

SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 4
.03
.1
.03
.1
.035
.1
.03
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
420
410
400
390
380
370
360
-1000
-800
-600
-400
-200
0
200
400
600
800
Station (ft)

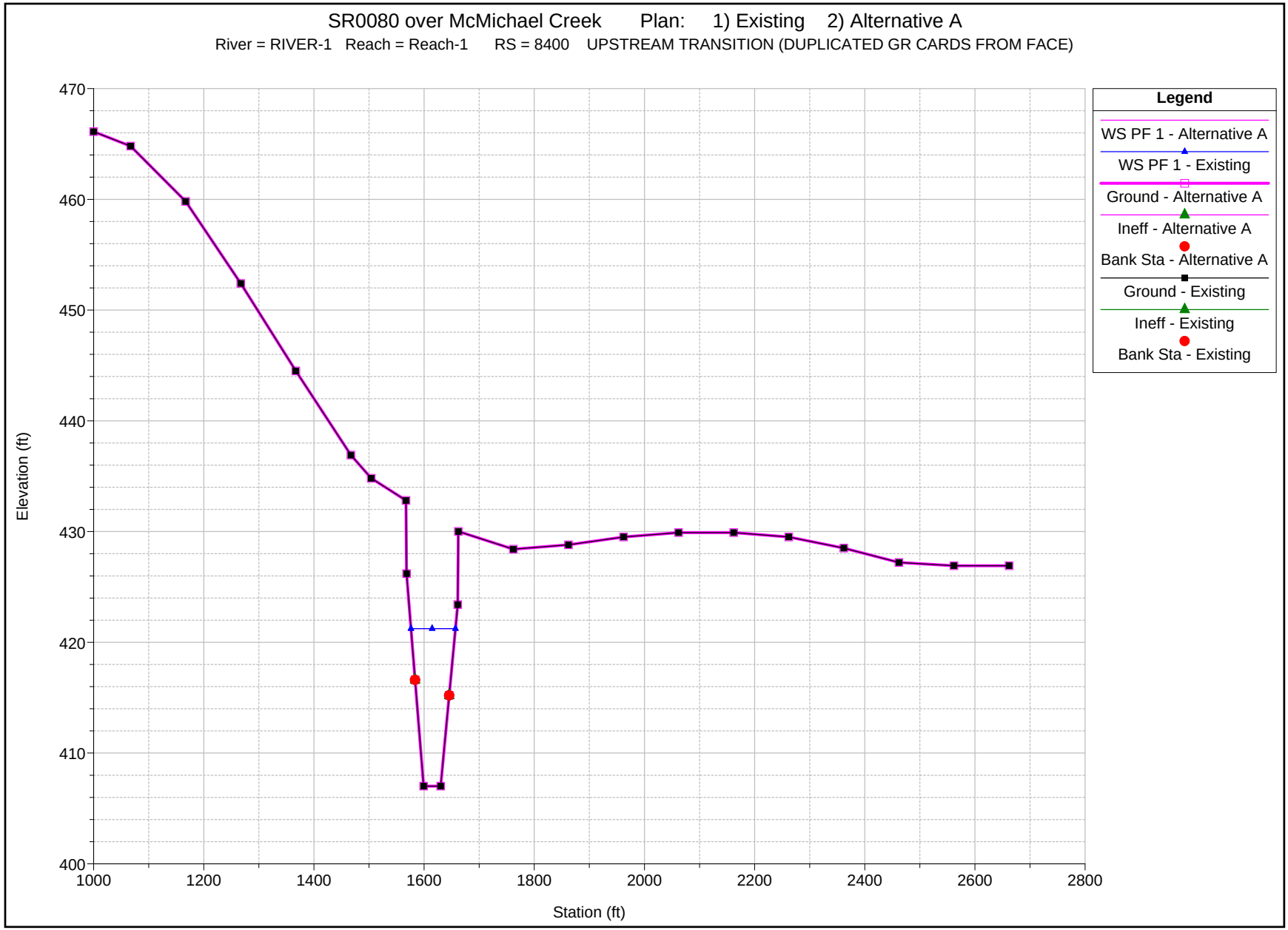

SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 3
.03
.1
.03
.1
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
440
430
420
410
400
390
380
370
360
-800
-600
-400
-200
0
200
400
600

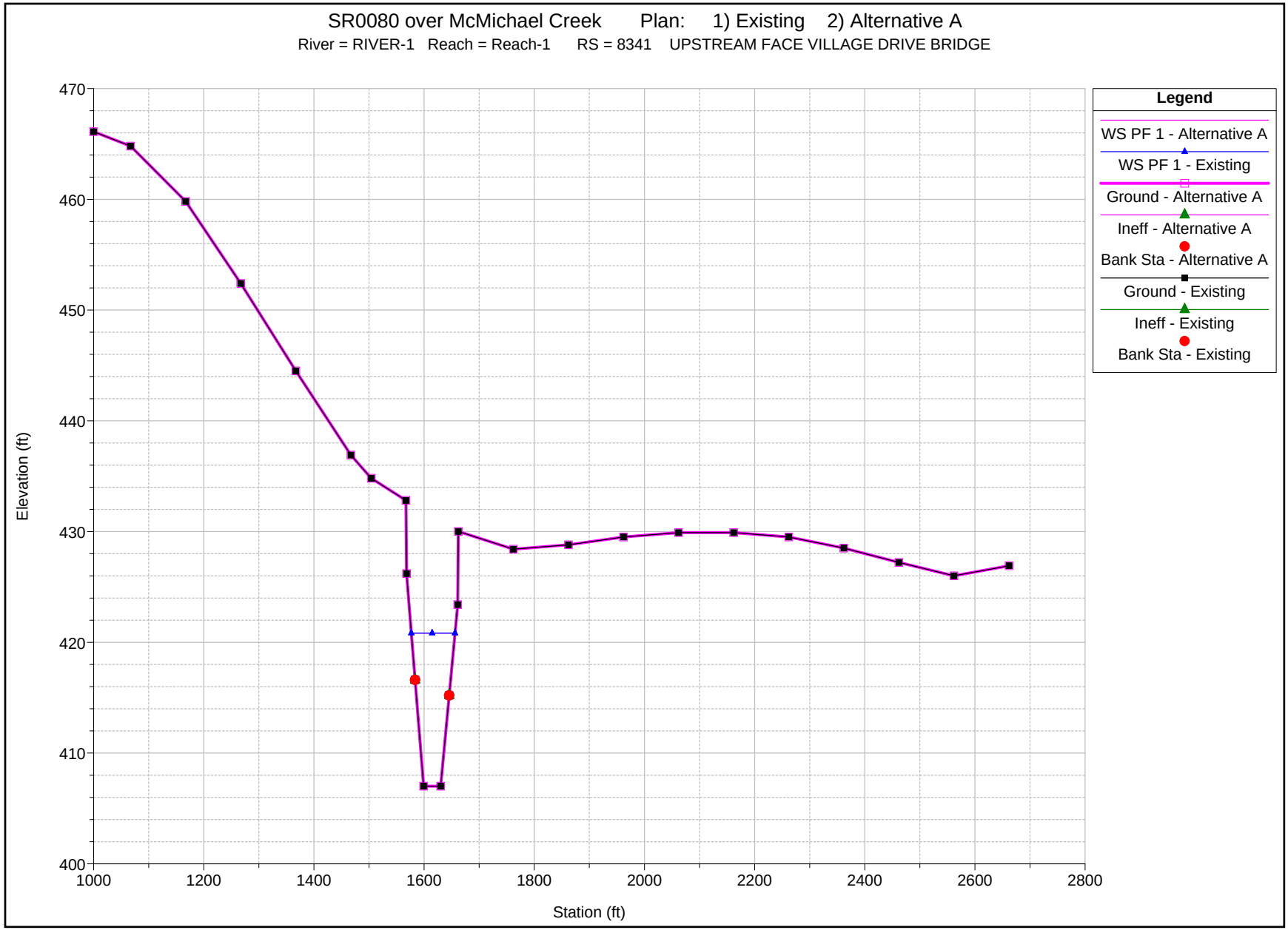

SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 2
.03
.1
.03
.1
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
420
410
400
390
380
370
360
-800
-600
-400
-200
0
200
400
600

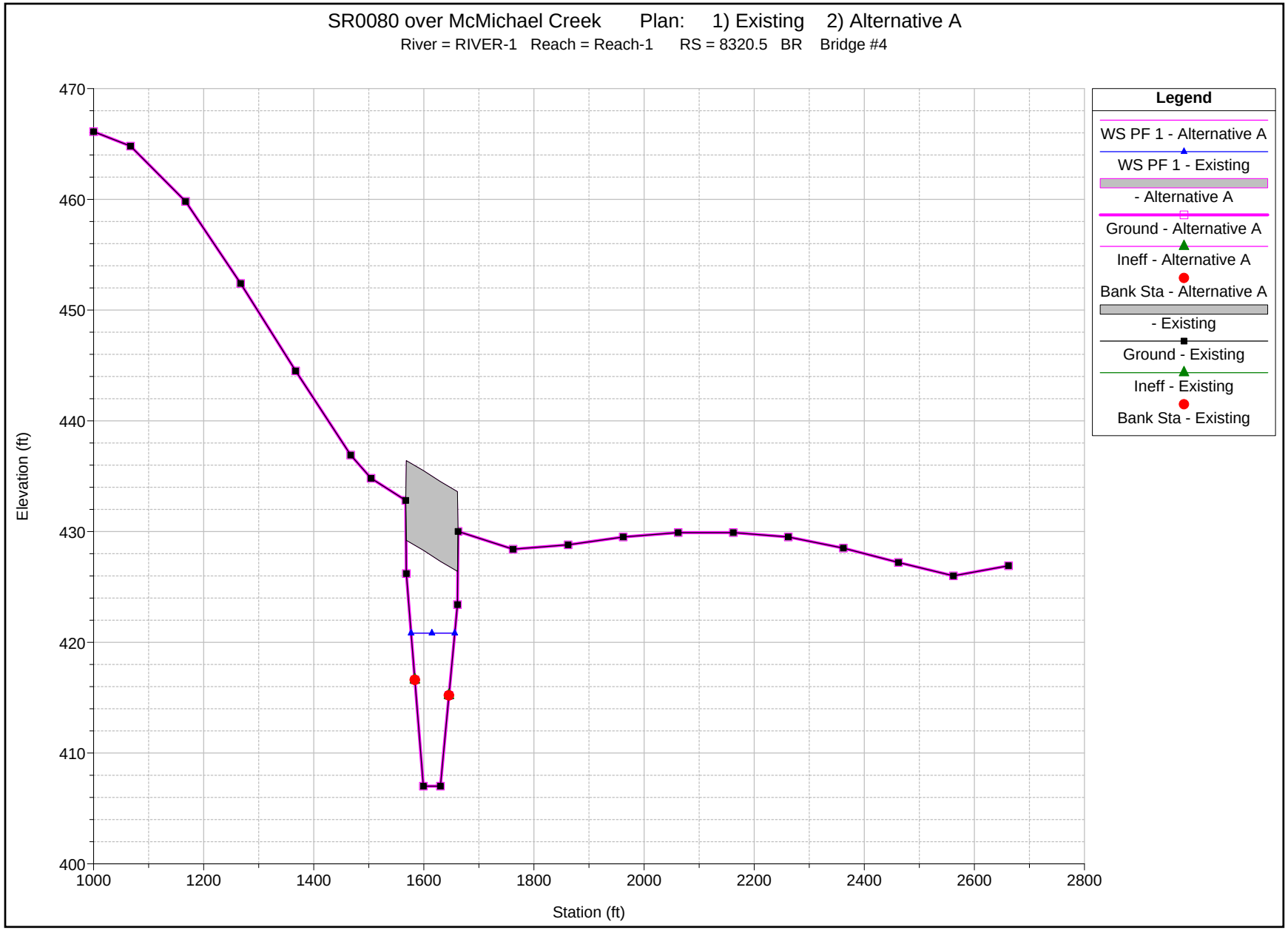

SR 0080 over Brodhead Creek Plan: Alternative A 10/10/2014
River = Stream Reach = Reach RS = 1
.03
.1
.03
.1
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
420
410
400
390
380
370
360
-800
-600
-400
-200
0
200
400
600

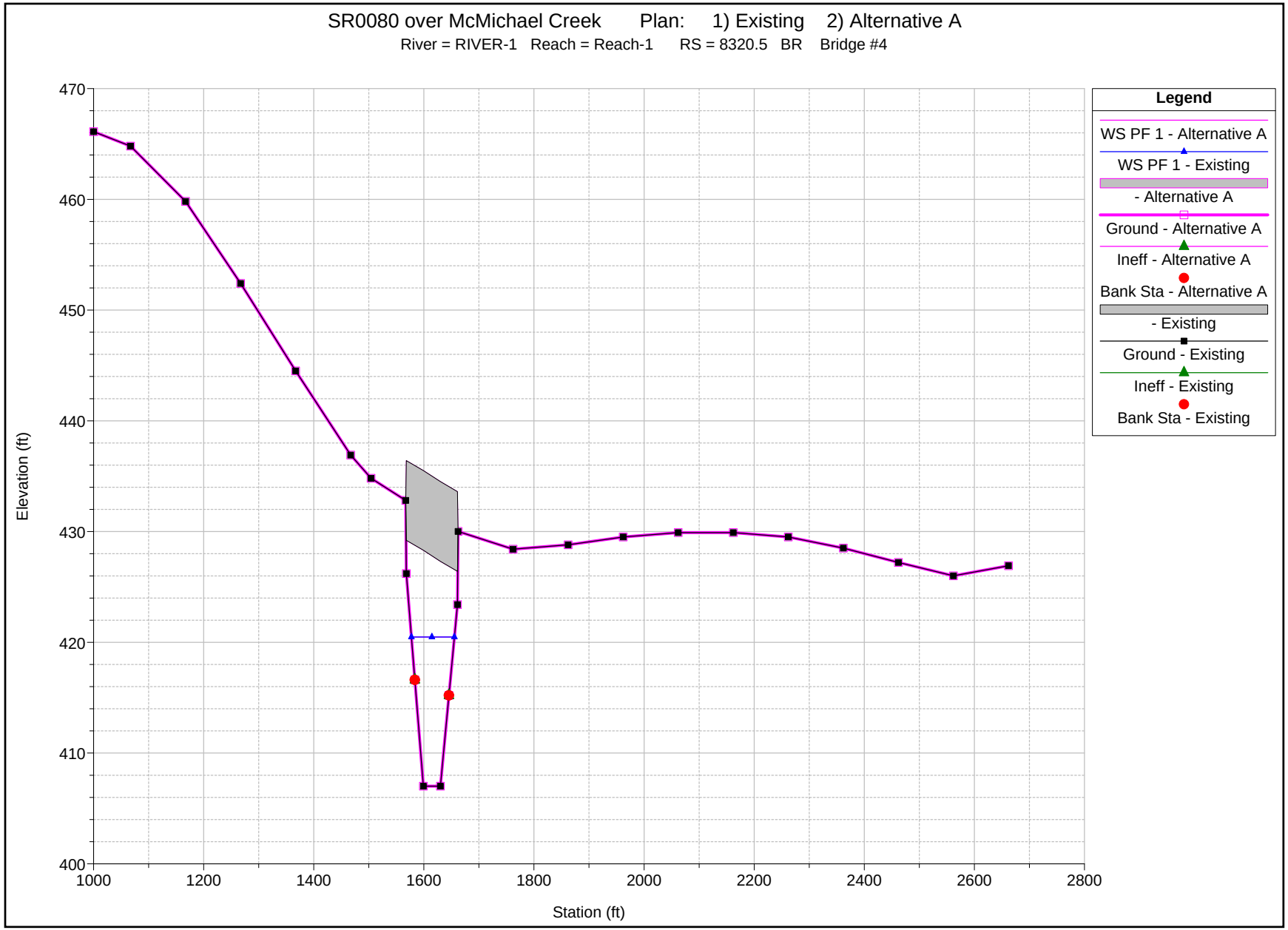

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 10670 XSEC J (WAS XSEC 3)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
470
460
450
440
430
420
410
1000
1500
2000
2500
3000
Station (ft)

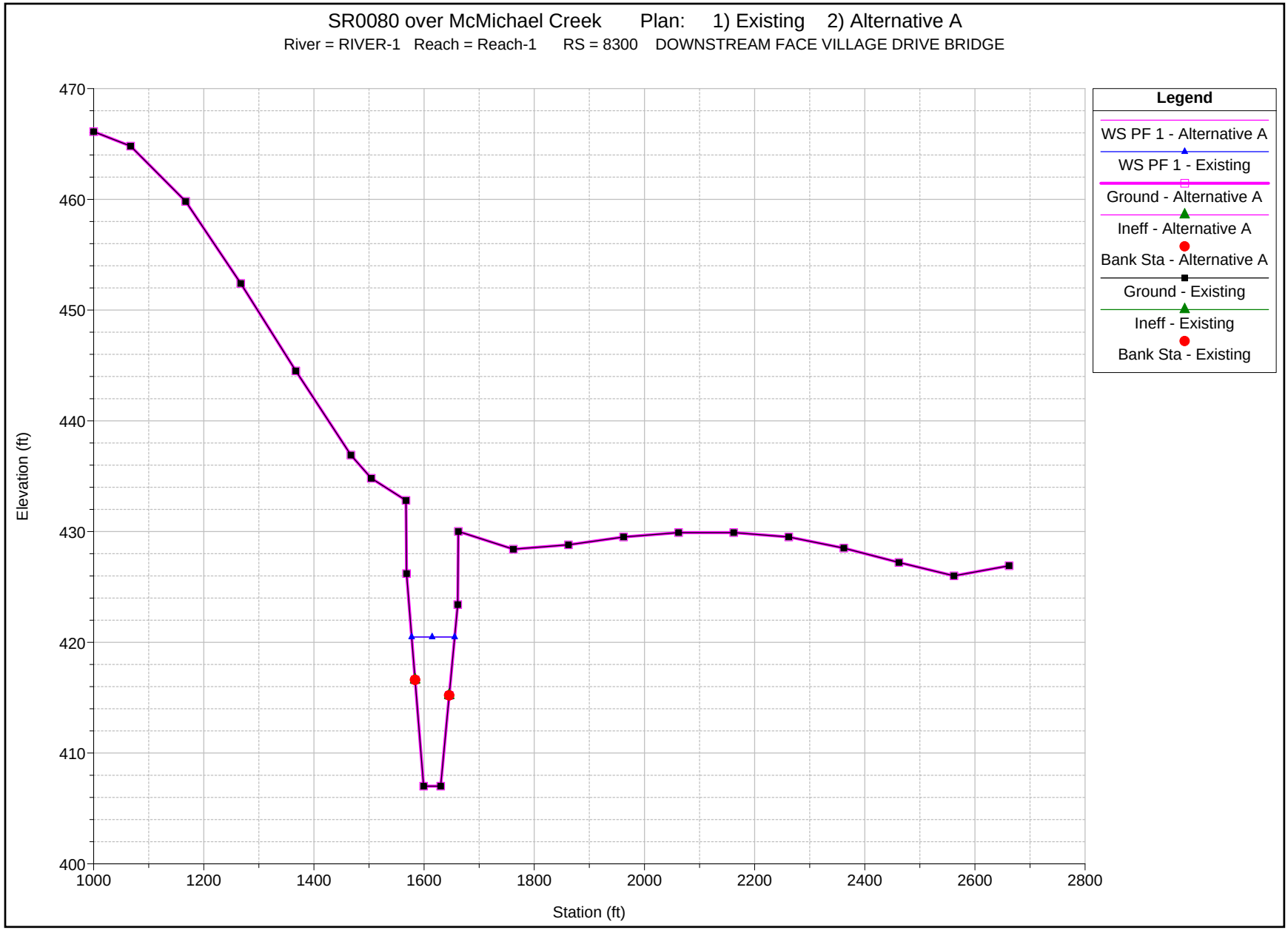

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 9535 DUPLICATED SECTION J
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
470
460
450
440
430
420
410
1000
1500
2000
2500
3000
Station (ft)

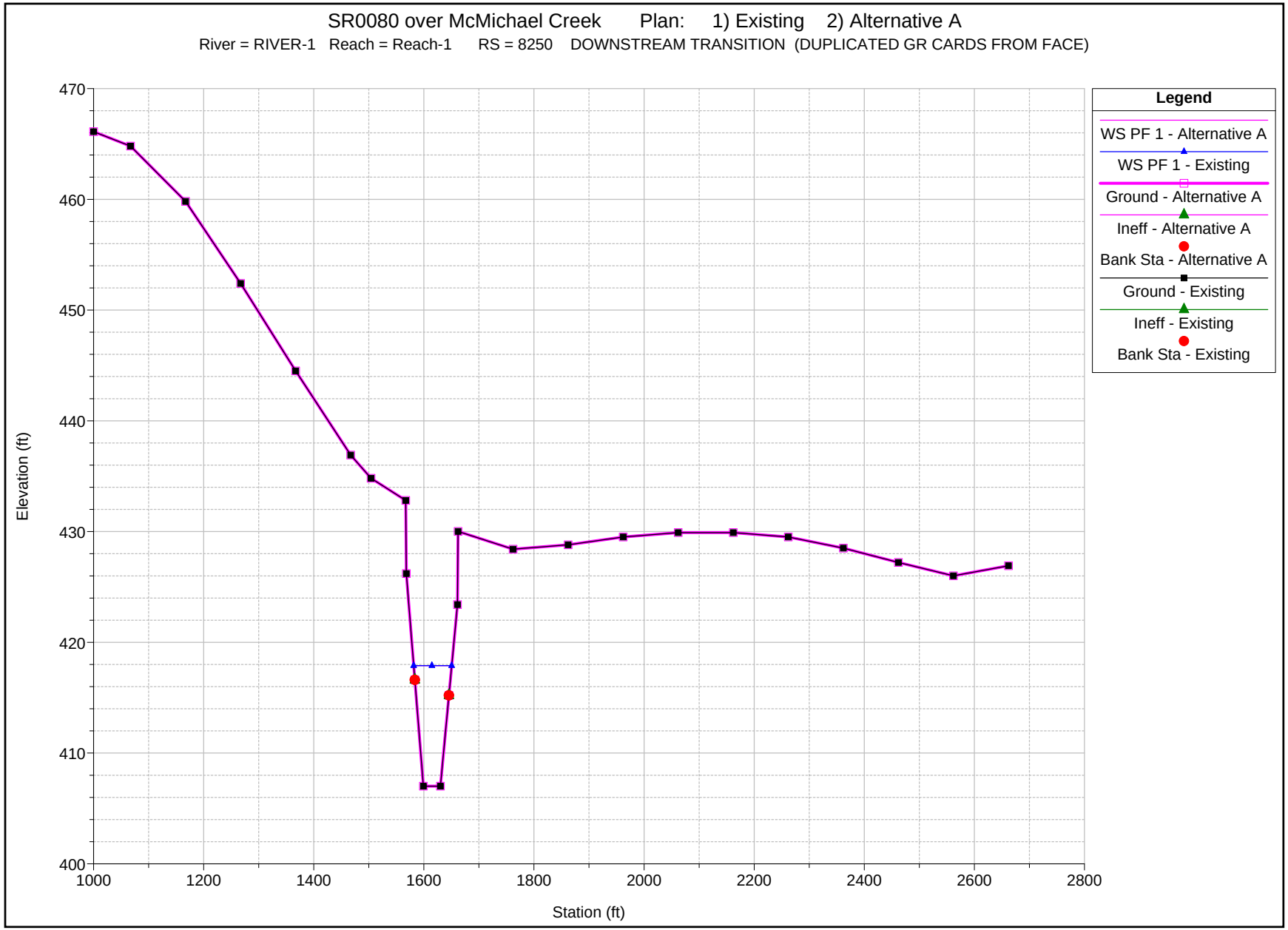

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 8400 UPSTREAM TRANSITION (DUPLICATED GR CARDS FROM FACE)
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
Ground - Existing
Ineff - Existing
Bank Sta - Existing

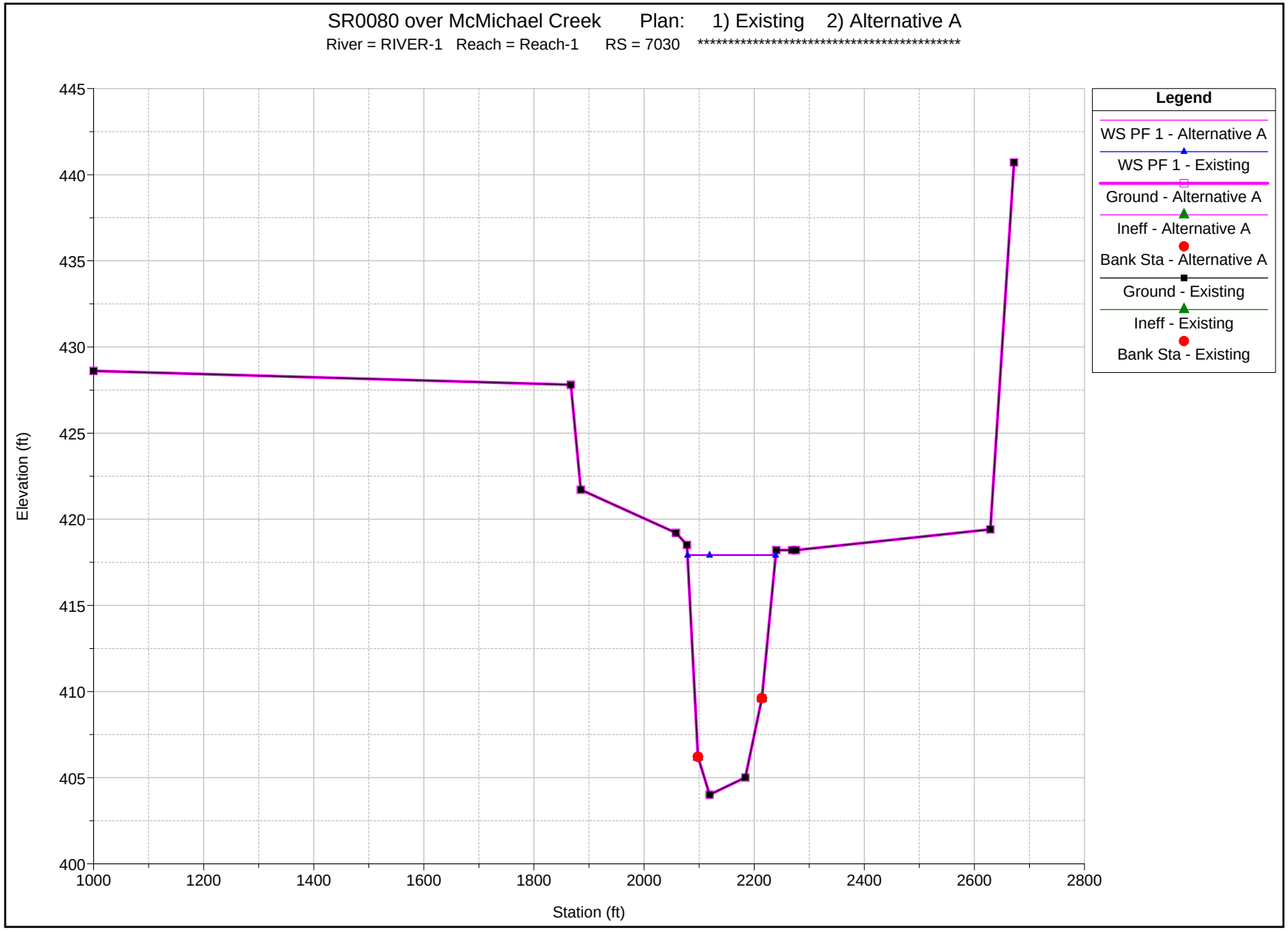

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 8341 UPSTREAM FACE VILLAGE DRIVE BRIDGE
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
Ground - Existing
Ineff - Existing
Bank Sta - Existing

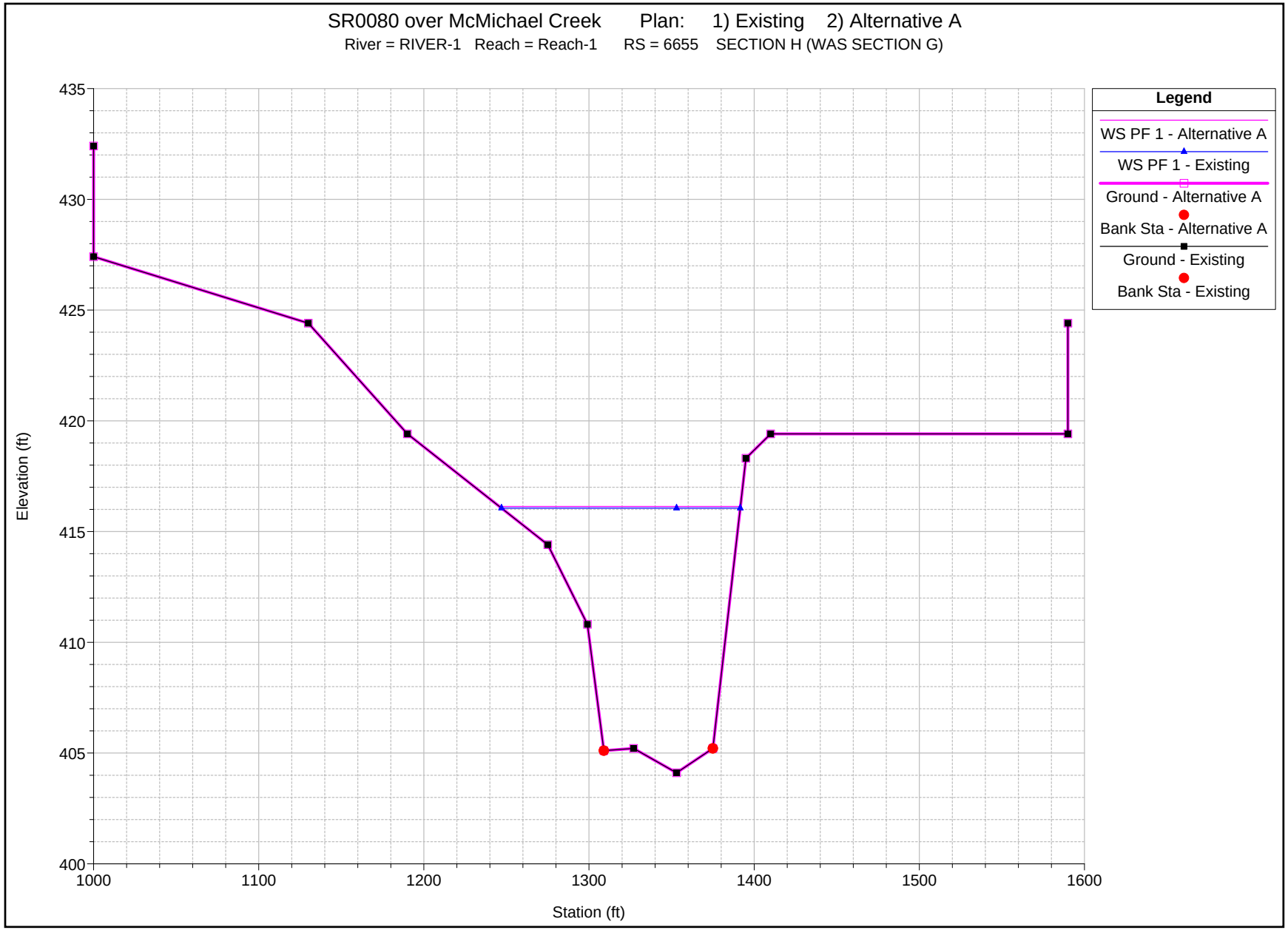

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 8320.5 BR Bridge #4
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

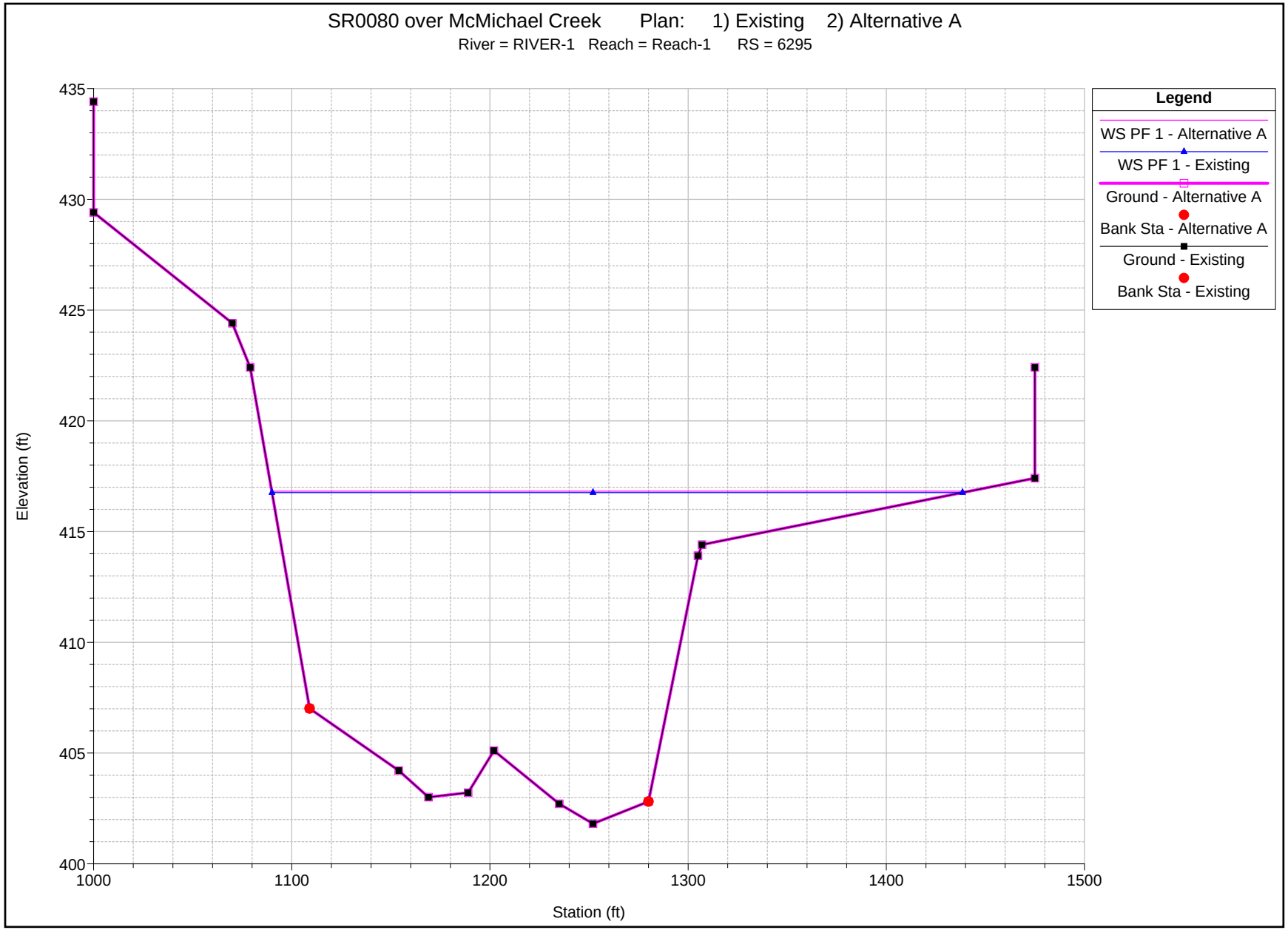

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 8320.5 BR Bridge #4
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

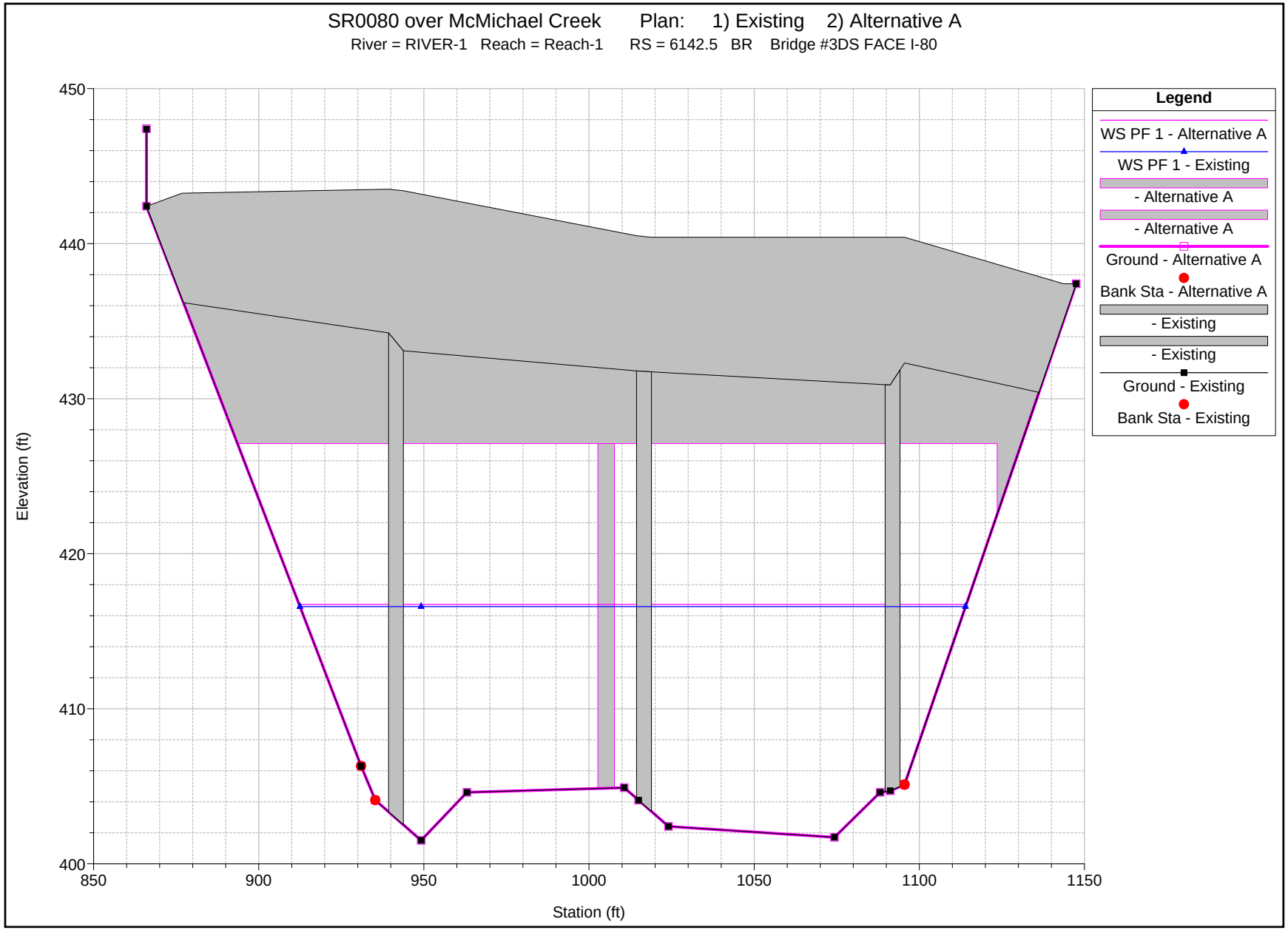

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 8300 DOWNSTREAM FACE VILLAGE DRIVE BRIDGE
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
Ground - Existing
Ineff - Existing
Bank Sta - Existing

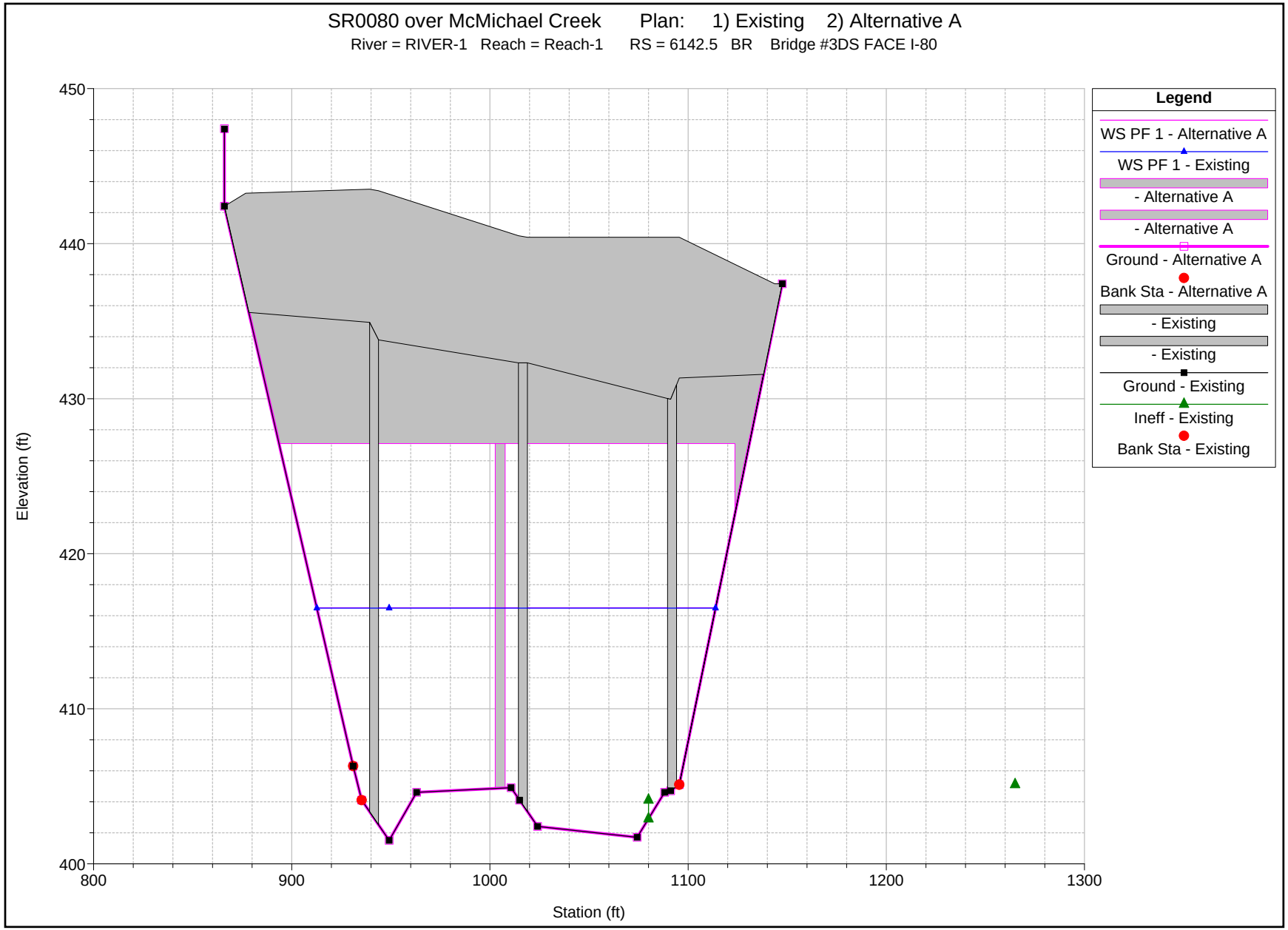

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 8250 DOWNSTREAM TRANSITION (DUPLICATED GR CARDS FROM FACE)
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
Ground - Existing
Ineff - Existing
Bank Sta - Existing

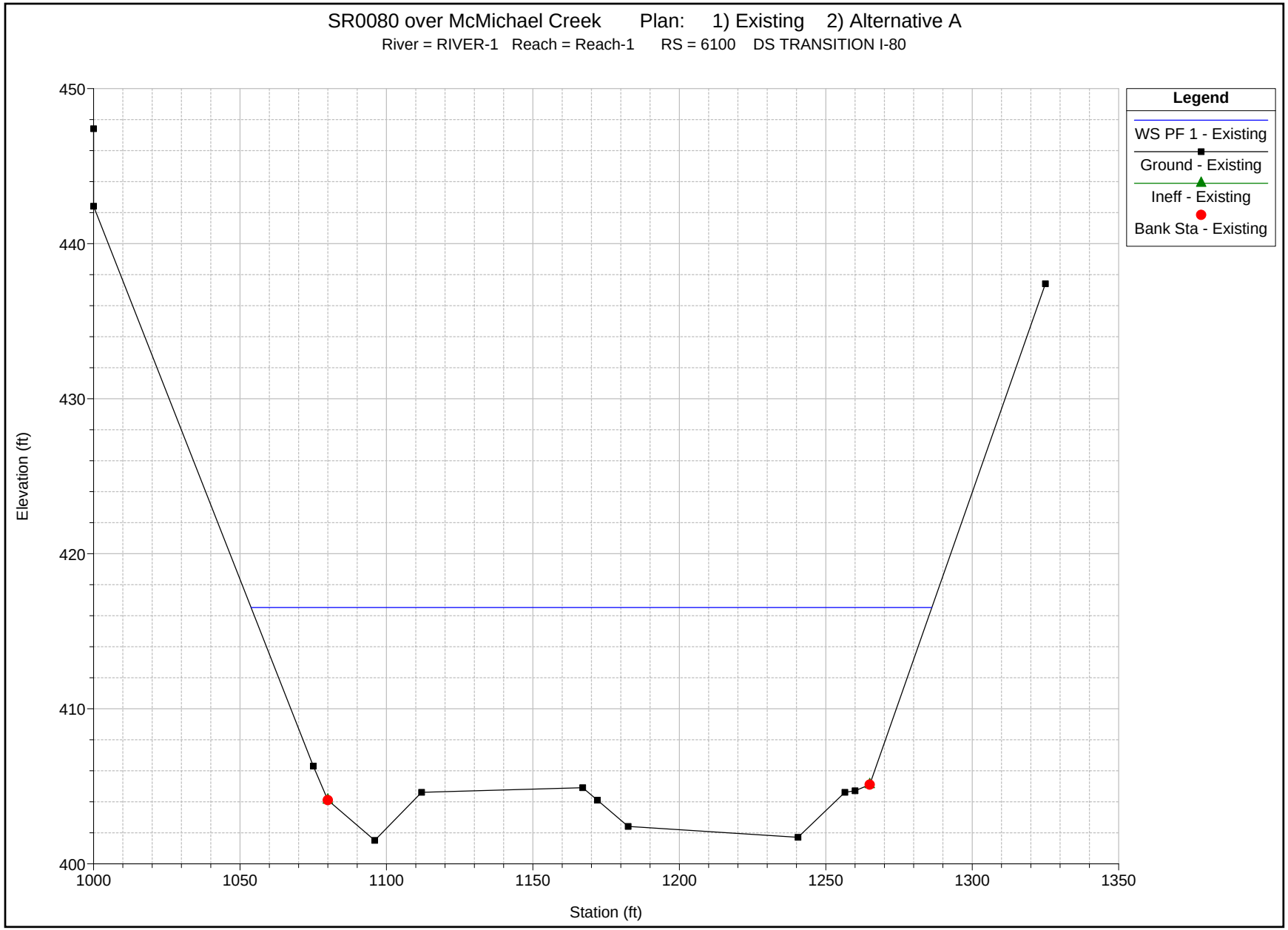

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 7030 **********
Elevation (ft)
445
440
435
430
425
420
415
410
405
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
Ground - Existing
Ineff - Existing
Bank Sta - Existing

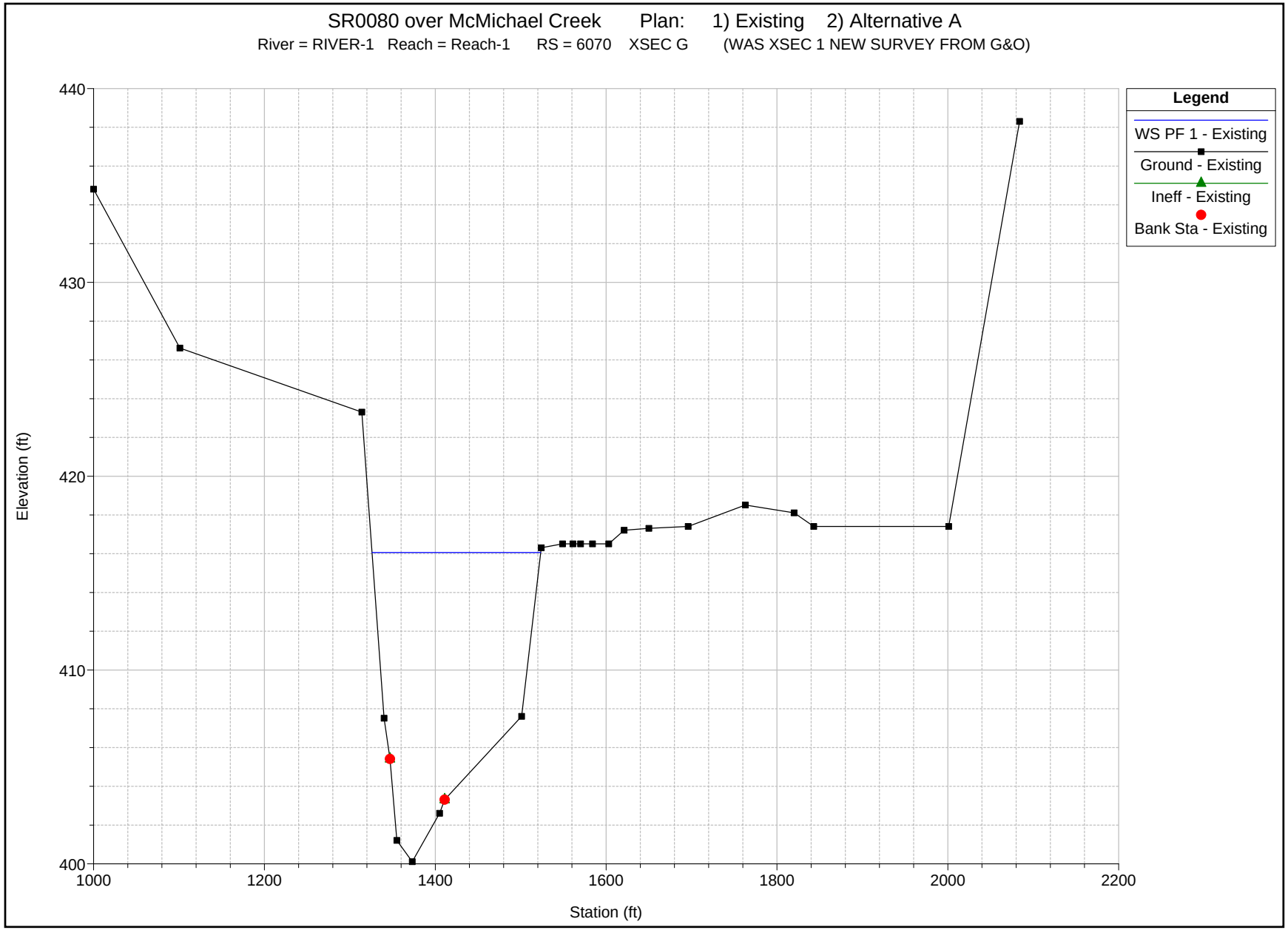

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 6655 SECTION H (WAS SECTION G)
Elevation (ft)
435
430
425
420
415
410
405
400
1000
1100
1200
1300
1400
1500
1600
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing

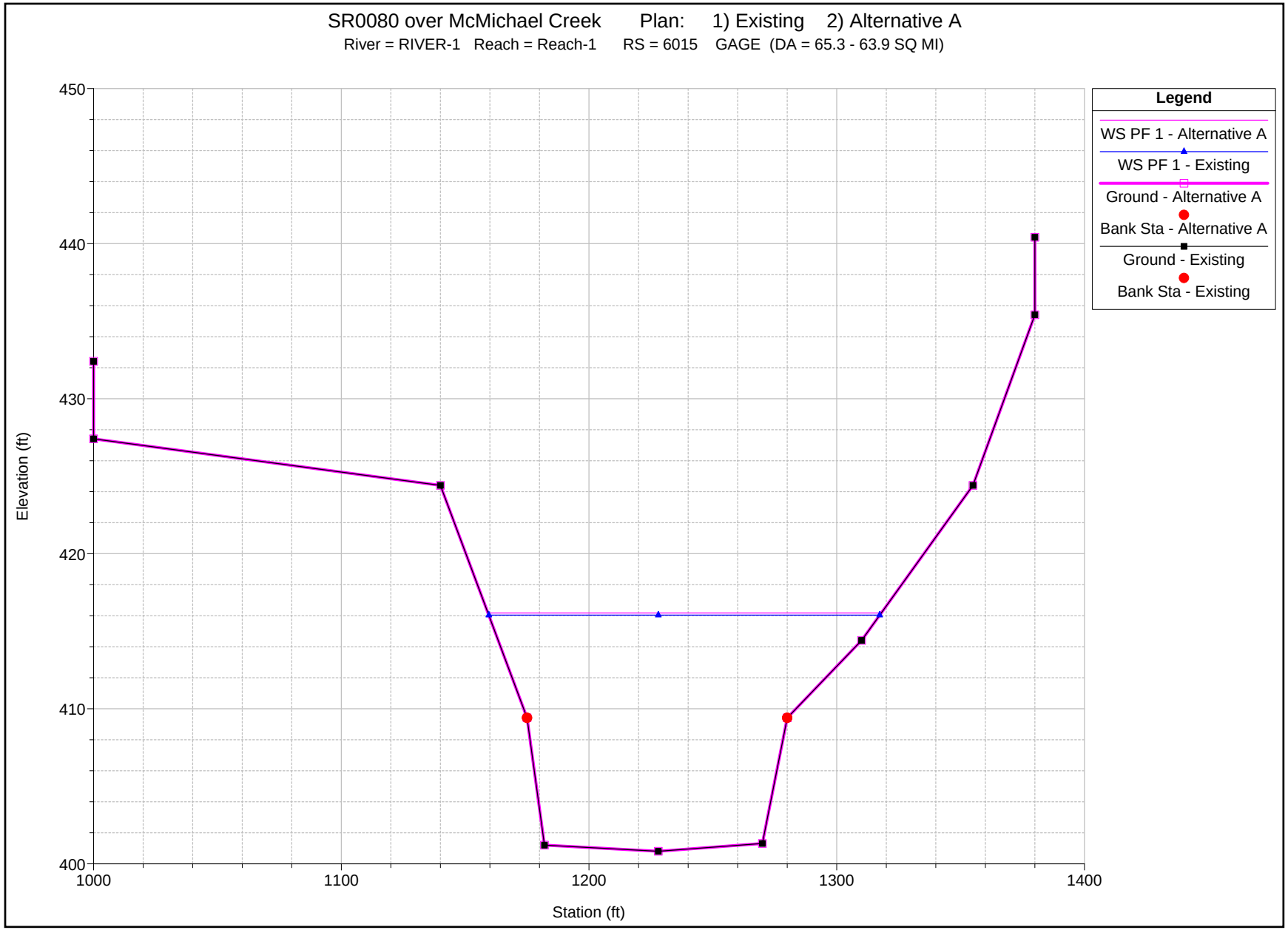

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 6295
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
435
430
425
420
415
410
405
400
1000
1100
1200
1300
1400
1500
Station (ft)

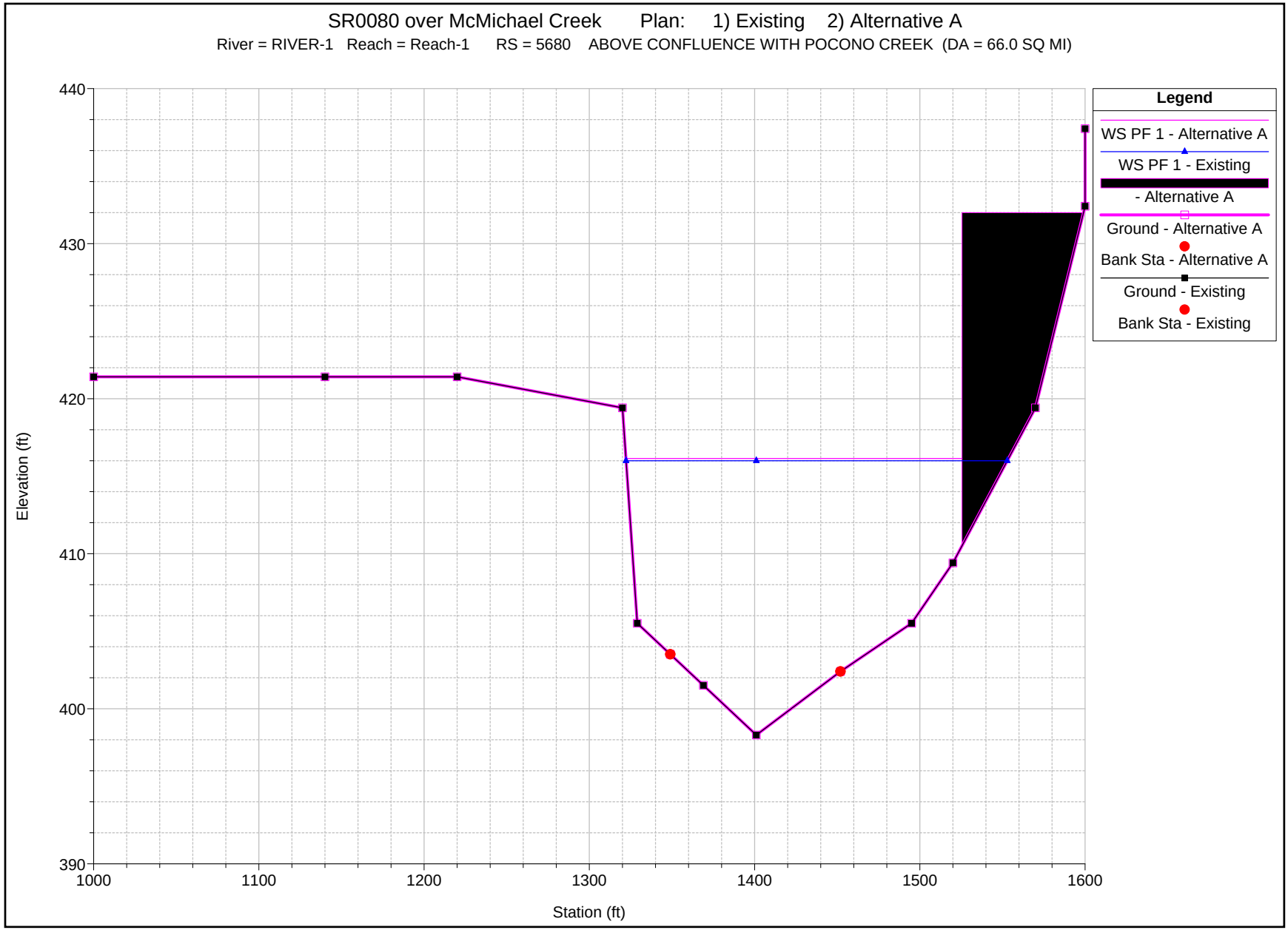

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 6142.5 BR Bridge #3DS FACE I-80
Elevation (ft)
450
440
430
420
410
400
850
900
950
1000
1050
1100
1150
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
- Existing
- Existing
Ground - Existing
Bank Sta - Existing

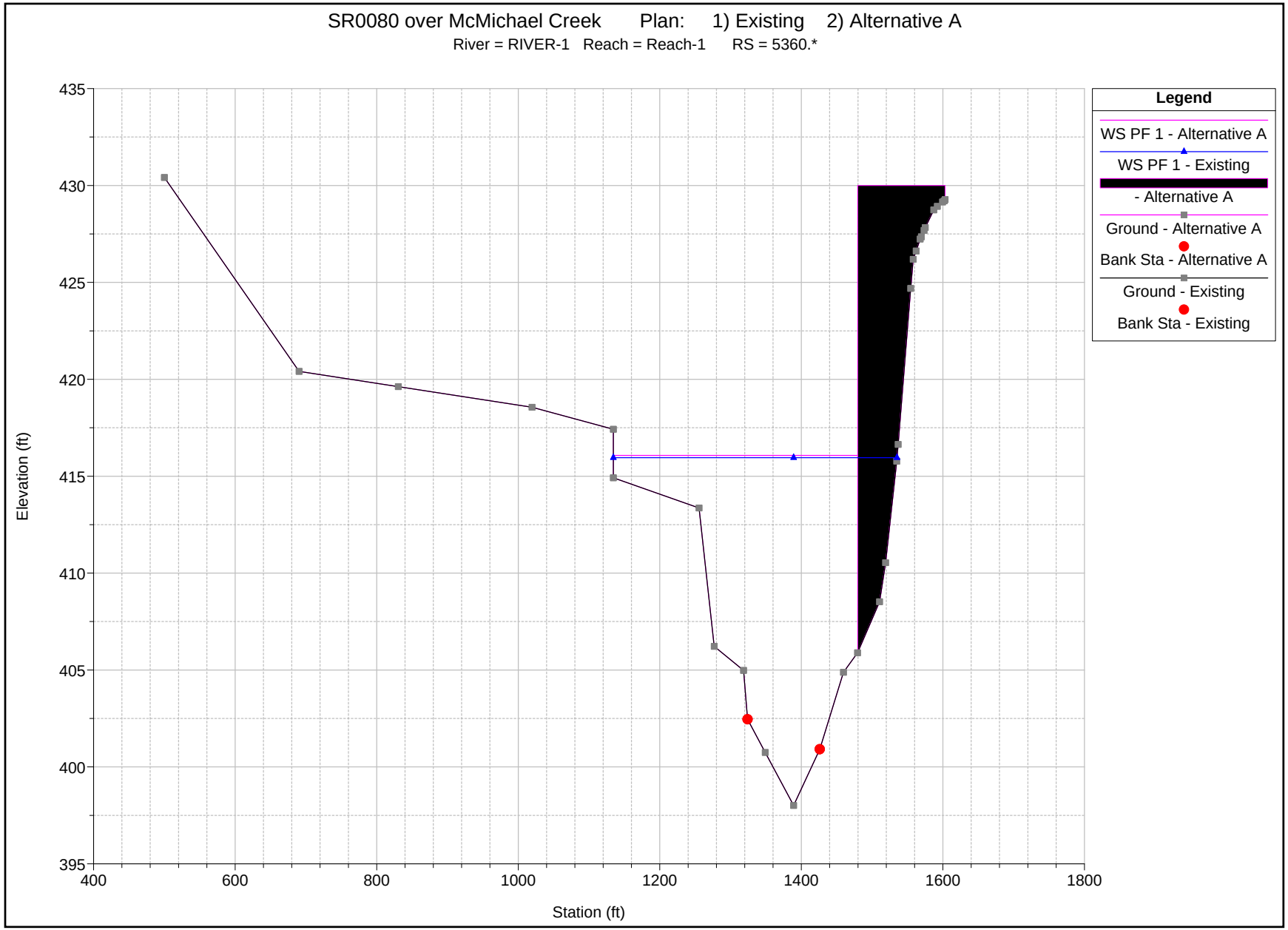

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 6142.5 BR Bridge #3DS FACE I-80
Elevation (ft)
450
440
430
420
410
400
800
900
1000
1100
1200
1300
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
- Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

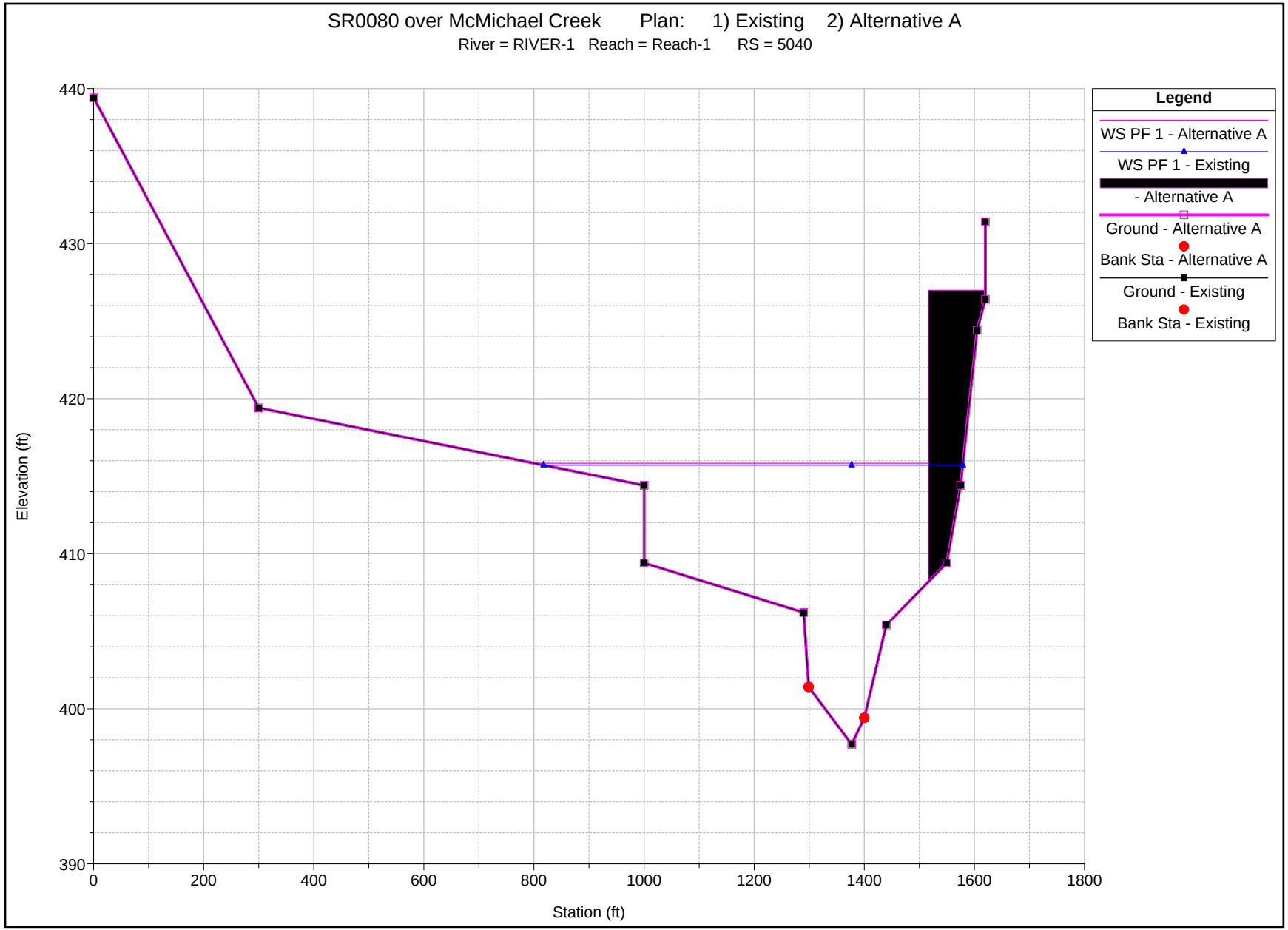

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 6100 DS TRANSITION I-80
Legend
WS PF 1 - Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
Station (ft)
450
440
430
420
410
400
1000
1050
1100
1150
1200
1250
1300
1350

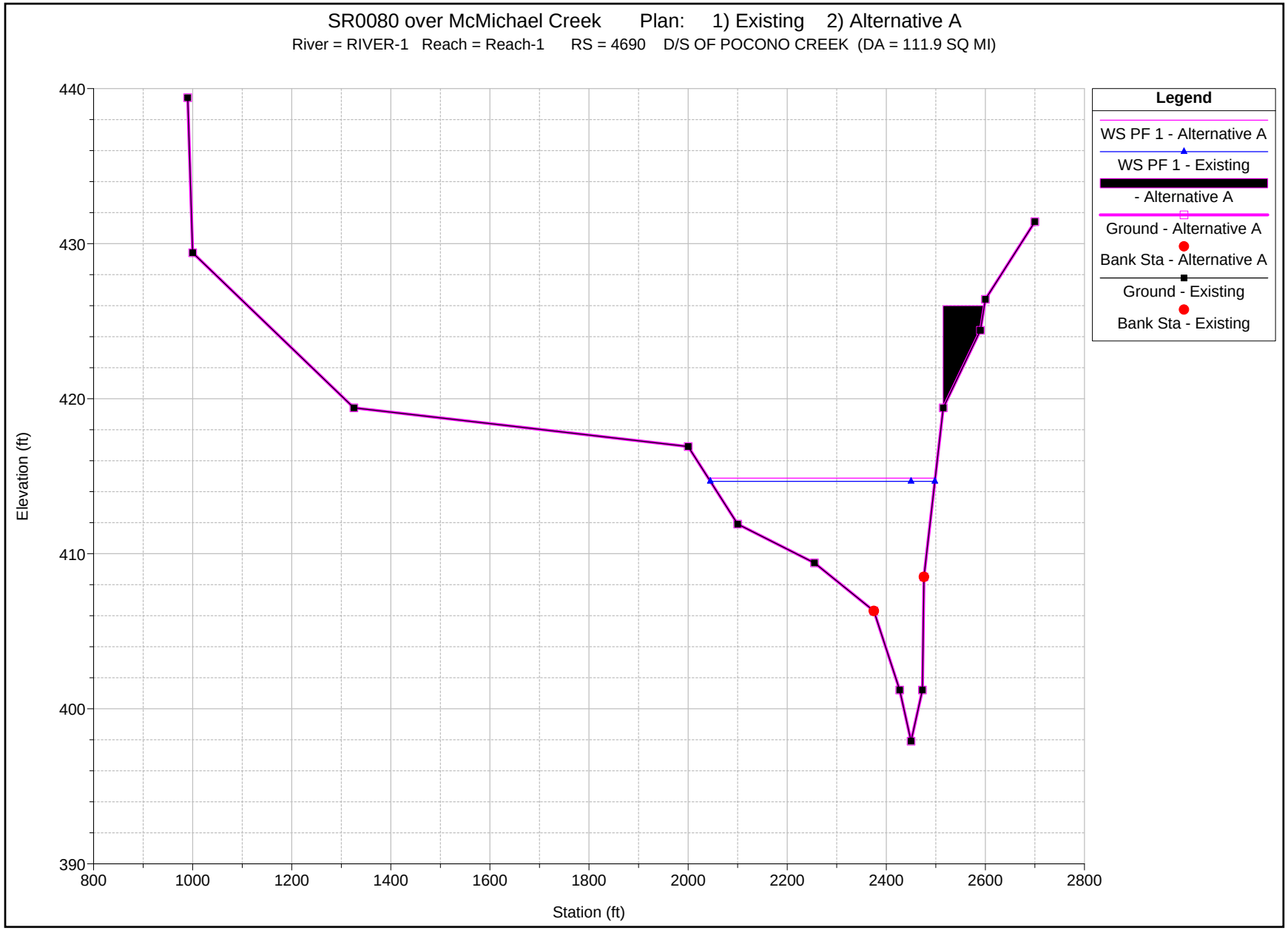

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 6070 XSEC G (WAS XSEC 1 NEW SURVEY FROM G&O)
Legend
WS PF 1 - Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
Station (ft)

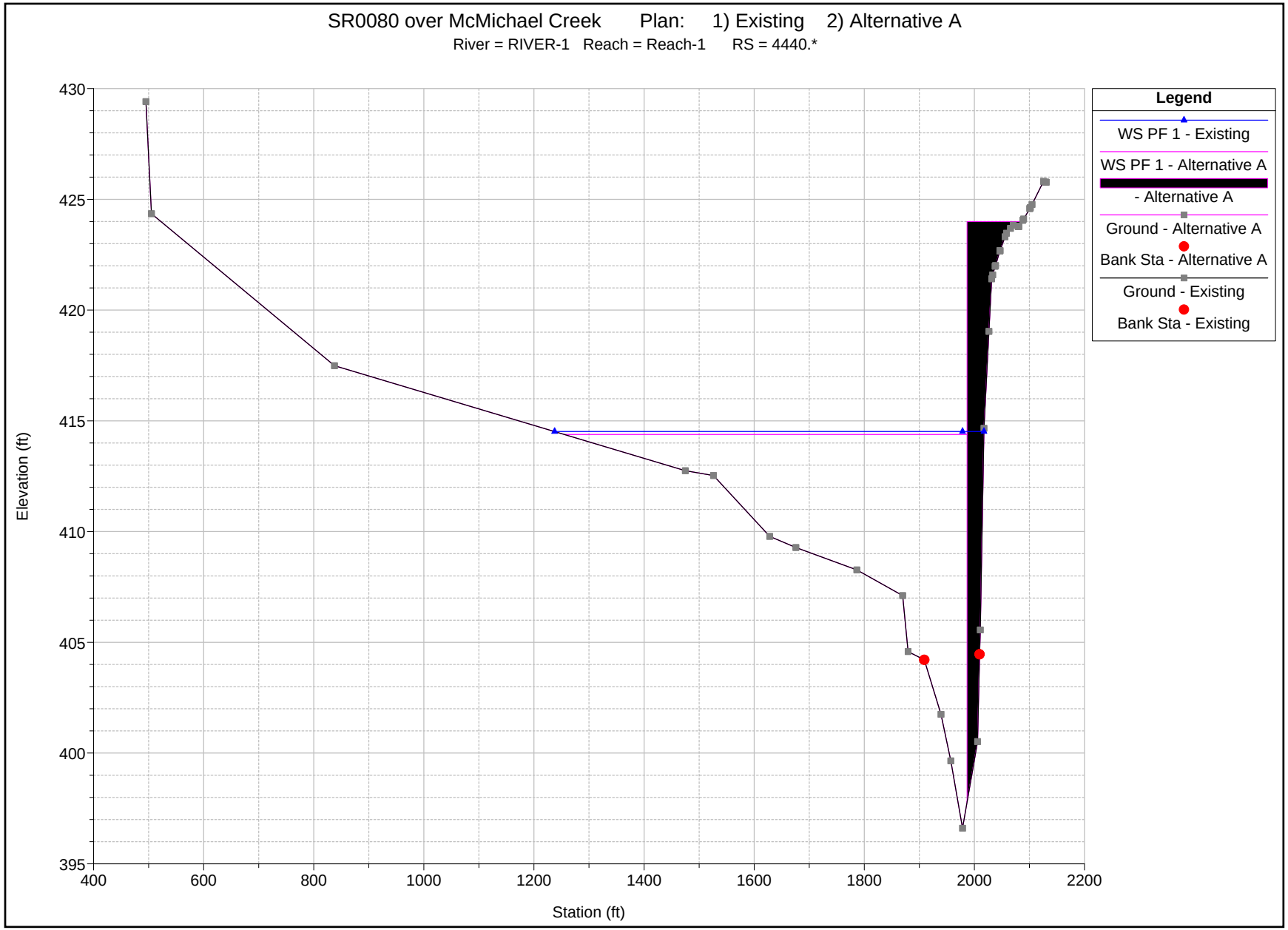

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 6015 GAGE (DA = 65.3 - 63.9 SQ MI)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
450
440
430
420
410
400
1000
1100
1200
1300
1400
Station (ft)

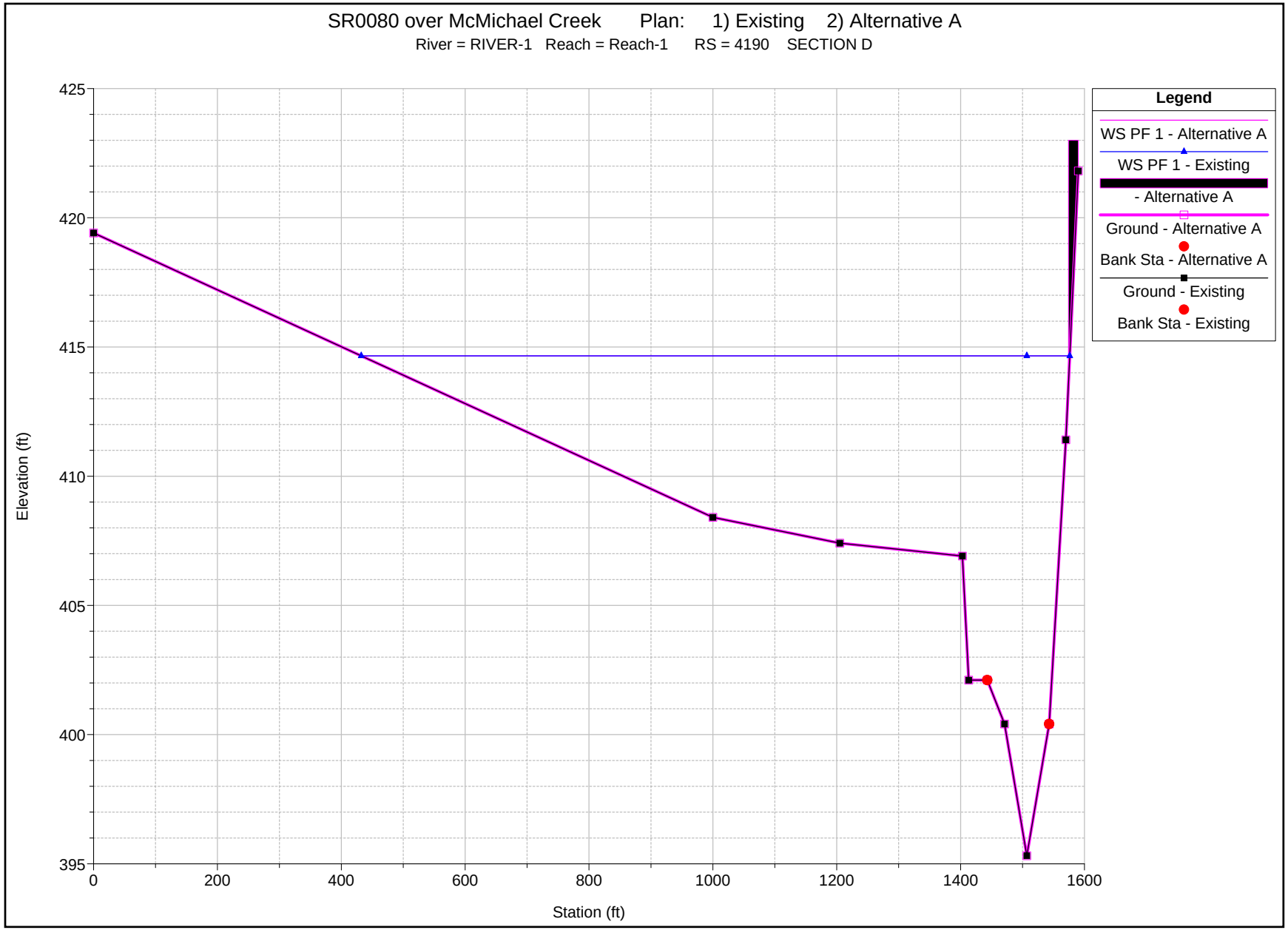

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 5680 ABOVE CONFLUENCE WITH POCONO CREEK (DA = 66.0 SQ MI)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
1600
Station (ft)

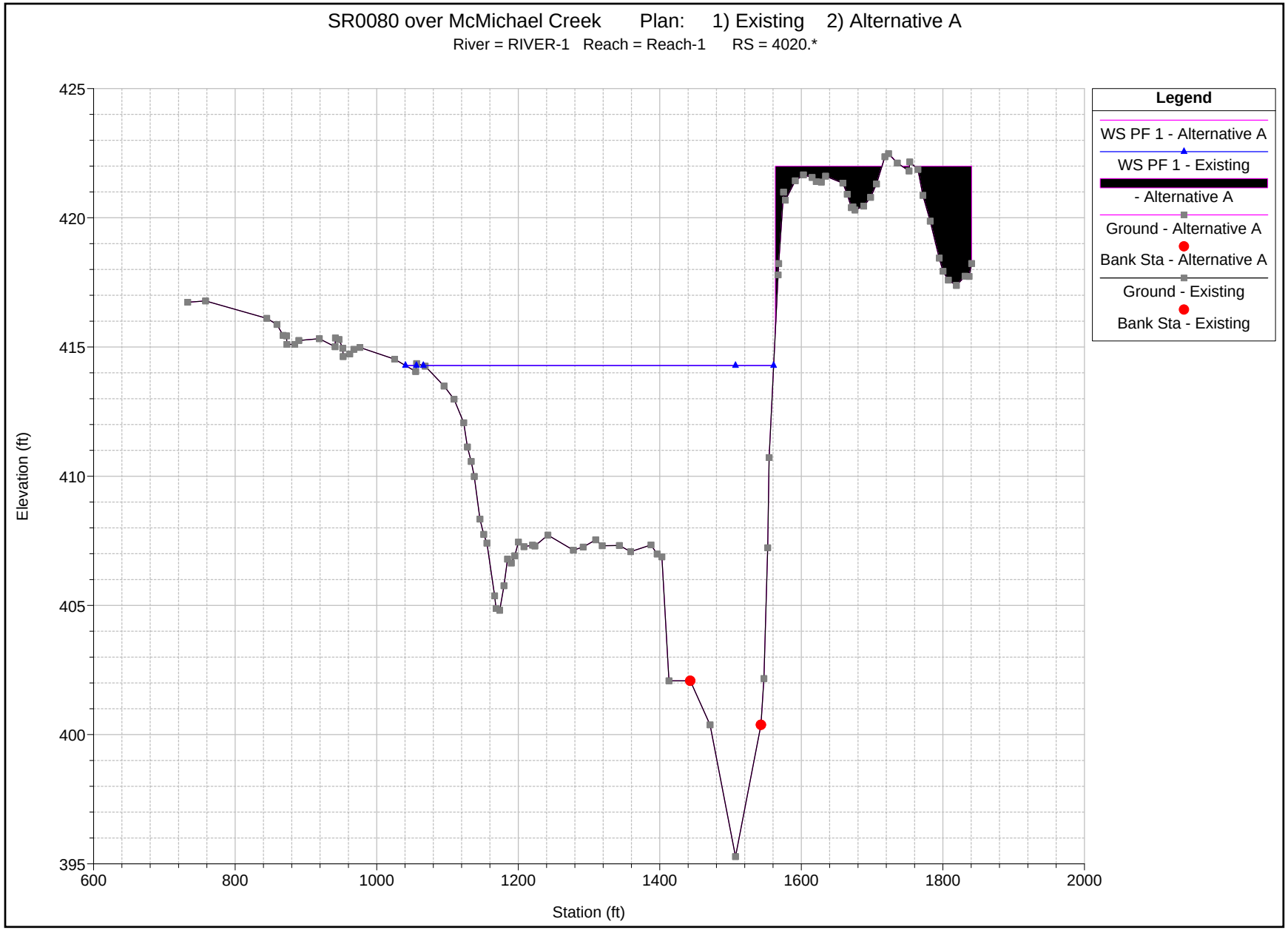

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 5360.*
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
435
430
425
420
415
410
405
400
395
400
600
800
1000
1200
1400
1600
1800
Station (ft)

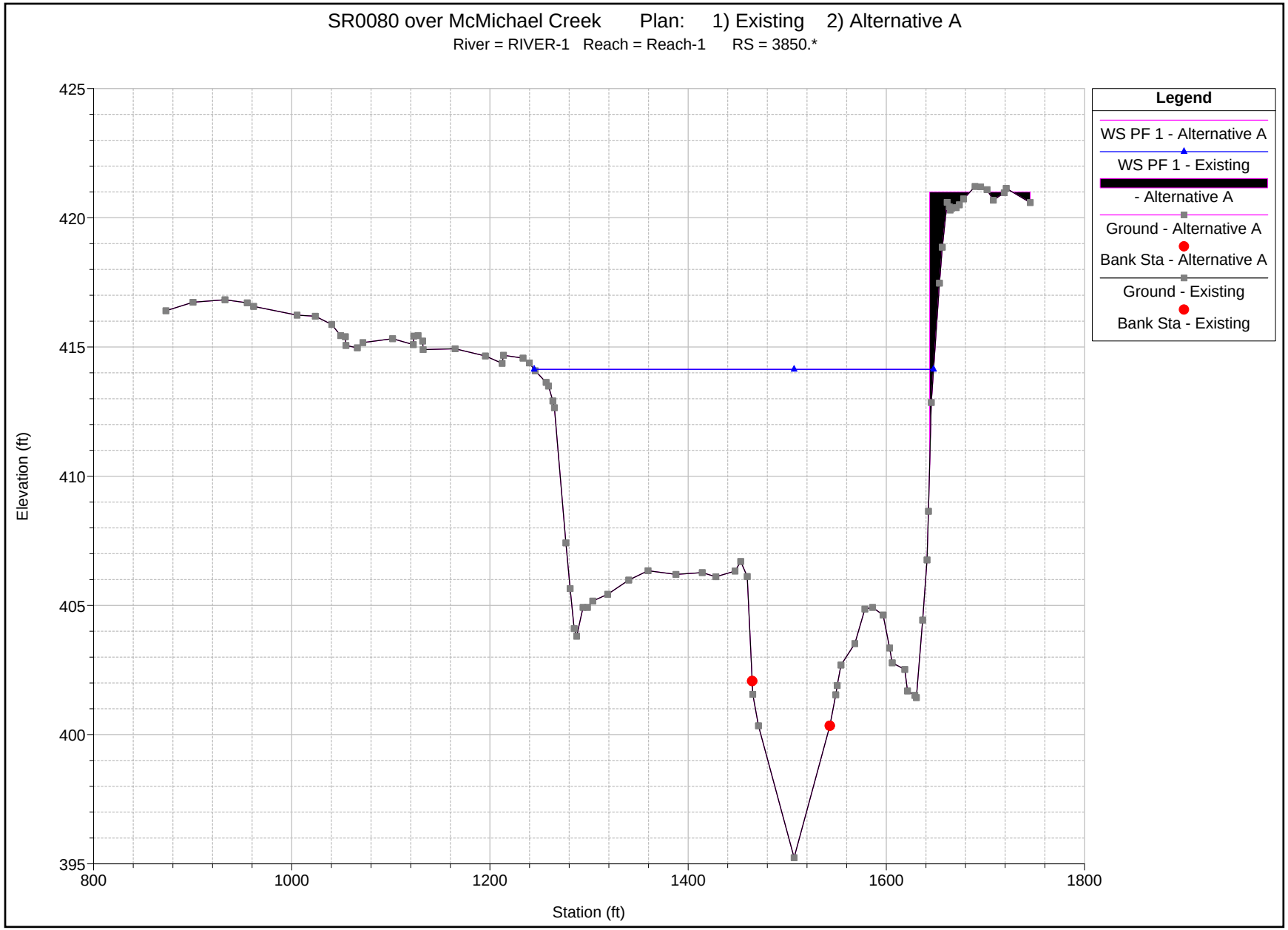

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 5040
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
440
430
420
410
400
390
0
200
400
600
800
1000
1200
1400
1600
1800
Station (ft)

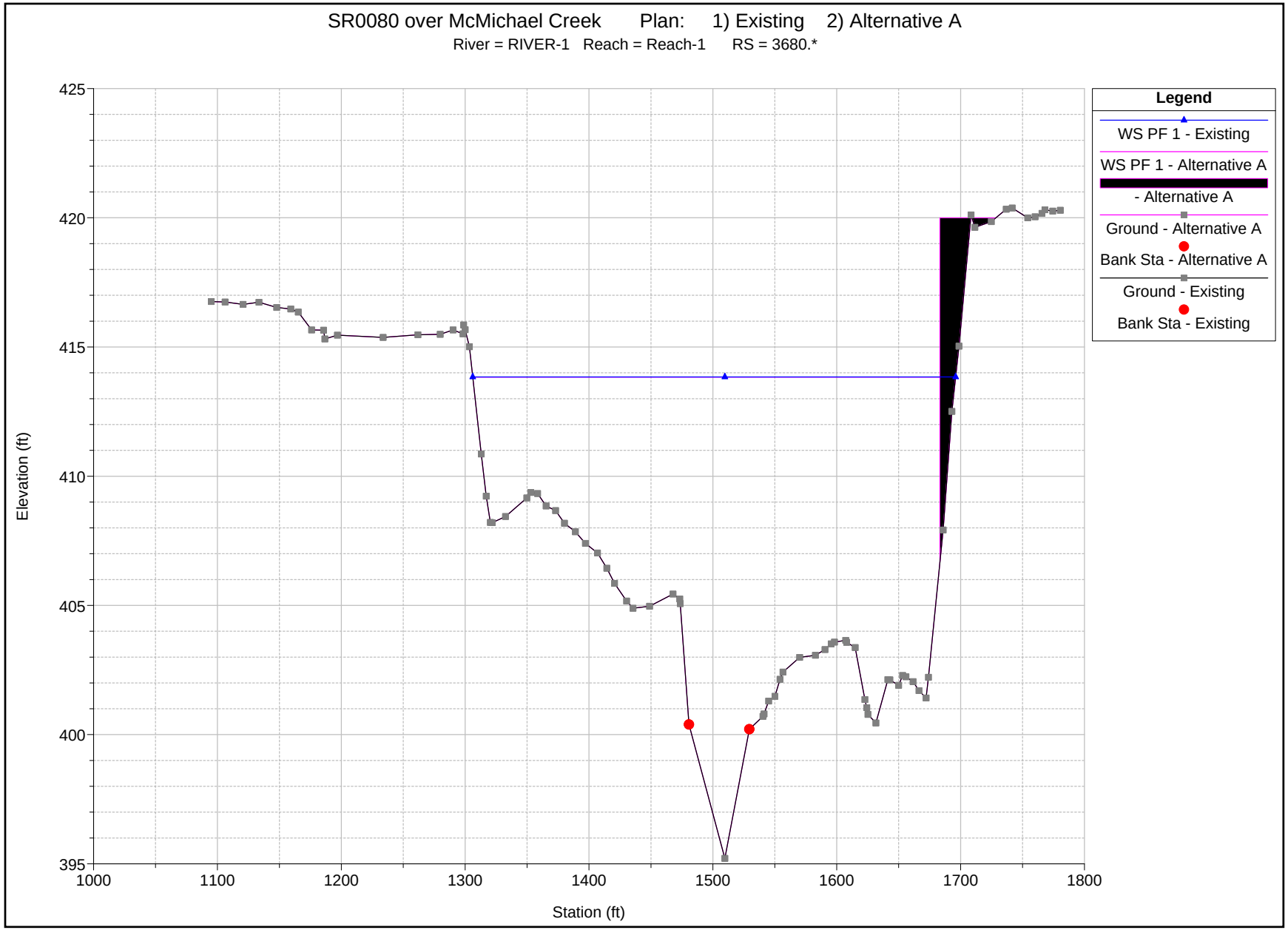

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 4690 D/S OF POCONO CREEK (DA = 111.9 SQ MI)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
440
430
420
410
400
390
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Station (ft)

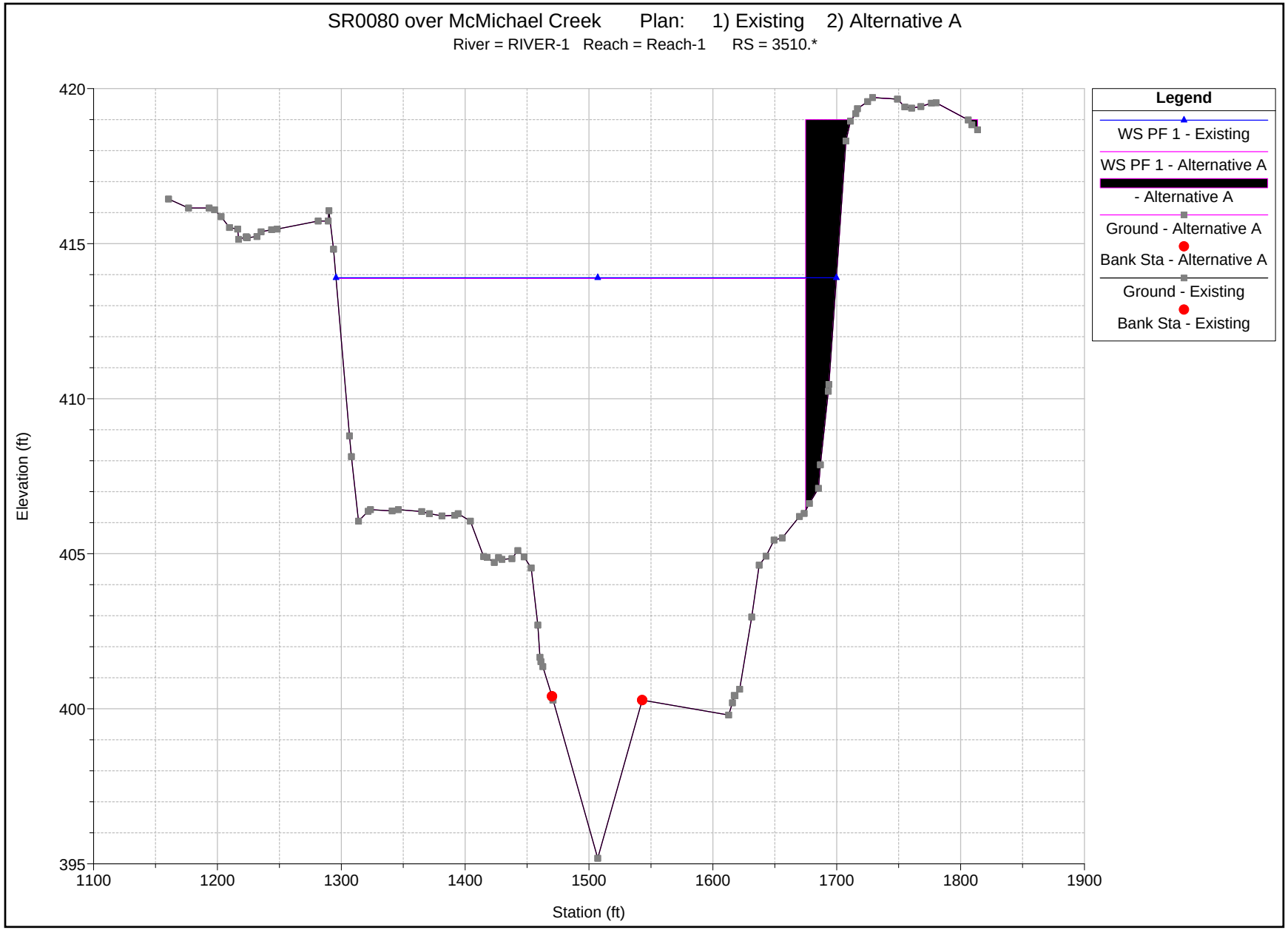

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 4440.*
Legend
WS PF 1 - Existing
WS PF 1 - Alternative A
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
Station (ft)
430
425
420
415
410
405
400
395
400
600
800
1000
1200
1400
1600
1800
2000
2200

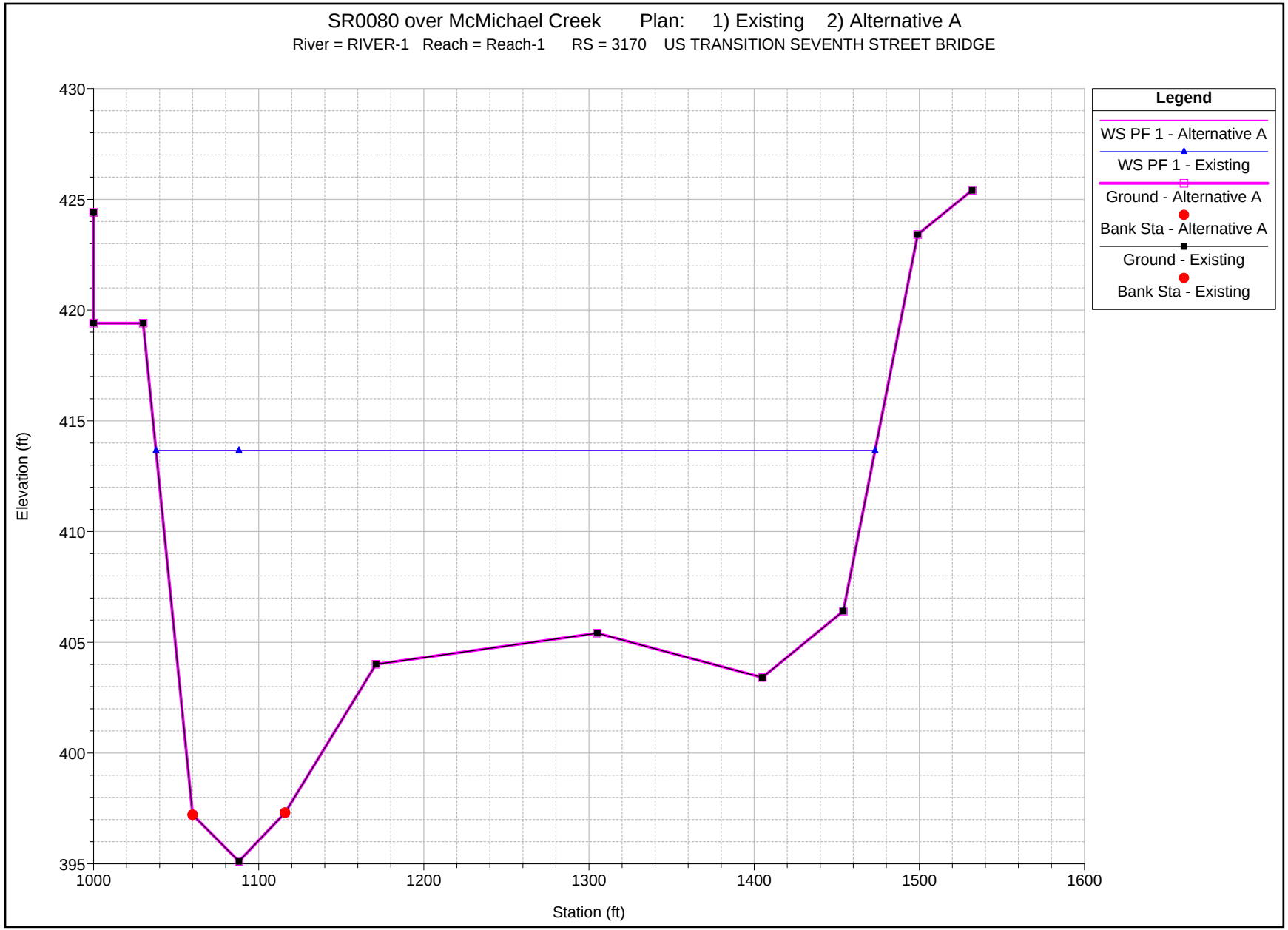

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 4190 SECTION D
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
425
420
415
410
405
400
395
0
200
400
600
800
1000
1200
1400
1600
Station (ft)

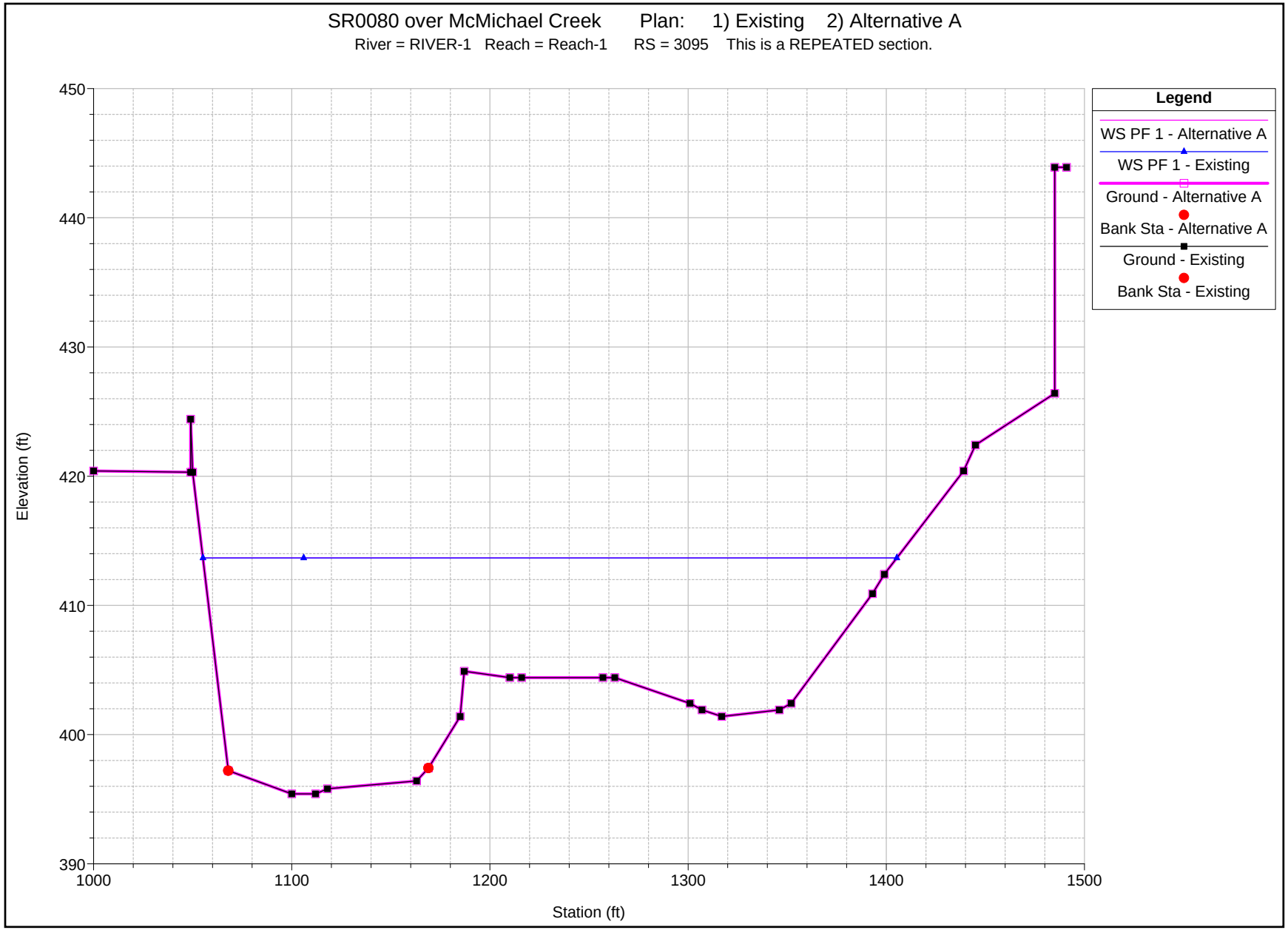

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 4020.*
Elevation (ft)
425
420
415
410
405
400
395
600
800
1000
1200
1400
1600
1800
2000
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing

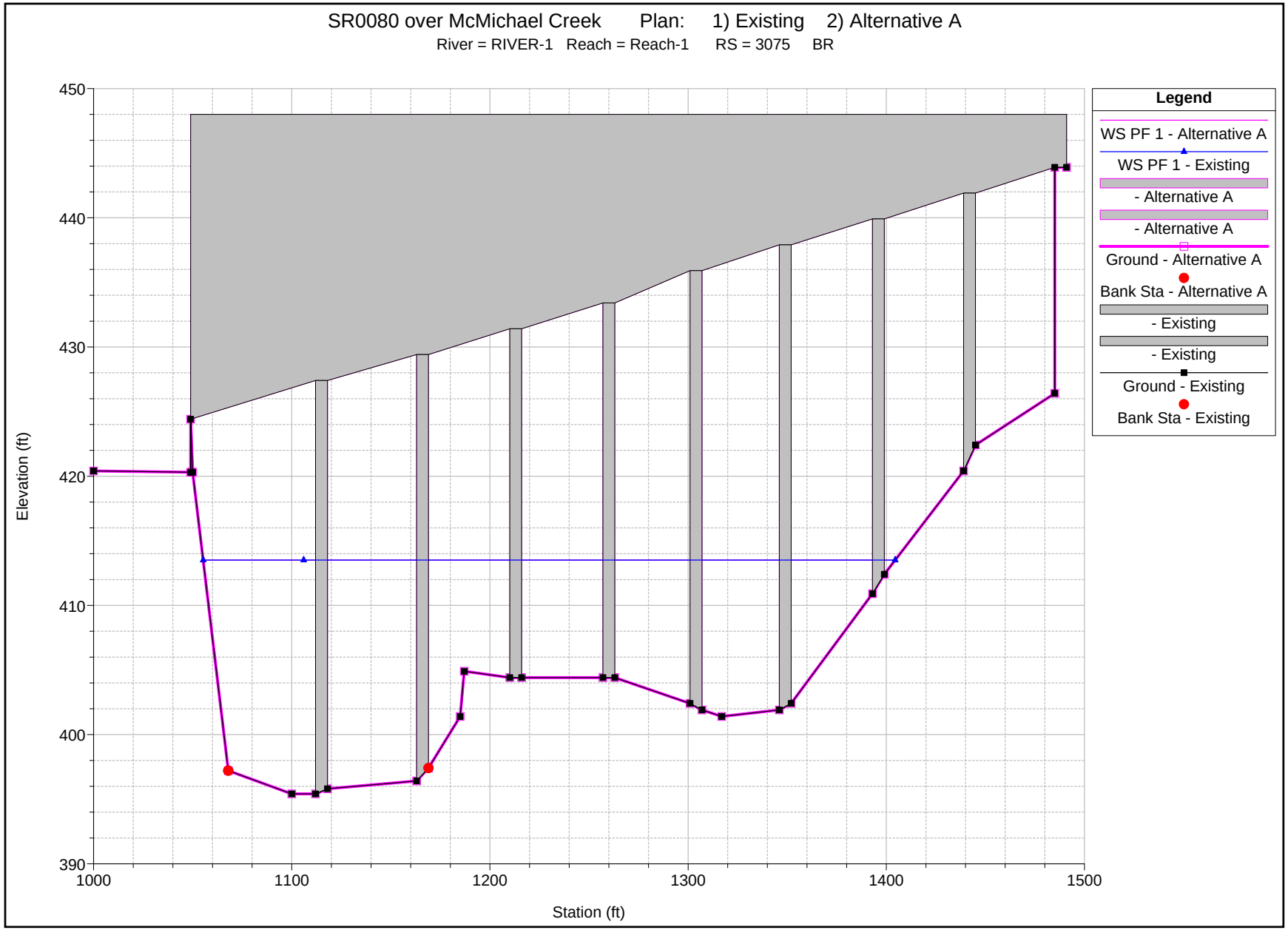

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 3850.*
Elevation (ft)
425
420
415
410
405
400
395
800
1000
1200
1400
1600
1800
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing

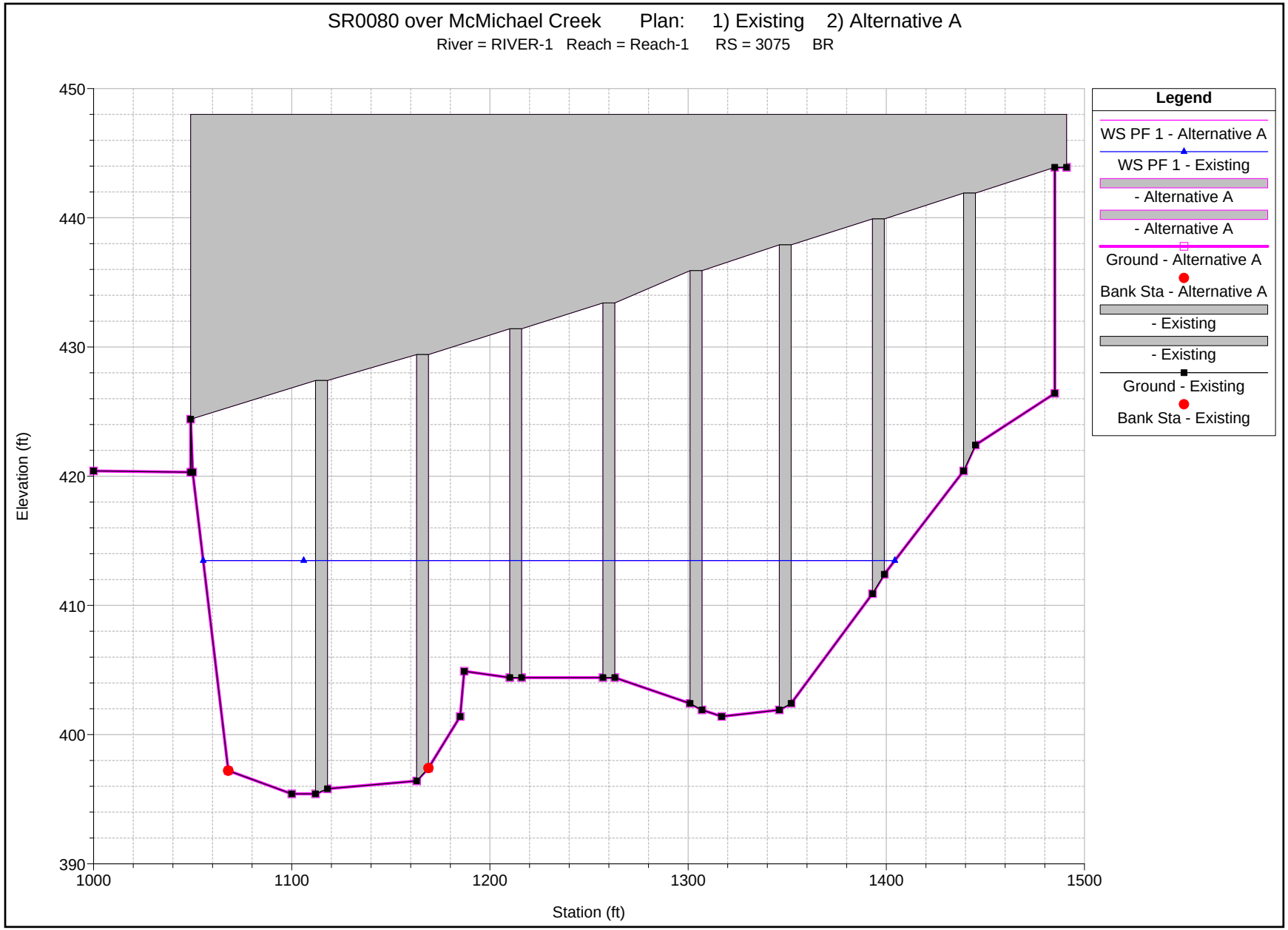

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 3680.*
Legend
WS PF 1 - Existing
WS PF 1 - Alternative A
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
425
420
415
410
405
400
395
1000
1100
1200
1300
1400
1500
1600
1700
1800
Station (ft)

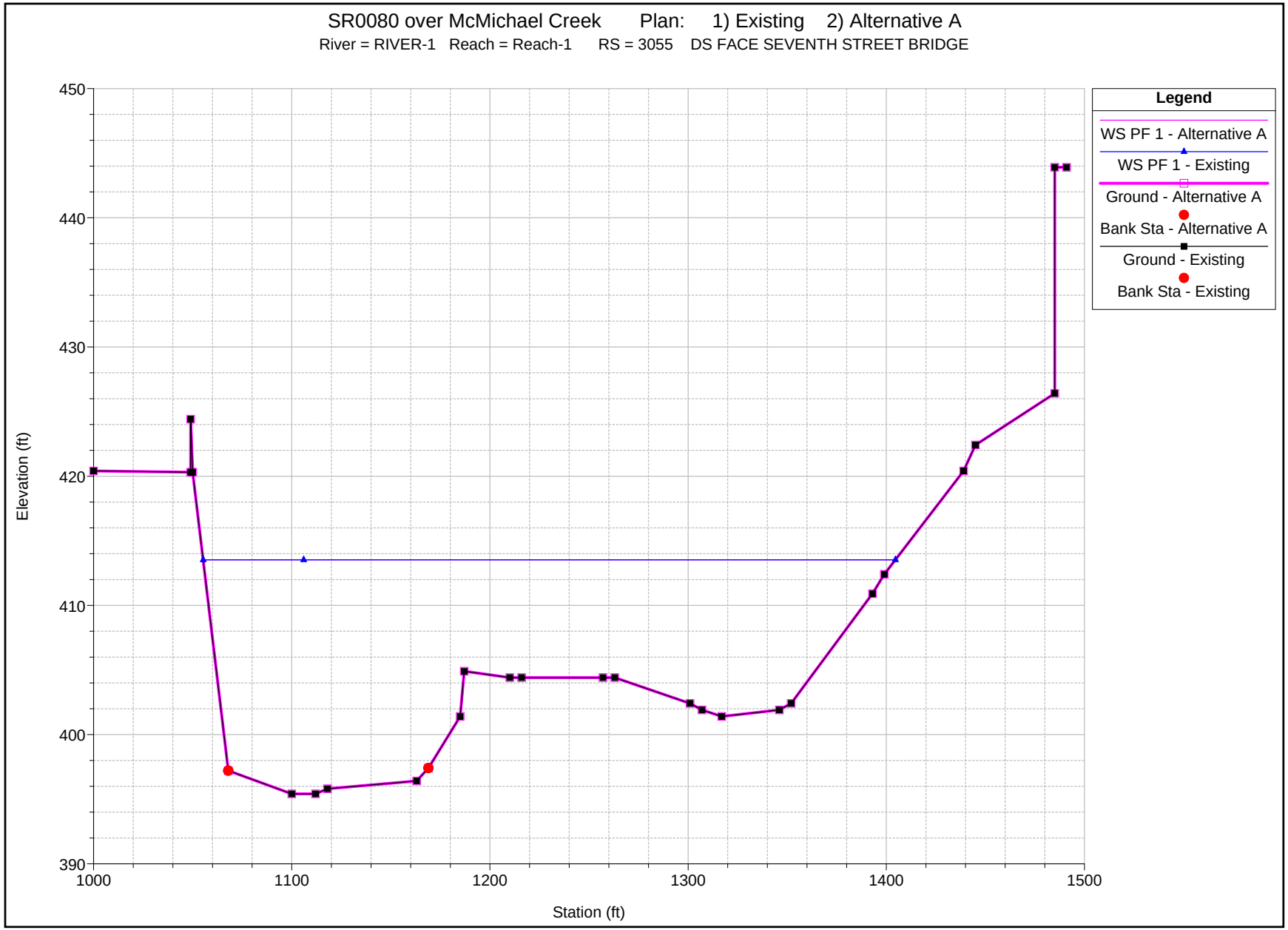

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 3510.*
Elevation (ft)
420
415
410
405
400
395
1100
1200
1300
1400
1500
1600
1700
1800
1900
Station (ft)
Legend
WS PF 1 - Existing
WS PF 1 - Alternative A
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing

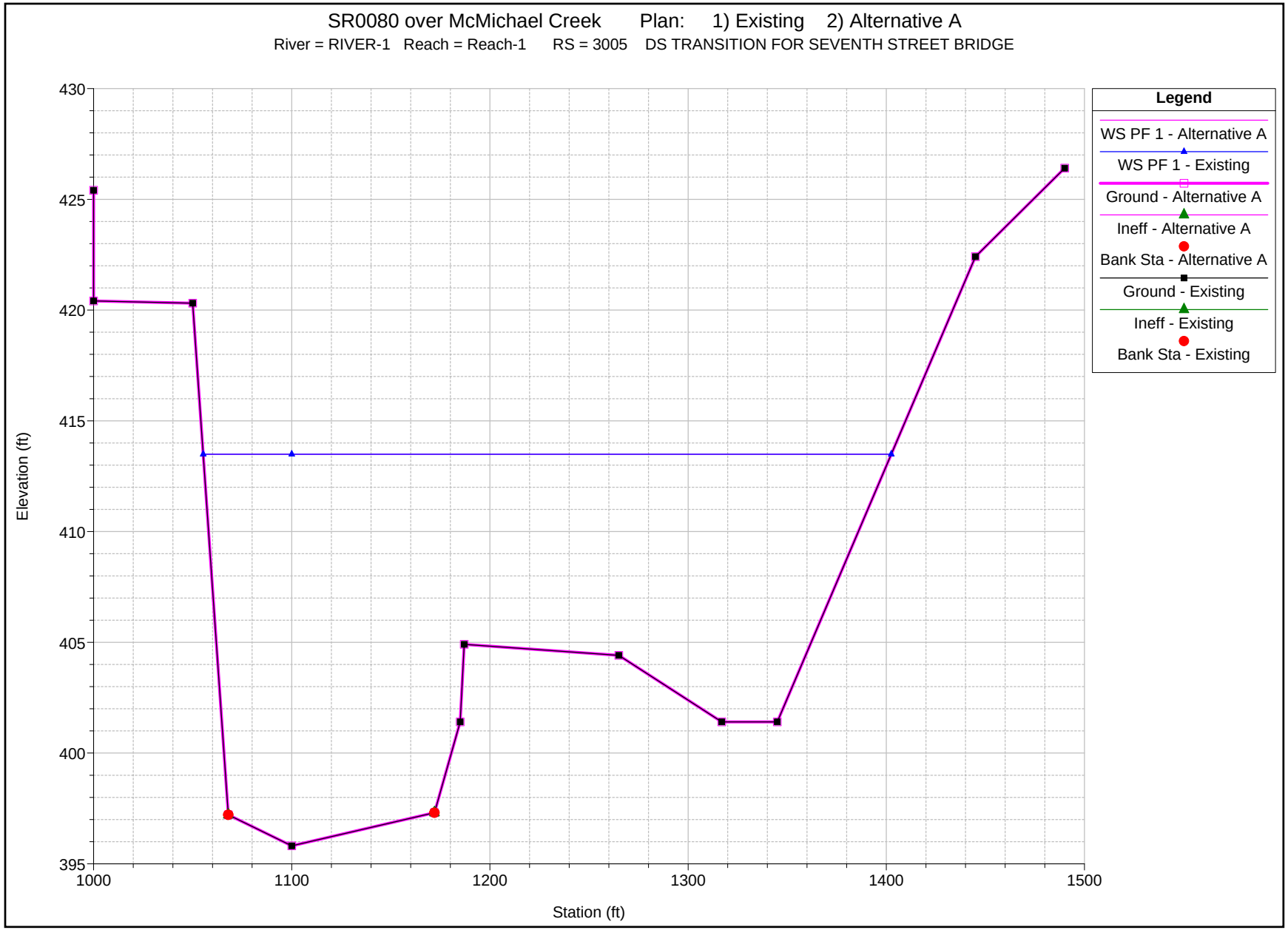

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 3170 US TRANSITION SEVENTH STREET BRIDGE
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
Station (ft)
430
425
420
415
410
405
400
395
1000
1100
1200
1300
1400
1500
1600

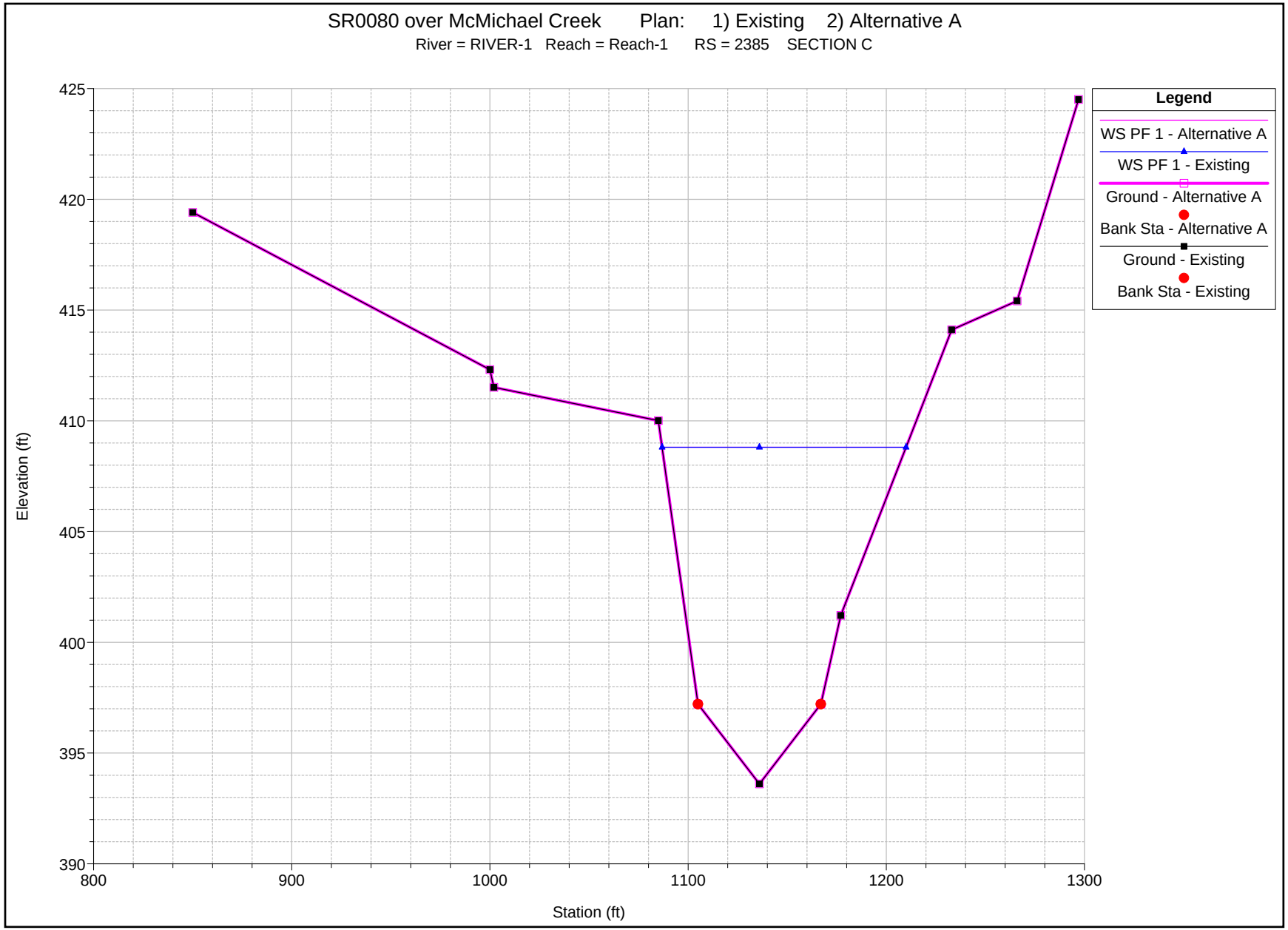

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 3095 This is a REPEATED section.
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
450
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
Station (ft)

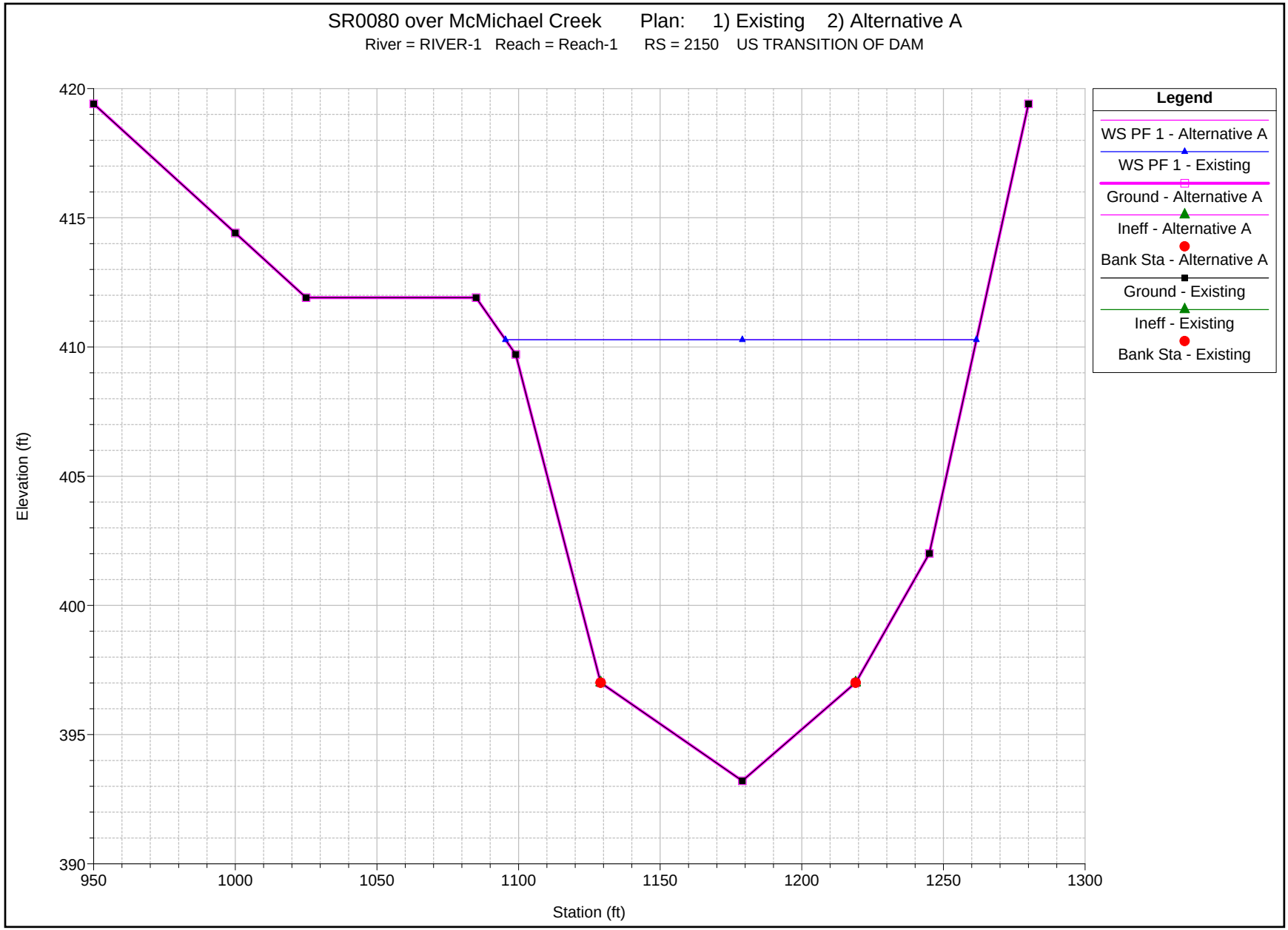

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 3075 BR
Elevation (ft)
Station (ft)
450
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
- Existing
- Existing
Ground - Existing
Bank Sta - Existing

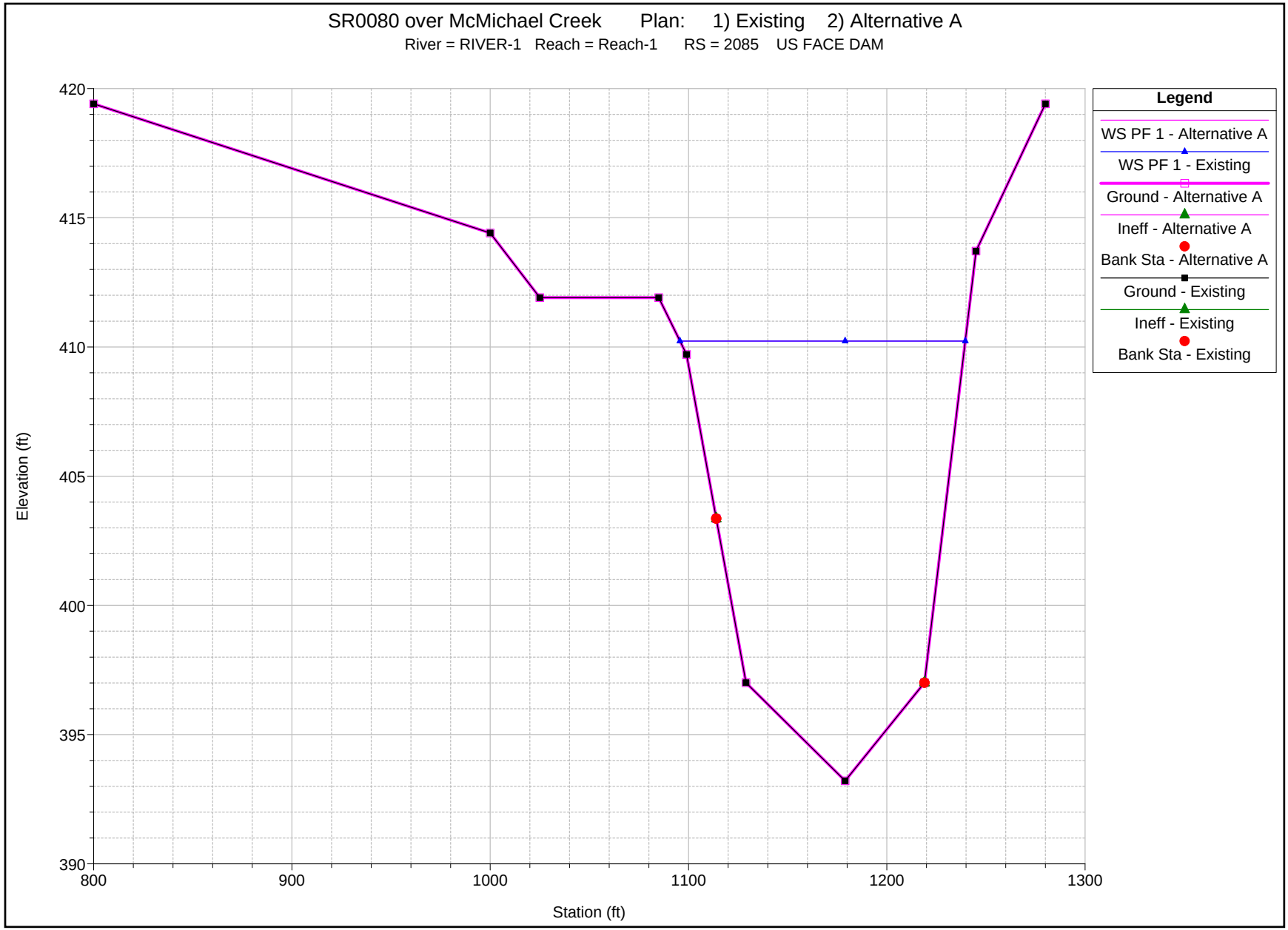

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 3075 BR
Elevation (ft)
Station (ft)
450
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
- Alternative A
Ground - Alternative A
Bank Sta - Alternative A
- Existing
- Existing
Ground - Existing
Bank Sta - Existing

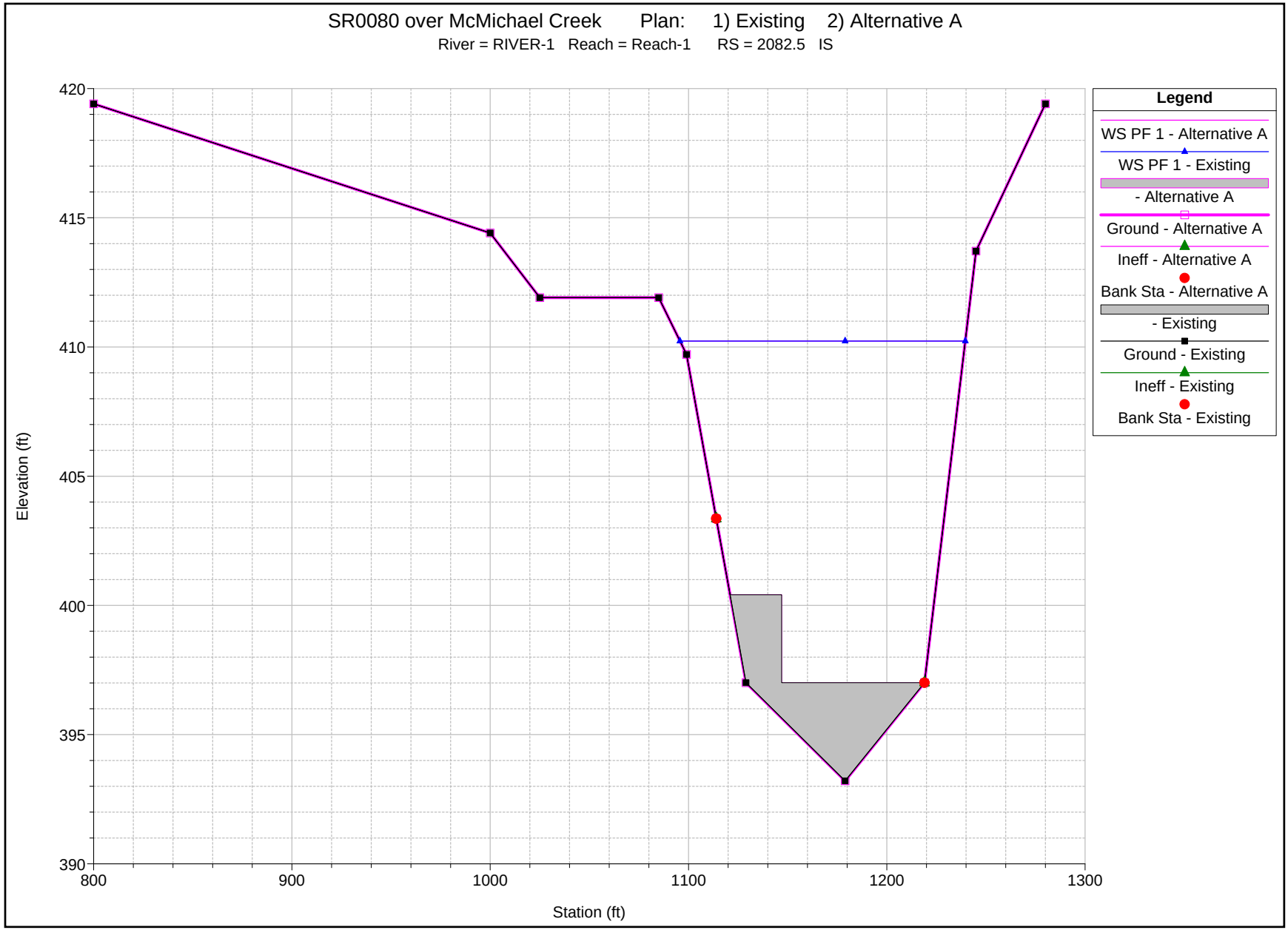

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 3055 DS FACE SEVENTH STREET BRIDGE
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
450
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
Station (ft)

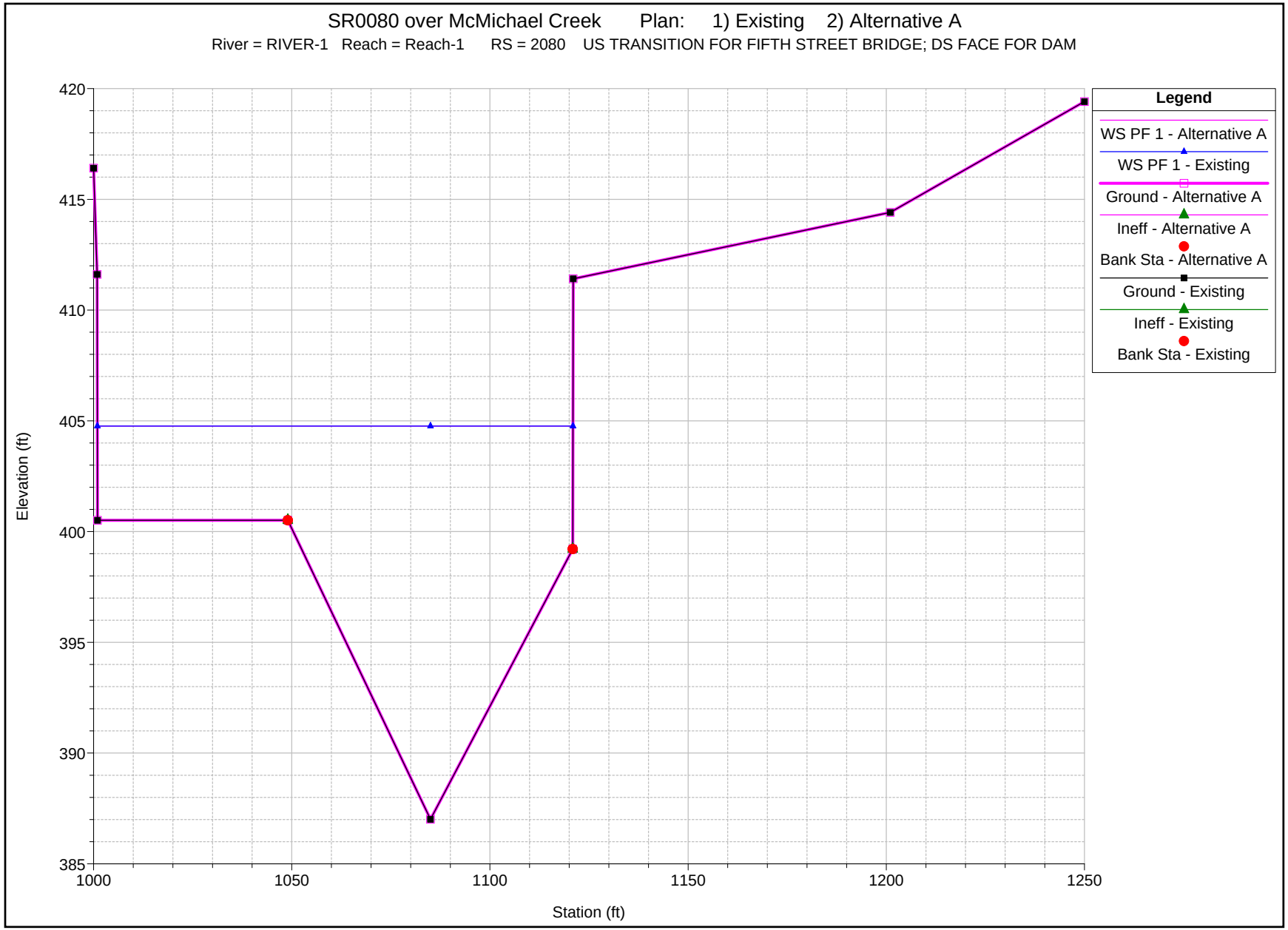

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 3005 DS TRANSITION FOR SEVENTH STREET BRIDGE
Elevation (ft)
Station (ft)
430
425
420
415
410
405
400
395
1000
1100
1200
1300
1400
1500
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
Ground - Existing
Ineff - Existing
Bank Sta - Existing

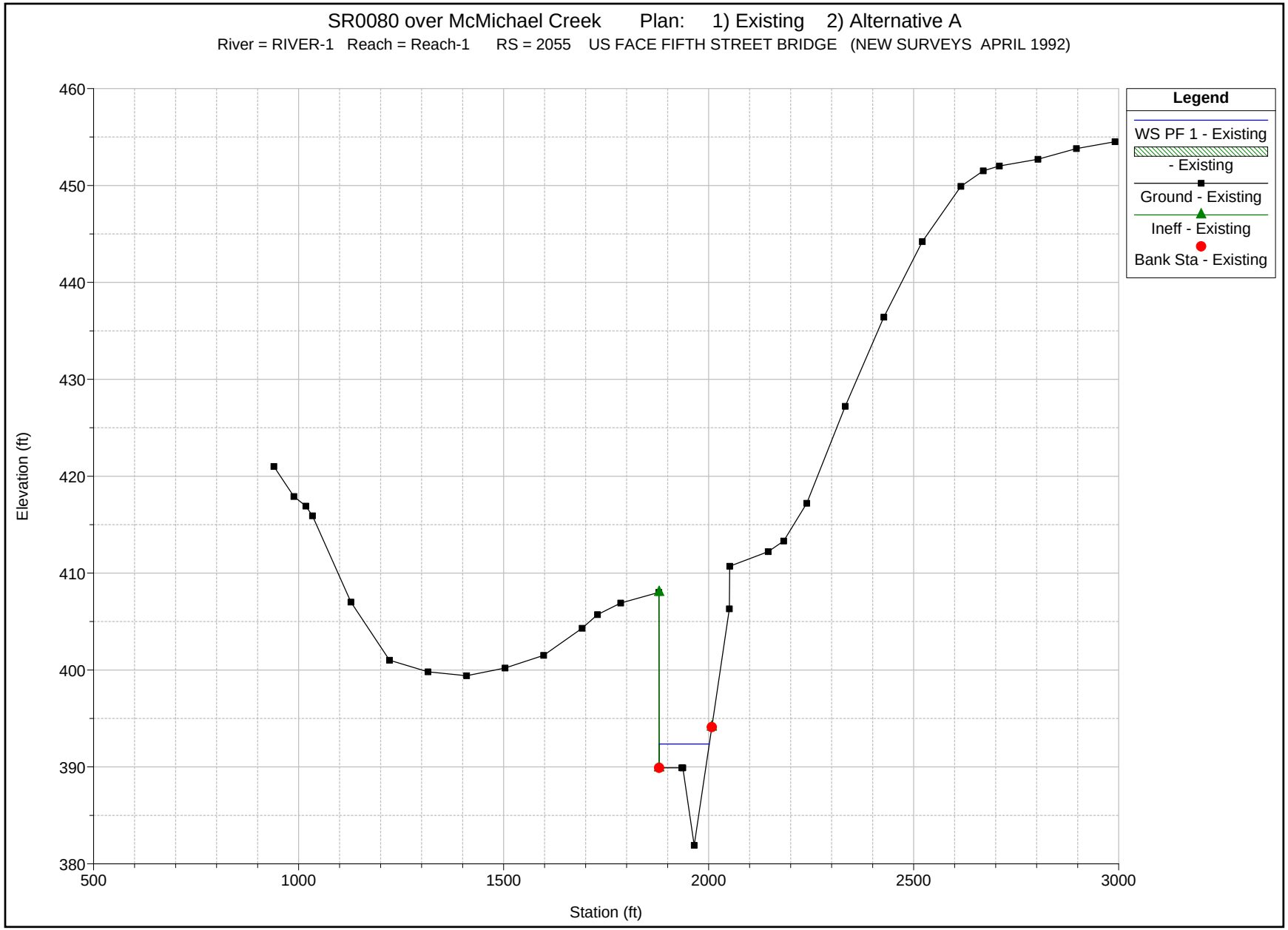

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 2385 SECTION C
Elevation (ft)
425
420
415
410
405
400
395
390
800
900
1000
1100
1200
1300
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing

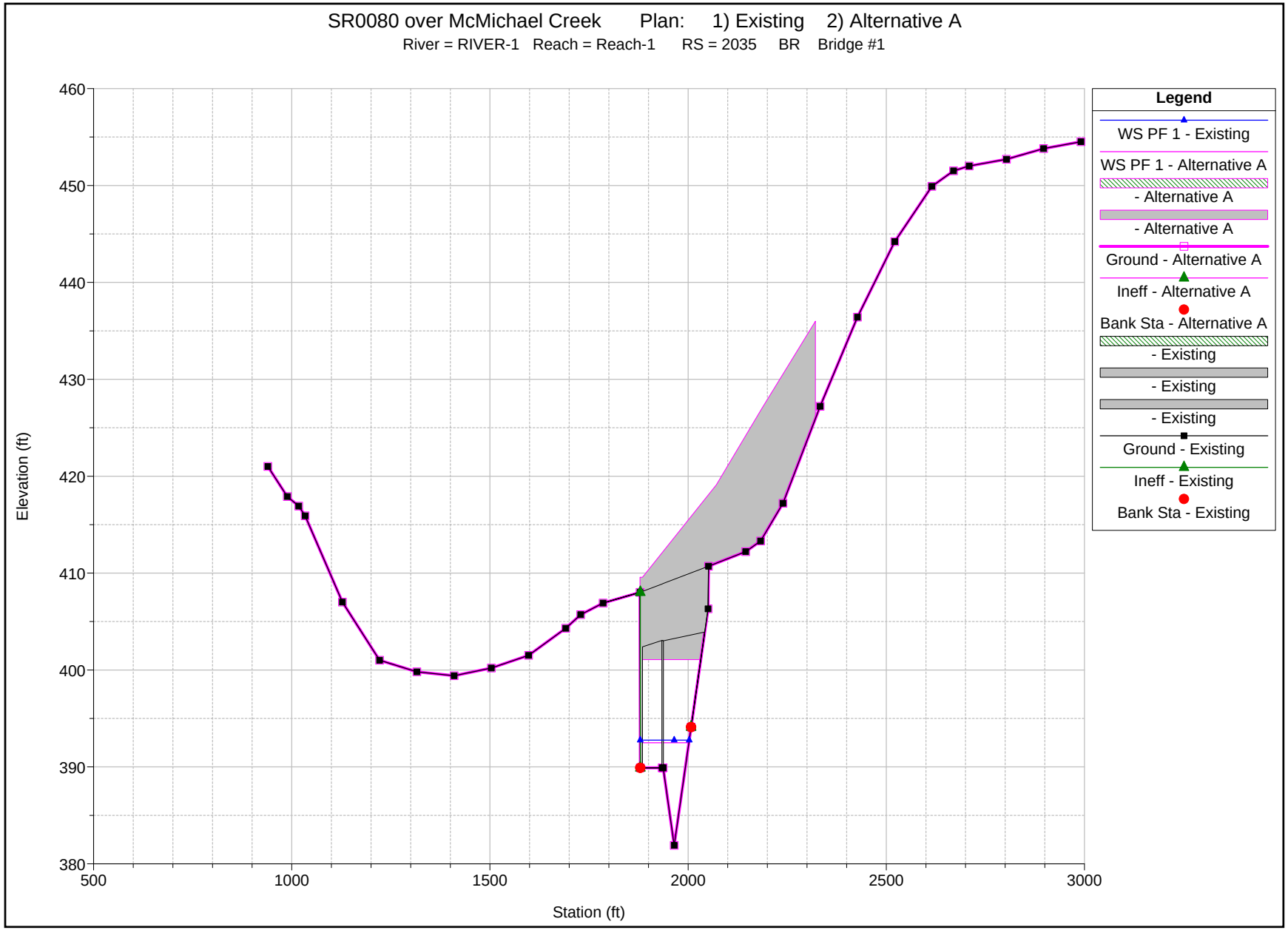

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 2150 US TRANSITION OF DAM
Elevation (ft)
Station (ft)
420
415
410
405
400
395
390
950
1000
1050
1100
1150
1200
1250
1300
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
Ground - Existing
Ineff - Existing
Bank Sta - Existing

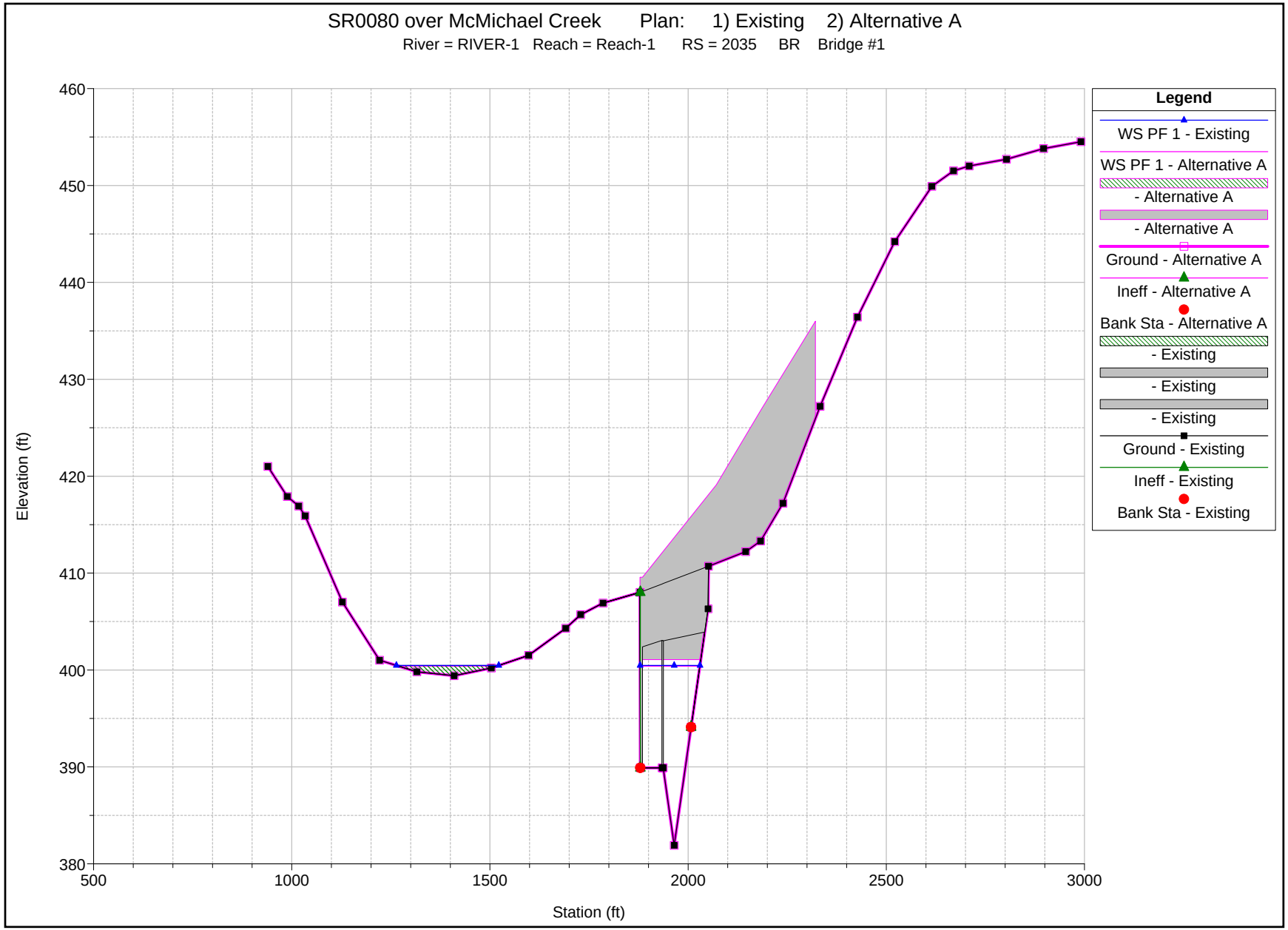

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 2085 US FACE DAM
Elevation (ft)
420
415
410
405
400
395
390
800
900
1000
1100
1200
1300
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
Ground - Existing
Ineff - Existing
Bank Sta - Existing

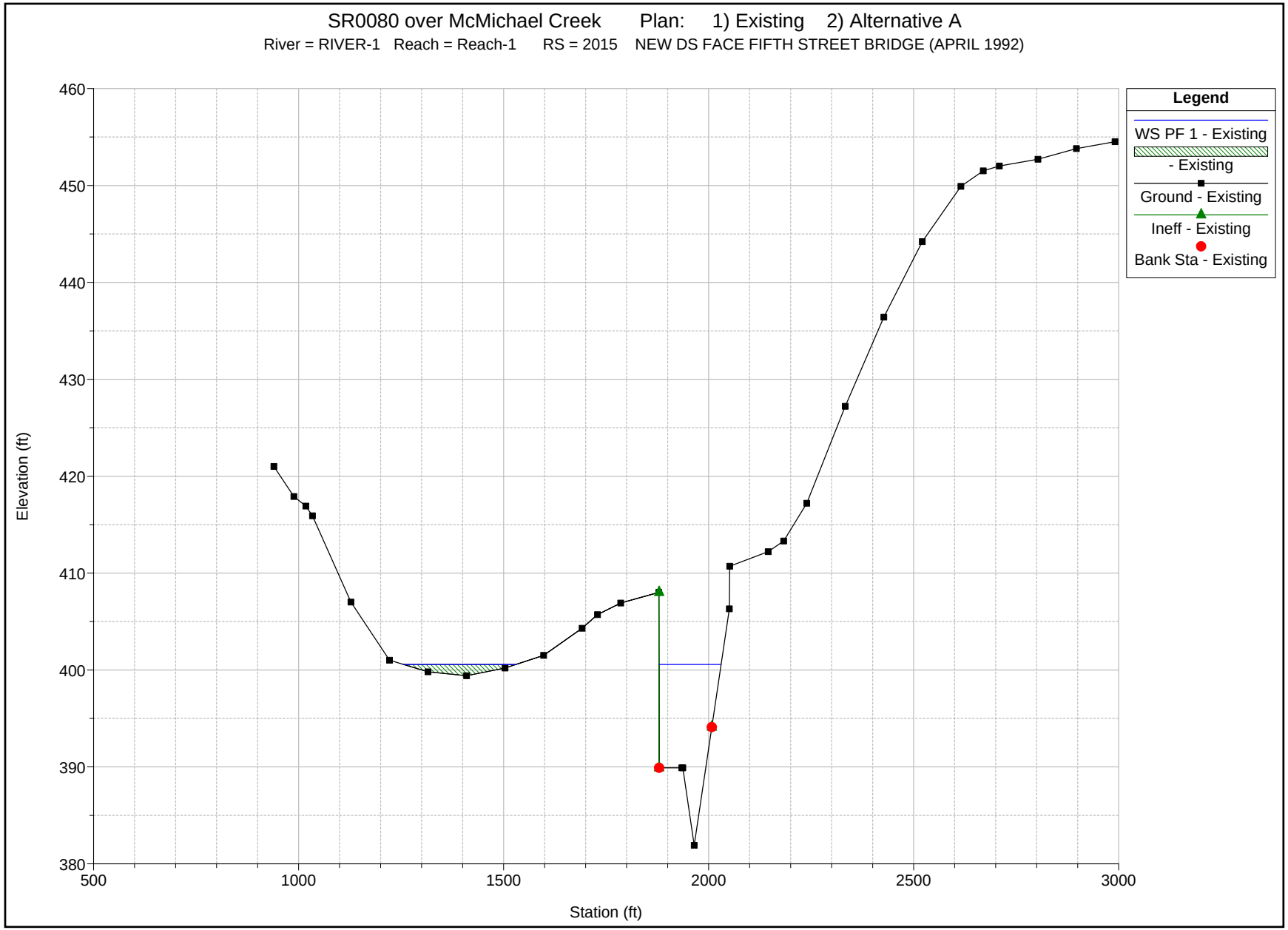

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 2082.5 IS
Elevation (ft)
420
415
410
405
400
395
390
800
900
1000
1100
1200
1300
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
- Alternative A
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

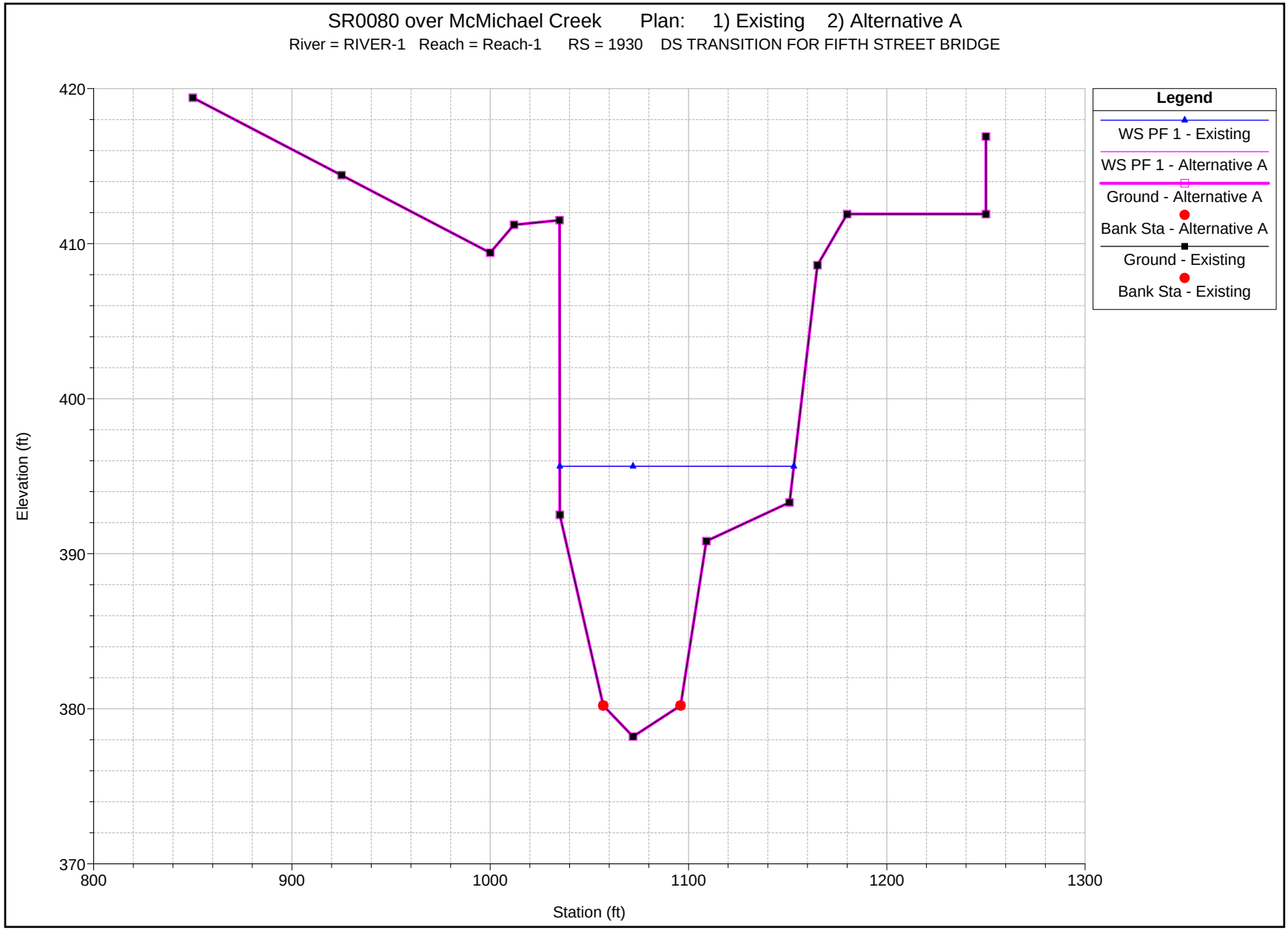

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 2080 US TRANSITION FOR FIFTH STREET BRIDGE; DS FACE FOR DAM
Elevation (ft)
420
415
410
405
400
395
390
385
1000
1050
1100
1150
1200
1250
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
Ground - Existing
Ineff - Existing
Bank Sta - Existing

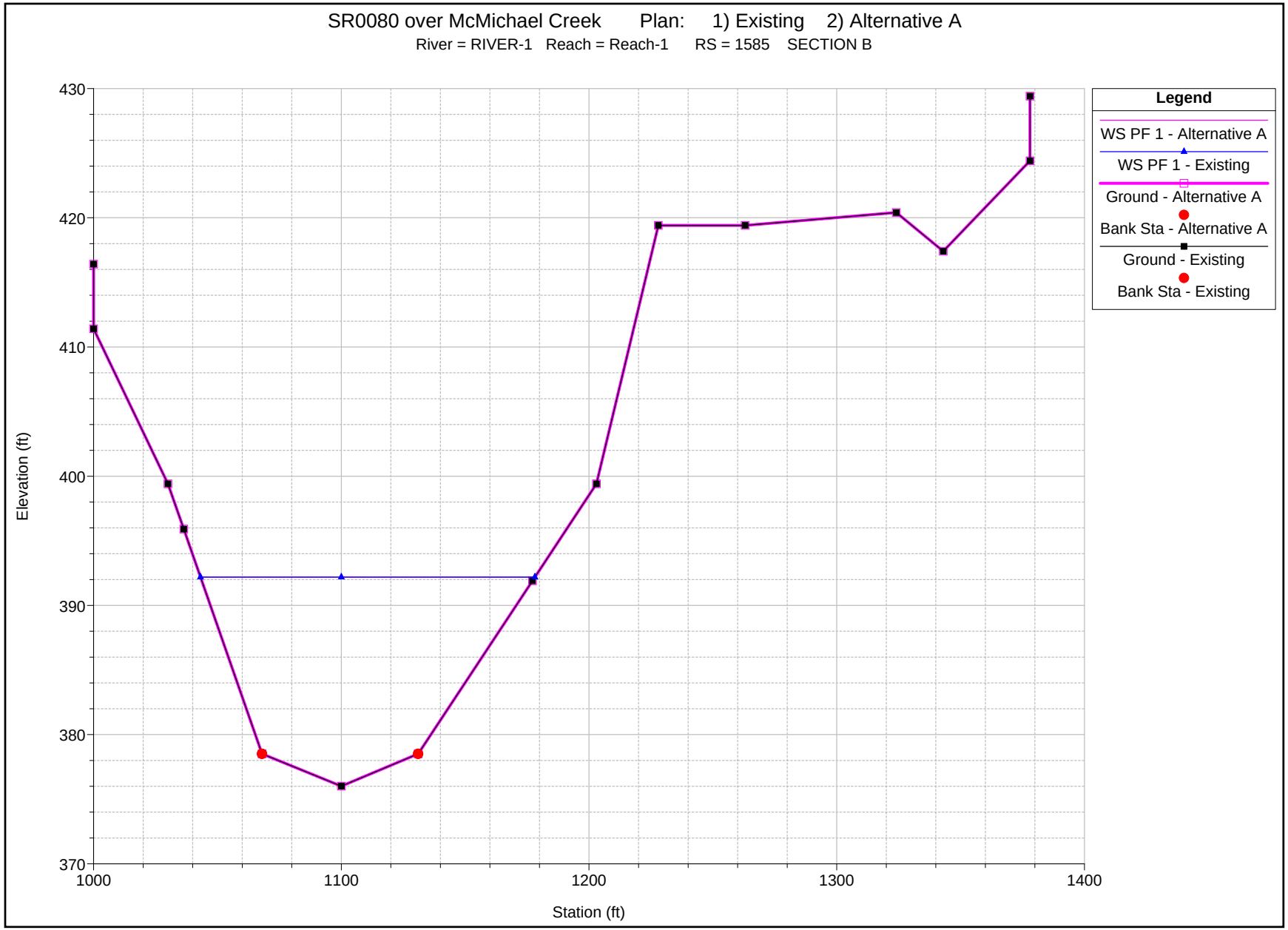

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 2055 US FACE FIFTH STREET BRIDGE (NEW SURVEYS APRIL 1992)
Legend
WS PF 1 - Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
460
450
440
430
420
410
400
390
380
500
1000
1500
2000
2500
3000
Station (ft)

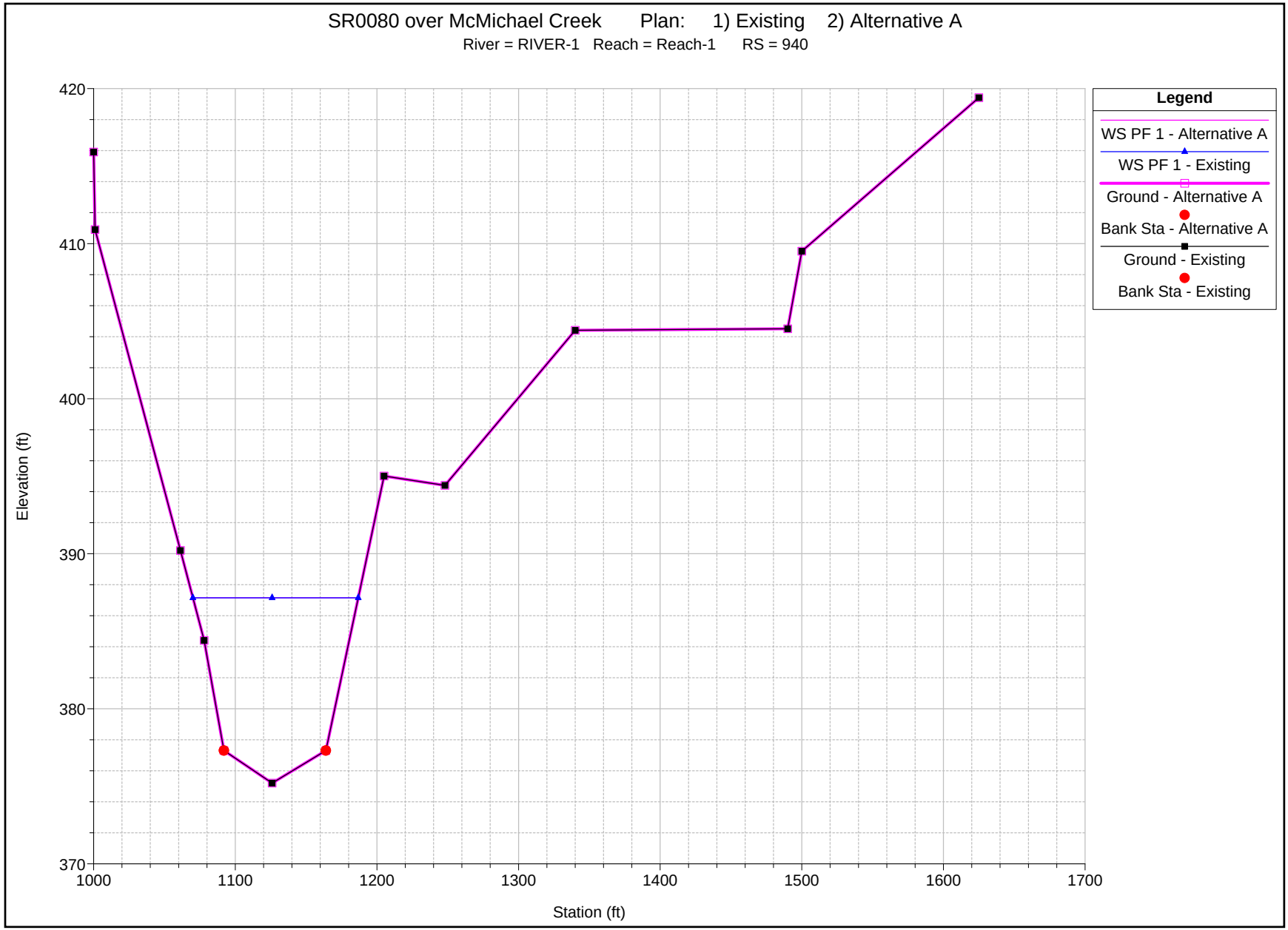

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 2035 BR Bridge #1
Elevation (ft)
460
450
440
430
420
410
400
390
380
500
1000
1500
2000
2500
3000
Station (ft)
Legend
WS PF 1 - Existing
WS PF 1 - Alternative A
- Alternative A
- Alternative A
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
- Existing
- Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

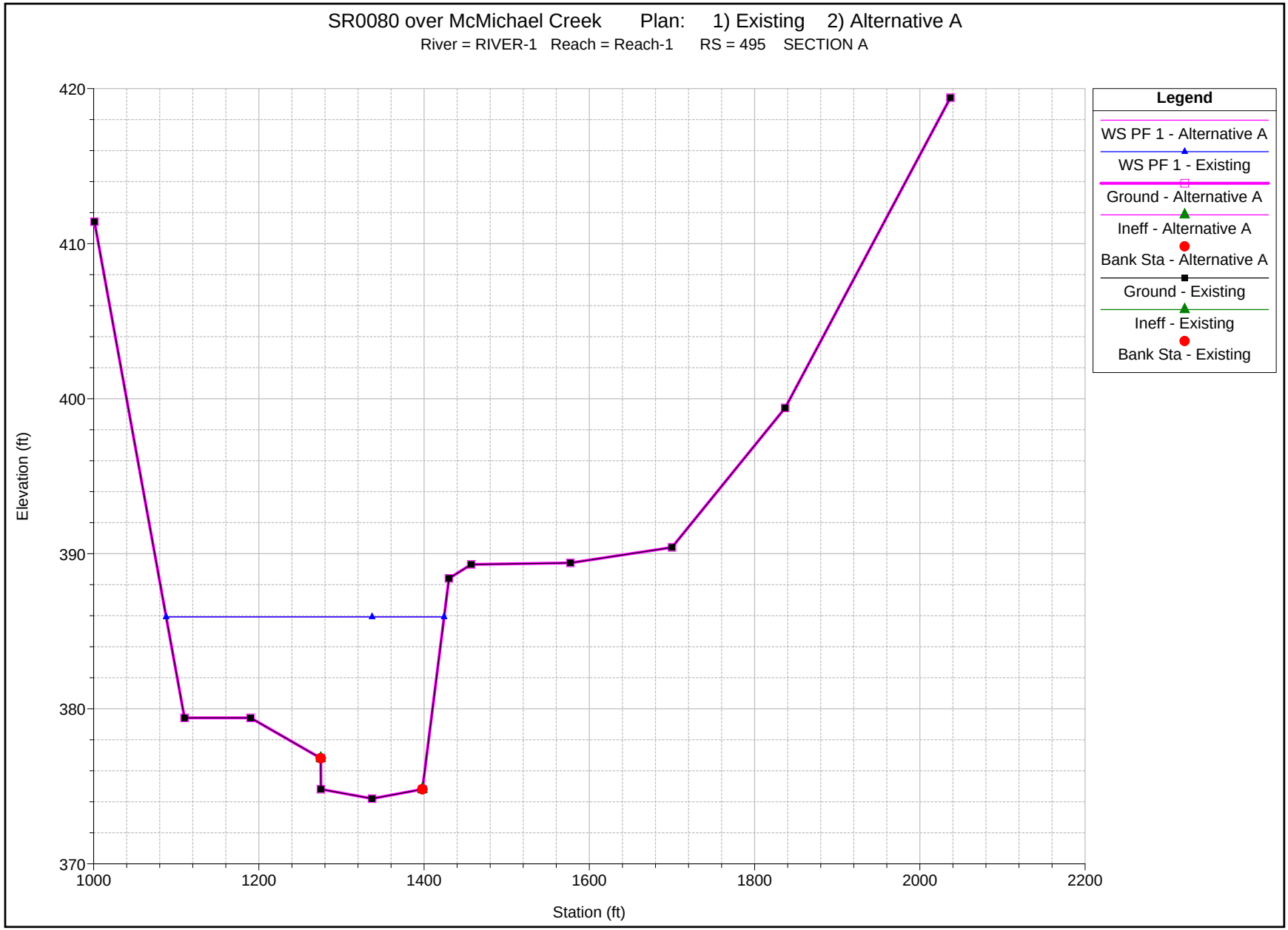

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 2035 BR Bridge #1
Elevation (ft)
460
450
440
430
420
410
400
390
380
500
1000
1500
2000
2500
3000
Station (ft)
Legend
WS PF 1 - Existing
WS PF 1 - Alternative A
- Alternative A
- Alternative A
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
- Existing
- Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

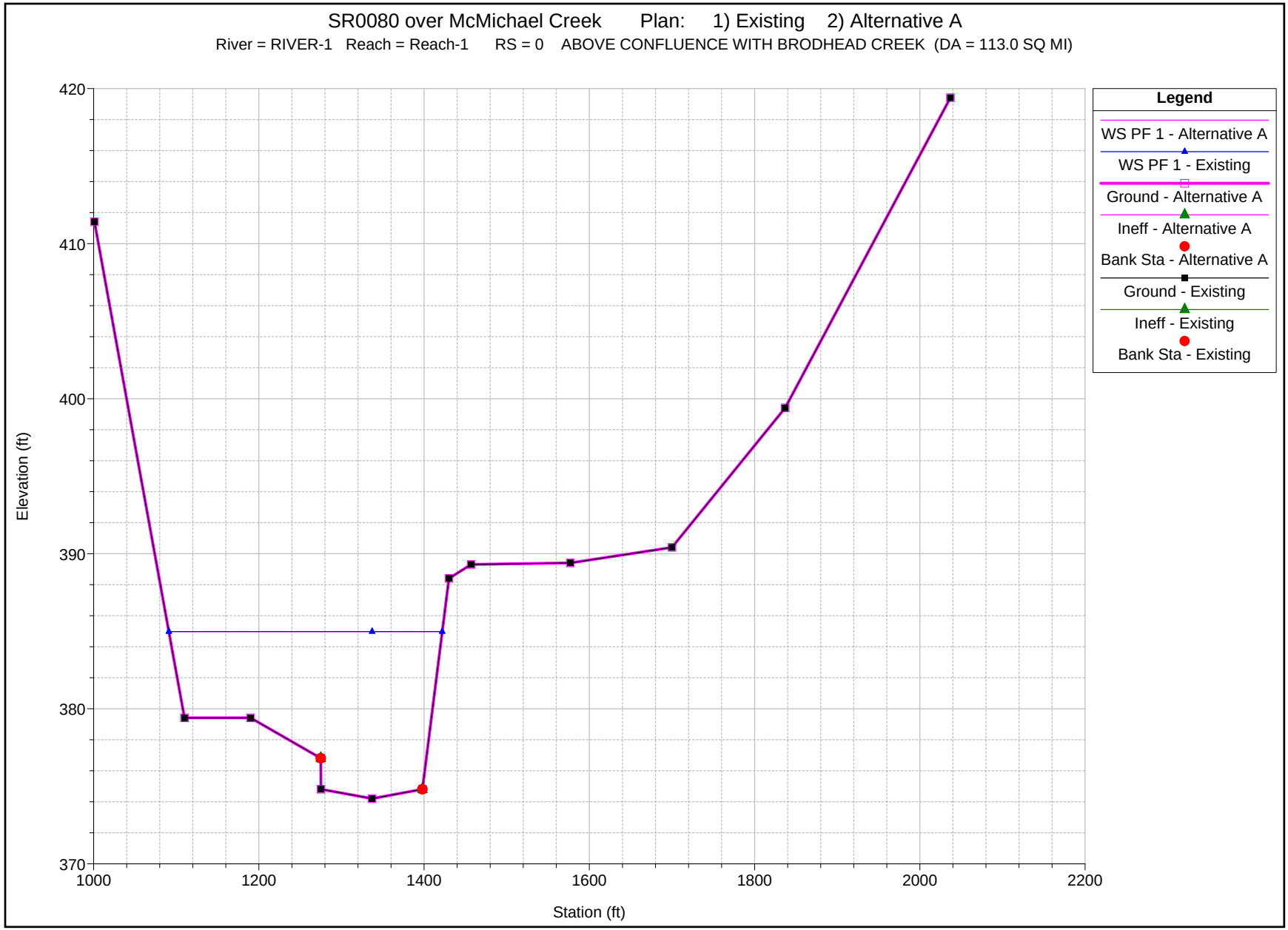

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 2015 NEW DS FACE FIFTH STREET BRIDGE (APRIL 1992)
Legend
WS PF 1 - Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
460
450
440
430
420
410
400
390
380
500
1000
1500
2000
2500
3000
Station (ft)

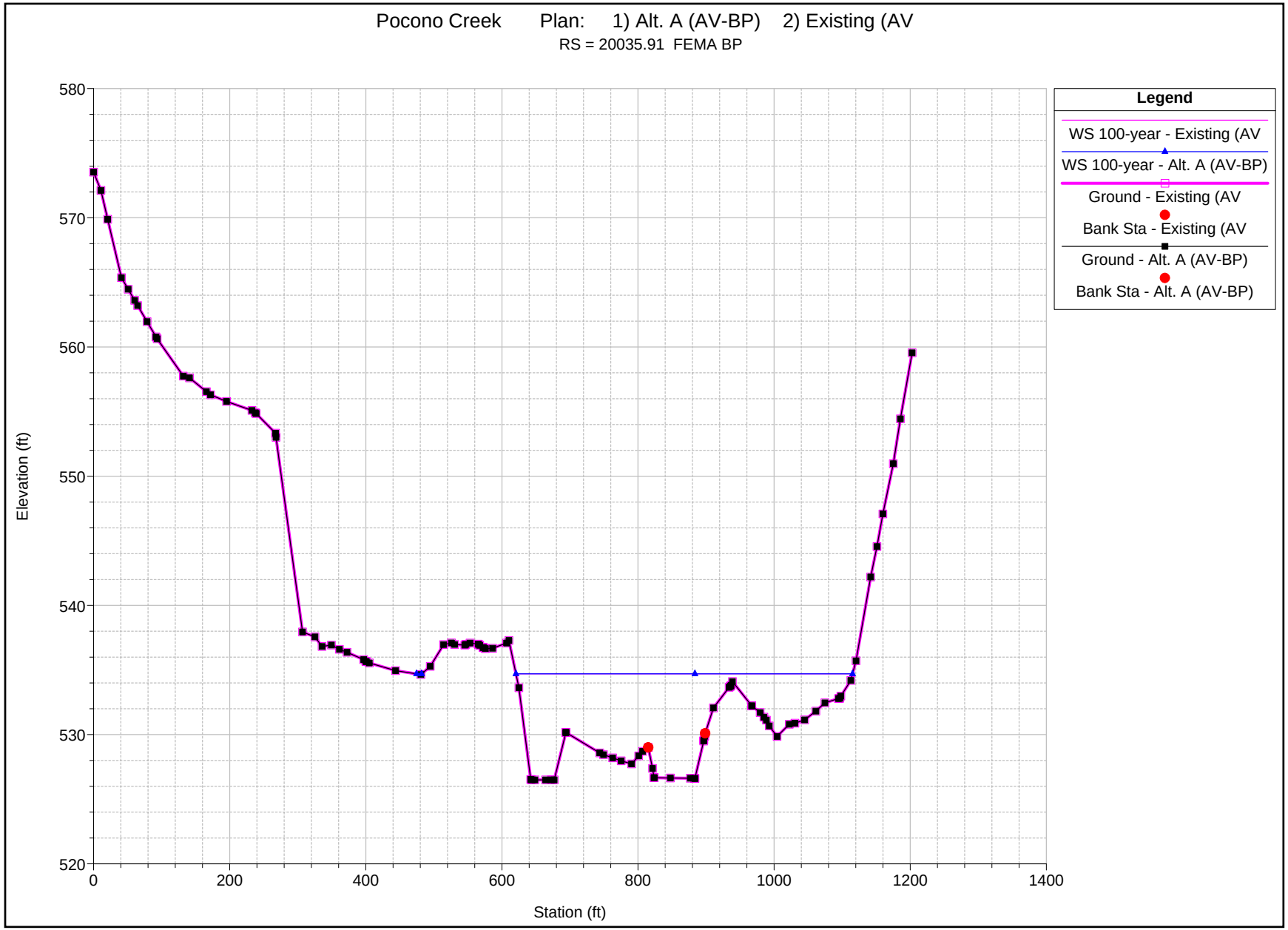

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 1930 DS TRANSITION FOR FIFTH STREET BRIDGE
Legend
WS PF 1 - Existing
WS PF 1 - Alternative A
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
420
410
400
390
380
370
800
900
1000
1100
1200
1300
Station (ft)

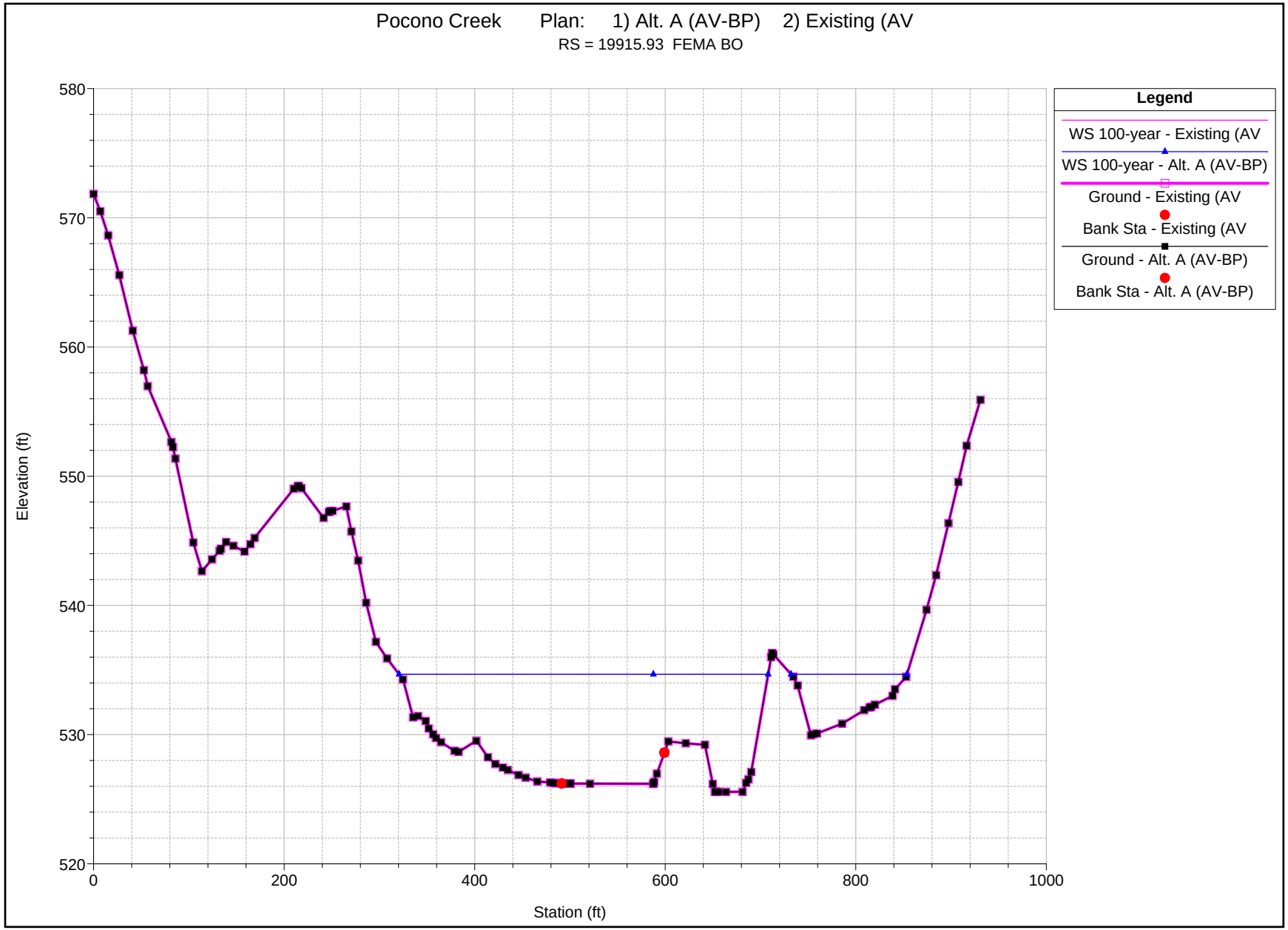

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 1585 SECTION B
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing
Elevation (ft)
430
420
410
400
390
380
370
1000
1100
1200
1300
1400
Station (ft)

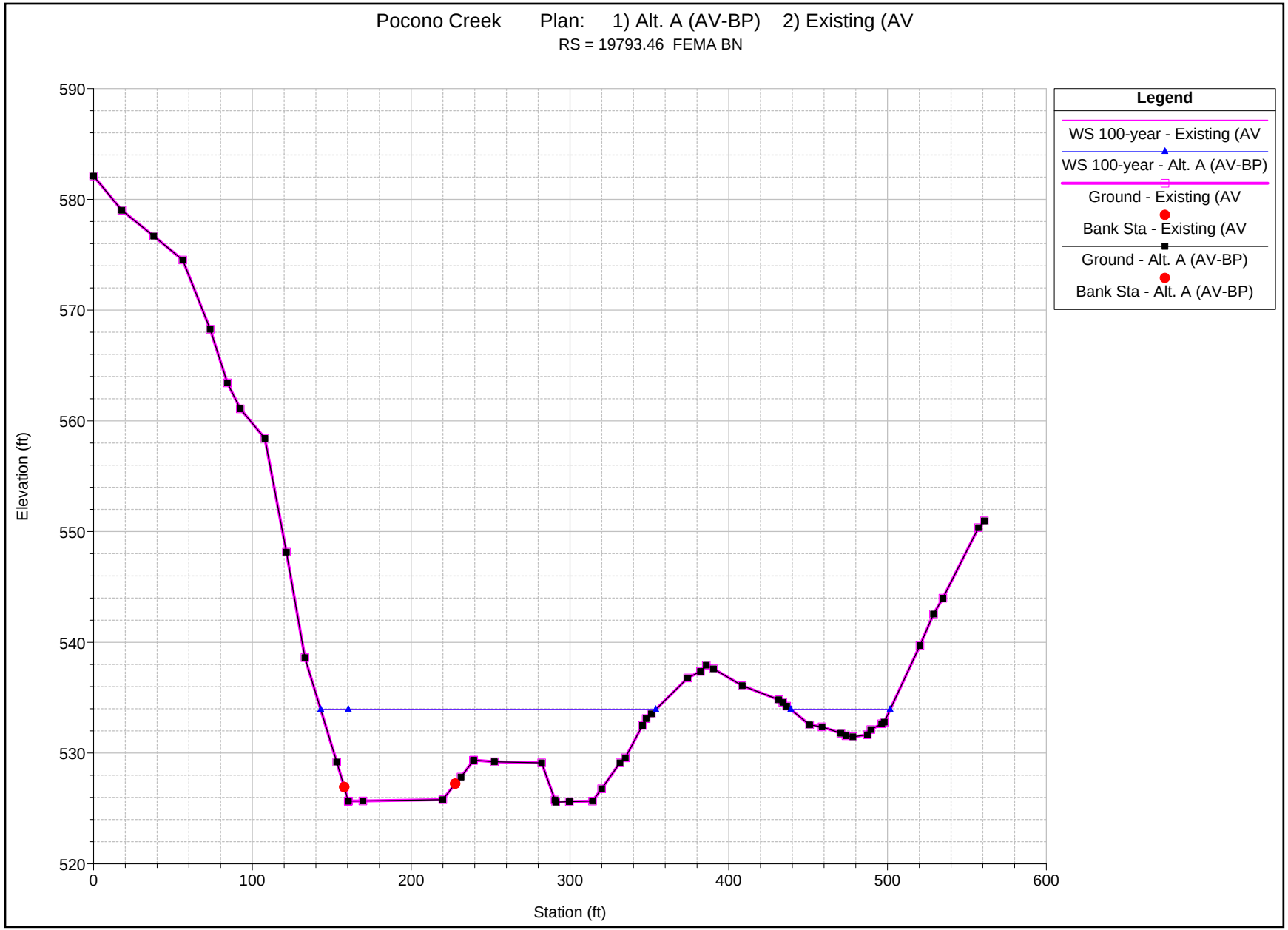

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 940
Elevation (ft)
420
410
400
390
380
370
1000
1100
1200
1300
1400
1500
1600
1700
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Bank Sta - Alternative A
Ground - Existing
Bank Sta - Existing

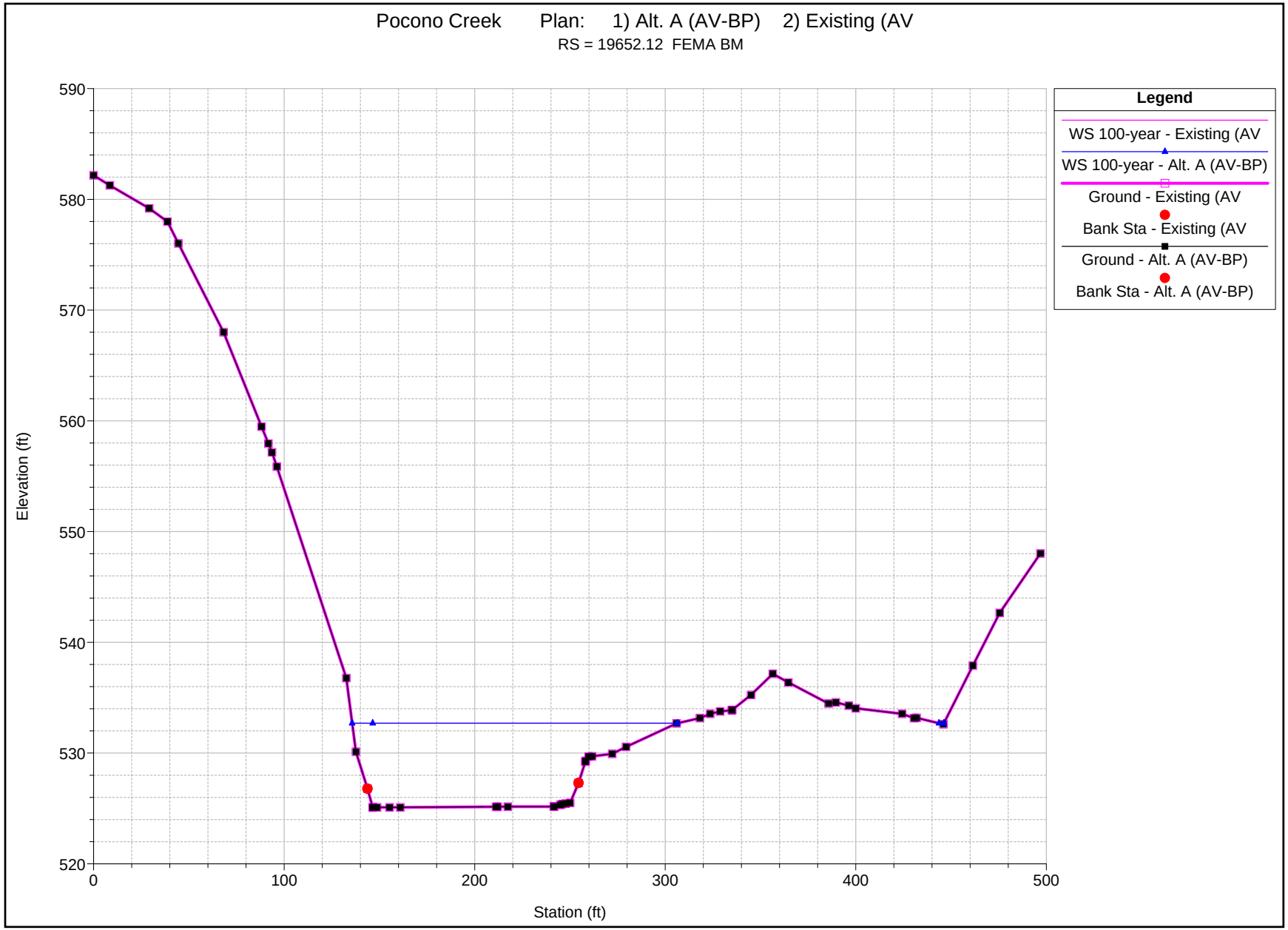

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 495 SECTION A
Elevation (ft)
420
410
400
390
380
370
1000
1200
1400
1600
1800
2000
2200
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
Ground - Existing
Ineff - Existing
Bank Sta - Existing

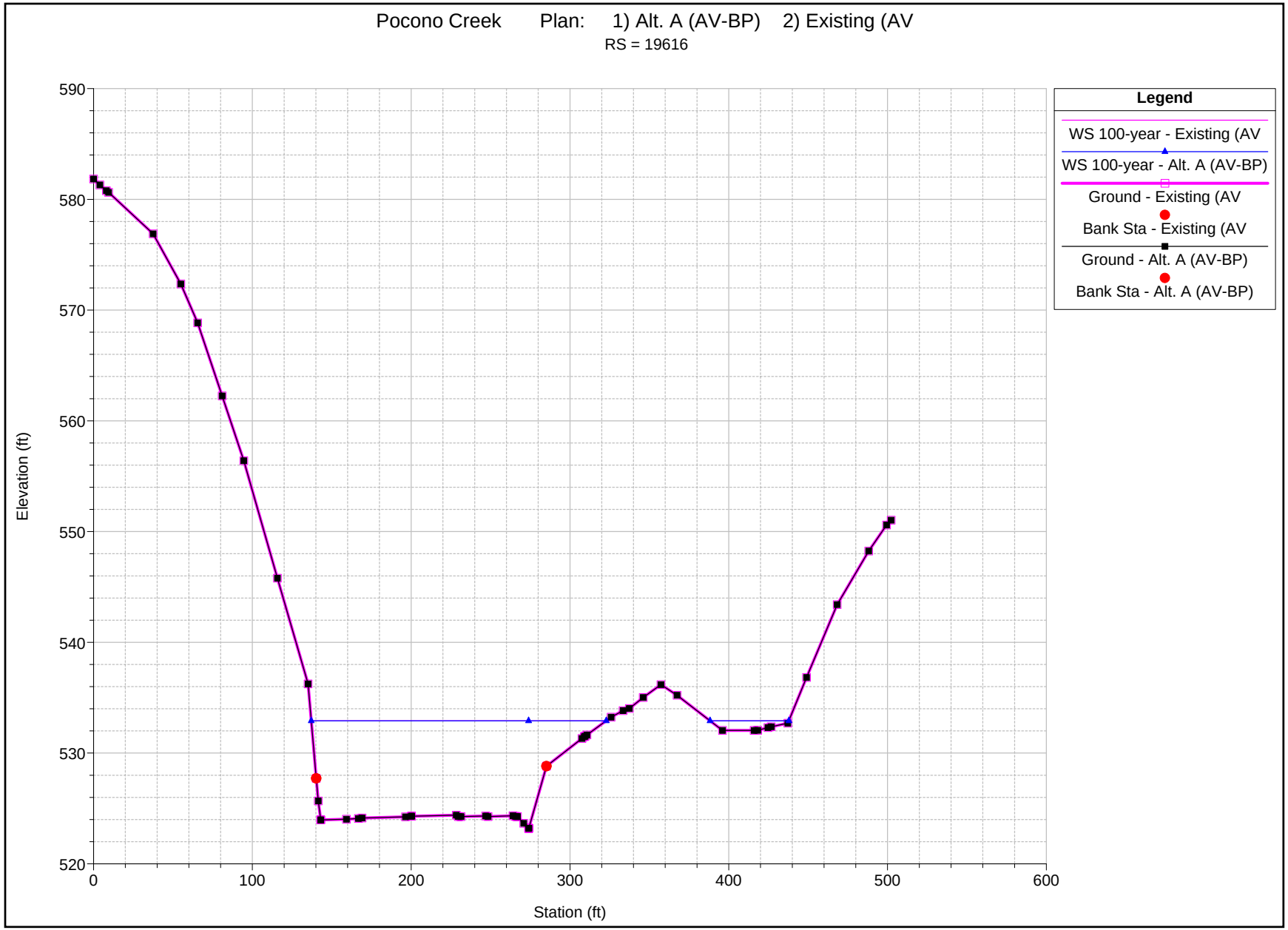

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative A
River = RIVER-1 Reach = Reach-1 RS = 0 ABOVE CONFLUENCE WITH BRODHEAD CREEK (DA = 113.0 SQ MI)
Elevation (ft)
420
410
400
390
380
370
1000
1200
1400
1600
1800
2000
2200
Station (ft)
Legend
WS PF 1 - Alternative A
WS PF 1 - Existing
Ground - Alternative A
Ineff - Alternative A
Bank Sta - Alternative A
Ground - Existing
Ineff - Existing
Bank Sta - Existing

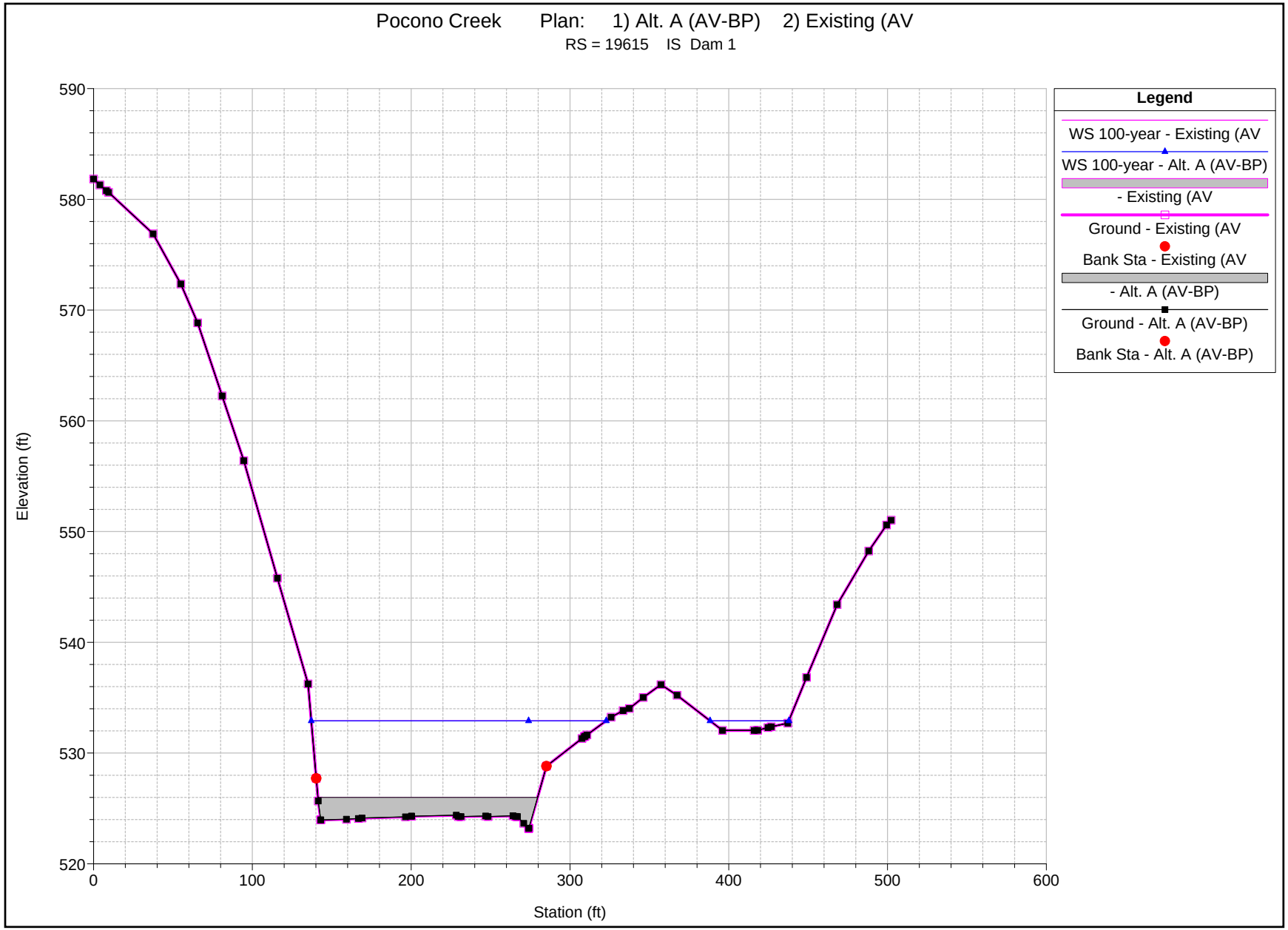

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 20035.91 FEMA BP
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
Station (ft)
580
570
560
550
540
530
520
0
200
400
600
800
1000
1200
1400

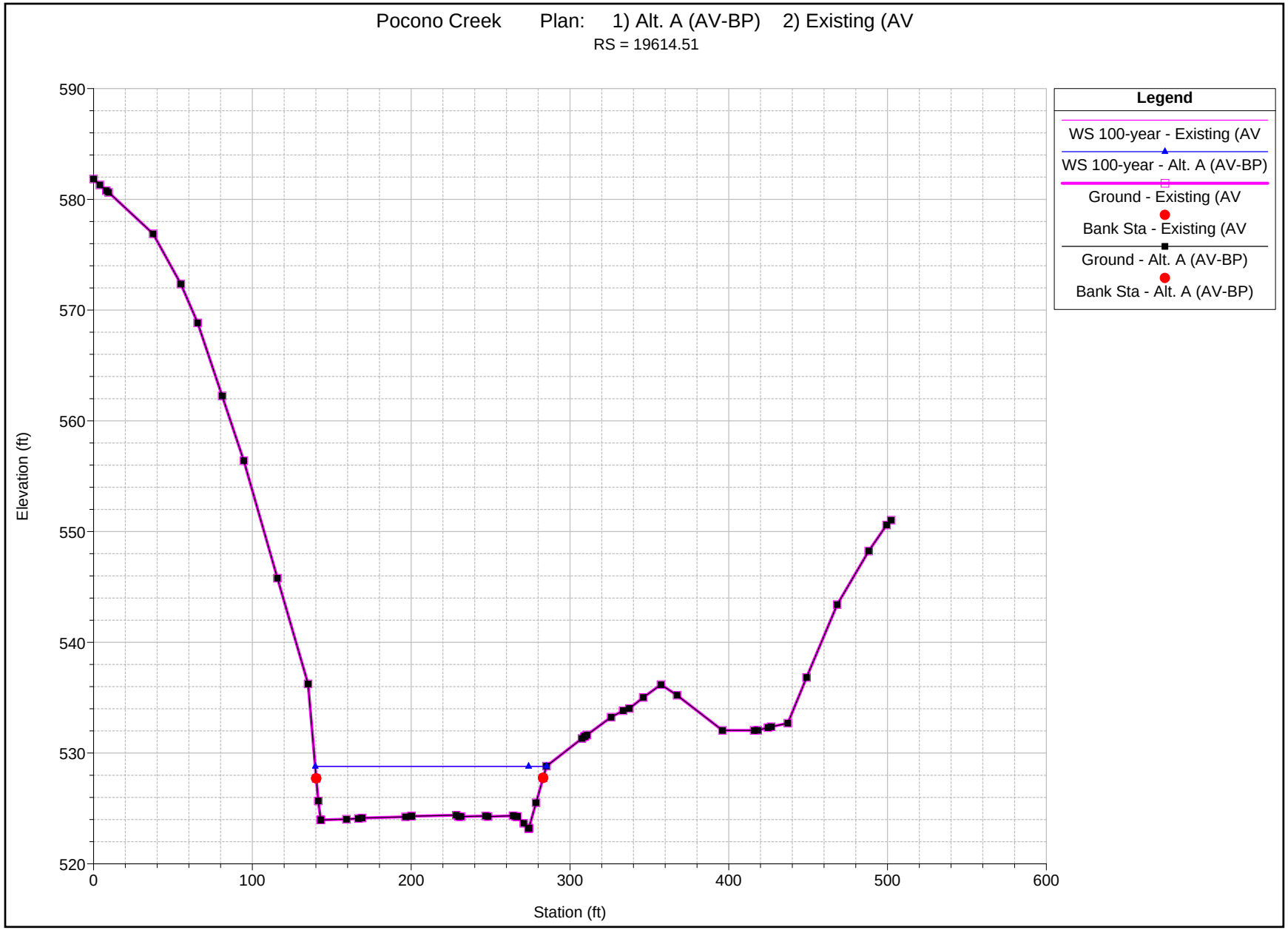

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 19915.93 FEMA BO
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
580
570
560
550
540
530
520
0
200
400
600
800
1000
Station (ft)

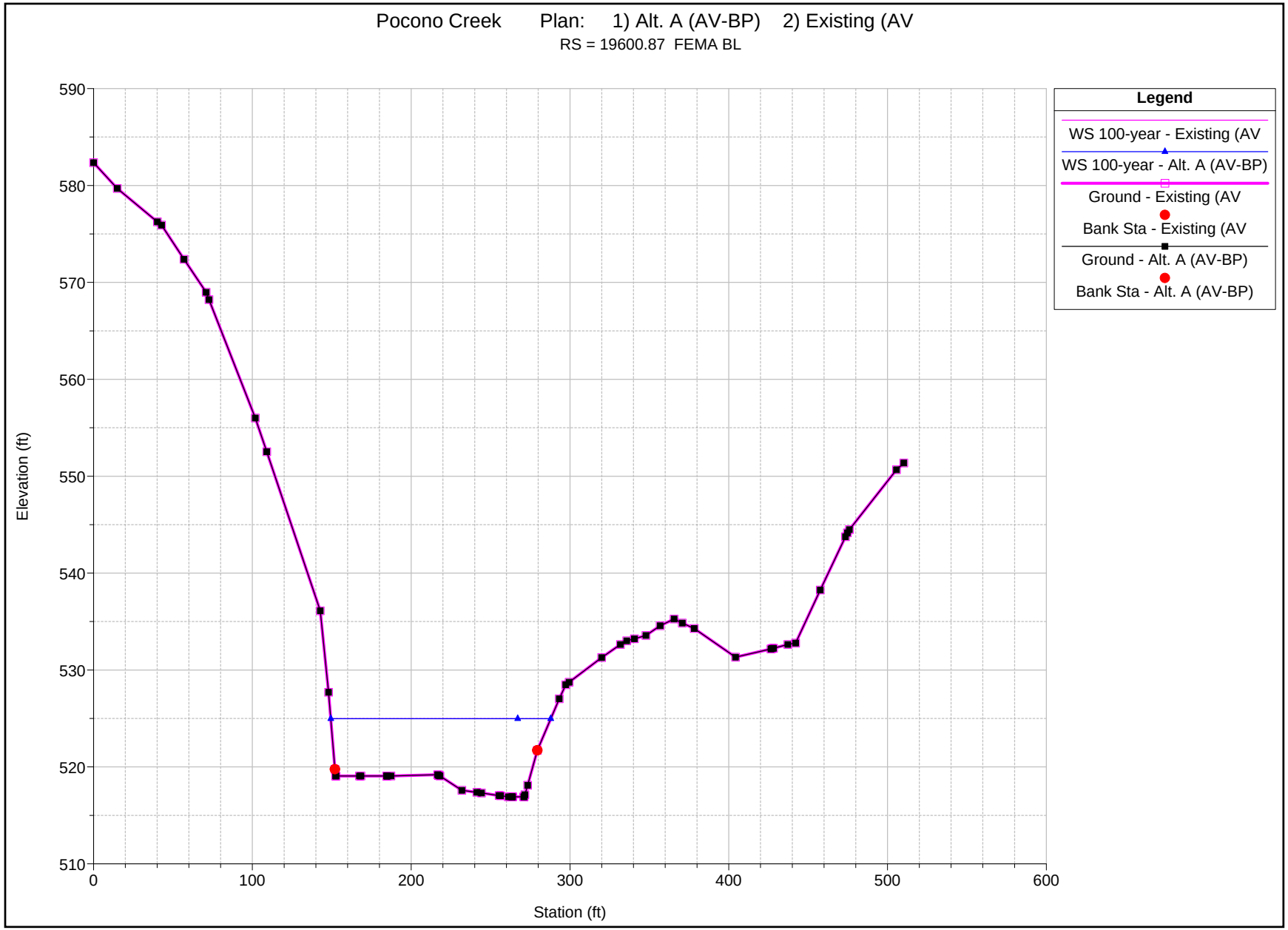

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 19793.46 FEMA BN
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
600
Station (ft)

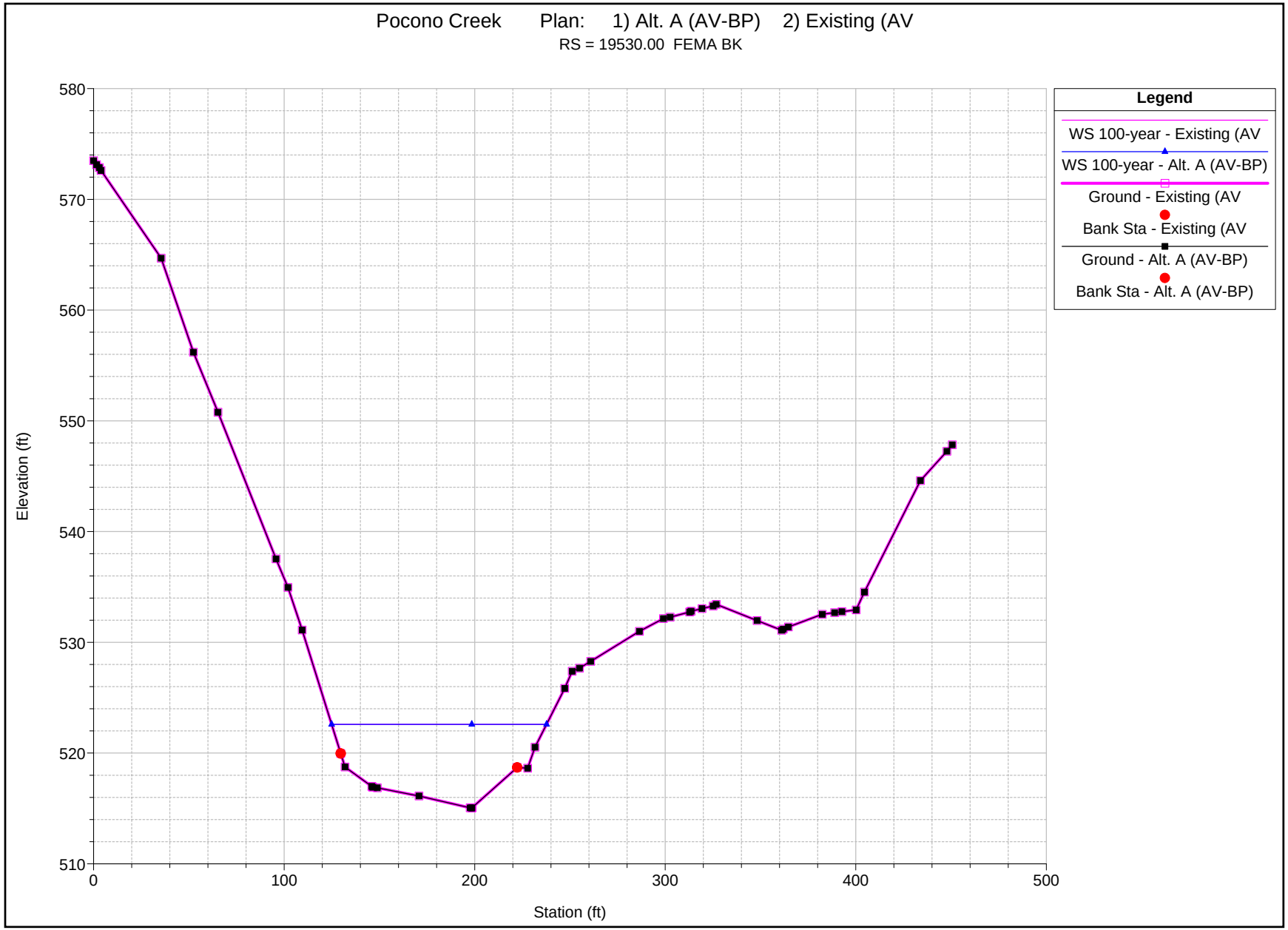

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 19652.12 FEMA BM
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
Station (ft)

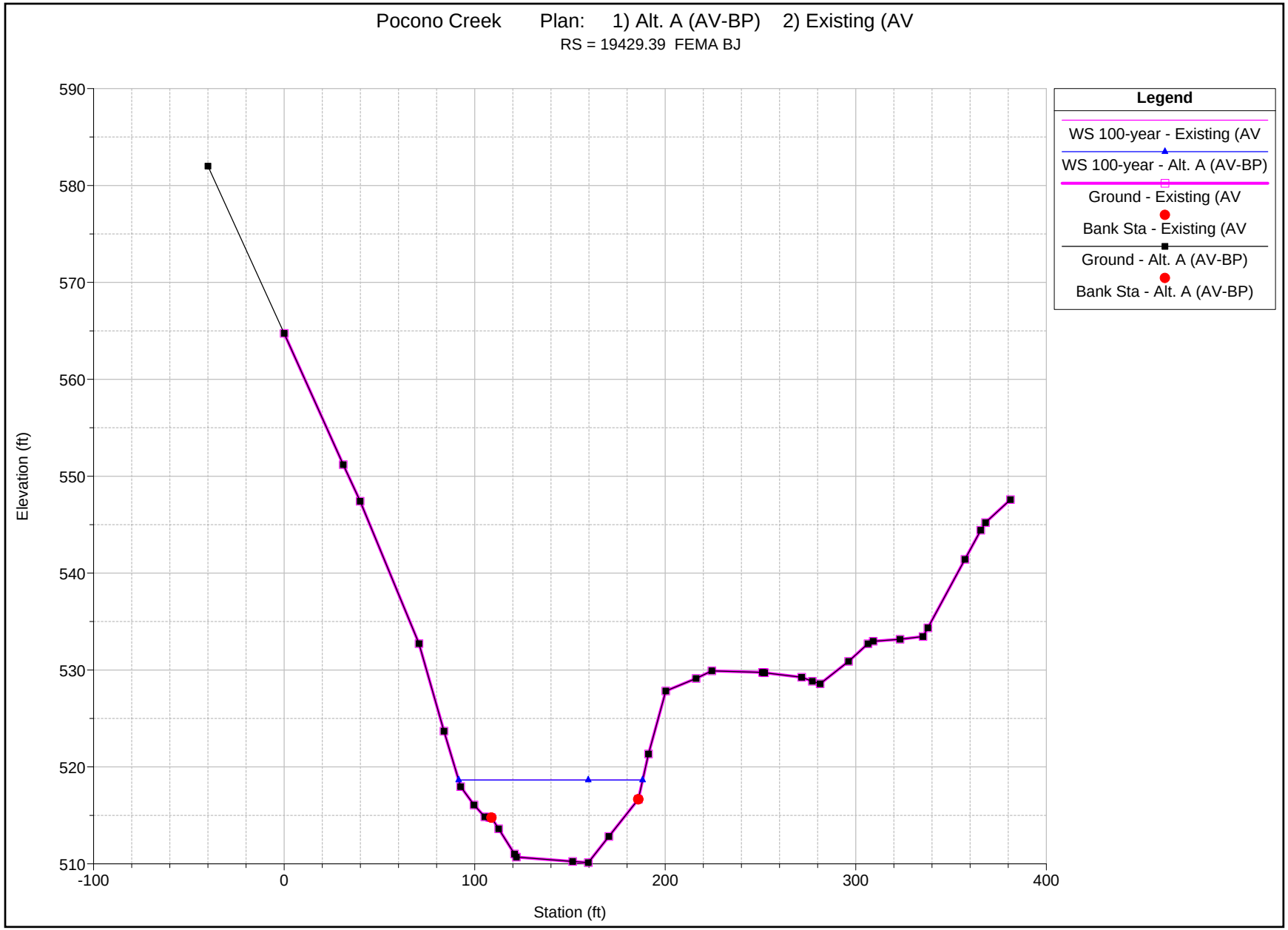

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 19616
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
600
Station (ft)

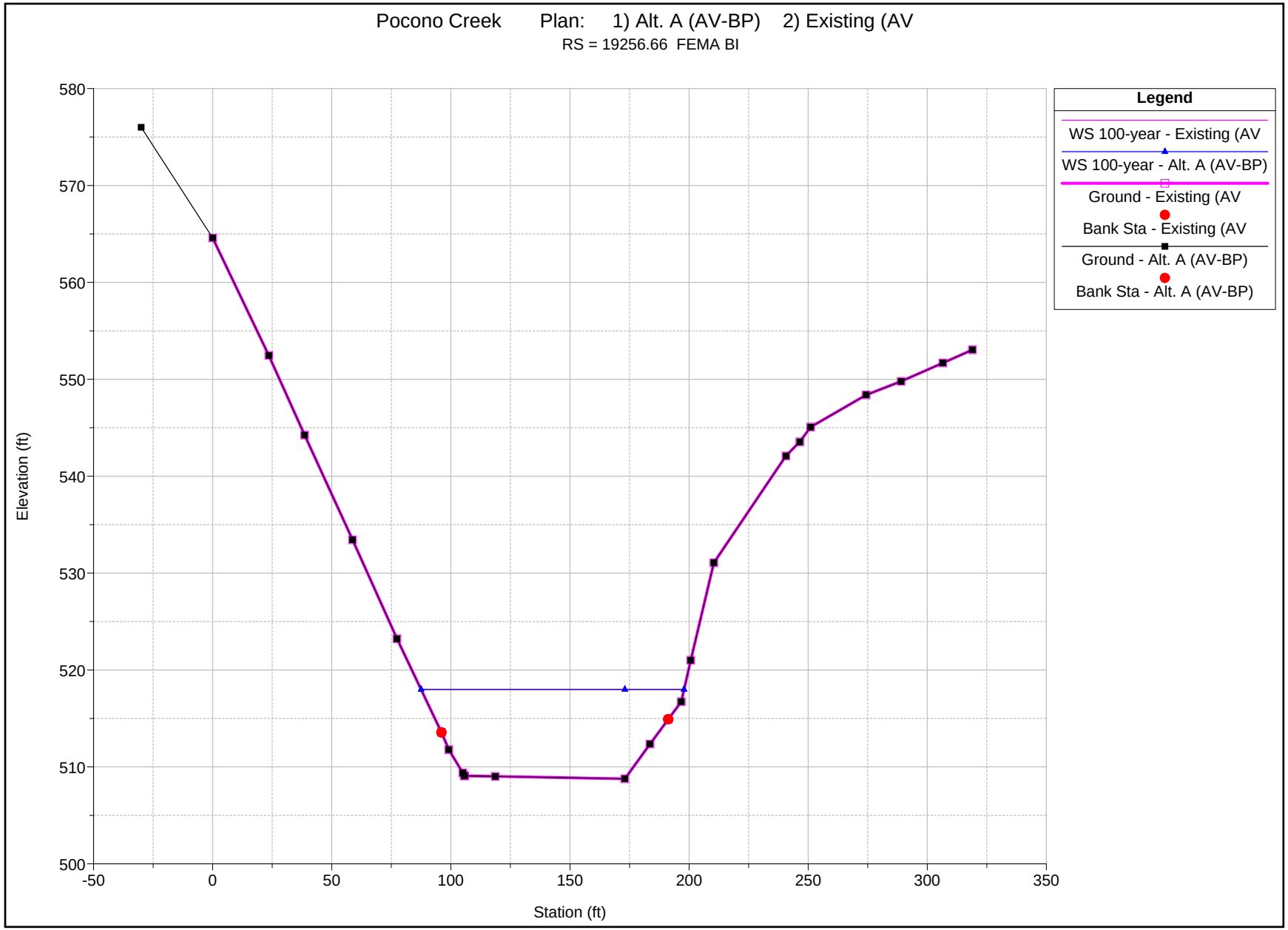

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 19615 IS Dam 1
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
- Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
- Alt. A (AV-BP)
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
600
Station (ft)

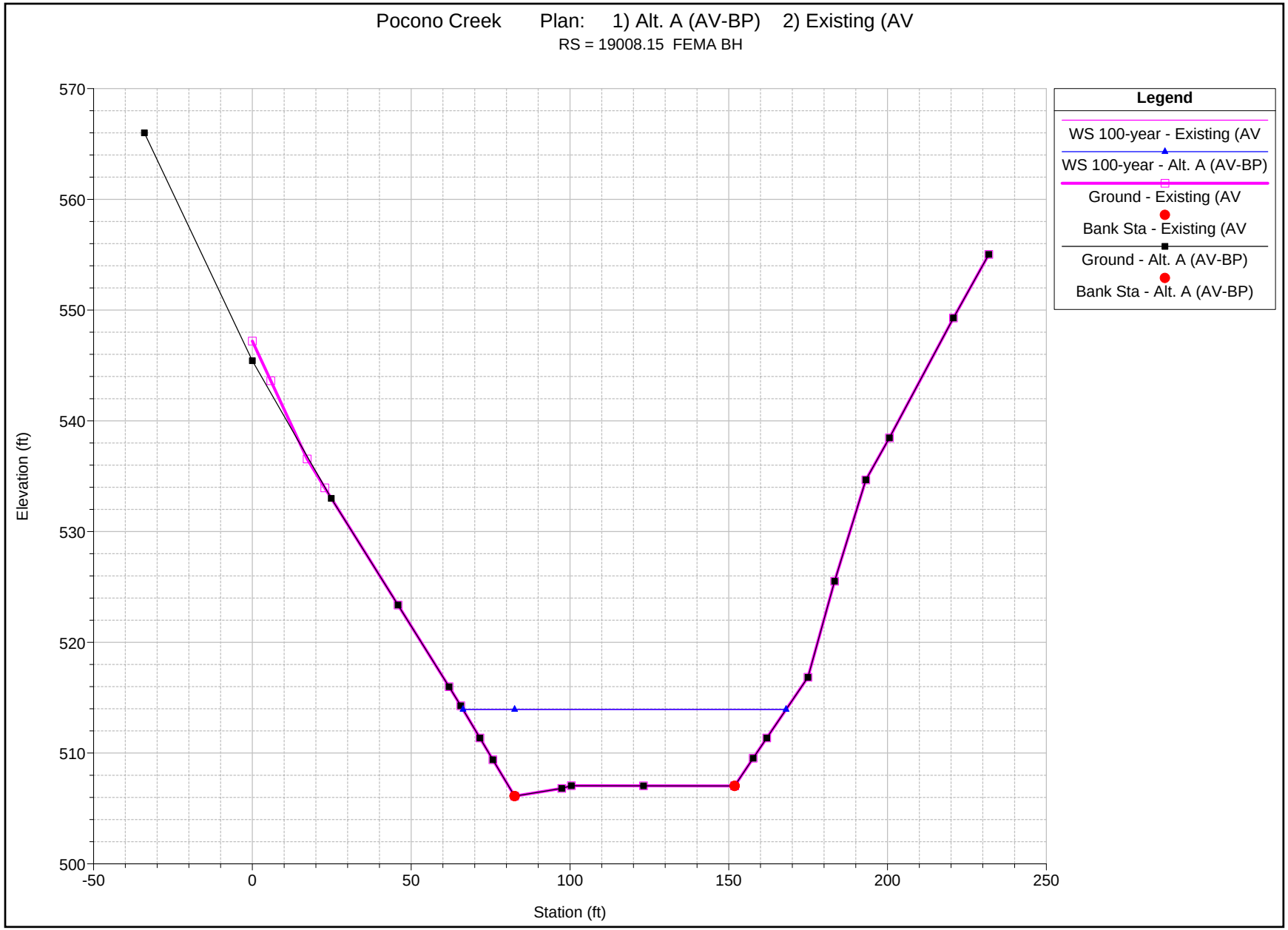

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 19614.51
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
600
Station (ft)

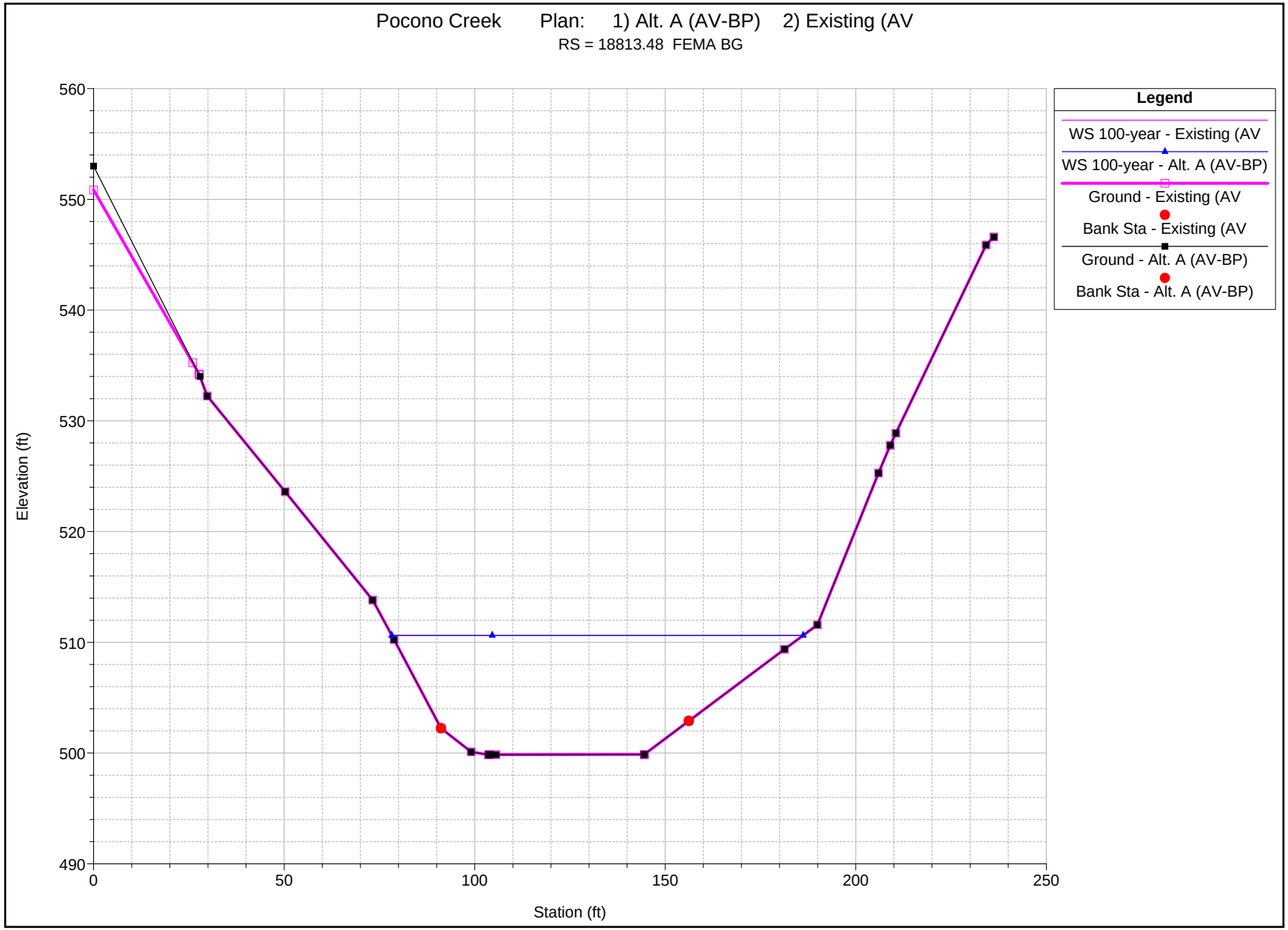

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 19600.87 FEMA BL
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
510
0
100
200
300
400
500
600
Station (ft)

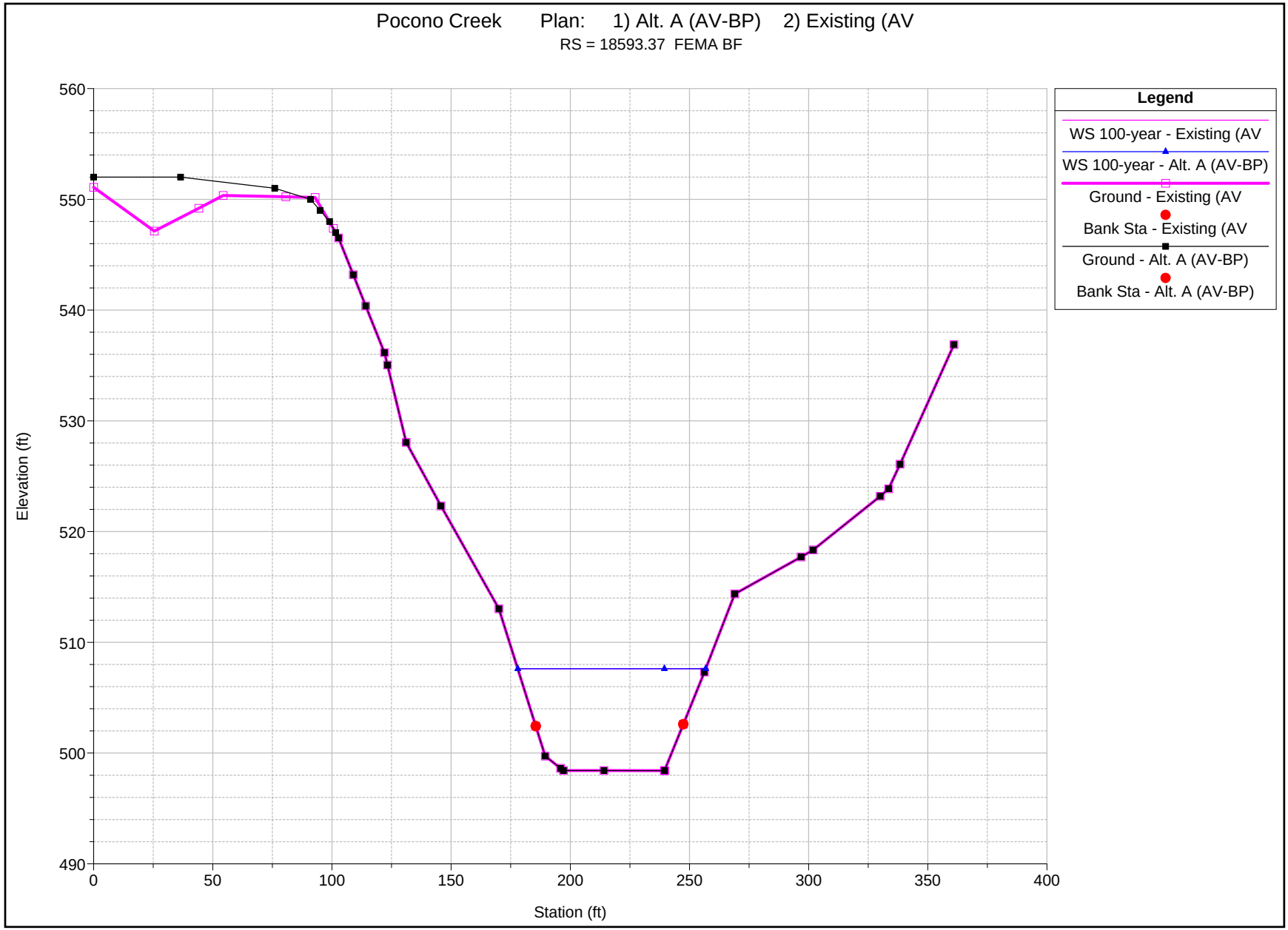

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 19530.00 FEMA BK
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
Station (ft)
580
570
560
550
540
530
520
510
0
100
200
300
400
500

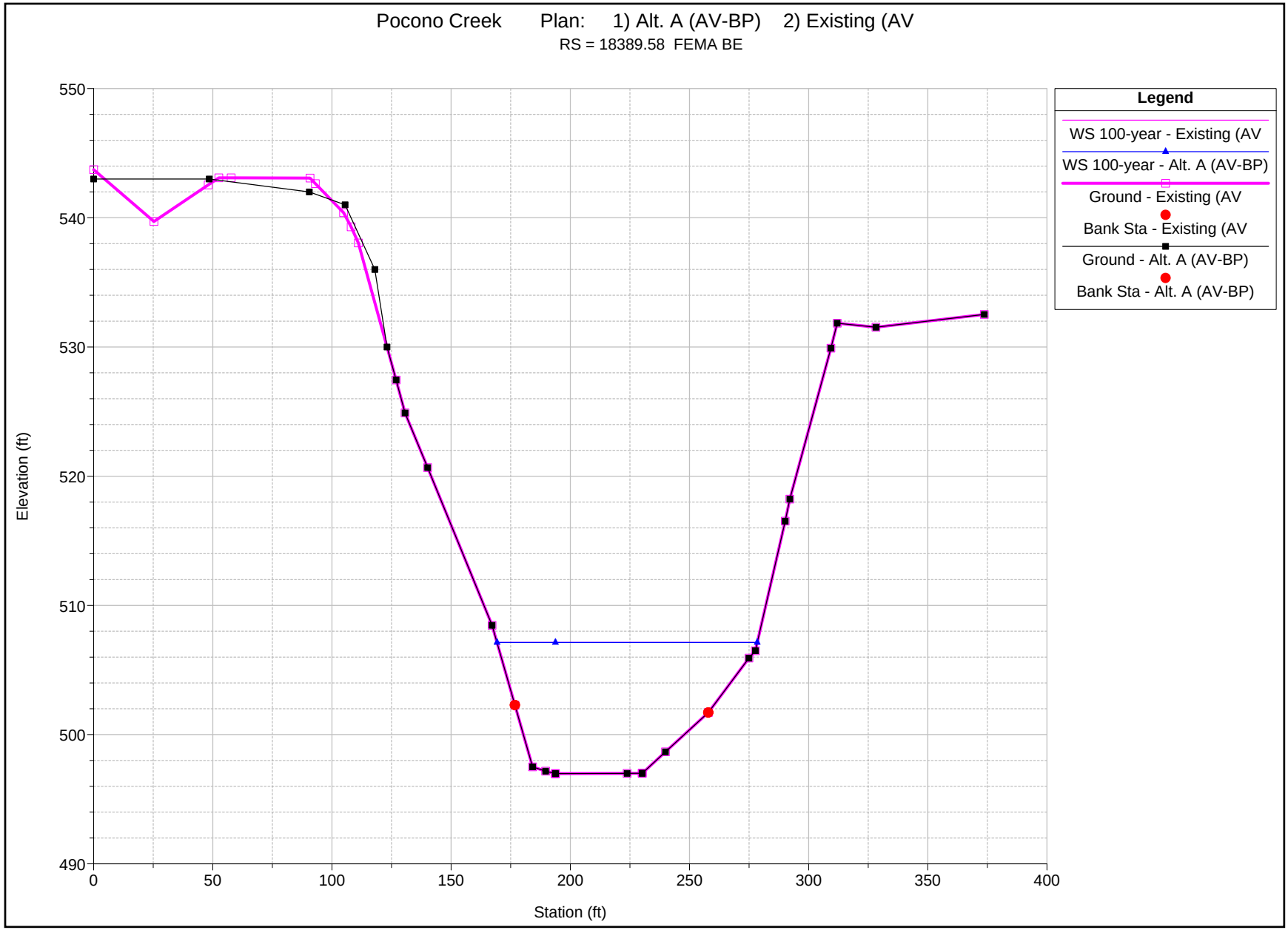

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 19429.39 FEMA BJ
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
510
-100
0
100
200
300
400
Station (ft)

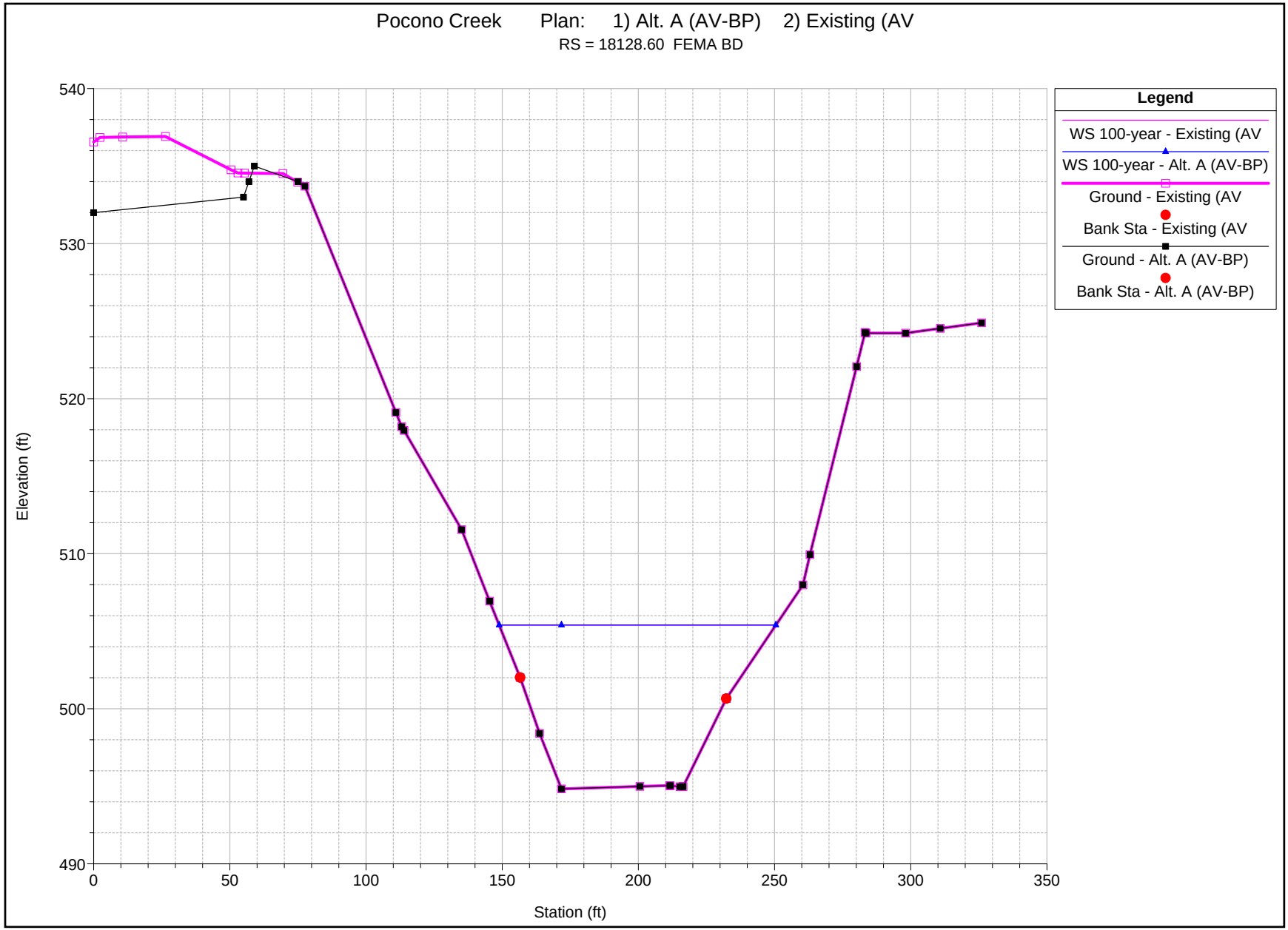

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 19256.66 FEMA BI
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
Station (ft)
580
570
560
550
540
530
520
510
500
-50
0
50
100
150
200
250
300
350

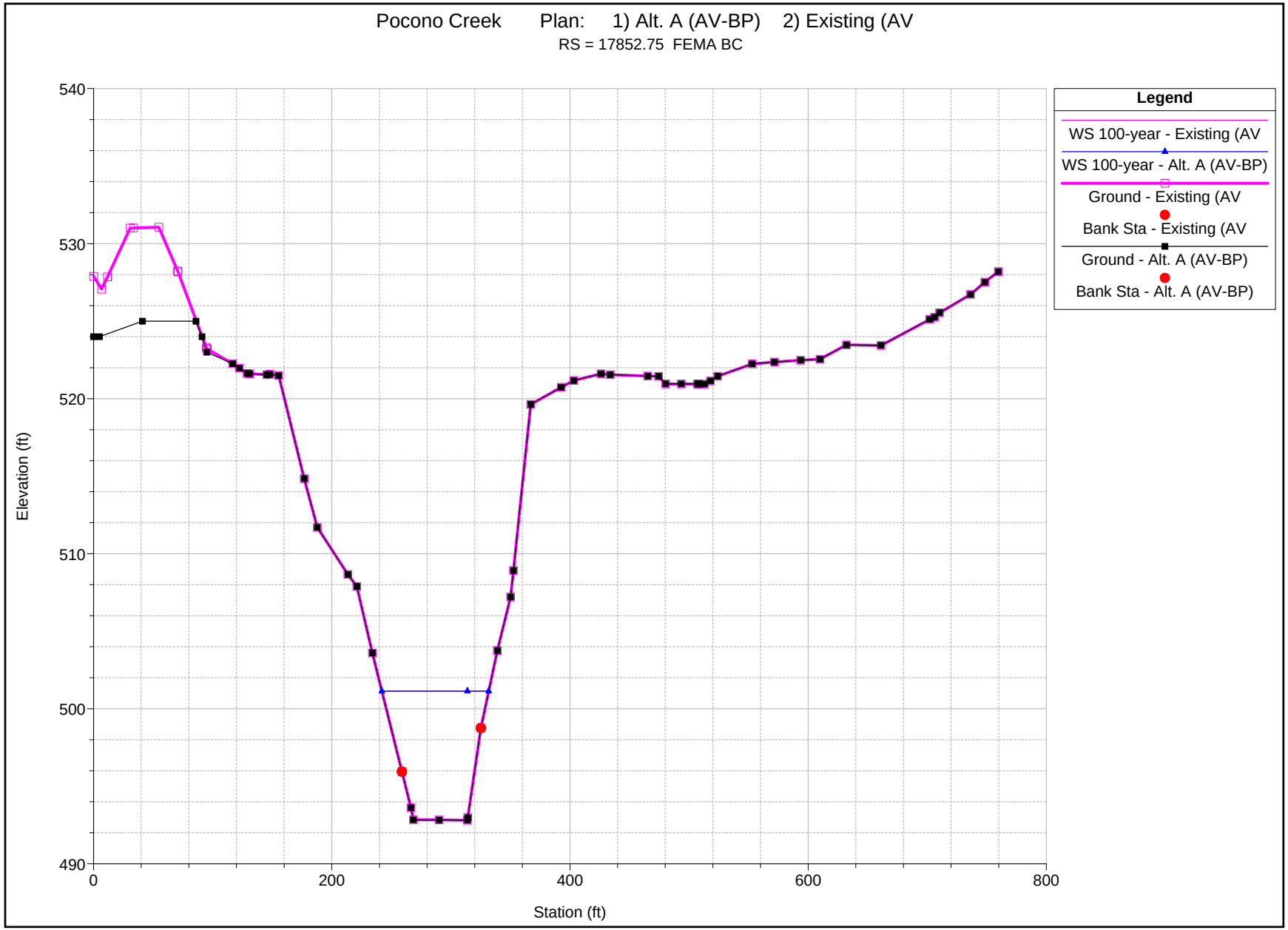

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 19008.15 FEMA BH
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
570
560
550
540
530
520
510
500
-50
0
50
100
150
200
250
Station (ft)

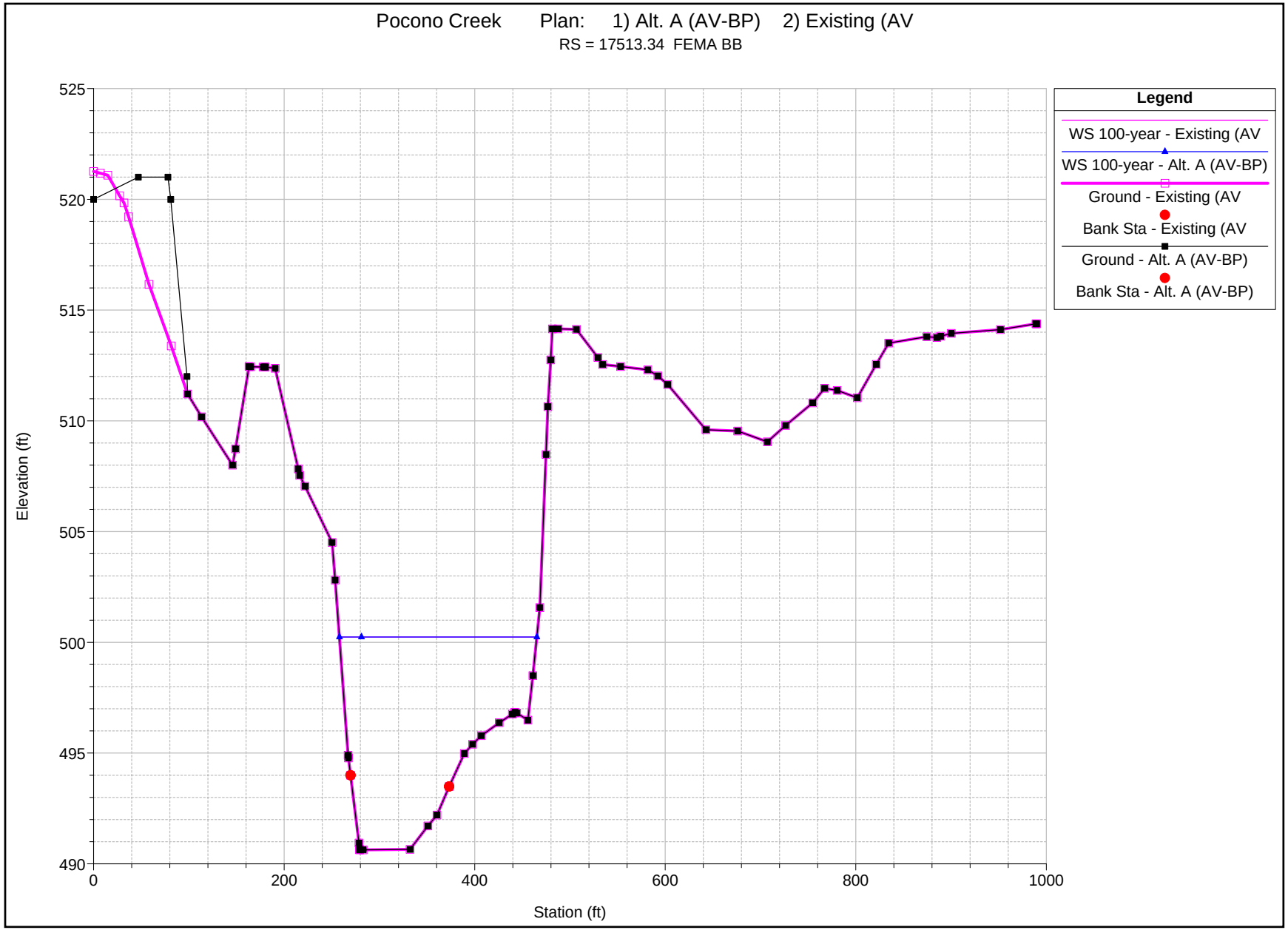

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 18813.48 FEMA BG
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
560
550
540
530
520
510
500
490
0
50
100
150
200
250
Station (ft)

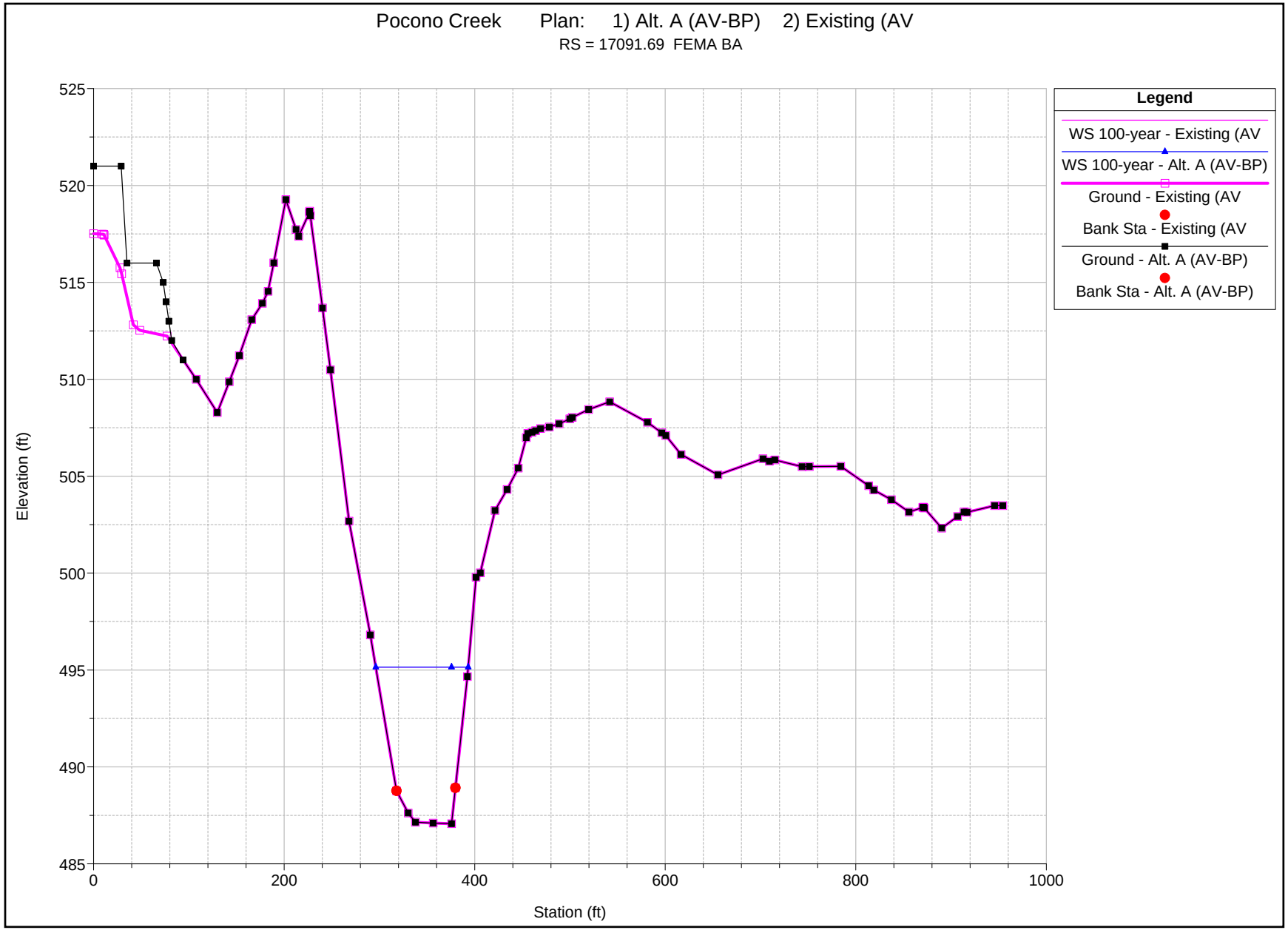

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 18593.37 FEMA BF
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
Station (ft)
560
550
540
530
520
510
500
490
0
50
100
150
200
250
300
350
400

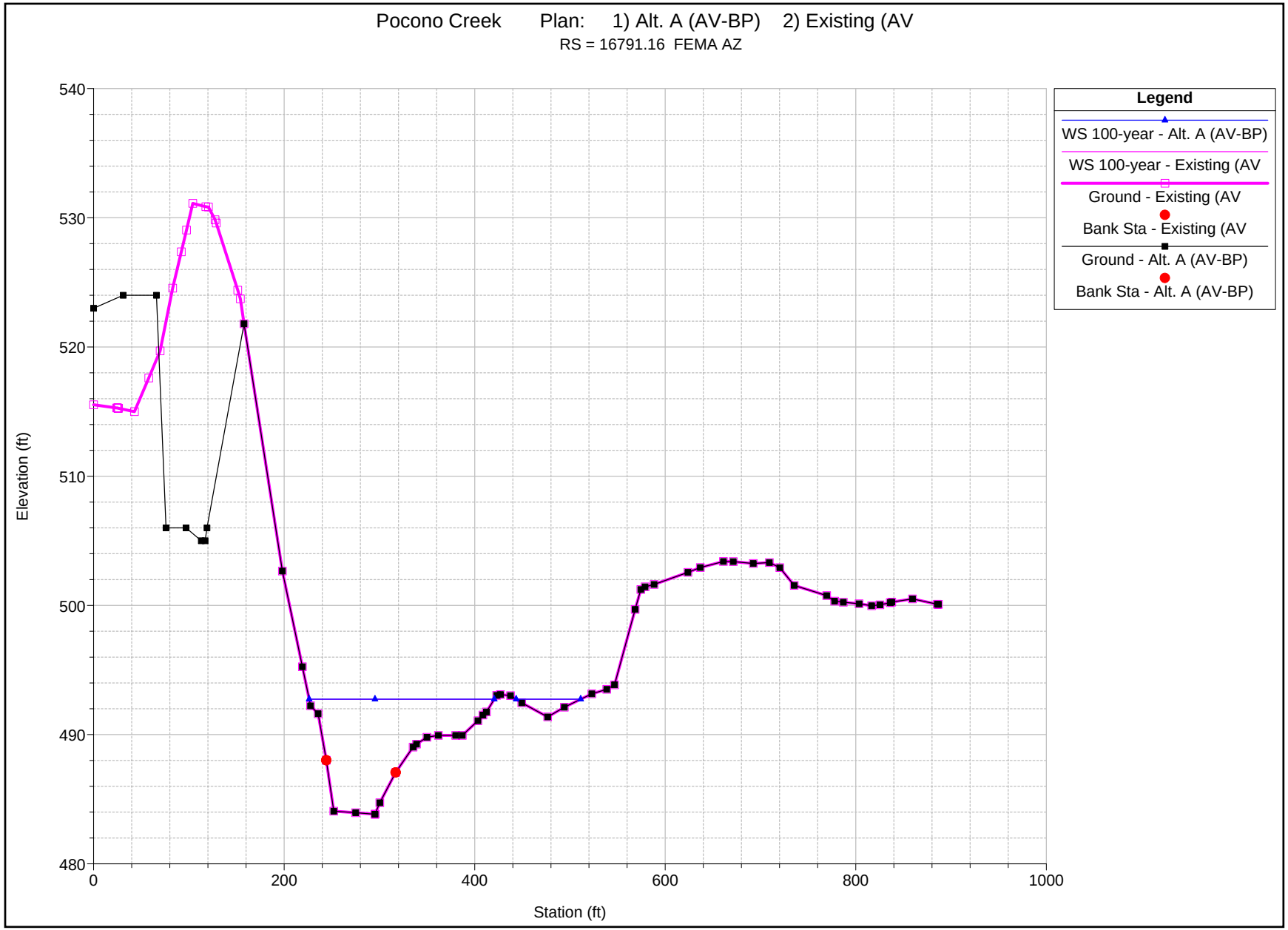

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 18389.58 FEMA BE
Elevation (ft)
Station (ft)
550
540
530
520
510
500
490
0
50
100
150
200
250
300
350
400
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)

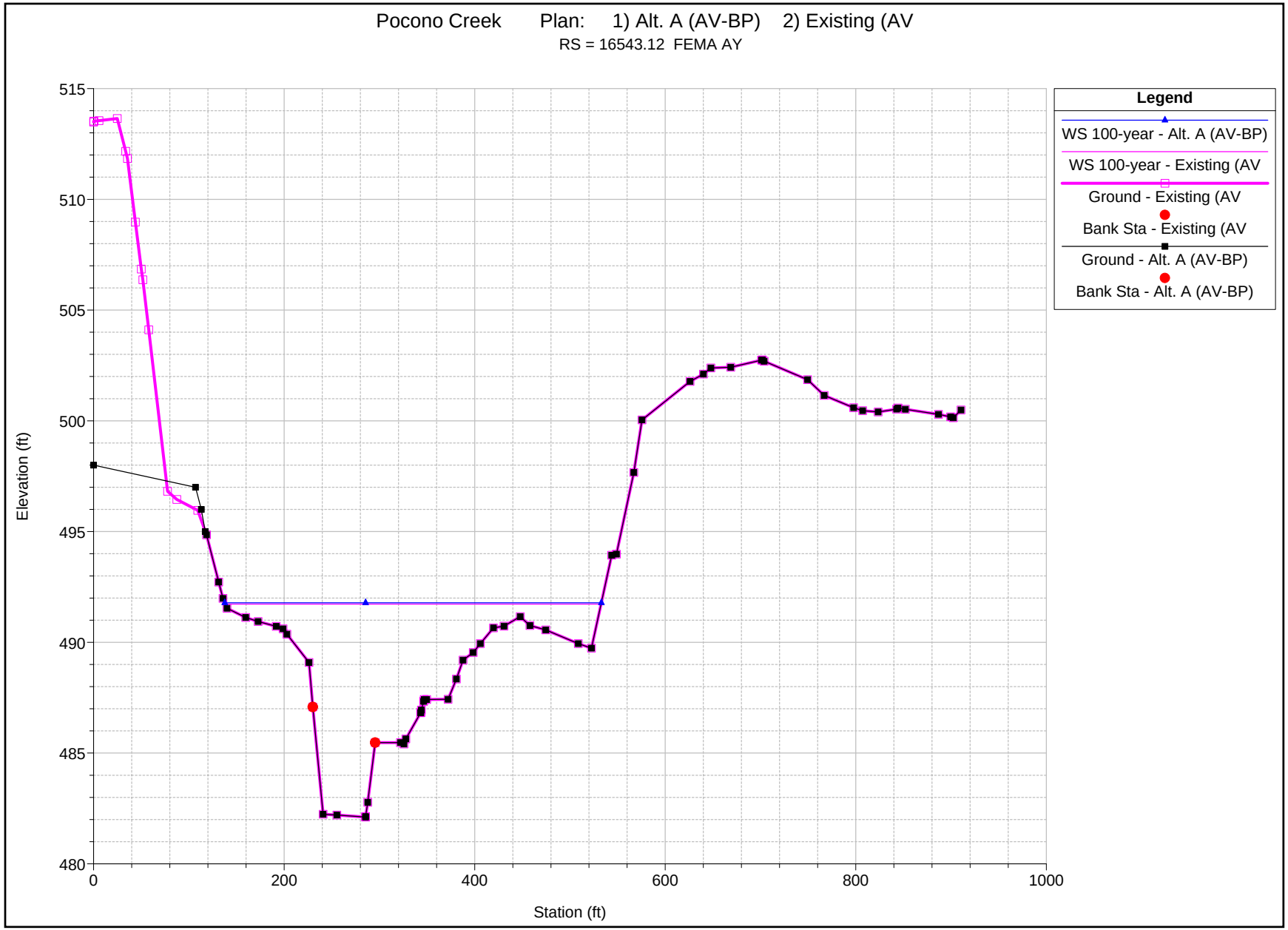

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 18128.60 FEMA BD
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
Station (ft)
540
530
520
510
500
490
0
50
100
150
200
250
300
350

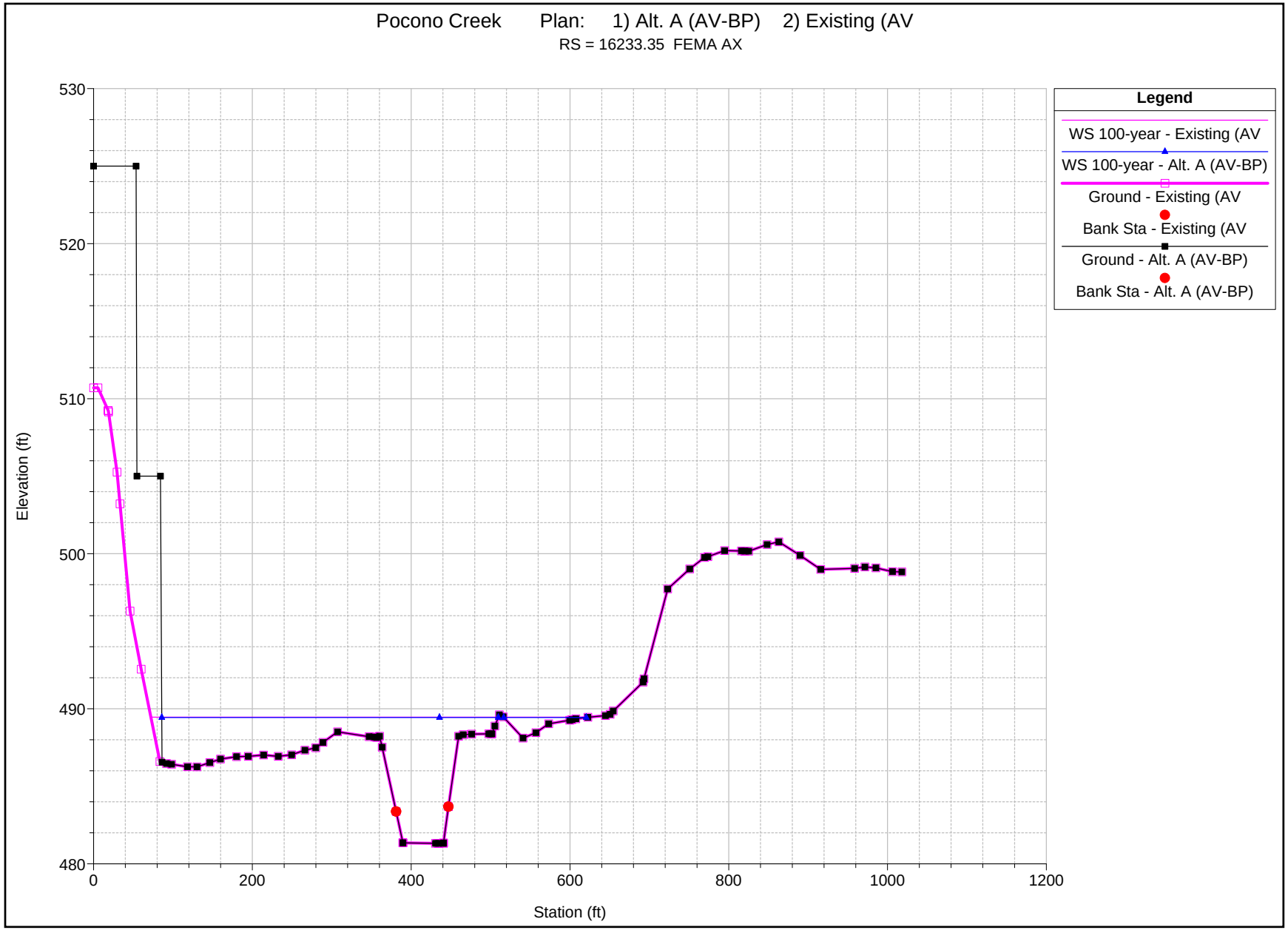

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 17852.75 FEMA BC
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
Station (ft)
540
530
520
510
500
490
0
200
400
600
800

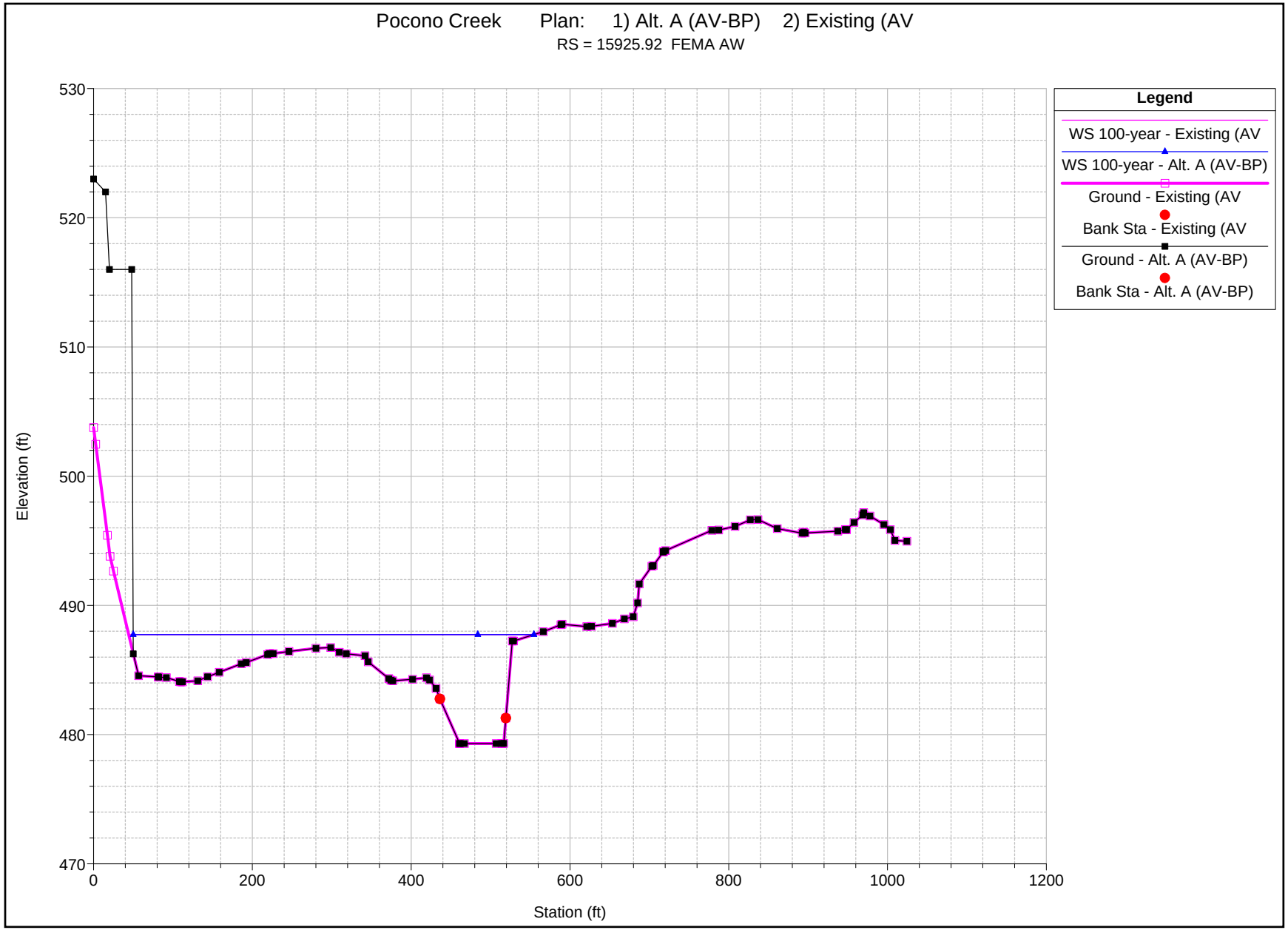

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 17513.34 FEMA BB
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
525
520
515
510
505
500
495
490
0
200
400
600
800
1000
Station (ft)

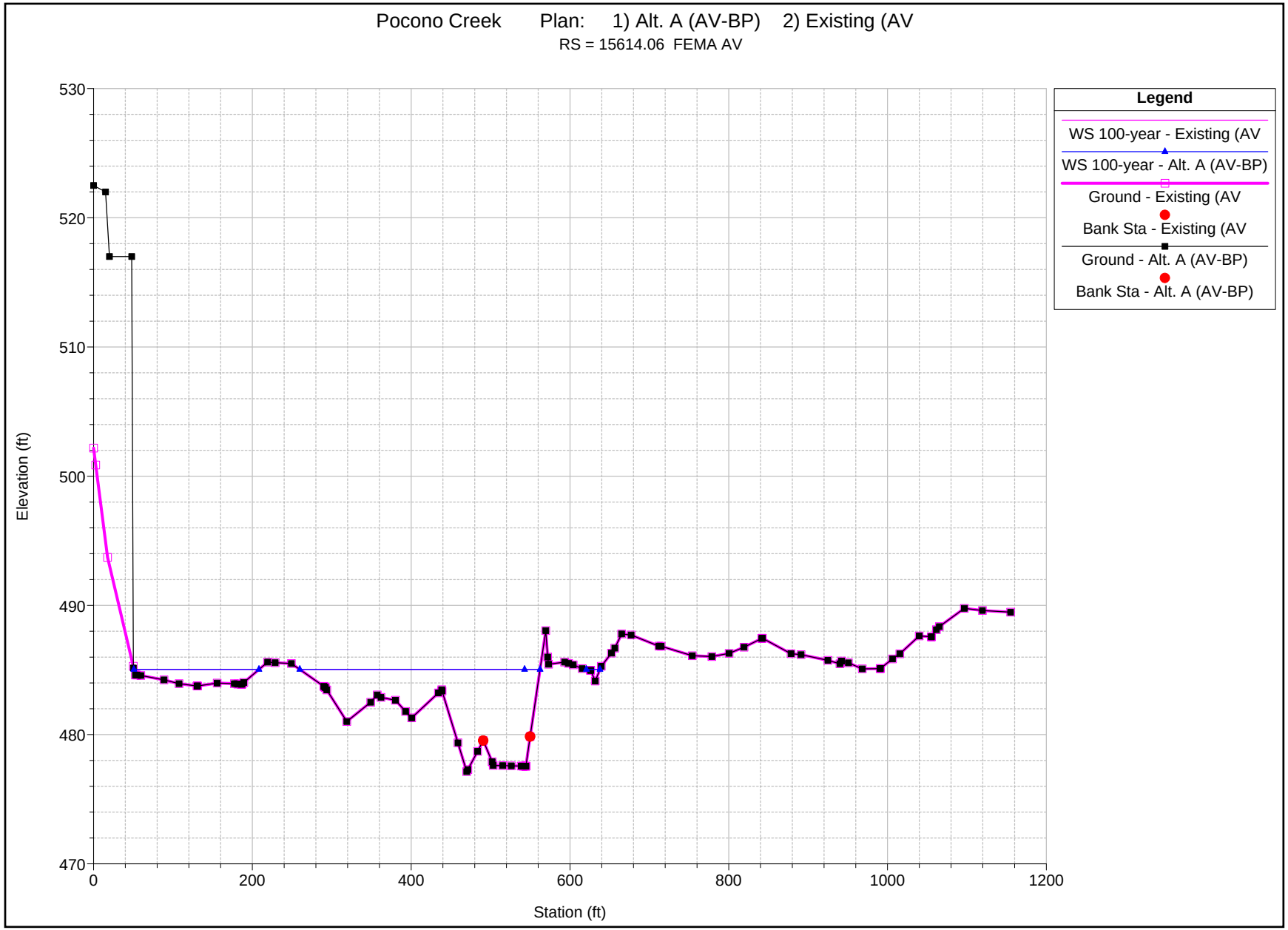

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 17091.69 FEMA BA
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
525
520
515
510
505
500
495
490
485
0
200
400
600
800
1000
Station (ft)

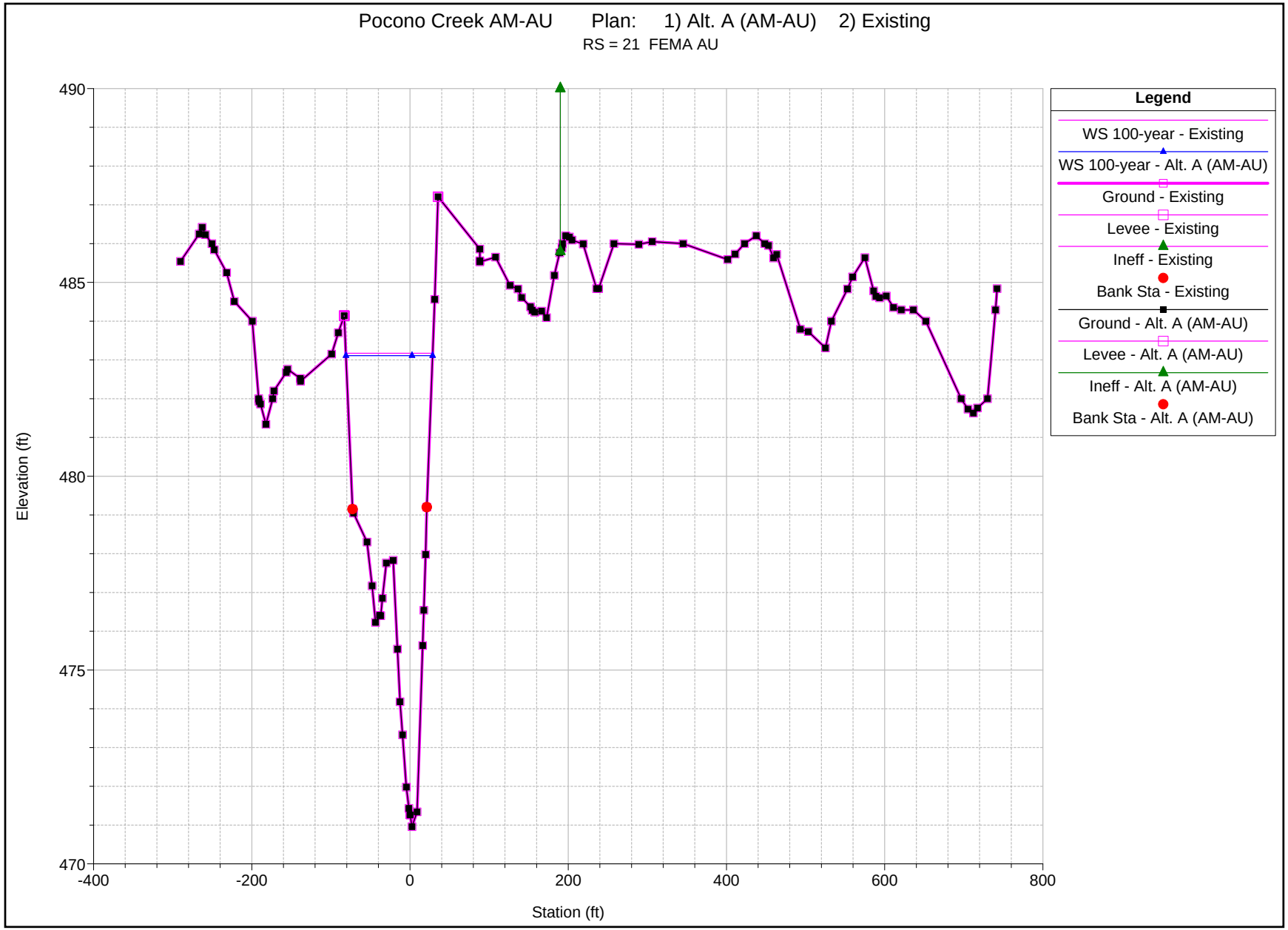

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 16791.16 FEMA AZ
Legend
WS 100-year - Alt. A (AV-BP)
WS 100-year - Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
Station (ft)
540
530
520
510
500
490
480
0
200
400
600
800
1000

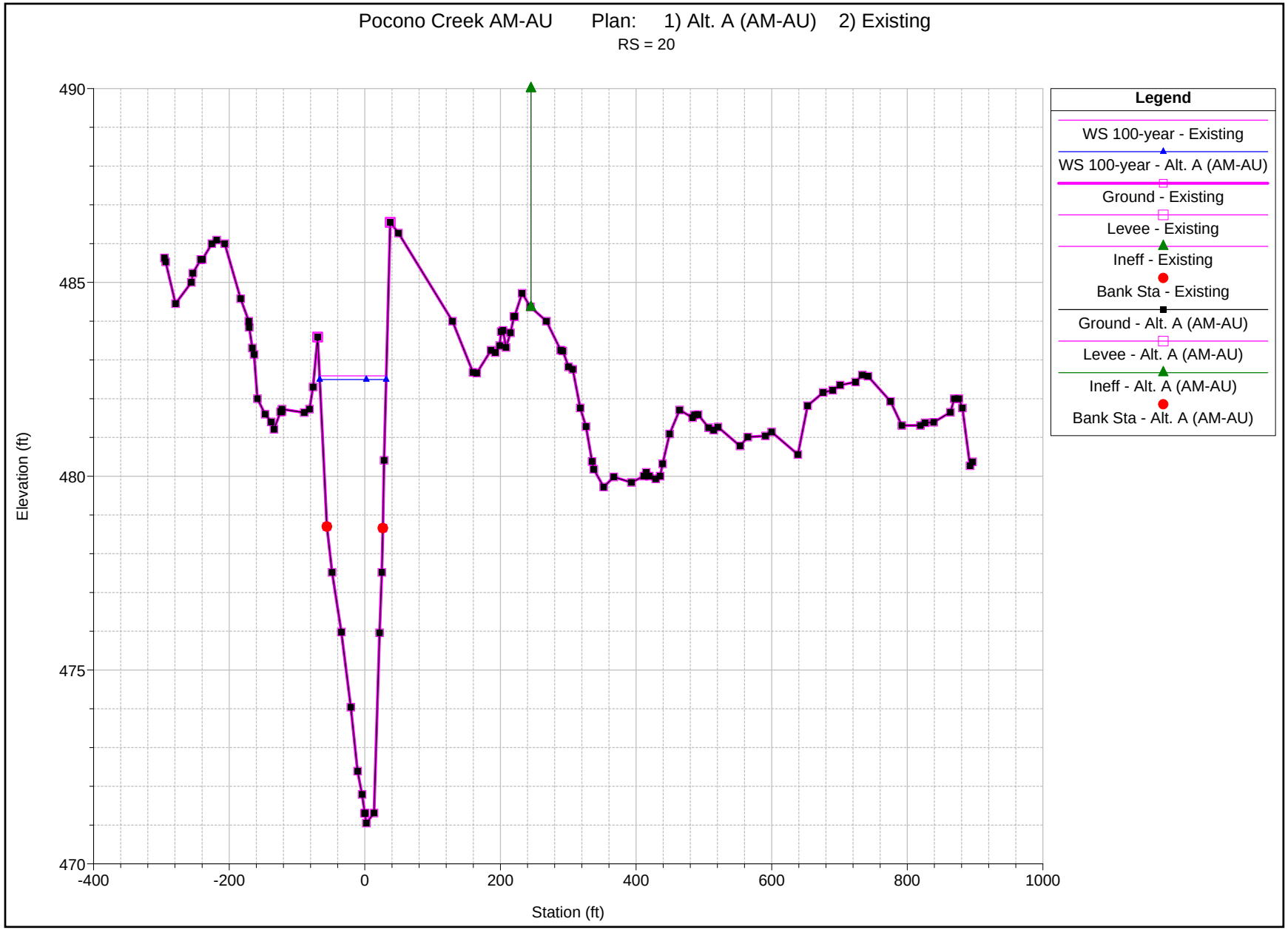

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 16543.12 FEMA AY
Legend
WS 100-year - Alt. A (AV-BP)
WS 100-year - Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
515
510
505
500
495
490
485
480
0
200
400
600
800
1000
Station (ft)

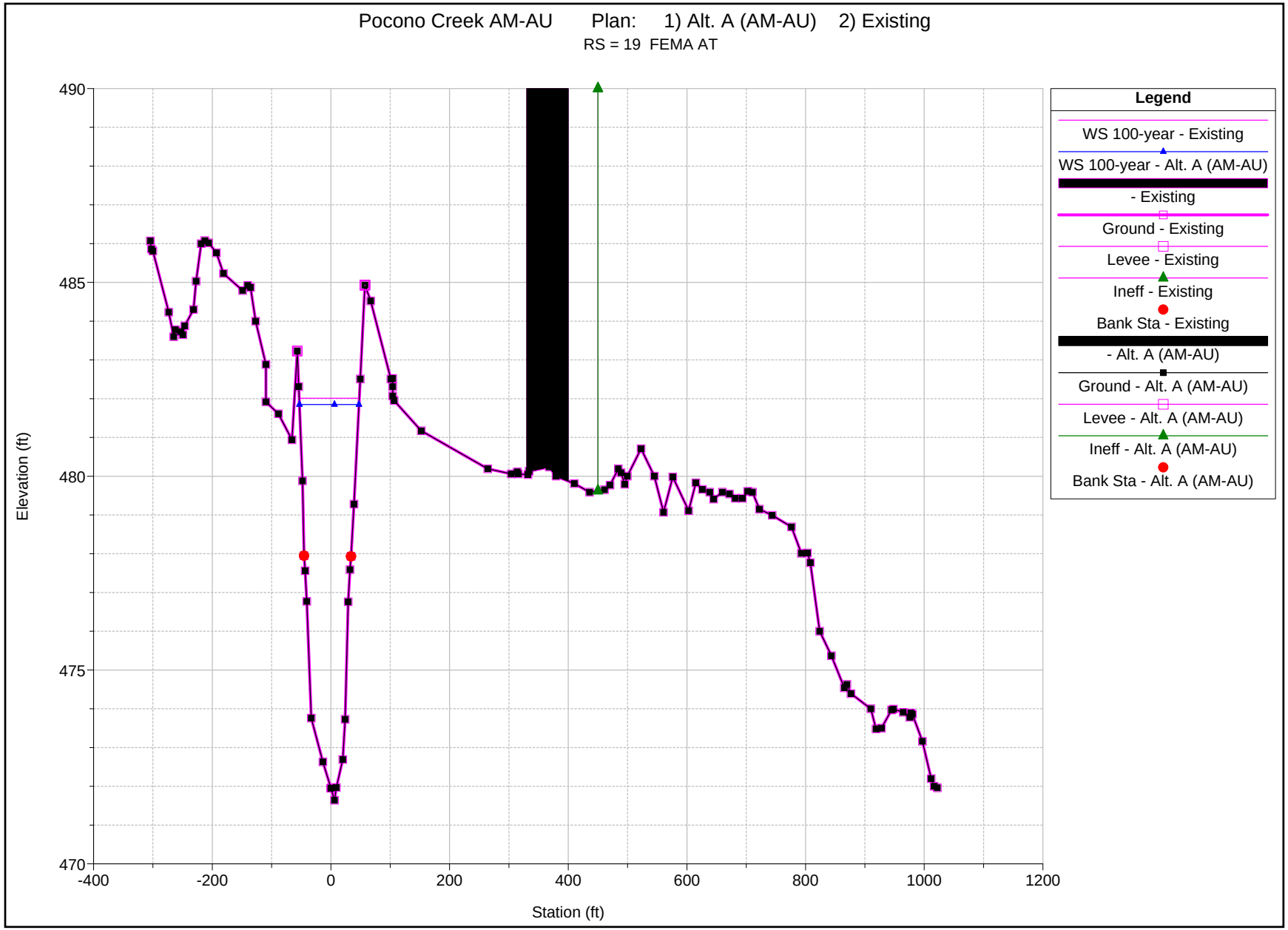

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 16233.35 FEMA AX
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
530
520
510
500
490
480
0
200
400
600
800
1000
1200
Station (ft)

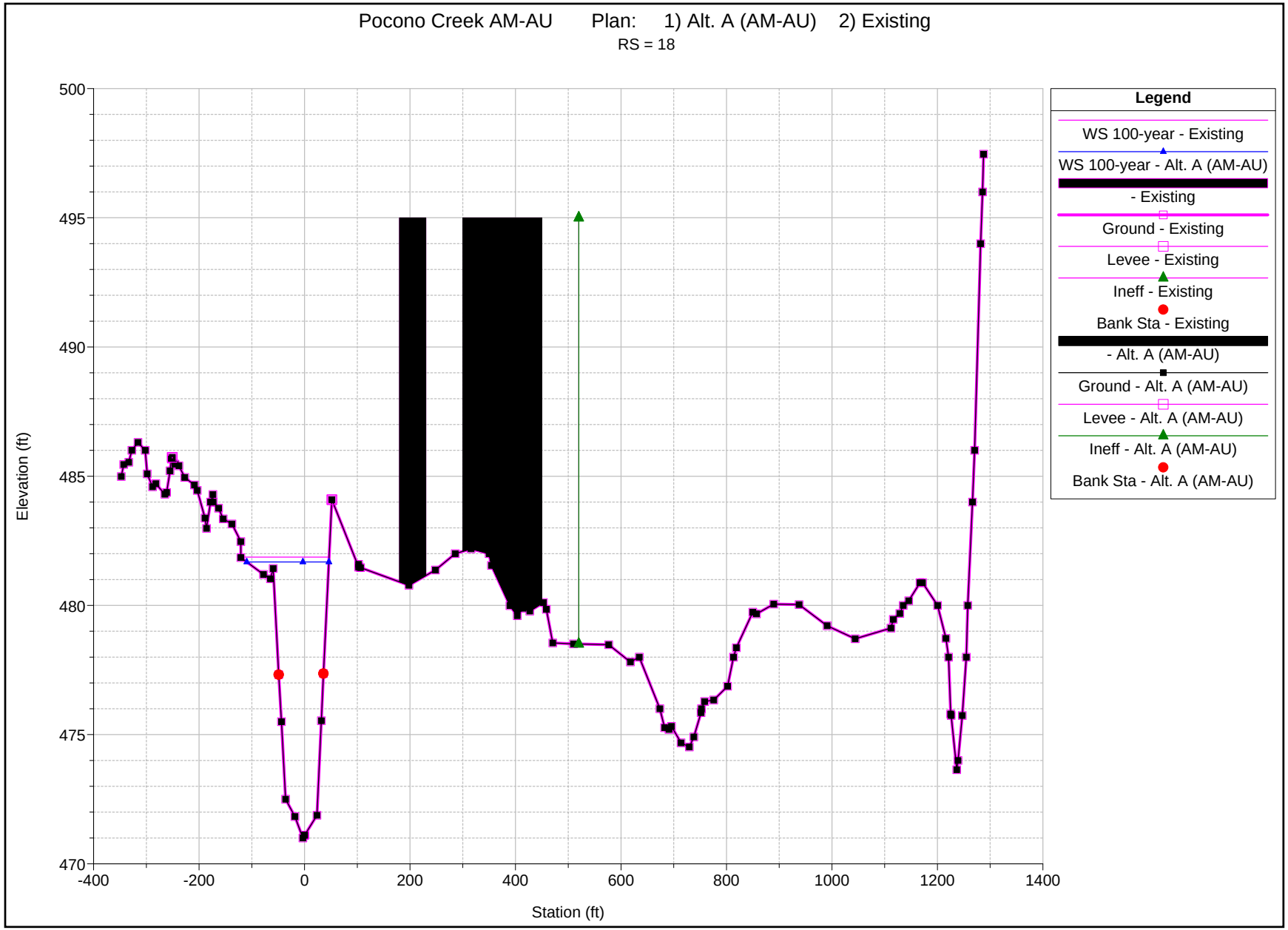

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 15925.92 FEMA AW
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
530
520
510
500
490
480
470
0
200
400
600
800
1000
1200
Station (ft)

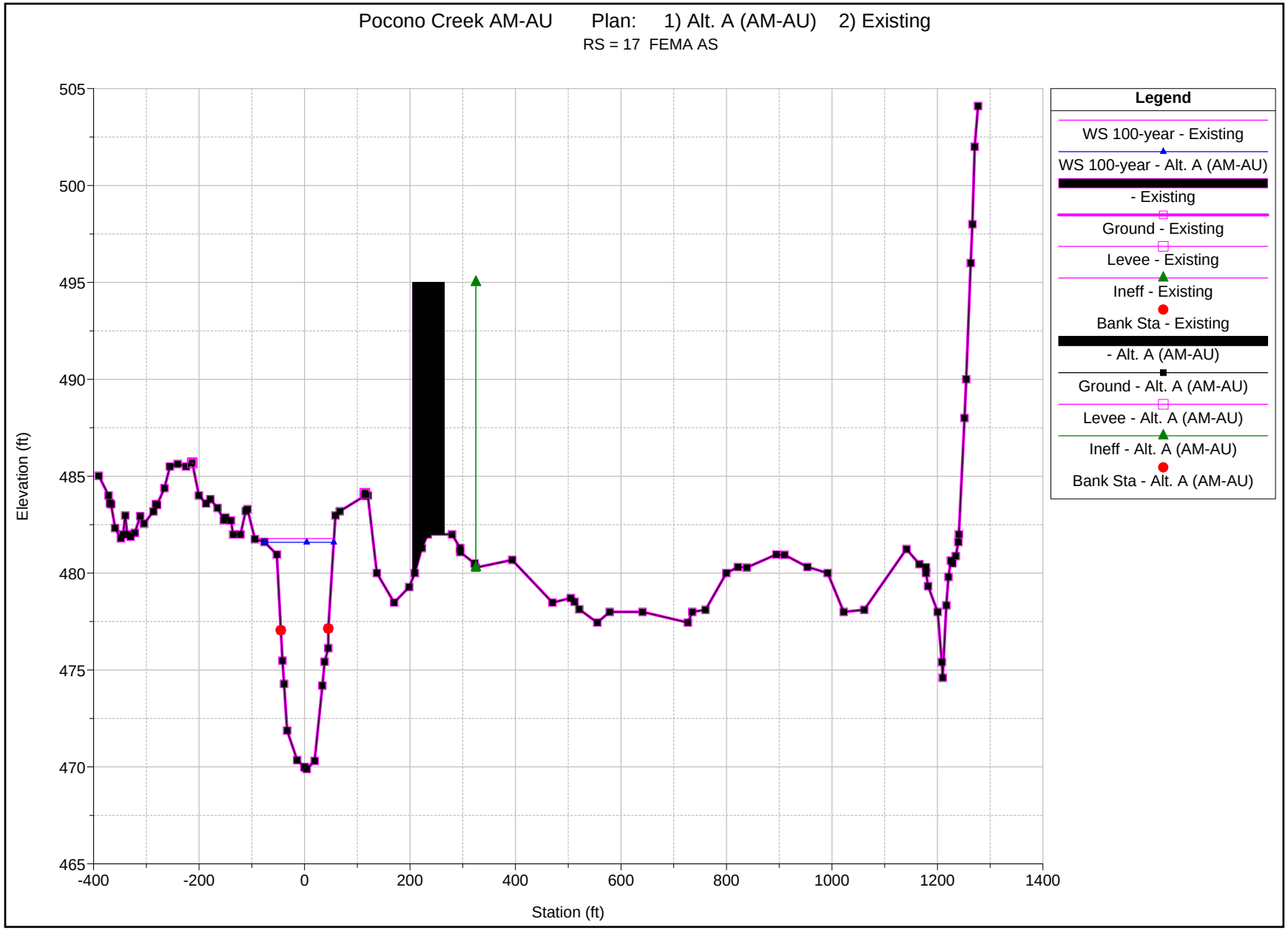

Pocono Creek Plan: 1) Alt. A (AV-BP) 2) Existing (AV
RS = 15614.06 FEMA AV
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. A (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. A (AV-BP)
Bank Sta - Alt. A (AV-BP)
Elevation (ft)
530
520
510
500
490
480
470
0
200
400
600
800
1000
1200
Station (ft)

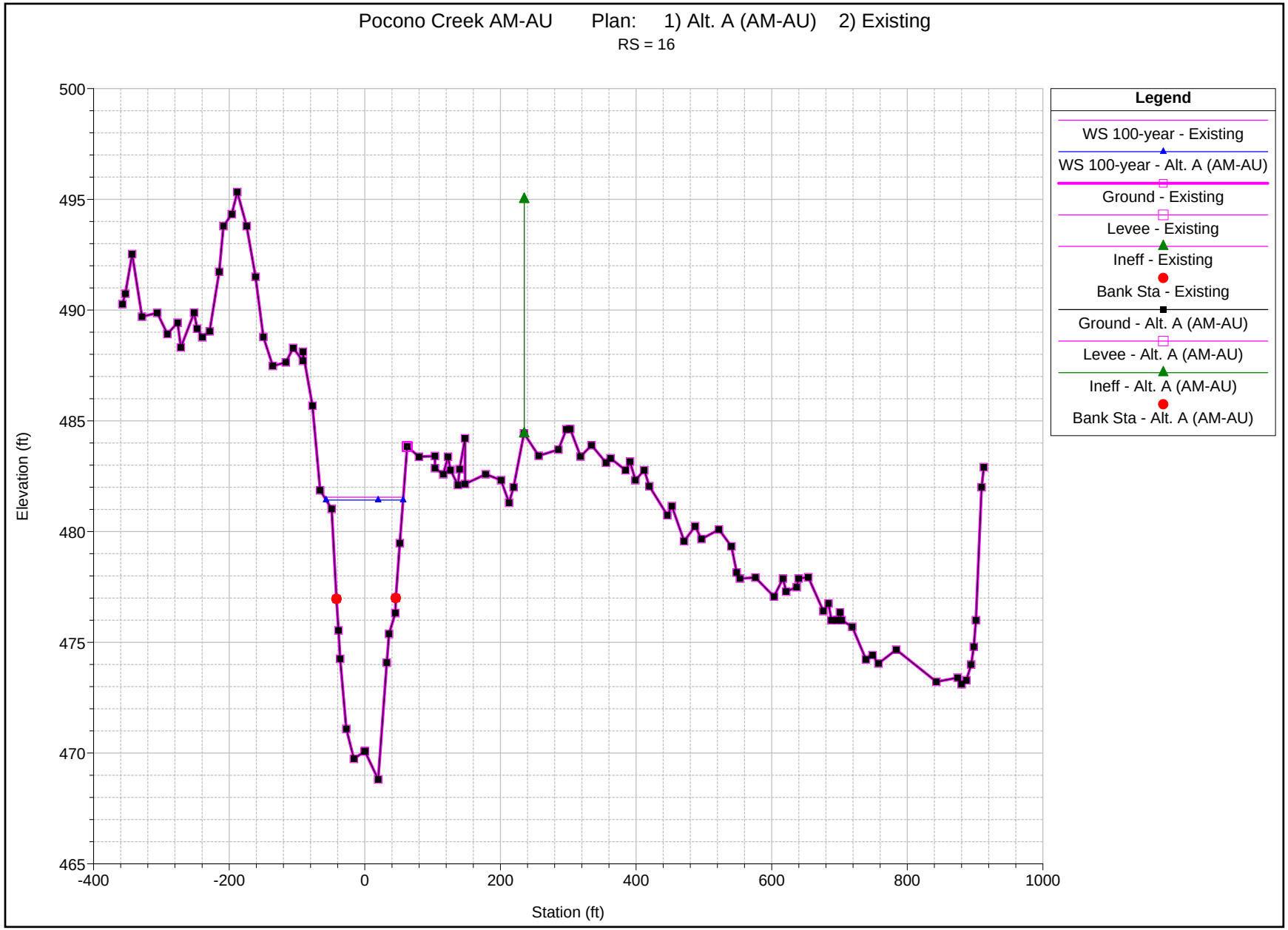

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 21 FEMA AU
Elevation (ft)
490
485
480
475
470
-400
-200
0
200
400
600
800
Station (ft)
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)


Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 20
Elevation (ft)
490
485
480
475
470
-400
-200
0
200
400
600
800
1000
Station (ft)
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

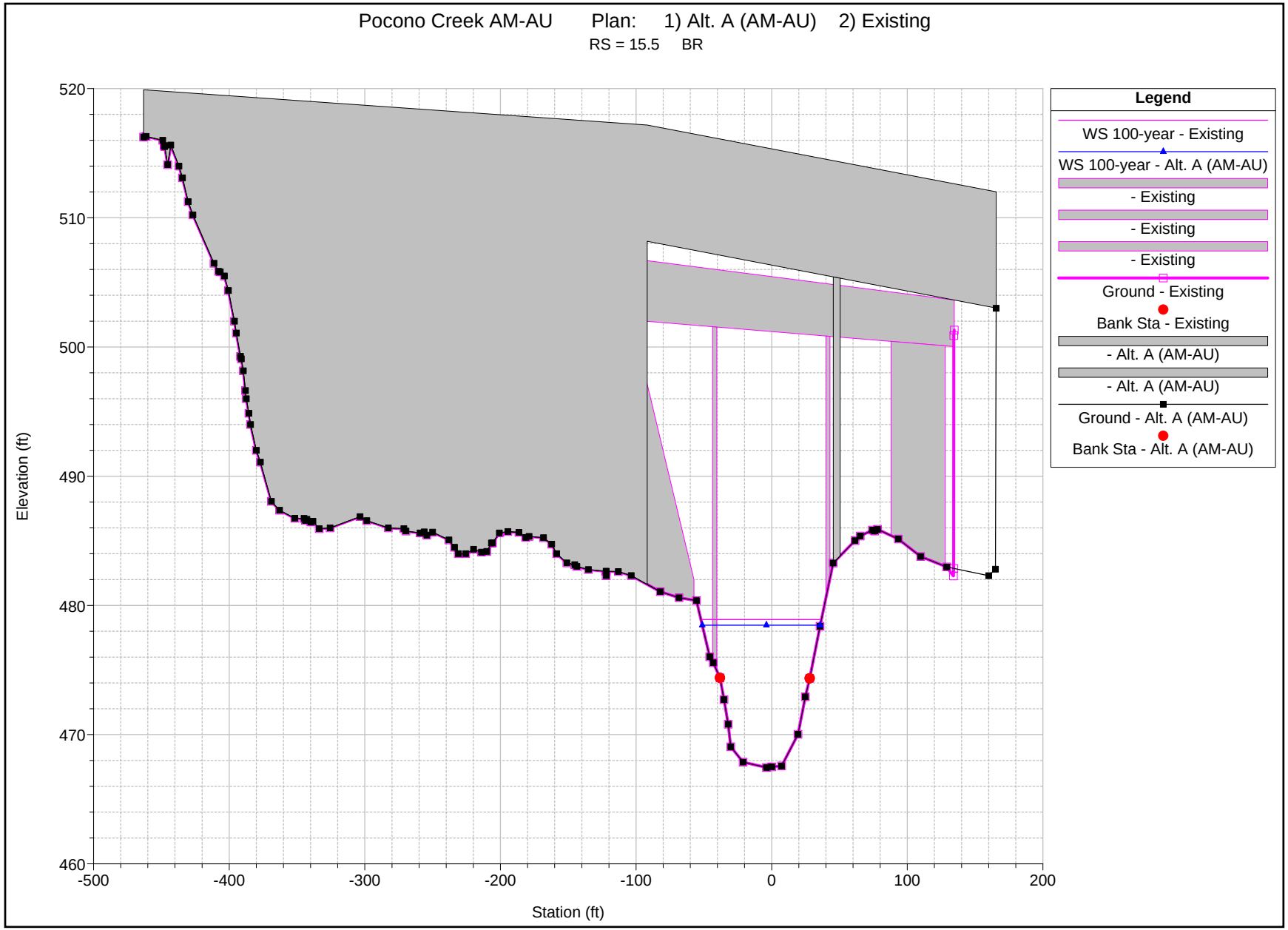

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 19 FEMA AT
Elevation (ft)
490
485
480
475
470
-400
-200
0
200
400
600
800
1000
1200
Station (ft)
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt. A (AM-AU)
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

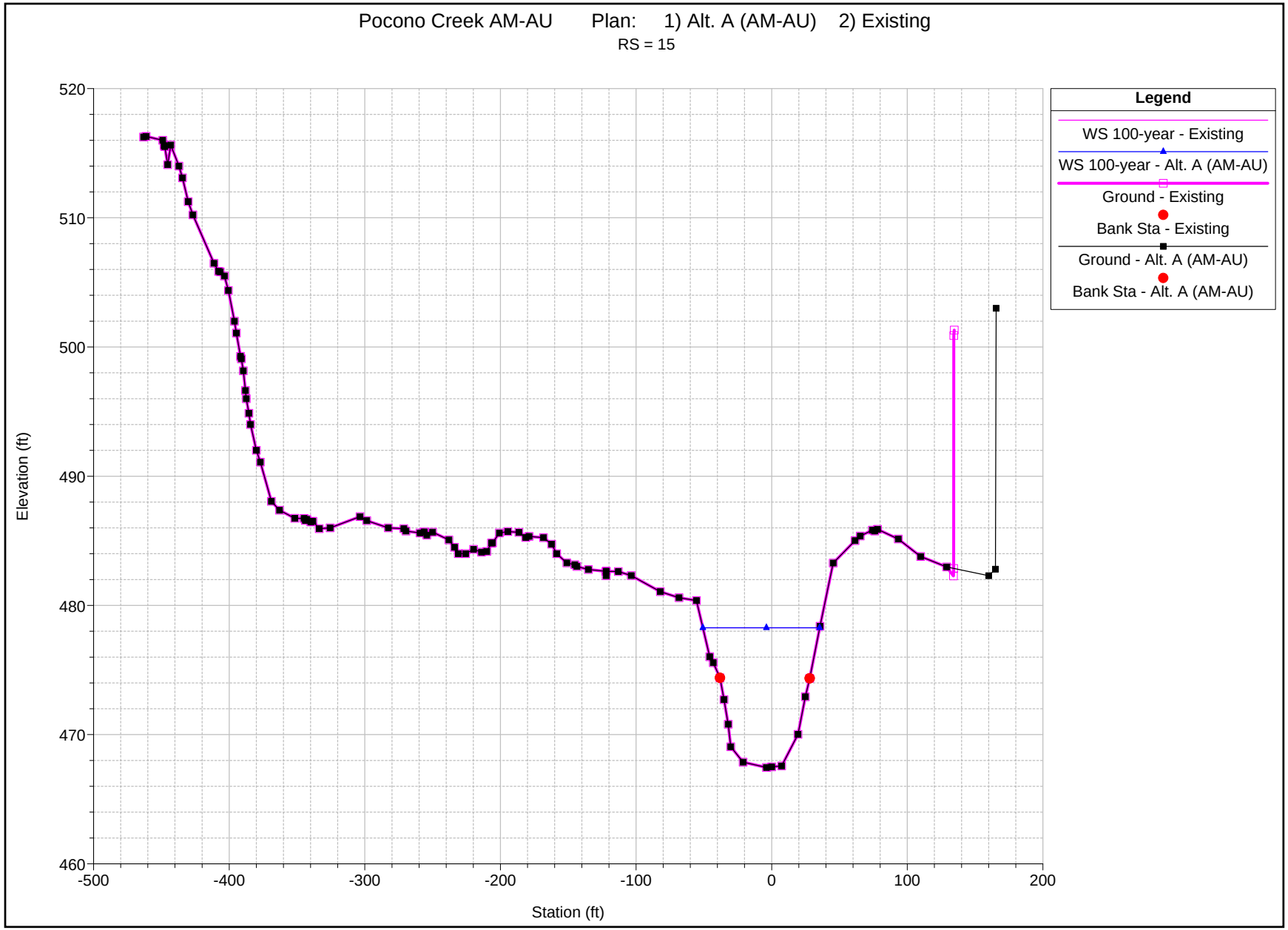

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 18
Elevation (ft)
Station (ft)
500
495
490
485
480
475
470
-400
-200
0
200
400
600
800
1000
1200
1400
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt. A (AM-AU)
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

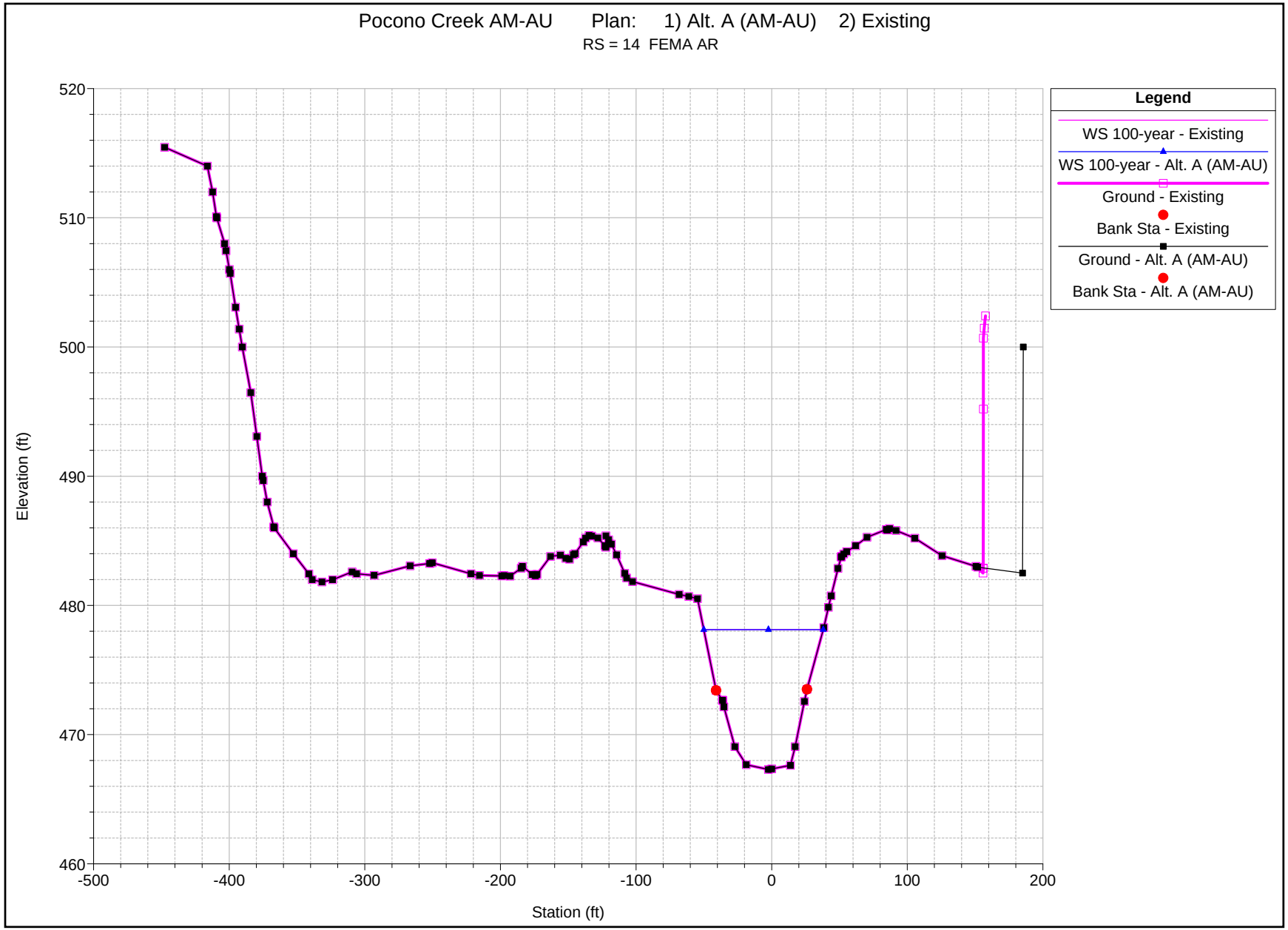

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 17 FEMA AS
Elevation (ft)
505
500
495
490
485
480
475
470
465
-400
-200
0
200
400
600
800
1000
1200
1400
Station (ft)
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt. A (AM-AU)
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

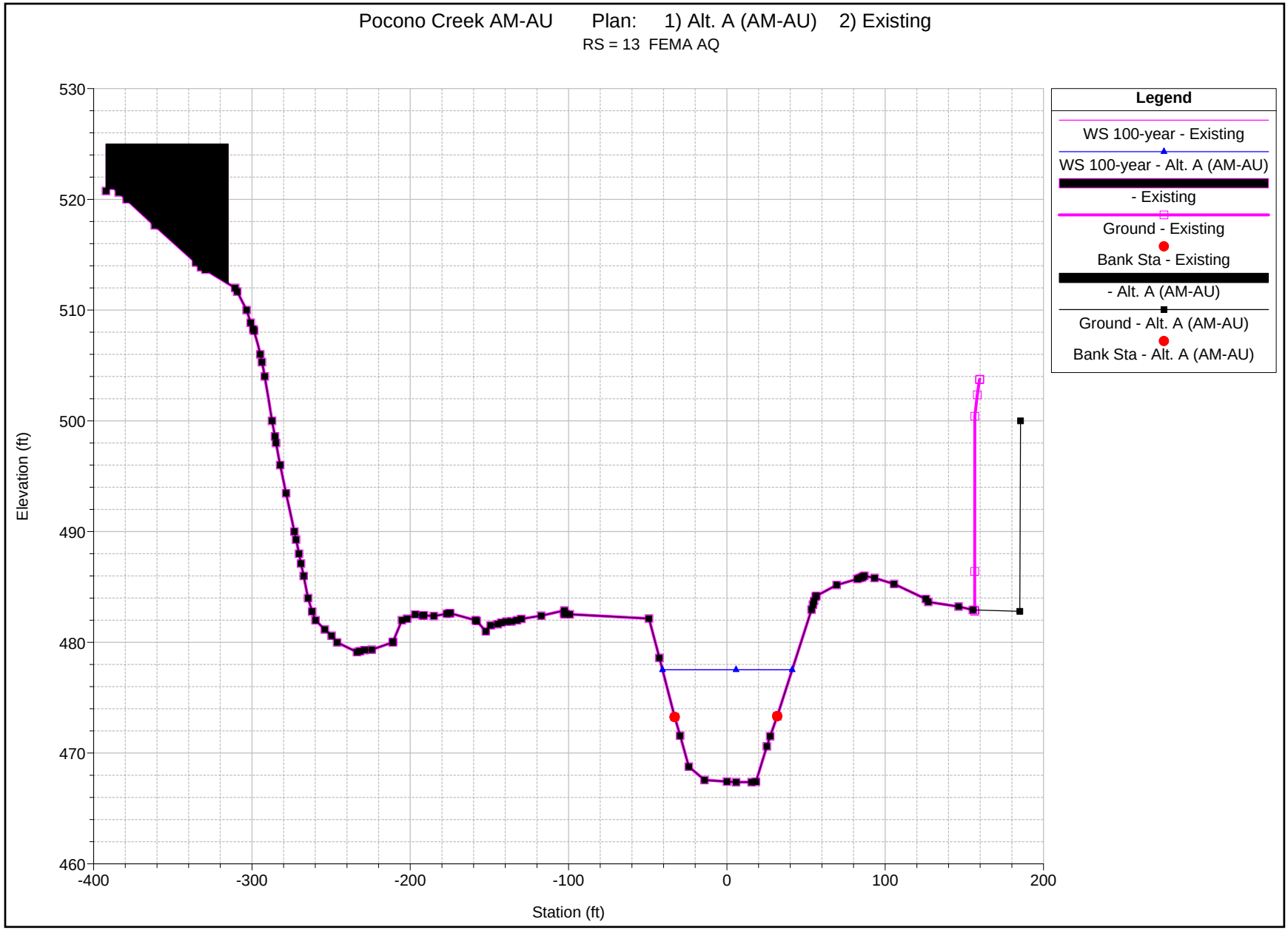

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 16
Elevation (ft)
Station (ft)
500
495
490
485
480
475
470
465
-400
-200
0
200
400
600
800
1000
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

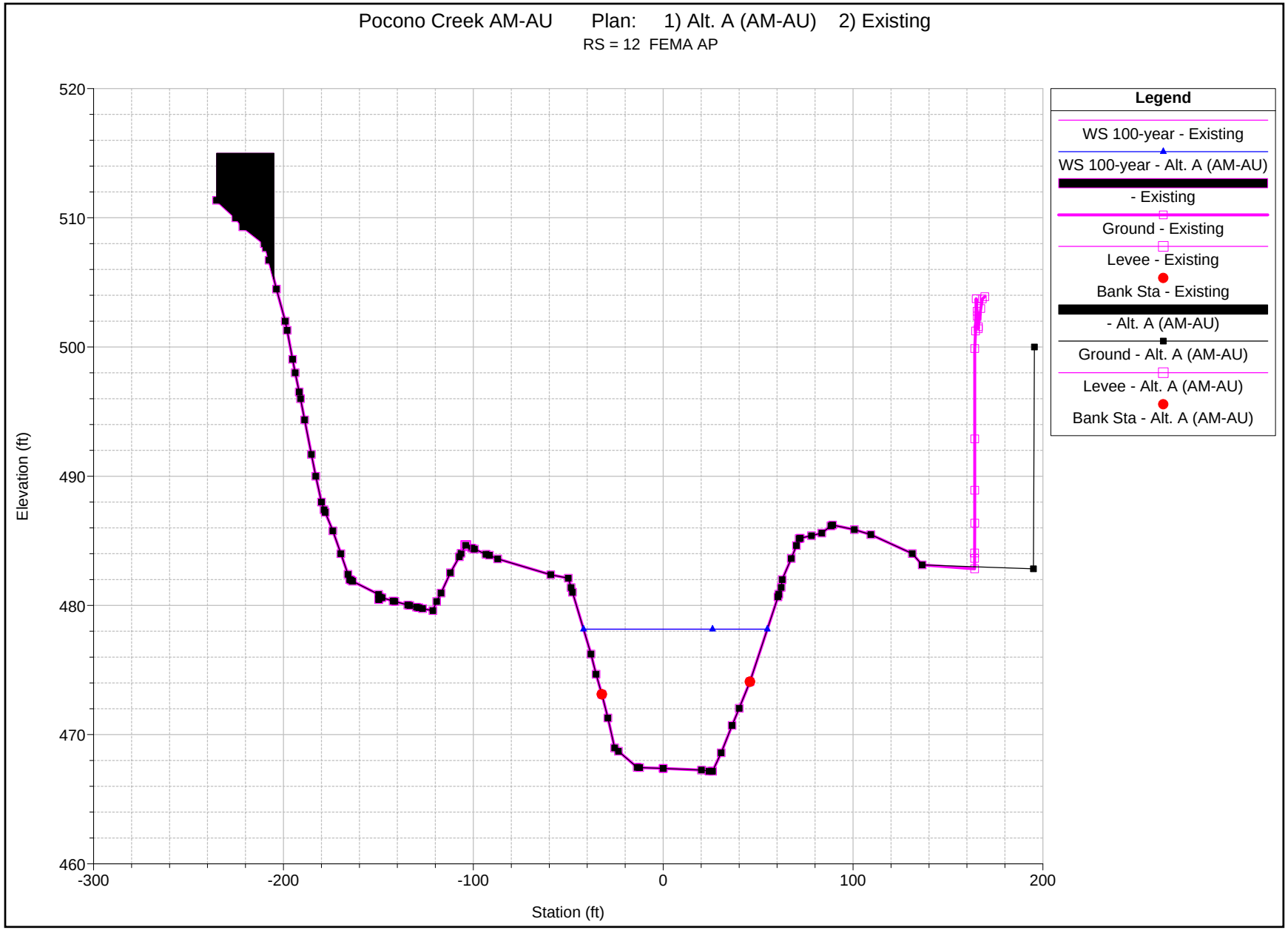

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 15.5 BR
Elevation (ft)
520
510
500
490
480
470
460
-400
-200
0
200
400
600
800
1000
Station (ft)
Legend
WS 100-year - Alt. A (AM-AU)
WS 100-year - Existing
- Existing
- Existing
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt. A (AM-AU)
- Alt. A (AM-AU)
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

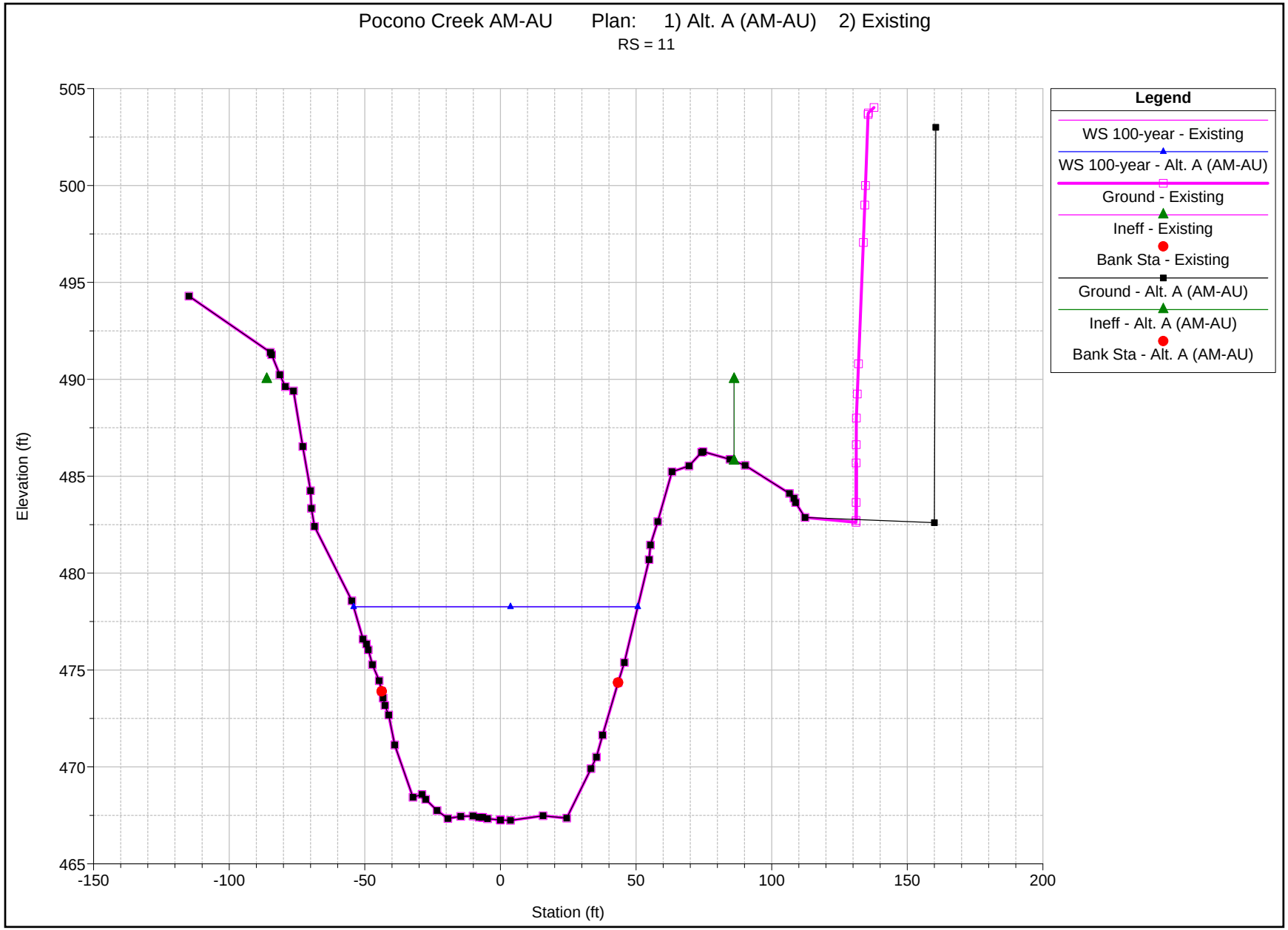

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 15.5 BR
Elevation (ft)
520
510
500
490
480
470
460
-500
-400
-300
-200
-100
0
100
200
Station (ft)
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
- Existing
- Existing
- Existing
Ground - Existing
Bank Sta - Existing
- Alt. A (AM-AU)
- Alt. A (AM-AU)
Ground - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

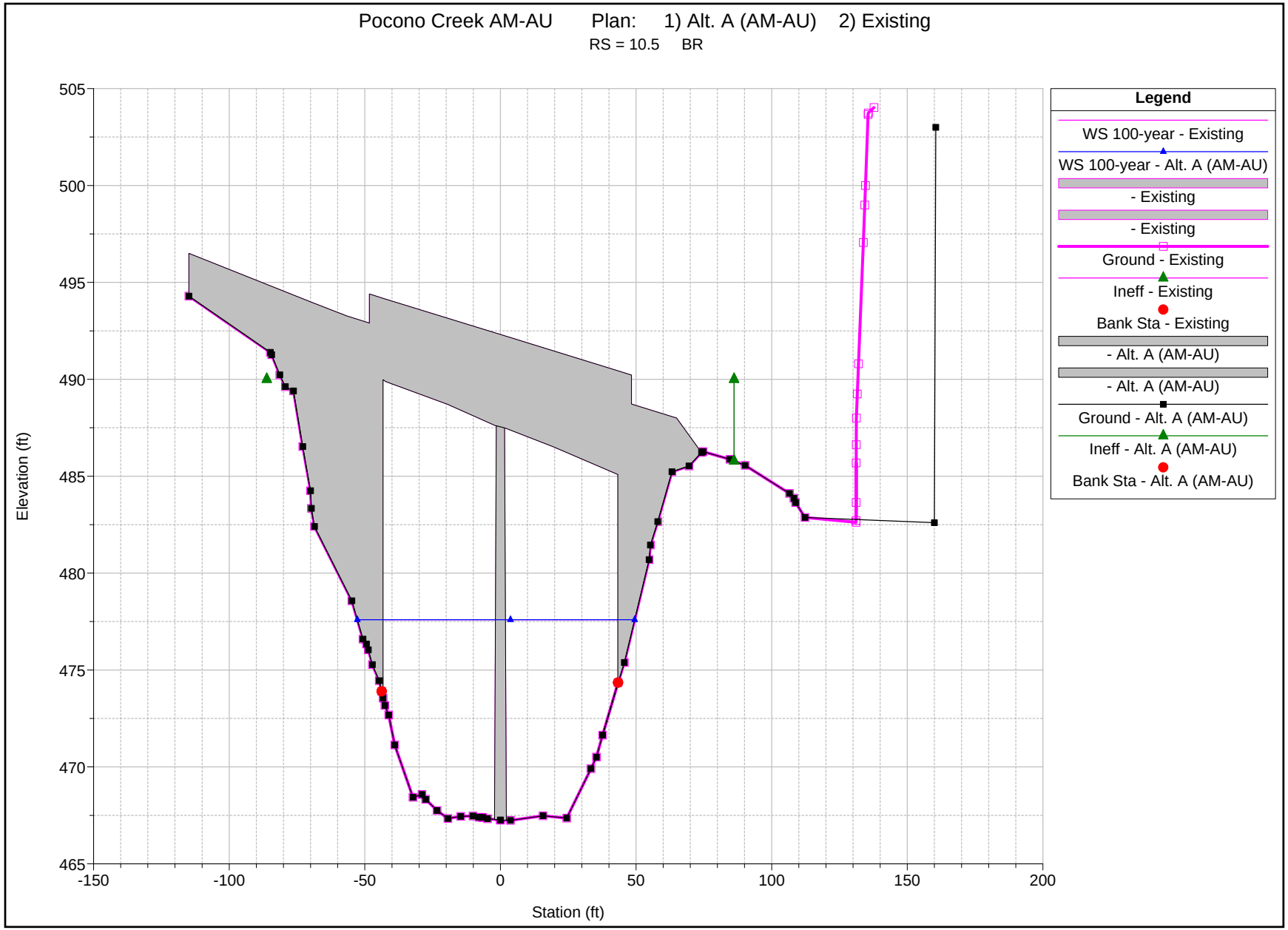

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 15
Elevation (ft)
520
510
500
490
480
470
460
-500
-400
-300
-200
-100
0
100
200
Station (ft)
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
Ground - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

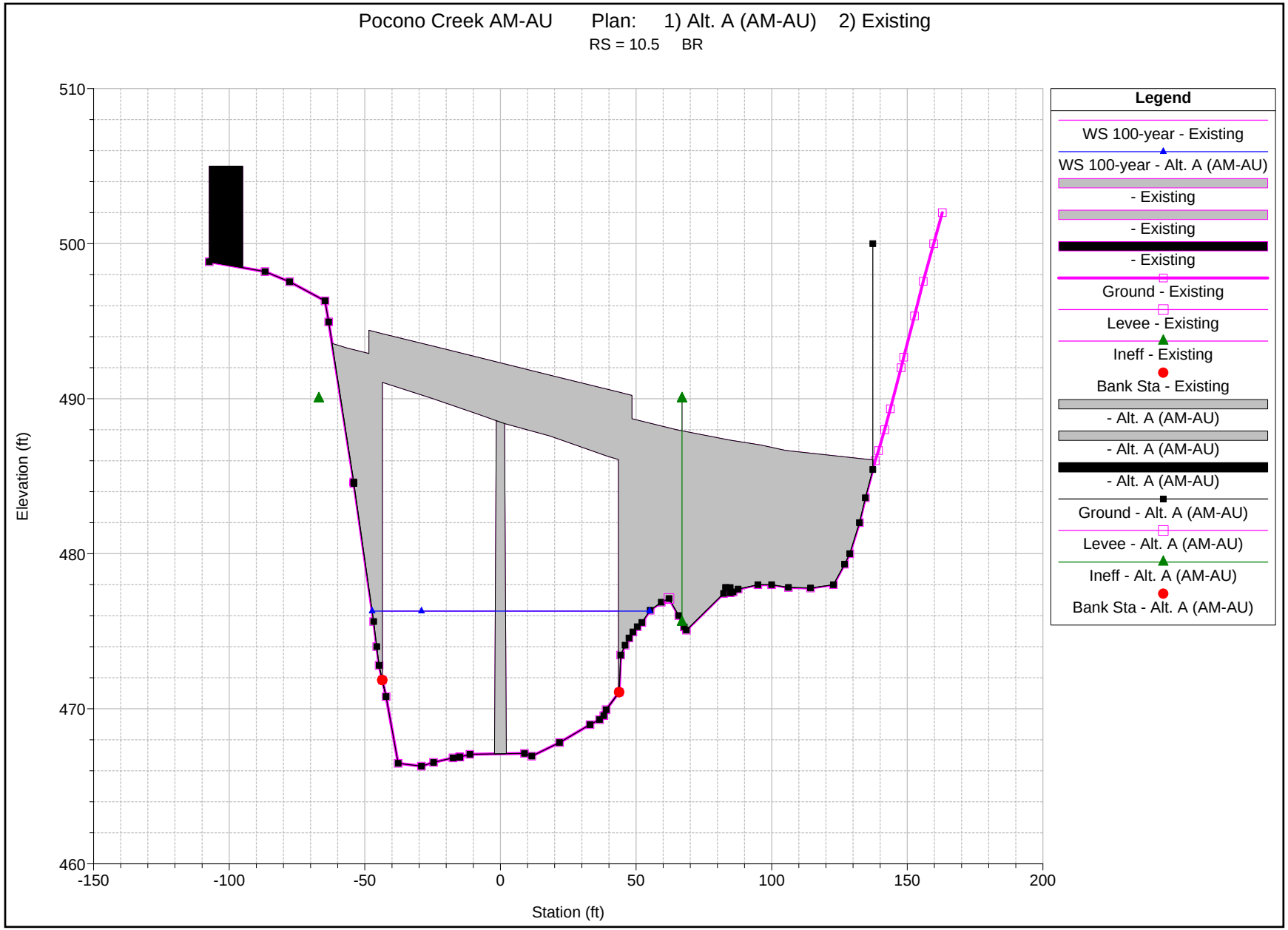

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 14 FEMA AR
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
Ground - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)
Elevation (ft)
520
510
500
490
480
470
460
-500
-400
-300
-200
-100
0
100
200
Station (ft)

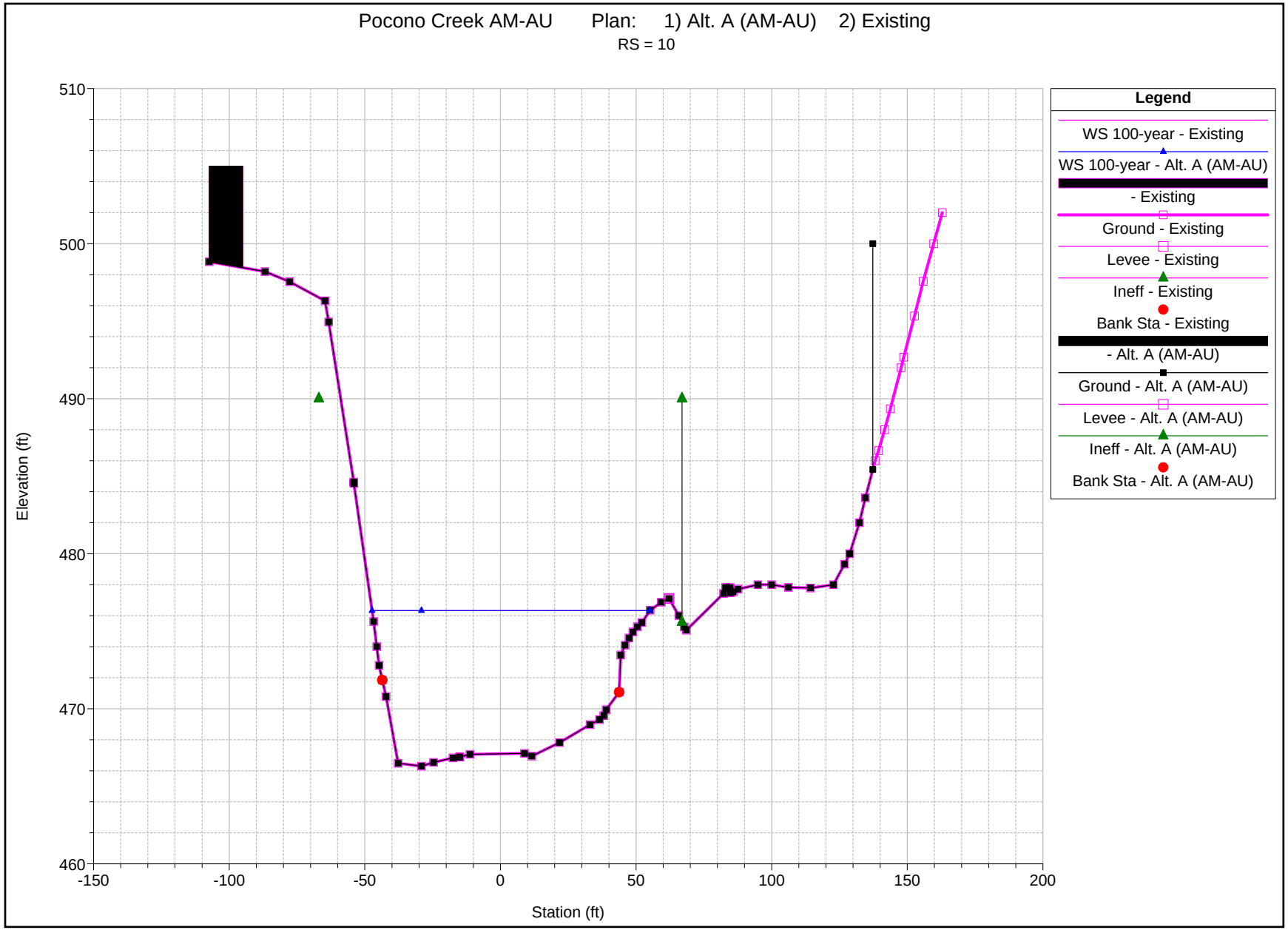

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 13 FEMA AQ
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
- Existing
Ground - Existing
Bank Sta - Existing
- Alt. A (AM-AU)
Ground - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)
Elevation (ft)
530
520
510
500
490
480
470
460
-400
-300
-200
-100
0
100
200
Station (ft)

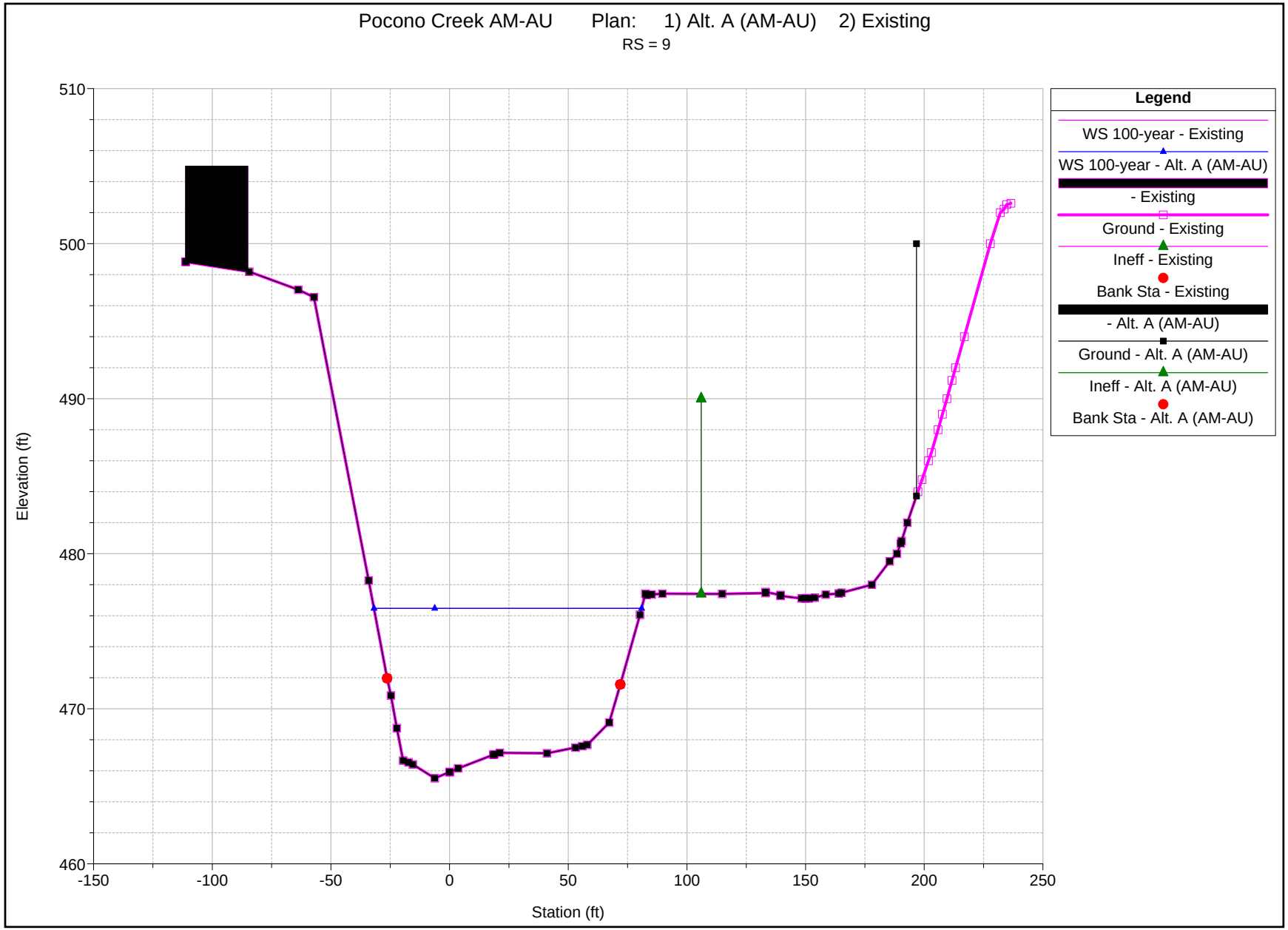

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 12 FEMA AP
Elevation (ft)
520
510
500
490
480
470
460
-300
-200
-100
0
100
200
Station (ft)
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
- Existing
Ground - Existing
Levee - Existing
Bank Sta - Existing
- Alt. A (AM-AU)
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

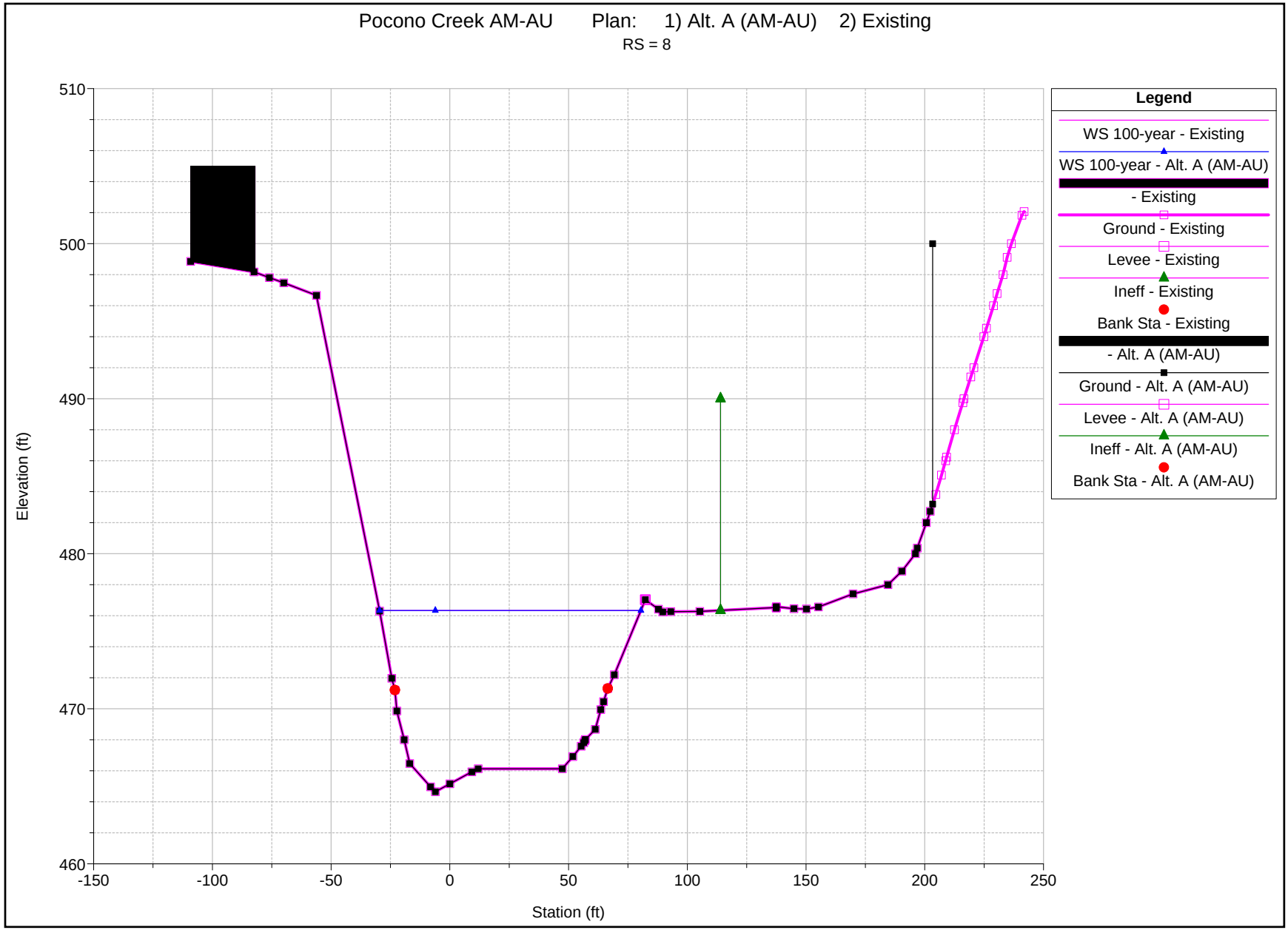

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 11
Elevation (ft)
505
500
495
490
485
480
475
470
465
-150
-100
-50
0
50
100
150
200
Station (ft)
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

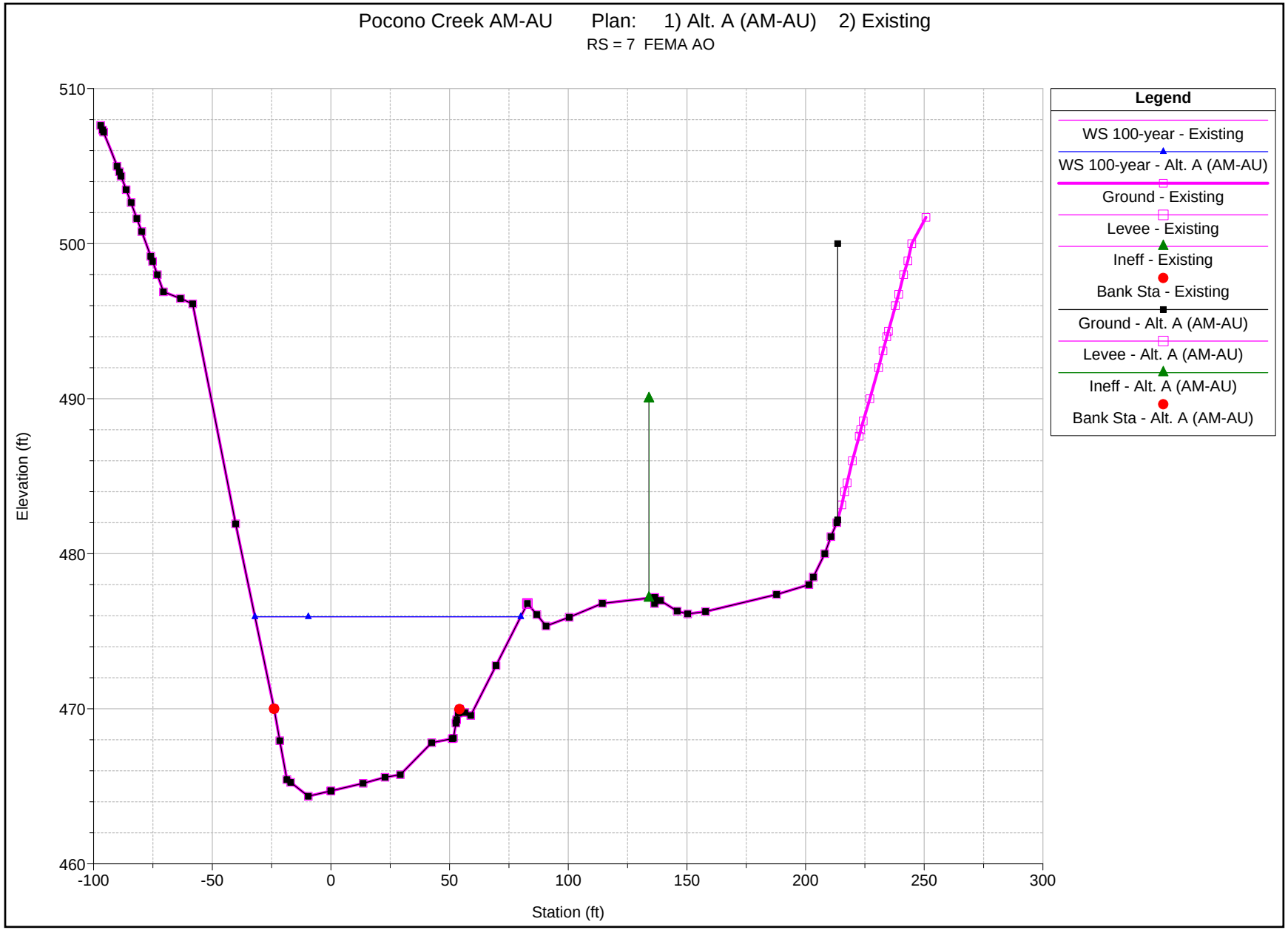

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 10.5 BR
Elevation (ft)
505
500
495
490
485
480
475
470
465
-150
-100
-50
0
50
100
150
200
Station (ft)
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
- Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
- Alt. A (AM-AU)
- Alt. A (AM-AU)
Ground - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

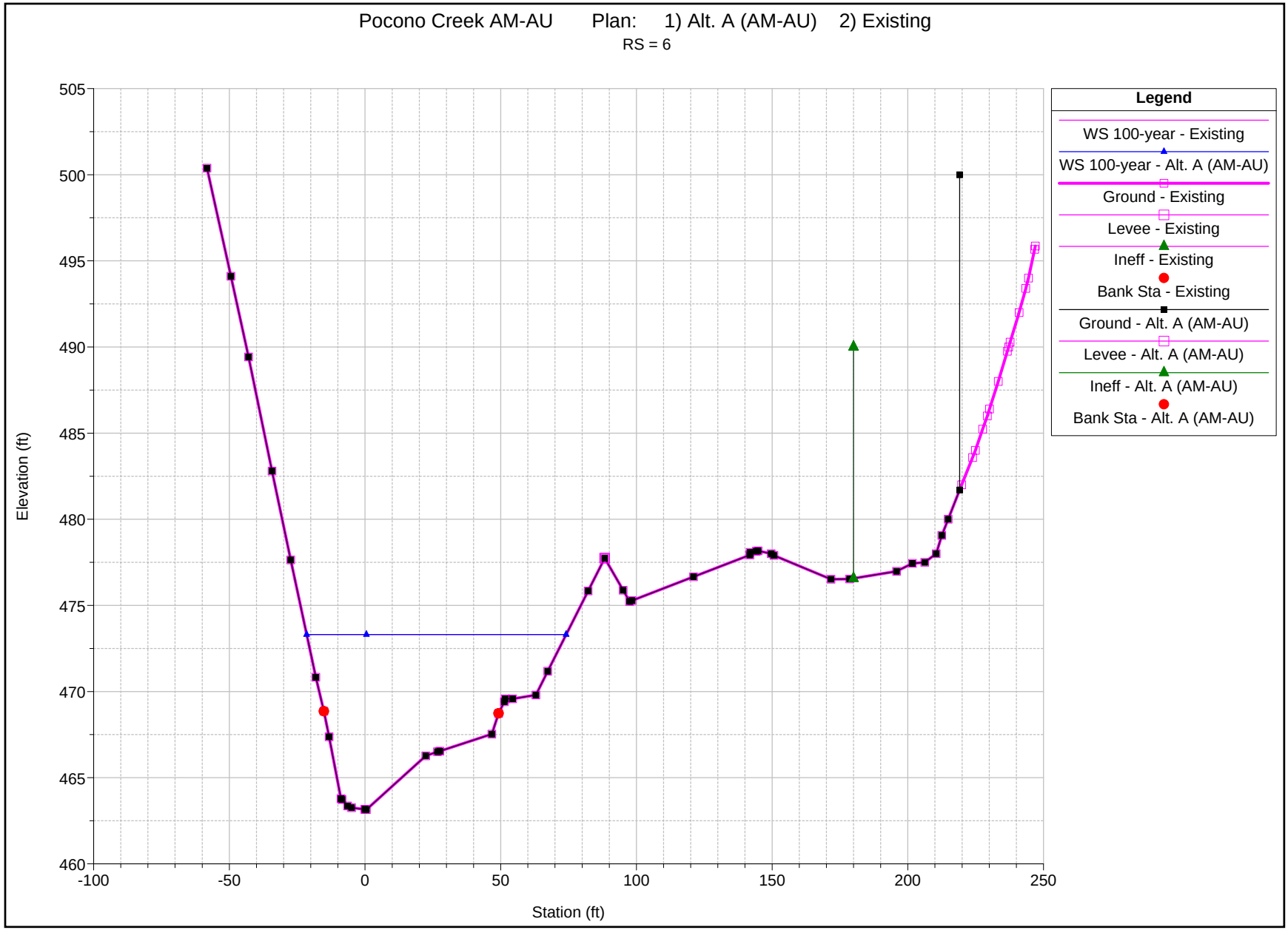

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 10.5 BR
Elevation (ft)
Station (ft)
510
500
490
480
470
460
-150
-100
-50
0
50
100
150
200
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
- Existing
- Existing
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt. A (AM-AU)
- Alt. A (AM-AU)
- Alt. A (AM-AU)
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

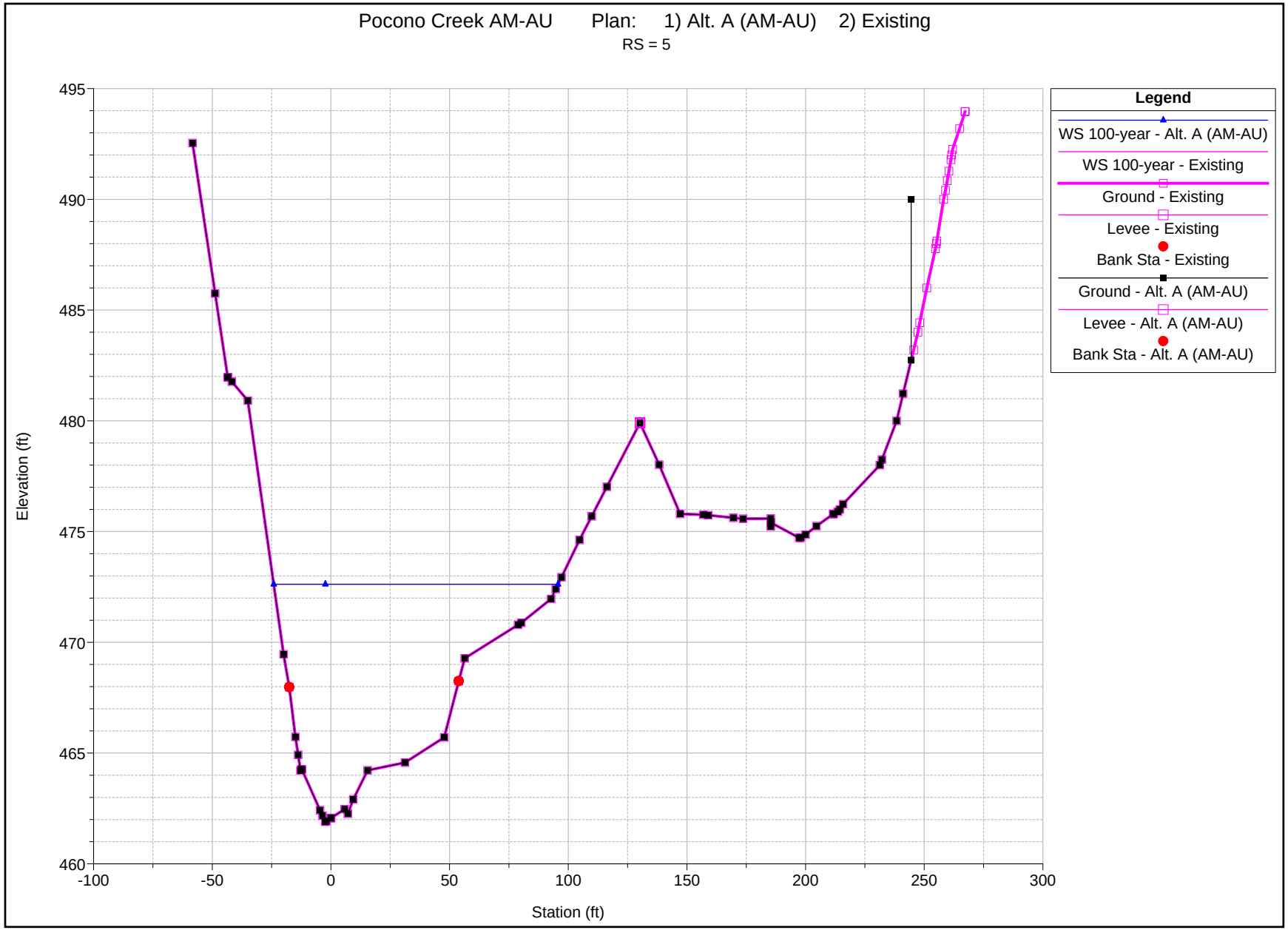

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 10
Elevation (ft)
Station (ft)
510
500
490
480
470
460
-150
-100
-50
0
50
100
150
200
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt. A (AM-AU)
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

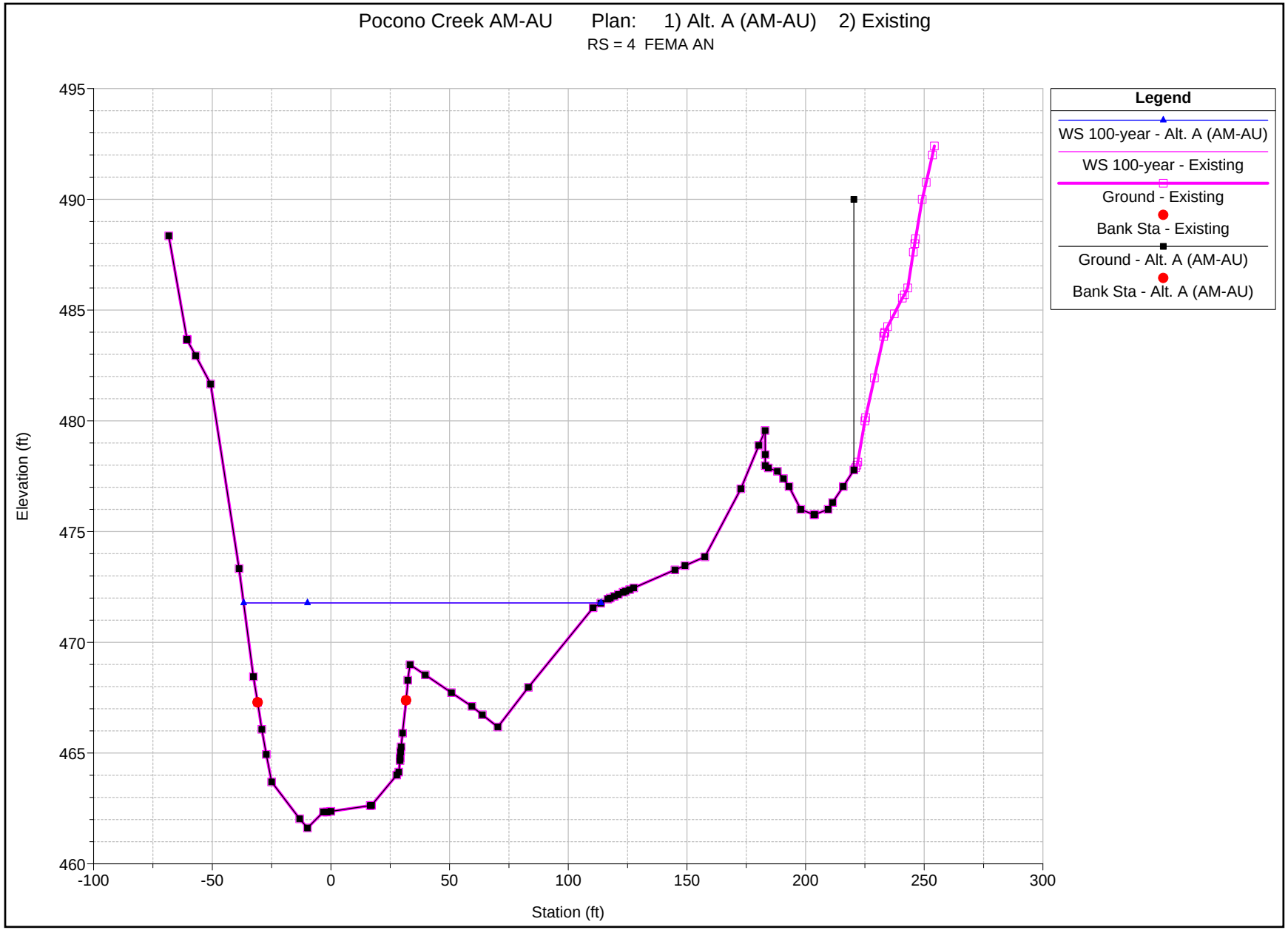

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 9
Elevation (ft)
Station (ft)
510
500
490
480
470
460
-150
-100
-50
0
50
100
150
200
250
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
- Alt. A (AM-AU)
Ground - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

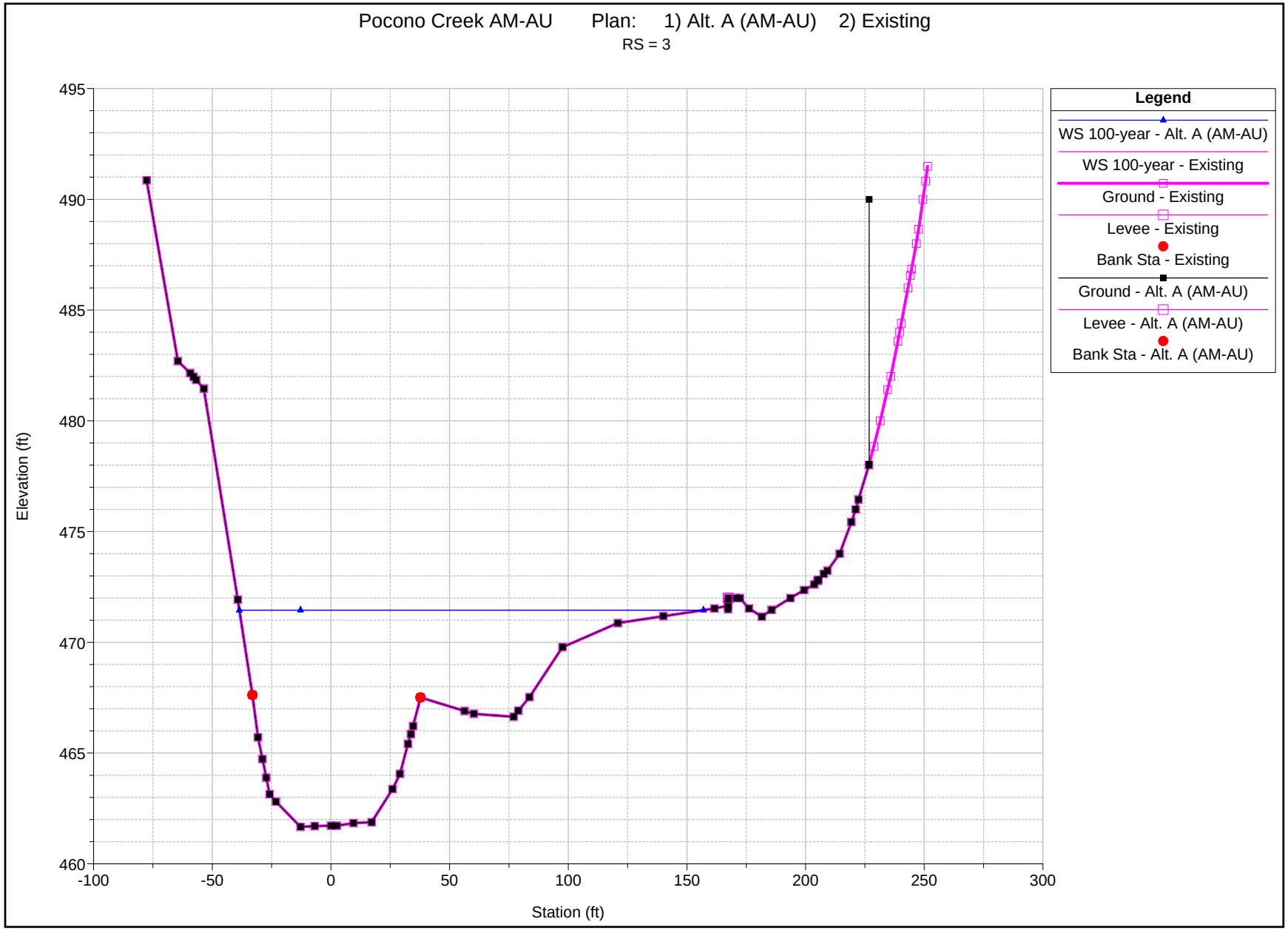

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 8
Elevation (ft)
Station (ft)
510
500
490
480
470
460
-150
-100
-50
0
50
100
150
200
250
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt. A (AM-AU)
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

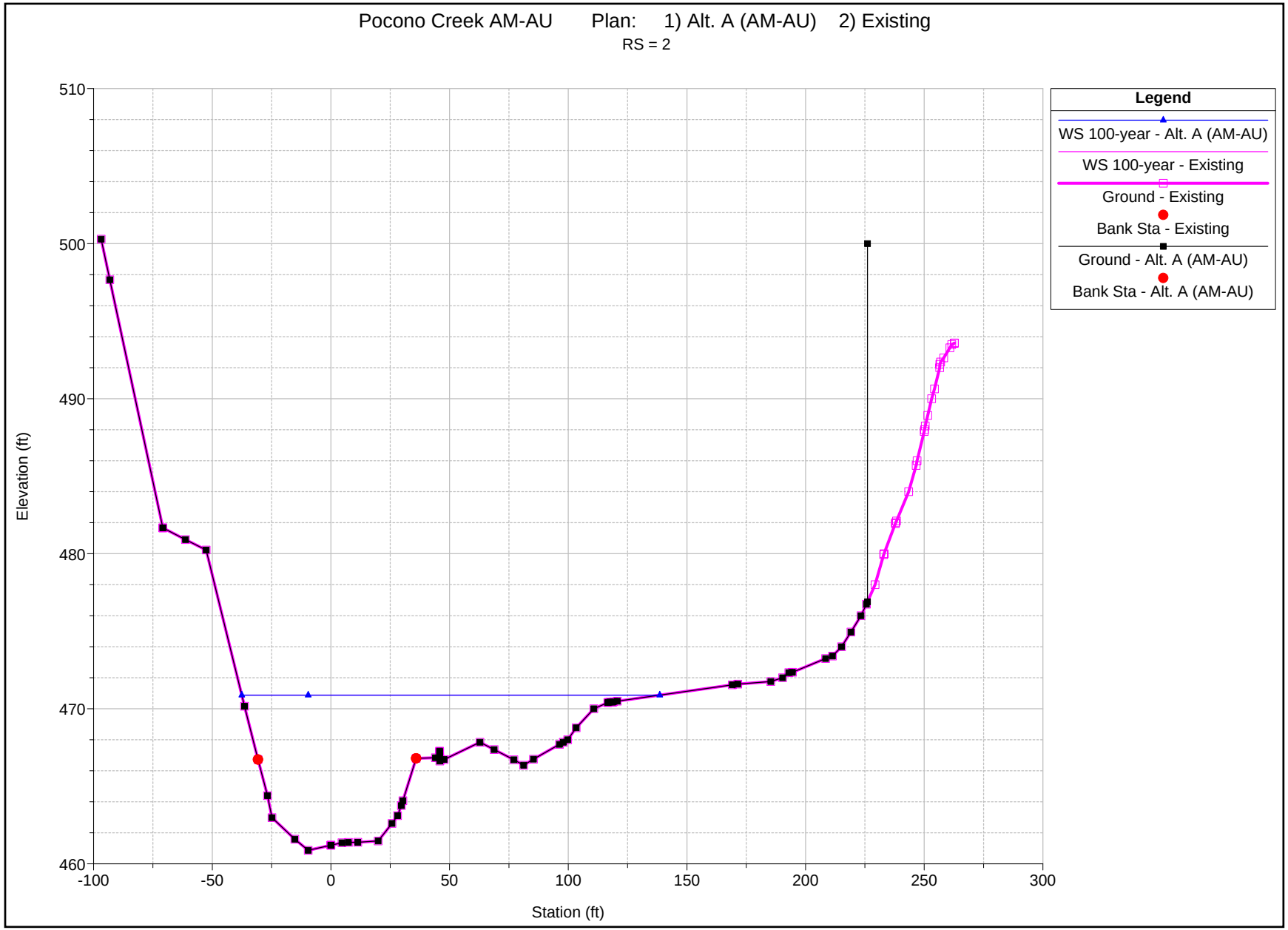

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 7 FEMA AO
Elevation (ft)
510
500
490
480
470
460
-100
-50
0
50
100
150
200
250
300
Station (ft)
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

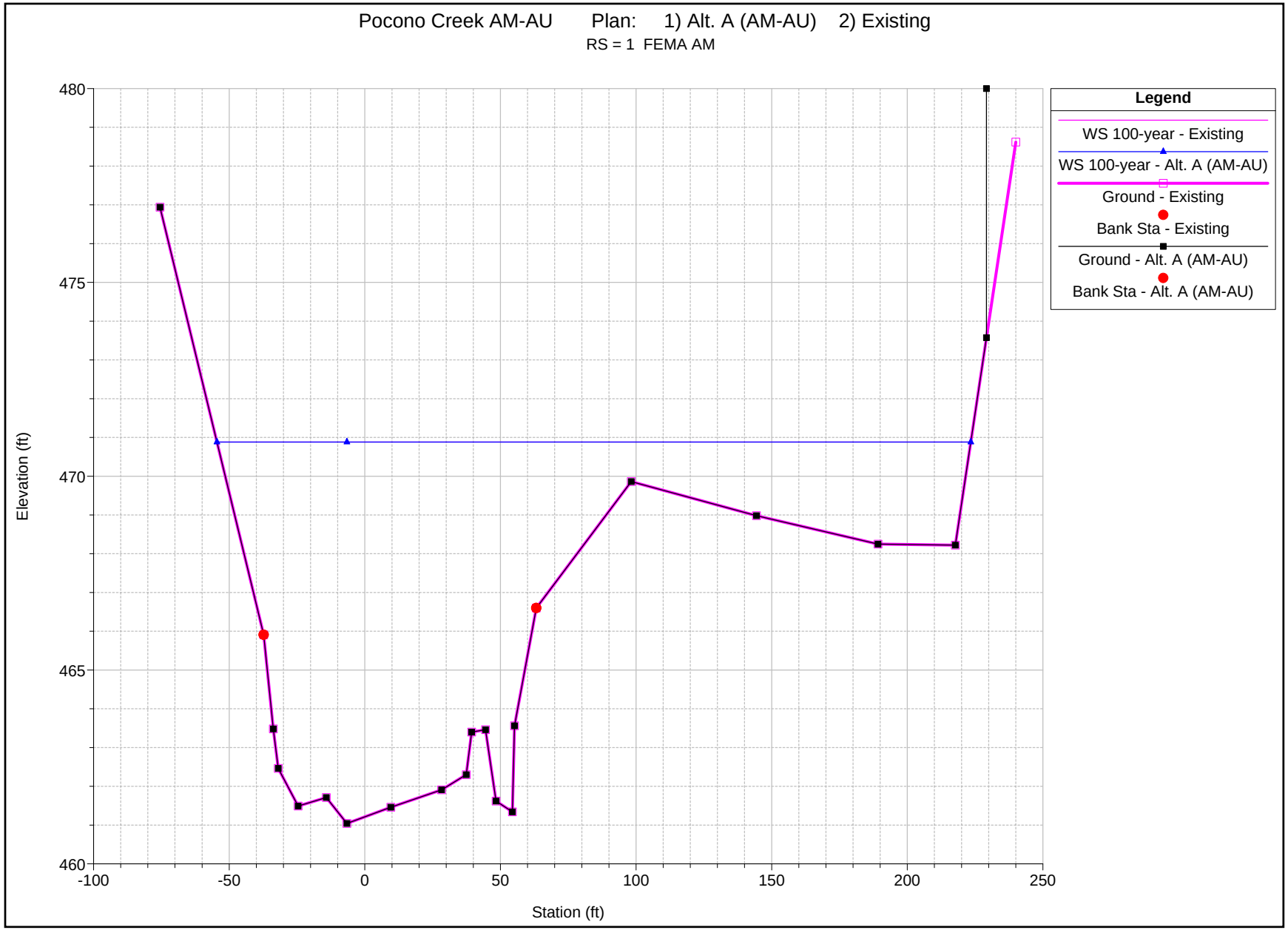

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 6
Elevation (ft)
Station (ft)
505
500
495
490
485
480
475
470
465
460
-100
-50
0
50
100
150
200
250
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Ineff - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

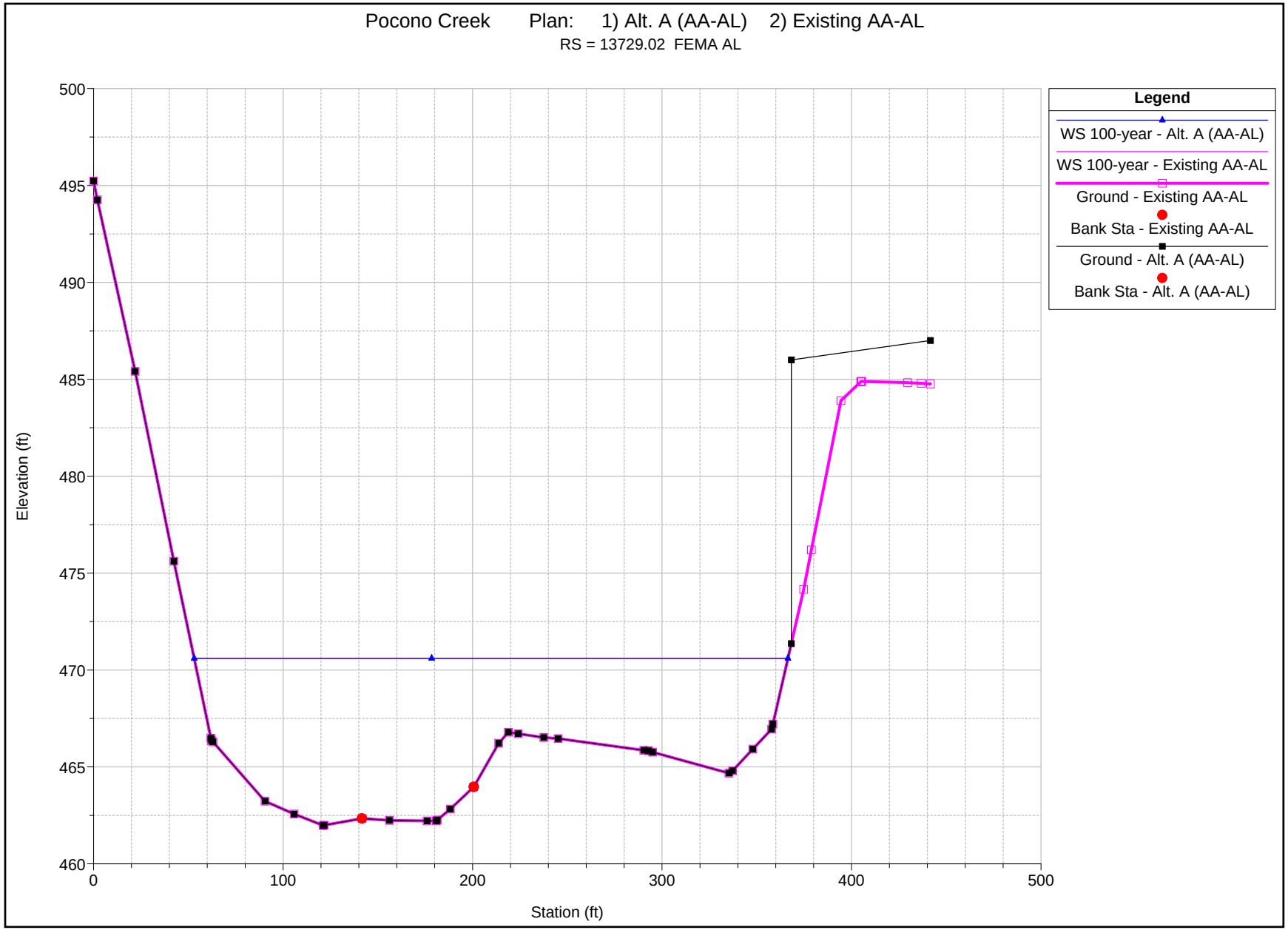

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 5
Elevation (ft)
Station (ft)
495
490
485
480
475
470
465
460
-100
-50
0
50
100
150
200
250
300
Legend
WS 100-year - Alt. A (AM-AU)
WS 100-year - Existing
Ground - Existing
Levee - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

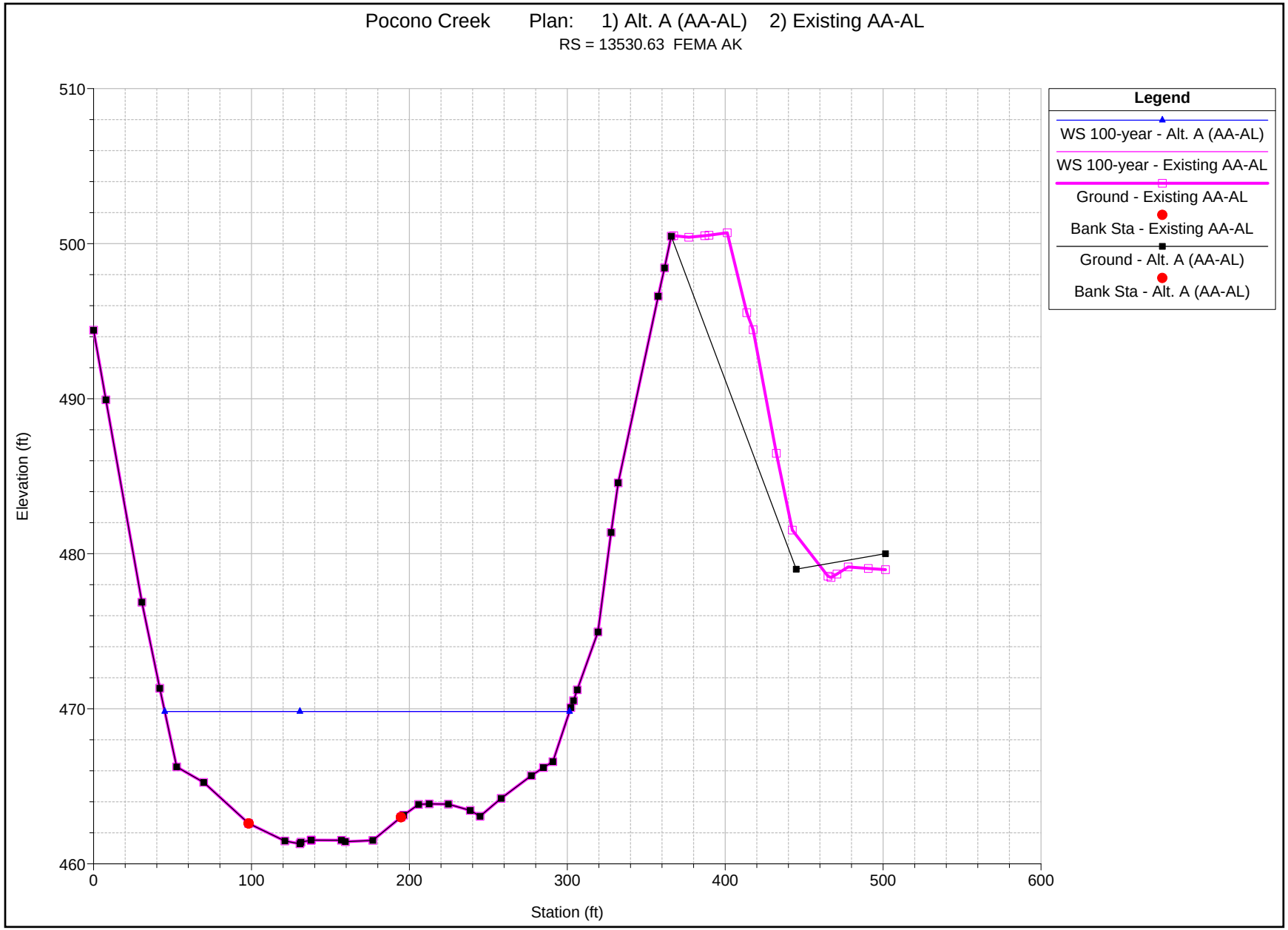

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 4 FEMA AN
Legend
WS 100-year - Alt. A (AM-AU)
WS 100-year - Existing
Ground - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)
Elevation (ft)
Station (ft)
495
490
485
480
475
470
465
460
-100
-50
0
50
100
150
200
250
300

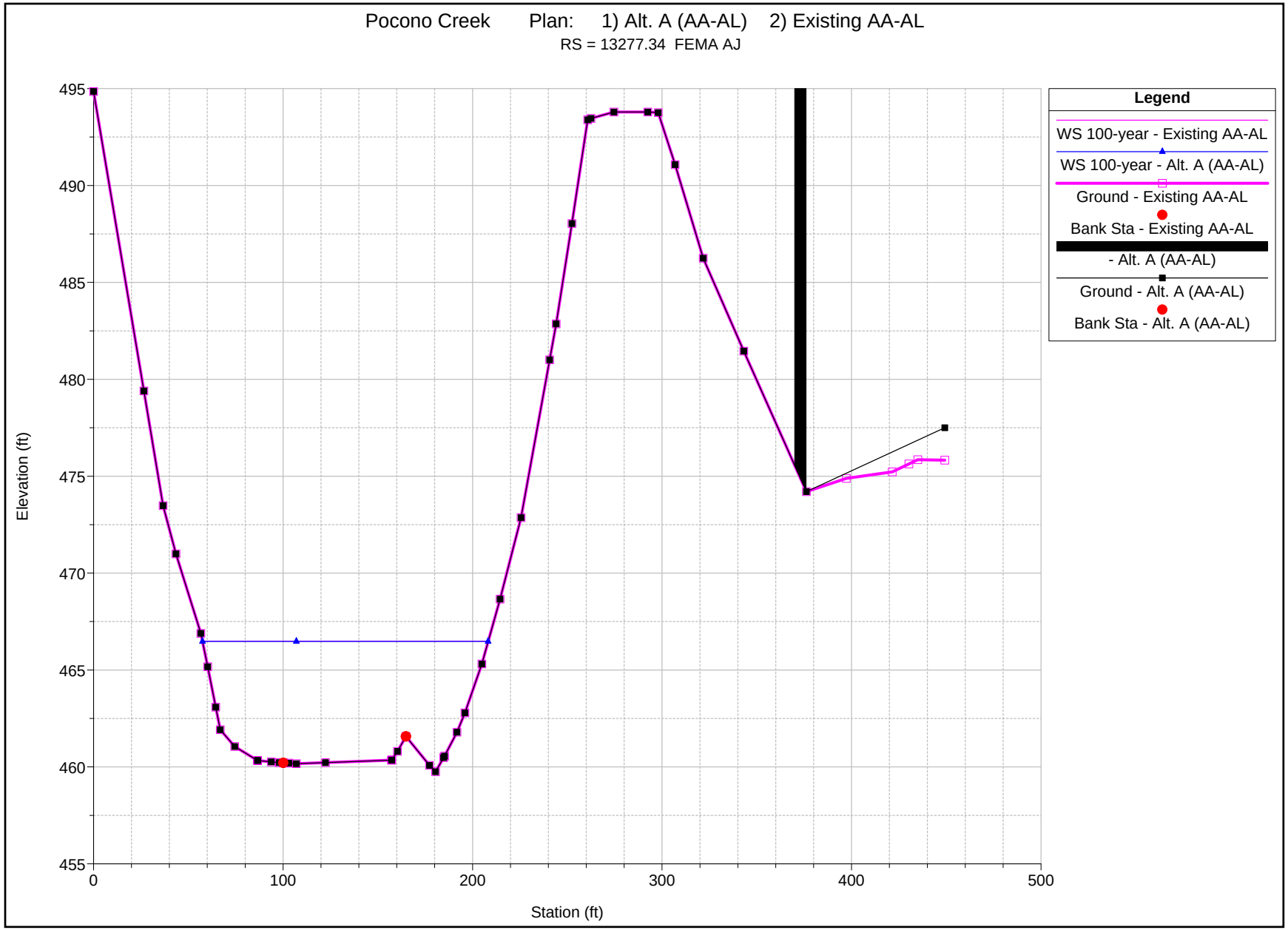

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 3
Elevation (ft)
Station (ft)
495
490
485
480
475
470
465
460
-100
-50
0
50
100
150
200
250
300
Legend
WS 100-year - Alt. A (AM-AU)
WS 100-year - Existing
Ground - Existing
Levee - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Levee - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)

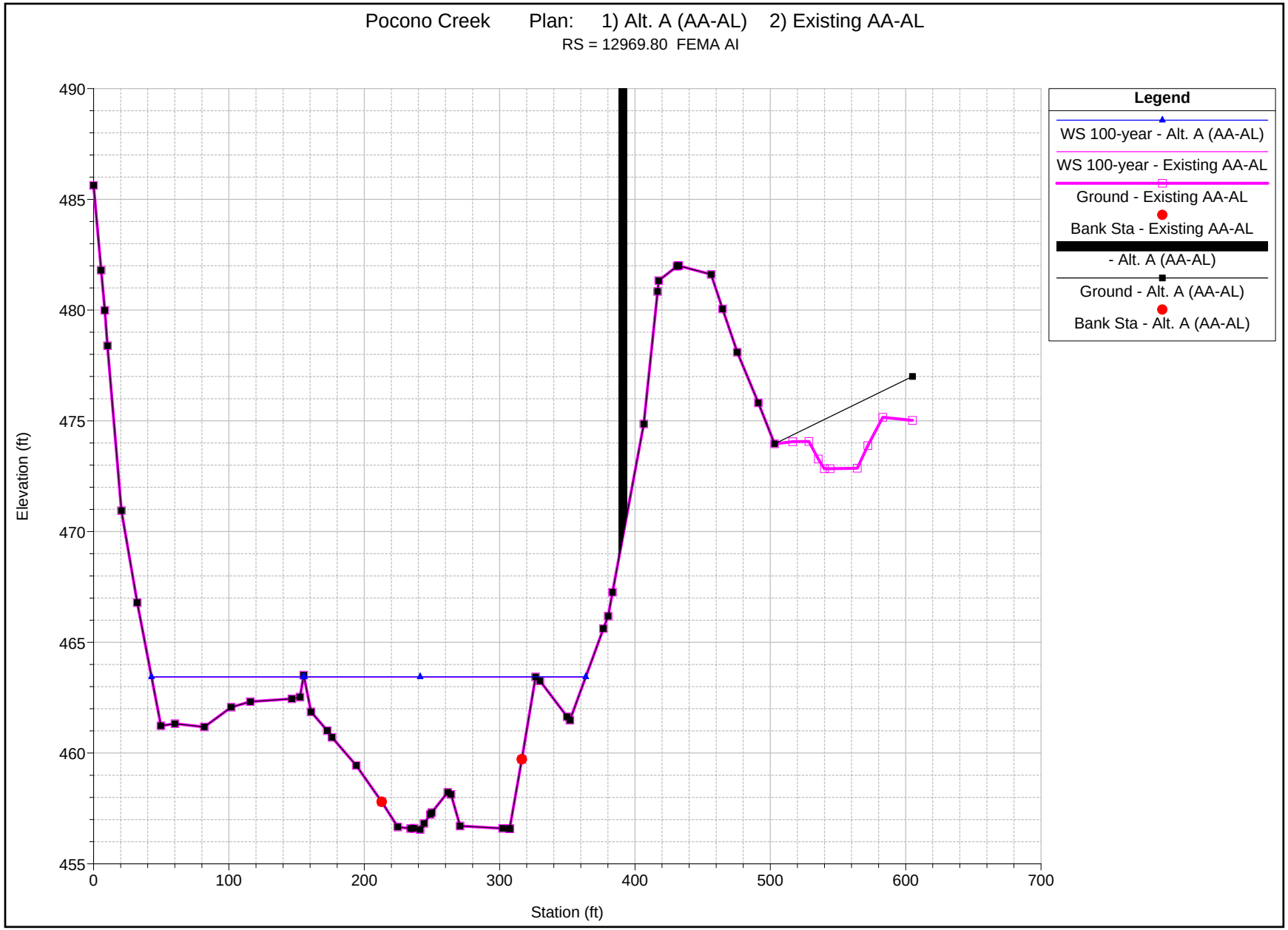

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 2
Legend
WS 100-year - Alt. A (AM-AU)
WS 100-year - Existing
Ground - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)
Elevation (ft)
Station (ft)
510
500
490
480
470
460
-100
-50
0
50
100
150
200
250
300

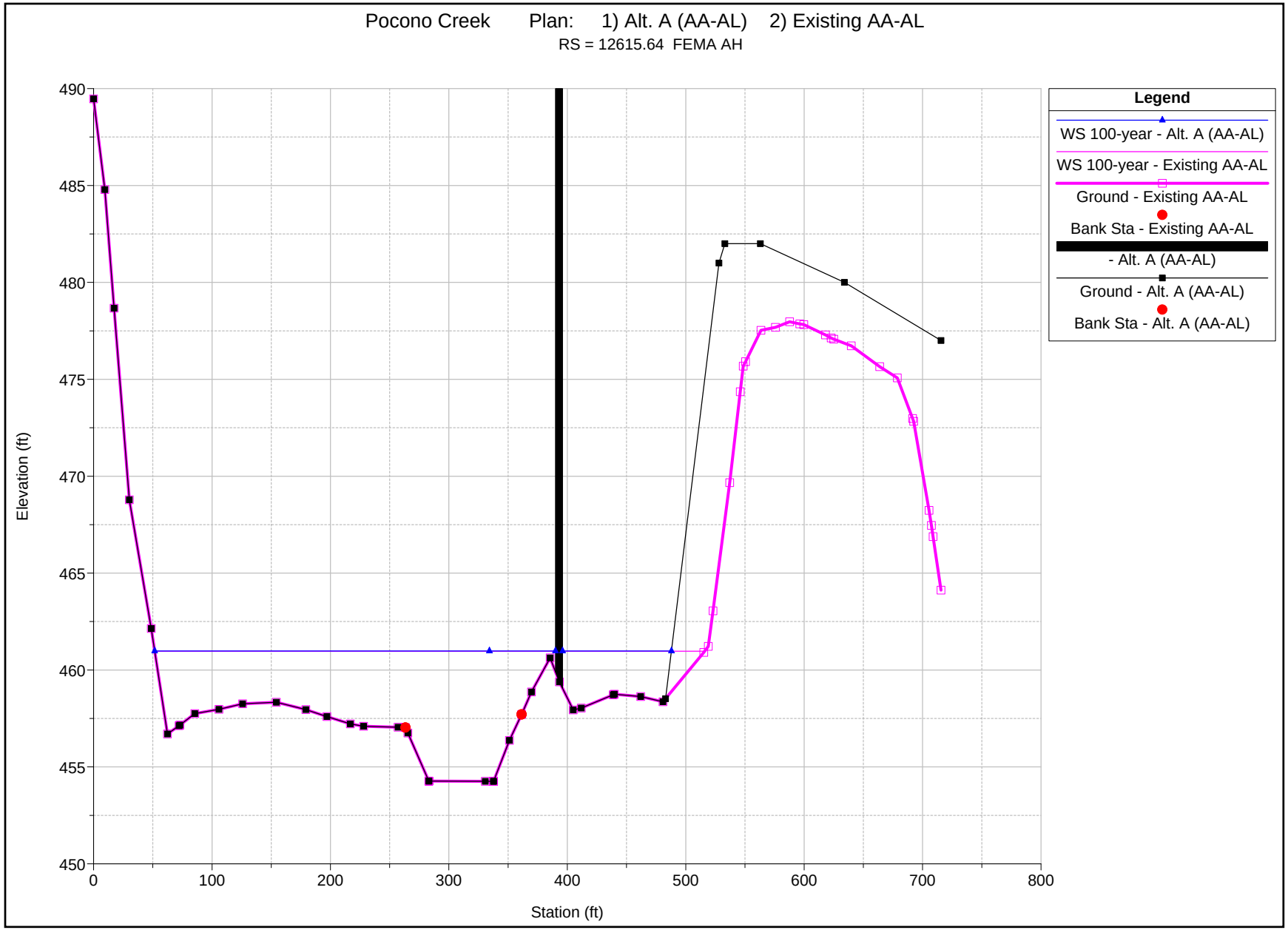

Pocono Creek AM-AU Plan: 1) Alt. A (AM-AU) 2) Existing
RS = 1 FEMA AM
Legend
WS 100-year - Existing
WS 100-year - Alt. A (AM-AU)
Ground - Existing
Bank Sta - Existing
Ground - Alt. A (AM-AU)
Bank Sta - Alt. A (AM-AU)
Elevation (ft)
480
475
470
465
460
-100
-50
0
50
100
150
200
250
Station (ft)

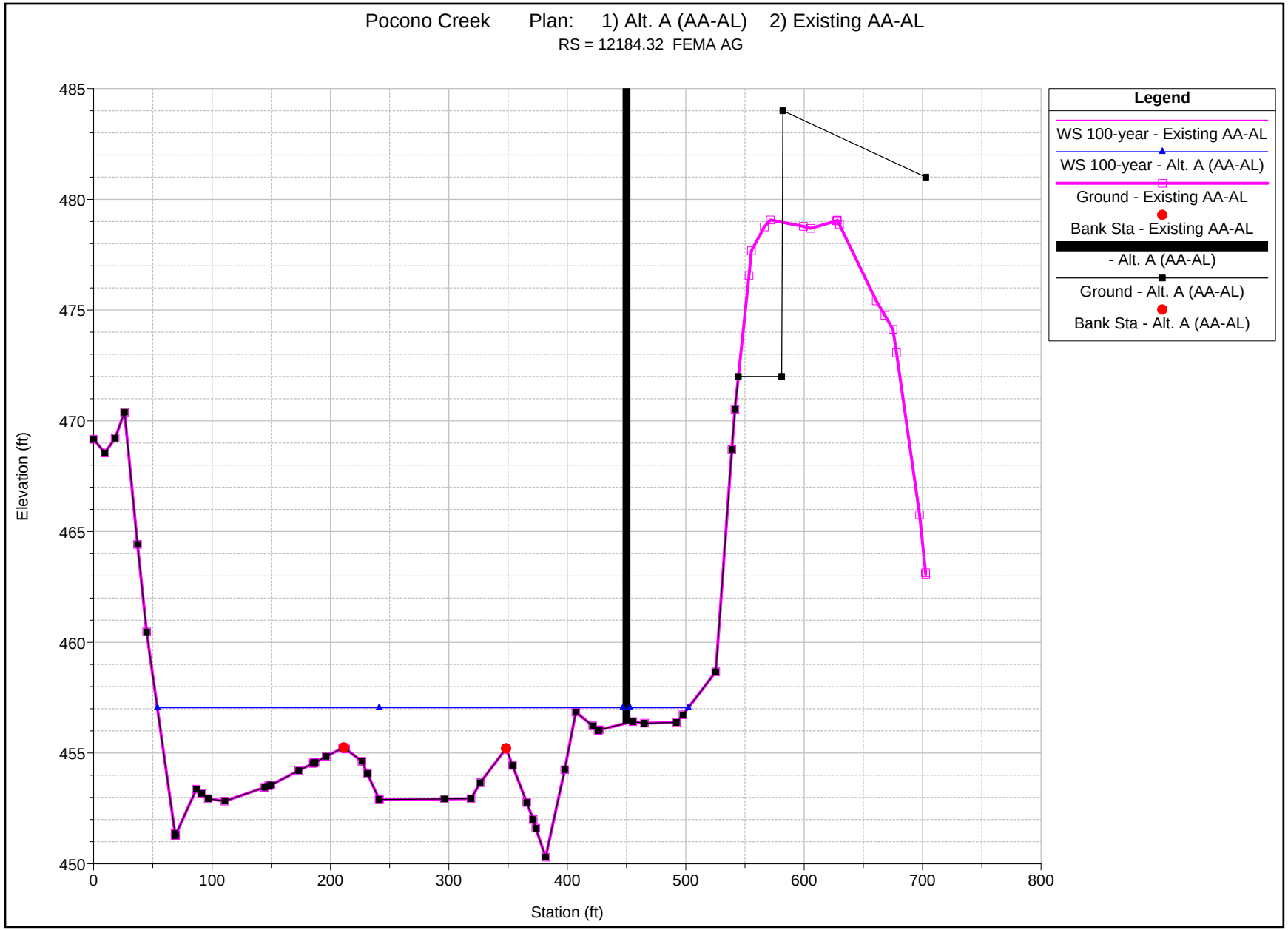

Pocono Creek Plan: 1) Alt. A (AA-AL) 2) Existing AA-AL
RS = 13729.02 FEMA AL
Elevation (ft)
Station (ft)
500
495
490
485
480
475
470
465
460
0
100
200
300
400
500
Legend
WS 100-year - Alt. A (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. A (AA-AL)
Bank Sta - Alt. A (AA-AL)

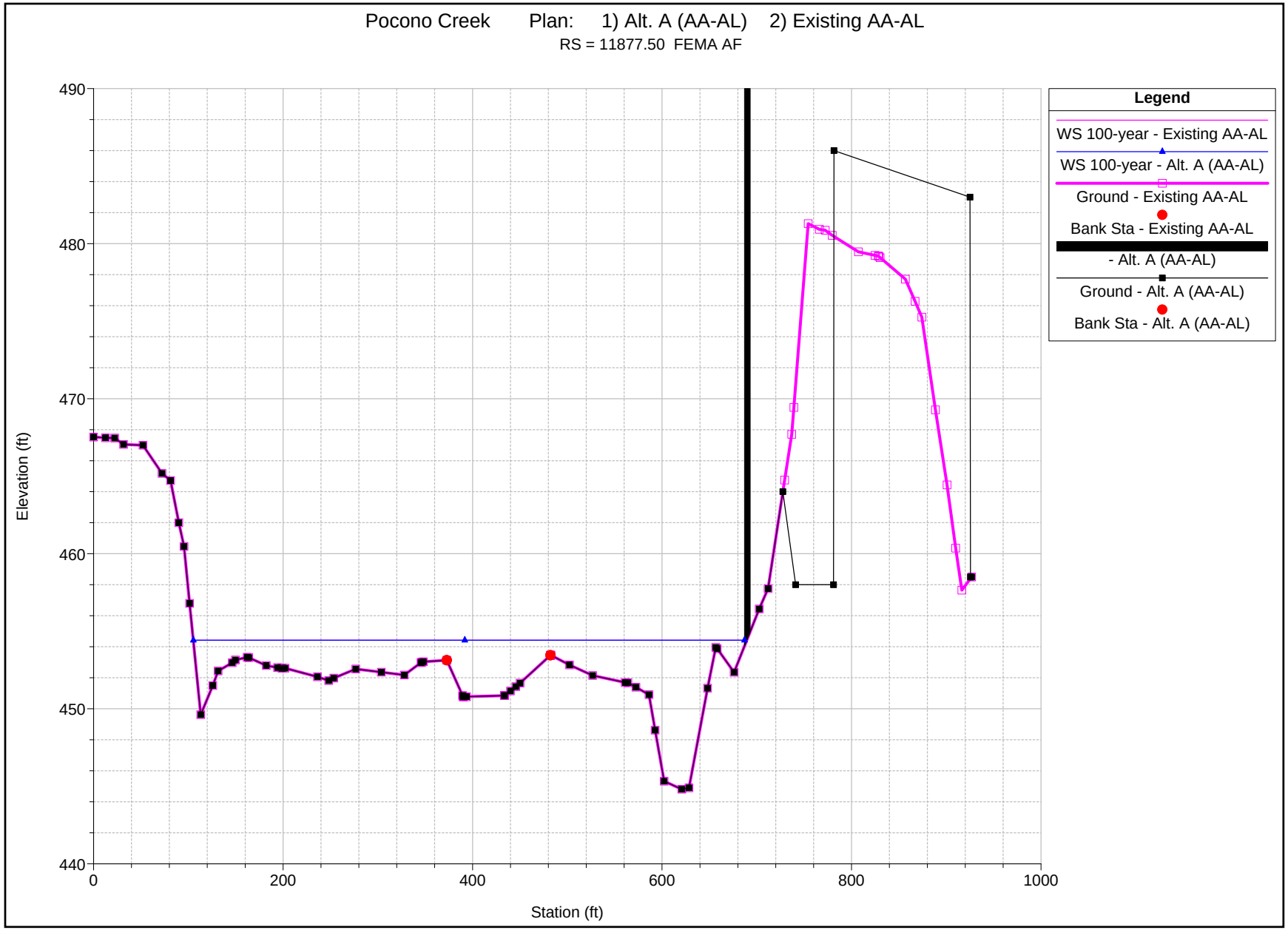

Pocono Creek Plan: 1) Alt. A (AA-AL) 2) Existing AA-AL
RS = 13530.63 FEMA AK
Elevation (ft)
Station (ft)
510
500
490
480
470
460
0
100
200
300
400
500
600
Legend
WS 100-year - Alt. A (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. A (AA-AL)
Bank Sta - Alt. A (AA-AL)

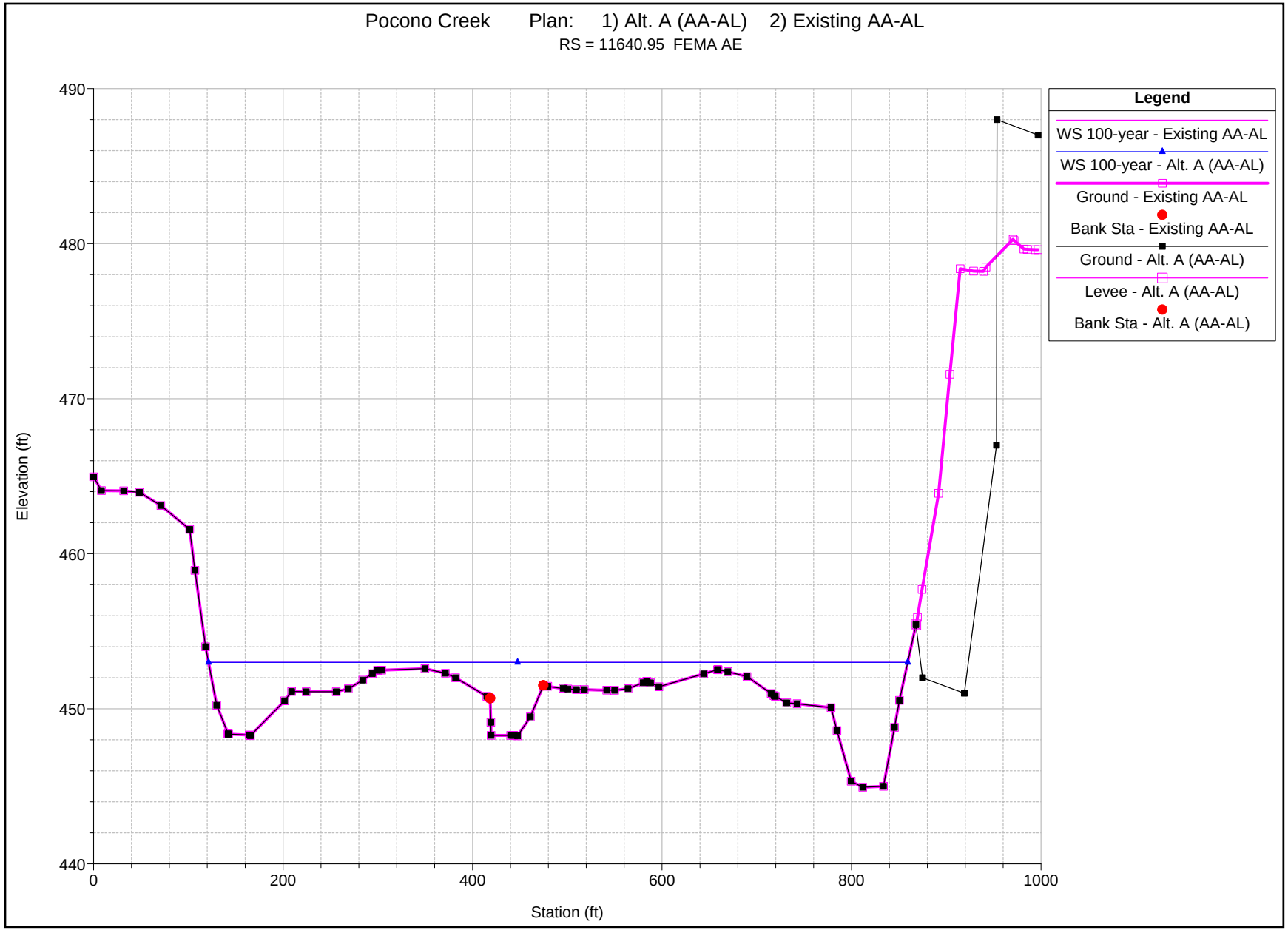

Pocono Creek Plan: 1) Alt. A (AA-AL) 2) Existing AA-AL
RS = 13277.34 FEMA AJ
Elevation (ft)
Station (ft)
495
490
485
480
475
470
465
460
455
0
100
200
300
400
500
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. A (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. A (AA-AL)
Ground - Alt. A (AA-AL)
Bank Sta - Alt. A (AA-AL)

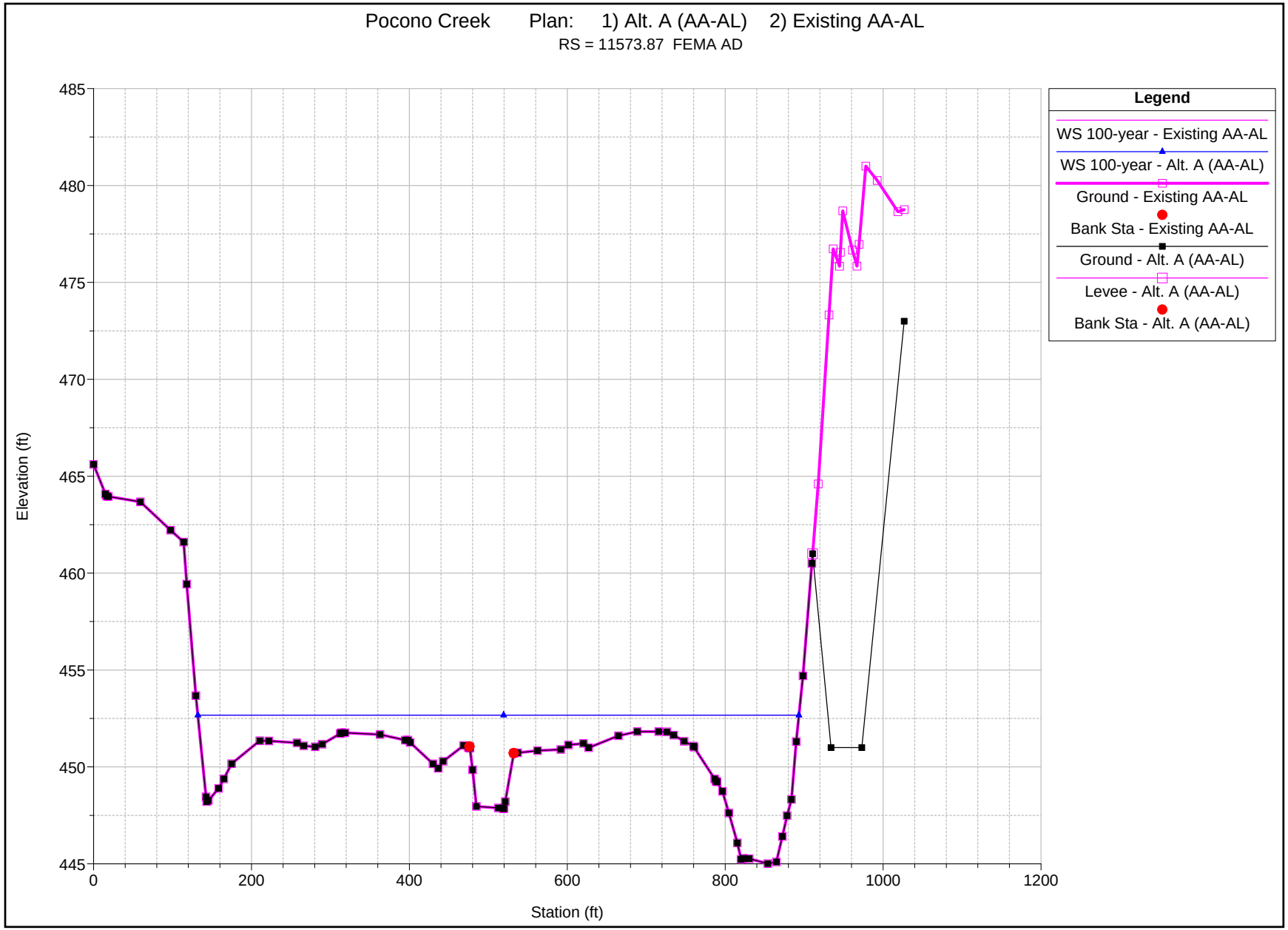

Pocono Creek Plan: 1) Alt. A (AA-AL) 2) Existing AA-AL
RS = 12969.80 FEMA AI
Elevation (ft)
Station (ft)
490
485
480
475
470
465
460
455
0
100
200
300
400
500
600
700
Legend
WS 100-year - Alt. A (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. A (AA-AL)
Ground - Alt. A (AA-AL)
Bank Sta - Alt. A (AA-AL)

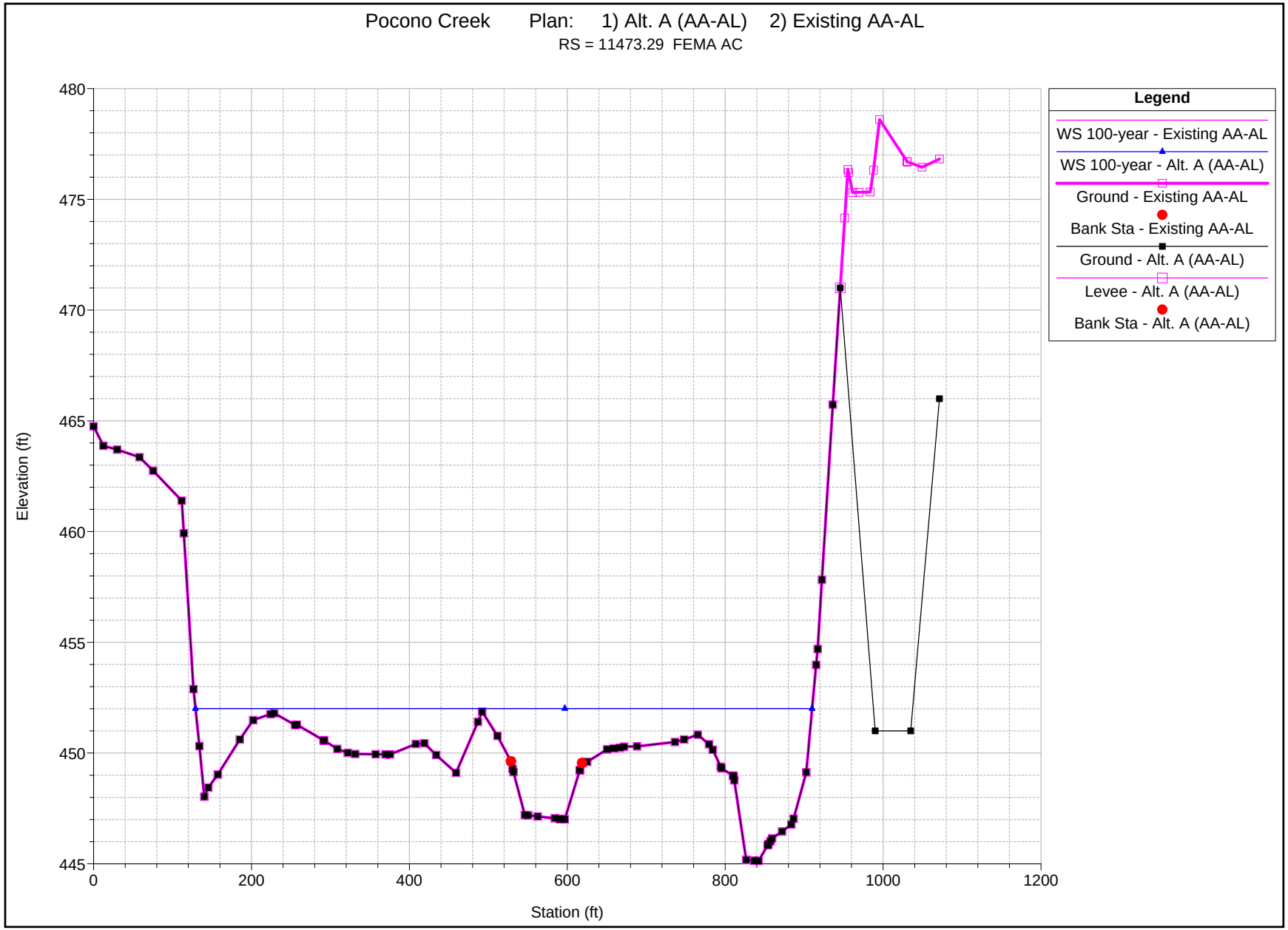

Pocono Creek Plan: 1) Alt. A (AA-AL) 2) Existing AA-AL
RS = 12615.64 FEMA AH
Elevation (ft)
Station (ft)
490
485
480
475
470
465
460
455
450
0
100
200
300
400
500
600
700
800
Legend
WS 100-year - Alt. A (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. A (AA-AL)
Ground - Alt. A (AA-AL)
Bank Sta - Alt. A (AA-AL)

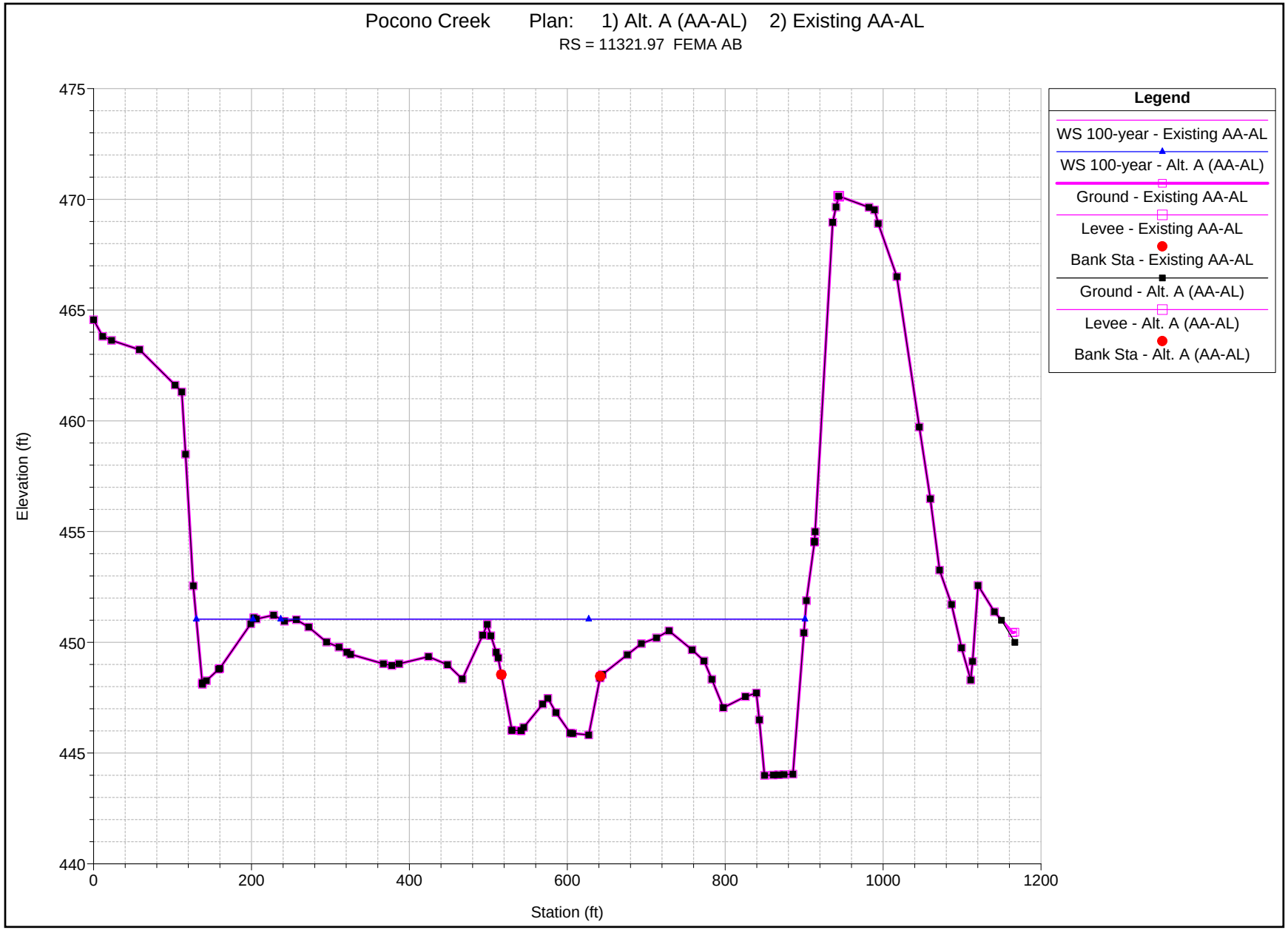

Pocono Creek Plan: 1) Alt. A (AA-AL) 2) Existing AA-AL
RS = 12184.32 FEMA AG
Elevation (ft)
Station (ft)
485
480
475
470
465
460
455
450
0
100
200
300
400
500
600
700
800
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. A (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. A (AA-AL)
Ground - Alt. A (AA-AL)
Bank Sta - Alt. A (AA-AL)

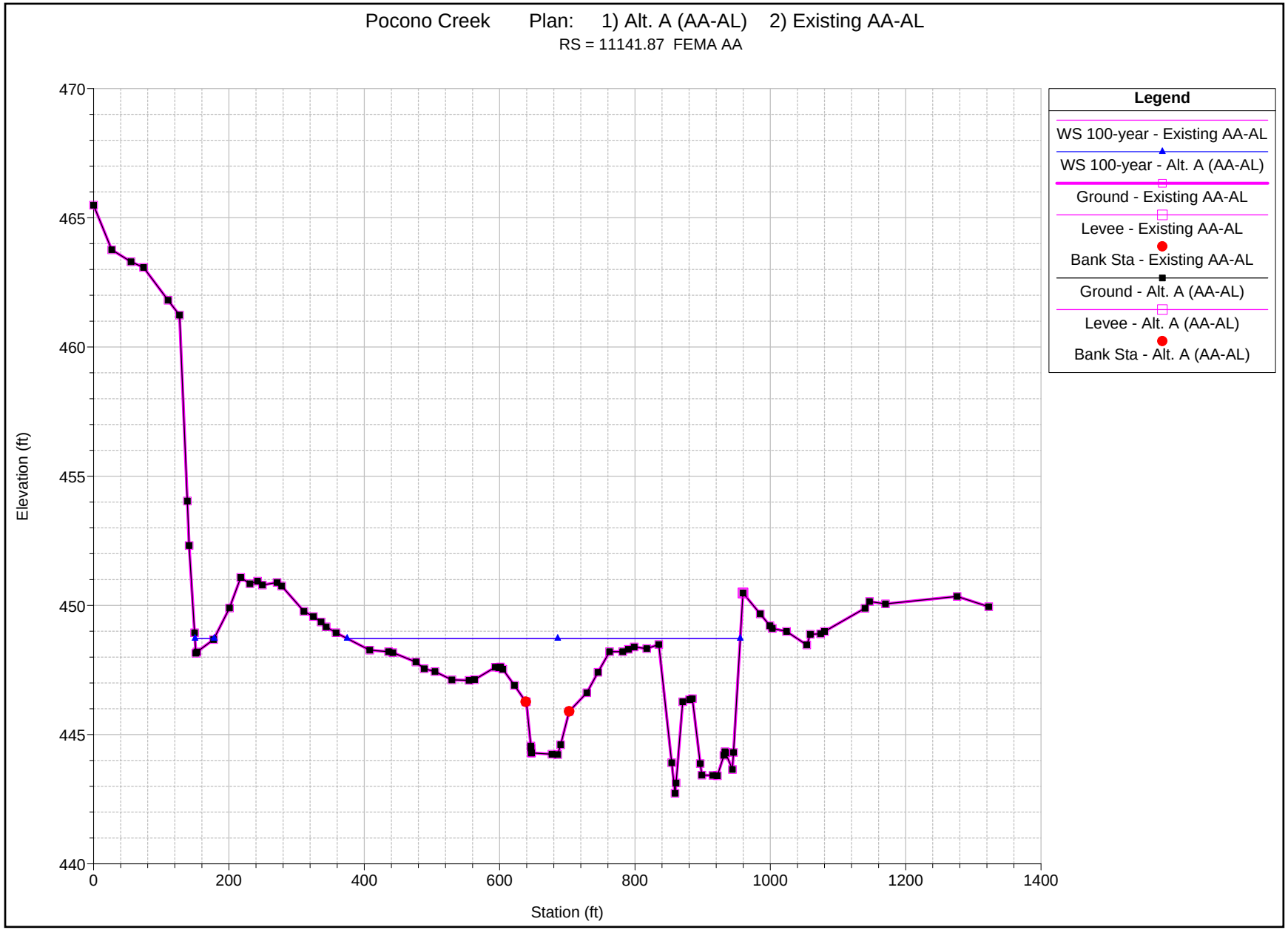

Pocono Creek Plan: 1) Alt. A (AA-AL) 2) Existing AA-AL
RS = 11877.50 FEMA AF
Elevation (ft)
Station (ft)
490
480
470
460
450
440
0
200
400
600
800
1000
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. A (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. A (AA-AL)
Ground - Alt. A (AA-AL)
Bank Sta - Alt. A (AA-AL)


Pocono Creek Plan: 1) Alt. A (AA-AL) 2) Existing AA-AL
RS = 11640.95 FEMA AE
Elevation (ft)
Station (ft)
490
480
470
460
450
440
0
200
400
600
800
1000
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. A (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. A (AA-AL)
Levee - Alt. A (AA-AL)
Bank Sta - Alt. A (AA-AL)


Pocono Creek Plan: 1) Alt. A (AA-AL) 2) Existing AA-AL
RS = 11573.87 FEMA AD
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. A (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. A (AA-AL)
Levee - Alt. A (AA-AL)
Bank Sta - Alt. A (AA-AL)
Elevation (ft)
485
480
475
470
465
460
455
450
445
0
200
400
600
800
1000
1200
Station (ft)


Pocono Creek Plan: 1) Alt. A (AA-AL) 2) Existing AA-AL
RS = 11473.29 FEMA AC
Elevation (ft)
480
475
470
465
460
455
450
445
0
200
400
600
800
1000
1200
Station (ft)
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. A (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. A (AA-AL)
Levee - Alt. A (AA-AL)
Bank Sta - Alt. A (AA-AL)


Pocono Creek Plan: 1) Alt. A (AA-AL) 2) Existing AA-AL
RS = 11321.97 FEMA AB
Elevation (ft)
Station (ft)
475
470
465
460
455
450
445
440
0
200
400
600
800
1000
1200
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. A (AA-AL)
Ground - Existing AA-AL
Levee - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. A (AA-AL)
Levee - Alt. A (AA-AL)
Bank Sta - Alt. A (AA-AL)


Pocono Creek Plan: 1) Alt. A (AA-AL) 2) Existing AA-AL
RS = 11141.87 FEMA AA
Elevation (ft)
Station (ft)
470
465
460
455
450
445
440
0
200
400
600
800
1000
1200
1400
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. A (AA-AL)
Ground - Existing AA-AL
Levee - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. A (AA-AL)
Levee - Alt. A (AA-AL)
Bank Sta - Alt. A (AA-AL)

I-80 Alternatives Analysis

APPENDIX E

Alternative D Results

Monroe County
PennDOT District 5-0

NEWELL TERESKA & MACKAY
ENGINEERING

Proposed Alternative D Results

Water surface elevations at the hydraulic sections in the McMichael, Pocono, and Little Pocono Creek HEC-RAS models are compared with existing conditions in tables below for the 100-year event. Flood maps for every study area are also attached. The flood profiles include the calculated 100-year elevations as well as the FEMA 100-year floodplain and floodway. The FEMA floodplain may not follow the provided contours as it was mapped using outdated data. Furthermore, note that the proposed contours may end abruptly due to the preliminary stages of the project. The Brodhead Creek alternate D bridge is the same as the alternate A bridge, so please refer to the alternate A analysis for results.

Table 1: McMichael Creek Existing vs. Alternative D FEMA 100-year Flow Flood Elevations

HEC-RAS Cross Section	FEMA Cross Section	Water Surface Elevations		Difference (Ex-Alt.D)
		Existing	Alternative D	
10670	J	424.5	424.5	0.0
9535		424.1	424.1	0.0
8400		421.2	421.2	0.0
8341		420.8	420.8	0.0
8320.5	Village Drive Bridge			
8300		420.5	420.5	0.0
8250		417.9	417.9	0.0
7030	I	417.9	417.9	0.0
6655	H	416.1	416.1	0.0
6295		416.8	416.8	0.0
6142.5	I-80 Bridge			
6100		416.5	N/A	N/A
6070	G	416.1	N/A	N/A
6015		416.0	416.2	+0.2
5680	F	416.0	416.1	+0.1
5360		416.0	416.1	+0.1
5040		415.7	415.8	+0.1
4690	E	414.7	414.8	+0.1
4440		414.5	414.4	-0.1
4190	D	414.7	414.7	0.0
4020		414.3	414.3	0.0

Table 2: McMichael Creek Existing vs. Alternative D FEMA 100-year Flow Flood Elevations (continued)

HEC-RAS Cross Section	FEMA Cross Section	Water Surface Elevations		Difference (Ex-Alt.D)
		Existing	Alternative D	
3850		414.1	414.1	0.0
3680		413.8	413.8	0.0
3510		413.9	413.9	0.0
3170		413.7	413.7	0.0
3095		413.7	413.7	0.0
3075	SR 0611 Bridge			
3055		413.5	413.5	0.0
3005		413.5	413.5	0.0
2385	C	408.8	408.8	0.0
2150		410.3	410.3	0.0
2085		410.2	410.2	0.0
2082.5	Fifth Street Dam			
2080		404.80	404.8	0.0
2055.1		N/A	392.3	N/A
2055		392.40	N/A	N/A
2035	SR 0191 Bridge			
2015.1		N/A	400.5	N/A
2015		400.60	N/A	N/A
1930		395.60	395.6	0.0
1585	B	392.20	392.2	0.0
940		387.20	387.2	0.0
495	A	385.90	385.9	0.0
0		385.00	385.0	0.0

Small increases in water surface elevations are expected in the area between the SR 0611 bridge and the I-80 bridge over McMichael Creek due to the floodplain encroachment from the roadway embankment. Water surface increases are not expected upstream of the I-80 bridge.

Table 3: Pocono Creek (upstream) Existing vs. Alternative D FEMA 100-year Flow Flood Elevations Upstream of I-80 Crossing

HEC-RAS Cross Section	FEMA Section	Water Surface Elevations		Difference (Ex-Alt.D)
		Existing	Alternative D	
20035.91	BP	534.7	534.7	0.0
19915.93	BO	534.7	534.7	0.0
1973.46	BN	533.9	533.9	0.0
19652.12	BM	532.7	532.7	0.0
19600.87	BL	525.0	525.0	0.0
19530.00	BK	522.6	522.6	0.0
19429.39	BJ	518.6	518.6	0.0
18256.66	BI	518.0	518.0	0.0
19008.15	BH	513.9	513.9	0.0
18813.48	BG	510.6	510.6	0.0
18593.37	BF	507.6	507.6	0.0
19389.58	BE	507.1	507.1	0.0
18128.60	BD	505.4	505.4	0.0
17852.75	BC	501.1	501.1	0.0
17513.34	BB	500.2	500.2	0.0
17091.69	BA	495.2	495.2	0.0
16791.16	AZ	492.7	492.7	0.0
16543.12	AY	491.7	491.7	0.0
16233.35	AX	489.5	489.5	0.0
15925.92	AW	487.7	487.7	0.0
15614.06	AV	485.0	485.0	0.0

No increases in the FEMA 100-year water surface elevation.

Table 4: Pocono Creek (bridge) Existing vs. Alternative D FEMA 100-year Flow Flood Elevations

HEC-RAS Cross Section	FEMA Cross Section	Water Surface Elevations		Difference (Ex-Alt.D)
		Existing	Alternative D	
21	AU	483.2	483.1	-0.1
20		482.6	482.5	-0.1
19	AT	482.0	481.9	-0.1
18		481.9	481.7	-0.2
17	AS	481.8	481.6	-0.2
16		481.6	481.4	-0.2
I-80 Bridge				
15		478.3	478.3	0.0
14	AR	478.1	478.1	0.0
13	AQ	477.5	477.5	0.0
12	AP	478.2	478.2	0.0
11		478.3	478.3	0.0
SR 2009 Bridge				
10		476.3	476.3	0.0
9		476.5	476.5	0.0
8		476.3	476.3	0.0
7	AO	475.9	475.9	0.0
6		473.3	473.3	0.0
5		472.6	472.7	0.1
4	AN	471.8	471.8	0.0
3		471.5	471.5	0.0
2		470.9	471.0	0.1
1	AM	470.9	470.9	0.0

Minor increases in the 100-year water surface elevation.

Table 5: Pocono Creek (downstream) Existing vs. Alternative D FEMA 100-year Flow Flood Elevations

HEC-RAS Cross Section	FEMA Cross Section	Water Surface Elevations		Difference (Ex-Alt.D)
		Existing	Alternative D	
13729.02	AL	470.6	470.5	-0.1
13530.63	AK	469.8	469.8	0.0
13277.34	AJ	466.5	466.5	0.0
12696.80	AI	463.4	463.5	+0.1
12615.64	AH	461.0	461.0	0.0
12184.32	AG	457.0	457.0	0.0
11877.70	AF	454.4	454.4	0.0
11640.95	AE	453.0	453.0	0.0
11573.87	AD	452.7	452.7	0.0
11473.29	AC	452.0	452.0	0.0
11321.97	AB	451.1	451.1	0.0
11141.87	AA	448.7	448.7	0.0

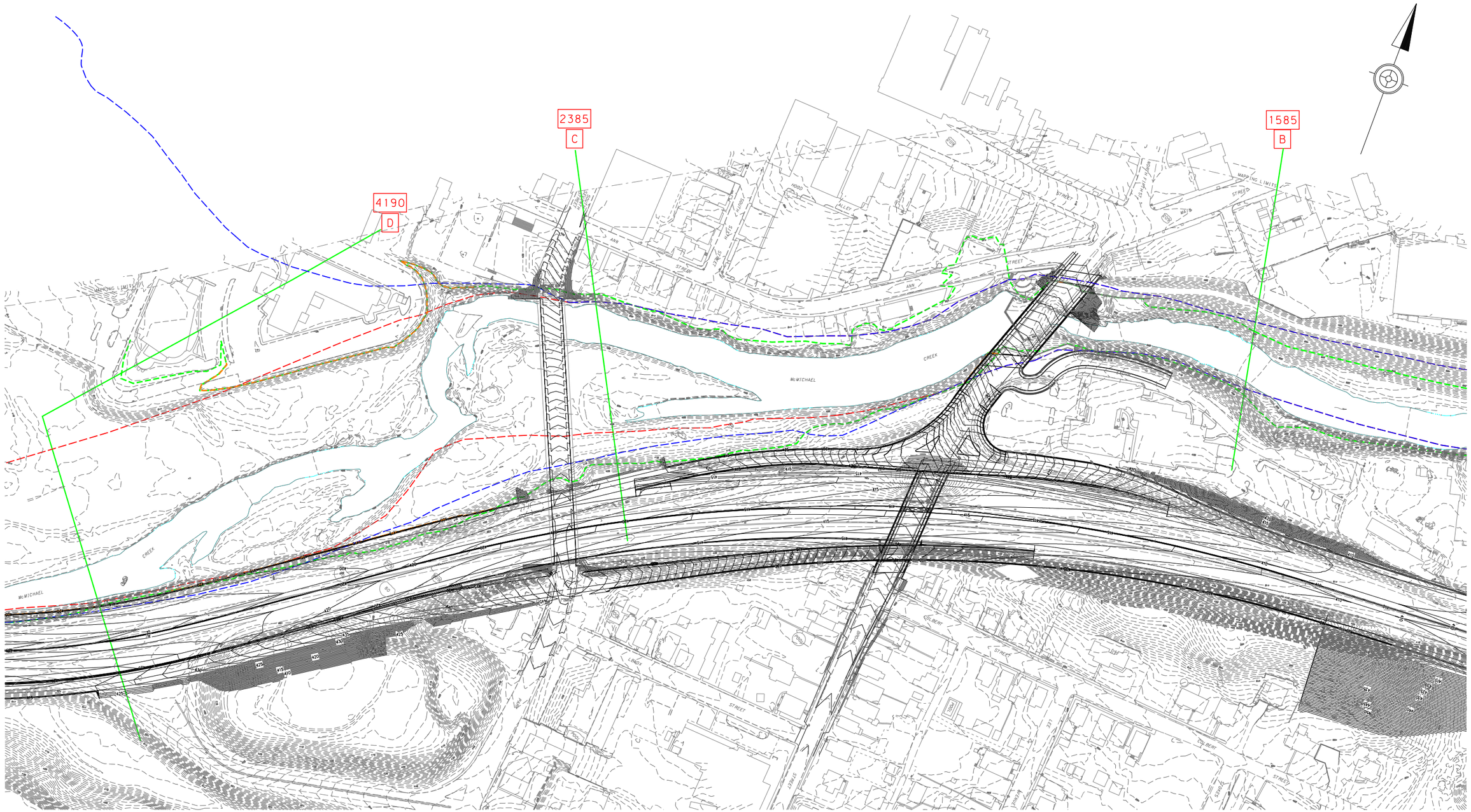
Minor increases in the 100-year water surface elevation. Increases are within the allowable water surface elevation increase for encroachment into the floodplain.

Table 6: Little Pocono Creek Existing vs. Alternative D FEMA 100-year Flow Flood Elevations

Cross Section	Water Surface Elevations		Difference (Ex-Alt.D)
	Existing	Alternative D	
24	459.6	459.6	0.0
23	459.0	459.0	0.0
22	459.1	459.1	0.0
21	458.1	458.1	0.0
20	457.1	457.1	0.0
19	456.8	457.1	+0.3
18	456.6	457.0	+0.4
17	456.5	457.0	+0.5
16	455.9	456.7	+0.8
CD Road Ramp Culvert			
15	455.4	455.8	+0.4
14	455.2	455.7	+0.5
13	455.4	455.8	+0.4
12	455.3	455.7	+0.4
I-80 Culvert – Stream Enclosure			
5	453.0	452.7	-0.3
Main Street Culvert			
4	451.5	451.5	0.0
Pedestrian Bridge			
2	450.1	450.1	0.0
1	449.0	449.0	0.0

Minor increases in the 100-year water surface elevation. Increases are within the allowable water surface elevation increase for approximate study areas.

Structure sizes were assumed for the proposed Little Pocono Creek configuration. The structures span and out-to-out were provided but the structure rise was assumed with a minimum cover of 2 feet. All structure sizes for alternative D are summarized in the Floodplain map attached. The structure under I-80 could not be sized appropriately since the ramp downstream of the crossing has contours lower than the assumed structure size. A smaller structure size would generate backwater increases that would require a CLOMR. Therefore, further coordination between the structure, roadway and H&H groups is required.



LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (PROPOSED FLOODPLAIN IS THE SAME AS EXISTING EXCEPT WHERE SHOWN)
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- C — FEMA HYDRAULIC CROSS-SECTION
- EDGE OF WATER

NOTE: ONLY CROSS SECTIONS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAPS ARE DISPLAYED.

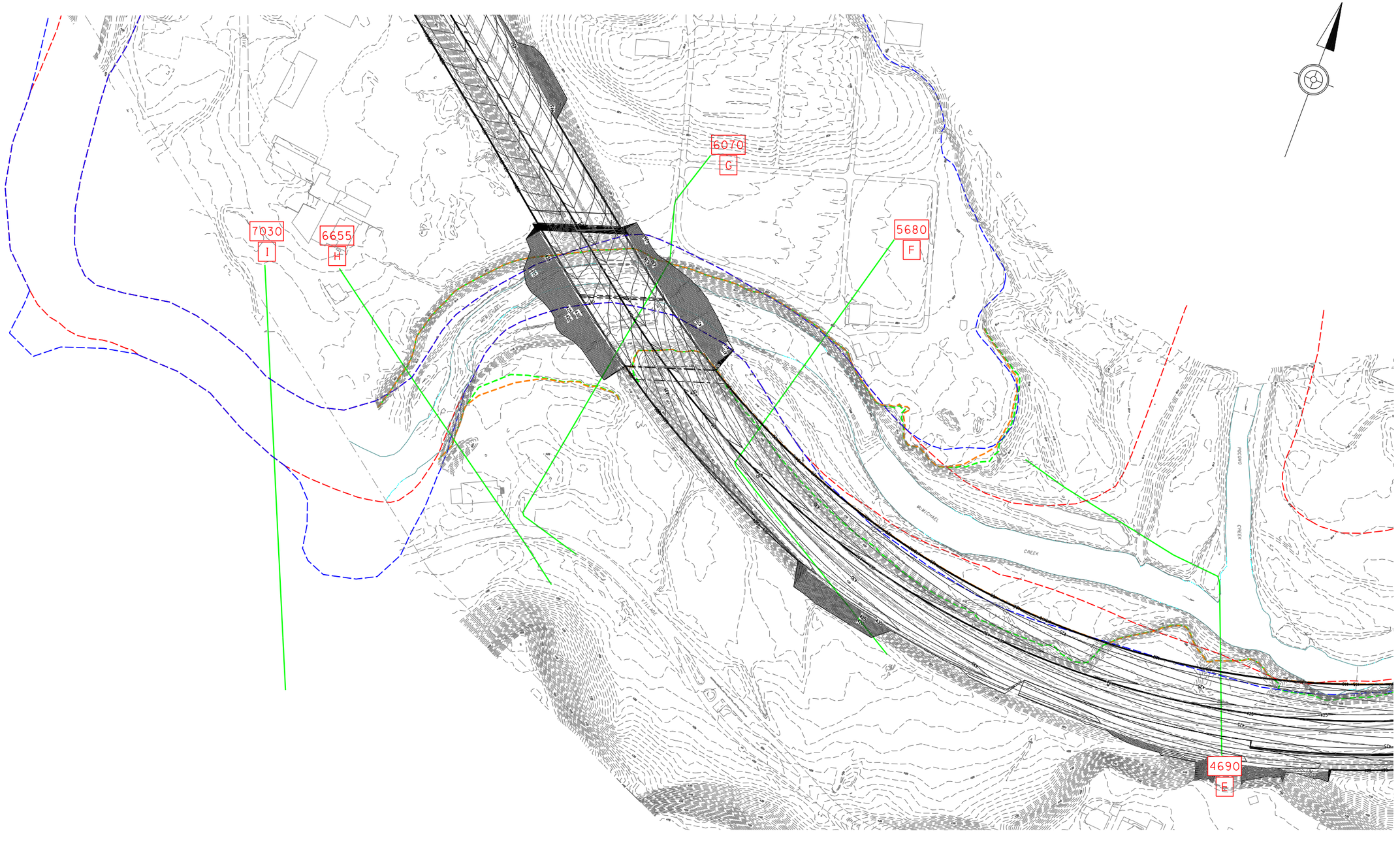
SCALE IN FEET

0 200 400

NEWELL TERESKA & MACKAY ENGINEERING
130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER MCMICHAEL CREEK
EXISTING AND ALTERNATIVE D
HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE
MUNICIPALITY: STROUDSBURG BOROUGH



LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (PROPOSED FLOODPLAIN IS THE SAME AS EXISTING EXCEPT WHERE SHOWN)
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- C — FEMA HYDRAULIC CROSS-SECTION
- EDGE OF WATER

NOTE: ONLY CROSS SECTIONS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAPS ARE DISPLAYED.

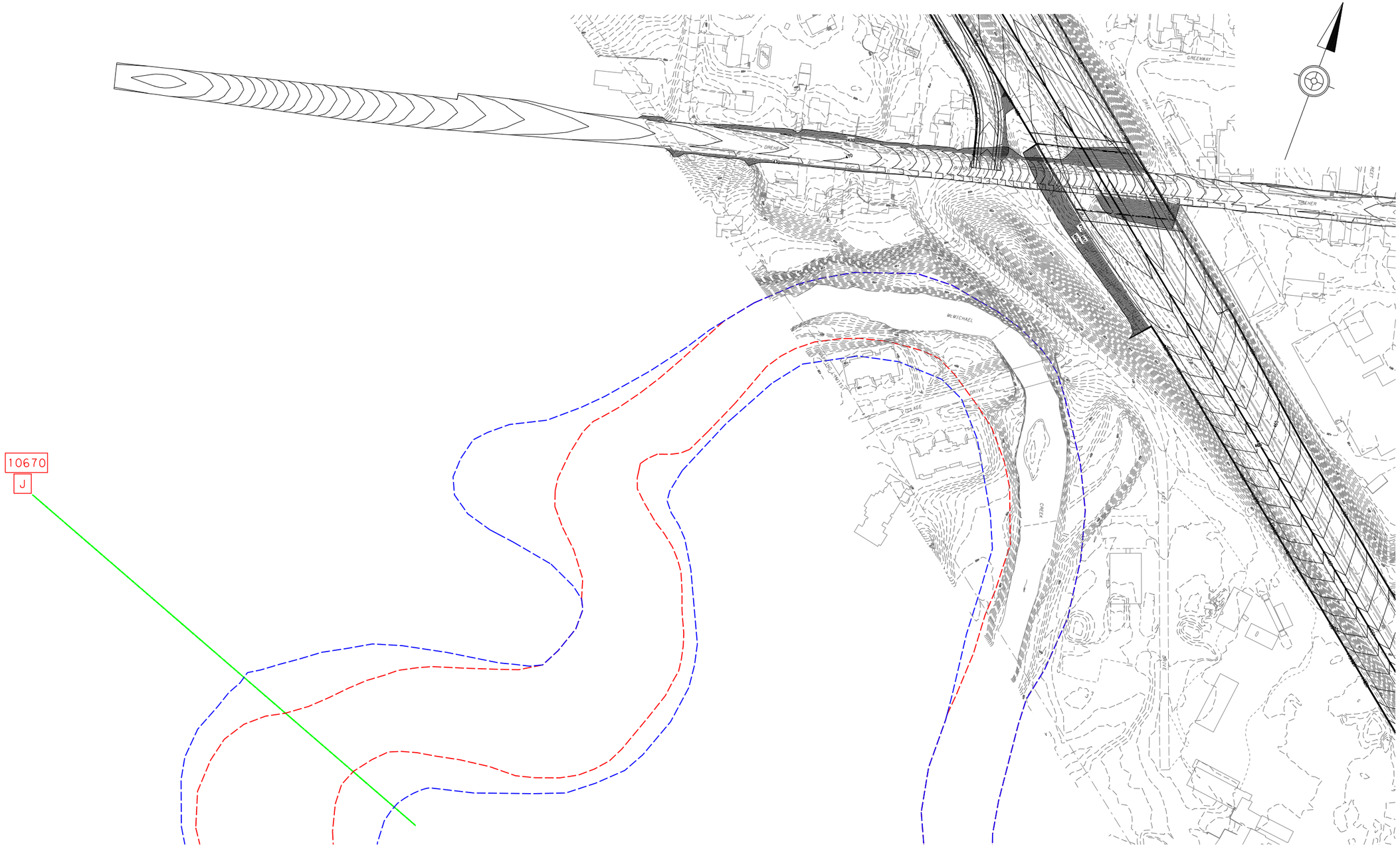
SCALE IN FEET

0 200 400

NEWELL TERESKA & MACKAY ENGINEERING
130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER MCMICHAEL CREEK EXISTING AND ALTERNATIVE D HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE
MUNICIPALITY: STROUDSBURG BOROUGH



LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (PROPOSED FLOODPLAIN IS THE SAME AS EXISTING EXCEPT WHERE SHOWN)
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- FEMA HYDRAULIC CROSS-SECTION
- EDGE OF WATER

NOTE: ONLY CROSS SECTIONS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAPS ARE DISPLAYED.

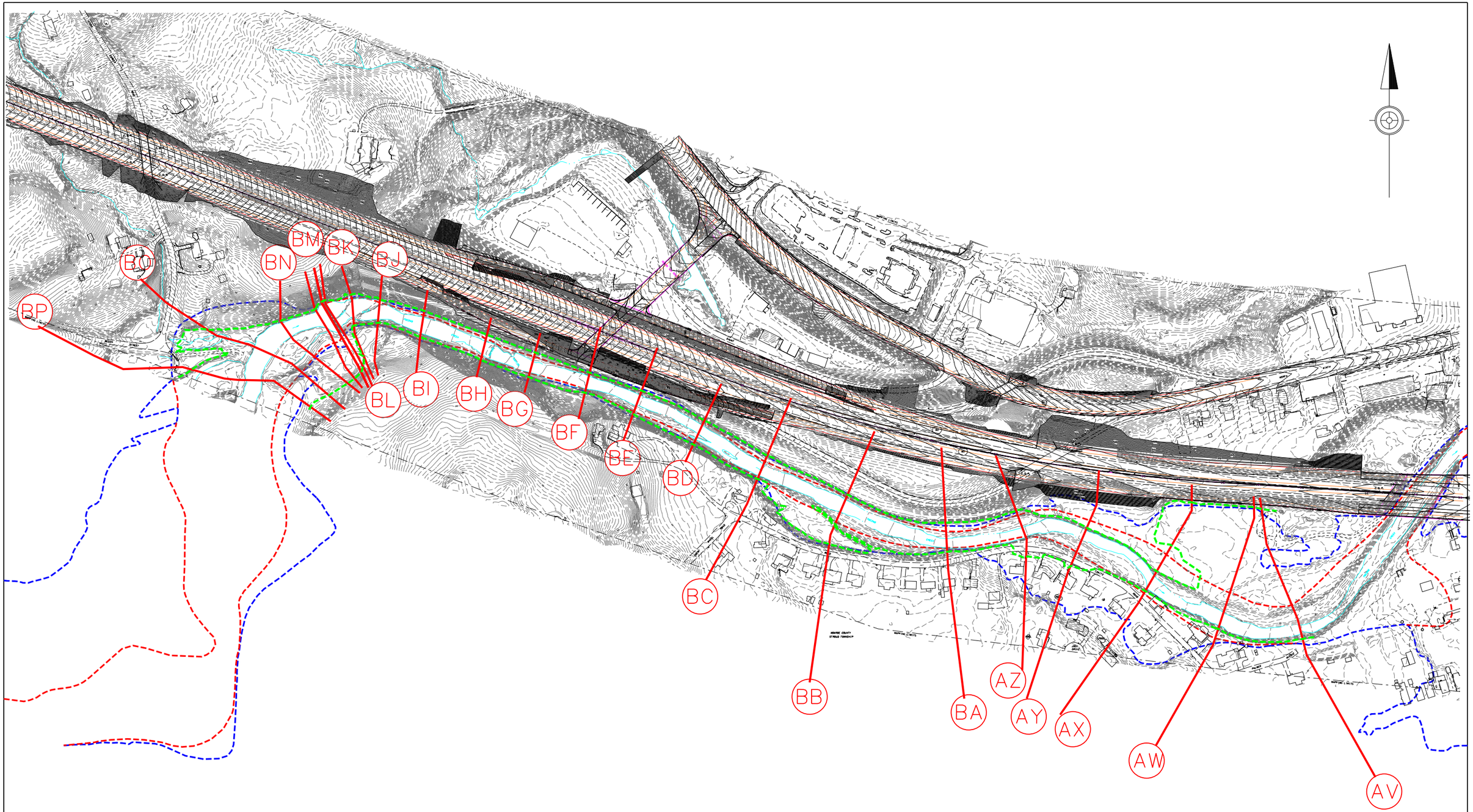
SCALE IN FEET

0 200 400

NEWELL TERESKA & MACKAY ENGINEERING
130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER MCMICHAEL CREEK EXISTING AND ALTERNATIVE A HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE
MUNICIPALITY: STROUDSBURG BOROUGH



LEGEND

- EXISTING AND PROPOSED 100-YEAR FLOOD ELEVATION
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- AV - FEMA SECTION IDENTIFICATION
- EDGE OF WATER

SCALE IN FEET

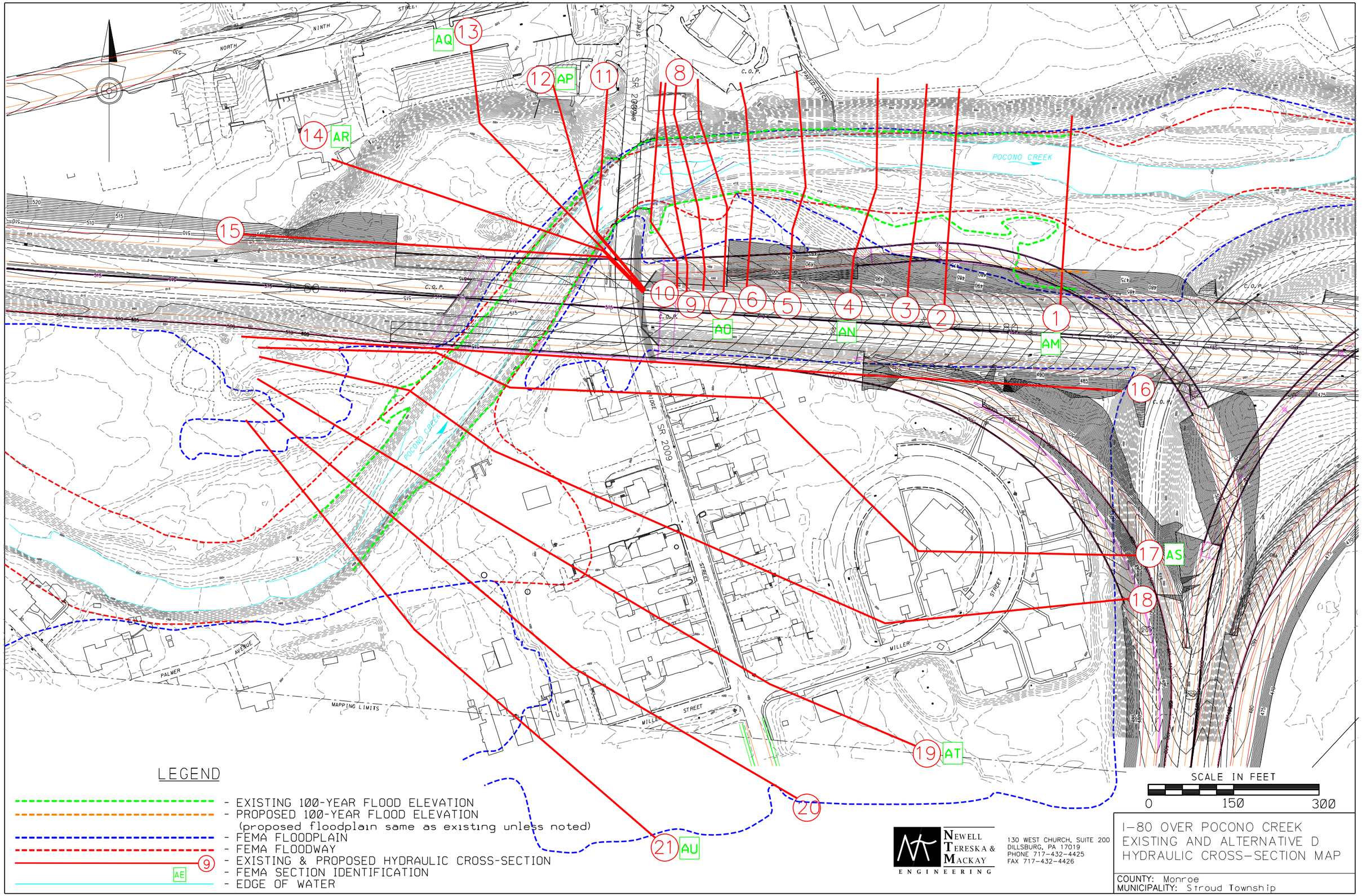
0 350 700

NEWELL TERESKA & MACKAY ENGINEERING

130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER POCONO CREEK
EXISTING AND ALTERNATIVE D
HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE CO.
MUNICIPALITY: STROUD TWP.



LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (proposed floodplain same as existing unless noted)
- FEMA FLOODPLAIN
- FEMA FLOODWAY
- EXISTING & PROPOSED HYDRAULIC CROSS-SECTION (9)
- FEMA SECTION IDENTIFICATION (AE)
- EDGE OF WATER

SCALE IN FEET
0 150 300

NEWELL TERESKA & MACKAY ENGINEERING
130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER POCONO CREEK
EXISTING AND ALTERNATIVE D
HYDRAULIC CROSS-SECTION MAP

COUNTY: Monroe
MUNICIPALITY: Stroud Township

AL AK AJ AI AH AG AF AE AD AC AB AA

CREEK

POCONO

CREEK

MARKING LIMITS

STROUD TOWNSHIP
STROUDSBURG BOROUGH

POKONA AVENUE

PEARL ALLEY

WHITE STREET

JANIE COURT

ZEL STREET

SCALE IN FEET

0 200 400

LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION
  (proposed floodplain same as existing unless noted)
- FEMA FLOODPLAIN
- FEMA FLOODWAY
- AA - FEMA HYDRAULIC CROSS-SECTION
- EDGE OF WATER

NEWELL TERESKA & MACKAY ENGINEERING

130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER POCONO CREEK
EXISTING AND ALTERNATIVE D
HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE
MUNICIPALITY: STROUD

HONEYSUCKLE LANE

MAPPING LIMITS

APPROXIMATE LOCATION

HEMLOCK ROAD

LITTLE POCONO CREEK

WET LANDS

C.O.P.

SECOND STREET

MAIN STREET

BEERS STREET

1 2 3 4 5 5.5 12 13 14 15 16 17 18 19 20 21 22 23 24

LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION
  (proposed floodplain same as existing unless noted)
- FEMA FLOODPLAIN
- HYDRAULIC CROSS-SECTION
- EDGE OF WATER

SCALE IN FEET

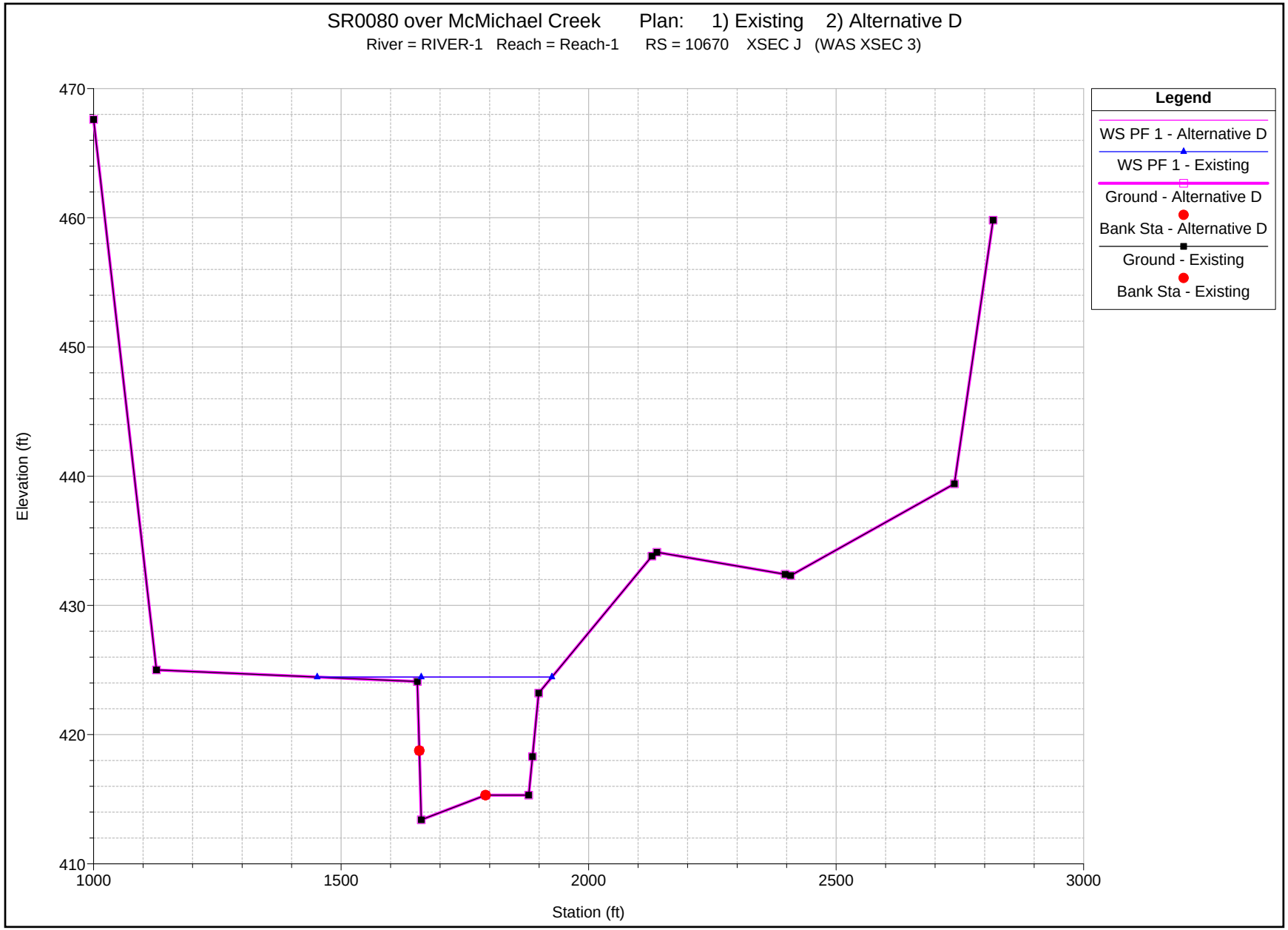
0 125 250

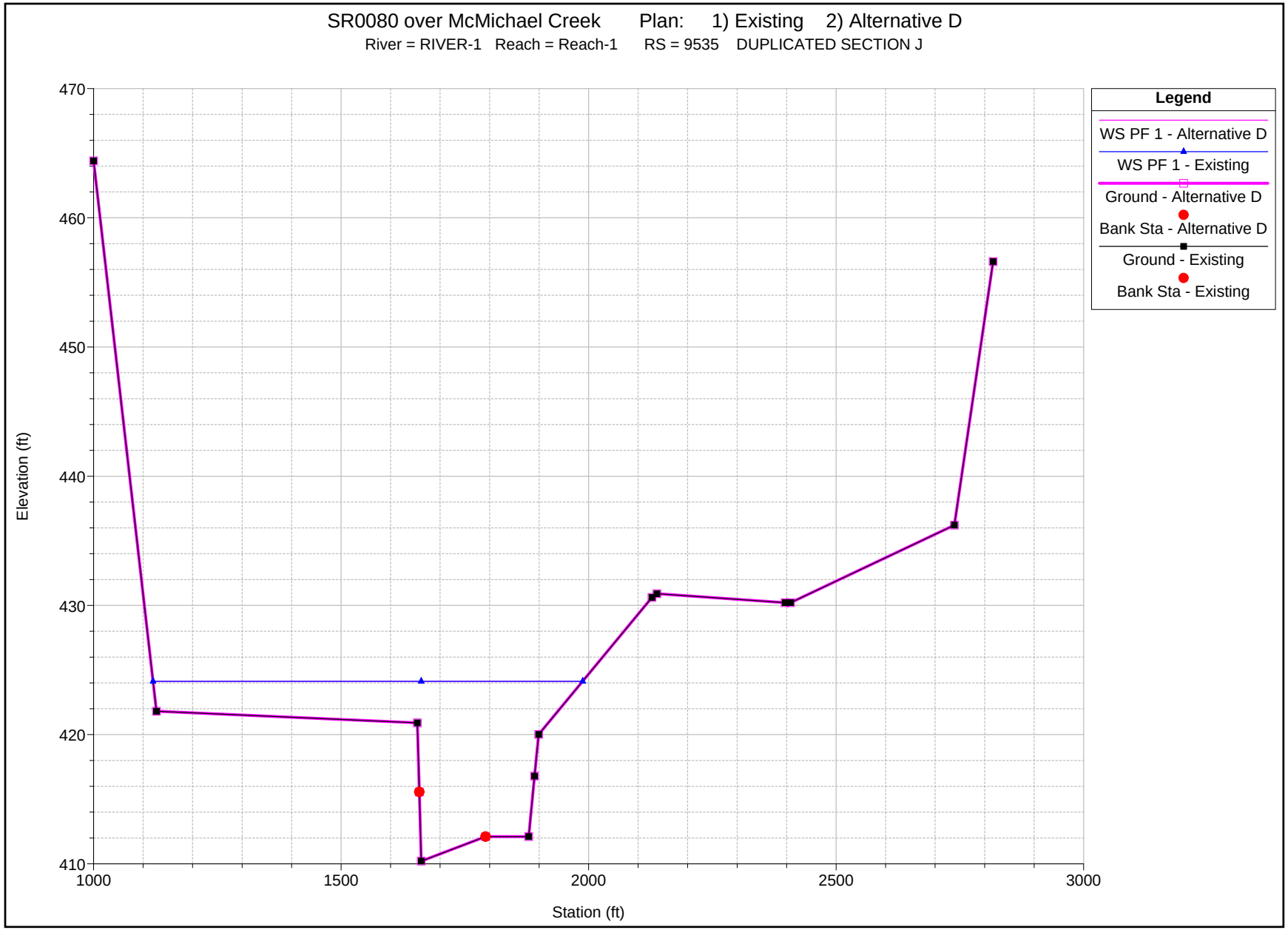
NEWELL TERESKA & MACKAY ENGINEERING

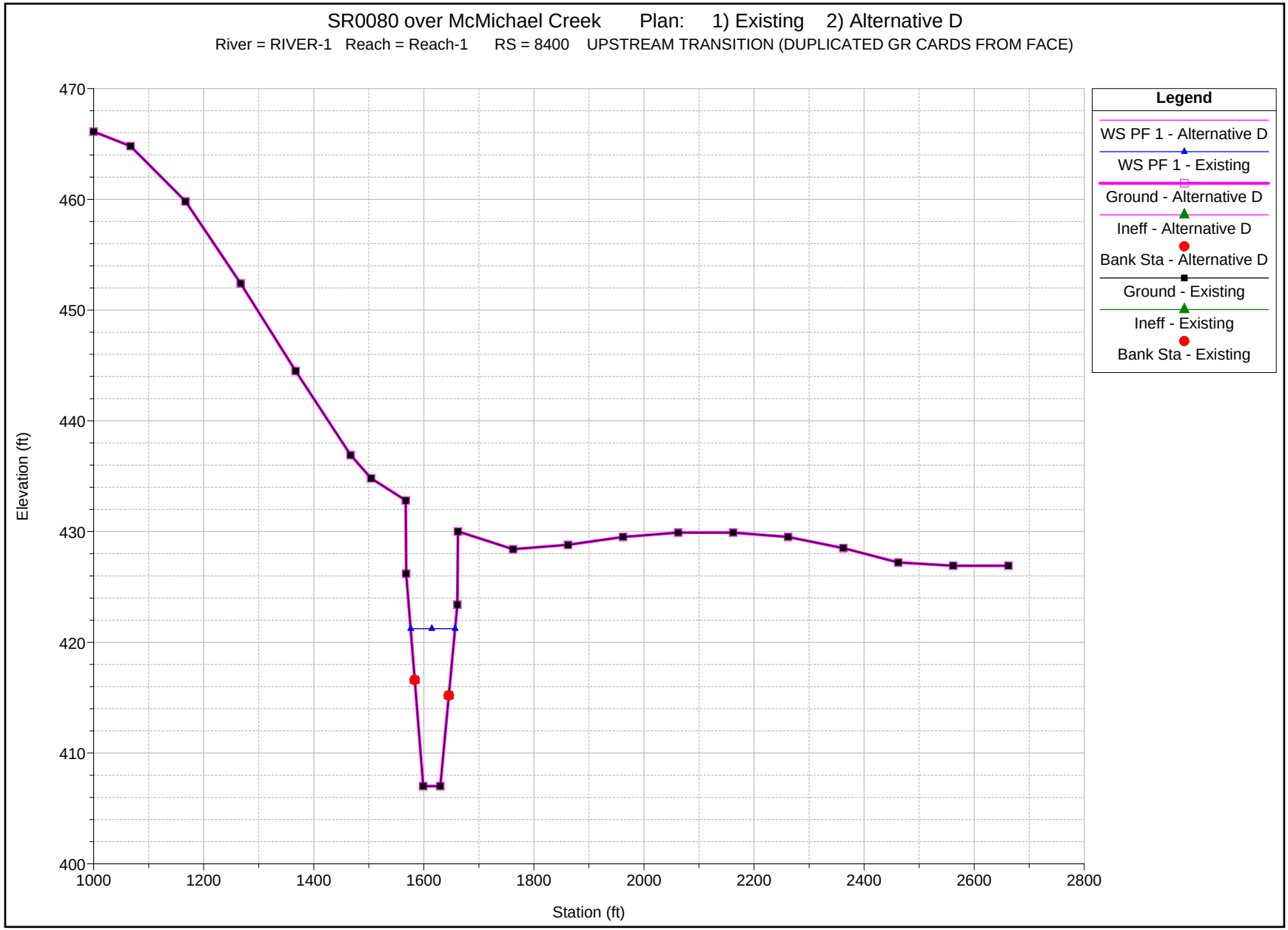
130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

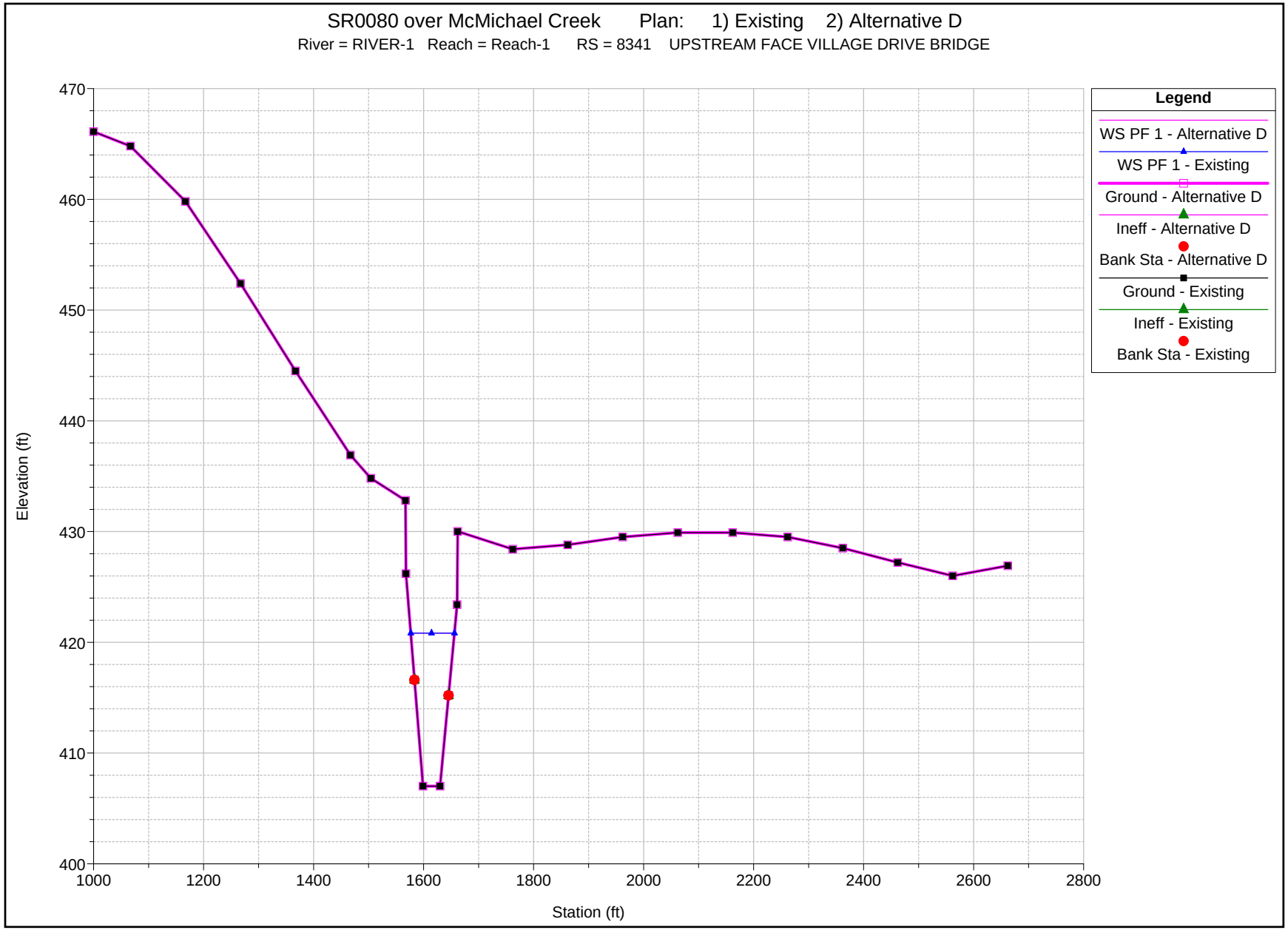
I-80 OVER LITTLE POCONO CREEK
ALTERNATIVE D
HYDRAULIC CROSS-SECTION MAP

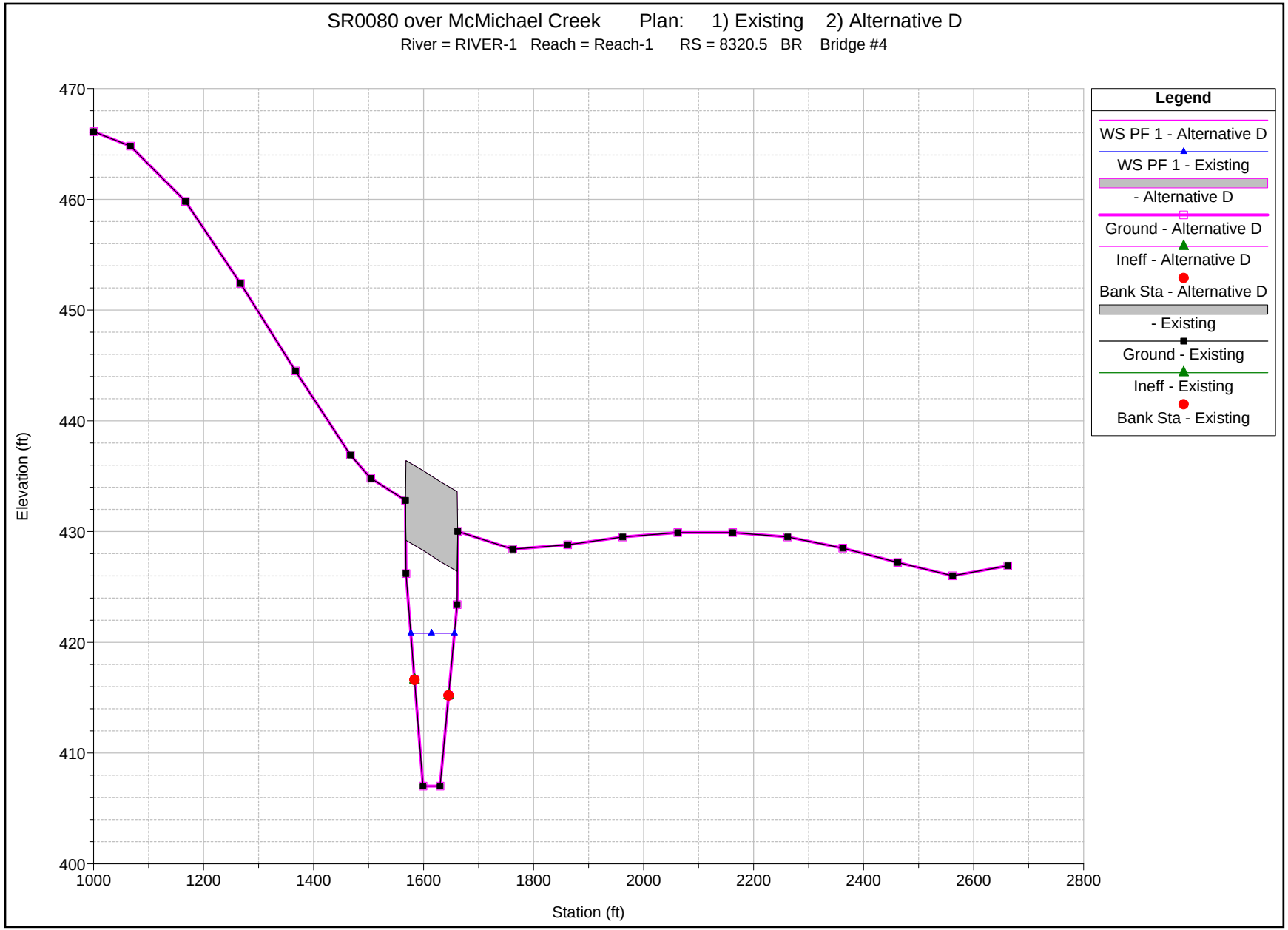
COUNTY: Monroe Co.
MUNICIPALITY: Stroudsburg Borough

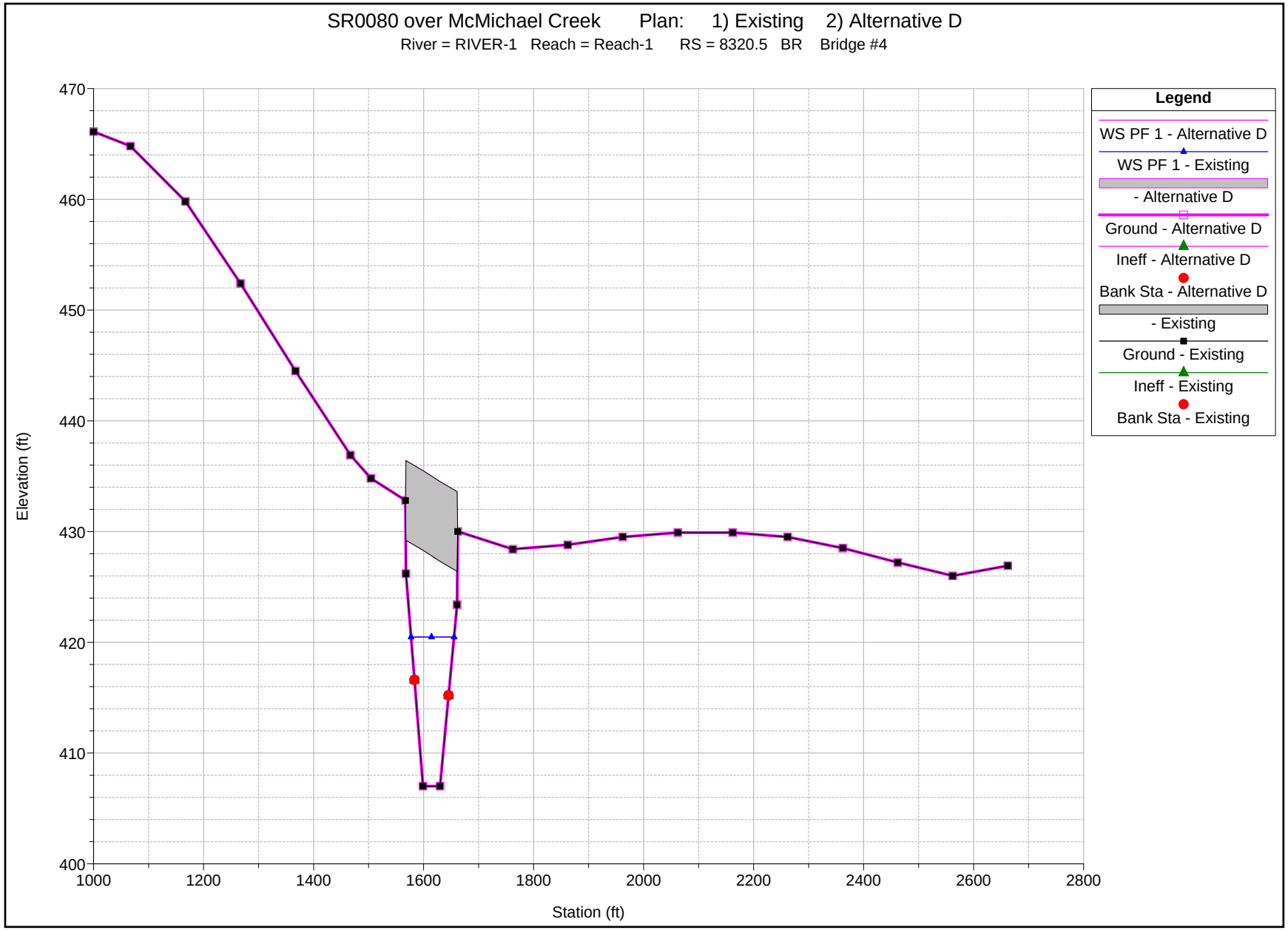

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 10670 XSEC J (WAS XSEC 3)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
470
460
450
440
430
420
410
1000
1500
2000
2500
3000
Station (ft)

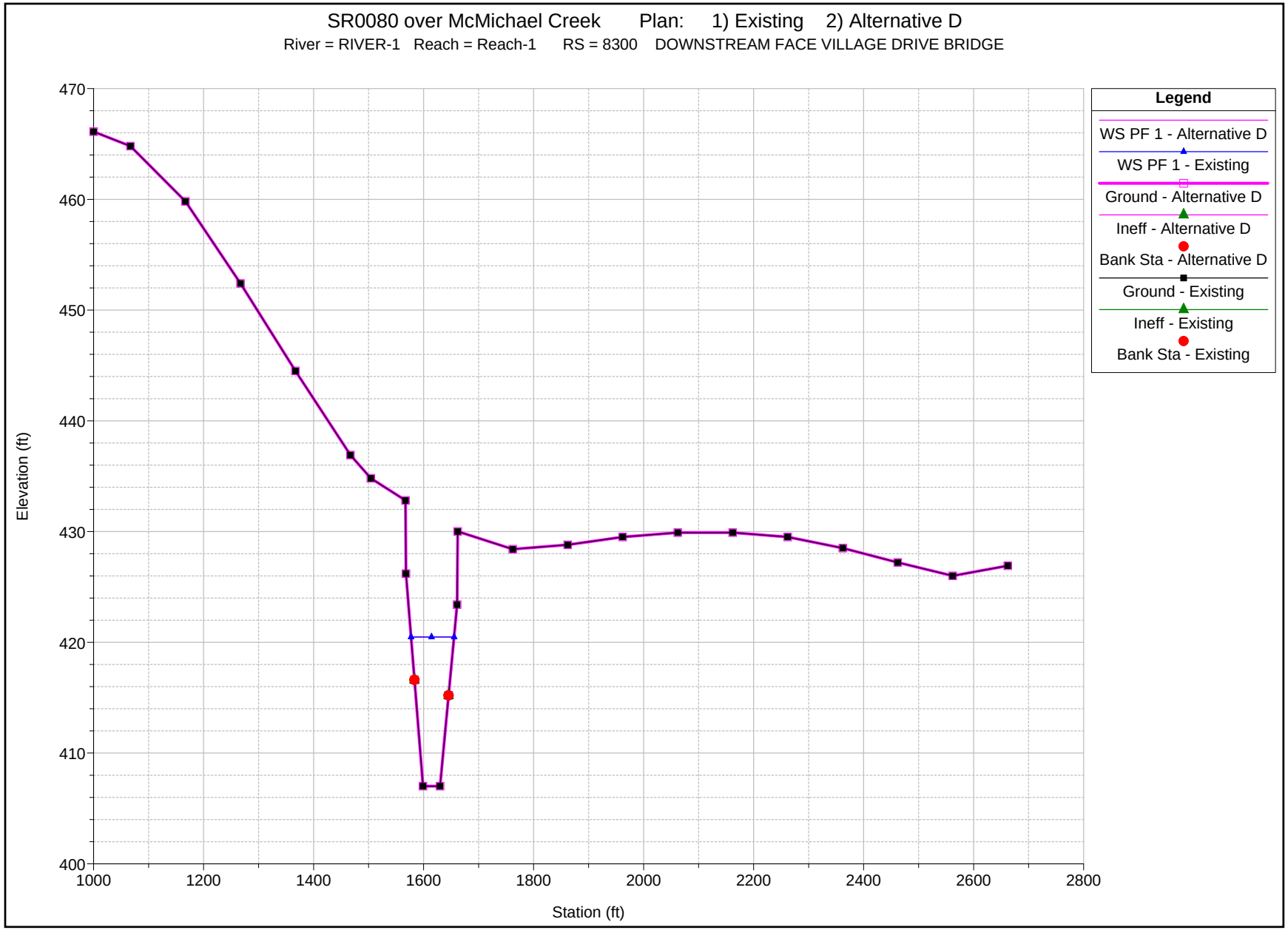

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 9535 DUPLICATED SECTION J
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
470
460
450
440
430
420
410
1000
1500
2000
2500
3000
Station (ft)

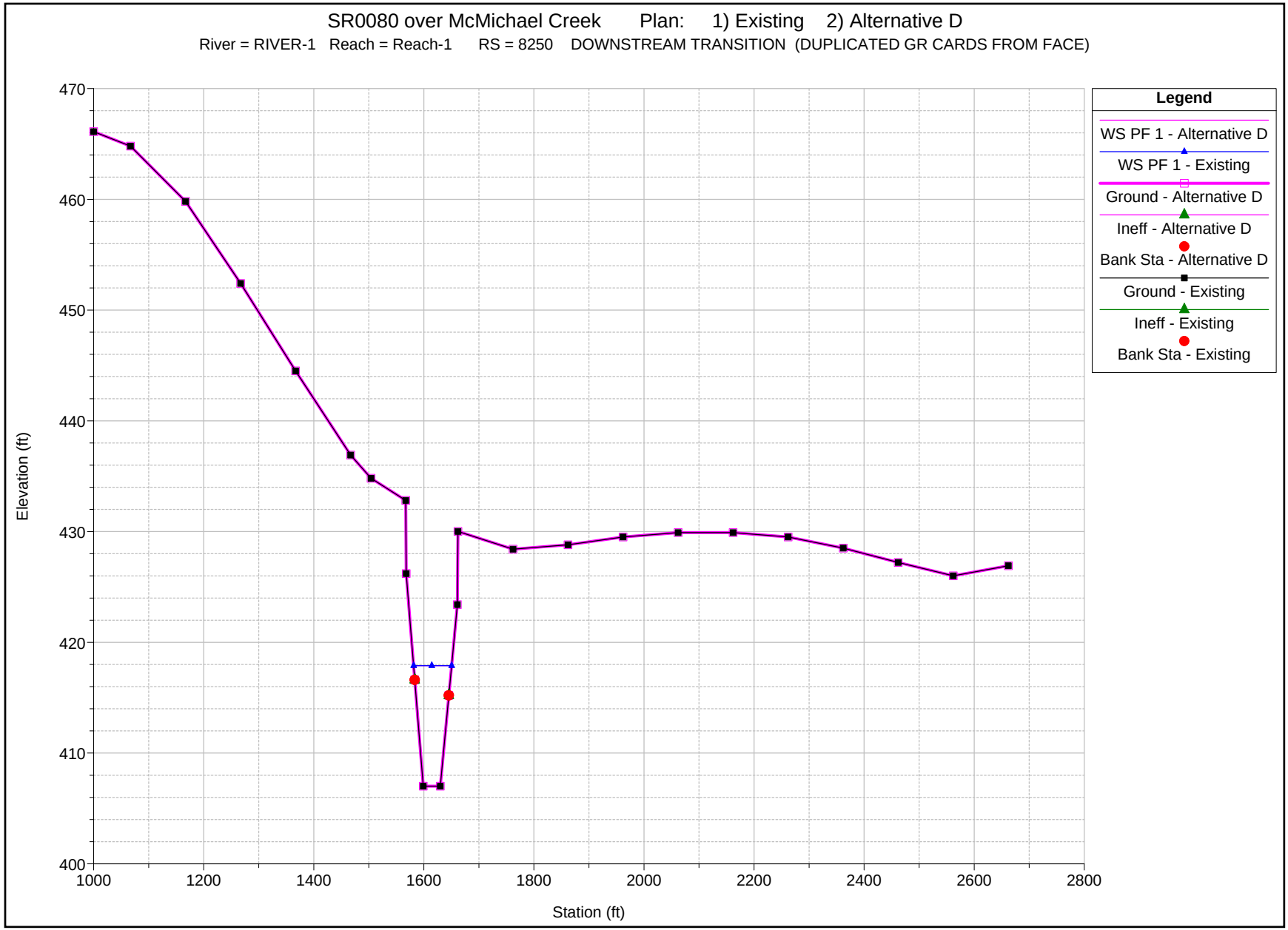

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 8400 UPSTREAM TRANSITION (DUPLICATED GR CARDS FROM FACE)
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
Ground - Existing
Ineff - Existing
Bank Sta - Existing

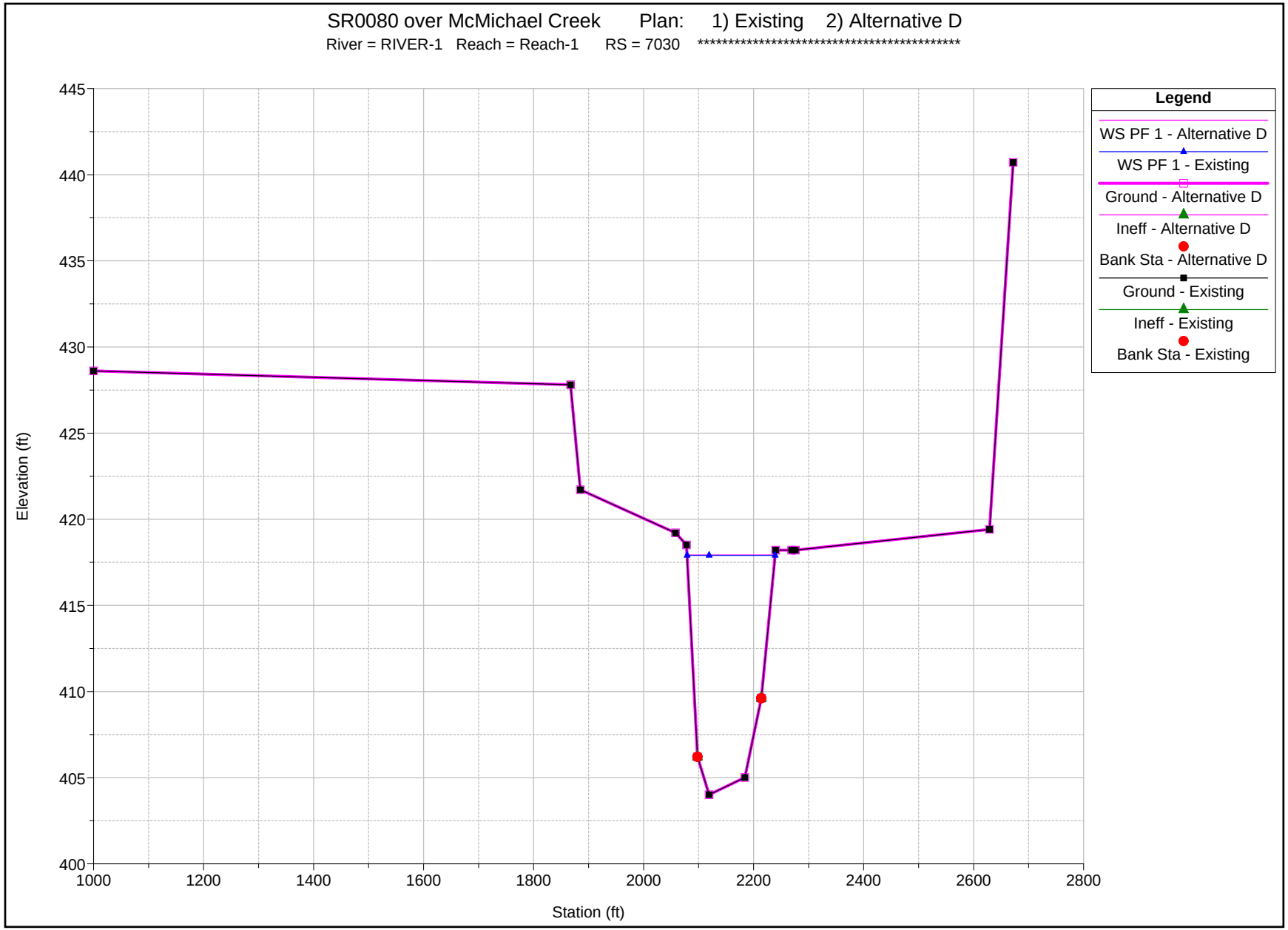

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 8341 UPSTREAM FACE VILLAGE DRIVE BRIDGE
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
Ground - Existing
Ineff - Existing
Bank Sta - Existing

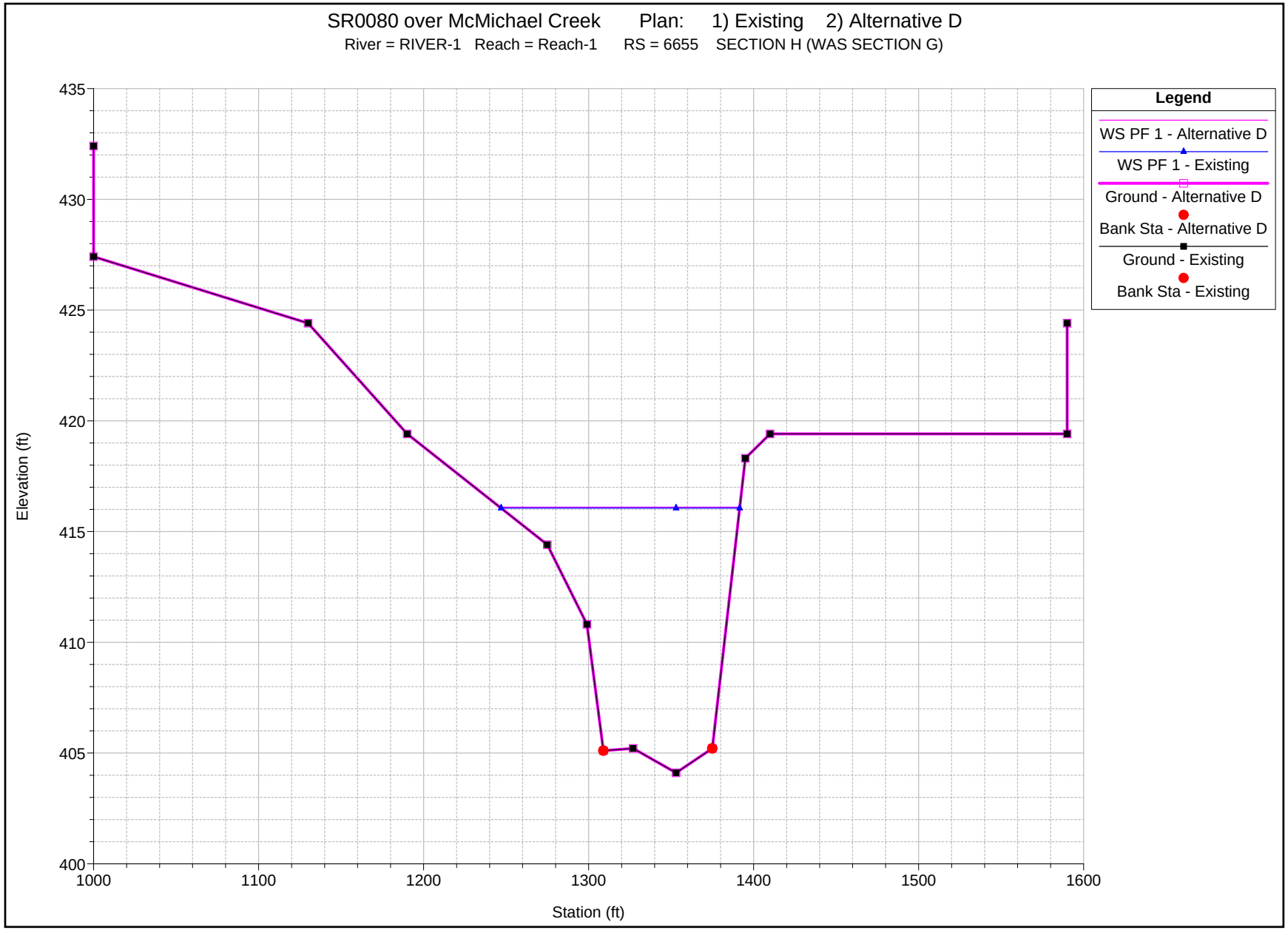

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 8320.5 BR Bridge #4
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

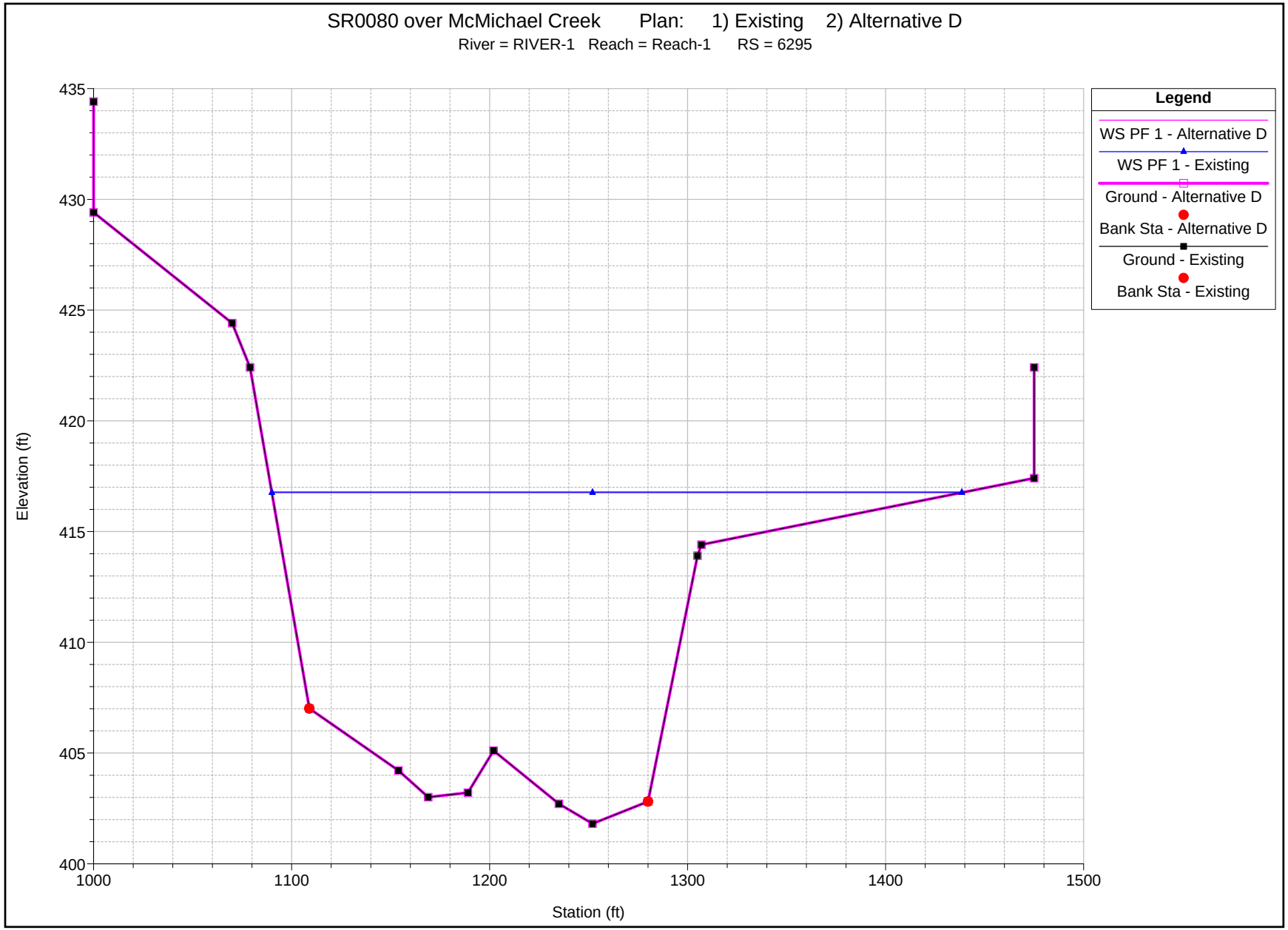

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 8320.5 BR Bridge #4
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

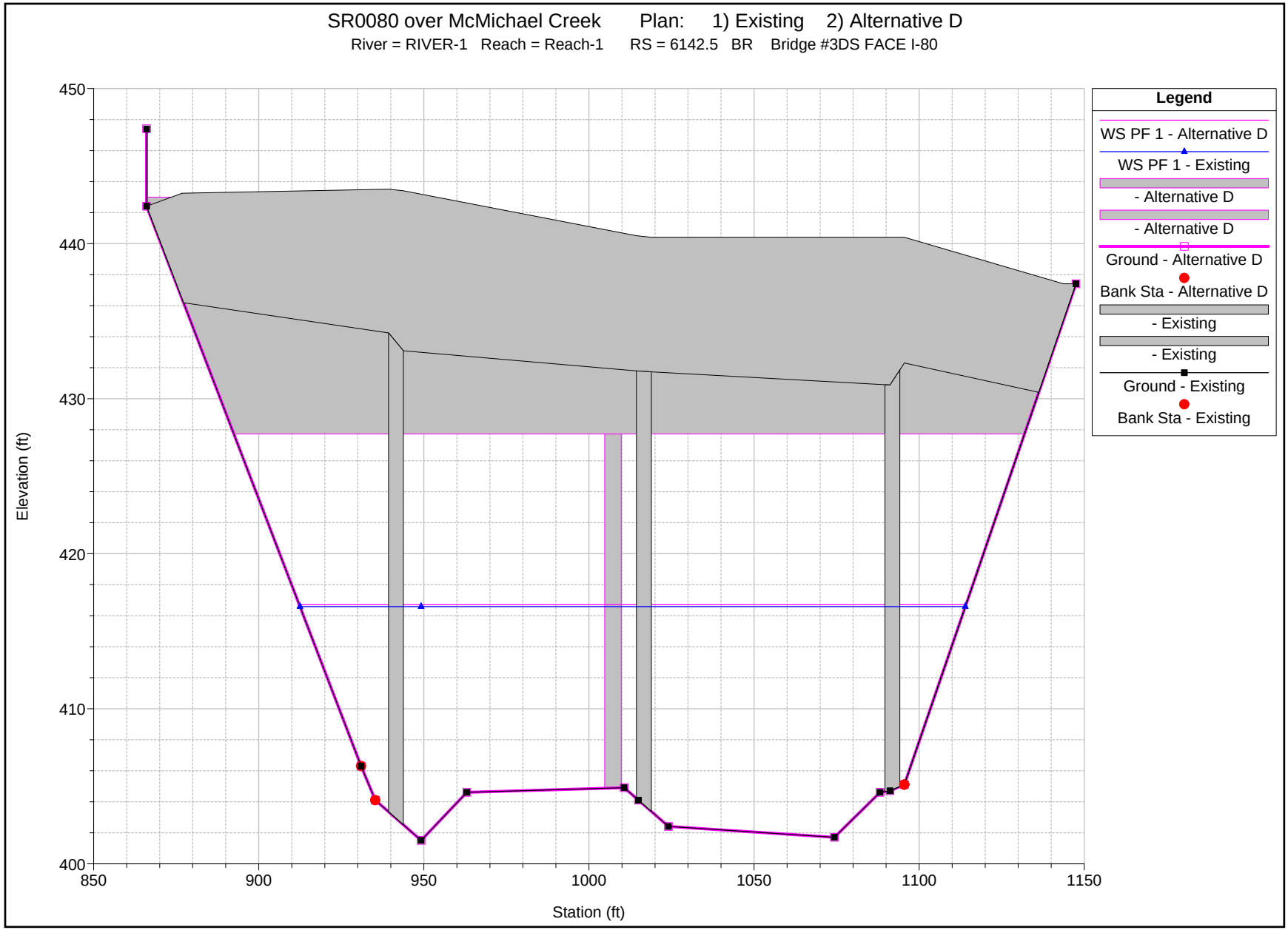

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 8300 DOWNSTREAM FACE VILLAGE DRIVE BRIDGE
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
Ground - Existing
Ineff - Existing
Bank Sta - Existing

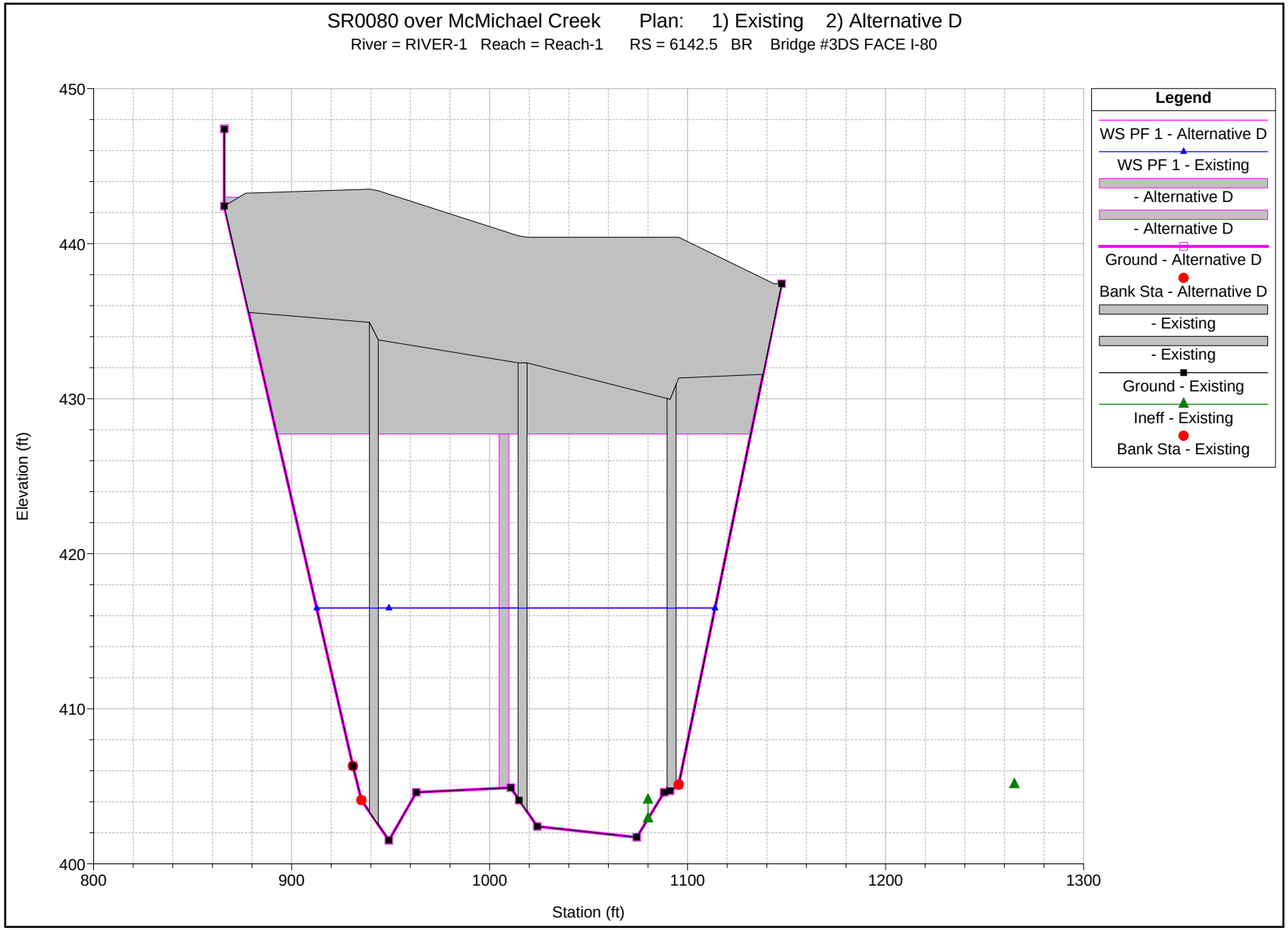

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 8250 DOWNSTREAM TRANSITION (DUPLICATED GR CARDS FROM FACE)
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
Ground - Existing
Ineff - Existing
Bank Sta - Existing

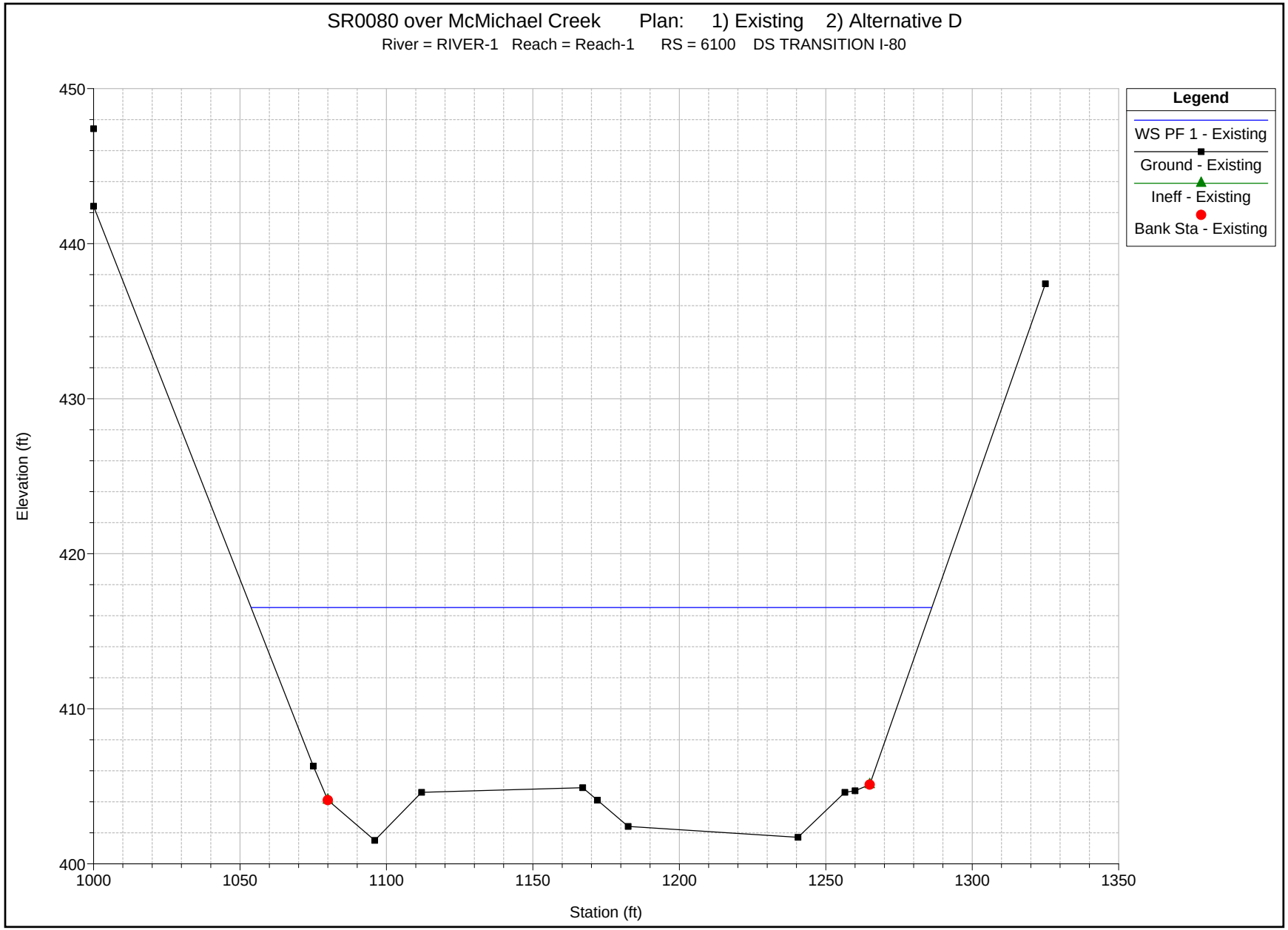

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 7030 **********
Elevation (ft)
445
440
435
430
425
420
415
410
405
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Station (ft)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
Ground - Existing
Ineff - Existing
Bank Sta - Existing

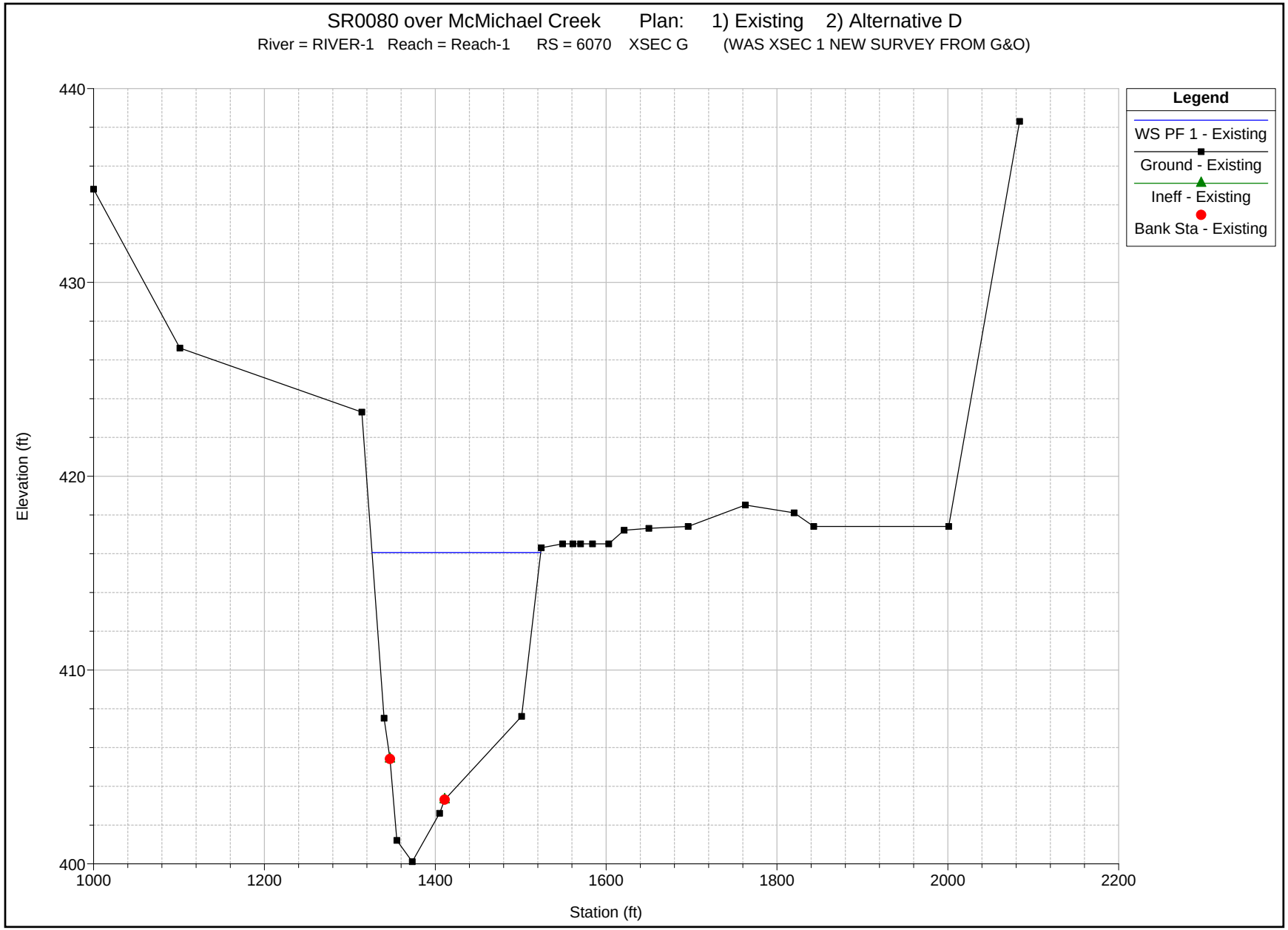

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 6655 SECTION H (WAS SECTION G)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
435
430
425
420
415
410
405
400
1000
1100
1200
1300
1400
1500
1600
Station (ft)

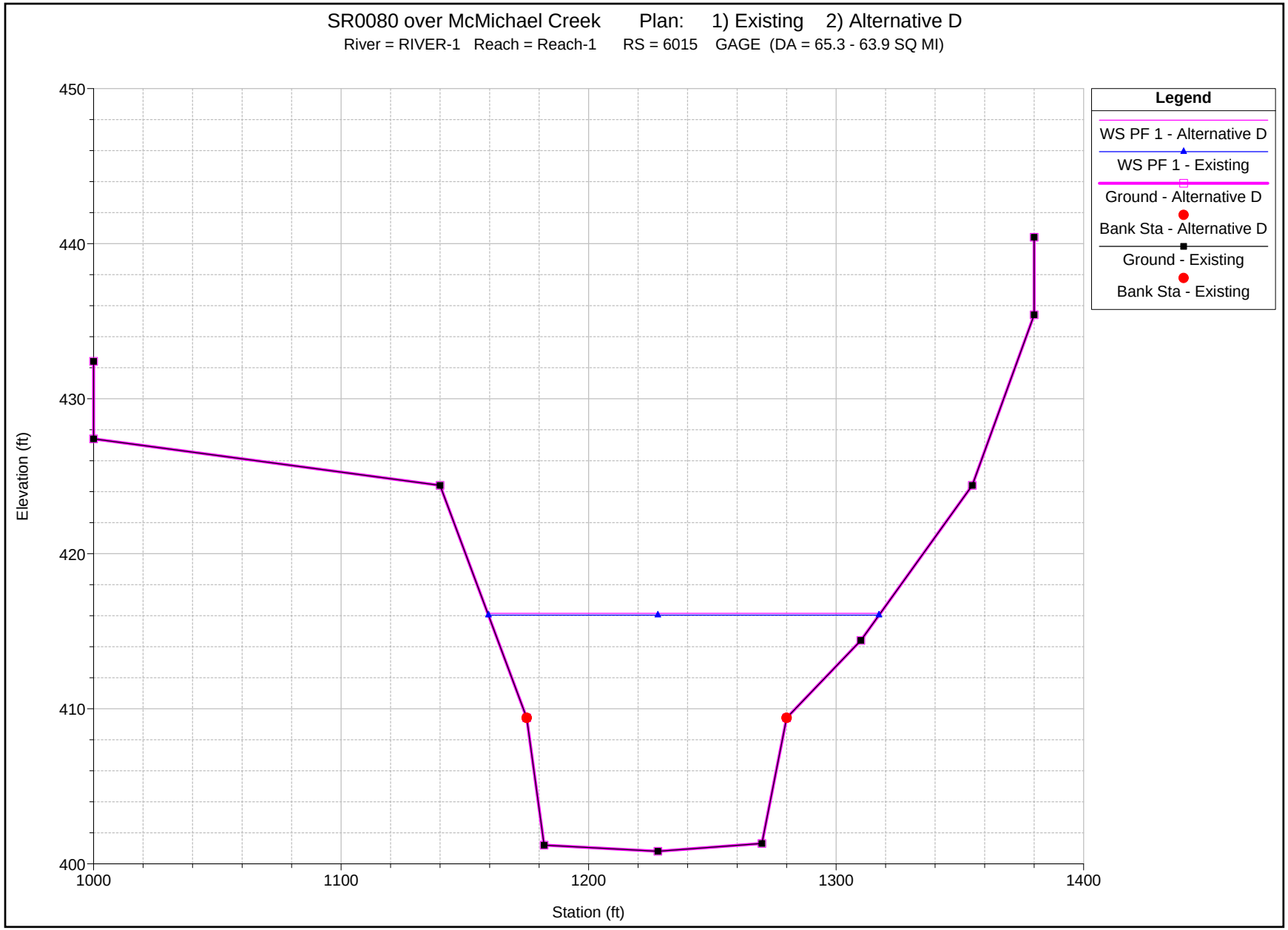

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 6295
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
435
430
425
420
415
410
405
400
1000
1100
1200
1300
1400
1500
Station (ft)

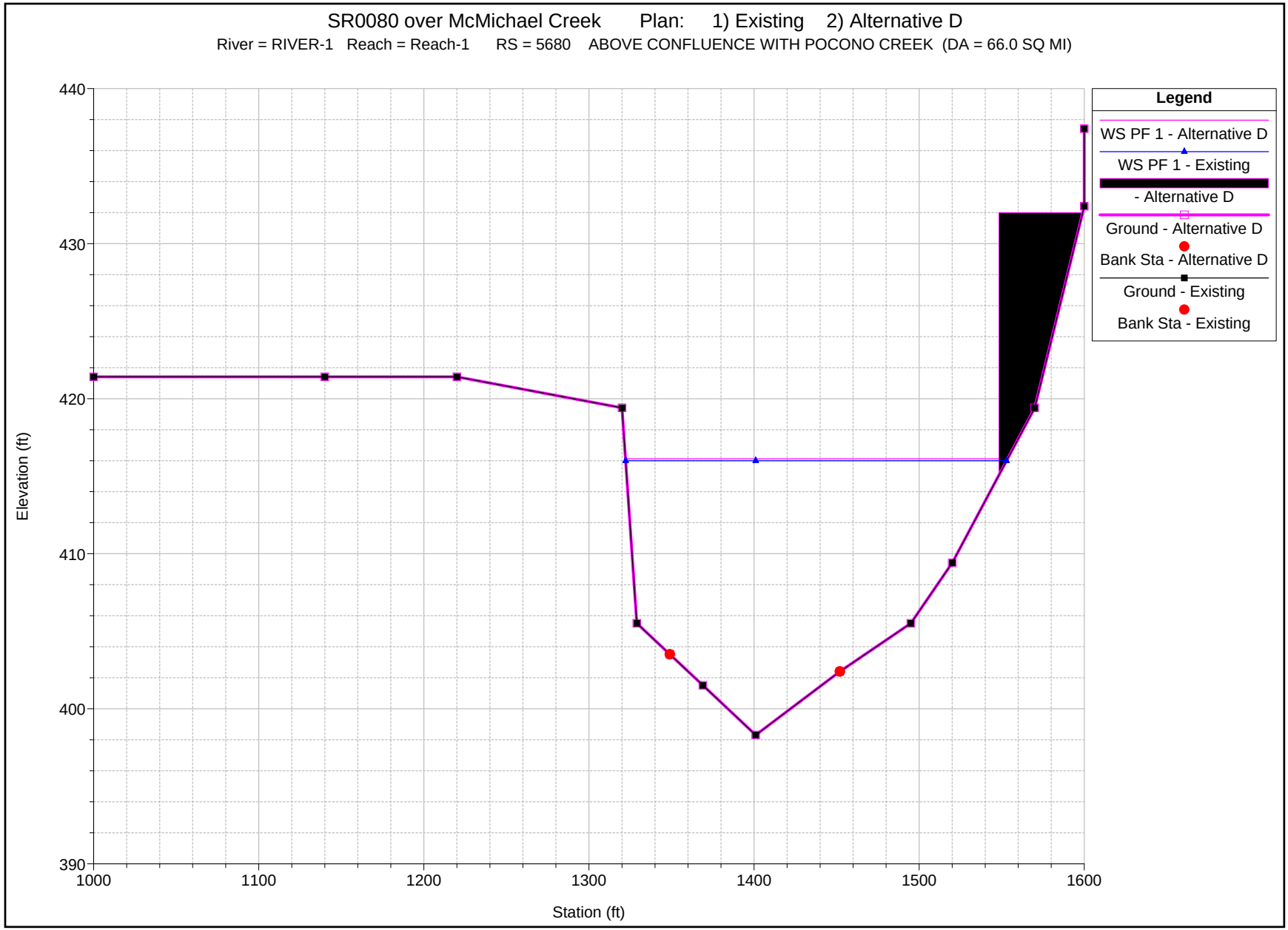

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 6142.5 BR Bridge #3DS FACE I-80
Elevation (ft)
450
440
430
420
410
400
850
900
950
1000
1050
1100
1150
Station (ft)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
- Existing
- Existing
Ground - Existing
Bank Sta - Existing

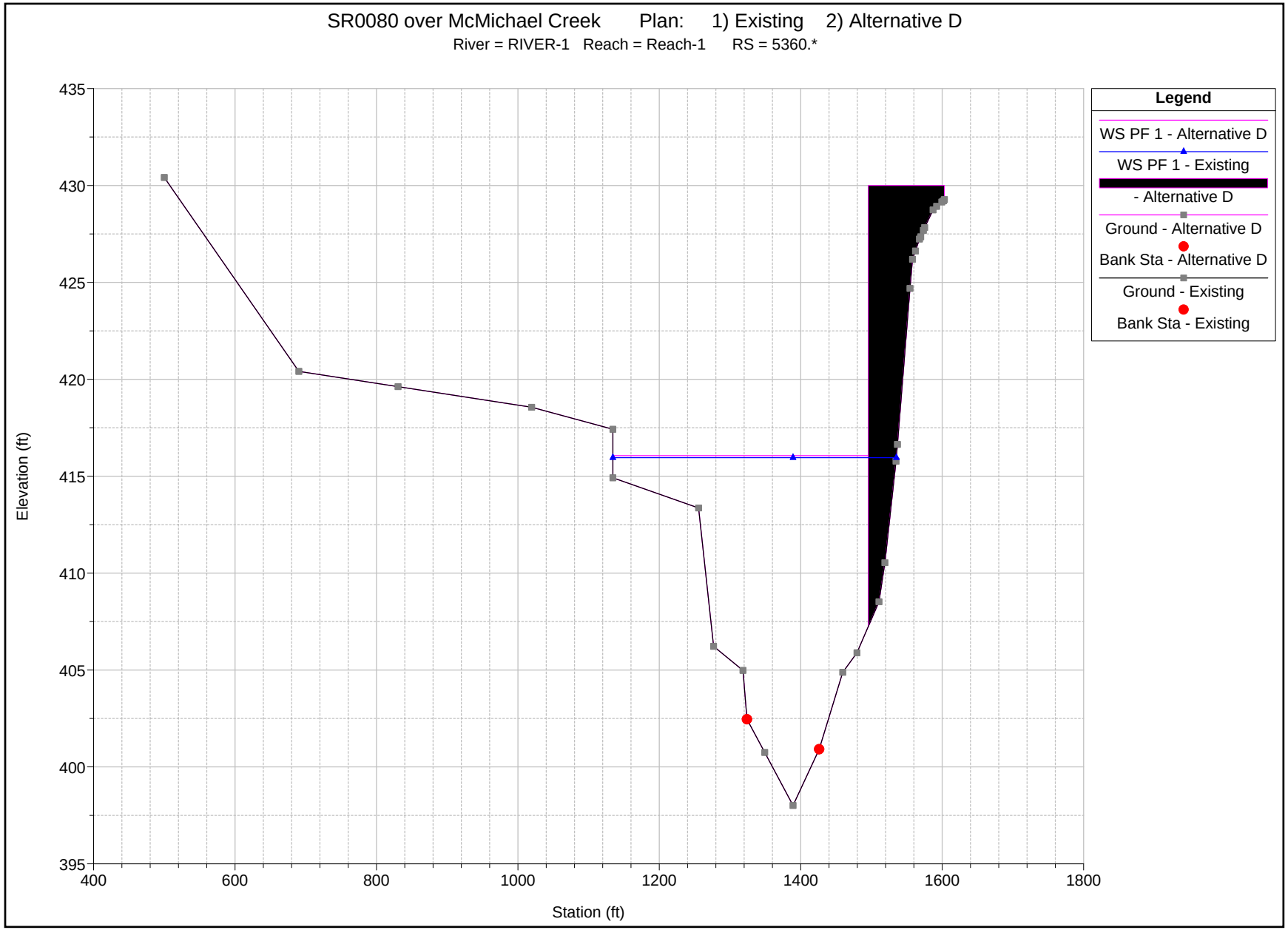

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 6142.5 BR Bridge #3DS FACE I-80
Elevation (ft)
450
440
430
420
410
400
800
900
1000
1100
1200
1300
Station (ft)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
- Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

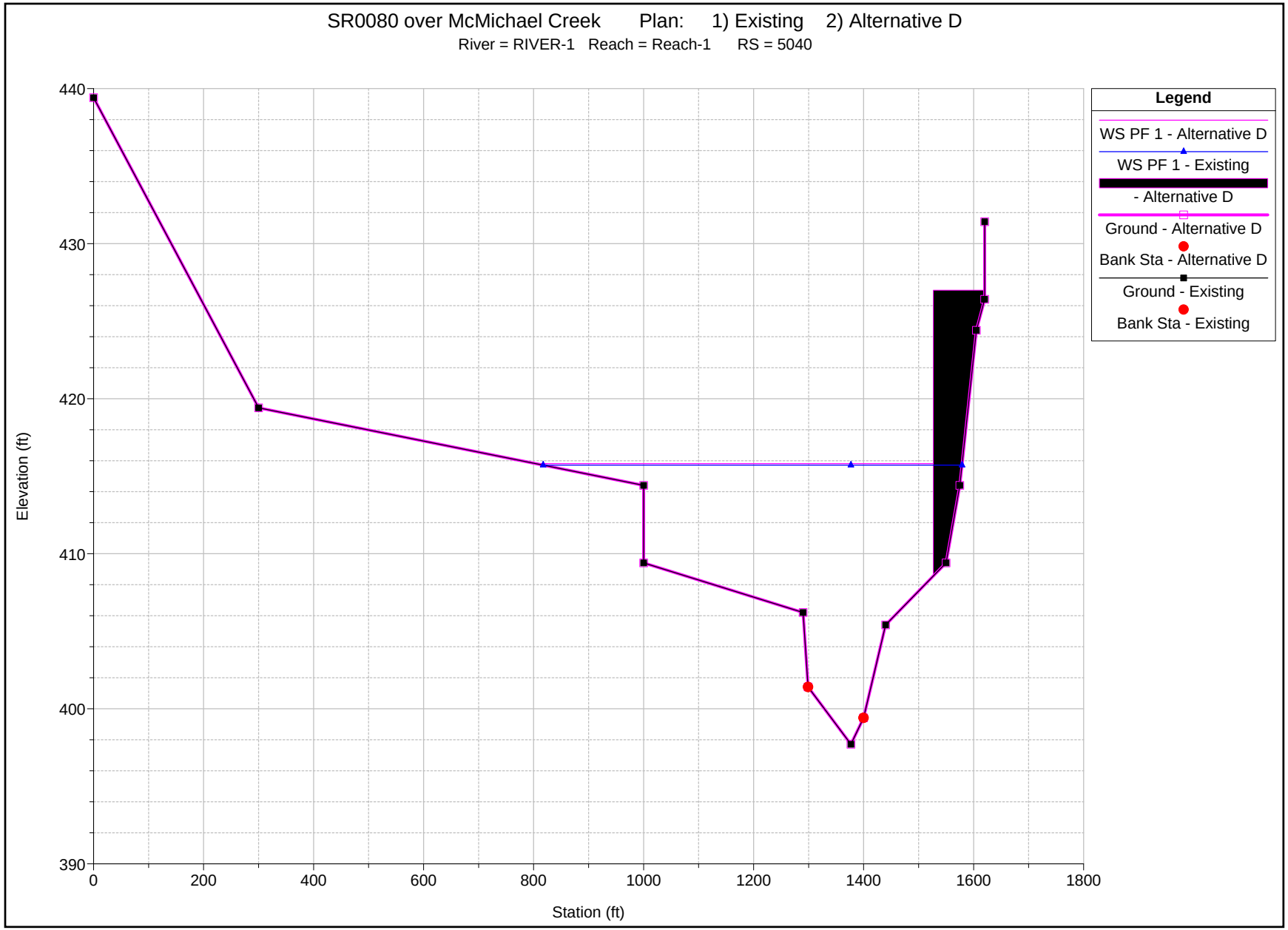

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 6100 DS TRANSITION I-80
Legend
WS PF 1 - Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
450
440
430
420
410
400
1000
1050
1100
1150
1200
1250
1300
1350
Station (ft)

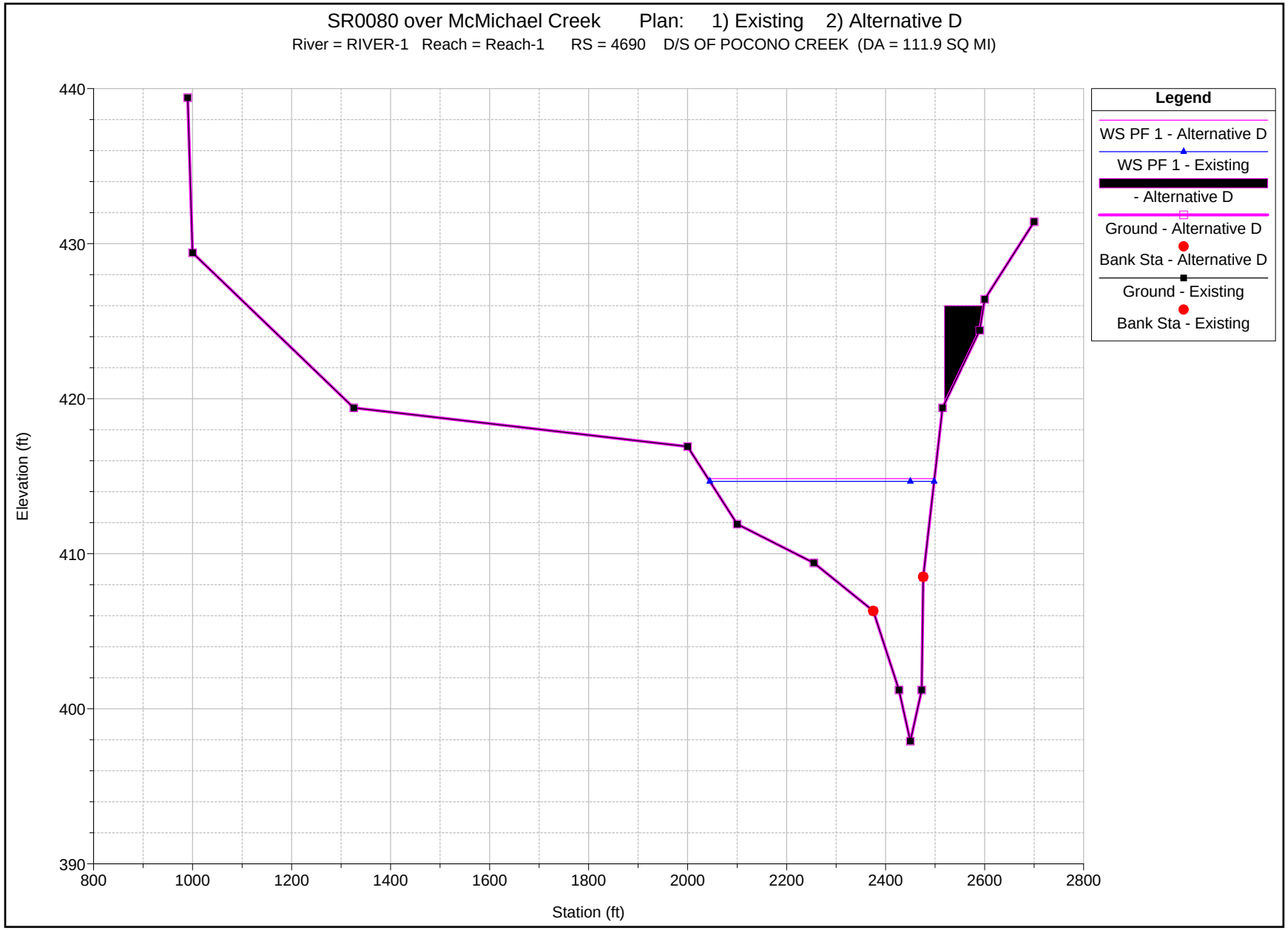

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 6070 XSEC G (WAS XSEC 1 NEW SURVEY FROM G&O)
Legend
WS PF 1 - Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
Station (ft)

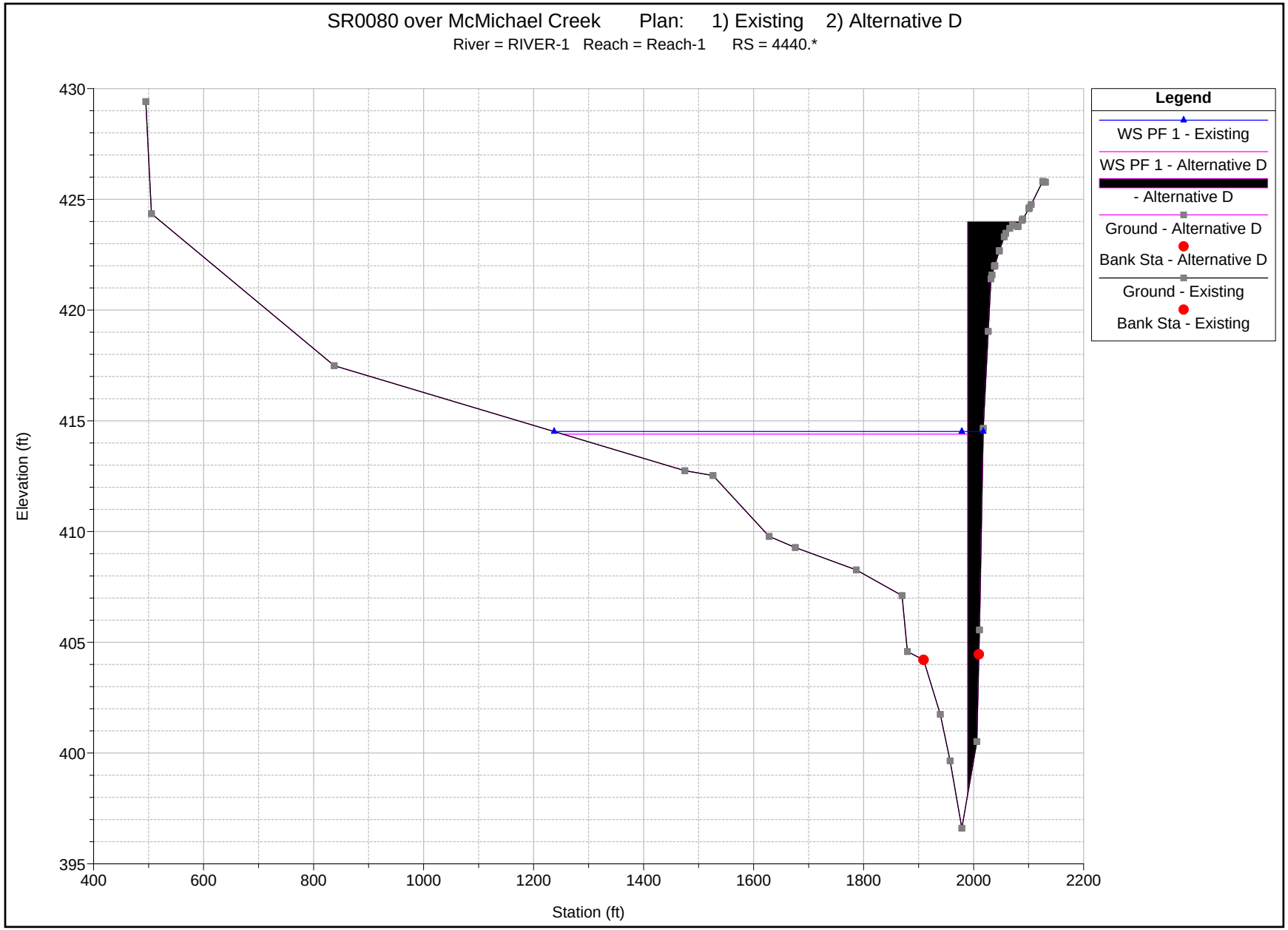

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 6015 GAGE (DA = 65.3 - 63.9 SQ MI)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
450
440
430
420
410
400
1000
1100
1200
1300
1400
Station (ft)

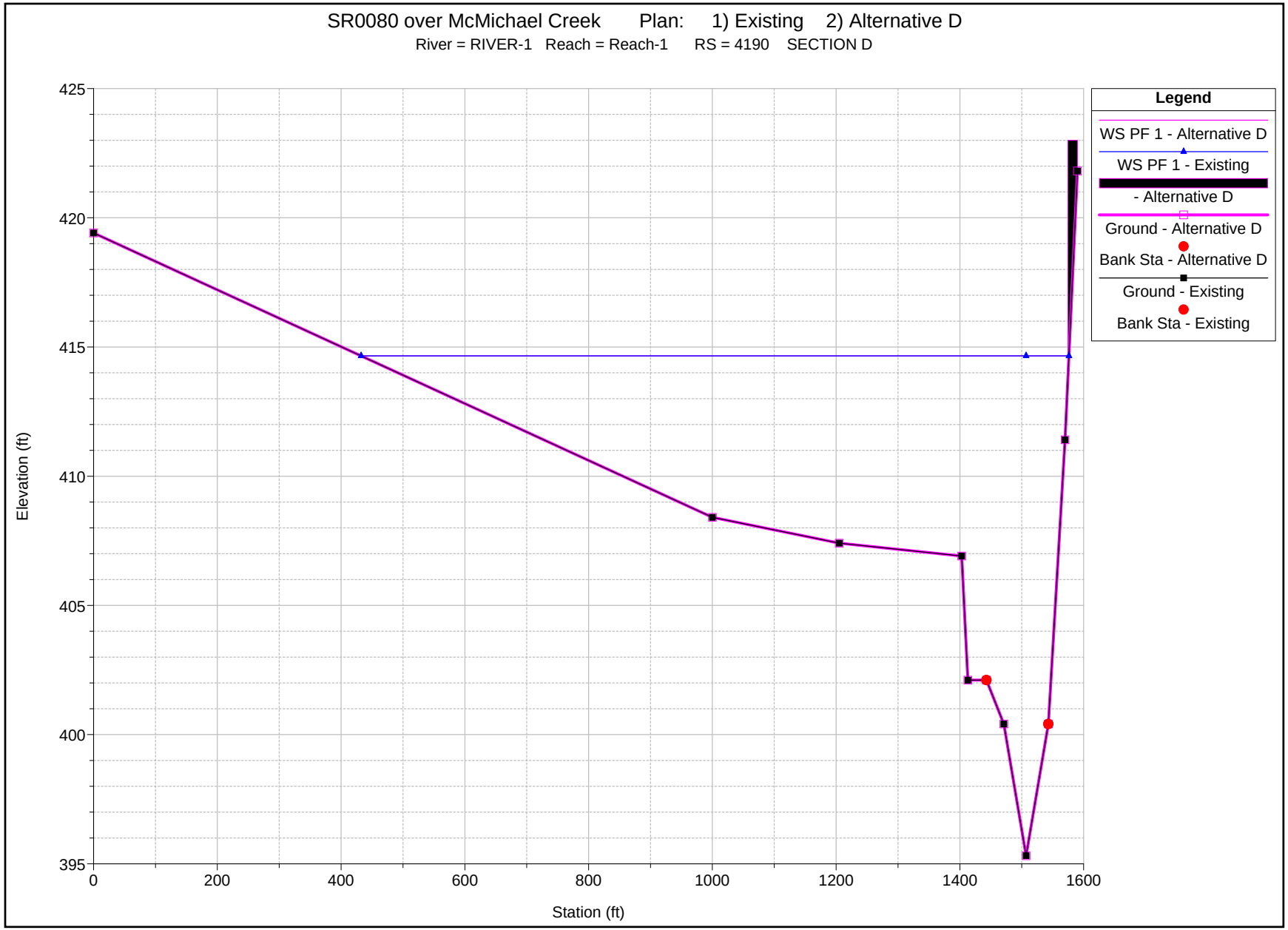

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 5680 ABOVE CONFLUENCE WITH POCONO CREEK (DA = 66.0 SQ MI)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
1600
Station (ft)

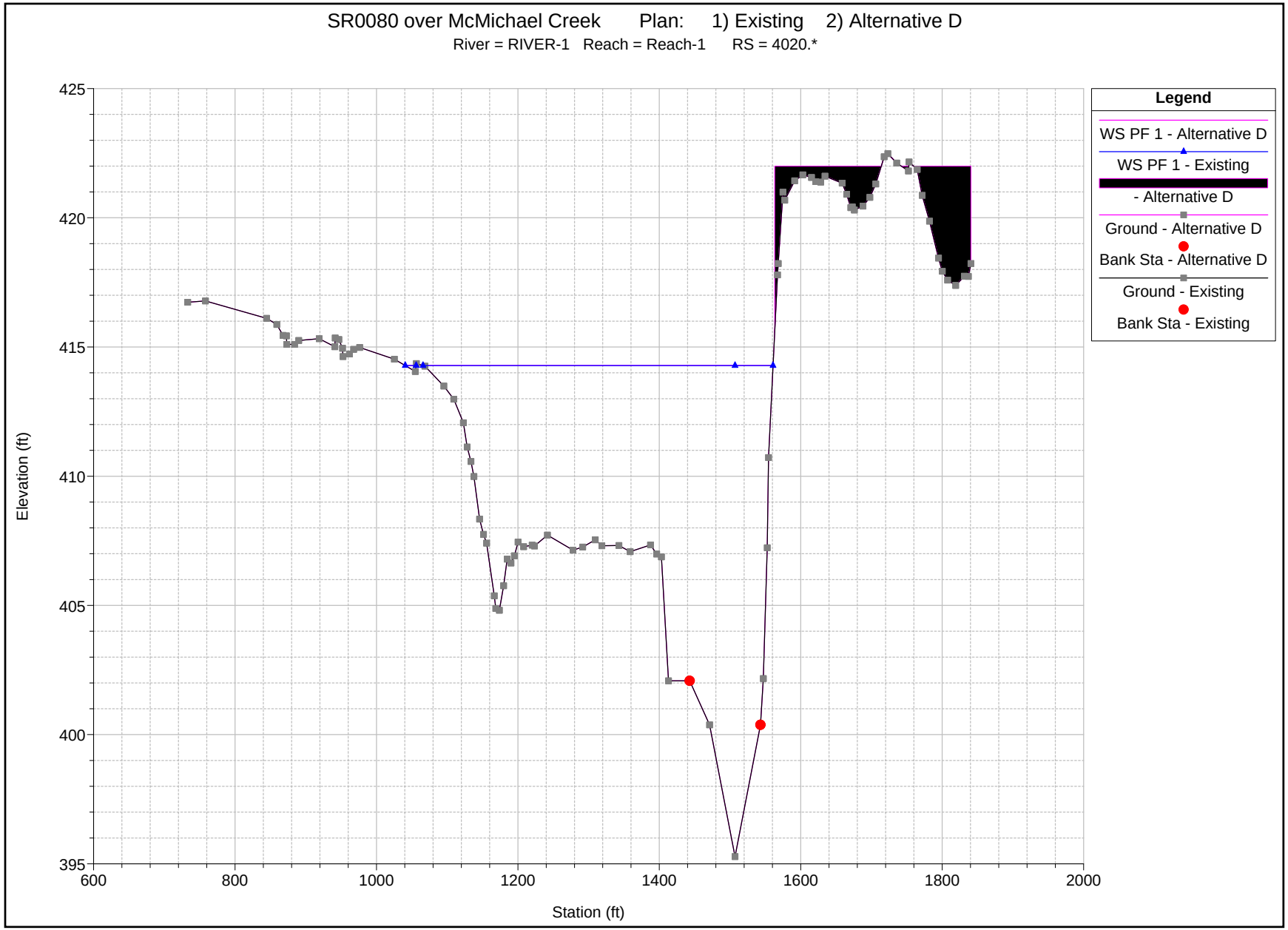

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 5360.*
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
435
430
425
420
415
410
405
400
395
400
600
800
1000
1200
1400
1600
1800
Station (ft)

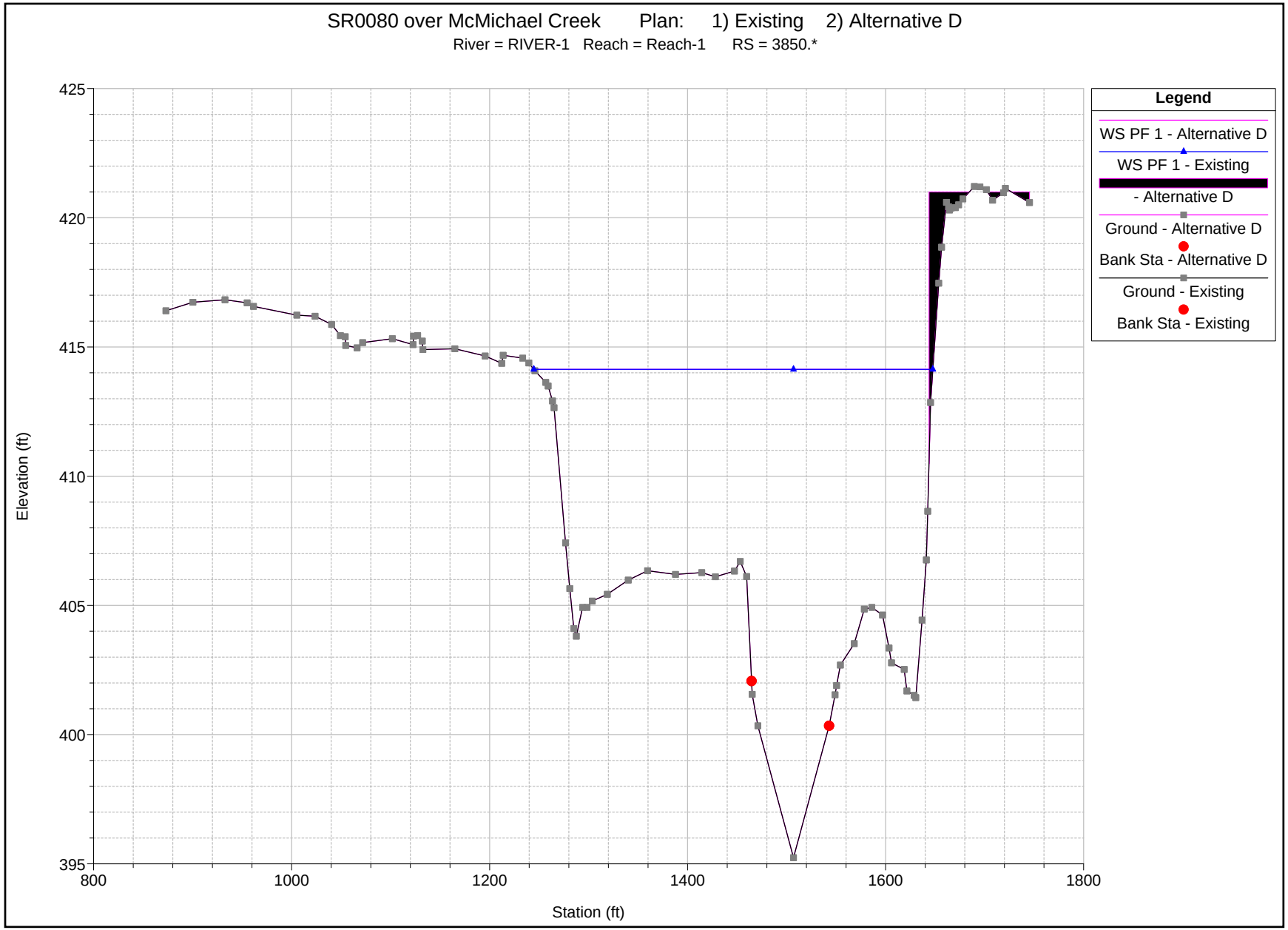

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 5040
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
440
430
420
410
400
390
0
200
400
600
800
1000
1200
1400
1600
1800
Station (ft)

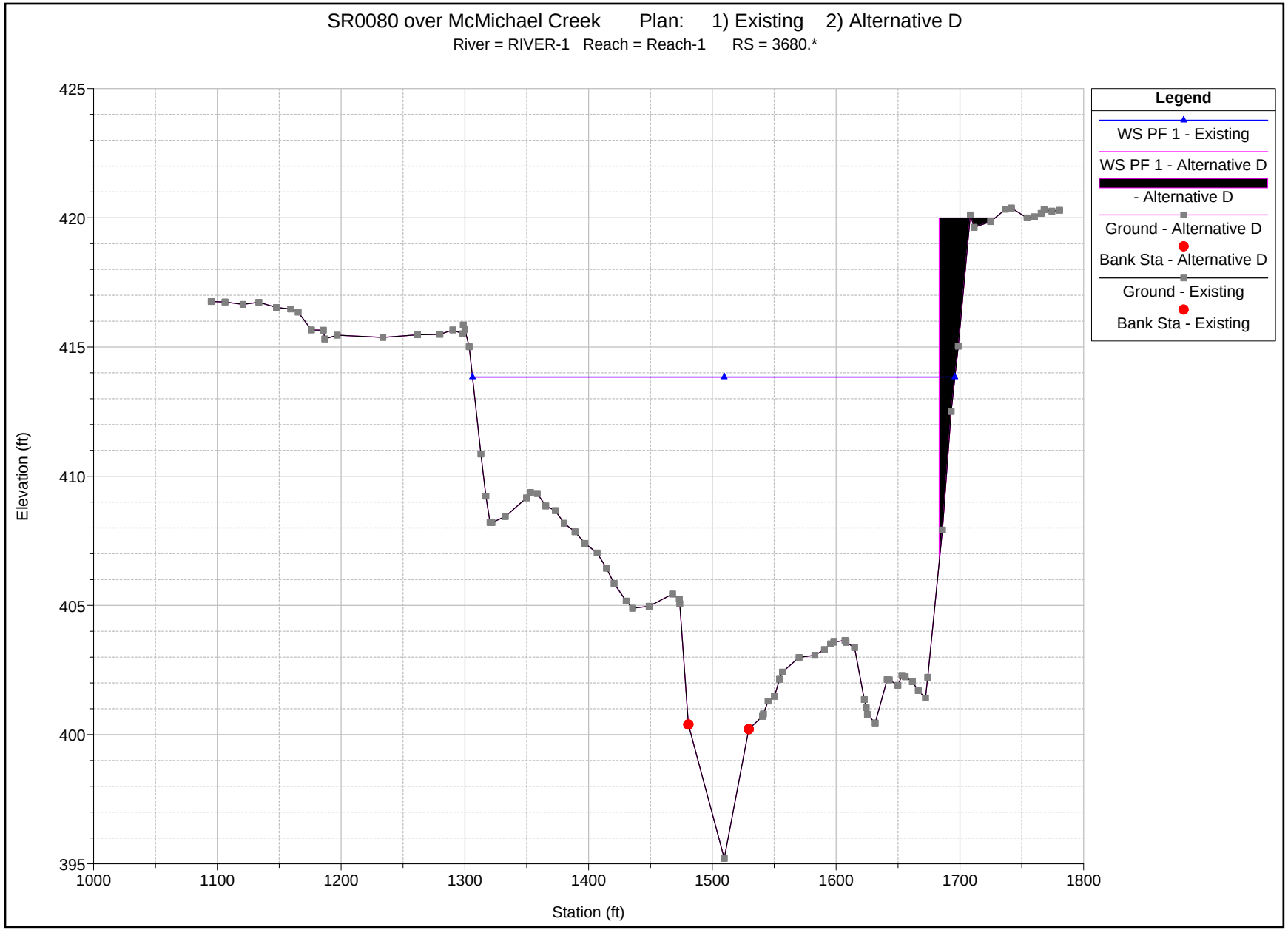

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 4690 D/S OF POCONO CREEK (DA = 111.9 SQ MI)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
440
430
420
410
400
390
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Station (ft)

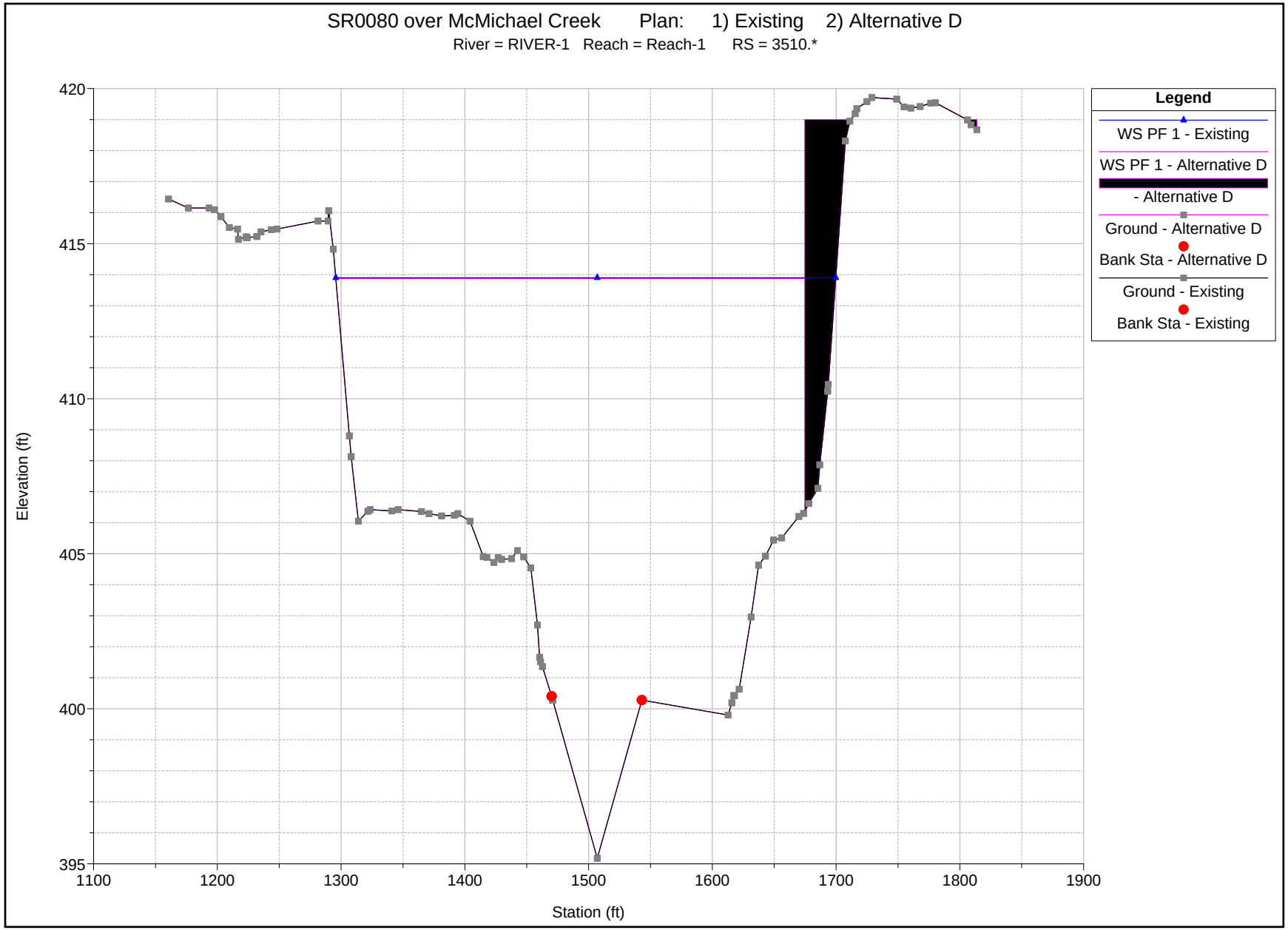

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 4440.*
Legend
WS PF 1 - Existing
WS PF 1 - Alternative D
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
Station (ft)
430
425
420
415
410
405
400
395
400
600
800
1000
1200
1400
1600
1800
2000
2200

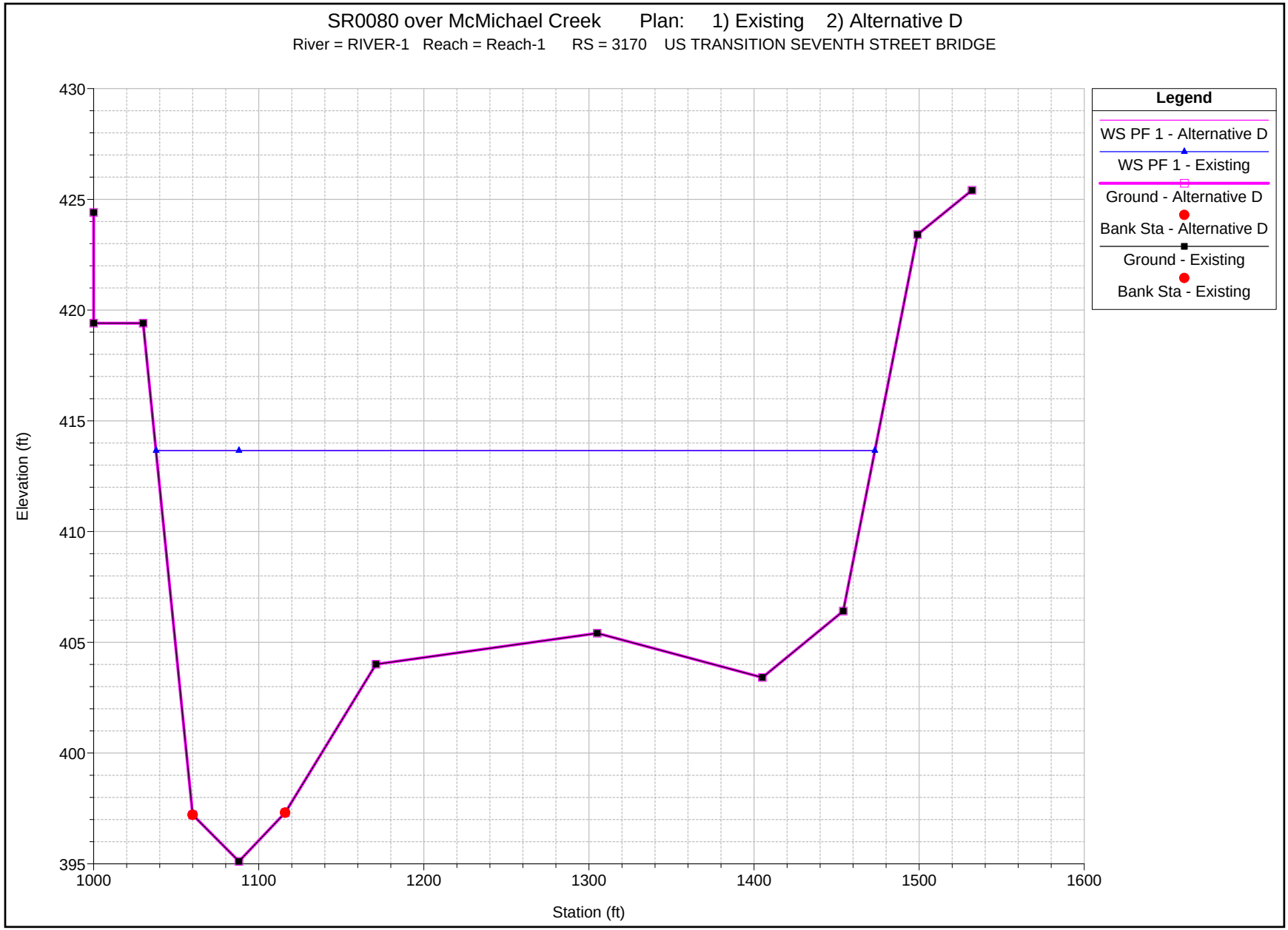

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 4190 SECTION D
Elevation (ft)
425
420
415
410
405
400
395
0
200
400
600
800
1000
1200
1400
1600
Station (ft)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing

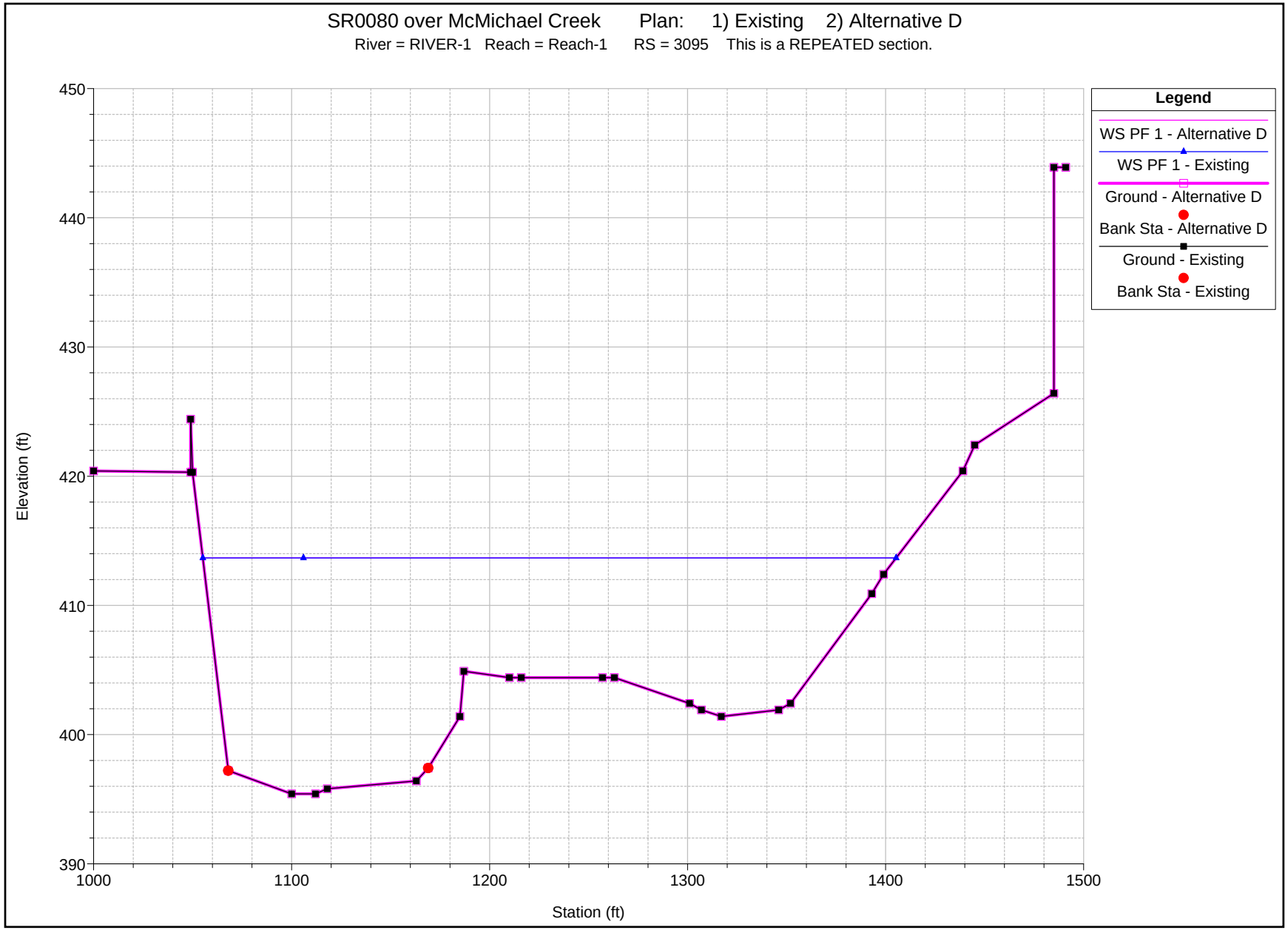

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 4020.*
Elevation (ft)
425
420
415
410
405
400
395
600
800
1000
1200
1400
1600
1800
2000
Station (ft)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing

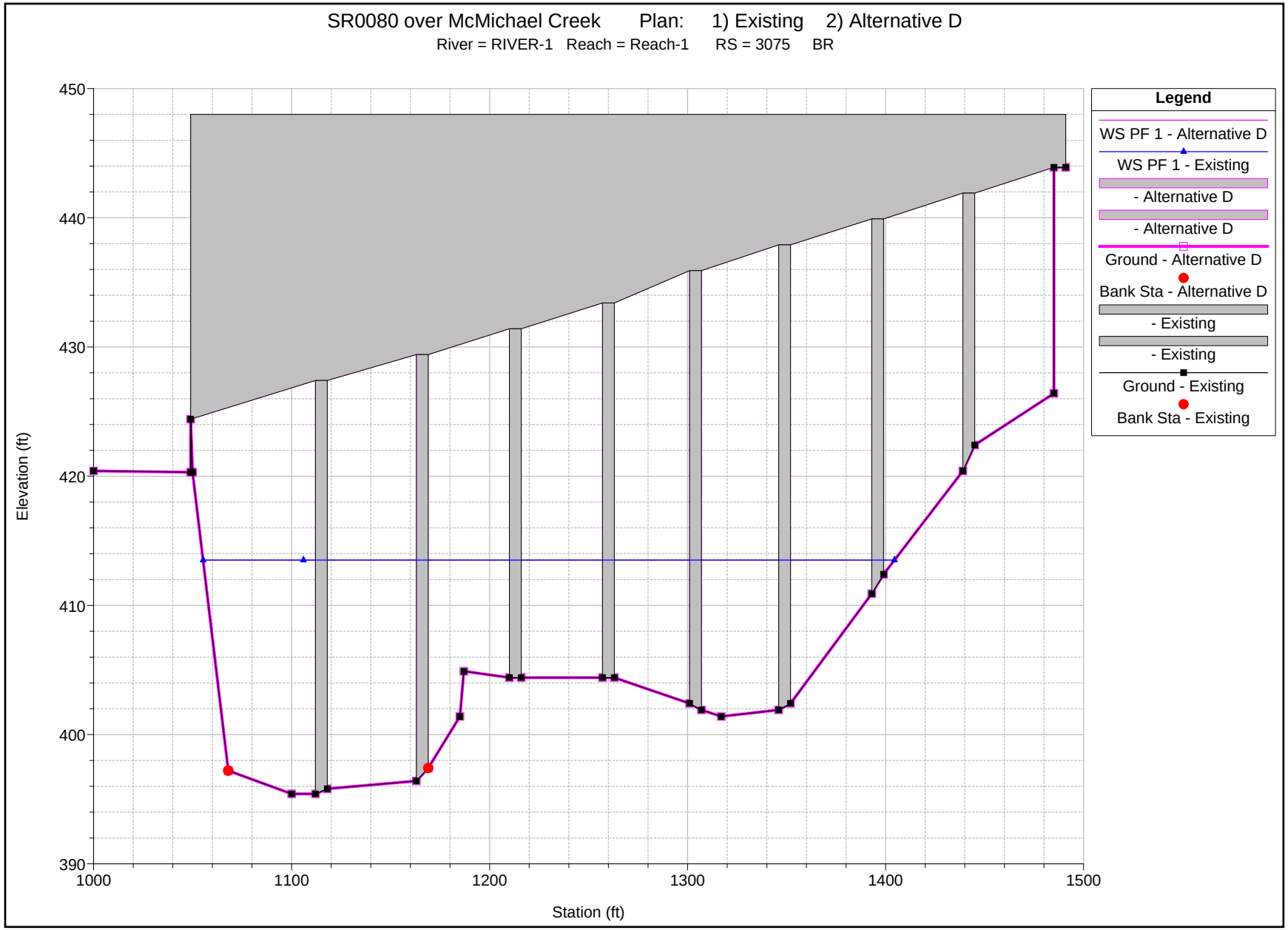

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 3850.*
Elevation (ft)
425
420
415
410
405
400
395
800
1000
1200
1400
1600
1800
Station (ft)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing

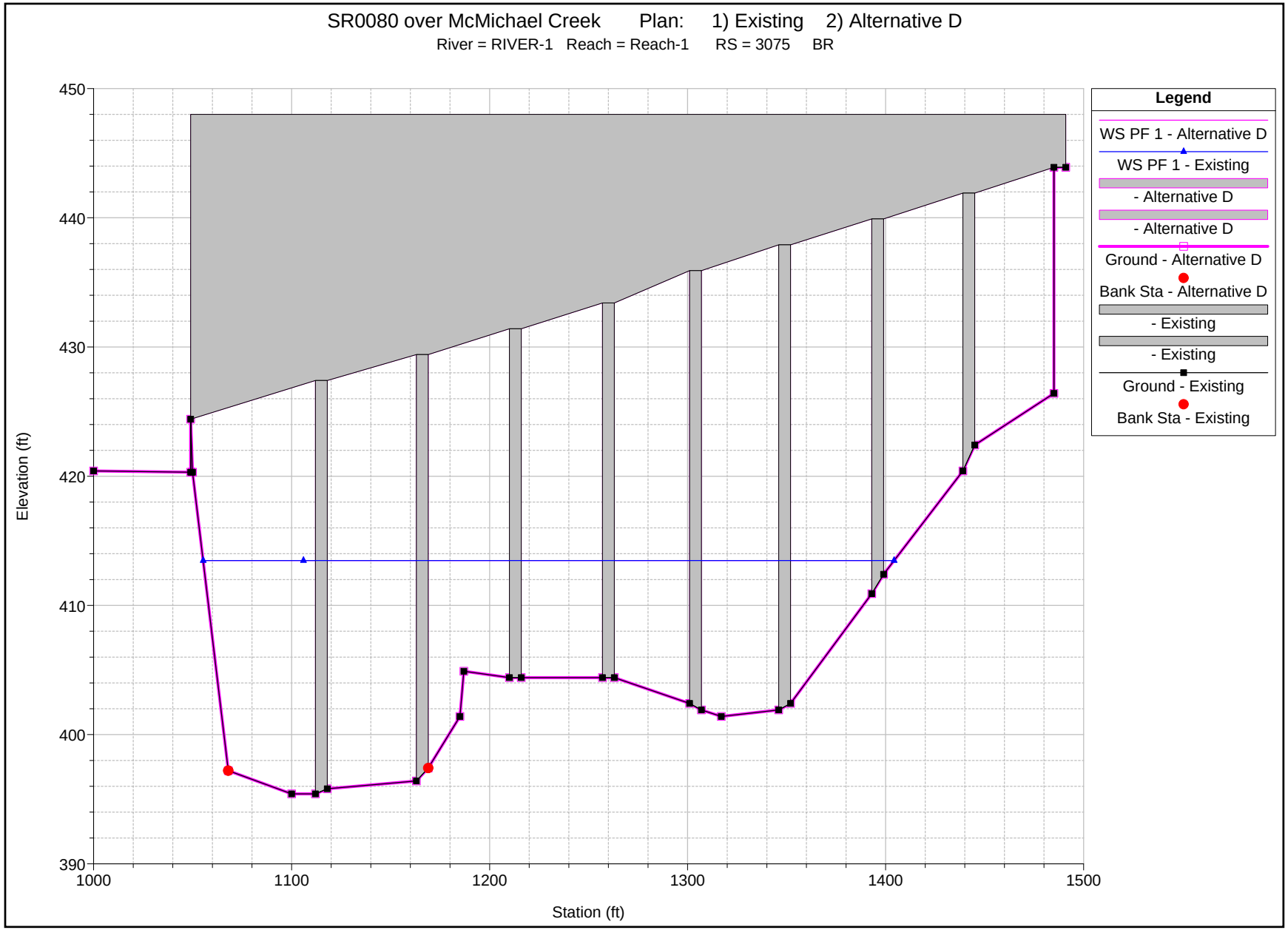

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 3680.*
Elevation (ft)
425
420
415
410
405
400
395
1000
1100
1200
1300
1400
1500
1600
1700
1800
Station (ft)
Legend
WS PF 1 - Existing
WS PF 1 - Alternative D
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing

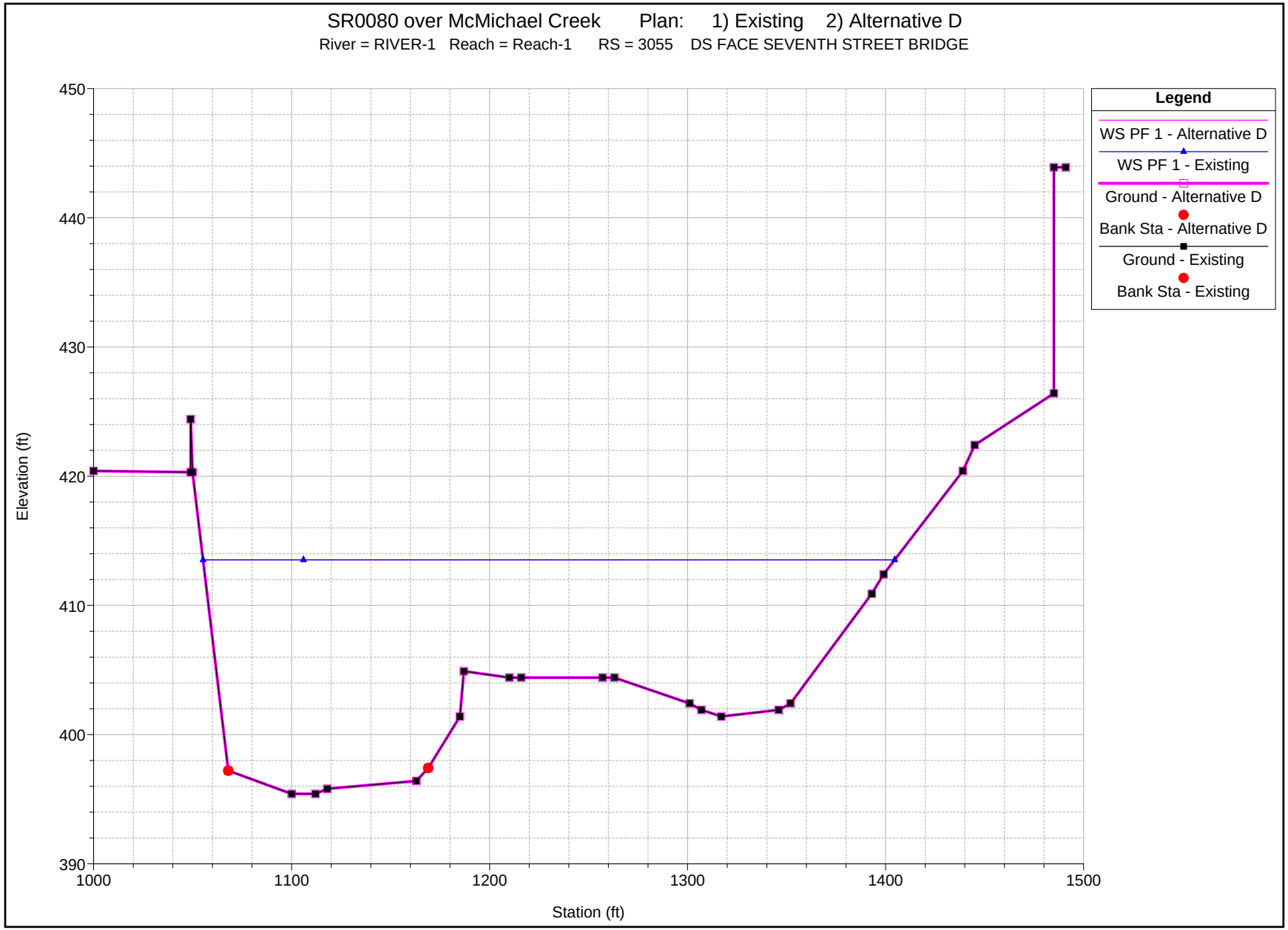

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 3510.*
Elevation (ft)
420
415
410
405
400
395
1100
1200
1300
1400
1500
1600
1700
1800
1900
Station (ft)
Legend
WS PF 1 - Existing
WS PF 1 - Alternative D
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing

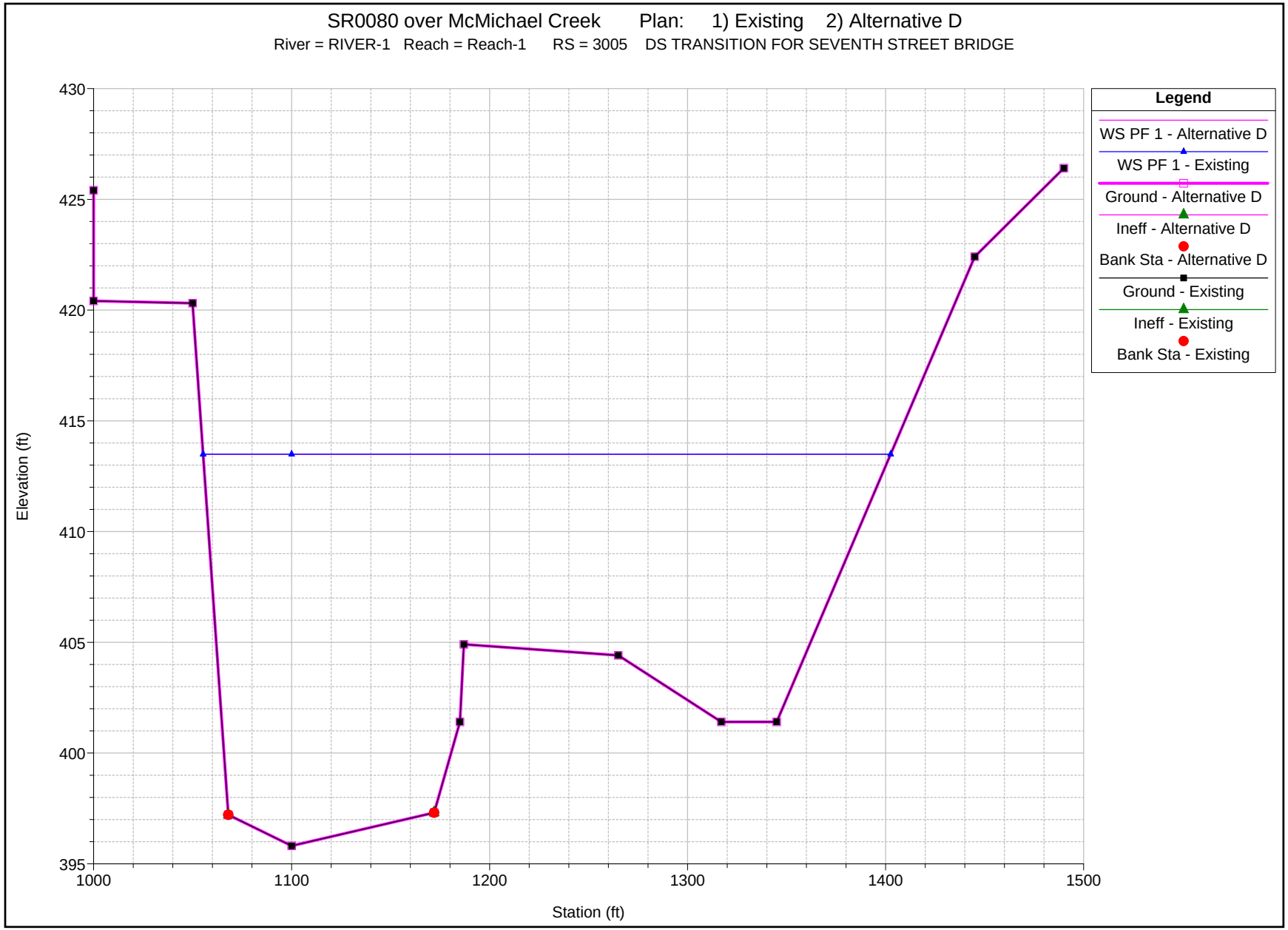

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 3170 US TRANSITION SEVENTH STREET BRIDGE
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
430
425
420
415
410
405
400
395
1000
1100
1200
1300
1400
1500
1600
Station (ft)

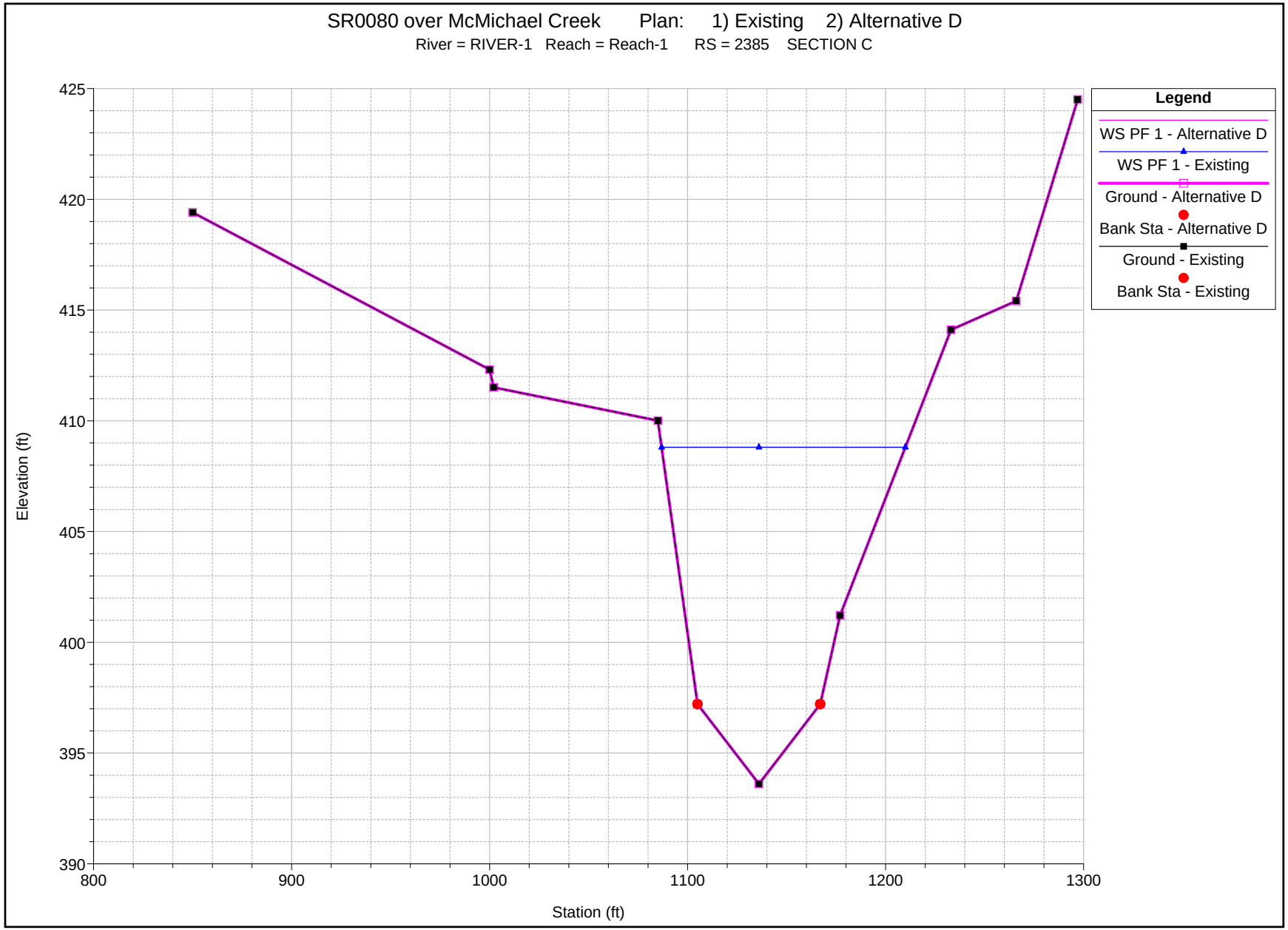

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 3095 This is a REPEATED section.
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
Station (ft)
450
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500

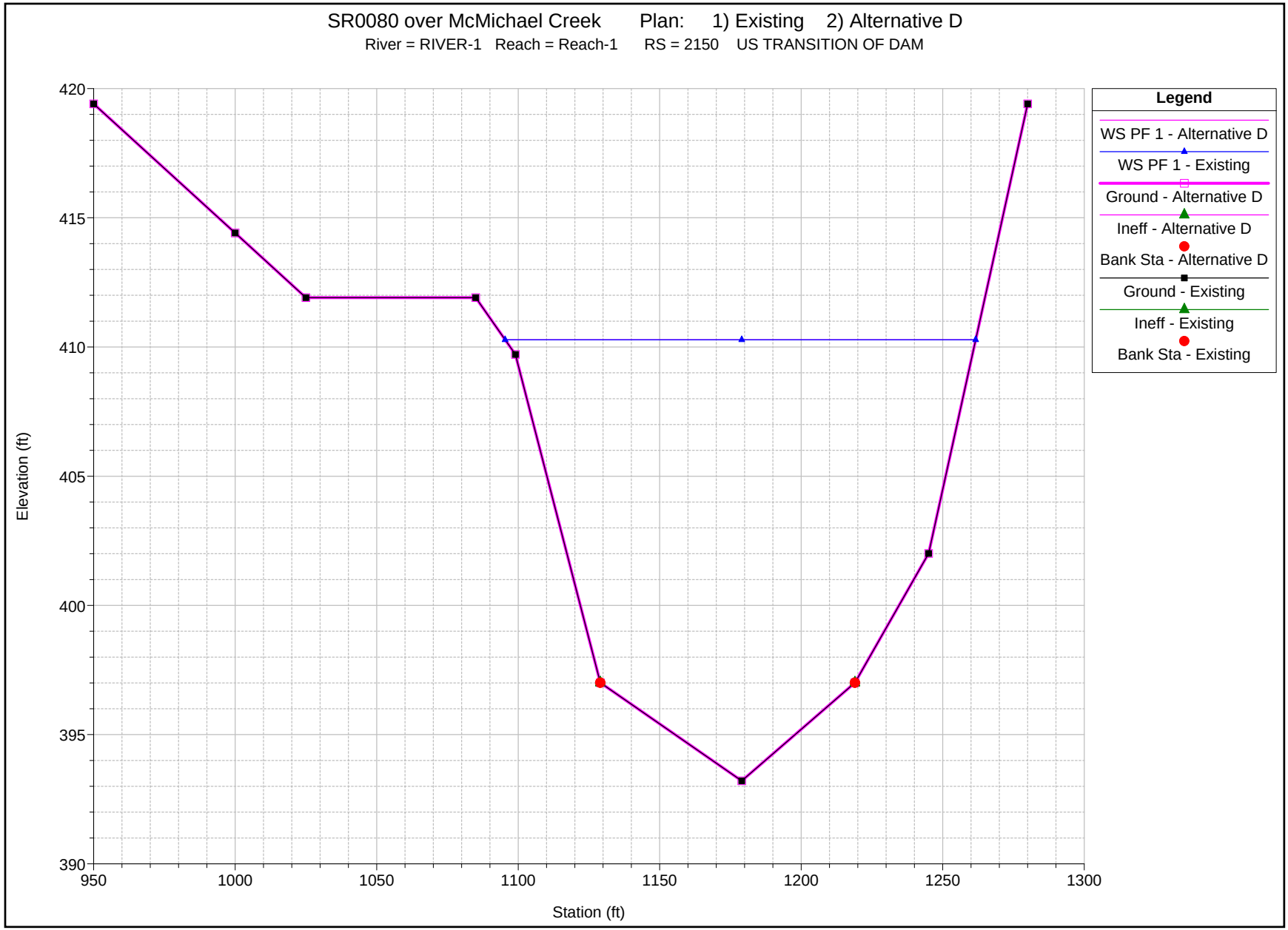

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 3075 BR
Elevation (ft)
Station (ft)
450
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
- Existing
- Existing
Ground - Existing
Bank Sta - Existing

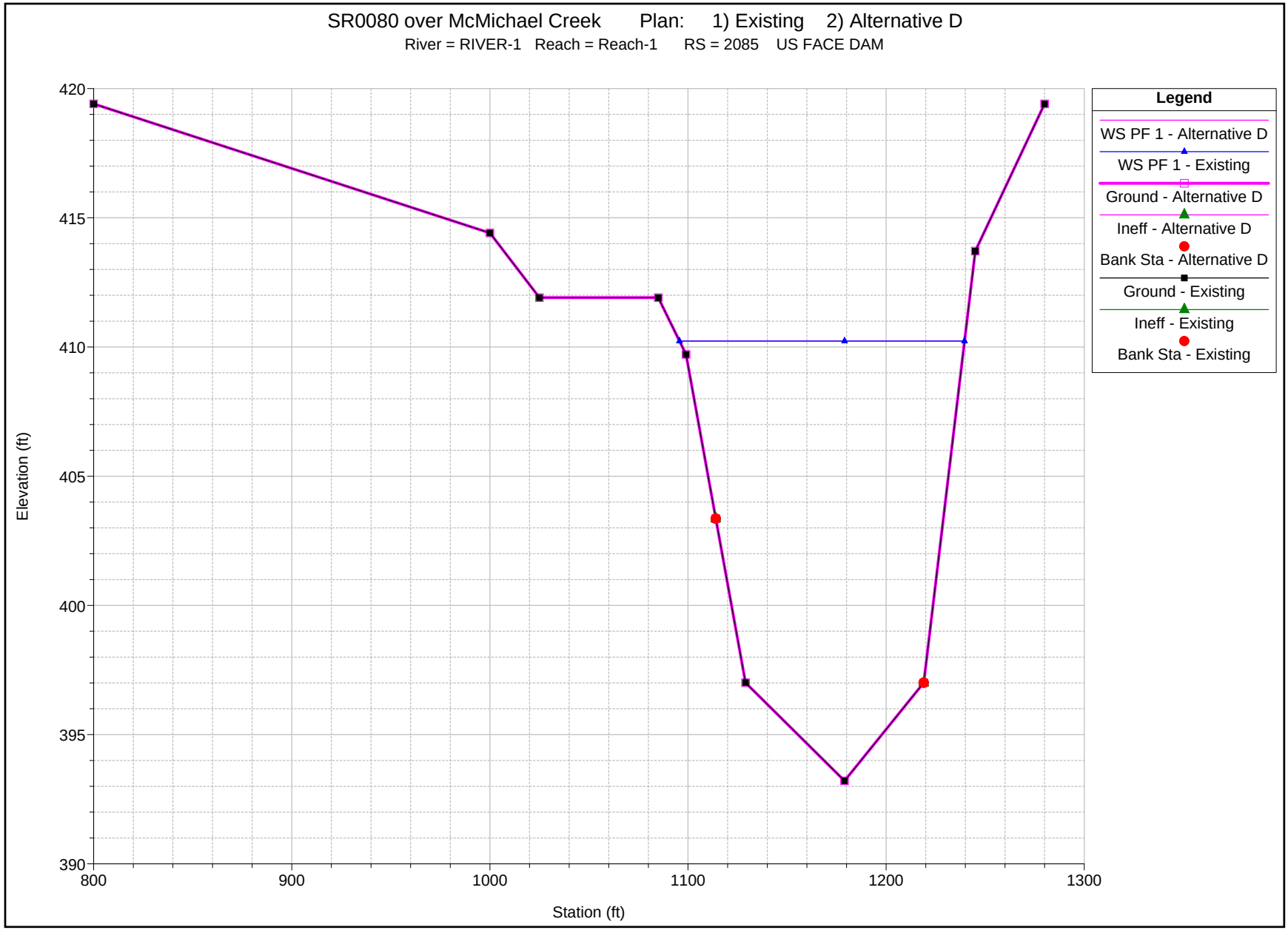

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 3075 BR
Elevation (ft)
Station (ft)
450
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
- Alternative D
Ground - Alternative D
Bank Sta - Alternative D
- Existing
- Existing
Ground - Existing
Bank Sta - Existing

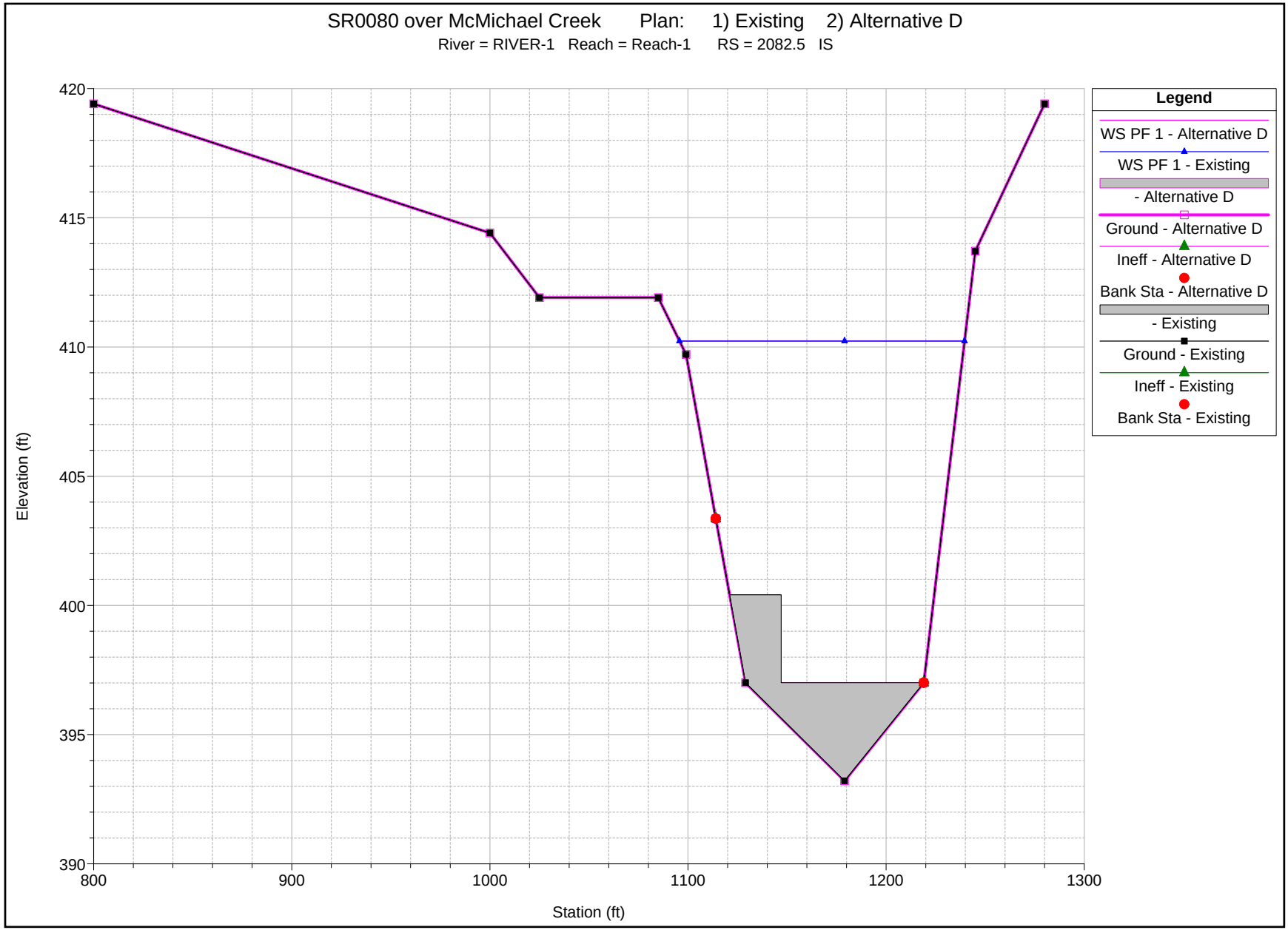

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 3055 DS FACE SEVENTH STREET BRIDGE
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
Station (ft)
450
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500

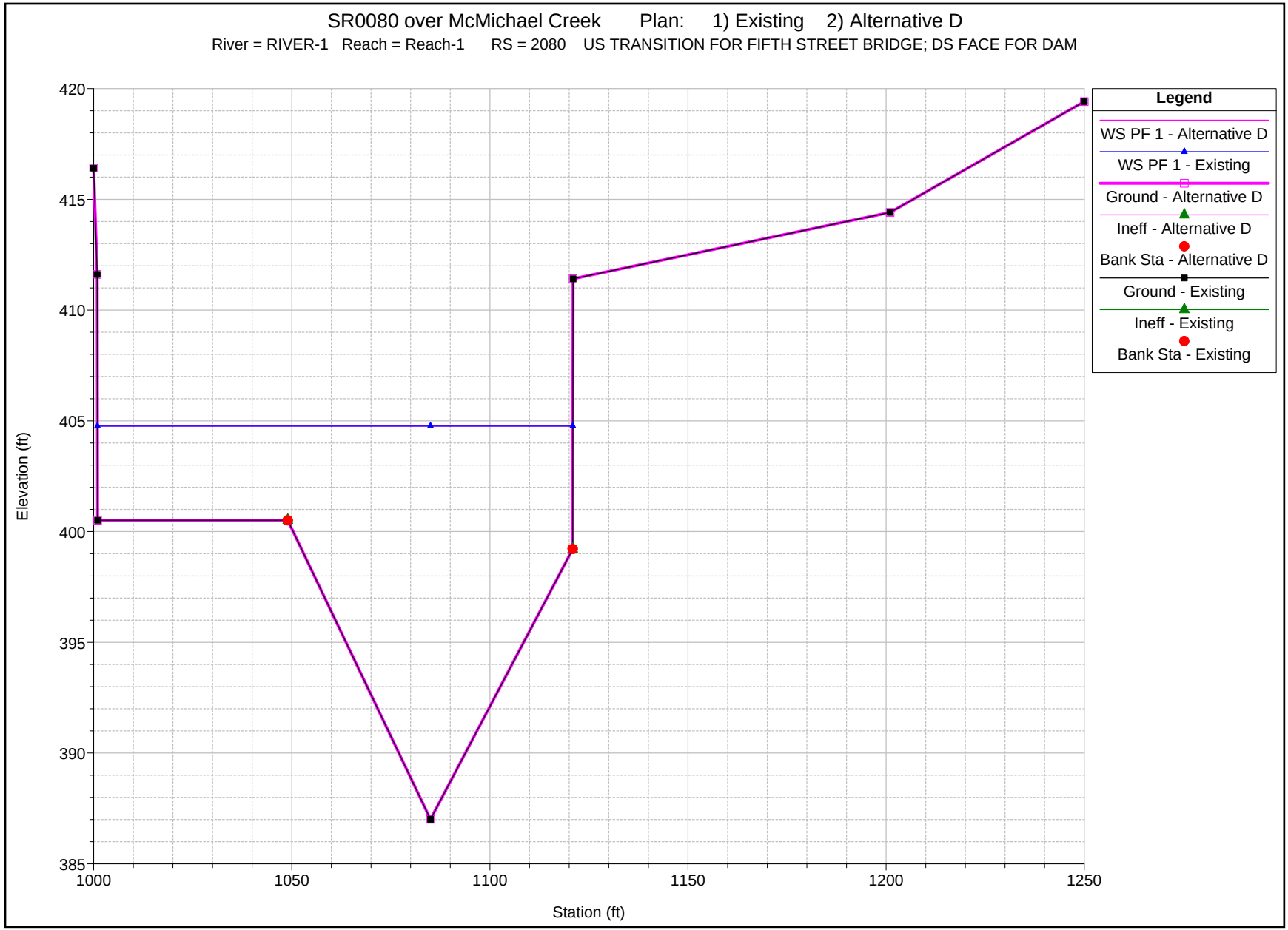

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 3005 DS TRANSITION FOR SEVENTH STREET BRIDGE
Elevation (ft)
Station (ft)
430
425
420
415
410
405
400
395
1000
1100
1200
1300
1400
1500
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
Ground - Existing
Ineff - Existing
Bank Sta - Existing

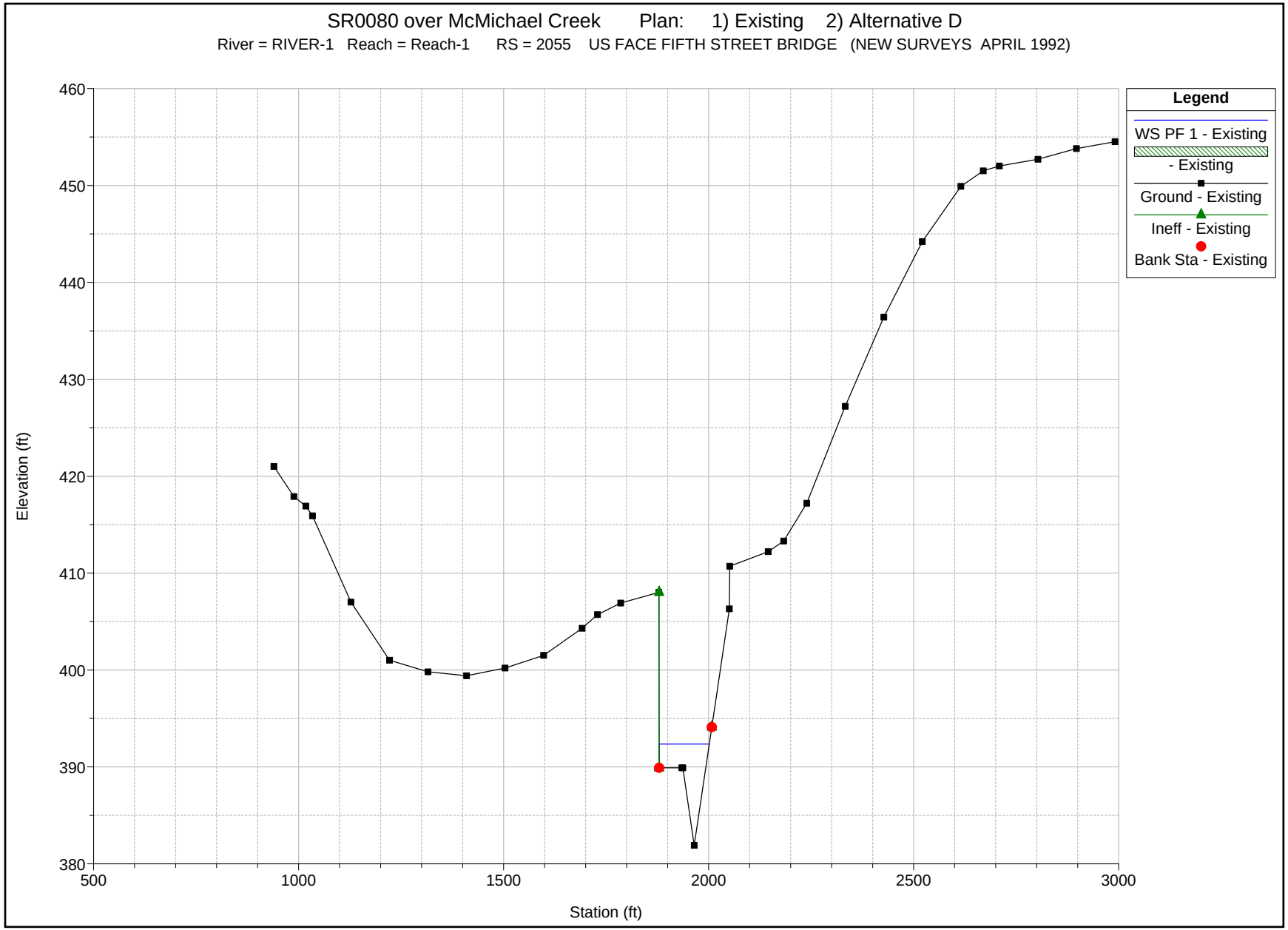

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 2385 SECTION C
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
425
420
415
410
405
400
395
390
800
900
1000
1100
1200
1300
Station (ft)

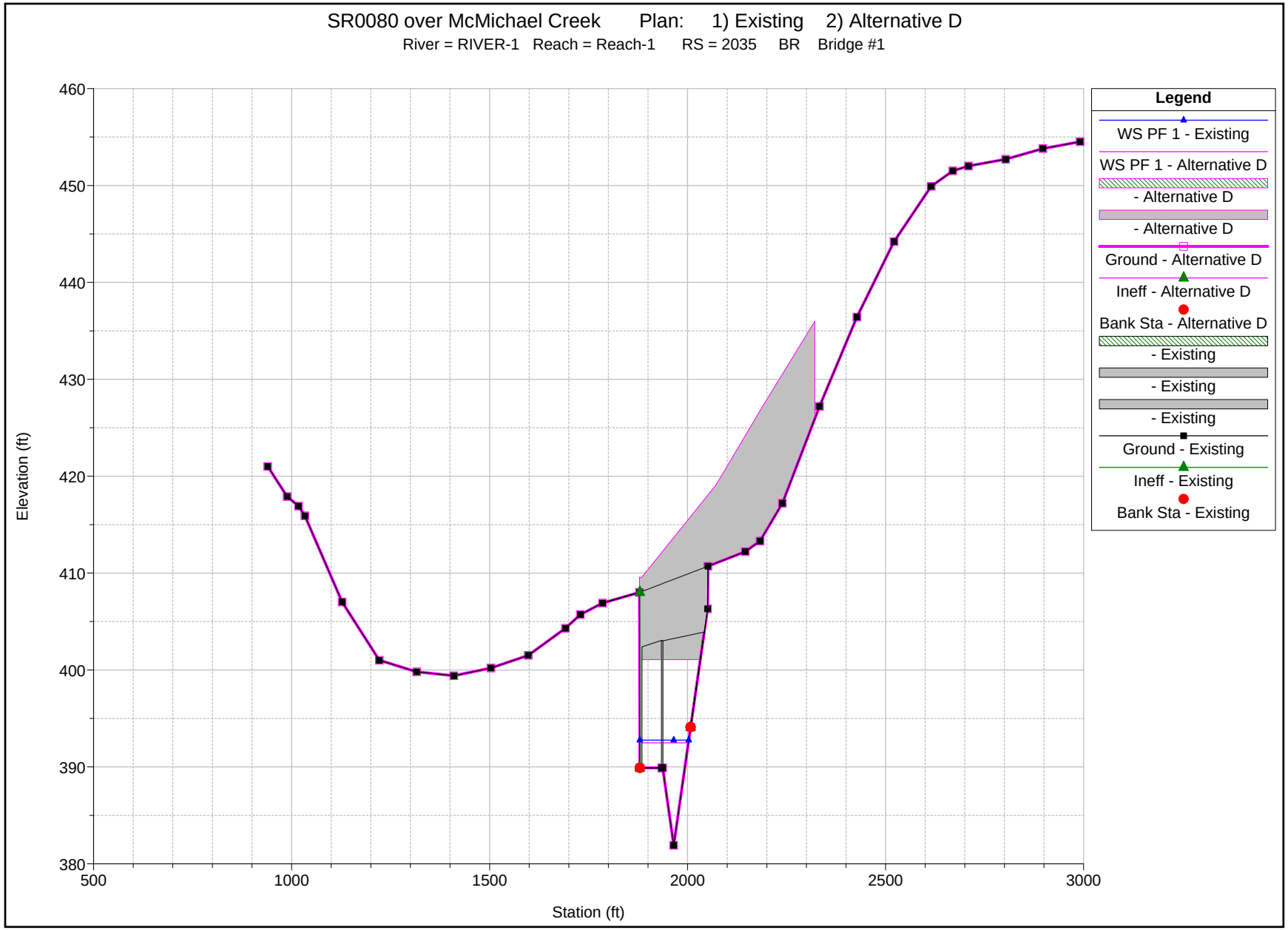

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 2150 US TRANSITION OF DAM
Elevation (ft)
420
415
410
405
400
395
390
950
1000
1050
1100
1150
1200
1250
1300
Station (ft)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
Ground - Existing
Ineff - Existing
Bank Sta - Existing

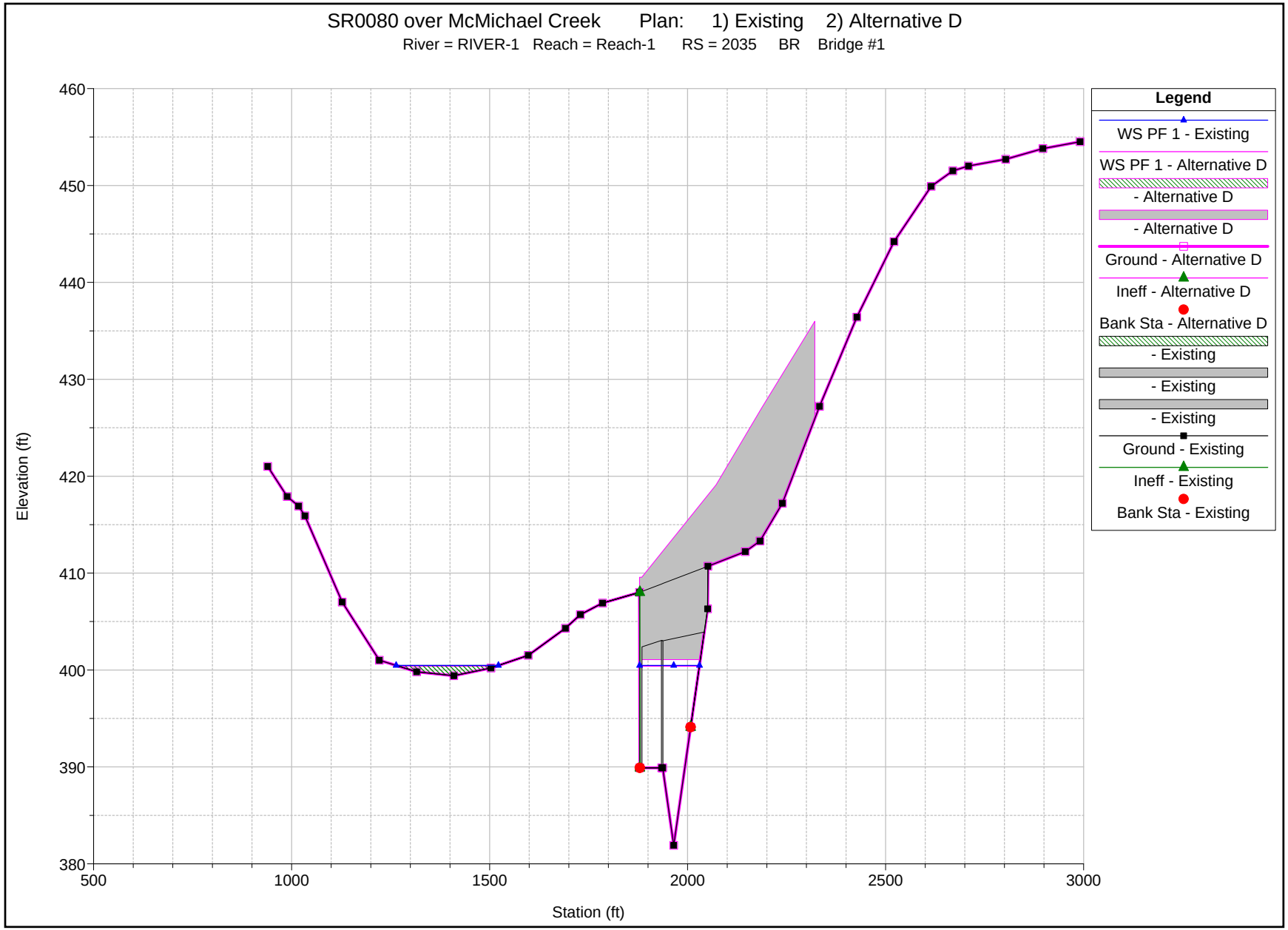

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 2085 US FACE DAM
Elevation (ft)
420
415
410
405
400
395
390
800
900
1000
1100
1200
1300
Station (ft)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
Ground - Existing
Ineff - Existing
Bank Sta - Existing

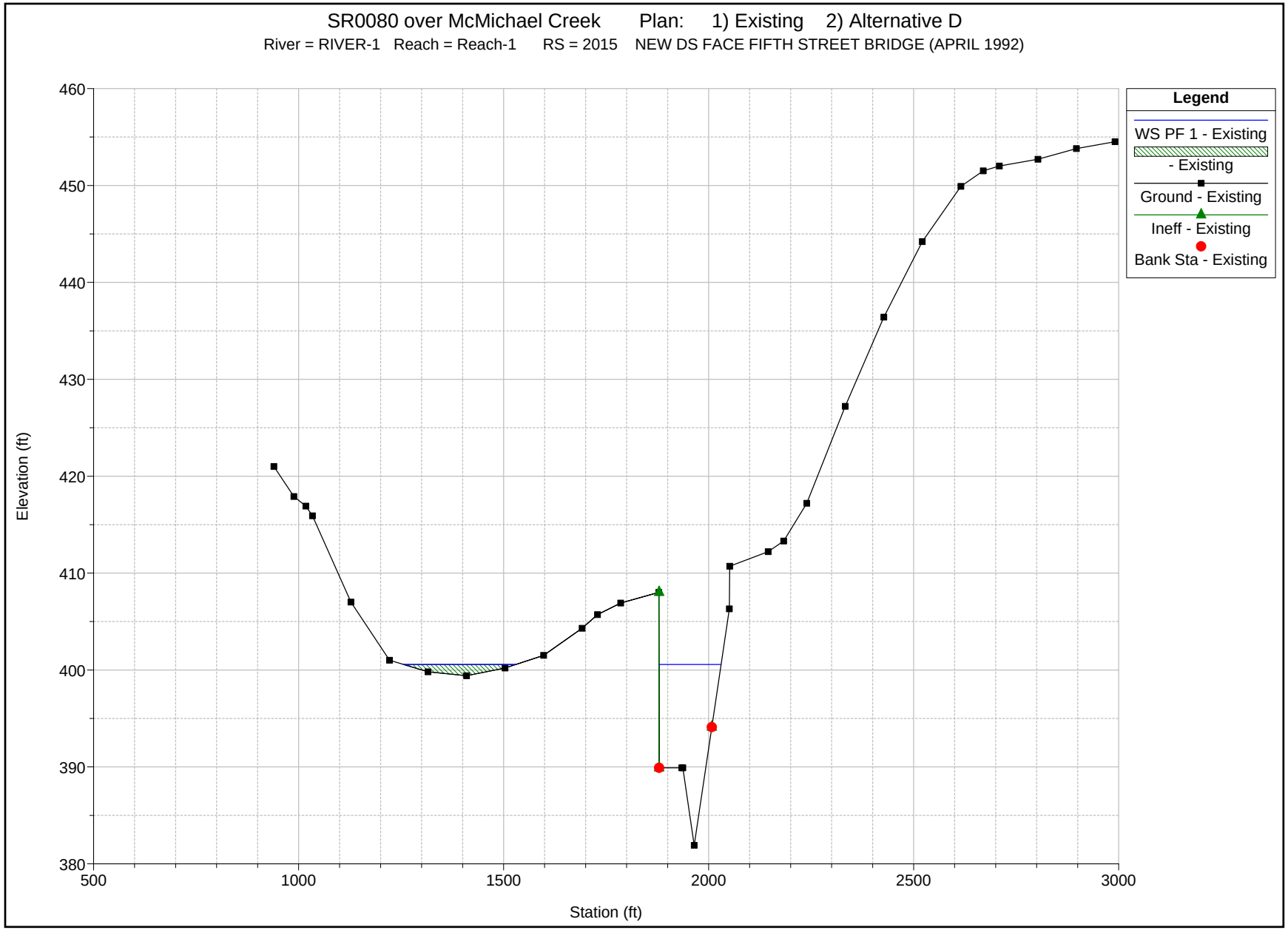

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 2082.5 IS
Elevation (ft)
420
415
410
405
400
395
390
800
900
1000
1100
1200
1300
Station (ft)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
- Alternative D
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

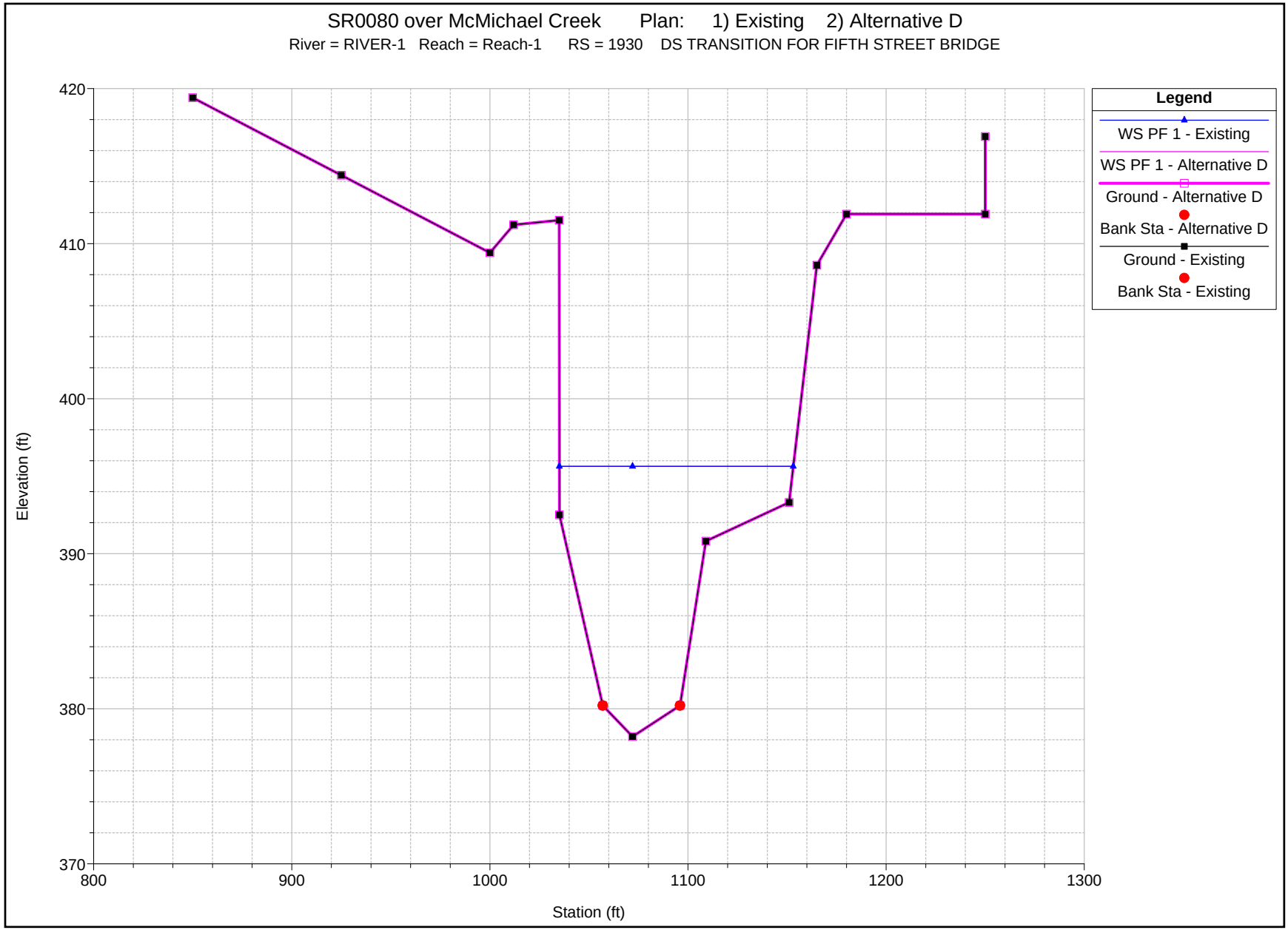

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 2080 US TRANSITION FOR FIFTH STREET BRIDGE; DS FACE FOR DAM
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
420
415
410
405
400
395
390
385
1000
1050
1100
1150
1200
1250
Station (ft)

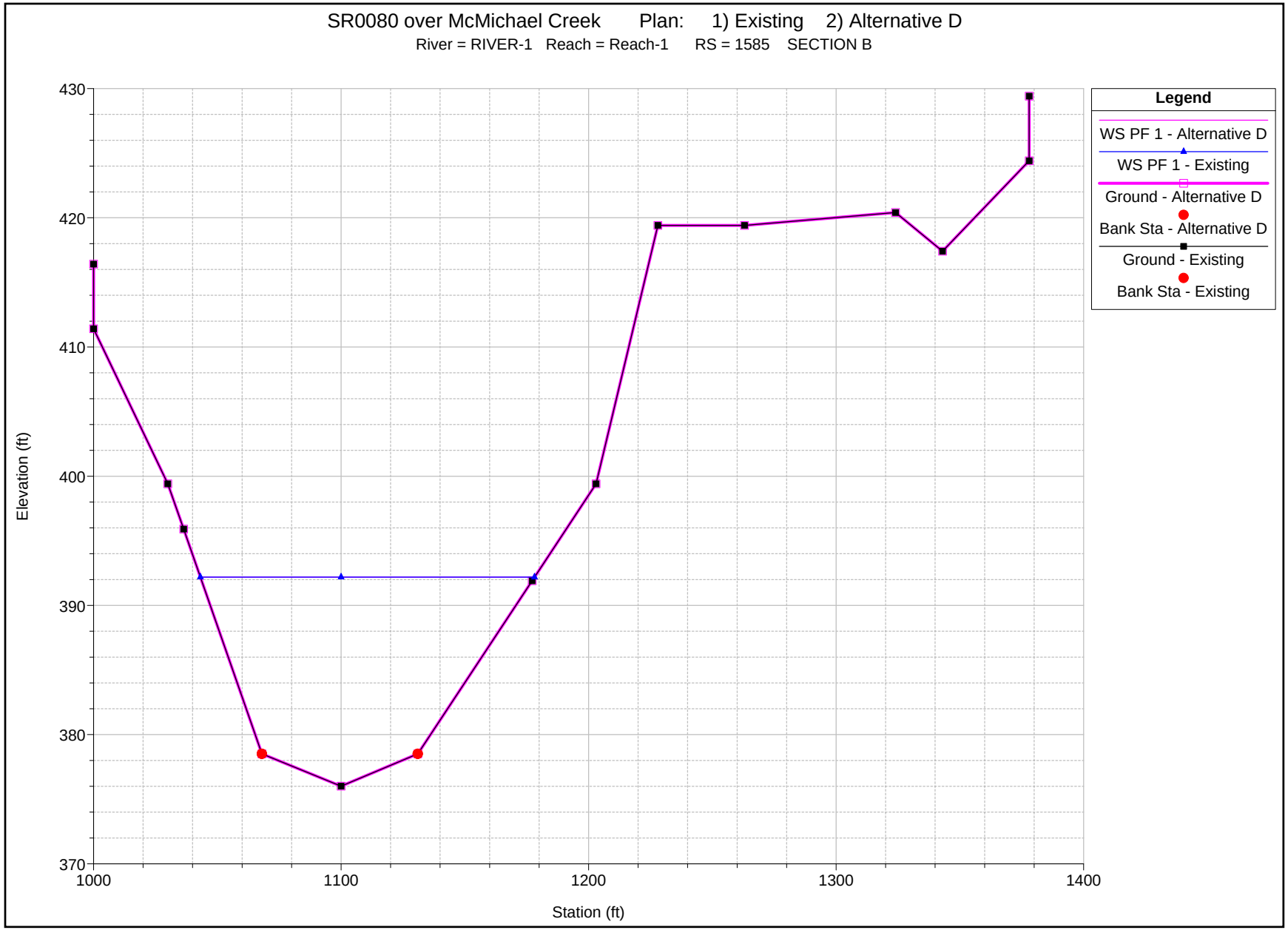

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 2055 US FACE FIFTH STREET BRIDGE (NEW SURVEYS APRIL 1992)
Legend
WS PF 1 - Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
460
450
440
430
420
410
400
390
380
500
1000
1500
2000
2500
3000
Station (ft)

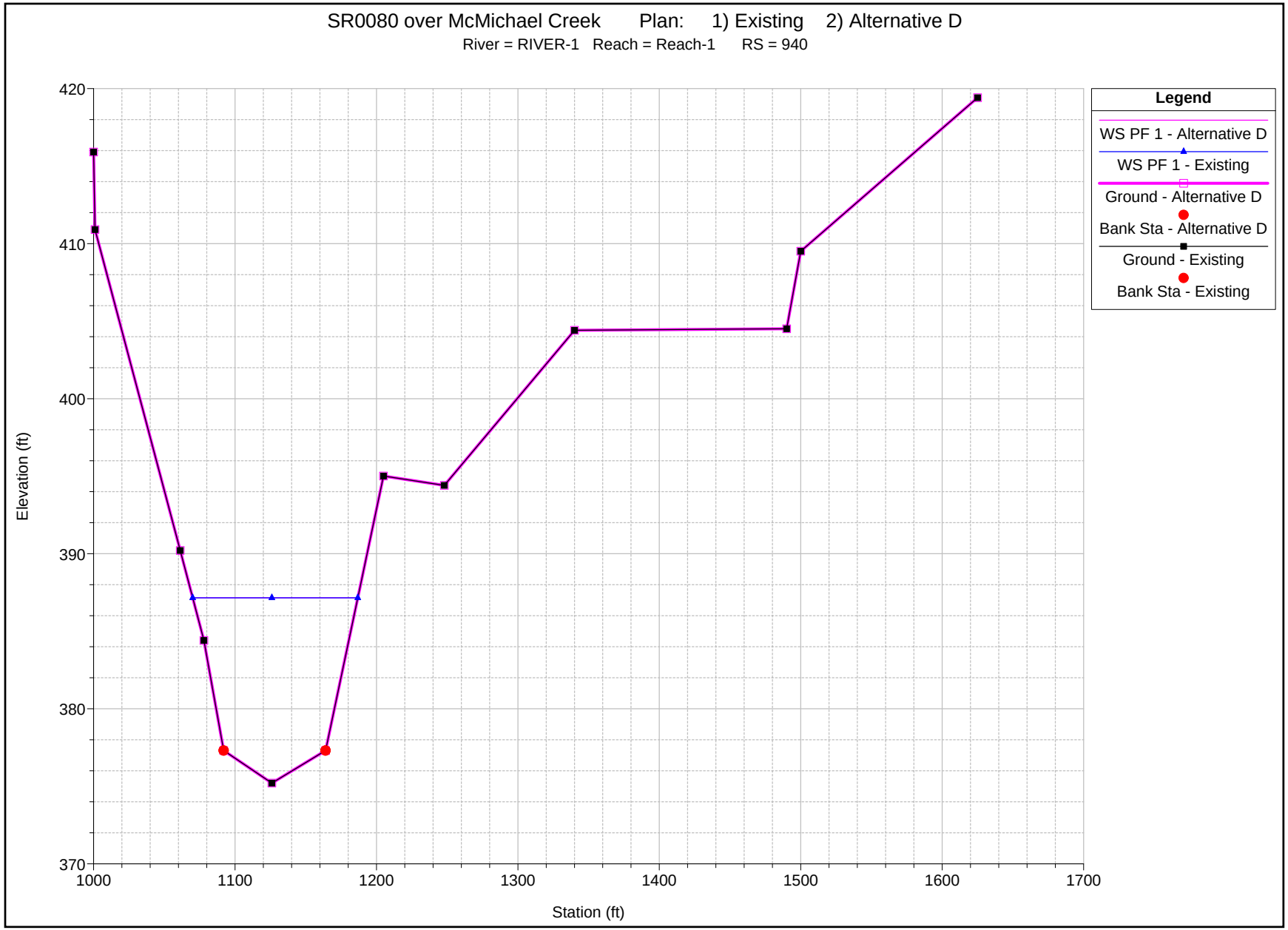

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 2035 BR Bridge #1
Elevation (ft)
460
450
440
430
420
410
400
390
380
500
1000
1500
2000
2500
3000
Station (ft)
Legend
WS PF 1 - Existing
WS PF 1 - Alternative D
- Alternative D
- Alternative D
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
- Existing
- Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

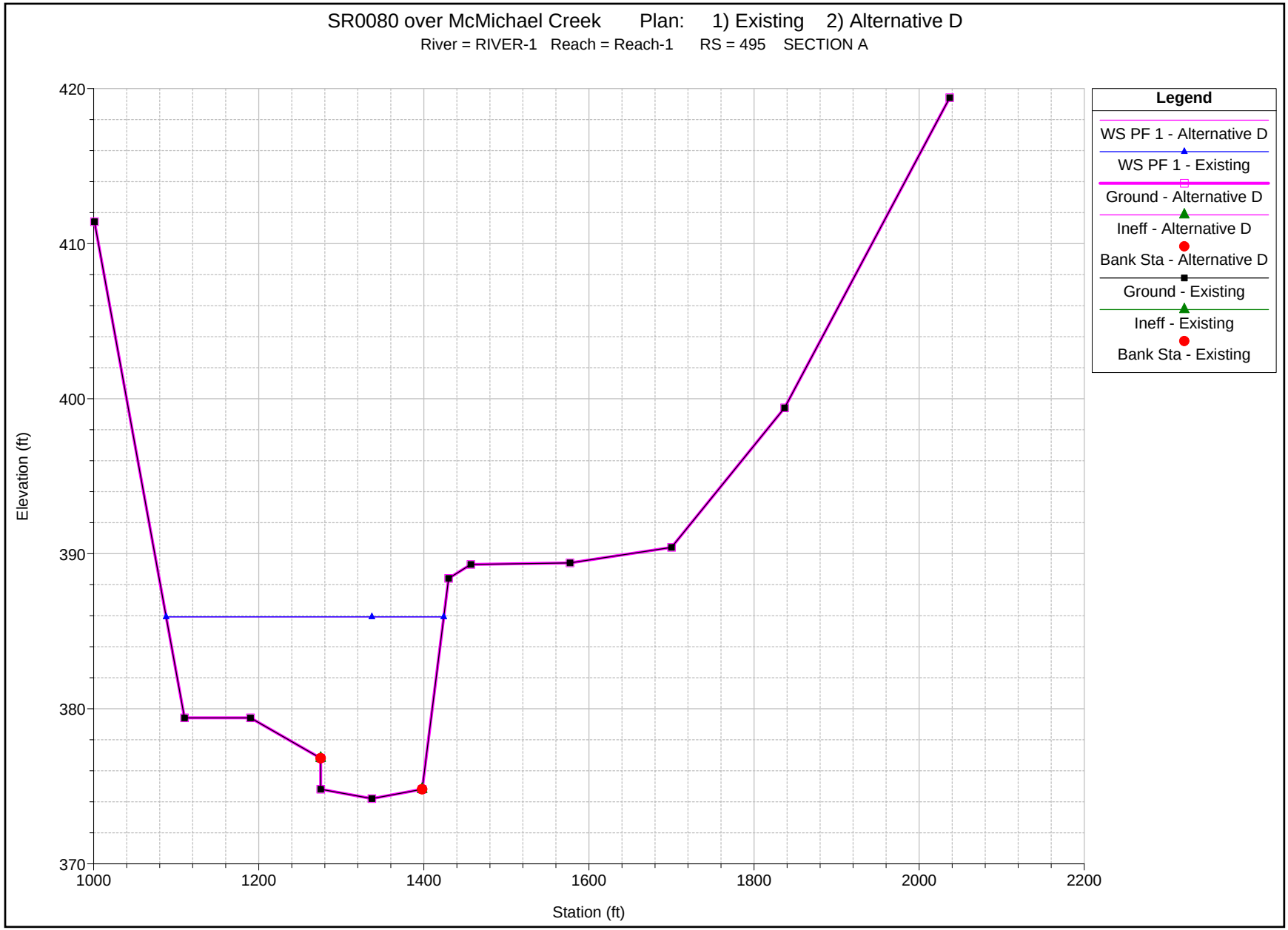

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 2035 BR Bridge #1
Elevation (ft)
460
450
440
430
420
410
400
390
380
500
1000
1500
2000
2500
3000
Station (ft)
Legend
WS PF 1 - Existing
WS PF 1 - Alternative D
- Alternative D
- Alternative D
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
- Existing
- Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

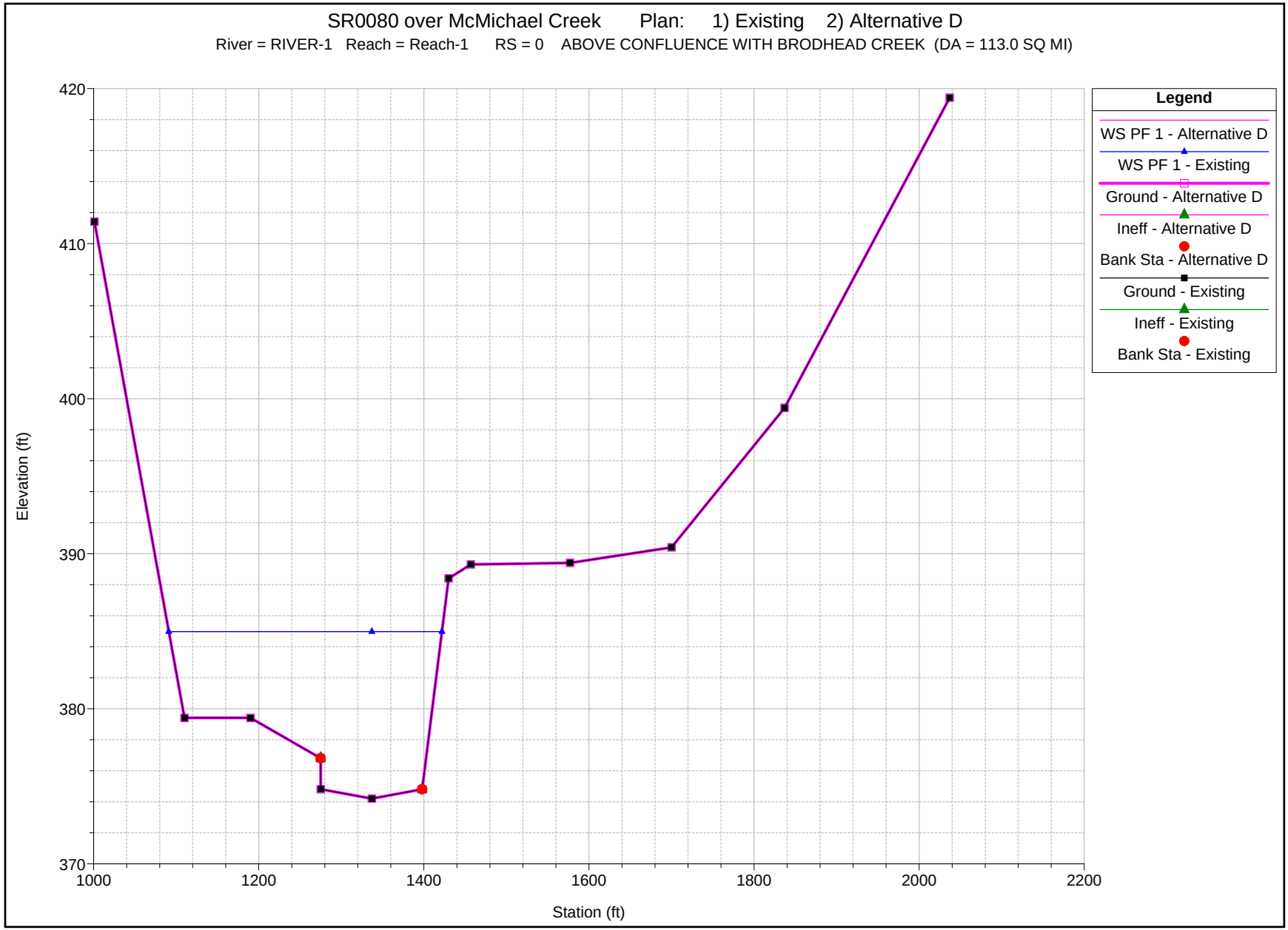

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 2015 NEW DS FACE FIFTH STREET BRIDGE (APRIL 1992)
Legend
WS PF 1 - Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
460
450
440
430
420
410
400
390
380
500
1000
1500
2000
2500
3000
Station (ft)

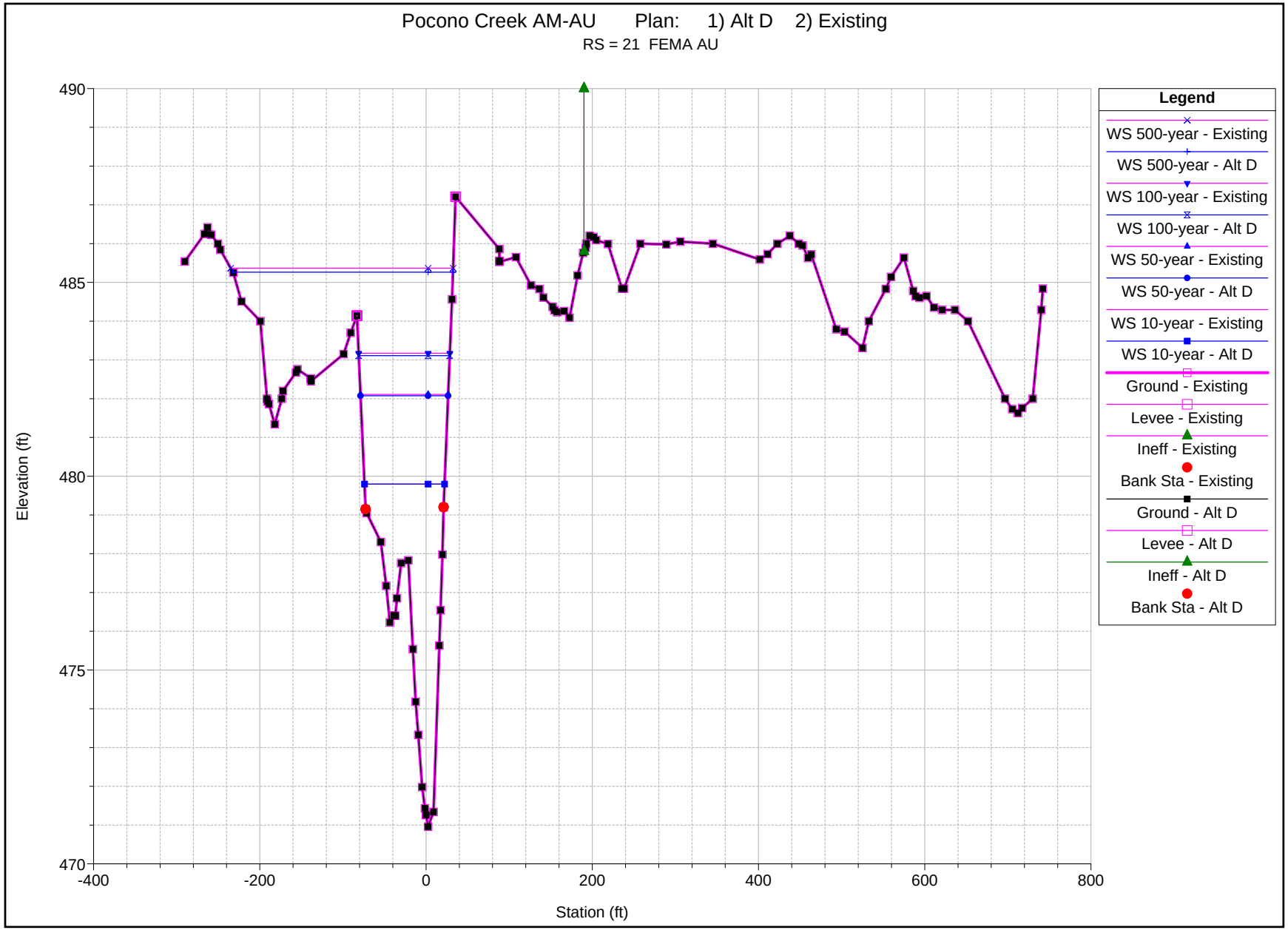

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 1930 DS TRANSITION FOR FIFTH STREET BRIDGE
Legend
WS PF 1 - Existing
WS PF 1 - Alternative D
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing
Elevation (ft)
420
410
400
390
380
370
800
900
1000
1100
1200
1300
Station (ft)

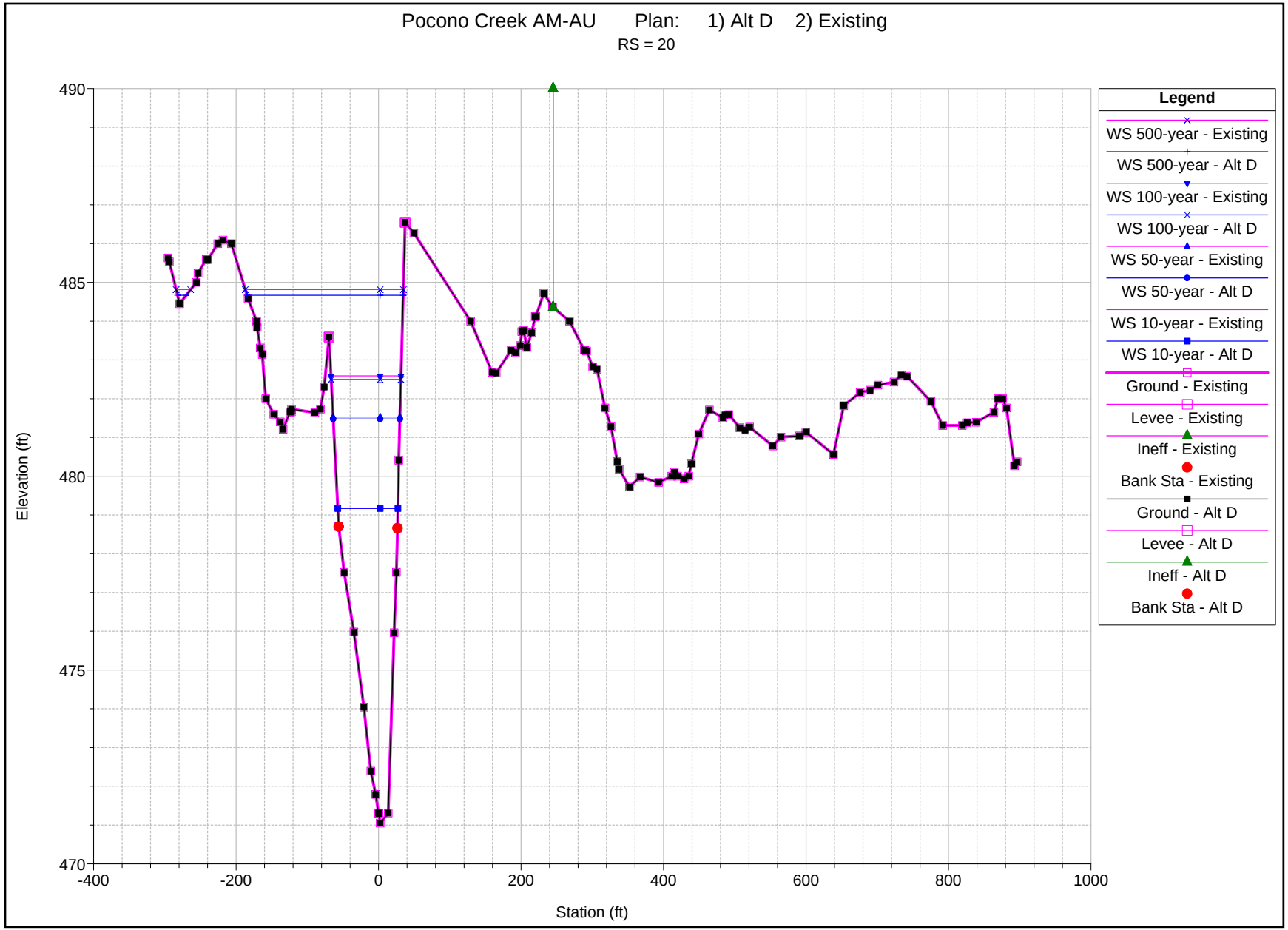

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 1585 SECTION B
Elevation (ft)
Station (ft)
430
420
410
400
390
380
370
1000
1100
1200
1300
1400
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing

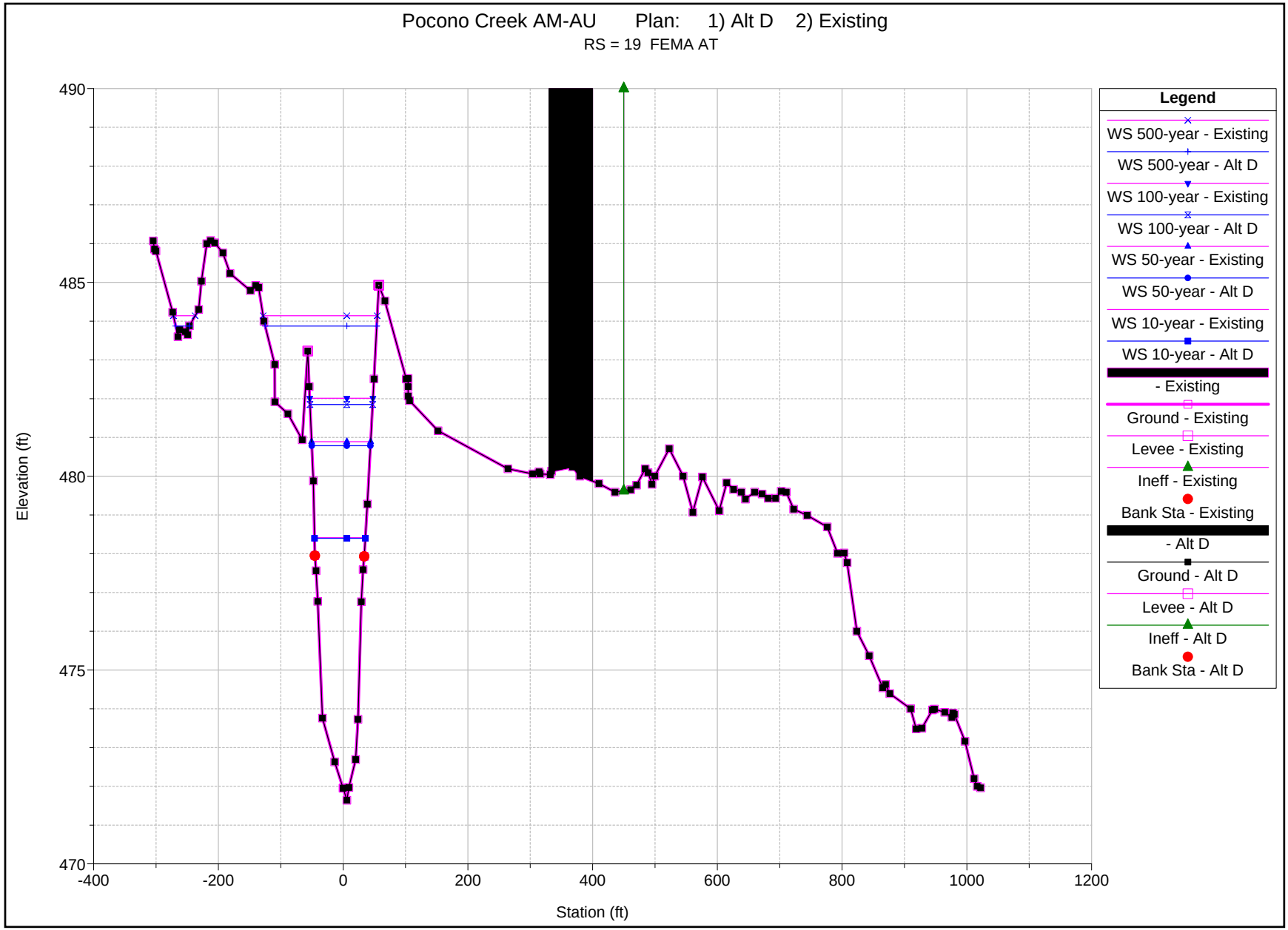

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 940
Elevation (ft)
420
410
400
390
380
370
1000
1100
1200
1300
1400
1500
1600
1700
Station (ft)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Bank Sta - Alternative D
Ground - Existing
Bank Sta - Existing

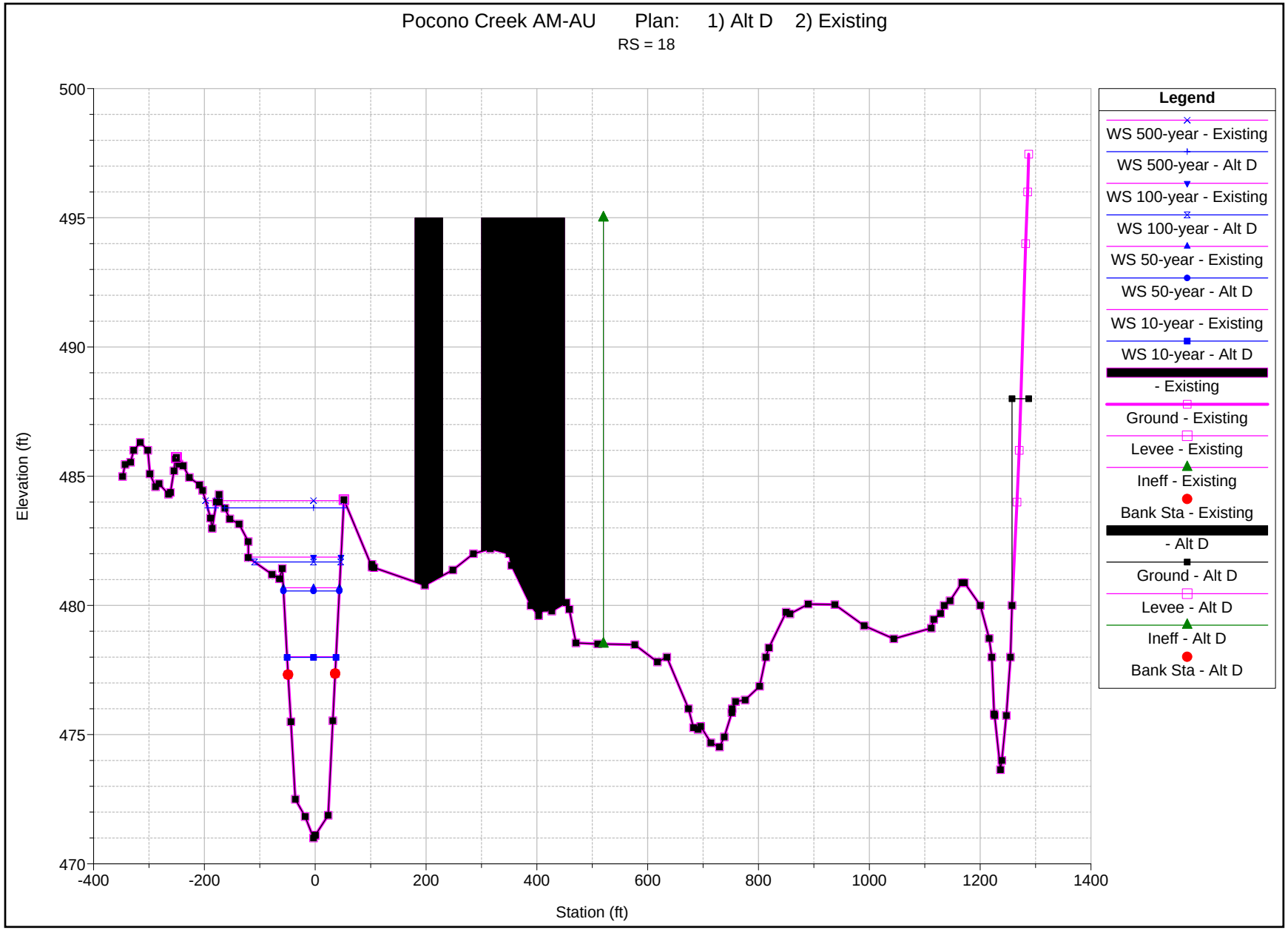

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 495 SECTION A
Elevation (ft)
420
410
400
390
380
370
1000
1200
1400
1600
1800
2000
2200
Station (ft)
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
Ground - Existing
Ineff - Existing
Bank Sta - Existing

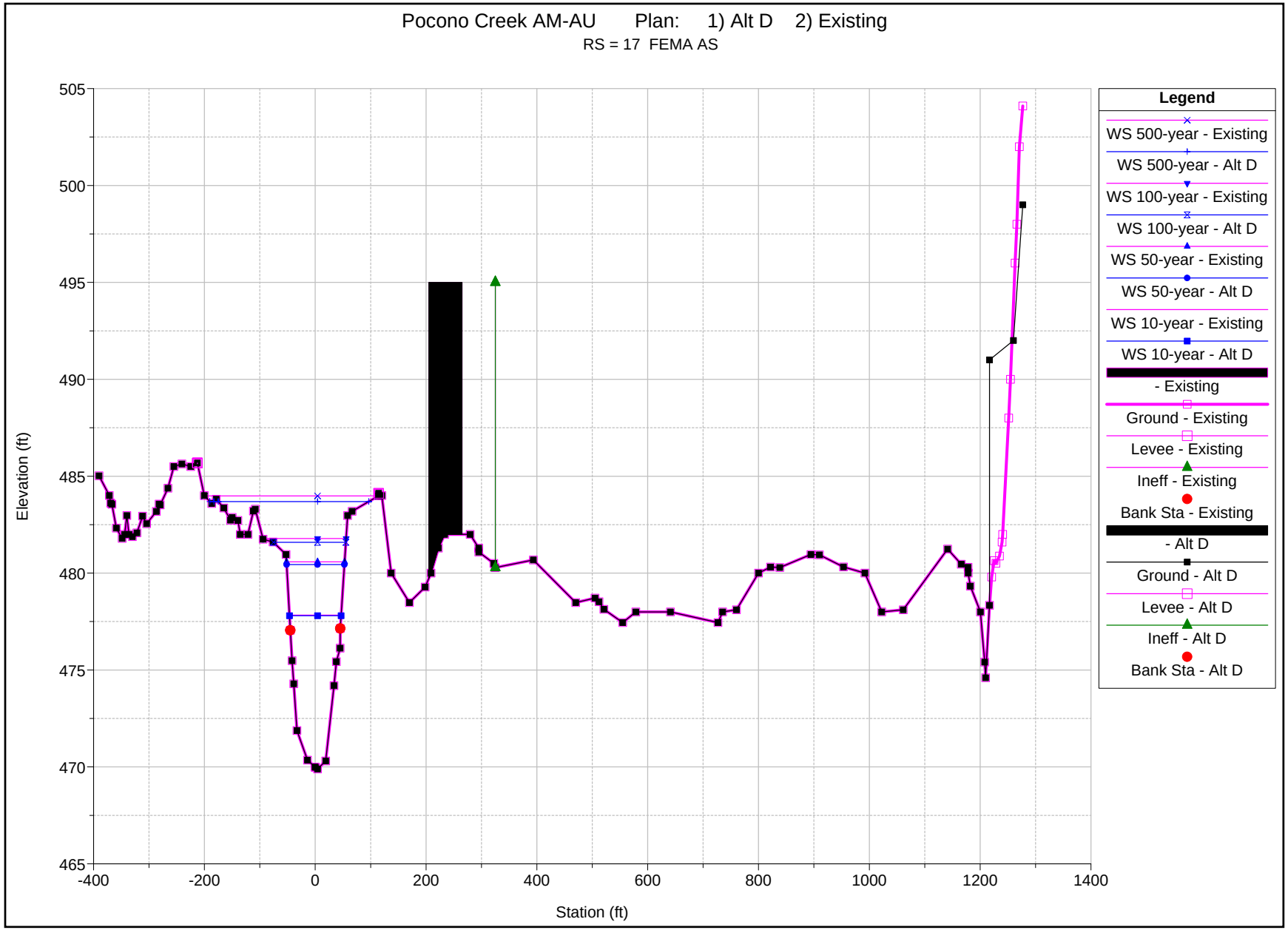

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative D
River = RIVER-1 Reach = Reach-1 RS = 0 ABOVE CONFLUENCE WITH BRODHEAD CREEK (DA = 113.0 SQ MI)
Elevation (ft)
Station (ft)
420
410
400
390
380
370
1000
1200
1400
1600
1800
2000
2200
Legend
WS PF 1 - Alternative D
WS PF 1 - Existing
Ground - Alternative D
Ineff - Alternative D
Bank Sta - Alternative D
Ground - Existing
Ineff - Existing
Bank Sta - Existing

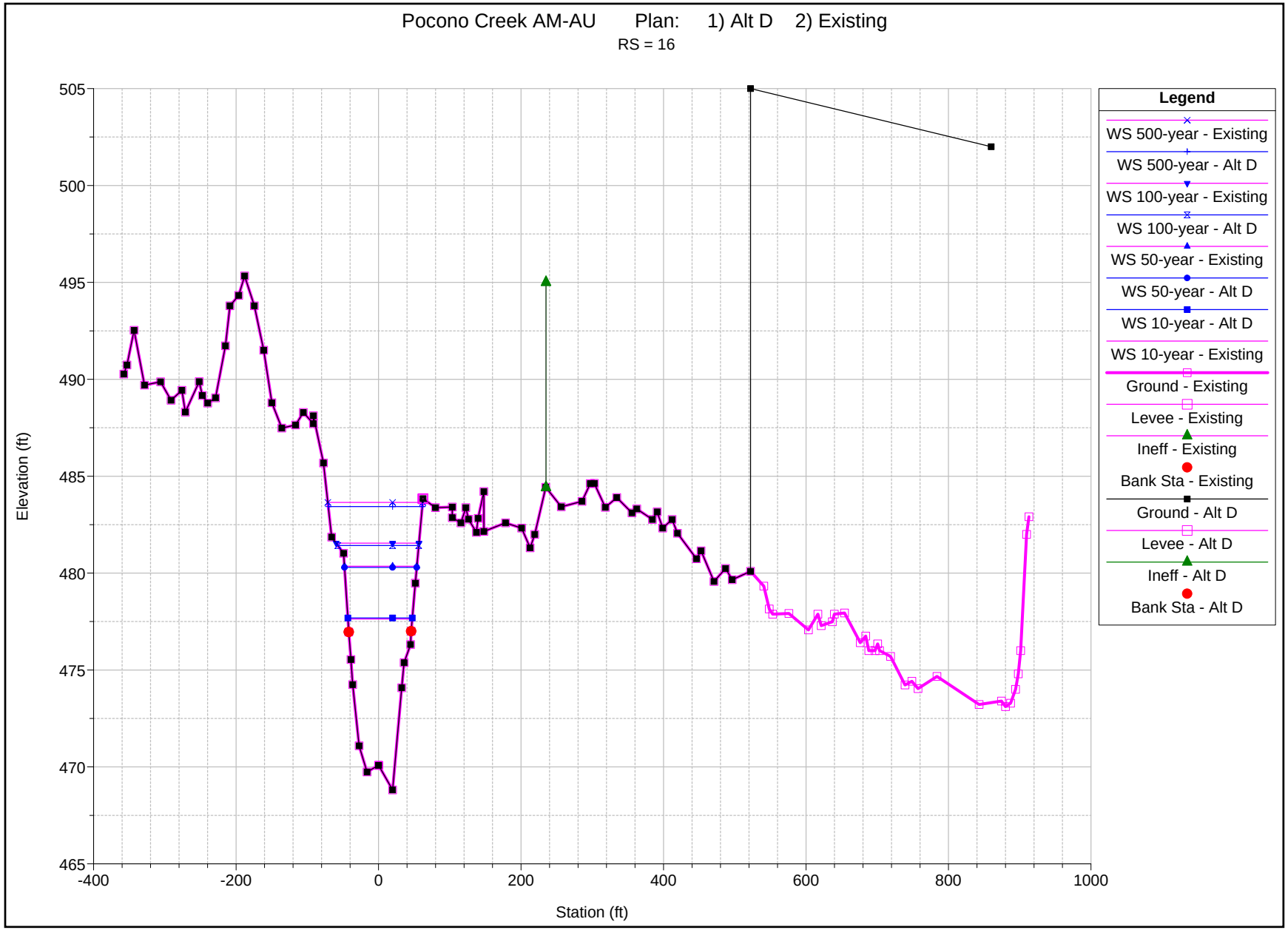

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 21 FEMA AU
Elevation (ft)
490
485
480
475
470
-400
-200
0
200
400
600
800
Station (ft)
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Existing
WS 50-year - Alt D
WS 10-year - Existing
WS 10-year - Alt D
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
Ground - Alt D
Levee - Alt D
Ineff - Alt D
Bank Sta - Alt D

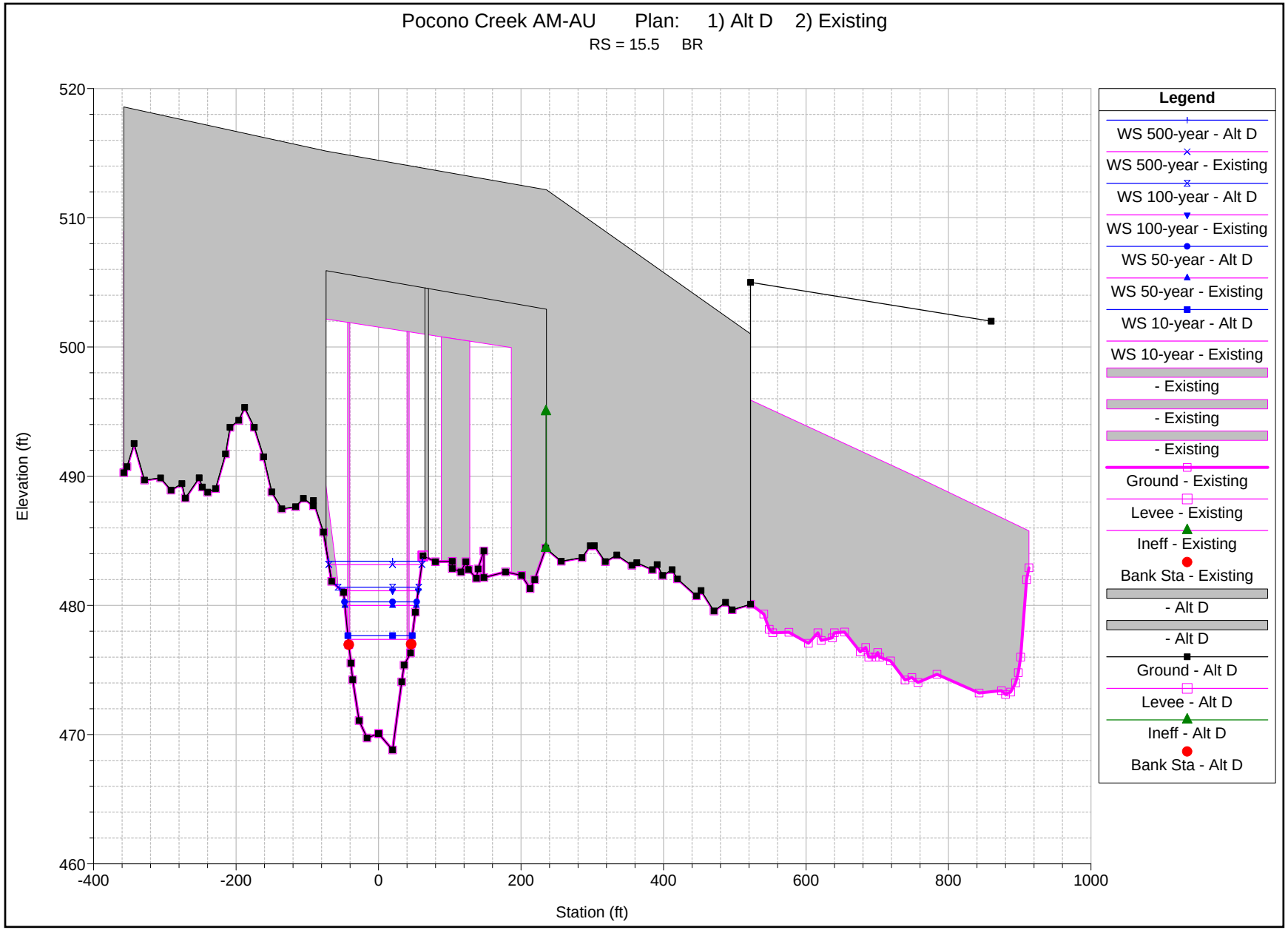

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 20
Elevation (ft)
490
485
480
475
470
-400
-200
0
200
400
600
800
1000
Station (ft)
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Existing
WS 50-year - Alt D
WS 10-year - Existing
WS 10-year - Alt D
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
Ground - Alt D
Levee - Alt D
Ineff - Alt D
Bank Sta - Alt D


Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 19 FEMA AT
Elevation (ft)
490
485
480
475
470
-400
-200
0
200
400
600
800
1000
1200
Station (ft)
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Existing
WS 50-year - Alt D
WS 10-year - Existing
WS 10-year - Alt D
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt D
Ground - Alt D
Levee - Alt D
Ineff - Alt D
Bank Sta - Alt D

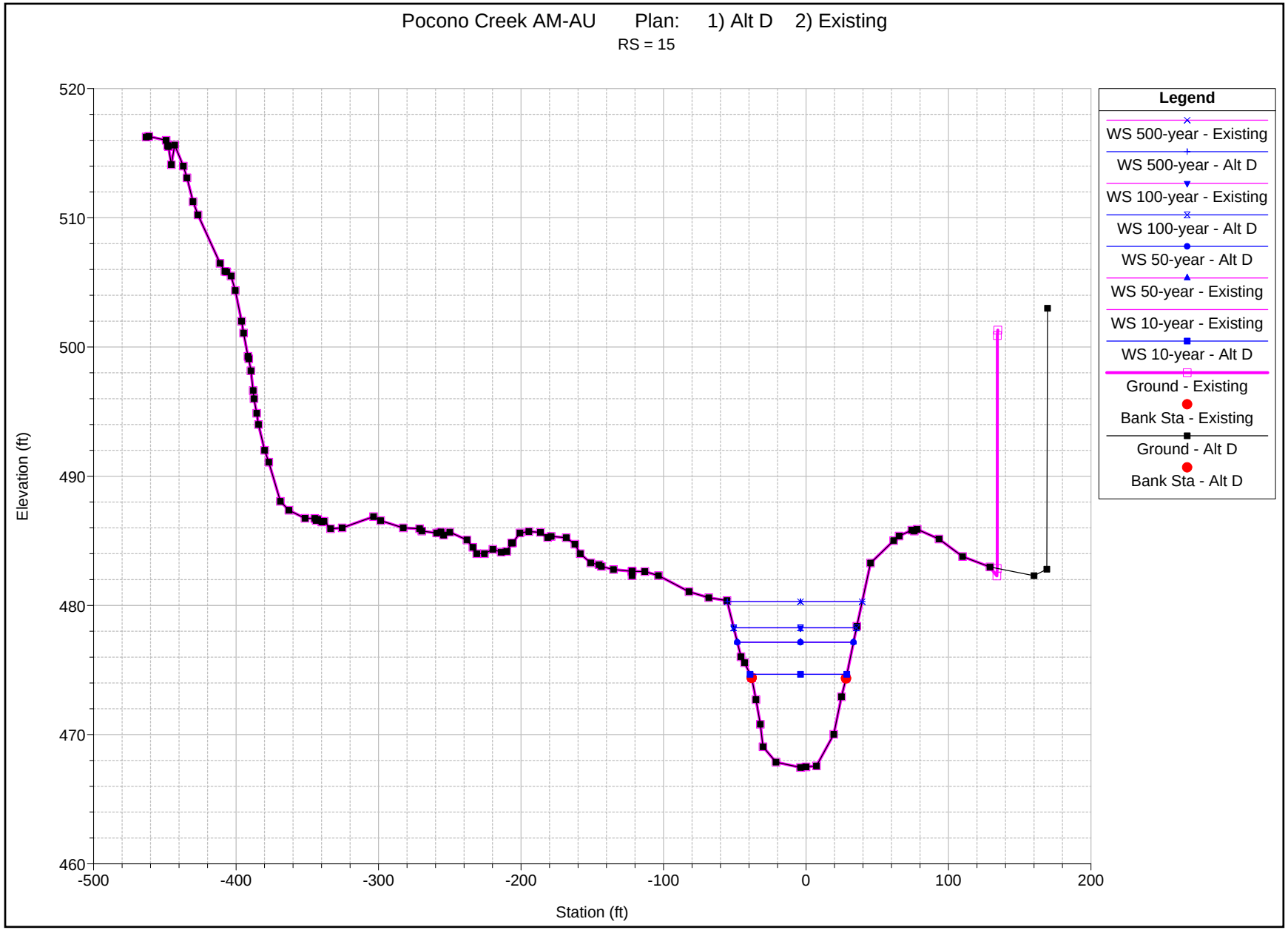

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 18
Elevation (ft)
Station (ft)
500
495
490
485
480
475
470
-400
-200
0
200
400
600
800
1000
1200
1400
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Existing
WS 50-year - Alt D
WS 10-year - Existing
WS 10-year - Alt D
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt D
Ground - Alt D
Levee - Alt D
Ineff - Alt D
Bank Sta - Alt D

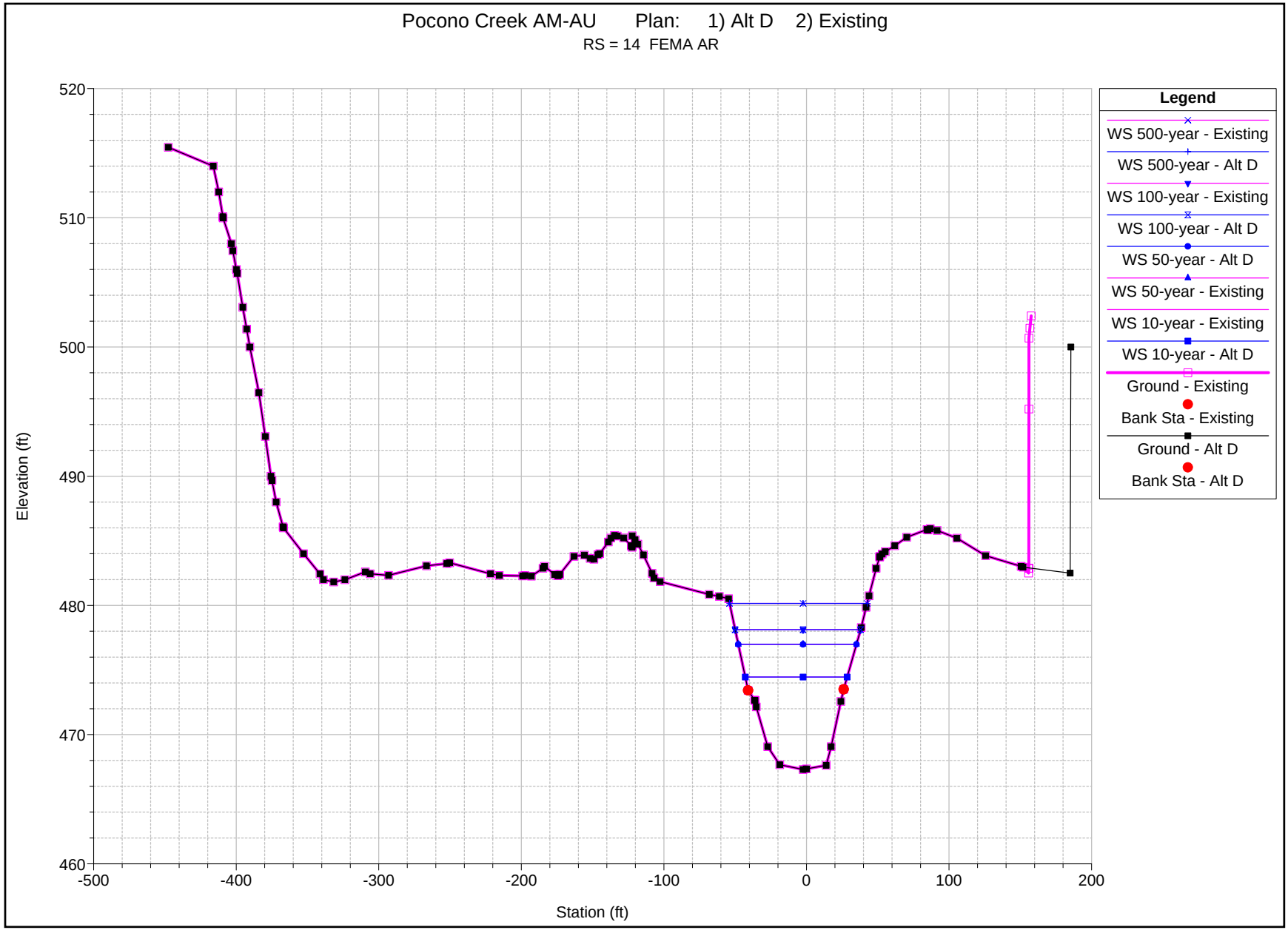

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 17 FEMA AS
Elevation (ft)
505
500
495
490
485
480
475
470
465
-400
-200
0
200
400
600
800
1000
1200
1400
Station (ft)
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Existing
WS 50-year - Alt D
WS 10-year - Existing
WS 10-year - Alt D
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt D
Ground - Alt D
Levee - Alt D
Ineff - Alt D
Bank Sta - Alt D

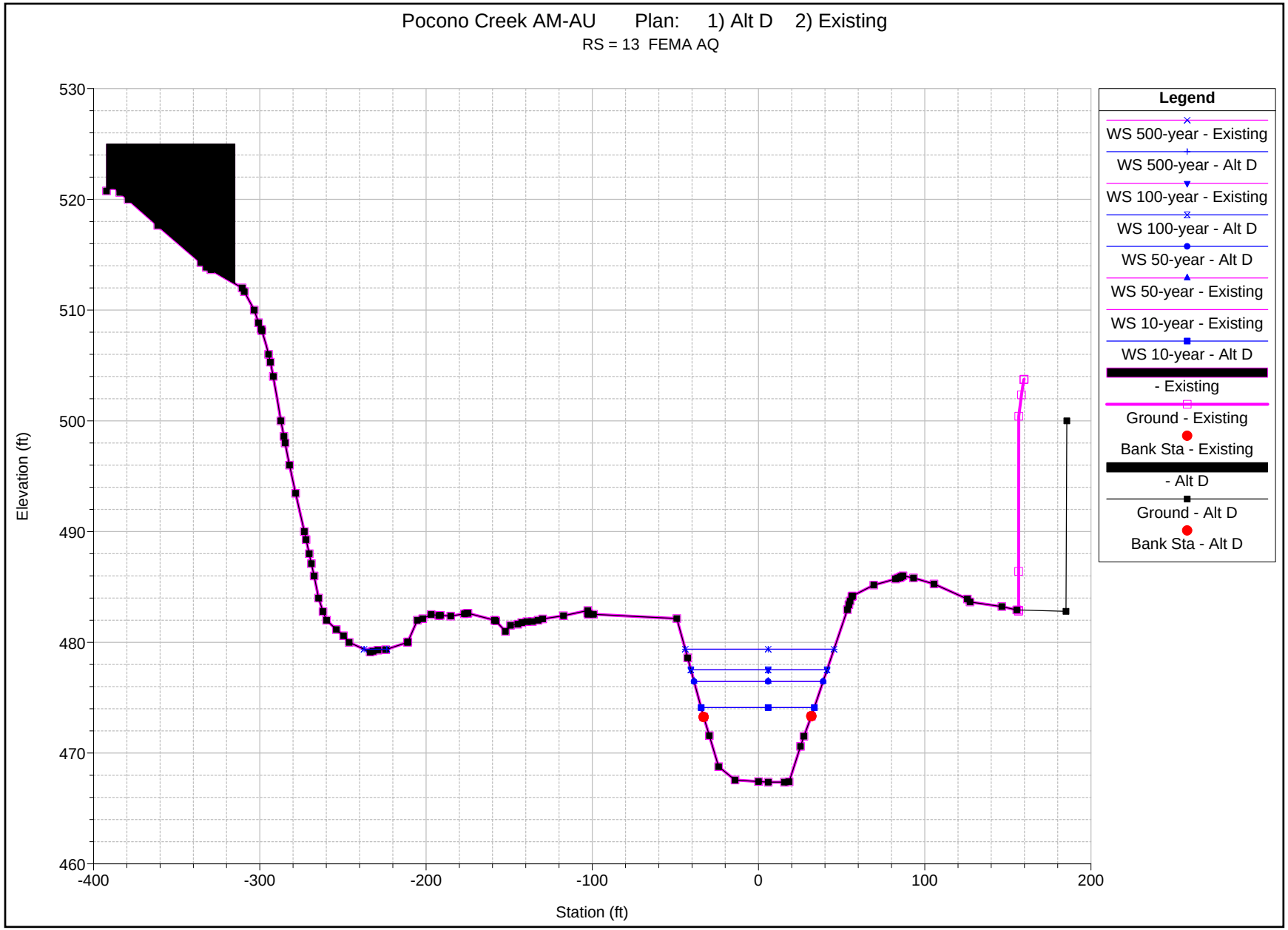

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 16
Elevation (ft)
505
500
495
490
485
480
475
470
465
-400
-200
0
200
400
600
800
1000
Station (ft)
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Existing
WS 50-year - Alt D
WS 10-year - Alt D
WS 10-year - Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
Ground - Alt D
Levee - Alt D
Ineff - Alt D
Bank Sta - Alt D

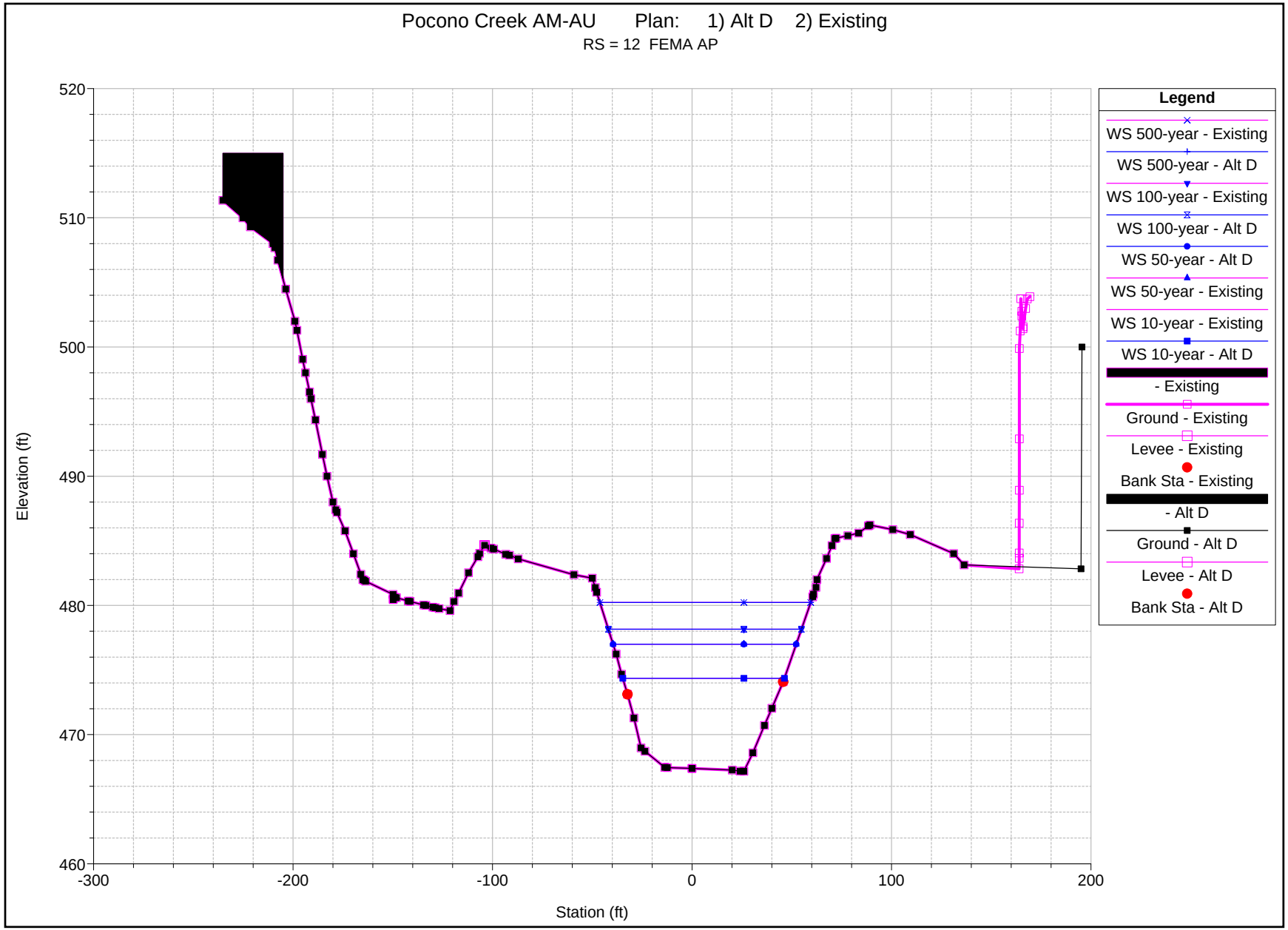

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 15.5 BR
Elevation (ft)
Station (ft)
520
510
500
490
480
470
460
-400
-200
0
200
400
600
800
1000
Legend
WS 500-year - Alt D
WS 500-year - Existing
WS 100-year - Alt D
WS 100-year - Existing
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Alt D
WS 10-year - Existing
- Existing
- Existing
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt D
- Alt D
Ground - Alt D
Levee - Alt D
Ineff - Alt D
Bank Sta - Alt D

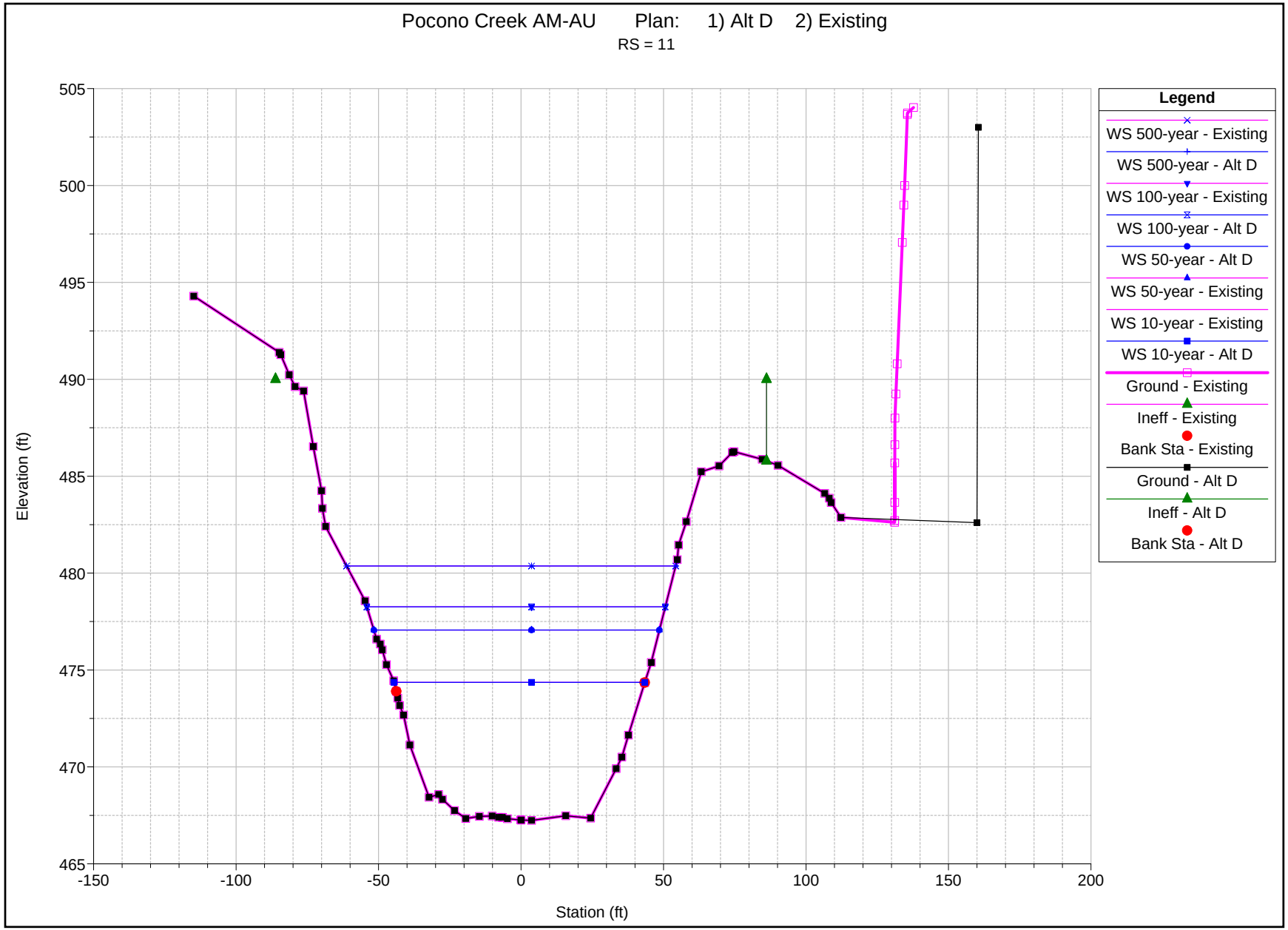

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 15.5 BR
Elevation (ft)
Station (ft)
520
510
500
490
480
470
460
-500
-400
-300
-200
-100
0
100
200
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Existing
WS 50-year - Alt D
WS 10-year - Existing
WS 10-year - Alt D
- Existing
- Existing
- Existing
Ground - Existing
Bank Sta - Existing
- Alt D
- Alt D
Ground - Alt D
Bank Sta - Alt D

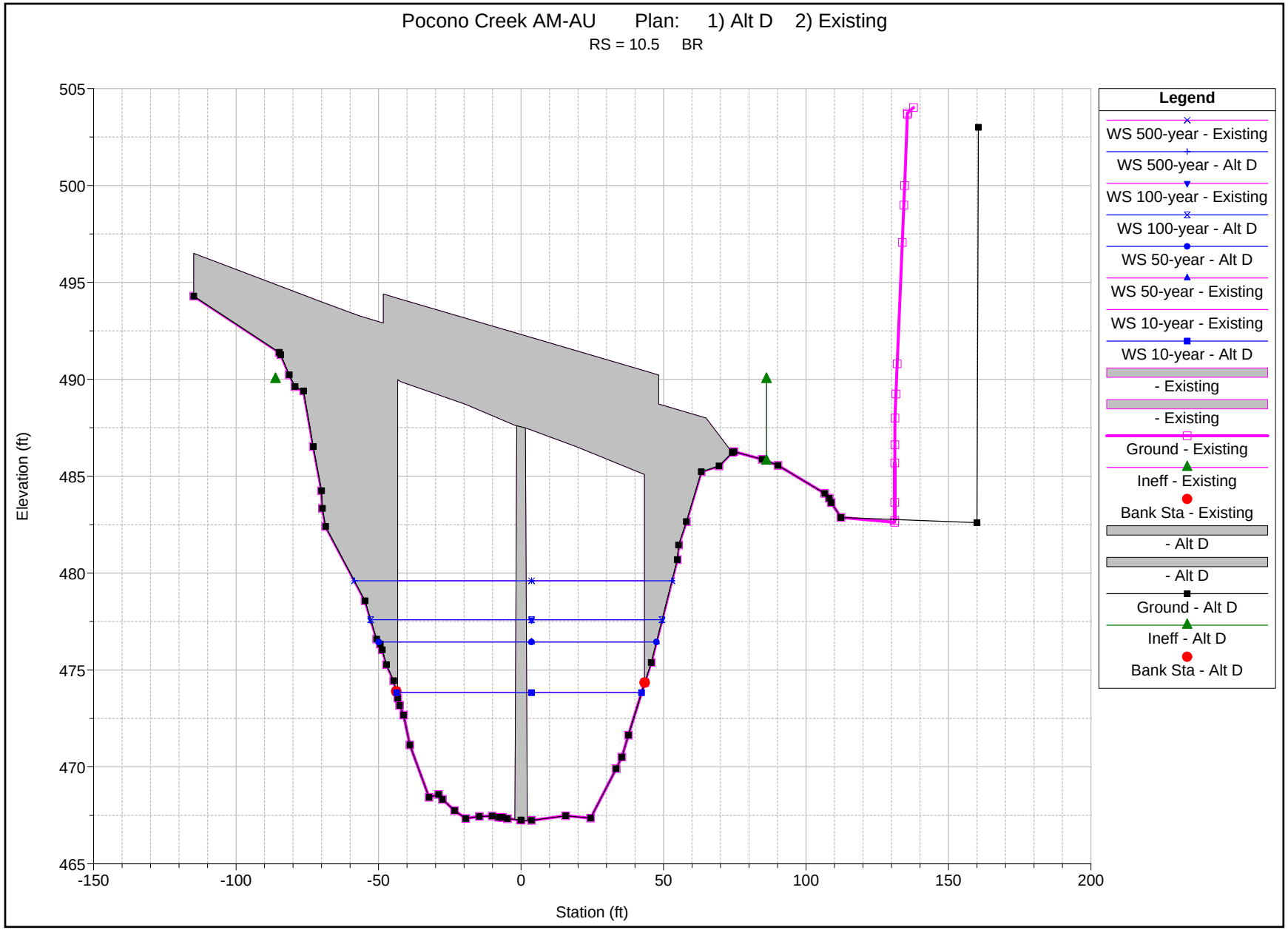

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 15
Elevation (ft)
Station (ft)
520
510
500
490
480
470
460
-500
-400
-300
-200
-100
0
100
200
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
Ground - Existing
Bank Sta - Existing
Ground - Alt D
Bank Sta - Alt D

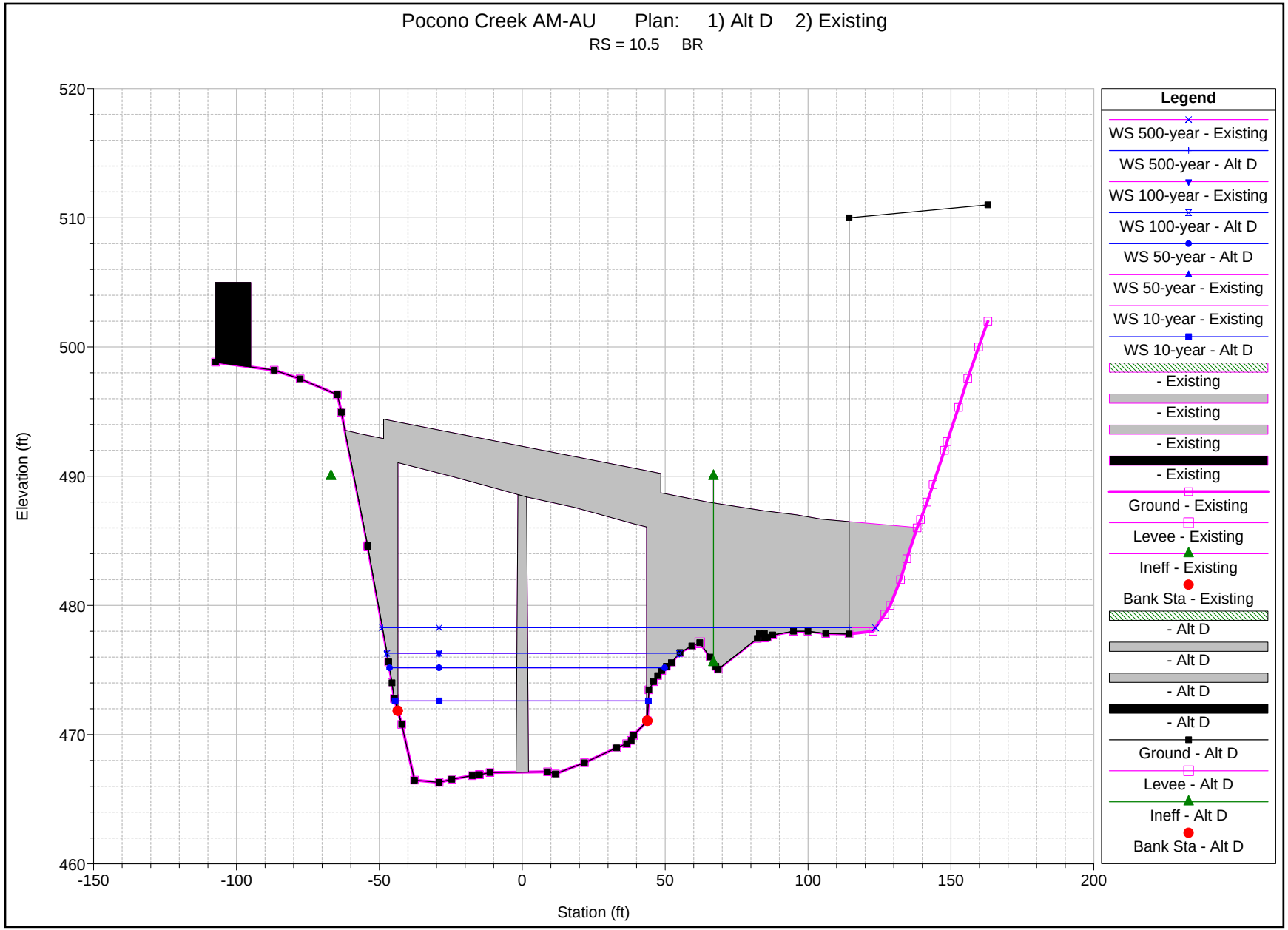

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 14 FEMA AR
Elevation (ft)
Station (ft)
520
510
500
490
480
470
460
-500
-400
-300
-200
-100
0
100
200
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
Ground - Existing
Bank Sta - Existing
Ground - Alt D
Bank Sta - Alt D

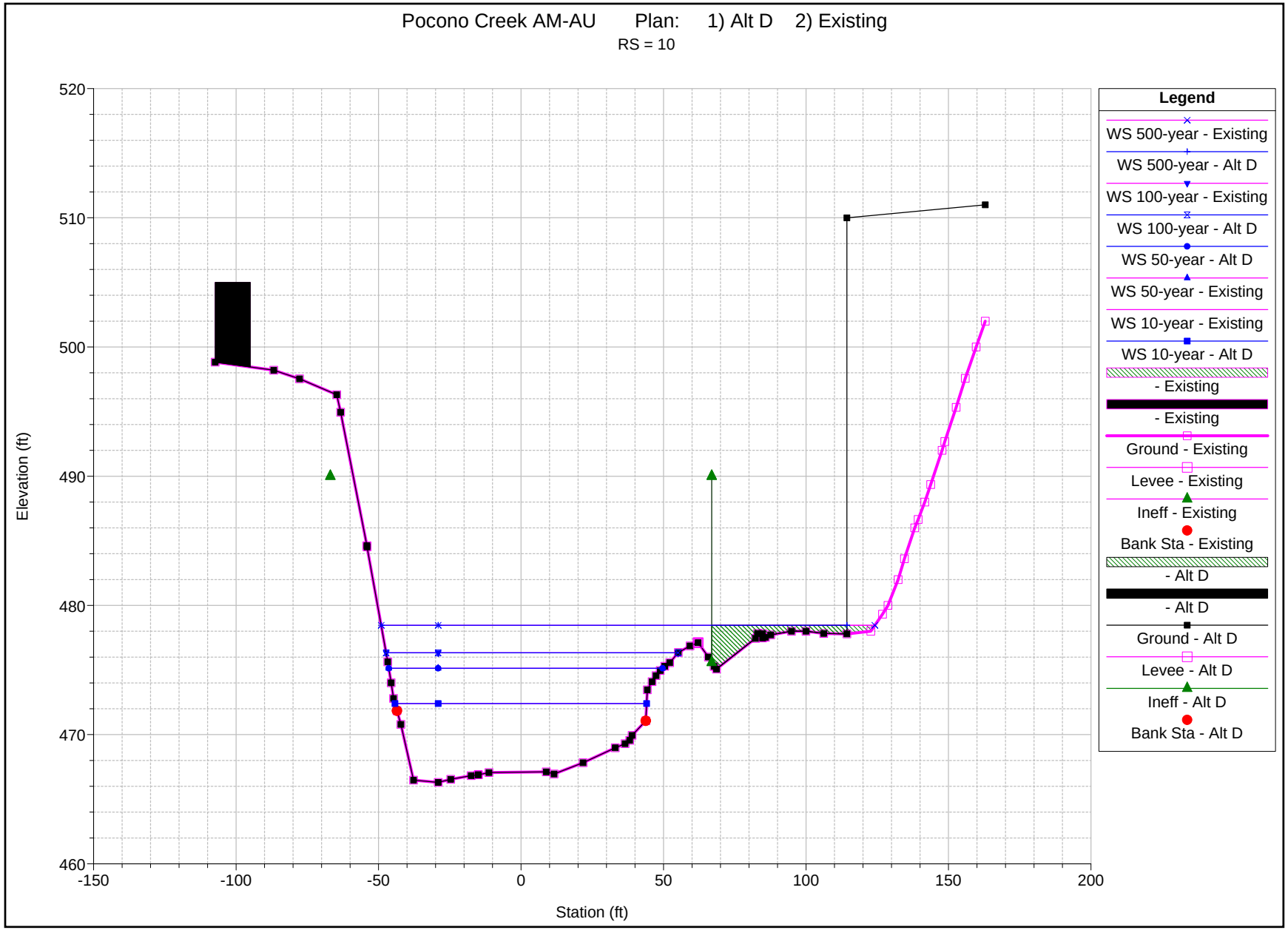

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 13 FEMA AQ
Elevation (ft)
530
520
510
500
490
480
470
460
-400
-300
-200
-100
0
100
200
Station (ft)
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
- Existing
Ground - Existing
Bank Sta - Existing
- Alt D
Ground - Alt D
Bank Sta - Alt D

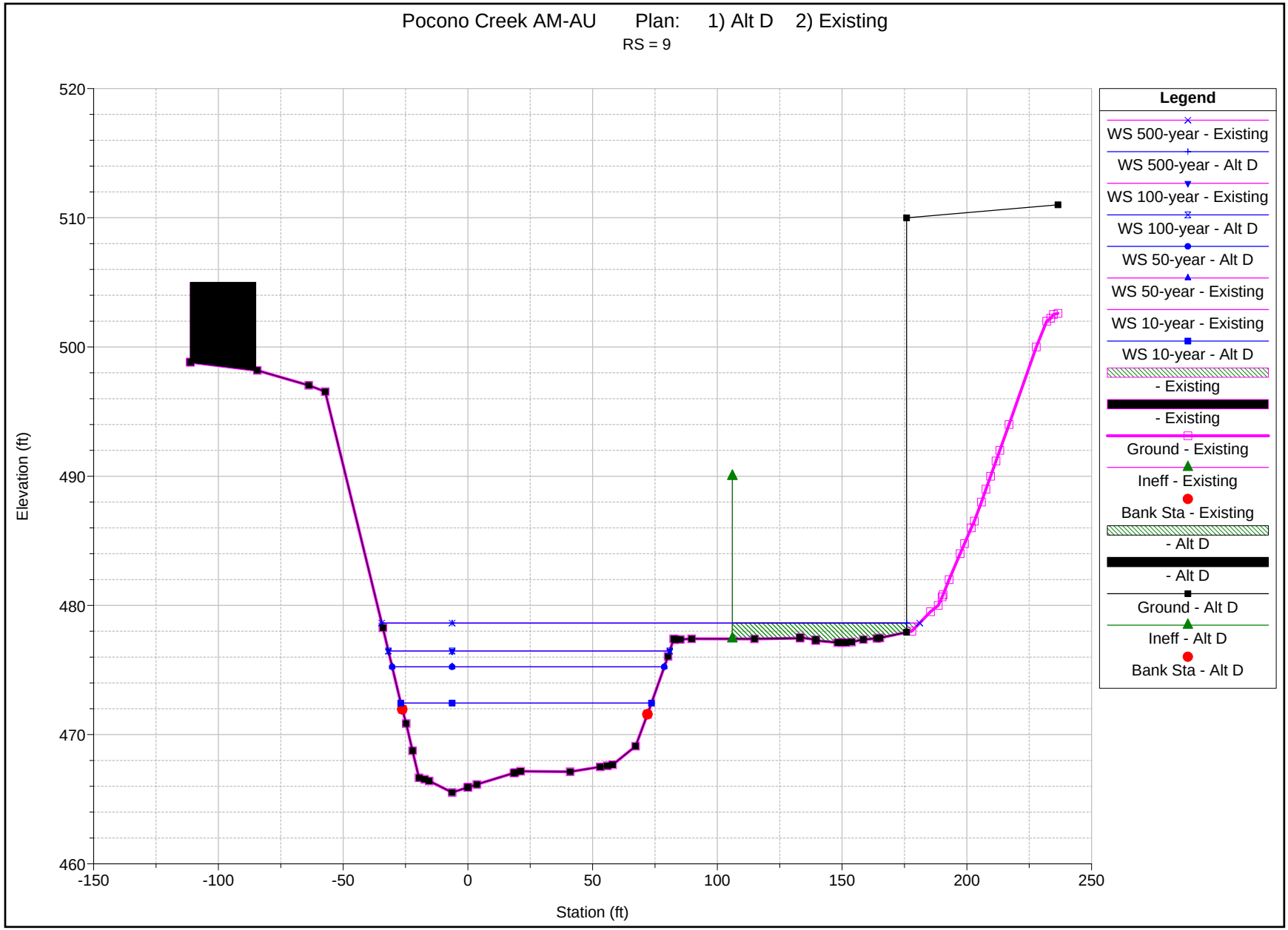

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 12 FEMA AP
Elevation (ft)
520
510
500
490
480
470
460
-300
-200
-100
0
100
200
Station (ft)
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
- Existing
Ground - Existing
Levee - Existing
Bank Sta - Existing
- Alt D
Ground - Alt D
Levee - Alt D
Bank Sta - Alt D

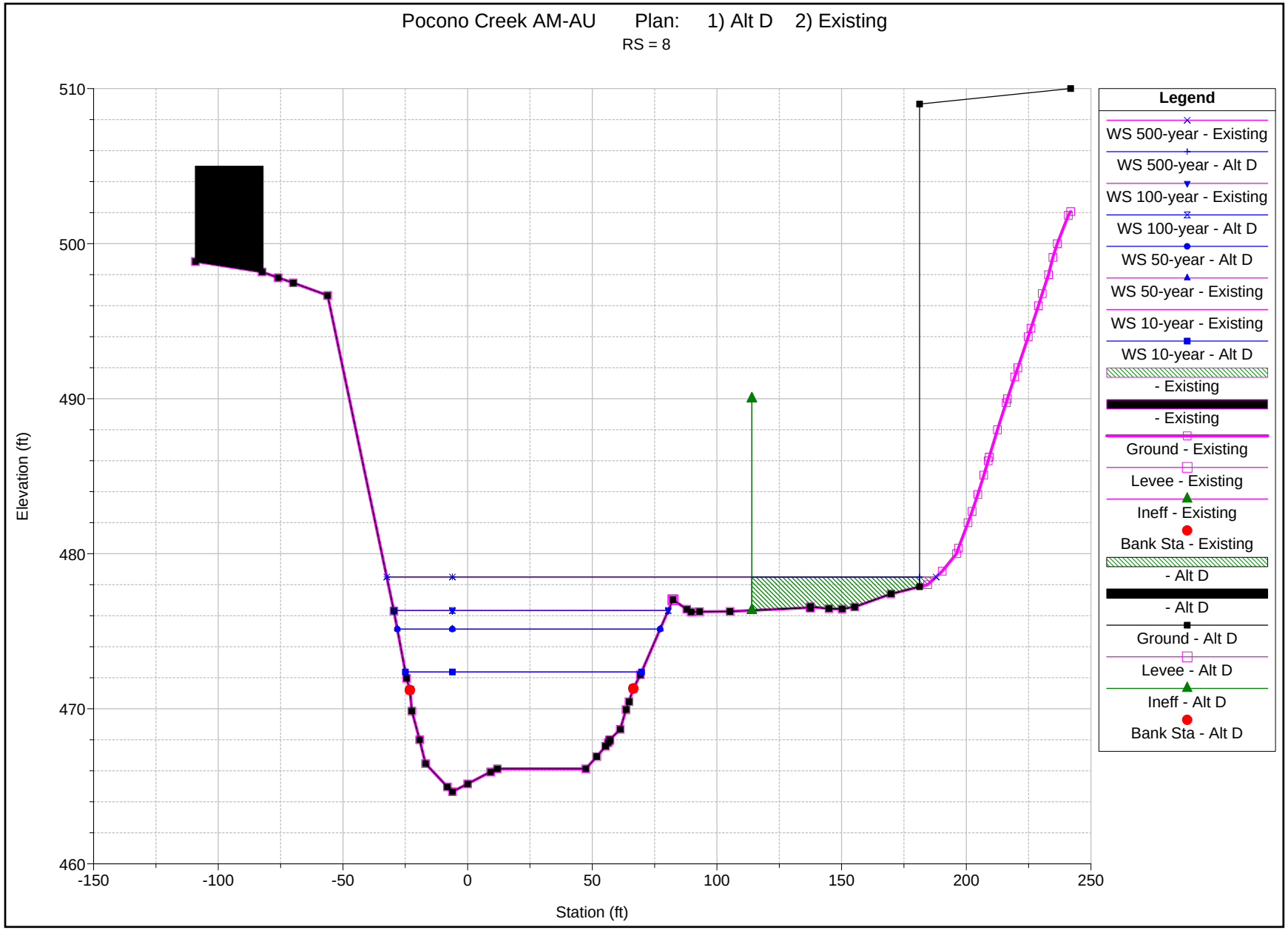

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 11
Elevation (ft)
Station (ft)
505
500
495
490
485
480
475
470
465
-150
-100
-50
0
50
100
150
200
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Ground - Alt D
Ineff - Alt D
Bank Sta - Alt D

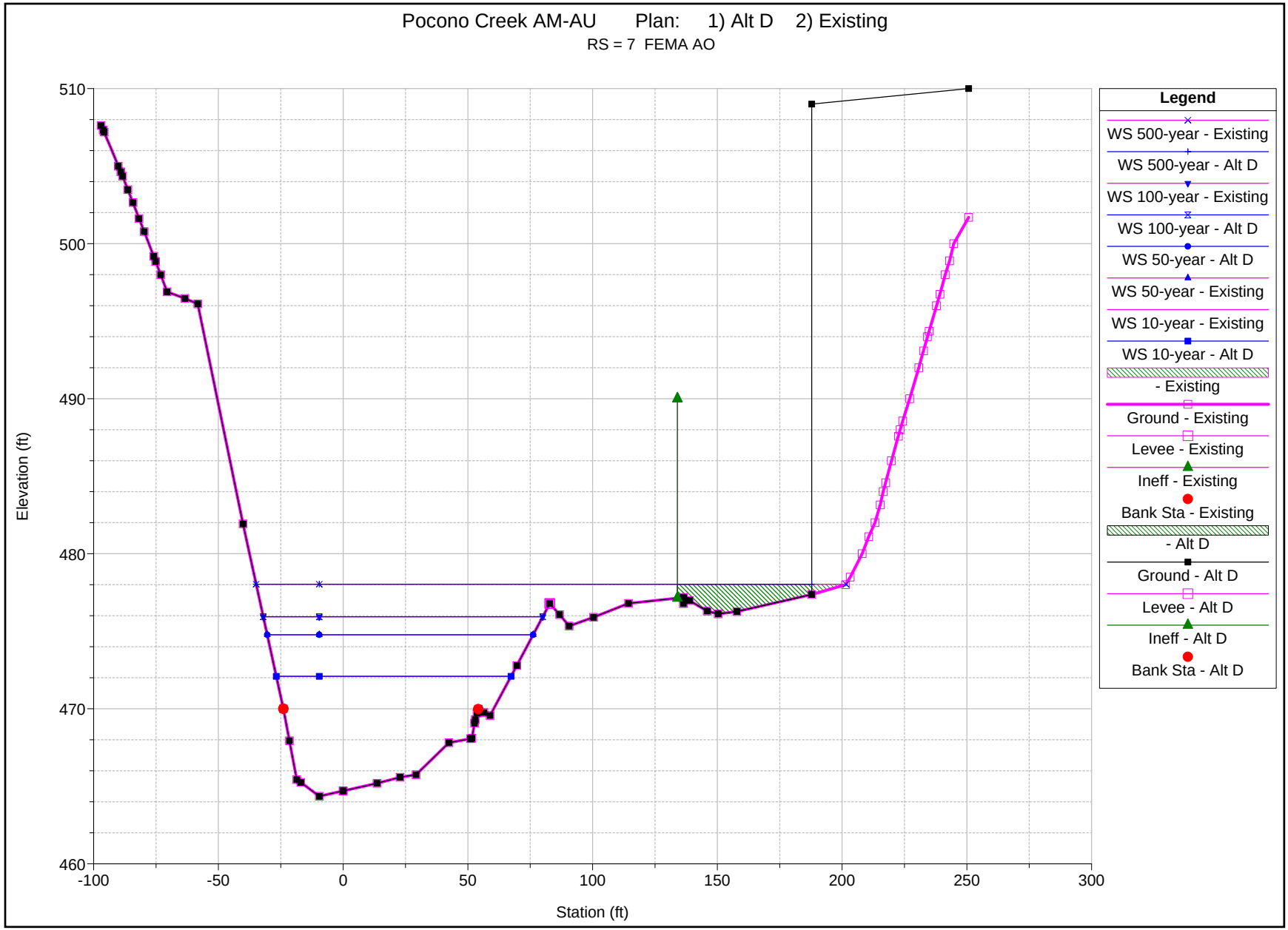

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 10.5 BR
Elevation (ft)
505
500
495
490
485
480
475
470
465
-150
-100
-50
0
50
100
150
200
Station (ft)
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
- Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
- Alt D
- Alt D
Ground - Alt D
Ineff - Alt D
Bank Sta - Alt D

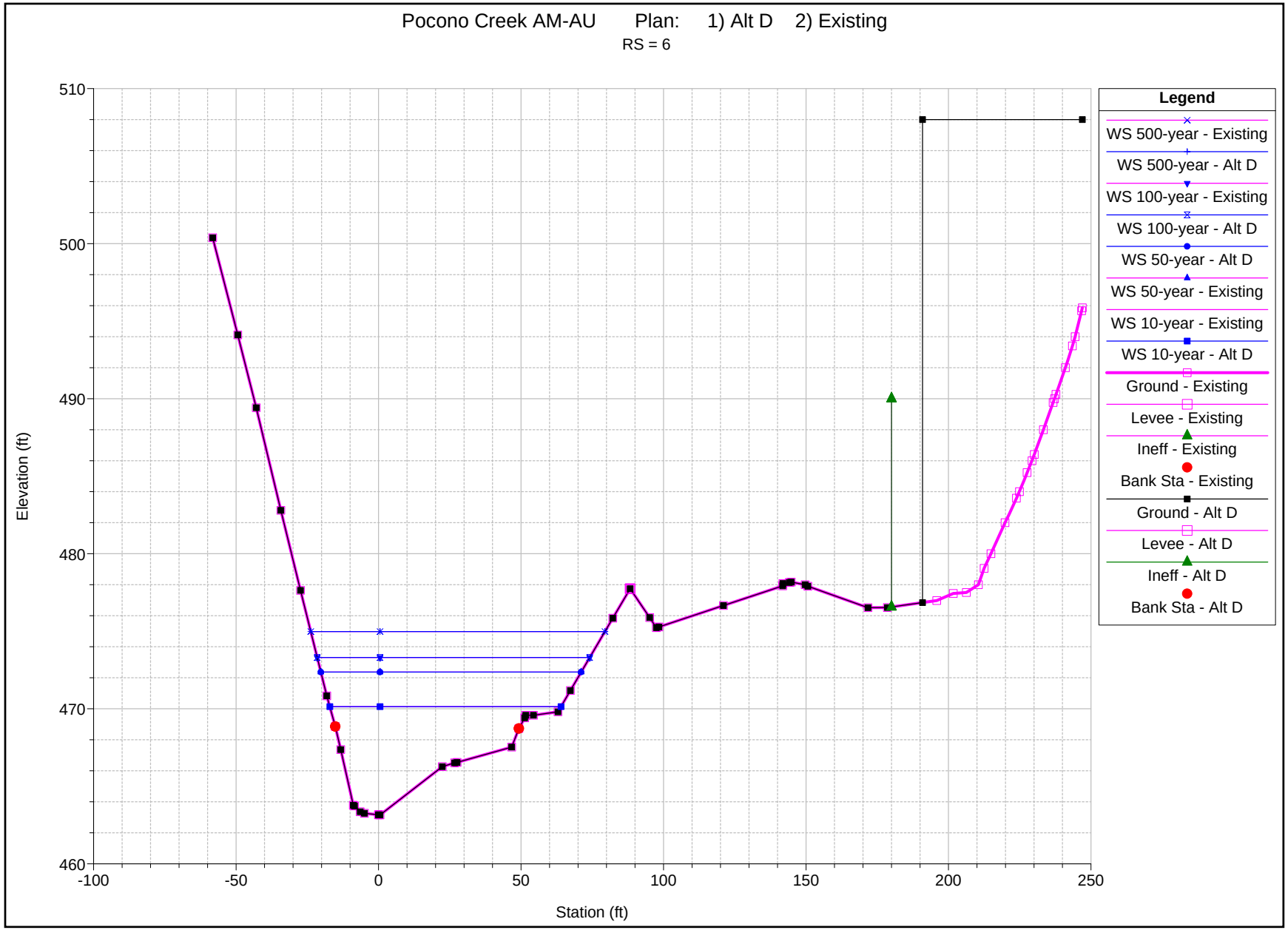

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 10.5 BR
Elevation (ft)
Station (ft)
520
510
500
490
480
470
460
-150
-100
-50
0
50
100
150
200
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
- Existing
- Existing
- Existing
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt D
- Alt D
- Alt D
- Alt D
Ground - Alt D
Levee - Alt D
Ineff - Alt D
Bank Sta - Alt D

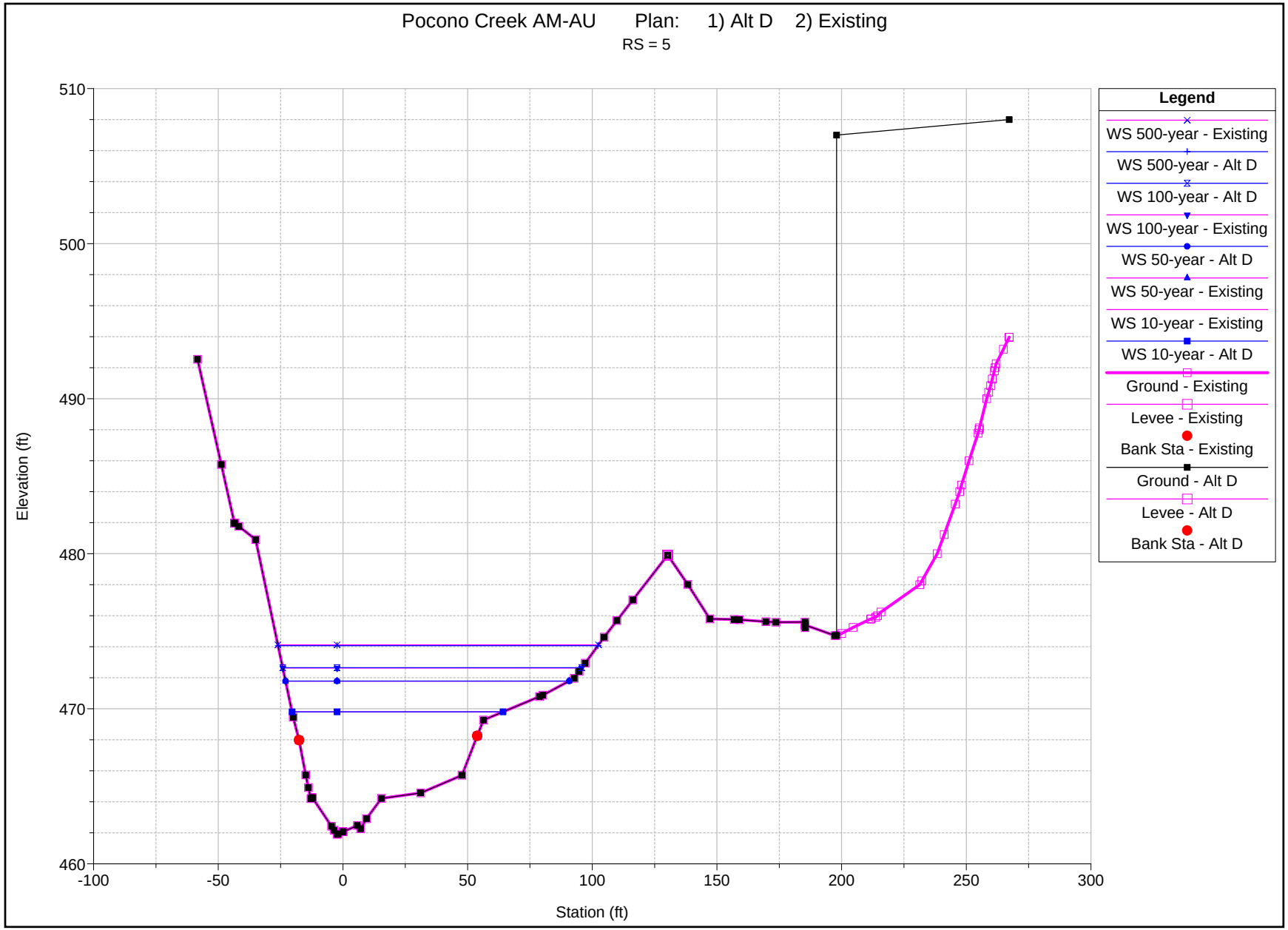

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 10
Elevation (ft)
Station (ft)
520
510
500
490
480
470
460
-150
-100
-50
0
50
100
150
200
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
- Existing
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt D
- Alt D
Ground - Alt D
Levee - Alt D
Ineff - Alt D
Bank Sta - Alt D

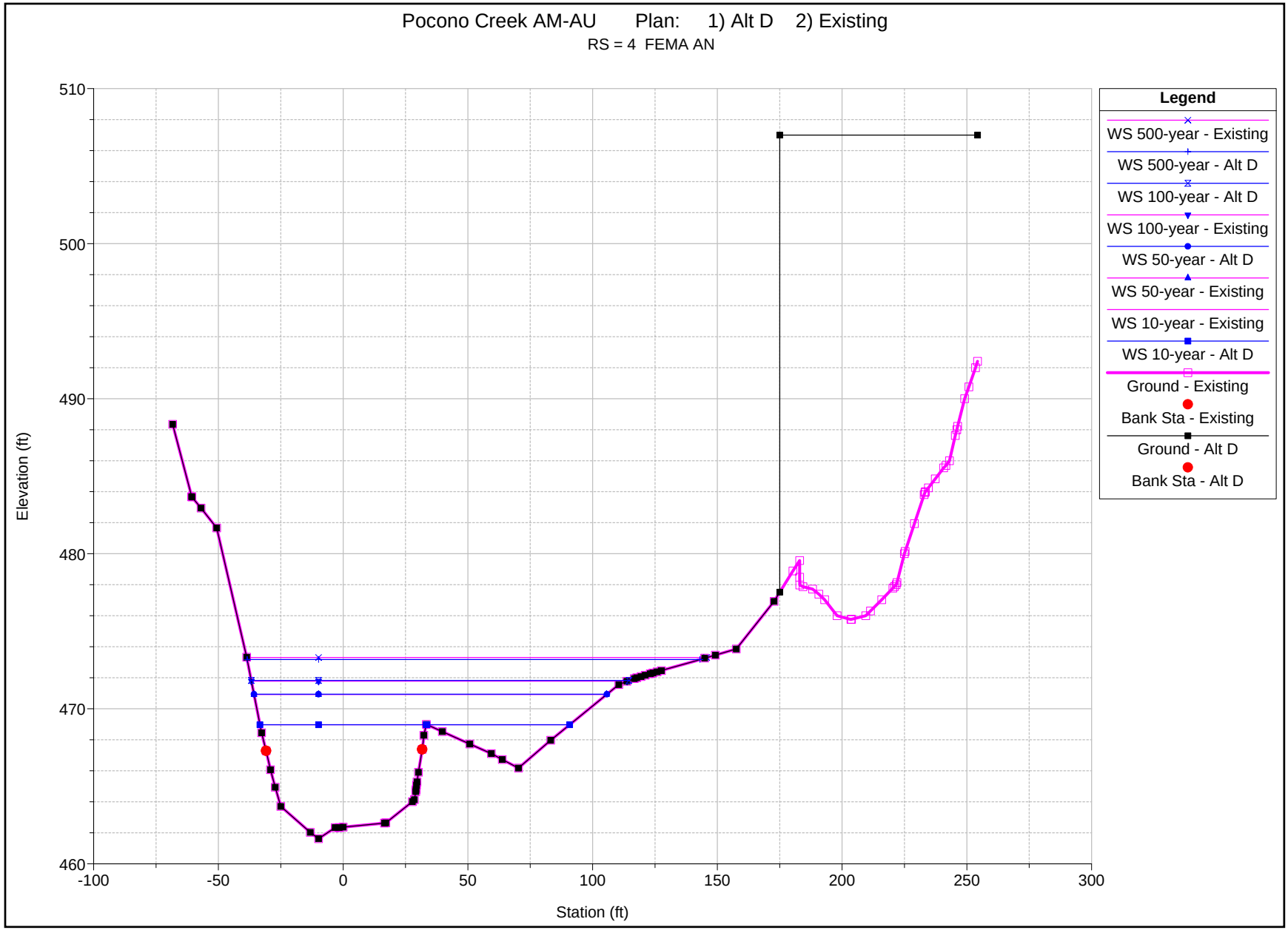

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 9
Elevation (ft)
Station (ft)
520
510
500
490
480
470
460
-150
-100
-50
0
50
100
150
200
250
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
- Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
- Alt D
- Alt D
Ground - Alt D
Ineff - Alt D
Bank Sta - Alt D

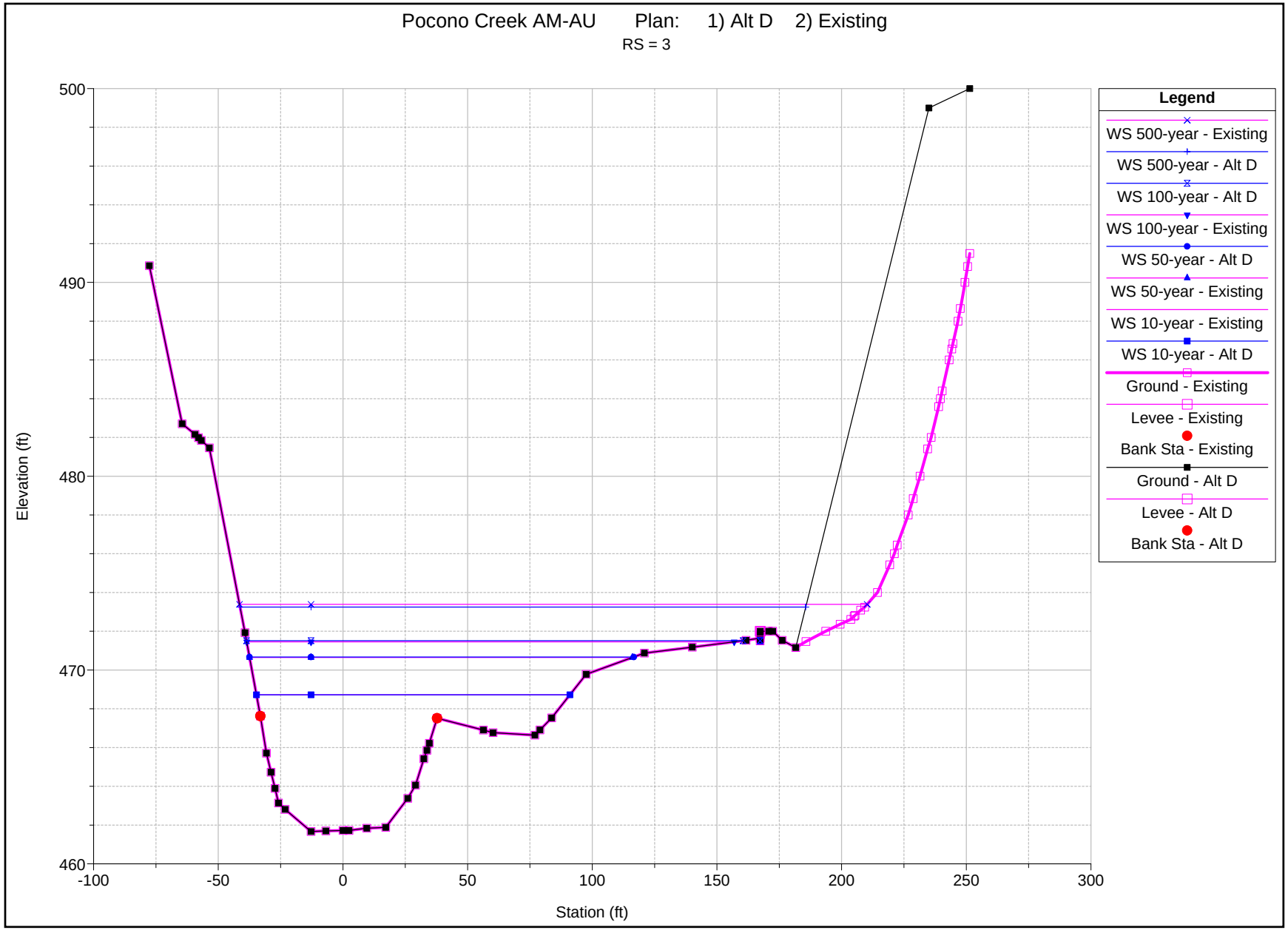

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 8
Elevation (ft)
Station (ft)
510
500
490
480
470
460
-150
-100
-50
0
50
100
150
200
250
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
- Existing
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt D
- Alt D
Ground - Alt D
Levee - Alt D
Ineff - Alt D
Bank Sta - Alt D

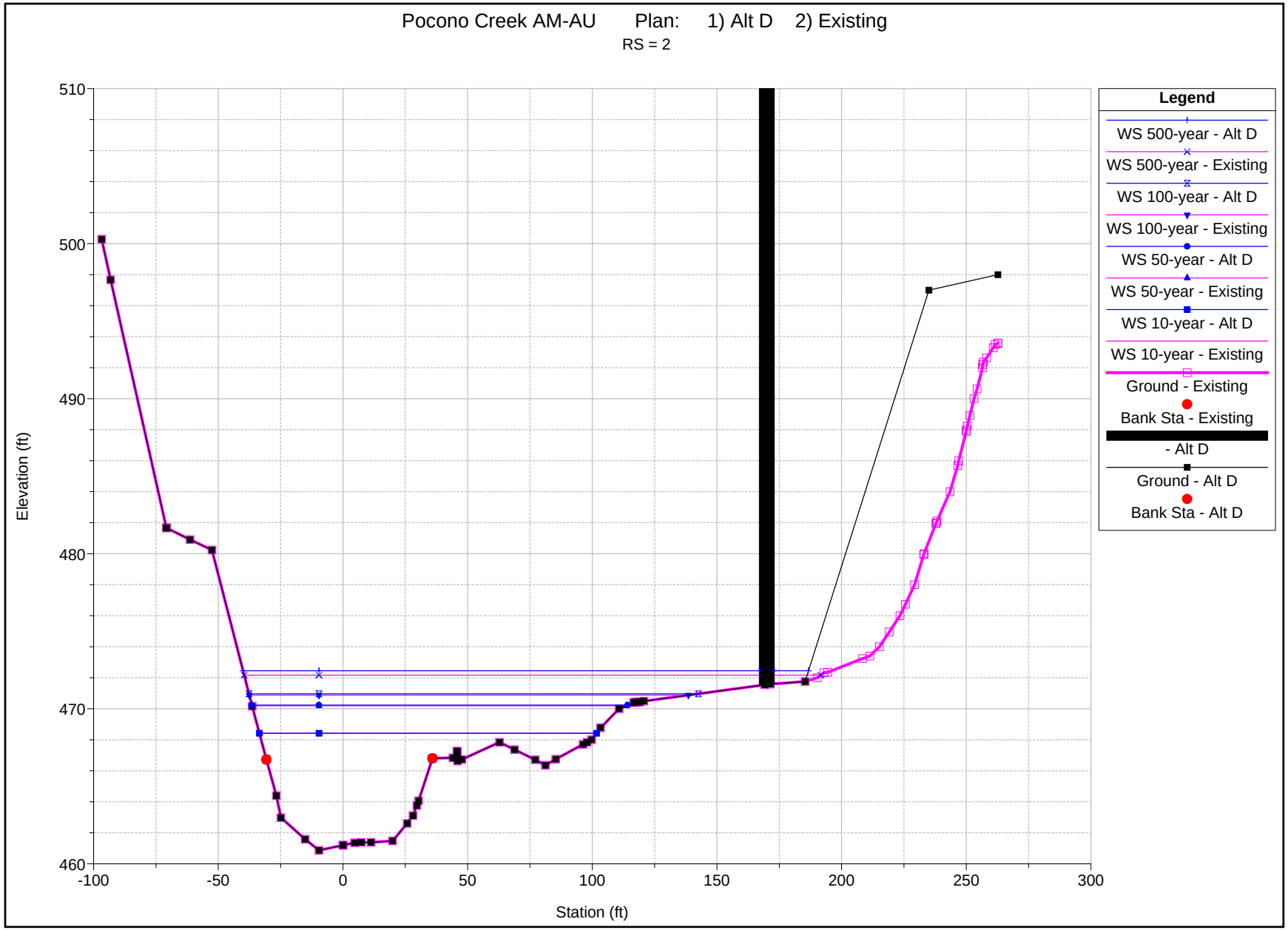

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 7 FEMA AO
Elevation (ft)
Station (ft)
510
500
490
480
470
460
-100
-50
0
50
100
150
200
250
300
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
- Existing
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
- Alt D
Ground - Alt D
Levee - Alt D
Ineff - Alt D
Bank Sta - Alt D

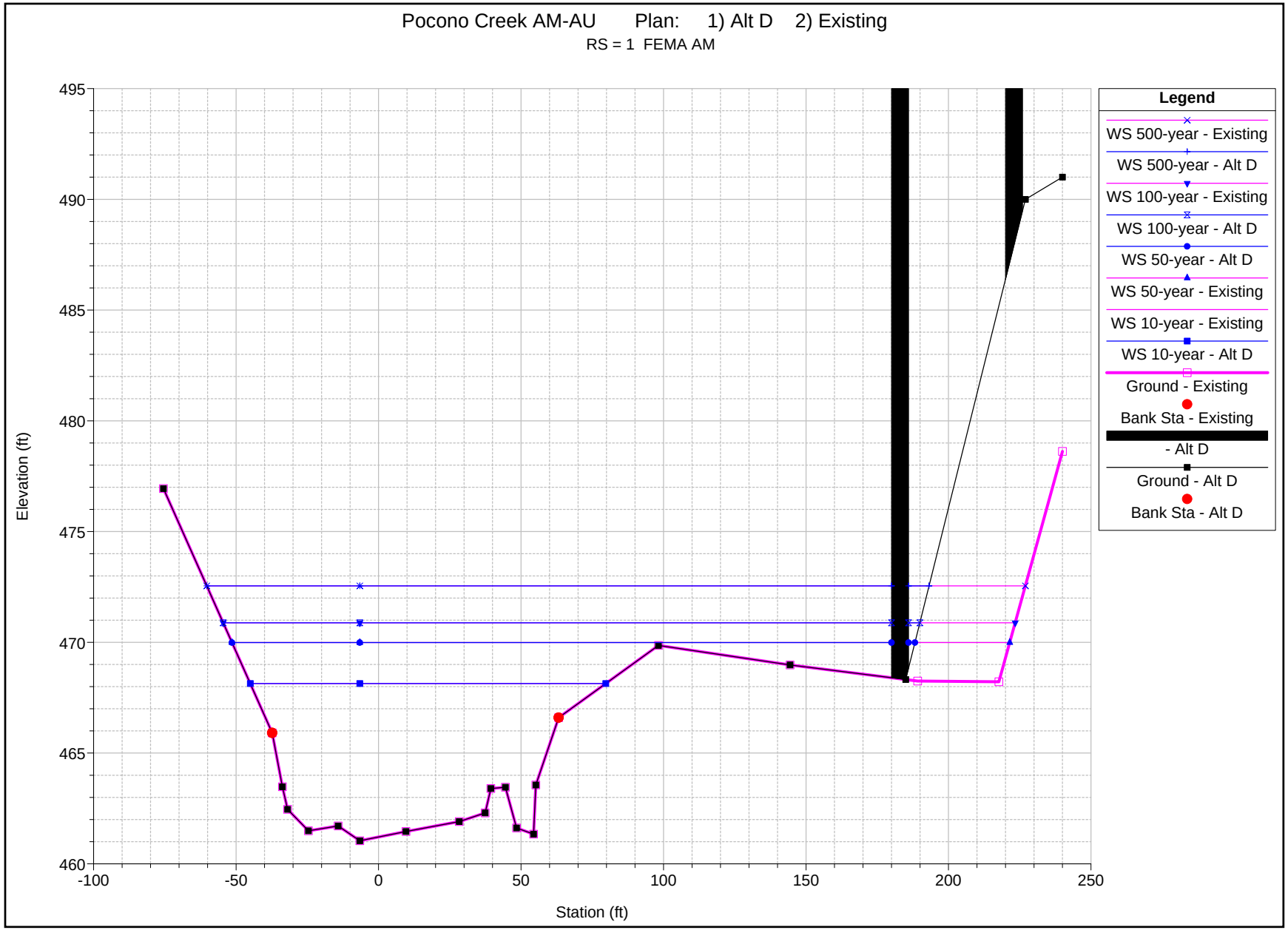

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 6
Elevation (ft)
Station (ft)
510
500
490
480
470
460
-100
-50
0
50
100
150
200
250
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
Ground - Existing
Levee - Existing
Ineff - Existing
Bank Sta - Existing
Ground - Alt D
Levee - Alt D
Ineff - Alt D
Bank Sta - Alt D

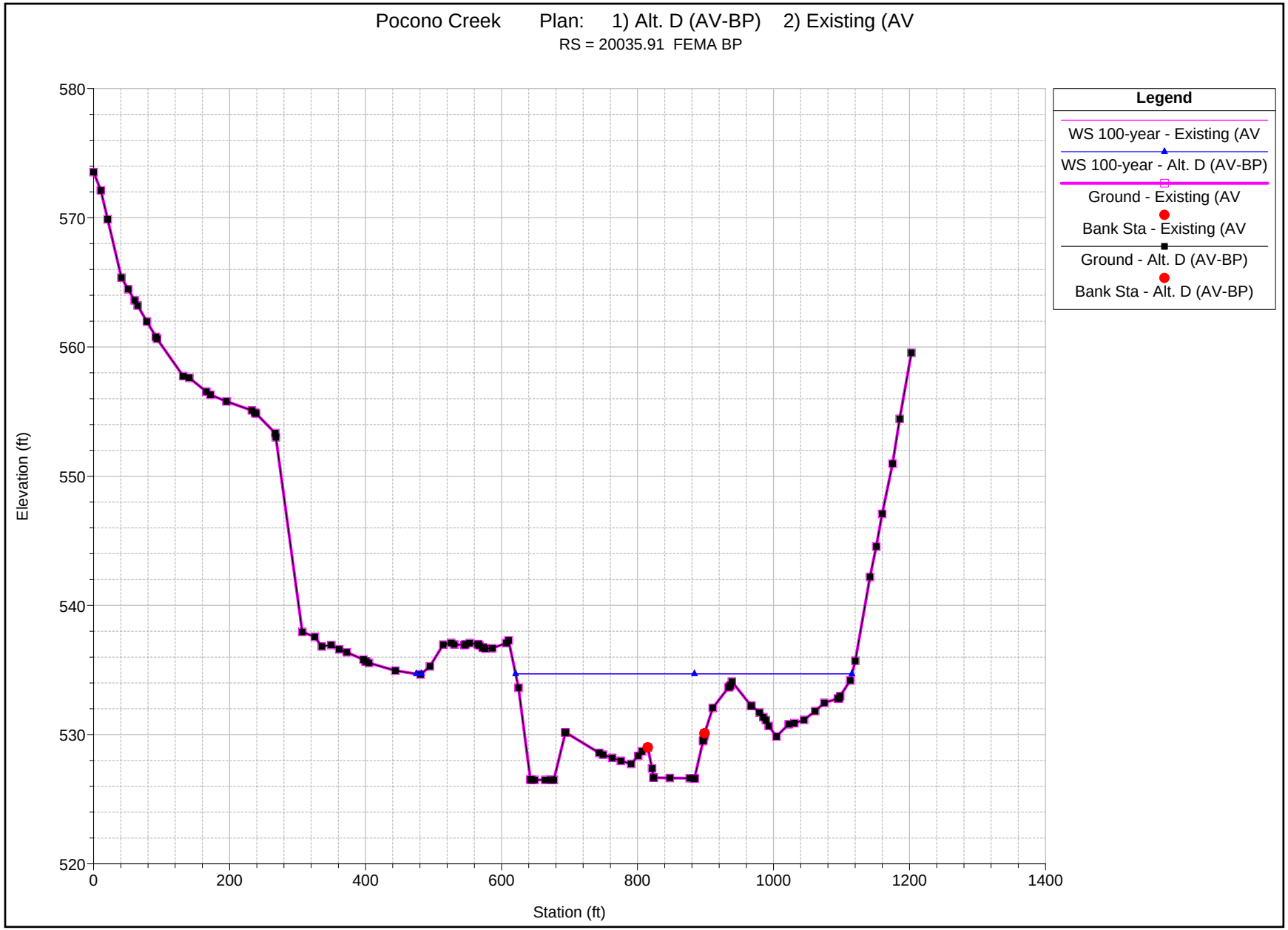

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 5
Elevation (ft)
Station (ft)
510
500
490
480
470
460
-100
-50
0
50
100
150
200
250
300
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Alt D
WS 100-year - Existing
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
Ground - Existing
Levee - Existing
Bank Sta - Existing
Ground - Alt D
Levee - Alt D
Bank Sta - Alt D

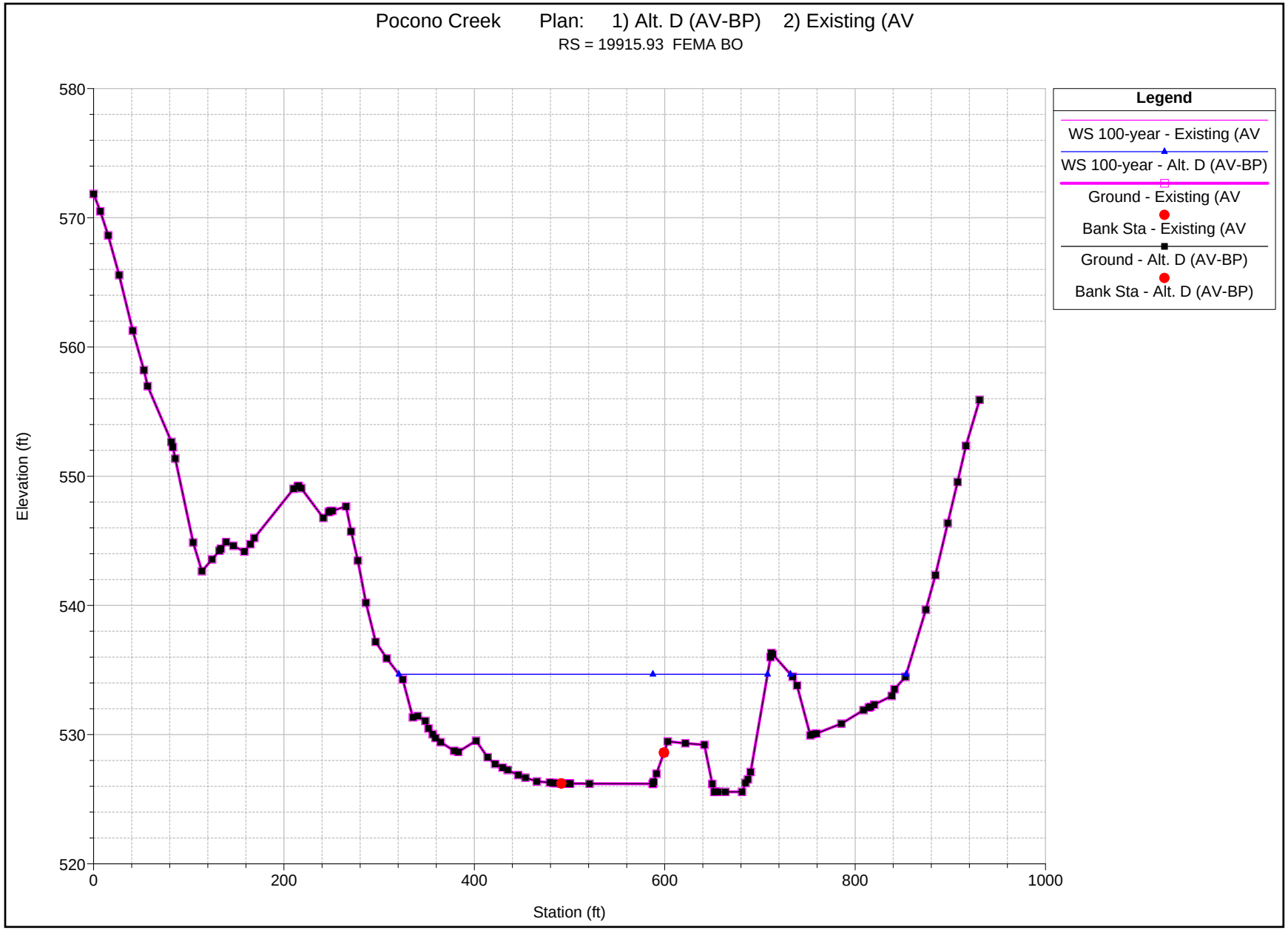

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 4 FEMA AN
Elevation (ft)
Station (ft)
510
500
490
480
470
460
-100
-50
0
50
100
150
200
250
300
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Alt D
WS 100-year - Existing
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
Ground - Existing
Bank Sta - Existing
Ground - Alt D
Bank Sta - Alt D

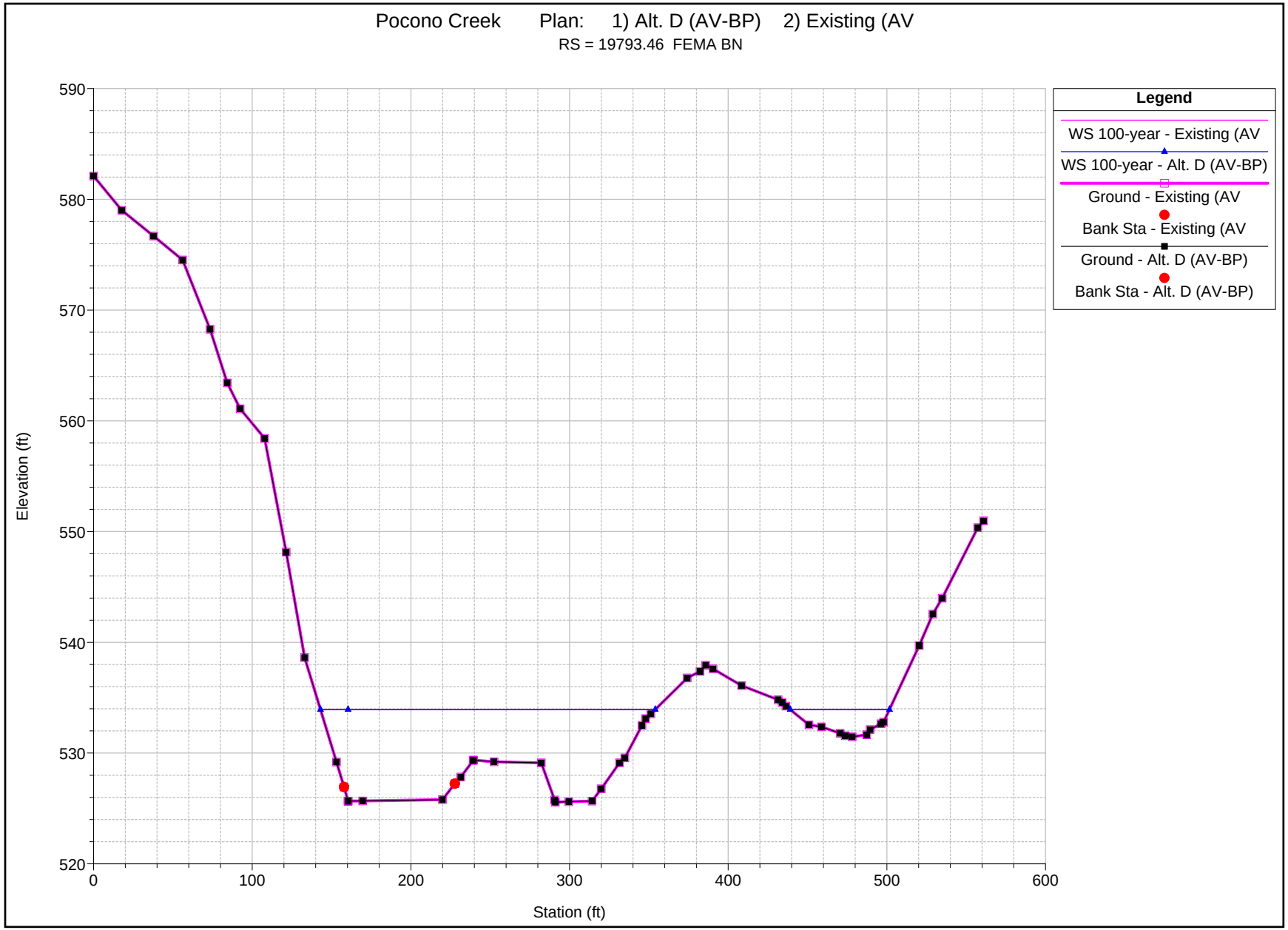

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 3
Elevation (ft)
Station (ft)
500
490
480
470
460
-100
-50
0
50
100
150
200
250
300
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Alt D
WS 100-year - Existing
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
Ground - Existing
Levee - Existing
Bank Sta - Existing
Ground - Alt D
Levee - Alt D
Bank Sta - Alt D

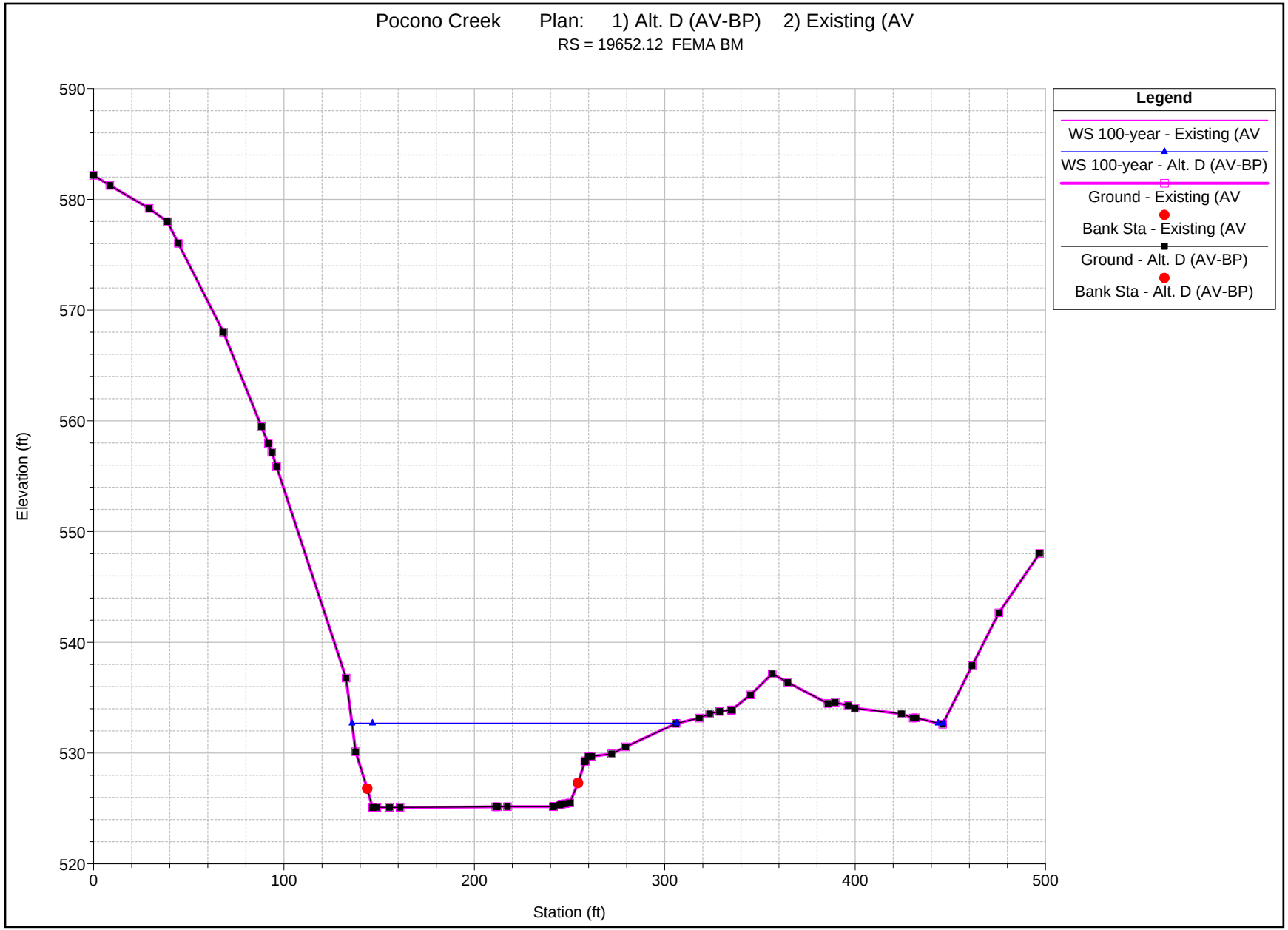

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 2
Elevation (ft)
Station (ft)
510
500
490
480
470
460
-100
-50
0
50
100
150
200
250
300
Legend
WS 500-year - Alt D
WS 500-year - Existing
WS 100-year - Alt D
WS 100-year - Existing
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Alt D
WS 10-year - Existing
Ground - Existing
Bank Sta - Existing
- Alt D
Ground - Alt D
Bank Sta - Alt D

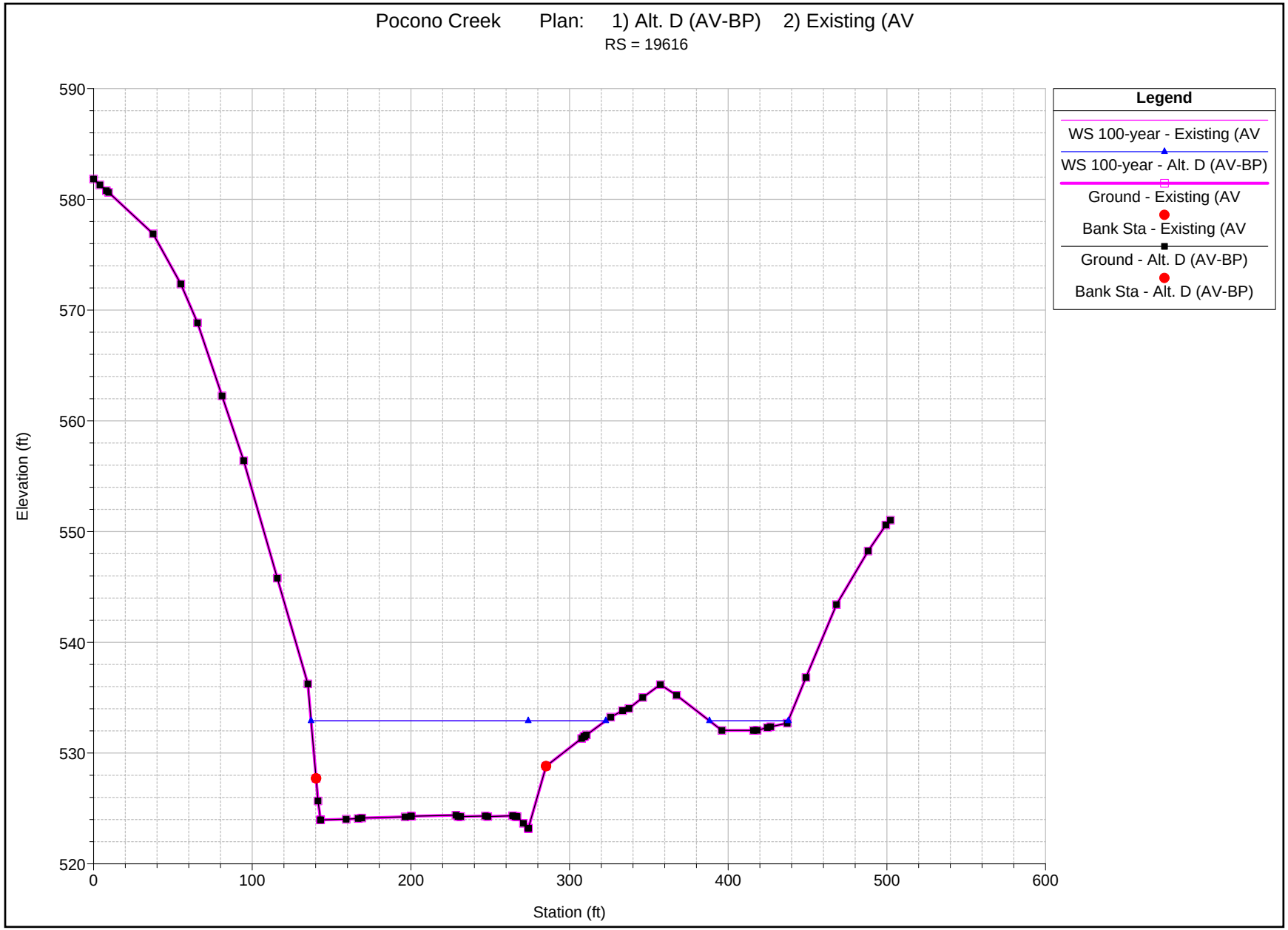

Pocono Creek AM-AU Plan: 1) Alt D 2) Existing
RS = 1 FEMA AM
Elevation (ft)
Station (ft)
495
490
485
480
475
470
465
460
-100
-50
0
50
100
150
200
250
Legend
WS 500-year - Existing
WS 500-year - Alt D
WS 100-year - Existing
WS 100-year - Alt D
WS 50-year - Alt D
WS 50-year - Existing
WS 10-year - Existing
WS 10-year - Alt D
Ground - Existing
Bank Sta - Existing
- Alt D
Ground - Alt D
Bank Sta - Alt D

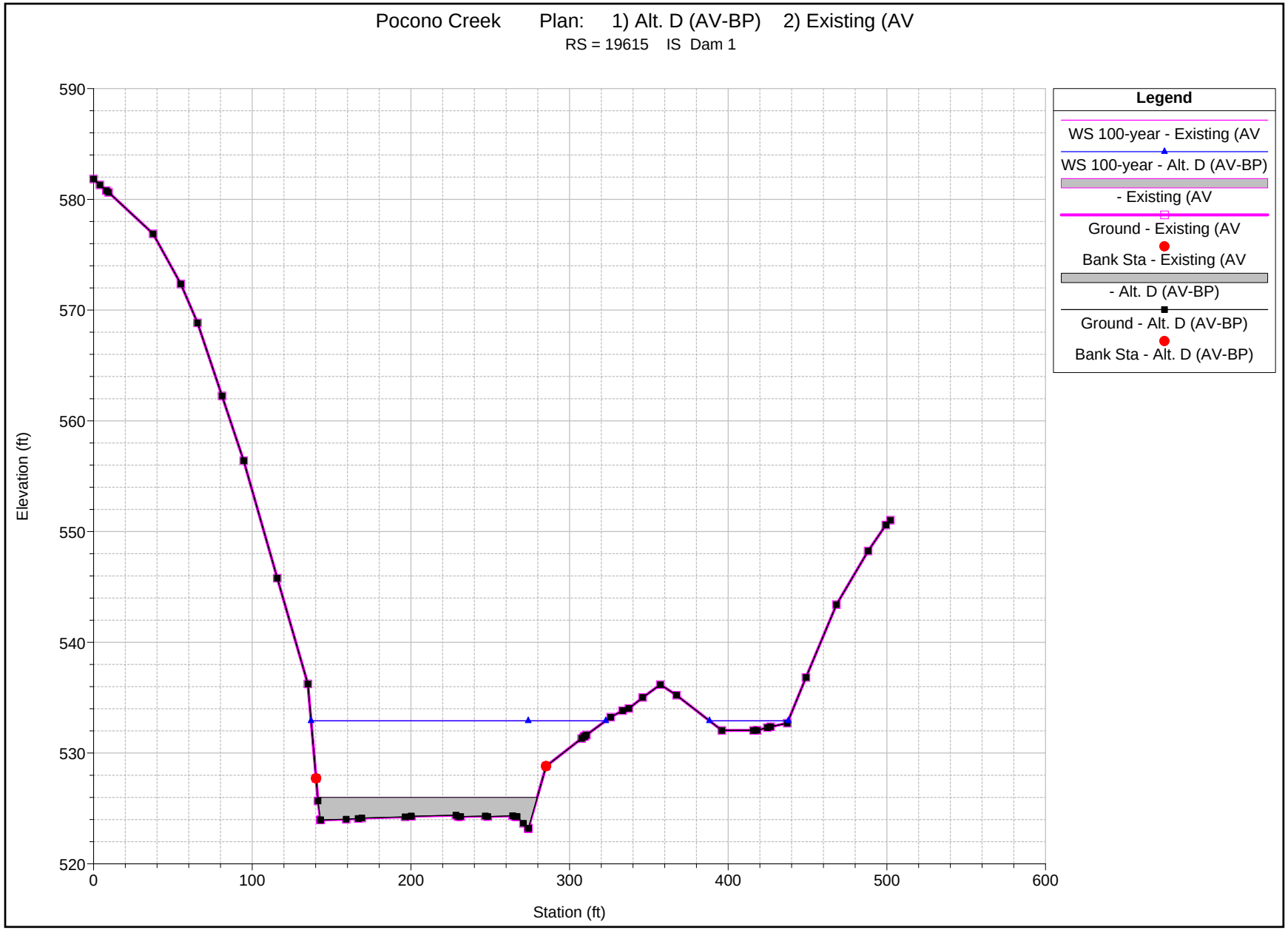

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 20035.91 FEMA BP
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
580
570
560
550
540
530
520
0
200
400
600
800
1000
1200
1400
Station (ft)

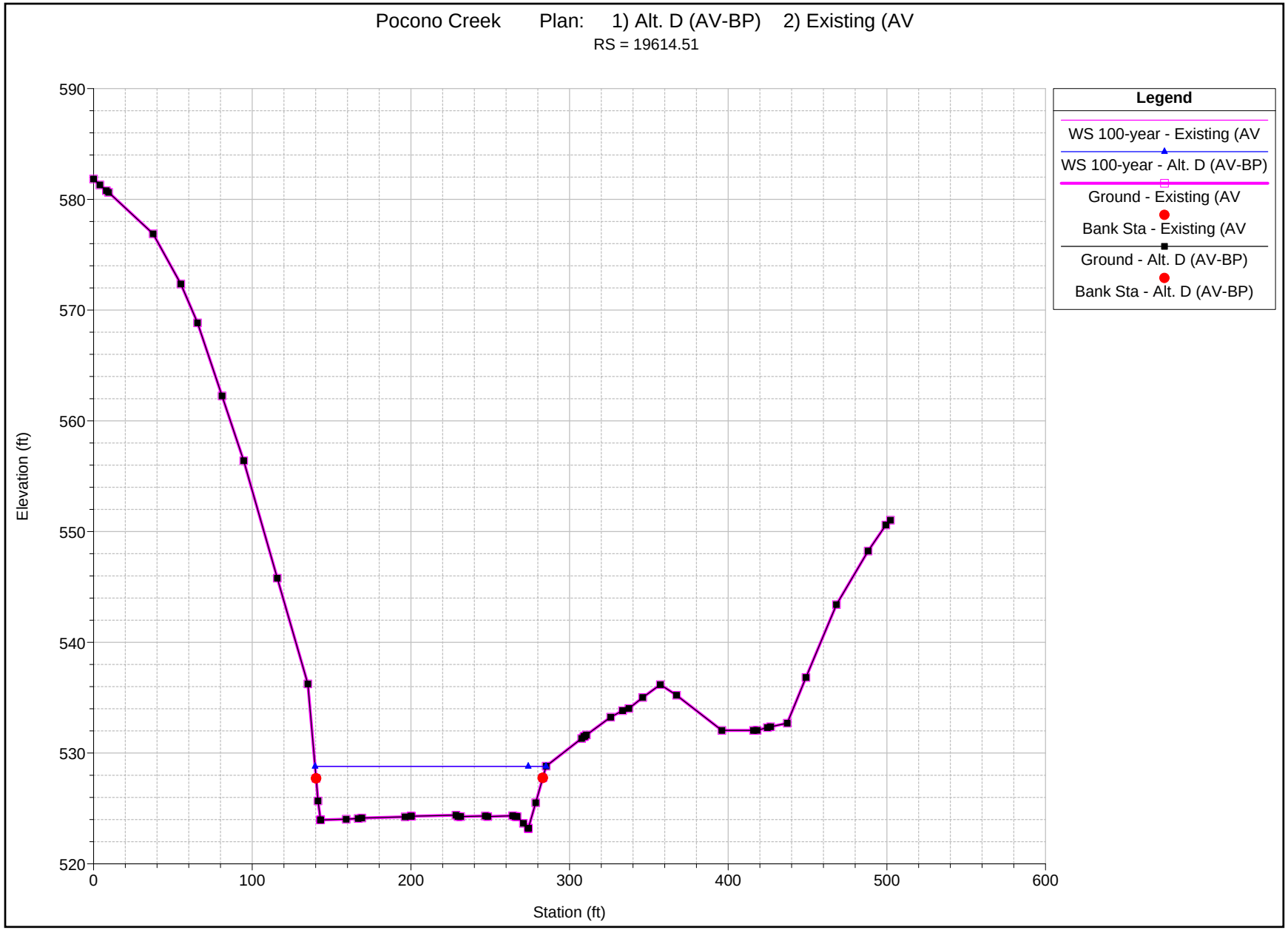

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 19915.93 FEMA BO
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
Station (ft)
580
570
560
550
540
530
520
0
200
400
600
800
1000

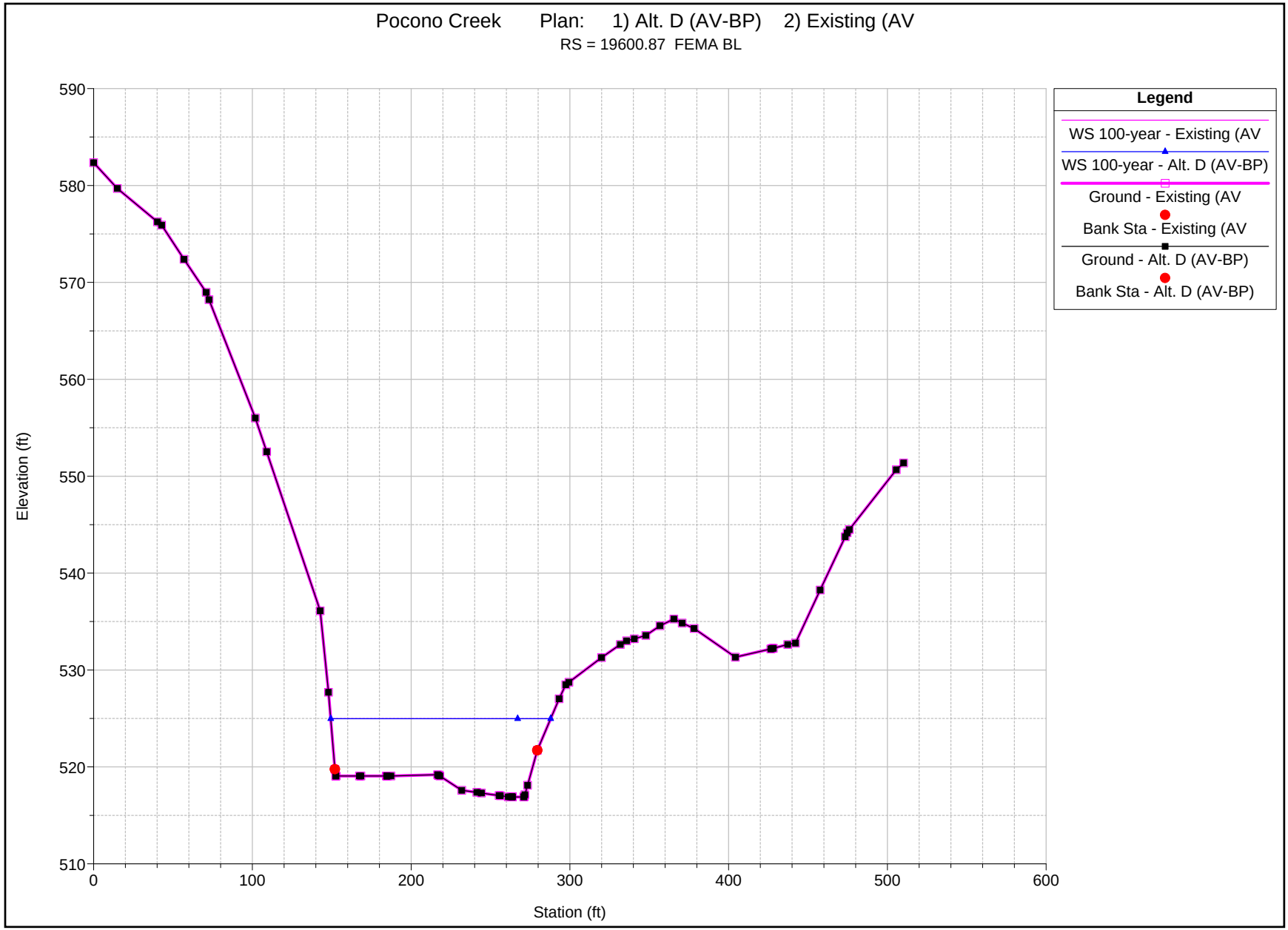

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 19793.46 FEMA BN
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
600
Station (ft)

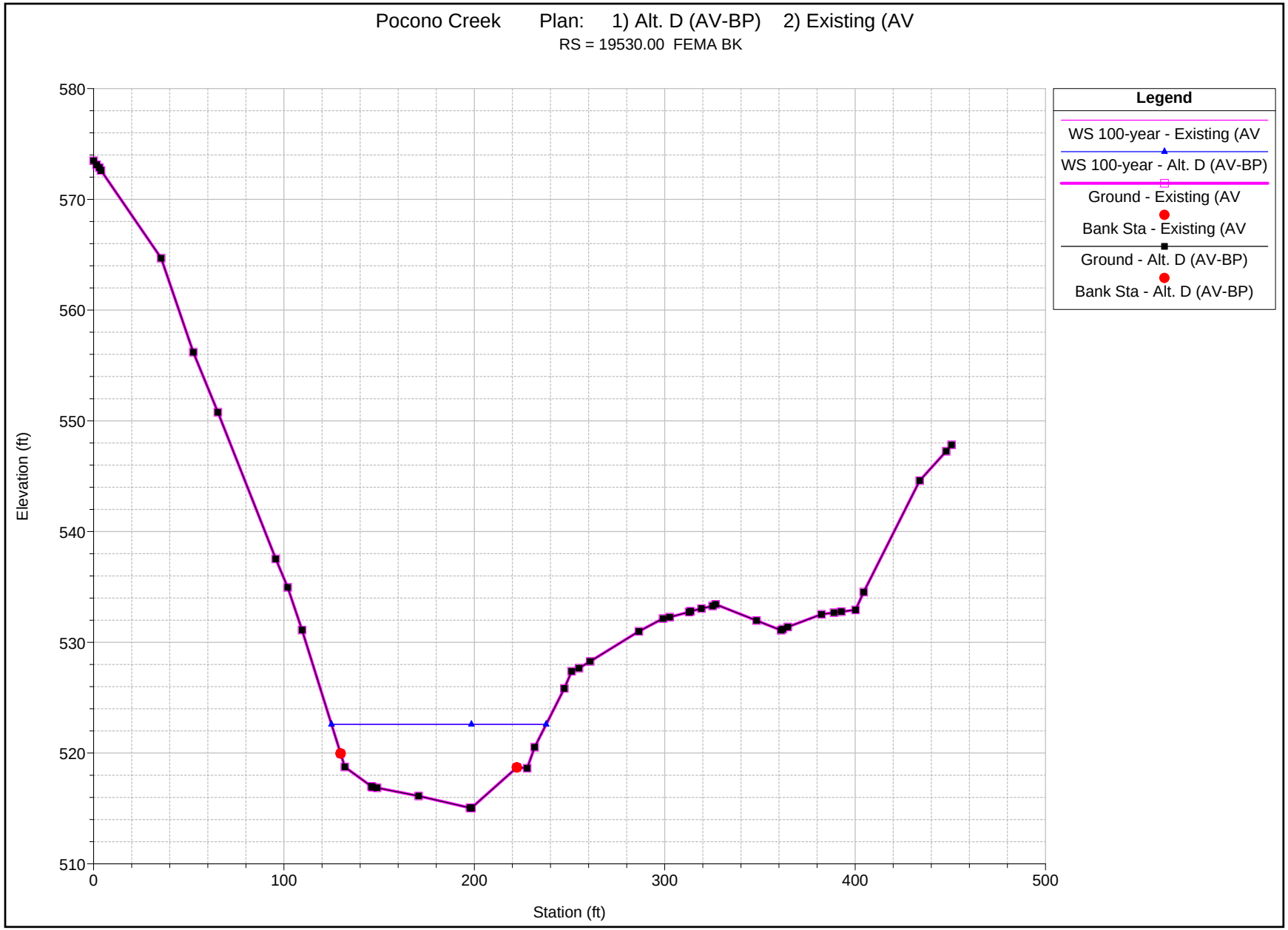

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 19652.12 FEMA BM
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
Station (ft)

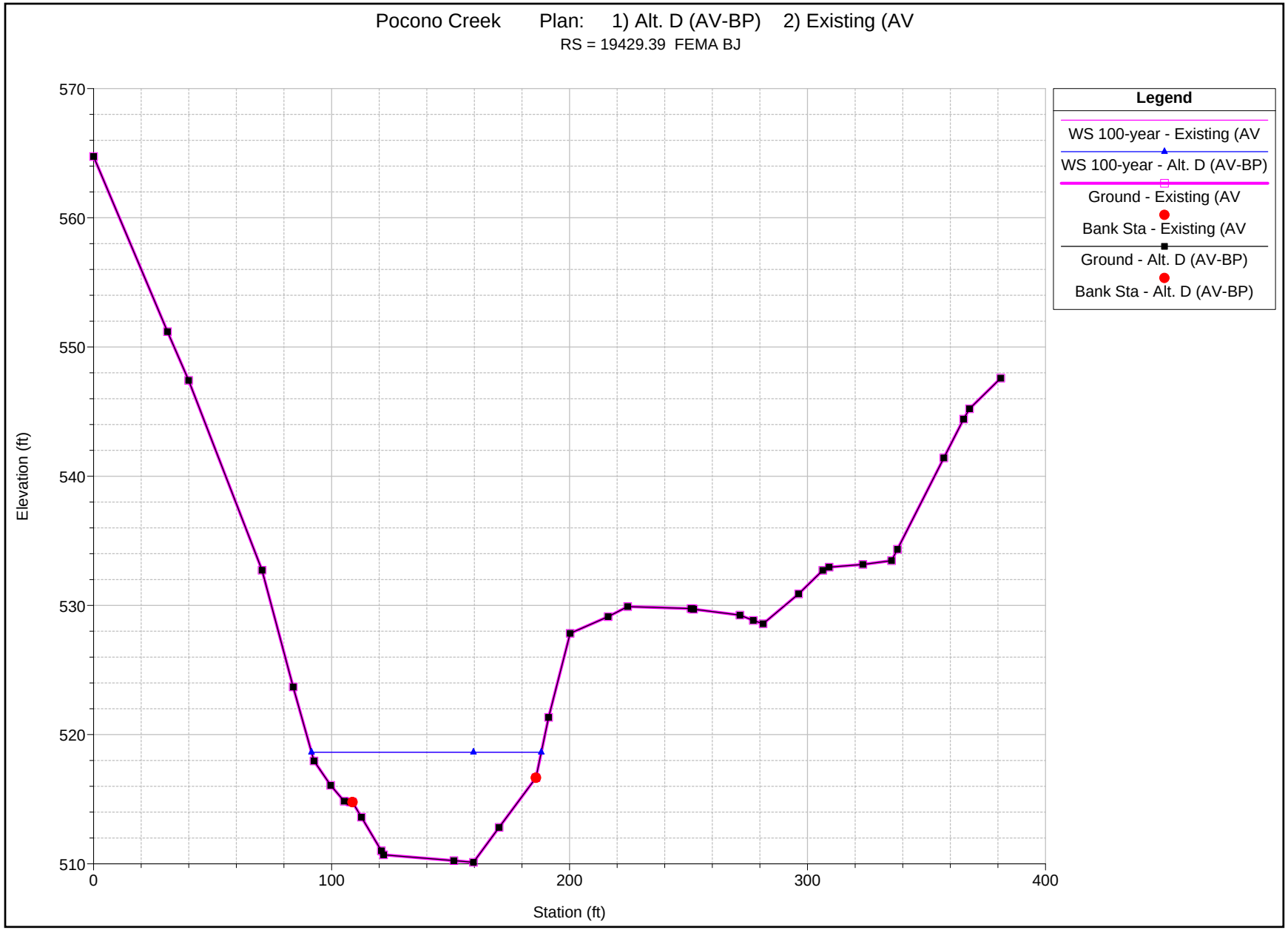

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 19616
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
600
Station (ft)
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)

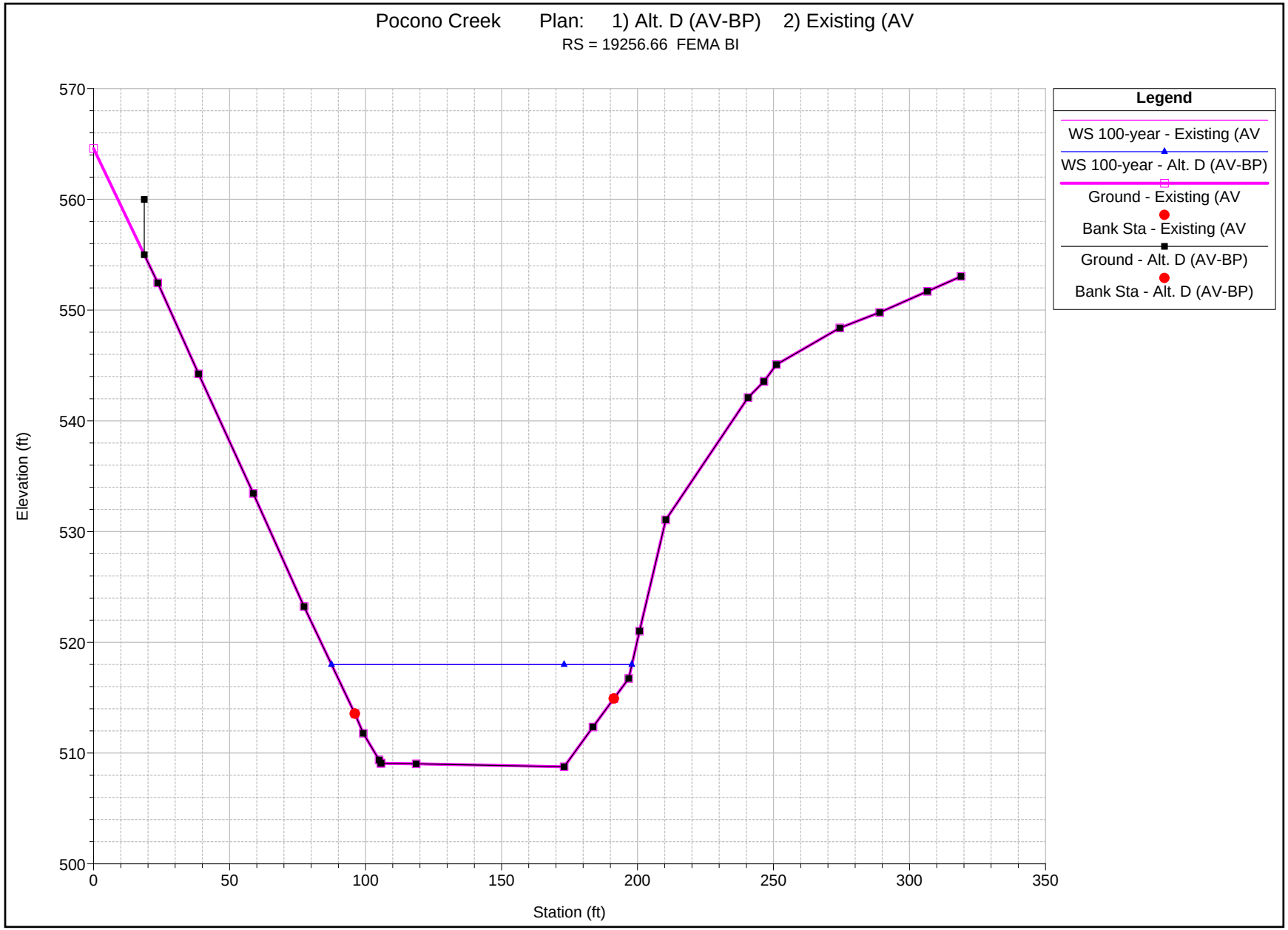

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 19615 IS Dam 1
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
600
Station (ft)
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
- Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
- Alt. D (AV-BP)
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)

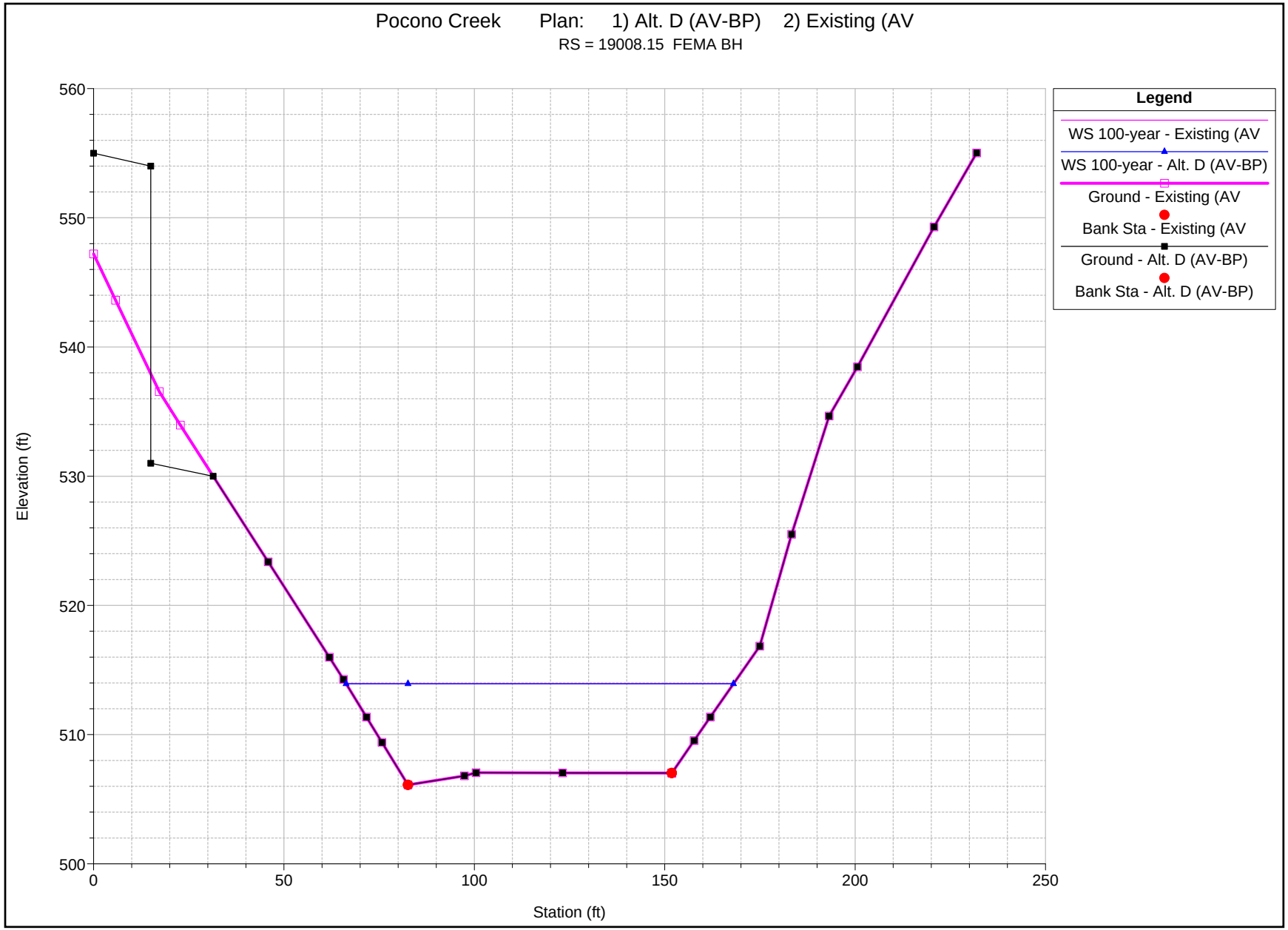

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 19614.51
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
600
Station (ft)
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)

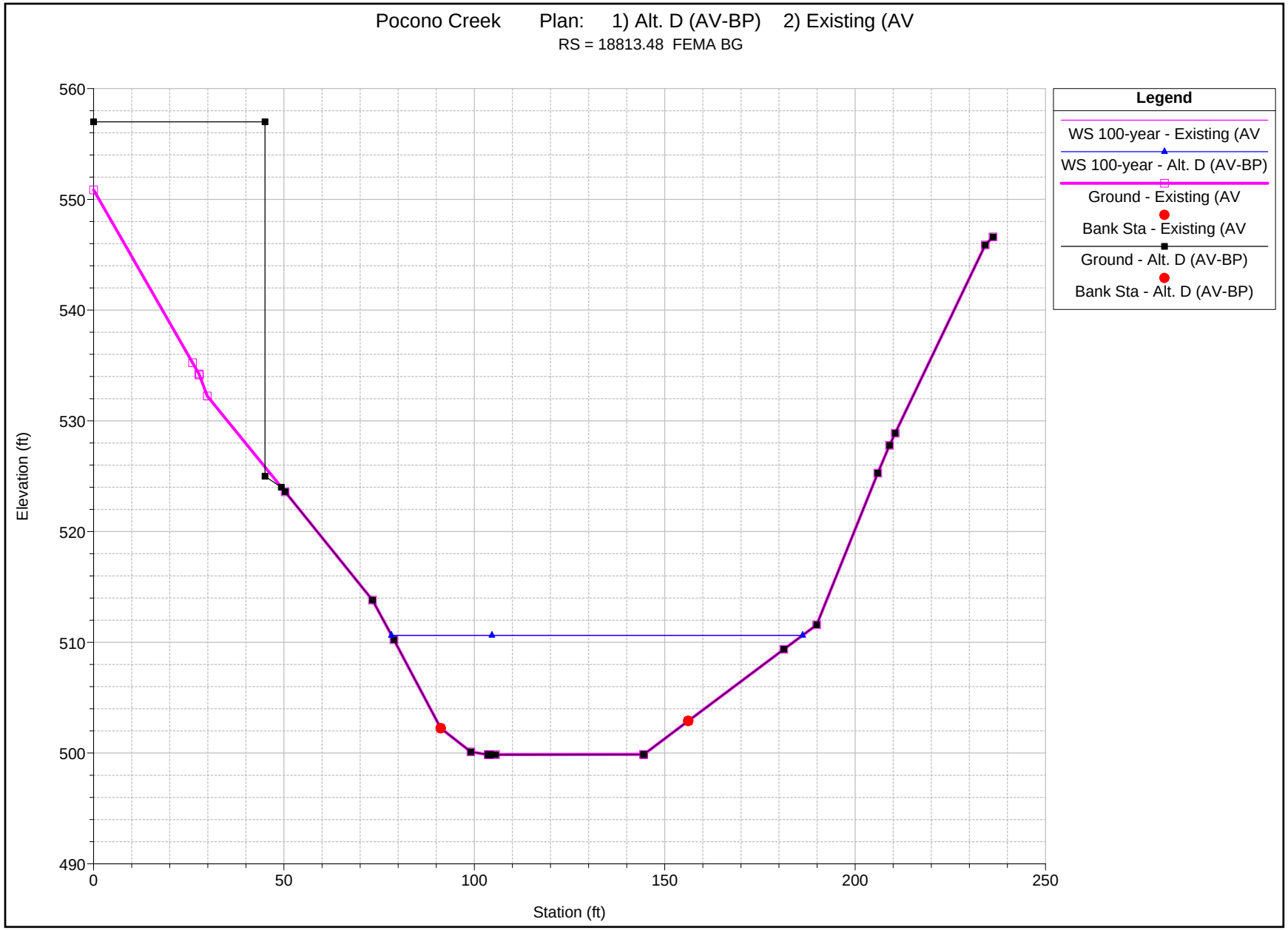

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 19600.87 FEMA BL
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
510
Station (ft)
0
100
200
300
400
500
600

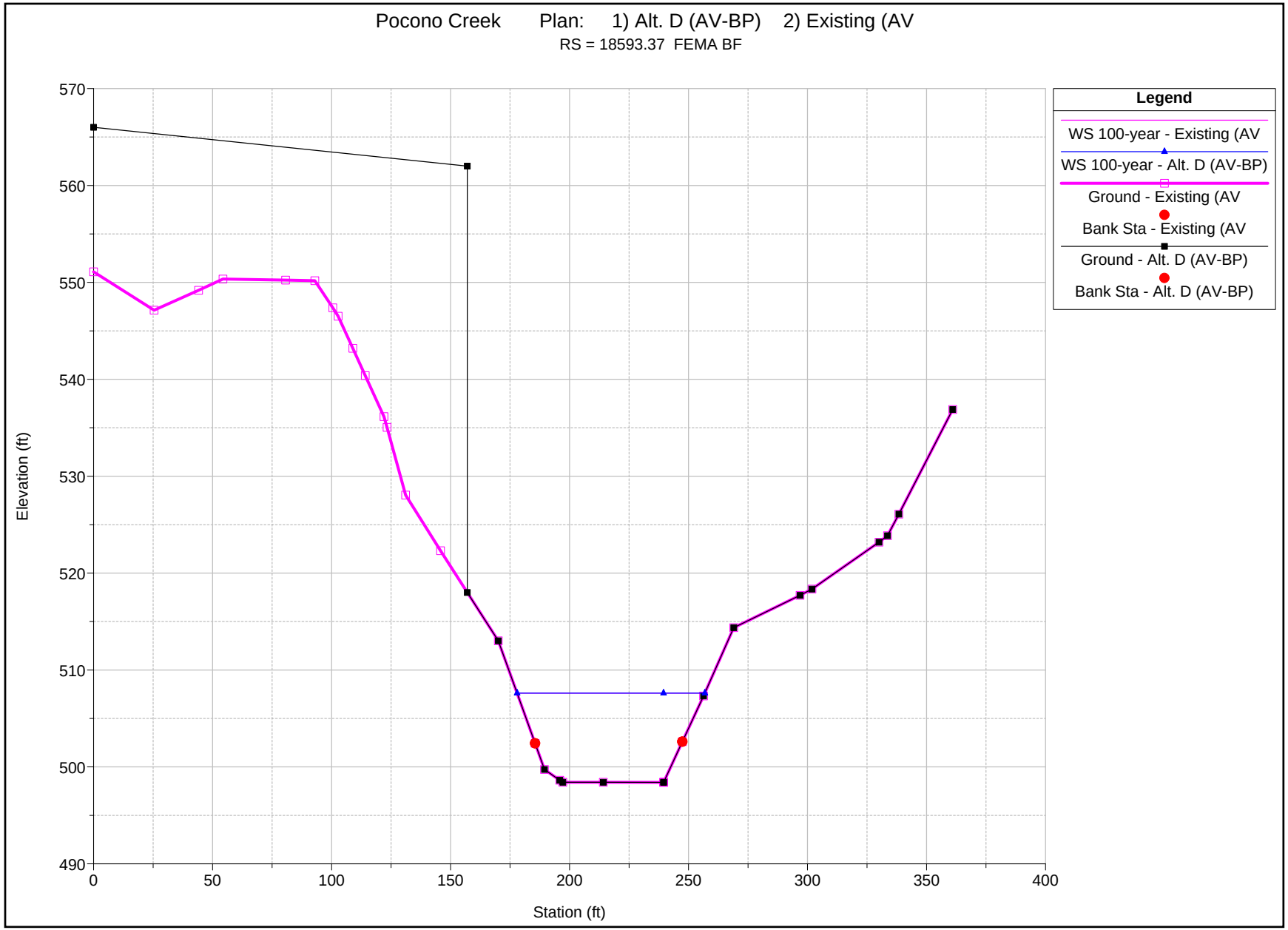

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 19530.00 FEMA BK
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
Station (ft)
580
570
560
550
540
530
520
510
0
100
200
300
400
500

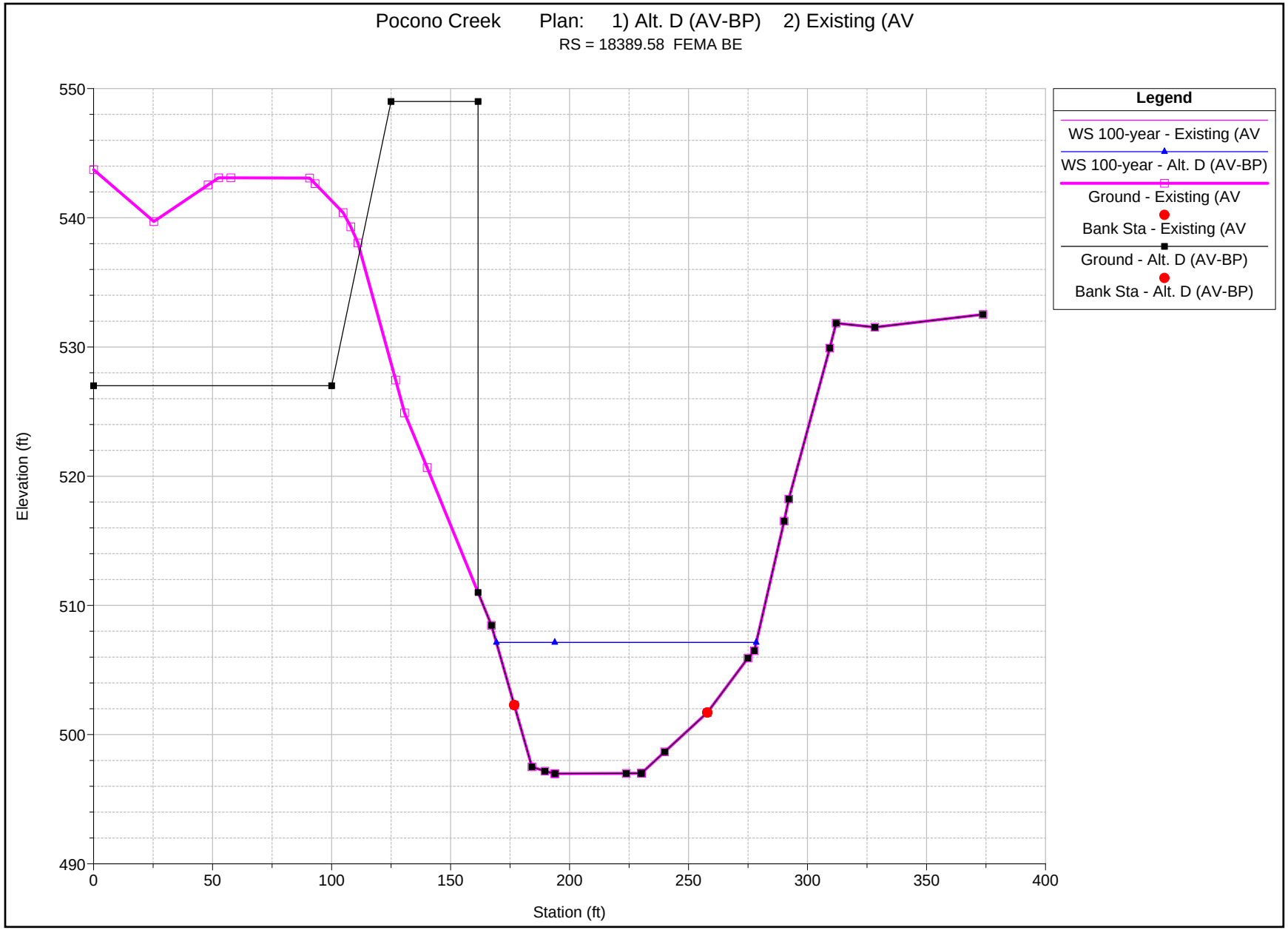

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 19429.39 FEMA BJ
Elevation (ft)
570
560
550
540
530
520
510
0
100
200
300
400
Station (ft)
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)

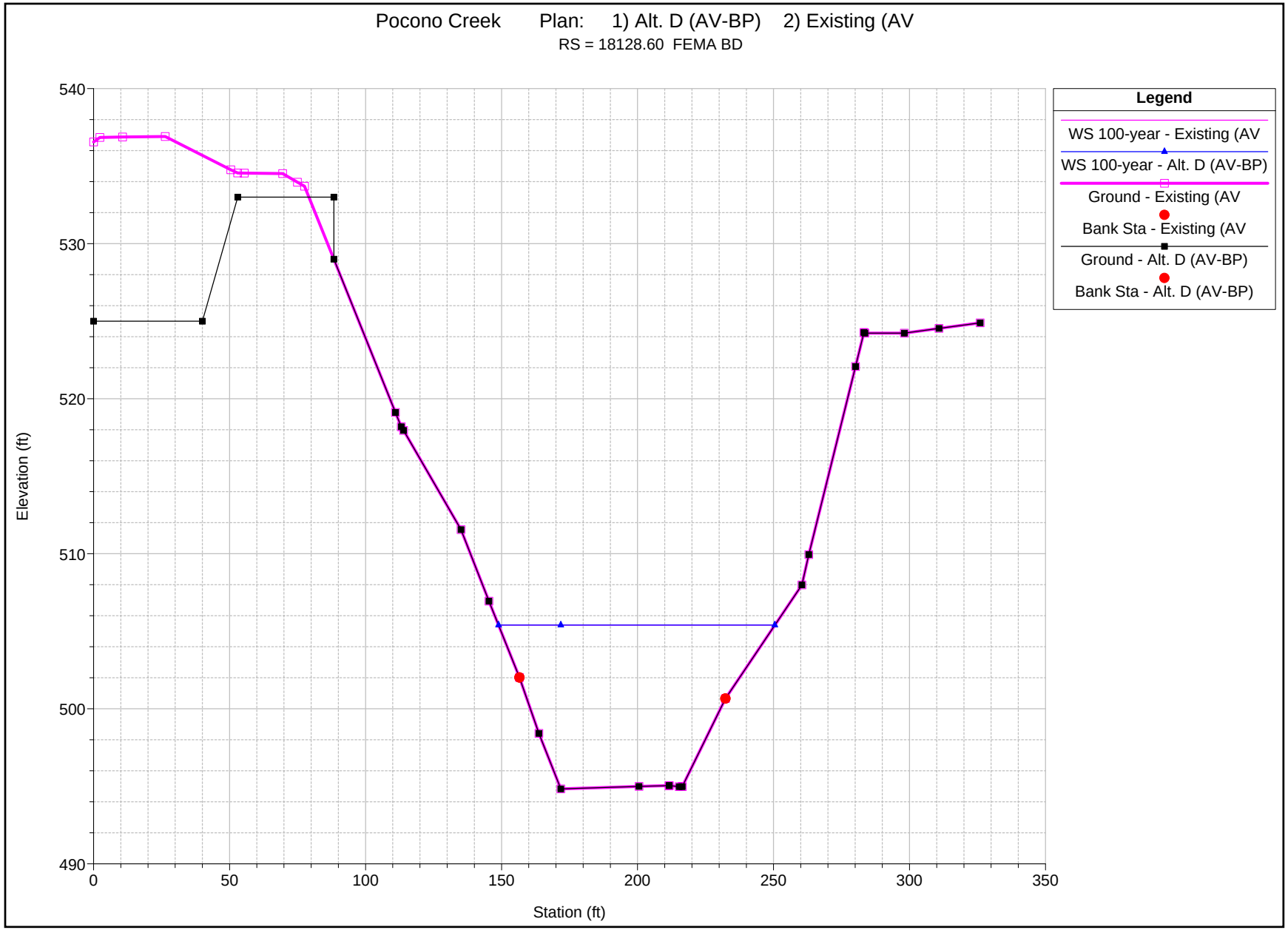

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 19256.66 FEMA BI
Elevation (ft)
Station (ft)
570
560
550
540
530
520
510
500
0
50
100
150
200
250
300
350
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)

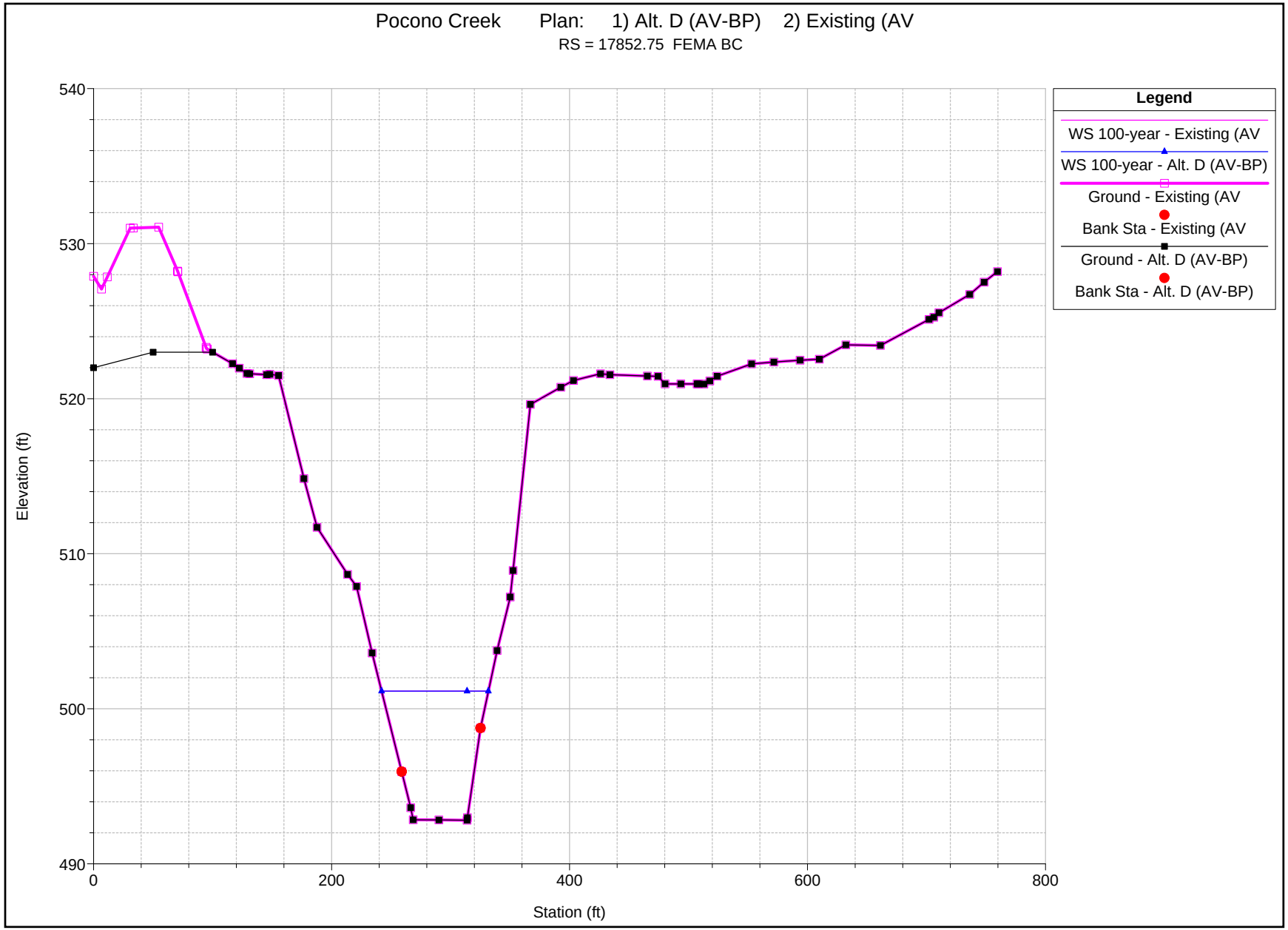

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 19008.15 FEMA BH
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
560
550
540
530
520
510
500
0
50
100
150
200
250
Station (ft)

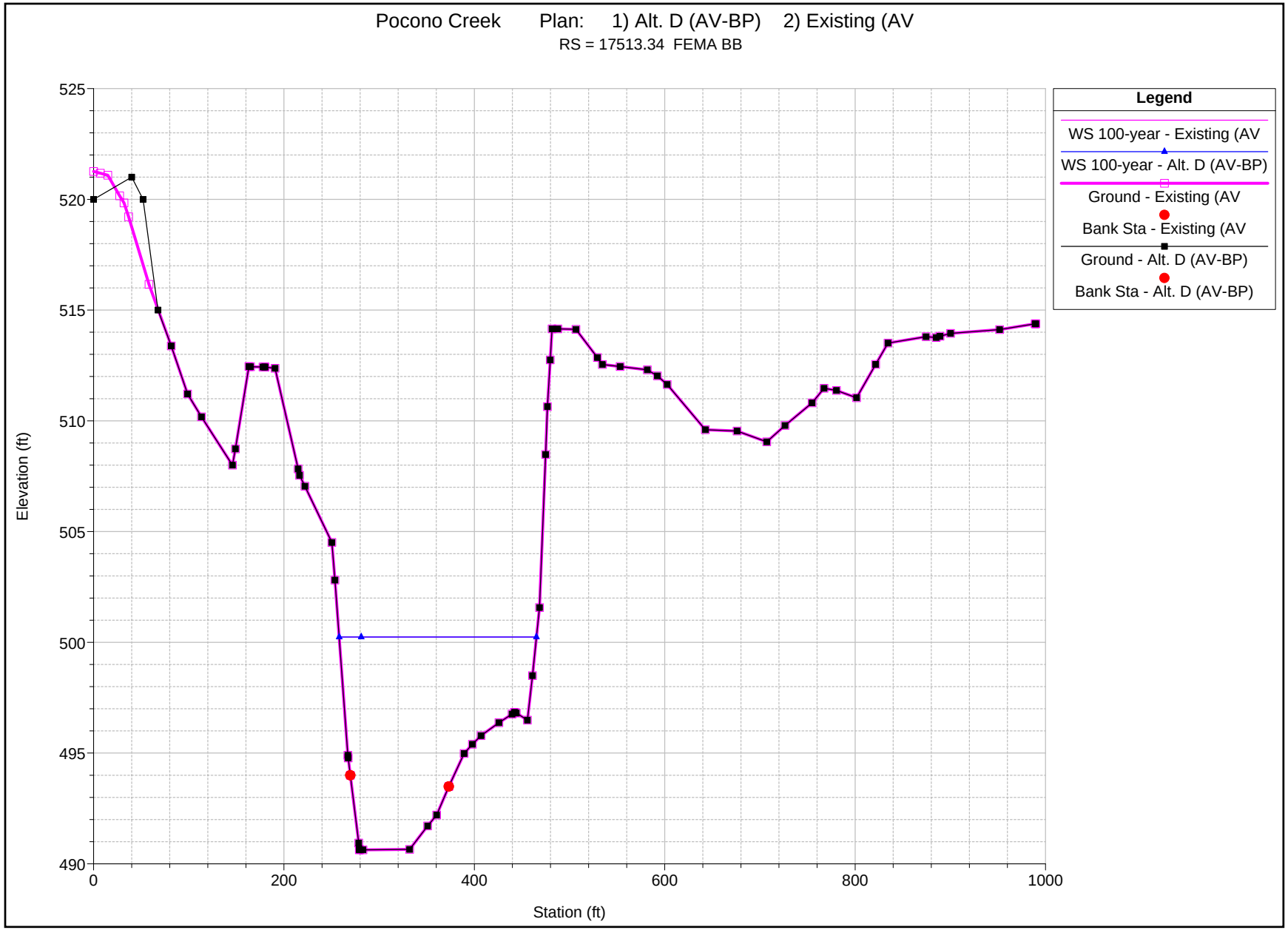

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 18813.48 FEMA BG
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
560
550
540
530
520
510
500
490
0
50
100
150
200
250
Station (ft)


Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 18593.37 FEMA BF
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
570
560
550
540
530
520
510
500
490
0
50
100
150
200
250
300
350
400
Station (ft)


Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 18389.58 FEMA BE
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
Station (ft)
550
540
530
520
510
500
490
0
50
100
150
200
250
300
350
400


Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 18128.60 FEMA BD
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
Station (ft)
540
530
520
510
500
490
0
50
100
150
200
250
300
350


Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 17852.75 FEMA BC
Elevation (ft)
Station (ft)
540
530
520
510
500
490
0
200
400
600
800
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)


Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 17513.34 FEMA BB
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
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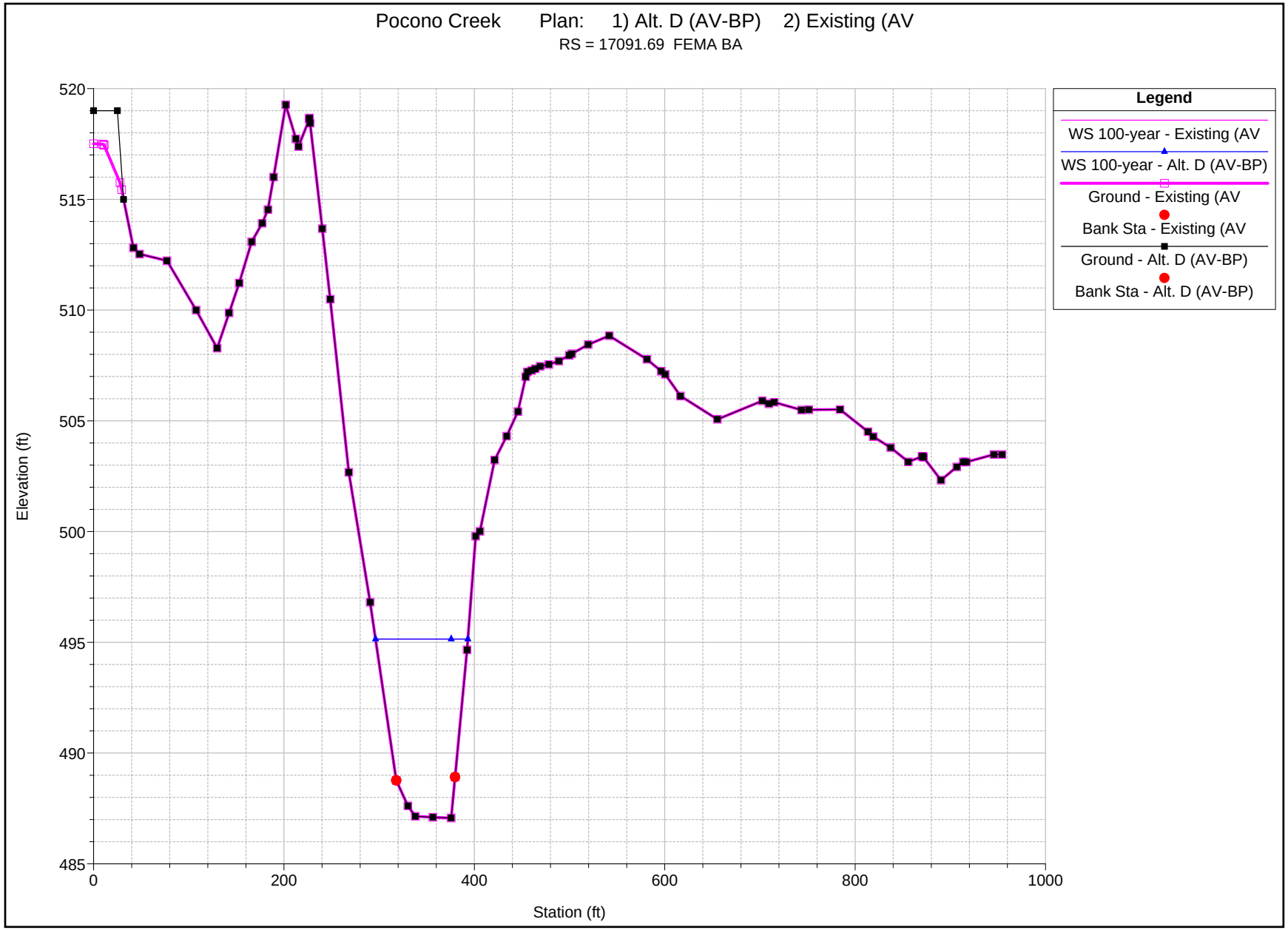
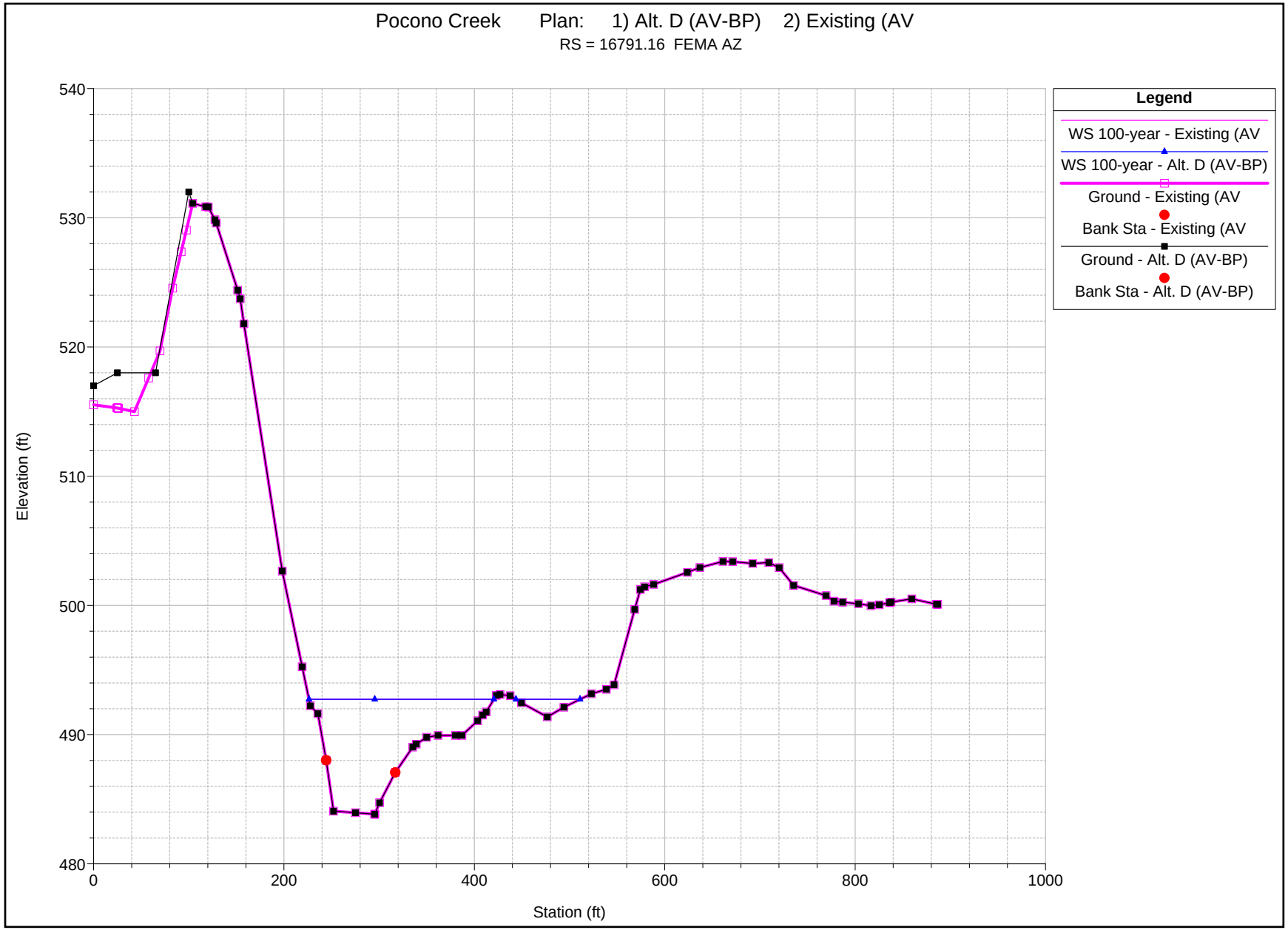
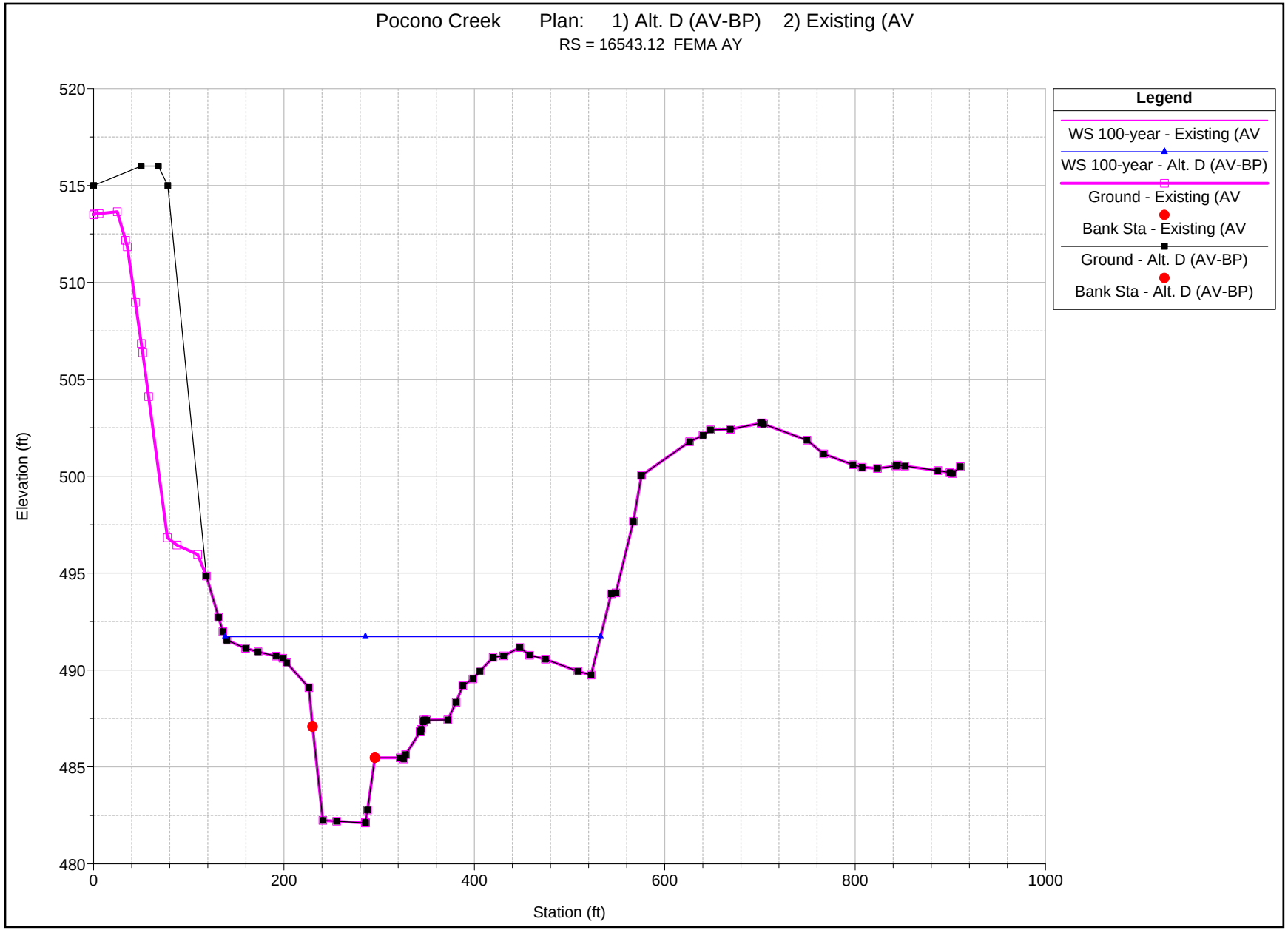
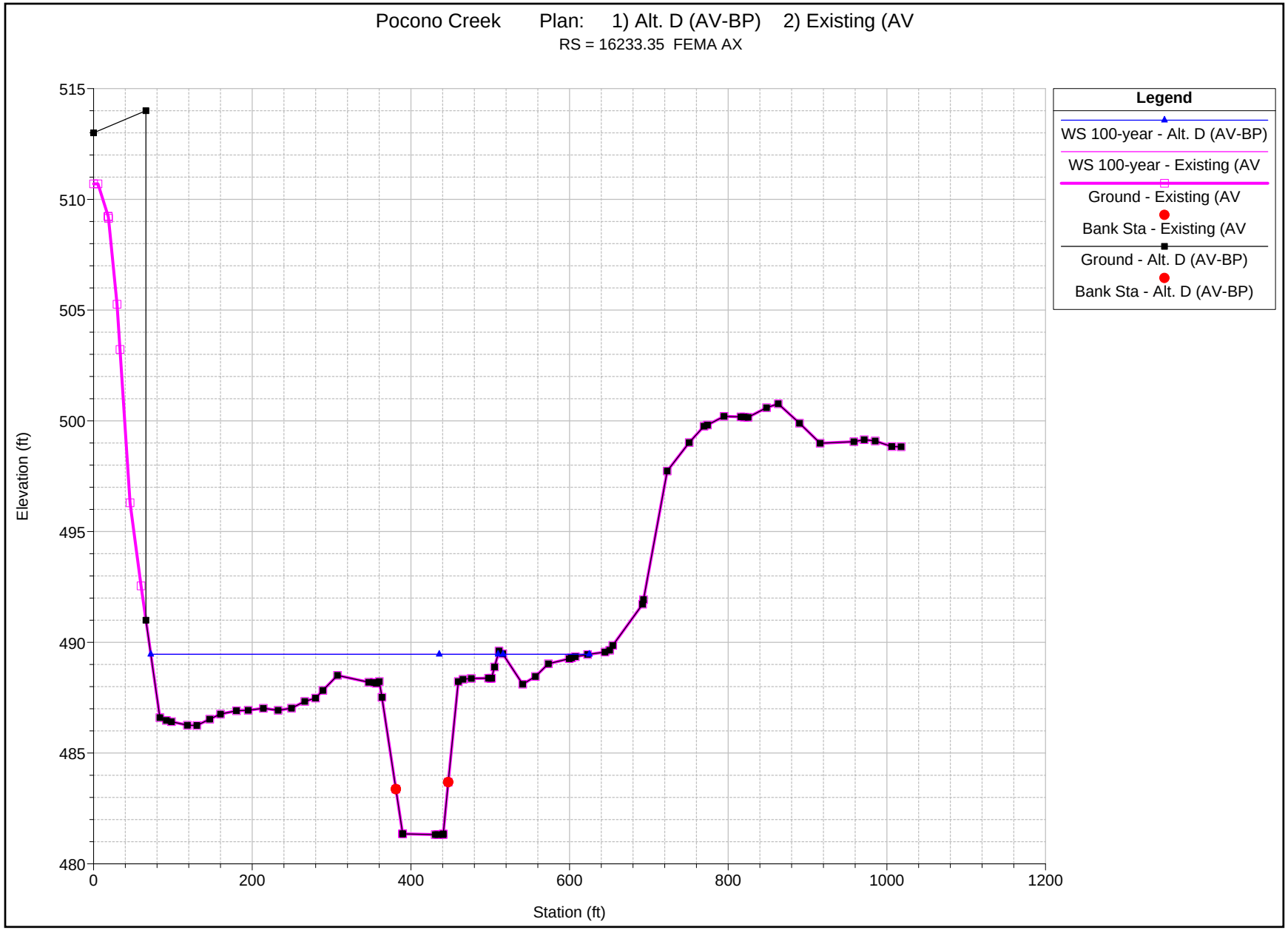
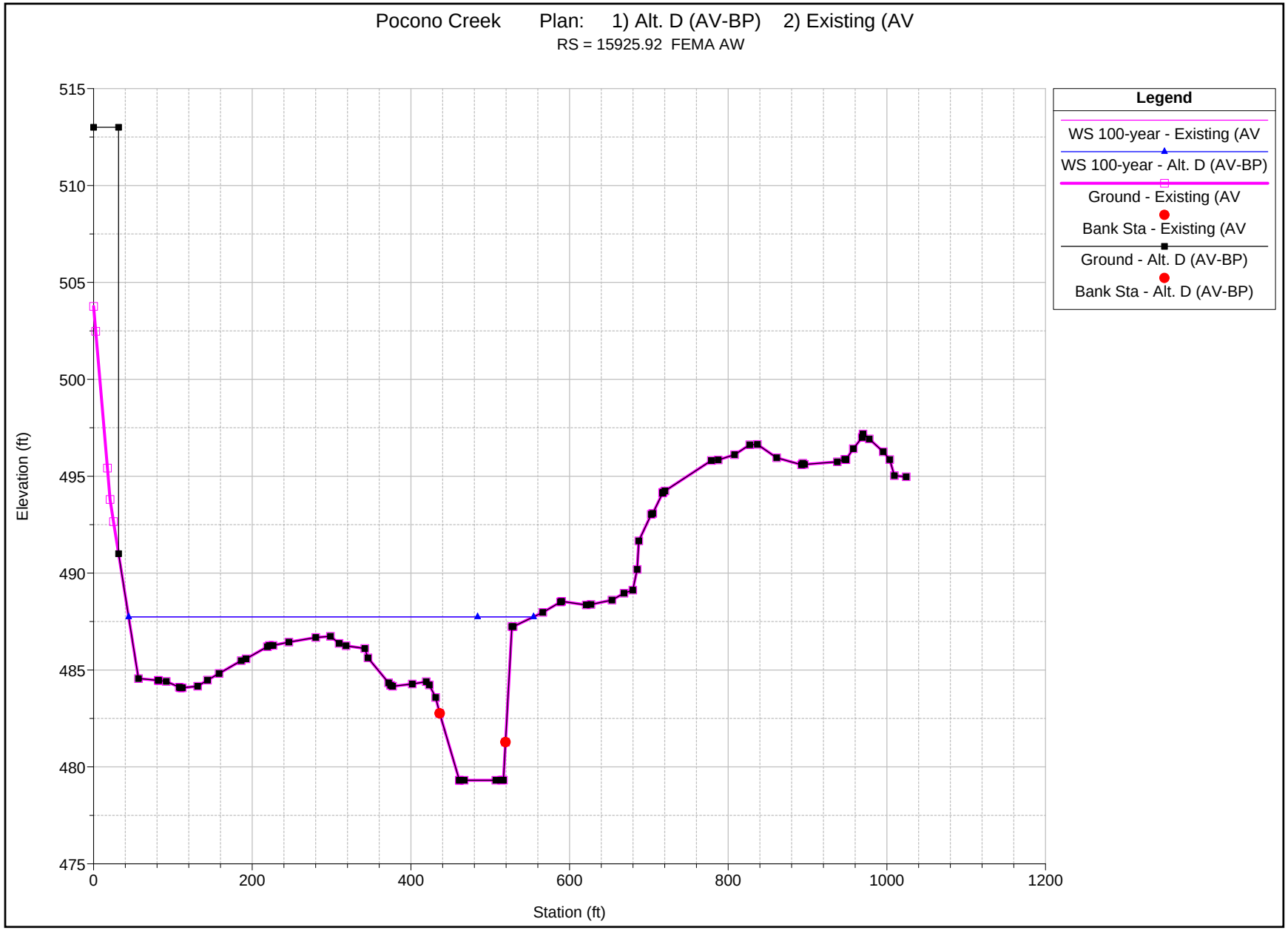
520
515
510
505
500
495
490
0
200
400
600
800
1000
Station (ft)

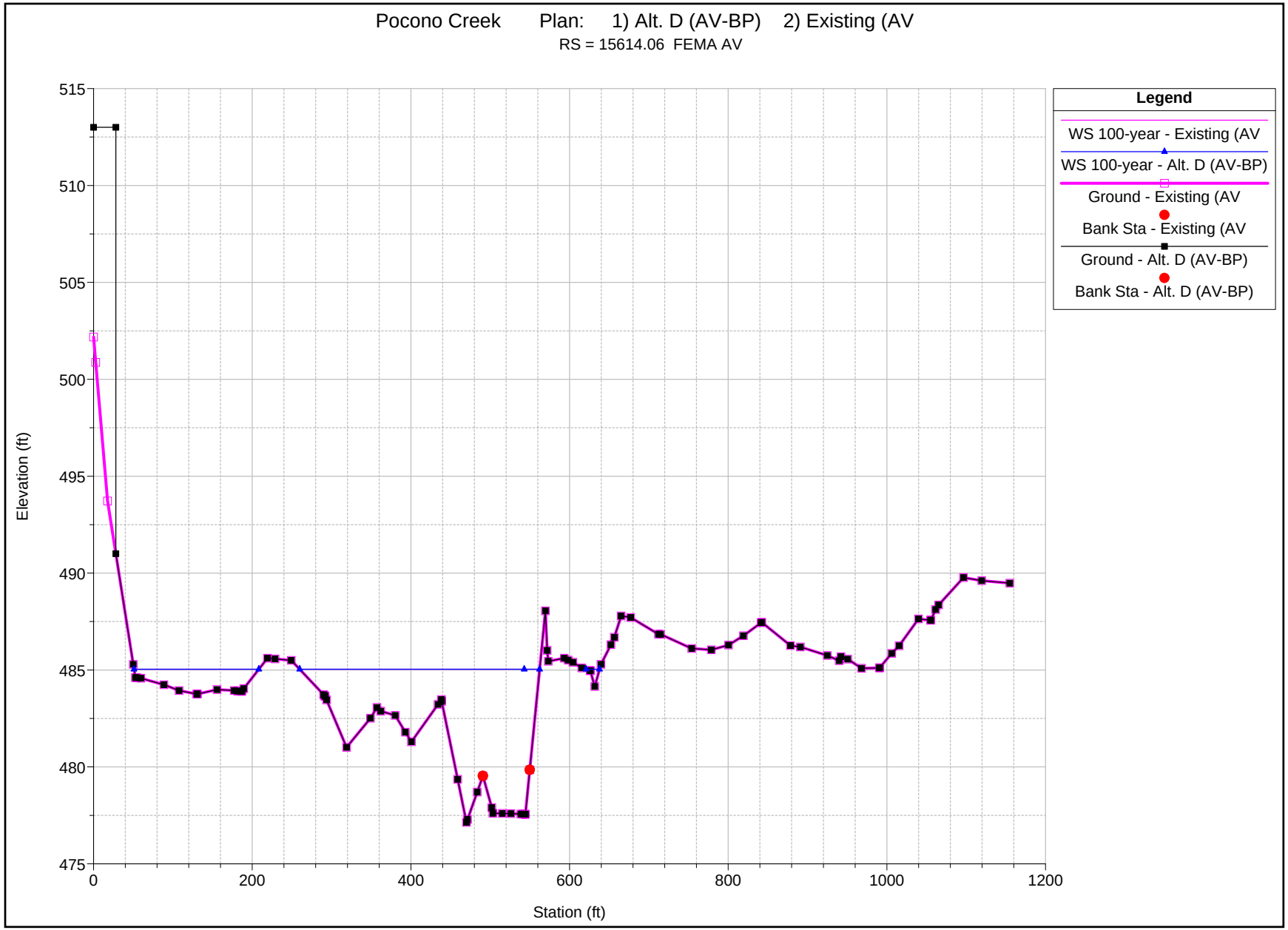

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 17091.69 FEMA BA
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
520
515
510
505
500
495
490
485
0
200
400
600
800
1000
Station (ft)

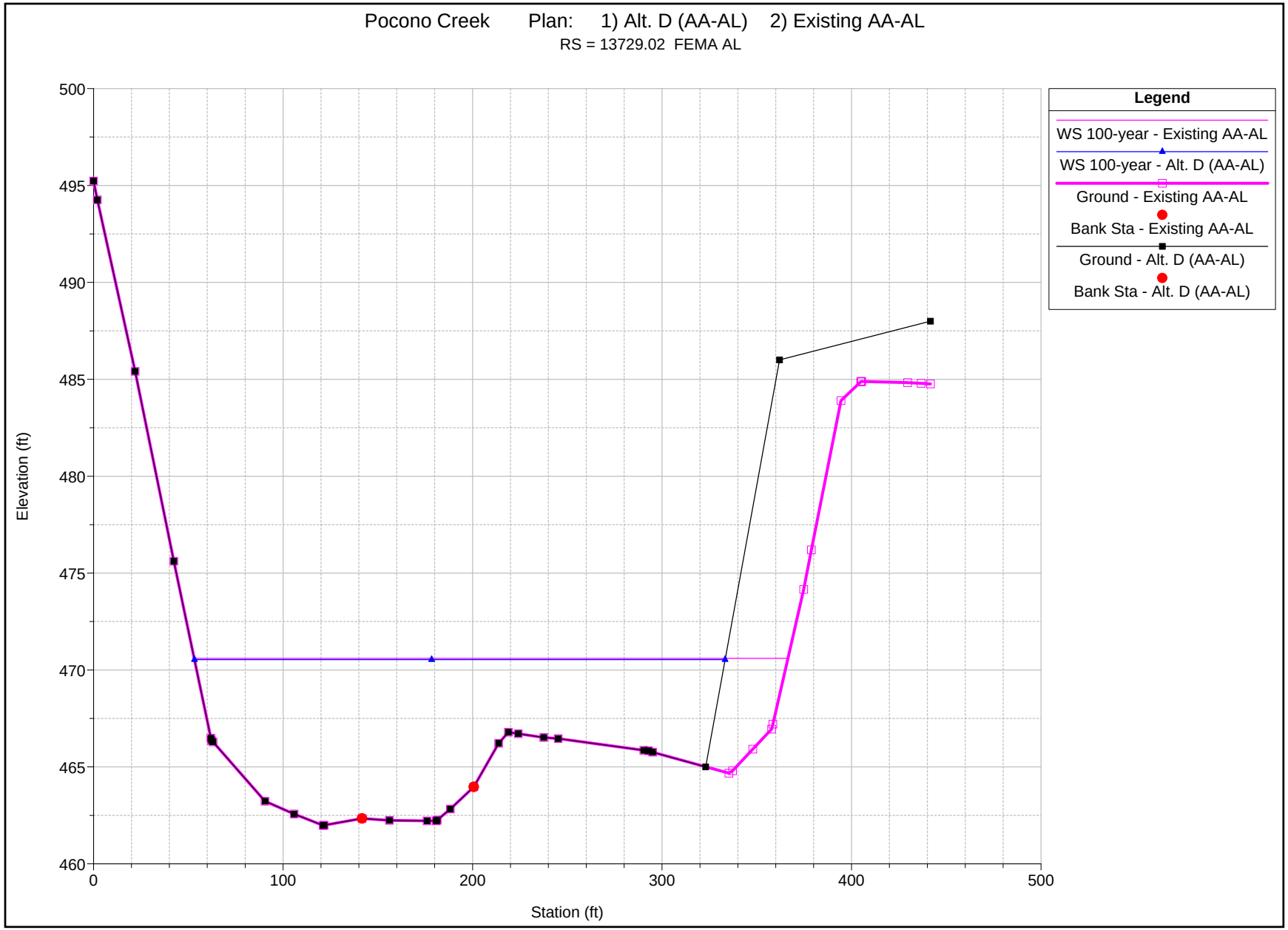

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 16791.16 FEMA AZ
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
Station (ft)
540
530
520
510
500
490
480
0
200
400
600
800
1000

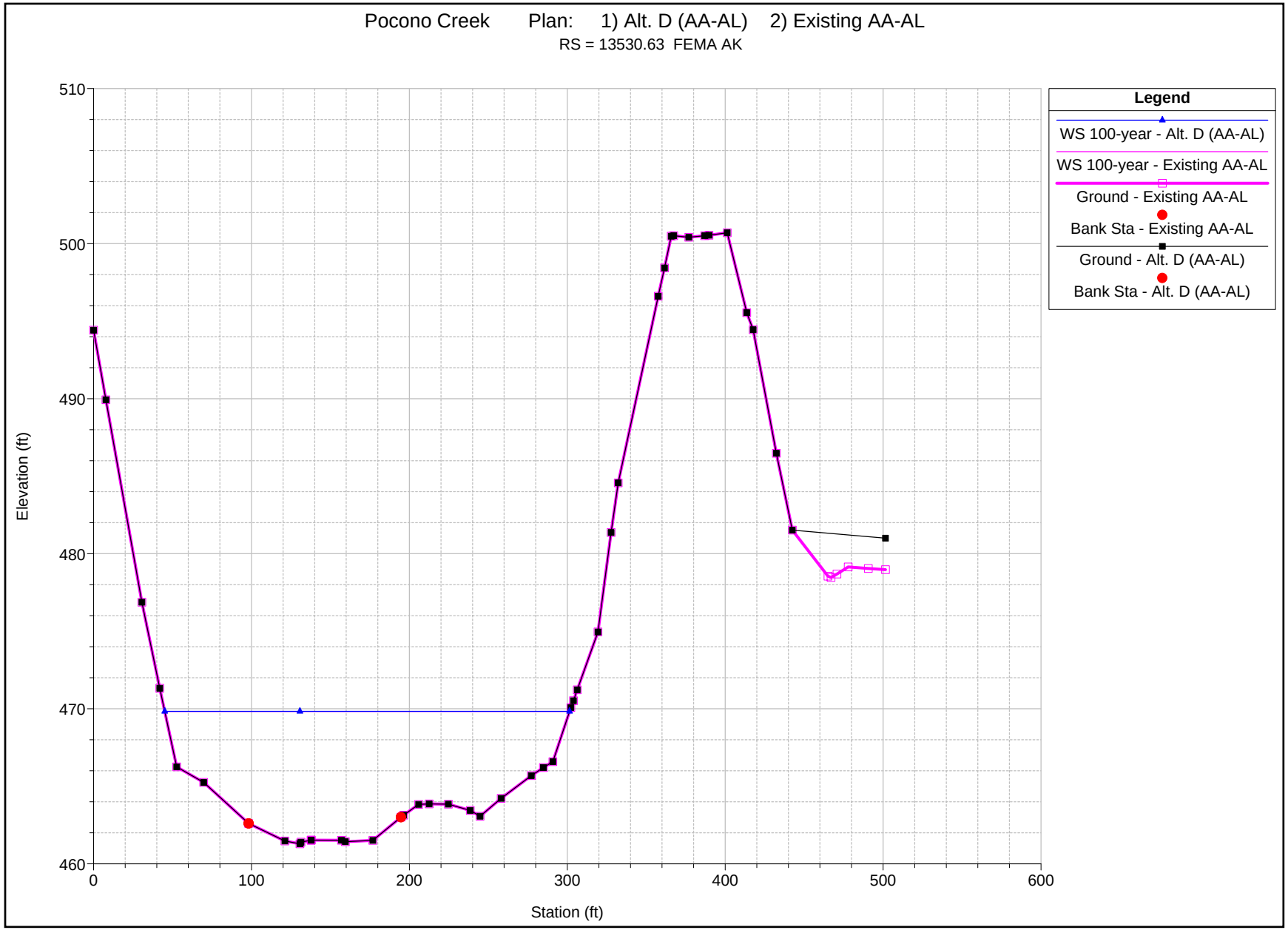

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 16543.12 FEMA AY
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
Station (ft)
520
515
510
505
500
495
490
485
480
0
200
400
600
800
1000

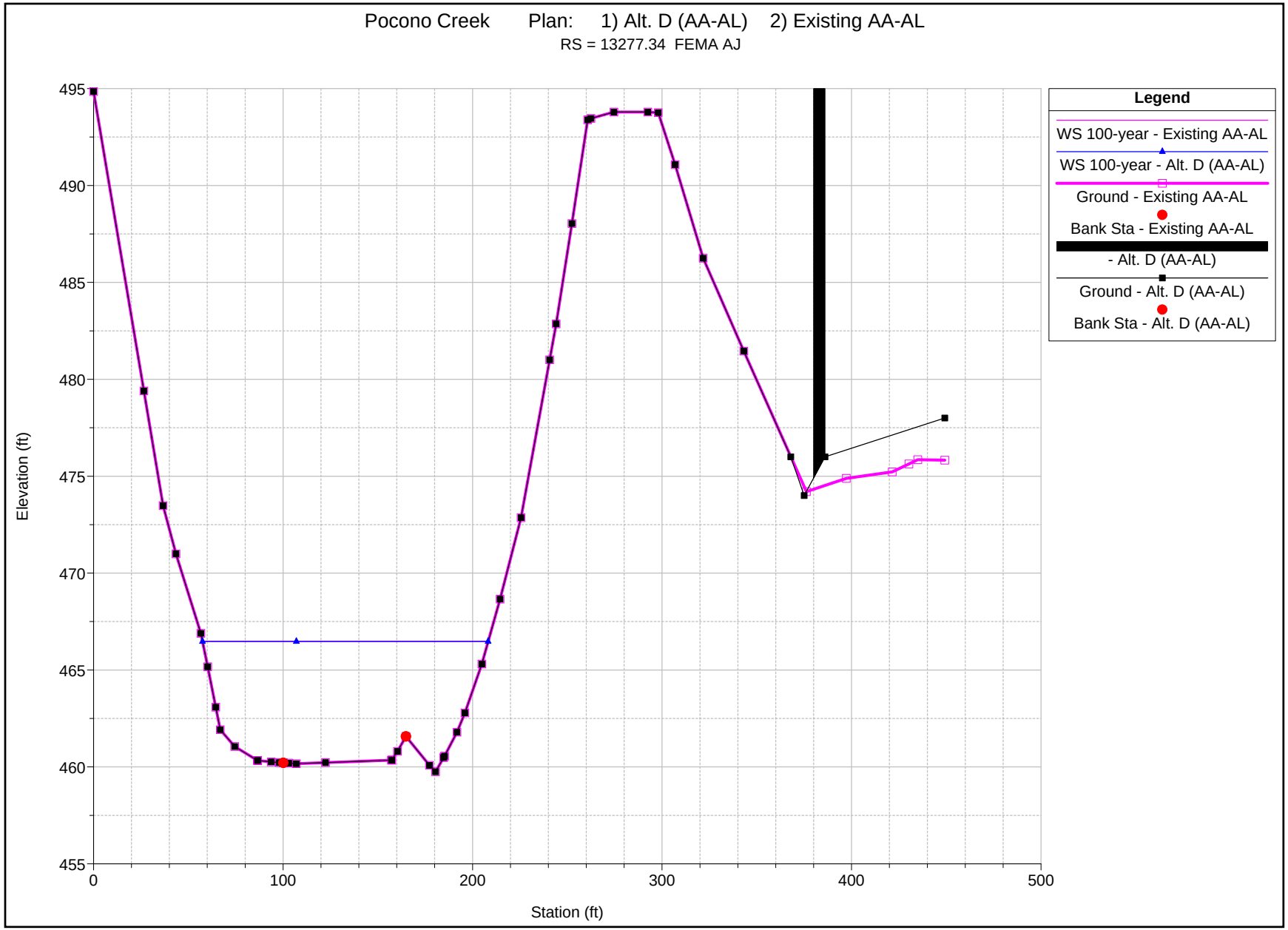

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 16233.35 FEMA AX
Legend
WS 100-year - Alt. D (AV-BP)
WS 100-year - Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
515
510
505
500
495
490
485
480
0
200
400
600
800
1000
1200
Station (ft)

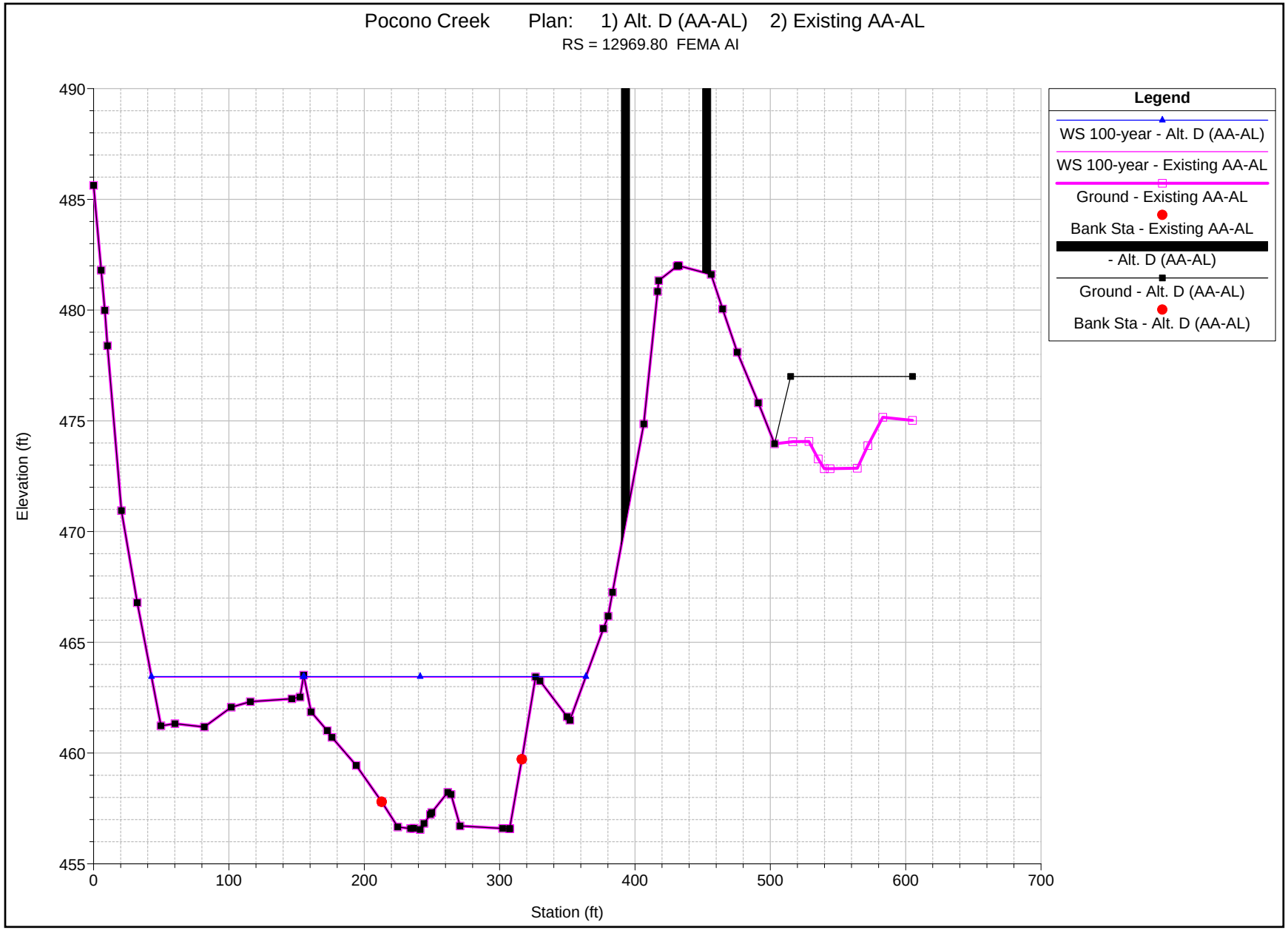

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 15925.92 FEMA AW
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
515
510
505
500
495
490
485
480
475
0
200
400
600
800
1000
1200
Station (ft)

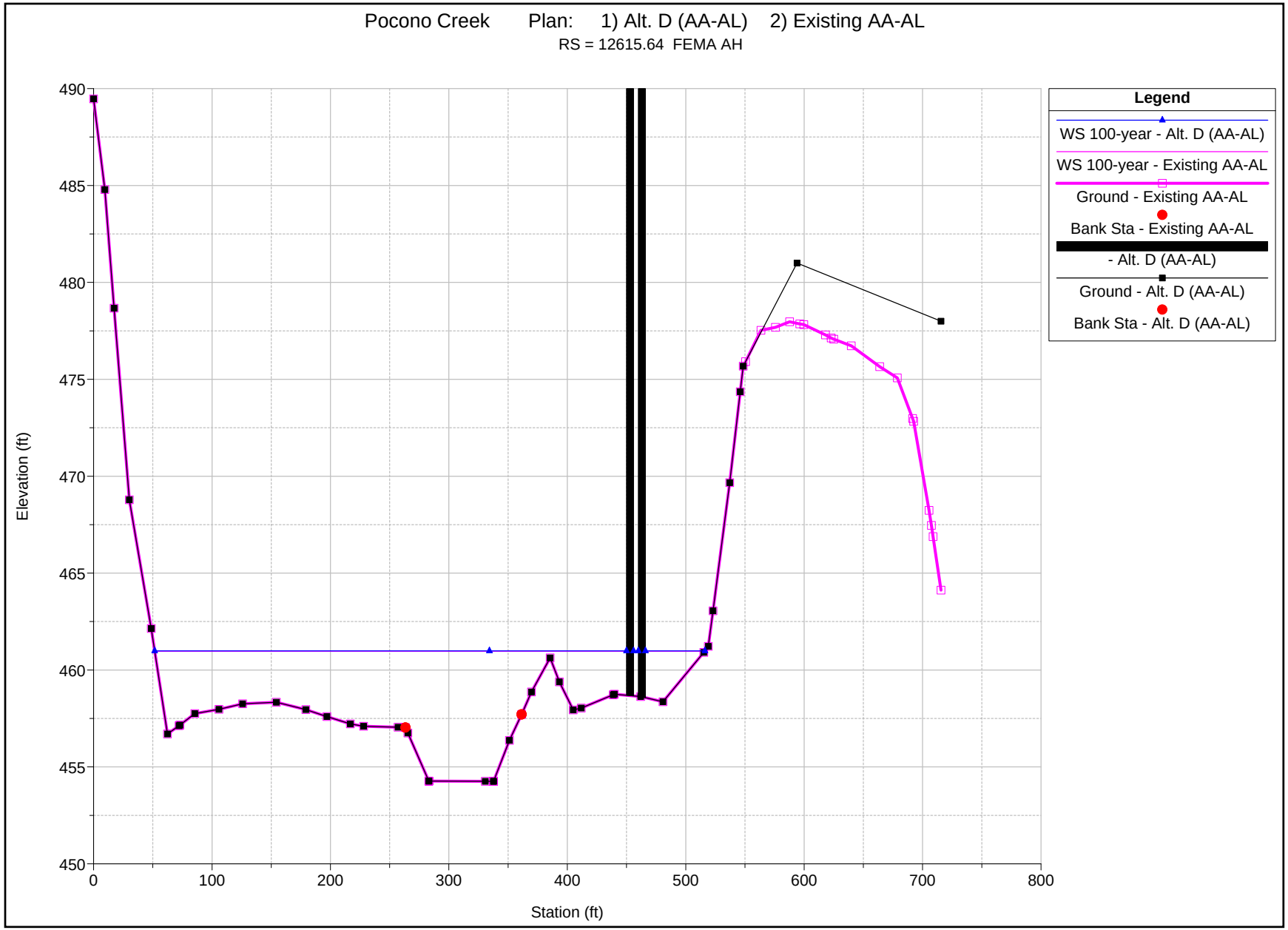

Pocono Creek Plan: 1) Alt. D (AV-BP) 2) Existing (AV
RS = 15614.06 FEMA AV
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. D (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. D (AV-BP)
Bank Sta - Alt. D (AV-BP)
Elevation (ft)
515
510
505
500
495
490
485
480
475
0
200
400
600
800
1000
1200
Station (ft)

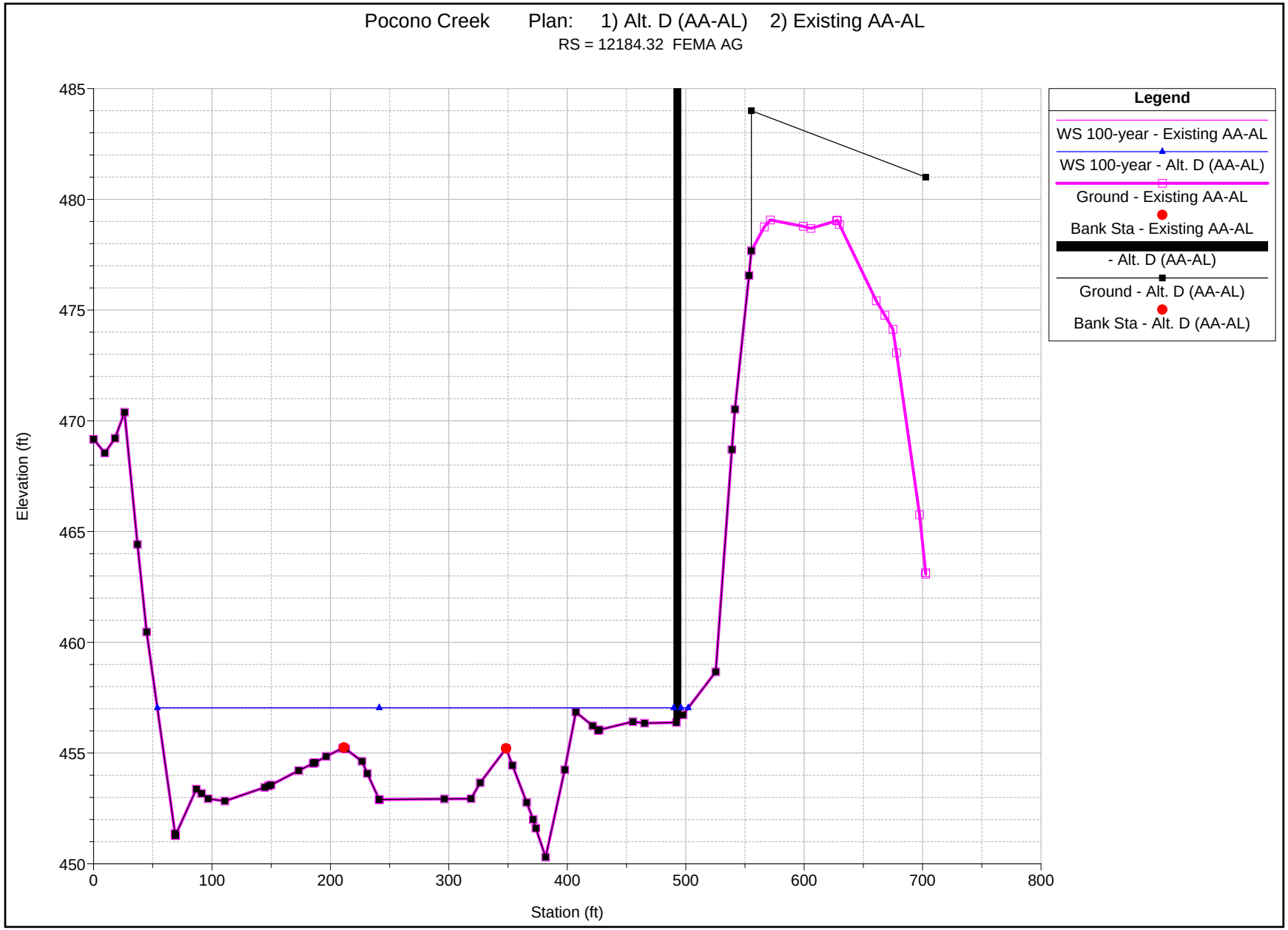

Pocono Creek Plan: 1) Alt. D (AA-AL) 2) Existing AA-AL
RS = 13729.02 FEMA AL
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. D (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. D (AA-AL)
Bank Sta - Alt. D (AA-AL)
Elevation (ft)
Station (ft)
500
495
490
485
480
475
470
465
460
0
100
200
300
400
500

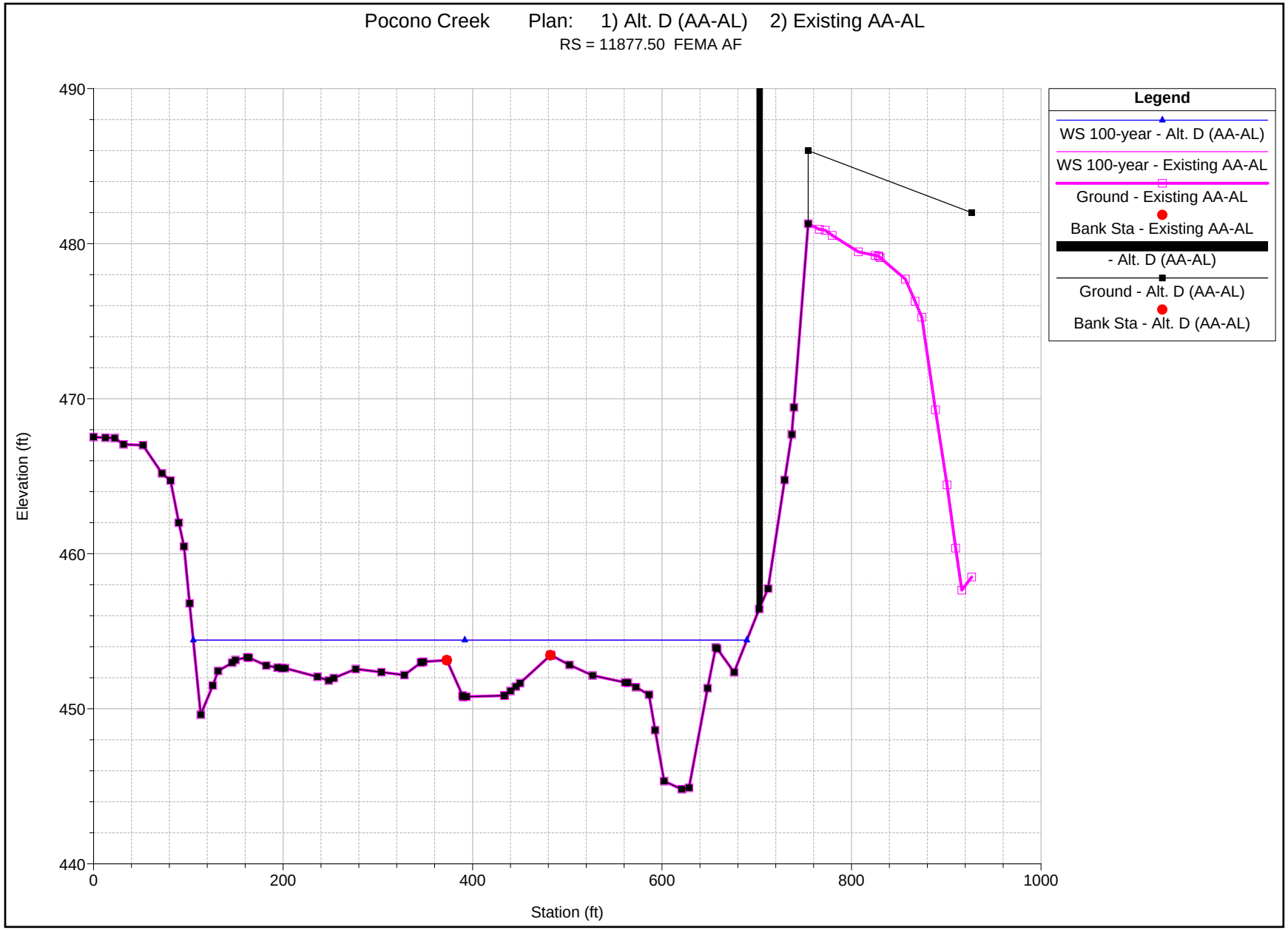

Pocono Creek Plan: 1) Alt. D (AA-AL) 2) Existing AA-AL
RS = 13530.63 FEMA AK
Elevation (ft)
Station (ft)
510
500
490
480
470
460
0
100
200
300
400
500
600
Legend
WS 100-year - Alt. D (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. D (AA-AL)
Bank Sta - Alt. D (AA-AL)

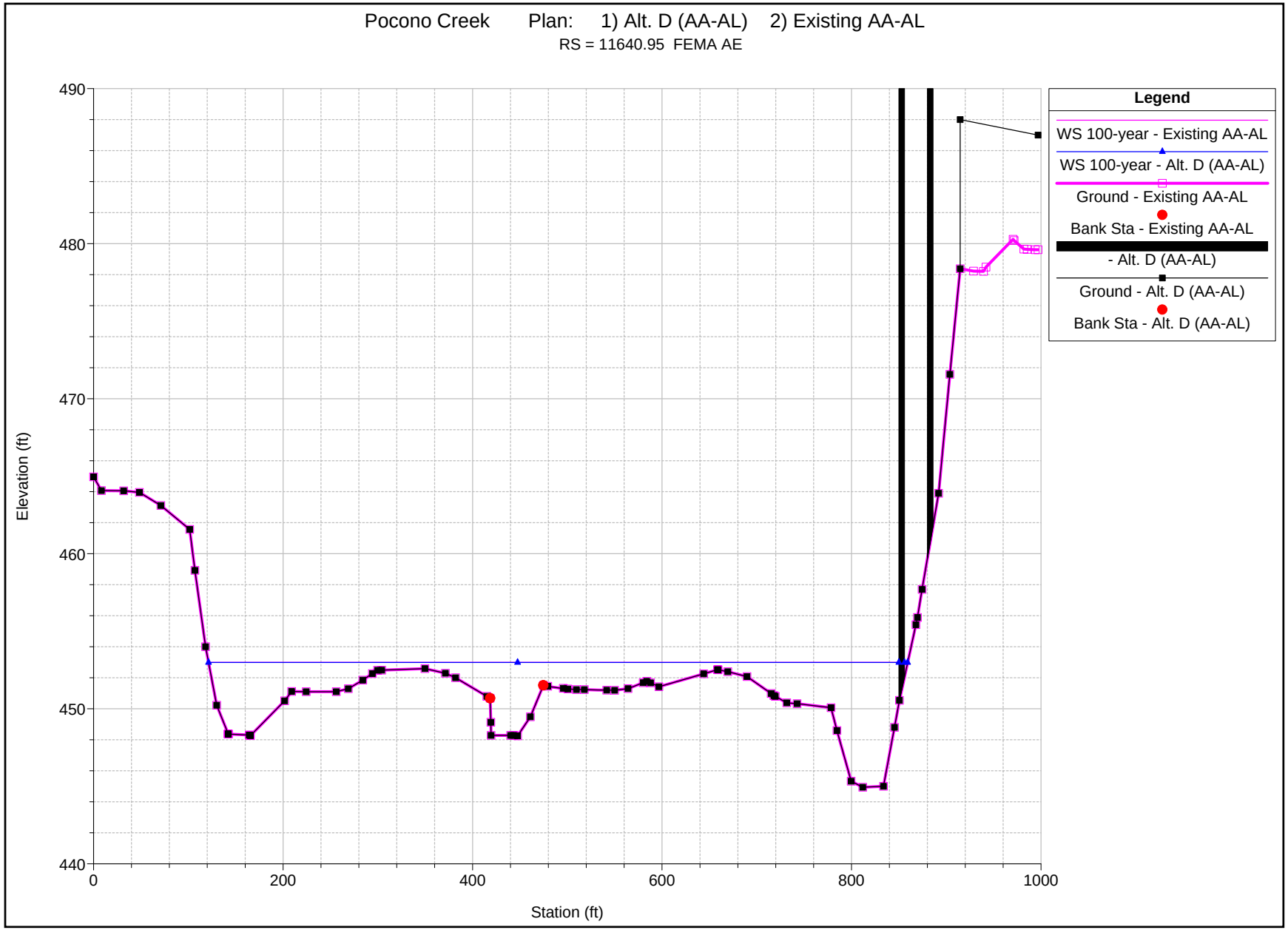

Pocono Creek Plan: 1) Alt. D (AA-AL) 2) Existing AA-AL
RS = 13277.34 FEMA AJ
Elevation (ft)
Station (ft)
495
490
485
480
475
470
465
460
455
0
100
200
300
400
500
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. D (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. D (AA-AL)
Ground - Alt. D (AA-AL)
Bank Sta - Alt. D (AA-AL)

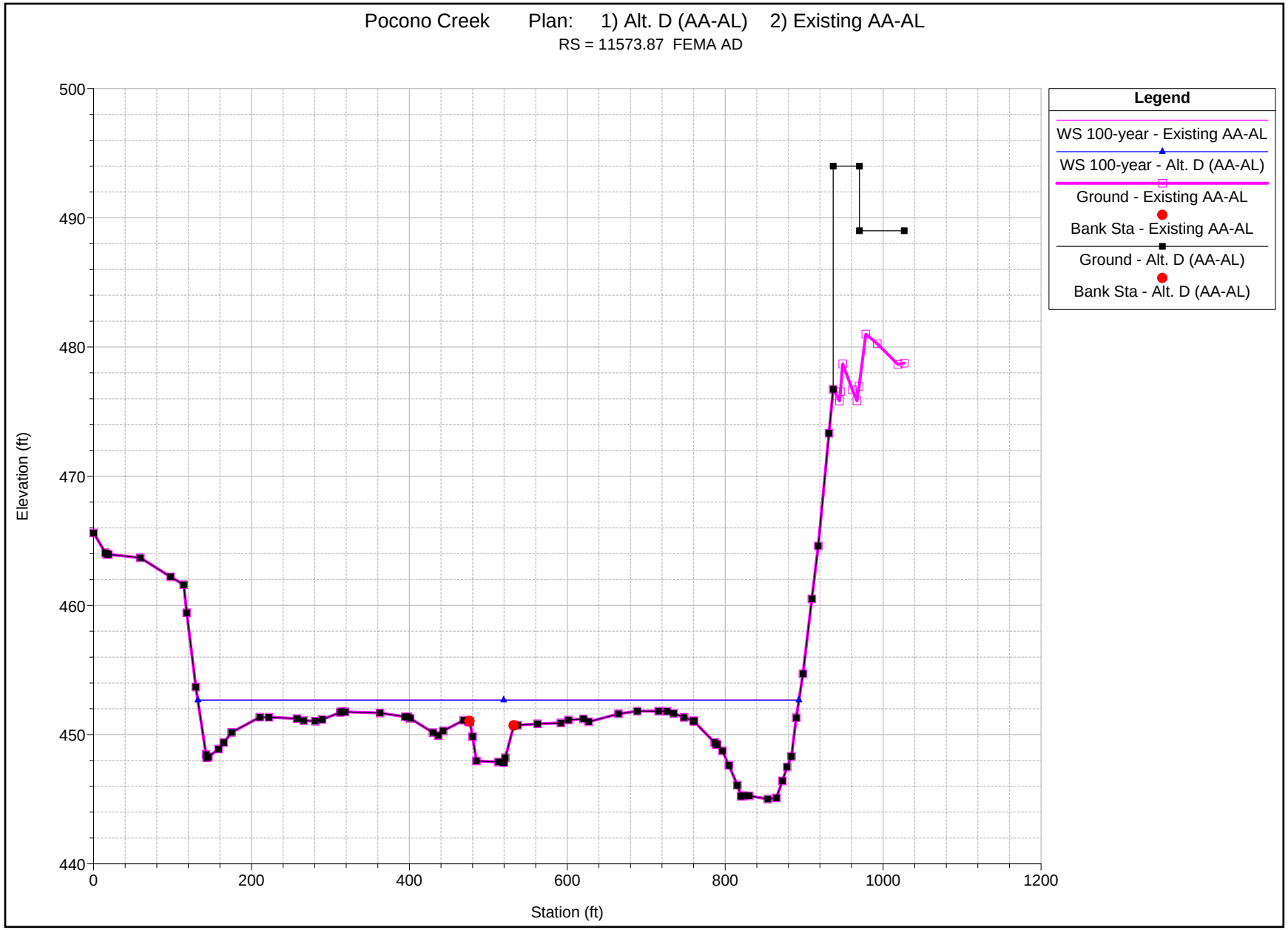

Pocono Creek Plan: 1) Alt. D (AA-AL) 2) Existing AA-AL
RS = 12969.80 FEMA AI
Elevation (ft)
Station (ft)
490
485
480
475
470
465
460
455
0
100
200
300
400
500
600
700
Legend
WS 100-year - Alt. D (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. D (AA-AL)
Ground - Alt. D (AA-AL)
Bank Sta - Alt. D (AA-AL)

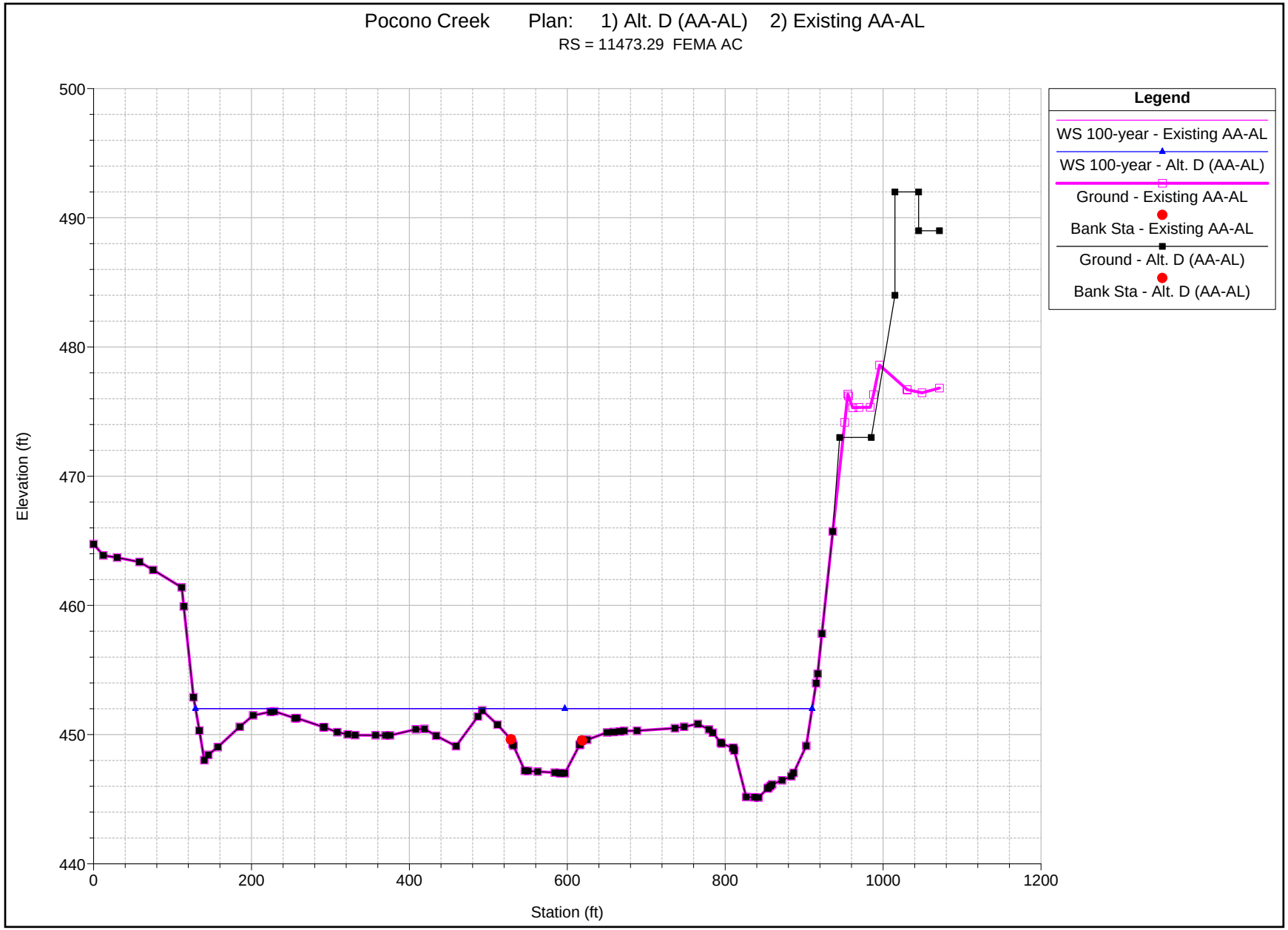

Pocono Creek Plan: 1) Alt. D (AA-AL) 2) Existing AA-AL
RS = 12615.64 FEMA AH
Elevation (ft)
Station (ft)
490
485
480
475
470
465
460
455
450
0
100
200
300
400
500
600
700
800
Legend
WS 100-year - Alt. D (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. D (AA-AL)
Ground - Alt. D (AA-AL)
Bank Sta - Alt. D (AA-AL)

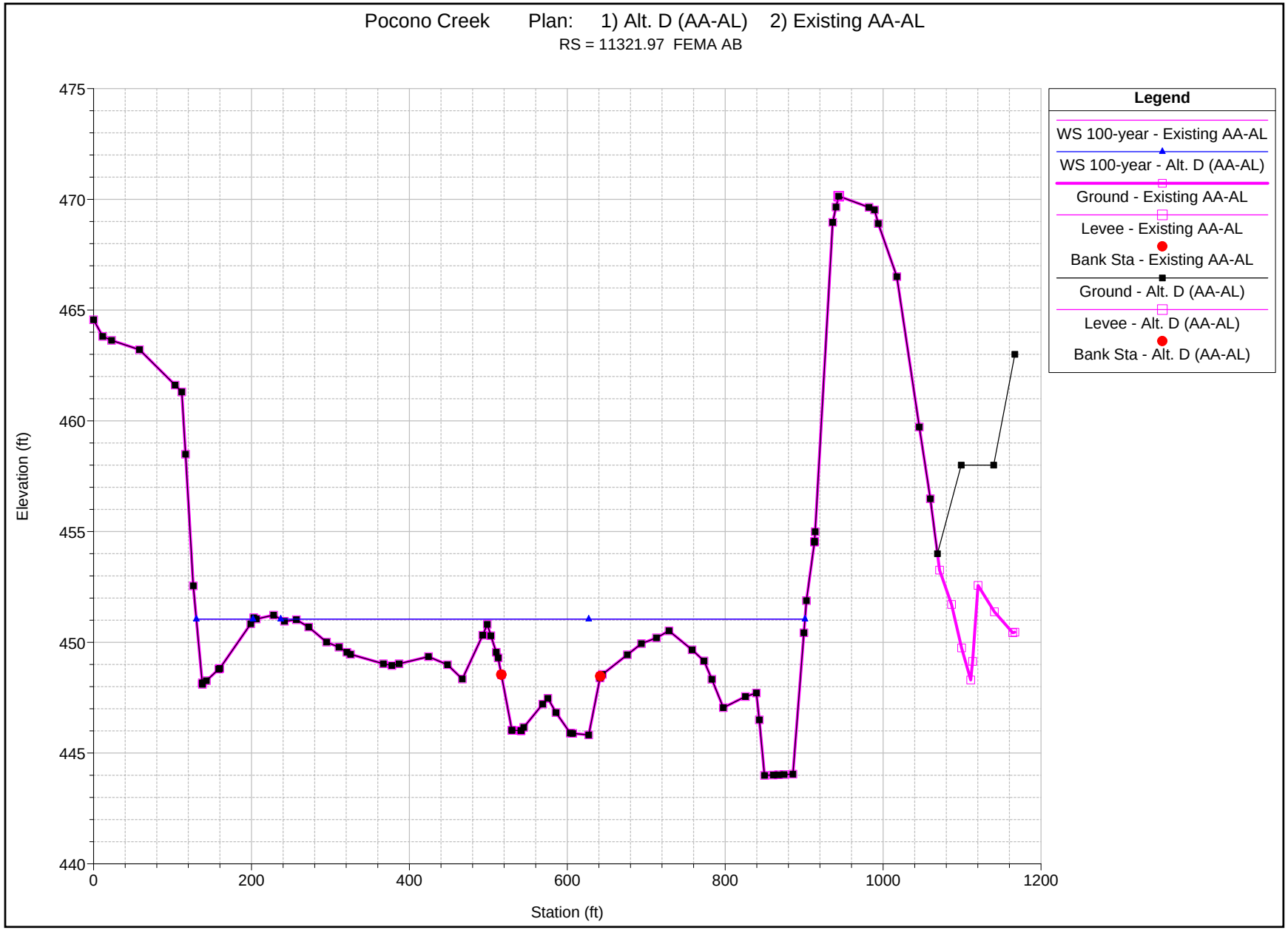

Pocono Creek Plan: 1) Alt. D (AA-AL) 2) Existing AA-AL
RS = 12184.32 FEMA AG
Elevation (ft)
Station (ft)
485
480
475
470
465
460
455
450
0
100
200
300
400
500
600
700
800
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. D (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. D (AA-AL)
Ground - Alt. D (AA-AL)
Bank Sta - Alt. D (AA-AL)

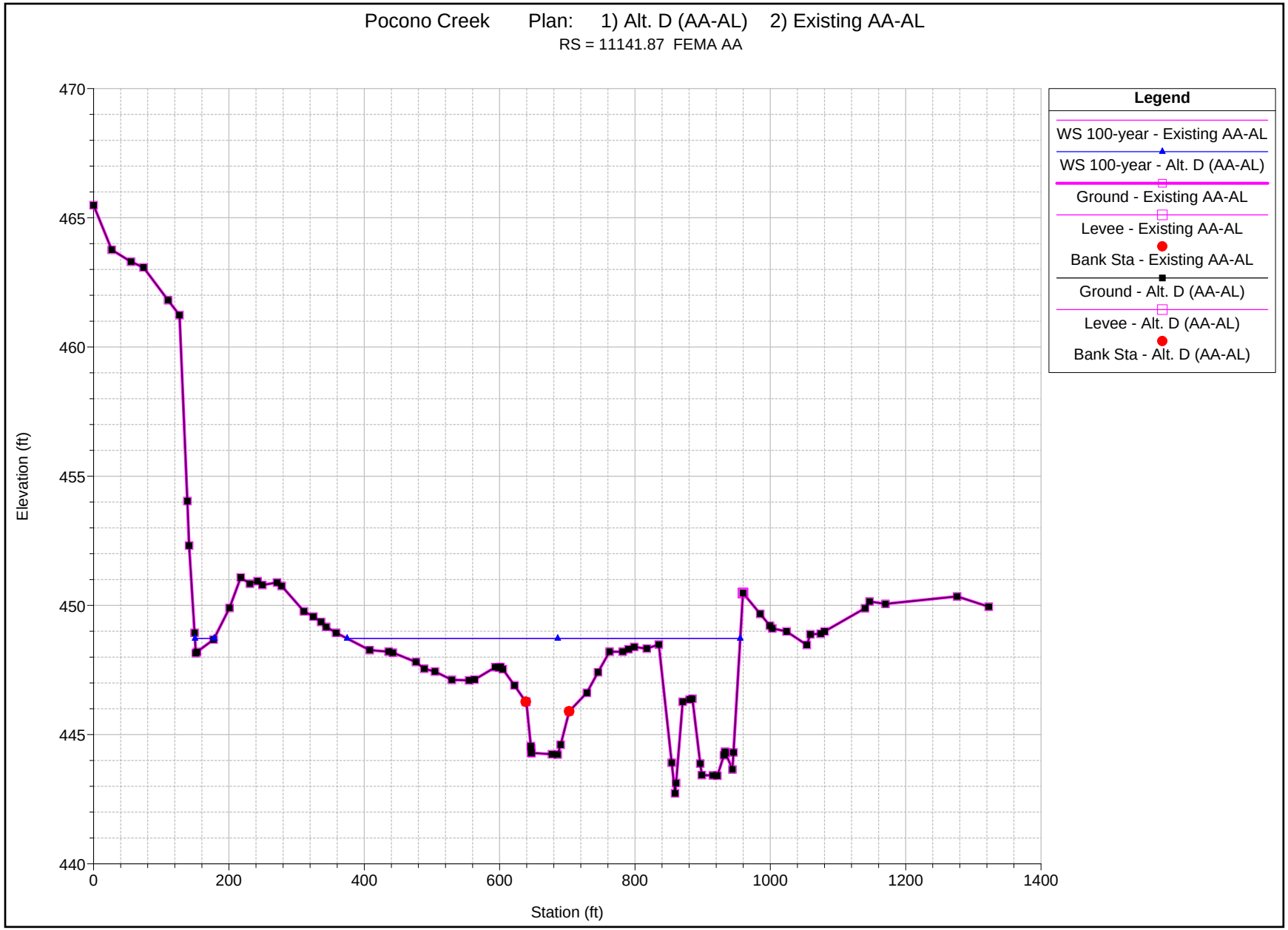

Pocono Creek Plan: 1) Alt. D (AA-AL) 2) Existing AA-AL
RS = 11877.50 FEMA AF
Legend
WS 100-year - Alt. D (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. D (AA-AL)
Ground - Alt. D (AA-AL)
Bank Sta - Alt. D (AA-AL)
Elevation (ft)
490
480
470
460
450
440
0
200
400
600
800
1000
Station (ft)


Pocono Creek Plan: 1) Alt. D (AA-AL) 2) Existing AA-AL
RS = 11640.95 FEMA AE
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. D (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. D (AA-AL)
Ground - Alt. D (AA-AL)
Bank Sta - Alt. D (AA-AL)
Elevation (ft)
490
480
470
460
450
440
0
200
400
600
800
1000
Station (ft)


Pocono Creek Plan: 1) Alt. D (AA-AL) 2) Existing AA-AL
RS = 11573.87 FEMA AD
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. D (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. D (AA-AL)
Bank Sta - Alt. D (AA-AL)
Elevation (ft)
500
490
480
470
460
450
440
0
200
400
600
800
1000
1200
Station (ft)


Pocono Creek Plan: 1) Alt. D (AA-AL) 2) Existing AA-AL
RS = 11473.29 FEMA AC
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. D (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. D (AA-AL)
Bank Sta - Alt. D (AA-AL)
Elevation (ft)
Station (ft)
500
490
480
470
460
450
440
0
200
400
600
800
1000
1200


Pocono Creek Plan: 1) Alt. D (AA-AL) 2) Existing AA-AL
RS = 11321.97 FEMA AB
Elevation (ft)
Station (ft)
475
470
465
460
455
450
445
440
0
200
400
600
800
1000
1200
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. D (AA-AL)
Ground - Existing AA-AL
Levee - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. D (AA-AL)
Levee - Alt. D (AA-AL)
Bank Sta - Alt. D (AA-AL)


Pocono Creek Plan: 1) Alt. D (AA-AL) 2) Existing AA-AL
RS = 11141.87 FEMA AA
Elevation (ft)
Station (ft)
470
465
460
455
450
445
440
0
200
400
600
800
1000
1200
1400
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. D (AA-AL)
Ground - Existing AA-AL
Levee - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. D (AA-AL)
Levee - Alt. D (AA-AL)
Bank Sta - Alt. D (AA-AL)

I-80 Alternatives Analysis

APPENDIX F

Alternative B Results

Monroe County
PennDOT District 5-0

NEWELL TERESKA & MACKAY ENGINEERING

Proposed Alternative B Results

Water surface elevations at the hydraulic sections in the McMichael and Pocono Creek HEC-RAS models are compared with existing conditions in tables below for the 100-year event. Flood maps for every study area are also attached. The flood profiles include the calculated 100-year elevations as well as the FEMA 100-year floodplain and floodway. The FEMA floodplain may not follow the provided contours as it was mapped using outdated data. Furthermore, note that the proposed contours may end abruptly due to the preliminary stages of the project. The Brodhead Creek alternative B bridge is the same as the alternative A bridge, so please refer to the alternative A analysis for results.

Table 1: McMichael Creek Existing vs. Alternative B FEMA 100-year Flow Flood Elevations

HEC-RAS Cross Section	FEMA Cross Section	Water Surface Elevations		Difference (Ex-Alt.D)
		Existing	Alternative B	
10670	J	424.5	424.5	0.0
9535		424.1	424.1	0.0
8400		421.2	421.2	0.0
8341		420.8	420.8	0.0
8320.5	Village Drive Bridge			
8300		420.5	420.5	0.0
8250		417.9	417.9	0.0
7030	I	417.9	418.0	0.0
6655	H	416.0	416.1	0.0
6295		416.7	416.8	0.0
6185		416.6	N/A	N/A
6142.5	I-80 Bridge			
6110		416.5	N/A	N/A
6100		416.5	N/A	N/A
6070	G	416.1	N/A	N/A
6015		416.0	416.2	+0.2
5680	F	416.0	416.1	+0.1
5360		416.0	416.1	+0.1
5040		415.7	415.8	+0.1
4690	E	414.7	414.9	+0.1
4440		415.0	414.4	-0.1
4190	D	414.7	414.7	0.0

Table 2: McMichael Creek Existing vs. Alternative B FEMA 100-year Flow Flood Elevations (continued)

HEC-RAS Cross Section	FEMA Cross Section	Water Surface Elevations		Difference (Ex-Alt.D)
		Existing	Alternative B	
4020		414.3	414.3	0.0
3850		414.1	414.1	0.0
3680		413.8	413.8	0.0
3510		413.9	413.9	0.0
3170		413.7	413.7	0.0
3095		413.7	413.7	0.0
3075	SR 0611 Bridge			
3055		413.5	413.5	0.0
3005	C	413.5	413.5	0.0
2385		408.8	408.8	0.0
2150		410.3	410.3	0.0
2085		410.2	410.2	0.0
2082.5	Fifth Street Dam			
2080		404.8	404.8	0.0
2055.1		N/A	392.3	N/A
2055		392.4	N/A	N/A
2035	SR 0191 Bridge			
2015.1		N/A	400.5	N/A
2015		400.6	N/A	N/A
1930		395.6	395.6	0.0
1585	B	392.2	392.2	0.0
940		387.2	387.2	0.0
495	A	385.9	385.9	0.0
0		385.0	385.0	0.0

Small increases in water surface elevations are expected in the area between the SR 0611 bridge and the I-80 bridge over McMichael Creek due to the floodplain encroachment from the roadway embankment. Water surface increases are not expected upstream of the I-80 bridge.

Table 3: Pocono Creek (upstream) Existing vs. Alternative B FEMA 100-year Flow Flood Elevations Upstream of I-80 Crossing

HEC-RAS Cross Section	FEMA Section	Water Surface Elevations		Difference (Ex-Alt.D)
		Existing	Alternative B	
20035.91	BP	534.7	534.7	0.0
19915.93	BO	534.7	534.7	0.0
1973.46	BN	533.9	533.9	0.0
19652.12	BM	532.7	532.7	0.0
19600.87	BL	525.0	525.0	0.0
19530.00	BK	522.6	522.6	0.0
19429.39	BJ	518.6	519.5	+0.9
18256.66	BI	518.0	518.8	+0.8
19008.15	BH	513.9	514.7	+0.8
18813.48	BG	510.6	510.6	0.0
18593.37	BF	507.6	507.6	0.0
19389.58	BE	507.1	507.1	0.0
18128.60	BD	505.4	505.4	0.0
17852.75	BC	501.1	501.1	0.0
17513.34	BB	500.2	500.2	0.0
17091.69	BA	495.2	495.2	0.0
16791.16	AZ	492.7	492.8	+0.1
16543.12	AY	491.7	492.1	+0.4
16233.35	AX	489.5	489.8	+0.3
15925.92	AW	487.7	487.7	0.0
15614.06	AV	485.0	485.0	0.0

Alternative B encroaches into the floodplain and floodway for Pocono Creek upstream of the I-80 crossing. Since the project encroaches into the FEMA floodway any increases to the 100-year event will require a CLOMR. The results show increases to the 100-year event up to 0.9 feet at FEMA cross section BJ.

Table 4: Pocono Creek (bridge) Existing vs. Alternative B FEMA 100-year Flow Flood Elevations

HEC-RAS Cross Section	FEMA Cross Section	Water Surface Elevations		Difference (Ex-Alt.D)
		Existing	Alternative B	
21	AU	483.2	483.6	0.4
20		482.6	483.1	0.5
19	AT	482.0	482.7	0.7
18		481.9	482.7	0.8
I-80 Bridge				
13	AQ	477.5	477.5	0.0
12	AP	478.2	478.2	0.0
11		478.3	478.3	0.0
SR 2009 Bridge				
10		476.3	476.3	0.0
9		476.5	476.5	0.0
8		476.3	476.3	0.0
7	AO	475.9	475.9	0.0
6		473.3	473.3	0.0
5		472.6	472.7	0.1
4	AN	471.8	471.9	0.1
3		471.5	471.5	0.0
2		470.9	471.0	0.1
1	AM	470.9	470.9	0.0

The bridge crossing on Pocono Creek for Alternative B includes bridges for ramps upstream and downstream of the I-80 bridge crossing. The additional ramps increase the out-to-out width of the bridge significantly and a few of the existing cross sections had to be deleted. With fewer cross sections, the energy grade slope is extended further upstream. The energy grade line is causing the increase and may not provide an accurate comparison between existing and proposed scenarios. One approach to provide a better comparison is to create an existing model with the same cross sections as the Alt B model (eliminating the cross sections that fall within the Alternative B bridge). This way the energy grade line would be maintained and the comparison would be apples to apples. However, the existing water surface elevations between alternatives would be different. The current hydraulic model shows increases upstream of the proposed bridge. The maximum water surface elevation increase upstream is 0.8 feet at cross section 18 and will require a CLOMR.

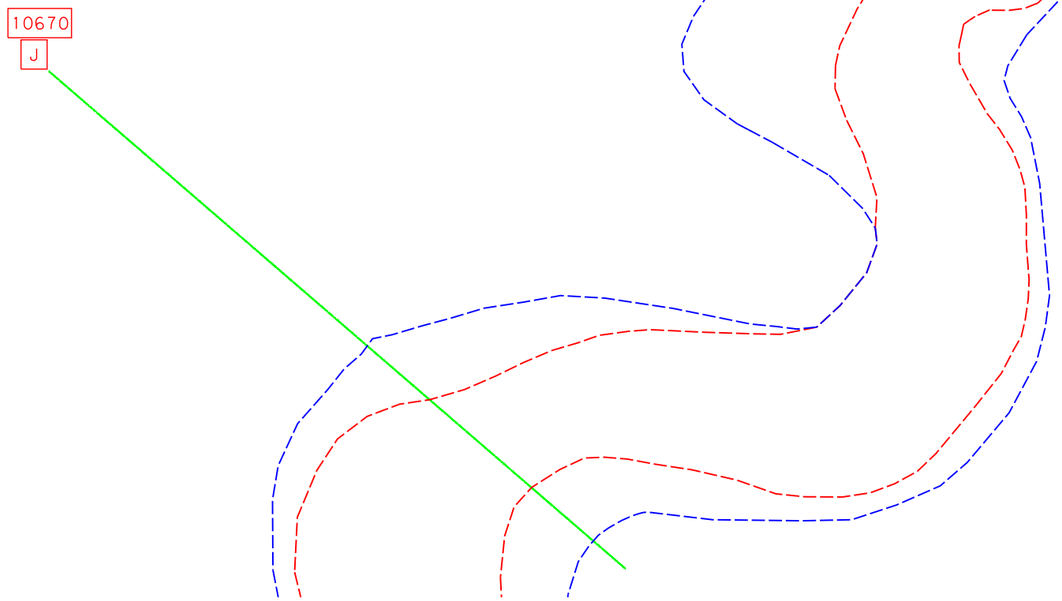
Alternative B encroaches into the floodplain and floodway for Pocono Creek downstream of the I-80 crossing. Since the project encroaches into the floodway any increases to the 100-year event will require a CLOMR. The results show increases to the 100-year event up to 0.1 feet at several FEMA cross sections downstream.

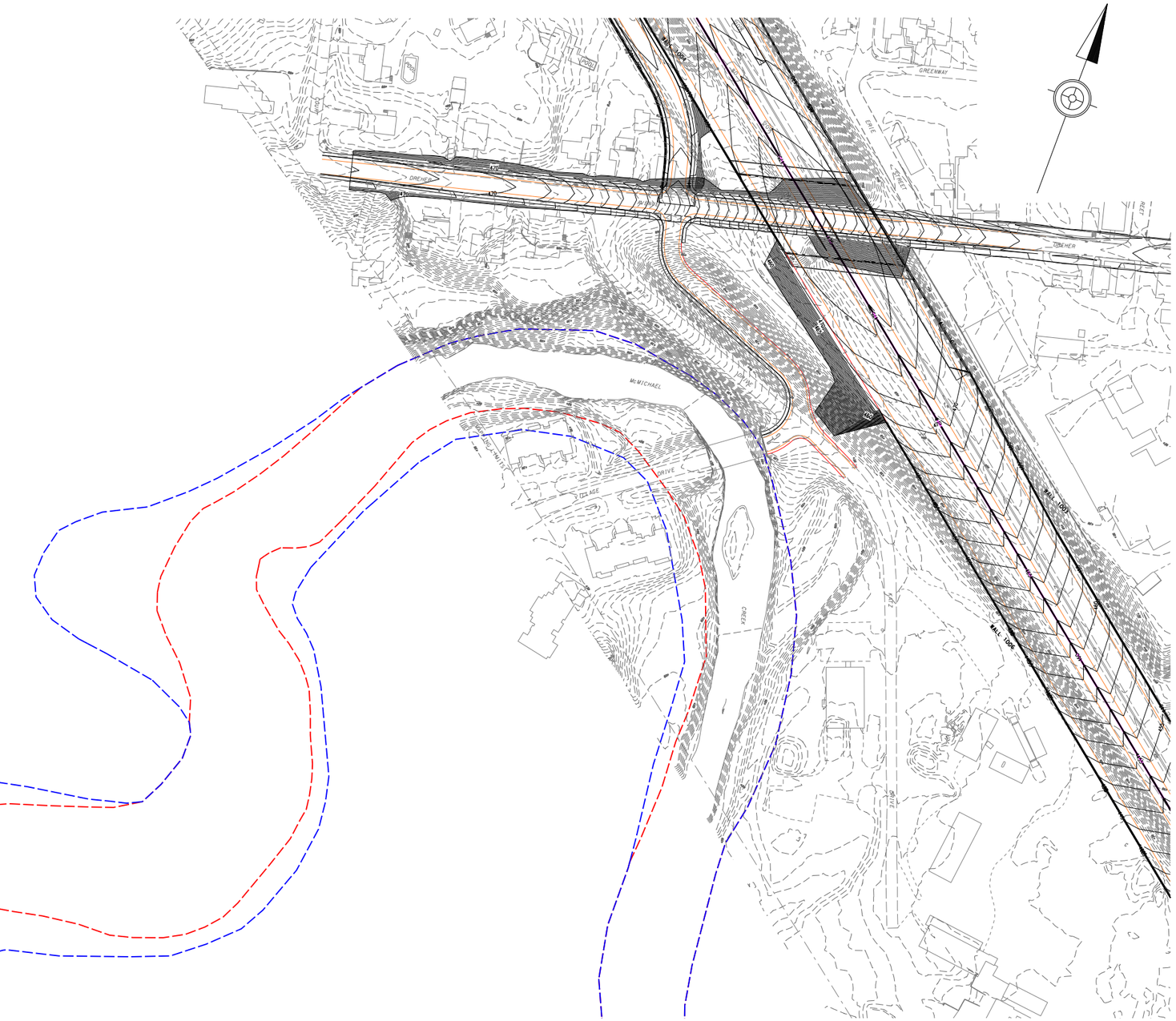
Table 5: Pocono Creek (downstream) Existing vs. Alternative B FEMA 100-year Flow Flood Elevations

HEC-RAS Cross Section	FEMA Cross Section	Water Surface Elevations		Difference (Ex-Alt.B)
		Existing	Alternative B	
13729.02	AL	470.6	470.4	-0.2
13530.63	AK	469.8	469.8	0.0
13277.34	AJ	466.5	466.5	0.0
12696.80	AI	463.4	463.4	0.0
12615.64	AH	461.0	461.0	0.0
12184.32	AG	457.1	457.1	0.0
11877.70	AF	454.4	454.6	+0.2
11640.95	AE	453.0	453.1	+0.1
11573.87	AD	452.7	452.7	0.0
11473.29	AC	452.0	452.0	0.0
11321.97	AB	451.1	451.1	0.0
11141.87	AA	448.7	448.7	0.0

Alternative B encroaches into the floodplain and floodway for Pocono Creek downstream of the I-80 crossing. Since the project encroaches into the floodway any increases to the 100-year event will require a CLOMR. The results show increases to the 100-year event up to 0.2 feet at FEMA cross section AF.

The Little Pocono Creek alternative B configuration is the same as alternative D, therefore all results are the same as alternative D. The structure under I-80 could not be sized appropriately since the ramp downstream of the crossing has contours lower than the assumed structure size. A smaller structure size would generate backwater increases that would require a CLOMR. Therefore, further coordination between the structure, roadway and H&H groups is required.





LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (PROPOSED FLOODPLAIN IS THE SAME AS EXISTING EXCEPT WHERE SHOWN)
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- C — FEMA HYDRAULIC CROSS-SECTION
- EDGE OF WATER

NOTE: ONLY CROSS SECTIONS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAPS ARE DISPLAYED.

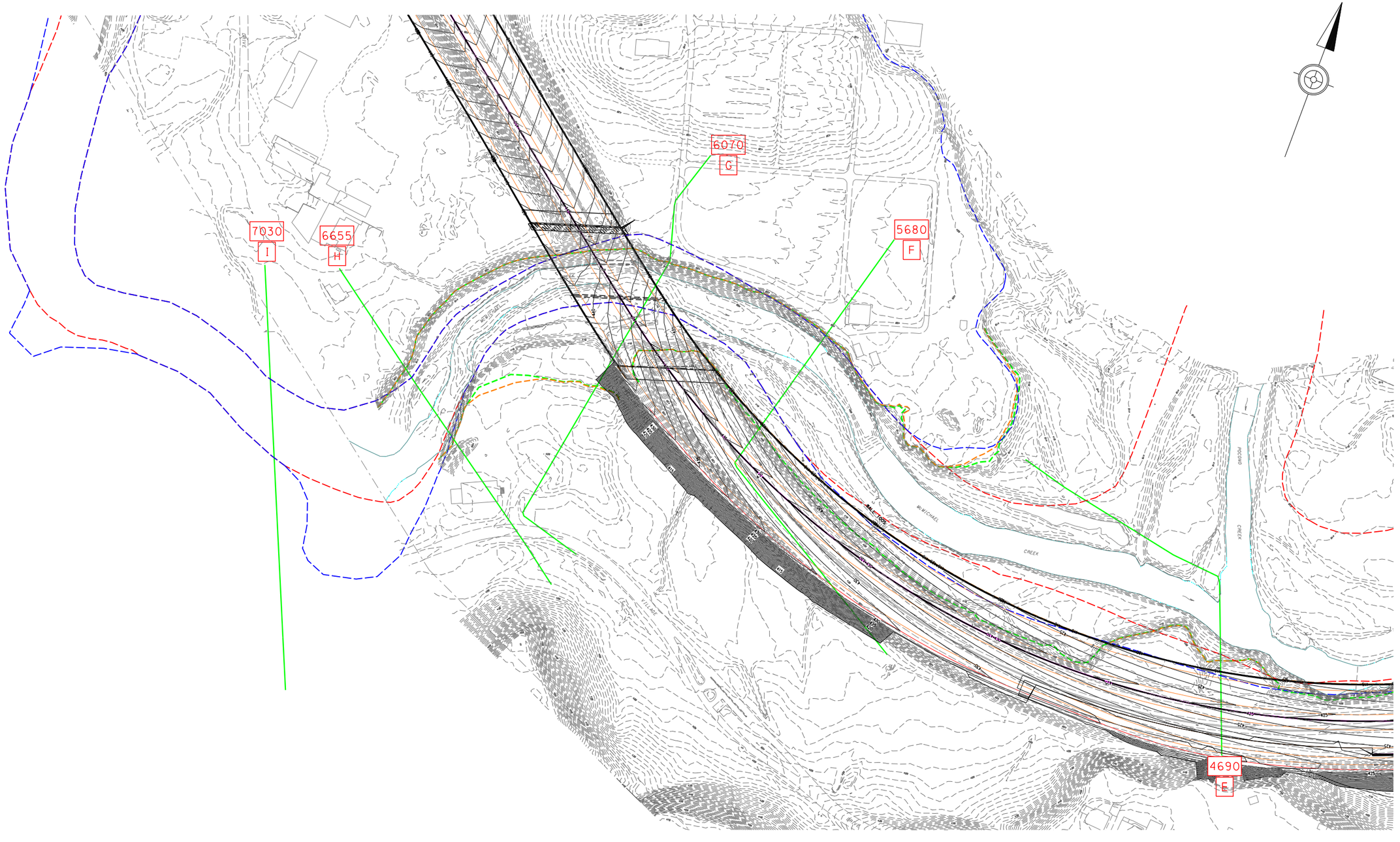
SCALE IN FEET

0 200 400

NEWELL TERESKA & MACKAY ENGINEERING
130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER MCMICHAEL CREEK EXISTING AND ALTERNATIVE B HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE
MUNICIPALITY: STROUDSBURG BOROUGH



LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (PROPOSED FLOODPLAIN IS THE SAME AS EXISTING EXCEPT WHERE SHOWN)
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- C — FEMA HYDRAULIC CROSS-SECTION
- EDGE OF WATER

NOTE: ONLY CROSS SECTIONS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAPS ARE DISPLAYED.

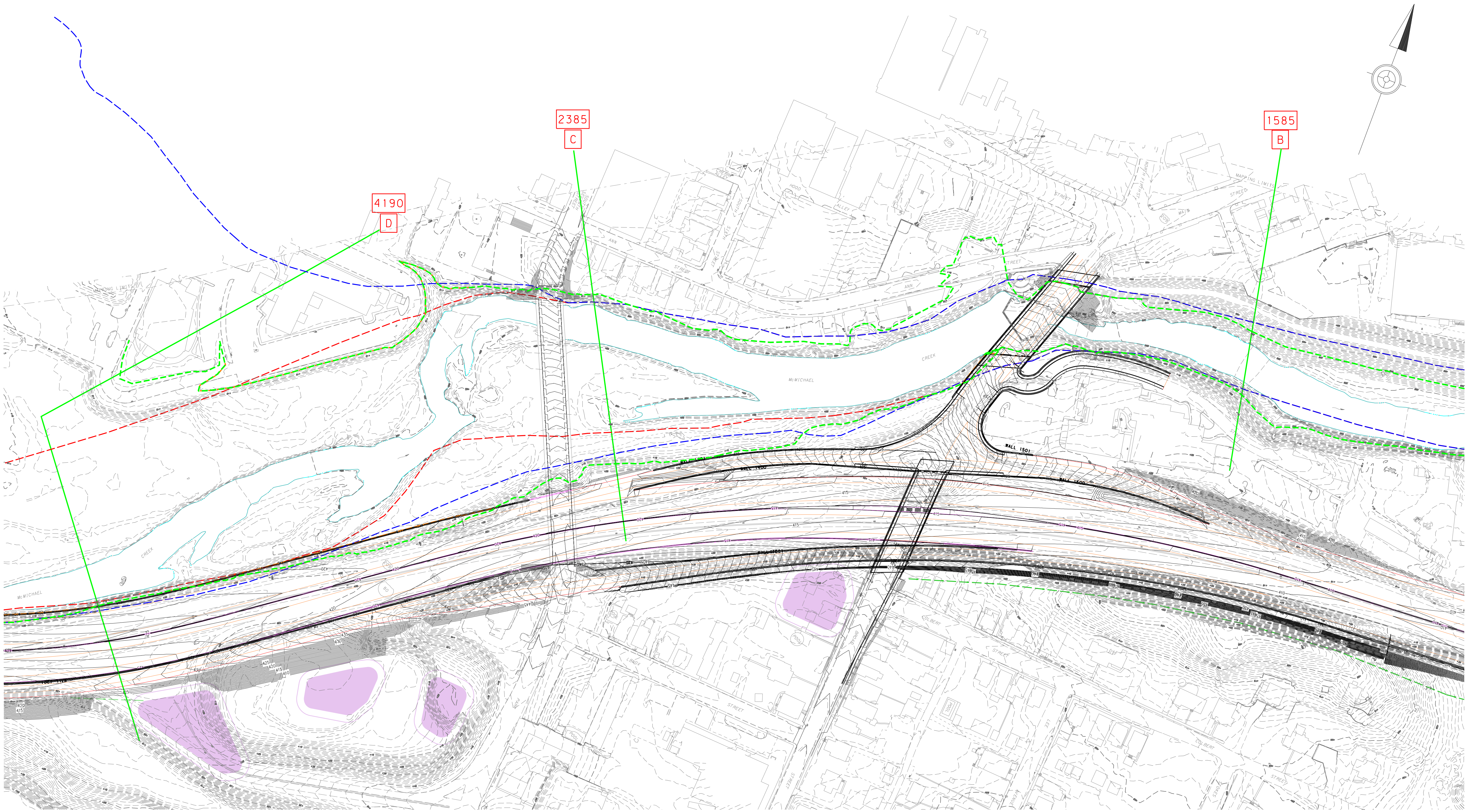
SCALE IN FEET

0 200 400

NEWELL TERESKA & MACKAY ENGINEERING
130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER MCMICHAEL CREEK EXISTING AND ALTERNATIVE B HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE
MUNICIPALITY: STROUDSBURG BOROUGH



<u>LEGEND</u>

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (PROPOSED FLOODPLAIN IS THE SAME AS EXISTING EXCEPT WHERE SHOWN)
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- C — FEMA HYDRAULIC CROSS-SECTION
- EDGE OF WATER

NOTE: ONLY CROSS SECTIONS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAPS ARE DISPLAYED.

SCALE IN FEET

0 200 400

NEWELL TERESKA & MACKAY ENGINEERING

130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER MCMICHAEL CREEK
EXISTING AND ALTERNATIVE B
HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE
MUNICIPALITY: STROUDSBURG BOROUGH

BP BO BN BM BK BJ BL BI BH BG BF BE BD BC BB BA AZ AY AX AW AV

LEGEND

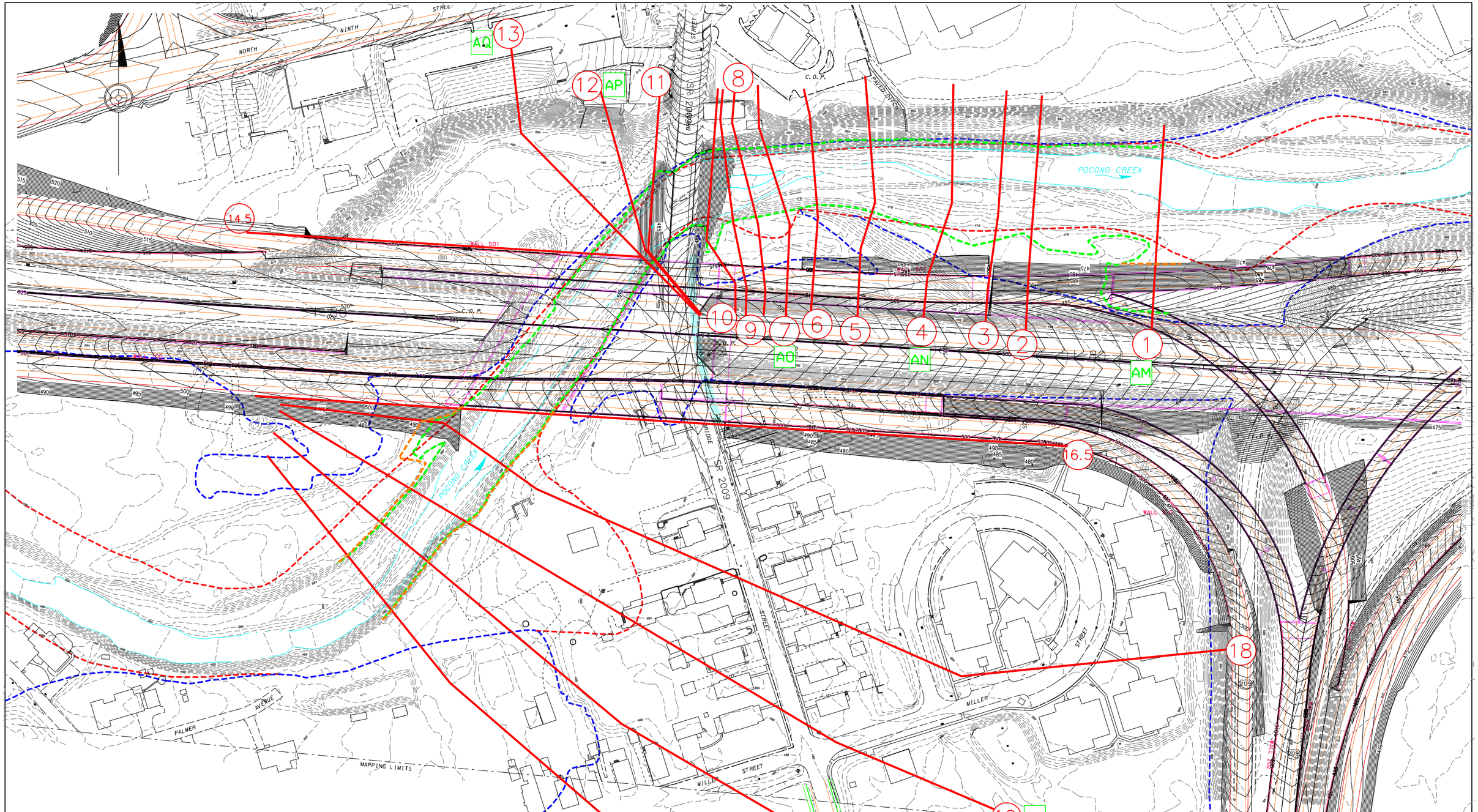
- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION
  (proposed floodplain same as existing unless noted)
- FEMA 100-YEAR FLOODPLAIN
- FEMA FLOODWAY
- (AV) FEMA SECTION IDENTIFICATION
- EDGE OF WATER

SCALE IN FEET
0 350 700

NEWELL TERESKA & MACKAY ENGINEERING
130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER POCONO CREEK
EXISTING AND ALTERNATIVE B
HYDRAULIC CROSS-SECTION MAP

COUNTY: MONROE CO.
MUNICIPALITY: STROUD TWP.



LEGEND

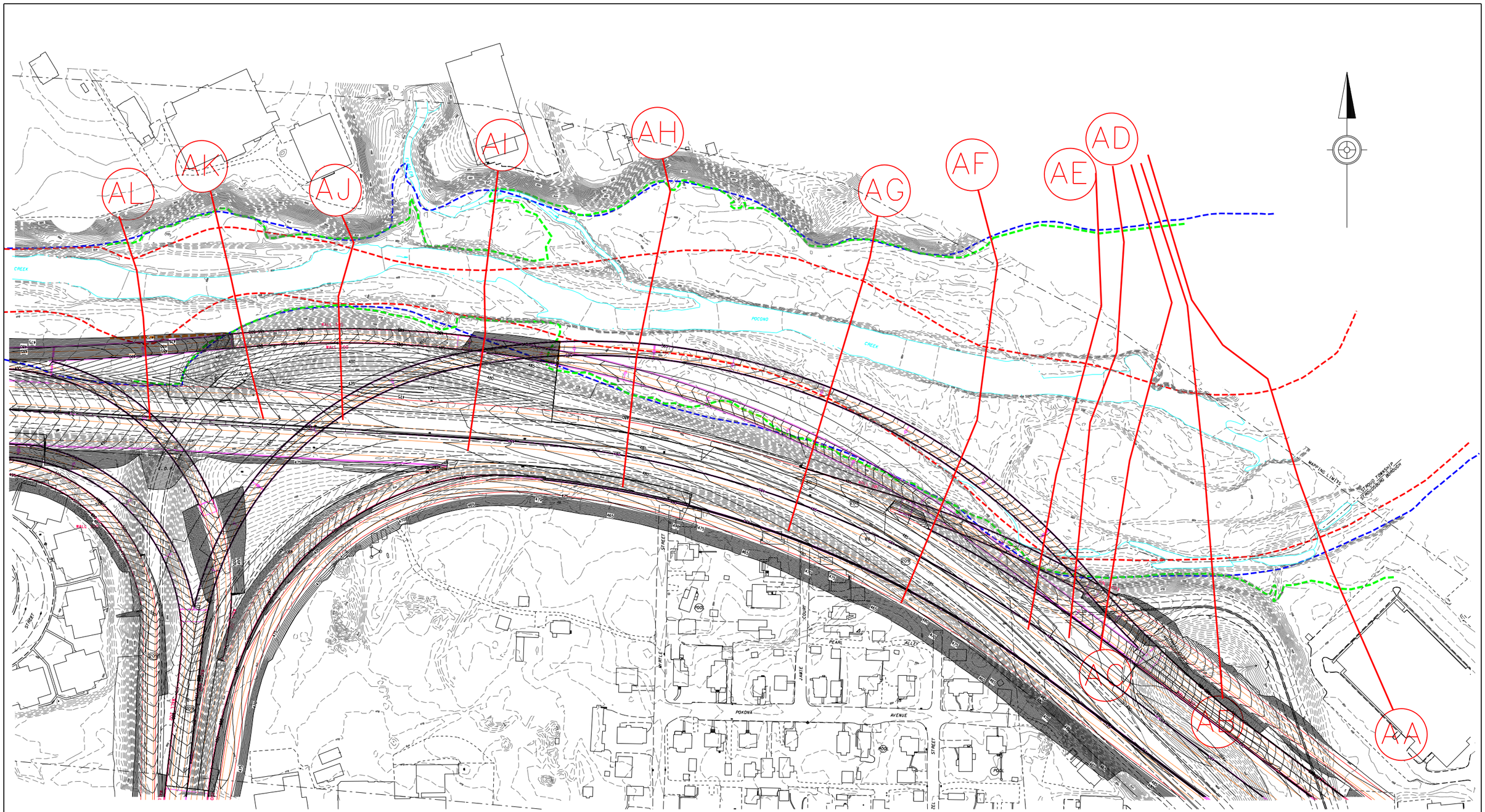
- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (proposed floodplain same as existing unless noted)
- FEMA FLOODPLAIN
- FEMA FLOODWAY
- (9) EXISTING & PROPOSED HYDRAULIC CROSS-SECTION
- (AE) FEMA SECTION IDENTIFICATION
- EDGE OF WATER

SCALE IN FEET
0 150 300

NEWELL TERESKA & MACKAY ENGINEERING
130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

I-80 OVER POCONO CREEK
ALTERNATIVE B
HYDRAULIC CROSS-SECTION MAP

COUNTY: Monroe
MUNICIPALITY: Stroud Township



LEGEND

- EXISTING 100-YEAR FLOOD ELEVATION
- PROPOSED 100-YEAR FLOOD ELEVATION (proposed floodplain same as existing unless noted)
- FEMA FLOODPLAIN
- FEMA FLOODWAY
- AA - FEMA HYDRAULIC CROSS-SECTION
- EDGE OF WATER

SCALE IN FEET

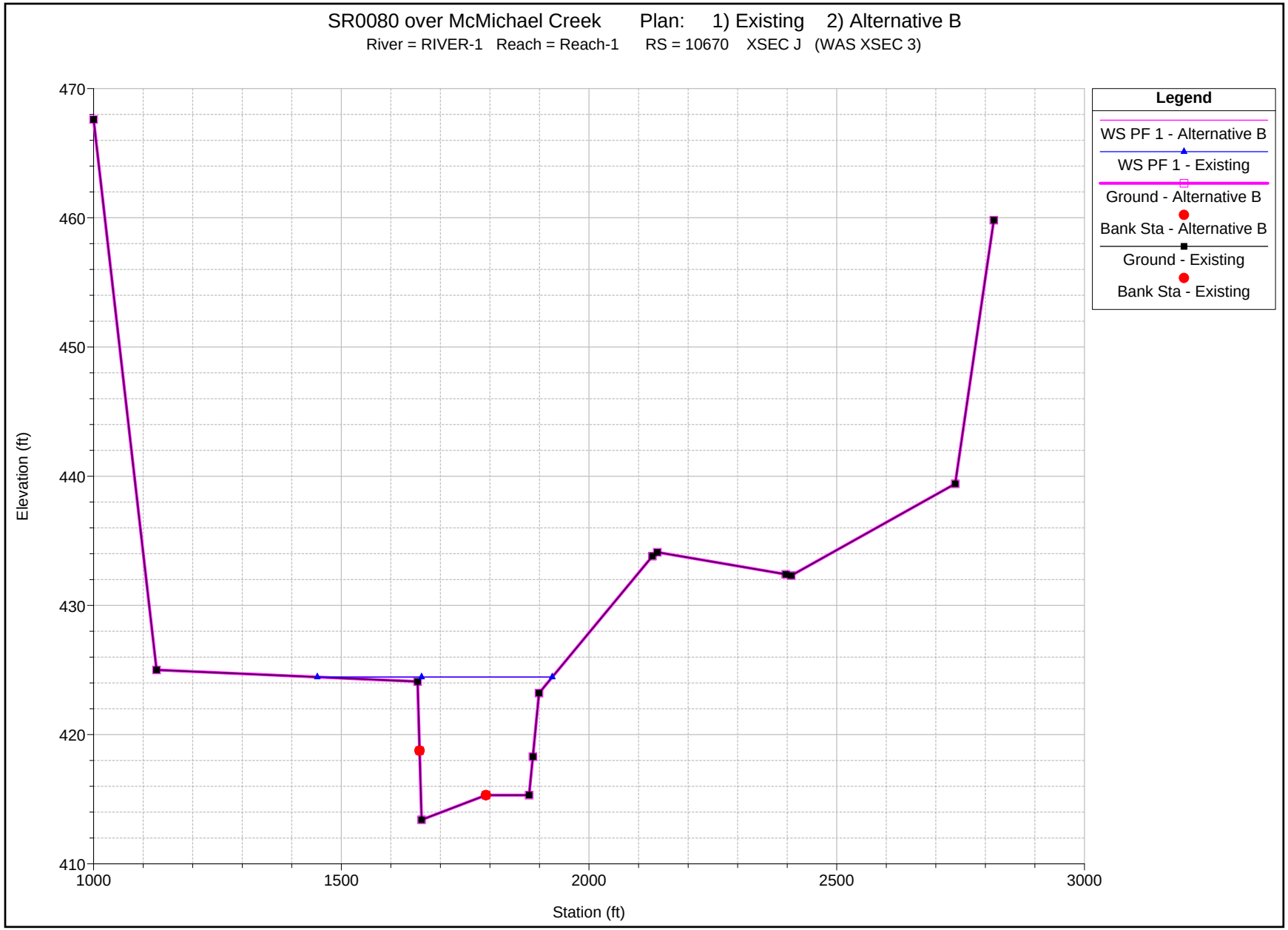
0 200 400

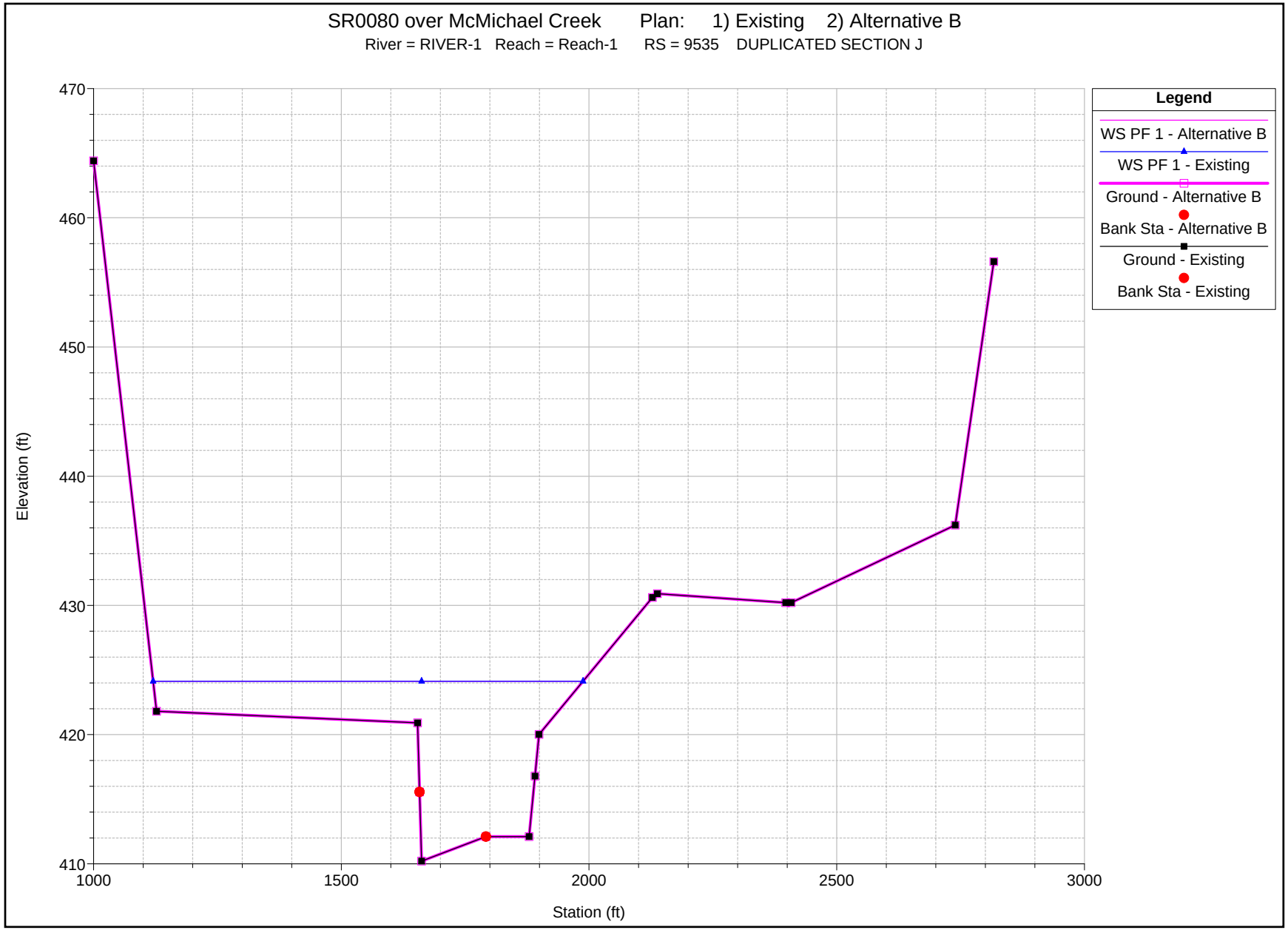
NEWELL TERESKA & MACKAY ENGINEERING

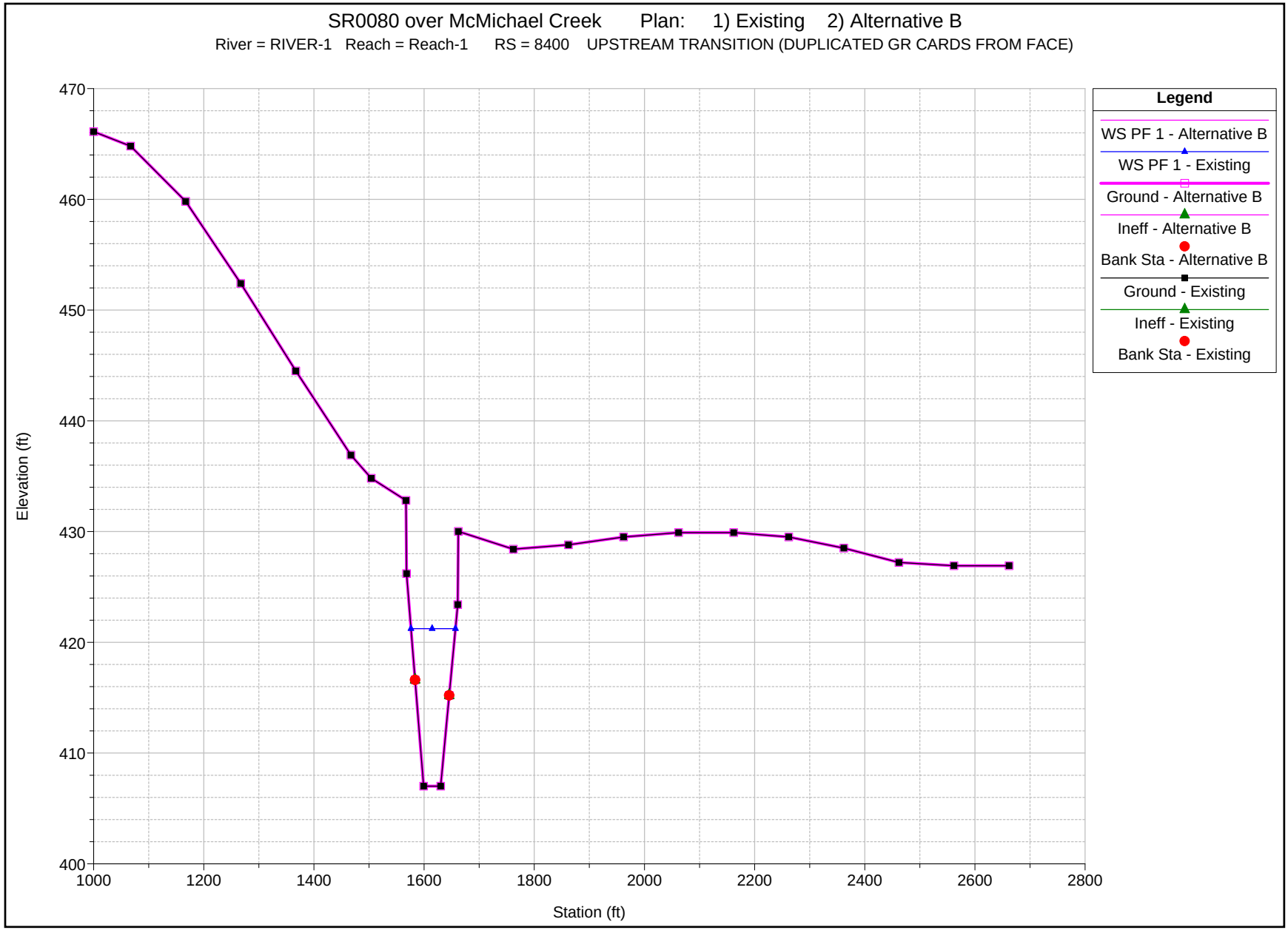
130 WEST CHURCH, SUITE 200
DILLSBURG, PA 17019
PHONE 717-432-4425
FAX 717-432-4426

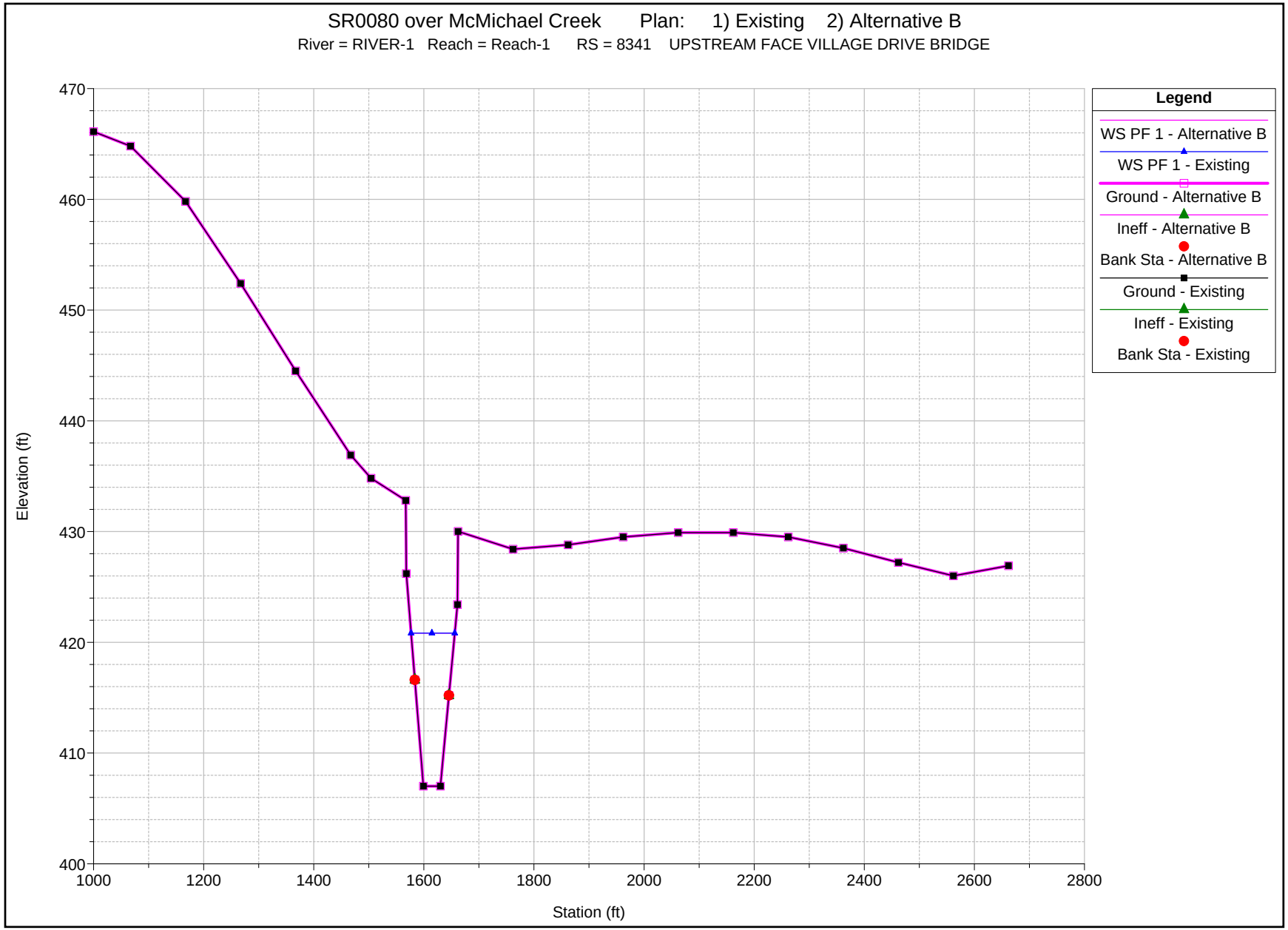
I-80 OVER POCONO CREEK
EXISTING AND ALTERNATIVE B
HYDRAULIC CROSS-SECTION MAP

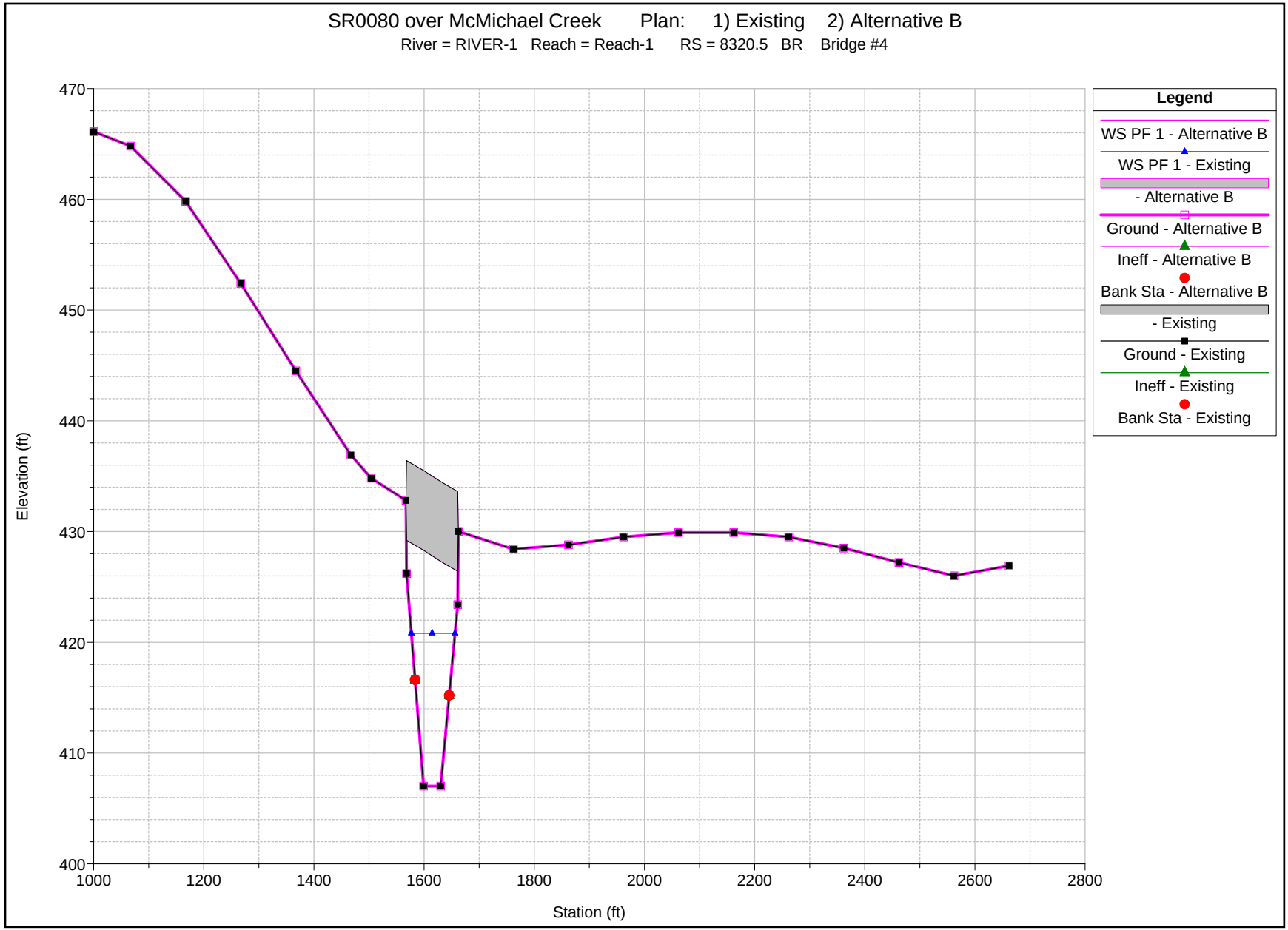
COUNTY: MONROE
MUNICIPALITY: STROUD

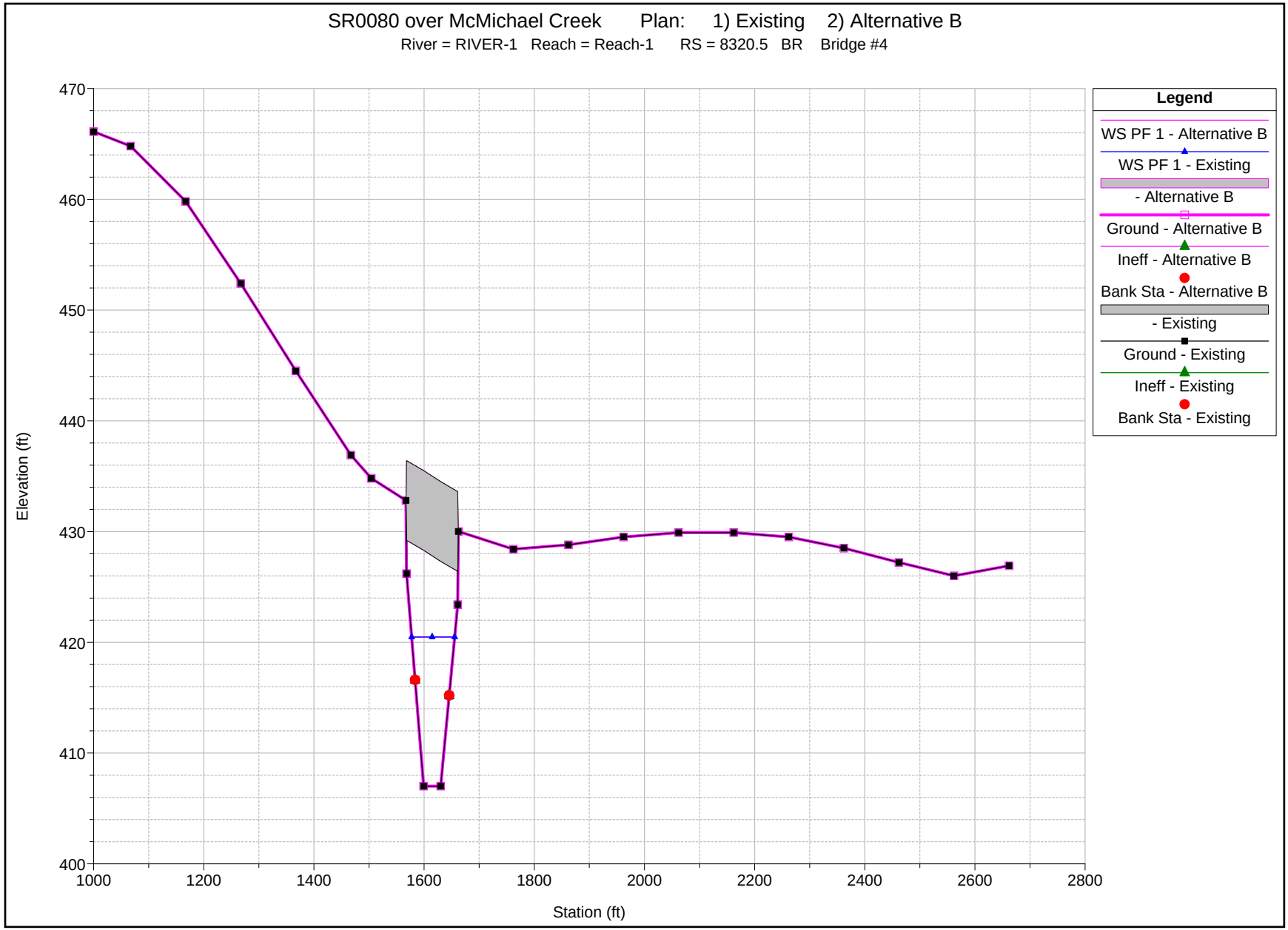

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 10670 XSEC J (WAS XSEC 3)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
470
460
450
440
430
420
410
1000
1500
2000
2500
3000
Station (ft)

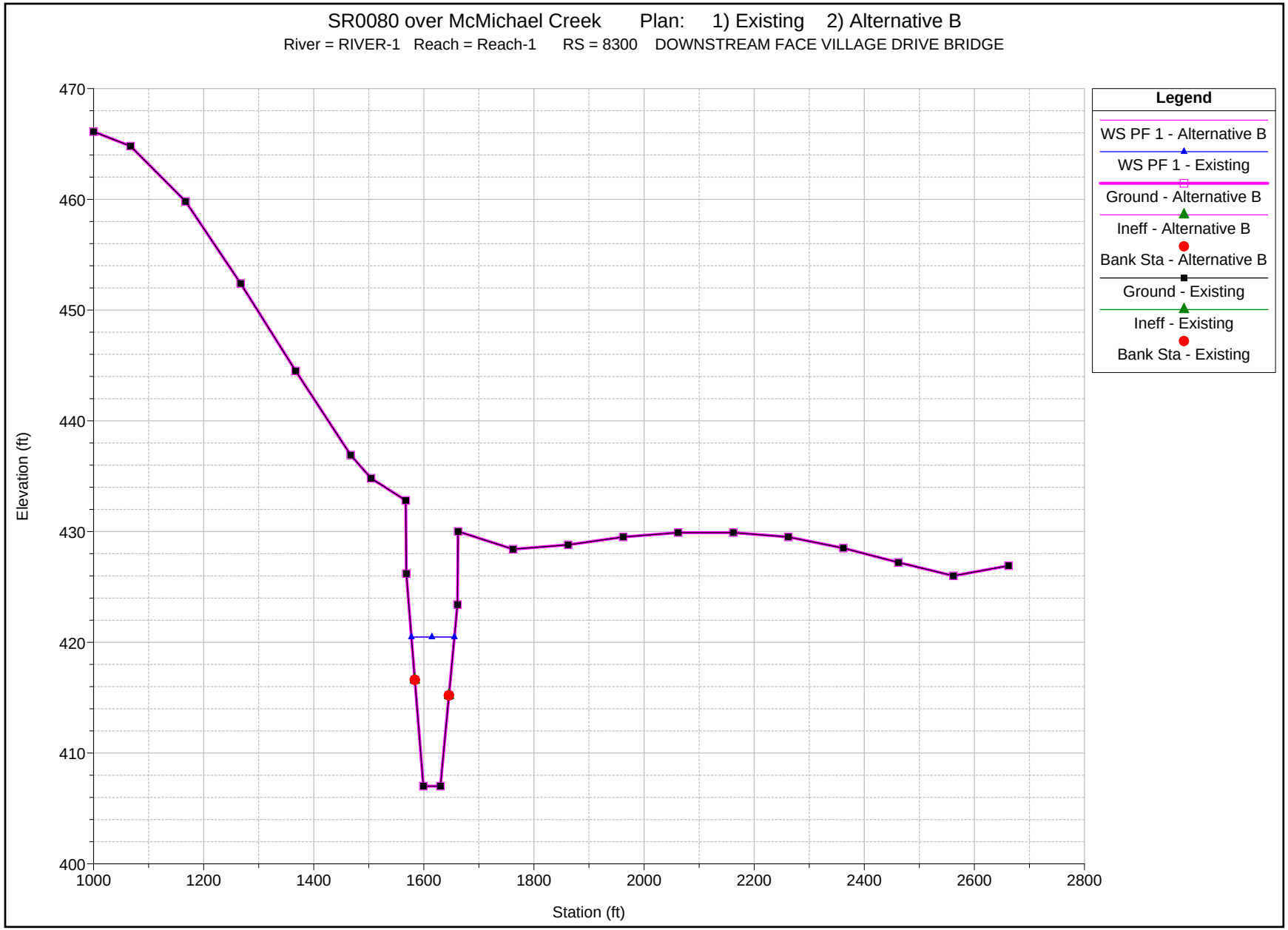

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 9535 DUPLICATED SECTION J
Elevation (ft)
470
460
450
440
430
420
410
1000
1500
2000
2500
3000
Station (ft)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing

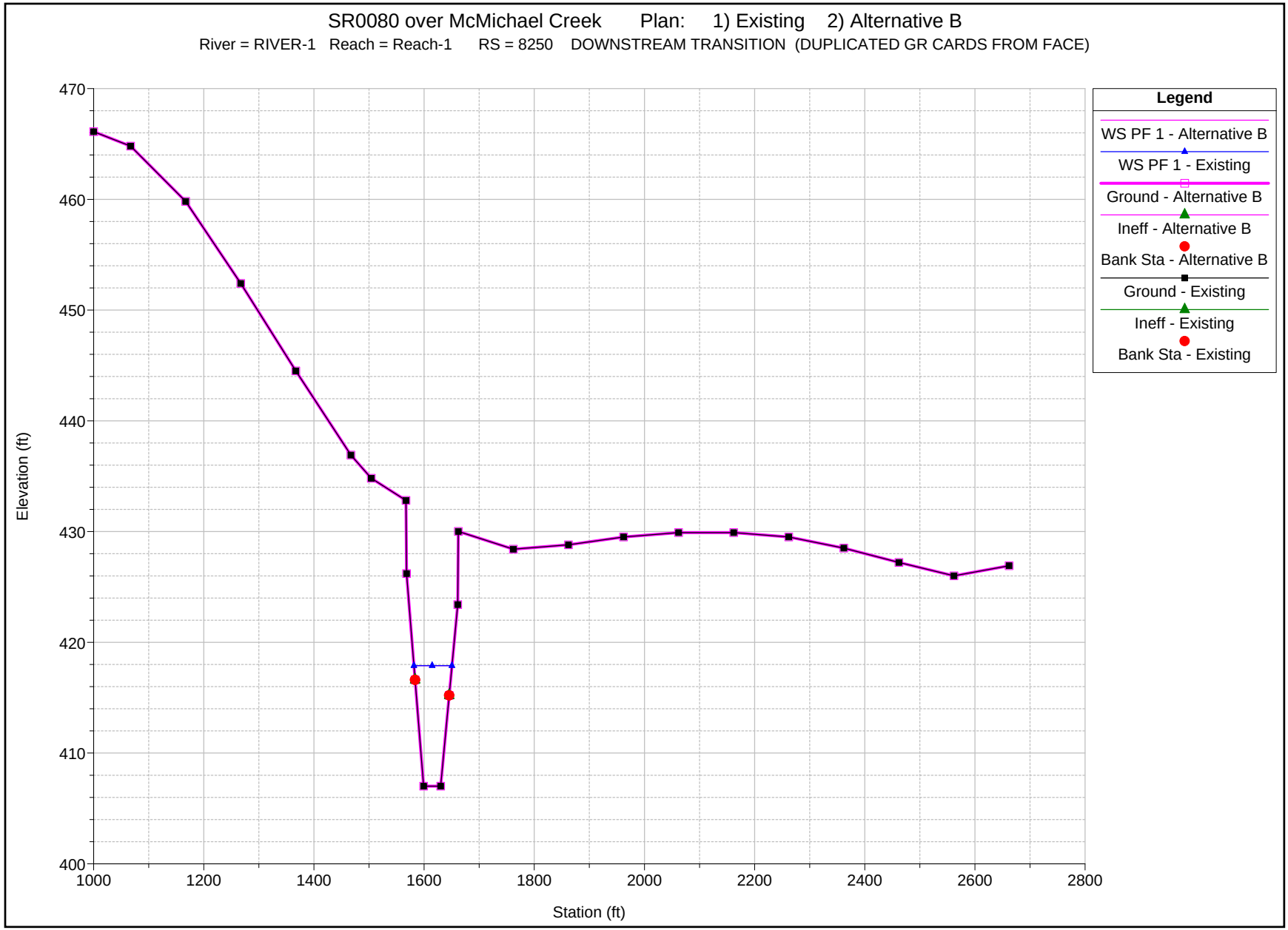

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 8400 UPSTREAM TRANSITION (DUPLICATED GR CARDS FROM FACE)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800

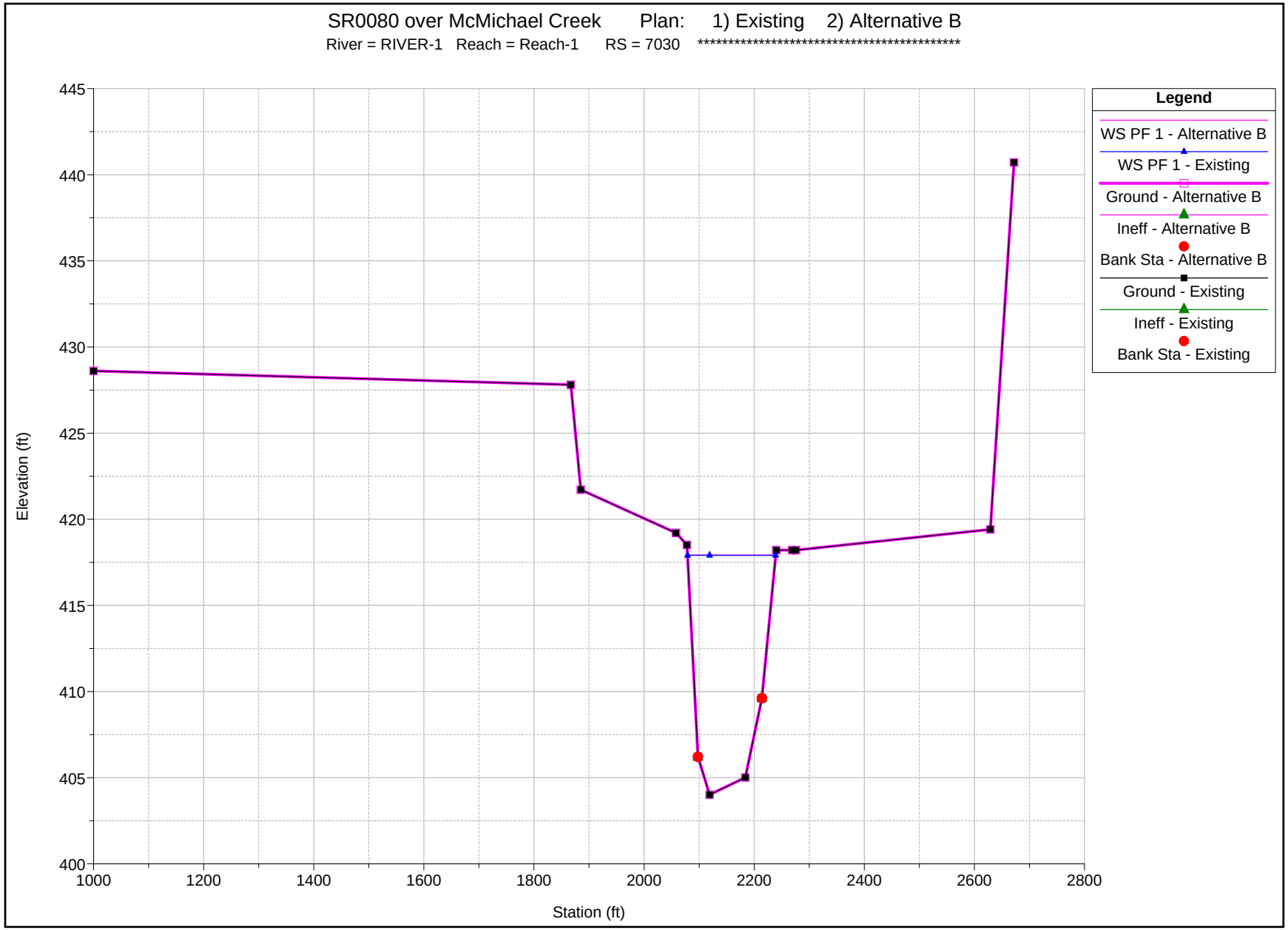

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 8341 UPSTREAM FACE VILLAGE DRIVE BRIDGE
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
Ground - Existing
Ineff - Existing
Bank Sta - Existing

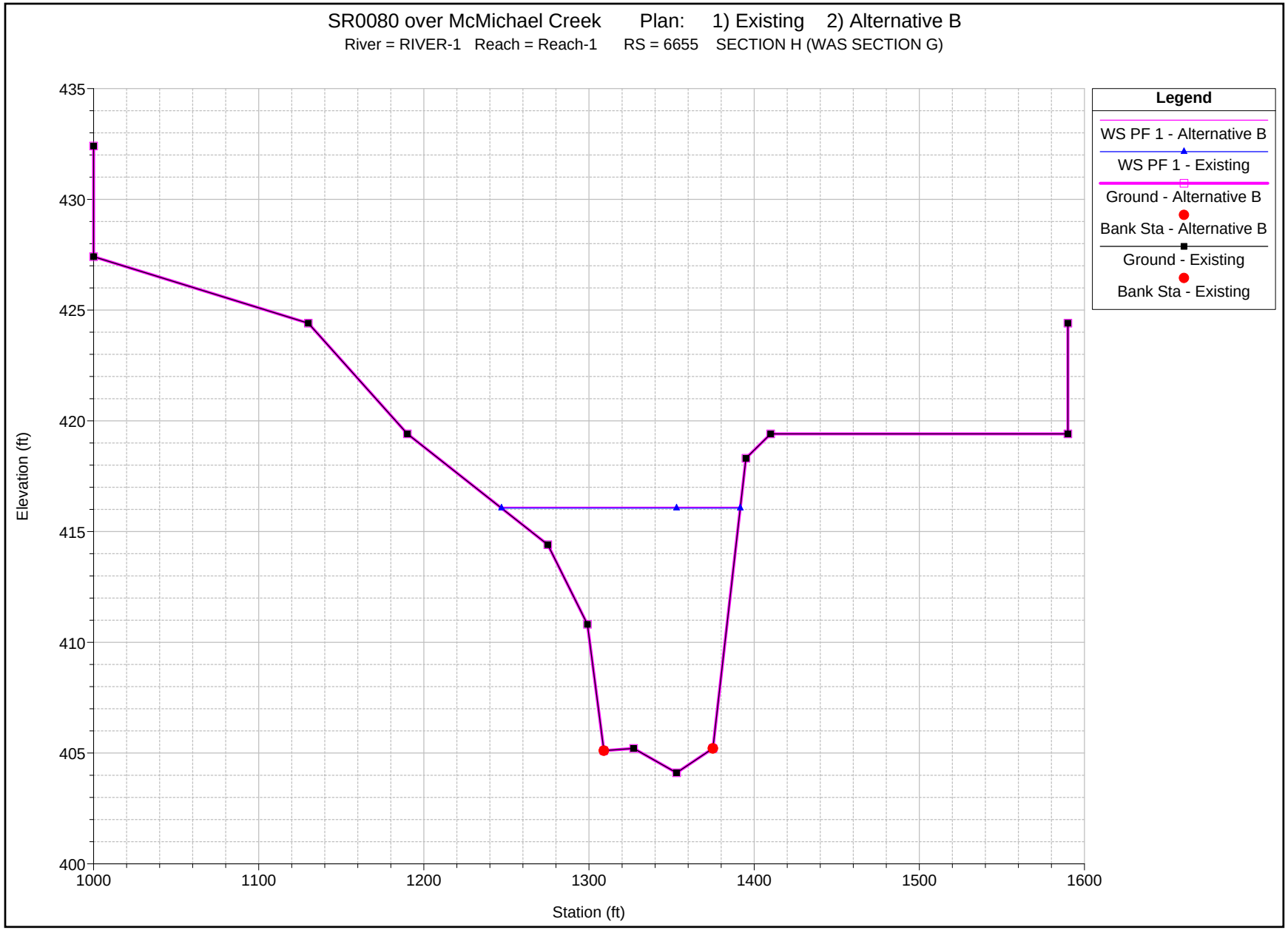

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 8320.5 BR Bridge #4
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

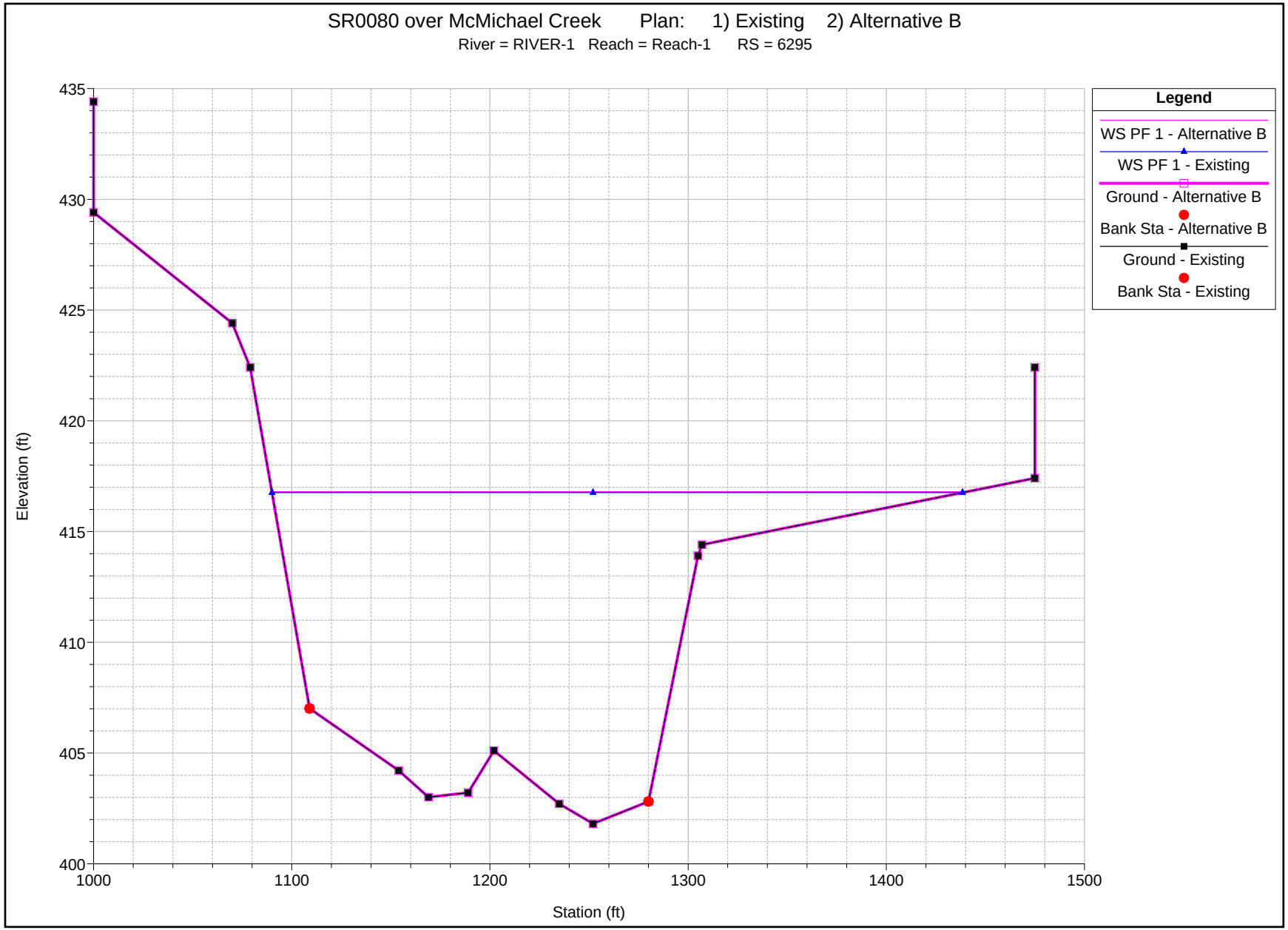

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 8320.5 BR Bridge #4
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

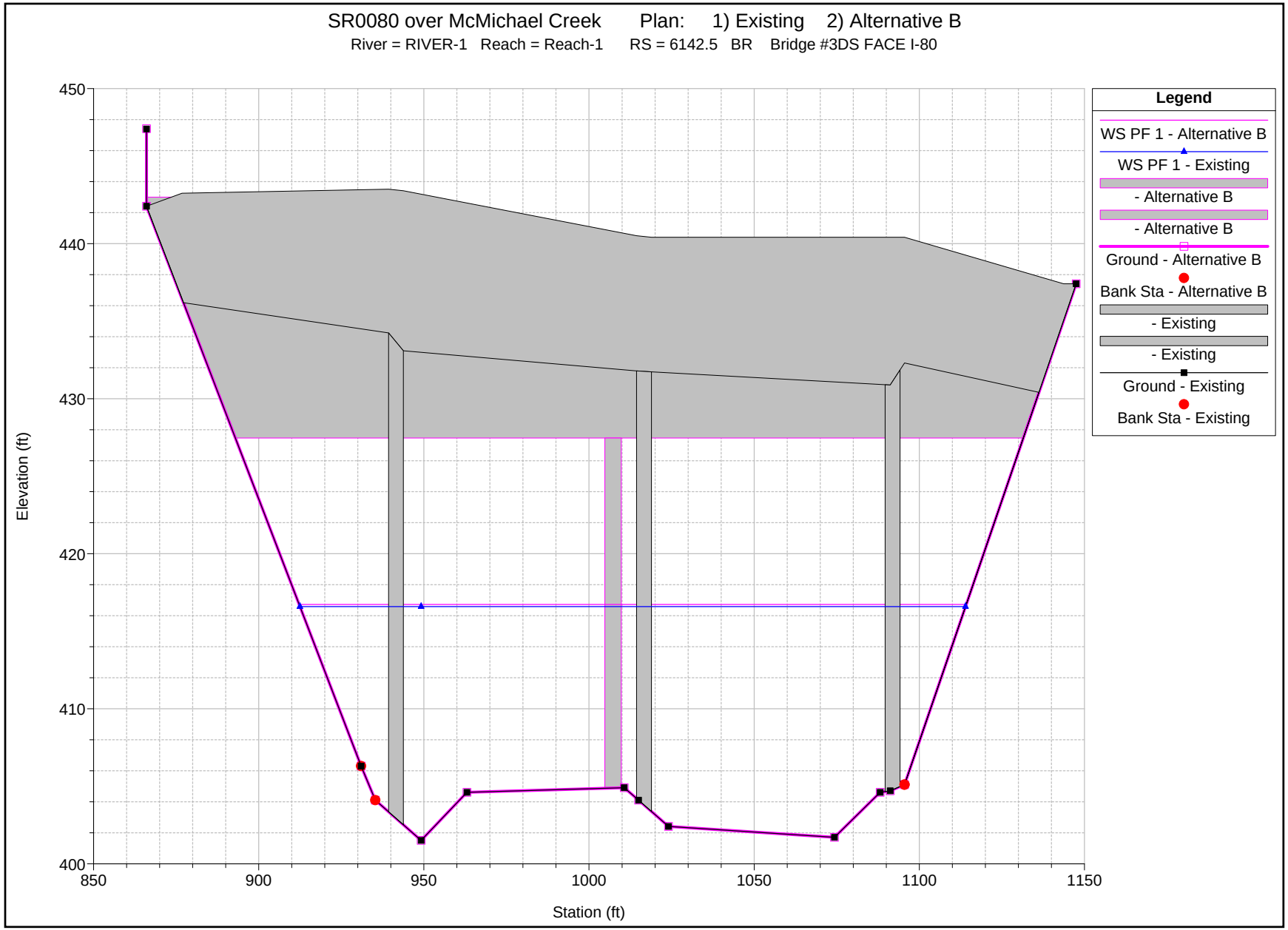

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 8300 DOWNSTREAM FACE VILLAGE DRIVE BRIDGE
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
Ground - Existing
Ineff - Existing
Bank Sta - Existing

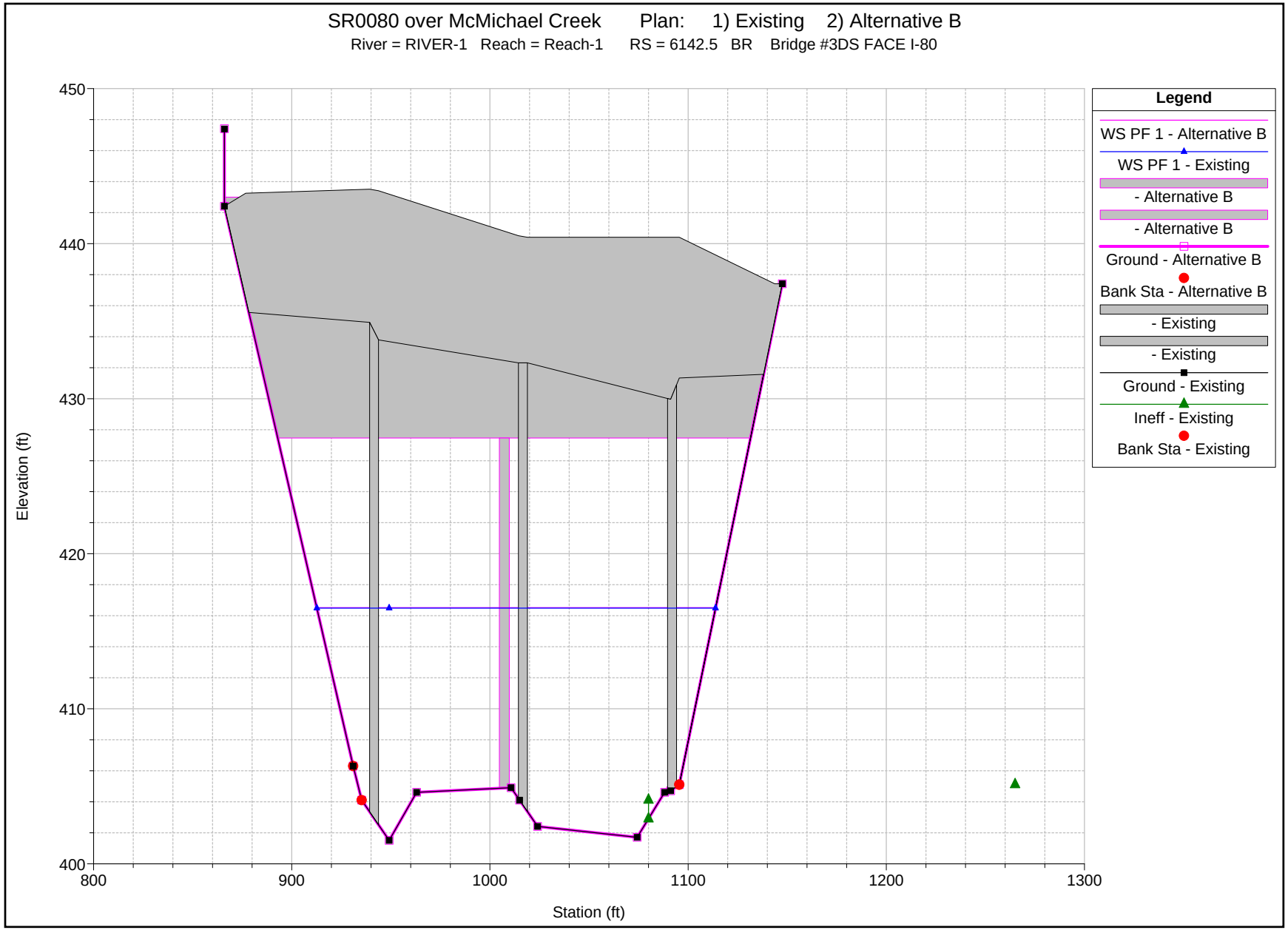

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 8250 DOWNSTREAM TRANSITION (DUPLICATED GR CARDS FROM FACE)
Elevation (ft)
Station (ft)
470
460
450
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
Ground - Existing
Ineff - Existing
Bank Sta - Existing

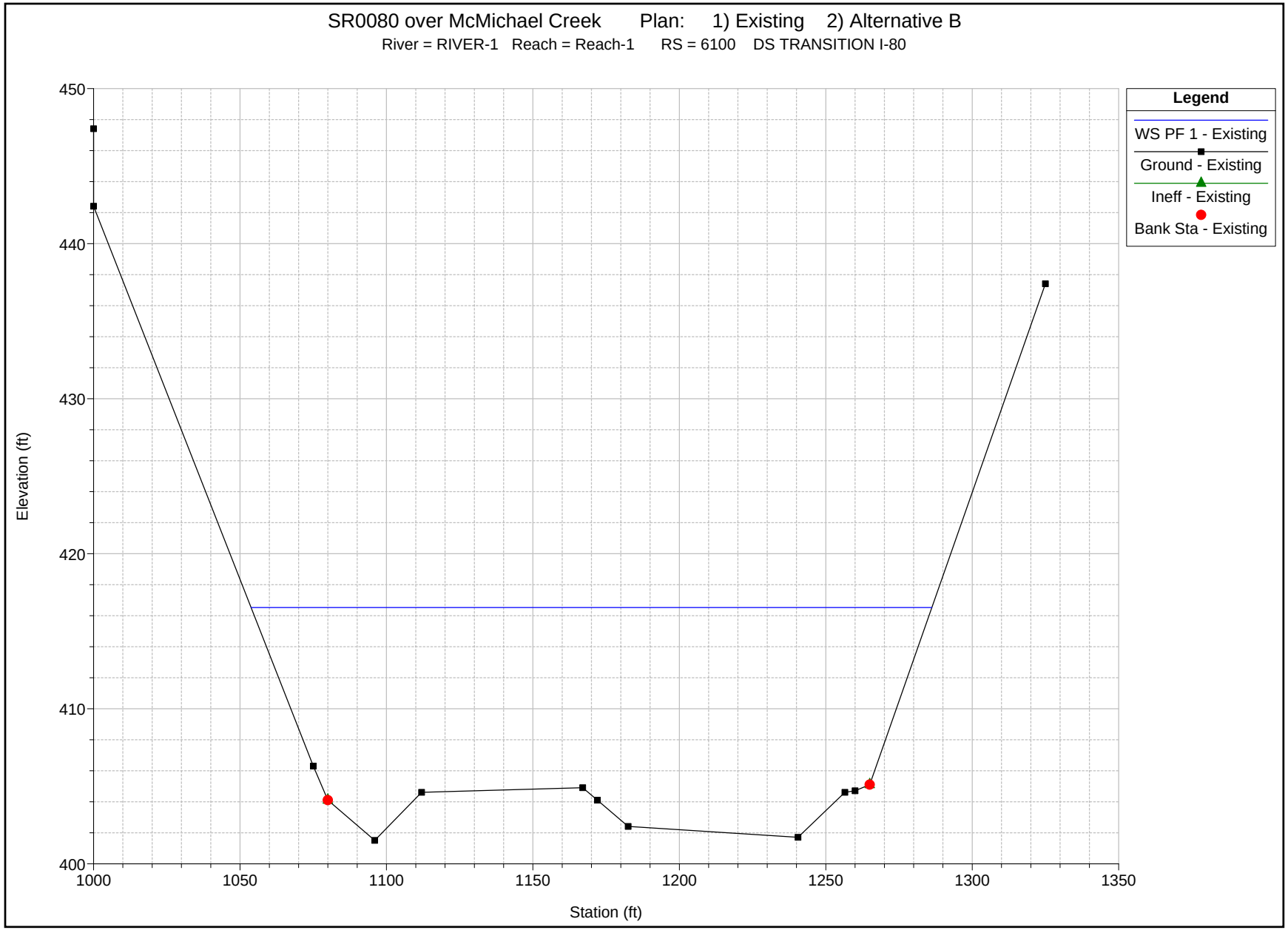

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 7030 **********
Elevation (ft)
445
440
435
430
425
420
415
410
405
400
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Station (ft)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
Ground - Existing
Ineff - Existing
Bank Sta - Existing

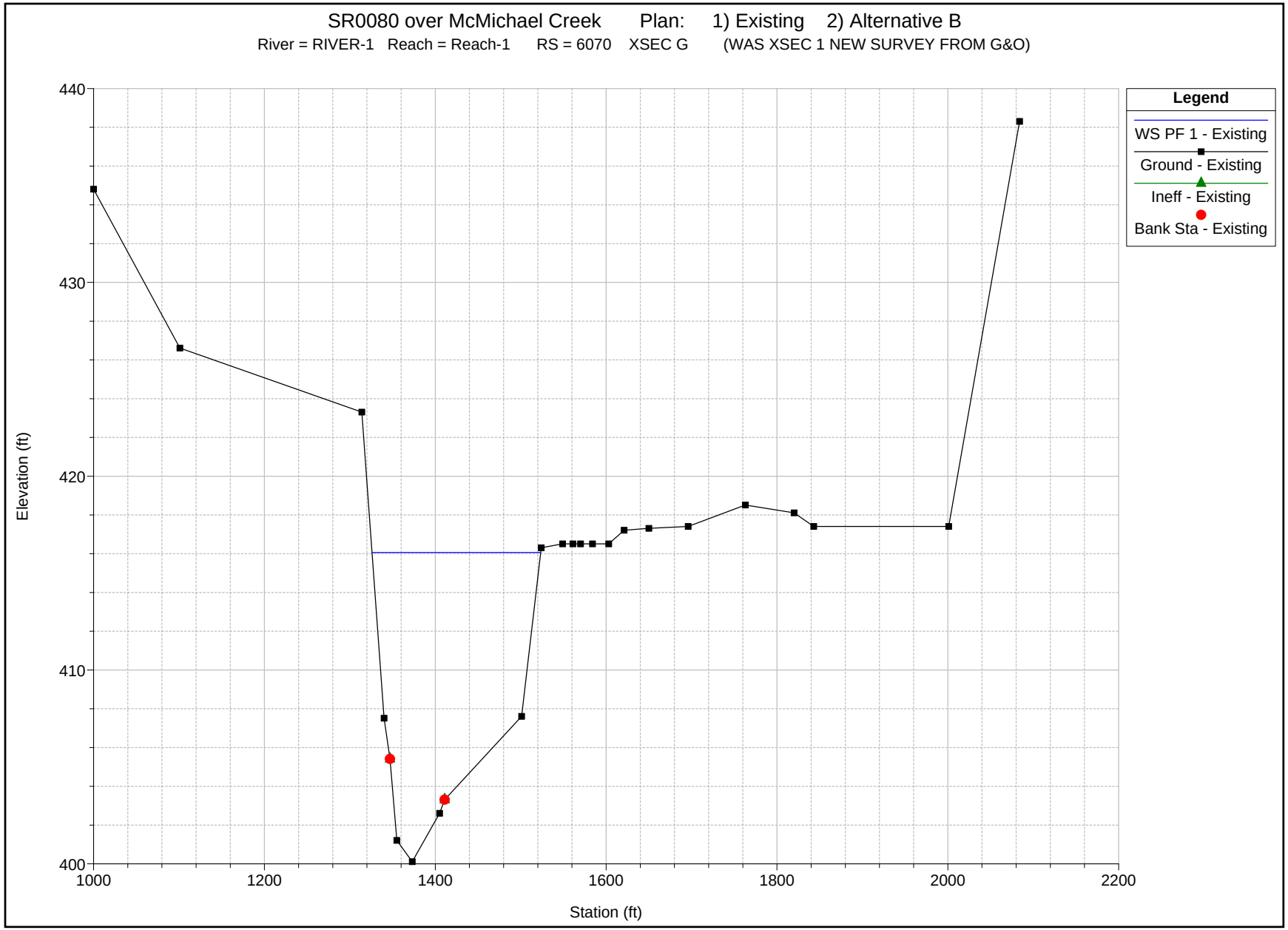

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 6655 SECTION H (WAS SECTION G)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
435
430
425
420
415
410
405
400
1000
1100
1200
1300
1400
1500
1600
Station (ft)

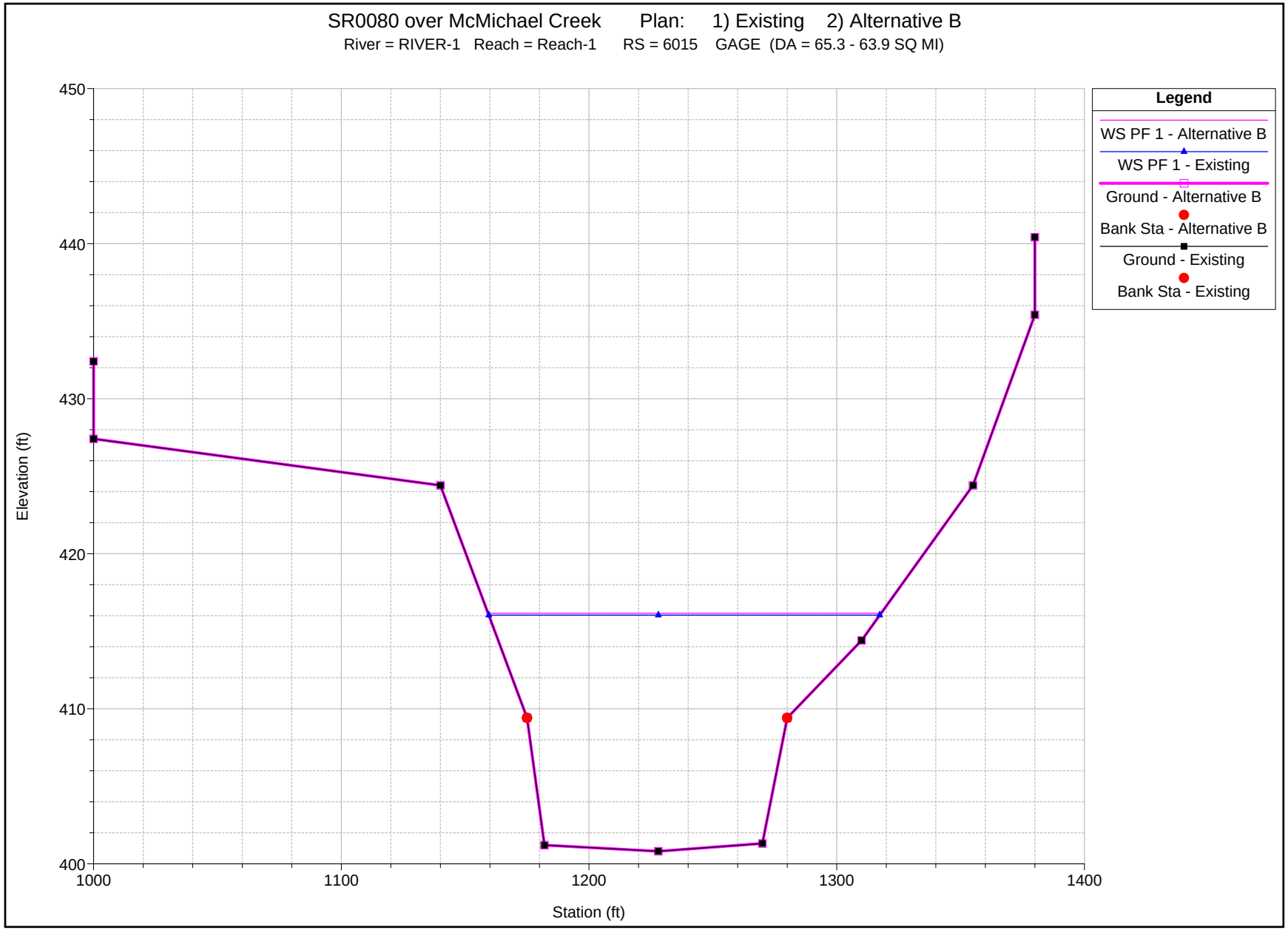

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 6295
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
435
430
425
420
415
410
405
400
1000
1100
1200
1300
1400
1500
Station (ft)

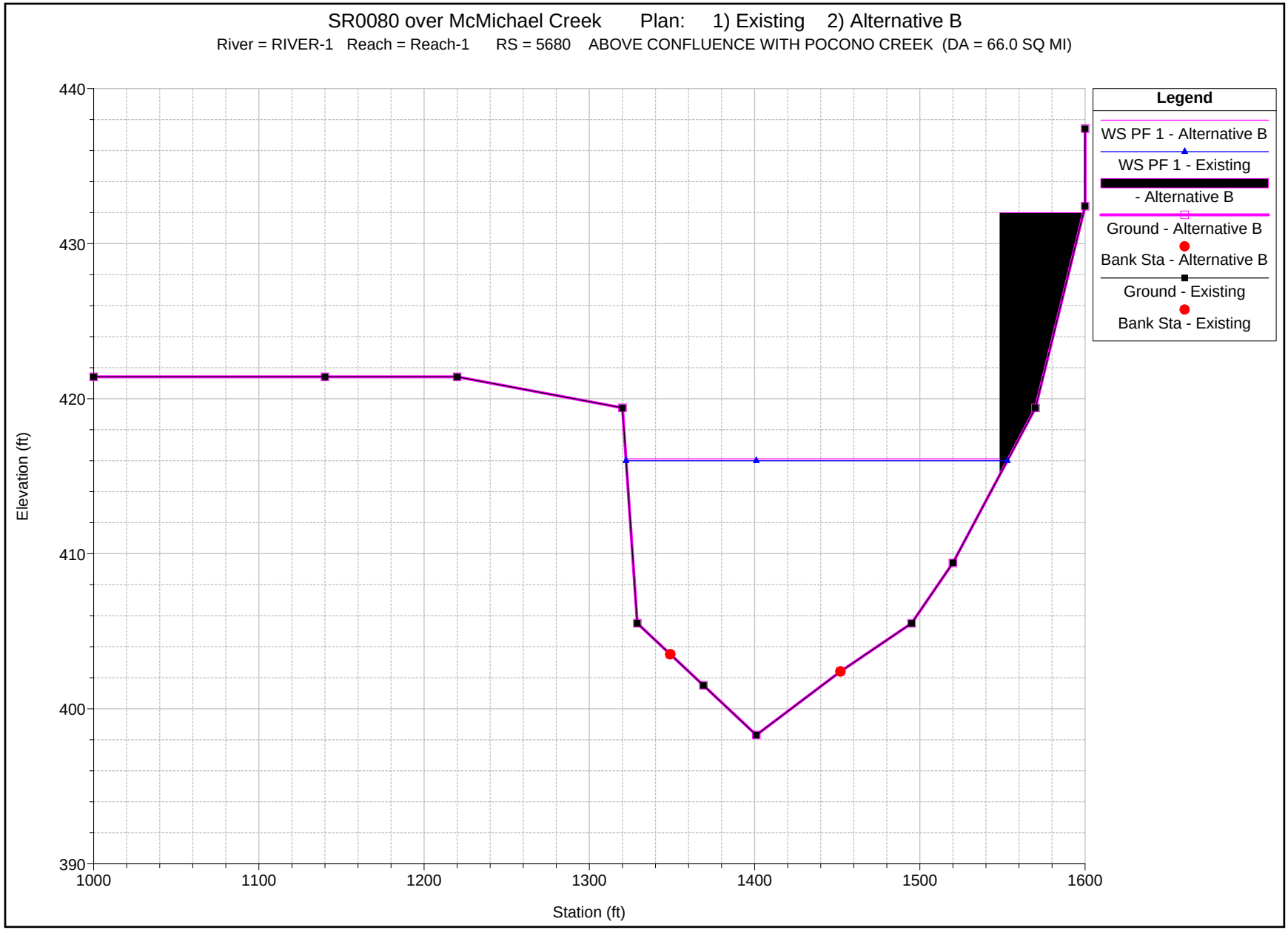

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 6142.5 BR Bridge #3DS FACE I-80
Elevation (ft)
450
440
430
420
410
400
850
900
950
1000
1050
1100
1150
Station (ft)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
- Existing
- Existing
Ground - Existing
Bank Sta - Existing

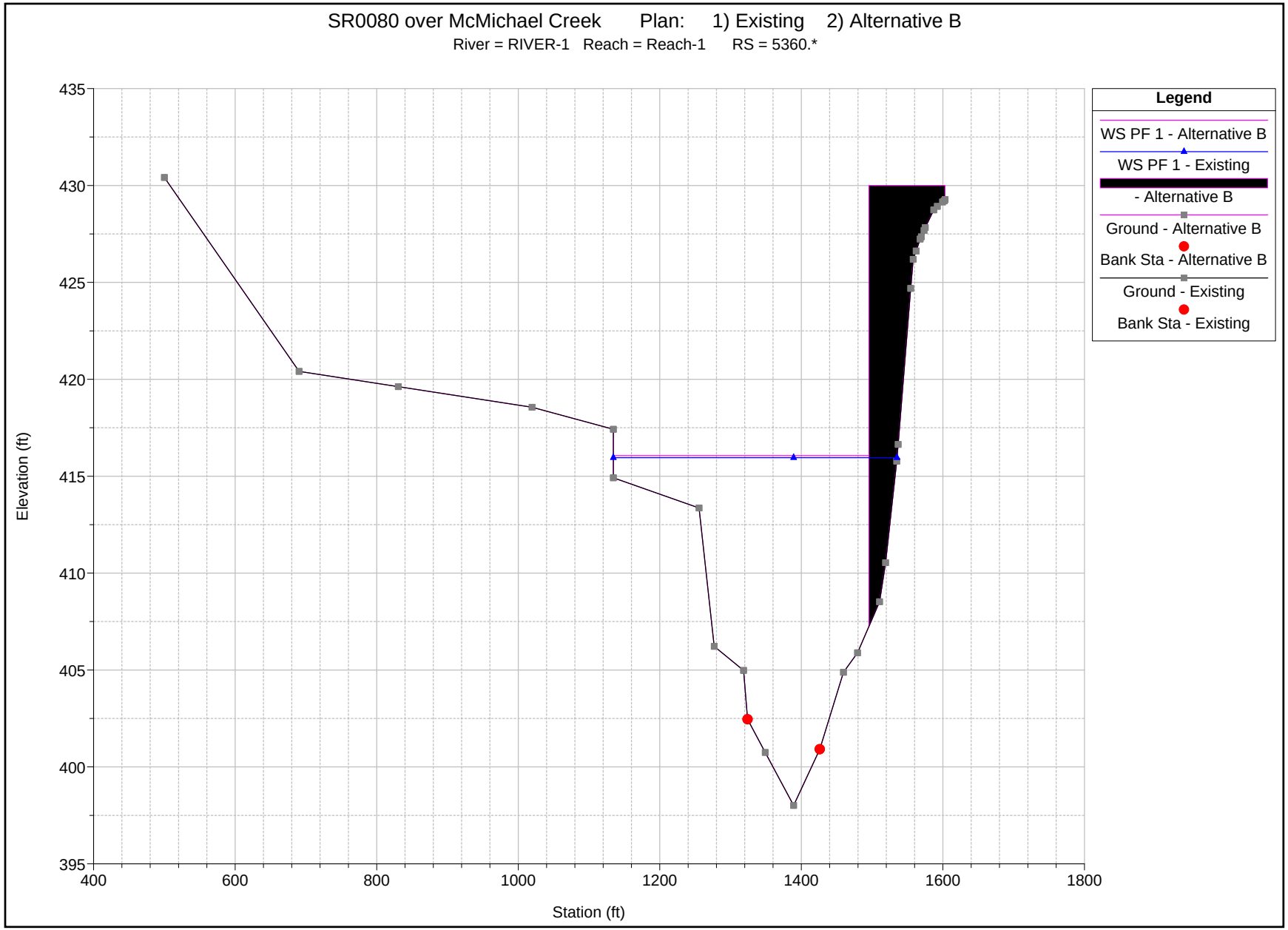

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 6142.5 BR Bridge #3DS FACE I-80
Elevation (ft)
450
440
430
420
410
400
800
900
1000
1100
1200
1300
Station (ft)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
- Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

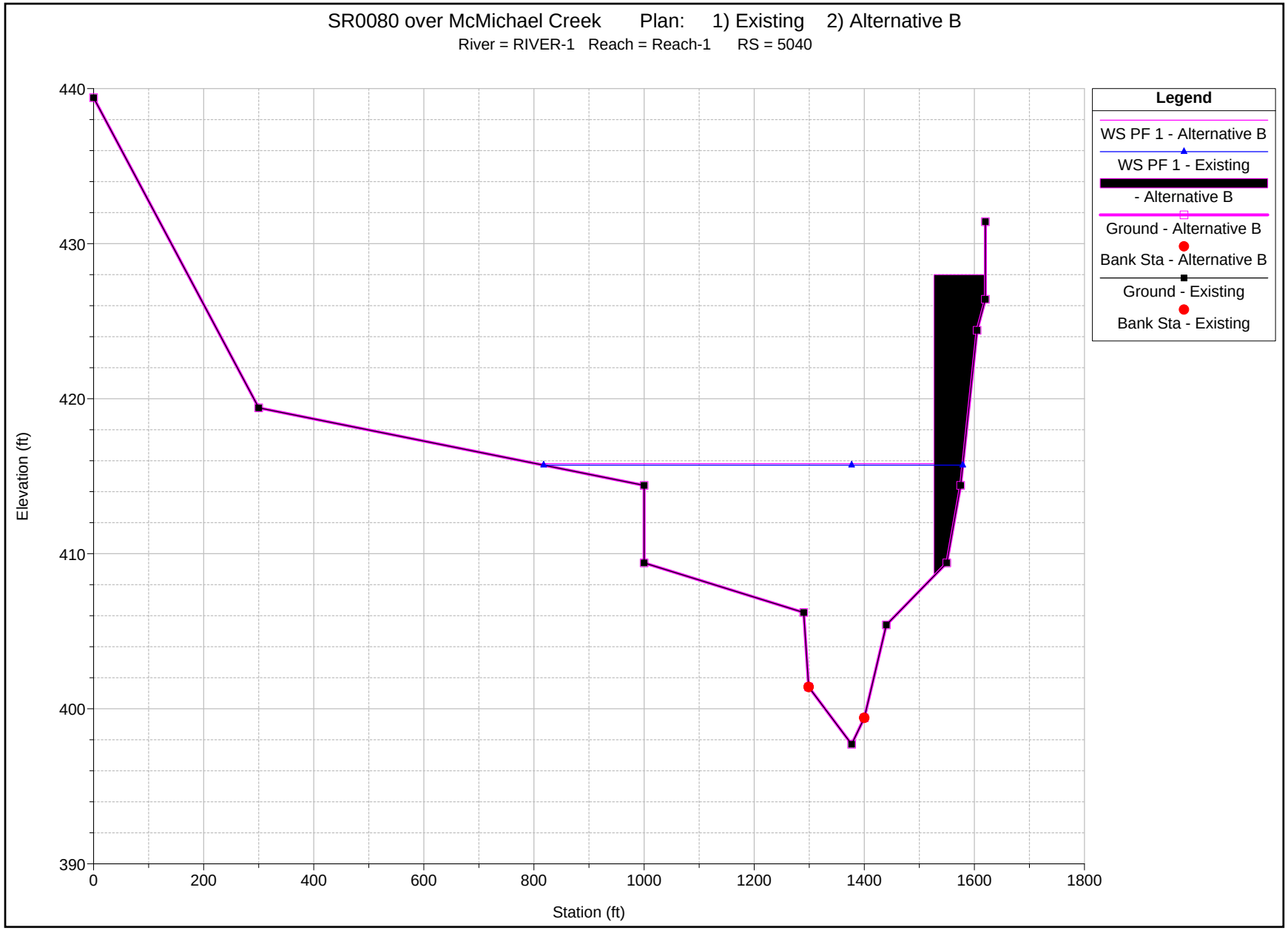

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 6100 DS TRANSITION I-80
Legend
WS PF 1 - Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
Station (ft)
450
440
430
420
410
400
1000
1050
1100
1150
1200
1250
1300
1350

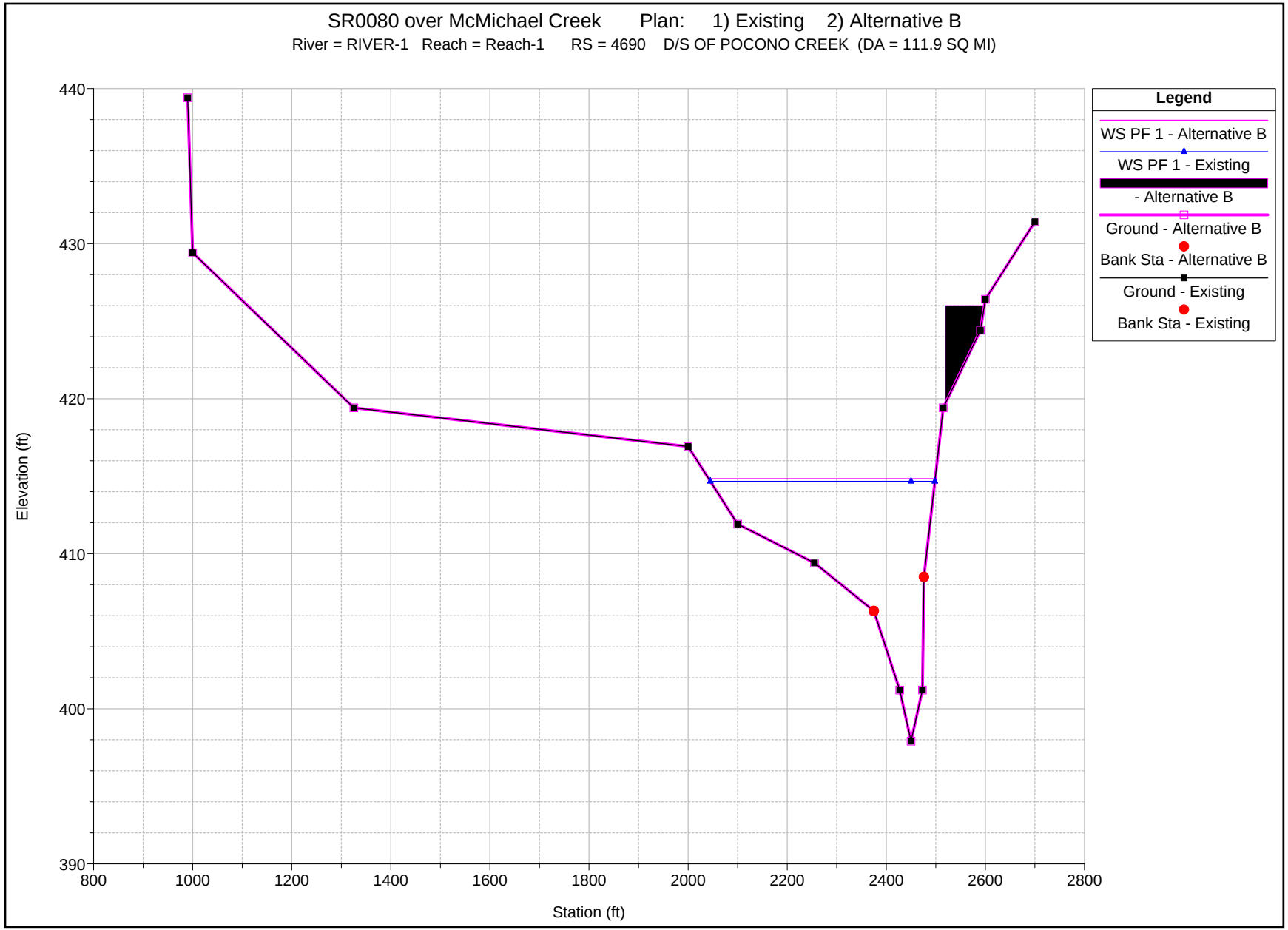

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 6070 XSEC G (WAS XSEC 1 NEW SURVEY FROM G&O)
Legend
WS PF 1 - Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
440
430
420
410
400
1000
1200
1400
1600
1800
2000
2200
Station (ft)

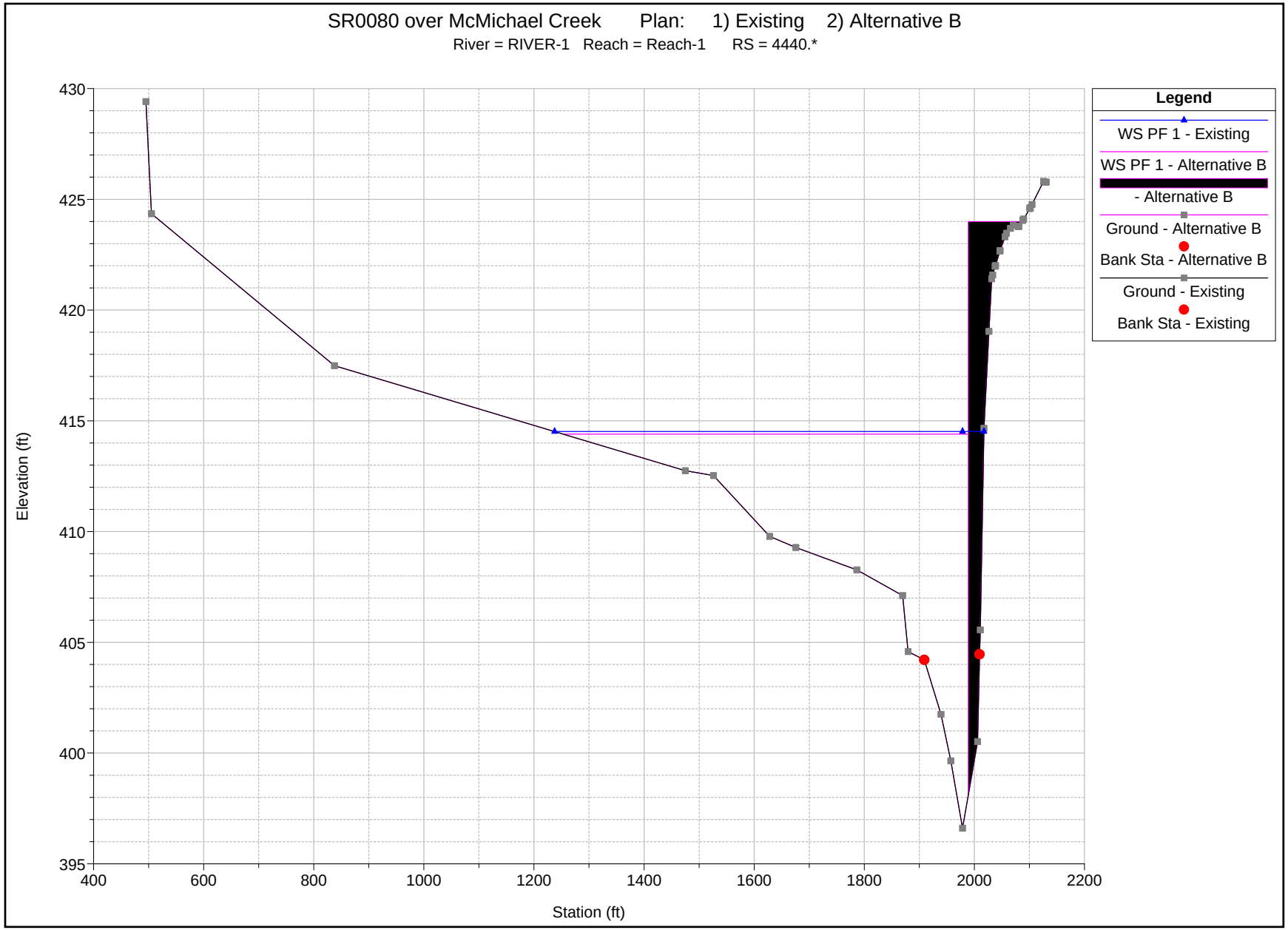

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 6015 GAGE (DA = 65.3 - 63.9 SQ MI)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
450
440
430
420
410
400
1000
1100
1200
1300
1400
Station (ft)

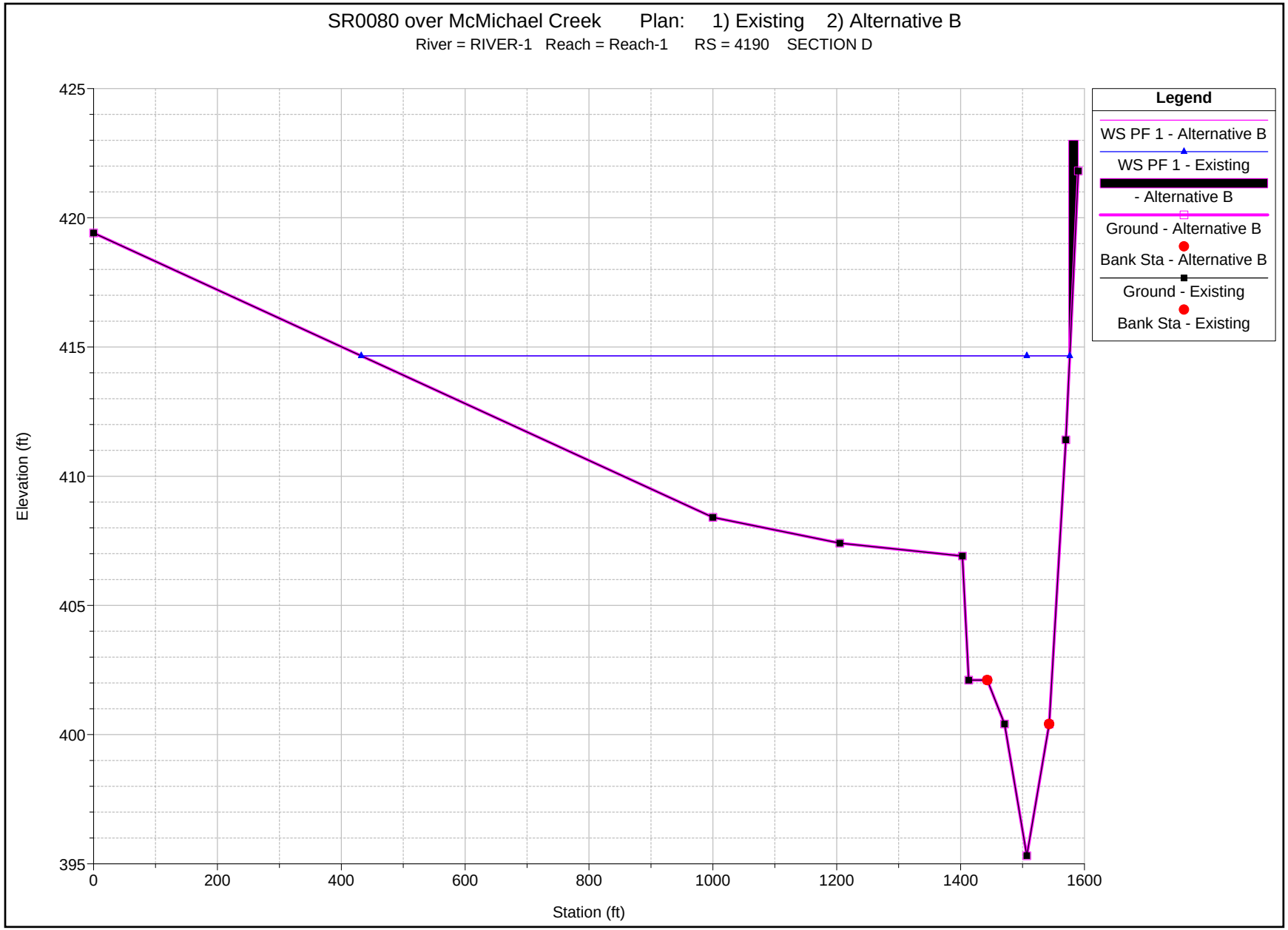

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 5680 ABOVE CONFLUENCE WITH POCONO CREEK (DA = 66.0 SQ MI)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
1600
Station (ft)

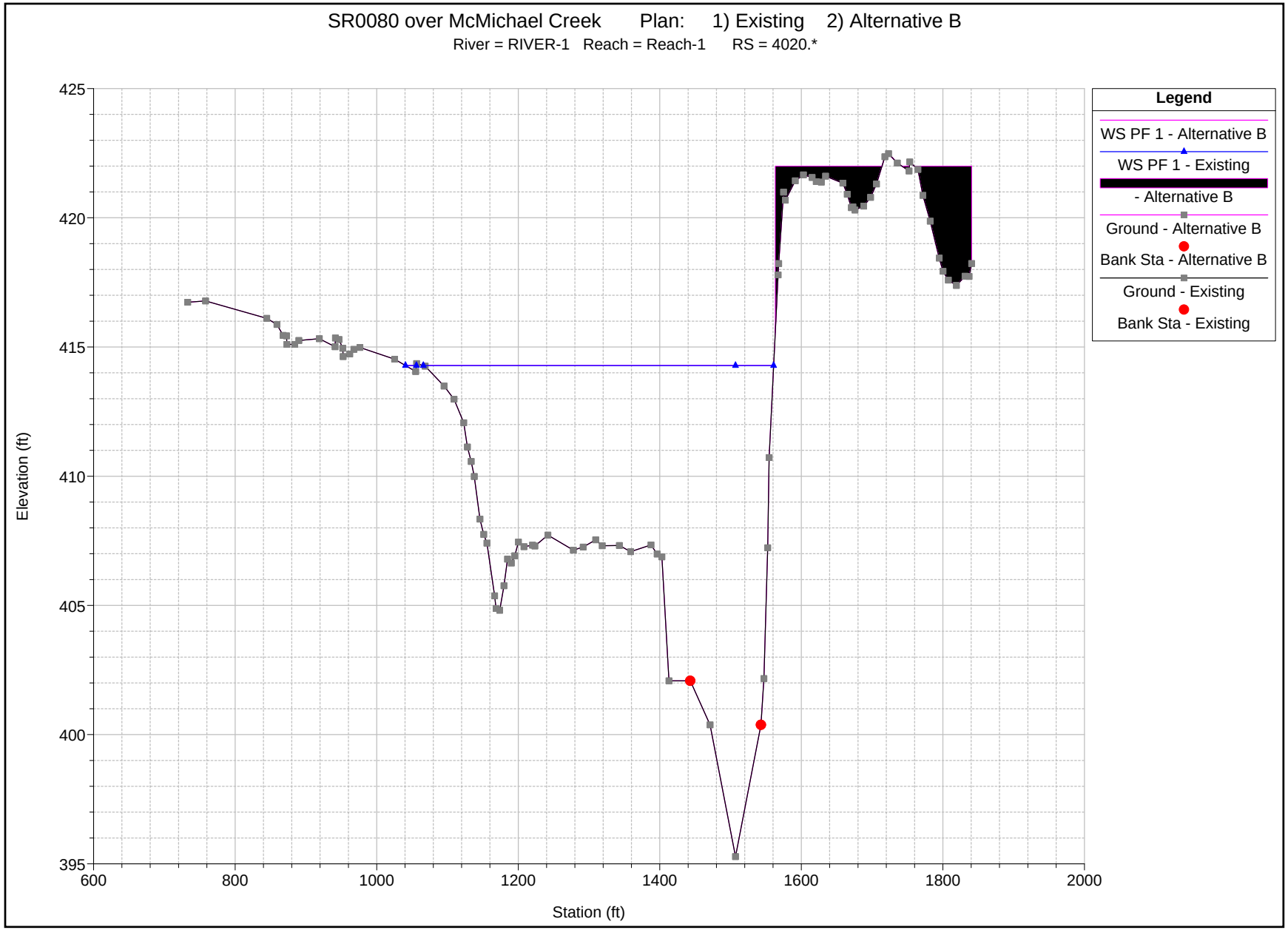

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 5360.*
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
435
430
425
420
415
410
405
400
395
400
600
800
1000
1200
1400
1600
1800
Station (ft)

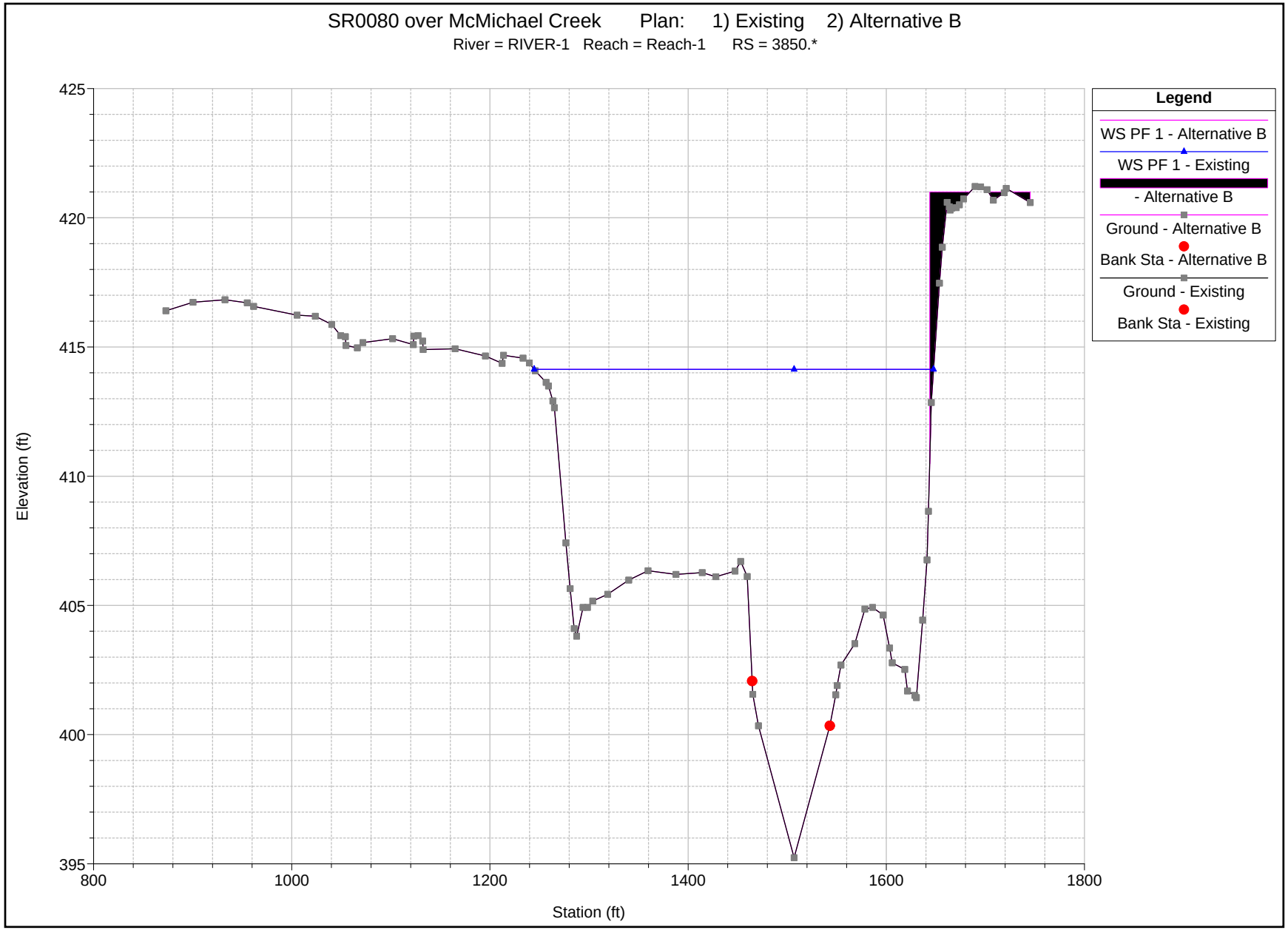

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 5040
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
440
430
420
410
400
390
0
200
400
600
800
1000
1200
1400
1600
1800
Station (ft)

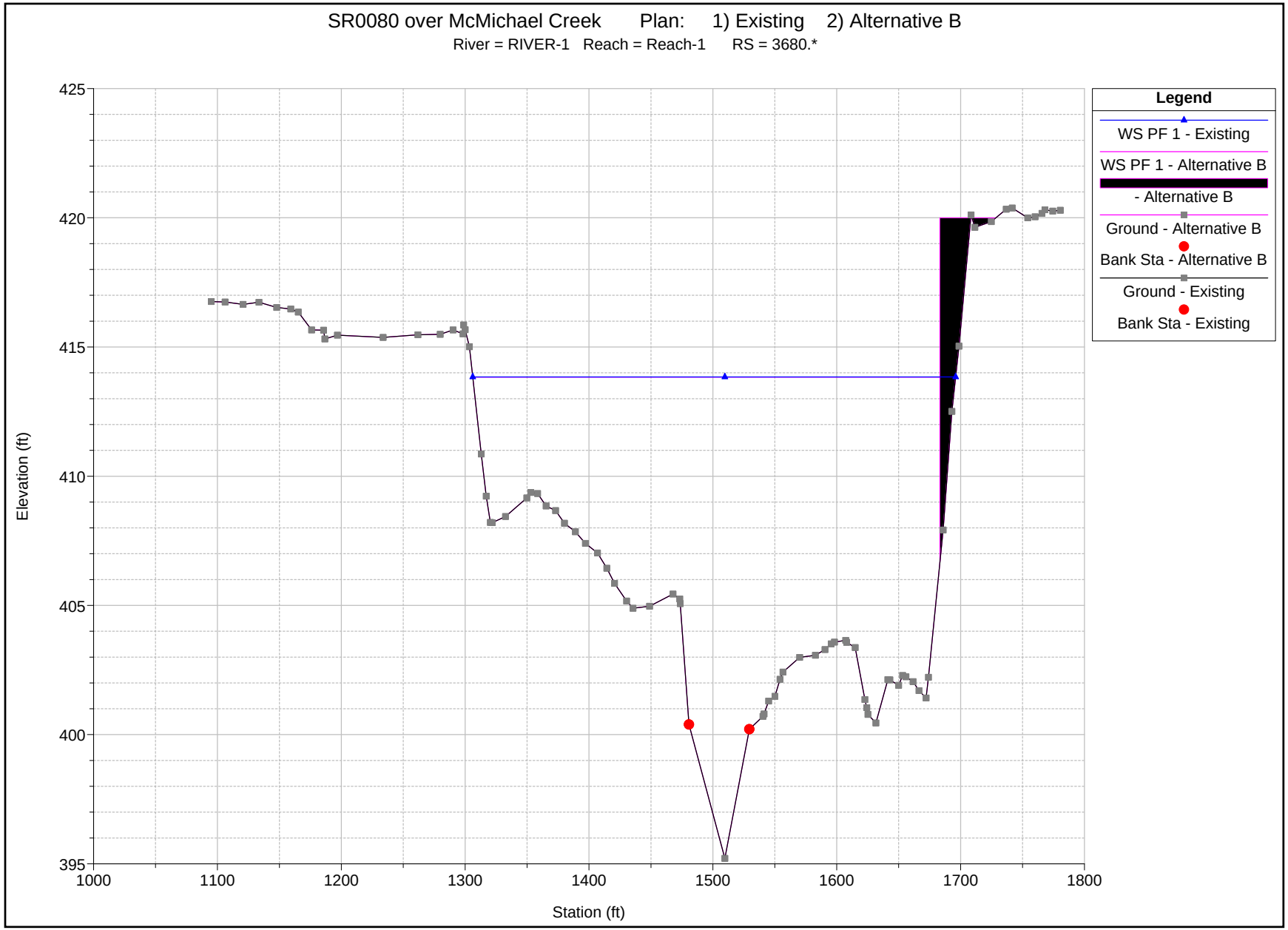

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 4690 D/S OF POCONO CREEK (DA = 111.9 SQ MI)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
440
430
420
410
400
390
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Station (ft)

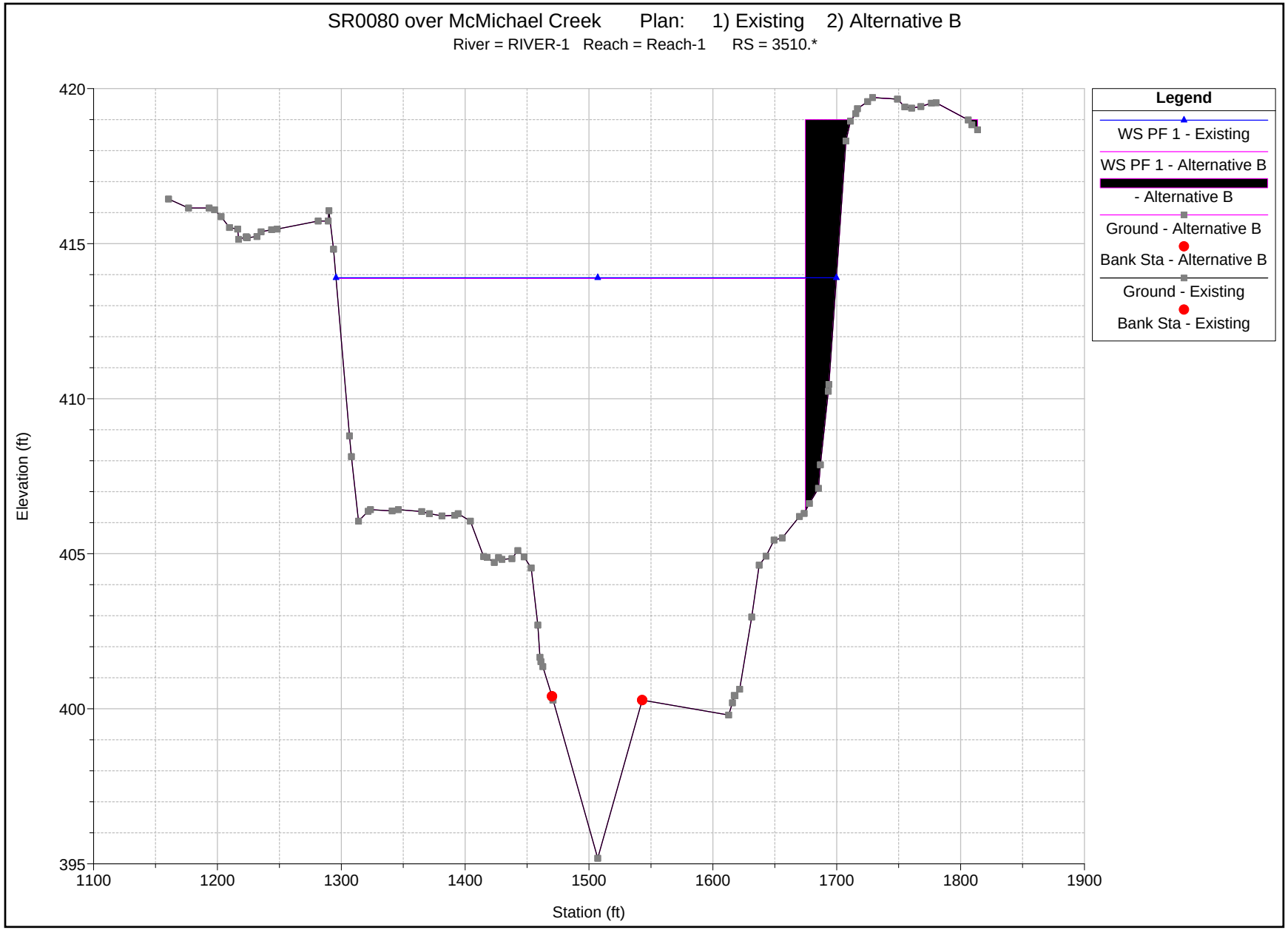

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 4440.*
Elevation (ft)
Station (ft)
430
425
420
415
410
405
400
395
400
600
800
1000
1200
1400
1600
1800
2000
2200
Legend
WS PF 1 - Existing
WS PF 1 - Alternative B
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing

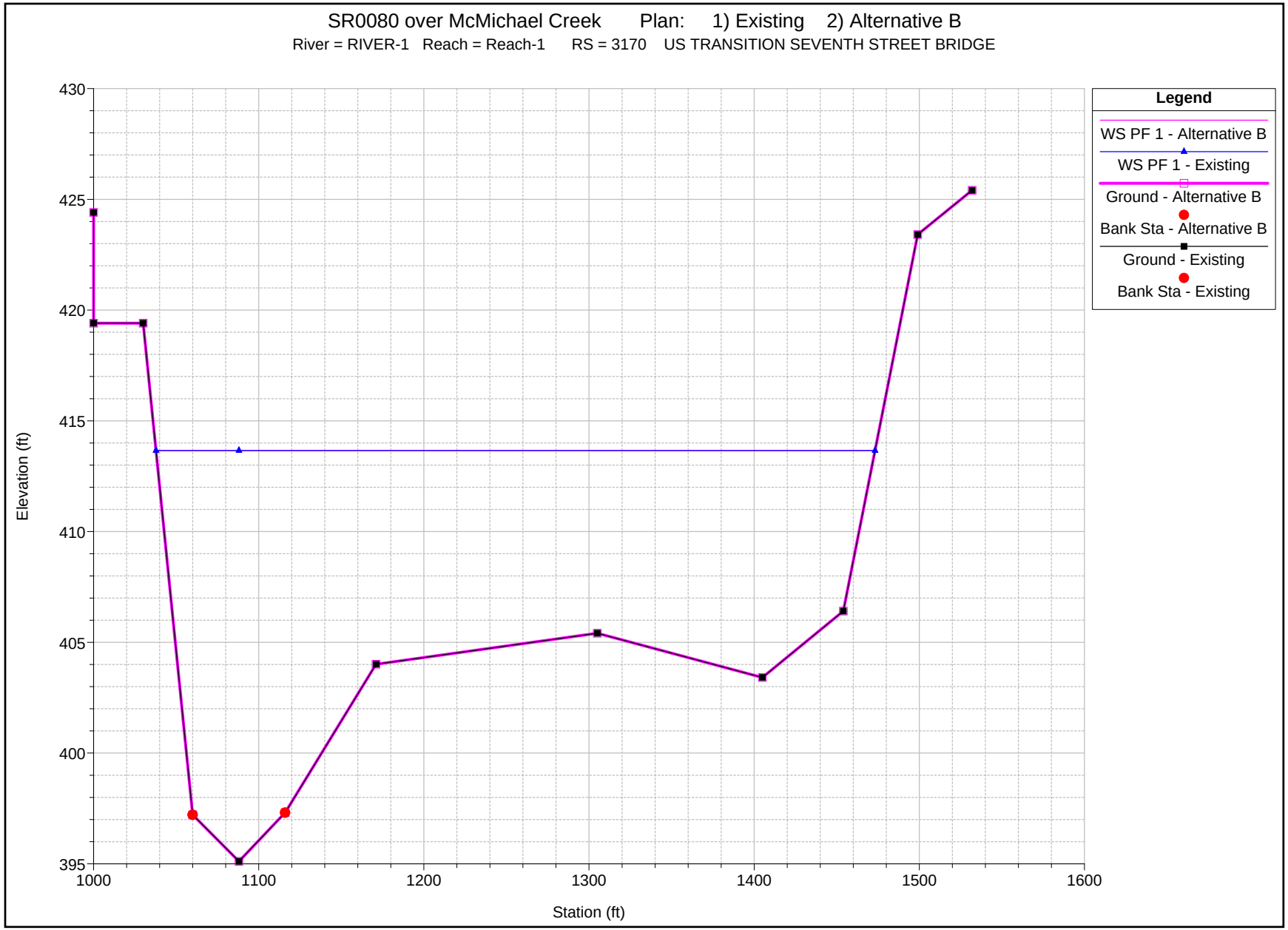

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 4190 SECTION D
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
425
420
415
410
405
400
395
0
200
400
600
800
1000
1200
1400
1600
Station (ft)

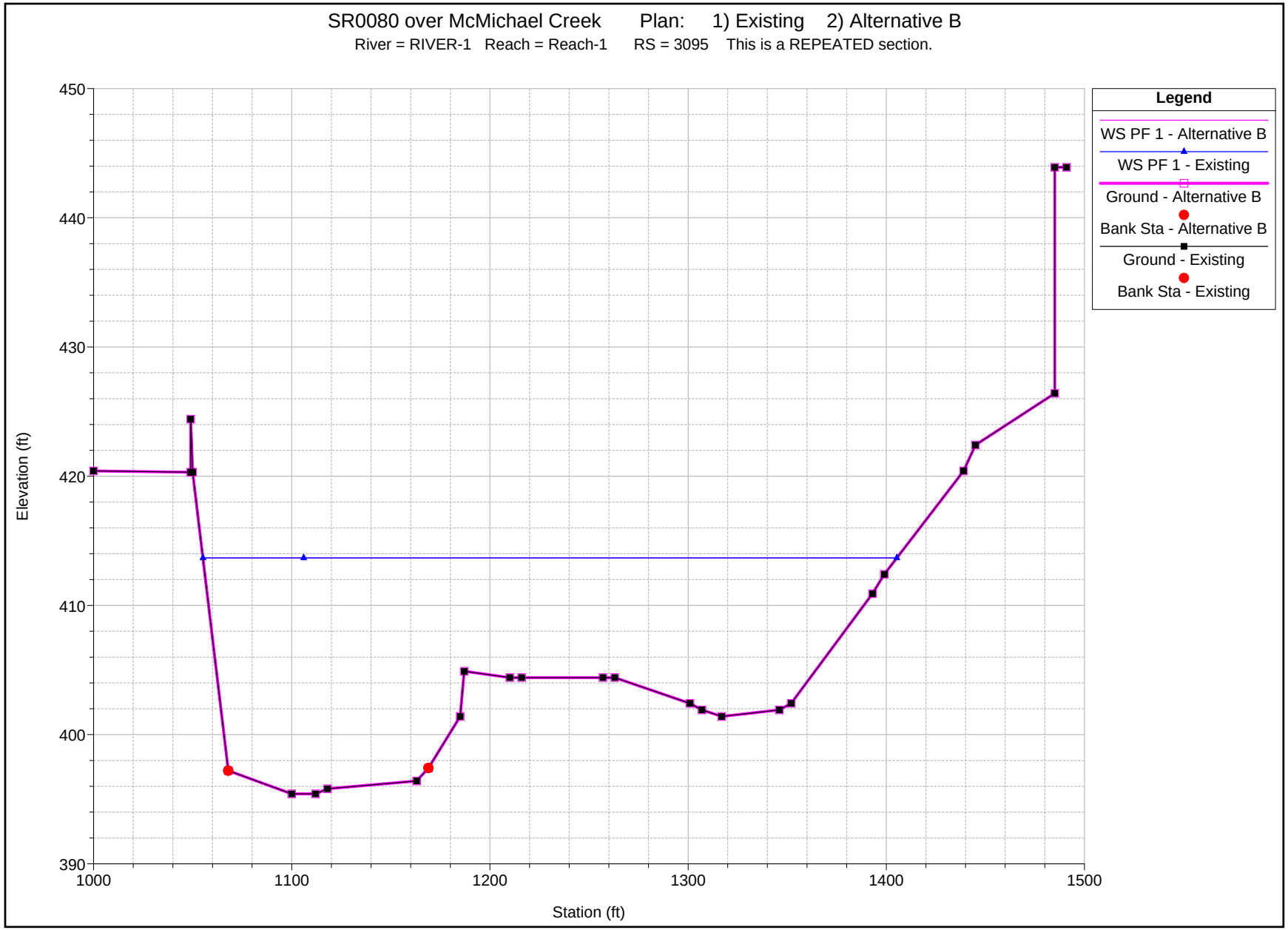

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 4020.*
Elevation (ft)
425
420
415
410
405
400
395
600
800
1000
1200
1400
1600
1800
2000
Station (ft)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing

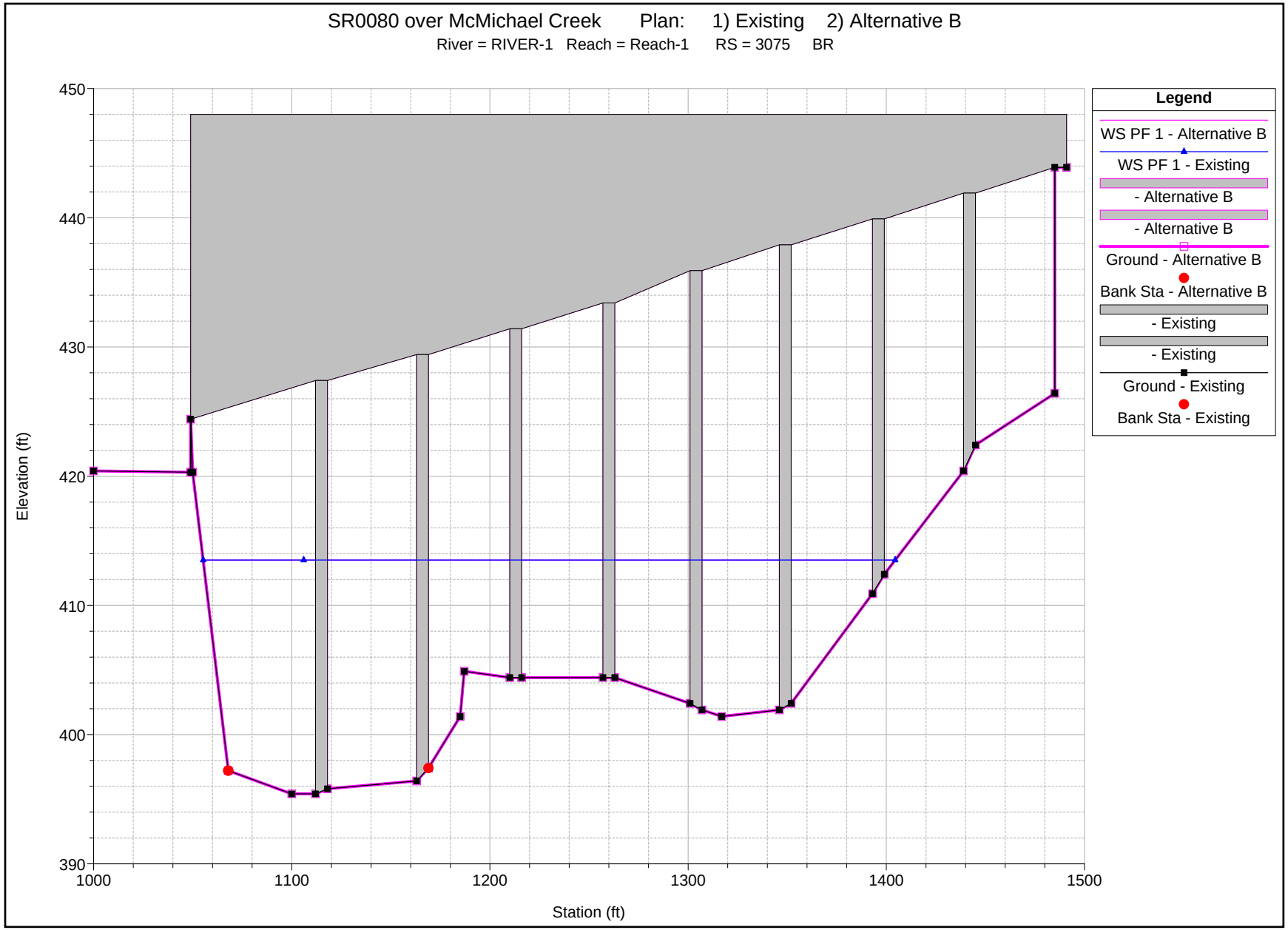

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 3850.*
Elevation (ft)
425
420
415
410
405
400
395
800
1000
1200
1400
1600
1800
Station (ft)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing

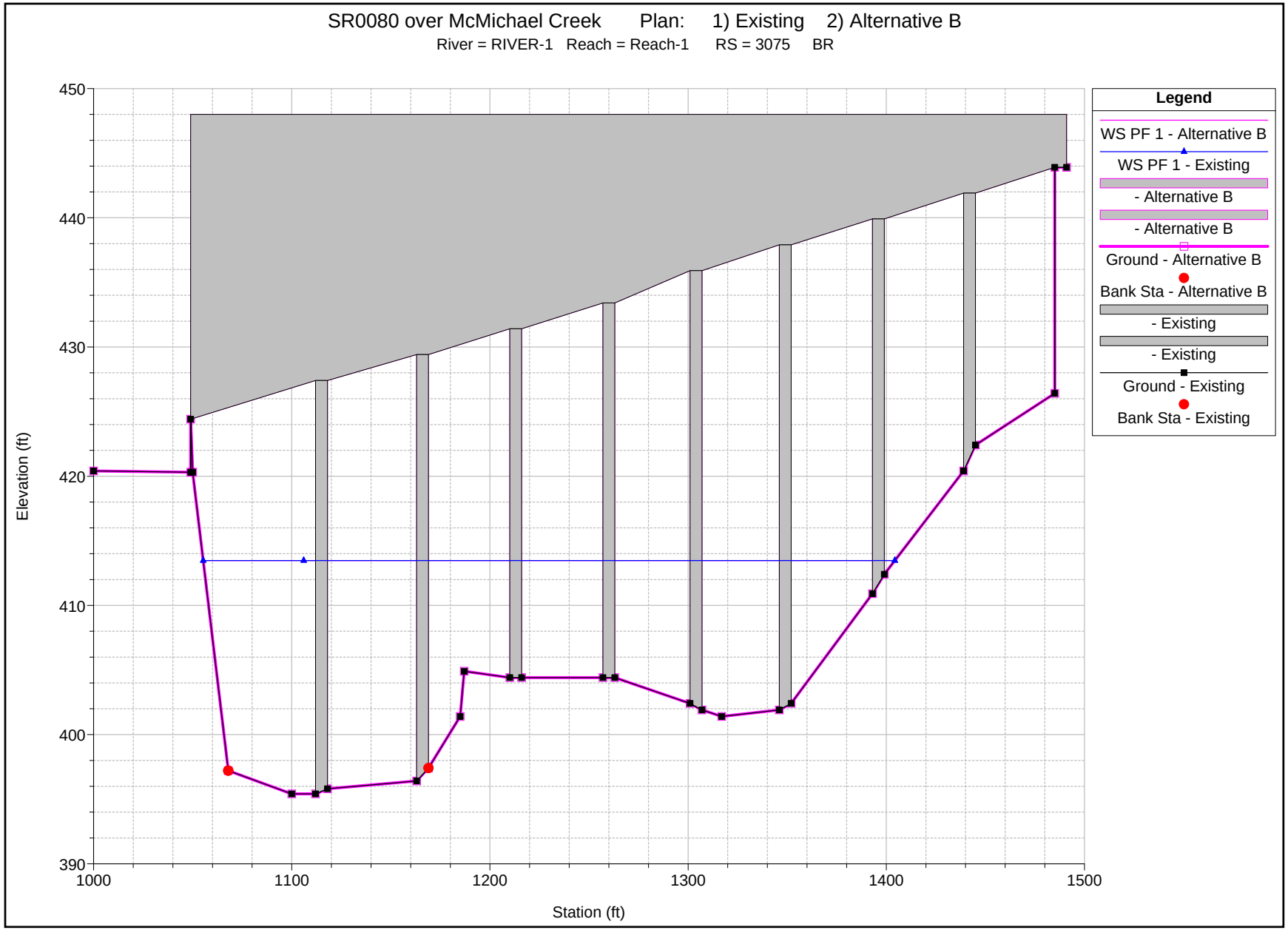

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 3680.*
Elevation (ft)
425
420
415
410
405
400
395
1000
1100
1200
1300
1400
1500
1600
1700
1800
Station (ft)
Legend
WS PF 1 - Existing
WS PF 1 - Alternative B
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing

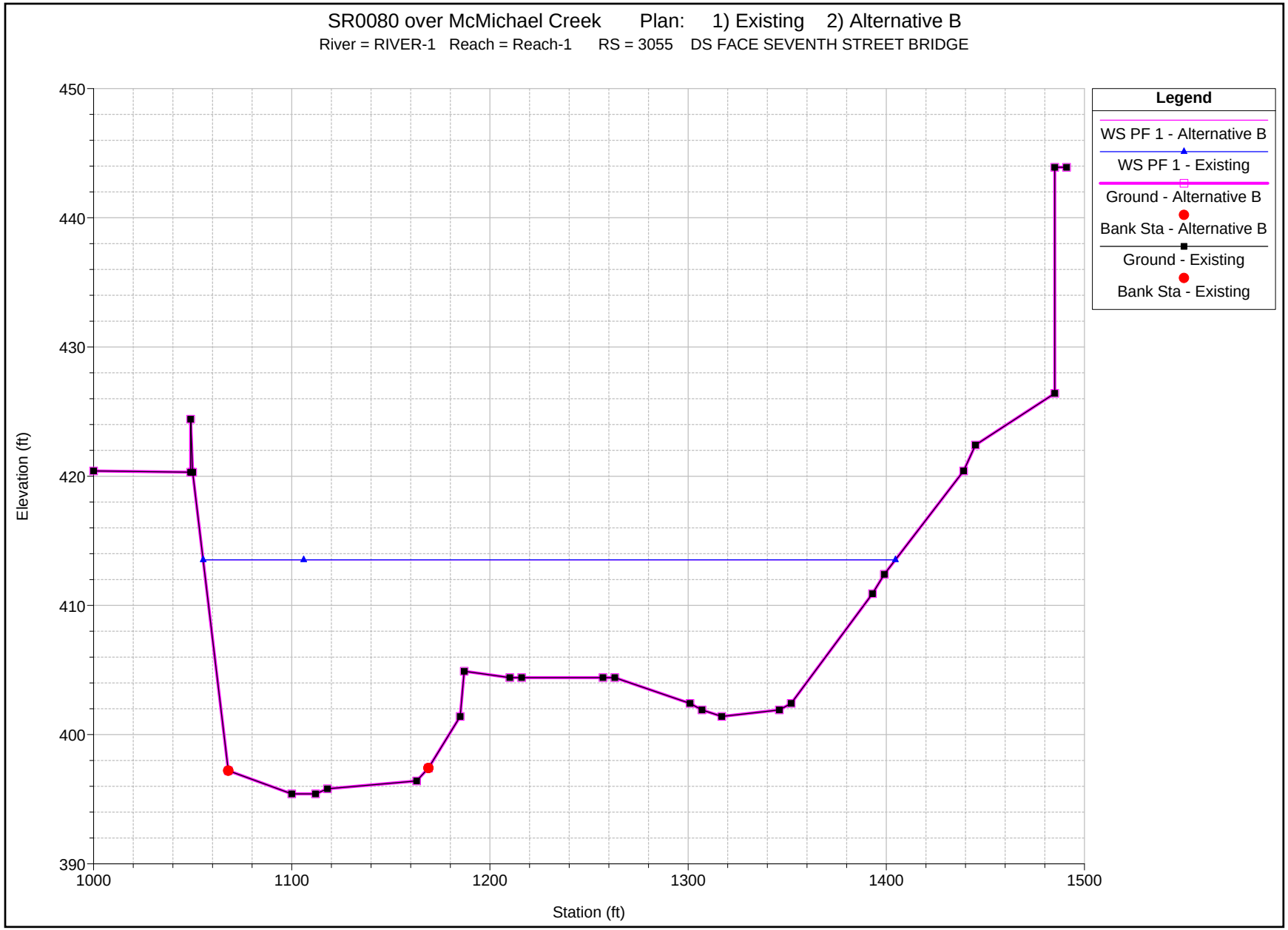

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 3510.*
Elevation (ft)
Station (ft)
420
415
410
405
400
395
1100
1200
1300
1400
1500
1600
1700
1800
1900
Legend
WS PF 1 - Existing
WS PF 1 - Alternative B
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing

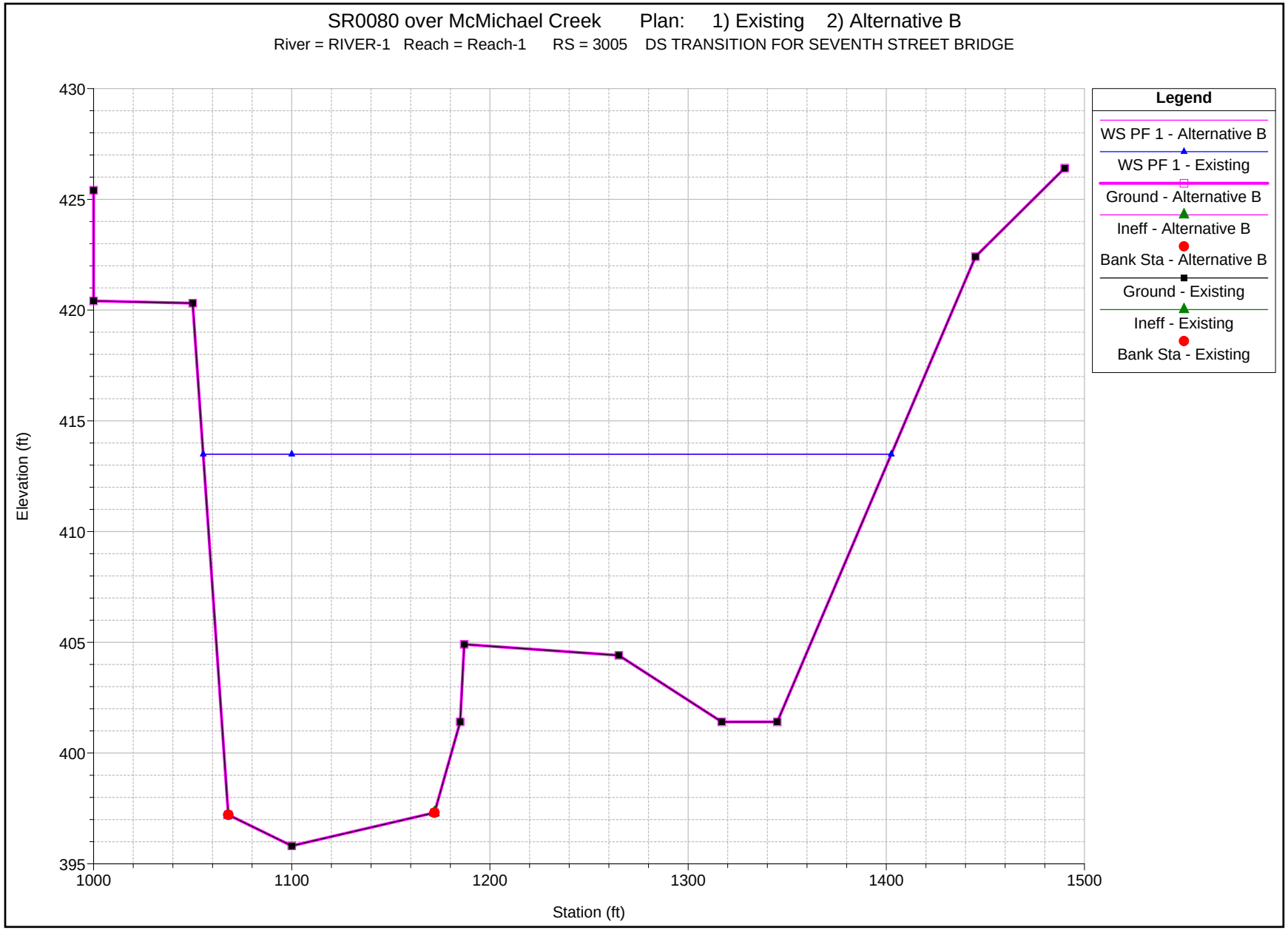

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 3170 US TRANSITION SEVENTH STREET BRIDGE
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
430
425
420
415
410
405
400
395
1000
1100
1200
1300
1400
1500
1600
Station (ft)

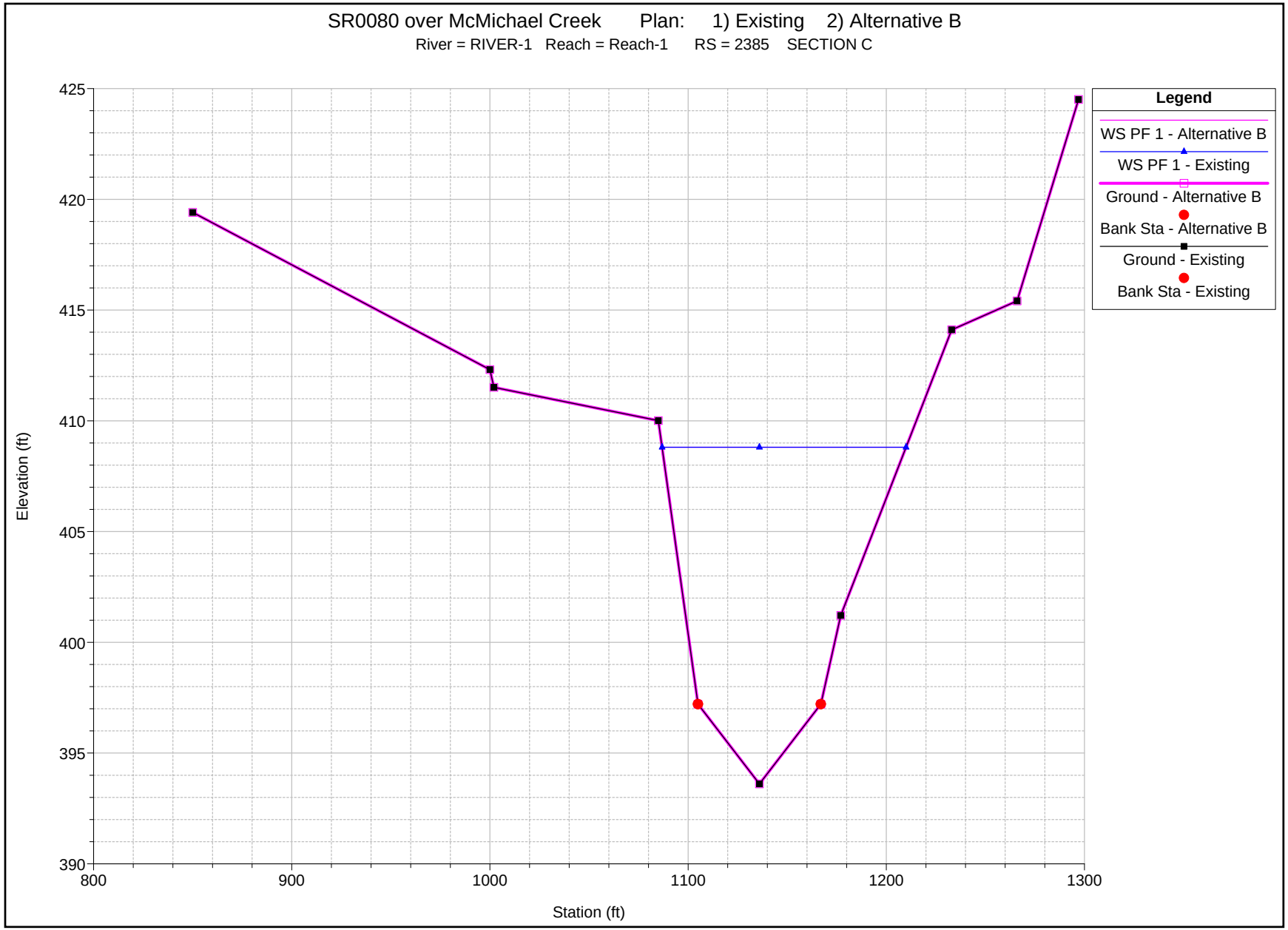

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 3095 This is a REPEATED section.
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
450
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
Station (ft)

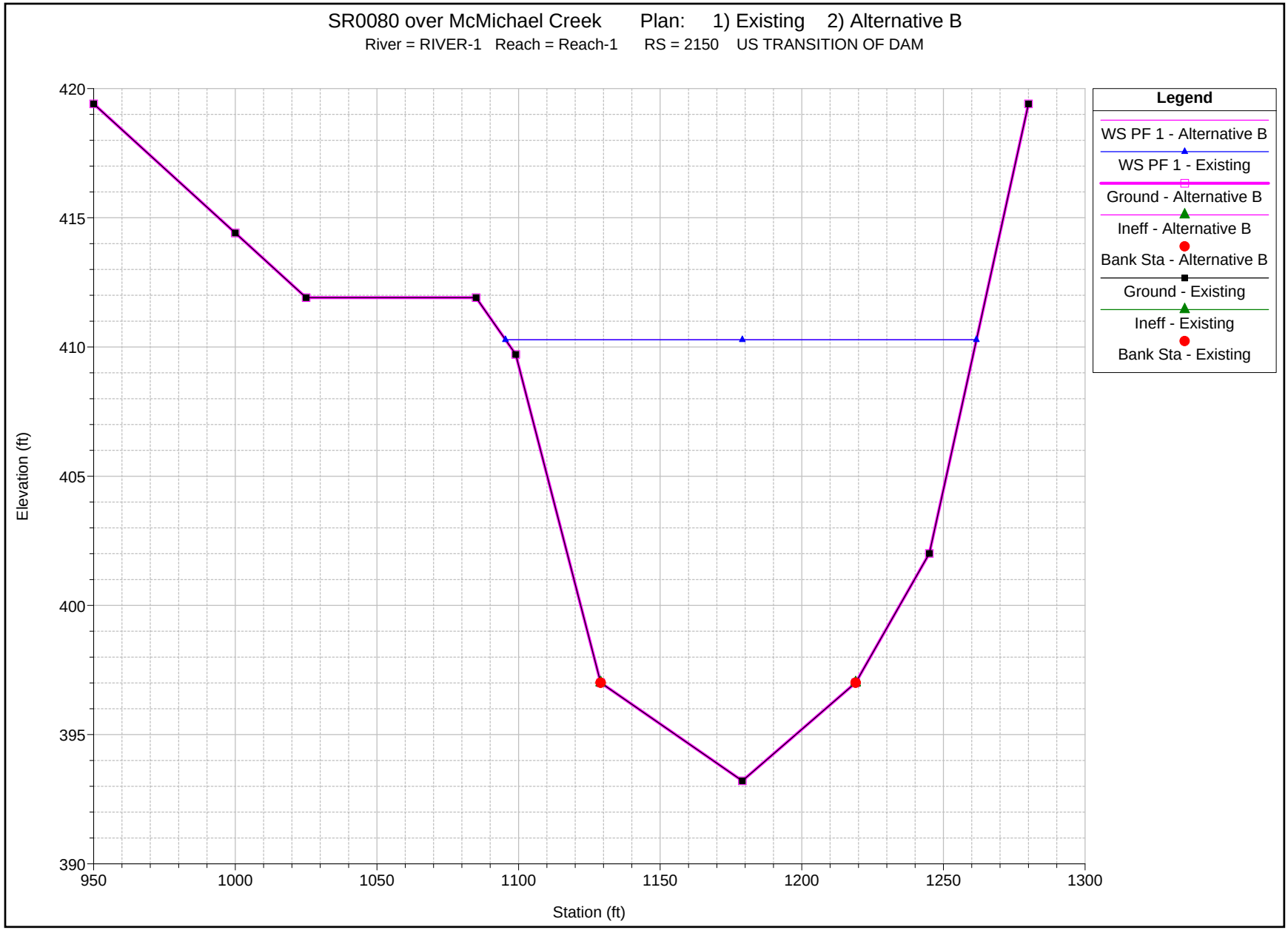

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 3075 BR
Elevation (ft)
Station (ft)
450
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
- Existing
- Existing
Ground - Existing
Bank Sta - Existing

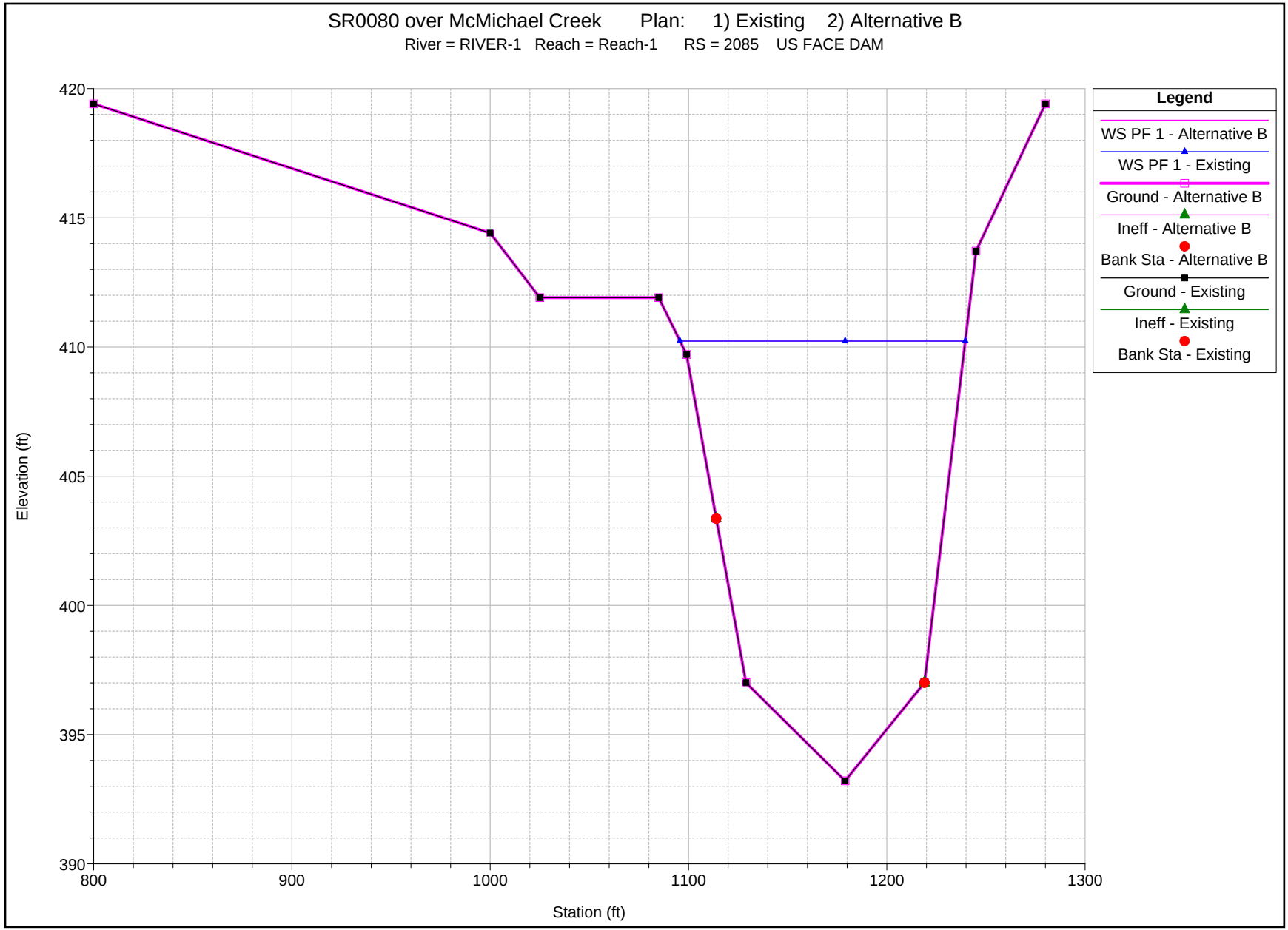

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 3075 BR
Elevation (ft)
Station (ft)
450
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
- Alternative B
Ground - Alternative B
Bank Sta - Alternative B
- Existing
- Existing
Ground - Existing
Bank Sta - Existing

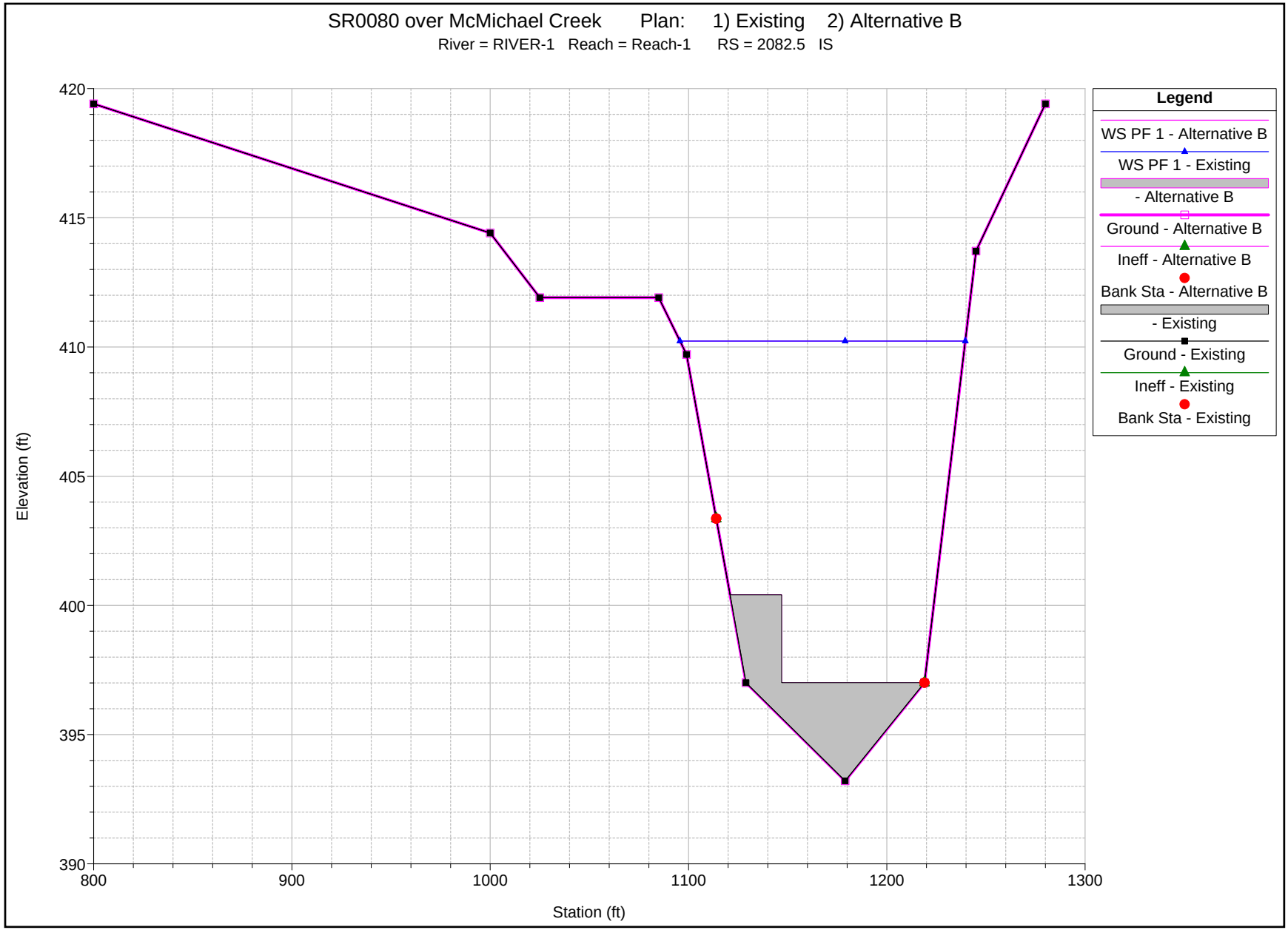

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 3055 DS FACE SEVENTH STREET BRIDGE
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
450
440
430
420
410
400
390
1000
1100
1200
1300
1400
1500
Station (ft)

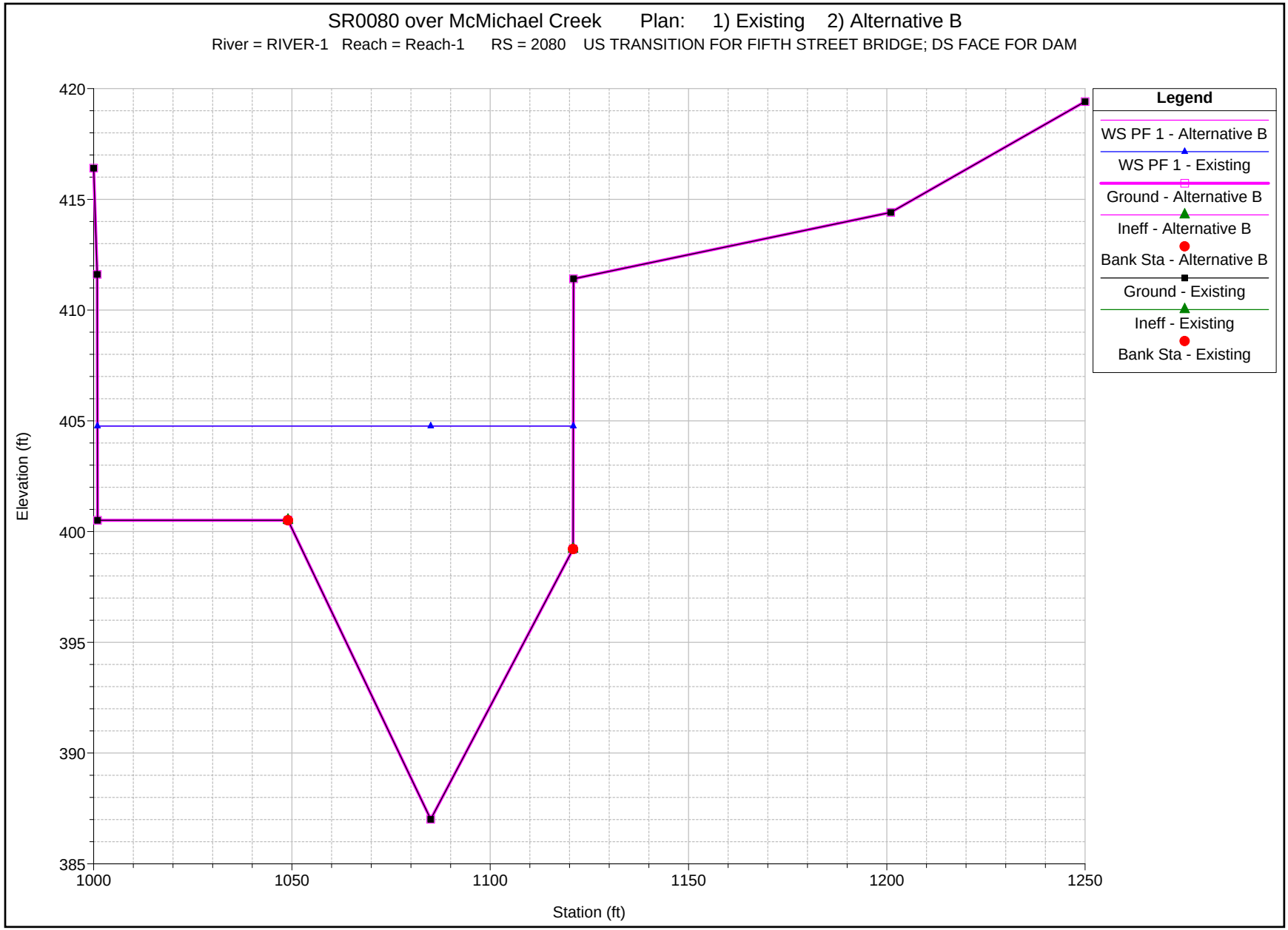

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 3005 DS TRANSITION FOR SEVENTH STREET BRIDGE
Elevation (ft)
Station (ft)
430
425
420
415
410
405
400
395
1000
1100
1200
1300
1400
1500
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
Ground - Existing
Ineff - Existing
Bank Sta - Existing

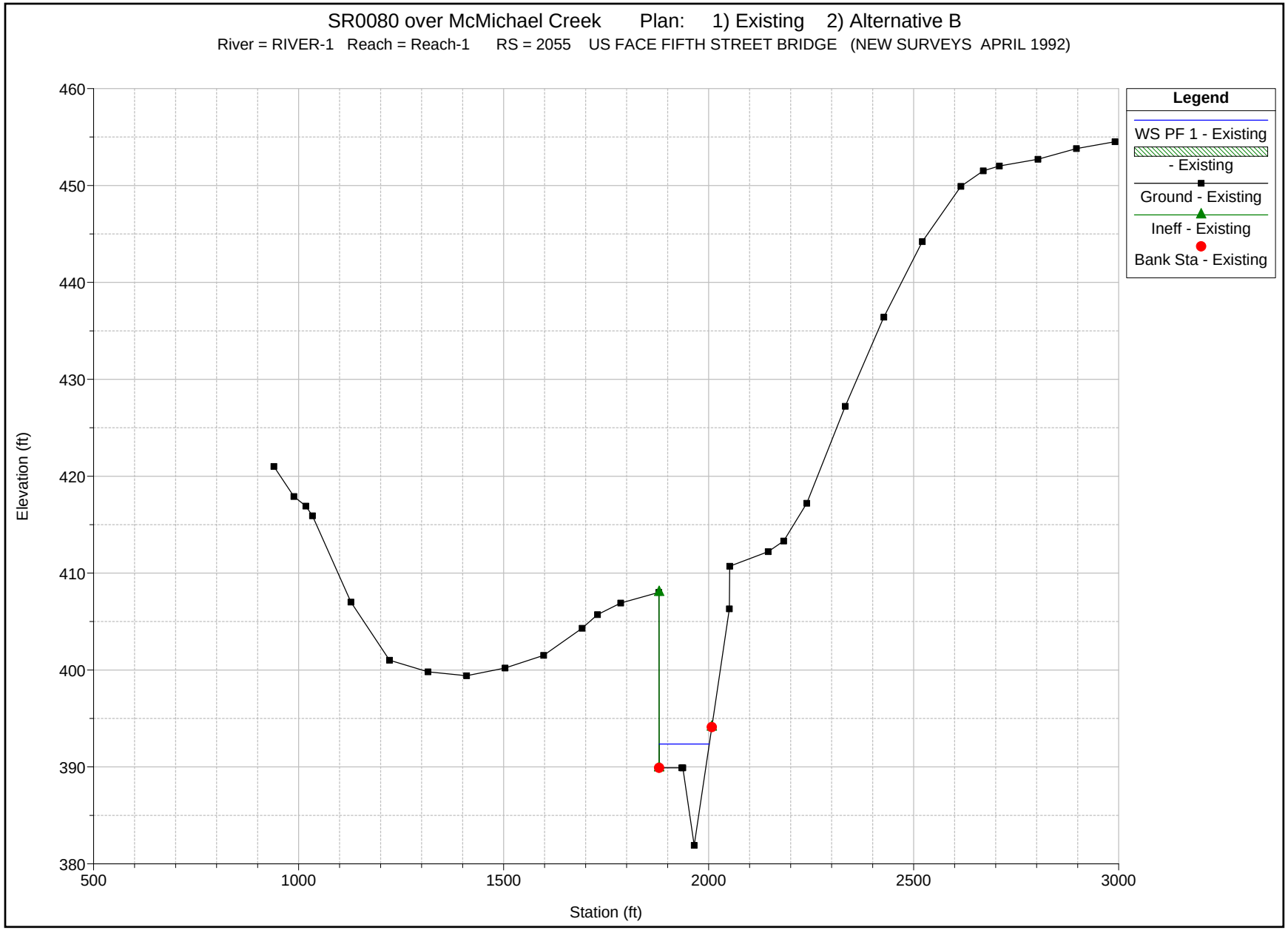

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 2385 SECTION C
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
425
420
415
410
405
400
395
390
800
900
1000
1100
1200
1300
Station (ft)

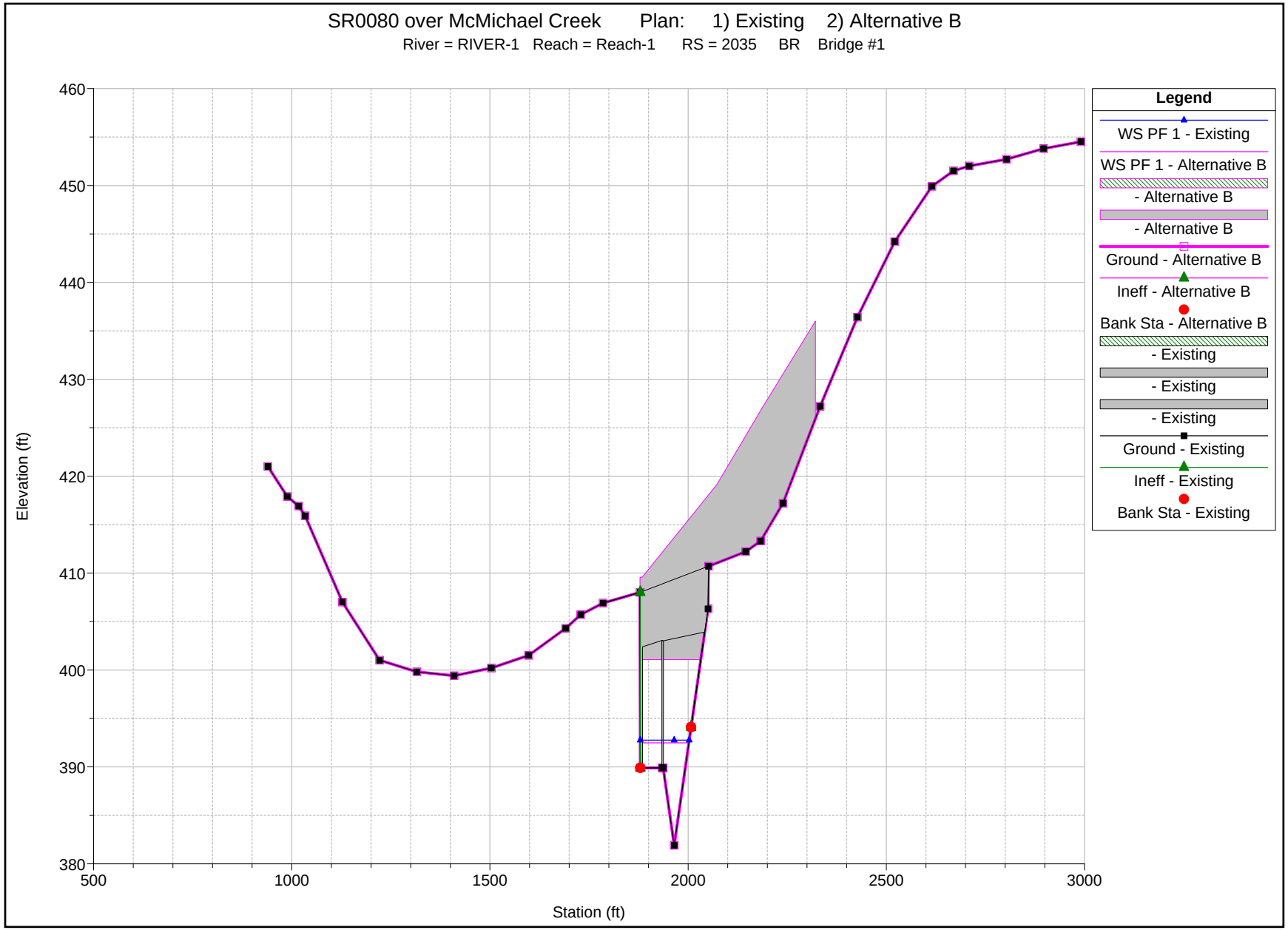

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 2150 US TRANSITION OF DAM
Elevation (ft)
Station (ft)
420
415
410
405
400
395
390
950
1000
1050
1100
1150
1200
1250
1300
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
Ground - Existing
Ineff - Existing
Bank Sta - Existing

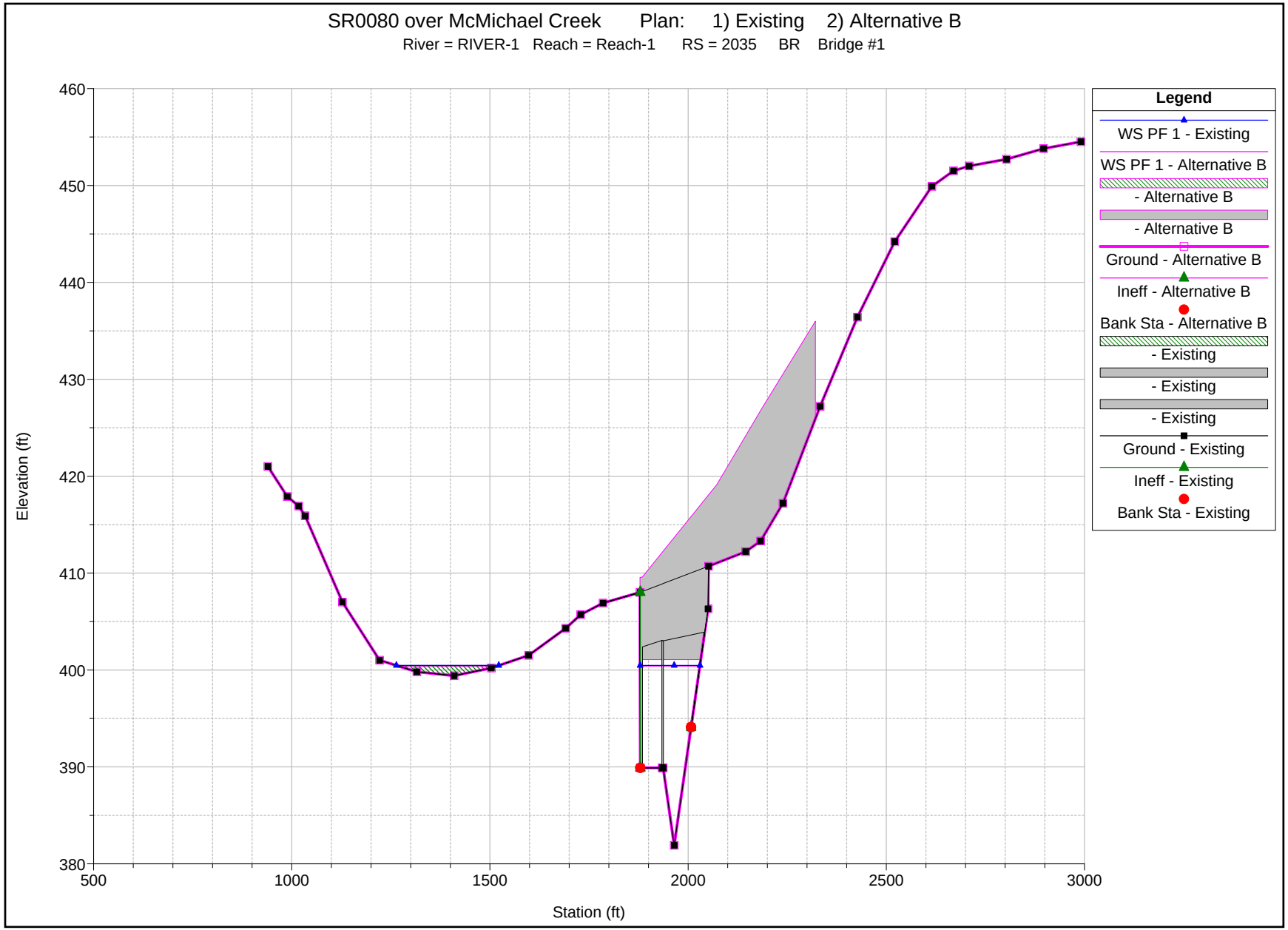

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 2085 US FACE DAM
Elevation (ft)
420
415
410
405
400
395
390
800
900
1000
1100
1200
1300
Station (ft)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
Ground - Existing
Ineff - Existing
Bank Sta - Existing

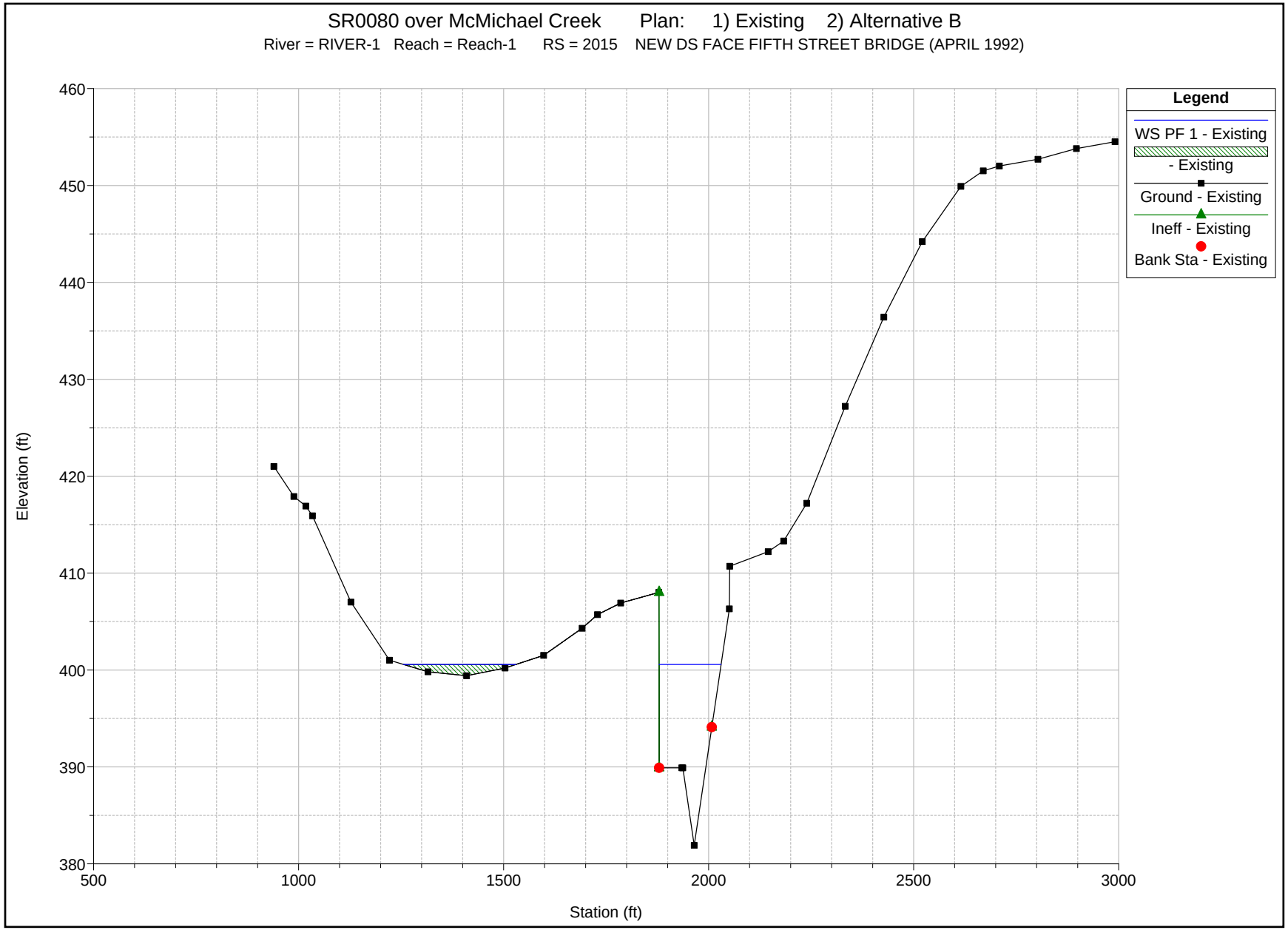

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 2082.5 IS
Elevation (ft)
420
415
410
405
400
395
390
800
900
1000
1100
1200
1300
Station (ft)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
- Alternative B
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

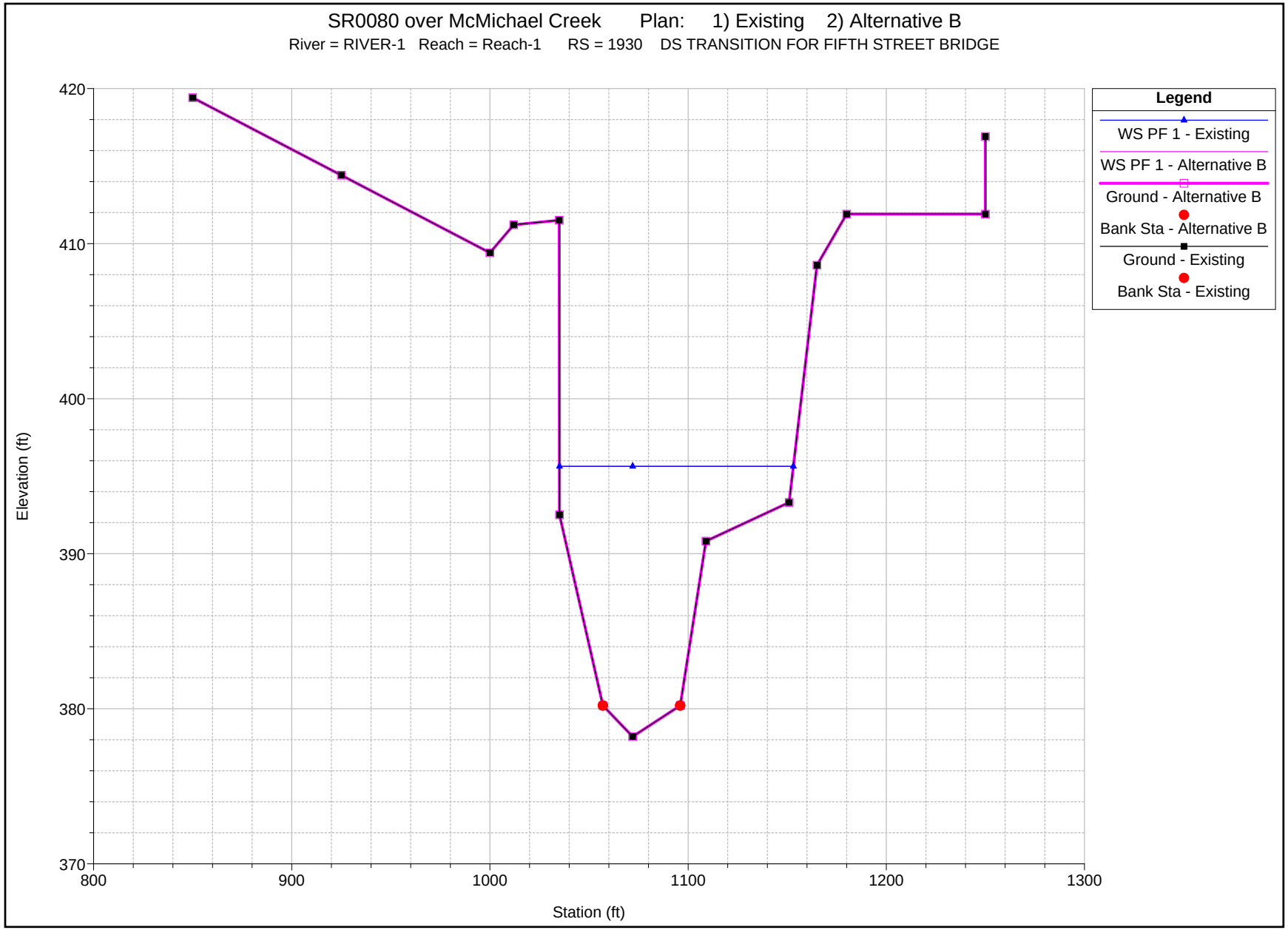

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 2080 US TRANSITION FOR FIFTH STREET BRIDGE; DS FACE FOR DAM
Elevation (ft)
420
415
410
405
400
395
390
385
1000
1050
1100
1150
1200
1250
Station (ft)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
Ground - Existing
Ineff - Existing
Bank Sta - Existing

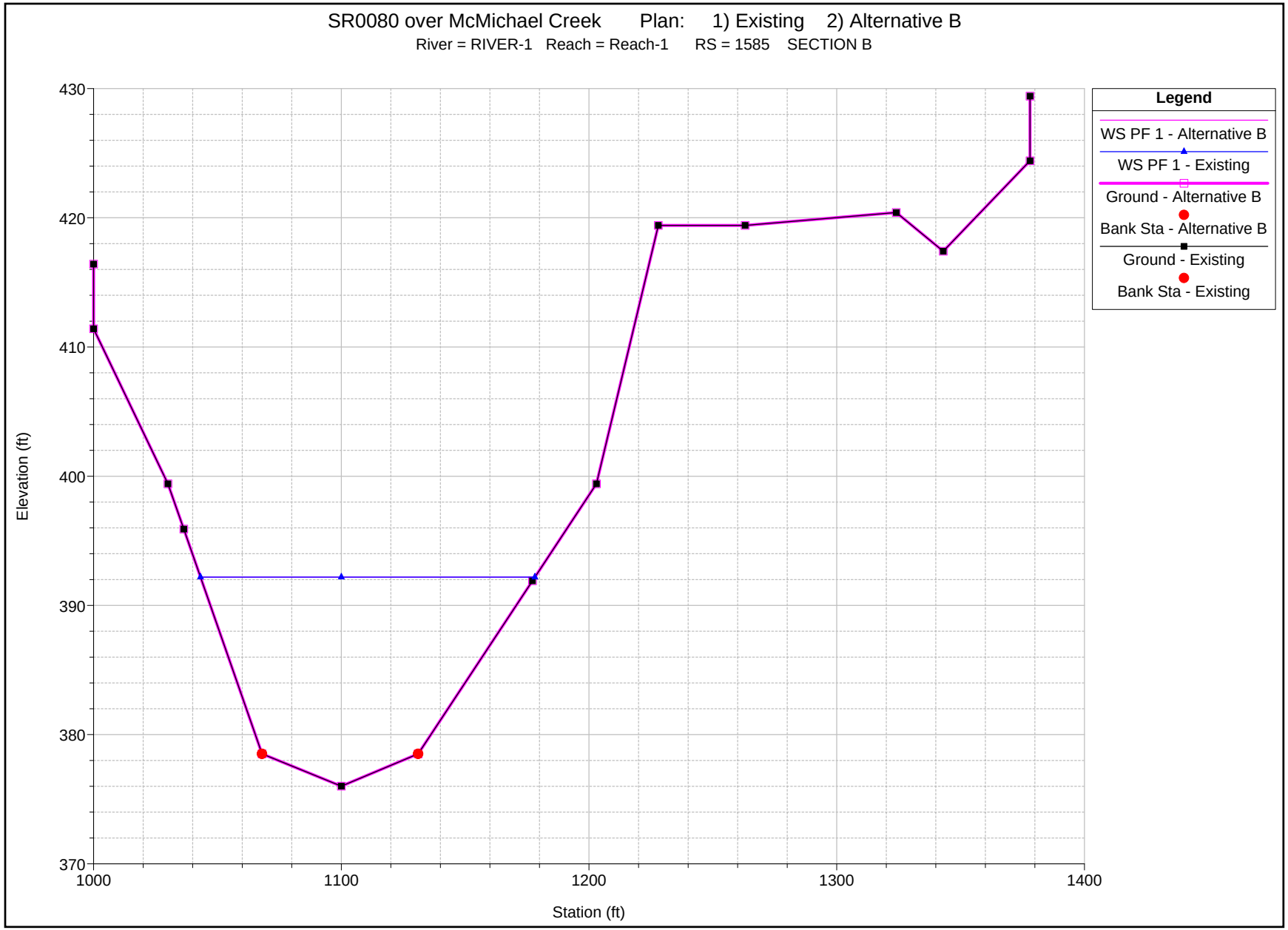

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 2055 US FACE FIFTH STREET BRIDGE (NEW SURVEYS APRIL 1992)
Legend
WS PF 1 - Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
460
450
440
430
420
410
400
390
380
500
1000
1500
2000
2500
3000
Station (ft)

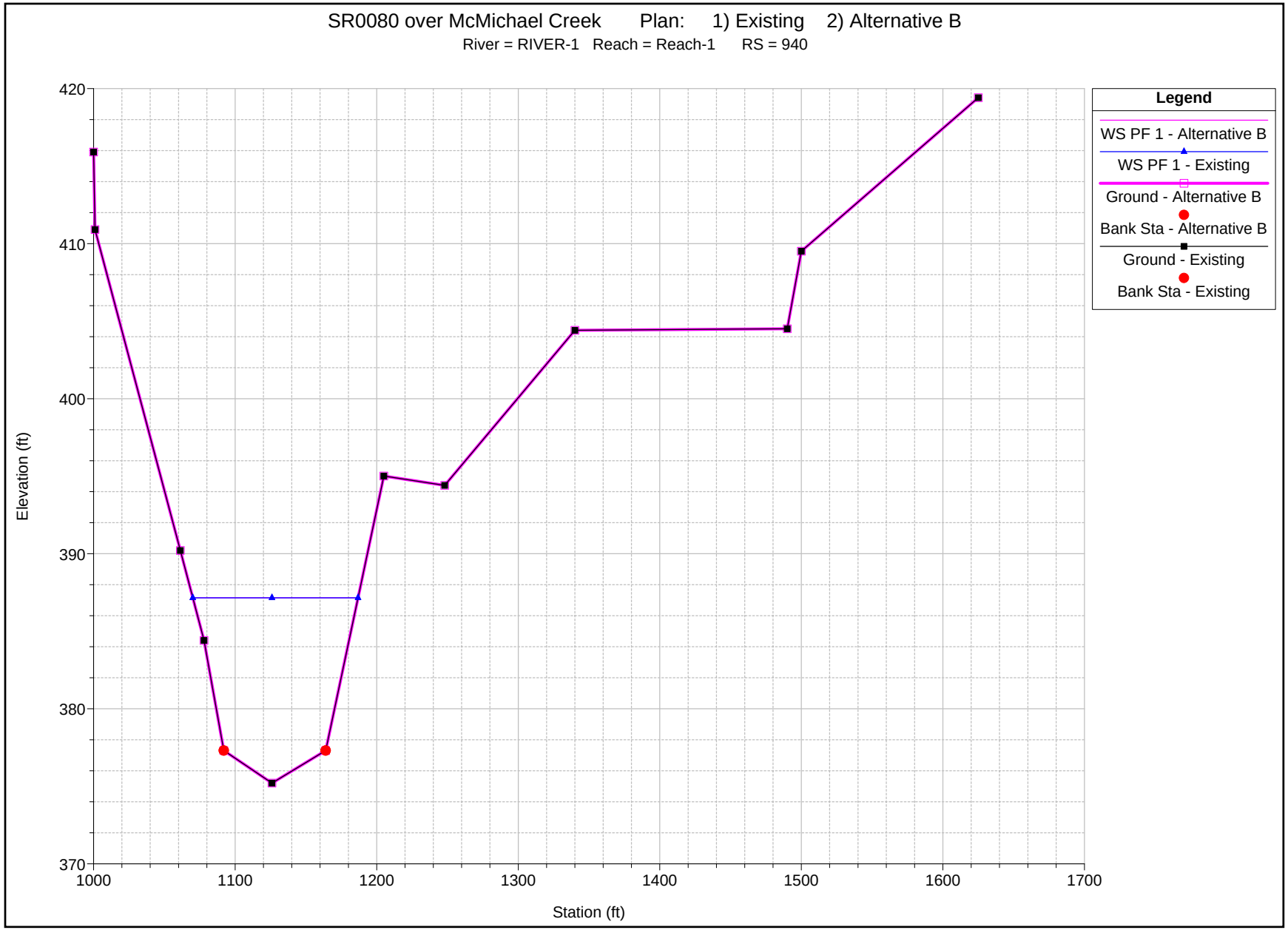

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 2035 BR Bridge #1
Elevation (ft)
460
450
440
430
420
410
400
390
380
500
1000
1500
2000
2500
3000
Station (ft)
Legend
WS PF 1 - Existing
WS PF 1 - Alternative B
- Alternative B
- Alternative B
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
- Existing
- Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

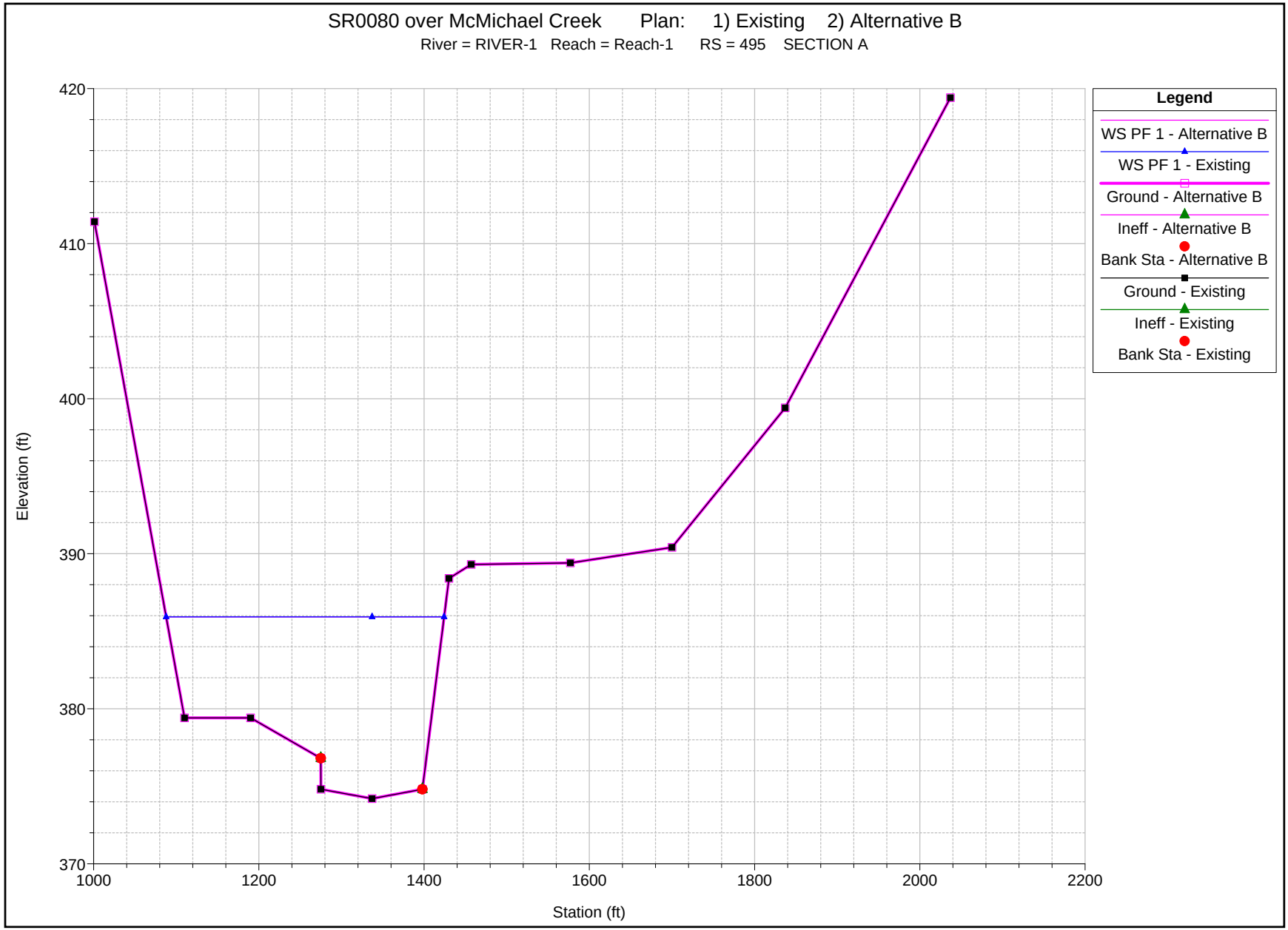

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 2035 BR Bridge #1
Elevation (ft)
460
450
440
430
420
410
400
390
380
500
1000
1500
2000
2500
3000
Station (ft)
Legend
WS PF 1 - Existing
WS PF 1 - Alternative B
- Alternative B
- Alternative B
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
- Existing
- Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing

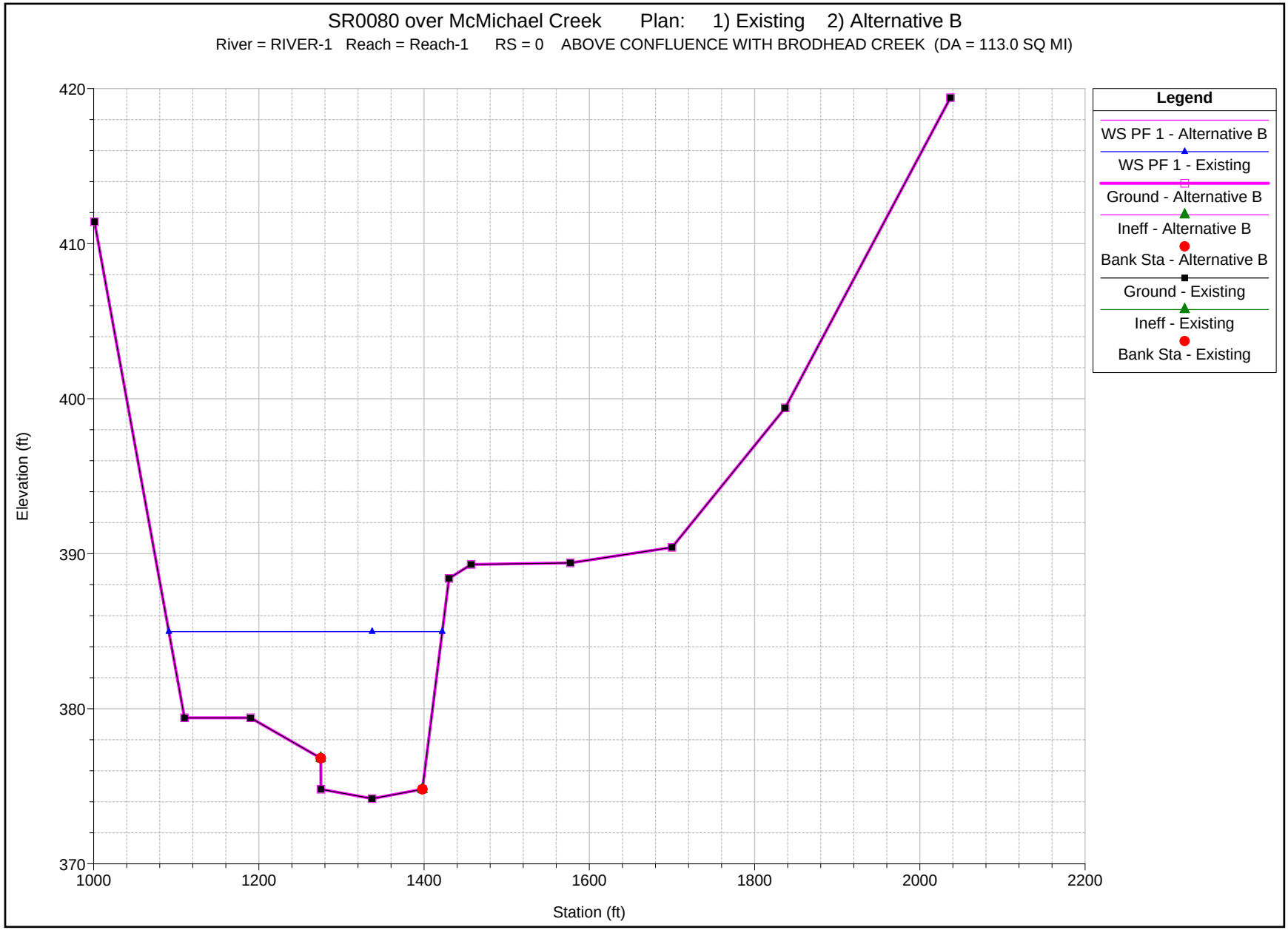

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 2015 NEW DS FACE FIFTH STREET BRIDGE (APRIL 1992)
Legend
WS PF 1 - Existing
- Existing
Ground - Existing
Ineff - Existing
Bank Sta - Existing
Elevation (ft)
460
450
440
430
420
410
400
390
380
500
1000
1500
2000
2500
3000
Station (ft)

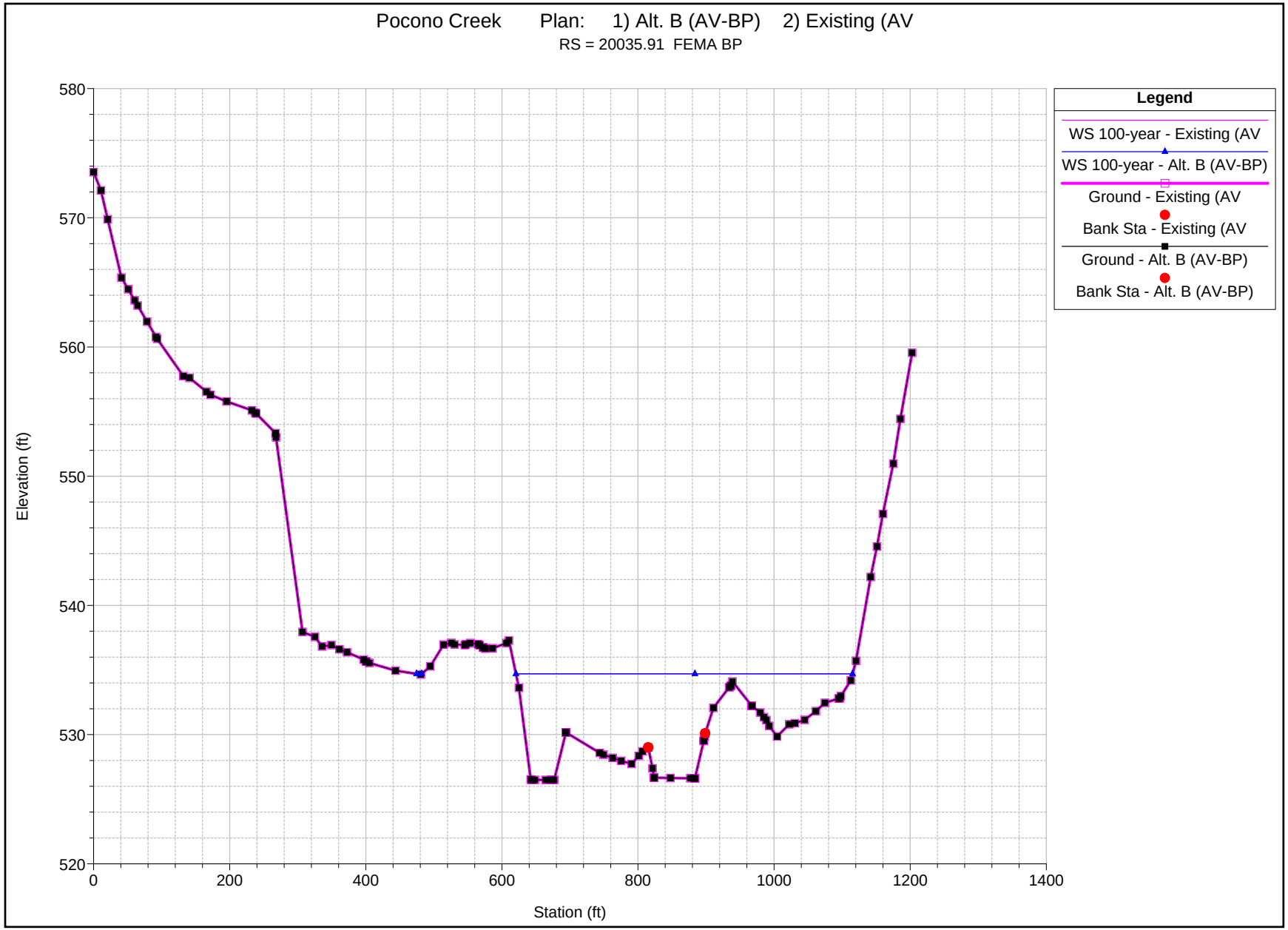

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 1930 DS TRANSITION FOR FIFTH STREET BRIDGE
Legend
WS PF 1 - Existing
WS PF 1 - Alternative B
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
420
410
400
390
380
370
800
900
1000
1100
1200
1300
Station (ft)

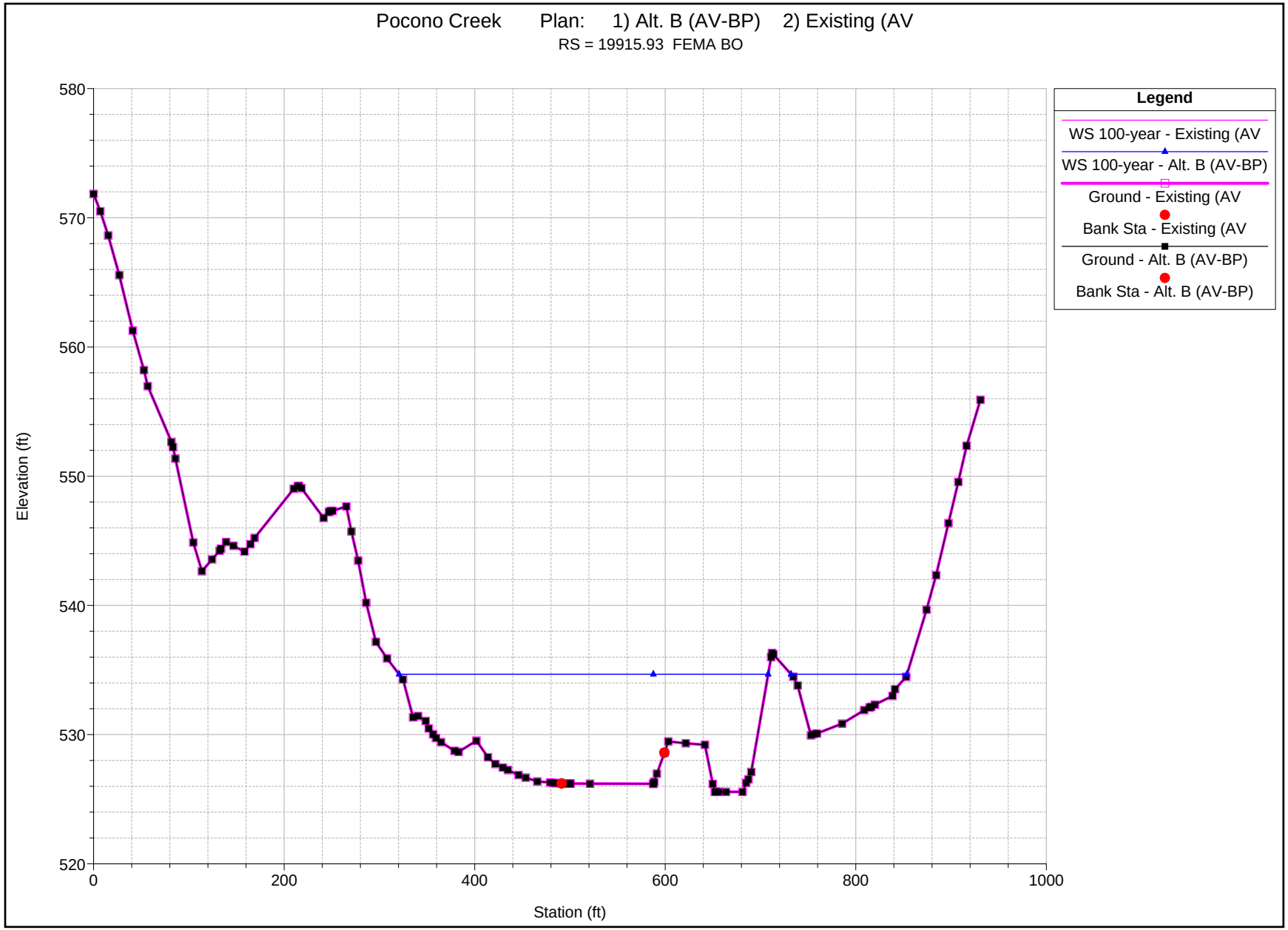

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 1585 SECTION B
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing
Elevation (ft)
430
420
410
400
390
380
370
1000
1100
1200
1300
1400
Station (ft)

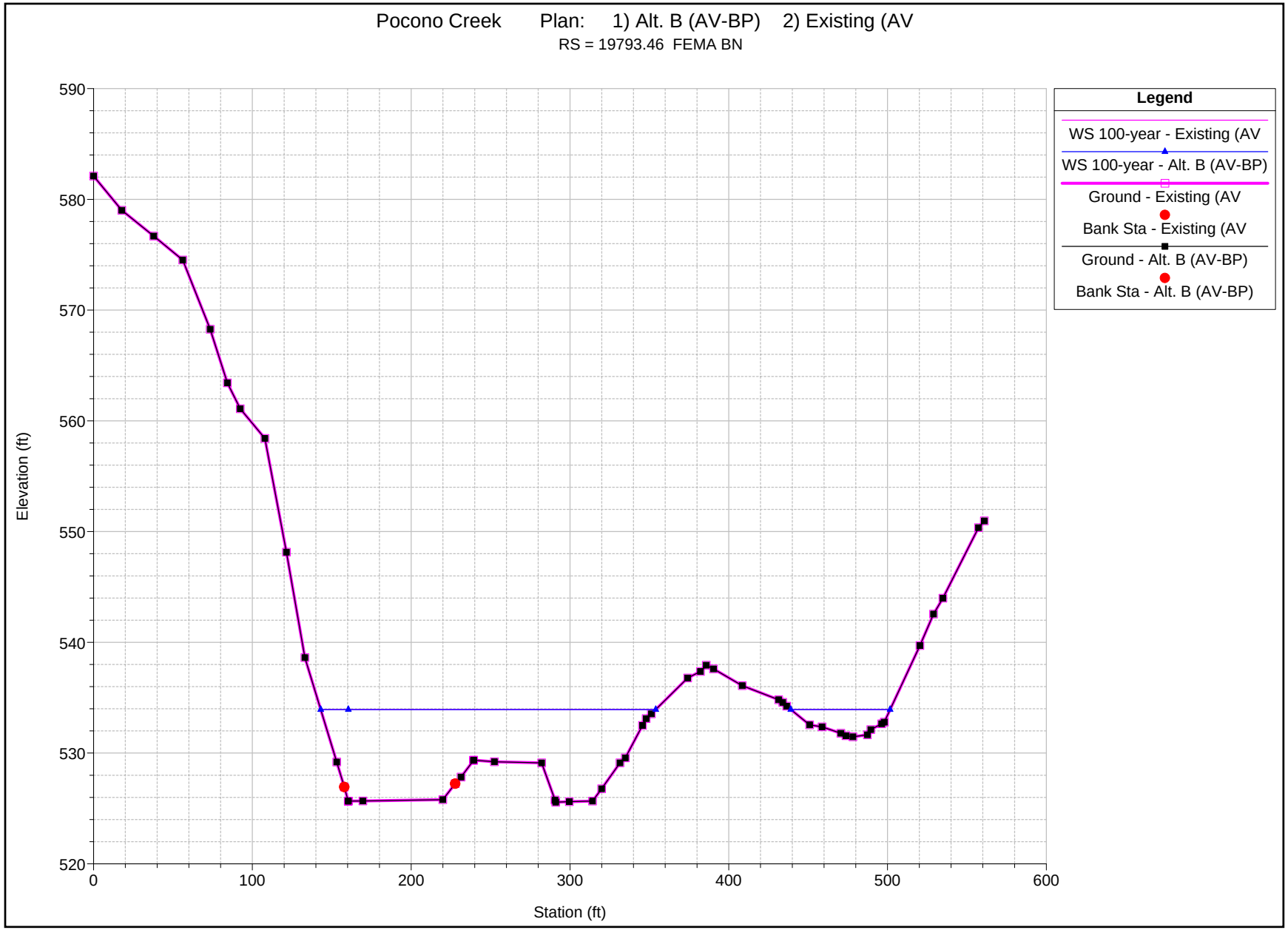

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 940
Elevation (ft)
420
410
400
390
380
370
1000
1100
1200
1300
1400
1500
1600
1700
Station (ft)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Bank Sta - Alternative B
Ground - Existing
Bank Sta - Existing

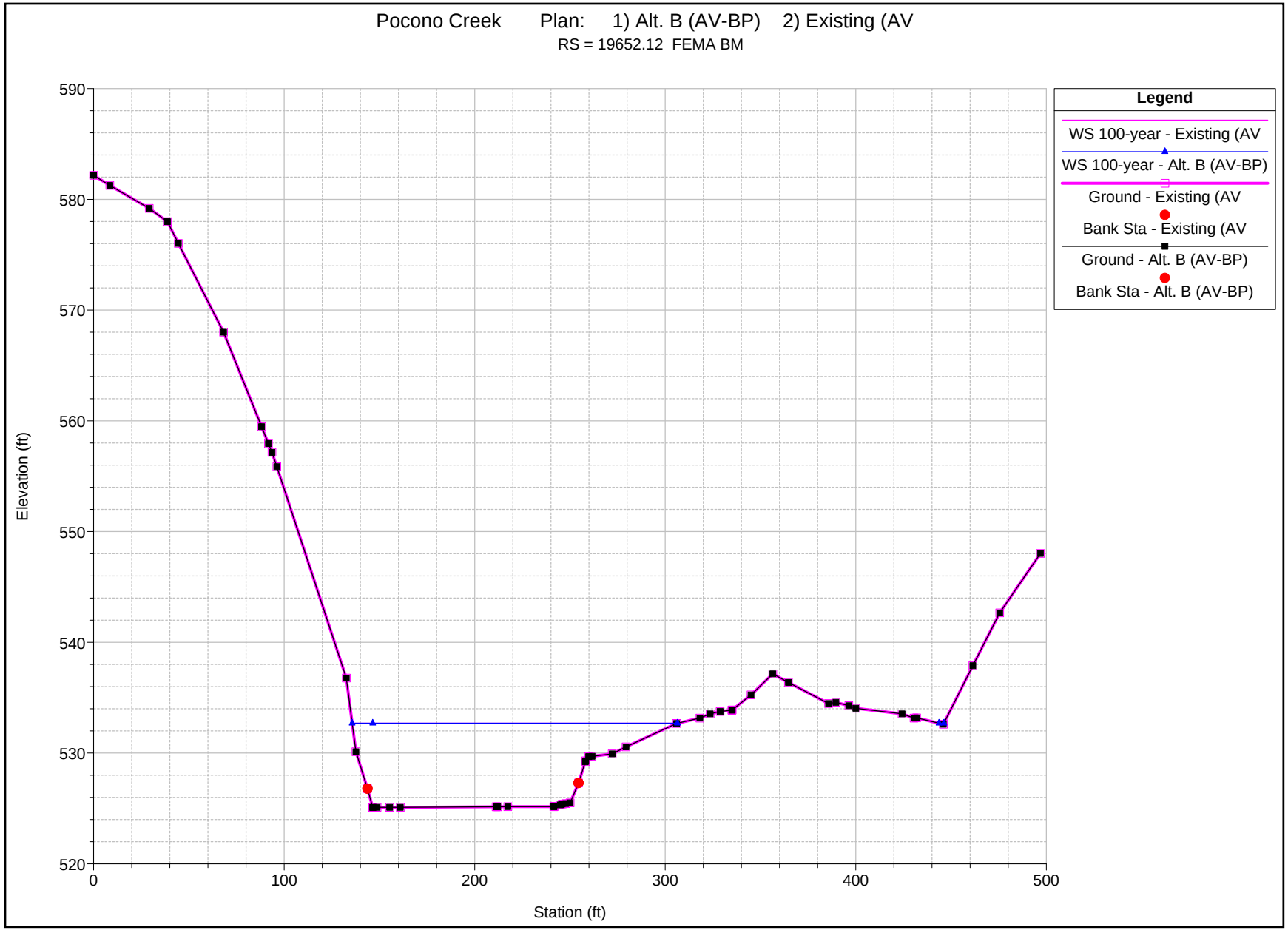

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 495 SECTION A
Elevation (ft)
420
410
400
390
380
370
1000
1200
1400
1600
1800
2000
2200
Station (ft)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
Ground - Existing
Ineff - Existing
Bank Sta - Existing

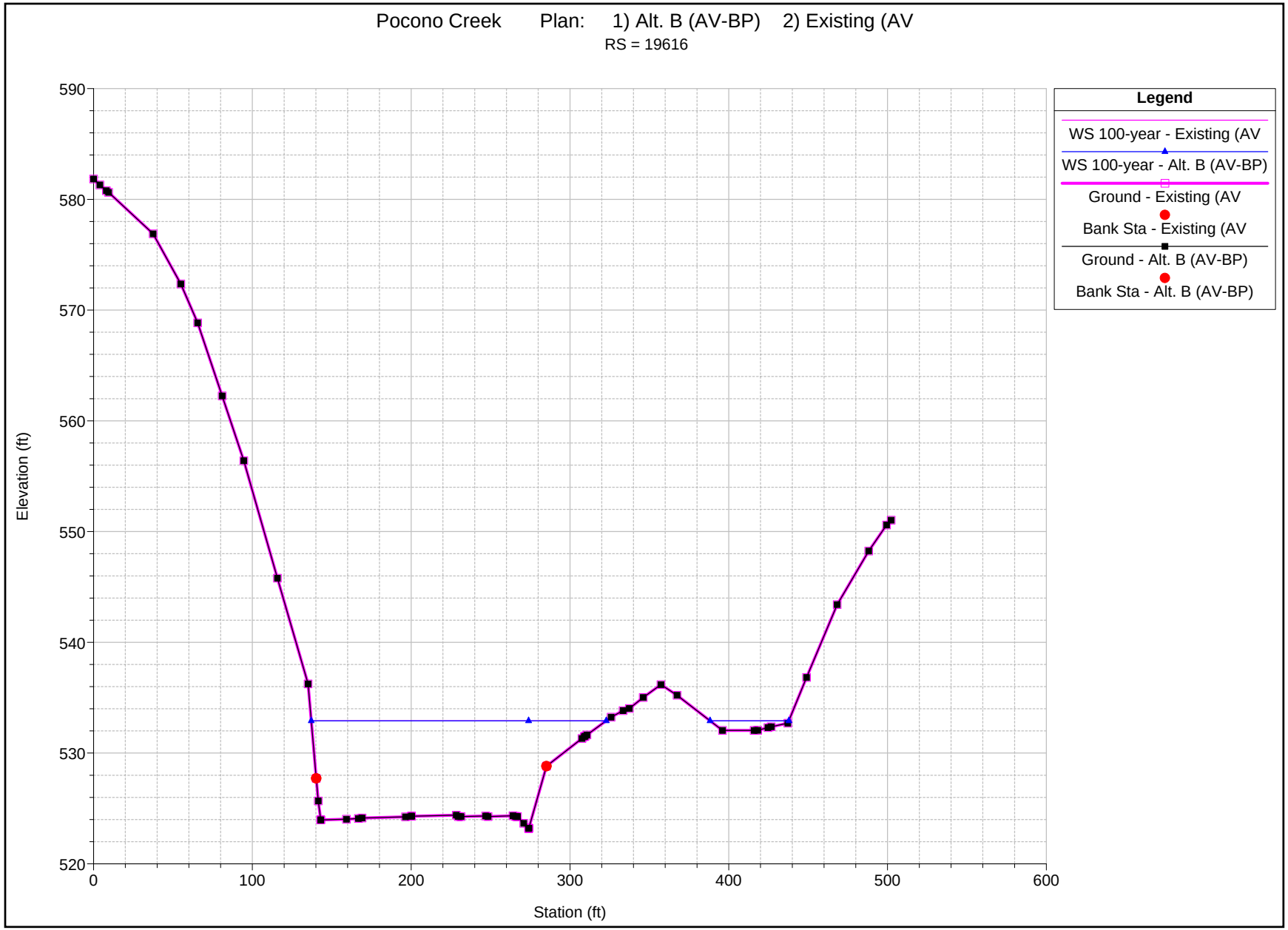

SR0080 over McMichael Creek Plan: 1) Existing 2) Alternative B
River = RIVER-1 Reach = Reach-1 RS = 0 ABOVE CONFLUENCE WITH BRODHEAD CREEK (DA = 113.0 SQ MI)
Elevation (ft)
420
410
400
390
380
370
1000
1200
1400
1600
1800
2000
2200
Station (ft)
Legend
WS PF 1 - Alternative B
WS PF 1 - Existing
Ground - Alternative B
Ineff - Alternative B
Bank Sta - Alternative B
Ground - Existing
Ineff - Existing
Bank Sta - Existing

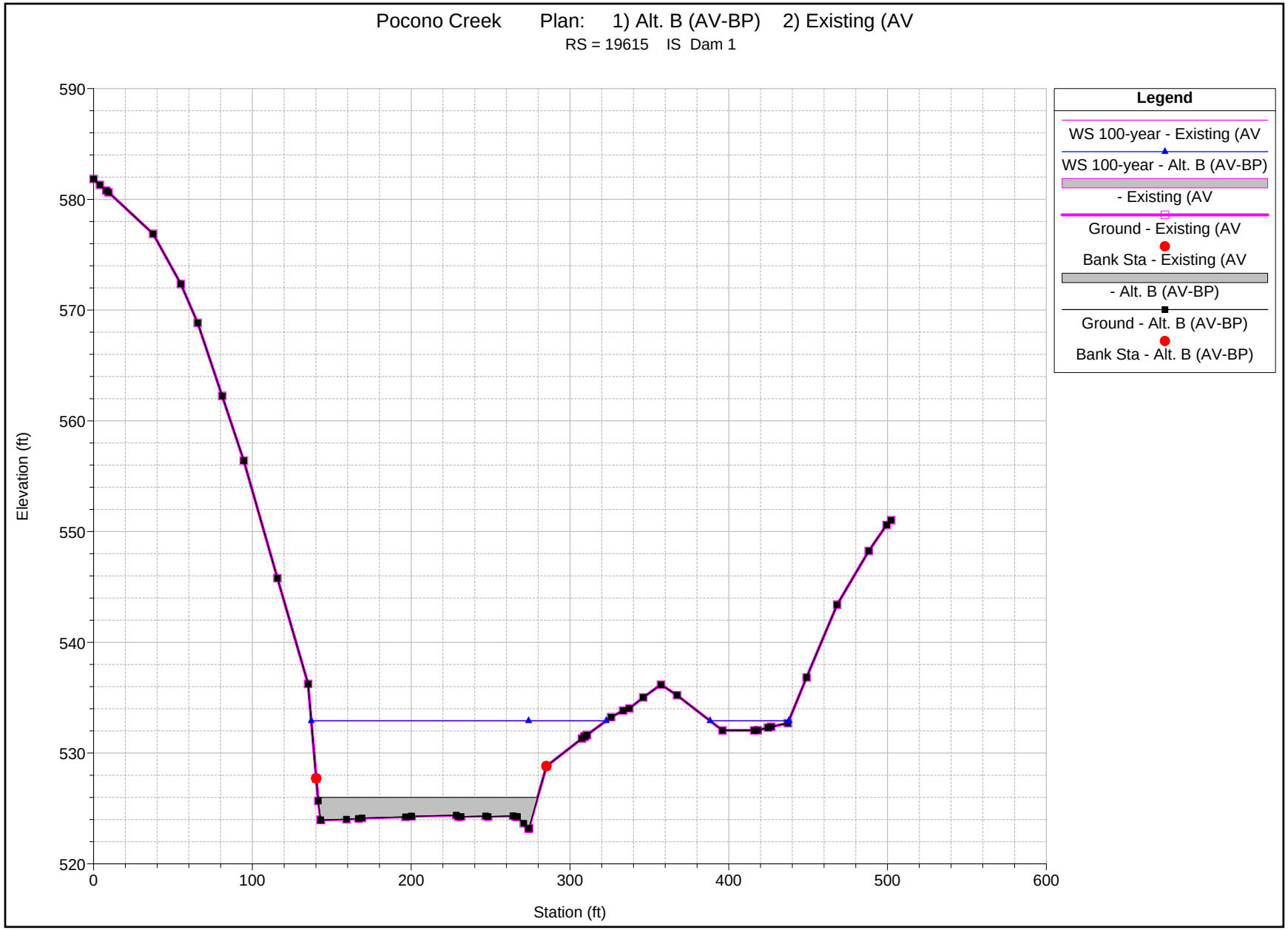

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 20035.91 FEMA BP
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
Station (ft)
580
570
560
550
540
530
520
0
200
400
600
800
1000
1200
1400

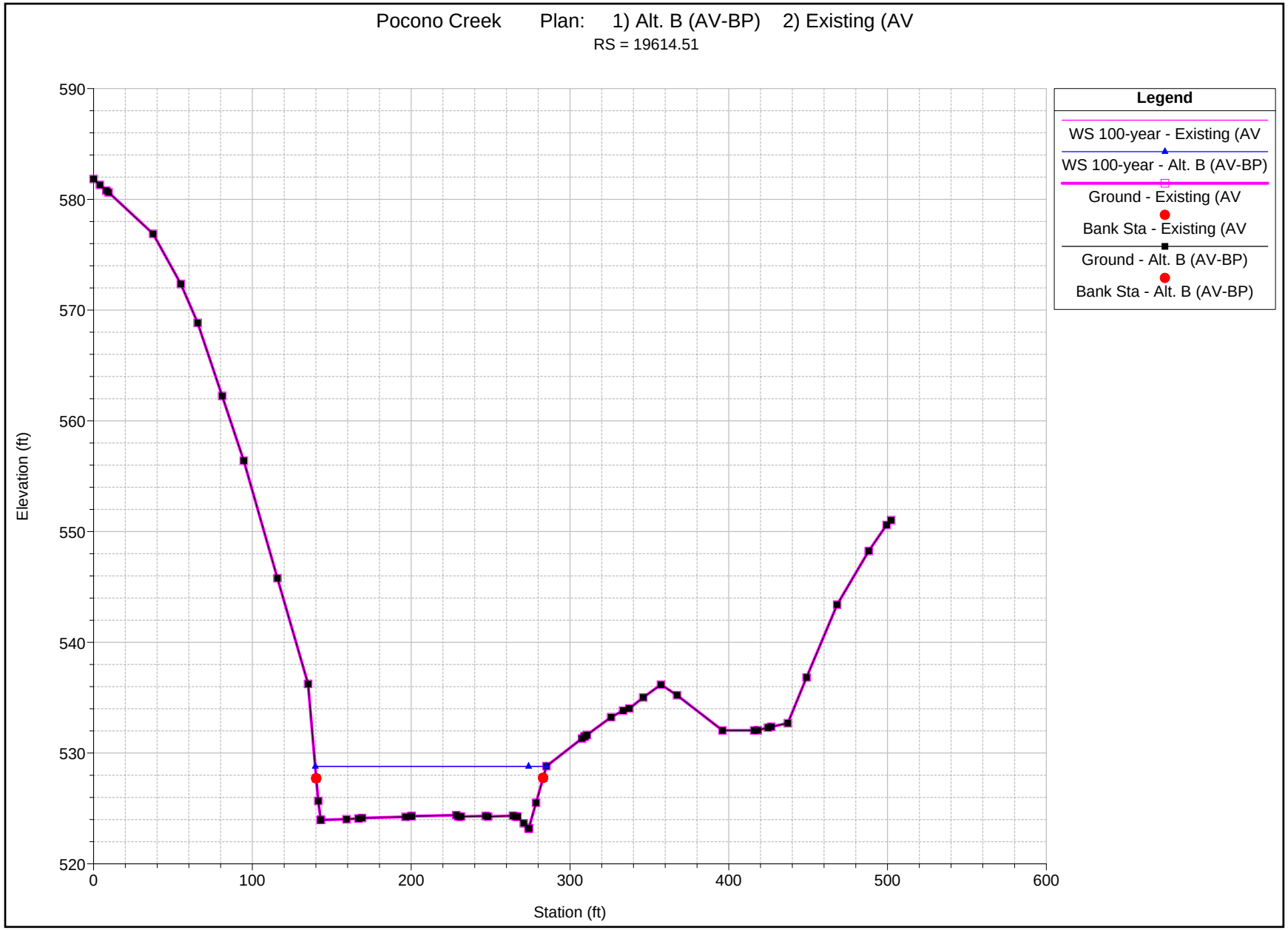

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 19915.93 FEMA BO
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
580
570
560
550
540
530
520
0
200
400
600
800
1000
Station (ft)

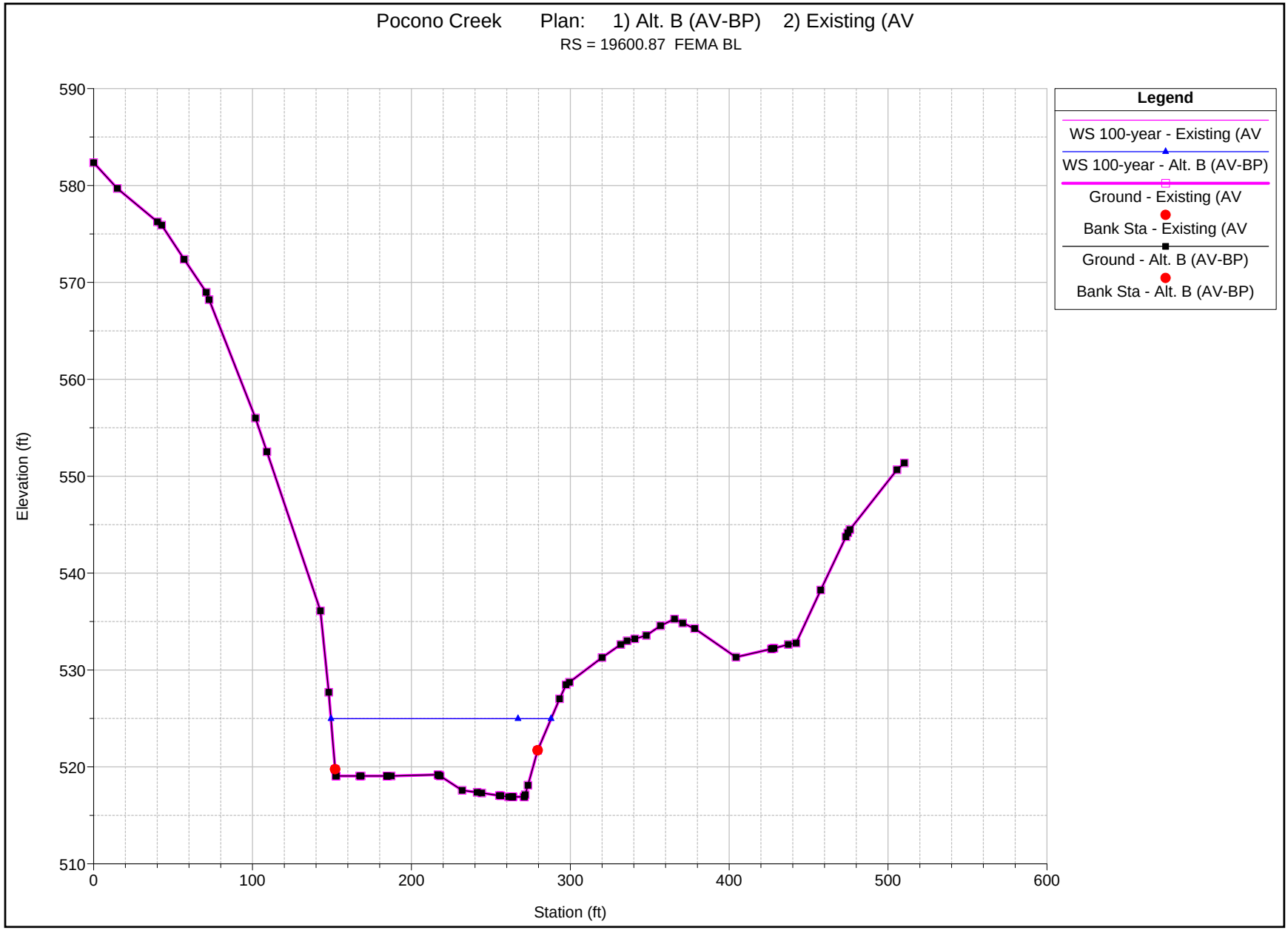

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 19793.46 FEMA BN
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
600
Station (ft)

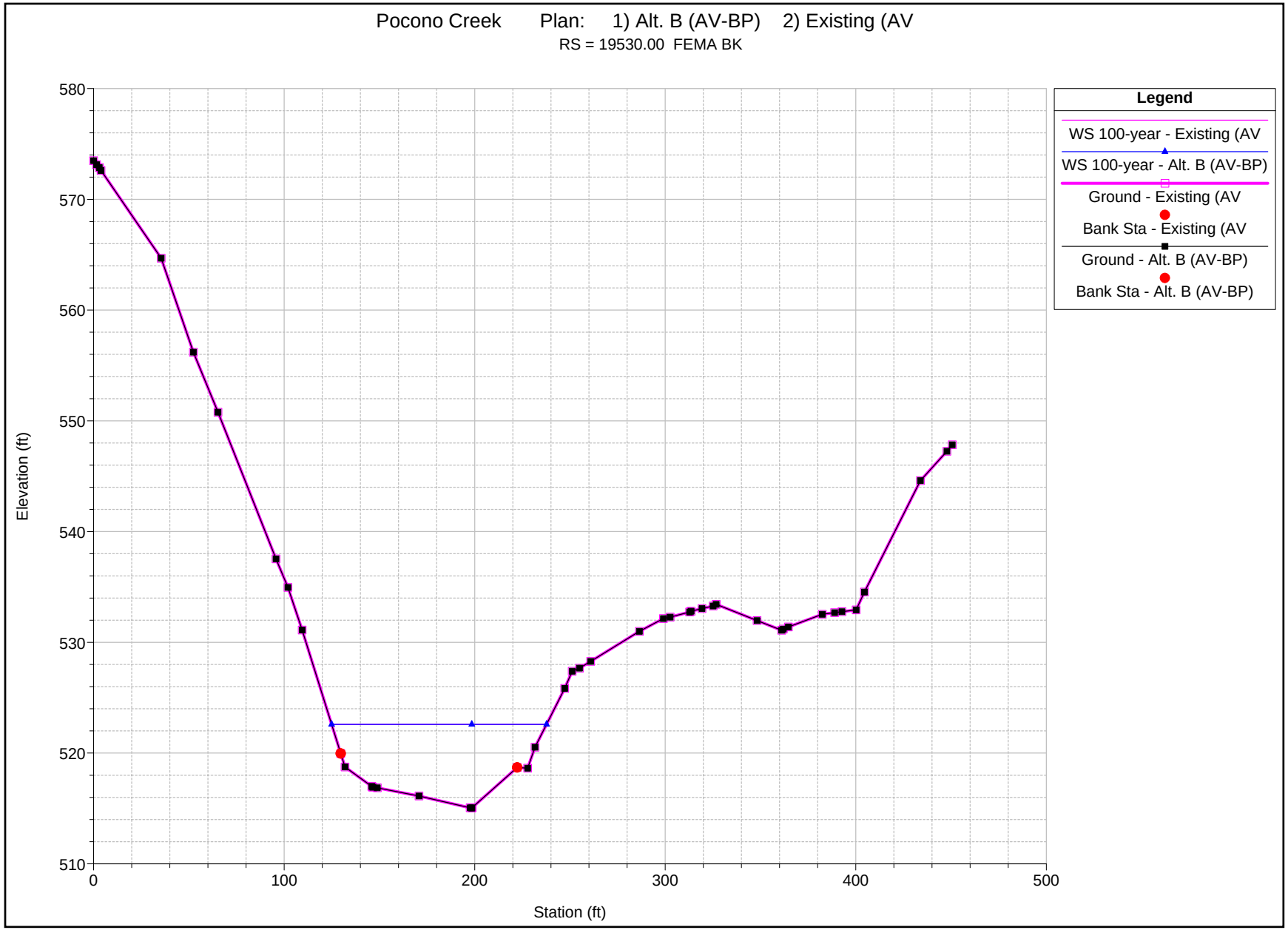

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 19652.12 FEMA BM
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
Station (ft)

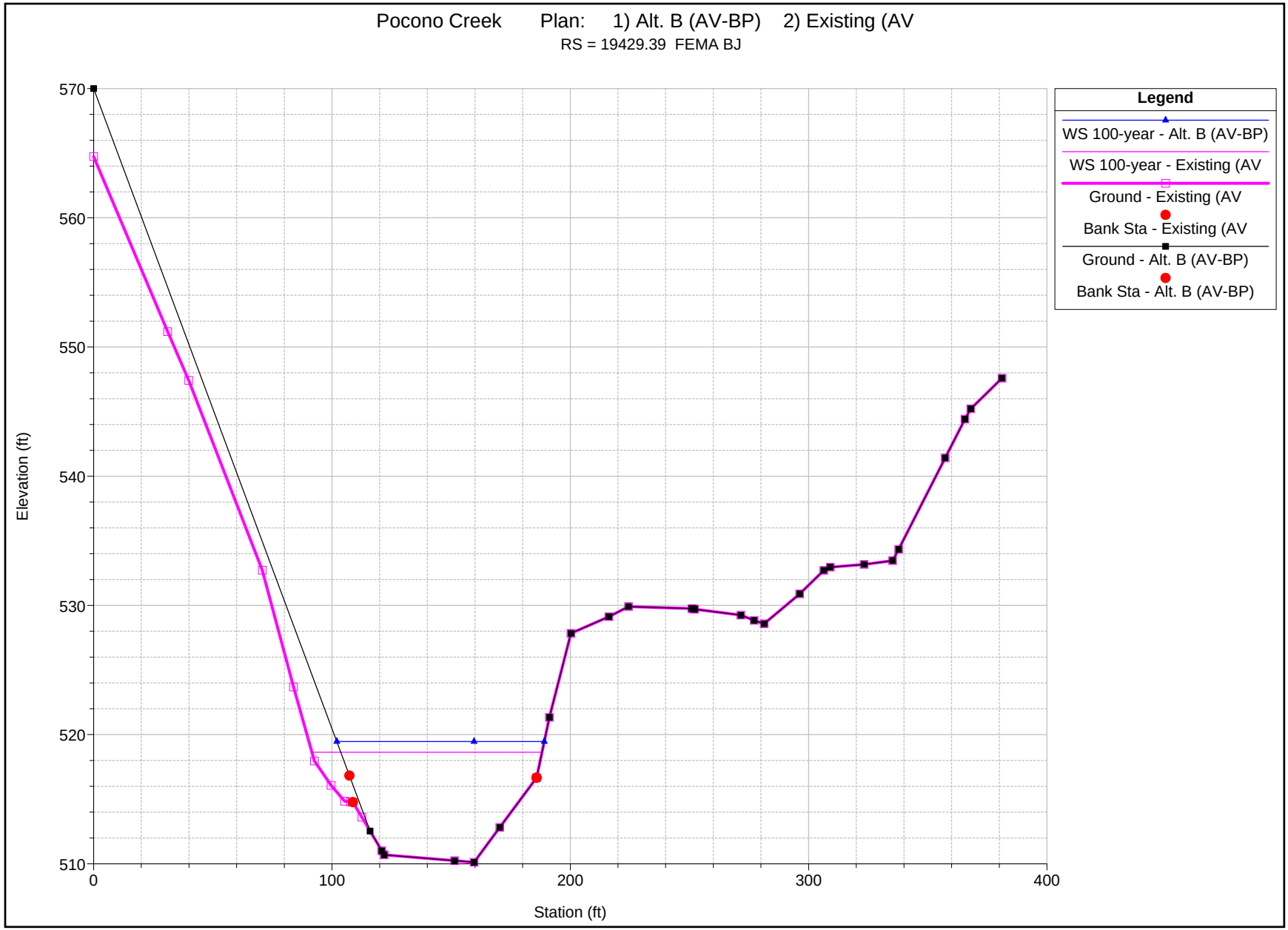

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 19616
Elevation (ft)
Station (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
600
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)

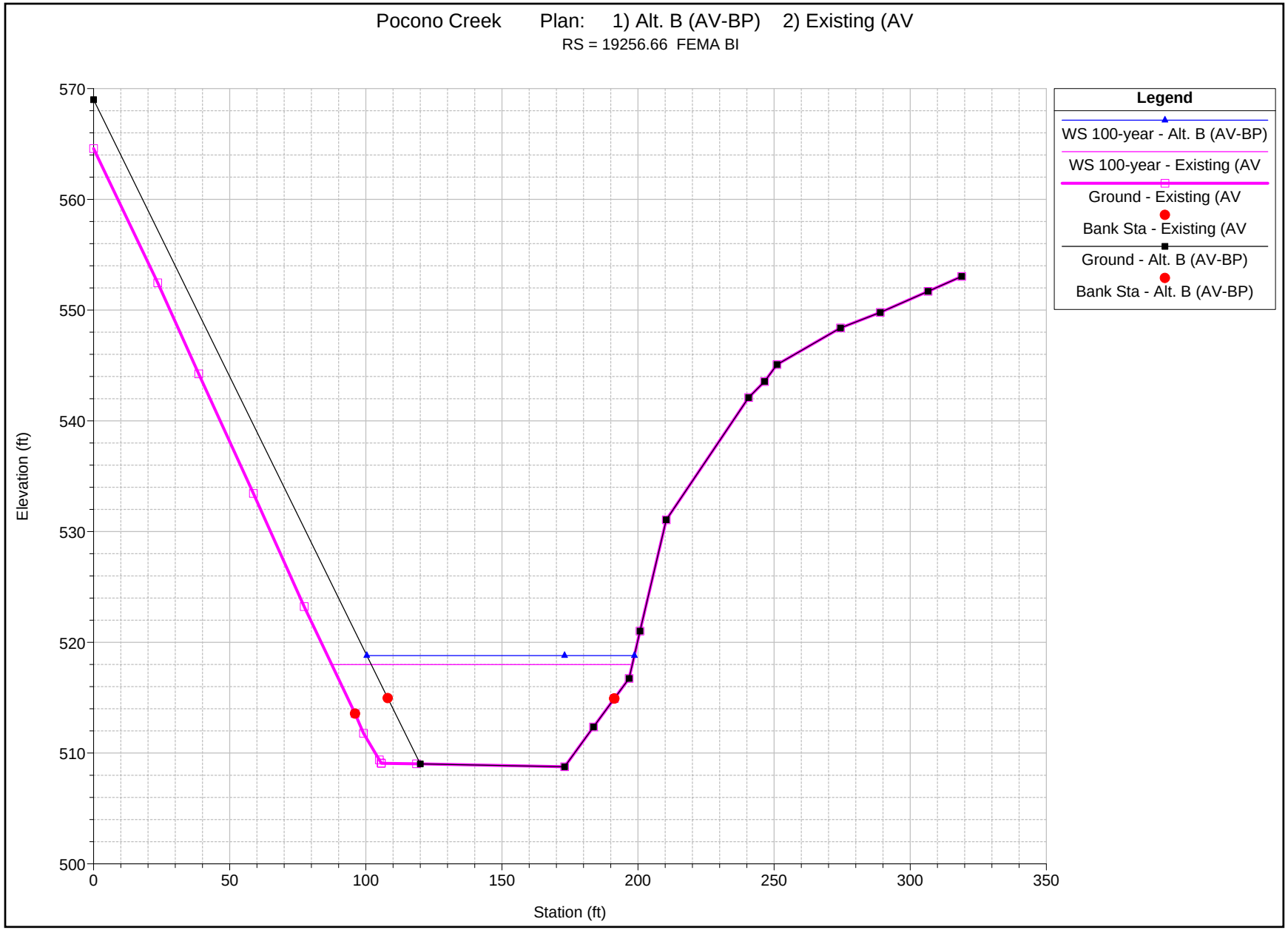

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 19615 IS Dam 1
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
- Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
- Alt. B (AV-BP)
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
600
Station (ft)

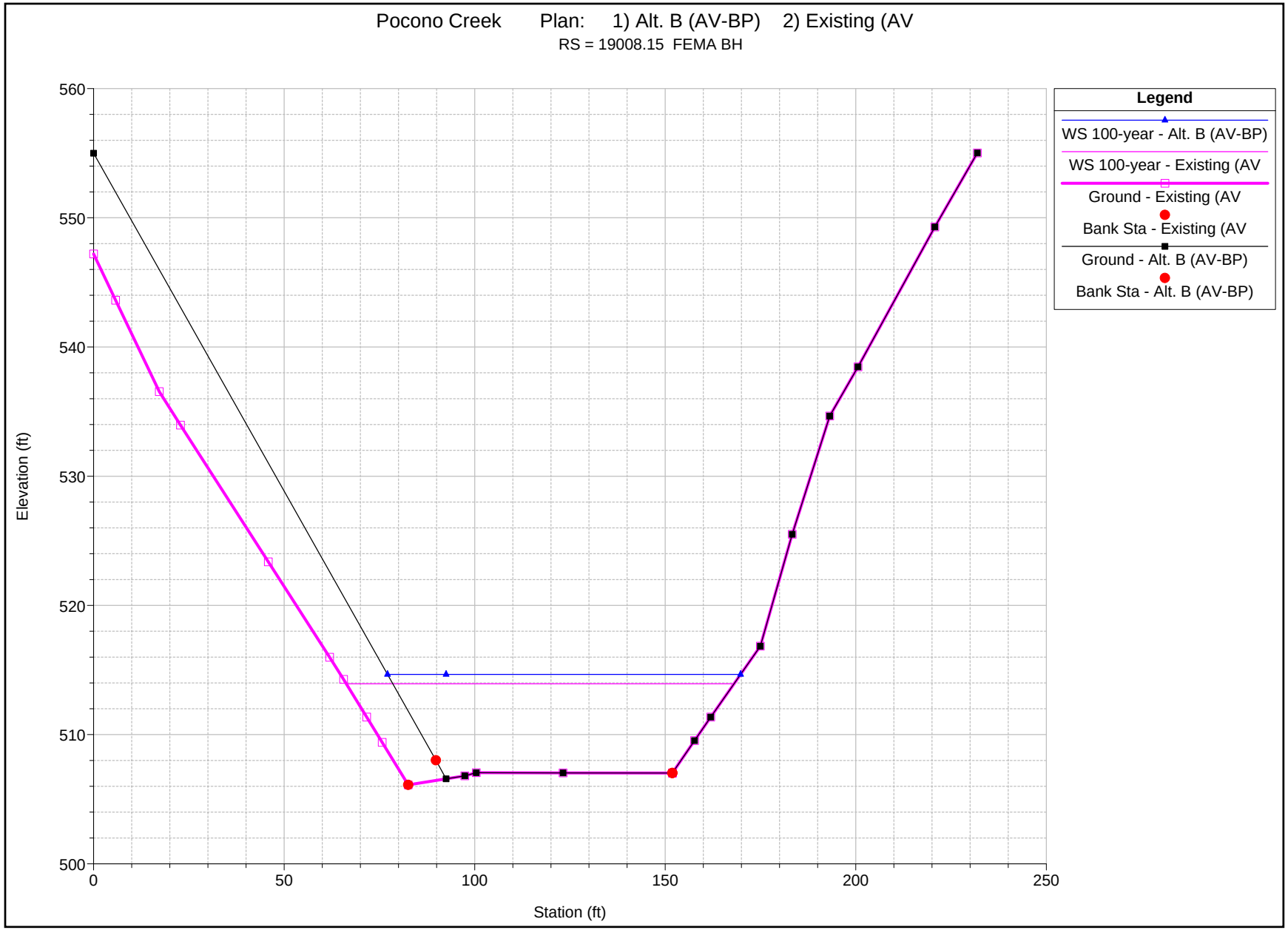

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 19614.51
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
0
100
200
300
400
500
600
Station (ft)

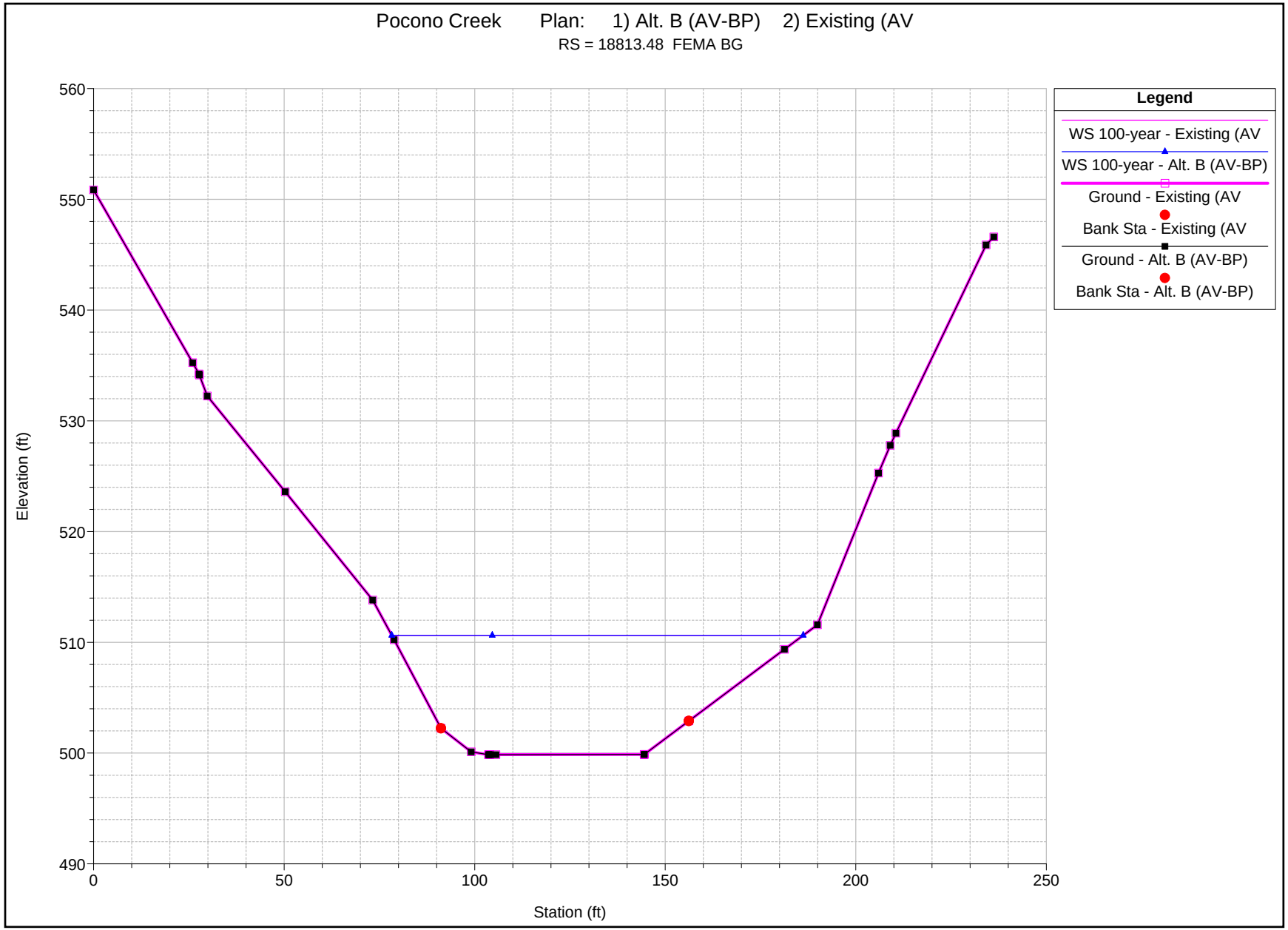

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 19600.87 FEMA BL
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
590
580
570
560
550
540
530
520
510
0
100
200
300
400
500
600
Station (ft)

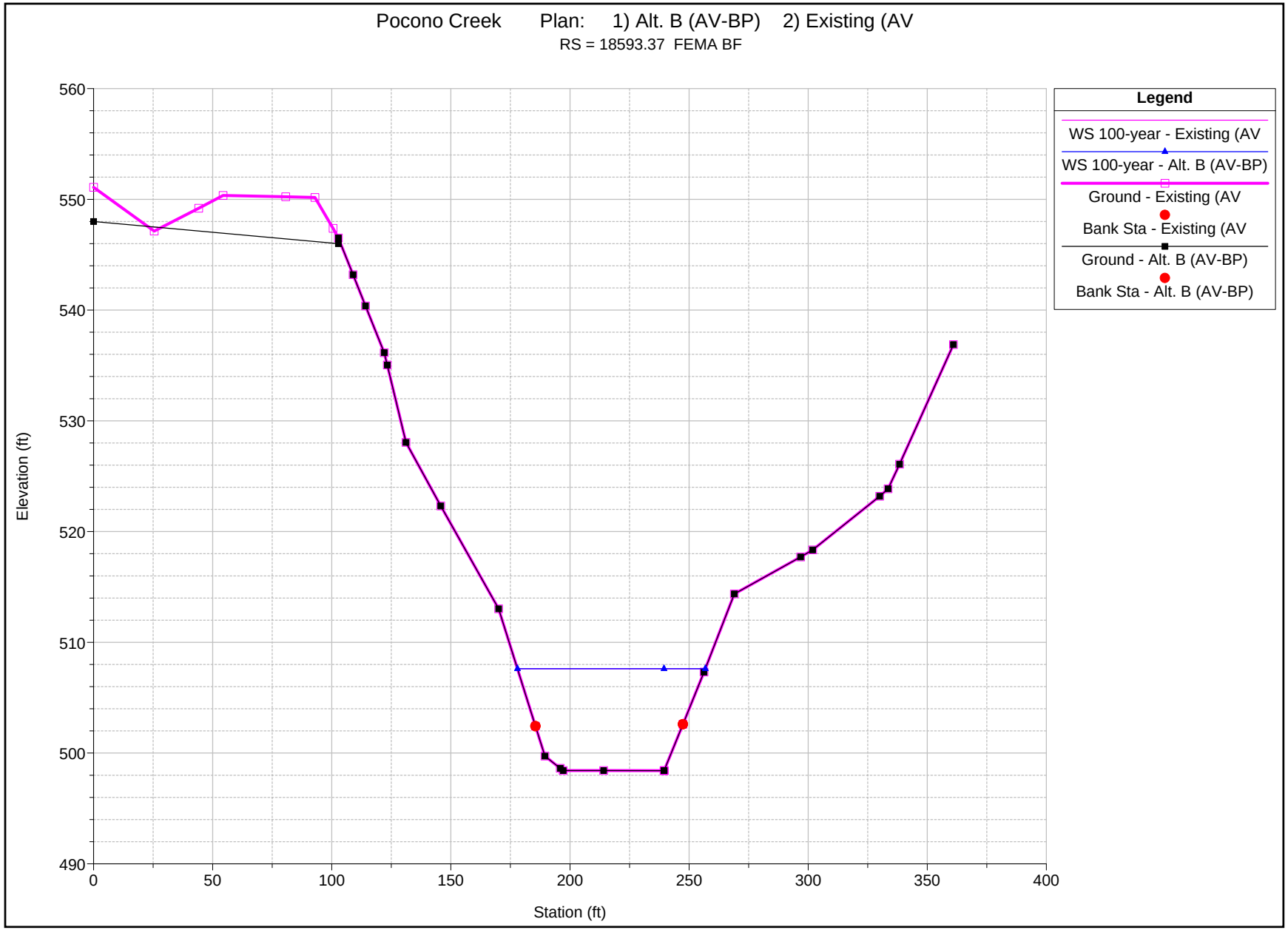

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 19530.00 FEMA BK
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
Station (ft)
580
570
560
550
540
530
520
510
0
100
200
300
400
500

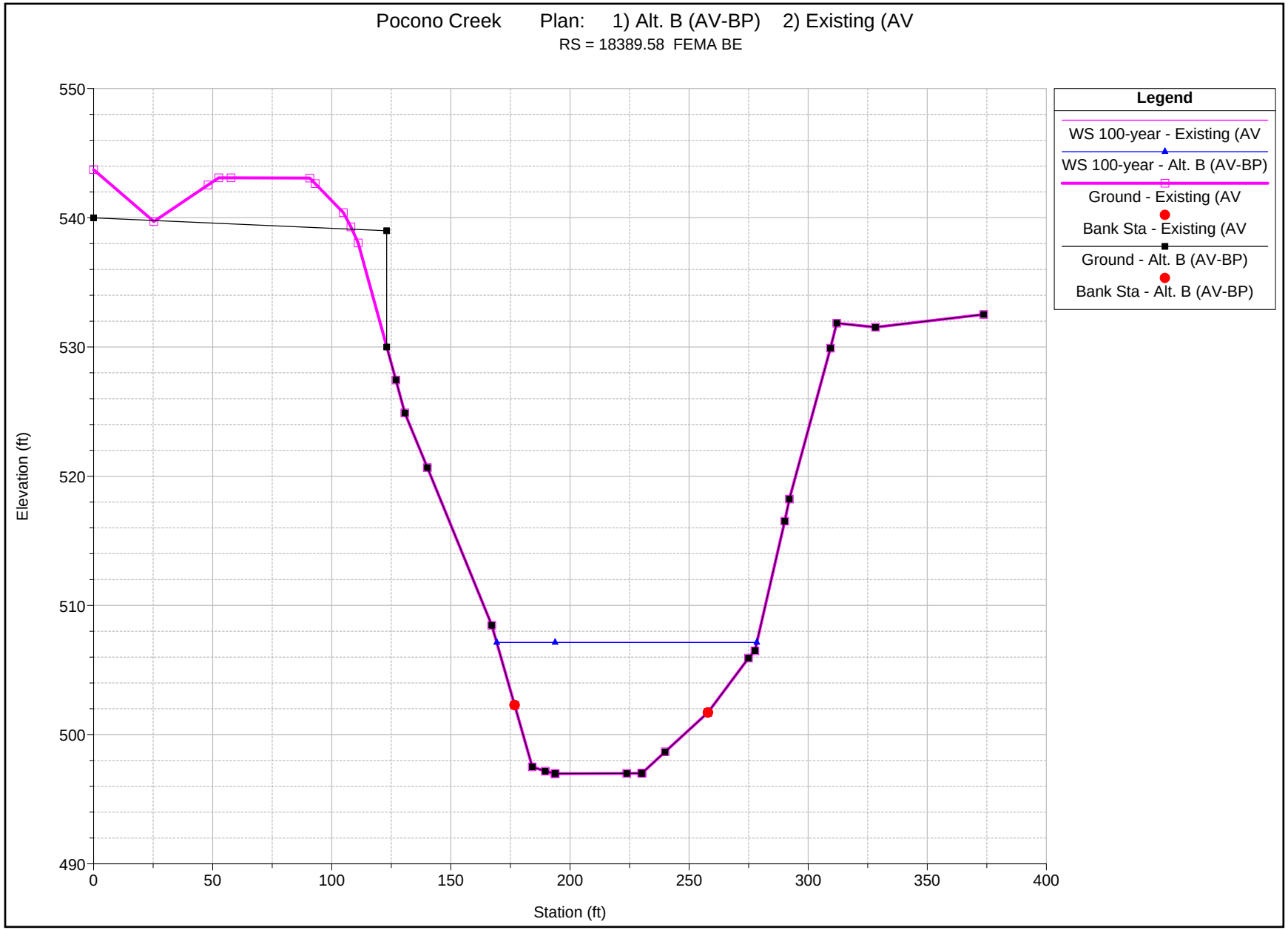

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 19429.39 FEMA BJ
Legend
WS 100-year - Alt. B (AV-BP)
WS 100-year - Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
570
560
550
540
530
520
510
0
100
200
300
400
Station (ft)

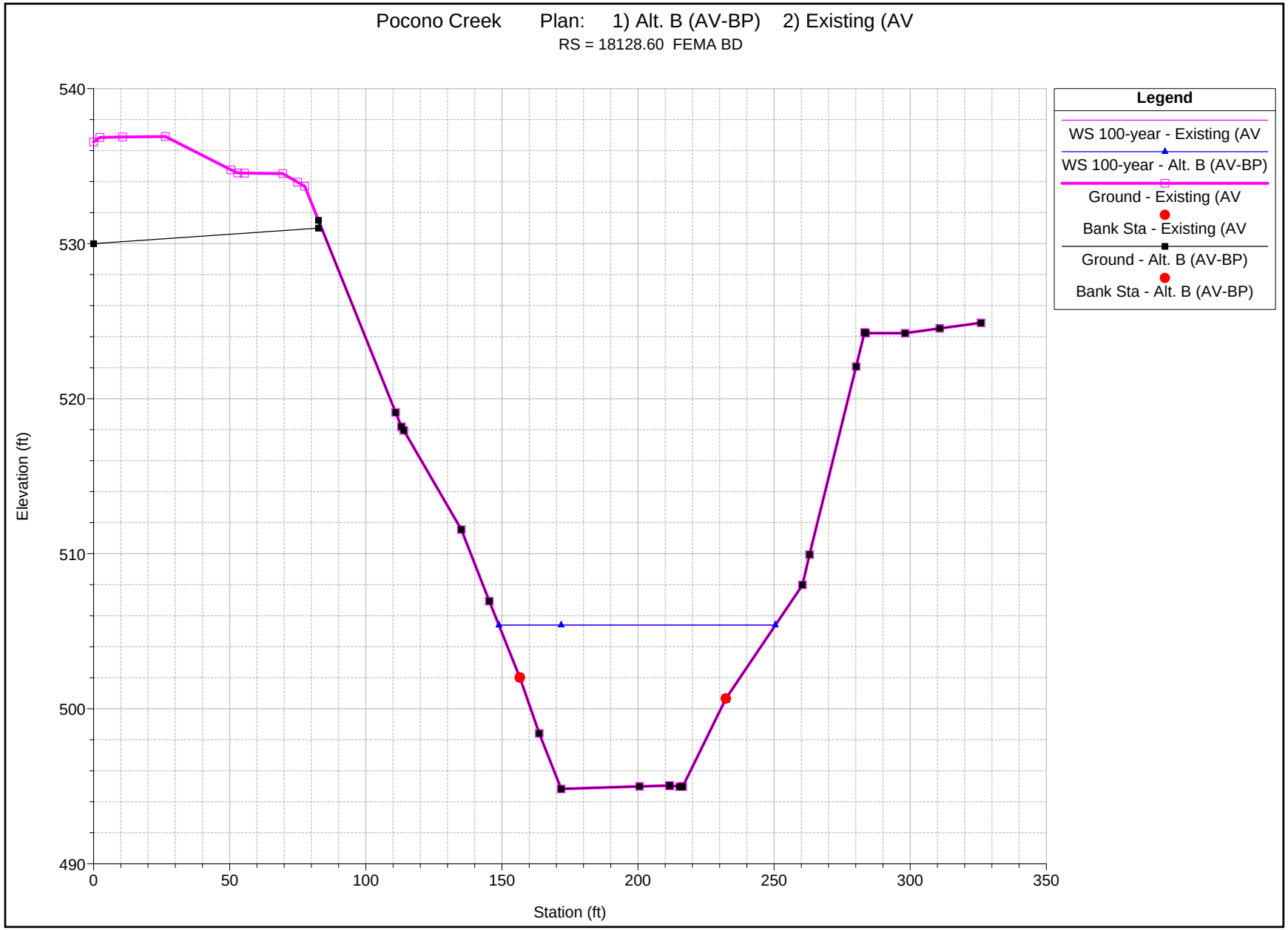

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 19256.66 FEMA BI
Legend
WS 100-year - Alt. B (AV-BP)
WS 100-year - Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
570
560
550
540
530
520
510
500
0
50
100
150
200
250
300
350
Station (ft)

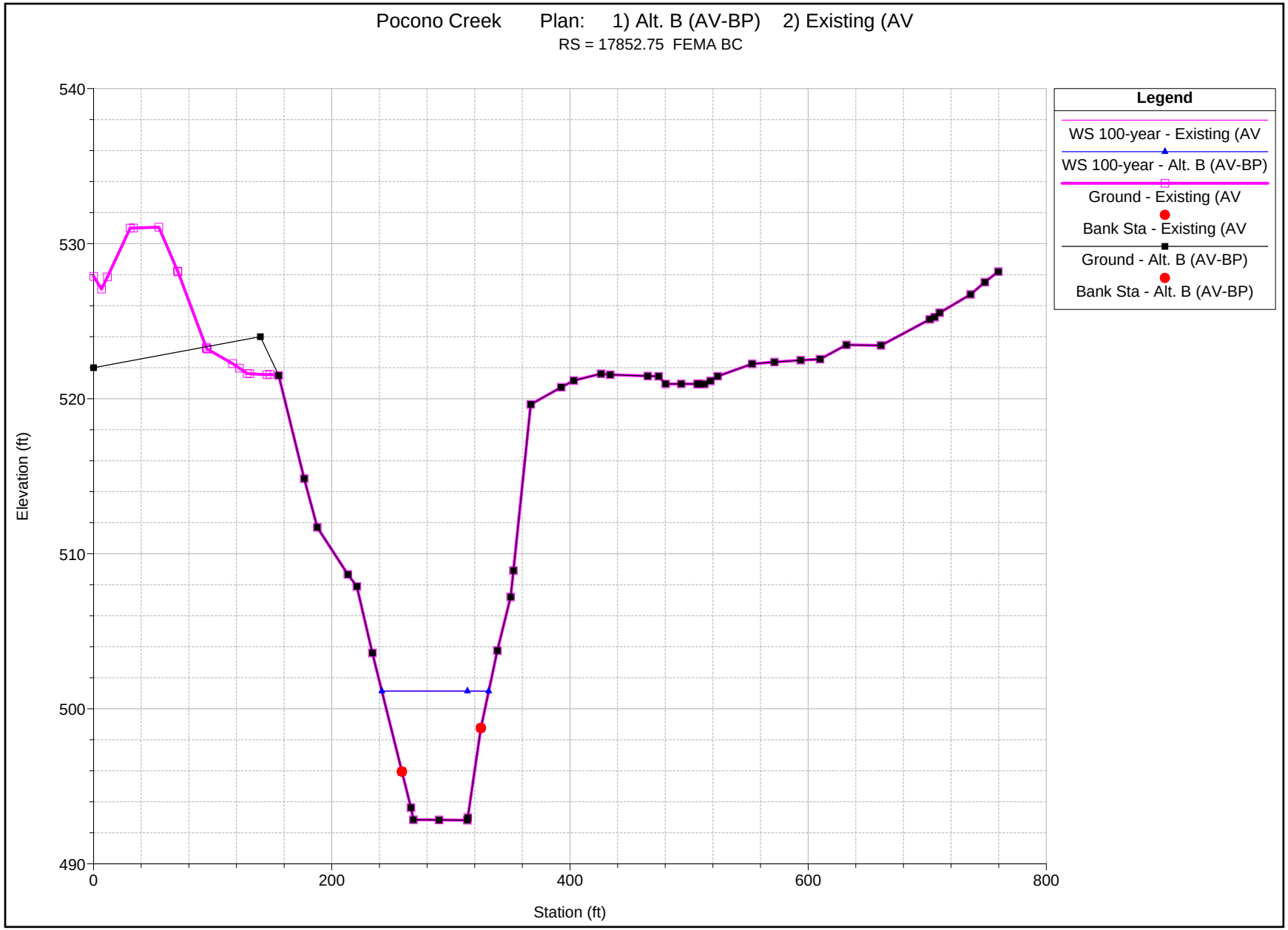

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 19008.15 FEMA BH
Legend
WS 100-year - Alt. B (AV-BP)
WS 100-year - Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
560
550
540
530
520
510
500
0
50
100
150
200
250
Station (ft)

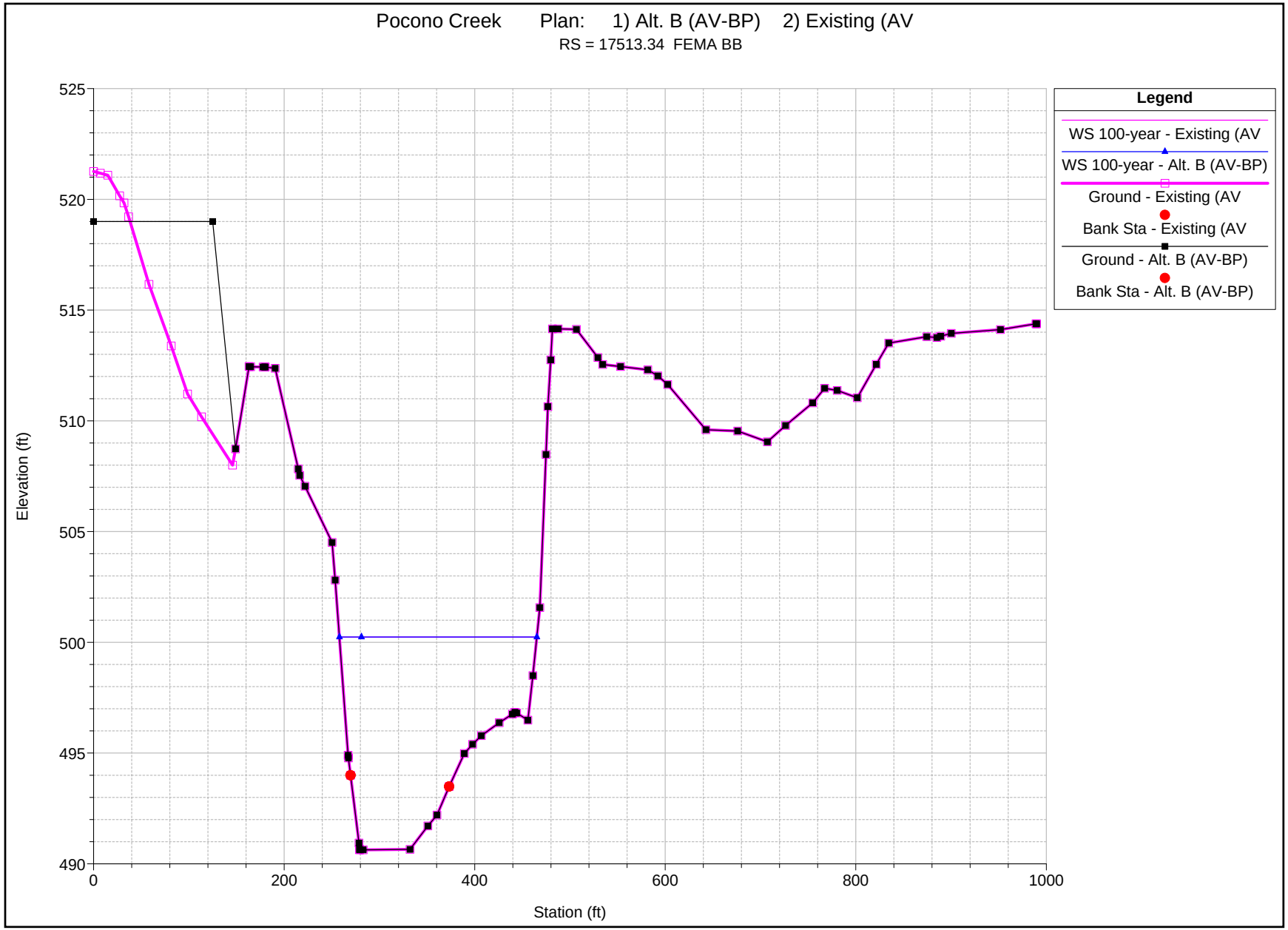

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 18813.48 FEMA BG
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
Station (ft)
560
550
540
530
520
510
500
490
0
50
100
150
200
250

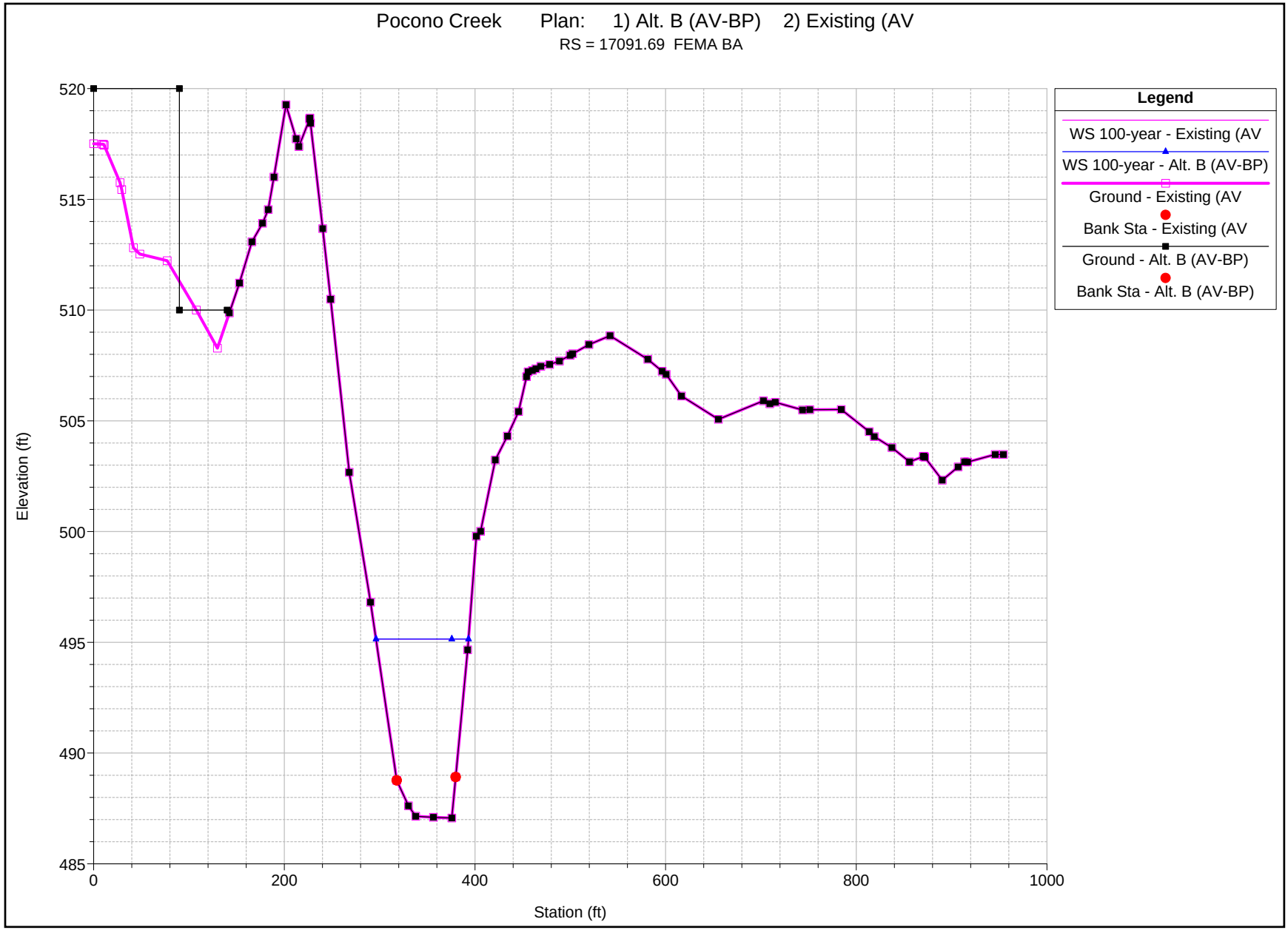

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 18593.37 FEMA BF
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
560
550
540
530
520
510
500
490
0
50
100
150
200
250
300
350
400
Station (ft)

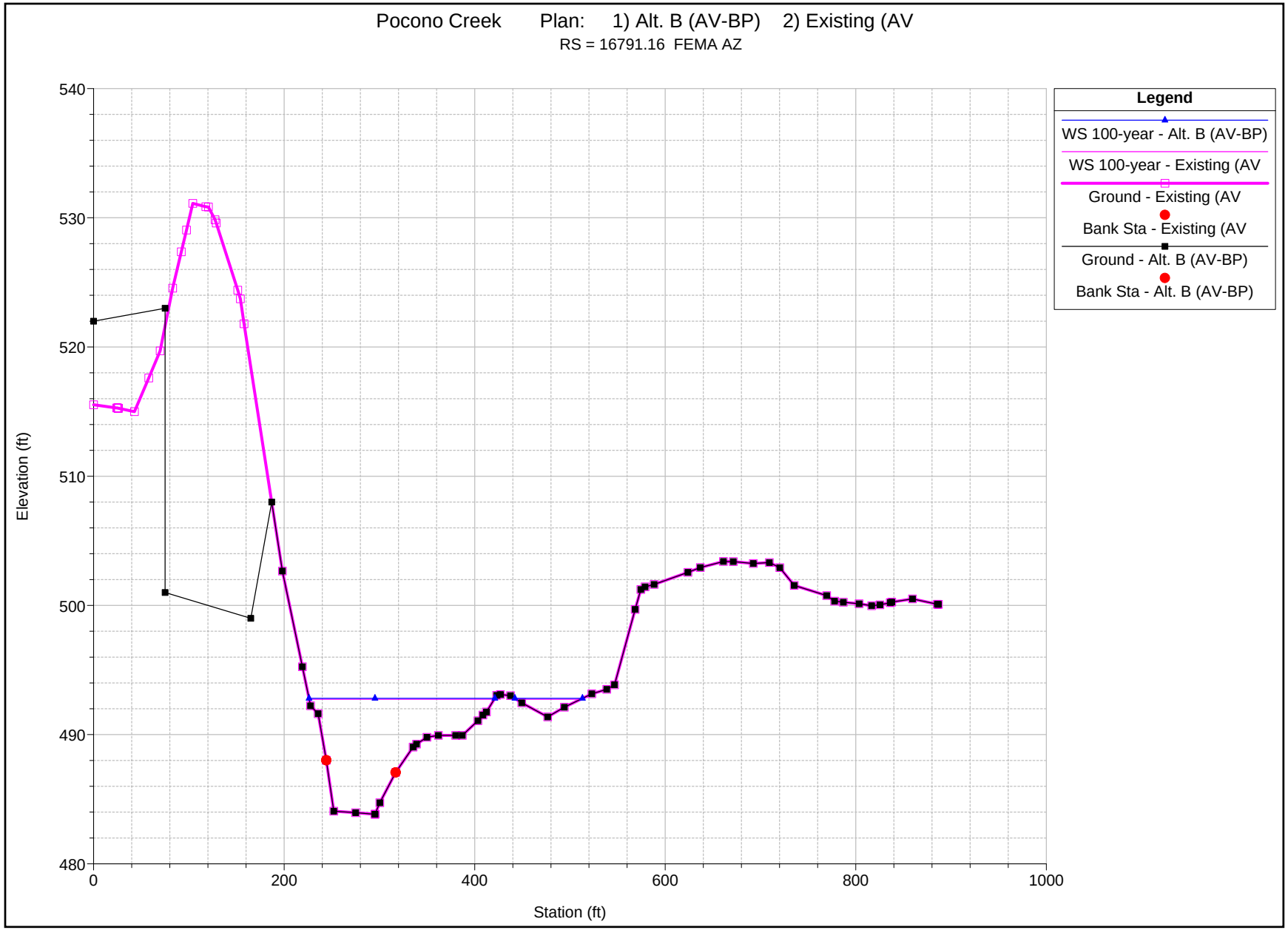

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 18389.58 FEMA BE
Elevation (ft)
Station (ft)
550
540
530
520
510
500
490
0
50
100
150
200
250
300
350
400
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)

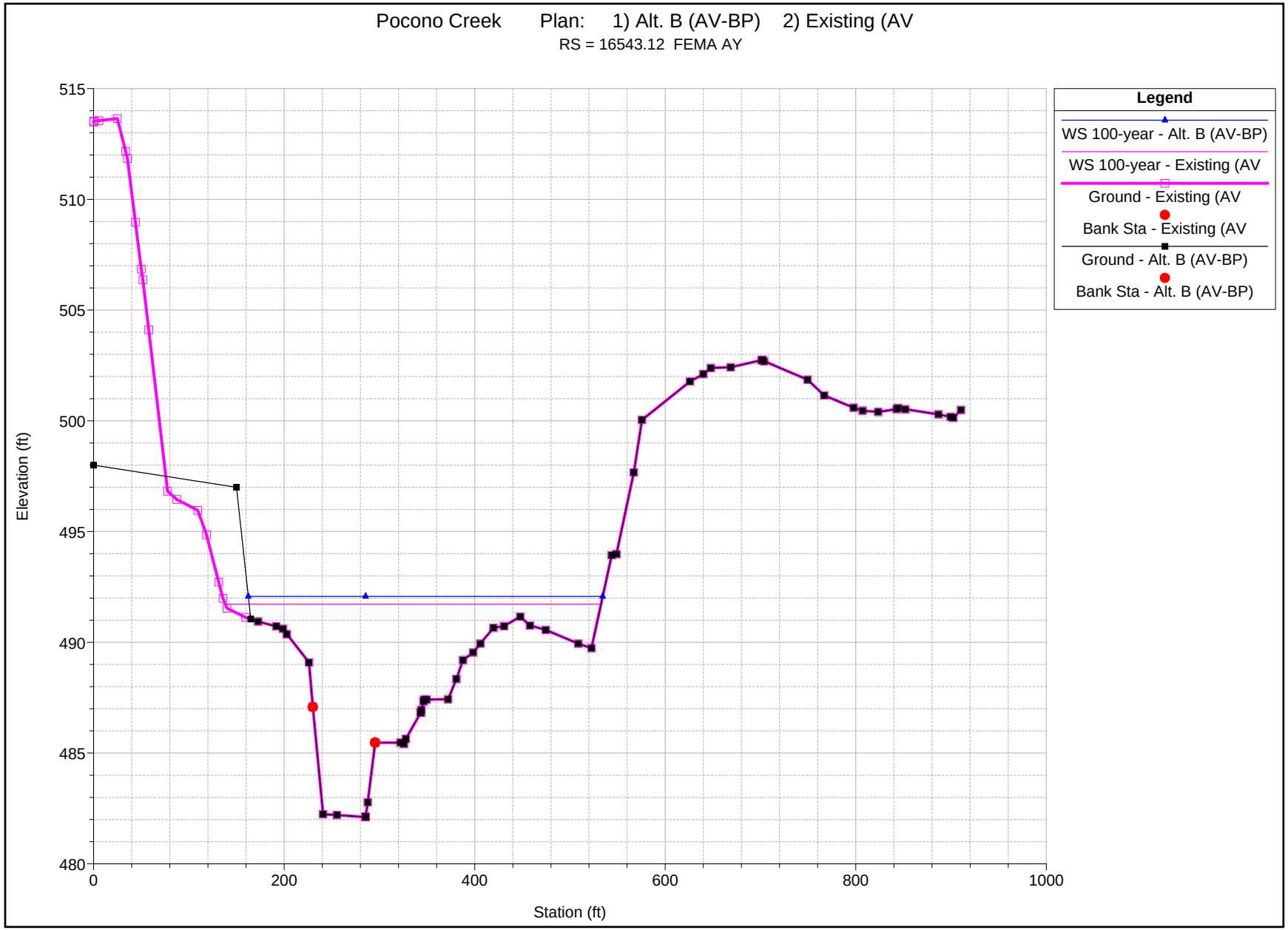

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 18128.60 FEMA BD
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
Station (ft)
540
530
520
510
500
490
0
50
100
150
200
250
300
350

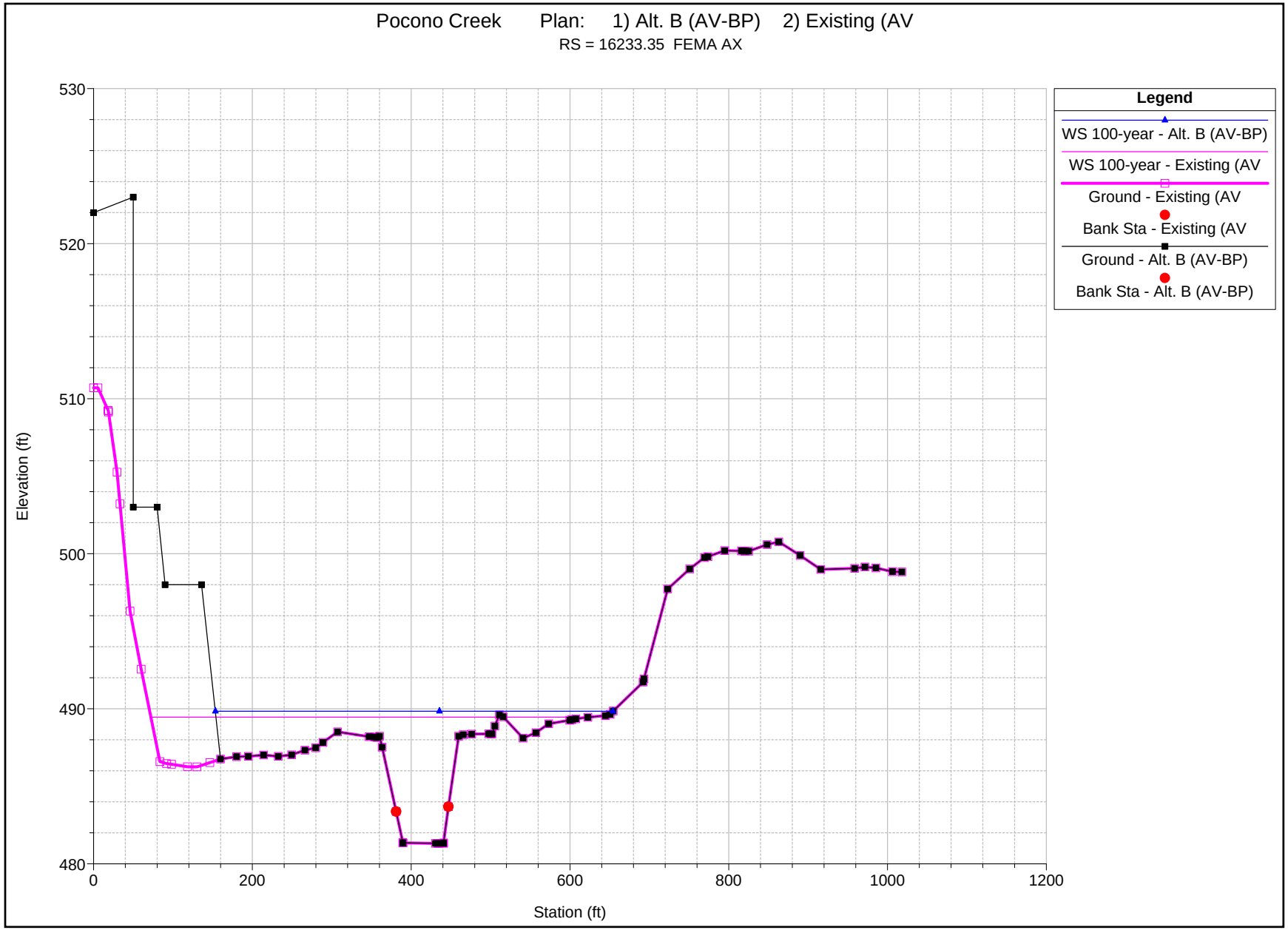

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 17852.75 FEMA BC
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
Station (ft)
540
530
520
510
500
490
0
200
400
600
800

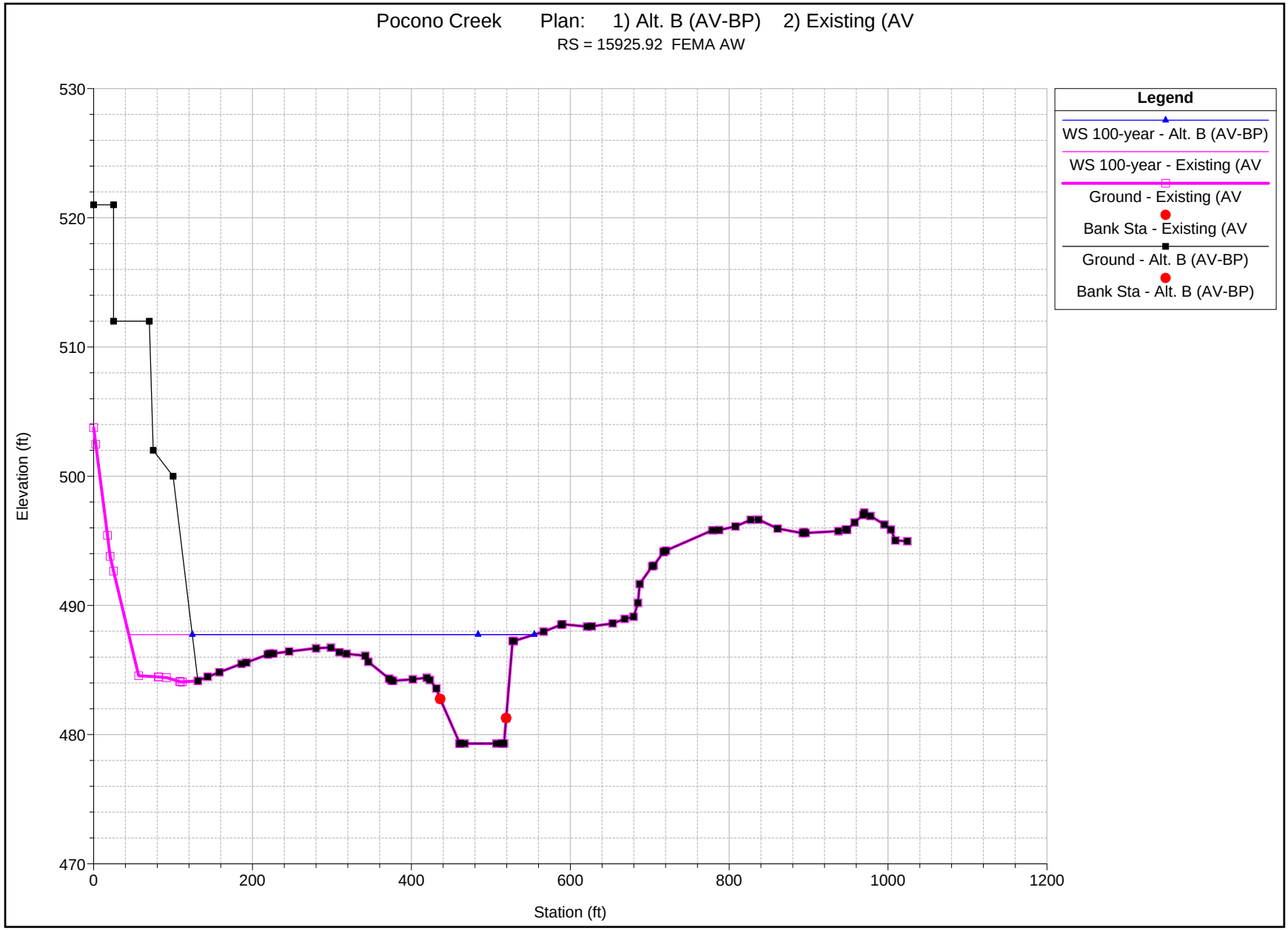

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 17513.34 FEMA BB
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
525
520
515
510
505
500
495
490
0
200
400
600
800
1000
Station (ft)

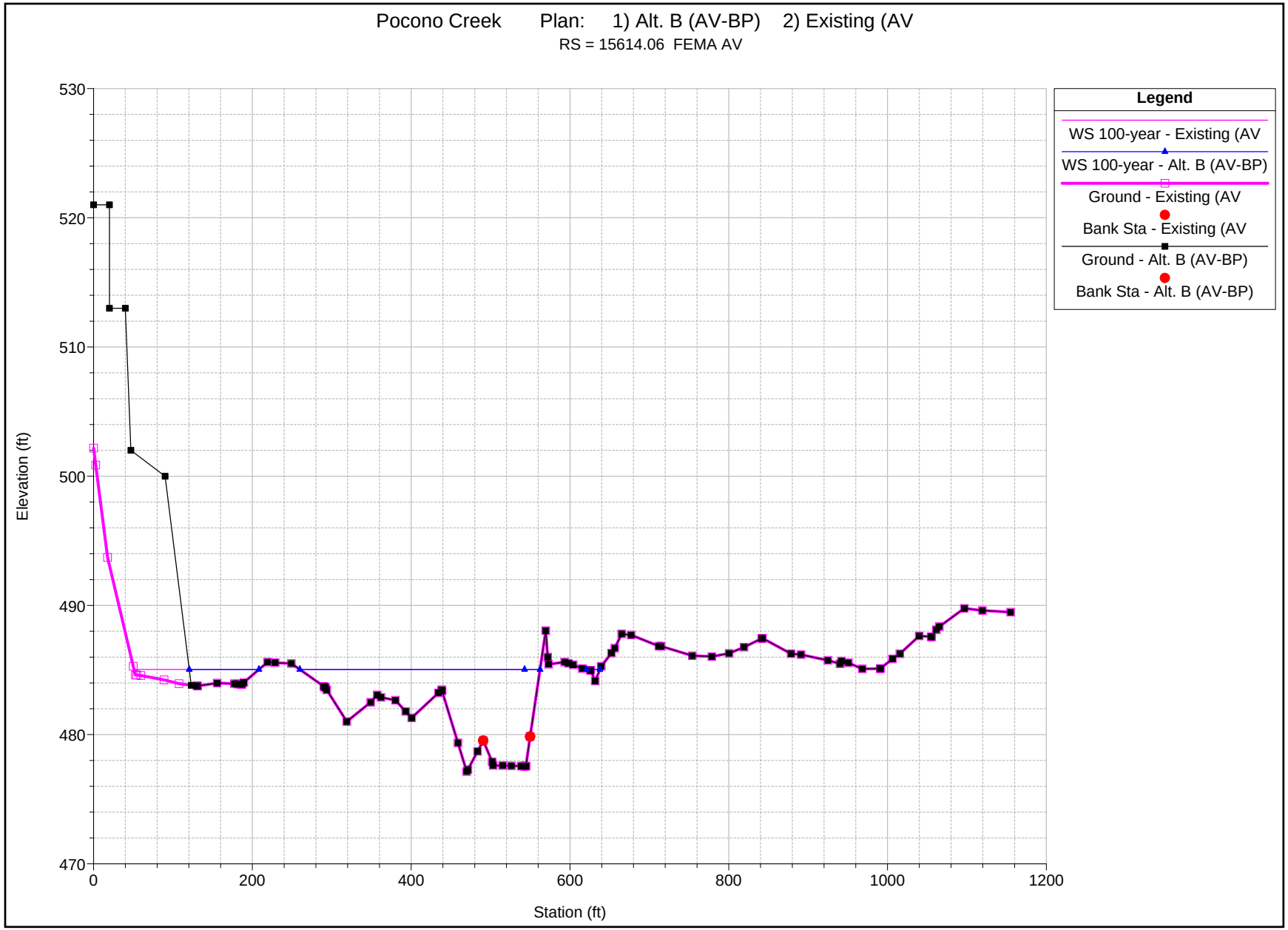

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 17091.69 FEMA BA
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
520
515
510
505
500
495
490
485
0
200
400
600
800
1000
Station (ft)

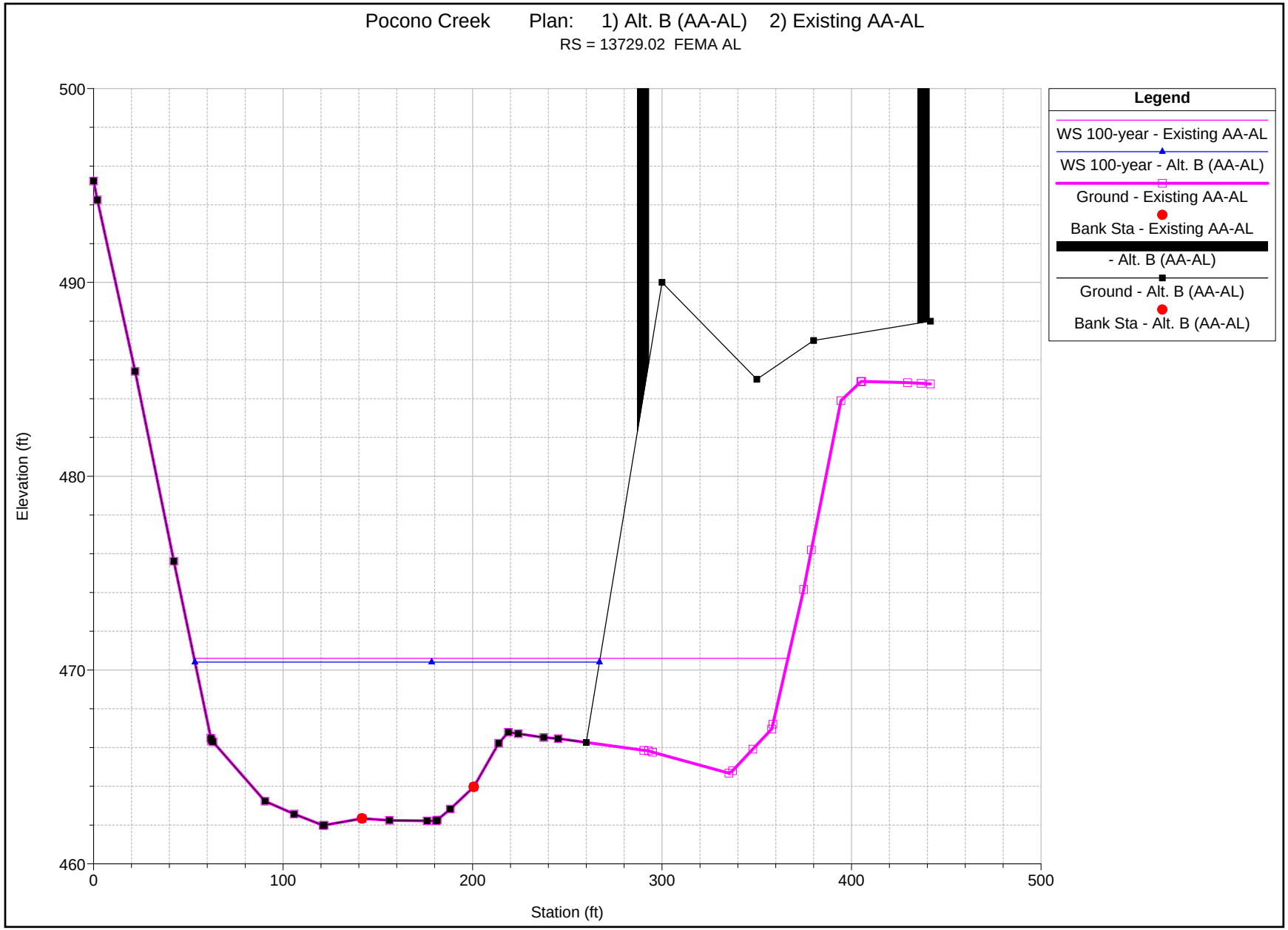

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 16791.16 FEMA AZ
Legend
WS 100-year - Alt. B (AV-BP)
WS 100-year - Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
Station (ft)
540
530
520
510
500
490
480
0
200
400
600
800
1000

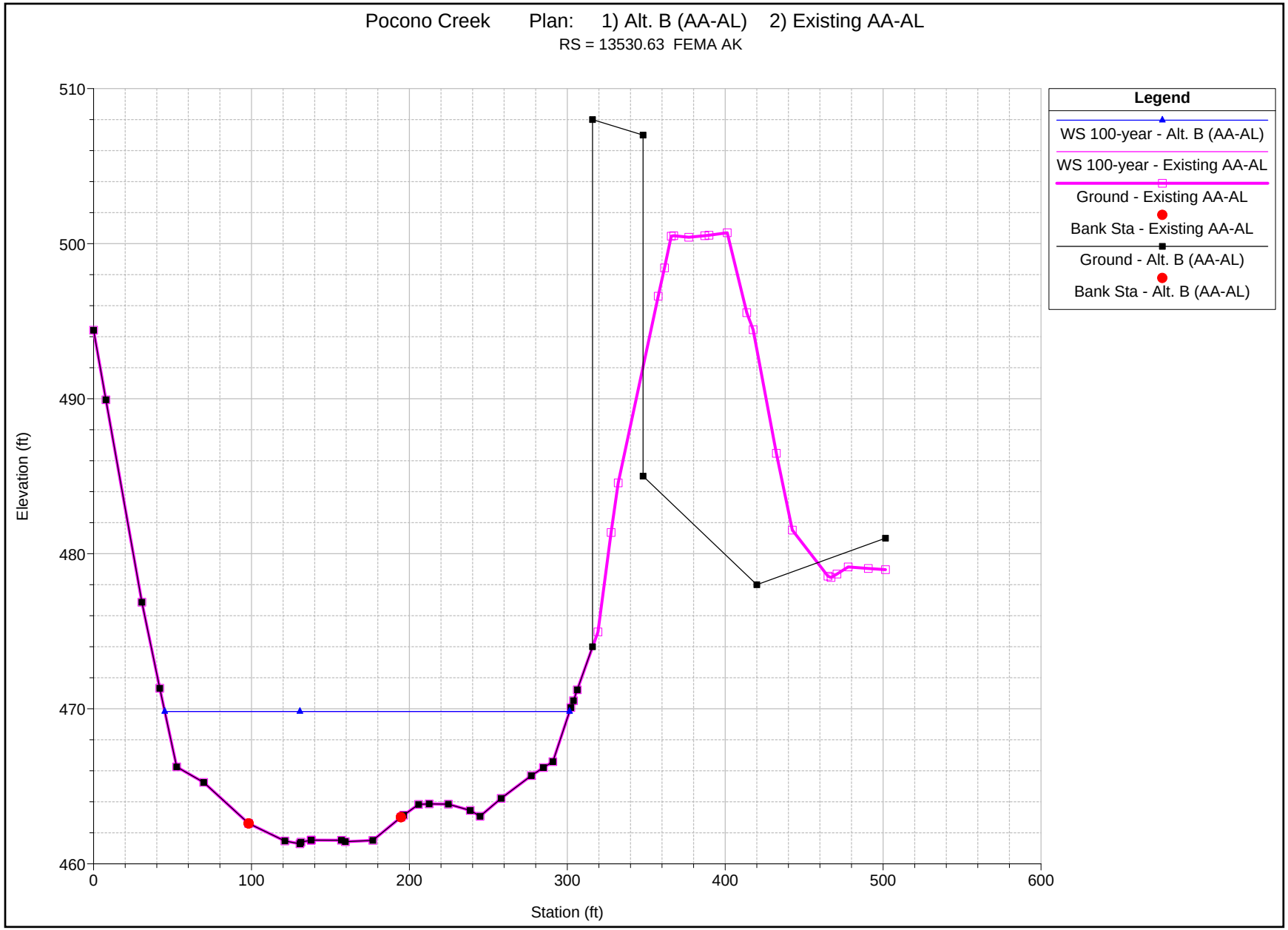

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 16543.12 FEMA AY
Legend
WS 100-year - Alt. B (AV-BP)
WS 100-year - Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
515
510
505
500
495
490
485
480
0
200
400
600
800
1000
Station (ft)

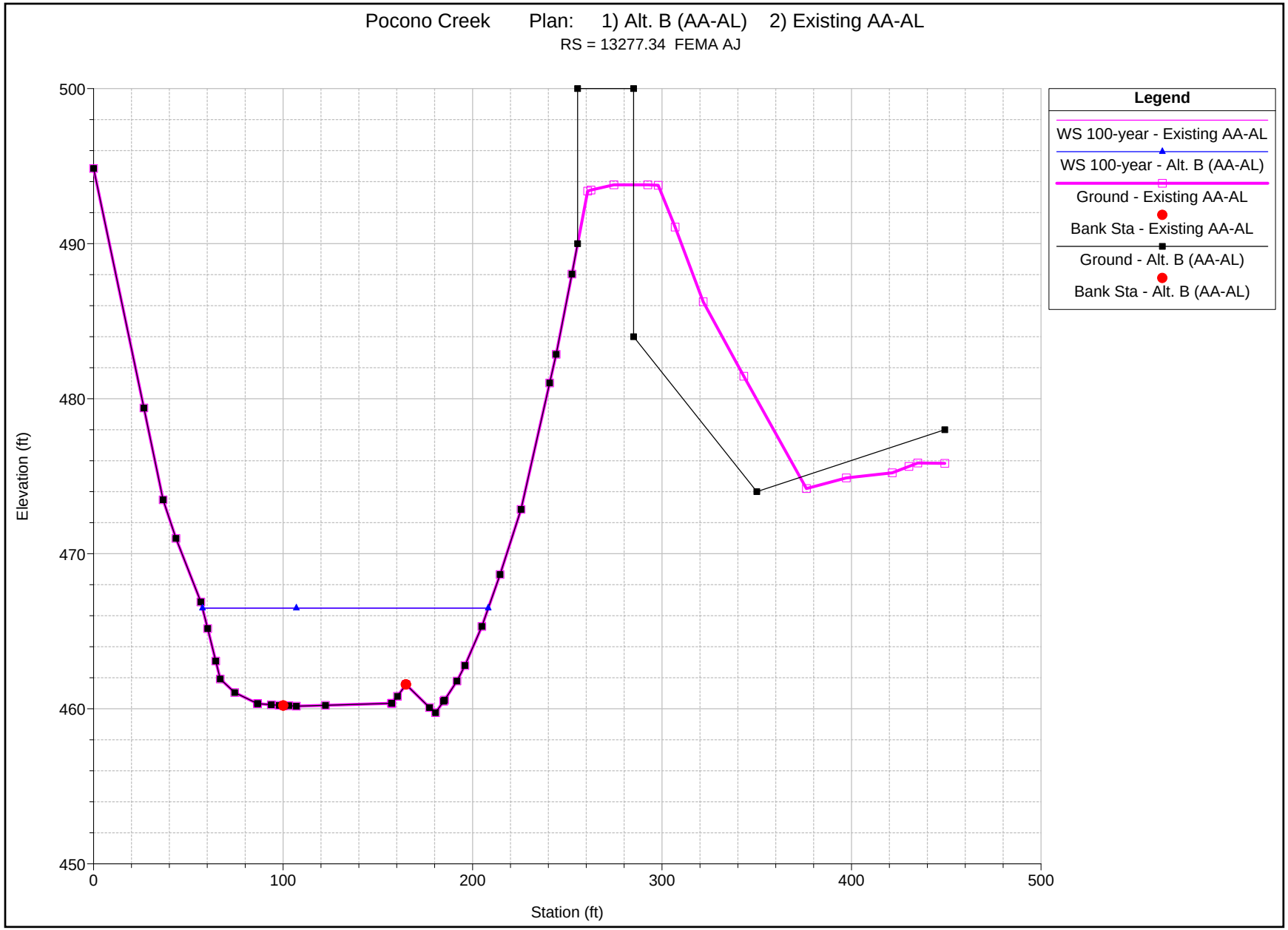

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 16233.35 FEMA AX
Legend
WS 100-year - Alt. B (AV-BP)
WS 100-year - Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
530
520
510
500
490
480
0
200
400
600
800
1000
1200
Station (ft)

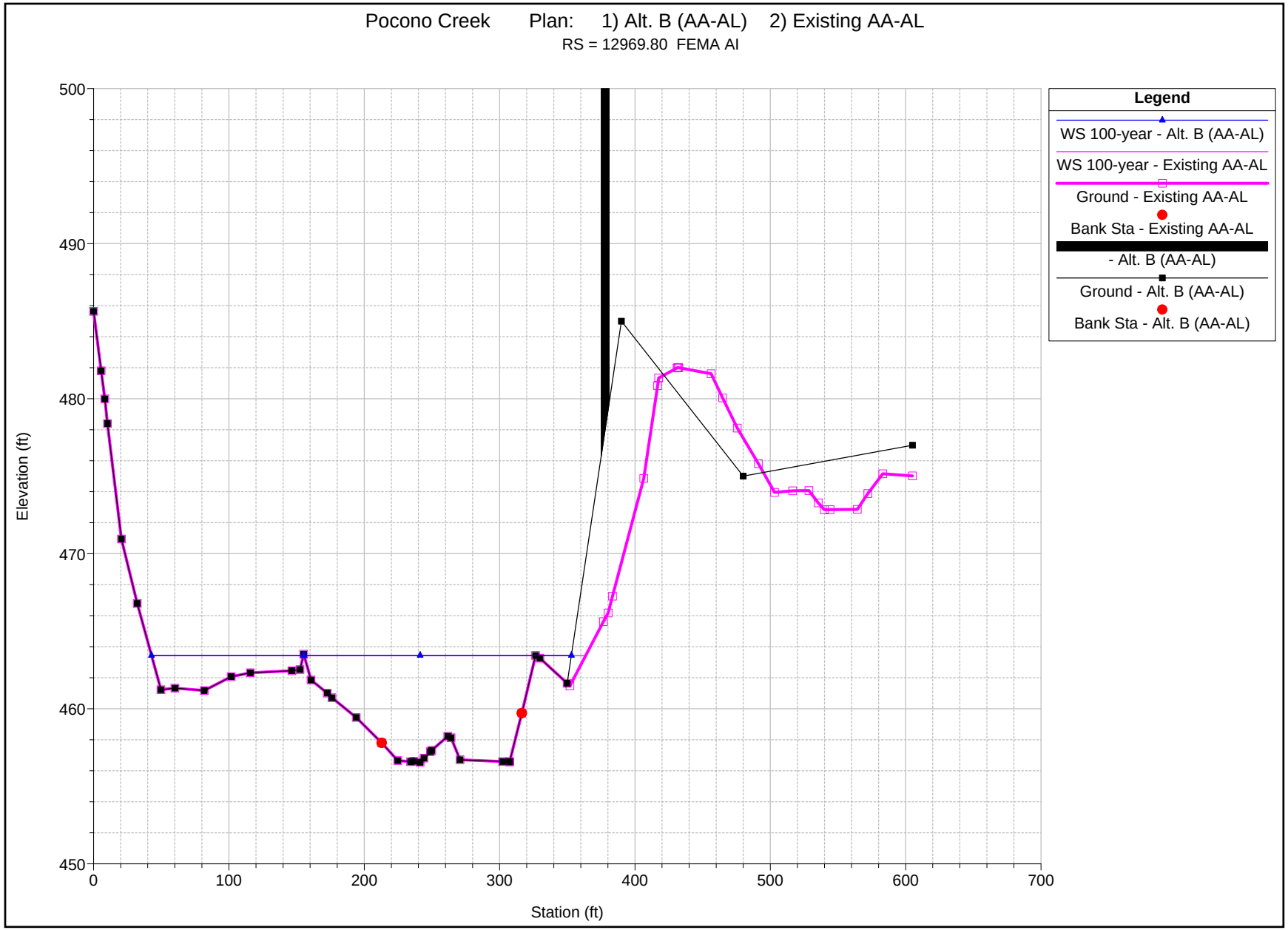

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 15925.92 FEMA AW
Legend
WS 100-year - Alt. B (AV-BP)
WS 100-year - Existing (AV
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
530
520
510
500
490
480
470
0
200
400
600
800
1000
1200
Station (ft)

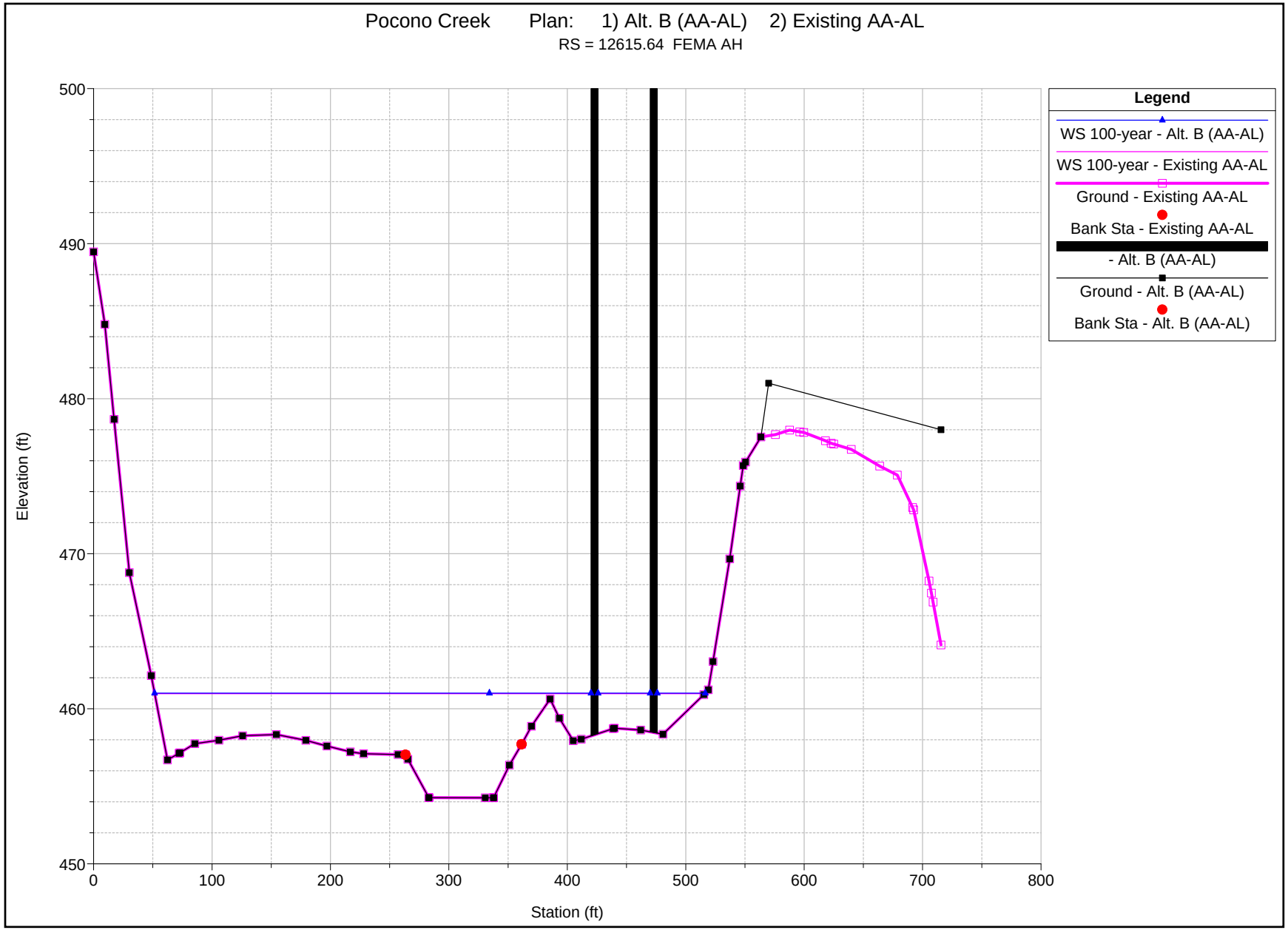

Pocono Creek Plan: 1) Alt. B (AV-BP) 2) Existing (AV
RS = 15614.06 FEMA AV
Legend
WS 100-year - Existing (AV
WS 100-year - Alt. B (AV-BP)
Ground - Existing (AV
Bank Sta - Existing (AV
Ground - Alt. B (AV-BP)
Bank Sta - Alt. B (AV-BP)
Elevation (ft)
530
520
510
500
490
480
470
0
200
400
600
800
1000
1200
Station (ft)

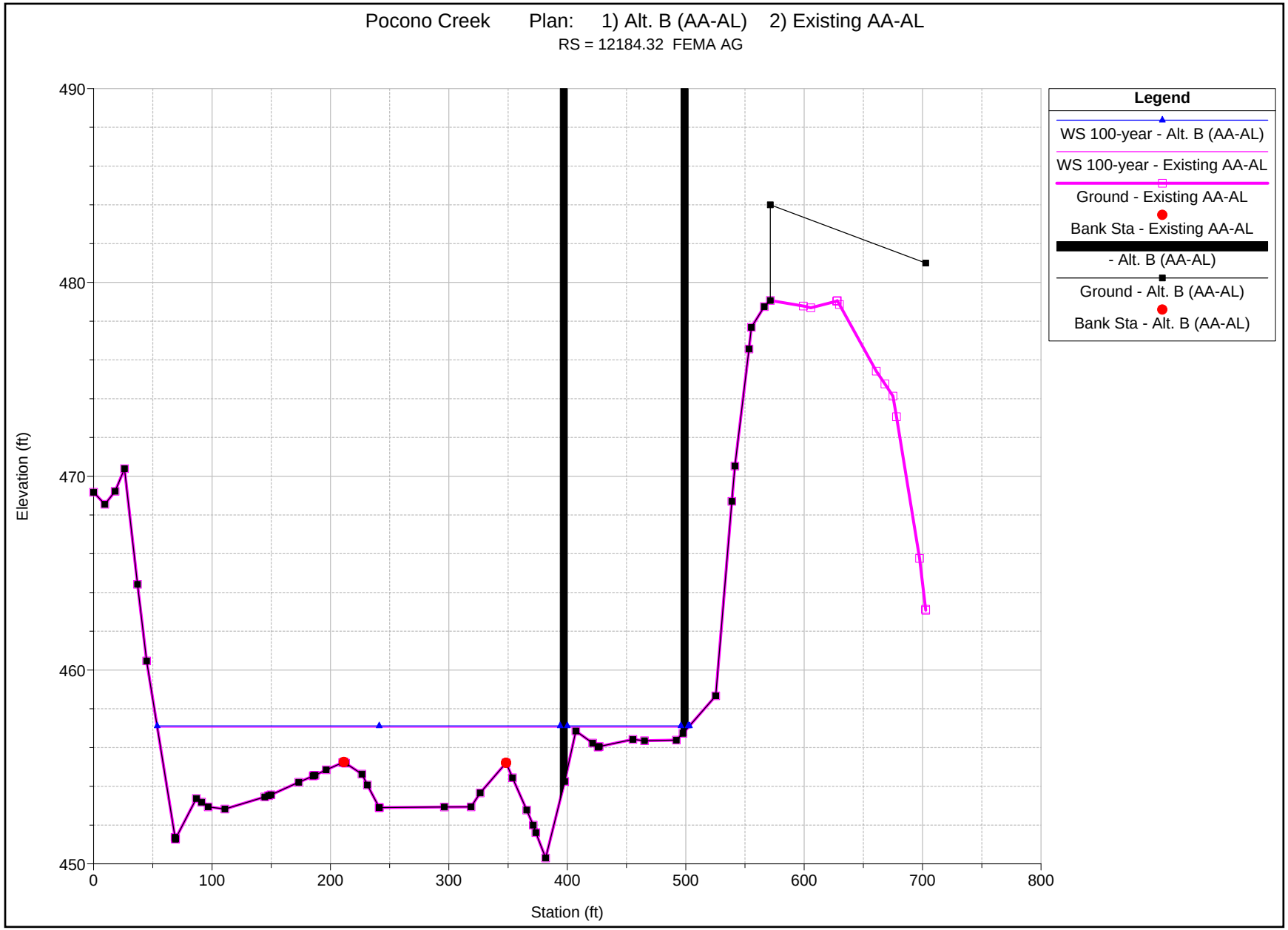

Pocono Creek Plan: 1) Alt. B (AA-AL) 2) Existing AA-AL
RS = 13729.02 FEMA AL
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. B (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. B (AA-AL)
Ground - Alt. B (AA-AL)
Bank Sta - Alt. B (AA-AL)
Elevation (ft)
500
490
480
470
460
0
100
200
300
400
500
Station (ft)

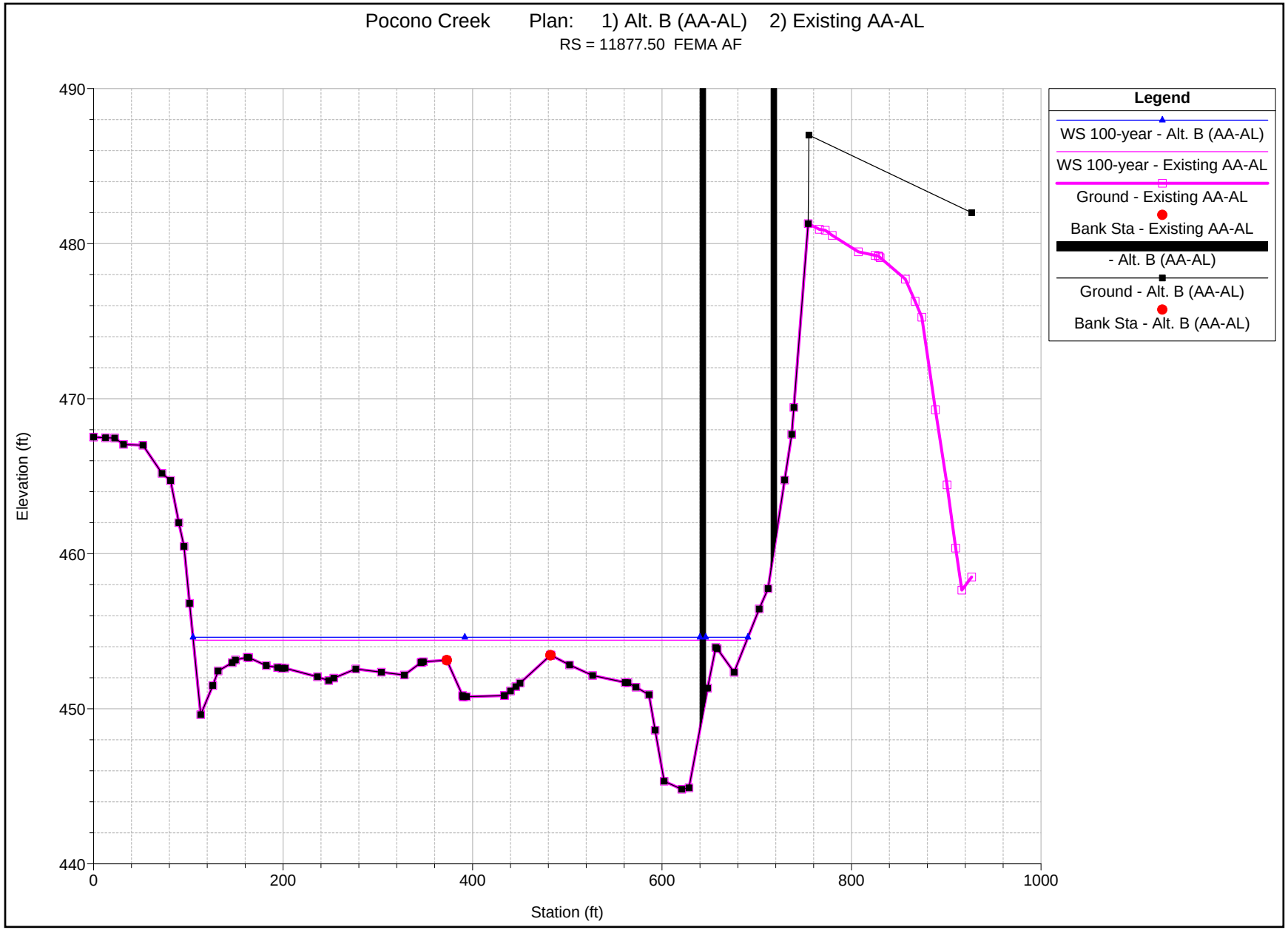

Pocono Creek Plan: 1) Alt. B (AA-AL) 2) Existing AA-AL
RS = 13530.63 FEMA AK
Legend
WS 100-year - Alt. B (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. B (AA-AL)
Bank Sta - Alt. B (AA-AL)
Elevation (ft)
510
500
490
480
470
460
0
100
200
300
400
500
600
Station (ft)

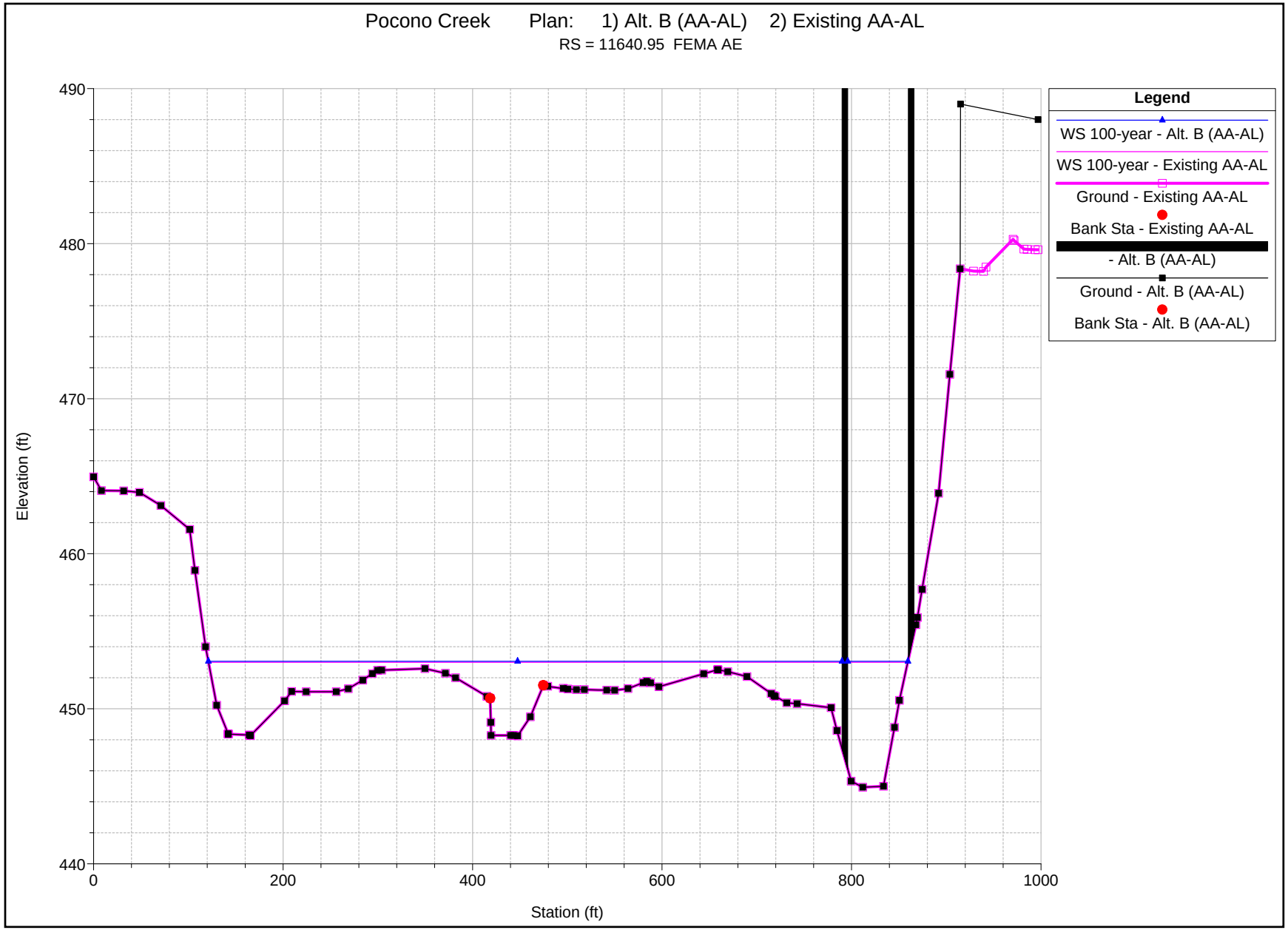

Pocono Creek Plan: 1) Alt. B (AA-AL) 2) Existing AA-AL
RS = 13277.34 FEMA AJ
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. B (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. B (AA-AL)
Bank Sta - Alt. B (AA-AL)
Elevation (ft)
Station (ft)
500
490
480
470
460
450
0
100
200
300
400
500

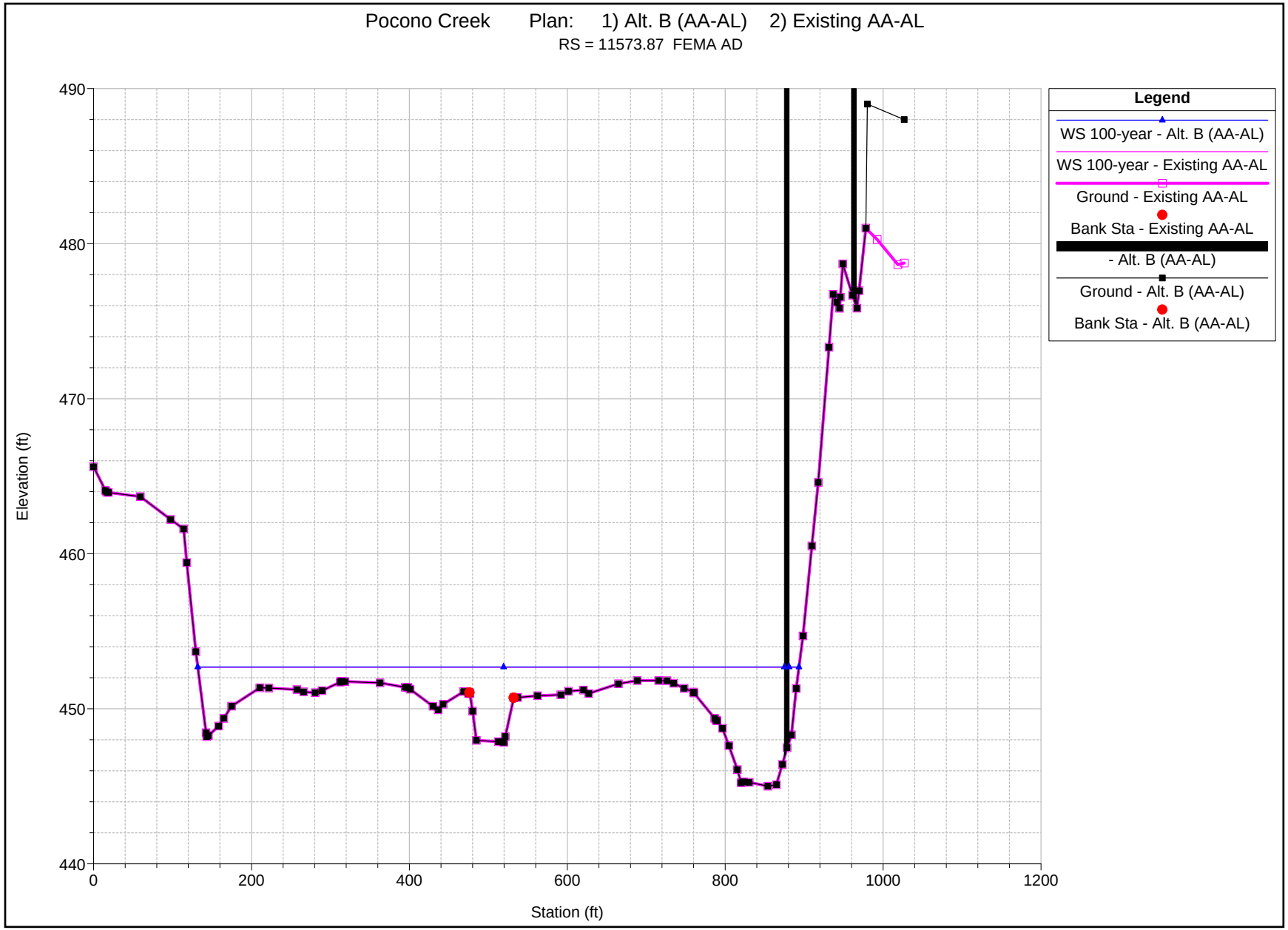

Pocono Creek Plan: 1) Alt. B (AA-AL) 2) Existing AA-AL
RS = 12969.80 FEMA AI
Elevation (ft)
Station (ft)
500
490
480
470
460
450
0
100
200
300
400
500
600
700
Legend
WS 100-year - Alt. B (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. B (AA-AL)
Ground - Alt. B (AA-AL)
Bank Sta - Alt. B (AA-AL)

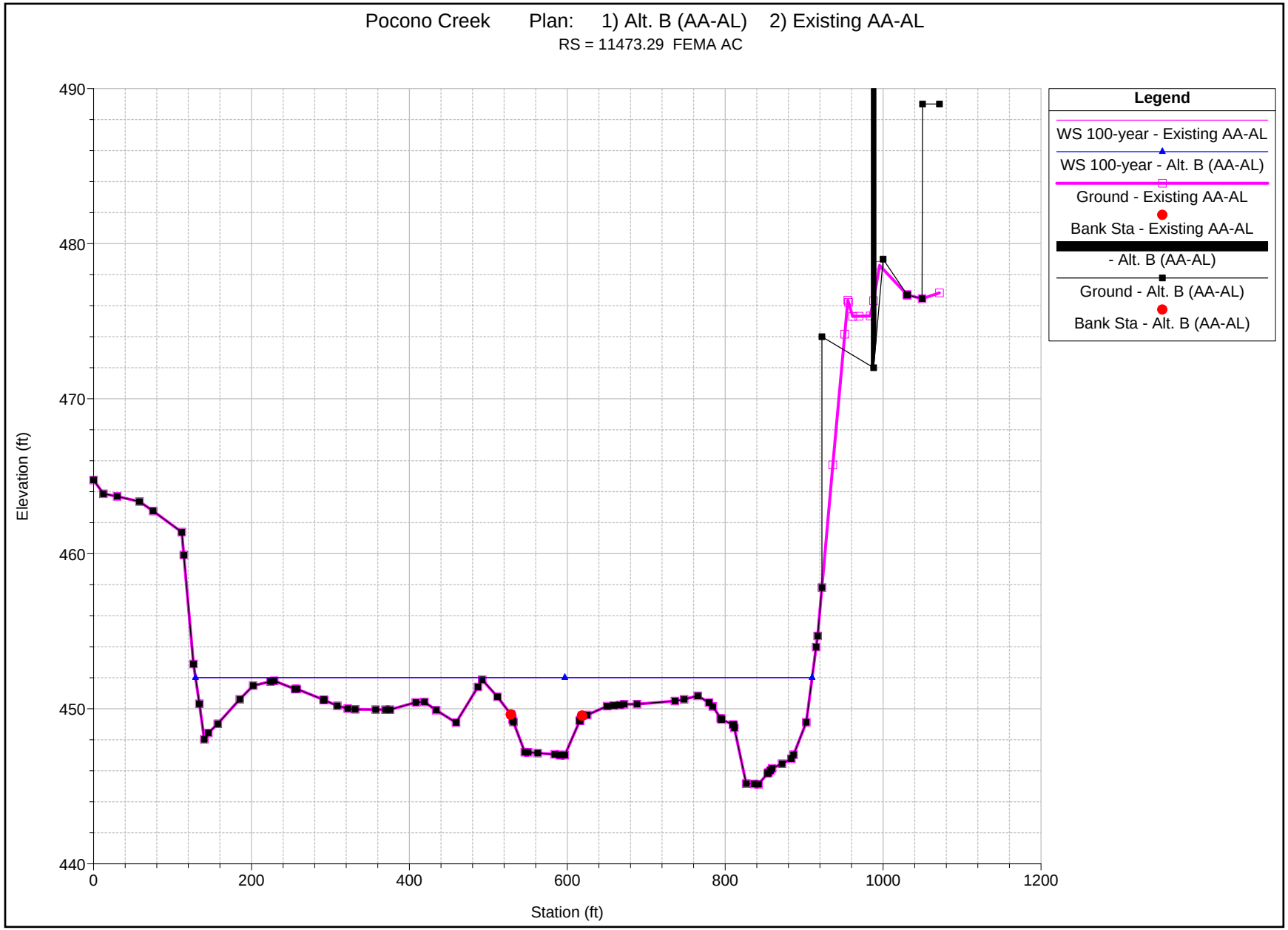

Pocono Creek Plan: 1) Alt. B (AA-AL) 2) Existing AA-AL
RS = 12615.64 FEMA AH
Legend
WS 100-year - Alt. B (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. B (AA-AL)
Ground - Alt. B (AA-AL)
Bank Sta - Alt. B (AA-AL)
Elevation (ft)
Station (ft)
500
490
480
470
460
450
0
100
200
300
400
500
600
700
800

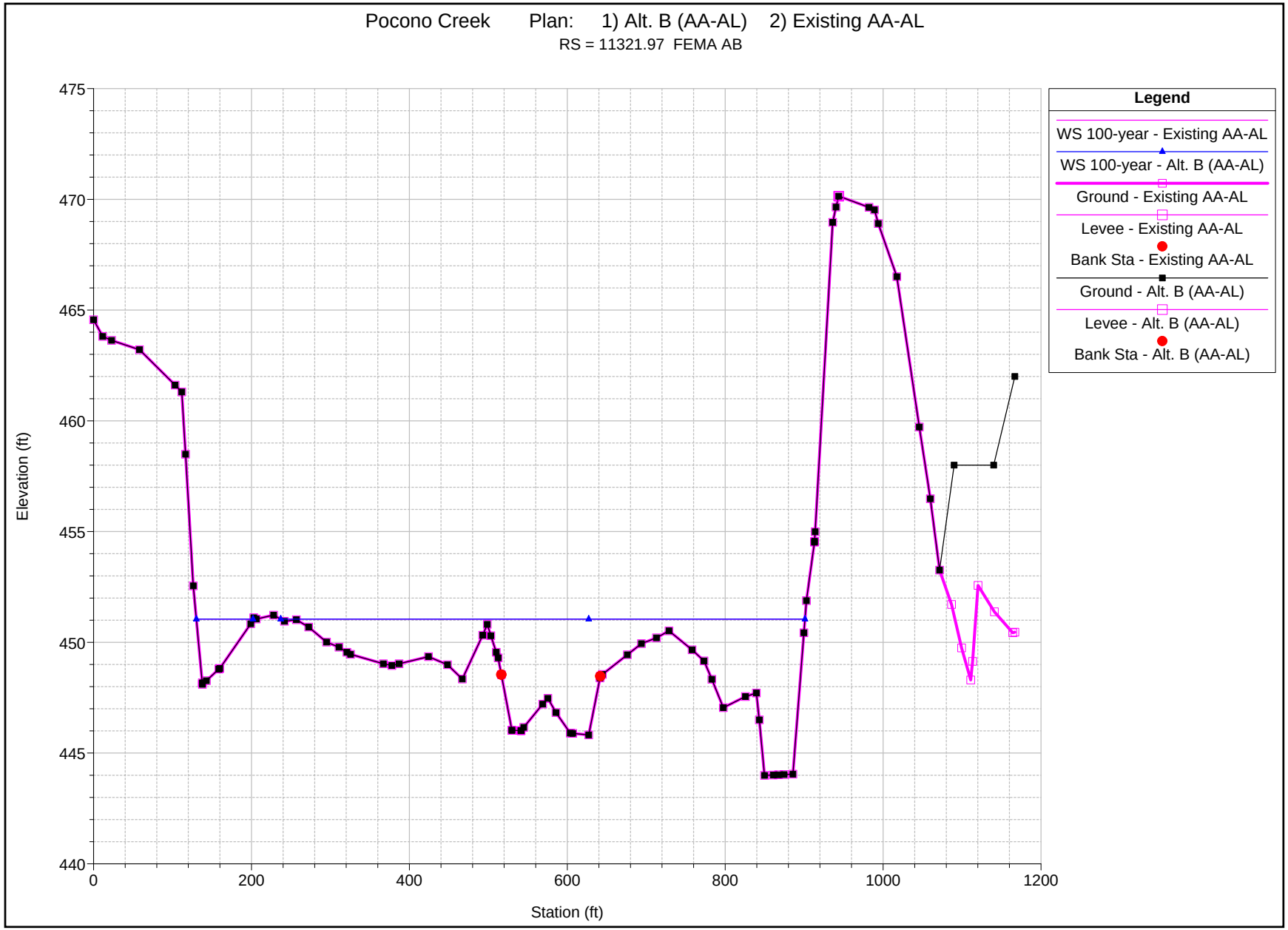

Pocono Creek Plan: 1) Alt. B (AA-AL) 2) Existing AA-AL
RS = 12184.32 FEMA AG
Legend
WS 100-year - Alt. B (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. B (AA-AL)
Ground - Alt. B (AA-AL)
Bank Sta - Alt. B (AA-AL)
Elevation (ft)
490
480
470
460
450
0
100
200
300
400
500
600
700
800
Station (ft)

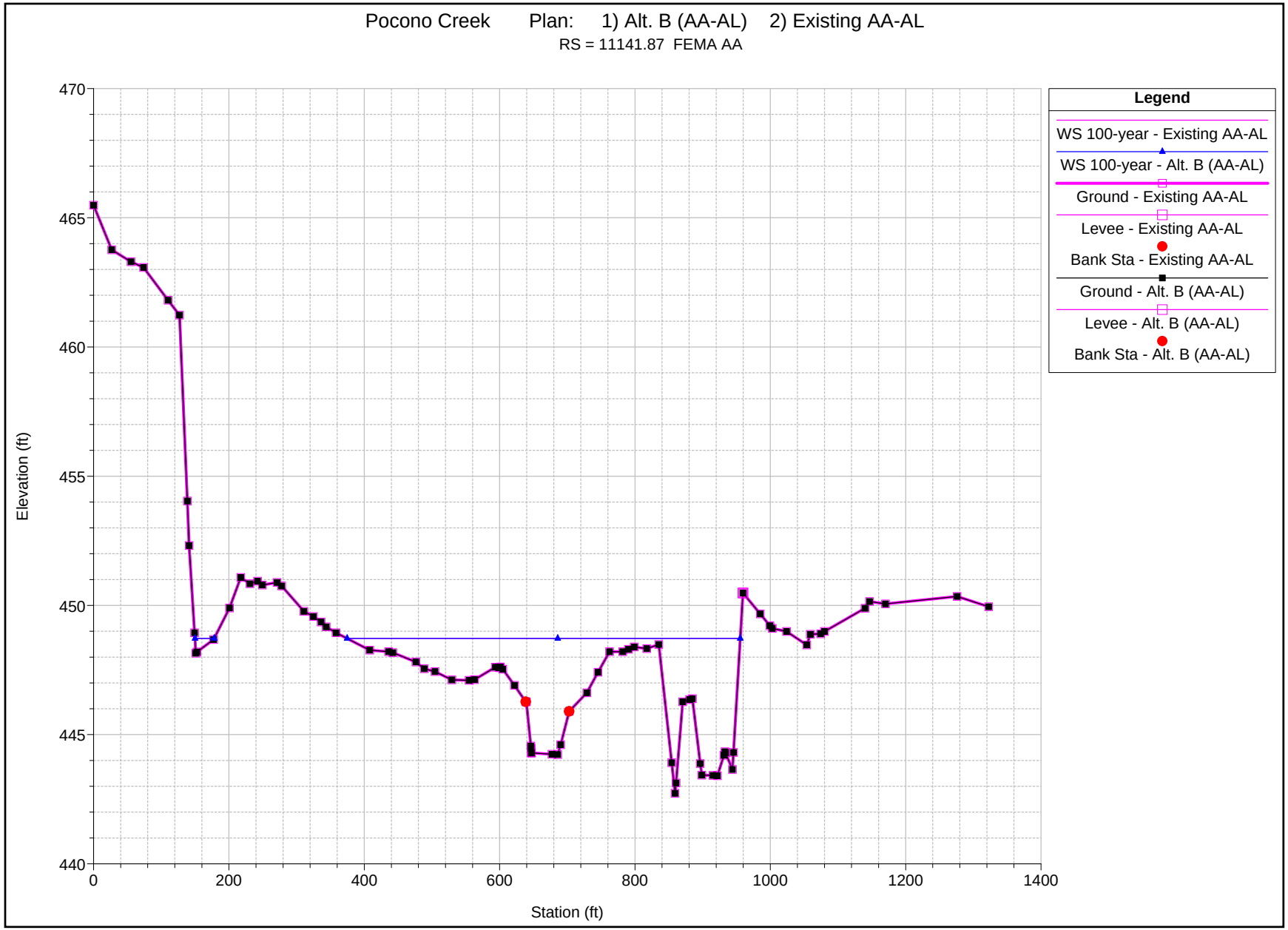

Pocono Creek Plan: 1) Alt. B (AA-AL) 2) Existing AA-AL
RS = 11877.50 FEMA AF
Elevation (ft)
490
480
470
460
450
440
0
200
400
600
800
1000
Station (ft)
Legend
WS 100-year - Alt. B (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. B (AA-AL)
Ground - Alt. B (AA-AL)
Bank Sta - Alt. B (AA-AL)


Pocono Creek Plan: 1) Alt. B (AA-AL) 2) Existing AA-AL
RS = 11640.95 FEMA AE
Elevation (ft)
490
480
470
460
450
440
0
200
400
600
800
1000
Station (ft)
Legend
WS 100-year - Alt. B (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. B (AA-AL)
Ground - Alt. B (AA-AL)
Bank Sta - Alt. B (AA-AL)


Pocono Creek Plan: 1) Alt. B (AA-AL) 2) Existing AA-AL
RS = 11573.87 FEMA AD
Legend
WS 100-year - Alt. B (AA-AL)
WS 100-year - Existing AA-AL
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. B (AA-AL)
Ground - Alt. B (AA-AL)
Bank Sta - Alt. B (AA-AL)
Elevation (ft)
490
480
470
460
450
440
0
200
400
600
800
1000
1200
Station (ft)


Pocono Creek Plan: 1) Alt. B (AA-AL) 2) Existing AA-AL
RS = 11473.29 FEMA AC
Elevation (ft)
490
480
470
460
450
440
0
200
400
600
800
1000
1200
Station (ft)
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. B (AA-AL)
Ground - Existing AA-AL
Bank Sta - Existing AA-AL
- Alt. B (AA-AL)
Ground - Alt. B (AA-AL)
Bank Sta - Alt. B (AA-AL)


Pocono Creek Plan: 1) Alt. B (AA-AL) 2) Existing AA-AL
RS = 11321.97 FEMA AB
Elevation (ft)
Station (ft)
475
470
465
460
455
450
445
440
0
200
400
600
800
1000
1200
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. B (AA-AL)
Ground - Existing AA-AL
Levee - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. B (AA-AL)
Levee - Alt. B (AA-AL)
Bank Sta - Alt. B (AA-AL)


Pocono Creek Plan: 1) Alt. B (AA-AL) 2) Existing AA-AL
RS = 11141.87 FEMA AA
Elevation (ft)
Station (ft)
470
465
460
455
450
445
440
0
200
400
600
800
1000
1200
1400
Legend
WS 100-year - Existing AA-AL
WS 100-year - Alt. B (AA-AL)
Ground - Existing AA-AL
Levee - Existing AA-AL
Bank Sta - Existing AA-AL
Ground - Alt. B (AA-AL)
Levee - Alt. B (AA-AL)
Bank Sta - Alt. B (AA-AL)