Revised Draft SEIR Appendix 5.5g

Castaic Creek Floodplain Report

LAND DEVELOPMENT DIVISION
STORM DRAIN & HYDROLOGY UNIT

TO: PACE Advanced Water Engineering DATE 3/18/25
ATTN: Jose Cruz
CC: Christine Huch

REVIEW OF HYDROLOGY STUDY

PM NO. **18108** **DATE OF REPORT** **March 2025**
PLAN CASE NO. **ESTU2023000109**

The LA County Floodplain and Floodway Map Revision for Castaic Creek has been approved.

COMMENTS:

1. This approval supersedes the original approval dated June 2023.

REVIEWED BY _____
Alex Mikhailpoor - (626) 458-4921

APPROVED BY: _____

Capital Floodway Revision Analysis

Los Angeles County Floodway Revision ML Map No.'s 335-ML-1 and 2 for Castaic Creek
ESTU No. 2023000109

Revised March 2025
November 2024

Prepared For:

FIVEPOINT

FivePoint Communities, LLC
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FLOODPLAIN/WAY STUDY APPROVED

REVIEWED BY: _____ DATE 03/18/2025

APPROVED BY: _____ DATE 03/18/2025

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

Submitted To:

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PACE JN A535

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B. HEC-RAS Revised Existing Conditions Capital Floodplain and Floodway
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D. HEC-RAS Cross Section Comparison – Existing Vs. Proposed Conditions

Enclosure

1. HEC-RAS version 6.2 hydraulic models of existing and proposed floodplain and floodway

1 Introduction

Pacific Advanced Civil Engineering, Inc. (PACE) has been retained by FivePoint Communities to prepare a report for LA County Floodplain and Floodway Map Layer Revision along lower Castaic Creek. This report proposes a revision to the existing LA County Adopted Floodway Map for Castaic Creek between Commerce Center Drive and the Old Road/ Interstate 5 (I-5) Bridges. Furthermore, this report presents the proposed condition floodway and floodplain based on channel improvements for the Valencia Commerce Center (VCC) Industrial Park Development in Tentative Parcel Map (TPM) No. 18108. The project site is located within the unincorporated area of Los Angeles County, three miles west of the City of Santa Clarita.

The Valencia Commerce Center (VCC) Industrial Park Development in Tentative Parcel Map (TPM) No. 18108 requires bank protection along Castaic Creek. The proposed improvements along Castaic Creek consist of approximately 8,400 lineal feet (LF) of soil cement bank protection broken up into three segments.

(1) Proposed **"West"** Soil Cement Bank Protection - an approximately 4,000-LF section of soil cement bank protection on the west bank beginning near the confluence of Castaic Creek and Hasley Creek and extending to the existing concrete slope lining (PD No. 1982) adjacent to Live Oak Road

(2) Proposed **"Southeast"** Soil Cement Bank Protection – an approximately 3,000-LF section of soil cement bank protection on the east bank that will extend from Commerce Center Drive (CCD) Bridge to the existing rip-rap slope protection (PD No. 2441)

(3) Proposed **"Northeast"** Soil Cement Bank Protection – an approximately 1,400-LF section of soil cement bank protection on the east bank, that begins at the northern end of the existing rip-rap slope protection (PD No. 2441) to the Old Road Bridge

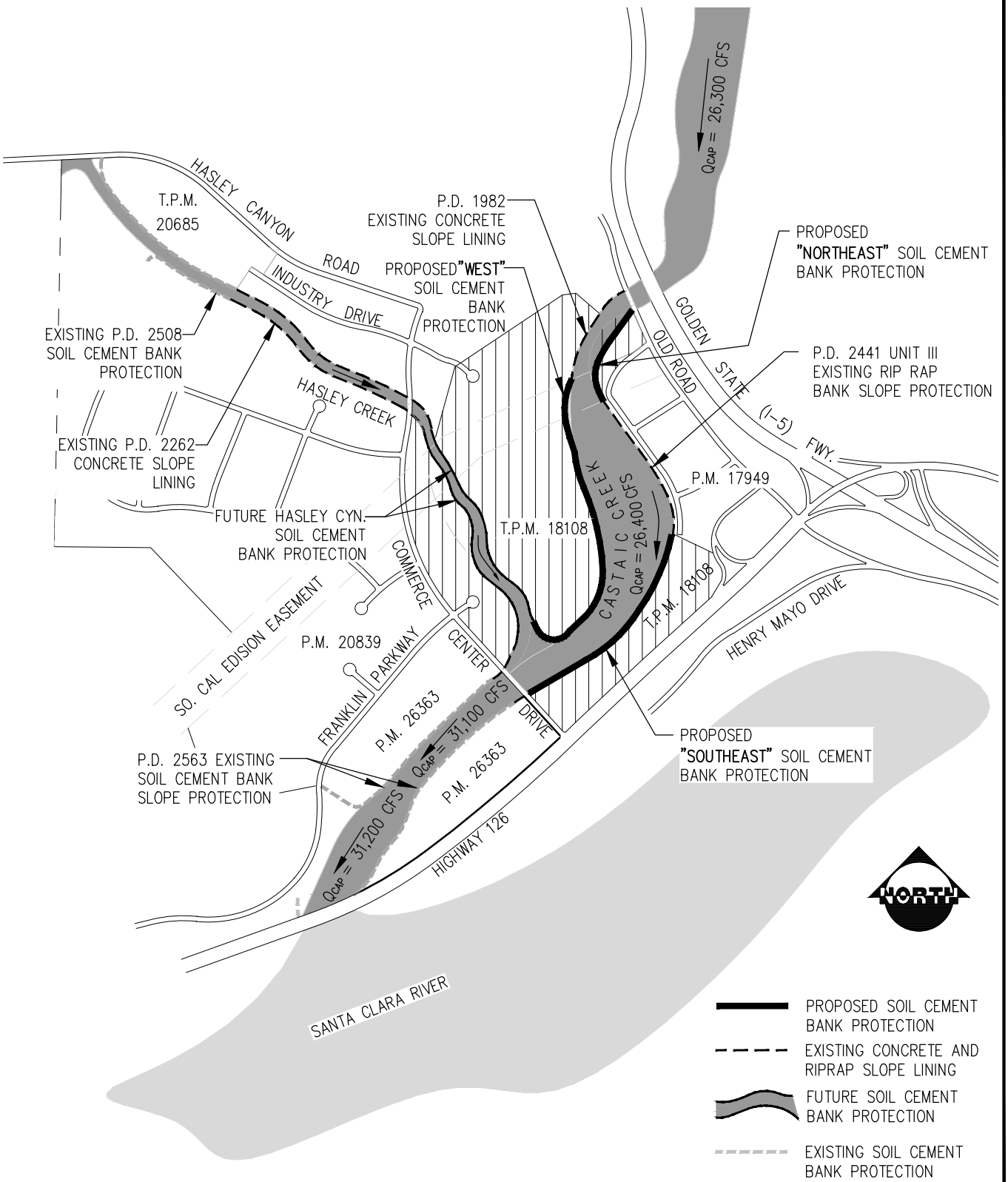
The Drainage Concept Report for the proposed soil cement bank protection titled, **Drainage Concept Report Volume II of V, Castaic Creek Bank Protection, ESTU No. 2001000012**, was approved by LACPW in September 2019. Refer to Figure 1-1 for project location map.

The existing Los Angeles County Capital Floodway maps (335-ML-1 & 2) were adopted by the Board of Supervisors on August 28, 1984 by Ordinance No. 84-0136. PACE prepared revisions to the existing Los Angeles County Capital Floodway maps, herein referred to as ML Maps, as part of a report titled, **Los Angeles County Capital Floodway Revision ML Map No's 335-ML-1&2 Castaic Creek Bank Protection (P.D. No. 2563) for P.M. No. 26363**, in December 2006. The revisions were submitted to LA County Department of Public Works for review and approved on October 2, 2007. The 2007 revisions changed the ML mapped floodway and floodplain between Commerce Center Drive and Hwy 126.

PACE obtained current hydrology data for the capital flood (Q_{cap}) within Castaic Creek watershed, from Los Angeles County Department of Public Works (LACPW). The hydraulic analysis performed for Castaic Creek was based on the current hydrology provided.

Some of the major items discussed or included in this report include:

- A summary of the hydrology and hydraulic study utilized to determine the existing and proposed capital floodway and floodplain.
- LA County adopted floodway ML Maps No.'s 335-ML-1 & 2.
- Updated existing conditions capital floodplain and floodway hydraulic analysis from Commerce Center Drive to upstream of the Interstate-5 (I-5) Bridge.
- Proposed conditions floodplain and floodway hydraulic analysis from Commerce Center Drive to upstream of the Interstate-5 (I-5) Bridge, RS 12350 (approx. 7,200 ft in length).
- Updated existing and proposed conditions capital floodplain and floodway mapping.



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CASTAIC CREEK
SOIL CEMENT BANK PROTECTION
TPM # 18108

INDEX MAP

FIGURE 1-1

2 Hydrology

2.1 Regional Hydrology

Castaic Creek is located within Castaic Creek basin watershed, which has a contributing drainage area of approximately 202 square-miles. PACE obtained current hydrology data for the Capital Flood (Q_{cap}) for Castaic Creek from LACPW. The Q_{cap} discharge rates for Castaic Creek are summarized in Table 2-1.

The Los Angeles County Flood Control District (LACFCD) analyzes hydraulics based on the Capital Flood, Q_{cap}. The Q_{cap} assumes a burned watershed and bulked peak flows. The design storm established by LACFCD is the Q_{cap} capital flood, which is defined as follows:

1. The design storm is assumed to occur on already saturated soils over a period of four days, with the maximum rainfall falling on the fourth day. During the 24-hour period of maximum rainfall, the rainfall intensity typically increases during the first 70-90% of the period and decreases in the remaining time. Furthermore, approximately 80% of the amount of the 24-hour rainfall falls within the same 70-90% of the period.
2. When converting rainfall to runoff, rainfall that is not lost due to hydrologic processes of interception, evaporation, transpiration, depression storage, infiltration or percolation is assumed to be surface runoff.
3. The natural portions of the watershed are assumed to have been burned by fire, which decreases soil infiltration.
4. In the area where a watershed is burned, the runoff would carry with it a large layer of eroded topsoil, burned trees and brush. To account for the quantity of debris, the design flow rate is artificially increased by a percentage increase in flow rate, or bulking factor.

Table 2-1 presents the capital flood discharge rates for Castaic Creek between the Old Road and the Hwy 126 Bridges.

Table 2-1: Design Hydrology

Storm Event	Design Flow (cfs)	Location
CAP (1)	26,300	Upstream of the Old Road Bridge and I-5 Bridge
CAP (1)	26,400	Old Road Bridge and I-5 Bridge to Hasley Creek Confluence
CAP (1)	31,100	Hasley Creek Confluence to unnamed canyon approximately 1,200 ft upstream of Highway 126
CAP (1)	31,200	unnamed canyon approximately 1,200 ft upstream of Highway 126 to State highway 126 Bridge

Notes:
(1) Source LACPW (Water Resources Division, See Appendix A)

3 Existing Hydraulic Analysis and Floodplain/ Floodway Mapping

Included in this report are three floodplain/ floodway map limits: (1) LA County Adopted Capital Floodplain and Floodway, (2) the Updated Existing Condition Capital Floodplain and Floodway, and the (3) Proposed Condition Capital Floodplain and Floodway. HEC-RAS hydraulic models were created for the updated existing condition and proposed conditions floodplain and floodways using 2013 topography, updated flowrates, and the proposed soil cement bank protection channel geometry.

3.1 HEC-RAS Models

A hydraulic model was developed for Castaic Creek using recent topography and hydrology data to determine the limits of the capital floodplain and floodway for the updated existing condition and proposed condition. A manning's roughness value of 0.06 was used in the revised modeling, which is consistent with LACPW floodplain mapping requirements. The hydraulic model was prepared using HEC-RAS software version 6.2.0, as developed by the U.S. Army Corps of Engineers. Table 3-1 below shows the different HEC-RAS hydraulic models generated for Castaic Creek and utilized for the updated existing and proposed conditions floodplain and floodway hydraulic analysis.

Table 3-1: HEC-RAS Models for Castaic Creek

HEC-RAS File Name	Description	Use
Updated Existing Conditions	Q_{cap}, n=0.060	To determine existing capital floodplain and floodway within Castaic Creek from Interstate-5/ Old Rd. to upstream of Hwy. 126 (RS 13371 to RS 1981.79)
Proposed Conditions	Q_{cap}, n=0.060	To determine proposed capital floodplain and floodway within Castaic Creek from Interstate-5/ Old Rd. to upstream of Hwy. 126 (RS 13371 to RS 1981.79)

Note:
See Appendices B and C for copies of the detailed HEC-RAS hydraulic output for the existing and proposed conditions.

3.1.1 Cross Section Geometry

The HEC-RAS model cross section lay-out was based on the Drainage Concept Report titled, **Drainage Concept Report Volume II of V, Castaic Creek Bank Protection, ESTU No. 2001000012**, approved in September 2019, with updates to facilitate floodplain mapping. Additional cross sections were added to capture locations of abrupt change in cross section geometry – specifically in areas around a berm at the Hasley Creek confluence.

3.1.2 Hydraulic Structures

The hydraulic models include three existing bridges over Castaic Creek within the study area: the Commerce Center Drive Bridge, the Old Road Bridge, and the I-5. Debris loading is applied at each bridge in accordance with the USACE (US Army Corps of Engineers) Memorandum of Record, "Hydrology and Hydraulics Policy Memorandum No 4., Debris Loading on Bridges and Culverts." The piers for the Old Road Bridge and the I-5 Bridge do not have sloping extensions, so they fall under debris loading Case 1. This case assumes 2 feet of debris loading on each side of each pier for the full depth of flow. At the Commerce Center Drive bridge, Case 1 debris loading is applied to piers 1,2,3,4, and 6. Pier 5 is wider than 6', so additional debris loading does not need to be added.

3.1.3 Ineffective Flow Areas and Expansion and Contraction Coefficients

Ineffective flow markers were used to define area with ineffective flow, including at abrupt contractions and expansions in the available flow area. In the existing condition a contraction ratio of 1:1 was used to define ineffective flow downstream of cross section 11811.16, where flow expands downstream of the Old Road Bridge, and also downstream of cross section 7688.71 where flow expands as it breaks out over the left bank. These areas of ineffective flow are detailed on Figure 3.3.

In both the existing and proposed conditions, ineffective flow markers are used to make flows on the north side of the flow diversion berm at Commerce Center Drive ineffective. The flows on this side of the berm will generally come from Hasley Canyon Creek, so they are modeled as ineffective for Castaic Creek. More detailed discussion on the modeling of the confluence can be found in Section 3.6.

The expansion and contraction coefficients specified at each cross section follow the guidance in the HEC-RAS Manual. Generally, cross sections expansion and contraction coefficients are set to 0.3 and 0.1, respectively. This represents areas of gradual transition and are also the default values within HEC-RAS. At bridge sections, the expansion and contraction coefficients are set to 0.5 and 0.3 respectively, as required in the HEC-RAS Manual.

3.2 LA County Adopted Capital Floodplain and Floodway

The current existing Los Angeles County Capital Floodway Maps (335-ML-1 & 2) were adopted by the Board of Supervisors on August 28, 1984 by Ordinance No. 84-0136. Refer to Figures 3-1 and 3-2 for LA County Capital Floodway (ML) maps (reference only).

Soil cement bank protection was built in 2007 per P.D. 2563 downstream of the Commerce Center Drive bridge. At construction completion, PACE submitted a revision for the Los Angeles County Capital Floodway Maps and the revisions were adopted by the Board of Supervisors on October 2, 2007. However, the current ML maps have not been updated to reflect these improvements. Upon discussion with LACPW it was determined that the downstream portion of the present study should tie-in to the adopted 2007 floodway and floodplain limits, while the upstream limits will still tie-in to the adopted ML maps from 1984.

3.3 Updated Existing Condition Capital Floodplain

The existing condition hydraulic analysis was generated in order to establish the current existing LA County floodplain from Commerce Center Drive to the Old Rd. / Interstate-5 Bridges. The updated existing conditions hydraulic analysis utilized more current topography (dated 2013), updated Q_{cap} discharge rates, and Manning's value (n) of 0.06. Table 3-2 provides a summary of the updated existing conditions hydraulic analysis. See Figure 3-3 for mapping of the updated existing condition floodplain.

3.4 Updated Existing Condition Capital Floodway

Floodways are defined as the channel of a river that is reserved in order to discharge the base flood without cumulatively increasing the water surface elevation by more than a designated height, usually set at 1.0 ft. Cross section floodways were defined in accordance with LACDPW requirements where, *"Floodway limits are established at the point where the velocity of flow equals 10 ft/sec or the water surface elevation rises 1ft above the flood plain water surface elevation. The first of either criteria reached controls the floodway width. If the velocity of flow in the flood plain for a particular section exceeds 10 ft/sec, the flood plain lines and floodway lines are one and the same."*

The updated existing condition floodway hydraulic model was generated using the following steps. First, the updated existing condition floodplain was analyzed and all sections with velocity greater than 10 ft/sec were set to have no encroachment. Next, HEC-RAS encroachment methods 4 and 1 were used to generate a floodway. HEC-RAS encroachment method 4 computes encroachment stations to achieve a maximum of a 1.0-foot rise with an equal loss of conveyance on the left and right banks. Then, Method 1 is then used to refine the encroachment stations, where the user specifies the locations of the encroachment stations at each individual cross section. Floodway encroachment results for change in water surface elevation and velocity were checked to ensure they meet the LACDPW criteria.

3.5 Updated Existing Condition Capital Floodplain and Floodway Results

The existing condition floodway hydraulic analysis was generated in order to establish the updated existing condition floodplain and floodway limits from Commerce Center Drive to the Old Rd./ Interstate-5 Bridges. The updated existing conditions hydraulic analysis utilized more current topography, updated Q_{cap} discharge rates, and Manning's value (n) of 0.06.

Table 3-2 provides a summary of the updated existing conditions hydraulic analysis for the floodplain and floodway. The table compares several hydraulic elements. The most important elements to analyze are the water surface elevations and top widths. The maximum rise allowable in water surface elevations is 1.0 ft. The water surface elevations increase as a result of encroaching into the floodplain to determine an acceptable floodway boundary. Table 3-2 shows the differences between the floodplain and floodway are all within the 1.0 ft maximum allowable rise in water.

The limits of the floodplain and floodway for the updated existing conditions extend from the Commerce Center Drive to the Old Rd./ Interstate-5 Bridges. The updated existing hydraulic analysis establishes the current existing capital floodway for LA County ML maps (335 ML-1&2). See Figure 3-3 for mapping of the updated existing floodplain and floodway.

Table 3-2: Updated Existing Conditions Floodplain and Floodway Comparison, Q_{cap}= 26,400 cfs/ 31,200 cfs (n=0.06)

HEC-RAS River Station	Profile	W.S.E (ft)	FP - FW Delta W.S.E. (ft)	Top Width (ft)	Sta W.S.E. Left (ft)	Sta W.S.E. Right (ft)	Enc. Sta. Left (ft)	Enc. Sta. Right (ft)
12350	FP	1041.4		1197.2	28.2	1225.4		
12350	FW	1041.4	**0.0**	320.0	775.0	1095.0	775.0	1095.0
12146	FP	1040.3		860.9	145.6	1082.8		
12146	FW	1040.3	**0.0**	261.6	663.8	925.4	663.8	925.4
12059.65 BR U	FP	1040.0		207.3	664.8	924.4		
12059.65 BR U	FW	1040.0	**0.0**	231	663.8	925.4	663.8	925.4
12059.65 BR D	FP	1038.0		235.7	686.6	926.6		
12059.65 BR D	FW	1038.1	**0.1**	234	690.0	924.0	690.0	924.0
11957.32	FP	1038.0		239.9	686.6	926.6		
11957.32	FW	1038.1	**0.1**	234.0	690.0	924.0	690.0	924.0
11923	FP	1038.0		242.6	687.7	930.2		
11923	FW	1038.0	**0.1**	234.0	690.0	924.0	690.0	924.0
11917.82 BR U	FP	1036.0		207.3	688.8	929.1		
11917.82 BR U	FW	1036.0	**0.0**	201	690.0	924.0	690.0	924.0
11917.82 BR D	FP	1035.5		235.7	674.8	919.7		
11917.82 BR D	FW	1035.6	**0.1**	235.7	660.0	926.6	0.0	0.0
11878.32	*FP*	*1035.5*		*266.1*	*660.3*	*926.4*		
11878.32	*FW*	*1035.6*	***0.1***	*266.6*	*660.0*	*926.6*	*0.0*	*0.0*
11845.64	FP	1035.4		304.1	666.5	970.6		
11845.64	FW	1035.5	**0.1**	302.0	667.0	969.0	667.0	969.0
11811.76	*FP*	*1033.3*		*289.6*	*633.2*	*987.9*		
11811.76	*FW*	*1034.2*	***0.9***	*301.7*	*631.1*	*990.9*	*0.0*	*0.0*
11551.18	FP	1031.5		999.9	91.8	1091.7		
11551.18	FW	1032.1	**0.6**	419.0	580.0	999.0	580.0	999.0
11242.98	FP	1029.4		999.0	419.5	1418.4		
11242.98	FW	1030.2	**0.8**	541.0	820.0	1361.0	820.0	1361.0
10982.86	FP	1027.8		1115.5	515.7	1631.2		
10982.86	FW	1028.8	**1.0**	601.0	975.0	1576.0	975.0	1576.0
10738.26	FP	1026.2		1286.8	71.0	1357.8		
10738.26	FW	1026.9	**0.6**	582.0	640.0	1222.0	640.0	1222.0
10490.82	FP	1023.8		1441.7	24.2	1476.3		
10490.82	FW	1024.3	**0.5**	645.0	735.0	1380.0	735.0	1380.0
10351.28	FP	1021.6		1339.5	171.2	1552.1		
10351.28	FW	1022.3	**0.7**	585.0	905.0	1490.0	905.0	1490.0
10141.82	FP	1019.1		1090.0	296.6	1616.3		
10141.82	FW	1019.9	**0.8**	555.0	930.0	1485.0	930.0	1485.0

HEC-RAS River Station	Profile	W.S.E (ft)	FP - FW Delta W.S.E. (ft)	Top Width (ft)	Sta W.S.E. Left (ft)	Sta W.S.E. Right (ft)	Enc. Sta. Left (ft)	Enc. Sta. Right (ft)
9931.16	FP	1017.2		915.0	812.2	1727.2		
9931.16	FW	1017.9	**0.7**	630.0	920.0	1550.0	920.0	1550.0
9670.57	FP	1015.1		1042.0	802.0	1844.0		
9670.57	FW	1016.1	**0.9**	776.0	865.0	1641.0	865.0	1641.0
9501.81	FP	1013.8		754.8	745.0	1499.8		
9501.81	FW	1014.8	**1.0**	618.0	790.0	1408.0	790.0	1408.0
9298.99	FP	1011.8		674.7	704.4	1379.1		
9298.99	FW	1012.7	**0.8**	549.0	753.0	1302.0	753.0	1302.0
9042.81	FP	1009.3		909.4	654.0	1563.4		
9042.81	FW	1010.2	**0.8**	677.0	748.0	1425.0	748.0	1425.0
8724.84	FP	1006.3		1290.3	663.9	1954.1		
8724.84	FW	1007.3	**1.0**	919.0	768.0	1687.0	768.0	1687.0
8396.13	FP	1003.3		1376.5	540.7	1917.2		
8396.13	FW	1004.0	**0.7**	931.0	754.0	1685.0	754.0	1685.0
8049.79	FP	1002.0		1280.0	424.7	1704.6		
8049.79	FW	1002.4	**0.4**	925.0	650.0	1575.0	650.0	1575.0
7688.71	FP	1001.4		1215.3	572.2	1787.5		
7688.71	FW	1001.7	**0.3**	800.0	640.0	1440.0	640.0	1440.0
7326.46	FP	1000.2		1365.0	76.8	1453.6		
7326.46	FW	1000.7	**0.5**	515.0	580.0	1095.0	580.0	1095.0
6966.68	FP	999.2		1209.2	75.6	1284.8		
6966.68	FW	999.7	**0.6**	525.0	525.0	1050.0	525.0	1050.0
6623.5	FP	998.0		846.7	192.6	1041.8		
6623.5	FW	998.6	**0.6**	425.0	545.0	970.0	545.0	970.0
6304.52	FP	997.0		937.5	217.8	1155.3		
6304.52	FW	997.9	**0.8**	400.0	510.0	910.0	510.0	910.0
6087.88	FP	996.6		839.2	382.0	1221.1		
6087.88	FW	997.4	**0.8**	390.0	535.0	925.0	535.0	925.0
5781.35	FP	996.0		721.5	492.0	1213.5		
5781.35	FW	996.7	**0.6**	430.0	560.0	990.0	560.0	990.0
5629.45	FP	995.3		607.7	600.0	1263.0		
5629.45	FW	996.2	**0.9**	430.0	635.0	1065.0	635.0	1065.0
5557.68	FP	994.6		510.0	140.2	691.2		
5557.68	FW	995.2	**0.6**	315.0	200.0	515.0	200.0	515.0
5500 BR U	FP	994.3		477.9	140.2	690.3		
5500 BR U	FW	994.7	**0.4**	291	200.0	515.0	200.0	515.0
5500 BR D	FP	993.7		465.1	140.2	723.0		
5500 BR D	FW	994.3	**0.5**	380.81	207.0	635.0	207.0	635.0
5453.98	FP	993.8		516.0	207.1	723.1		
5453.98	FW	994.3	**0.5**	428.0	207.0	635.0	207.0	635.0
5434.68	FP	993.7		521.8	800.3	1322.2		
5434.68	FW	994.3	**0.6**	452.2	820.0	1272.2	820.0	1272.2
5340.04	FP	992.5		473.8	790.6	1264.4		
5340.04	FW	993.4	**0.9**	440.4	800.0	1240.4	800.0	1240.4

Note:
Bridge Locations: I-5 Bridge at RS 12059.65, Old Rd. Bridge at RS 11917.82, Commerce Ctr. Dr. Bridge at RS 5500
Italicized sections indicate Velocity is greater than 10 ft/s, so there is no encroachment.

3.6 Castaic Creek and Hasley Canyon Creek Confluence Modeling Approach

The confluence of Castaic Creek with Hasley Canyon Creek was extensively studied as part of the proposed bank protection design detailed in the project Drainage Concept Report (DCR) for the subject project under EIMP No. 2019000489. There are two possible flow paths that can form at the confluence.

Case 1 - Flow will travel from Hasley Canyon Creek into Castaic Creek upstream of the flow diversion berm, with little or no flow traveling through the north side of the flow diversion berm.

Case 2 - All flow from Hasley will travel through the north side of the flow diversion berm and enter Castaic Creek downstream of Commerce Center Drive.

In the Drainage Concept Report (DCR) both conditions are important to model since they capture different elements associated with the design of the soil cement top and toe. When flow enters Castaic Creek upstream of Commerce Center Drive Bridge (Case 1), no flow is mapped north of the berm because the invert of Castaic Creek is much lower than the invert of Halsey Canyon Creek. However, this modeling approach best captures the water surface and velocities to design the Hasley Canyon Creek East bank connection to the Castaic Creek “West” Soil cement Bank Protection. When the Hasley Canyon Creek flow is modeled going through the north side of the flow diversion berm before entering Castaic Creek downstream of Commerce Center Drive (Case 2), it captures the highest water surface elevation and velocities for the design of the Halsey Canyon Creek West Bank.

For the Hasley Canyon Creek floodplain and floodway analysis, the existing and proposed conditions are modeled in a way that will produce the widest floodplain. In the existing condition, the flow diversion berm either funnels flows from Hasley Canyon Creek through the north side of the flow diversion berm or flows will circumvent the berm and flow into Castaic Creek upstream of Commerce Center Drive. The flows then confluence with Castaic Creek downstream of Commerce Center Drive Bridge (Case 2). This modeling approach was selected as it produces the widest floodplain along the north side of the berm. If the Case 1 flow condition was used, the area to the north of the berm would be mapped with no floodplain, as the Hasley flow would be contained within the Castaic Creek main channel, which has a much lower invert than the invert within the north side of the diversion berm.

In the proposed condition, Hasley Canyon Creek flows will either enter Castaic Creek upstream of Commerce Center Drive Bridge or flow along the north side of the berm and confluence with Castaic Creek downstream of Commerce Center Drive Bridge. For the purposes of floodplain mapping, the proposed condition Hasley Canyon Creek model analyzes the condition where all flow from Hasley Canyon Creek flows on the north side of the berm (Case 2). More detailed discussion can be found in the Hasley Canyon Creek Capital Floodway Revision Analysis, (per ESTU No. 2023000298, approval pending).

The Castaic Creek HEC-RAS model captures the widest floodplain within the confluence through the use of a flow change upstream of the confluence of Castaic and Hasley Canyon Creek. This flow change captures a condition where all of the Hasley Canyon Creek flow enters Castaic Creek upstream of Commerce Center Drive, with no flows from Hasley Canyon Creek going through the north side of the flow diversion berm (Case 1). Both the existing condition and proposed condition models use the flow change upstream of the confluence. This modeling approach will produce the highest water surface elevations in Castaic Creek in the vicinity of the confluence. The final mapped floodplain and floodway are discussed further in Section 6


SEE MAP NO. 43-MLI
SANTA CLARA RIVER
HENRY MAYO DRIVE
SOUTHERN PACIFIC
CASTAIC CREEK
LACFC CASTAIC CREEK
LEGEND
CAPITAL FLOOD PLAIN BOUNDARY
FLOODWAY BOUNDARY
WATER SURFACE ELEVATIONS
ADOPTED BY BOARD OF SUPERVISORS
AUGUST 28, 1984
ORDINANCE NO. 84-0136
REVISED
REFERENCES
335 T 7
335 T 8
(10/80)
DRAWN
J.DOMENICHELLI
CHECKED
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
CASTAIC CREEK
FLOODWAY MAP
FROM 700' D/S OF HENRY MAYO DR.
TO 7700' U/S OF HENRY MAYO DR.
7/6/84
1" = 100'
no. 335-MLI

LEGEND

CAPITAL FLOOD PLAIN BOUNDARY

FLOODWAY BOUNDARY

WATER SURFACE ELEVATIONS

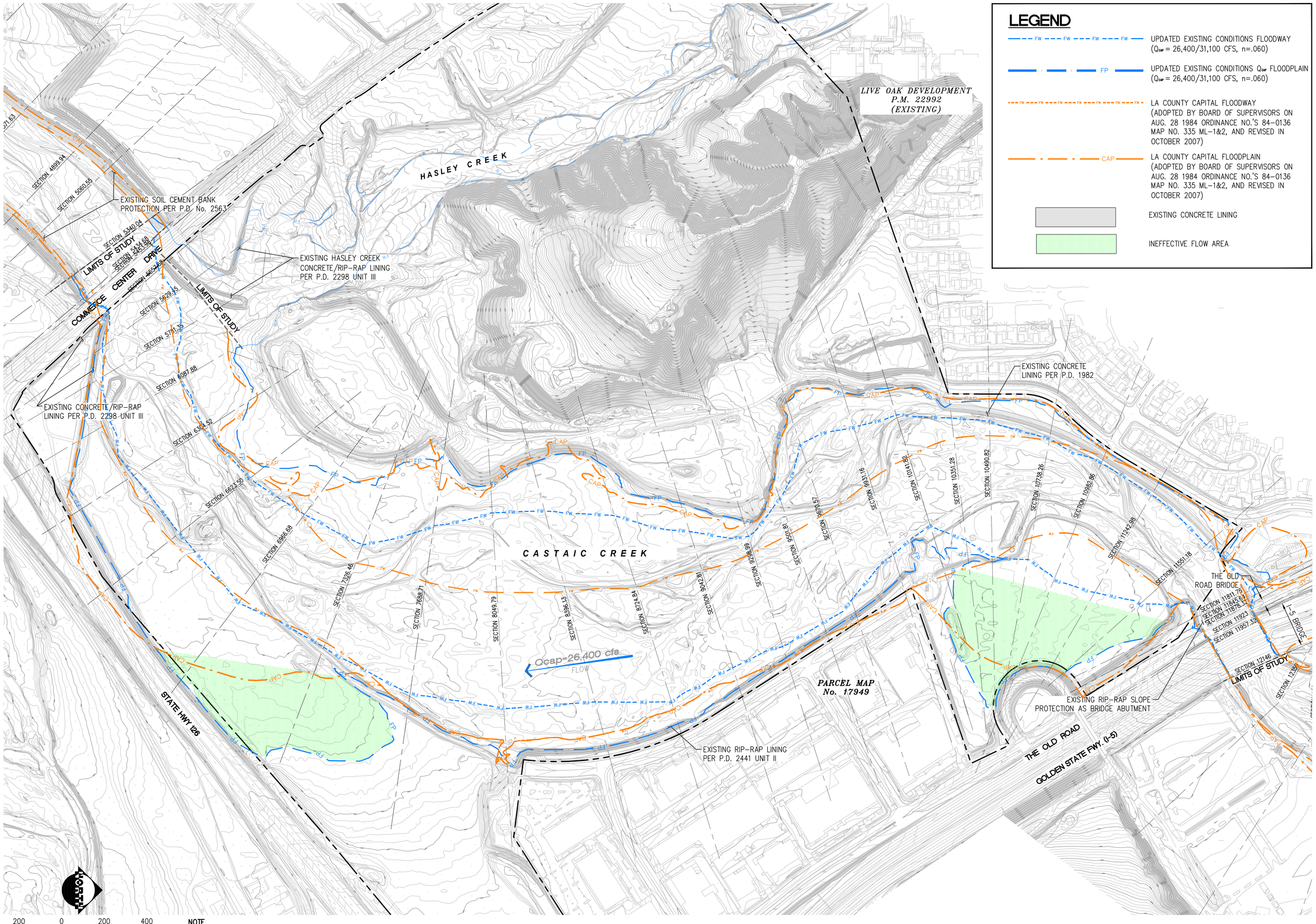
ADOPTED BY BOARD OF SUPERVISORS
AUGUST 28, 1984
ORDINANCE NO. 84-0136

REVISED	REFERENCES
	335 T9
	335 T10

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

CASTAIC CREEK
FLOODWAY MAP
FROM 7700' U/S OF HENRY MAYO DR.
TO 4700' U/S OF GOLDEN STATE FWY

DESIGNED J. DOMENICHELLI
7/6/84
1"= 100'
NO. 335-ML2



NOTE
1. CONTOURS SHOWN ON THIS MAP IS BASED ON AERIAL TOPOGRAPHY DATED OCT. 2013

PLAN

NO	BY	DATE	REVISIONS	DATE	APP.

PRELIMINARY NOT FOR CONSTRUCTION
PROJECT ENGINEER — DATE

PREPARED BY
JOSE CRUZ
R.C.E. NO. # 72249
EXP. 6/30/24

DRAWN	SCALE
M.M.T.	1"=200'
DESIGNED	
E.M.R.	
CHECKED	DATE
J.C.	2/22/23

THESE DRAWINGS ARE THE PROPERTY OF P.A.C.E. AND SHALL NOT BE REPRODUCED IN ANY MANNER NOR BE USED FOR CONSTRUCTION UNLESS STAMPED "ISSUED FOR CONSTRUCTION".

TITLE
UPDATED EXISTING CONDITIONS CAPITAL FLOODWAY & FLOODPLAIN MAPPING

JOB
VALENCIA COMMERCE CENTER
CASTAIC CREEK FLOODPLAIN & FLOODWAY MAPPING FROM COMMERCE CENTER DRIVE TO I-5 FWY
LOS ANGELES COUNTY CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

FIGURE
3-3

JOB NO. A535

4 Proposed Channel Improvements

The proposed channel improvements at Valencia Commerce Center (VCC) Industrial Park Development in Tentative Parcel Map (TPM) No. 18108 consist of soil cement bank protection combined with launch stone rip-rap along both banks of Castaic Creek. Refer to Section 7.0 of the "Drainage Concept Report Volume II of V, Castaic Creek Bank Protection ESTU No. 2001000012," prepared by PACE approved September 2019 for detailed description of the proposed soil cement bank protection. Below is a summary of the soil cement bank protection design.

4.1 Bank Protection Description

The proposed soil cement bank protection will be constructed in three segments, "West," "Northeast," and "Southeast." The bank protection proposed for the west bank will be constructed as a continuous section beginning near the confluence of Castaic Creek and Hasley Creek and extending roughly 4,000 LF upstream, where it will join the existing concrete slope lining (PD No. 1982) adjacent to Live Oak Road. The bank protection proposed for the east bank will be constructed in two separate sections due to an existing rip-rap slope protection (PD No. 2441-Unit II) located adjacent to Hancock Parkway. The southeast section of the proposed bank protection will be approximately 3,000 LF and will extend from the Commerce Center Drive (CCD) Bridge to the existing rip-rap slope protection (PD No. 2441). The northeast section of the proposed soil cement bank protection will be around 1,400 LF and extends from the existing rip-rap slope protection (PD No. 2441) to the Old Road Bridge.

In addition to the proposed bank protection, there will be modifications to the existing flow diversion berm at the Castaic Creek confluence with Hasley Canyon Creek. The existing flow diversion berm (P.D. 2298 Unit III) was designed to divert flows from Hasley Canyon Creek into Castaic Creek downstream of the Commerce Center Drive Bridge. However, a large storm in January 2005 caused flows to bifurcate the berm. This change caused the berm to become an obstruction to flows and increased chances of blockages to either flow path, into Castaic Creek or under Commerce Center Drive. In the proposed condition, the upstream portion of the flow diversion berm will be removed and lowered to the scour depth. This will remove the obstruction to the flow path and allow water into Castaic Creek Upstream of Commerce Center Drive Bridge. The proposed modifications to the flow diversion berm are detailed in Figure 4-2.

4.2 Bank Protection Design Summary

The proposed bank protection will consist of a standard soil cement section to provide scour and freeboard flood control protection for all storm events up to the Capital Flood. The critical factors in determining the design of the bank protection were based on the following criteria:

1. Flood control stability and durability of bank protection.
2. Safety concerns regarding access to and from the channel in dry and wet conditions.
3. Bank protection maintenance considerations.
4. Environmental compatibility with the native area and resource enhancement concepts, and aesthetic considerations.
5. Constructability and cost of construction.

Soil cement bank protection is constructed as a monolithic and homogenous structure consisting of approximately 90% native soils and 10% cement. The typical section consists of 8-foot wide and 6- to 12-inch thick layers of soil cement. Each layer of soil cement is set back from the edge of the previous layer, at a 1.5 (H) : 1 (V) slope. The entire section varies in total height based on varying freeboard, flow depth and toe-down requirements. A typical cross section is shown in Figure 4-1.

The proposed soil cement bank protection addresses the above design criteria as follows:

1. Soil cement provides a stable riverbank protection material, in terms of both surface erosion and structural stability. Preliminary geotechnical analyses indicate that locally available native soils are considered acceptable for use in soil cement.
2. The soil cement bank protection will be completely buried with a 3:1 slope soil backfill. Due to transitions from proposed soil cement bank protection (buried condition) to existing concrete and rip-rap bank protection (exposed conditions), some soil cement areas will be exposed.

The proposed channel improvements are used to revise channel geometry in the proposed condition HEC-RAS model.

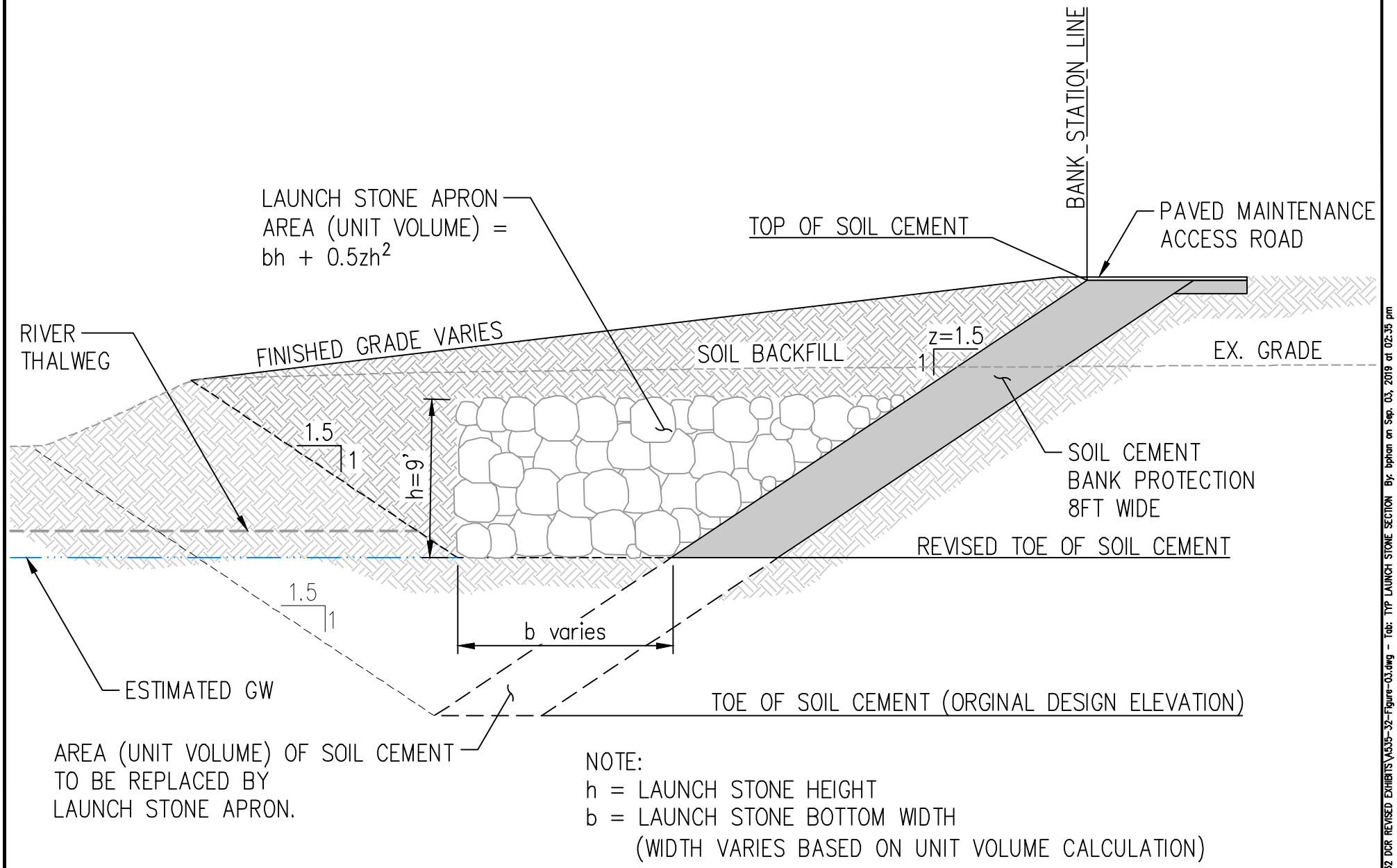
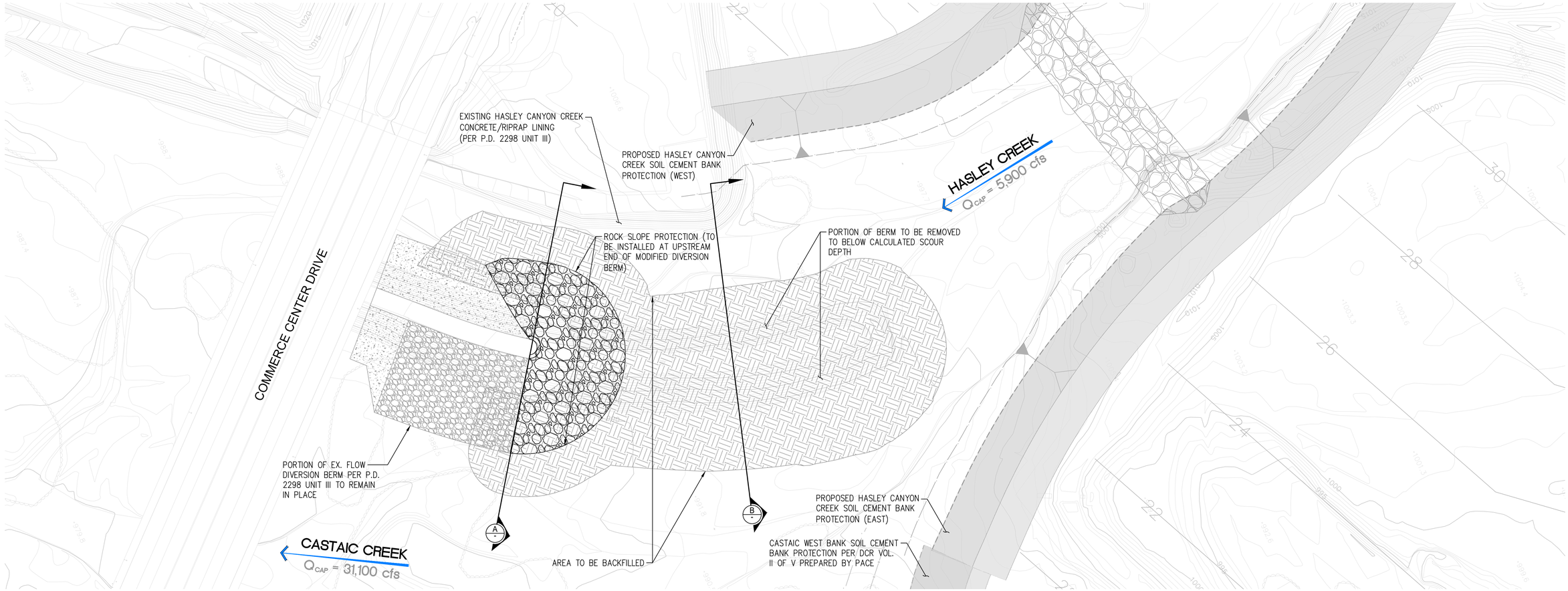


FIGURE 4-1

SOIL CEMENT / LAUNCH STONE BANK PROTECTION TYPICAL SECTION

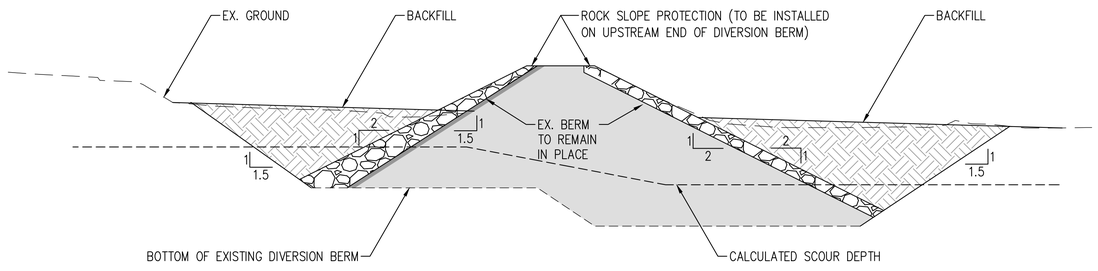


PLAN - MODIFIED DIVERSION BERM

NORTH

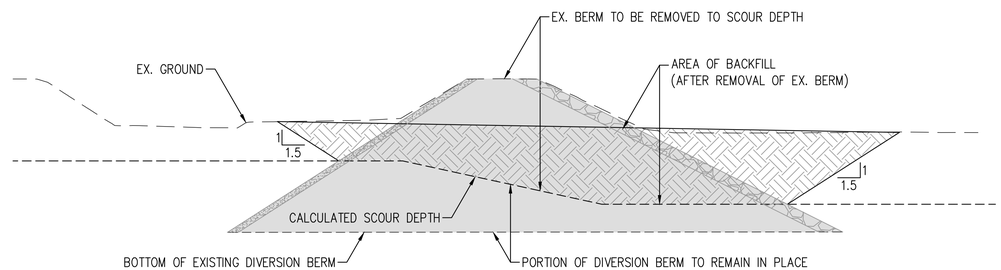
40 0 40 80

SCALE 1"=40'



SECTION A - PORTION OF DIVERSION BERM TO REMAIN

SCALE 1"=20'



SECTION B - PORTION OF DIVERSION BERM TO BE MODIFIED

SCALE 1"=20'

NO	BY	DATE		DATE	APP.

JOB VALENCIA COMMERCE CENTER

CASTAIC CREEK FLOODPLAIN AND FLOODWAY MAPPING

LOS ANGELES COUNTY CA.

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

PREPARED	JOSE CRUZ
PROJECT ENGINEER R.C.E. NO.	72249
EXP.	06/30/2022
DRAWN	BDP
SCALE	AS SHOWN
DESIGNED	JC
CHECKED	MEK
DATE	5/3/2024

REGISTERED PROFESSIONAL ENGINEER JOSE CRUZ No. 72249 CIVIL STATE OF CALIFORNIA

TITLE

PROPOSED MODIFICATION OF DIVERSION BERM

FIGURE 4-2

JOB NO. A535

P:\A535\Engineering\A535-72_Castaic Creek ML\exhibits\A535-72- Figure 4.2_Proposed Modification of Diversion Berm.dwg - Tab: Layout By: erondig on May. 03, 2024 at 03:56 pm

5 Sediment Transport Considerations

A Fluvial Study was completed for Castaic Creek in January 2006, and approved by LACPW in April 2006, to assess creek bed impacts from potential modifications of fluvial operation from the proposed TPM. No. 18108 development. The study provides a comprehensive assessment of short-term and long-term bed adjustments based on the level of information available. The Fluvial Study describes the following: (1) general adjustment, (2) long term adjustment, (3) other scour, (4) study reach gradation, (5) SAM modeling and analysis, and (6) total scour potential for the purpose of determining soil cement bank protection toe-down and freeboard.

5.1 Types of Adjustments

Modifications to the Castaic Creek System are measured as bed adjustment in feet. Types of adjustments included in the fluvial study include general, long-term, and other scour adjustments. General adjustment consists of scour that occurs in an individual discharge event and may be considered as the difference between sediment inflow and outflow. For example, aggradation describes a situation where sediment inflow is higher than sediment outflow for the same reach. In contrast, if sediment outflow exceeds inflow for a given reach, degradation in the form of scour will occur. Long-term adjustment consists of fluvial process that occur over many rainy seasons and contribute to fluctuation of bed elevation of a river or creek. Other scour types include local scour, bend scour, low-flow incisement, and bedform formation.

5.2 Summary of Fluvial Analyses

The fluvial study analyzed the individual degradational components of eight subreaches of Castaic Creek. The locations of each subreach are shown in Figure 5-1. The relevant subreaches and their results are summarized below.

Subreach SRA1: SAM numerical calculations predict 2.4 feet of degradation in this reach, while long-term aggradation is expected based on the analysis of SRA2. No long-term data is presently available for SRA1. The expected aggradation is a result of the bed recovering from gravel mining. Aggradation is expected to be approximately 0.7 feet. Other scour is dominated in this subreach by scouring at the Interstate 5 Bridge and Old Road Bridge piers. Toe-down and freeboard calculations on the outside of the curve of the reach may be impacted by the bend in this portion of the Creek. Aggradation is set to the Los Angeles County Flood Control District Design Manual (LACFCDDM) depth of 2.5 feet for most sections because the total aggradation predicted by LACFCDDM is greater than that predicted by Los Angeles County Department of Public Works Hydrology and Sedimentation Manual (LACH&SM).

Subreach SRA2: SAM calculations estimate degradation of 1.5 feet, and long-term analysis has shown aggradation of 0.7 feet as the bed recovers from historic gravel mining. Some local bend scour can be found in this subreach. When it is present, bend scour will dominate the total toe-down value. Aggradation is set to the LACFCDDM depth of 2.5 feet for all sections because the total aggradation predicted by LACFCDDM is greater than that predicted by LACH&SM.

Subreach SRA3: SAM estimates 0.3 feet of aggradation in this reach. Long-term historic analysis predicts aggradation of 0.6 feet. Section 8050 in this subreach shows approximately no change in cross-section between 2004 and 2005 suggesting armoring. The presence of historical gravel mining is prominent in 8050 whereby a deep, wide gravel pit is evident in the historic data, and the 1999 section also appears to be recovering from the mining activity. Local scour is expected to be significant in this reach because of the presence of a major bend in the Creek's path. Aggradation is set to the LACFCDDM depth of 2.5 feet for all sections because the total aggradation predicted by LACFCDDM is greater than that predicted by LACH&SM.

Subreach SRA4: SAM numerical calculations predict 1.9 feet of aggradation in this reach, while long-term degradation is expected to be 1.3 feet. Other scour is dominated in this subreach by scouring at Commerce Center Bridge piers. Outside of the curve of the reach will also be impacted by the bend in this portion of

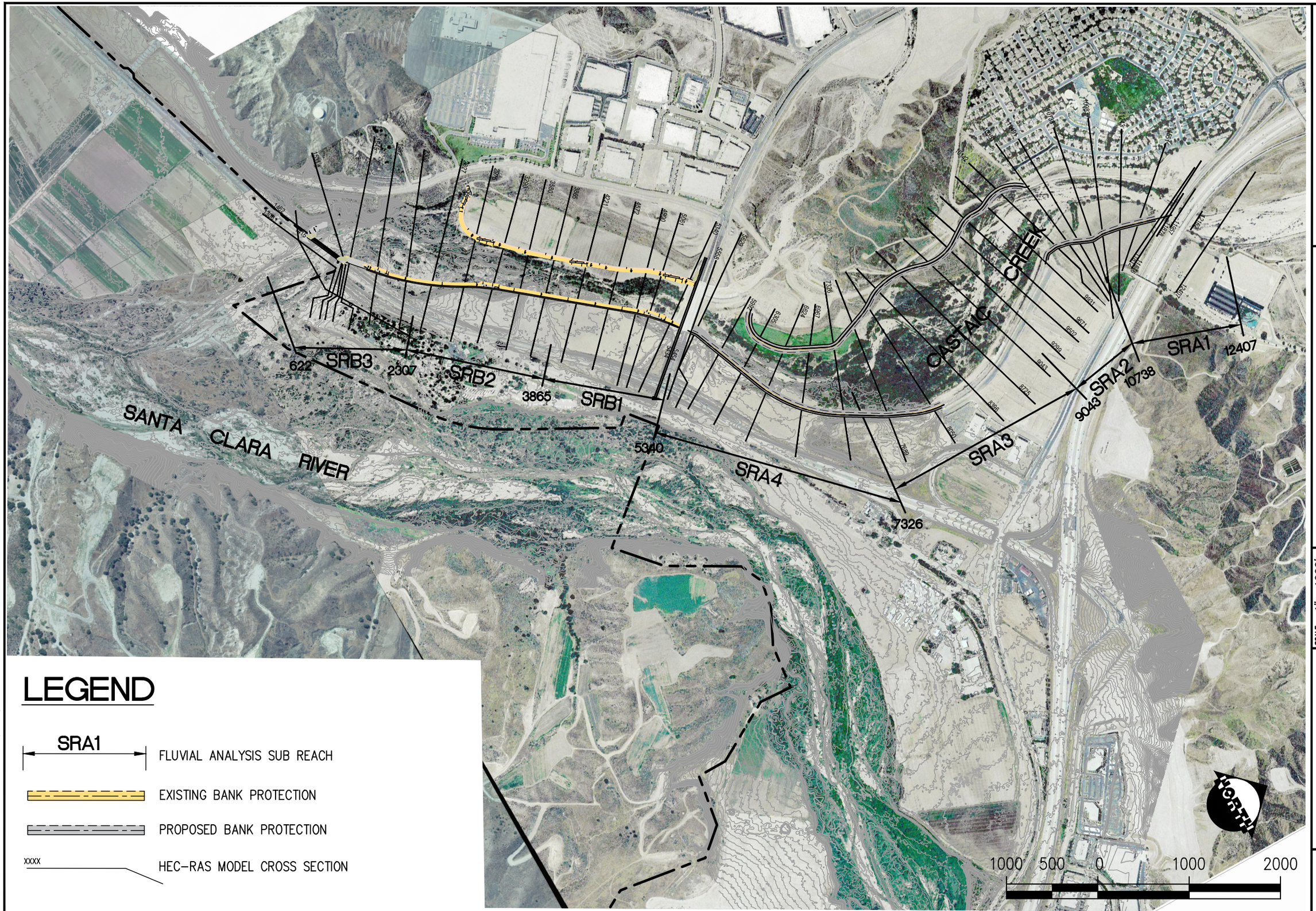
the Creek. The small change in average bed height between 2004 and 2005 suggests the bed is at or approaching the armoring depth below which no additional degradation will occur without a change in sediment inflow characteristics or a change in hydrology. Aggradation in this subreach exceeds three feet at every section and the large general adjustment dominates the components. Hasley Creek confluences in this subreach. The result of the confluence is an increase in discharge. Additionally, some sediment delivery from the Hasley Canyon Creek watershed may occur. This may explain some downstream aggradation observed in SRB3.

Subreach SRB1: SAM calculations estimate degradation of 3.3 feet, and long-term analysis has shown degradation of 2.1 feet. Minor amounts of local scour can be found in most of this subreach as most of it is quite straight. Aggradation is set to the LACFCDDM depth of 2.5 feet for most sections because the total aggradation predicted by LACFCDDM is greater than that predicted by LACH&SM.

Subreach SRB2: SAM estimates degradation of 1.0 feet of degradation in this reach. Long-term historic analysis predicts degradation of 2.7 and 0.8 feet in sections 2975 and 2627, respectively. Section 2975 considers agricultural fill, while 2627 does not. Historic sections show continuous degradation since the construction of the Dam. The thalweg depths in both 1999 and 2004 are lower than in 2005 despite the continued degradation into 2005. Little local scour can be found in this subreach as it is quite straight. Aggradation is set to the LACFCDDM depth of 2.5 feet for all sections because the total aggradation predicted by LACFCDDM is greater than that predicted by LACH&SM.

5.3 Proposed Soil Cement Bank Protection Sediment Transport Considerations

The proposed soil cement bank protection is intended to provide long-term erosion protection from lateral migration of the bank and flood protection for the adjacent proposed development areas. The proposed bank protection was designed based on current LA County Hydraulic Design Criteria. The soil Cement bank protection was designed for flood protection up to the Q_{cap} (31,100 cfs) flood event. All sediment transport considerations were used in the design of the proposed soil cement bank protection to determine the top and toe of the bank.



LEGEND

- SRA1 — FLUVIAL ANALYSIS SUB REACH
- EXISTING BANK PROTECTION
- PROPOSED BANK PROTECTION
- XXXX — HEC-RAS MODEL CROSS SECTION

TITLE: HEC-RAS CROSS SECTION LOCATION MAP

JOB: CASTAIC CREEK FLUVIAL STUDY — LOS ANGELES COUNTY CA

SCALE	1"= 1000'
DESIGNED	EMR
DRAWN	DP
CHECKED	J.C.
DATE	02/27/23
JOB NO.	8065E

PACE
PACIFIC ADVANCED CIVIL ENGINEERING
17520 NEWHOPE STREET, SUITE 200
FOUNTAIN VALLEY, CA 92708-7299
PH (714) 481-7300 FAX (714) 481-7299

FIGURE 5-1

P:\A535\Engineering\A535-72_Castaic Creek ML\exhibits\A535_73-Figure-4-1_8197 Castaic Creek-Fluvial Study Worksmap.dwg - Tab: Layout1 By: erandig on Apr. 17, 2023 at 10:26 am
Xrefs: 7841E-Piono_bridge.dwg; 7841-PSIRV.dwg; P-bank protection_REV.dwg; 7142-Lining.dwg; 7142-Flood.Resource.dwg; 7142-river-sections1.dwg; NR-cdfg_2004.dwg; 7104-Santa Clara Reach Analysis.dwg; 7904-E-LACO Floodway map (12-29-04).dwg; 8197-3660-EXH-TBLK.dwg; 8197-HEC-SECS.dwg; 7142-Lining Sections.dwg; 7142-Lining
Dimscale = 1; LTscale = 0.375; PSltscale = 1; Acad Ver. = 23.0s (LMS Tech); Vsetclin = 1

6 Proposed Hydraulic Analysis and Floodplain/ Floodway Mapping

The proposed condition HEC-RAS model uses the updated existing condition model as a base. Channel geometry is revised to include the new bank alignments for the proposed soil cement bank protection.

6.1 Proposed Capital Floodplain

The proposed condition floodplain analysis was completed to establish the floodplain limits with the proposed soil cement bank protection included in the cross section geometry. The analysis includes the proposed bank protection, 2013 topography, updated Q_{cap} discharge rates, and Manning's value of 0.06. Table 6-1 provides a summary of the proposed condition hydraulic analysis. Refer to Figure 6-1 for capital floodplain mapping.

6.2 Proposed Capital Floodway

The proposed condition floodway analysis was completed with the same methodology used in the updated existing condition analysis. First, the updated existing condition floodplain was analyzed and all sections with velocity greater than 10 ft/sec were set to have no encroachment. Next, HEC-RAS encroachment methods 4 and 1 were used to generate a floodway. HEC-RAS encroachment method 4 computes encroachment stations to achieve a maximum of a 1.0-foot rise with an equal loss of conveyance on the left and right banks. Then, Method 1 is then used to refine the encroachment stations, where the user specifies the locations of the encroachment stations at each individual cross section. Table 6-1 below provides a summary of the proposed floodplain and floodway hydraulic analysis.

Table 6-1: Proposed Conditions Floodplain and Floodway Comparison, Q_{cap}= 26,400 cfs/ 31,200 cfs (n=0.06)

HEC-RAS River Station	Profile	W.S.E (ft)	FP - FW Delta W.S.E. (ft)	Top Width (ft)	Sta W.S.E. Left (ft)	Sta W.S.E. Right (ft)	Enc. Sta. Left (ft)	Enc. Sta. Right (ft)
12350	FP	1041.1		1171.5	32.4	1224.2		
12350	FW	1041.1	**0.0**	316.6	775.0	1091.6	775.0	1095.0
12146	FP	1039.9		259.2	162.7	1082.0		
12146	FW	1039.9	**0.0**	259.2	664.7	924.0	663.8	925.4
12059.65 BR U	FP	1039.6		247.0	665.4	923.3		
12059.65 BR U	FW	1039.7	**0.0**	247.1	664.7	924.0	663.8	925.4
12059.65 BR D	FP	1037.5		235.8	688.0	926.8		
12059.65 BR D	FW	1037.6	**0.1**	235.8	687.9	926.8	0	0
11957.32	*FP*	*1037.5*		*238.8*	*688.0*	*926.8*		
11957.32	*FW*	*1037.6*	***0.1***	*238.8*	*687.9*	*926.8*	*0*	*0*
11923	FP	1037.5		241.0	688.7	929.7		
11923	FW	1037.6	**0.1**	240.6	688.9	929.5	688.9	929.5
11917.82 BR U	FP	1036.0		207.0	689.1	929.1		
11917.82 BR U	FW	1036.1	**0.1**	207.1	688.9	929.5	688.9	929.5
11917.82 BR D	FP	1035.9		235.7	674.8	919.8		
11917.82 BR D	FW	1036.0	**0.1**	235.7	658.8	928.3	658.8	928.3
11878.32	FP	1036.0		269.5	658.8	928.3		
11878.32	FW	1036.1	**0.1**	269.6	658.8	928.3	658.8	928.3
11845.64	FP	1036.0		324.9	657.4	982.4		
11845.64	FW	1036.1	**0.1**	325.6	657.1	982.7	656.3	982.7
11811.76	*FP*	*1035.2*		*346.2*	*628.4*	*1010.4*		
11811.76	*FW*	*1035.4*	***0.2***	*402.5*	*626.0*	*1081.5*	*0*	*0*
11551.18	FP	1033.3		579.6	556.8	1136.3		
11551.18	FW	1033.8	**0.5**	408.0	621.0	1029.0	621.0	1029.0
11242.98	FP	1031.2		614.5	808.2	1422.7		

HEC-RAS River Station	Profile	W.S.E (ft)	FP - FW Delta W.S.E. (ft)	Top Width (ft)	Sta W.S.E. Left (ft)	Sta W.S.E. Right (ft)	Enc. Sta. Left (ft)	Enc. Sta. Right (ft)
11242.98	FW	1031.6	**0.4**	431.0	923.0	1354.0	923.0	1354.0
10982.86	FP	1028.9		696.4	937.1	1633.6		
10982.86	FW	1029.3	**0.5**	523.0	1066.0	1589.0	1066.0	1589.0
10738.26	FP	1026.5		858.3	502.6	1360.9		
10738.26	FW	1026.9	**0.4**	560.0	675.0	1235.0	675.0	1235.0
10490.82	FP	1023.9		817.0	649.0	1477.6		
10490.82	FW	1024.2	**0.3**	560.0	825.0	1385.0	825.0	1385.0
10351.28	FP	1021.4		760.4	789.1	1549.5		
10351.28	FW	1021.8	**0.3**	530.0	955.0	1485.0	955.0	1485.0
10141.82	FP	1018.9		824.7	824.2	1648.9		
10141.82	FW	1019.7	**0.7**	635.0	890.0	1525.0	890.0	1525.0
9931.16	FP	1017.3		946.2	811.7	1757.9		
9931.16	FW	1018.0	**0.7**	700.0	900.0	1600.0	900.0	1600.0
9670.57	FP	1014.1		1024.8	803.9	1828.7		
9670.57	FW	1014.8	**0.8**	780.0	920.0	1700.0	920.0	1700.0
9501.81	FP	1012.4		1016.1	747.2	1763.3		
9501.81	FW	1013.1	**0.7**	785.0	855.0	1640.0	855.0	1640.0
9298.99	FP	1010.9		1029.2	705.7	1734.9		
9298.99	FW	1011.6	**0.7**	860.0	810.0	1670.0	810.0	1670.0
9042.81	FP	1009.0		1142.9	654.2	1797.1		
9042.81	FW	1009.9	**0.8**	910.8	799.2	1710.0	799.2	1710.0
8724.84	FP	1006.1		1388.3	663.8	2052.1		
8724.84	FW	1007.1	**1.0**	1018.4	858.7	1877.1	858.7	1877.1
8396.13	FP	1003.5		1436.2	539.9	1976.1		
8396.13	FW	1004.3	**0.8**	940.0	785.0	1725.0	785.0	1725.0
8049.79	FP	1002.6		1289.1	473.6	1762.7		
8049.79	FW	1003.4	**0.7**	930.0	690.0	1620.0	690.0	1620.0
7688.71	FP	1002.2		1034.6	555.3	1589.8		
7688.71	FW	1003.0	**0.7**	835.0	645.0	1480.0	645.0	1480.0
7326.46	FP	1001.6		731.3	518.7	1250.0		
7326.46	FW	1002.4	**0.8**	529.0	573.0	1102.0	573.0	1102.0
6966.68	FP	1001.0		624.3	554.9	1179.2		
6966.68	FW	1001.7	**0.7**	463.0	624.0	1087.0	624.0	1087.0
6623.5	FP	999.8		461.9	615.5	1077.3		
6623.5	FW	1000.4	**0.6**	305.0	673.0	978.0	673.0	978.0
6304.52	FP	998.3		362.1	675.3	1037.4		
6304.52	FW	998.8	**0.5**	246.8	720.0	966.8	720.0	966.8
6087.88	FP	997.6		497.0	711.3	1208.3		
6087.88	FW	998.3	**0.7**	341.5	730.0	1071.5	730.0	1071.5
5781.35	FP	995.9		518.2	694.9	1213.1		
5781.35	FW	996.4	**0.5**	359.0	715.0	1074.0	715.0	1074.0
5629.45	FP	994.8		456.4	742.5	1255.8		
5629.45	FW	995.5	**0.7**	324.6	740.4	1065.0	740.4	1065.0
5557.68	FP	994.4		508.0	140.2	690.8		
5557.68	FW	994.9	**0.5**	320.0	200.0	520.0	200.0	520.0
5500 BR U	FP	994.1		475.5	140.2	689.3		
5500 BR U	FW	994.4	**0.4**	296.0	200.0	520.0	200.0	520.0
5500 BR D	FP	993.6		468.9	204.3	724.3		
5500 BR D	FW	994.1	**0.5**	380.4	207.0	635.0	207.0	635.0
5453.98	FP	993.7		521.4	203.1	724.5		
5453.98	FW	994.2	**0.6**	428.0	207.0	635.0	207.0	635.0
5434.68	FP	993.6		520.0	800.3	1320.2		

HEC-RAS River Station	Profile	W.S.E (ft)	FP - FW Delta W.S.E. (ft)	Top Width (ft)	Sta W.S.E. Left (ft)	Sta W.S.E. Right (ft)	Enc. Sta. Left (ft)	Enc. Sta. Right (ft)
5434.68	FW	994.2	**0.6**	452.2	820.0	1272.2	820.0	1272.2

Note:
Bridge Locations: I-5 Bridge at RS 12059.65, Old Rd. Bridge at RS 11917.82, Commerce Ctr. Dr. Bridge at RS 5500
Italicized sections indicate Velocity is greater than 10 ft/s, so there is no encroachment.

6.2.1 Tie-In Locations

The proposed capital floodplain and floodways are tied into the effective ML map in accordance with standard top width tie-in requirements. Proposed top widths must tie in within 5% tolerance of the effective top width. The tie-in cross sections, top widths, and tolerance are detailed in Table 6-2.

Table 6-2: Top width Tie-In Locations

Floodplain			
Cross Section	**ML Effective Top Width (ft)**	**Proposed Top Width (ft)**	**Top Width Tolerance (%)**
12146	260.0	259.2	-0.3
5453.98	501.3	521.4	3.8
Floodway			
Cross Section	**ML Effective Top Width (ft)**	**Proposed Top Width (ft)**	**Top Width Tolerance (%)**
12146	255.8	259.2	1.3
5453.98	441.1	428.0	-3.1

6.2.2 *Updated Existing Condition and Proposed Condition Comparison*

Table 6-3 and Table 6-4 were prepared to show the comparison between existing and proposed floodplain and floodway hydraulic analysis, respectively. The installation of the proposed soil cement bank protection causes a maximum increase in water surface elevation of 1.8 ft and an increase in velocity of a maximum of 3.4 ft/s as shown in Table 6-3. Refer to Figure 6-1 for capital floodway mapping. Figure 6-2 and Figure 6-3 which are the revised ML Map No.'s 335 ML-1 and 2 were created to replace the existing LA County adopted ML Maps.

Table 6-3: Updated Existing and Proposed Conditions Floodplain Water Surface Elevations and Velocities Comparison, Q_{cap}= 26,400 cfs/ 31,100 cfs/ 31,200 cfs (n=0.06)

HEC-RAS River Station	Updated Existing W.S.E. (ft)	Proposed W.S.E (ft)	Delta (ft)	Updated Existing Velocity (ft/s)	Proposed Velocity (ft/s)	Delta (ft/s)
12350	1041.4	1041.1	-0.3	6.6	6.9	0.2
12146	**1040.3**	**1039.9**	**-0.4**	**8.2**	**8.5**	**0.2**
12059.65	Golden State Freeway, I-5					
11957.32	1038.0	1037.5	-0.5	9.9	10.2	0.3
11923	1038.0	1037.5	-0.5	9.7	10.1	0.3
11917.82	The Old Road Bridge					
11878.32	1035.5	1036.0	0.5	10.5	9.9	-0.6
11845.64	1035.4	1036.0	0.6	10.0	9.0	-0.9
11811.76	1033.3	1035.2	1.8	13.3	10.6	-2.8
11551.18	1031.5	1033.3	1.8	7.7	8.5	0.8
11242.98	1029.4	1031.2	1.8	7.1	8.1	0.9
10982.86	1027.8	1028.9	1.0	6.8	9.2	2.4
10738.26	1026.2	1026.5	0.3	6.8	8.6	1.9
10490.82	1023.8	1023.9	0.1	7.2	7.4	0.2
10351.28	1021.6	1021.4	-0.1	8.1	8.4	0.3
10141.82	1019.1	1018.9	-0.2	6.9	6.7	-0.1
9931.16	1017.2	1017.3	0.1	6.2	5.8	-0.4
9670.57	1015.1	1014.1	-1.1	5.7	7.5	1.8
9501.81	1013.8	1012.4	-1.4	6.2	5.7	-0.5
9298.99	1011.8	1010.9	-0.9	7.6	5.7	-2.0
9042.81	1009.3	1009.0	-0.3	6.6	5.7	-0.9
8724.84	1006.3	1006.1	-0.2	5.8	5.7	-0.1
8396.13	1003.3	1003.5	0.2	5.1	4.6	-0.4
8049.79	1002.0	1002.6	0.6	4.0	3.5	-0.5
7688.71	1001.4	1002.2	0.8	3.5	3.2	-0.3
7326.46	1000.2	1001.6	1.4	5.1	4.2	-0.9
6966.68	999.2	1001.0	1.8	4.0	4.4	0.5
6623.5	998.0	999.8	1.8	5.0	6.3	1.3
6304.52	997.0	998.3	1.3	4.4	7.5	3.0
6087.88	996.6	997.6	1.0	4.4	5.7	1.3
5781.35	996.0	995.9	-0.1	5.4	8.8	3.4
5629.45	995.3	994.8	-0.5	6.7	8.7	2.1
5557.68	994.6	994.4	-0.2	7.6	7.8	0.2
5500	Commerce Center Drive Bridge					
5453.98	**993.8**	**993.7**	**-0.1**	**6.5**	**6.6**	**0.1**
5434.68	993.7	993.6	-0.1	6.3	6.4	0.1

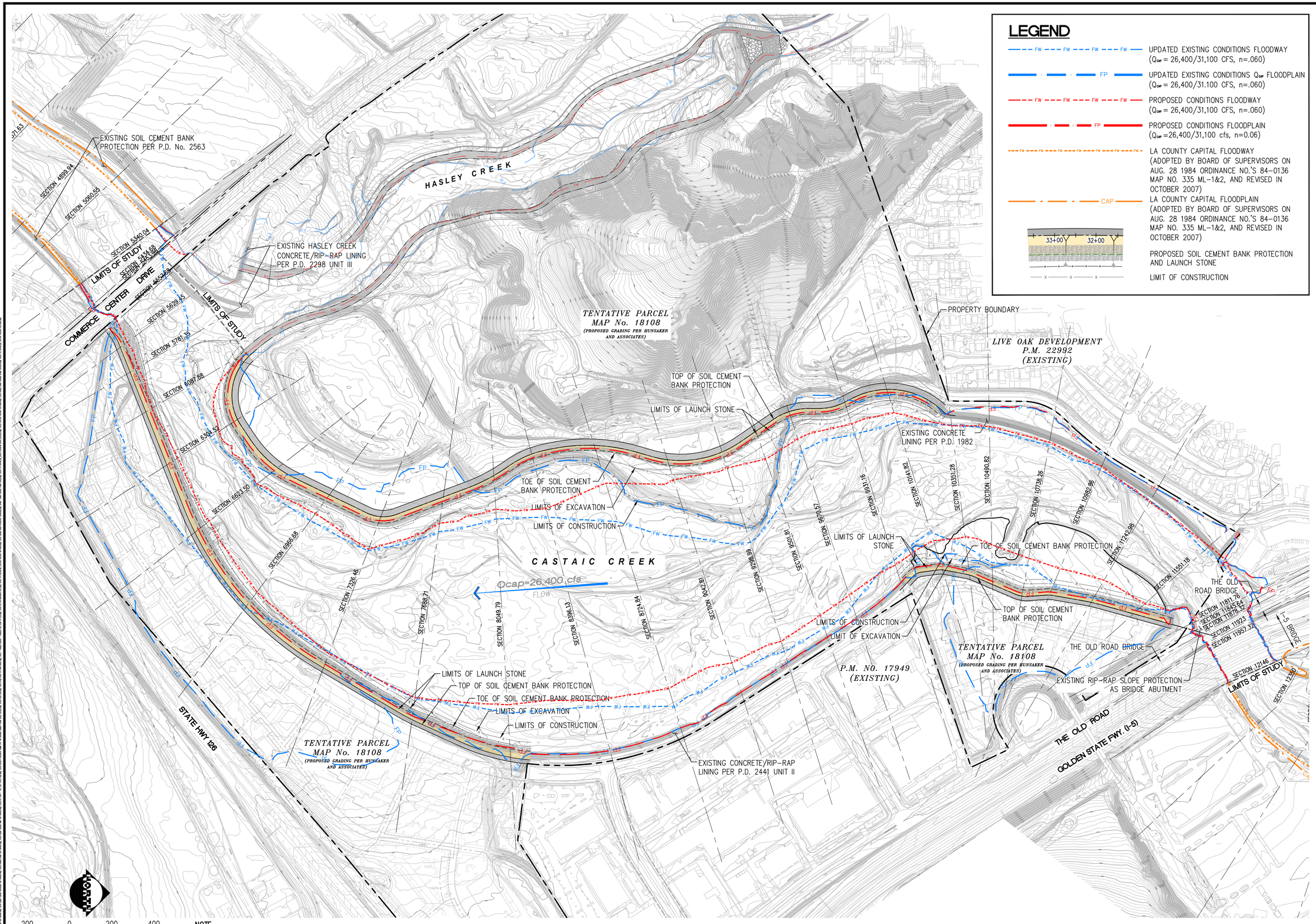
Note:
Bolded cross sections indicate tie-in locations where the proposed condition top width is within 5% of the effective ML water surface.

Table 6-4 shows a comparison between the updated existing floodway and proposed condition floodway.

Table 6-4: Updated Existing and Proposed Conditions Floodway Water Surface Elevation and Top Width Comparison, Q_{cap}= 26,400 cfs/ 31,100 cfs/ 31,200 cfs (n=0.06)

HEC-RAS River Station	Updated Existing W.S.E (ft)	Proposed W.S.E. (ft)	W.S.E. Delta (ft)	Updated Existing Top width (ft)	Proposed Top width (ft)	Top width Delta (ft)
12350	1041.4	1041.1	-0.3	320.0	316.6	-3.4
12146	**1040.3**	**1039.9**	**-0.4**	**261.6**	**259.2**	**-2.4**
12059.65 BR U	1040.0	1039.7	-0.4	231.0	247.1	16.1
12059.65 BR D	1038.1	1037.6	-0.5	234.0	235.8	1.8
11957.32	1038.1	1037.6	-0.5	234.0	238.8	4.8
11923	1038.0	1037.6	-0.5	234.0	240.6	6.6
11917.82 BR U	1036.0	1036.1	0.2	201.0	207.1	6.1
11917.82 BR D	1035.6	1036.0	0.4	235.7	235.7	0.0
11878.32	1035.6	1036.1	0.5	266.6	269.6	3.0
11845.64	1035.5	1036.1	0.6	302.0	325.6	23.6
11811.76	1034.2	1035.4	1.2	301.7	402.5	100.8
11551.18	1032.1	1033.8	1.7	419.0	408.0	-11.0
11242.98	1030.2	1031.6	1.4	541.0	431.0	-110.0
10982.86	1028.8	1029.3	0.5	601.0	523.0	-78.0
10738.26	1026.9	1026.9	0.1	582.0	560.0	-22.0
10490.82	1024.3	1024.2	-0.1	645.0	560.0	-85.0
10351.28	1022.3	1021.8	-0.5	585.0	530.0	-55.0
10141.82	1019.9	1019.7	-0.2	555.0	635.0	80.0
9931.16	1017.9	1018.0	0.1	630.0	700.0	70.0
9670.57	1016.1	1014.8	-1.2	776.0	780.0	4.0
9501.81	1014.8	1013.1	-1.7	618.0	785.0	167.0
9298.99	1012.7	1011.6	-1.0	549.0	860.0	311.0
9042.81	1010.2	1009.9	-0.3	677.0	910.8	233.8
8724.84	1007.3	1007.1	-0.2	919.0	1018.4	99.4
8396.13	1004.0	1004.3	0.3	931.0	940.0	9.0
8049.79	1002.4	1003.4	0.9	925.0	930.0	5.0
7688.71	1001.7	1003.0	1.3	800.0	835.0	35.0
7326.46	1000.7	1002.4	1.7	515.0	529.0	14.0
6966.68	999.7	1001.7	2.0	525.0	463.0	-62.0
6623.5	998.6	1000.4	1.8	425.0	305.0	-120.0
6304.52	997.9	998.8	1.0	400.0	246.8	-153.2
6087.88	997.4	998.3	0.9	390.0	341.5	-48.5
5781.35	996.7	996.4	-0.3	430.0	359.0	-71.1
5629.45	996.2	995.5	-0.7	430.0	324.6	-105.4
5557.68	995.2	994.9	-0.3	315.0	320.0	5.0
5500 BR U	994.7	994.4	-0.2	291.0	296.0	5.0
5500 BR D	994.3	994.1	-0.1	380.8	380.4	-0.4
5453.98	**994.3**	**994.2**	**-0.1**	**428.0**	**428.0**	**0.0**
5434.68	994.3	994.2	-0.1	452.2	452.2	0.1

Notes:
1. Bridge Locations: I-5 Bridge at RS 12059.65, Old Rd. Bridge at RS 11917.82, and Commerce Ctr. Dr. Bridge at RS 5500
2. Bolded cross sections indicate tie-in locations where the proposed condition top width is within 5% of the effective ML water surface.



NOTE
1. CONTOURS SHOWN ON THIS MAP IS BASED ON AERIAL TOPOGRAPHY DATED OCT. 2013

PLAN

NO	BY	DATE	REVISIONS	DATE	APP.

PRELIMINARY NOT FOR CONSTRUCTION
PROJECT ENGINEER — DATE

PREPARED BY
JOSE CRUZ
PROJECT ENGINEER
R.C.E. NO. # 72249
EXP. 6/30/24

DRAWN	SCALE	DATE
M.M.T.	1"=200'	2/22/23
DESIGNED		
E.M.R.		
CHECKED		
J.C.		

TITLE
PROPOSED CONDITION CAPITAL FLOODPLAN & FLOODWAY MAPPING

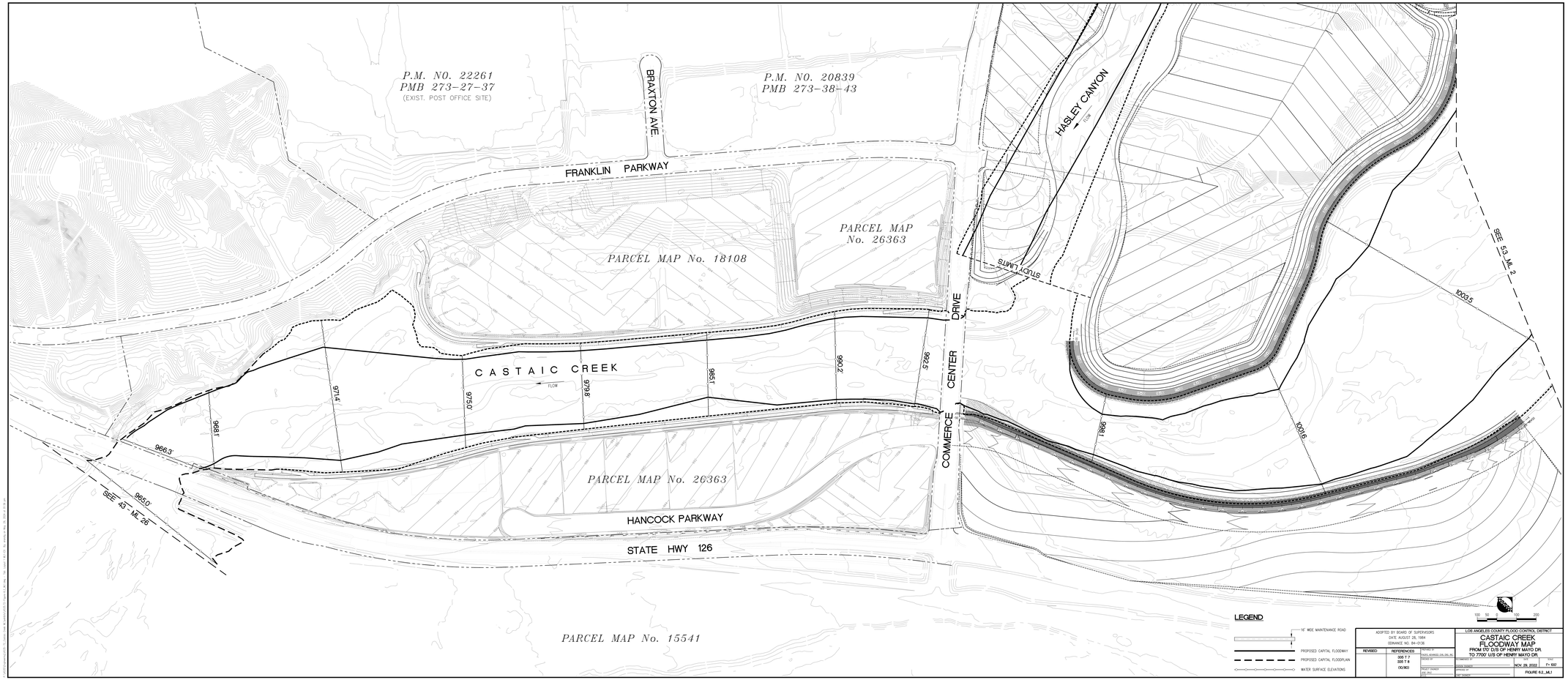
JOB
VALENCIA COMMERCE CENTER
CASTAIC CREEK FLOODPLAIN & FLOODWAY MAPPING FROM COMMERCE CENTER DRIVE TO I-5 FWY
LOS ANGELES COUNTY CA

PACE
Advanced Water Engineering
17520 Newhope Street, Suite 200 | Fountain Valley, CA 92708
P: (714) 481-7300 | www.pacewater.com

FIGURE
6-1

JOB NO. A535

Dimscale = 1; LTscale = 1; PSltscale = 1; ACAD Ver. = 23.0s (LMS Tech); Viewtdi = 1
\\pwdata01_svm\projects\A535\Engineering\A535-72_Castaic Creek ML\exhibits\A535-72-Figure-6-1.dwg - Tab: 24x36 - by mturner on 10/23/24 at 8:28:14 AM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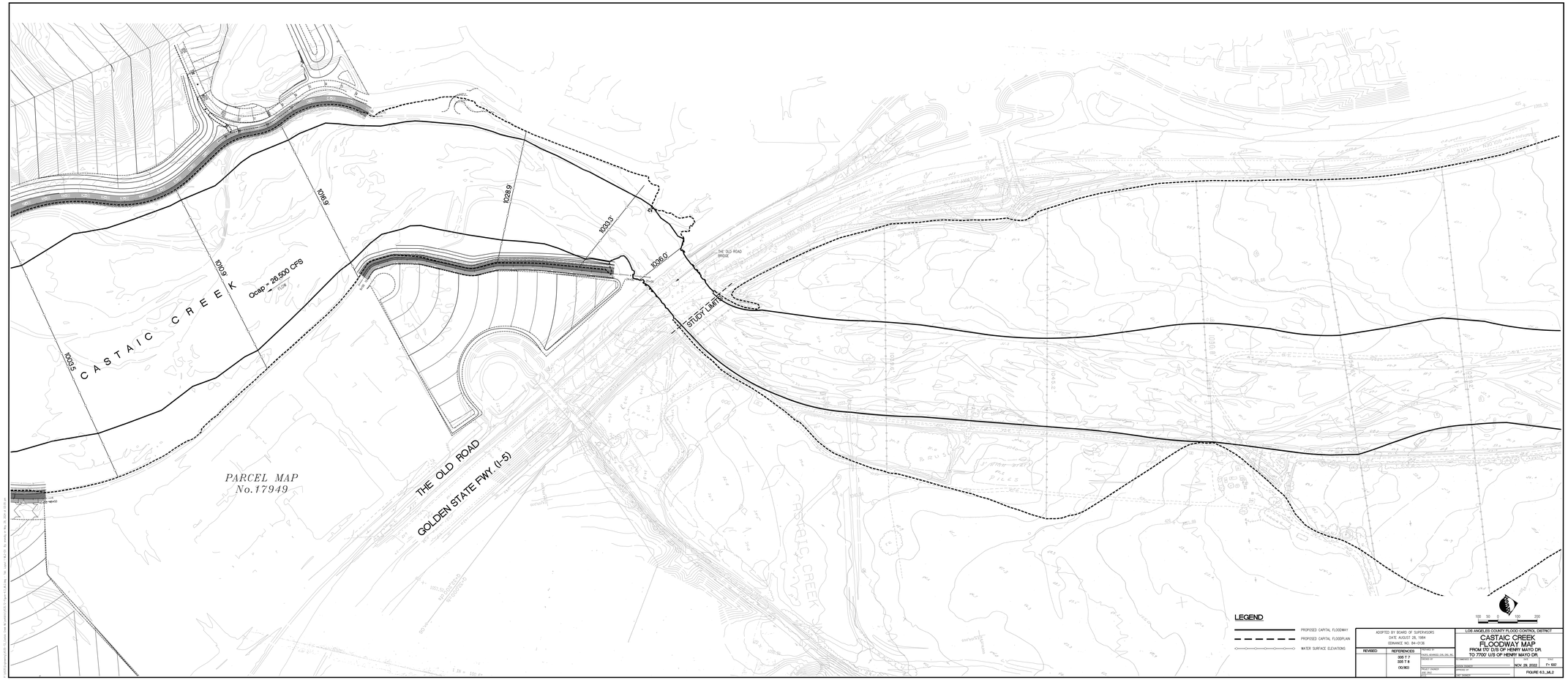
PMB 273-27-37
(EXIST. POST OFFICE SITE)
P.M. NO. 20839
PMB 273-38-43
BRAXTON AVE.
FRANKLIN PARKWAY
HASLEY CANYON
STUDY LIMITS
PARCEL MAP No. 18108
PARCEL MAP No. 26363
PARCEL MAP No. 26363
CASTAIC CREEK
FLOW
DRIVE
CENTER
COMMERCE
HANCOCK PARKWAY
STATE HWY 126
PARCEL MAP No. 15541
SEE 53 - ML 2
SEE 45 - ML 26
1003.5
1001.5
998.1
992.5
990.2
979.8
970.5
971.4
966.3
965.0
LEGEND
16' WIDE MAINTENANCE ROAD
PROPOSED CAPITAL FLOODWAY
PROPOSED CAPITAL FLOODPLAIN
WATER SURFACE ELEVATIONS
ADOPTED BY BOARD OF SUPERVISORS
DATE: AUGUST 28, 1984
ORDINANCE NO. 84-0136
REVISED
REFERENCES
335 7 7
335 7 8
00/803
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
CASTAIC CREEK
FLOODWAY MAP
FROM 170' D/S OF HENRY MAYO DR.
TO 7700' U/S OF HENRY MAYO DR.
NOV. 29, 2022
1" = 100'
FIGURE 6.2_ML1


CASTAIC CREEK
Qcap = 26,500 CFS
FLOW
1016.9'
1019.9'
1028.9'
1033.3'
1038.0'
1039.5
THE OLD ROAD BRIDGE
STUDY LIMITS
PARCEL MAP No.17949
THE OLD ROAD
GOLDEN STATE FWY. (I-5)
CASTAIC CREEK
LEGEND
PROPOSED CAPITAL FLOODWAY
PROPOSED CAPITAL FLOODPLAIN
WATER SURFACE ELEVATIONS
100 50 0 100 200
SCALE
ADOPTED BY BOARD OF SUPERVISORS
DATE: AUGUST 28, 1984
ORDINANCE NO. 84-0136
REVISED
REFERENCES
338 7 7
339 7 8
00/803
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
CASTAIC CREEK
FLOODWAY MAP
FROM 170' D/S OF HENRY MAYO DR.
TO 7700' U/S OF HENRY MAYO DR.
NOV. 29, 2022
1" = 100'
FIGURE 6.3_MI_2

7 Summary

Pacific Advanced Civil Engineering, Inc. (PACE) has been retained by FivePoint Communities to prepare a report for LA County Floodplain and Floodway Revision along lower Castaic Creek. This report proposes a revision to existing LA County Adopted Floodway Maps No.'s 335 ML-1and 2 for Castaic Creek between Commerce Center Drive to the Old Rd. / Interstate-5 Bridges. The purpose of this report is to show the following:

1. Existing LA County Adopted Floodway and Floodplain boundaries.
2. Updated existing hydraulic analysis based on current LACPW Q_{cap} hydrology and hydraulic design criteria.
3. Proposed conditions hydraulic analysis based on current LACPW Q_{cap} hydrology and hydraulic design criteria.
4. Methods utilized to generate the existing and proposed conditions floodway boundaries. PACE has created revised LA County ML Maps 335 ML-1 and 2 to replace the existing LA County Adopted ML Maps.

PACE proposes that LA County revise the current adopted capital floodplain and floodway Maps 335-ML-1 and 2 upon completion of Castaic Creek channel improvements. Upon LACPW staff review and approval of this document, the ML Map Revision shall be presented to the Los Angeles county Board of Supervisors for Acceptance of Revision.

PACE
Advanced Water Engineering

Appendix A – LACPW Capital Flood Flow Rates

Reach	Capital Flood Flow Rate (cfs)
A	24,100
B	25,300
C	25,400
D	25,600
E	26,200
F	26,300
G	26,400
H	31,100
I	31,200

N

A
B
C
D
E
F
G
H
I

QUAD: VALVERDE 1-H1-45
NEW HALL 1-H1-44
WHITAKER PEAK 1-H1-55

2,200 1,100 0 2,200 Feet

ATTACHMENT A

LEGEND

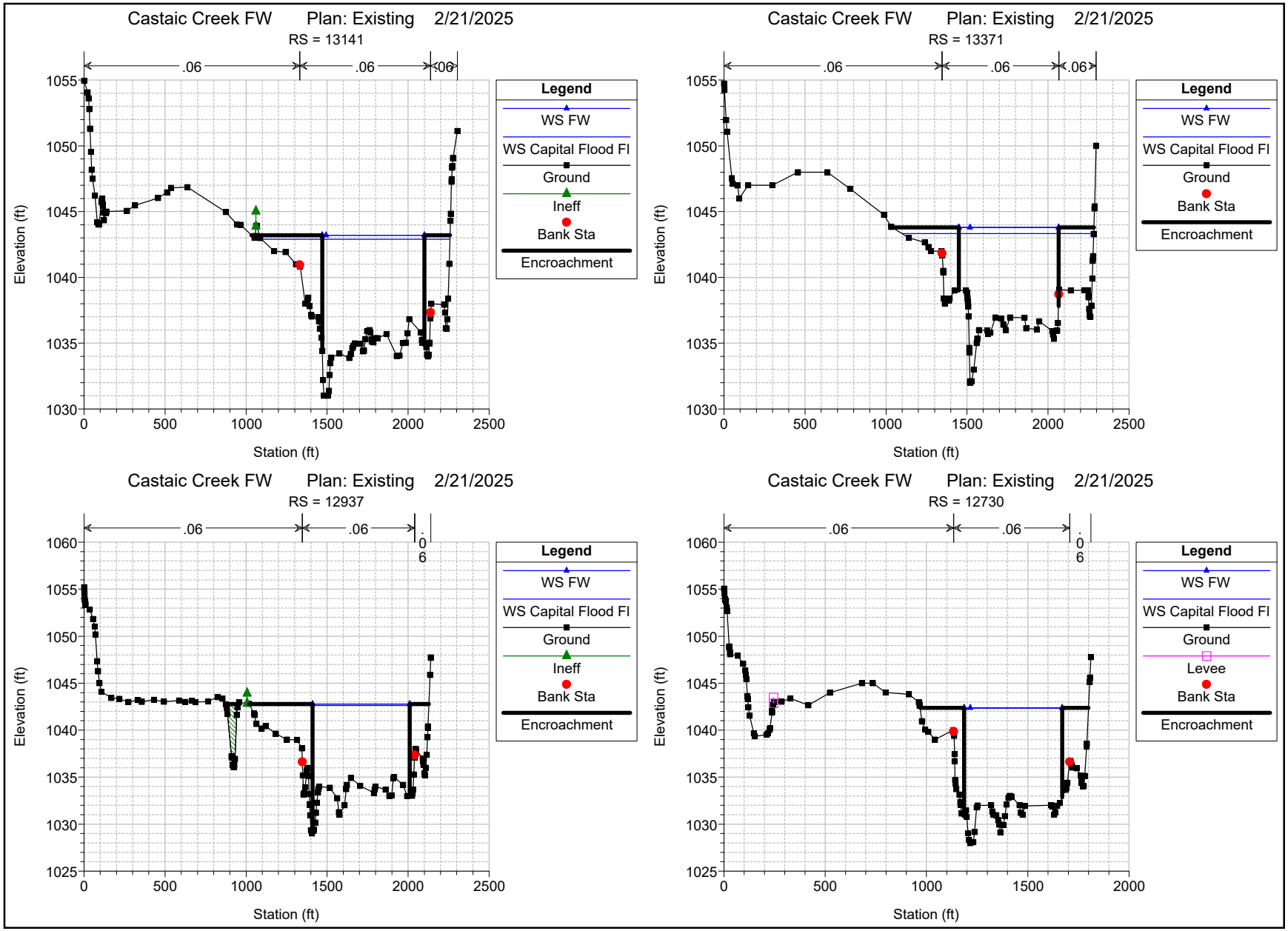
A — Reach

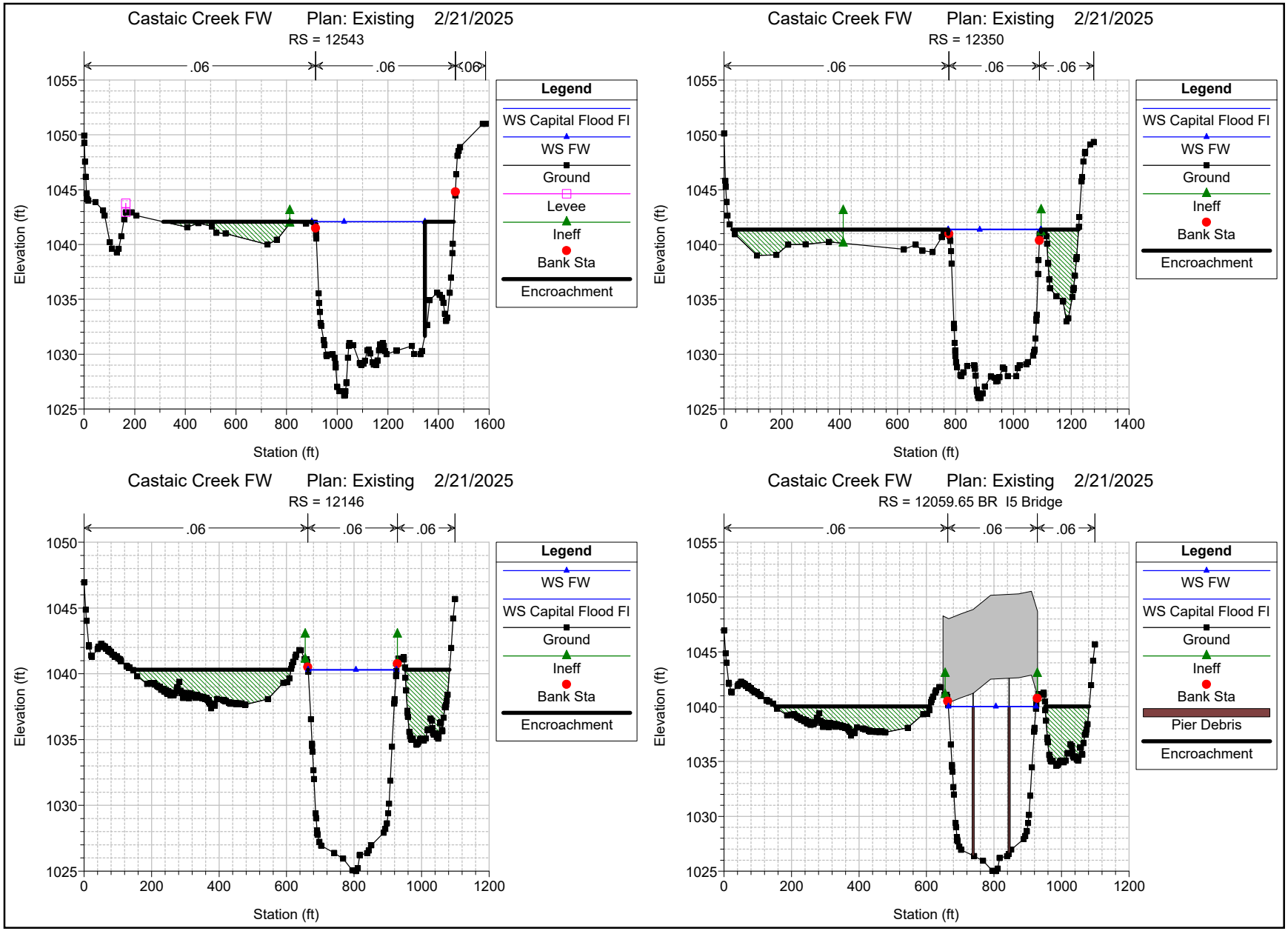
Natural Watercourse

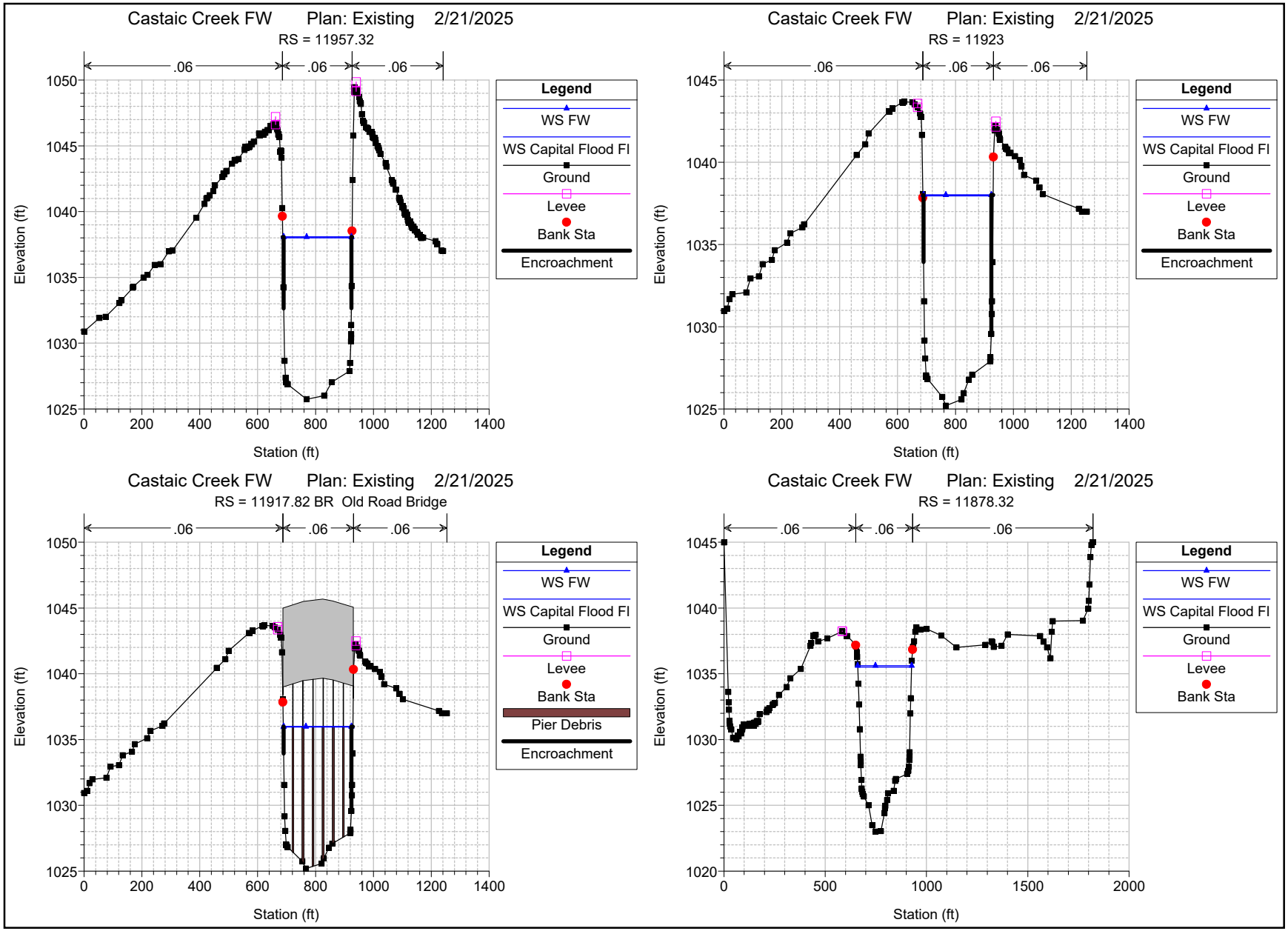
PREPARED BY SSL	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DATE 04/03/17	Lower Castaic Creek Capital Flood Flow Rates
SCALE 1" = 2200'	

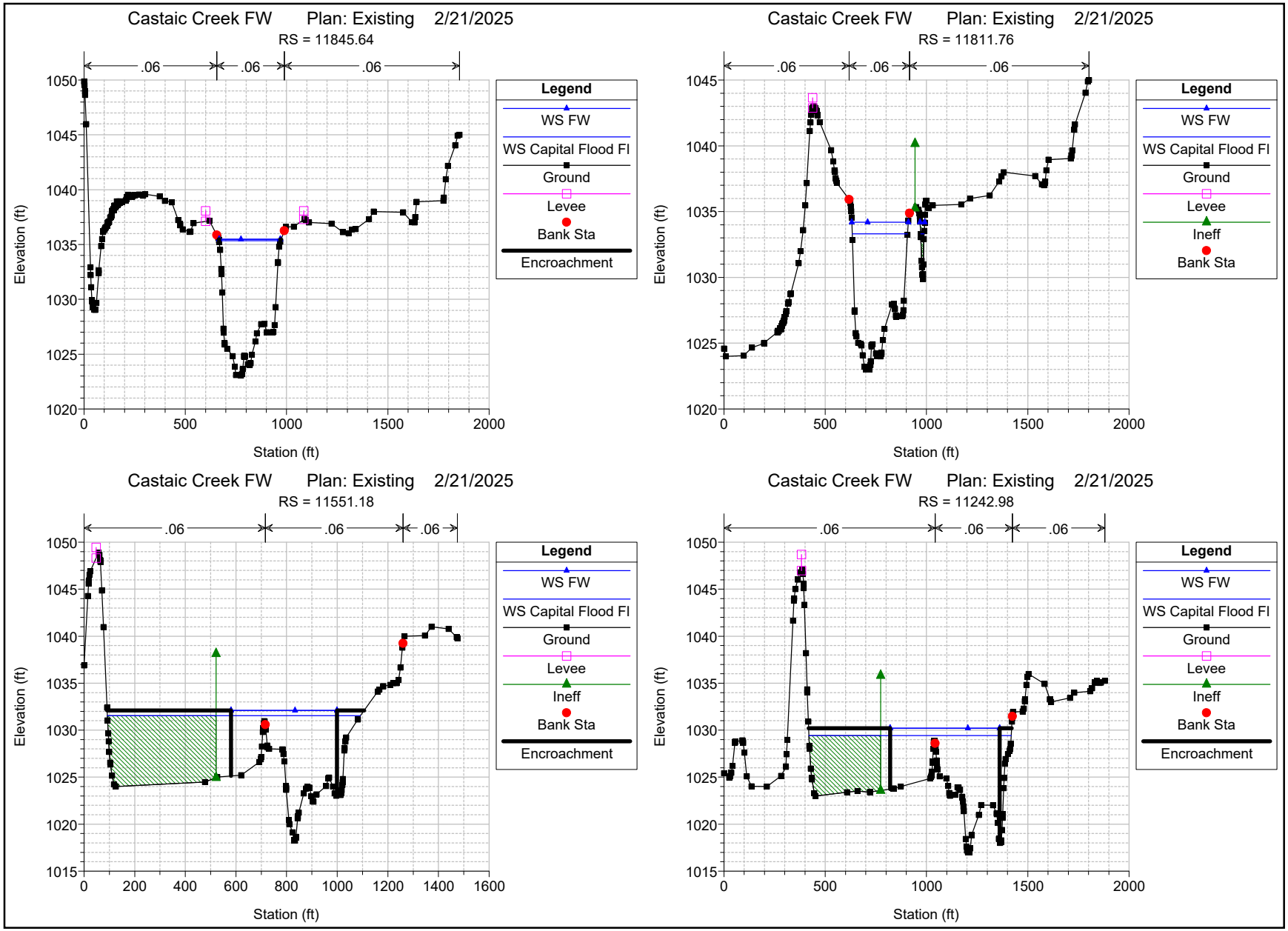
PACE
Advanced Water Engineering

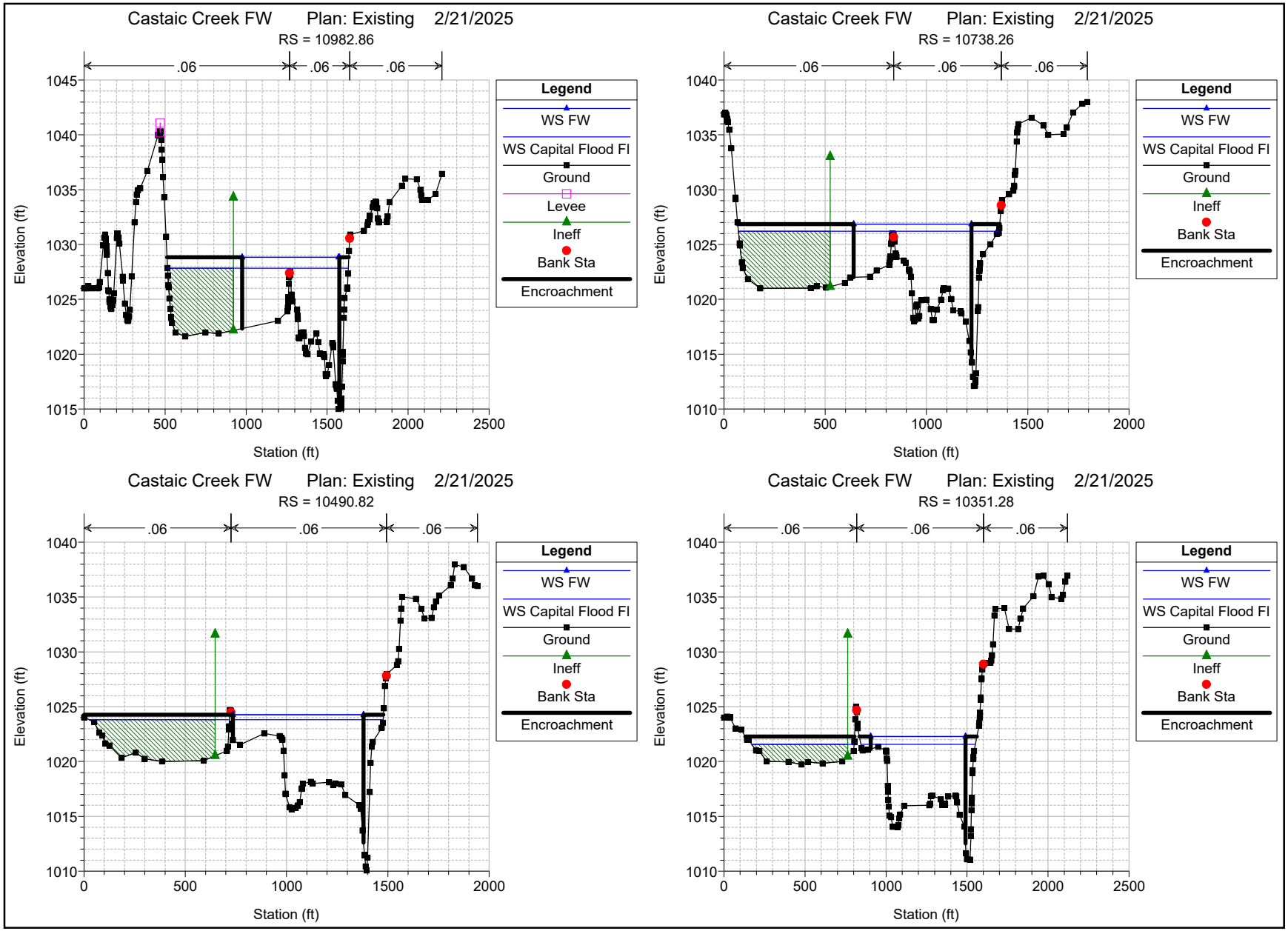
Appendix B – HEC-RAS Existing Condition Results

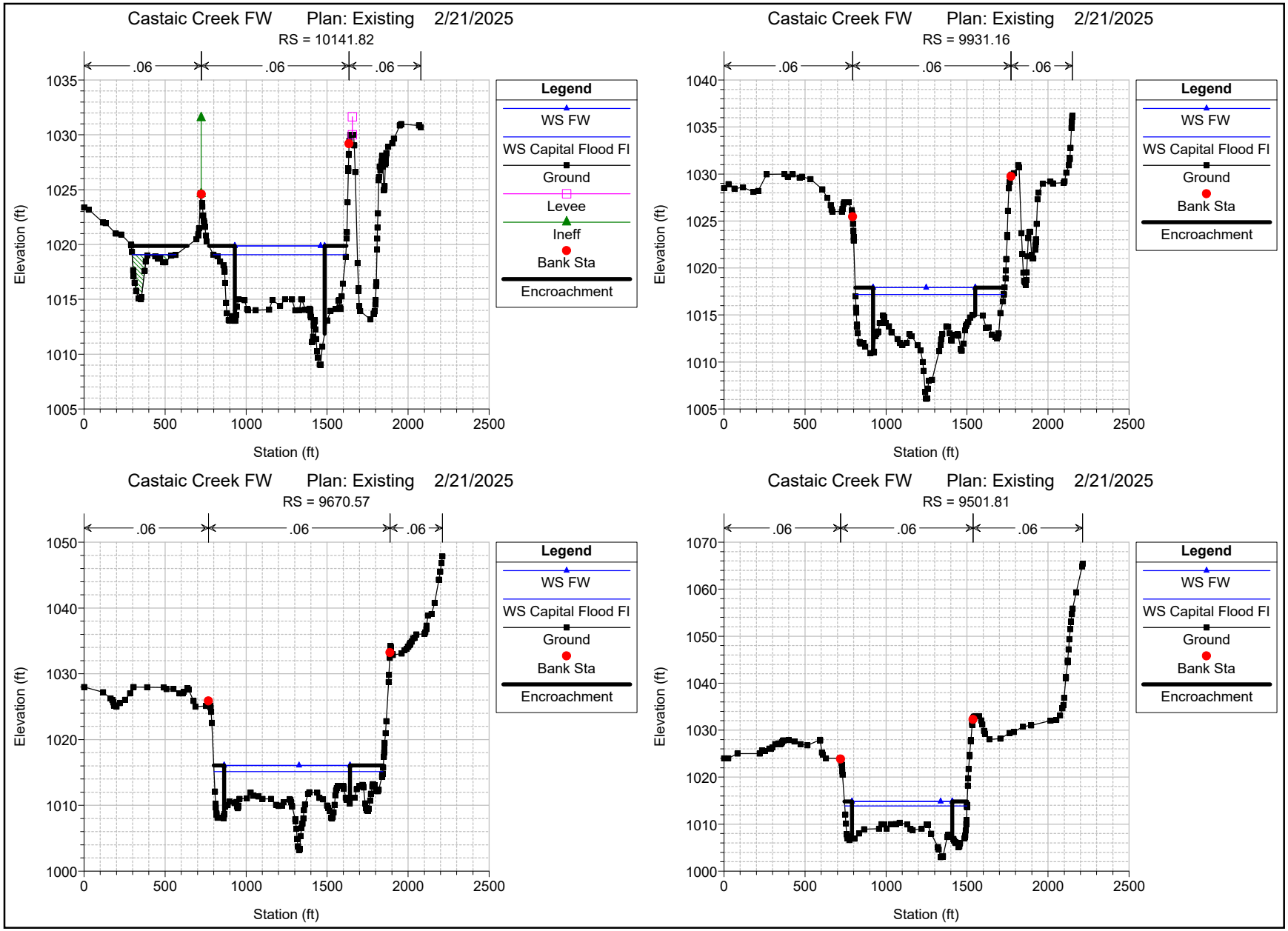

Castaic Creek FW Plan: Existing 2/21/2025
RS = 13141
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 13371
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 12937
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 12730
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Bank Sta
Encroachment

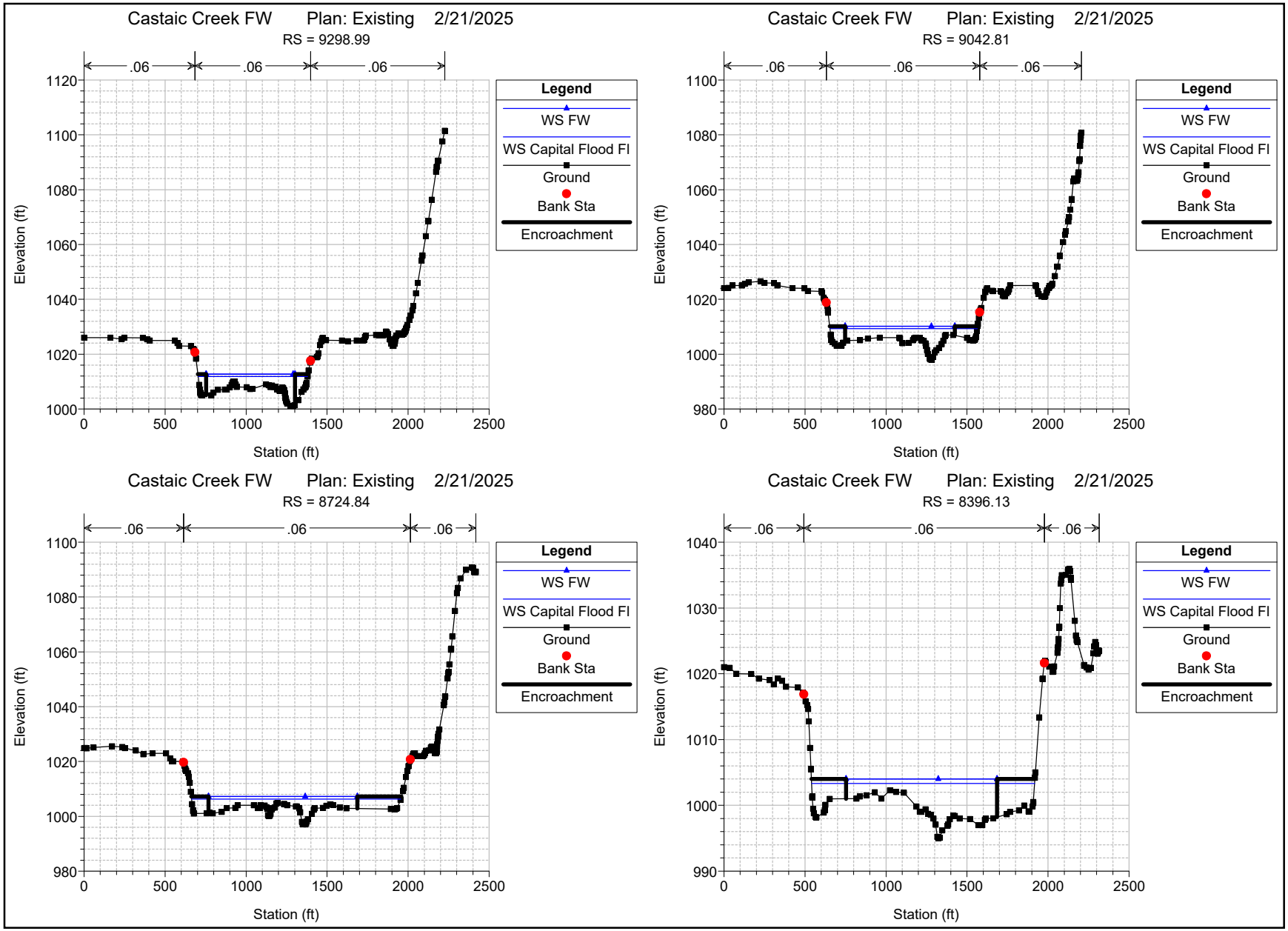

Castaic Creek FW Plan: Existing 2/21/2025
RS = 12543
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS Capital Flood Fl
WS FW
Ground
Levee
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 12350
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS Capital Flood Fl
WS FW
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 12146
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 12059.65 BR I5 Bridge
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Ineff
Bank Sta
Pier Debris
Encroachment


Castaic Creek FW Plan: Existing 2/21/2025
RS = 11957.32
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 11923
Castaic Creek FW Plan: Existing 2/21/2025
RS = 11917.82 BR Old Road Bridge
Pier Debris
Castaic Creek FW Plan: Existing 2/21/2025
RS = 11878.32


Castaic Creek FW Plan: Existing 2/21/2025
RS = 11845.64
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 11811.76
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Ineff
Bank Sta
Castaic Creek FW Plan: Existing 2/21/2025
RS = 11551.18
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 11242.98
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Ineff
Bank Sta
Encroachment


Castaic Creek FW Plan: Existing 2/21/2025
RS = 10982.86
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 10738.26
Castaic Creek FW Plan: Existing 2/21/2025
RS = 10490.82
Castaic Creek FW Plan: Existing 2/21/2025
RS = 10351.28


Castaic Creek FW Plan: Existing 2/21/2025
RS = 10141.82
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 9931.16
Castaic Creek FW Plan: Existing 2/21/2025
RS = 9670.57
Castaic Creek FW Plan: Existing 2/21/2025
RS = 9501.81


Castaic Creek FW Plan: Existing 2/21/2025
RS = 9298.99
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Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 9042.81
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 8724.84
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 8396.13
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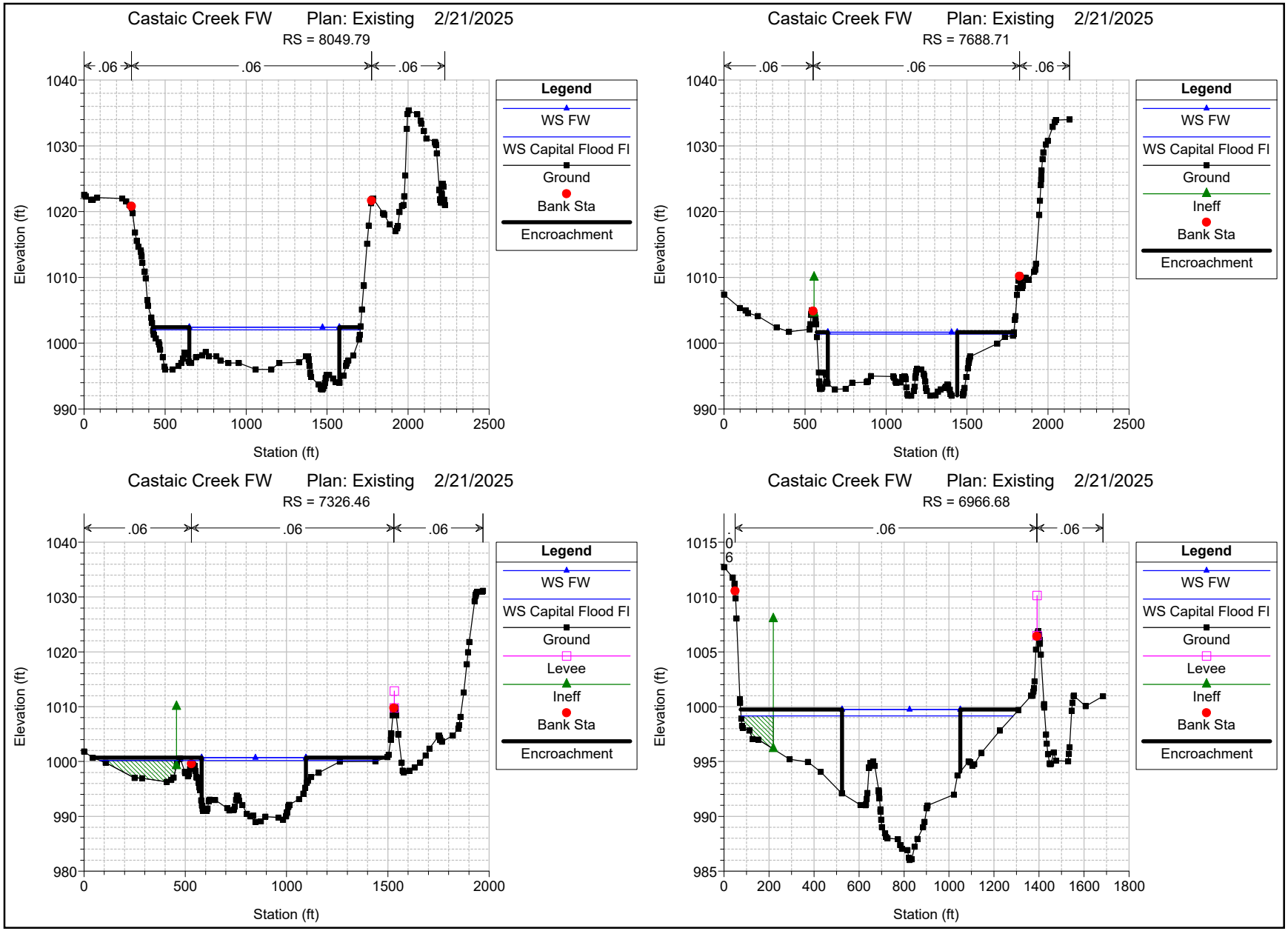
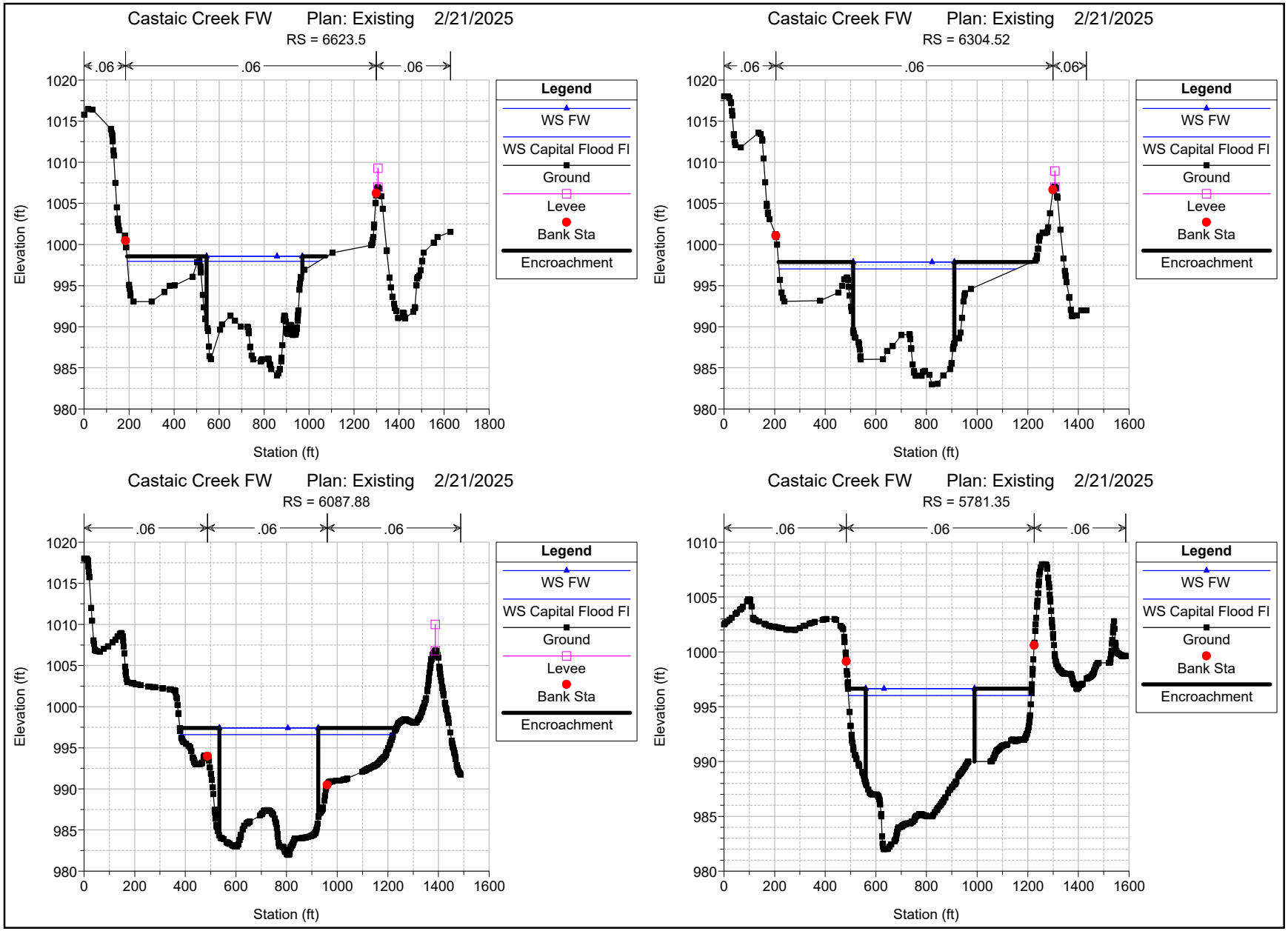
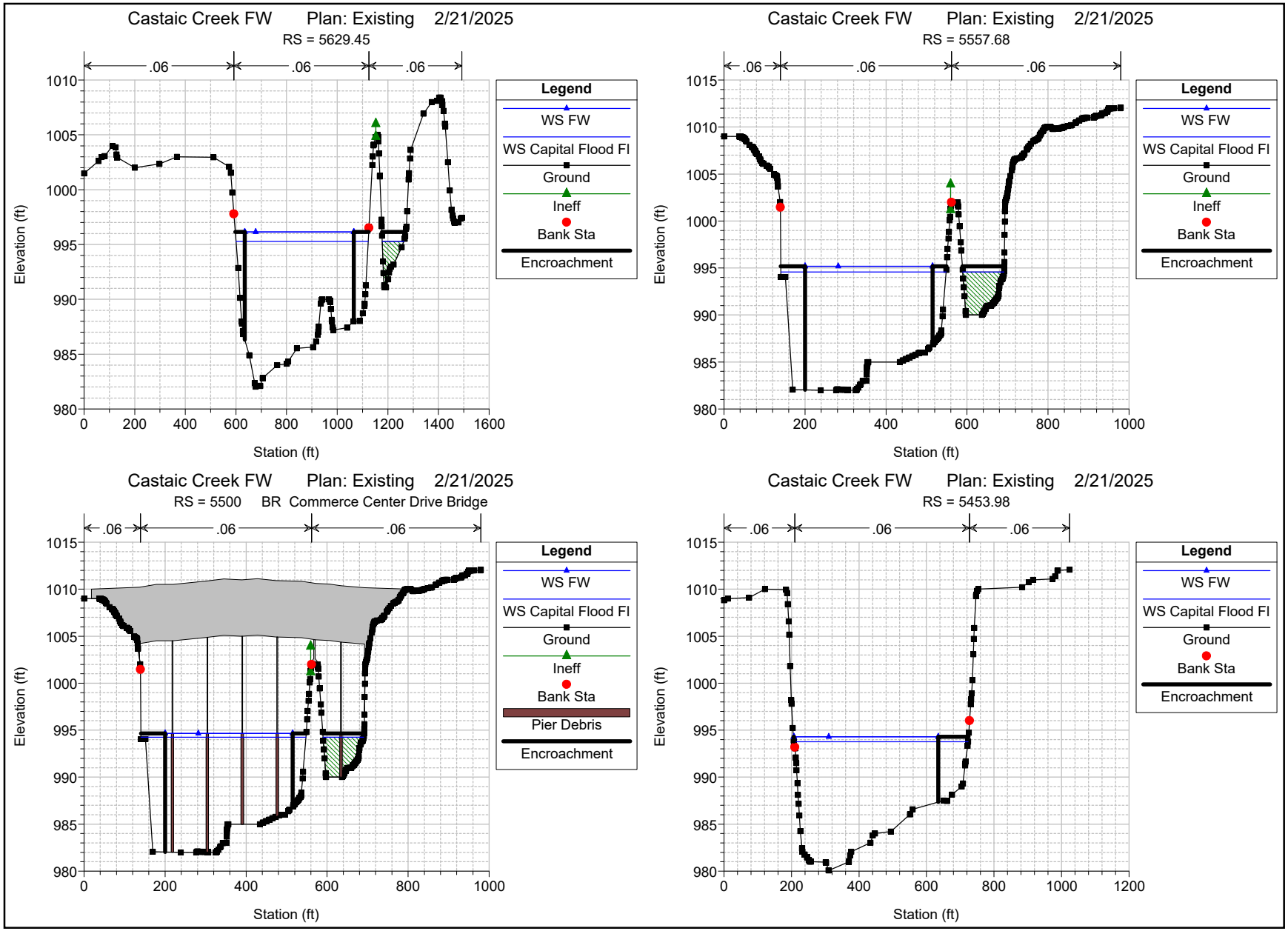
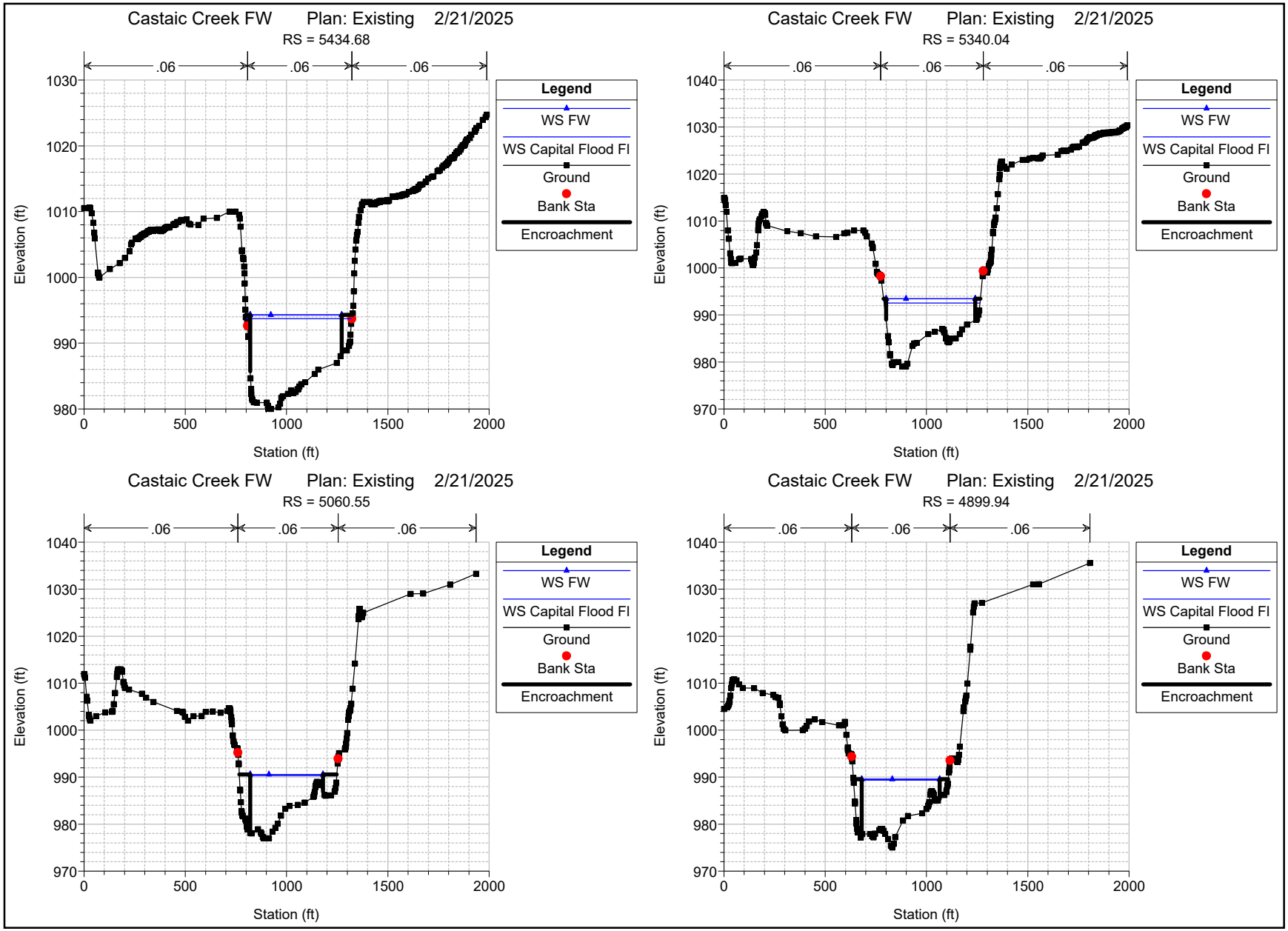
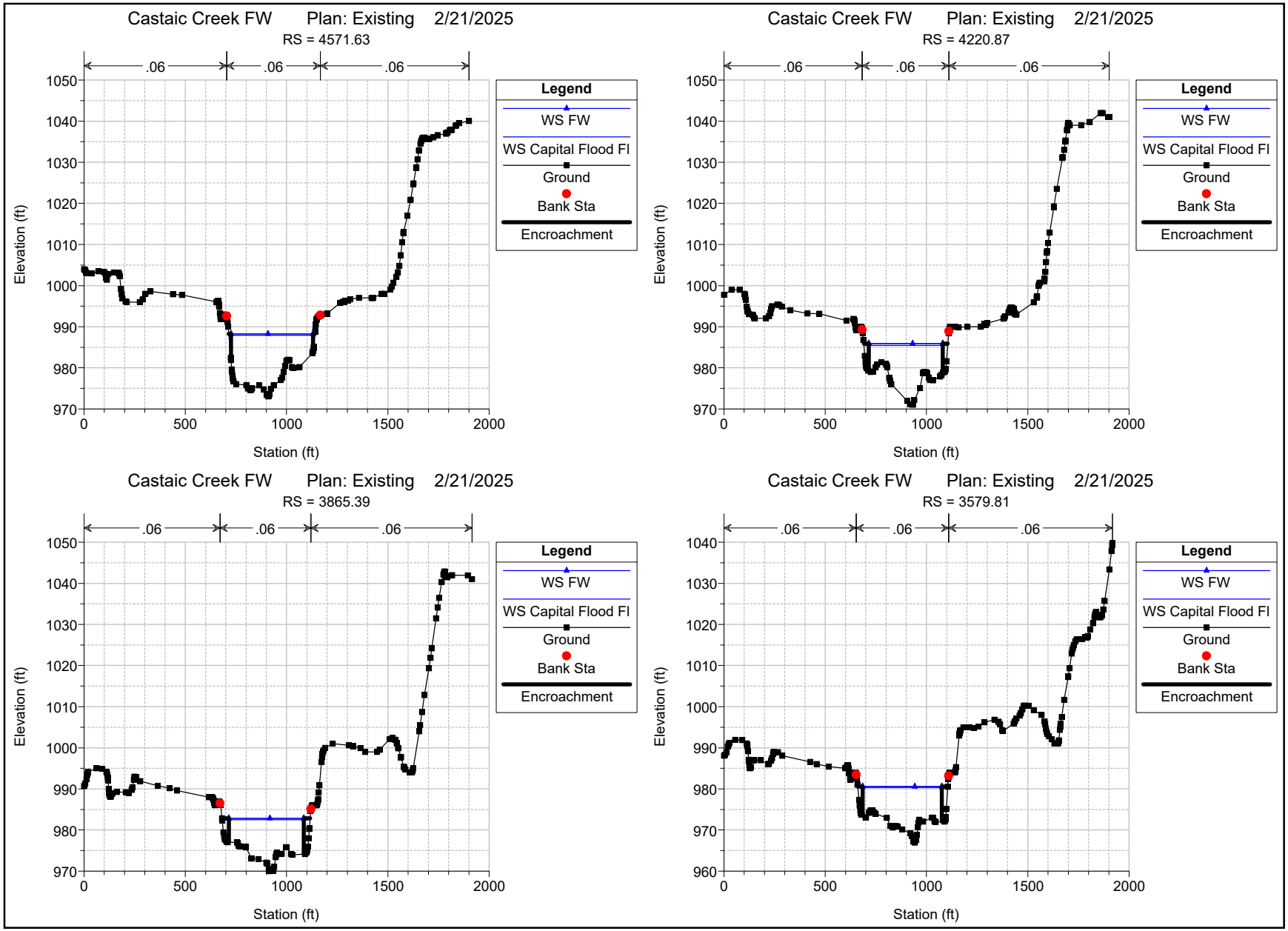
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Bank Sta
Encroachment

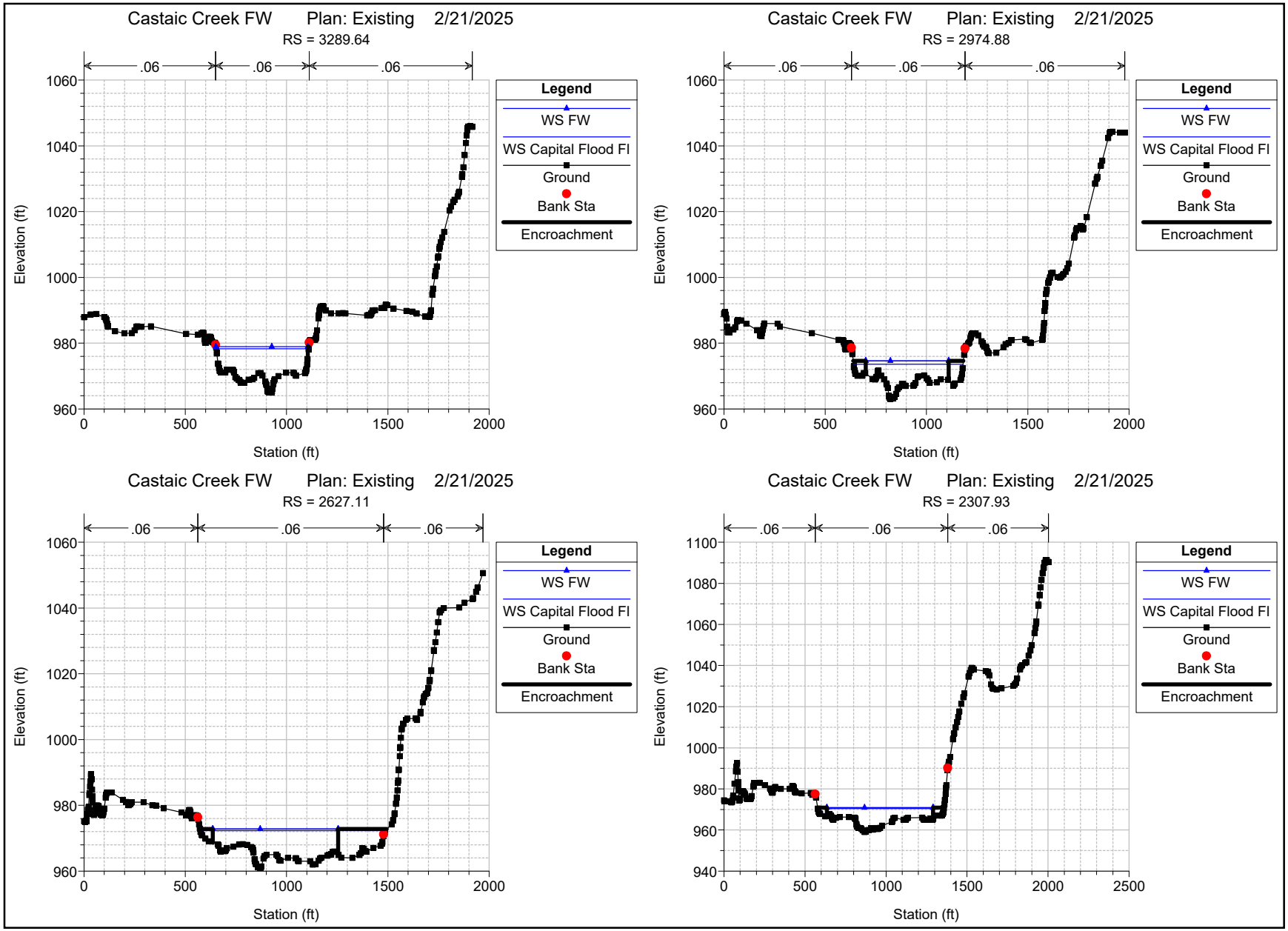

Castaic Creek FW Plan: Existing 2/21/2025
RS = 8049.79
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 7688.71
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 7326.46
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 6966.68
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Ineff
Bank Sta
Encroachment

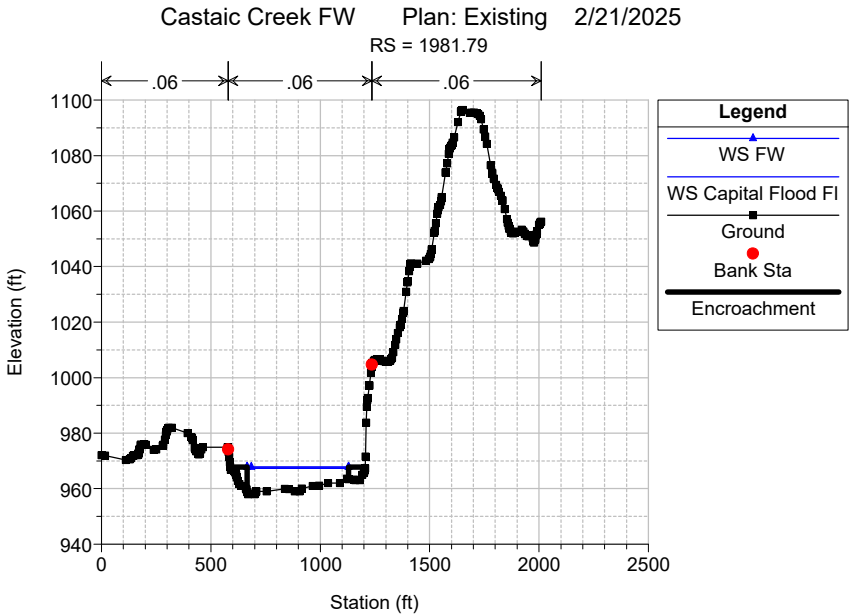

Castaic Creek FW Plan: Existing 2/21/2025
RS = 6623.5
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 6304.52
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 6087.88
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Levee
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 5781.35
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Bank Sta
Encroachment

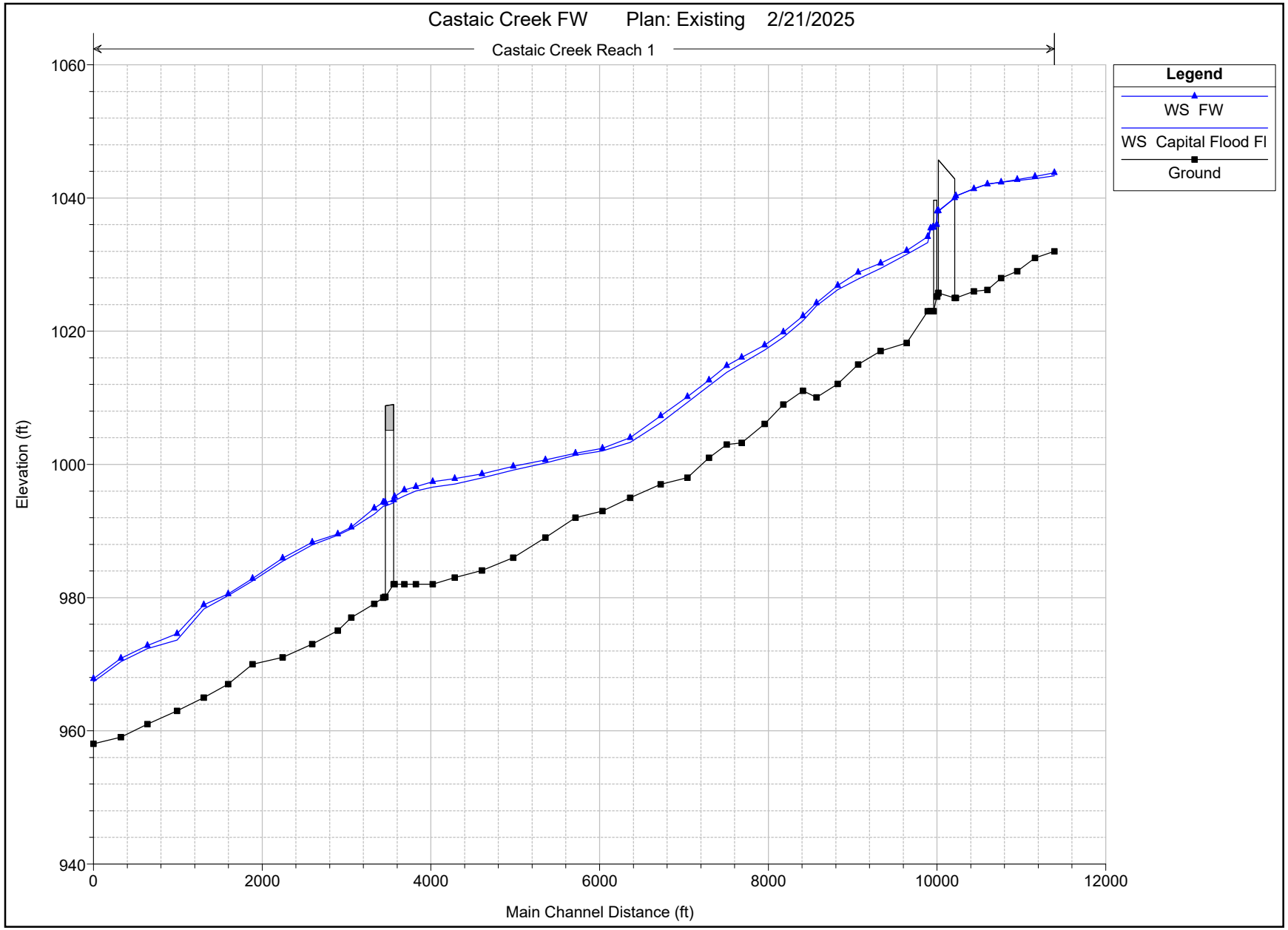

Castaic Creek FW Plan: Existing 2/21/2025
RS = 5629.45
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 5557.68
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 5500 BR Commerce Center Drive Bridge
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Ineff
Bank Sta
Pier Debris
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 5453.98
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Bank Sta
Encroachment


Castaic Creek FW Plan: Existing 2/21/2025
RS = 5434.68
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 5340.04
Castaic Creek FW Plan: Existing 2/21/2025
RS = 5060.55
Castaic Creek FW Plan: Existing 2/21/2025
RS = 4899.94


Castaic Creek FW Plan: Existing 2/21/2025
RS = 4571.63
.06
.06
.06
Legend
WS FW
WS Capital Flood Fl
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Castaic Creek FW Plan: Existing 2/21/2025
RS = 4220.87
Castaic Creek FW Plan: Existing 2/21/2025
RS = 3865.39
Castaic Creek FW Plan: Existing 2/21/2025
RS = 3579.81


Castaic Creek FW Plan: Existing 2/21/2025
RS = 3289.64
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Existing 2/21/2025
RS = 2974.88
Castaic Creek FW Plan: Existing 2/21/2025
RS = 2627.11
Castaic Creek FW Plan: Existing 2/21/2025
RS = 2307.93


Castaic Creek FW Plan: Existing 2/21/2025
RS = 1981.79
.06
.06
.06
1100
1080
1060
1040
1020
1000
980
960
940
Elevation (ft)
0
500
1000
1500
2000
2500
Station (ft)
Legend
WS FW
WS Capital Flood Fl
Ground
Bank Sta
Encroachment


Castaic Creek FW Plan: Existing 2/21/2025
Castaic Creek Reach 1
Legend
WS FW
WS Capital Flood Fl
Ground
Elevation (ft)
Main Channel Distance (ft)
1060
1040
1020
1000
980
960
940
0
2000
4000
6000
8000
10000
12000

HEC-RAS Plan: Exist River: Castaic Creek Reach: Reach 1

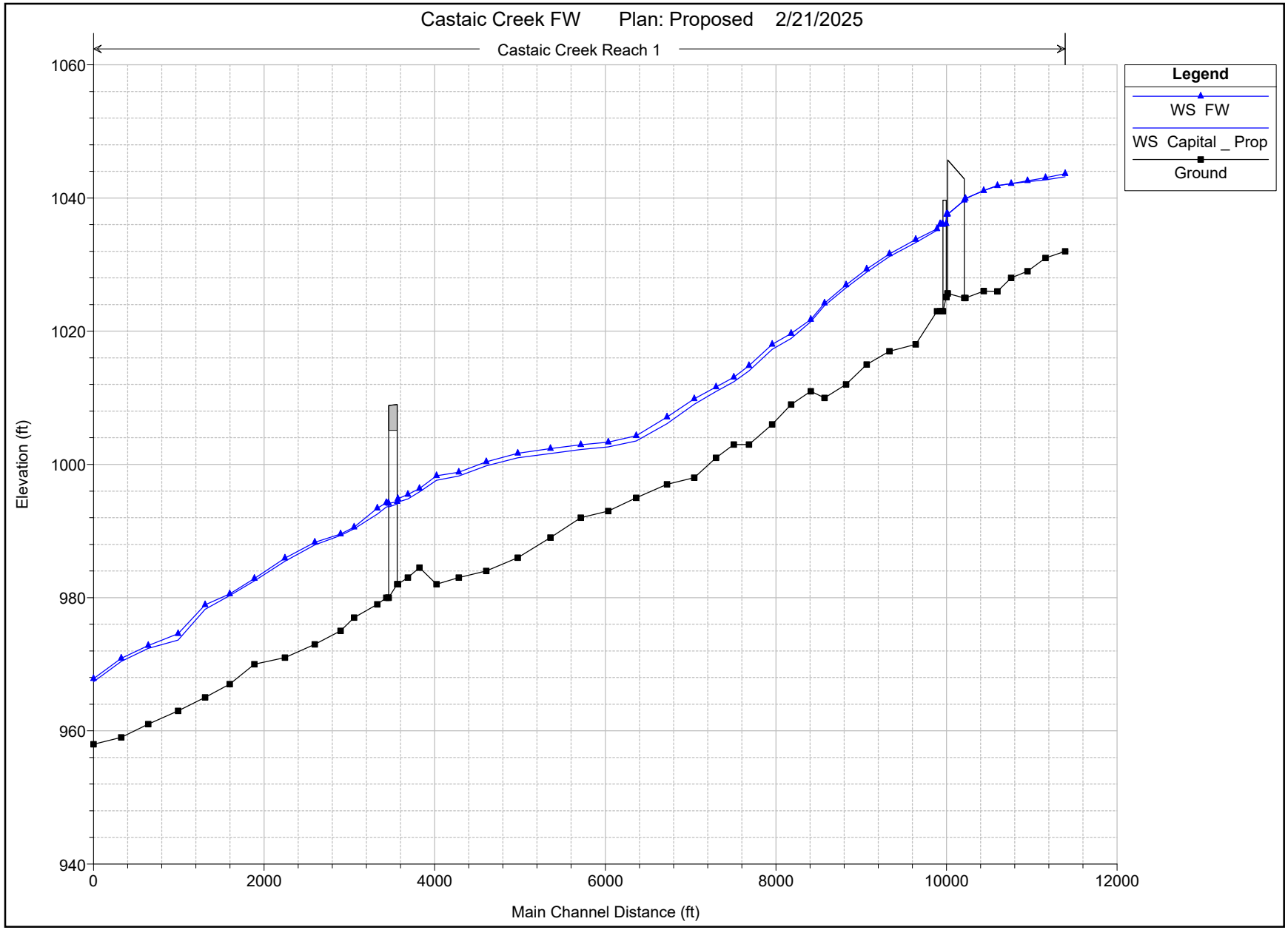
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	13371	Capital Flood Fl	26300.00	1032.00	1043.33		1043.66	0.002992	4.76	5892.71	1183.55	0.33
Reach 1	13371	FW	26300.00	1032.00	1043.80		1044.31	0.003800	5.74	4580.37	615.00	0.37
Reach 1	13141	Capital Flood Fl	26300.00	1031.00	1042.89	1038.43	1043.13	0.001688	3.94	7000.86	1163.35	0.25
Reach 1	13141	FW	26300.00	1031.00	1043.21	1038.54	1043.59	0.002383	4.93	5335.52	630.00	0.30
Reach 1	12937	Capital Flood Fl	26300.00	1029.00	1042.62	1037.07	1042.82	0.001207	3.74	7677.00	1176.77	0.22
Reach 1	12937	FW	26300.00	1029.14	1042.77	1037.44	1043.12	0.001995	4.74	5544.65	600.00	0.28
Reach 1	12730	Capital Flood Fl	26300.00	1027.98	1042.36	1035.81	1042.59	0.001118	3.97	7063.96	831.25	0.22
Reach 1	12730	FW	26300.00	1027.98	1042.37	1035.97	1042.76	0.001767	4.97	5291.67	485.00	0.27
Reach 1	12543	Capital Flood Fl	26300.00	1026.20	1042.09	1034.91	1042.39	0.001341	4.42	5960.85	1150.14	0.24
Reach 1	12543	FW	26300.00	1026.20	1042.07	1034.89	1042.48	0.001642	5.12	5138.51	446.00	0.26
Reach 1	12350	Capital Flood Fl	26300.00	1026.00	1041.40	1034.83	1042.06	0.002632	6.64	4379.46	1197.22	0.34
Reach 1	12350	FW	26300.00	1026.00	1041.37	1034.81	1042.11	0.002858	6.91	3810.04	320.00	0.35
Reach 1	12146	Capital Flood Fl	26300.00	1025.00	1040.28	1034.35	1041.33	0.004047	8.24	3192.60	860.93	0.42
Reach 1	12146	FW	26300.00	1025.00	1040.31	1034.33	1041.36	0.004014	8.22	3200.91	261.60	0.41
Reach 1	12059.65		Bridge									
Reach 1	11957.32	Capital Flood Fl	26300.00	1025.73	1038.00	1034.06	1039.52	0.006840	9.89	2659.33	239.94	0.52
Reach 1	11957.32	FW	26300.00	1025.73	1038.08	1034.04	1039.59	0.006776	9.88	2660.90	234.00	0.52
Reach 1	11923	Capital Flood Fl	26300.00	1025.20	1037.96	1033.88	1039.42	0.006517	9.72	2706.51	242.58	0.51
Reach 1	11923	FW	26300.00	1025.20	1038.02	1033.87	1039.51	0.006596	9.79	2685.69	234.00	0.51
Reach 1	11917.82		Bridge									
Reach 1	11878.32	Capital Flood Fl	26300.00	1023.01	1035.52	1032.68	1037.24	0.009328	10.53	2498.61	266.09	0.61
Reach 1	11878.32	FW	26300.00	1023.01	1035.62	1032.68	1037.31	0.009005	10.41	2527.12	266.56	0.60
Reach 1	11845.64	Capital Flood Fl	26300.00	1023.04	1035.35	1032.49	1036.89	0.009233	9.97	2637.58	304.11	0.60
Reach 1	11845.64	FW	26300.00	1023.04	1035.47	1032.48	1036.97	0.008759	9.84	2673.56	302.00	0.58
Reach 1	11811.76	Capital Flood Fl	26400.00	1023.00	1033.32	1032.65	1036.07	0.020771	13.31	1984.10	289.59	0.87
Reach 1	11811.76	FW	26400.00	1023.00	1034.20	1032.65	1036.38	0.014604	11.85	2227.03	301.71	0.74
Reach 1	11551.18	Capital Flood Fl	26400.00	1018.25	1031.53	1029.19	1032.42	0.008223	7.70	3510.68	999.89	0.54
Reach 1	11551.18	FW	26400.00	1018.25	1032.11	1029.80	1033.29	0.008849	9.06	3064.94	419.00	0.57
Reach 1	11242.98	Capital Flood Fl	26400.00	1017.01	1029.42	1027.07	1030.13	0.006394	7.14	3950.49	998.95	0.48
Reach 1	11242.98	FW	26400.00	1017.01	1030.20	1027.43	1030.96	0.005826	7.40	3828.43	541.00	0.46
Reach 1	10982.86	Capital Flood Fl	26400.00	1015.00	1027.84	1025.51	1028.47	0.005887	6.80	4207.19	1115.54	0.46
Reach 1	10982.86	FW	26400.00	1015.00	1028.83	1025.95	1029.47	0.005120	6.83	4159.67	601.00	0.43
Reach 1	10738.26	Capital Flood Fl	26400.00	1012.10	1026.22	1024.33	1026.86	0.007558	6.75	4159.60	1286.75	0.50
Reach 1	10738.26	FW	26400.00	1014.58	1026.87	1025.05	1027.83	0.009101	8.24	3424.54	582.00	0.56
Reach 1	10490.82	Capital Flood Fl	26400.00	1010.07	1023.81	1022.18	1024.60	0.010779	7.20	3726.09	1441.69	0.58
Reach 1	10490.82	FW	26400.00	1012.60	1024.26	1022.83	1025.23	0.011827	7.92	3331.93	645.00	0.61
Reach 1	10351.28	Capital Flood Fl	26400.00	1011.06	1021.57	1019.83	1022.59	0.014185	8.11	3275.99	1339.54	0.67
Reach 1	10351.28	FW	26400.00	1012.53	1022.28	1020.39	1023.33	0.011647	8.21	3215.79	585.00	0.62
Reach 1	10141.82	Capital Flood Fl	26400.00	1009.00	1019.08	1017.33	1019.81	0.009739	6.85	3853.70	1089.96	0.56
Reach 1	10141.82	FW	26400.00	1009.00	1019.87	1017.99	1020.85	0.009757	7.93	3330.87	555.00	0.57
Reach 1	9931.16	Capital Flood Fl	26400.00	1006.09	1017.18		1017.78	0.008295	6.24	4227.48	915.02	0.51
Reach 1	9931.16	FW	26400.00	1006.09	1017.92		1018.75	0.008835	7.34	3594.34	630.00	0.54
Reach 1	9670.57	Capital Flood Fl	26400.00	1003.22	1015.14		1015.64	0.007171	5.67	4655.40	1042.02	0.47
Reach 1	9670.57	FW	26400.00	1003.22	1016.08		1016.66	0.006214	6.07	4346.26	776.00	0.45
Reach 1	9501.81	Capital Flood Fl	26400.00	1003.00	1013.84		1014.44	0.006273	6.20	4261.15	754.84	0.46
Reach 1	9501.81	FW	26400.00	1003.00	1014.83		1015.53	0.006378	6.69	3946.84	618.00	0.47
Reach 1	9298.99	Capital Flood Fl	26400.00	1001.00	1011.82		1012.72	0.010839	7.64	3457.31	674.72	0.59
Reach 1	9298.99	FW	26400.00	1001.00	1012.67		1013.75	0.011458	8.33	3169.24	549.00	0.61
Reach 1	9042.81	Capital Flood Fl	26400.00	998.00	1009.33		1010.01	0.009965	6.61	3992.18	909.40	0.56
Reach 1	9042.81	FW	26400.00	998.00	1010.17		1011.00	0.009573	7.32	3607.48	677.00	0.56
Reach 1	8724.84	Capital Flood Fl	26400.00	997.00	1006.27		1006.78	0.009998	5.76	4586.15	1290.26	0.54
Reach 1	8724.84	FW	26400.00	997.00	1007.27		1007.92	0.009471	6.46	4087.79	919.00	0.54
Reach 1	8396.13	Capital Flood Fl	26400.00	995.00	1003.32		1003.72	0.007112	5.07	5209.71	1376.48	0.46
Reach 1	8396.13	FW	26400.00	995.00	1004.01		1004.63	0.008705	6.27	4207.50	931.00	0.52

HEC-RAS Plan: Exist River: Castaic Creek Reach: Reach 1 (Continued)

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 1	8049.79	Capital Flood Fl	26400.00	993.00	1002.03		1002.27	0.002818	3.95	6679.15	1279.96	0.31
Reach 1	8049.79	FW	26400.00	993.00	1002.42		1002.78	0.003650	4.84	5458.82	925.00	0.35
Reach 1	7688.71	Capital Flood Fl	26400.00	992.00	1001.38	996.68	1001.56	0.001720	3.48	7591.89	1215.31	0.25
Reach 1	7688.71	FW	26400.00	992.00	1001.68	997.00	1001.95	0.001855	4.17	6329.43	800.00	0.26
Reach 1	7326.46	Capital Flood Fl	26400.00	989.00	1000.21	995.64	1000.61	0.004418	5.13	5195.14	1365.03	0.39
Reach 1	7326.46	FW	26400.00	989.00	1000.69	995.66	1001.16	0.002557	5.47	4828.95	515.00	0.31
Reach 1	6966.68	Capital Flood Fl	26400.00	986.01	999.15	994.72	999.40	0.002232	3.96	6658.72	1209.19	0.28
Reach 1	6966.68	FW	26400.00	986.01	999.73	994.62	1000.18	0.002502	5.39	4898.24	525.00	0.31
Reach 1	6623.5	Capital Flood Fl	26400.00	984.09	997.97	993.59	998.35	0.003552	4.99	5294.74	846.67	0.35
Reach 1	6623.5	FW	26400.00	984.09	998.56	993.31	999.16	0.002995	6.17	4275.79	425.00	0.34
Reach 1	6304.52	Capital Flood Fl	26400.00	983.01	997.03	991.13	997.34	0.002697	4.41	5982.05	937.47	0.31
Reach 1	6304.52	FW	26400.00	983.01	997.86	991.15	998.34	0.002010	5.58	4730.39	400.00	0.29
Reach 1	6087.88	Capital Flood Fl	26400.00	982.00	996.59	989.74	996.86	0.001271	4.41	6668.73	839.17	0.23
Reach 1	6087.88	FW	26400.00	982.00	997.41	989.88	997.85	0.001674	5.31	4974.45	390.00	0.26
Reach 1	5781.35	Capital Flood Fl	31100.00	982.00	996.01		996.46	0.002968	5.39	5773.33	721.48	0.34
Reach 1	5781.35	FW	31100.00	982.00	996.65		997.35	0.003279	6.73	4618.09	430.00	0.36
Reach 1	5629.45	Capital Flood Fl	31100.00	982.03	995.29	990.95	995.97	0.003912	6.65	4677.89	607.68	0.39
Reach 1	5629.45	FW	31100.00	982.03	996.15	991.10	996.89	0.003553	6.88	4519.34	430.00	0.37
Reach 1	5557.68	Capital Flood Fl	31100.00	982.00	994.56	989.91	995.47	0.004488	7.62	4081.44	509.99	0.42
Reach 1	5557.68	FW	31100.00	982.00	995.17	990.53	996.34	0.005287	8.69	3576.84	315.00	0.45
Reach 1	5500		Bridge									
Reach 1	5453.98	Capital Flood Fl	31100.00	980.08	993.77		994.44	0.003627	6.54	4753.01	516.03	0.38
Reach 1	5453.98	FW	31100.00	980.08	994.30		995.04	0.003380	6.86	4532.49	428.00	0.37
Reach 1	5434.68	Capital Flood Fl	31100.00	980.00	993.72		994.35	0.003251	6.32	4920.45	521.84	0.36
Reach 1	5434.68	FW	31100.00	980.00	994.30		994.92	0.002848	6.33	4910.20	452.15	0.34
Reach 1	5340.04	Capital Flood Fl	31100.00	979.08	992.53		993.68	0.008042	8.58	3624.42	473.83	0.55
Reach 1	5340.04	FW	31100.00	979.08	993.44		994.41	0.005647	7.89	3942.13	440.38	0.46
Reach 1	5060.55	Capital Flood Fl	31100.00	977.01	990.34		991.47	0.008103	8.54	3639.99	480.82	0.55
Reach 1	5060.55	FW	31100.00	977.01	990.59		992.25	0.010930	10.34	3007.98	360.00	0.63
Reach 1	4899.94	Capital Flood Fl	31100.00	975.04	989.37		990.33	0.005943	7.88	3948.14	466.52	0.48
Reach 1	4899.94	FW	31100.00	975.04	989.56		990.76	0.006939	8.79	3538.06	385.00	0.51
Reach 1	4571.63	Capital Flood Fl	31100.00	973.03	987.92		988.78	0.004273	7.40	4201.15	424.98	0.42
Reach 1	4571.63	FW	31100.00	973.03	988.30		989.11	0.003812	7.23	4299.50	405.00	0.39
Reach 1	4220.87	Capital Flood Fl	31100.00	971.03	985.46		986.73	0.008016	9.04	3441.18	413.64	0.55
Reach 1	4220.87	FW	31100.00	971.03	985.91		987.23	0.007556	9.22	3372.70	365.00	0.53
Reach 1	3865.39	Capital Flood Fl	31100.00	970.00	982.51		983.78	0.008487	9.02	3446.43	434.13	0.56
Reach 1	3865.39	FW	31100.00	970.00	982.88		984.31	0.008796	9.60	3239.90	370.00	0.57
Reach 1	3579.81	Capital Flood Fl	31100.00	967.00	980.32		981.46	0.007431	8.59	3622.59	444.01	0.53
Reach 1	3579.81	FW	31100.00	967.00	980.56		981.86	0.007985	9.13	3407.69	390.00	0.54
Reach 1	3289.64	Capital Flood Fl	31100.00	965.00	978.28		979.36	0.006966	8.34	3730.23	455.54	0.51
Reach 1	3289.64	FW	31100.00	965.00	978.93		979.86	0.005429	7.73	4022.70	454.20	0.46
Reach 1	2974.88	Capital Flood Fl	31200.00	963.00	973.62	973.12	975.57	0.023266	11.21	2782.99	540.80	0.87
Reach 1	2974.88	FW	31200.00	963.00	974.59		976.76	0.019712	11.82	2640.58	410.00	0.82
Reach 1	2627.11	Capital Flood Fl	31200.00	961.00	972.35		972.74	0.003153	5.01	6225.07	912.68	0.34
Reach 1	2627.11	FW	31200.00	961.00	972.80		973.44	0.004450	6.42	4857.86	620.00	0.40
Reach 1	2307.93	Capital Flood Fl	31200.00	959.06	970.40	968.39	971.19	0.008189	7.10	4394.81	776.86	0.53
Reach 1	2307.93	FW	31200.00	959.06	970.87		971.68	0.007025	7.22	4321.81	655.00	0.50
Reach 1	1981.79	Capital Flood Fl	31200.00	958.04	967.36	965.21	968.36	0.009101	8.04	3878.27	615.74	0.57
Reach 1	1981.79	FW	31200.00	958.04	967.82	965.48	969.06	0.009099	8.91	3502.78	465.00	0.57

PACE
Advanced Water Engineering

Appendix C – HEC-RAS Proposed Condition Results


Castaic Creek FW Plan: Proposed 2/21/2025
Castaic Creek Reach 1
Legend
WS FW
WS Capital _ Prop
Ground
Elevation (ft)
1060
1040
1020
1000
980
960
940
0
2000
4000
6000
8000
10000
12000
Main Channel Distance (ft)

HEC-RAS Plan: Proposed River: Castaic Creek Reach: Reach 1

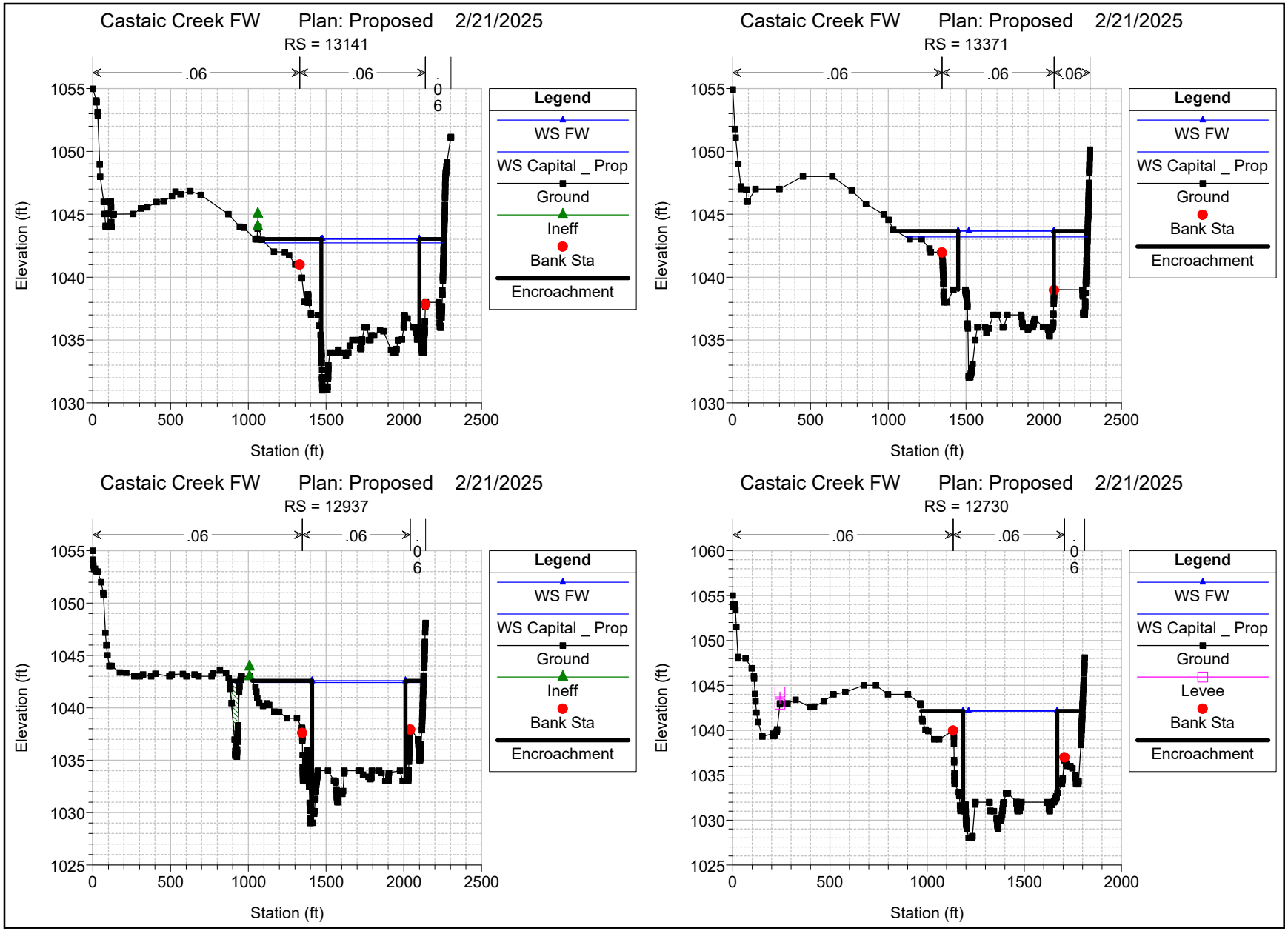
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	13371	Capital _ Prop	26300.00	1032.00	1043.20		1043.54	0.003208	4.87	5737.10	1168.88	0.34
Reach 1	13371	FW	26300.00	1032.00	1043.66		1044.19	0.004003	5.83	4509.06	615.00	0.38
Reach 1	13141	Capital _ Prop	26300.00	1031.00	1042.72	1038.42	1042.97	0.001837	4.05	6797.28	1150.46	0.26
Reach 1	13141	FW	26300.00	1031.00	1043.03	1038.52	1043.43	0.002553	5.03	5226.82	630.00	0.31
Reach 1	12937	Capital _ Prop	26300.00	1029.00	1042.43	1036.93	1042.64	0.001255	3.79	7558.30	1164.13	0.22
Reach 1	12937	FW	26300.00	1029.02	1042.58	1037.31	1042.94	0.002026	4.77	5518.38	600.00	0.28
Reach 1	12730	Capital _ Prop	26300.00	1028.00	1042.16	1035.80	1042.40	0.001204	4.05	6907.02	828.96	0.22
Reach 1	12730	FW	26300.00	1028.00	1042.16	1035.98	1042.56	0.001893	5.07	5182.59	485.00	0.27
Reach 1	12543	Capital _ Prop	26300.00	1026.00	1041.86	1034.87	1042.18	0.001433	4.51	5829.74	1076.77	0.24
Reach 1	12543	FW	26300.00	1026.00	1041.84	1034.88	1042.26	0.001744	5.21	5045.01	431.14	0.27
Reach 1	12350	Capital _ Prop	26300.00	1026.01	1041.11	1034.82	1041.82	0.002911	6.85	4202.00	1171.54	0.35
Reach 1	12350	FW	26300.00	1026.01	1041.08	1034.80	1041.86	0.003111	7.07	3719.42	316.62	0.36
Reach 1	12146	Capital _ Prop	26300.00	1025.00	1039.91	1034.35	1041.02	0.004409	8.48	3100.58	834.53	0.43
Reach 1	12146	FW	26300.00	1025.00	1039.93	1034.33	1041.04	0.004383	8.47	3106.69	259.23	0.43
Reach 1	12059.65		Bridge									
Reach 1	11957.32	Capital _ Prop	26300.00	1025.66	1037.53	1033.94	1039.15	0.007708	10.23	2571.96	238.81	0.55
Reach 1	11957.32	FW	26300.00	1025.66	1037.59	1033.94	1039.19	0.007580	10.17	2585.49	238.84	0.55
Reach 1	11923	Capital _ Prop	26300.00	1025.14	1037.49	1033.79	1039.06	0.007366	10.06	2615.52	241.01	0.54
Reach 1	11923	FW	26300.00	1025.14	1037.55	1033.79	1039.10	0.007239	10.00	2629.27	240.60	0.53
Reach 1	11917.82		Bridge									
Reach 1	11878.32	Capital _ Prop	26300.00	1023.00	1035.98	1032.61	1037.52	0.007874	9.94	2646.82	269.46	0.56
Reach 1	11878.32	FW	26300.00	1023.00	1036.11	1032.60	1037.61	0.007550	9.81	2681.70	269.55	0.55
Reach 1	11845.64	Capital _ Prop	26300.00	1023.00	1035.97	1032.21	1037.24	0.006936	9.04	2914.19	324.94	0.52
Reach 1	11845.64	FW	26300.00	1023.00	1036.10	1032.23	1037.34	0.006618	8.91	2958.56	325.61	0.51
Reach 1	11811.76	Capital _ Prop	26400.00	1023.00	1035.16	1032.63	1036.89	0.010387	10.56	2503.15	346.22	0.63
Reach 1	11811.76	FW	26400.00	1023.00	1035.36	1032.63	1037.01	0.009745	10.32	2564.39	402.47	0.61
Reach 1	11551.18	Capital _ Prop	26400.00	1018.01	1033.30	1030.28	1034.41	0.008214	8.46	3120.39	579.56	0.55
Reach 1	11551.18	FW	26400.00	1018.01	1033.76	1030.13	1034.94	0.006308	8.72	3027.59	408.00	0.50
Reach 1	11242.98	Capital _ Prop	26400.00	1017.00	1031.19	1027.78	1032.20	0.006100	8.06	3274.82	614.54	0.48
Reach 1	11242.98	FW	26400.00	1017.00	1031.59	1028.25	1032.86	0.007132	9.04	2921.78	431.00	0.52
Reach 1	10982.86	Capital _ Prop	26400.00	1015.00	1028.87	1026.40	1030.19	0.009173	9.24	2856.20	696.42	0.58
Reach 1	10982.86	FW	26400.00	1015.00	1029.33	1026.55	1030.73	0.008833	9.49	2780.96	523.00	0.57
Reach 1	10738.26	Capital _ Prop	26400.00	1012.00	1026.52	1024.67	1027.67	0.011593	8.60	3068.34	858.32	0.63
Reach 1	10738.26	FW	26400.00	1012.00	1026.94	1025.04	1028.32	0.011366	9.43	2800.82	560.00	0.63
Reach 1	10490.82	Capital _ Prop	26400.00	1010.00	1023.86	1021.97	1024.71	0.011268	7.40	3566.78	816.96	0.60
Reach 1	10490.82	FW	26400.00	1011.45	1024.20	1022.71	1025.30	0.012029	8.41	3140.57	560.00	0.63
Reach 1	10351.28	Capital _ Prop	26400.00	1011.00	1021.43	1019.83	1022.51	0.016302	8.36	3157.37	760.35	0.71
Reach 1	10351.28	FW	26400.00	1013.97	1021.76	1020.43	1023.09	0.015228	9.26	2850.18	530.00	0.70
Reach 1	10141.82	Capital _ Prop	26400.00	1009.00	1018.92	1017.20	1019.62	0.009186	6.71	3935.60	824.69	0.54
Reach 1	10141.82	FW	26400.00	1009.00	1019.66	1017.58	1020.44	0.007965	7.09	3725.93	635.00	0.52
Reach 1	9931.16	Capital _ Prop	26400.00	1006.00	1017.29		1017.82	0.006951	5.84	4519.95	946.15	0.47
Reach 1	9931.16	FW	26400.00	1006.00	1018.01		1018.71	0.007545	6.72	3930.85	700.00	0.50
Reach 1	9670.57	Capital _ Prop	26400.00	1003.00	1014.06		1014.92	0.017455	7.45	3543.12	1024.81	0.71
Reach 1	9670.57	FW	26400.00	1003.00	1014.84		1015.82	0.015298	7.97	3313.30	780.00	0.68
Reach 1	9501.81	Capital _ Prop	26400.00	1003.00	1012.41		1012.92	0.007212	5.74	4597.90	1016.05	0.48
Reach 1	9501.81	FW	26400.00	1003.00	1013.09		1013.77	0.008335	6.62	3989.25	785.00	0.52
Reach 1	9298.99	Capital _ Prop	26400.00	1001.00	1010.94		1011.43	0.006976	5.65	4669.14	1029.16	0.47
Reach 1	9298.99	FW	26400.00	1001.00	1011.64		1012.19	0.006656	5.96	4426.44	860.00	0.46
Reach 1	9042.81	Capital _ Prop	26400.00	998.00	1009.02		1009.52	0.008065	5.67	4660.10	1142.88	0.49
Reach 1	9042.81	FW	26400.00	998.00	1009.86		1010.42	0.007236	5.98	4412.74	910.83	0.48

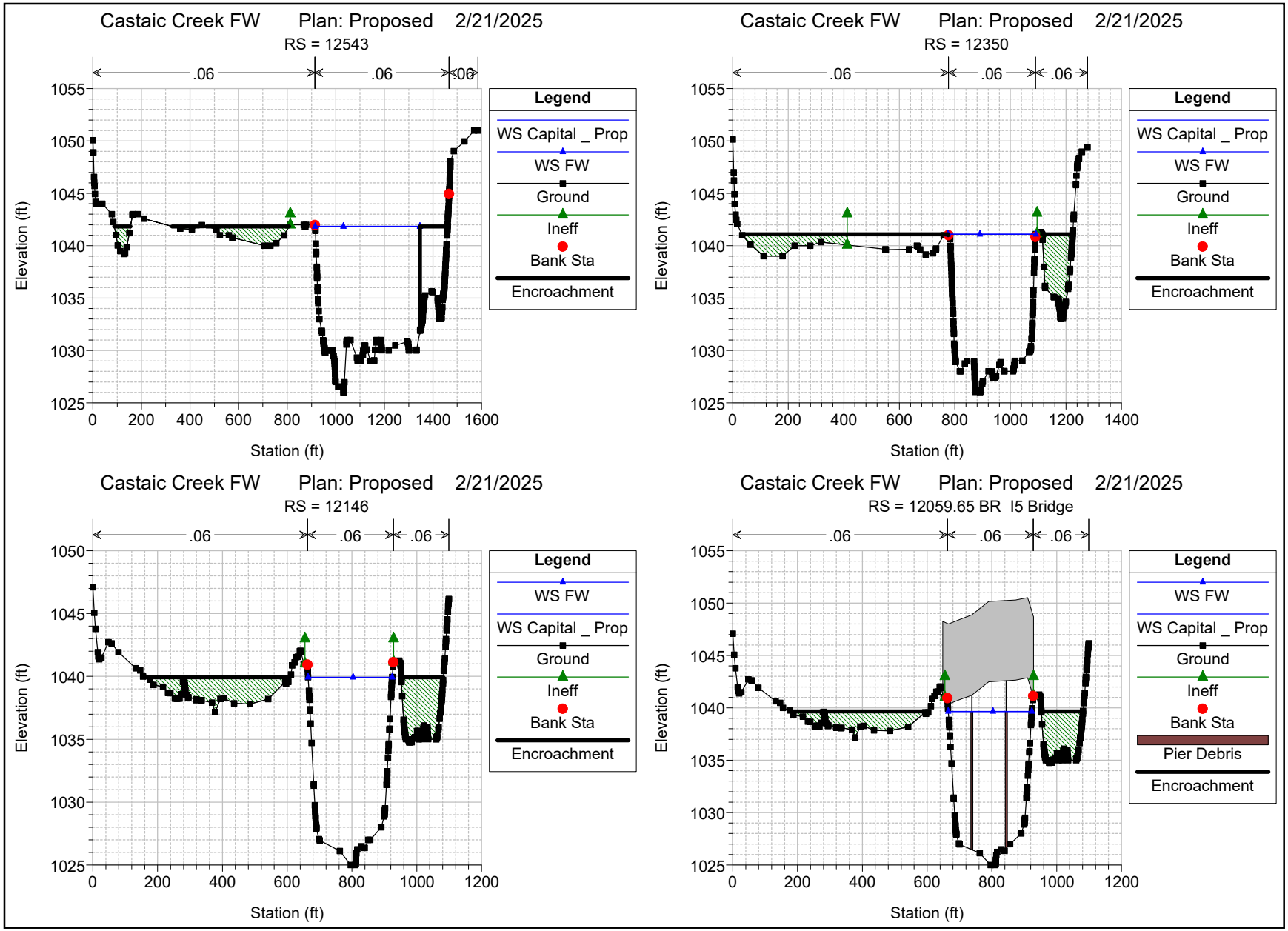
HEC-RAS Plan: Proposed River: Castaic Creek Reach: Reach 1 (Continued)

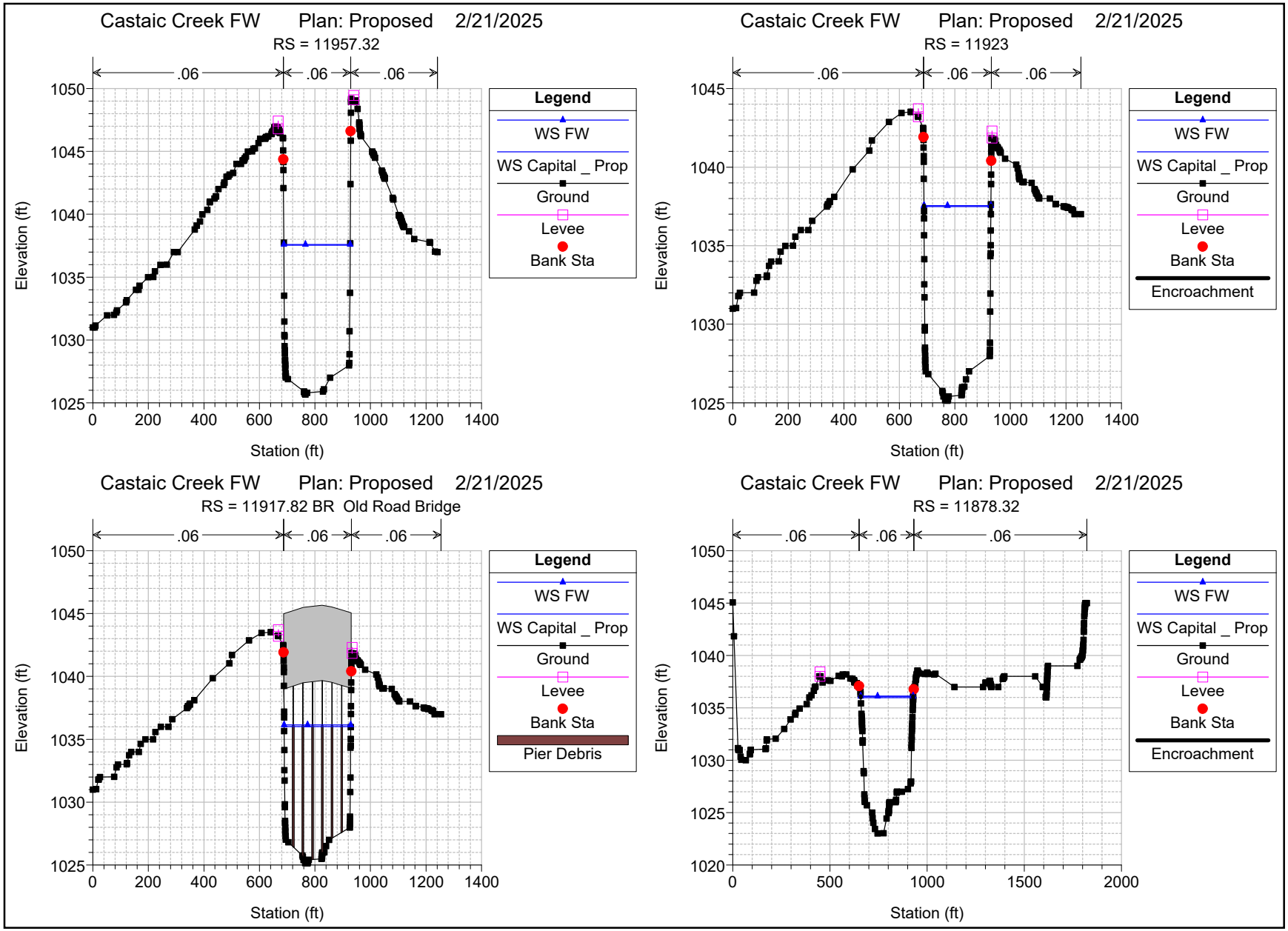
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	8724.84	Capital _ Prop	26400.00	997.00	1006.11		1006.61	0.010473	5.67	4657.98	1388.33	0.55
Reach 1	8724.84	FW	26400.00	997.00	1007.11		1007.73	0.009971	6.30	4190.54	1018.35	0.55
Reach 1	8396.13	Capital _ Prop	26400.00	995.00	1003.52		1003.86	0.005590	4.63	5696.29	1436.15	0.41
Reach 1	8396.13	FW	26400.00	995.00	1004.30		1004.81	0.006526	5.73	4605.63	940.00	0.46
Reach 1	8049.79	Capital _ Prop	26400.00	993.00	1002.63		1002.82	0.001895	3.50	7548.15	1289.12	0.25
Reach 1	8049.79	FW	26400.00	993.00	1003.35		1003.61	0.002087	4.08	6464.69	930.00	0.27
Reach 1	7688.71	Capital _ Prop	26400.00	992.00	1002.22		1002.38	0.001000	3.15	8380.77	1034.56	0.20
Reach 1	7688.71	FW	26400.00	992.00	1002.96		1003.14	0.000996	3.40	7770.30	835.00	0.20
Reach 1	7326.46	Capital _ Prop	26400.00	989.00	1001.64		1001.91	0.001668	4.22	6257.40	731.33	0.25
Reach 1	7326.46	FW	26400.00	989.00	1002.39		1002.71	0.001427	4.53	5831.13	529.00	0.24
Reach 1	6966.68	Capital _ Prop	26400.00	986.00	1000.98		1001.29	0.001588	4.42	5968.88	624.28	0.25
Reach 1	6966.68	FW	26400.00	986.00	1001.69		1002.09	0.001784	5.09	5182.71	463.00	0.27
Reach 1	6623.5	Capital _ Prop	26400.00	984.01	999.80		1000.42	0.003470	6.29	4196.64	461.87	0.37
Reach 1	6623.5	FW	26400.00	984.01	1000.38		1001.18	0.003266	7.16	3684.86	305.00	0.36
Reach 1	6304.52	Capital _ Prop	26400.00	983.00	998.28		999.14	0.004411	7.45	3541.49	362.10	0.42
Reach 1	6304.52	FW	26400.00	983.00	998.82		999.93	0.004374	8.48	3112.54	246.84	0.42
Reach 1	6087.88	Capital _ Prop	26400.00	982.00	997.64		998.14	0.002727	5.70	4631.25	497.03	0.33
Reach 1	6087.88	FW	26400.00	982.00	998.31		998.94	0.002523	6.37	4143.96	341.53	0.32
Reach 1	5781.35	Capital _ Prop	31100.00	984.50	995.88		997.08	0.009854	8.81	3529.45	518.17	0.60
Reach 1	5781.35	FW	31100.00	984.50	996.36		997.91	0.009596	10.01	3107.24	358.95	0.60
Reach 1	5629.45	Capital _ Prop	31100.00	983.00	994.82	991.18	996.01	0.006386	8.74	3557.70	456.40	0.50
Reach 1	5629.45	FW	31100.00	983.00	995.49	991.44	996.79	0.006240	9.15	3397.08	324.56	0.50
Reach 1	5557.68	Capital _ Prop	31100.00	982.00	994.35	989.89	995.29	0.004807	7.79	3993.22	508.02	0.44
Reach 1	5557.68	FW	31100.00	982.00	994.86	990.50	996.08	0.005670	8.84	3519.68	320.00	0.47
Reach 1	5500		Bridge									
Reach 1	5453.98	Capital _ Prop	31100.00	980.00	993.66		994.33	0.003810	6.60	4714.36	521.37	0.39
Reach 1	5453.98	FW	31100.00	980.00	994.21		994.95	0.003485	6.90	4506.32	428.00	0.37
Reach 1	5434.68	Capital _ Prop	31100.00	980.00	993.62		994.25	0.003417	6.39	4865.64	519.95	0.37
Reach 1	5434.68	FW	31100.00	980.00	994.23		994.86	0.002906	6.37	4881.83	452.23	0.34
Reach 1	5340.04	Capital _ Prop	31100.00	979.00	992.52		993.67	0.008116	8.60	3615.15	473.63	0.55
Reach 1	5340.04	FW	31100.00	979.00	993.44		994.41	0.005669	7.90	3938.94	440.52	0.47
Reach 1	5060.55	Capital _ Prop	31100.00	977.00	990.32		991.45	0.008074	8.52	3648.33	481.62	0.55
Reach 1	5060.55	FW	31100.00	977.00	990.59		992.25	0.010920	10.33	3010.21	360.00	0.63
Reach 1	4899.94	Capital _ Prop	31100.00	975.00	989.35		990.32	0.005960	7.88	3946.33	466.36	0.48
Reach 1	4899.94	FW	31100.00	975.00	989.55		990.75	0.006976	8.80	3533.21	385.00	0.51
Reach 1	4571.63	Capital _ Prop	31100.00	973.00	987.91		988.76	0.004282	7.40	4200.52	424.99	0.42
Reach 1	4571.63	FW	31100.00	973.00	988.29		989.10	0.003815	7.23	4300.82	405.00	0.39
Reach 1	4220.87	Capital _ Prop	31100.00	971.00	985.45		986.71	0.008001	9.03	3444.02	413.24	0.55
Reach 1	4220.87	FW	31100.00	971.00	985.91		987.23	0.007537	9.21	3376.08	365.00	0.53
Reach 1	3865.39	Capital _ Prop	31100.00	970.00	982.51		983.77	0.008461	9.01	3450.78	433.93	0.56
Reach 1	3865.39	FW	31100.00	970.00	982.88		984.31	0.008777	9.59	3243.12	370.00	0.57
Reach 1	3579.81	Capital _ Prop	31100.00	967.01	980.31		981.45	0.007441	8.58	3624.14	444.05	0.53
Reach 1	3579.81	FW	31100.00	967.01	980.56		981.86	0.008014	9.13	3406.23	390.00	0.54
Reach 1	3289.64	Capital _ Prop	31100.00	965.01	978.25		979.34	0.007023	8.35	3722.46	455.10	0.52
Reach 1	3289.64	FW	31100.00	965.01	978.92		979.85	0.005437	7.73	4022.09	453.64	0.46
Reach 1	2974.88	Capital _ Prop	31200.00	963.00	973.63	973.14	975.56	0.022824	11.14	2801.48	540.83	0.86
Reach 1	2974.88	FW	31200.00	963.00	974.60		976.76	0.019621	11.79	2645.69	410.00	0.82
Reach 1	2627.11	Capital _ Prop	31200.00	961.01	972.37		972.75	0.003154	5.00	6239.20	913.45	0.34
Reach 1	2627.11	FW	31200.00	961.01	972.82		973.46	0.004429	6.41	4866.53	620.00	0.40
Reach 1	2307.93	Capital _ Prop	31200.00	959.00	970.41	968.40	971.19	0.008208	7.10	4393.07	777.14	0.53
Reach 1	2307.93	FW	31200.00	959.00	970.88		971.69	0.007084	7.23	4314.09	655.00	0.50

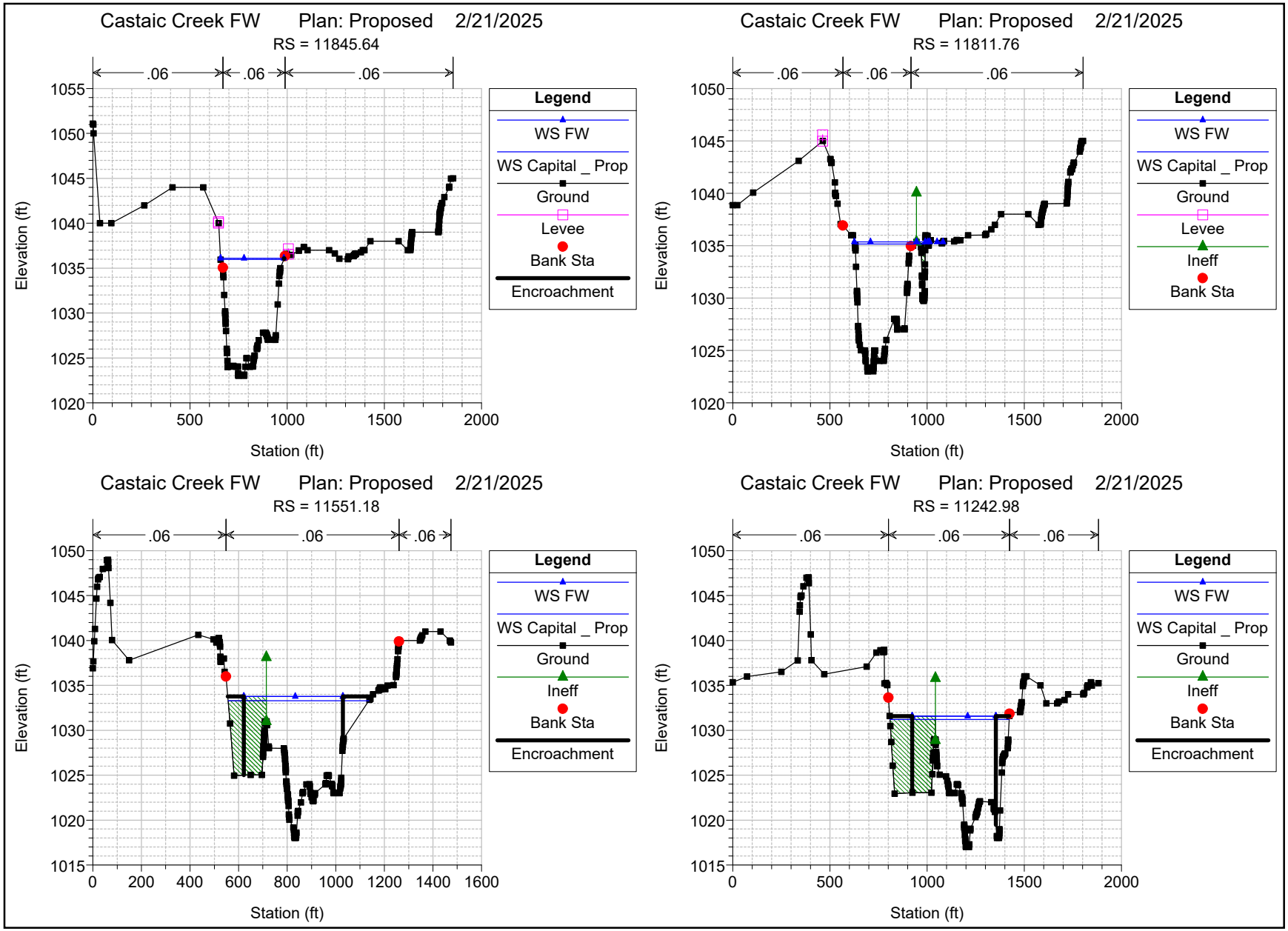
HEC-RAS Plan: Proposed River: Castaic Creek Reach: Reach 1 (Continued)

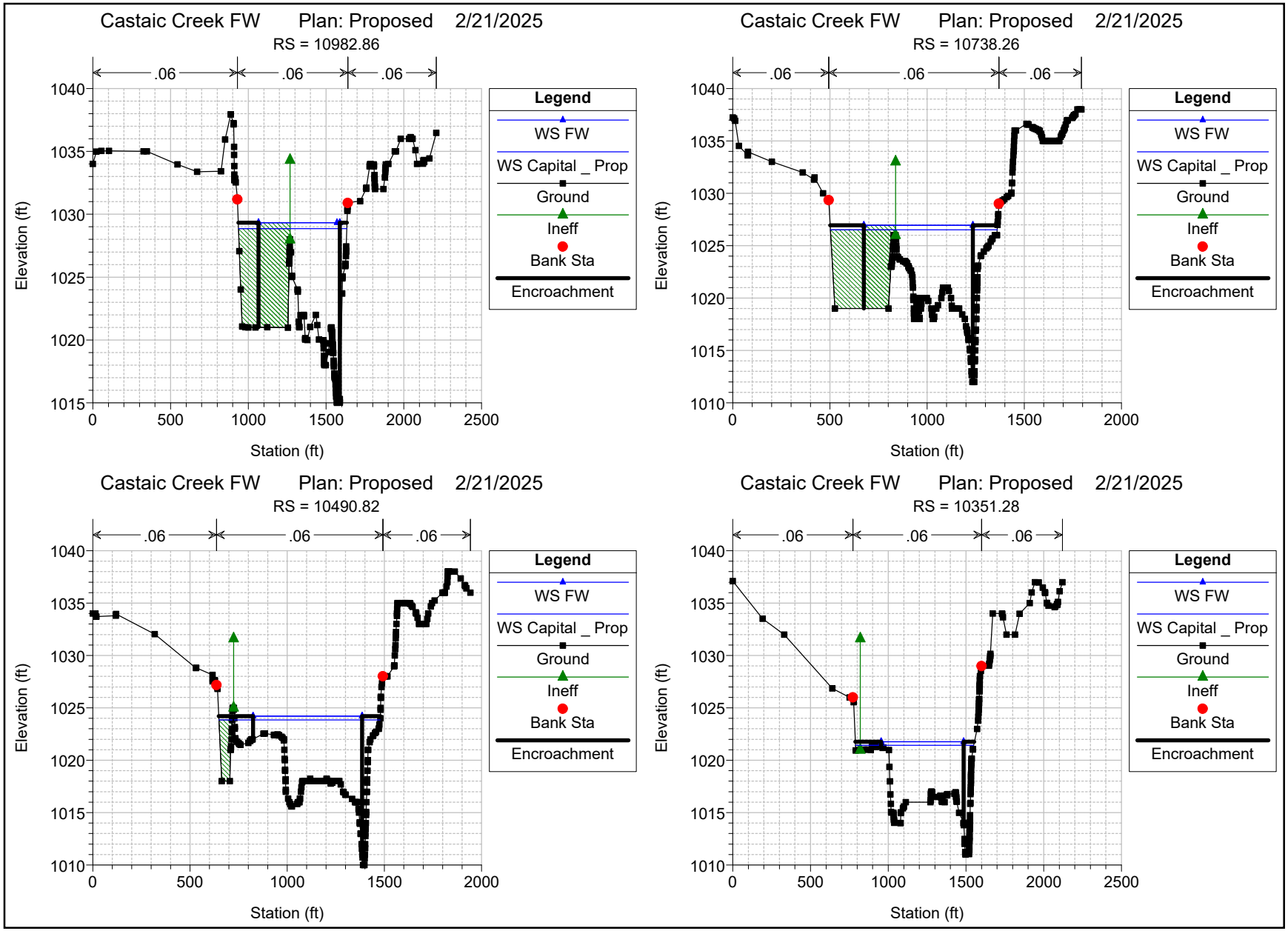
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	1981.79	Capital _ Prop	31200.00	958.00	967.36	965.21	968.37	0.009101	8.04	3882.98	616.95	0.56
Reach 1	1981.79	FW	31200.00	958.00	967.82	965.47	969.05	0.009099	8.91	3503.44	465.00	0.57

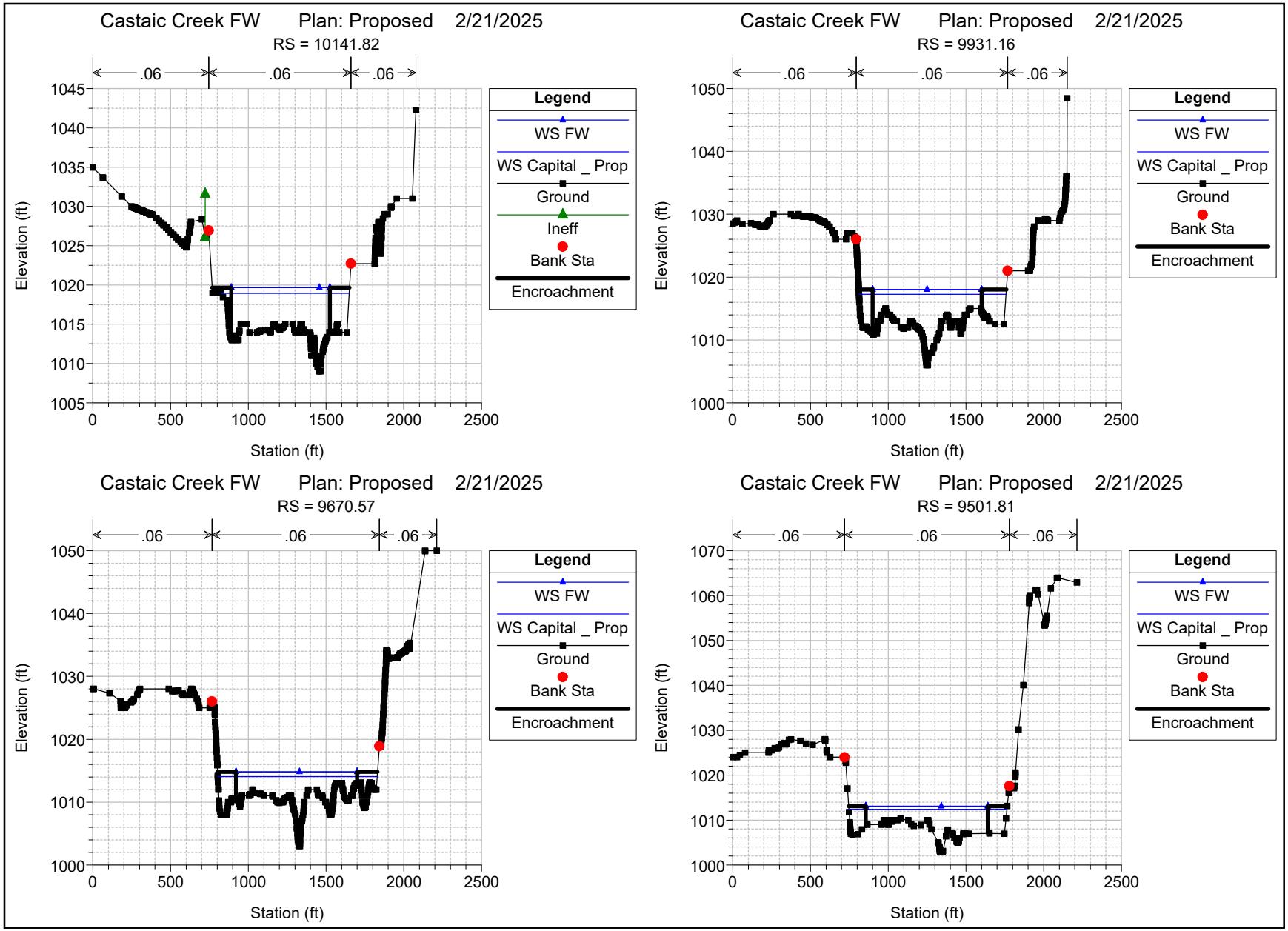

Castaic Creek FW Plan: Proposed 2/21/2025
RS = 13141
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 13371
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 12937
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 12730
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Levee
Bank Sta
Encroachment

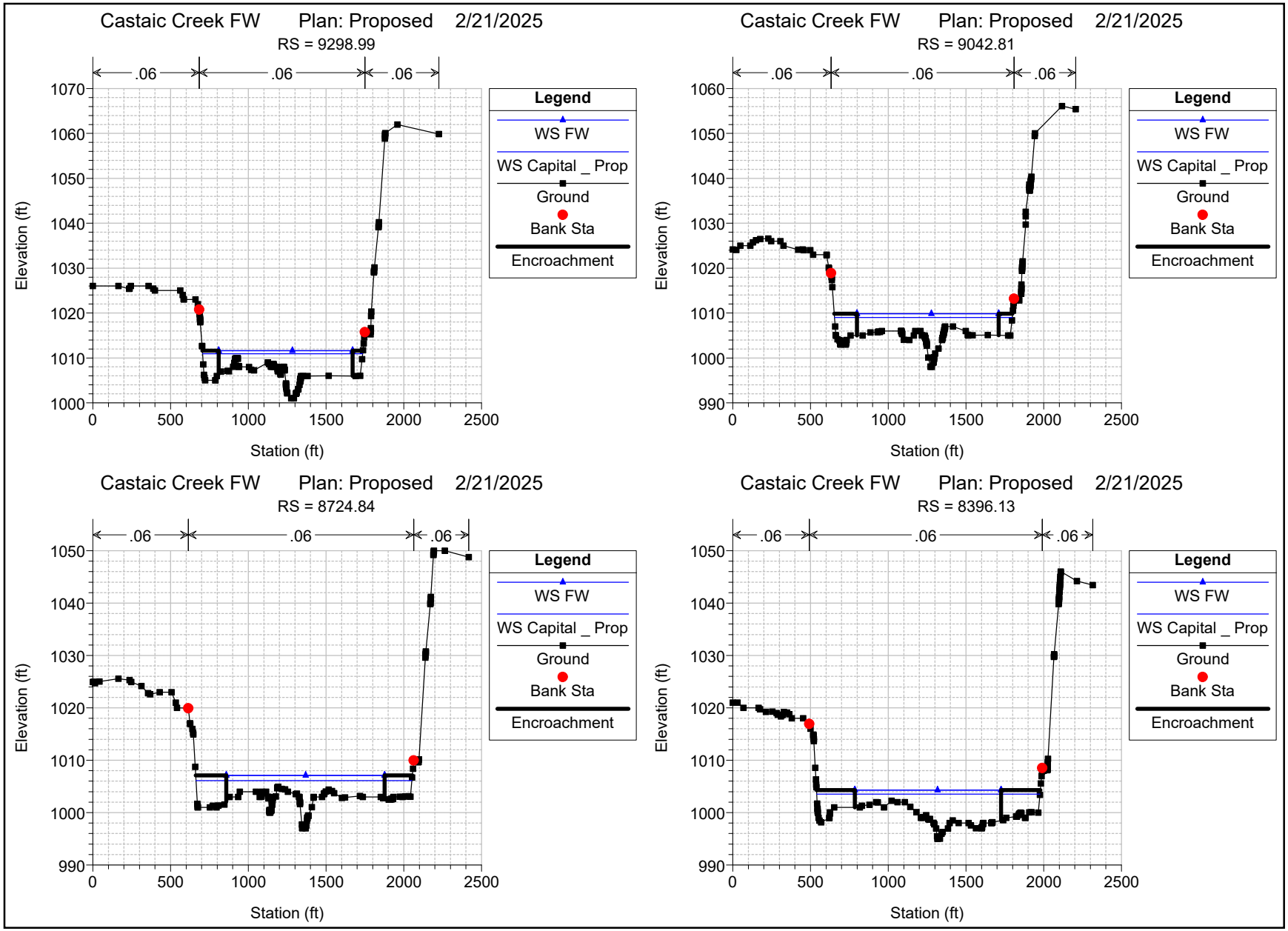

Castaic Creek FW Plan: Proposed 2/21/2025
RS = 12543
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS Capital _ Prop
WS FW
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 12350
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS Capital _ Prop
WS FW
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 12146
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 12059.65 BR I5 Bridge
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Ineff
Bank Sta
Pier Debris
Encroachment

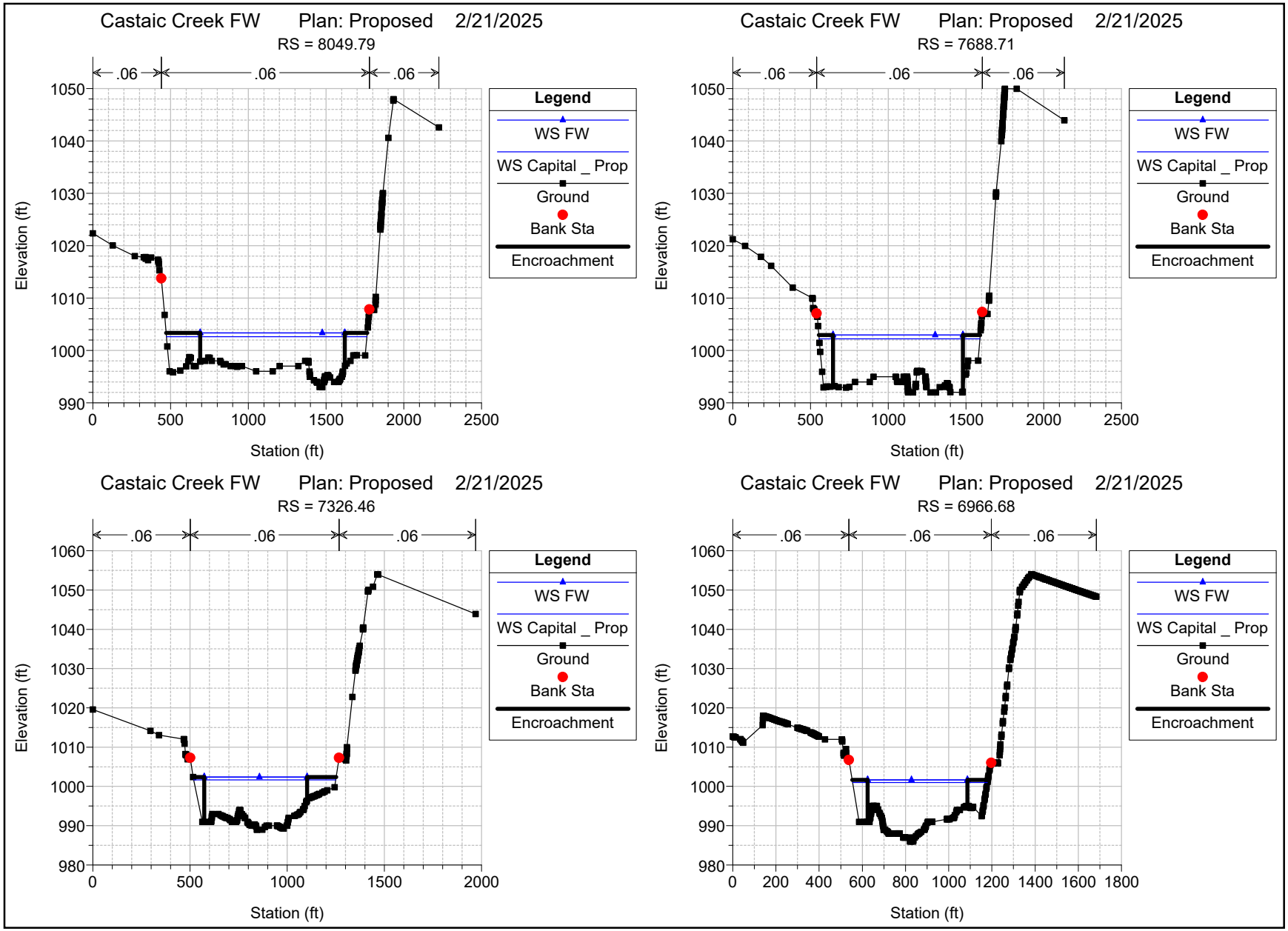

Castaic Creek FW Plan: Proposed 2/21/2025
RS = 11957.32
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Levee
Bank Sta
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 11923
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 11917.82 BR Old Road Bridge
Pier Debris
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 11878.32

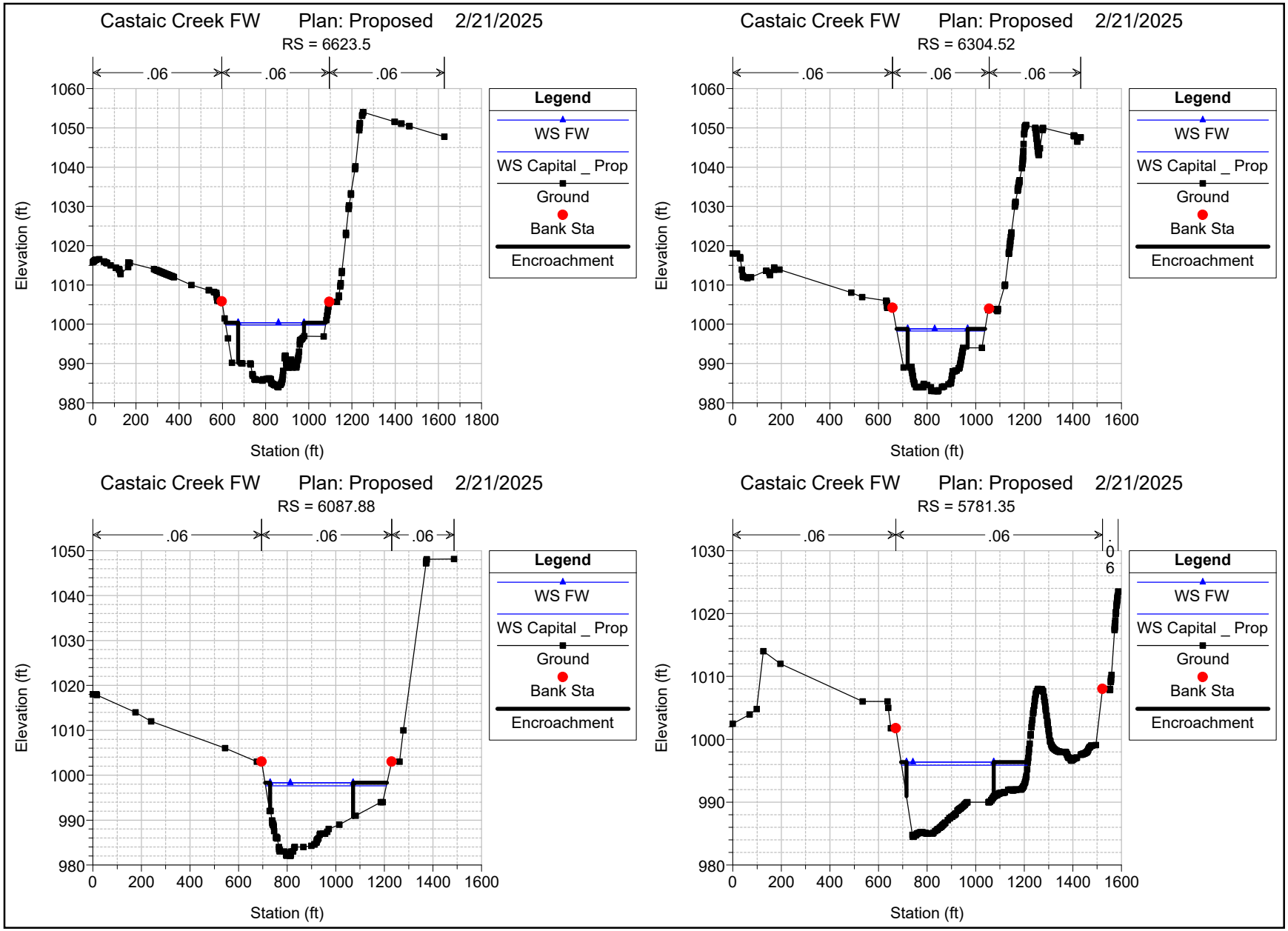

Castaic Creek FW Plan: Proposed 2/21/2025
RS = 11845.64
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Levee
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 11811.76
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Levee
Ineff
Bank Sta
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 11551.18
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 11242.98
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Ineff
Bank Sta
Encroachment

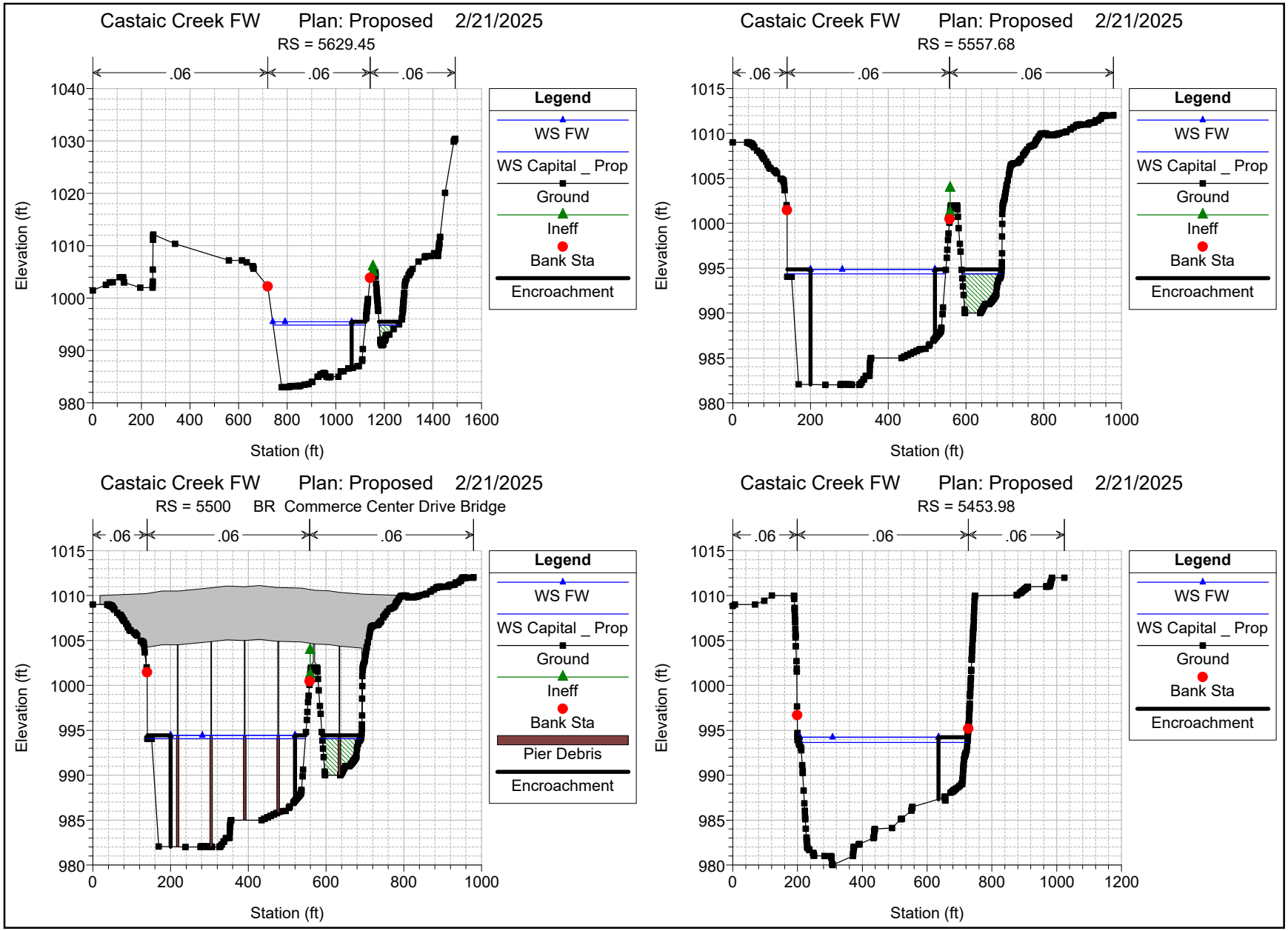

Castaic Creek FW Plan: Proposed 2/21/2025
RS = 10982.86
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 10738.26
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 10490.82
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 10351.28
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Ineff
Bank Sta
Encroachment

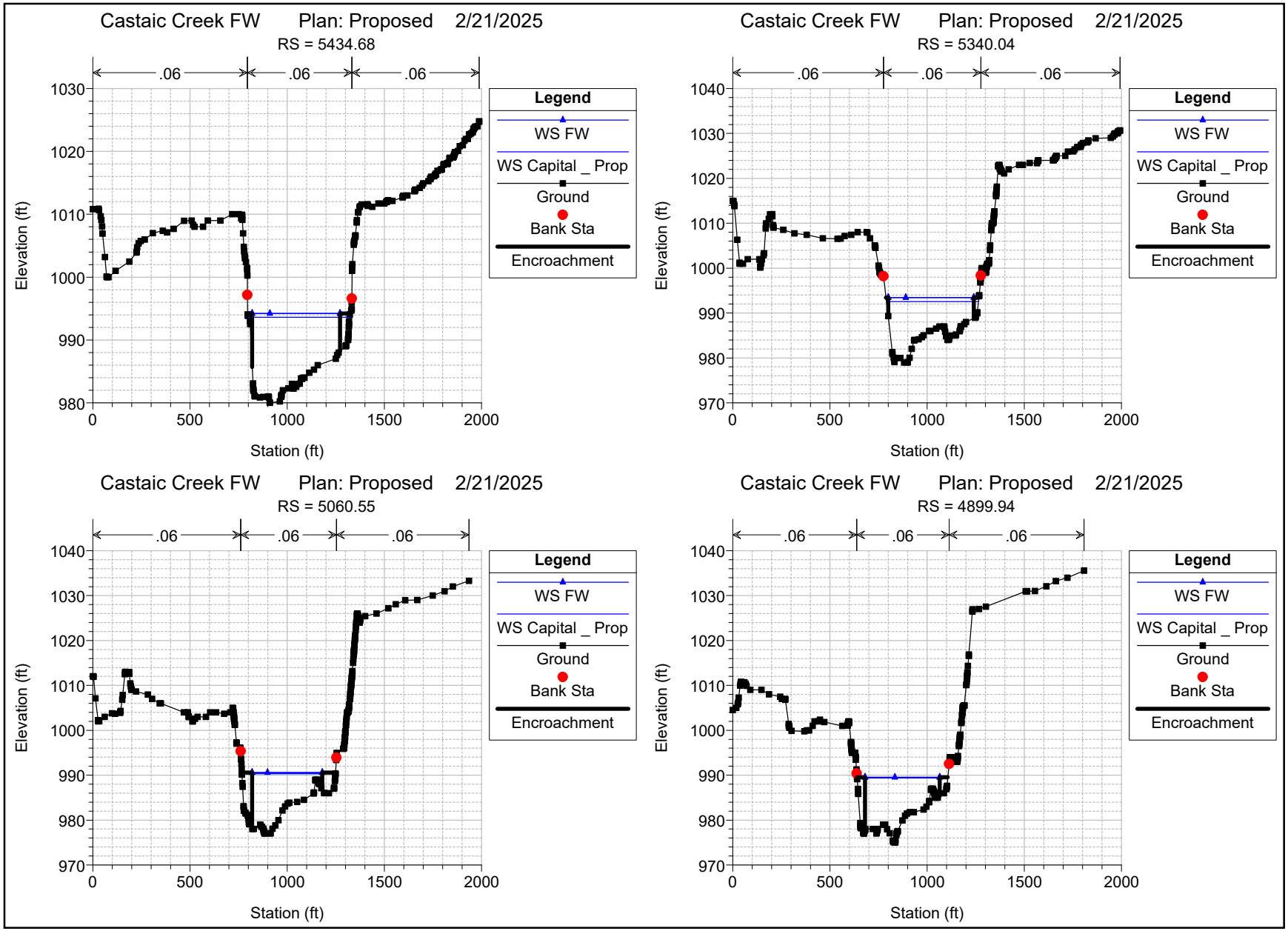

Castaic Creek FW Plan: Proposed 2/21/2025
RS = 10141.82
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 9931.16
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 9670.57
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 9501.81

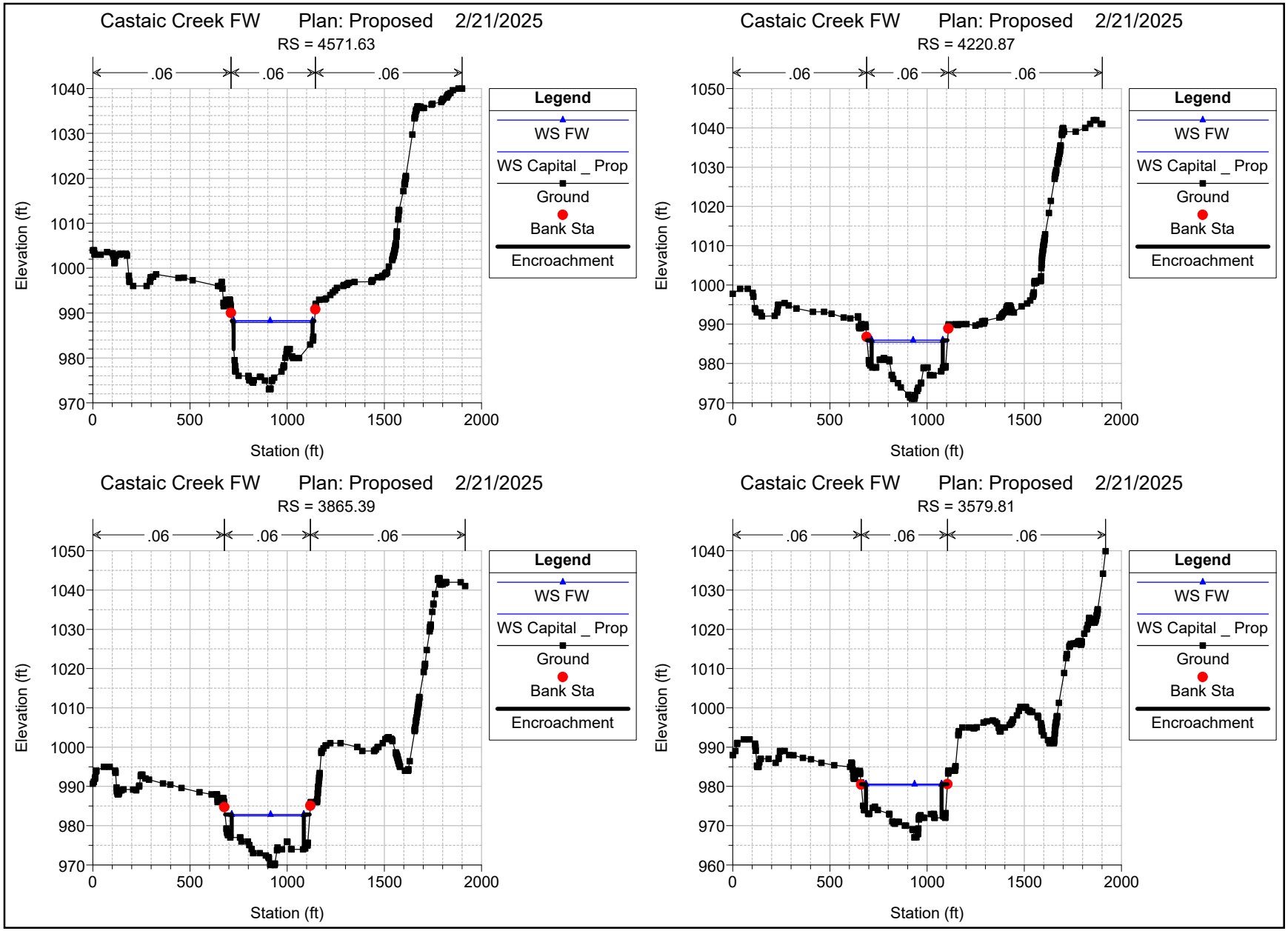

Castaic Creek FW Plan: Proposed 2/21/2025
RS = 9298.99
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 9042.81
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 8724.84
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 8396.13
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Bank Sta
Encroachment

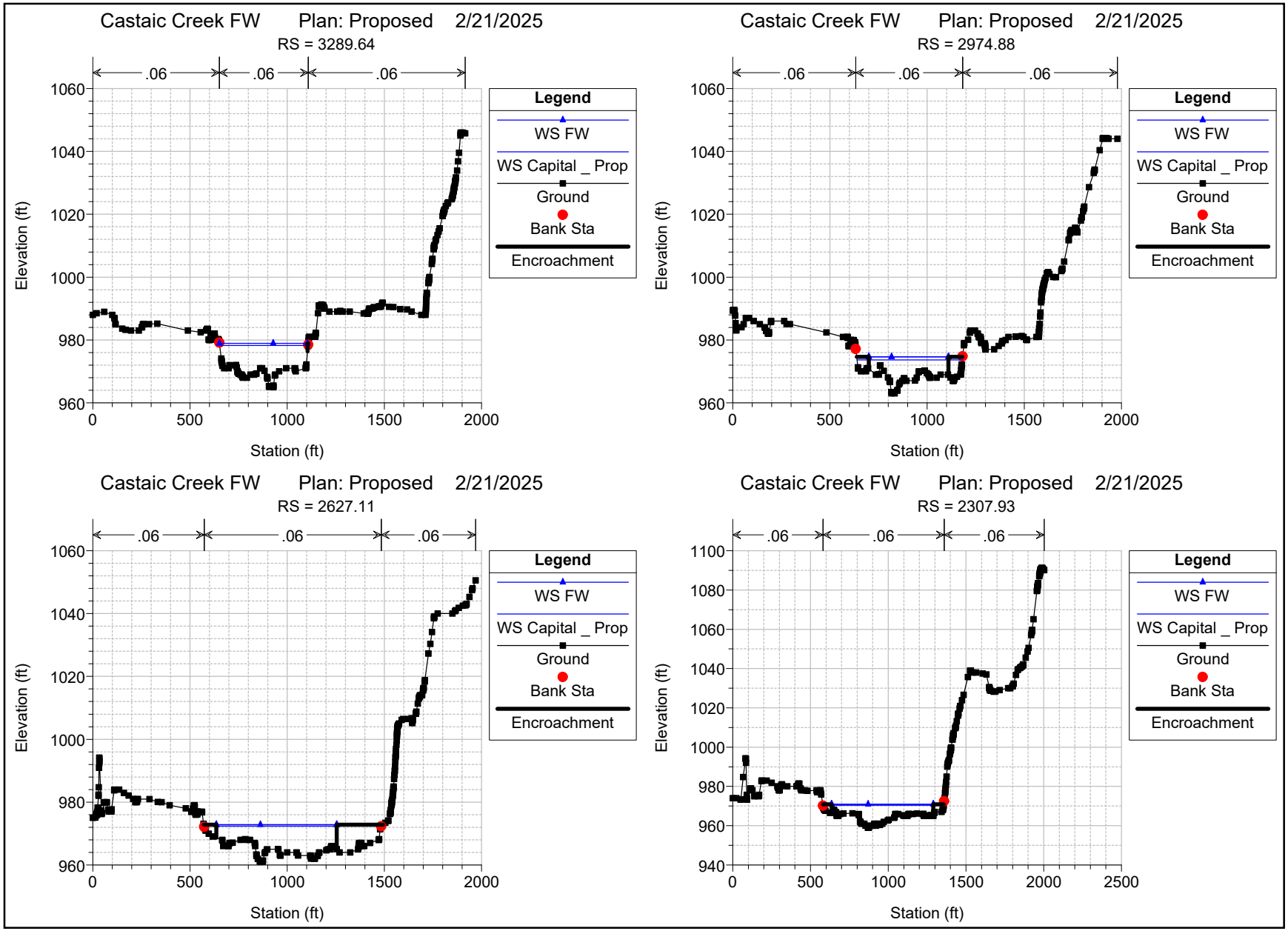

Castaic Creek FW Plan: Proposed 2/21/2025
RS = 8049.79
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 7688.71
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 7326.46
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 6966.68

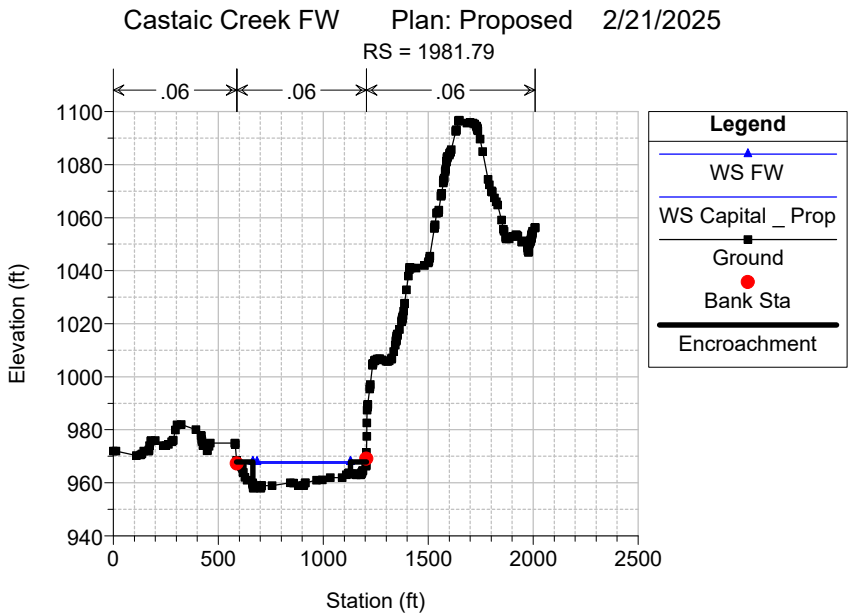

Castaic Creek FW Plan: Proposed 2/21/2025
RS = 6623.5
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 6304.52
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 6087.88
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 5781.35


Castaic Creek FW Plan: Proposed 2/21/2025
RS = 5629.45
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Ineff
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 5557.68
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 5500 BR Commerce Center Drive Bridge
Pier Debris
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 5453.98


Castaic Creek FW Plan: Proposed 2/21/2025
RS = 5434.68
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 5340.04
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 5060.55
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 4899.94

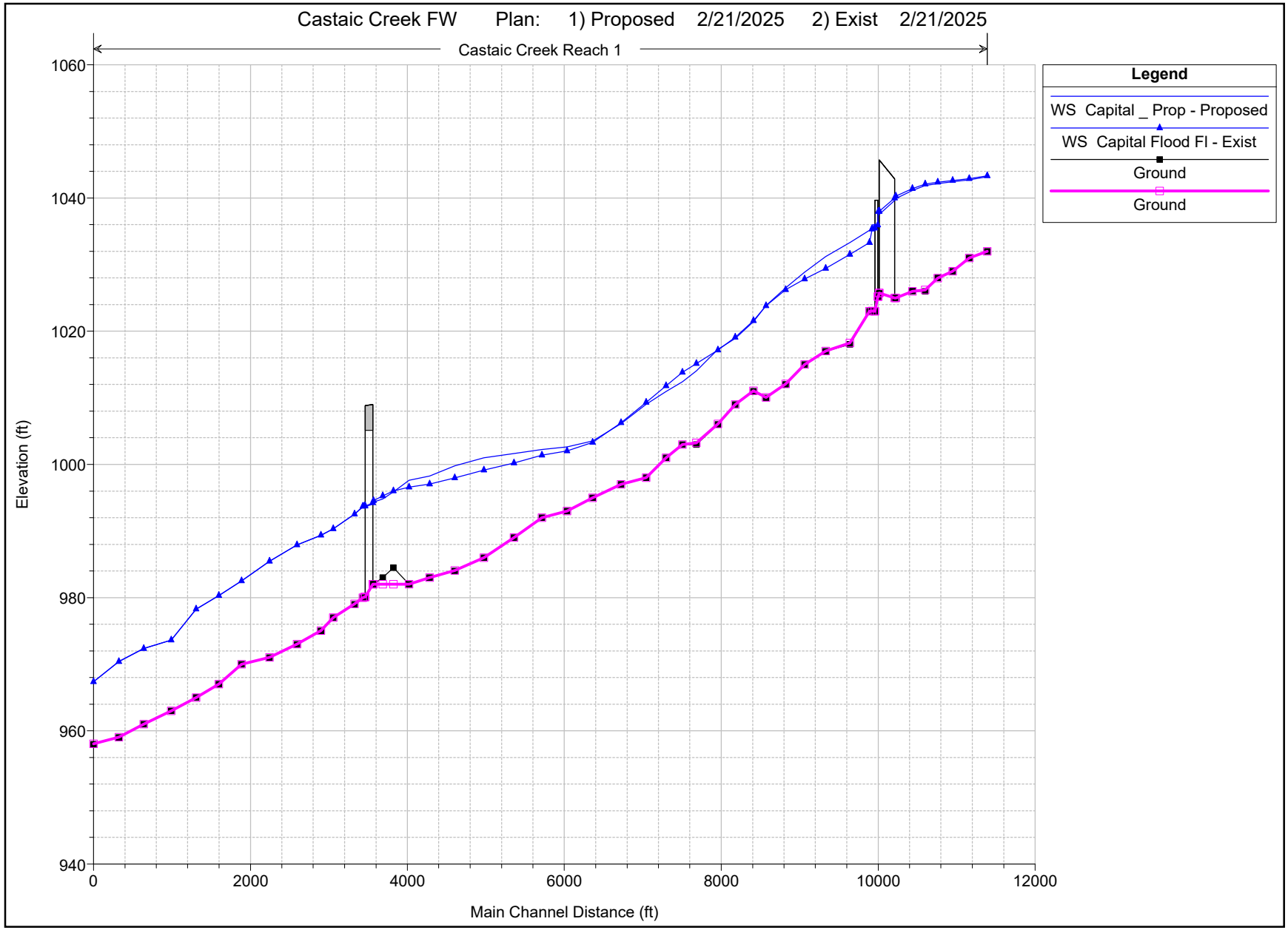

Castaic Creek FW Plan: Proposed 2/21/2025
RS = 4571.63
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 4220.87
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 3865.39
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 3579.81


Castaic Creek FW Plan: Proposed 2/21/2025
RS = 3289.64
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Bank Sta
Encroachment
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 2974.88
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 2627.11
Castaic Creek FW Plan: Proposed 2/21/2025
RS = 2307.93

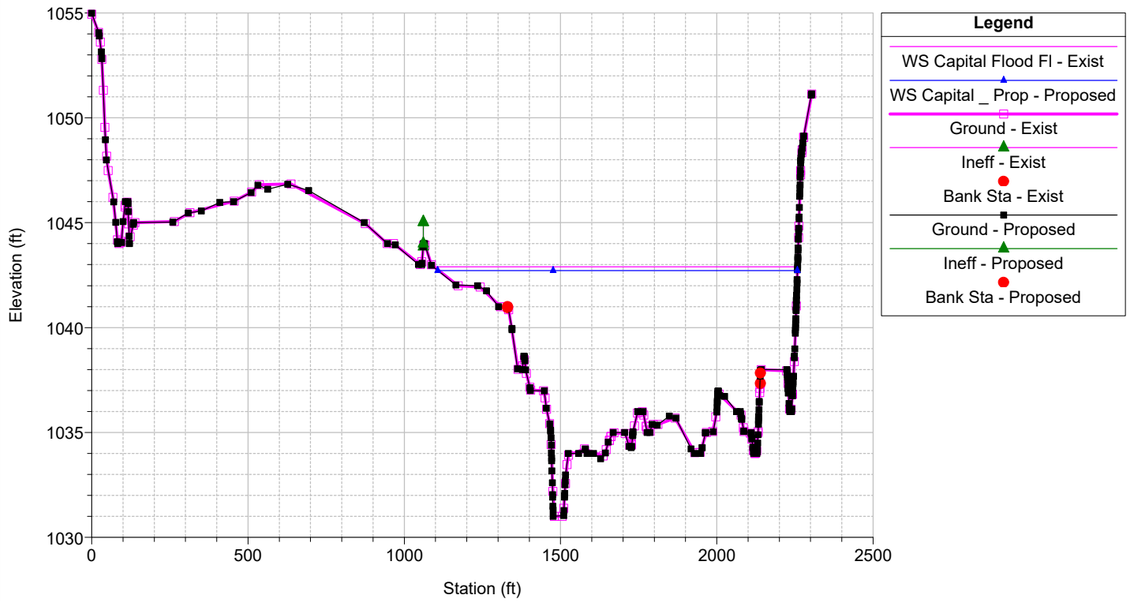

Castaic Creek FW Plan: Proposed 2/21/2025
RS = 1981.79
.06
.06
.06
Elevation (ft)
1100
1080
1060
1040
1020
1000
980
960
940
0
500
1000
1500
2000
2500
Station (ft)
Legend
WS FW
WS Capital _ Prop
Ground
Bank Sta
Encroachment

PACE
Advanced Water Engineering

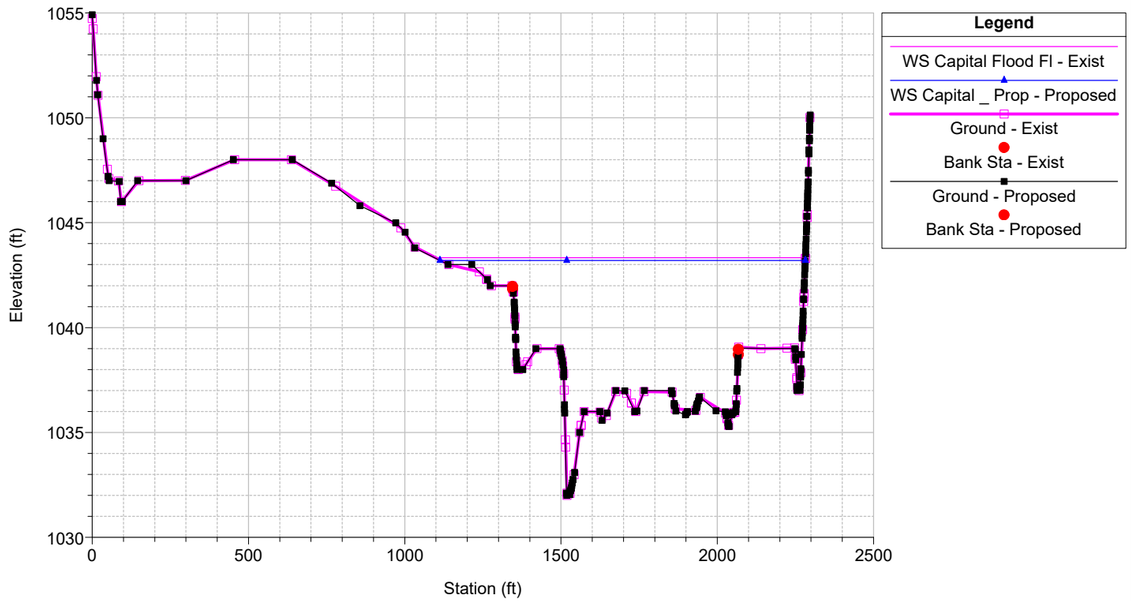
Appendix D – HEC-RAS Cross Section Comparison Existing vs. Proposed Conditions


Castaic Creek FW Plan: 1) Proposed 2/21/2025 2) Exist 2/21/2025
Castaic Creek Reach 1
Legend
WS Capital _ Prop - Proposed
WS Capital Flood Fl - Exist
Ground
Ground
Elevation (ft)
1060
1040
1020
1000
980
960
940
0
2000
4000
6000
8000
10000
12000
Main Channel Distance (ft)

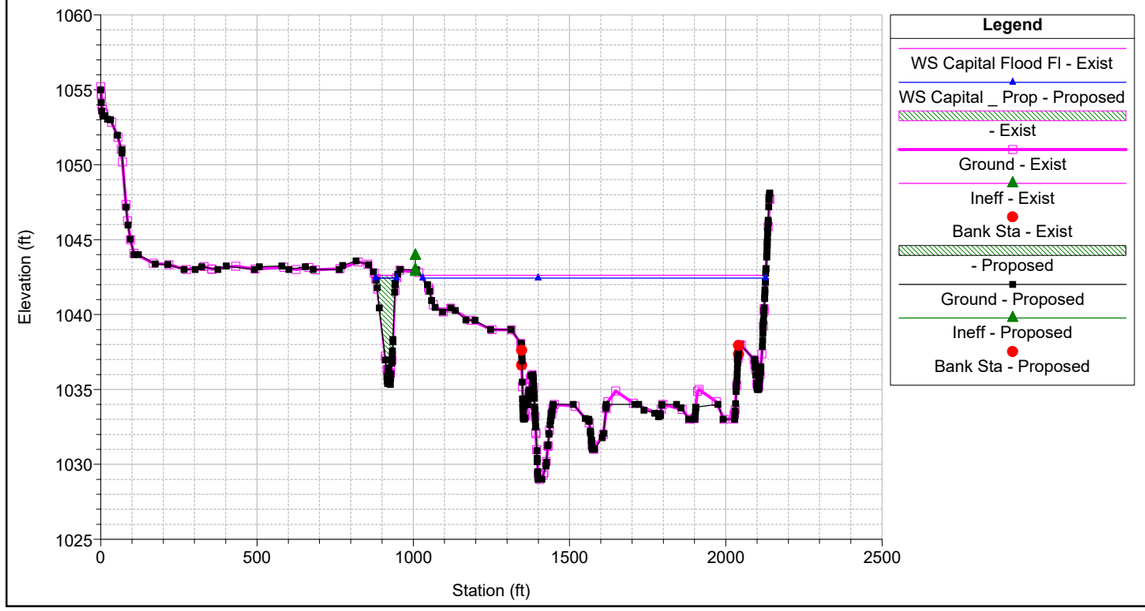
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 13141



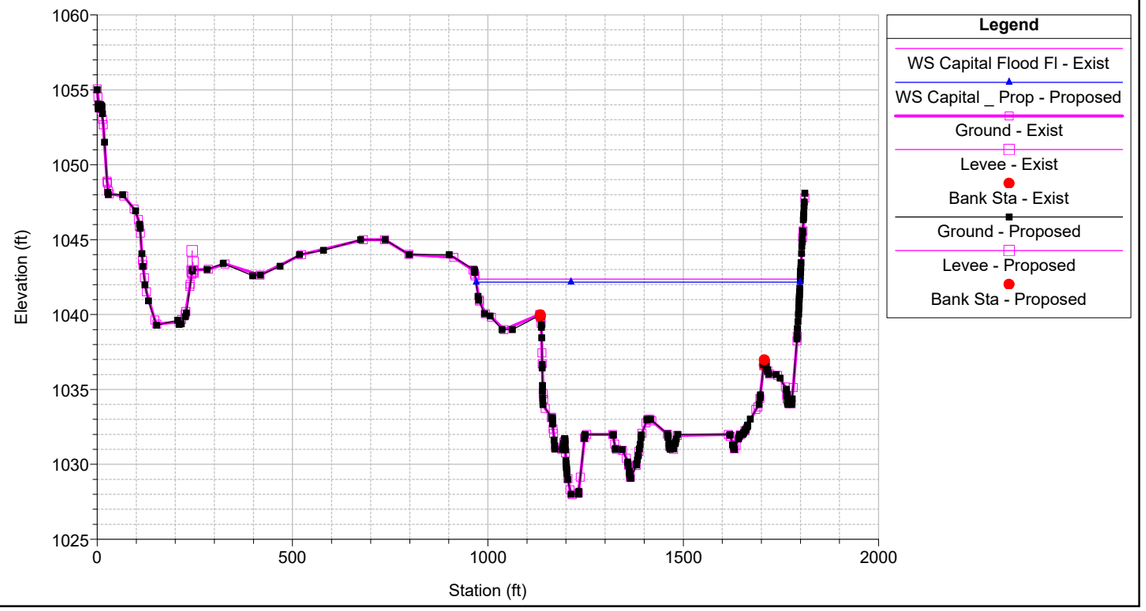
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 13371



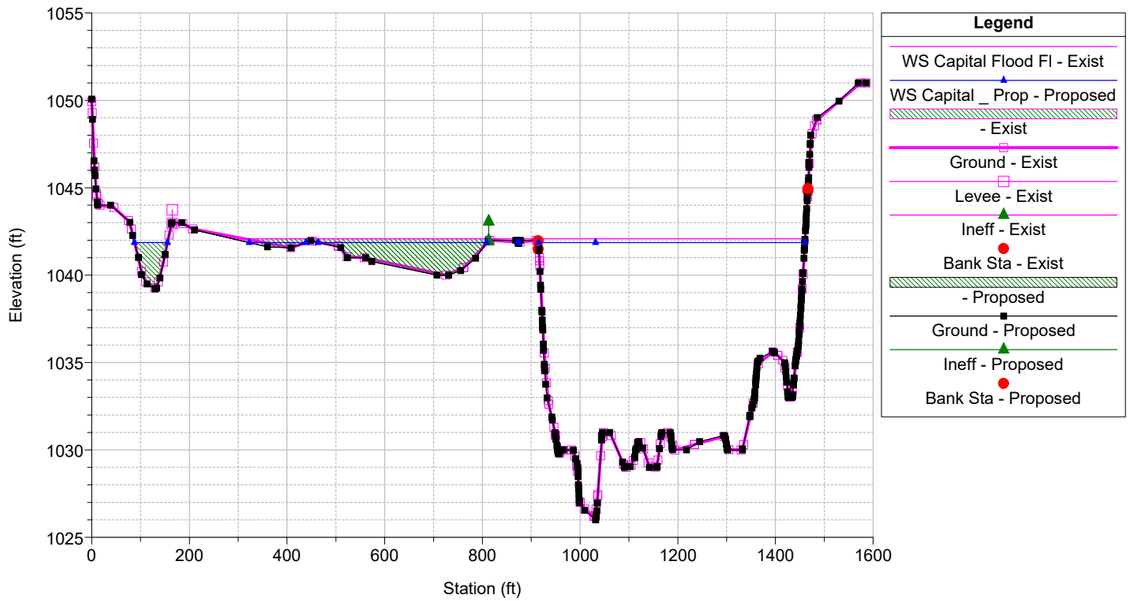
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 12937



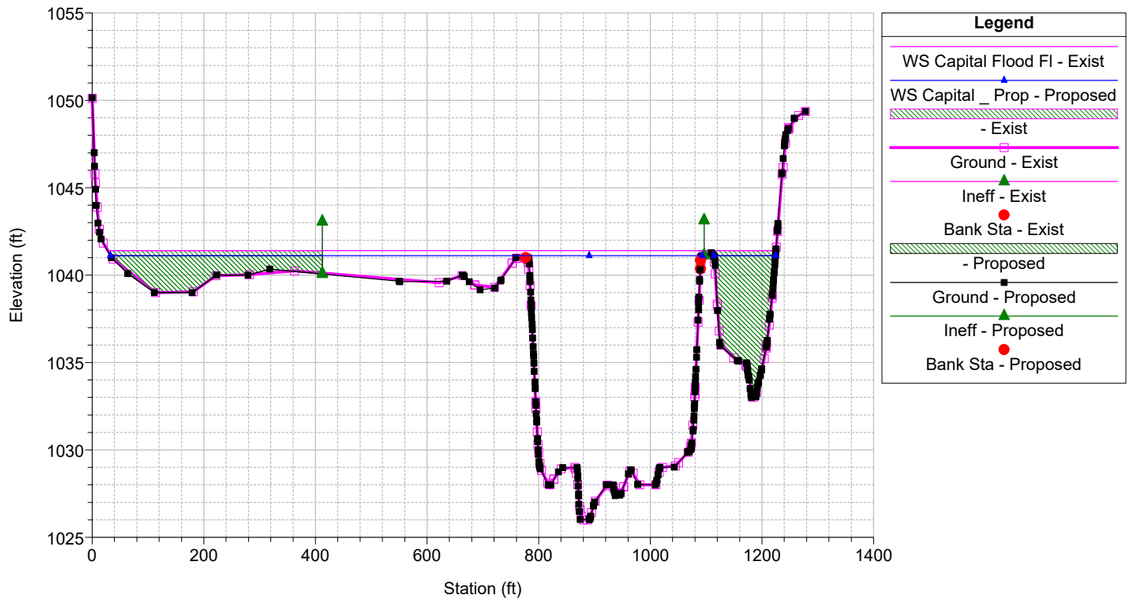
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 12730



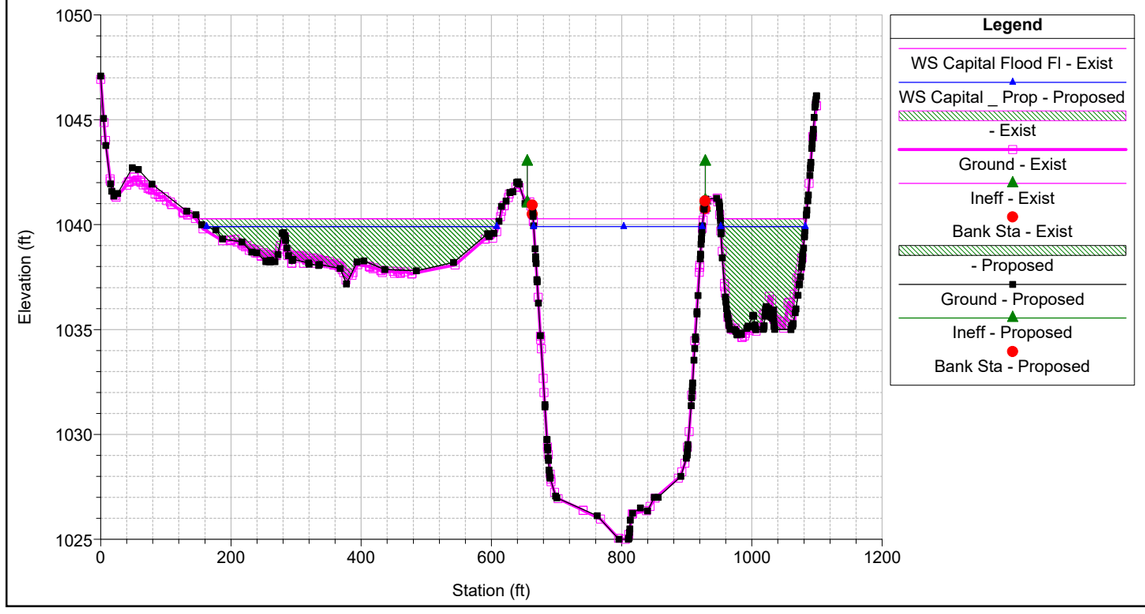
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 12543



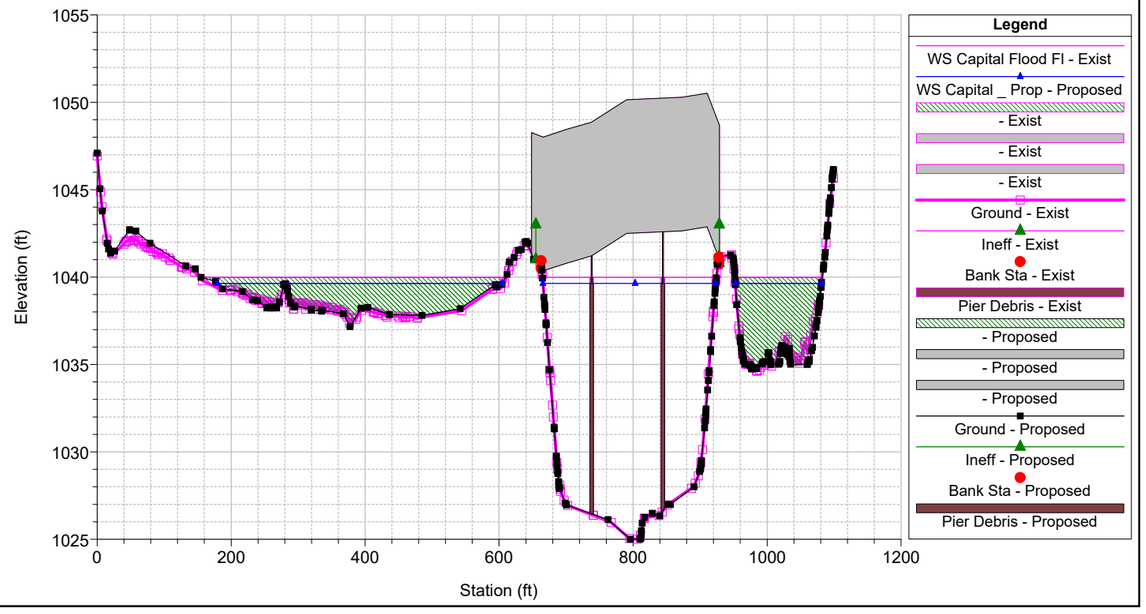
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 12350



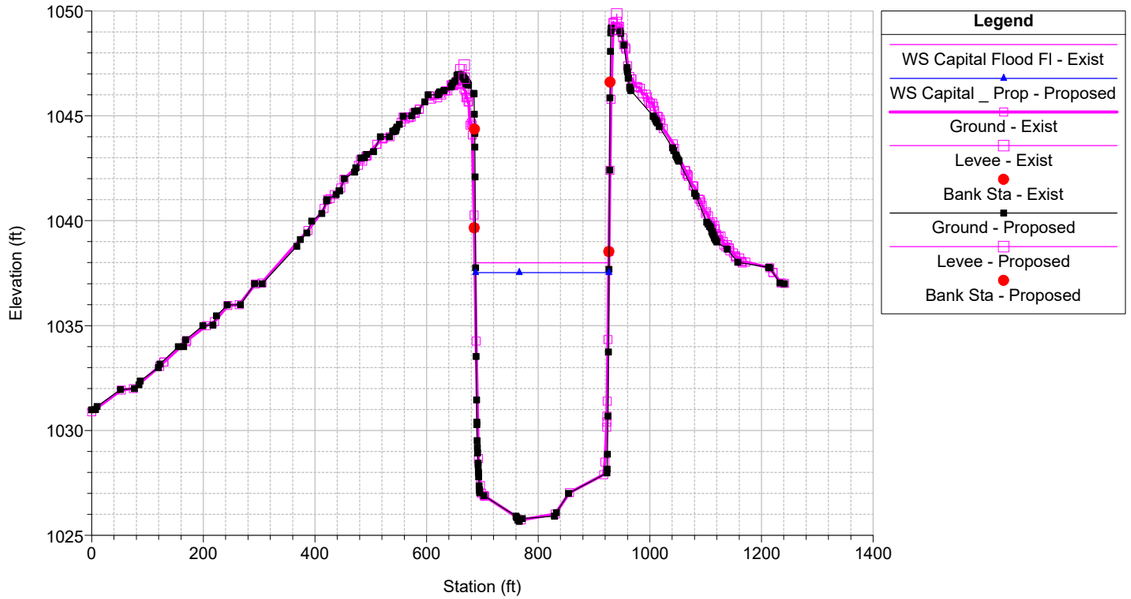
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 12146



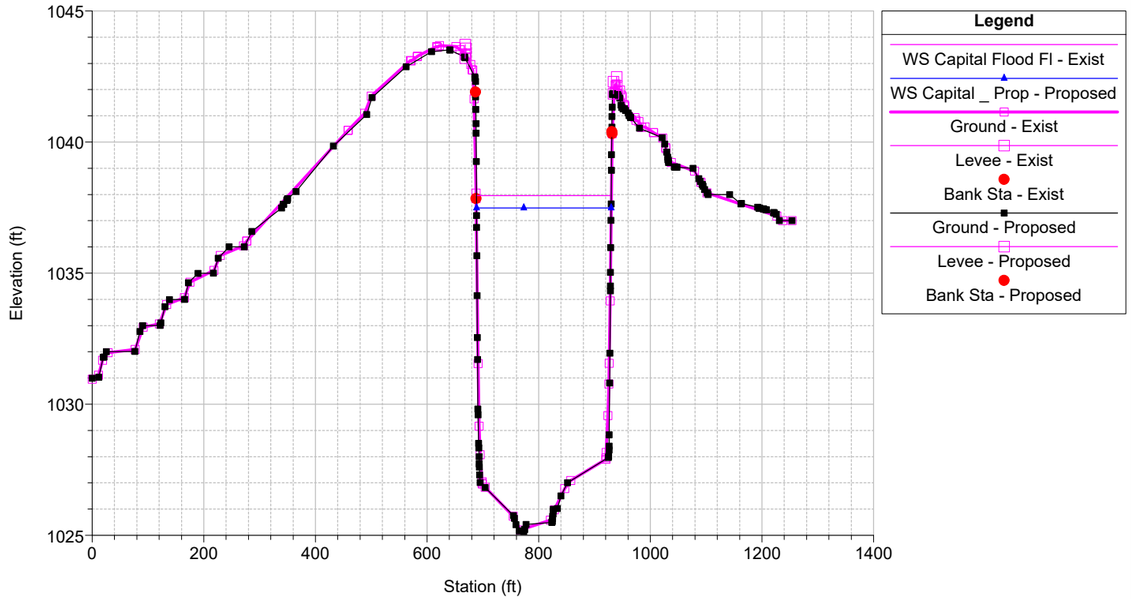
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 12059.65 BR I5 Bridge



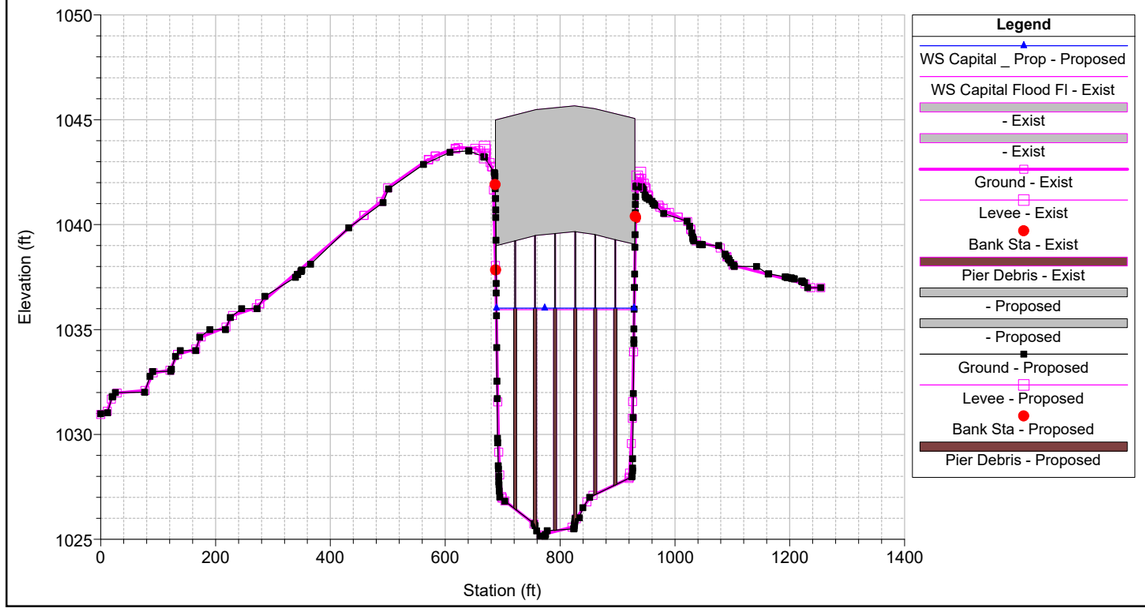
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 11957.32



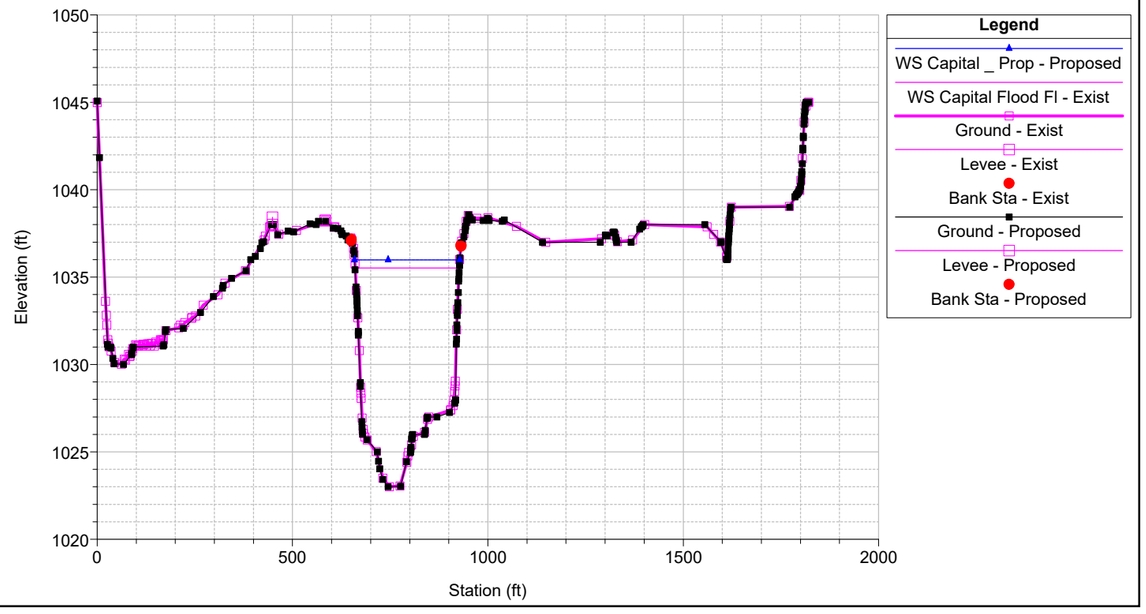
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 11923



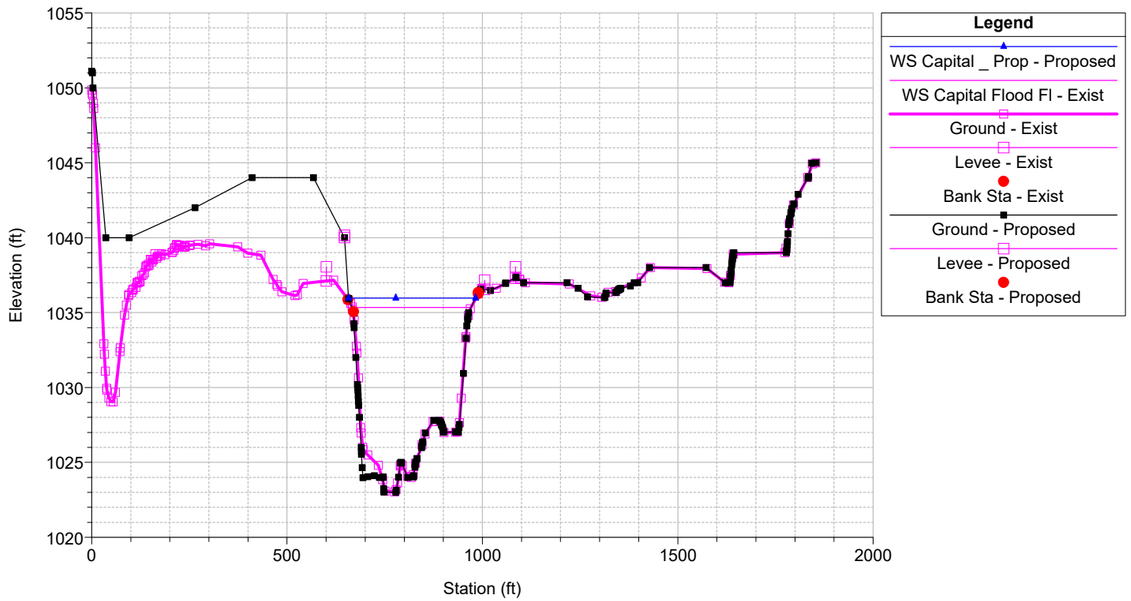
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 11917.82 BR Old Road Bridge



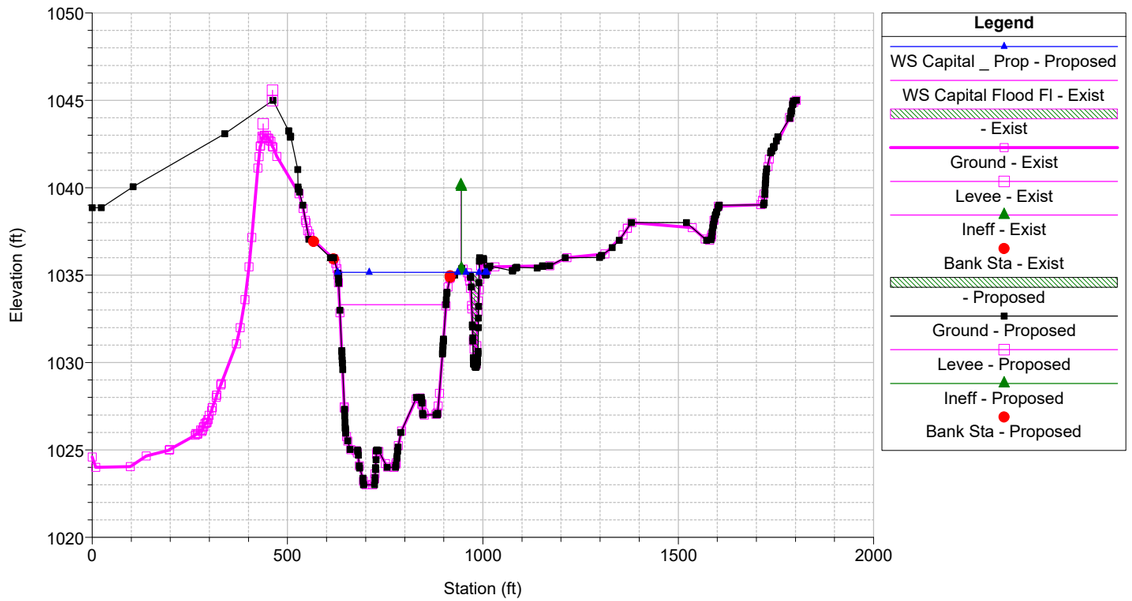
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 11878.32



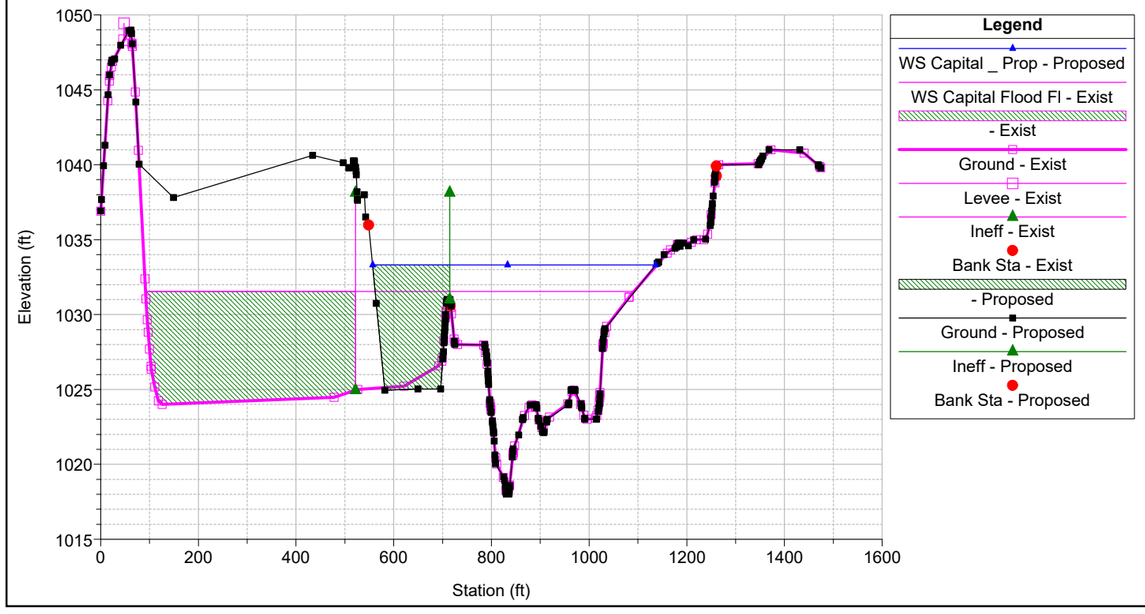
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 11845.64



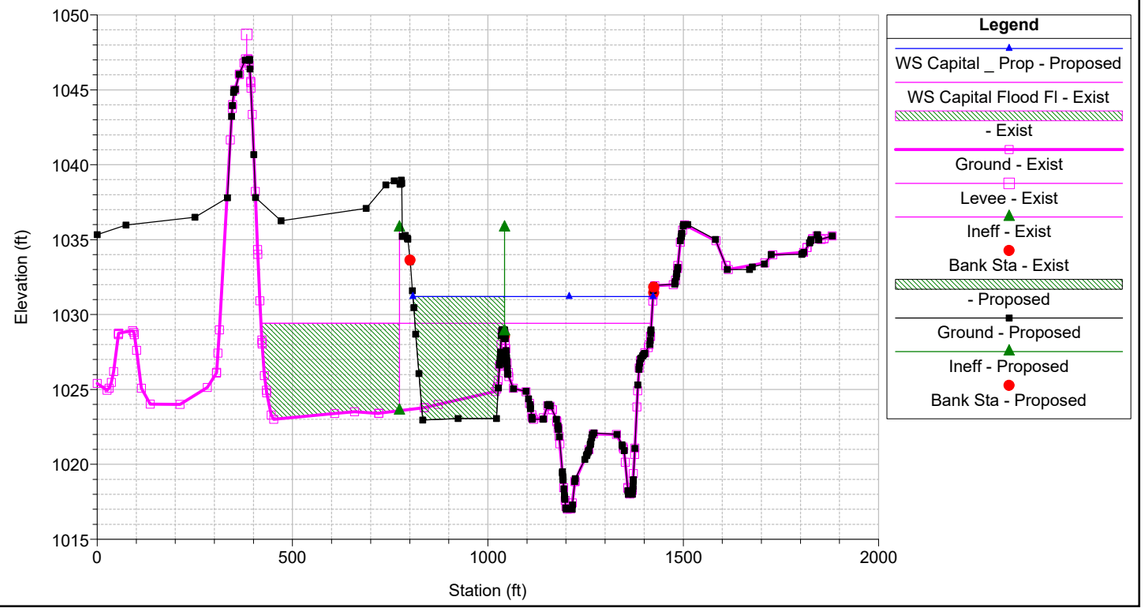
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 11811.76



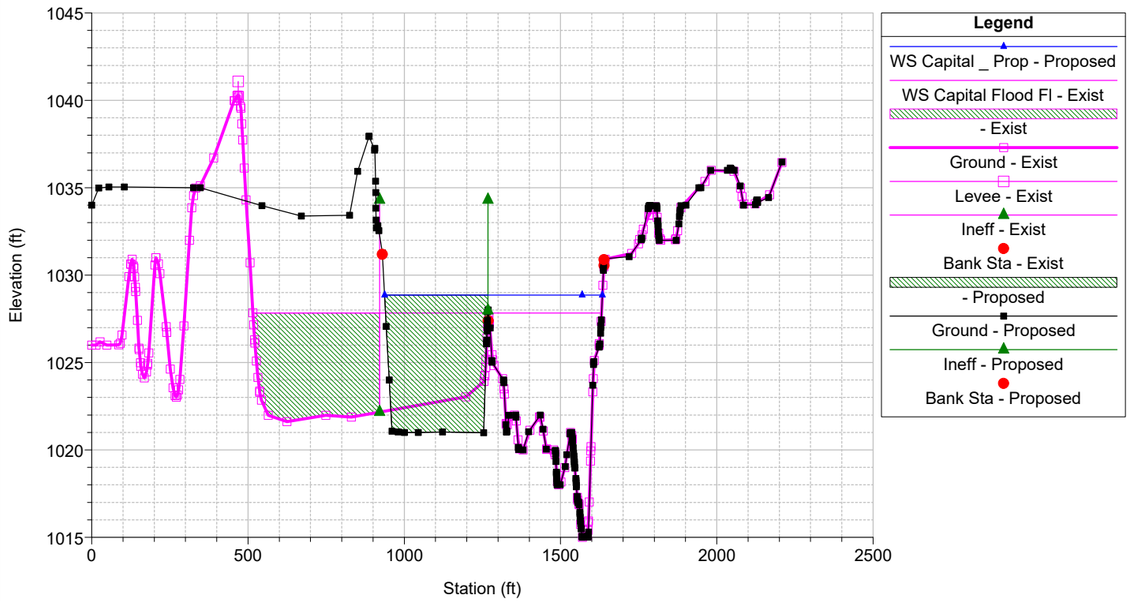
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 11551.18



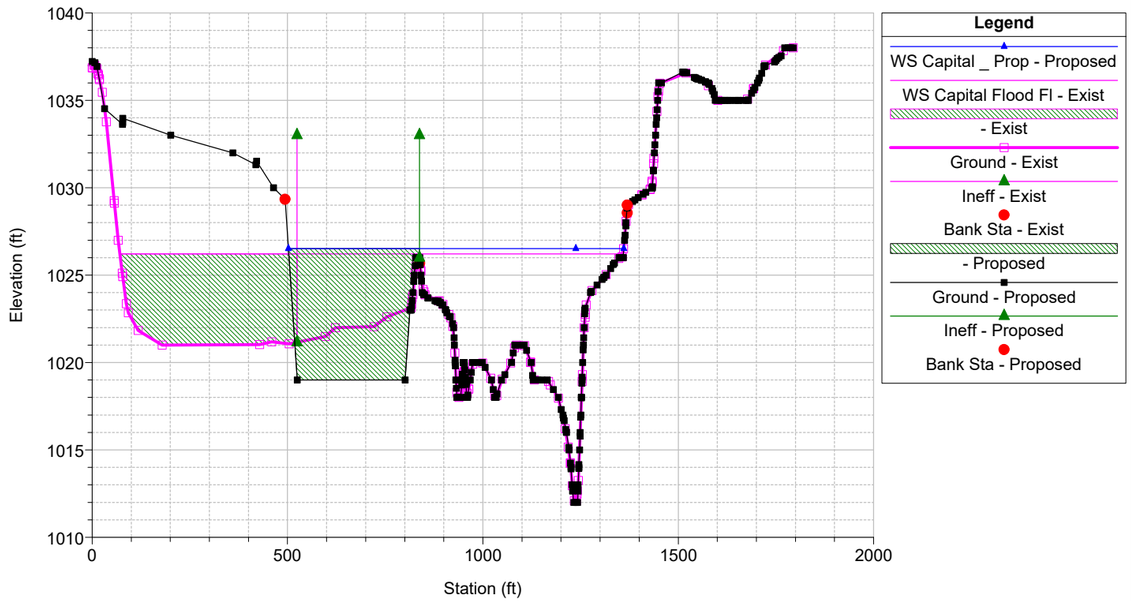
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 11242.98



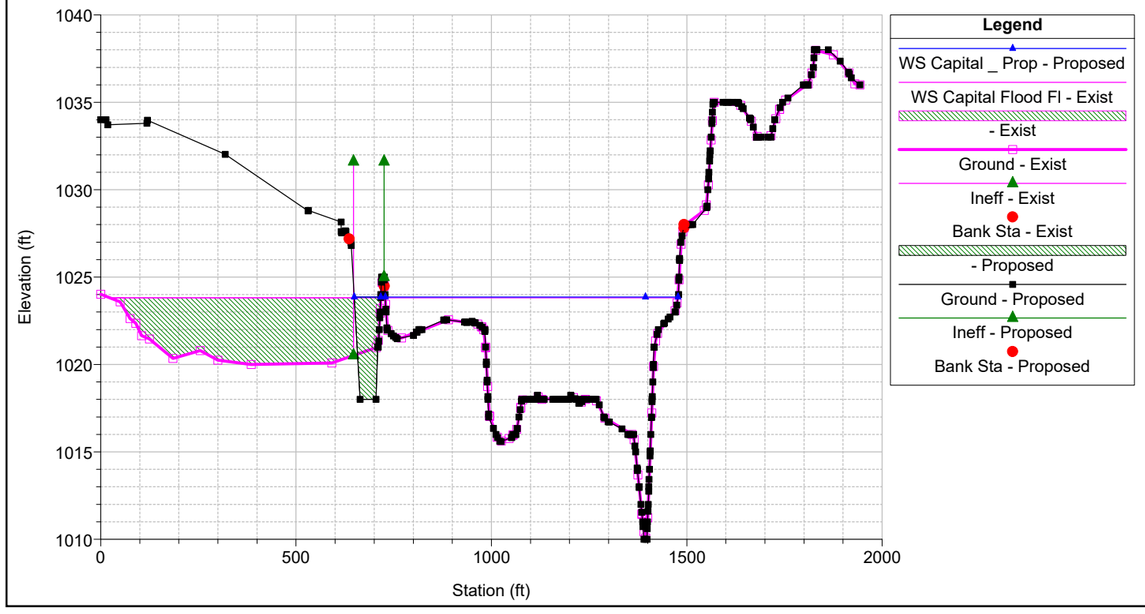
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 10982.86



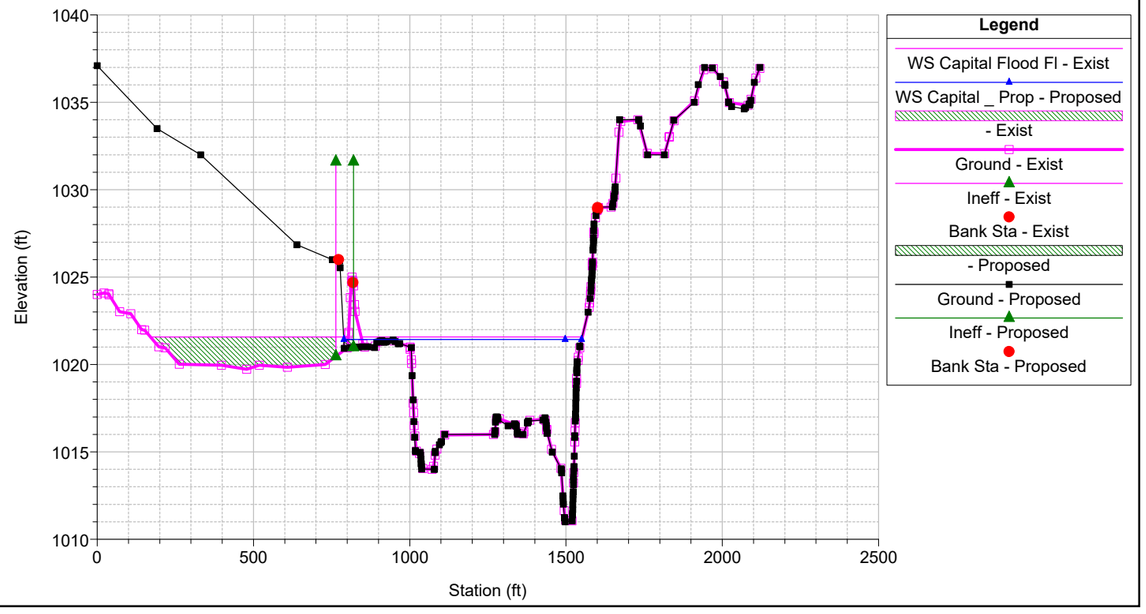
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 10738.26



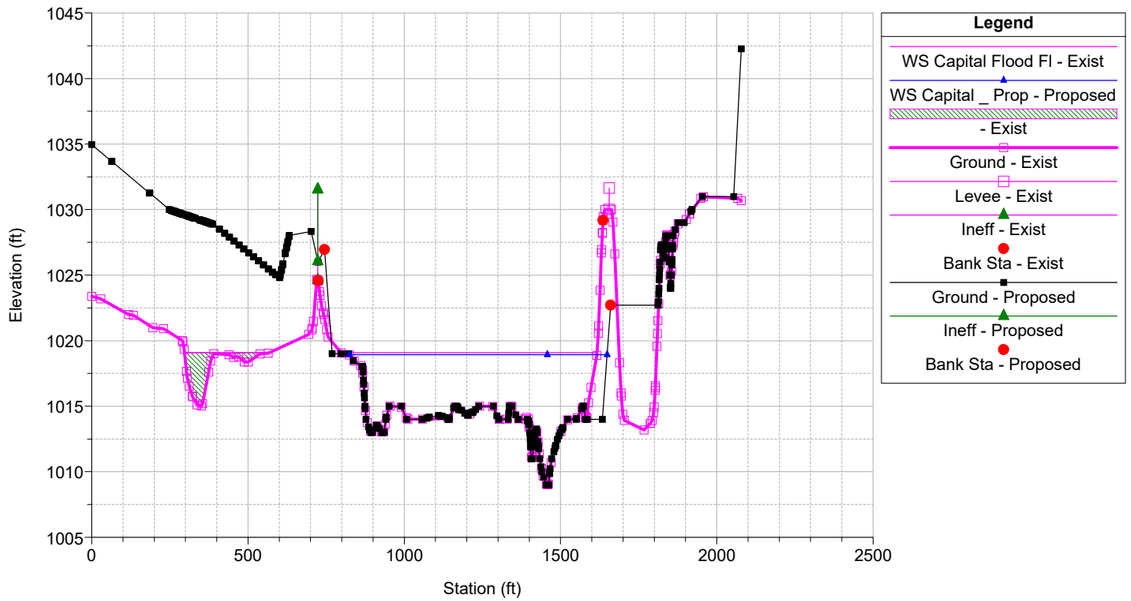
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 10490.82



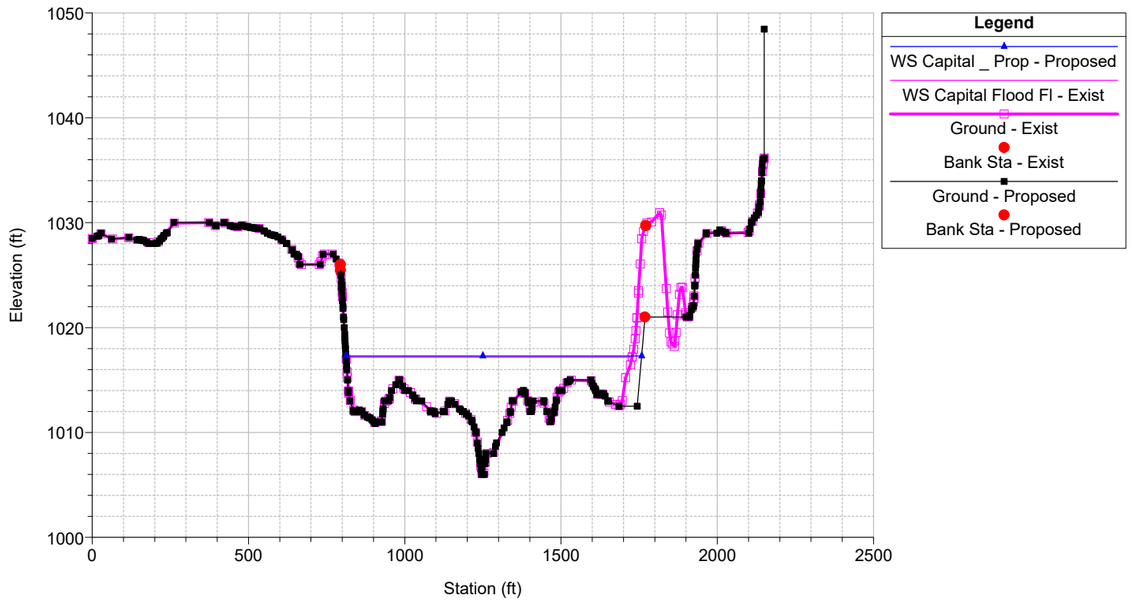
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 10351.28



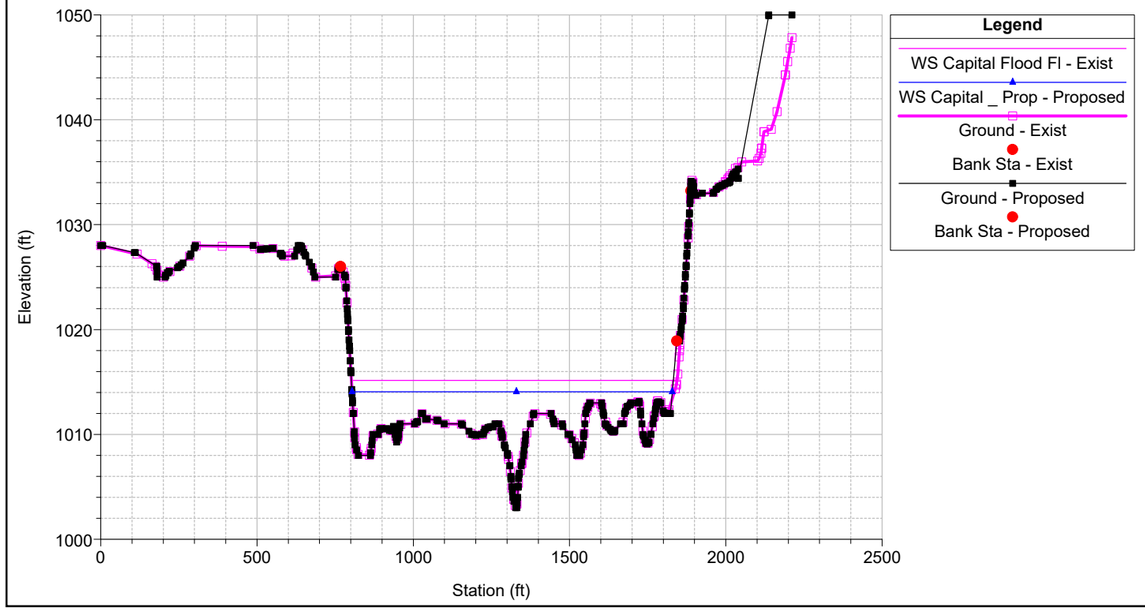
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 10141.82



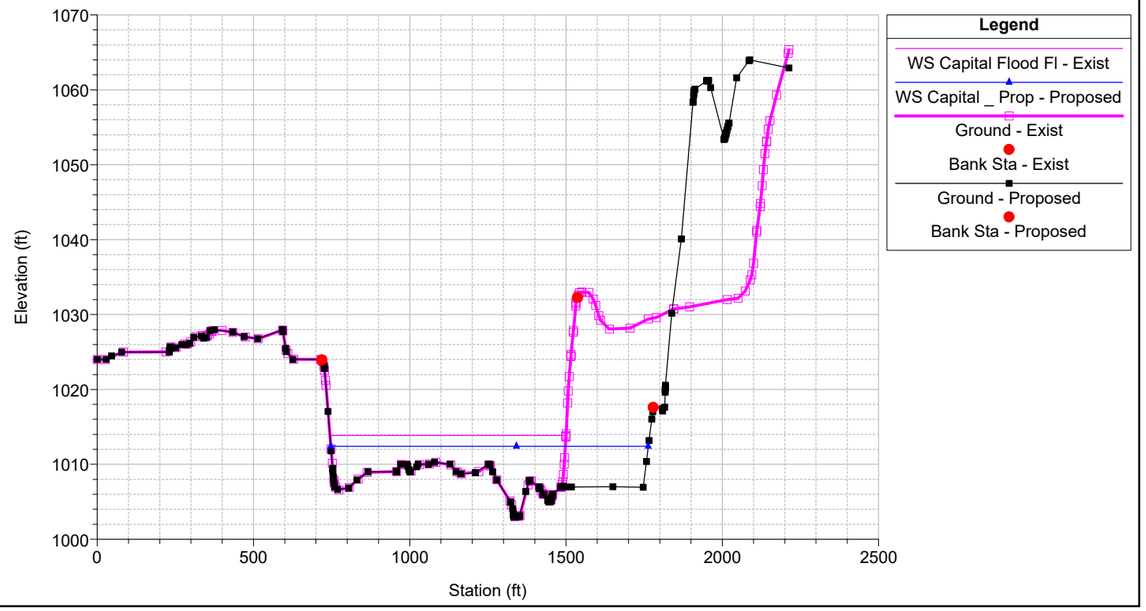
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 9931.16



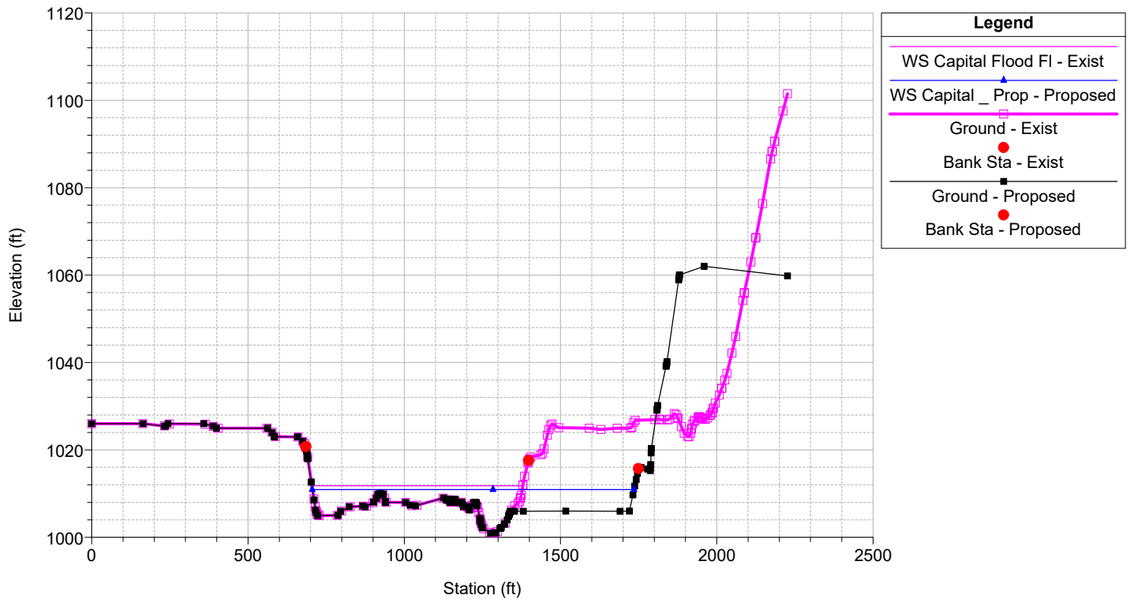
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 9670.57



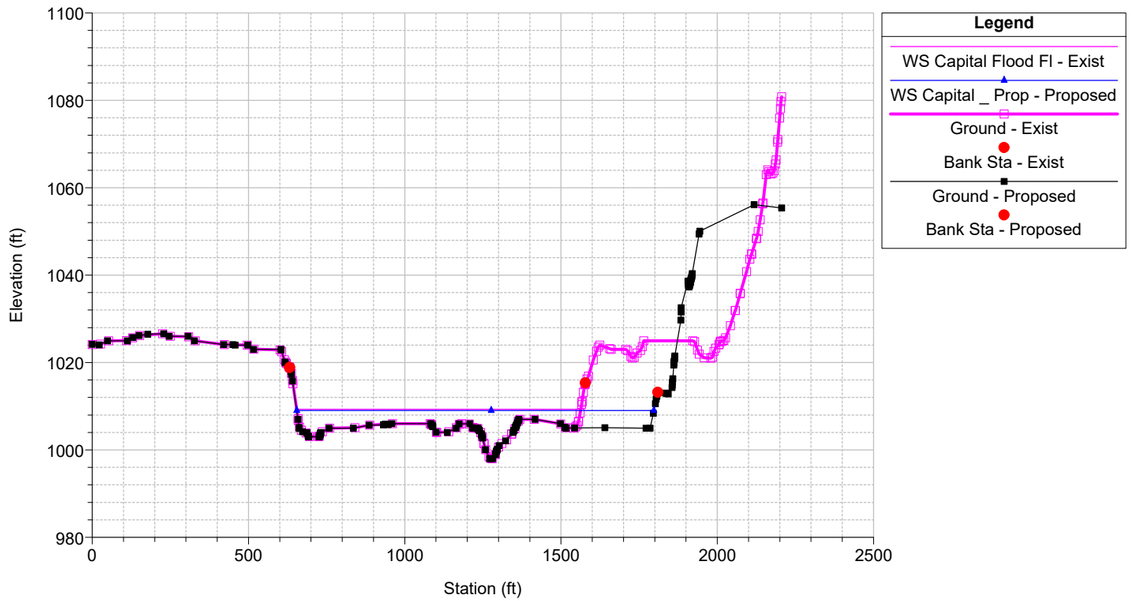
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 9501.81



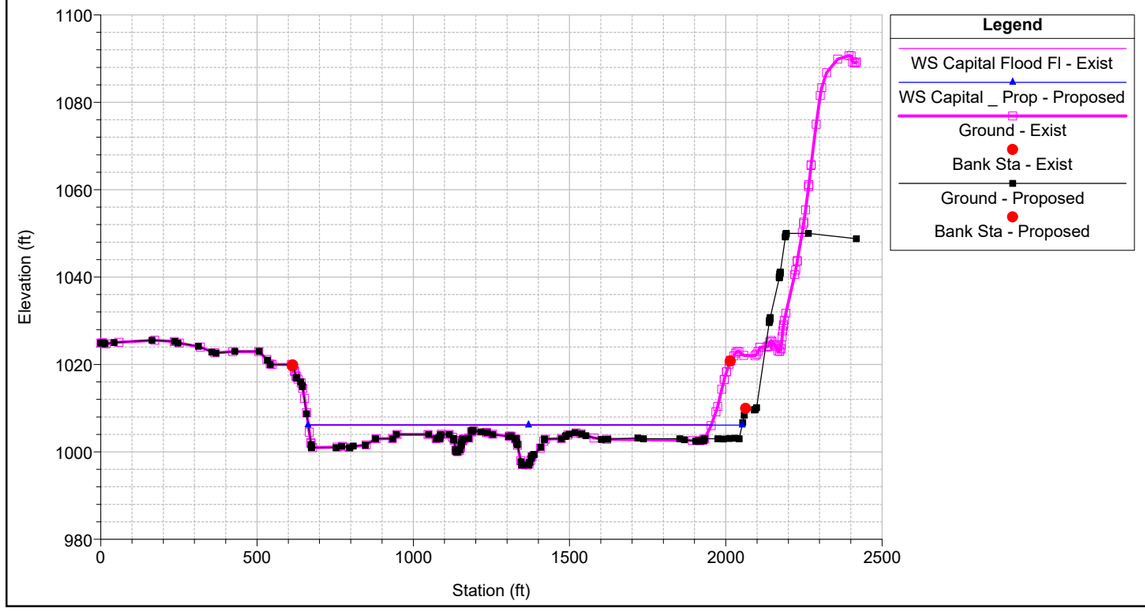
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 9298.99



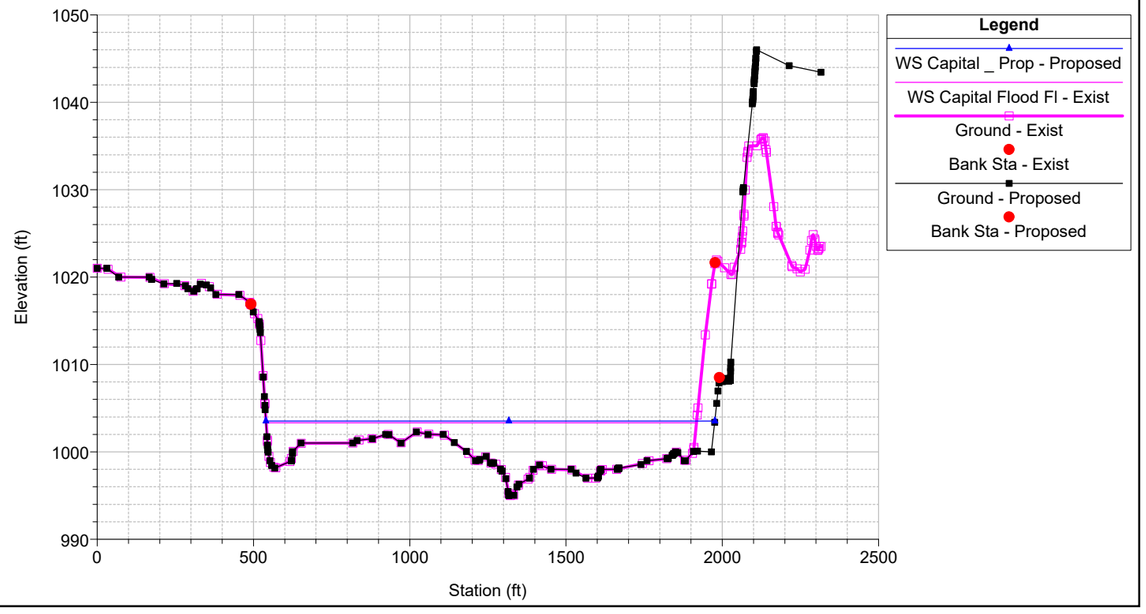
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 9042.81



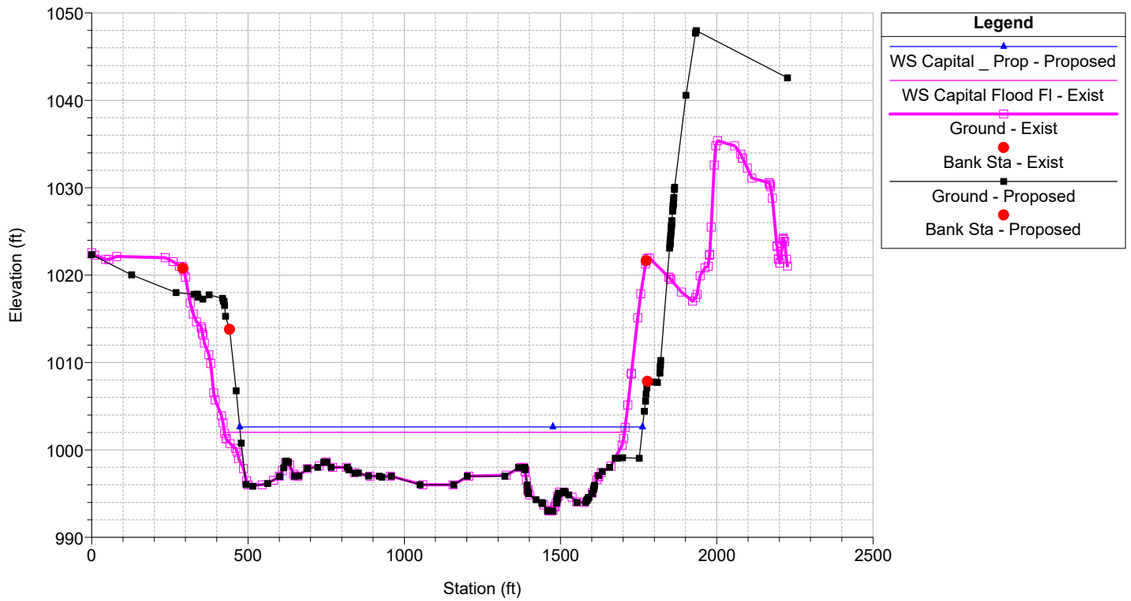
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 8724.84



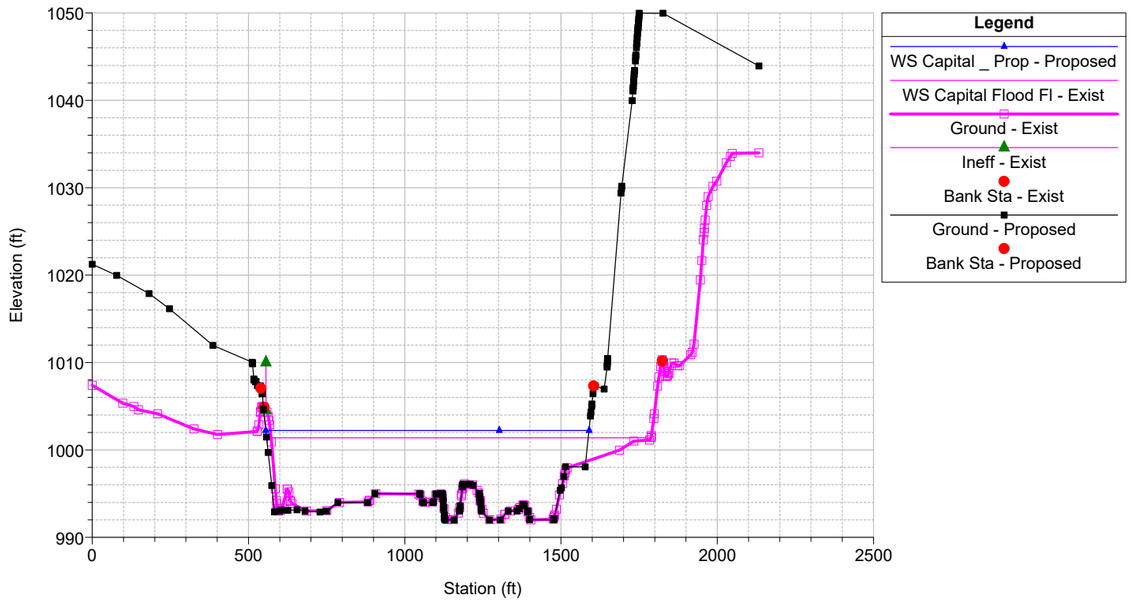
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 8396.13



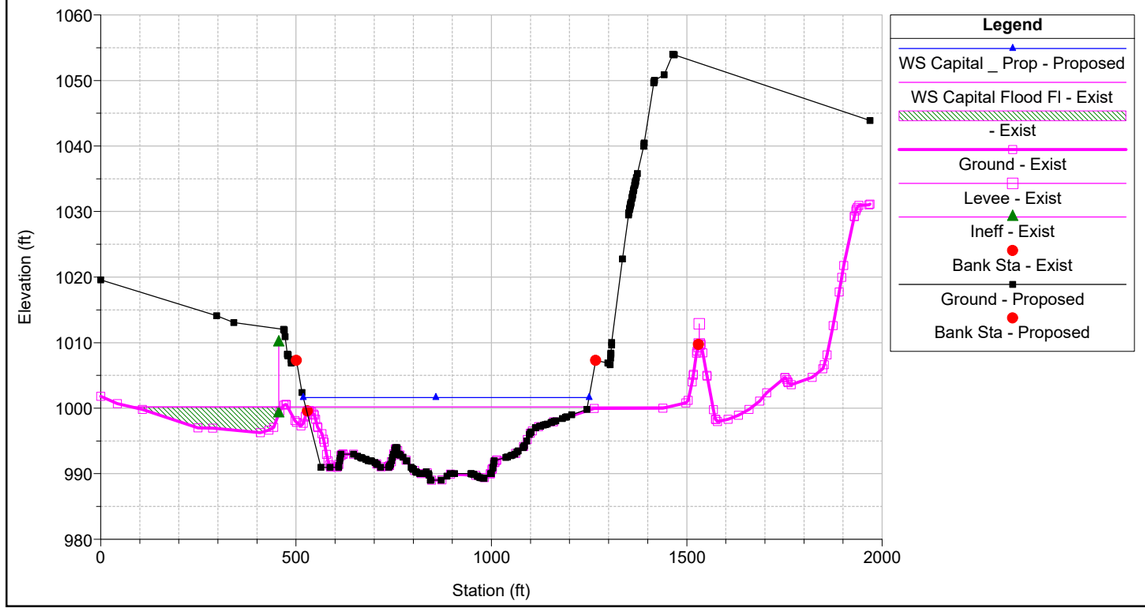
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 8049.79



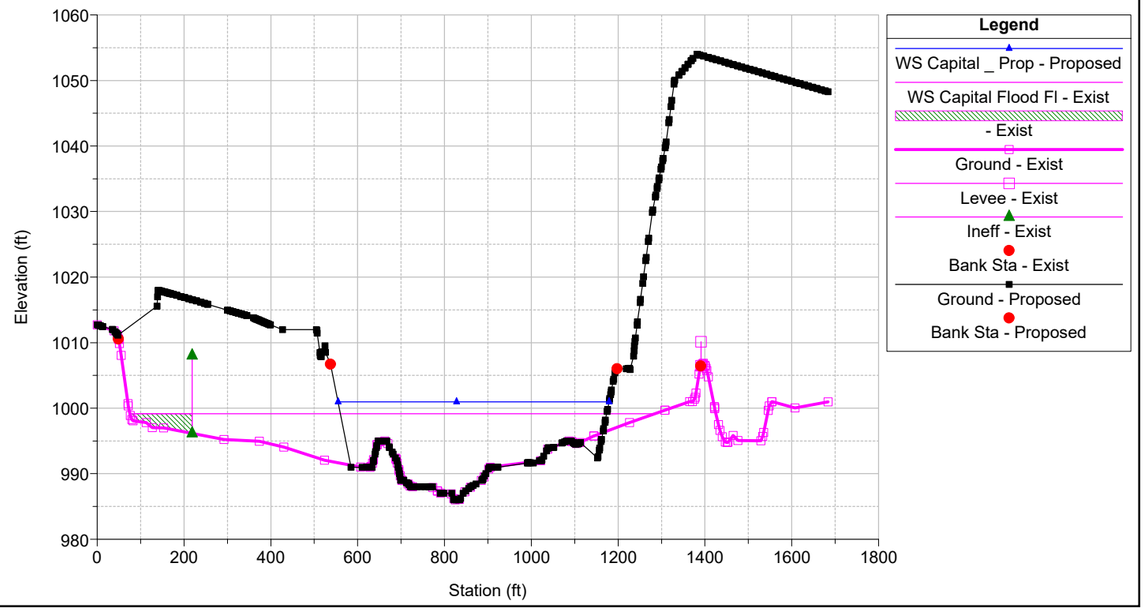
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 7688.71



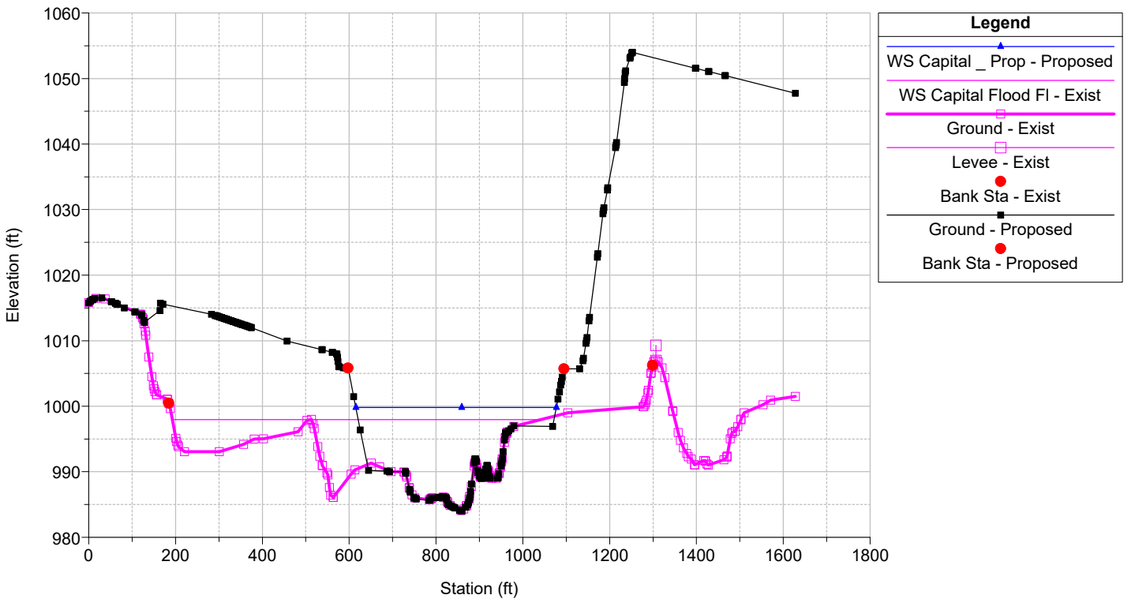
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 7326.46



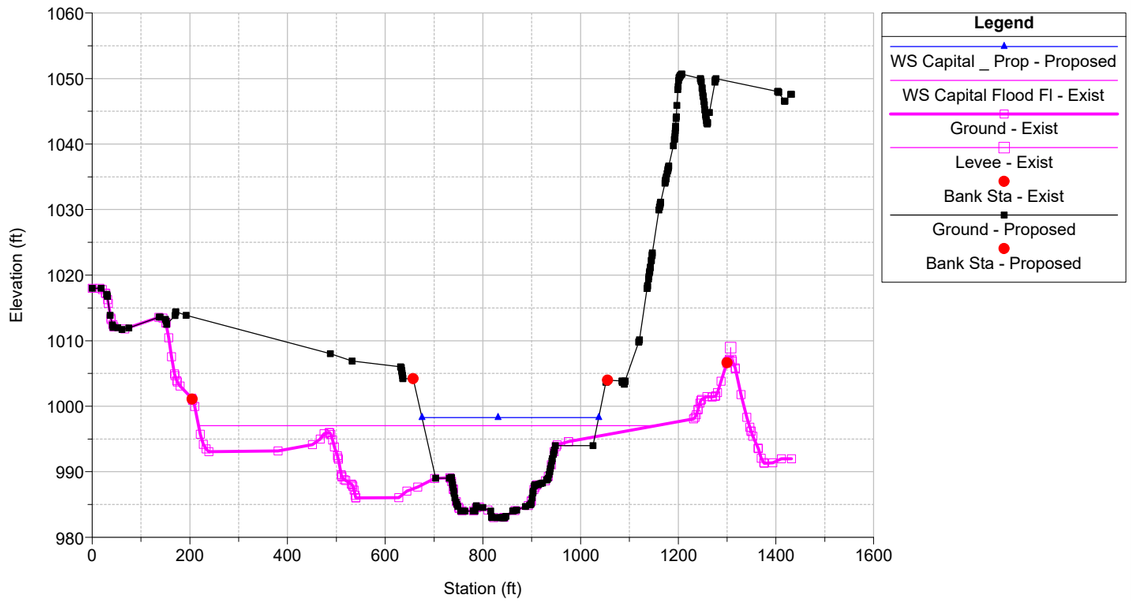
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 6966.68



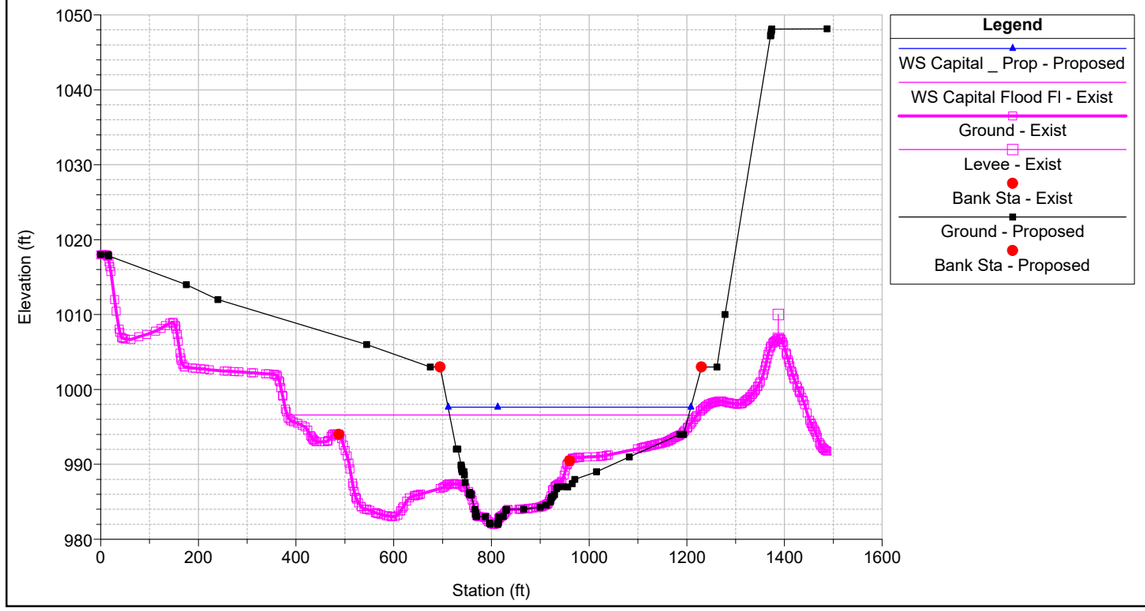
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 6623.5



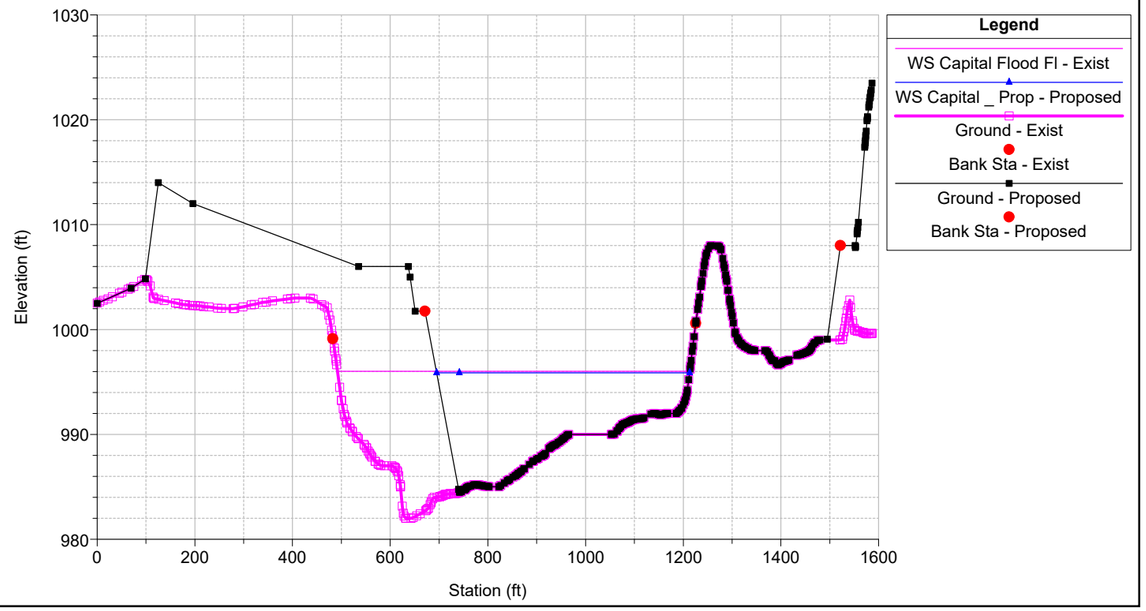
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 6304.52



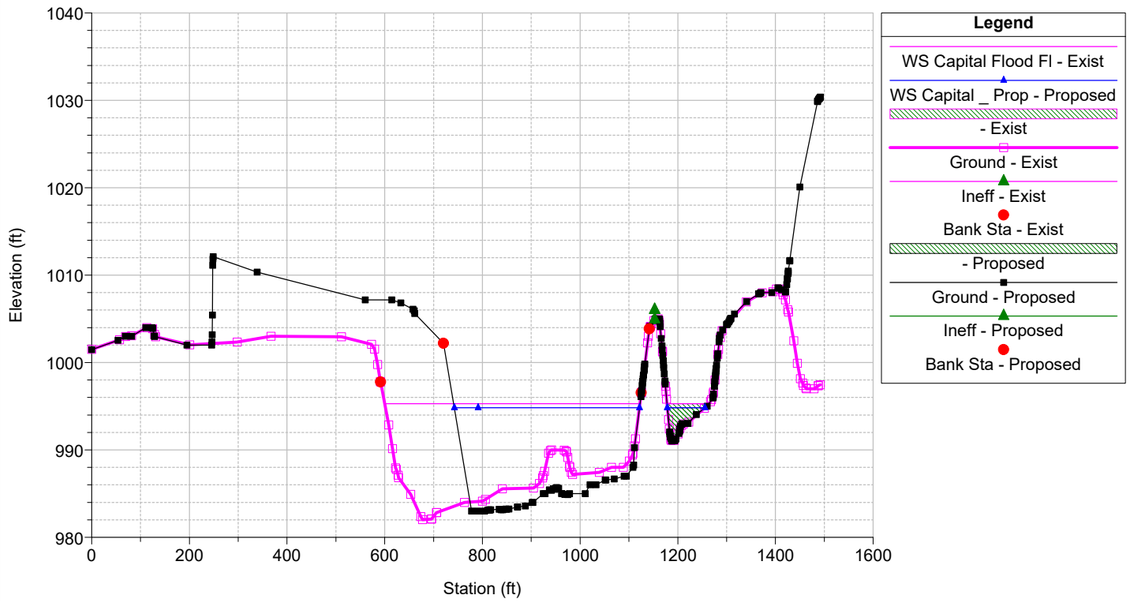
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 6087.88



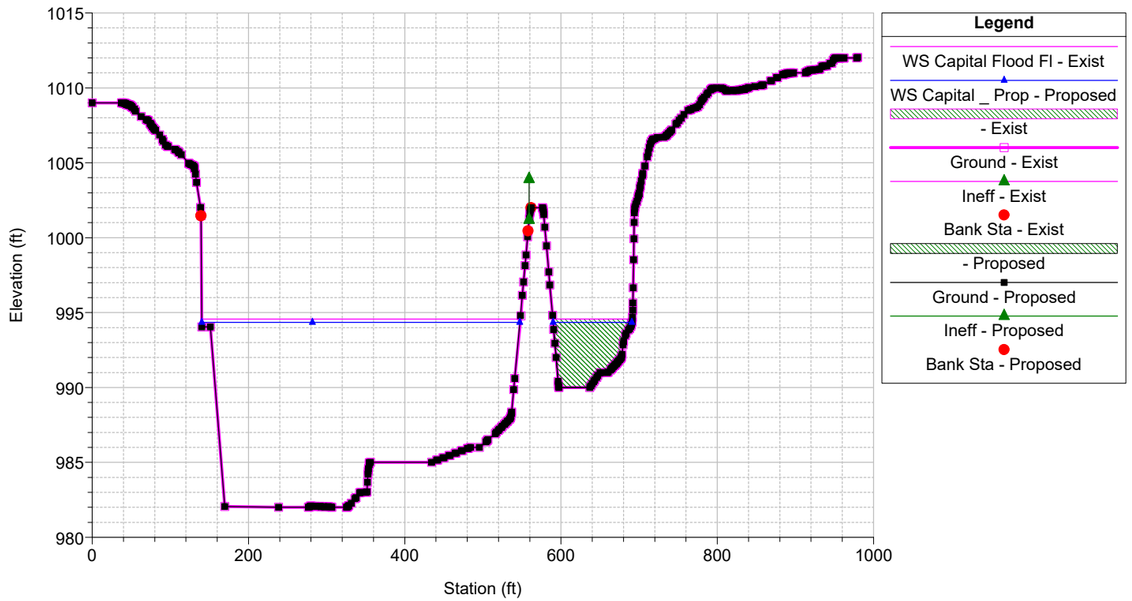
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 5781.35



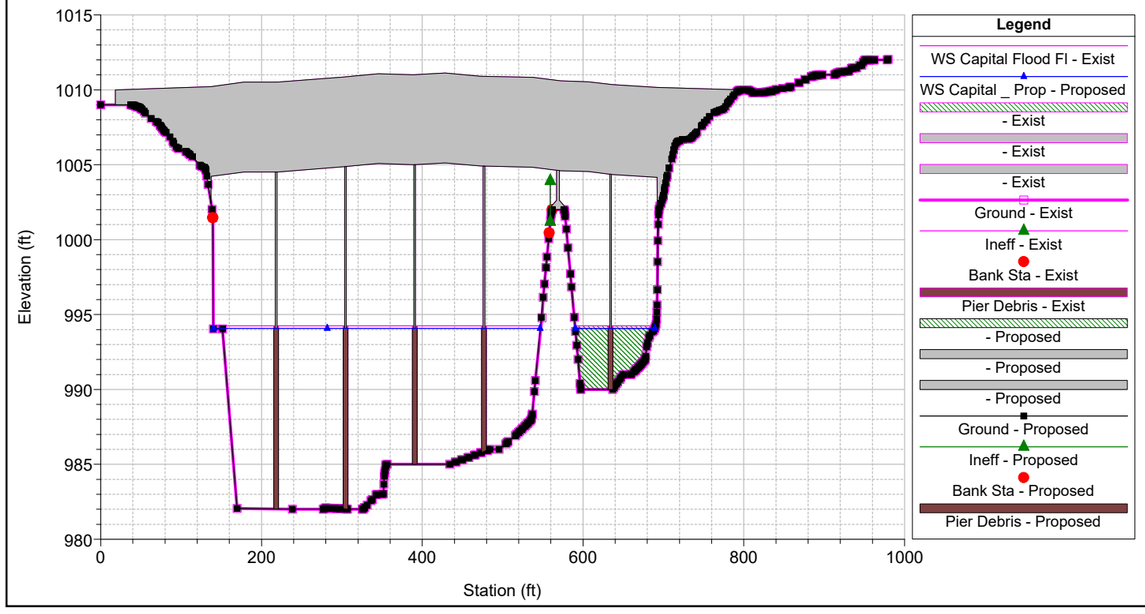
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 5629.45



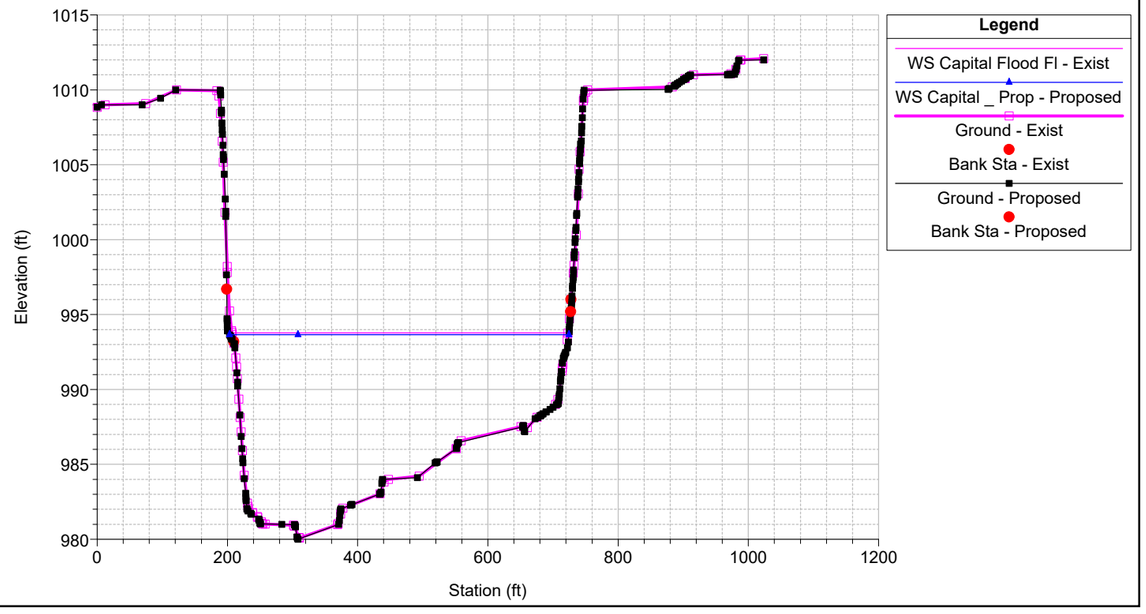
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 5557.68



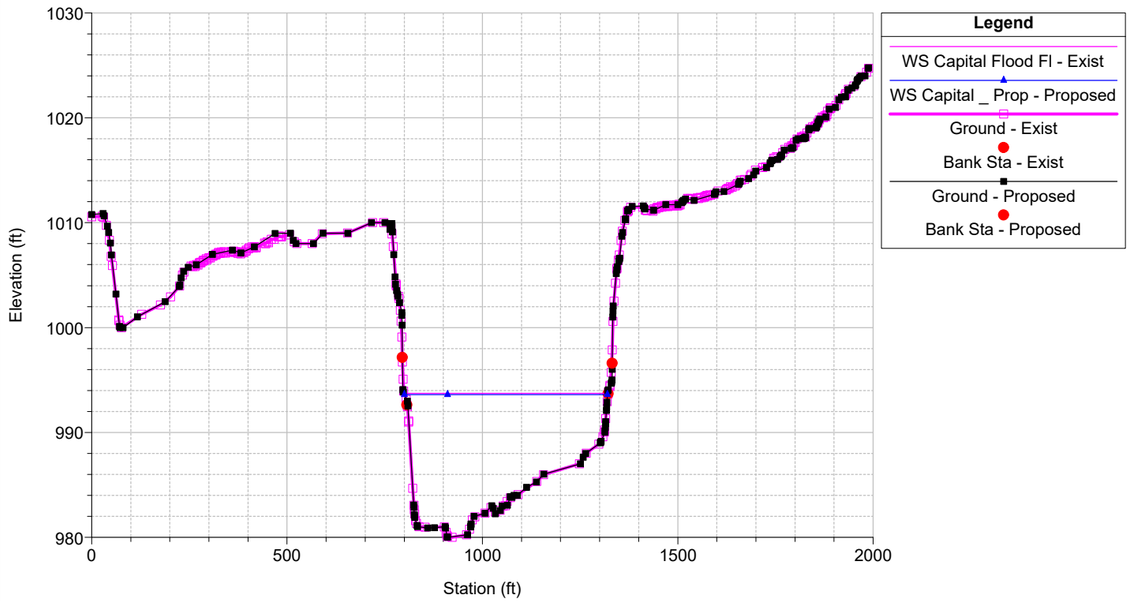
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 5500 BR Commerce Center Drive Bridge



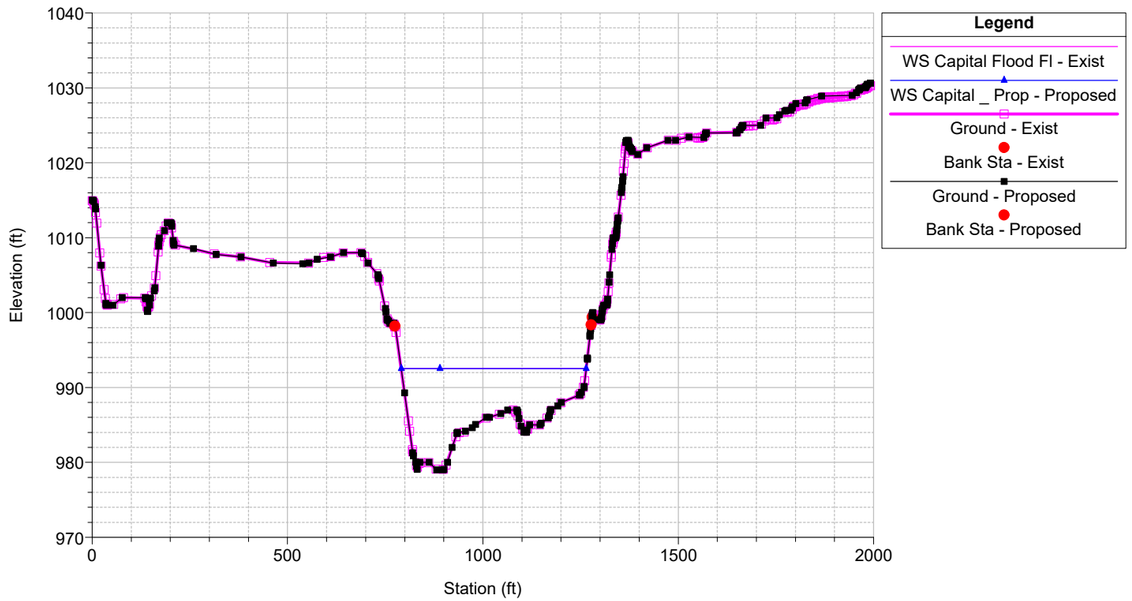
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 5453.98



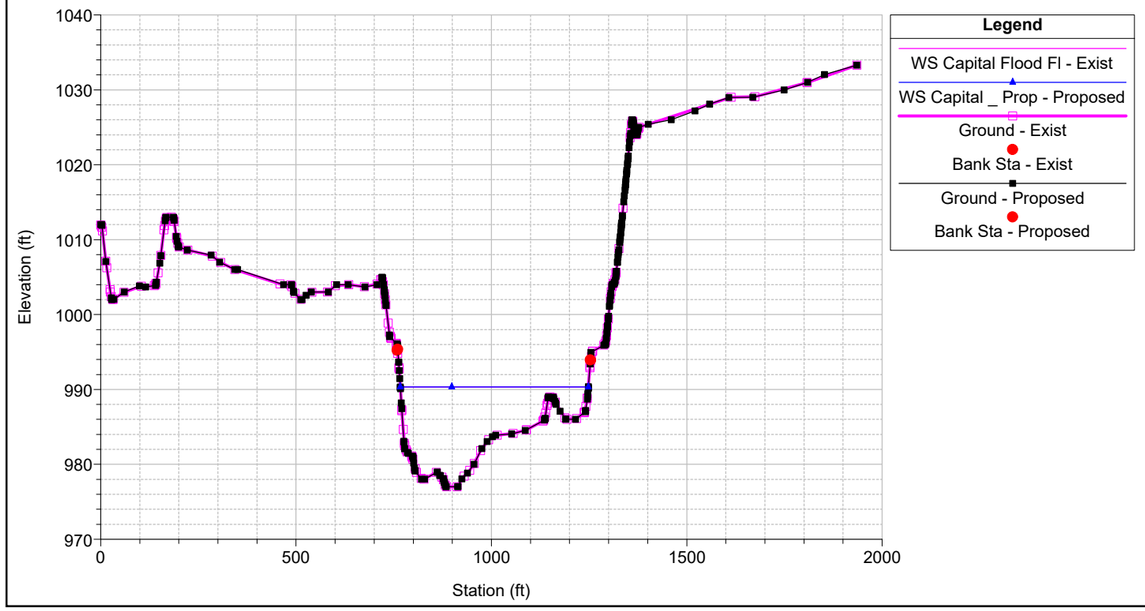
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 5434.68



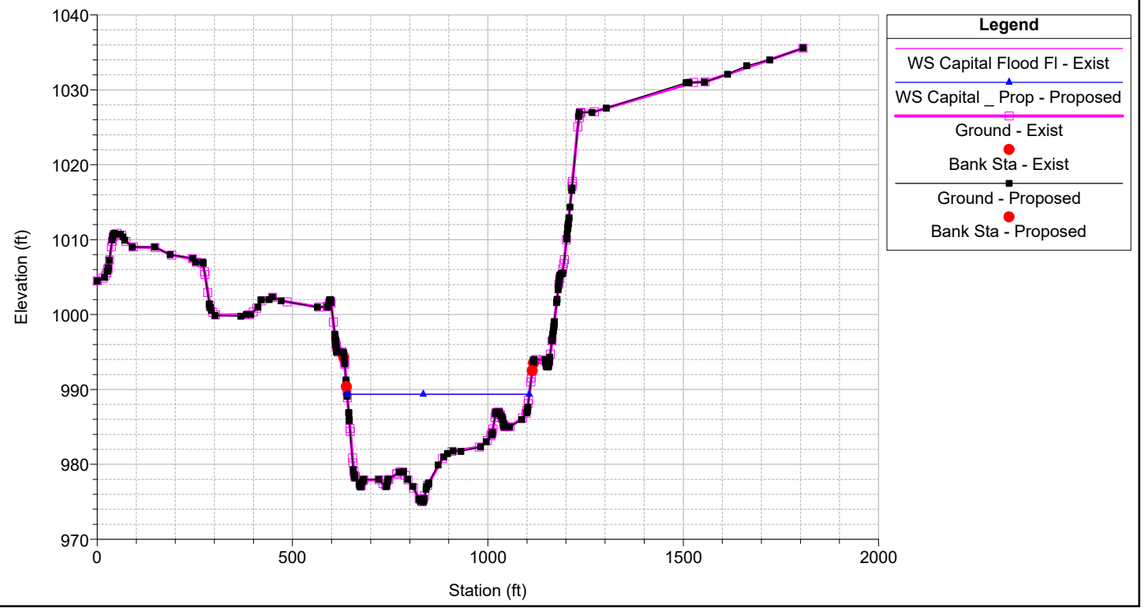
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 5340.04



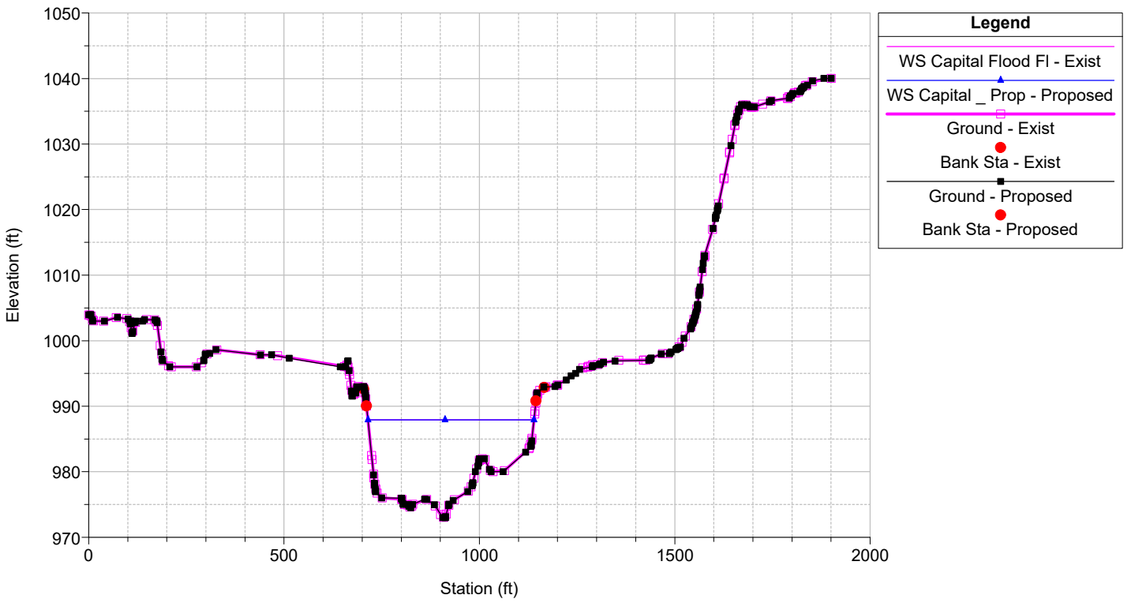
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 5060.55



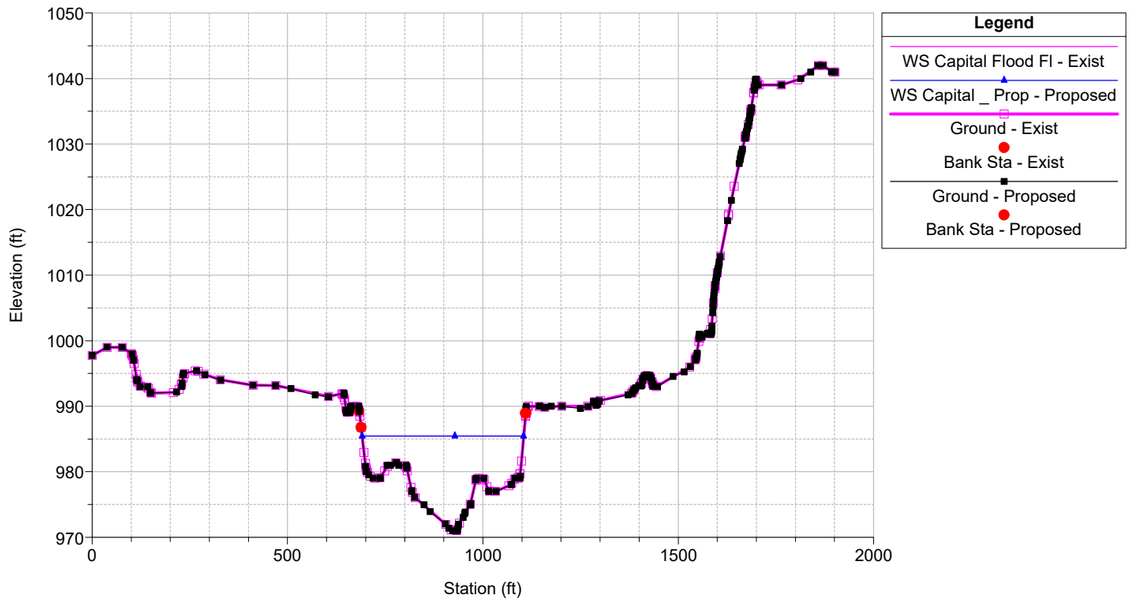
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 4899.94



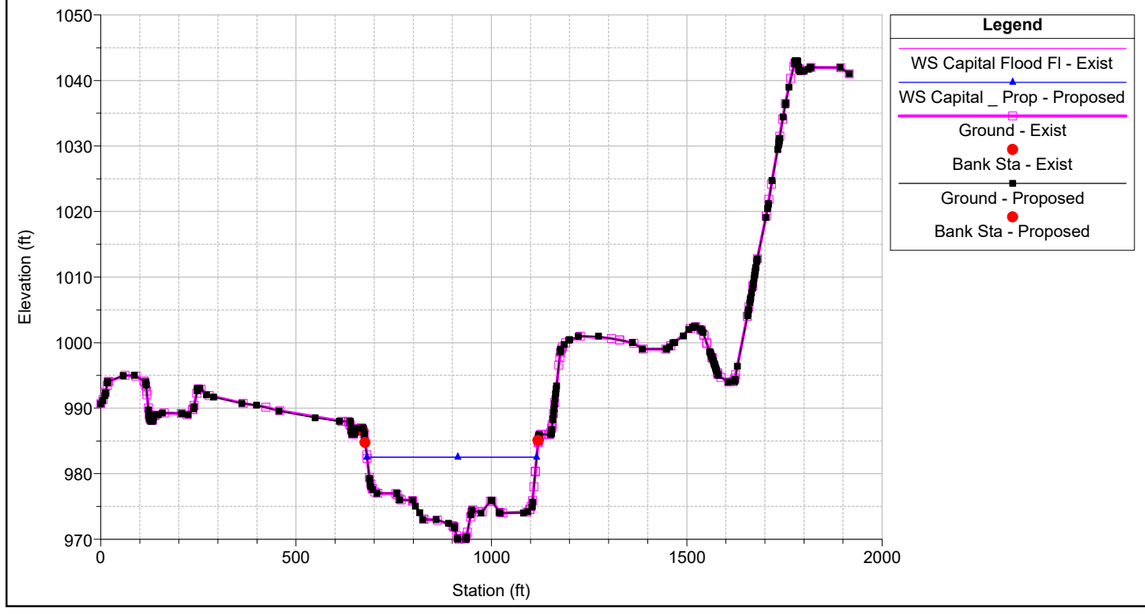
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 4571.63



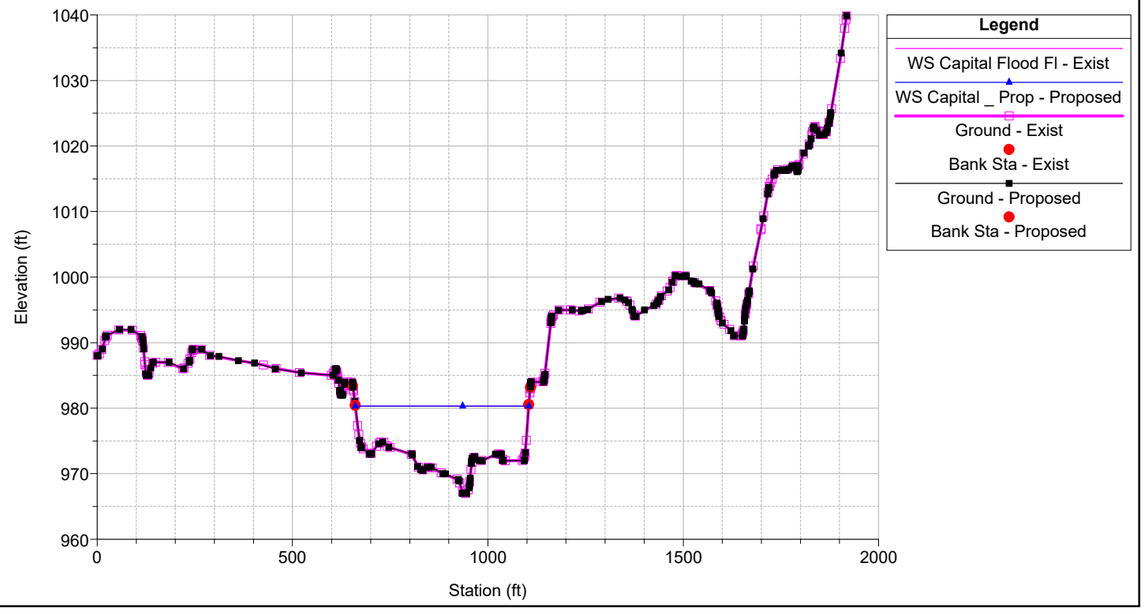
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 4220.87



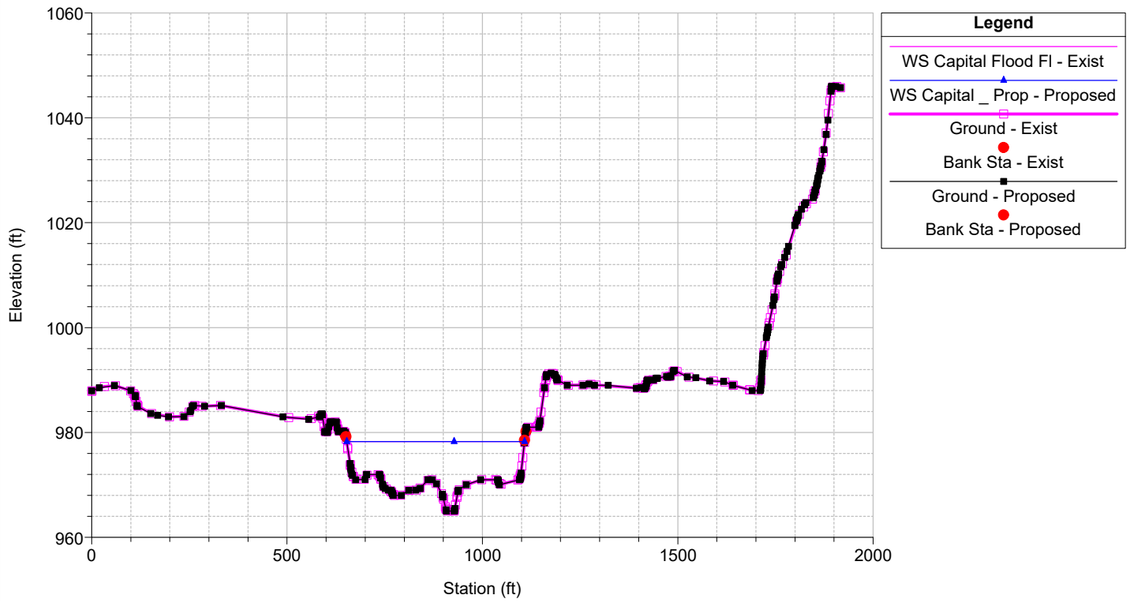
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 3865.39



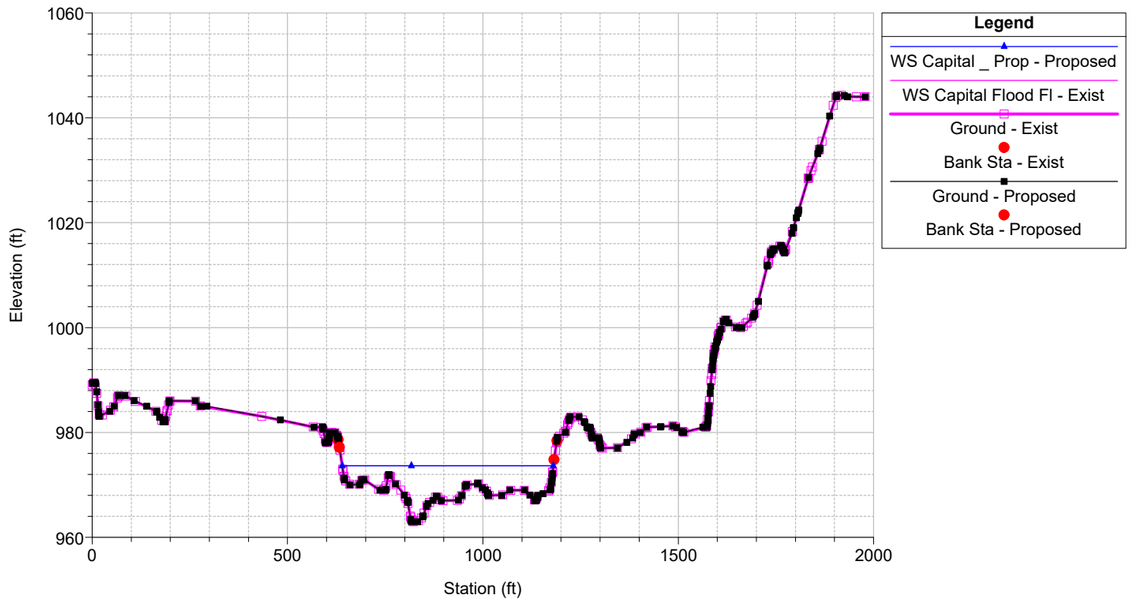
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 3579.81



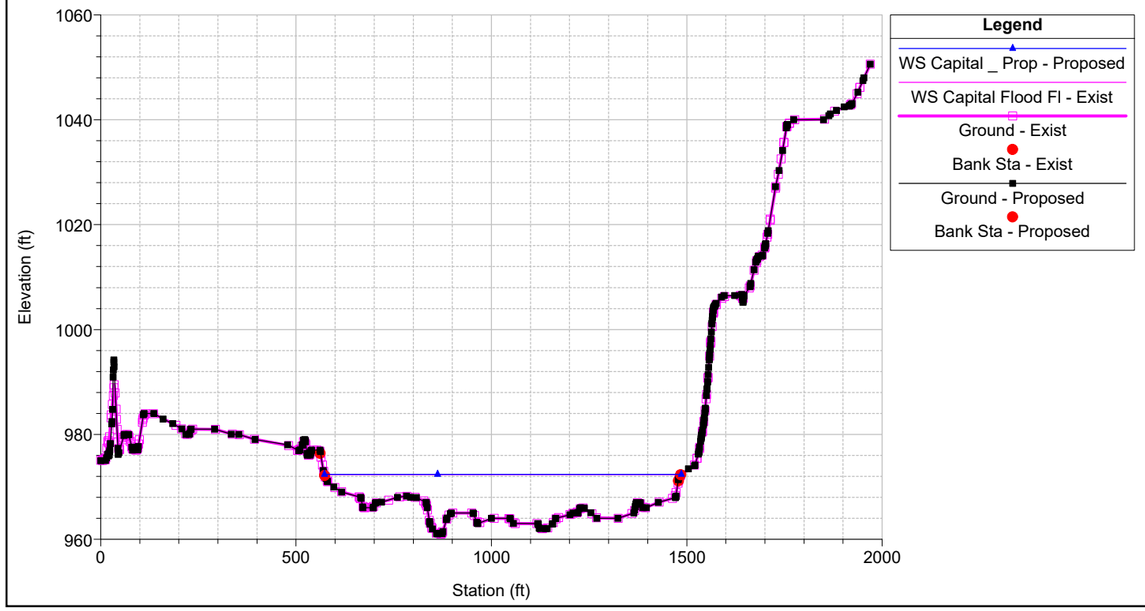
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 3289.64



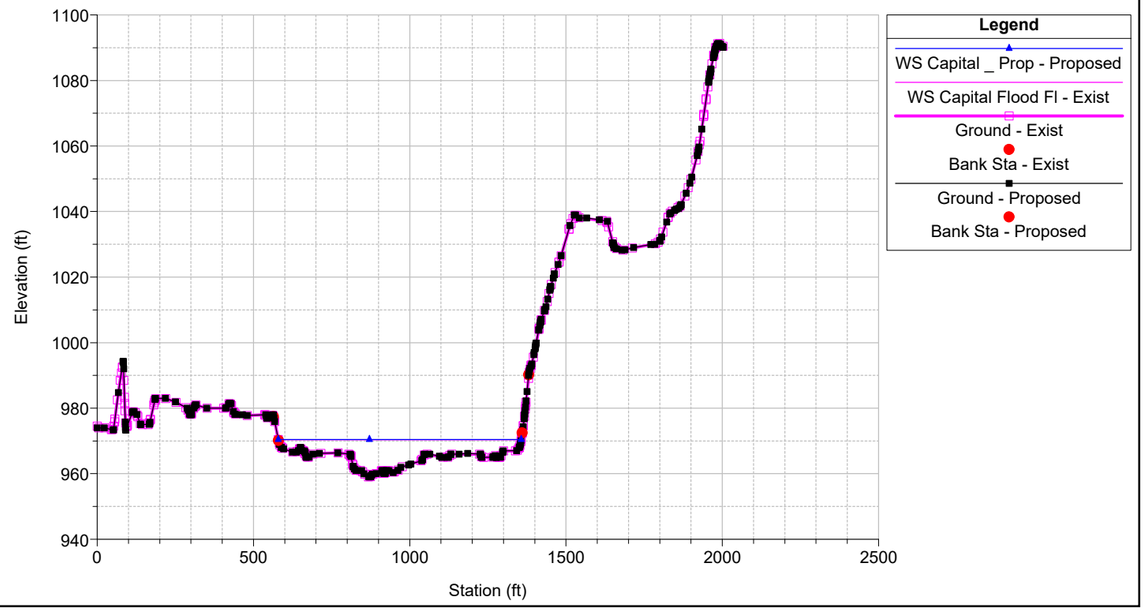
Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 2974.88



Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 2627.11



Castaic Creek FW Plan: 1) Proposed 2) Exist
RS = 2307.93



Castaic Creek FW Plan: 1) Proposed 2) Exist

RS = 1981.79