



## Initial Study

Mill Creek Diversion and  
Debris Management Improvement  
San Bernardino County, California

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Prepared for:

**San Bernardino Valley Water Conservation District**  
1630 W. Redlands Boulevard  
Redlands, California 92373

Prepared by:

Jericho Systems, Inc.  
47 N. 1<sup>st</sup> Street, Suite 1  
Redlands, CA 92373

June 2017



**SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT  
NOTICE OF AVAILABILITY AND NOTICE OF INTENT (NOI) TO  
ADOPT AN INITIAL STUDY/MITIGATED NEGATIVE DECLARATION FOR  
MILL CREEK DIVERSION IMPROVEMENTS**

In accordance with the California Environmental Quality Act (CEQA) and the CEQA Guidelines, San Bernardino Valley Water Conservation District (District) Staff prepared a Draft Initial Study / Mitigated Negative Declaration (IS/MND) that identify and evaluate the environmental impacts of the below-named project.

**Project Title:** Mill Creek Diversion Improvements

**Project No.:** 0168-342-03

**Project Location:** Mill Creek, at the existing District diversion facility

**Project Description:** The proposed project involves a redesign and reconstruction of the existing water diversion channel and structures to redirect the sediment and debris away from the water diversion gates, allowing water to flow through the diversion structure and returning sediment back to the main flow of Mill Creek. The reconstructed facility will include the following features: a new hardened debris return structure which consists of an approximate 0.48-acre rip rap area in Mill Creek with a new concrete access road; hardening of the existing channel diversion berm; a new sediment bypass channel that would direct first flow sediment to the debris return structure; new debris diverter walls with a slide gate to capture larger debris and direct it to the new debris return pad; replacing the existing main weir intake gates; installing a trash rack; removing and replacing the existing concrete channel bottom; and removing and replacing the existing catwalks. The structure is located adjacent to a Corps-constructed levee, and portions of the levee were integrated into the channel bottom of the diversion structure. The diversion structure has been in place since the 1920s, and the Corps levee was constructed in the 1990s.

**Environmental Review and Public Comment:** The circulation of the Draft Mitigated Negative Declaration and Initial Study is to encourage written public comments. Interested persons can review the Draft IS/MND at <http://www.sbvwd.org> and at the following physical locations:

San Bernardino Valley Water Conservation District  
1630 West Redlands Blvd., Suite A  
Redlands, California 92373

If unavailable on the web site, the document may be obtained in electronic format by telephoning the San Bernardino Valley Water Conservation District at (909) 793-2503 or, or by emailing Daniel Cozad at [dcozad@sbvwd.org](mailto:dcozad@sbvwd.org) to request a PDF version of the document.

The public comment period starts **June 9, 2017** and ends on **July 8, 2017 at 5:00 PM**. Please submit comments to:

[dcozad@sbvwd.org](mailto:dcozad@sbvwd.org) or to:  
Daniel Cozad, General Manager  
San Bernardino Valley Water Conservation District  
1630 West Redlands Blvd., Suite A  
Redlands, California 92373

**Public Hearing:** A public hearing will be scheduled to consider adoption of the Final IS/MND at the **July 12, 2017** regular meeting of the Board of the San Bernardino Valley Water Conservation District. In advance of the hearing date, Staff will distribute a separate notice regarding that hearing.



**SAN BERNARDINO COUNTY SUN**

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290 N D STREET STE 102, SAN BERNARDINO, CA 92401  
Telephone (909) 386-3014 / Fax (909) 884-2536

ATHENA MONGE  
SAN BERNARDINO VALLEY WATER CONSERVATI  
1630 W. REDLANDS BLVD., #A  
REDLANDS, CA - 92373

SB #: 3019697

**PROOF OF PUBLICATION**

(2015.5 C.C.P.)

State of California )  
County of SAN BERNARDINO ) ss

Notice Type: GPNSB - GOVERNMENT PUBLIC NOTICE-SB

Ad Description:

Project Title: Mill Creek Diversion and Debris Management Improv

I am a citizen of the United States and a resident of the State of California; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the principal clerk of the printer and publisher of the SAN BERNARDINO COUNTY SUN, a newspaper published in the English language in the city of SAN BERNARDINO, county of SAN BERNARDINO, and adjudged a newspaper of general circulation as defined by the laws of the State of California by the Superior Court of the County of SAN BERNARDINO, State of California, under date 06/27/1952, Case No. 73081. That the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

06/09/2017

Executed on: 06/09/2017  
At Riverside, California

I certify (or declare) under penalty of perjury that the foregoing is true and correct.



Signature



\* A 0 0 0 0 0 4 4 7 0 8 5 8 \*

**SAN BERNARDINO VALLEY  
WATER CONSERVATION  
DISTRICT  
NOTICE OF AVAILABILITY  
AND NOTICE OF INTENT  
(NOI) TO ADOPT AN INITIAL  
STUDY/MITIGATED NEGATIVE  
DECLARATION FOR  
MILL CREEK DIVERSION  
IMPROVEMENTS**

In accordance with the California Environmental Quality Act (CEQA) and the CEQA Guidelines, San Bernardino Valley Water Conservation District (District) Staff prepared a Draft Initial Study / Mitigated Negative Declaration (IS/MND) that identify and evaluate the environmental impacts of the below-named project.

Project Title: Mill Creek Diversion and Debris Management Improvement Project

Project No.: 0168-342-03

Project Location: Mill Creek, at the existing District diversion facility

Project Description: The proposed project involves a redesign and reconstruction of the existing water diversion channel and structures to redirect the sediment and debris away from the water diversion gates, allowing water to flow through the diversion structure and returning sediment back to the main flow of Mill Creek. The reconstructed facility will include the following features: a new hardened debris return structure which consists of an approximate 0.48-acre rip rap area in Mill Creek with a new concrete access road; hardening of the existing channel diversion berm; a new sediment bypass channel that would direct first flow sediment to the debris return structure; new debris diverter walls with a slide gate to capture larger debris and direct it to the new debris return pad; replacing the existing main weir intake gates; installing a trash rack; removing and replacing the existing concrete channel bottom; and removing and replacing the existing catwalks. The structure is located adjacent to a Corps-constructed levee, and portions of the levee were integrated into the channel bottom of the diversion structure. The diversion structure has been in place since the 1920s, and the Corps levee was constructed in the 1990s.

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6/9/17

**SBS-3019697#**

**SBS-3019697#**

**Notice of Completion & Environmental Document Transmittal**

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613

For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

**Project Title:** Mill Creek Diversion and Debris Management Improvement

Lead Agency: San Bernardino Valley Water Conservation District (SBVWCD)

Contact Person: Daniel Cozad

Mailing Address: 1630 W. Redlands Boulevard

Phone: (909) 793-2503

City: Redlands, California

Zip: 92373

County: San Bernardino

**Project Location:** County: San Bernardino

City/Nearest Community: Redlands and Mentone

Cross Streets: Garnet Street

Zip Code:

Longitude/Latitude (degrees, minutes and seconds): 34 ° 4 ' 32 " N / 117 ° 5 ' 24 " W Total Acres: 4.8

Assessor's Parcel No.: 0168-342-03

Section: 21

Twp.: 1 S

Range: 2 W

Base: SBBM

Within 2 Miles: State Hwy #: Interstate 38

Waterways: Mill Creek, Santa Ana River

Airports: None

Railways: None

Schools: Mentone Elementary

**Document Type:**CEQA: ☐ NOP☐ Draft EIRNEPA: ☐ NOIOther: ☐ Joint Document☐ Early Cons☐ Supplement/Subsequent EIR☐ EA☐ Final Document☐ Neg Dec

(Prior SCH No.)

☐ Draft EIS☐ Other:☒ Mit Neg Dec

Other:

☐ FONSI**Local Action Type:**☐ General Plan Update☐ Specific Plan☐ Rezone☐ Annexation☐ General Plan Amendment☐ Master Plan☐ Prezone☐ Redevelopment☐ General Plan Element☐ Planned Unit Development☐ Use Permit☐ Coastal Permit☐ Community Plan☐ Site Plan☐ Land Division (Subdivision, etc.)☐ Other:**Development Type:**☐ Residential: Units \_\_\_\_\_ Acres \_\_\_\_\_☐ Office: Sq.ft. \_\_\_\_\_ Acres \_\_\_\_\_ Employees \_\_\_\_\_☐ Transportation: Type \_\_\_\_\_☐ Commercial: Sq.ft. \_\_\_\_\_ Acres \_\_\_\_\_ Employees \_\_\_\_\_☐ Mining: Mineral \_\_\_\_\_☐ Industrial: Sq.ft. \_\_\_\_\_ Acres \_\_\_\_\_ Employees \_\_\_\_\_☐ Power: Type \_\_\_\_\_ MW \_\_\_\_\_☐ Educational: \_\_\_\_\_☐ Waste Treatment: Type \_\_\_\_\_ MGD \_\_\_\_\_☐ Recreational: \_\_\_\_\_☐ Hazardous Waste: Type \_\_\_\_\_☐ Water Facilities: Type \_\_\_\_\_ MGD \_\_\_\_\_☒ Other: Water Conservation Structure Improvements**Project Issues Discussed in Document:**☒ Aesthetic/Visual☐ Fiscal☐ Recreation/Parks☒ Vegetation☐ Agricultural Land☒ Flood Plain/Flooding☐ Schools/Universities☒ Water Quality☒ Air Quality☐ Forest Land/Fire Hazard☐ Septic Systems☒ Water Supply/Groundwater☒ Archeological/Historical☒ Geologic/Seismic☐ Sewer Capacity☒ Wetland/Riparian☒ Biological Resources☒ Minerals☒ Soil Erosion/Compaction/Grading☐ Growth Inducement☐ Coastal Zone☒ Noise☐ Solid Waste☐ Land Use☒ Drainage/Absorption☐ Population/Housing Balance☒ Toxic/Hazardous☒ Cumulative Effects☐ Economic/Jobs☐ Public Services/Facilities☒ Traffic/Circulation☐ Other:**Present Land Use/Zoning/General Plan Designation:**

Open space/floodplain

**Project Description:** (please use a separate page if necessary)

The project involves a redesign/reconstruction of the existing water diversion channel and structures to redirect the sediment/debris away from the water diversion gates and into the main flow of Mill Creek which will allow water to flow through the diversion structure for conservation. Improvements include: an approx. 0.48-acre rip rap area in the main channel of Mill Creek with a new concrete access road to function as the debris return structure; hardening the existing channel diversion berm; a new sediment bypass channel; new debris diverter walls with a slide gate; replacing existing main weir intake gates; installing a trash rack; removing and replacing the existing concrete channel bottom; and removing and replacing the existing catwalks.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

## Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with an "X".  
If you have already sent your document to the agency please denote that with an "S".

<input checked="" type="checkbox"/> Air Resources Board	<input checked="" type="checkbox"/> Office of Historic Preservation
<input type="checkbox"/> Boating & Waterways, Department of	<input type="checkbox"/> Office of Public School Construction
<input type="checkbox"/> California Emergency Management Agency	<input type="checkbox"/> Parks & Recreation, Department of
<input type="checkbox"/> California Highway Patrol	<input type="checkbox"/> Pesticide Regulation, Department of
<input checked="" type="checkbox"/> Caltrans District #8	<input type="checkbox"/> Public Utilities Commission
<input type="checkbox"/> Caltrans Division of Aeronautics	<input checked="" type="checkbox"/> Regional WQCB #8
<input type="checkbox"/> Caltrans Planning	<input type="checkbox"/> Resources Agency
<input type="checkbox"/> Central Valley Flood Protection Board	<input type="checkbox"/> Resources Recycling and Recovery, Department of
<input type="checkbox"/> Coachella Valley Mtns. Conservancy	<input type="checkbox"/> S.F. Bay Conservation & Development Comm.
<input type="checkbox"/> Coastal Commission	<input type="checkbox"/> San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
<input type="checkbox"/> Colorado River Board	<input type="checkbox"/> San Joaquin River Conservancy
<input type="checkbox"/> Conservation, Department of	<input type="checkbox"/> Santa Monica Mtns. Conservancy
<input type="checkbox"/> Corrections, Department of	<input type="checkbox"/> State Lands Commission
<input type="checkbox"/> Delta Protection Commission	<input type="checkbox"/> SWRCB: Clean Water Grants
<input type="checkbox"/> Education, Department of	<input checked="" type="checkbox"/> SWRCB: Water Quality
<input type="checkbox"/> Energy Commission	<input checked="" type="checkbox"/> SWRCB: Water Rights
<input checked="" type="checkbox"/> Fish & Game Region #6	<input type="checkbox"/> Tahoe Regional Planning Agency
<input type="checkbox"/> Food & Agriculture, Department of	<input type="checkbox"/> Toxic Substances Control, Department of
<input checked="" type="checkbox"/> Forestry and Fire Protection, Department of	<input checked="" type="checkbox"/> Water Resources, Department of
<input type="checkbox"/> General Services, Department of	
<input type="checkbox"/> Health Services, Department of	Other: _____
<input type="checkbox"/> Housing & Community Development	Other: _____
<input checked="" type="checkbox"/> Native American Heritage Commission	

### Local Public Review Period (to be filled in by lead agency)

Starting Date June 10, 2017 Ending Date July 11, 2017

### Lead Agency (Complete if applicable):

Consulting Firm: Jericho Systems, Inc  
Address: 47 N. First Street, Suite 1  
City/State/Zip: Redlands, CA 92373  
Contact: Shay Lawrey  
Phone: (909) 915-5900

Applicant: San Bernardino Valley Water Conservation District  
Address: 1630 W. Redlands Boulevard  
City/State/Zip: Redlands, California 92373  
Phone: (909) 793-2503

Signature of Lead Agency Representative: \_\_\_\_\_

Date: 6/7/17

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

# Summary Form for Electronic Document Submittal

Form F

Lead agencies may include 15 hardcopies of this document when submitting electronic copies of Environmental Impact Reports, Negative Declarations, Mitigated Negative Declarations, or Notices of Preparation to the State Clearinghouse (SCH). The SCH also accepts other summaries, such as EIR Executive Summaries prepared pursuant to CEQA Guidelines Section 15123. Please include one copy of the Notice of Completion Form (NOC) with your submission and attach the summary to each electronic copy of the document.

SCH #: \_\_\_\_\_

Project Title: Mill Creek Diversion Improvements

Lead Agency: San Bernardino Valley Water Conservation District (SBVWCD)

Contact Name: Daniel Cozad

Email: cdcozad@sbvwcd.org

Phone Number: (909) 793-2503

Project Location: Mill Creek, at the existing SBVWCD diversion facility  
*City*

San Bernardino County  
*County*

Project Description (Proposed actions, location, and/or consequences).

The proposed project involves a redesign and reconstruction of the existing water diversion channel and structures to redirect the sediment and debris away from the water diversion gates, allowing water to flow through the diversion structure and returning sediment back to the main flow of Mill Creek. The reconstructed facility will include the following features: a new hardened debris return structure which consists of an approximate 0.48-acre rip rap area in Mill Creek with a new concrete access road; hardening of the existing channel diversion berm; a new sediment bypass channel that would direct first flow sediment to the debris return structure; new debris diverter walls with a slide gate to capture larger debris and direct it to the new debris return pad; replacing the existing main weir intake gates; installing a trash rack; removing and replacing the existing concrete channel bottom; and removing and replacing the existing catwalks. The structure is located adjacent to a Corps-constructed levee, and portions of the levee were integrated into the channel bottom of the diversion structure. The diversion structure has been in place since the 1920s, and the Corps levee was constructed in the 1990s.

Identify the project's significant or potentially significant effects and briefly describe any proposed mitigation measures that would reduce or avoid that effect.

The project is a Mitigated Negative Declaration, and there were no potentially significant effects. The project occurs within an existing water conservation structure that has been operating since the 1920s. Mitigation measures are summarized as follows:

Biological Resources: multiple - exclusionary fencing, pre-construction biological surveys, worker awareness training, delineation of project footprint prior to construction, biological monitoring during ground-disturbing activities, and invasive species removal, pre-construction nesting bird surveys.

Cultural Resources: stop if find human remains, protocol for unanticipated discovery of resources, protocol for fossil discovery.

Geology/Soils: stockpile management, stormwater management

Hazardous Materials: Notification if spill, no work during Red Flag warnings.

If applicable, describe any of the project's areas of controversy known to the Lead Agency, including issues raised by agencies and the public.

There are no known areas of controversy. The purpose of the facility is to continue to provide water conservation services through this facility.

Provide a list of the responsible or trustee agencies for the project.

California Department of Fish and Wildlife  
Santa Ana Regional Water Quality Control Board  
US Fish and Wildlife Service  
US Army Corps of Engineers



## San Bernardino Valley Water Conservation District

### MITIGATED NEGATIVE DECLARATION

**Lead Agency:** San Bernardino Valley  
Water Conservation District  
1630 W. Redlands Boulevard  
Redlands, California 92373

**Contact:** Daniel Cozad, Director  
**Phone:** (909) 793-2503

**Project Title:** Mill Creek Diversion Improvements

**State Clearinghouse Number:** \_\_\_\_\_

**Project Location:** Mill Creek, at the existing SBVWCD diversion facility

**Project Description:** The proposed project involves a redesign and reconstruction of the existing water diversion channel and structures to redirect the sediment and debris away from the water diversion gates, allowing water to flow through the diversion structure and returning sediment back to the main flow of Mill Creek. The reconstructed facility will include the following features: a new hardened debris return structure which consists of an approximate 0.48-acre rip rap area in Mill Creek with a new concrete access road; hardening of the existing channel diversion berm; a new sediment bypass channel that would direct first flow sediment to the debris return structure; new debris diverter walls with a slide gate to capture larger debris and direct it to the new debris return pad; replacing the existing main weir intake gates; installing a trash rack; removing and replacing the existing concrete channel bottom; and removing and replacing the existing catwalks. The structure is located adjacent to a Corps-constructed levee, and portions of the levee were integrated into the channel bottom of the diversion structure. The diversion structure has been in place since the 1920s, and the Corps levee was constructed in the 1990s.

**Finding:** The San Bernardino Water Conservation District's (District) decision to implement this proposed project is a discretionary decision or "project" that requires evaluation under the California Environmental Quality Act (CEQA). Based on the information in the project Initial Study, District has made a determination that a Mitigated Negative Declaration is the appropriate environmental determination for this project to comply with CEQA.

**Initial Study:** Copies of the Mitigated Negative Declaration/Initial Study are available for review at the District's office located at 1630 W. Redlands Boulevard, Redlands, California 92373. The proposed Mitigated Negative Declaration/Initial Study was circulated for public review and comment from June 10, 2017 to July 9, 2017.

**Mitigation Measures:** All mitigation measures identified in the Mitigated Negative Declaration/Initial Study are summarized and are proposed for adoption as conditions of the project. These measures will be implemented through a Mitigation Monitoring and Reporting Program as part of the adoption of the Mitigated Negative Declaration/Initial Study.

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Signature

Title

Date





## Initial Study

Mill Creek Diversion and  
Debris Management Improvement  
San Bernardino County, California

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Prepared for:

**San Bernardino Valley Water Conservation District**  
1630 W. Redlands Boulevard  
Redlands, California 92373

Prepared by:

Jericho Systems, Inc.  
47 N. 1<sup>st</sup> Street, Suite 1  
Redlands, CA 92373

June 2017



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Figure 1 Regional Overview and Site Vicinity

Figure 2 Project Location

Figure 3 Mill Creek Diversion and Debris Management Improvement Plan Area

Figure 4 Soft Plug Locations (no change to soft plugs)

## **APPENDICES**

Appendix 1 Diversion Structure Photos

Appendix 2 Biological Resources and SBKR Survey Report

Appendix 3 Cultural Resources Report

Appendix 4 Hydrology Report

Appendix 5 Responses to Comments (reserved)

## SECTION 1 - INTRODUCTION

### Background

In 1910, the Water Conservation Association (WCA) was organized to conserve the water of the Santa Ana River by storing it in the underlying groundwater basin for future use. In 1931, local citizens voted to create the San Bernardino Valley Water Conservation District (SBVWCD) as a public agency to protect against excessive export of the local surface water by downstream agencies. The WCA was dissolved in the early 1940s and all land and water property was transferred to the SBVWCD. The Water Conservation Act of 1931 provided broad authority to exercise a variety of powers necessary to further the SBVWCD's primary goal of conserving water, such as making contracts, acquiring property through eminent domain, owning and operating recreational facilities, owning and operating hydroelectric plants, and intervening in the actions of other agencies when those actions interfere with the natural flow of streams that would otherwise be conserved for beneficial use. The SBVWCD is organized under Division 21 of the California Water Code, and regulated by Sections 74000 to 76501. The SBVWCD has historically operated water recharge facilities in two areas: along the Santa Ana River and along Mill Creek. Depending on the amount of rain and snow in the mountains, the SBVWCD recharges the groundwater basin during most months of the year. Imported water has also been recharged in the SBVWCD's facilities.

The SBVWCD is charged with operating and maintaining its existing facilities in the Santa Ana River and Mill Creek for groundwater recharge, as it has since approximately the 1920s. These facilities generally consist of a series of gates and weirs to divert water from the Santa Ana River and Mill Creek into large spreading basins owned by the SBVWCD where water can percolate into the regional groundwater basin.

Mill Creek is an approximate 500-foot-wide braided channel that originates in the San Bernardino Mountains and merges with the Santa Ana River approximately 2 miles downstream. The existing diversion structures were originally constructed in the 1920s. In the 1990s, the US Army Corps of Engineers (USACOE) constructed a grouted rock and concrete levee on the south side of Mill Creek that is approximately 2 miles long and 30 feet wide, beginning in the vicinity of the State of California Department of Water Resources, California Aqueduct, Crafton Hills Pump Station (upstream limit) to approximately Garnet Street (downstream limit). The USACOE integrated a portion of the Diversion structure bottom into the levee at approximately 0.5 mile upstream of Garnet Street. SBVWCD operates the Diversion facilities on property owned by the San Bernardino County Flood District via easement. Maintenance of the Diversion facilities is the responsibility of SBVWCD.

To facilitate water conservation, the SBVWCD operates a series of natural "soft plugs" located within one of the low flow braids on the south side of the channel. The "soft plugs" are small (approximately 1- to 2-foot high) sand berms that naturally guide first, localized flows and low flow into a natural braid of the channel that leads to a Diversion structure on the south side of Mill Creek, approximately 0.5-mile upstream of Garnet Street. The Diversion structure configuration further directs flows into two separate channels that have a series of manually operated gates. All gates are sluice/slide type gates, with the gates are made from wooden planks, and are operated manually. The two channels within the Diversion structure include:

Channel 1 - leads back to the natural Mill Creek channel. Three gates lead to this channel, and each is about 5 feet wide. These gates are beside each other in a parallel arrangement. This channel and gate is designed for debris to flow back into Mill Creek.

Channel 2 – is an engineered channel that leads to the SBVWCD spreading basins. There is a single 5-foot-wide gate leading to this channel. This gate is angled differently than the three gates that lead back to the natural channel of Mill Creek. The clean water flows from Mill Creek flows into this concrete channel to a turnout structure, which diverts the clean water to the spreading basins, south of Mill Creek.

The soft plugs upstream of the Diversion facilities are designed to wash away in higher flows, so that all flows can utilize the entire 500-foot wide channel. This protects the Diversion structure from being destroyed in a flood. Most localized storms historically have been flashy and carry high quantities of organic debris and sediments ranging from silts to boulders. The organic debris typically consists of logs 10-20 feet in length ranging from 2 to 12 inches in diameter. Therefore, during localized storms, the large debris will also flow to the Diversion structure channels, and accumulate at the small gates, thereby blocking flows through the Diversion and compromising the integrity of the gates. Accumulation of organic material, silt, sand, cobble, and small boulders behind the gates significantly impacts operations and blocks the gates, making the system inoperable (Appendix 1).

## SECTION 2 – REGULATORY FRAMEWORK

The SBVWCD has identified that the Mill Creek Diversion and Debris Management Improvement Project meets the California Environmental Quality Act (CEQA) Guidelines Section 15378 definition of a Project. CEQA Guidelines Section 15378 defines a Project as the following:

- (a) "Project" means the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.

In accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Sections 21000-21177), this Initial Study has been prepared to determine potentially significant impacts upon the environment resulting from the construction, operation and maintenance of the Mill Creek Diversion and Debris Management Improvement Project (hereinafter referred to as the "Project" or "proposed Project"). In accordance with Section 15063 of the State *CEQA Guidelines*, this Initial Study is a preliminary analysis prepared by the SBVWCD as Lead Agency to inform the Lead Agency decision makers, other affected agencies, and the public of potential environmental impacts associated with the implementation of the proposed Project.

### Organization of the Initial Study

The Initial Study is organized as follows:

**Introduction:** Provides the regulatory context for the review along a brief summary of the CEQA process.

**Project Information:** Provides fundamental Project information, such as the Project description, Project location and figures.

**Lead Agency Determination:** Identifies environmental factors potentially affected by the Project and identifies the Lead Agency's determination based on the initial evaluation.

**Mitigated Negative Declaration:** Prepared when a determination can be made that no significant environmental effects will occur because revisions to the Project have been made or mitigation measures will be implemented which will reduce all potentially significant impacts to less than significant levels.

**Mitigation Monitoring Program Table:** Identifies objectives, criteria, and specific procedures to administer the SBVWCD's responsibilities under CEQA.

**Evaluating Environmental Impacts:** Provides the parameters the SBVWCD uses when determining level of impact.

**CEQA Checklist:** Provides an environmental checklist and accompanying analysis for responding to checklist questions.

**References:** Includes a list of references and various resources utilized in preparing the analysis.

## SECTION 3 - DETAILED PROJECT DESCRIPTION

The SBVWCD is currently proposing to construct improvements to the Mill Creek Diversion gate system to reduce maintenance, environmental impact and costs related to debris management. The goal of the Mill Creek Diversion Debris Management Project (Project) is to construct a modified diversion system that redirects debris and creek bed sediments back to the Mill Creek channel system, while allowing the water to be rerouted to the existing spreading grounds for groundwater recharge.

The existing system receives its flow from a channel braid that flows on the south side of Mill Creek. The proposed Project components include the following:

- **New Hardened Debris Return Structure and Channel Berm with Concrete Access Road:** An approximate 0.48-acre area within Mill Creek, immediately north and adjacent to the intake/outfall structure, would be graded and grouted rip rap placed to form a pad that will allow debris to return to the natural Mill Creek channel. The existing earthen channel berm that directs flows to the diversion structure will also be hardened with grouted rip rap to prevent wash outs and allow floatable debris to overflow into the natural flow of Mill Creek. A concrete access road would be installed on the grouted rock to facilitate maintenance. The return structure and berm grading would match the existing contours of the area, which are relatively flat for the return structure, allowing for the debris to naturally flow downstream.
- **New Sediment Bypass Channel with Slide Gate:** The sediment bypass channel would be constructed between the New Hardened Debris Return Structure and Channel Berm and the main water intake structure. The sediment bypass channel is designed to capture silt and smaller rocks, channeling it to a gate that would lead to the New Debris Collection Pad. The Sediment Bypass Channel would be an approximate 12 foot wide by 50 foot long channel that will be delineated by the 180 foot long existing berm on the north side, which will be hardened with grouted rip rap, and a new 2-foot-high concrete berm on the south. The existing 180-foot-long berm is currently an earthen berm, approximately 3 foot high, and would remain approximately 1 foot high even after being hardened with rip rap. The 5-foot by 5-foot self-contained gate would be installed at the confluence of the bypass channel and Debris Return Structure to allow the sediment and smaller rocks and vegetation to pass over the New Debris Return Structure and into the normal earthen channel of Mill Creek. The south side channel varies in height, beginning at grade at the channel, increasing in height toward the outfall structure. It is designed so that smaller sediment and debris will settle in the channel, allowing water to spill over the wall.
- **New Debris Diverter Walls and Replace Slide Gates:** Four concrete walls will be constructed at angles within the intake area, just upstream of the Main Weir Intake Gate, to collect larger debris and vegetation between the Diverter Walls and Sediment Bypass Channel Wall. The Diverter Walls would

each be approximately 10 feet long, 2 feet wide by 7 feet high, angled toward the Sediment Bypass Channel. A New Slide Gate, approximately 17 feet long and 5 feet high, would replace the three existing 5-foot long by 4-foot high weir gates, allowing the larger sediment to pass to the New Debris Collection Pad.

- Replace Main Weir Intake Gate. The one existing 5-foot by 4-foot weir gate would be replaced with a one 5-foot high by 5-foot long weir gate.
- New Trash Rack: A new Trash Rack will be installed immediately upstream of the Main Weir Intake Gate.
- Remove and Replace Existing Concrete Channel Bottom – the existing channel bottom around the structure is concrete, or approximately 0.6 acre of the channel bottom. This same area would be regraded to achieve an adequate drop for the bypass channel, and a 12-inch thick concrete slab will be reinstalled.
- Remove and Replace Existing Catwalk: The existing catwalk will be removed, and a new catwalk installed approximately 5 feet downstream of the existing catwalk. The catwalk serves as the access to the weir gates.

#### *Construction Methods*

Construction is anticipated to occur during the drier months of the year, typically May through August, to reduce impacts to water and water quality. Prior to construction the three “soft plugs” (sand berms) that are located between 600 feet and 1,000 feet upstream of the facility and which used to direct flows to the facility, will be removed in a manner that will allow any storm flows to be directed into the northern portion of Mill Creek.

The New Debris Return Structure will be grouted rip rap. It is anticipated that trucks will haul locally-derived rock that exists at the SBVWCD stockpile, located on the south side of the existing flood wall, which exists immediately south of the existing Diversion structure, and dump it along the designated area. A concrete pump truck will be staged either on the access road south of the existing Diversion structure, or along an existing dirt access road, and pump concrete to fill the voids in the rock. A concrete access road will also be installed on the grouted rock pad, using the same pumping method as was used to place the grout for the pad.

The sediment bypass channel will be approximately 12 feet wide by 50 feet long, consisting of an approximate 2-foot-high concrete wall and concrete floor. A 5-foot high by 5-foot-wide self-contained slide gate will be installed. The low flow channel will be depressed 2 feet lower than the main return opening and the bypass wall will be 2 feet at its highest point.

After the removal of the existing 5-foot by 4-foot gates, existing cat walk, and existing concrete pad, the area would be graded to achieve the adequate drop for the bypass channel and the 12-inch thick reinforced PCC slab would be installed. This slab will have a base of 90 percent moisture compacted subgrade then a 3-inch thick, 95 percent moisture-compacted crushed aggregate base, and finally the 12-inch thick concrete slab. At the location where the bypass wall will sit on top of the slab, rebar will be placed horizontally along the berm alignment with 224-inch lap steel connections in the 12-inch concrete pad.

The bypass wall will vary in height from a maximum of 2 feet at the gate opening to a minimum of 0 feet (at grade) as it continues upstream into the channel. The berm will be 1 foot wide with 3 inch tooled edges. There

will be a transition point from the 2 feet in height to 1 feet in height in a length of 1 feet. After this transition, the berm will steadily decrease in height to grade (0 feet).

The downstream side of the bypass channel will be 5 feet wide and will be constructed with 2 feet of grouted rip rap. The area will have a berm between the main exit channel and the low flow channel that is 1 foot wide at the peak with 1:1 side slopes. This continued separation from the main return channel should help to keep sediment moving downstream away from the diversion structure as the small geometry will increase the flow rate of these small bypass flows.

Permanent impacts of the existing structure are estimated at approximately 0.01 acre. The Project will result in approximately 0.64 acre of temporary impacts to the diversion area, and 0.49 acre of new permanent impacts.

### *Construction Material Hauling*

Based on engineering estimates the following quantities of materials will be required:

Activity	Unit of Measure	Quantity	Trucks and Equipment (based on 10 cy truck for new material hauling)
Excavation	CY	2,020	Soil balancing will be used; little or no material to be hauled.
Backfill	CY	840	Soil balancing will be used; little or no material to be hauled.
Structural Excavation	CY	280	Soil balancing will be used; little or no material to be hauled.
Structural Concrete	CY	110	Approximately 11 concrete trucks; to be used for New Diversion Walls and structural concrete around new weir intake gate
Reinforcing Steel	LBS	12,170	1 flatbed truck, material will be stockpiled, placed as needed by construction equipment
Structural Steel	LBS	6,400	1 flatbed truck, material will be stockpiled, placed as needed by construction equipment
Miscellaneous Concrete (grout)	CY	120	Approximately 12 pumping trucks; to be used for the new hardened berm
Stainless Steel 5' x 5' Slide Gates	EA	2	1 haul truck, material will be stockpiled, placed as needed by construction equipment
Stainless Steel 17' x 5' Slide Gate	EA	1	1 flatbed truck, material will be stockpiled, placed as needed by construction equipment
Crushed Aggregate Base	TON	90	Approximately 1 dump trucks; to be used for concrete road base on the New Debris Collection Pad
Light Class Rip-Rap (16" diameter)	CY	940	Approximately 94 trucks, to be used for a portion of the New Debris Collection Pad
Grouted Rip Rap (16" grouted)	CY	490	Approximately 49 pumping trucks to be used for a portion of the New Debris Collection Pad



### *Construction Route*

Construction equipment will travel primarily on Mill Creek Road and Garnet Street to the facility access road, first reaching the staging area within the Mill Creek Spreading Facility. From the staging area, equipment and vehicles will travel west along the paved flood control access road toward Garnet Street, and turn north onto Garnet Street. The construction area is approximately 100 yards north of the flood control access road on Garnet Street. Equipment and vehicles would then travel approximately 0.75 mile along the existing dirt road to the construction area in Mill Creek.

### *Equipment and Material Staging*

The proposed staging area will be within the Mill Creek Spreading Facility located directly south of the Mill Creek Levee wall. This land is owned by the SBVWCD and currently a stockpiling location for materials.

### *Equipment*

The following is a list of general equipment that could typically be used for construction. The estimated equipment listed here is meant to give enough detail for the purpose of environmental analysis, and is not designed to identify the exact make and models or to limit contractors to this specific list.

- Back hoe
- Excavator
- Bulldozer
- Haul trucks
- Concrete trucks
- Concrete pump, boom and tailgate pump

### *Personnel*

Number of construction personnel will vary based on the work for the project that is completed that day, as most of the work is concrete and aggregate related, an estimate of approximately 20 construction personnel would be needed per day.

### *Construction Timing*

Work would likely occur between 6 am and 4 pm on Mondays through Fridays between May and August. Ideally construction would occur after the storm season has occurred so the existing facility can remain operational as long as possible.

### *Hazardous Waste*

It is assumed that the equipment will need fuel and servicing. The following types of wastes are considered hazardous: petroleum products, palliatives, septic wastes, paints, stains, wood preservatives, asphalt products, pesticides, acids, solvents, and roofing tar. There may be additional wastes on the site that are considered hazardous. It is assumed that the operations will be in compliance with the requirements set forth by the Hazardous Materials Division of the San Bernardino County Fire Department and the US EPA.

It is assumed that lubricants and fuel will be handled in the construction staging area whenever possible. The staging area is directly over the flood control levee wall and easily accessible from the construction site.

### *Operations and Maintenance*

It is anticipated that Operations and Maintenance will decrease with the improvements to this facility. Simple O&M activities such as greasing and preparing gates will still occur on an annual basis, but the large maintenance activities due to debris should decrease. Occasionally, if a large storm flush with lots of debris were to occur larger equipment would need to utilize the access road to enter the facility and remove the large debris. The SBVWCD works to protect its facilities as much as possible removing debris with hand tools whenever possible.

The SBVWCD currently employs two field personnel that regularly operate and maintain the facility. There are no plans to increase the number of field personnel due to the improvement of this diversion structure. Field staff operate the gate system to divert water to the Mill Creek spreading facilities and remove debris.

## ENVIRONMENTAL CHECKLIST FORM

1. **Project Title:** Mill Creek Diversion and Debris Management Improvement
2. **Lead Agency Name:** San Bernardino Valley Water Conservation District  
**Address:** 1630 W. Redlands Boulevard  
Redlands, California 92373
3. **Contact Person:** Daniel Cozad, District Manager  
San Bernardino Valley Water Conservation District  
dcozad@sbvwcd.org  
  
**Phone Number:** (909) 793-2503
4. **Project Location:** City of Redlands  
Approximately 0.54 miles east of Garnet Street and 0.16 miles north of California State Route 38. The diversion structure is located within Mill Creek, approximately 2 miles upstream of the confluence with Santa Ana River  
Topographic Quad (USGS 7.5"): Redlands  
Topographic Quad Coordinates: northeast one-quarter of Section 21, Township 1 South, Range 2 West  
Latitude: 34°4'32" N, Longitude: 117°5'24" W
6. **General Plan Designation:** City of Redlands, Flood Control/Construction Aggregates
7. **Zoning:** City of Redlands, Open Space
8. **Project Description Summary:**

The proposed project involves a redesign and reconstruction of the existing water diversion channel and structures to redirect the sediment and debris away from the water diversion gates, allowing water to flow through the diversion structure and returning sediment back to the main flow of Mill Creek. The reconstructed facility will include the following features: a new hardened debris return structure which consists of an approximate 0.48-acre rip rap area in the main channel of Mill Creek with a new concrete access road; hardening of the existing channel diversion berm; a new sediment bypass channel that would direct first flow sediment to the debris return structure; new debris diverter walls with a slide gate to capture larger debris and direct it to the new debris return pad; replacing the existing main weir intake gates; installing a trash rack; removing and replacing the existing concrete channel bottom; and removing and replacing the existing catwalks. The structure is located adjacent to a Corps-constructed levee, and portions of the levee were integrated into the channel bottom of the diversion structure. The diversion structure has been in place since the 1920s, and the Corps levee was constructed in the 1990s.

The existing system will be demolished and replaced so that the overflow height is increased by 3 feet with ponding to an additional 2 feet above the weir. Increasing the height will increase the ponding depth to promote sediment settling and prevent sediments from being transported to the spreading grounds. The three existing 5-foot by 4-foot weir gates would be replaced with a one large gate. Baffle walls would be added to direct debris toward the return weir. A trash rack would also be utilized at the diversion gate that conveys flows to the spreading grounds. The area around the proposed channel would also be reinforced with concrete. The earthen berm along the north bank of the Mill Creek Diversion Channel would be hardened along with the channel

bottom. Additionally, rocks would be placed downstream of the existing grouted area located downstream of the diversion back to Mill Creek to prevent further erosion.

Construction is anticipated to occur during the drier months of the year, typically May through August, to reduce impacts to water and water quality.

Project details are described in Section 3.

#### **10. Surrounding land uses and setting (Briefly describe the project's surroundings)**

The Mill Creek facility is generally surrounded by vacant land with a well-defined graded maintenance road network, or land that is utilized for agriculture or mining. Some residences also exist to the south. More specifically:

North:	Levee, Mill Creek, Agriculture
Northeast:	Levee, Mill Creek, Agriculture
South:	Open Space, Rural Residential
Southeast:	Agricultural, single-family medium-density homes, Open space
East:	Garnet Street, open space, water recharge basins
West:	Recharge basins, agriculture

#### **11. Lead Agency Discretionary Actions:**

Discretionary actions that may be taken by the Lead Agency include, but are not limited to, the following:

- Award contract for project.

#### **12. Other agencies whose approval is required (e.g., permits, financing approval, or participation agreement.):**

- Work within City/County limits. The Mill Creek facilities are located entirely within the City of Redlands, in San Bernardino County. However, because the SBVWCD is also a public agency, not subject to the City jurisdiction, no City permits are required.
- Alteration/Discharge into Streambeds – State Jurisdiction. The California Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section 1602) requires an entity to notify CDFW of any proposed activity that may substantially modify a river, stream, or lake. The proposed Project will modify Mill Creek, therefore, a Lake or Streambed Alteration Agreement from the CDFW is required. The Agreement will include reasonable conditions necessary to protect those resources. The Agreement must comply with CEQA. The entity may proceed with the activity in accordance with the final Agreement.
- Construction Compliance – Stormwater Discharge. Construction projects that disturb 1 acre of land or more are required to obtain coverage under the NPDES General Permit for Construction Activities (General Construction Permit), which requires the applicant to file a notice of intent (NOI) to discharge stormwater and to prepare and implement a SWPPP. The SWPPP includes an overview of the Best Management Practices (BMPs) that would be implemented to prevent soil erosion and

discharge of other construction-related pollutants that could contaminate nearby water resources. The SBVWCD will not prepare a SWPPP for the project because the facility can be hydrologically isolated from Mill Creek by removal of the soft plugs and placing a temporary berm in the diversion channel.

- Alteration/Discharge into Streambeds – Federal Jurisdiction. The federal Clean Water Act (CWA) is the primary federal law promulgated to protect the quality of the nation’s surface waters, including lakes, rivers, and coastal wetlands. The responsible regulating agencies are the U.S. Army Corps of Engineers and the Santa Ana Regional Water Quality Control Board. The Diversion Structure is located within the Mill Creek active floodplain and is considered Waters of the U.S. Project activities involving the physical alteration or direct discharge into Waters of the U.S. would require Federal Clean Water Act Permits would be required.
- US Army Corps of Engineers Section 408 Permit. Alterations of a US Army Corps of Engineers Civil Works Projects require permits pursuant to 33 USC 408. Alterations or alter refers to any action by any entity other than USACE that builds upon, alters, improves, moves, occupies, or otherwise affects the usefulness, or the structural or ecological integrity, of a USACE project. Alterations also include actions approved as “encroachments” pursuant to 33 CFR 208.10. The existing Diversion structure bottom was integrated into the existing Corps levee by Corps design. The Project will alter the bottom of the slope within the channel adjacent to the slope.

**13. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?**

*Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission’s Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.*

A search of tribal records was completed in March 2017 by CRM Tech (March 31, 2017). In response to CRM TECH’s inquiry, the NAHC reported in a letter dated March 6, 2017, that the sacred lands record search yielded negative results for Native American cultural resources within the APE, but recommended that local Native American groups be contacted for further information. For that purpose, the NAHC provided a list of potential contacts in the region (Appendix C). Upon receiving the NAHC’s response, CRM TECH initiated consultation with all 19 individuals on the referral list and the organizations they represent in accordance with the NAHC’s recommendation. In addition, as referred by the appropriate tribal government staff, the following six designated tribal spokespersons were also contacted:

- David L. Saldivar, Tribal Government Affairs Manager, Augustine Band of Cahuilla Indians;
- Judy Stapp, Director of Cultural Affairs, Cabazon Band of Mission Indians;
- Andreas Heredia, Cultural Director, Cahuilla Band of Indians;
- Anthony Madrigal, Interim Cultural Director, Cahuilla Band of Indians;
- Raymond Huaute, Cultural Resource Specialist, Morongo Band of Mission Indians;

- Gabriella Rubalcava, Environmental Director, Santa Rosa Band of Cahuilla Indians.

The written requests for comments were sent to the tribal representatives on March 9, 2017, and follow-up telephone solicitations were carried out on March 23-29, 2017. As of June 8, 2017, three of the tribal representatives contacted have responded in writing, and two others have provided their comments via telephone:

- Judy Stapp of the Cabazon Band of Mission Indians stated that the tribe had no specific information on any sites of Native American traditional cultural value in the APE.
- Michael Mirelez, Cultural Resources Coordinator for the Torres Martinez Desert Cahuilla Indians, stated that the tribe would defer to the San Manuel Band of Mission Indians.
- Katie Croft, Archaeologist with the Tribal Historic Preservation Office of the Agua Caliente Band of Cahuilla Indians, identified the APE to be a part of the tribe's traditional use area. According to Ms. Croft, records maintained by the tribe showed that the APE had been surveyed previously with no cultural resources found. The Agua Caliente Band also deferred further consultation to the San Manuel Band of Mission Indians.
- Goldie Walker, Chairperson of the Serrano Nation of Indians, found the APE to be in a culturally sensitive area and requested to be notified if any cultural resources were encountered.
- Joseph Ontiveros, Director of Cultural Resources for the Soboba Band of Luiseño Indians, also found the APE to be culturally sensitive due to its location "in proximity to known sites," and claimed it as a part of the tribe's traditional use area. Therefore, he requested further consultation with the lead agencies and Native American monitoring of ground-disturbing activities in the APE by a member of the Soboba Band's Cultural Resources Department.

In addition, to the above contacts, the following tribal entities contacted the SBVWCD in 2015 requesting AB52 consultation on SBVWCD projects:

- Daniel F. McCarthy, MS, RPA, Director-CRM Department, San Manuel Band of Mission Indians 26569 Community Center Drive Highland, CA 92346.
- Andrew Salas, chairman, Gabrieleno Band of Mission Indians - Kizh Nation, PO Box 393, Covina, CA 91723
- Raymond Huaute, Cultural Resource Specialist, Morongo Band of Mission Indians 12700 Pumarra Road, Banning, CA 92220

On May 2, 2017 the following tribal entity representatives were notified of the Project:

- Ms. Goldie Walker, Chairperson, Serrano Nation of Mission Indians
- Mr. Joseph Ontiveros, Director of Cultural Resources, Soboba Band of Luiseño Indians
- Mr. Daniel F. McCarthy, RPA, Director-CRM Department, San Manuel Band of Mission Indians
- Mr. Andrew Salas Chairman, Gabrieleno Band of Mission Indians - Kizh Nation
- Mr. Raymond Huaute, Cultural Resource Specialist. Morongo Band of Mission Indians

## ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project as indicated by the checklist on the following pages.

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Aesthetics               | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality                        |
| X Biological Resources                            | X Cultural Resources  | X Geology / Soils   |
| <input type="checkbox"/> Greenhouse Gas Emissions | X Hazards & Hazardous Materials                             | <input type="checkbox"/> Hydrology & Water Quality          |
| <input type="checkbox"/> Land Use / Planning      | <input type="checkbox"/> Mineral Resources                  | <input type="checkbox"/> Noise                              |
| <input type="checkbox"/> Population / Housing     | <input type="checkbox"/> Public Services                    | <input type="checkbox"/> Recreation                         |
| <input type="checkbox"/> Transportation / Traffic | <input type="checkbox"/> Utilities / Service Systems        | <input type="checkbox"/> Mandatory Findings of Significance |

**DETERMINATION** (To be completed by the Lead Agency)

On the basis of this initial evaluation, the following finding is made:

	The proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
<b>X</b>	Although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
	The proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
	The proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
	Although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

\_\_\_\_\_  
Jericho Systems, Inc.  
Prepared by

\_\_\_\_\_  
06/08/2017  
Date

\_\_\_\_\_  
Signature  
San Bernardino Valley Water Conservation District

\_\_\_\_\_  
Date



## EVALUATING ENVIRONMENTAL IMPACTS:

- 1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
- 2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
- 3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect is significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
- 4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).
- 5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
  - a) Earlier Analyses Used. Identify and state where they are available for review.
  - b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
  - c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
- 6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
- 7) Supporting Information Sources. A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
- 8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
- 9) The explanation of each issue should identify:
  - a) the significance criteria or threshold, if any, used to evaluate each question; and
  - b) the mitigation measure identified, if any, to reduce the impact to less than significance.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>I. AESTHETICS:</b> Would the project:				X
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				X

**SUBSTANTIATION:** (Check ☐ if project is located within a view-shed of any Scenic Route listed in the General Plan):

### **Environmental Setting**

The surface elevation of the Project area ranges from approximately 2,190 feet above mean sea level (AMSL) at the eastern boundary of the site to approximately 1,720 feet AMSL at the western boundary of the site. The site is generally located within the broad, gently sloping, alluvial fan plain of the San Bernardino Mountains. The Project is situated at the base of the southern foothills of the San Bernardino Mountains between the San Bernardino Mountains to the north and the Crafton Hills to the south, within the Mill Creek floodplain. The area is primarily characterized as existing open areas, containing existing conservation basins, maintenance access roads, and a flood control levee. The SBVWCD and its predecessors have been operating and maintaining these water conservation facilities since approximately 1911. The SBVWCD has been operating and maintaining them since before the 1930s.

Due to the relatively flat nature of the facility, the facility cannot be viewed from the major roadways, Garnet Street and Mill Creek Road. The area is also open, with no residential areas or tourist areas nearby.

### **Impact Analysis**

a) *Have a substantial adverse effect on a scenic vista?*

**No Impact.** The CEQA Guidelines do not provide a definition of what constitutes a “scenic vista” or “scenic resource” or a reference as to from what vantage point(s) the scenic vista and/or resource, if any, should be observed. However, a scenic vista can generally be defined as a viewpoint from a public vantage that provides expansive views of a highly-valued landscape for the benefit of the general public. Common examples include undeveloped hillsides, ridgelines, and open space areas that provide a unifying visual backdrop to a developed area. Scenic resources are those landscape patterns and features that are visually or aesthetically pleasing and that contribute affirmatively to the definition of a distinct community or region such as trees, rock outcroppings, and historic buildings.

The Project is located at grade and/or within a stream channel which generally cannot be seen from public access points. Additionally, the project will not change the channel alignment in a manner that would alter the existing visual character of the area. None of the proposed activities would have a substantial adverse effect on any scenic vista because the site is not a scenic vista, and the Project area surroundings do not afford a vantage point where the Project can be publicly viewed.

*b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

**No Impact.** Although State Route 38 (SR 38) is located at the southern boundary of the Project area, this segment of SR 38 is not designated as a scenic highway. This project will not damage any scenic resources viewed by people traveling on SR 38 nor will it damage any scenic resources within or adjacent to the SR 38 traveled corridor. There will be no impact to trees or rock outcroppings, or historic buildings within a state scenic highway.

*c) Substantially degrade the existing visual character or quality of the site and its surroundings?*

**Less Than Significant.** The project is to modify an in-stream diversion facility in which cannot be seen from public areas. The addition of a rip rap pad, concrete access road, and modification of the gates will represent a change from the natural stream conditions, but the project cannot be viewed from public areas, therefore, there will be no substantial degradation in the existing visual character of the site.

*d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

**No Impact.** The project does not propose to install lighting, and all work will be conducted during the daytime hours. Therefore, there will be no impact to this criterion.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>II. AGRICULTURE AND FORESTRY RESOURCES:</b>  In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

**SUBSTANTIATION:** (Check ☐ if project is located in the Important Farmlands Overlay):

**Environmental Setting**

The project site is located in an active channel. There are no farmlands or forest lands in the Project area.

### **Impact Analysis**

a) *Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*

**No Impact.** The Project Site was not identified within the survey limits of California Department of Conservation, Farmland Mapping and Monitoring Important Farmland Finder. No land under Williamson Act Contract occurs at the Project Site and no impacts will occur.

b) *Conflict with existing zoning for agricultural use or a Williamson Act contract?*

**No Impact.** As discussed above, no land on or near the project site is currently under agricultural production, nor are any parcels under a Williamson Act contract. Therefore, no impact is anticipated from the construction and operation of the proposed Project.

c) *Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?*

**No Impact.** Forest land is defined in Public Resources Code section 12220(g) as “land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.” The Project site is zoned Floodway. Implementation of the proposed Project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production because these designations do not occur at the Project site. No impact is identified and no mitigation measures are required.

d) *Result in the loss of forest land or conversion of forest land to non-forest use?*

**No Impact.** There is no forest land in the Project area. Therefore, there is no impact.

e) *Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?*

**No Impact.** Implementation of the proposed Project would not result in the conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. Therefore, there is no impact to this criterion.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>III. AIR QUALITY:</b> Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			X	
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X	
d) Expose sensitive receptors to substantial pollutant concentrations?			X	
e) Create objectionable odors affecting a substantial number of people?			X	

**SUBSTANTIATION:** (Discuss conformity with the South Coast Air Quality Management Plan, if applicable):

a) *Conflict with or obstruct implementation of the applicable air quality plan?*

**Less Than Significant.** The applicable air quality plan is the South Coast Air Quality Management District's (SCAQMD) 2016 Air Quality Management Plan (AQMP). The AQMD is a regional blueprint for achieving air quality standards and healthful air. Conflicts with the AQMP would arise if Project activities result in substantial increase in employment or population that was not previously adopted and/or approved in a General Plan. Large population or employment increases could affect transportation control strategies, which are among the most important in the air quality plan since transportation is a major contributor to particulates and ozone for which the South Coast Air Basin is not in attainment. Because the Project does not propose activities that would change population or employment levels within the air basin, the Project would not conflict with or obstruct implementation of the applicable air quality plan. The Project would implement measures to control air emissions during construction. Development of the improvements project is consistent with the District's plans and policies. Therefore, the project would not conflict with the SCAQMD's AQMP. A less than significant impact is identified, and no mitigation measures are proposed.

- b) *Violate any air quality standard or contribute substantially to an existing or projected air quality violation?*
- c) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*

**Less Than Significant.** The proposed improvement project is within the Mill Creek Wash and would require earthmoving, and other activities such as grading and paving to rehabilitate existing diversion structure facilities.

The project's construction activities were screened for emission generation using South Coast Air Quality Management District (SCAQMD) "Air Quality Handbook" guidelines, Emission Factors for On-Road Heavy-Heavy Duty Diesel Trucks (2017) and SCAQMD Off-Road Mobile Source Emissions Factors (2017). These tables are used to generate emissions estimates for development projects. The criteria pollutants screened for included: reactive organic gases (ROG), nitrous oxides (NO<sub>x</sub>), carbon monoxide (CO), and particulates (PM<sub>10</sub> and PM<sub>2.5</sub>). Two of these, ROG and NO<sub>x</sub>, are ozone precursors.

The proposed improvements will disturb up to one acre of land currently used for public works infrastructure. Grading will occur on approximately 2/3 of the site and all soil is to be balanced onsite. Improvements will also include the development of a concrete intake weir (23 concrete trucks/boom trucks), and the placement of 940 cubic yards ((CY) (94 street legal haul trucks)) of light class rip-rap and 490 CY (49 street legal haul trucks) of grouted rip rap. Construction earthwork emissions are considered temporary and short-term (approximately 4 months), construction emissions have been estimated using the method described above and using the following construction parameters:

*Material Removal, Typical daily equipment:*

- The removal of construction debris (asphalt, concrete, earth, etc.).
  - Approximately 30-mile round trip haul distance (worst case as C & B Crushing Inc. is located less than 10 miles from the site and operates a construction recycling program, Calimesa, CA)
- 1 Loader 5 street legal haul trucks (export)

*Channel Earthwork, Typical daily equipment:*

- 1 Loader/Backhoe
- 1 Bulldozer
- 1 Grader/Excavator
- 1 Misc. Construction Equipment

*Placement of Rip-Rap, Typical daily equipment:*

- Rip Rap Haul Trucks (143 total trips)
  - Approximately 2-mile round trip haul distance (worst case as SBVWCD has rip-rap located adjacent to the site to the south)
- Concrete Trucks (11 total trucks)
  - Approximately 30-mile round trip haul distance (worst case as Robertson Ready Mix is located less than 10 miles from the site, Redlands, CA.)
- 1 Miscellaneous Paving Equipment
- Concrete Pump Trucks (12 total trucks)

The resulting construction emissions, as compared to the SCQAMD thresholds for each pollutant are shown in Tables 1, 2, and 3. The construction activities have been divided into three categories in order to apply the appropriate equipment usage to each category prior to estimating the emissions. Daily emissions were modeled with all pieces of equipment operating for 8 hours/day on a daily basis and all rip-rap delivered on the same day.

**Table 1**  
**Construction Emissions**  
**Material Removal**  
**(Pounds per Day)**

Source	ROG	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Loaders <sup>1</sup>	0.7	5.2	3.6	0.3	0.3
Haul Trucks <sup>2</sup>	0.2	2.5	1.0	0.2	0.2
<b>Totals (lbs/day)</b>	<b>0.9</b>	<b>7.7</b>	<b>4.6</b>	<b>0.5</b>	<b>0.5</b>
SCAQMD Threshold	75	100	550	150	55
<b>Significant</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

<sup>1</sup> SCAQMD Off-Road Mobile Source Emissions Factors (2017)

<sup>2</sup> Emission Factors for On-Road Heavy-Heavy Duty Diesel Trucks (2017)

**Table 2**  
**Construction Emissions**  
**Channel Earthwork Activities**  
**(Pounds per Day)**

Source	ROG	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Loader/Backhoe	0.5	3.0	2.9	0.2	0.2
Bulldozer	2.0	15.6	7.4	0.6	0.6
Grader/Excavator	0.9	6.4	4.7	0.3	0.3
Misc. Construction Eq.	0.5	4.0	2.9	0.3	0.3
<b>Totals (lbs/day)</b>	<b>2.1</b>	<b>29.0</b>	<b>17.9</b>	<b>1.4</b>	<b>1.4</b>
SCAQMD Threshold	75	100	550	150	55
<b>Significant</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Source: SCAQMD Off-Road Mobile Source Emissions Factors (2017)

**Table 3**  
**Construction Emissions**  
**Placement of Rip-Rap**  
**(Pounds per Day)**

Source	ROG	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
Rip-Rap Haul Trucks <sup>2</sup>	0.4	4.8	1.9	0.5	0.5
Concrete Trucks	0.7	7.8	3.0	0.7	0.7
Miscellaneous Paving Equipment	0.7	4.8	3.3	0.3	0.3
<b>Totals (lbs/day)</b>	<b>1.8</b>	<b>17.4</b>	<b>8.2</b>	<b>1.5</b>	<b>1.5</b>
SCAQMD Threshold	75	100	550	150	55
<b>Significant</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Source: SCAQMD Offroad Mobile Source Emission Factors (2017)

<sup>2</sup> Emission Factors for On-Road Heavy-Heavy Duty Diesel Trucks (2017)



As shown in Tables 1, 2, and 3, construction emissions would not exceed SCAQMD thresholds based on the worst case scenario being daily emissions modeled with all pieces of equipment operating for 8 hours/ day on a daily basis and all the rip-rap delivered on the same day. Less than significant impacts are anticipated.

*Compliance with SCAQMD Rules 402 and 403*

Although the proposed project does not exceed SCAQMD thresholds for construction emissions, the District is required to comply with all applicable SCAQMD rules and regulations as the South Coast Air Basin is in non-attainment status for ozone and suspended particulates (PM<sub>10</sub>). The project shall comply with Rules 402 - Nuisance and 403 - Fugitive Dust, which require the implementation of Best Available Control Measures (BACM) for each fugitive dust source; and the Air Quality Management Plan (AMCP), which identifies Best Available Control Technologies (BACT) for area sources and point sources, respectively. This would include, but not be limited to the following BACMs and BACTs, as cited from the SCAQMD Rules:

- The project proponent shall ensure that any portion of the site to be graded shall be pre-watered prior to the onset of grading activities.
  - (a) The project proponent shall ensure that watering of the site or other soil stabilization method shall be employed on an on-going basis after the initiation of any grading activity on the site. Portions of the site that are actively being graded shall be watered regularly to ensure that a crust is formed on the ground surface, and shall be watered at the end of each workday.
  - (b) The project proponent shall ensure that all disturbed areas are treated to prevent erosion.
  - (c) The project proponent shall ensure that all grading activities are suspended during first and second stage ozone episodes or when winds exceed 25 miles per hour.

Exhaust emissions from construction vehicles and equipment and fugitive dust generated by equipment traveling over exposed surfaces, would increase NO<sub>x</sub> and PM<sub>10</sub> levels in the area. Although the proposed project does not exceed SCAQMD thresholds during construction, the City will be required to implement the following conditions as required by SCAQMD:

- To reduce emissions, all equipment used in earthwork must be tuned and maintained to the manufacturer's specification to maximize efficient burning of vehicle fuel.
- The project proponent shall ensure that construction personnel are informed of ride sharing and transit opportunities.
- The operator shall maintain and effectively utilize and schedule on-site equipment in order to minimize exhaust emissions from truck idling.
- The operator shall comply with all existing and future CARB and SCAQMD regulations related to diesel-fueled trucks, which may include among others: (1) meeting more stringent emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low sulfur fuel; and (4) use of alternative fuels or equipment.

Implementation of the Project does not exceed the SCAQMD significance thresholds for construction activities, and there would be no operational emissions. Although there would be emissions from vehicles and equipment during construction, the emissions would be temporary, of short duration, and below the established thresholds. In addition, Project emissions of particulate matter would be reduced by implementing BACMs as outlined in SCAQMD dust control Rules 402 - Nuisance and 403 - Fugitive Dust. The Project would not generate long-term

emissions of criteria pollutants and would therefore not cause a cumulatively considerable increase in criteria pollutants. A less than significant impact is identified, and no mitigation measures are proposed.

*d) Expose sensitive receptors to substantial pollutant concentrations?*

**Less Than Significant.** Sensitive receptors are those facilities used by a population group that is more susceptible to the effects of air pollutants. Sensitive receptors include residences, schools, playgrounds, child-care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The project site is within a rural residential area and the nearest residence is approximately 850 feet to the south. As shown in Tables 1, 2 and 3, construction impacts are not anticipated to exceed SCAQMD thresholds. No operational emissions would occur. With implementation of BACMs, emissions of dust or vehicle exhaust fumes associated with construction would be short-term and would not expose sensitive receptors to substantial pollutant concentrations. A less than significant impact is identified, and no mitigation measures are proposed.

*e) Create objectionable odors affecting a substantial number of people?*

**No Impact.** Project construction equipment would generate odors from the combustion of fuels. However, the determination of an impact from Project-generated odors is dependent on a number of variables including:

- Nature of the odor source;
- Frequency of odor generation (e.g., daily, seasonal, activity-specific);
- Intensity of the odor (e.g., concentration);
- Wind direction (e.g., upwind or downwind); and
- Sensitivity of the receptor.

As shown in Tables 1, 2 and 3, construction impacts are not anticipated to exceed SCAQMD thresholds of significance. No operational emissions are anticipated. Impacts associated with emission odors would be temporary during Project construction activities. Due to the rural nature of the project area, it is anticipated that the short-term odors generated by construction equipment would dissipate rapidly. Impacts would be less than significant and no mitigation measures are proposed.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>IV. BIOLOGICAL RESOURCES:</b> Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		X		
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

**SUBSTANTIATION:** (☒ Check if project is located in the Biological Resources Overlay or Contains habitat for any species listed in the California Natural Diversity Database):

#### **Regulatory Setting**

Special status species are native species that have been afforded special legal or management protection because of concern for their continued existence. There are several categories of protection at both federal and state levels, depending on the magnitude of threat to the continued existence and existing knowledge of population levels.

### *Federal Endangered Species Act*

The U.S. Fish and Wildlife Service (USFWS) administers the federal ESA of 1973. The ESA provides a legal mechanism for listing species as either threatened or endangered, and a process of protection for those species listed. Section 9 of the ESA prohibits "take" of threatened or endangered species. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. "Take" can include adverse modification of habitats used by a threatened or endangered species during any portion of its life history. Under the regulations of the ESA, the USFWS may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act. Take authorization can be obtained under Section 7 or Section 10 of the act.

### *California Endangered Species Act*

The CDFW, formerly Fish and Game, administers the State CESA. The State of California considers an endangered species one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is one present in such small numbers throughout its range that it is likely to become an endangered species soon, in the absence of special protection or management. And a rare species is one present in such small numbers throughout its range that it may become endangered if its present environment worsens. Rare species applies to California native plants. Further, all raptors and their nests are protected under Section 3503.5 of the FGC. Species that are California fully protected include those protected by special legislation for various reasons, such as the California condor. Species of Special Concern (SSC) is an informal designation used by CDFW for some declining wildlife species that are not proposed for listing as threatened or endangered. This designation does not provide legal protection, but signifies that these species are recognized as sensitive by CDFW.

### *The Migratory Bird Treaty Act*

Nesting birds are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C 703-711). The MBTA provides protection for nesting birds that are both residents and migrants whether or not they are considered sensitive by resource agencies. The MBTA prohibits take of nearly all native birds. The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed under 50 CFR 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The direct injury or death of a migratory bird, due to construction activities or other construction-related disturbance that causes nest abandonment, nestling abandonment, or forced fledging would be considered take under federal law. The USFWS, in coordination with the CDFW administers the MBTA. CDFW's authoritative nexus to MBTA is provided in FGC Sections 3503.5 which protects all birds of prey and their nests and FGC Section 3800 which protects all non-game birds that occur naturally in the State.

### *Clean Water Act*

Enacted in 1972, the Federal Clean Water Act (CWA; 33 U.S.C. § 1251 et seq.) and subsequent amendments outline the basic protocol for regulating discharges of pollutants to waters of the U.S. It is the primary Federal law applicable to water quality of the nation's surface waters. The CWA also established the National Pollutant Discharge Elimination System (NPDES), and provides the USEPA the authority to implement pollution control programs, such as setting wastewater standards for industry and water quality standards for surface waters (see below for a discussion of the NPDES program). The US Army Corps of Engineers (ACOE) administers the federal sections of the CWA. In California, the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs) are the designated authorities. This Project is within the jurisdiction of the Santa Ana Regional Water Quality Control Board.

## **Environmental Setting**

The Project area is within the Southern California Mountains and Valleys Ecological Section of California, which includes mountains, hills and valleys of the Transverse Ranges and the Peninsular Ranges that are near the Pacific Ocean, but not bordering it. Much of the section is close enough to the Pacific Ocean for the climate to be modified moderately marine influence. This subsection comprises the lower and warmer parts of the San Bernardino Mountains, which are between the southern branch of the San Andreas Fault on the south-southwest and the Mojave Desert on the north. It extends from the Cajon Pass eastward to near the Pipes Canyon fault. It includes mountains between the Mission Creek fault and the Banning fault on the south. The climate is hot to temperate and subhumid. Marine effects on climate are moderate on the south-southwest side and slight on the north and east sides of the mountains.

The elevation within the proposed project area is approximately 2,130 feet above mean sea level. The terrain consists of floodplain, sloping downward from the east to the west. The area under consideration is surrounded by rugged foothill topography and alluvial fan. The local area climate is semi-arid, with an average annual temperature of 67°F and a range from 25-110°F. The rainy season begins in November and continues through March, with the quantity and frequency of rain varying from year to year. The average annual rainfall is approximately 18.1 inches. The general vicinity consists of open space, undeveloped land, orchards, mixed suburban and rural residential community, flood control facilities and recharge basins.

Jericho conducted a biological habitat assessment of the Project area in March and April 2017. In addition to the general biological surveys, a protocol survey was conducted within the project area between March 8 and March 12, 2017, to determine the presence or absence of the federally-listed as endangered San Bernardino kangaroo rat (*Dipodomys merriami parvus* [SBKR]). The results of the survey were negative with no SBKR found.

Habitat within the survey area primarily consists of sandy river wash and scale broom scrub (*Lepidospartum squamatum* Shrubland Alliance), or Riversidean Alluvial Fan Sage Scrub (RAFSS). The project area is within and adjacent to existing SBVWCD facilities and is subject to past and ongoing human disturbances associated with the maintenance of the facilities. Disturbances observed within the Project area during survey include dirt roads, grading, and existing flood control and SBVWCD facilities. There is an existing dirt access road that provides access to the project site and much of the site has been previously graded.

According to Jericho's Biological Resource Assessment (April 2017), 18 sensitive species had a moderate to high potential to occur within the project area, according to the literature review and known observations. However, based on the field survey results, no State- and/or federally-listed threatened or endangered plants or species were observed on site. One species of special concern (San Diego pocket mouse) was observed on site during focused SBKR live-trapping efforts.

The Project area contains pioneer stage RAFSS which can support the San Bernardino kangaroo rat and the coastal California gnatcatcher (CAGN).

The project site is within USFWS-designated critical for the San Bernardino kangaroo rat and adjacent to critical habitat for the Santa Ana sucker.

### San Bernardino kangaroo rat

The federally-listed as endangered SBKR is one of three recognized subspecies of Merriam's kangaroo rat (*D. merriami*) in California. The Merriam's kangaroo rat is a small, burrowing rodent species that can be found within inland valleys and deserts of southwest United States of America and northern Mexico.

The project site is mapped within Unit 1 of SBKR critical habitat. SBKR have been documented in the local vicinity and there is suitable habitat within the project area. However, the protocol trapping surveys conducted between March 8 and March 12, 2017 yielded negative results.

### Coastal California gnatcatcher (CAGN)

The State- and federally-listed threatened CAGN is documented to occur close to the project area. Furthermore, the Primary Constituent Elements (PCEs) for this species (RAFSS with proximal non-sage scrub habitats) are present within the project site and surrounding areas. Therefore, CAGN are assumed to be present adjacent the project area.

### Burrowing Owl

The burrowing owl (BUOW) is a State and federal SSC and protected by the international treaty under the Migratory Bird Treaty Act of 1918 and by State law under the California Fish and Game Code (CDFG Code #3513 & #3503.5). The burrowing owl is a ground dwelling owl typically found in arid prairies, fields, and open areas where vegetation is sparse and low to the ground. Burrowing owl have been documented within flood control facilities similar to the Mill Creek Diversion project area.

Burrowing owl habitat generally includes, but is not limited to, short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey." The Project area is also mostly comprised of short, sparse vegetation and well-drained, friable soils. However, during Jericho's site survey in March and April 2017, no suitably-sized burrows, burrow surrogates, or host burrowers were observed within the project area, nor have BUOW been historically (within the last 3 years) identified on or adjacent to the site.

### Western spadefoot and California glossy snake

The western spadefoot is a moderate-sized greenish, brown, cream, or gray toad that has a glossy black spade, shaped like a wedge or teardrop, present on each hind foot. The western spadefoot is considered a SSC by the CDFW. These animals are nocturnal and almost completely terrestrial, entering water only to breed. The nearest documented western spadefoot occurrences (2015) are approximately 0.5 miles northwest and northeast of the project site, within suitable upland habitat north of Mill Creek. This area north of the project site represents one of the few areas in the region where this species has been documented and Mr. Smith has observed western spadefoots breeding in rain pools and foraging in this area in 2015, 2016 and early 2017. Potentially suitable habitat for this species exists in adjacent areas southwest of the project site.

The California glossy snake is a moderately-sized snake (26-70 in.) that has smooth, glossy scales, with a faded or bleached-out appearance, a tan or light brown ground color with dark brown blotches with dark edges on the back and sides and a pale, unmarked underside. California glossy snake are nocturnal and very sensitive to artificial light (Jericho, April 2017).

The upper Santa Ana River and its tributaries contain habitat suitable for California glossy snake and this species has recently (2013-15) been documented in several locations along the Santa Ana River and Lytle Creek. Per the

literature review, the nearest documented California glossy snake occurrence (2014) is approximately 3 miles northwest of the project site, along Greenspot Road. This area north of the Santa Ana River Wash represents one of the few areas in the region where this species has been documented and Mr. Smith has observed California glossy snakes within and adjacent the upper Santa Ana River Wash from 2013-2015. Potentially suitable habitat for this species exists within the project site and throughout the lower portions of Mill Creek.

#### Nesting birds

Vegetation suitable for nesting birds does exist within the project site and adjacent areas.

#### Jurisdictional Waters

Mill Creek is a jurisdictional feature subject to the CWA and FGC under the jurisdictions of the USACE, RWQCB, and CDFW respectively. The project site is located entirely within the Mill Creek floodplain (Jericho 2014). The project will result in permanent and temporary impacts to Mill Creek and permits or authorizations from the USACE, RWQCB, and/or CDFW will be required. The total work area encompasses 0.70 acre of which will includes 0.15 acre of temporary grading disturbance and 0.39 acre of permanent impact to jurisdictional waters.

#### Jurisdictional Wetlands

In March 2017, Jericho assessed the Project site for jurisdictional waters and jurisdictional wetlands. The result was that there were no jurisdictional wetlands in the Project area. ‘

#### Impact Analysis

- a) *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

**Less Than Significant With Mitigation Incorporated.** Based on the Biological Resources Assessment, the following species have been identified:

#### San Bernardino kangaroo rat

The SBKR is a federally-listed as endangered species known to locally occur, and the Project Site is located within a Critical Habitat unit. However, based on the negative results of the March 2017 presence/absence surveys, the SBKR is currently absent from the Project site. Therefore, there is a less than significant impact to this species. However, to ensure impacts are less than significant, Mitigation Measures BIO-1 through BIO-4 are required.

Approximately 0.1 acre of the proposed project footprint will be restricted to areas currently comprised of existing structures. The remaining 0.39 acre of the proposed project footprint is within critical habitat that contains the PCEs for SBKR. Therefore, the project will result in the loss of 0.39 acre, or 0.004 percent of the total 8,935 acres of SBKR critical habitat that comprise Unit 1, consultation with the USFWS will likely be required.

### Coastal California gnatcatcher

The State- and federally-listed threatened CAGN is documented to occur close to the project area. Furthermore, the PCEs for this species (RAFSS with proximal non-sage scrub habitats) are present within the project site and surrounding areas. Therefore, CAGN are assumed to be present adjacent the project area. The project may affect, but is not likely to adversely affect this species. Since there is a potential for indirect impacts to CAGN, such as habitat removal/alteration and other construction-related disturbances, consultation with the USFWS will likely be required.

To reduce potential impacts to CAGN, mitigation measures BIO-4 through BIO-6 are required.

### Western spadefoot and California glossy snake

The western spadefoot and California glossy snake are both considered SSC by the CDFW. Both species have been documented and/or observed within the project vicinity, which is one of the few areas in the region where these species are still known to occur. Direct and indirect impacts to these species potentially resulting from the proposed project include direct take and habitat removal/alteration. Neither of these species are State- or federally-listed as threatened or endangered. Therefore, no State or federal “Take” permits would be required for impacts to these species, if present, and presence of these species would not be considered a constraint to the project.

However, based on their sensitive status, mitigation measure BIO-7 and BIO-8 will reduce the potential impact to less than significant.

### Burrowing Owl

No BUOW individuals or sign have been observed within the vicinity of the subject property, nor have BUOW been historically (within the last 3 years) identified on or adjacent to the site. Therefore, BUOW are considered absent from the proposed project area and there is no risk of the proposed project resulting in a “taking” of this species. Suitable habitat does exist on site.

In order to reduce potential impacts to the various species, BIO-9 is required:

- b) *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

**Less Than Significant With Mitigation Incorporated.** Based on the findings of the site survey (Jericho, April 2017), the habitat is described as RAFSS, dominated by deerweed (*Acmispon glaber*), California sagebrush (*Artemisia californica*), mulefat (*Baccharis salicifolia*), California croton (*Croton californicus*), brittlebush (*Encelia farinosa*), hairy yerba santa (*Eriodictyon trichocalyx*), California buckwheat (*Eriogonum fasciculatum*), chaparral yucca (*Hesperoyucca whipplei*) and scale broom (*Lepidospartum squamatum*). A small 0.01 acre swath of young riparian habitat consisting of Fremont cottonwood (*Populus fremontii*) and black elderberry (*Sambucus nigra*) are also present within the project area.

Site grading will temporarily impact approximately 0.15 acre of RAFSS. Project construction will permanently impact approximately 0.38 acre of RAFSS and 0.01 (420 square feet ) of young riparian habitat.

Because the natural fluvial processes will continue after the project, the temporary impact area is anticipated to naturally restore itself fairly rapidly.



However, to ensure the integrity of the restoration and reduce impacts, Mitigation Measure BIO-10 is incorporated.

- c) *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

**No Impact.** The site does not support natural open space or wetlands. This project site does not contain any feature that qualifies as a jurisdictional wetland or water of the United States protected under Section 404 of the Clean Water Act (CWA). This finding is based on a field survey of the project site and a review of current aerial photographs of the site. This project will not result in the direct removal, filling, hydrological interruption, or other impacts to federally protected wetlands as defined by Section 404 of the CWA because site inspection verified that no such resources exist on the project site. The project will have no impact on protected wetlands.

- d) *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

**Less Than Significant With Mitigation Incorporated.** Nestable vegetation occurs within and adjacent to the Project site. Pursuant to the Migratory Bird Treaty Act and California Fish and Wildlife Code, construction activities, demolition activities and/or the removal of any trees, shrubs, or any other potential nesting habitat should be conducted outside the avian nesting season to avoid impacts to nesting birds. The nesting season generally extends from February 1 through August 31, but can vary slightly from year to year based upon seasonal weather conditions.

Construction is scheduled to occur between May and August, ideally after the storm season has occurred so the existing facility can remain operational as long as possible.

Because construction is scheduled to occur during the avian nesting season, Mitigation Measure BIO-11 would reduce the potential impact to nesting birds to less than significant.

- e) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

**Less Than Significant.** The project site is an existing active channel within no biological resources protected by any local policies or ordinances. One tree is proposed to be removed for this project, but it is not of the type and size protected by the City of Redlands. Therefore, there is a less than significant impact.

- f) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

**No Impact.** There are no adopted Habitat Conservation Plans or Natural Community Conservation Plans or other approved local, regional or state habitat conservation plans. Therefore, there are no impacts.

**Mitigation Measures:**

- |       |   |
|-------|---|
| BIO-1 | Exclusion fence should be installed around the entire proposed construction footprint, including all work areas, to exclude SBKR from entering the work zone from adjacent areas. Specifications for the fencing will be to the goal of SBKR exclusion and will be approved by the USFWS. |
|-------|---|

- BIO-2 A qualified biologist should perform a visual pre-construction survey within the construction footprint immediately prior to ground disturbing activities.
- BIO-3 A qualified biologist must be present on site to monitor all initial ground disturbance, rough grading, and work that could potentially affect sensitive biological resources that may occur within the project area.
- BIO-4 Worker Environmental Awareness Program (WEAP) training should be developed and implemented by a biologist familiar with CAGN and SBKR and associated habitat. WEAP training shall be provided for all construction personnel. For the life of the project, each employee (including temporary contractors and subcontractors) will receive WEAP training prior to conducting any work on the site.
- BIO-5 The entire proposed project footprint including disturbance limits should be visually delineated prior to ground disturbance, using brightly colored flagging, orange construction fence, or similar visual marker. All project activities shall be restricted to the work area and existing access roads.
- BIO-6 Within the exclusionary fence installed per BIO-1, prior to ground disturbing activities, a qualified biologist should conduct a nocturnal and diurnal preconstruction survey for western spadefoot and California glossy snake within the fenced footprint. If either species is found they will be relocated outside of the work area.
- BIO-7 During initial ground disturbing activities, a qualified biological monitor should be present to relocate any Western spadefoot and California glossy snake out of harm's way.
- BIO-8 Conduct a preconstruction survey for BUOW to verify that no BUOW have moved into the project area prior to the commencement of any proposed project activities.
- BIO-9 The SBVWCD will remove invasive species in all Project areas subject to grading for a period of two years after Project completion.
- BIO-10 Any grubbing, brushing or tree removal should be conducted outside of the State identified nesting season for migratory birds, which is typically March 15 through September 1. If work cannot be conducted outside of nesting season, a migratory nesting bird survey within and adjacent to the project site shall be conducted by a qualified biologist within three (3) days prior to initiating the construction activities. If active nests are found during the pre-construction nesting bird surveys, a Nesting Bird Plan (NBP) will be prepared and implemented. At a minimum, the NBP will include guidelines for addressing active nests, establishing buffers, monitoring, and reporting. The NBP will include a copy of maps showing the location of all nests and an appropriate buffer zone around each nest sufficient to protect the nest from direct and indirect impact. The size and location of all buffer zones, if required, shall be determined by the biologist, and shall be based on the nesting species, its sensitivity to disturbance, and expected types of disturbance. The nests and buffer zones shall be field checked weekly by a qualified biological monitor. The approved buffer zone shall be marked in the field with construction fencing, within which no vegetation clearing or ground disturbance shall commence until the qualified biologist has determined the young birds have successfully fledged and a monitoring report has been submitted reviewed and approved by the SBVWCD.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>V. CULTURAL RESOURCES:</b> Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in 15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to 15064.5?		X		
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		
d) Disturb any human remains, including those interred outside of formal cemeteries?		X		

**SUBSTANTIATION:** (Check if project is located in the Cultural ☐ or Paleontologic ☐ Resources overlays or cite results of cultural resource review)

### Environmental Setting

CRM Tech (CRM) completed a cultural resources records search to identify prehistoric or historic-period resources within one mile of the Project site (CRM, March 31, 2017). The research revealed no cultural resources were previously identified within or adjacent to the Project area, and none were encountered during the CRM survey. Native American input during the study did not identify any sites of traditional cultural value in the vicinity, and no notable cultural features were known to exist in the Project area throughout the historic period. Furthermore, the subsurface sediments in the Project area appear to be low in sensitivity for buried deposits of potentially significant archaeological remains, especially those of prehistoric origin. Based on these considerations, the CRM research concluded that no “historic properties,” “historical resources,” or “tribal cultural resources” are present within or adjacent to the Project area.

### Impact Analysis

a) *Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?*

**No Impact.** Because there are no historical resources in the Project area, there will be no adverse change in a historical resource.

b) *Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?*

**Less Than Significant with Mitigation Incorporated.** Because there are no archeological resources in the Project area, there will be no change in an archaeological resource. However, in the event an unanticipated resource is discovered, implementation of Mitigation Measure CUL-1 is incorporated to ensure any potential impact will be less than significant. Additionally, CUL-3 is also incorporated to reduce potential impacts to any unanticipated Native American resources.

c) *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

**Less Than Significant with Mitigation Incorporated.** Because the soil conditions have been subject to extensive fluvial processes and no unique geologic features are present on site, the likelihood of paleontological resources is low. Therefore, there will be a less than significant impact to paleontological resources. However, in the event an unanticipated resource is discovered, implementation of Mitigation Measure CUL-1 is incorporated to ensure any potential impact will be less than significant.

*d) Disturb any human remains, including those interred outside of formal cemeteries?*

**Less Than Significant with Mitigation Incorporated.** There are no known human remains within the vicinity of the project site, and no conditions exist that suggest human remains are likely to be found on the project site. It is not anticipated that implementation of the project would disturb human remains, including those interred outside of formal cemeteries. However, ground-disturbing activities, such as grading or excavation, have the potential to disturb human remains. If human remains are found, those remains would require proper treatment, in accordance with applicable laws. The Native American Graves Protection and Repatriation Act (NAGPRA) includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on federal and tribal lands, and penalties for noncompliance and illegal trafficking. State of California Public Resources Health and Safety Code Section 7050.5-7055 describes the general provisions regarding human remains, including the requirements if any human remains are accidentally discovered during excavation of a site. As required by state law, the requirements and procedures set forth in Section 5097.98 of the California Public Resources Code would be implemented, including notification of the County Coroner, notification of the Native American Heritage Commission and consultation with the individual identified by the Native American Heritage Commission to be the “most likely descendant.” If human remains are found during excavation, excavation must stop in the vicinity of the find and any area that is reasonably suspected to overlie adjacent remains until the County Coroner has been called out by local law enforcement, and the remains have been investigated and appropriate recommendations have been made for the treatment and disposition of the remains. Mitigation Measure CUL-2 would ensure the proper management of human remains if encountered on the project site. Additionally, CUL-3 is also incorporated to reduce potential impacts to any unanticipated Native American resources. With the implementation of Mitigation Measure CUL-2 and CUL-3, impacts would be less than significant.

#### **Mitigation Measures:**

- CUL 1 In the event that evidence of archaeological or paleontological resources are unearthed during construction activities, work in the immediate vicinity of the find will be stopped and a qualified archaeologist will be contacted to assess the find and recommend appropriate mitigation. No disturbance shall occur in the vicinity of the find until the site is evaluated by the archaeologist and the find is recorded or treated per the recommendations of the qualified archaeologist.
- CUL-2 In the event that human remains are discovered, there shall be no disposition of such human remains, other than in accordance with the procedures and requirements set forth in California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98. These code provisions require notification of the County Coroner and the Native American Heritage Commission, who in turn must notify those persons believed to be most likely descended from the deceased Native American for appropriate disposition of the remains. Excavation or disturbance may continue in other areas of the project site that are not reasonably suspected to overlie adjacent remains or archaeological resources.
- CUL-3 Tribal monitoring should be implemented during ground disturbing activities associated with this project.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>VI. GEOLOGY AND SOILS:</b> Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
<ul style="list-style-type: none"> <li>Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.</li> </ul>			X	
<ul style="list-style-type: none"> <li>Strong seismic ground shaking?</li> </ul>			X	
<ul style="list-style-type: none"> <li>Seismic-related ground failure, including liquefaction?</li> </ul>			X	
<ul style="list-style-type: none"> <li>Landslides?</li> </ul>			X	
b) Result in substantial soil erosion or the loss of topsoil?		X		
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X

**SUBSTANTIATION:** (☐ Check if project is located in the Geologic Hazards Overlay District):

### **Environmental Setting**

The Project Area is located within the Bunker Hill-San Timoteo Basin portion of the San Bernardino Valley in the transition area between the Peninsular Ranges Geomorphic Province and Transverse Range Geomorphic Province. This geomorphic province is typified by northwest to southeast trending mountain ridges, valleys, and faults parallel and sub-parallel to the San Andreas Fault. The surficial geologic material of the Peninsular Ranges Geomorphic Province generally consists of igneous and metamorphic rocks. The Mill Creek area, in the upper Santa Ana Valley, California, is bounded on the north by the Santa Ana River, on the east by the San Bernardino Mountains, on the south by the Crafton Hills, and on the west by the west edge of the city of Redlands. Large alluvial fans underlie most of the area, but other landforms include alluvial benches, dissected alluvial hills, plains, terraces, and bedrock hills which locally protrude above the floor of the valley (L. C. Butcher and W. L. Burnham, 1959).

In the Project area, there are several faults within 2 miles: the San Andreas Fault Zone, the Greenspot Fault, the Crafton Hills Fault Zone, and the Reservoir Canyon Fault.

The San Andreas Fault is a right-lateral strike-slip fault and considered to be currently active segment of the San Andreas fault system northwest of the San Geronio Pass. It forms an obvious linear scarp along the northeastern edge of the San Bernardino basin. The segment near Mill Creek is identified as the North Branch San Andreas Fault. The City of Redlands General Plan identifies that the 30 year probability for a magnitude 7 earthquake on the San Andreas faults is approximately 28 percent.

The Crafton Hills Fault Zone consists of approximately 10 faults, each approximately 10 kilometers (km) or less. It is roughly located approximately 2 miles southwest of the Project site. It is between the San Andreas Fault Zone and the San Jacinto Fault Zone.

The City of Redlands General Plan identify the Mill Creek Project area as generally susceptible to liquefaction.

### **Impact Analysis**

- a) *Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:*
- *Rupture of a known earthquake fault, as delineated on the most recent Alquist Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.*
  - *Strong seismic ground shaking?*
  - *Seismic related ground failure, including liquefaction?*
  - *Landslides?*

**Less Than Significant.** Several faults exist within the region that have the capability of producing a magnitude 6.7 or higher earthquake. The site is not located along an Alquist-Priolo earthquake fault. The project area has not been identified as being subject to landslides. The site is underlain by young unconsolidated alluvium, and groundwater is approximately 200 feet below ground surface (bgs). The City of Redlands has designated the Project Area as being subject to liquefaction.

The Mill Creek Diversion facilities have been operated for the purpose of facilitating groundwater recharge for the past several decades. No changes in the operation of the facilities are proposed. The purpose of the Project is to upgrade the Division structure to accommodate the debris flows and make the Diversion facility more efficient. Therefore, the upgraded Division structure will be exposed to seismic activity, but at the same level as the existing structure has for decades. The new facilities will be constructed to current engineering standards which are designed to withstand greater potential impacts from earthquakes. The exposure does not have a substantial adverse effect because it is in a remote location and there is no risk to life or property if it fails. Therefore, there is a less than a significant impact to upgrading the Diversion structure.

*b) Result in substantial soil erosion or the loss of topsoil?*

**Less Than Significant With Mitigation Incorporated.** Construction will require regrading the channel around the structure to facilitate positive drainage. The project will utilize soil balancing to achieve the desired grades. Therefore, there is no net loss of the topsoil, nor does the maintenance result in substantial soil erosion.

Grouted rip rap will be installed over an approximate 0.49-acre area of native Mill Creek to function as the New Debris Collection Pad.

No significant excavation would occur that would result in erosion or the loss of native topsoil. To prevent the loss of stockpiled materials, implementation of Mitigation Measure GEO-1 is recommended,

*c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?*

**Less Than Significant.** The Diversion structure is located within very young alluvium where groundwater is anticipated to be approximately 200 feet below ground surface, and the potential for liquefaction has been identified. However, the project is to replace/upgrade the existing Diversion structure that has existed for decades. Therefore, the impact of this criterion is less than significant.

*d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?*

**No Impact.** The young alluvium found within the project area has low to no shrink-swell potential (expansive soils). The City of Redlands or San Bernardino County General Plans do not identify the Project area as having expansive soil. The Project is not designed for human habitation; therefore, there is no impact.

*e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?*

**No Impact.** The project does not propose the use of septic tanks or alternative wastewater disposal systems. Therefore, there is no impact.

**Mitigation Measure:**

GEO-1      The contractor will provide to the SBVWCD an Erosion Control Report (ECR) that will identify the Best Management Practices (BMPs) for managing any stockpiled materials on site. The BMPs may include but not be limited to the following:

- Locate stockpiles away from drainage courses, drain inlets or concentrated flows of storm water.
- For wind erosion control, apply water or other dust palliative to stockpiles. Smaller stockpiles may be covered as an alternative.
- Place bagged materials on pallets under cover.
- During the rainy season, non-active soil stockpiles will be covered with heavy plastic and the stockpile contained within a temporary perimeter sediment barrier, such as berms, dikes, silt fences, or sandbag barriers. A soil stabilization measure may be used in lieu of cover.
- During the non-rainy season prior to the onset of rain, the stockpile should either be covered or protect them with temporary perimeter sediment barriers.

- Year-round, active soil stockpiles will be protected with temporary linear sediment barriers prior to the onset of rain.
- The main haul road will be graded and watered at least once per day, or as often as necessary to control dust as required by the South Coast Air Quality Management District (SCAQMD).



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>VII. GREENHOUSE GAS EMISSIONS:</b> Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

### **Background**

“Greenhouse gases” (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as “global warming.” These greenhouse gases contribute to an increase in the temperature of the earth’s atmosphere by transparency to short wavelength visible sunlight, but near opacity to outgoing terrestrial long wavelength heat radiation in some parts of the infrared spectrum. The principal greenhouse gases (GHGs) are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. For purposes of planning and regulation, Section 15364.5 of the California Code of Regulations defines GHGs to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions.

California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. GHG statutes and executive orders (EO) include AB 32, SB 1368, EO S-03-05, EO S-20-06 and EO S-01-07.

AB 32 is one of the most significant pieces of environmental legislation that California has adopted. Among other things, it is designed to maintain California’s reputation as a “national and international leader on energy conservation and environmental stewardship.” It will have wide-ranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of AB 32, beyond its broad and wide-ranging mandatory provisions and dramatic GHG reductions are the short time frames within which it must be implemented. Major components of the AB 32 include:

- Requires the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate “early action” control programs on the most readily controlled GHG sources.
- Mandates that by 2020, California’s GHG emissions be reduced to 1990 levels.
- Forces an overall reduction of GHG gases in California by 25-40%, from business as usual practices by 2020.
- Dictates that any local initiatives must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

Statewide, the framework for developing the implementing regulations for AB 32 is under way. Maximum GHG reductions are expected to derive from increased vehicle fuel efficiency, from greater use of renewable energy and from increased structural energy efficiency.

In 2006, the California State Legislature adopted Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006. AB 32 requires CARB, to adopt rules and regulations that would achieve a GHG emissions cap which was phased in starting in 2012. On January 1, 2017, AB 52 was revised to include a statewide GHG emission reduction of 40 percent below the State GHG emission limit no later than December 31, 2020.

Per CEQA guidelines, new project emissions are treated as standard emissions, and air quality impacts are evaluated for significance on an air basin or even at a neighborhood level. Greenhouse gas emissions are treated differently as the perspective is global, not local. Therefore, emissions for certain types of projects might not necessarily be considered as new emissions if the project is primarily population driven. Many gases make up the group of pollutants that are believed to contribute to global climate change. However the three gases that are currently evaluated are Carbon dioxide (CO<sub>2</sub>) Methane (CH<sub>4</sub>) and Nitrous oxide (N<sub>2</sub>O). GHGs emissions were evaluated using SCAQMD's Off-Road Mobile Source Emissions Factors (2017), Emission Factors for On-Road Heavy-Heavy Duty Diesel Trucks (2017), and California Climate Action Registry General Reporting Protocol, 2009I; Table A9-8-C SCAQMD Handbook; Climate Leaders EPA, Section 3, Table 2.

### **Impact Analysis**

a) *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

**Less Than Significant.** Model results for GHG emissions related to the Proposed Project are shown in Tables 4, 5 and 6. The construction activities are again shown in three categories, as explained in Section III. A threshold of 3,000 MTCO<sub>2e</sub> per year has been adopted by SCAQMD for determining a project's potential for significant impact to global warming for non-industrial projects (Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold, SCAQMD, October 2008).

**Table 4**  
**Greenhouse Gas Construction Emissions**  
**Material Removal**  
**MT Per Year**

Source/Phase	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O <sup>3</sup>
Loaders <sup>1</sup>	36.6	0.0	0.0
Haul Trucks <sup>2</sup>	26.5	0.0	0.0
Total in MT Per Year	64.0		
<b>Total CO<sub>2e</sub> Per Year</b>	<b>65.0</b>		
SCAQMD Threshold	3,000		
<b>Significant</b>	<b>No</b>		

<sup>1</sup> SCAQMD Off-Road Mobile Source Emissions Factors (2017)

<sup>2</sup> Emission Factors for On-Road Heavy-Heavy Duty Diesel Trucks (2017)

<sup>3</sup> California Climate Action Registry General Reporting Protocol, 2009I;  
Table A9-8-C SCAQMD Handbook; Climate Leaders EPA, Section 3, Table 2

Note: 84 day construction schedule

**Table 5**  
**Greenhouse Gas Construction Emissions**  
**Channel Earthwork Activities**  
**MT Per Year**

Source/Phase <sup>1</sup>	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O <sup>1</sup>
Loader/Backhoe	22.4	0.0	0.0
Bulldozer	80.3	0.2	0.0
Grader/Excavator	44.7	0.0	0.0
Misc. Construction Eq.	41.3	0.0	0.0
Total in MT Per Year	188.7		
<b>Total CO2e Per Year</b>	<b>190.0</b>		
SCAQMD Threshold	3,000		
<b>Significant</b>	<b>No</b>		

Source: Emission Factors for On-Road Heavy-Heavy Duty Diesel Trucks (2017)

<sup>1</sup> California Climate Action Registry General Reporting Protocol, 2009I;

Table A9-8-C SCAQMD Handbook; Climate Leaders EPA, Section 3, Table 2

<sup>2</sup> Emission Factors for On-Road Heavy-Heavy Duty Diesel Trucks (2017)

Note: 84 day construction schedule

**Table 6**  
**Greenhouse Gas Construction Emissions**  
**Placement of Rip-Rap**  
**MT Per Year**

Source/Phase <sup>1</sup>	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O <sup>1</sup>
Rip-Rap Haul Trucks <sup>2</sup>	50.5	0.0	0.0
Concrete Trucks <sup>2</sup>	81.1	0.0	0.0
Miscellaneous Paving Eq.	23.2	0.0	0.0
Total in MT Per Year	154.8		
<b>Total CO2e Per Year</b>	<b>156</b>		
SCAQMD Threshold	3,000		
<b>Significant</b>	<b>No</b>		

Source: Emission Factors for On-Road Heavy-Heavy Duty Diesel Trucks (2017)

<sup>1</sup> California Climate Action Registry General Reporting Protocol, 2009I;

Table A9-8-C SCAQMD Handbook; Climate Leaders EPA, Section 3, Table 2

<sup>2</sup> Emission Factors for On-Road Heavy-Heavy Duty Diesel Trucks (2017)

Note: 84 day construction schedule

As shown in Tables 4, 5 and 6, GHG emissions related to the proposed project are not anticipated to exceed the SCAQMD GHG emissions threshold. Therefore, impacts are anticipated to be less than significant.

*b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

**Less Than Significant.** The proposed diversion structure improvement project is within the Mill Creek Wash. Development of the project would improve the diversion of flows from Mill Creek into the District's spreading and recharge basin system. No operational emissions are anticipated. There are no existing GHG plans, policies, or regulations that have been adopted by CARB or SCAQMD that would apply to this type of emissions source. It is possible that CARB may develop performance standards for Project-related activities prior to Project construction. In this event, these performance standards would be implemented and adhered to, and there would be no conflict with any applicable plan, policy, or regulation; therefore, impacts would be less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>VIII. HAZARDS AND HAZARDOUS MATERIALS:</b> Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?			X	
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?		X		

### **Environmental Setting**

State and Federal databases were reviewed to identify hazardous waste facilities including Federal Superfund sites, State Response sites, Voluntary Cleanup sites, School Cleanup sites, Permitted Operating sites, Corrective Action sites, and Tiered Permit sites within or adjacent to the Project.

The City of Redlands has designated the Project area as a High Fire Hazard Zone (General Plan, 2010).

The Redlands Municipal Airport, a small craft public airport, is located approximately 2.8 miles west of the existing Mill Creek Diversion structures.

### **Impact Analysis**

- a) *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

**Less Than Significant.** Some hazardous materials that could be used during the construction and operation of the Diversion structure and may include gasoline, diesel fuel, oil, solvents, and lubricants associated with heavy equipment and other vehicles used for operations and maintenance activities. These materials will be transported, used, and disposed of in accordance with applicable laws, regulations, and state and local protocols designed to protect the environment, workers, and the public. No acutely hazardous materials (as defined in Title 22 Cal. Code Regs. § 66260.10) will be used for the project. Therefore, potential impacts associated with the routine transport, use, or disposal of hazardous materials will be less than significant.

- b) *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

**Less Than Significant With Mitigation Incorporated.** Limited quantities of hazardous materials will be used during construction of the Diversion structure including gasoline, diesel fuel, oil, solvents, and lubricants associated with the heavy equipment and vehicles and used for operation and maintenance activities. Reasonably foreseeable upset and accident conditions may include minor spills and/or drips. However, SBWCD contractors and employees are trained to properly prevent and clean up minor spills, as well as familiar with protocols to manage larger spills should they occur. Therefore, the impact of risk of upset by a potential release of hazardous waste is less than significant due to the limited quantities used. However, to ensure less than significant impacts will occur, mitigation measures HAZ-1 will be implemented.

- c) *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

**Less Than Significant.** There is no existing or proposed school within one-quarter mile of the Project site. Therefore, there is no impact.

- d) *Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

**No Impact.** The Project area has been utilized for water conservation/water spreading for nearly four decades. There are no sites that are included on a list of hazardous material sites compiled pursuant to Government Code 6596.5 in the construction area or adjacent to the construction area.

- e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?*

**Less Than Significant.** The Redlands Municipal Airport lies approximately 2.8 miles west of the Project area. The construction activities are at grade and will not result in a safety hazard for those working or residing in the project area.

- f) *For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?*

**No Impact.** There are no private airstrips in the project area. Therefore, there is no impact.

*g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

**Less Than Significant.** The Diversion structure is located in an undeveloped area. Mill Creek Road and Garnet Street are major roads in the area. Both the staging area and the construction area in Mill Creek are accessed off of Garnet Street, along a levee road. Therefore, Project the construction will not physically interfere with any emergency response or evacuation plan. Therefore, the impact is less than significant.

*h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

**Less Than Significant With Mitigation Incorporated.** The Project area is identified as being within a high fire area as designated by the City of Redlands. The Project is located in an area where low-lying coastal sage scrub and ruderal vegetation exists, and sparks from equipment may ignite vegetation. However, the active stream channel is typically free of free of vegetation, and the network of bladed roads can act as a fire break in the event of a fire. The closest residential areas to the construction area lie approximately 1,000 feet south of the Diversion structure. And though there is a low risk of a fire from construction or operation of the Diversion structure, mitigation measure HAZ-2 is incorporated to ensure the potential risk is less than significant.

**Mitigation Measure:**

HAZ-1 The Department of Toxic Substances Control (DTSC) and San Bernardino County Fire Department Hazardous Materials Division shall be immediately notified in the event malodorous or discolored soils, liquids, containers, or other materials known or suspected to contain hazardous materials and/or contaminants are encountered during activities associated with the proposed project. Earthmoving activities in the vicinity of said material shall be halted until the extent and nature of the suspect material is determined by qualified personnel (as determined by the DTSC). The removal and/or disposal of any such contaminants shall be in accordance with all applicable local, State, and Federal standards. HAZ-2 In the event of any identification of or spill of hazardous materials and/or contaminants in the construction area, the party whose activity resulted in the spill or release shall notify the SBVWCD of the location, extent, and nature of the spill or release. The SBVWCD shall thereupon assess the depth to groundwater in the area of the release, and if it appears that groundwater tables are high enough to create a potential for exposure of the groundwater table to the spill or release, will modify its recharge operations as much as feasible to prevent groundwater table intersection with the identified spill or release.

HAZ-2 During construction, all staging areas, welding areas, or areas slated for construction using spark-producing equipment will be cleared of dried vegetation or other material that could ignite. Spark arresting equipment shall be in good working order. SBVWCD shall require all vehicles and crews working at the project site to have access to functional fire extinguishers at all times. In addition, construction crews are required to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. The contractor also shall provide a safety plan for the implementation of additional protocols when the National Weather Service issues a Red Flag Warning. Such protocols should address smoking and fire rules, storage and parking areas, use of gasoline-powered tools, use of spark arresters on construction equipment, road closures, use of a fire guard, fire suppression tools, fire suppression equipment, and training requirements.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>IX. HYDROLOGY AND WATER QUALITY:</b> Would the project:				
a) Violate any water quality standards or waste discharge requirements?			X	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation onsite or offsite?			X	
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite?			X	
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				X
f) Otherwise substantially degrade water quality?			X	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?			X	
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?			X	
j) Inundation by seiche, tsunami, or mudflow?				X

### Environmental Setting

The Diversion structure is located within the Santa Ana River Hydrologic Unit, within the hydrological boundary of the South Coast Hydrologic Region. The Santa Ana River watershed encompasses more than 2,800 square miles in northwestern Riverside County, Orange County, southwestern portion of San Bernardino County, and a

small portion of Los Angeles County. The watershed originates on the San Gorgonio Peak in San Bernardino County, drains southwesterly towards northwestern Riverside County and Orange County into the coastal plain and finally into the Pacific Ocean at Newport Beach. The principal tributaries include the San Timoteo, Reche, Mill, Plunge, City, East Twin, Waterman Canyon, Devil Canyon, and Cajon Creeks and University Wash from the San Bernardino Mountains. The Santa Ana River Hydrologic Unit is under the jurisdiction of the Santa Ana Regional Water Quality Control Board, Region 8. Generally the water quality from Mill Creek and the Santa Ana River are the highest in the Santa Ana Watershed because they are low in TDS and there is minimal development in the watershed above the SBVWCD's diversions. The SBVWCD routinely monitors water quality.

Lockheed Propulsion Company, a division of Lockheed Martin Corporation, was located in the vicinity of the SBVWCD's Mill Creek water conservation facilities in the 1970s. Lockheed operated, produced, tested, and disposed of solid rocket propellants. As a result, trichloroethylene (TCE) and ammonium perchlorate were detected in groundwater, and have negatively affected groundwater quality. The SBVWCD routinely monitors the extent of the groundwater plume.

The City of Redlands receives some of its water from the Mill Creek watershed, which is treated at the Henry Tate Water Treatment Plant (WTP) located on Highway 38 east of Mentone, and the Santa Ana River watershed, which is treated at the Hinckley WTP located north of Mentone.

The Seven Oaks Dam, a 500-foot earthen dam across the Santa Ana River, was constructed between 1993 and 2000 in response to major floods in the mid 20<sup>th</sup> century. Fill for the dam was excavated directly from the Santa Ana River canyon directly below the dam, which now is part of the SBVWCD's water conservation facilities. The Dam protects the Santa Ana watershed from the massive flood events such as those that occurred in the 1960s. The quality of water released from the Dam varies. During high flows, especially as flows are increasing, water quality is reduced as turbidity levels increase. Once the flows have stabilized, the water tends to clear. The SBVWCD adjusts its operations and maintenance of the facilities, based on the water quality testing. For example, it does not divert water for spreading when turbidity levels are high.

A hydrology study was prepared for this project (Appendix 4). The study analyzed the following:

- Existing conditions 100-year event HEC-RAS hydraulic analysis of the Mill Creek wash.
- Proposed conditions 100-year event HEC-RAS hydraulic analysis of the Mill Creek wash.
- Comparison of existing vs. proposed HEC-RAS cross sect

The study concluded that based on the 100-year HEC-RAS flow calculations performed in the hydrology study, the Proposed Project improvements are not expected to have a negative impact on the hydraulics of the existing Mill Creek wash.

### **Impact Analysis**

*a) Violate any water quality standards or waste discharge requirements?*

**Less Than Significant.** Construction is anticipated to occur during the drier months of the year, typically May through August, to reduce impacts to water and water quality. Prior to construction the three "soft plugs" (sand berms) that are located between 600 feet and 1,000 feet upstream of the facility and which used to direct flows to the facility, will be removed in a manner that will allow any storm flows to be directed into the main channel of Mill Creek. Therefore, no water will be within the construction area, and there will be a less than significant impact.



- b) *Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?*

**Less Than Significant.** The purpose of the Diversion structure is to divert surface water runoff and first flows of Mill Creek into groundwater recharge facilities. The need to upgrade the Diversion structure is to better move silt and vegetation that have stopped or damaged the Diversion structure while allowing flows to continue to flow to the recharge basin. Therefore, the effect of the Project would be to maintain or increase groundwater supplies. Construction of the Diversion structure will utilize water for dust control. However, the amount of water is not significant and is readily available from local purveyors. Therefore, there is a less than significant impact to this criterion.

- c) *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation onsite or offsite?*

**Less Than Significant.** The purpose of the Project is to replace/upgrade an existing Diversion structure which diverts surface flow into water recharge facilities. The existing Diversion structure has been in place since the 1920s, prior to the Corps levee constructed in the 1990s. Historically, during high flows, the Diversion structure receives silt, rocks and vegetation that build up and block and damage the structure. The new Diversion structure will include a new side channel to funnel the rocks and debris back to Mill Creek. The hydrology study (Appendix 4) prepared for this project identifies that there will be no impact to the streambed. The replacement of this structure to an updated, more efficient structure will not alter the drainage any pattern beyond the current configuration or increase erosion or siltation onsite. Therefore, there is a less than significant impact.

- d) *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite?*

**Less Than Significant.** Refer to Response c), above. Less than significant impacts would occur.

- e) *Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?*

**No Impact.** The Diversion structure is self-contained and does not rely on municipal storm water drainage systems, and no water drains to the municipal system. Therefore, there is no impact to this criterion.

- f) *Otherwise substantially degrade water quality?*

**Less Than Significant.** The Project is to replace an existing structure that diverts flows from Mill Creek into existing water conservation facilities for groundwater recharge. The water that is diverted for water recharge is naturally-occurring. In heavy flows, the existing structure diverts debris and sediment from the structure to Mill Creek, as it has since the 1920s. The gates and structures that manage debris and sediment are undersized for the debris and silt it receives. Therefore, the project will upgrade the Diversion structure so that the debris and sediment will flow back into the main channel of Mill Creek, and not collect on the Diversion structure.

- g) *Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?*

**No Impact.** No housing construction is proposed as part of the Project. As a result, construction and operation of the Project would not place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Map or Federal Flood Insurance Map. Additionally, no other permanent habitable structures are proposed to be developed onsite. All construction equipment used for processing and hauling would be temporary and removed from the site when not in use. Therefore, no impacts would occur under this criterion as a result of the Project.

- h) *Place within a 100-year flood hazard area structures which would impede or redirect flood flows?*

**Less Than Significant.** The existing diversion structure redirects low flows for water conservation. The improved facility will redirect sediment and debris to a New Debris Collection Pad, where sediment and debris will continue to flow downstream as if the diversion structure were not in place. Therefore, no impacts would occur under this criterion because the Project will continue to redirect flows

- i) *Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?*

**Less Than Significant.** According to the County of San Bernardino Hazards Overlay Map, the Project site is located within a dam inundation area from the Seven Oaks Dam. Failure of the dam that is so significant as to cause failure of the Diversion structure would be a far greater hazard than the failure of the Diversion structures. The existing Diversion structure is fed by low flows from one braid of a 500-foot-wide braided channel. The low flow channel for the Diversion is controlled by a series of “soft plugs” which are sand berms that are about 1 foot high that are located in one of the established braids on the south side of the channel. In the case of higher flows, these soft plugs will wash away, allowing all flows to be carried down the full width of the channel. If the Diversion structure is also destroyed, pieces of the diversion structure would collect in Mill Creek and flow downstream with the other debris. Additionally, the existing Diversion structures have been in place since the 1960s, and there has not been a dam failure or a failure of the Diversion facilities. A hardened flood control levee and wall also exists on the south side of Mill Creek. Therefore, there is a less than significant impact.

Additionally, due to the short duration of the construction of the Diversion structure, construction of the facility would also not increase the risk of loss, injury, or death as a result of flooding, including as a result of the failure of the levee or the dam. Therefore, there is a less than significant impact.

- j) *Inundation by seiche, tsunami, or mudflow?*

**Less Than Significant.** The potential for the failure of the Seven Oaks Dam could create inundation by ground failure. The existing Diversion structure is already exposed to hazards created by the dam, and construction of an upgraded structure have no less exposure than the existing structure. The purpose of the Project is to provide an upgraded structure to better accommodate the sediment deposition experienced by the flows. Therefore, the impact would be less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>X. LAND USE AND PLANNING:</b> Would the project:				
a) Physically divide an established community?				X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X

### Environmental Setting

The Mill Creek Diversion structure is located in the City of Redlands.

### Impact Analysis

a) *Physically divide an established community?*

**No Impact.** The project involves the replacement of an existing structure in a stream for water conservation. Therefore, there is no impact.

b) *Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?*

**No Impact.** The project is the replacement of an existing structure used for water conservation which has existed for the past several decades. The Diversion structure is compatible with the land use and zoning of the City of Redlands. Therefore, there is no impact.

c) *Conflict with any applicable habitat conservation plan or natural community conservation plan?*

**No Impact.** There are no habitat conservation plans or natural community conservation plans that are applicable to the Mill Creek Diversion structure. Therefore, replacement of the structure will not conflict with any applicable habitat conservation plan or natural community conservation plan. Therefore, there is no impact.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XI. MINERAL RESOURCES:</b> Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?			X	
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?			X	

### **Environmental Setting**

The Project area of Santa Ana River and Mill Creek are known for some of the highest aggregate values in the State of California (City of Redlands, 1995).

The historical frequent flooding of the Santa Ana River has created a high quality aggregate resource in the Planning Area. In 1987, the California Department of Conservation, Division of Mines and Geology, issued Special Report 143, Part VII, Classification of Sand and Gravel Resource Areas, San Bernardino Production-Consumption Region in which virtually all of the Santa Ana and Mill Creek areas are designated as a Class 2 Mineral Resource Zone (MRZ-2), (LSA, 2008).

### **Impact Analysis**

*a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*

**Less Than Significant.** The Project will replace an existing Diversion structure for the purpose of allowing it to function more efficiently due to the high sediment loading. The rock to be used in the New Debris Collection Pad exists on site or in an existing SBVWCD stockpile. There is no mining that occurs in the Project area. The proposed Project would not result in the loss of availability of mineral resources that would be of value to the region and the residents of the state no mineral resources will be lost due to the project. Therefore, there will be less than significant impacts.

*b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

**Less Than Significant.** The resources in the Santa Ana and Mill Creek facilities are identified as having a high value. The purpose of the Project is to replace an existing structure within Mill Creek for the purpose of water conservation. The New Hardened Debris Return Structure and Channel Berm is less than on-half acre, and the rock to be used exists in the existing SBVWCD stockpiles. No mining occurs within the Project area. The improved facilities will continue their primary function as they have in since the 1960s. Therefore, there will be no loss of availability of the mineral resources in Mill Creek.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XII. NOISE:</b> Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			X	
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?			X	
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

### **Environmental Setting**

Noise is generally described as unwanted sound. Sound is a physical disturbance in a medium, such as air, that is capable of being detected by the human ear. Sound waves in air are caused by variations in pressure above and below the static value of atmospheric pressure. The unit of sound pressure ratio to the faintest sound detectable to a person with normal hearing is called a decibel (dB) on a logarithmic scale. The “pitch” (high or low) of the sound is a description of frequency, which is measured in Hertz (Hz). Most common environmental sounds are a composite of frequencies. A normal human ear can usually detect sounds within frequencies from 20 to 20,000 Hz. However, humans are most sensitive to frequencies in the range of 500 to 4,000 Hz.

Certain frequencies are given more “weight” during assessment because human hearing is not equally sensitive to all frequencies of sound. The A-weighted decibel (dBA) scale corresponds to the sensitivity range for human hearing. Noise levels capable of being heard by humans are measured in dBA. A noise level change of 3 dBA or less is barely perceptible to average human hearing. However, a 5 dBA change in noise level is clearly noticeable. A 10 dBA change is perceived as a doubling or halving of noise loudness, while a 20 dBA change is considered a “dramatic change” in loudness.

Sound from a source spreads out as it travels away from the source, and the sound pressure level diminishes with distance. Individual sound sources are considered “point sources” when the distance from the source is large compared to the size of the source (e.g., construction equipment, and turbines). Sound from a point source

radiates hemispherically, which yields a 6 dB sound level reduction for each doubling of the distance from the source. If the sound source is long in one dimension, the source is considered a “line source,” (i.e., roadways and railroads). Sound from a line source radiates cylindrically, which typically yields a 3 dB sound level reduction for each doubling of the distance from the source.

The metrics for evaluating the community noise environment are based on measurements of the noise levels over a period of time. These metrics are used in order to characterize and evaluate the cumulative noise impacts. The Community Noise Equivalent Level (CNEL) represents a 24-hour A-weighted sound level average from midnight to midnight, where sound levels during the evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dB weighting, and nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dB weighting.

Noise standards typically apply to permanent activities. The recommended noise exposure levels are established for permanent noise sources and receptors where noise can be generated over a 24-hour period with penalties applied for permanent noise generated during the night time hours. Construction related noise is short term and generally considered a nuisance. Construction noise is generally not of sufficient magnitude that is considered health threatening.

The nearest residences exist approximately 1,000 feet south of the Mill Creek water recharge facilities.

### **Impact Analysis**

- a) *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

**Less Than Significant.** The nearest residence is approximately 1,000 feet south of the Mill Creek Diversion structure. In compliance with Section 8.06.090(F) of the City of Redlands’s Noise ordinance, all grading and maintenance-related activities will be undertaken in between the hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday and will not be undertaken anytime on Sundays or holidays. Therefore, noise generated by the heavy equipment will not violate City ordinances standards or requirements. There is no noise associated with the operations of the facility because the gates are operated manually.

- b) *Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?*

**Less Than Significant.** Is anticipated that the proposed Project would not involve pile-driving activities typically associated with ground-borne vibration. The nearest sensitive receptors include the residential area located approximately 1,000 feet south of the site. Rock will be placed in an area to create the New Debris Collection Pad, and some noise or vibration may occur as the rock is dumped from the truck to the ground. However, with sensitive receptors located over 1,000 feet south of the project, a less than significant impact is anticipated.

- c) *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*

**Less Than Significant.** The Project is to replace an existing structure with a new structure that will operate in essentially the same manner as the existing structure has for decades. The Project will not introduce new noise levels or generate a substantial increase in permanent noise. Noise associated with construction activities would be short-term and not represent an increase in permanent noise.

- d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*

**Less Than Significant.** The Project is to replace an existing structure with a new structure that will operate in essentially the same manner as the existing structure has for decades. There will be short-term generation of noise during construction activities, but it is not substantial, and the nearest sensitive receptor is approximately 1,000 feet from the Mill Creek Diversion structure. Therefore, the impact is less than significant.

- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

**Less Than Significant.** The Redlands Municipal Airport, a small craft public airport, is located approximately 1.5 mile east of the Mill Creek structure. The airport operations will not expose construction personnel or residents in the area to unacceptable noise levels.

- f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?*

**No Impact.** There are no private airstrips in the vicinity of the Project. Therefore, there is no impact.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XIII. POPULATION AND HOUSING:</b> Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X

### **Environmental Setting**

The Project will replace an existing structure used as part of water conservation activities. The project does not involve housing, or the construction of structures for housing.

### **Impact Analysis**

*a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*

**No Impact.** The Project will replace an existing structure used as part of water conservation activities. The SBVWCD is exercising its purpose and right to recharge the groundwater, which does not induce growth. Therefore, the Project does not indirectly induce an increase in population.

*b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?*

**No Impact.** The Project is to replace an existing structure inside an existing stream. The construction will occur within the footprint of the existing creek, and does not require new or existing housing. Therefore, the proposed Project will not displace any housing, or require the construction of replacement housing.

*c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?*

**No Impact.** The construction will be performed within an existing stream by workers who live in the area, therefore, the Project will not displace people or require the construction of new or replacement housing.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XIV. PUBLIC SERVICES:</b> a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?			X	
Police protection?			X	
Schools?				X
Recreation/Parks?				X
Other public facilities?			X	

### **Environmental Setting**

The Project is located in the City of Redlands, which provides public services to the area.

### **Impact Analysis**

a) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services.*

a) *Fire protection?*

**Less Than Significant.** The proposed project is located within an area designated as a high fire risk. The area contains large expanses of sage scrub habitat that has adapted its ecology to periodic wildfires. Generally, the roads and basins are devoid of vegetation, or contain sparse vegetation, which act as natural fire breaks throughout the area. The area of the Diversion structure is served by the City of Redlands fire protection services, and the City of Redlands also participates in mutual aid in the event of a wildfire. Additionally, SBVWCD equipment, such as dozers and loaders, offer fire-fighting capability, and its staff is trained in how to respond to a potential fire.

The closest Redlands fire station to the Mill Creek facilities is City of Redlands Fire Department Station 263 located 5.5 miles east at 10 W Pennsylvania Ave. In addition to fire protection and rescue services, paramedic services are also available, including San Bernardino County Fire Station 9 (1300 Crafton Ave., Mentone) located 1.5 mi. from the site. No significant routine demand for fire protection or other emergency service will be necessary. The possibility exists for a work-related injury, but this type of occurrence is considered to be rare, and therefore, not create a substantial need for fire protection in the area. Therefore, the impact is less than significant.

*b) Police Protection?*

**Less Than Significant.** Construction of the structure is not anticipated to create a significant demand, or increase the need for, police services. The general area of the facilities is part of routine patrols from the City of Redlands. The potential for an incident occurring at the proposed Project site that requires police intervention is considered low based on the type of construction (i.e., no use of high value materials that are typically targeted for theft). Therefore, the impact is less than significant.

*c) Schools?*

**No Impact.** The project does not involve the use, or need for, schools. Construction personnel are anticipated to be local residents, where their school-aged children are already utilizing the existing schools. Therefore, there will be no impact to schools.

*d) Recreation/Parks?*

**No Impact.** There are no parks or recreational facilities in the area of the Diversion structure. The proposed Project does not require the use of, or interfere with, recreation and parks services. Therefore, there is no impact.

*e) Other Services?*

**Less Than Significant.** Construction of the structure may involve work-related accident that would require the use of area hospitals or helicopters. However, this occurrence is expected to be rare, and involve very few personnel. Public services exist in the area that can serve these types of incidents. Therefore, there is a less than significant impact to this criterion.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XV. RECREATION:</b>				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

### **Environmental Setting**

The Project is to replace an existing structure within an existing stream as part of water conservation activities. The structure is located in an area that is not suitable for recreation by the general public. Occasional users include hikers and equestrian.

### **Impact Analysis**

*a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*

**No Impact.** Implementation of the proposed Project does not include the development of residential or other land uses that would cause a substantial increase in the use of existing neighborhood and regional parks or other recreational facilities. Substantial physical deterioration of local recreational facilities is not anticipated as a result of the proposed Project. There is no impact to this criterion.

*b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*

**No Impact.** The proposed Project does not include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. There is no impact to this criterion.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XVI. TRANSPORTATION / TRAFFIC:</b> Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?			X	
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			X	
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
e) Result in inadequate emergency access?			X	
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				X

### **Environmental Setting**

The project is to replace an existing structure in a stream that is used for water conservation activities. The structure is located in an area where public access is restricted. The facilities are generally accessed off of Garnet Street in the City of Redlands.

### **Impact Analysis**

- a) *Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?*

**Less Than Significant.** The Diversion structure is not located on major roadways. The main access to the structure is via Garnet Street facilities and then onto SBVWCD dirt and paved access roads.

Construction equipment will travel primarily on Mill Creek Road and Garnet Street to the facility access road, first reaching the staging area within the Mill Creek Spreading Facility. From the staging area, equipment and vehicles will travel west along the paved flood control access road toward Garnet Street, and turn north onto Garnet Street. The construction area is approximately 100 yards north of the flood control access road on Garnet Street. Equipment and vehicles would then travel approximately 0.75 mile along the existing dirt road to the construction area in Mill Creek.

Therefore, the project will not conflict with any applicable plan, ordinance, or policy that establishes the performance of the system. Since the Project does not create any inconsistency with applicable plans, ordinance or policy that establishes measures of effectiveness, there is a less than significant impact.

- b) *Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?*

**Less Than Significant.** Construction activities may require that heavy equipment periodically use Garnet Street to access the facilities. However, this will be periodic and not conflict with the congestion management program or significantly add to the existing traffic levels because few equipment and personnel are expected to be needed for a short period of time. Therefore, the project will not conflict with an applicable congestion management program. The impact is less than significant.

- c) *Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?*

**No Impact.** The Redlands Municipal Airport, a small craft public airport, is located approximately 1.5 mile east of the Diversion structure in Mill Creek. The Project is to replace an existing structure within an existing stream, and activities will occur at or below grade. The Project will not result in a change of air traffic patterns, or increase traffic levels or create a change in location that results in safety risk.

- d) *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

**No Impact.** The Project location is within an existing stream, not located on main roads or trails. Public access is restricted to the existing structure, and will continue to be once it is replaced. The Project does not involve creating new roads or maintaining existing roads where there would be public access. Therefore, there is no impact.

- e) *Result in inadequate emergency access?*

**Less Than Significant.** Construction equipment will utilize Garnet Road to travel to and from the Project site. However, the equipment travels short distances, and therefore does not block or create inadequate emergency access for public response. The existing dirt and paved roads are designed for single vehicle directional access. Emergency access by the paved road to the Project is restricted by lane width only, but the Project site can be accessed by existing dirt roads. Emergency vehicles would only respond to the Project site in the event of an injury or fire. Therefore, there is a less than significant impact.

- f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?*

**No Impact.** Project activities would occur in stream and on dirt and paved roads that are not accessible to the public. The Project site and its access roads are not identified as public transit, bicycle or pedestrian facilities. Therefore, the Project not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities and there is no impact.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XVII. TRIBAL CULTURAL RESOURCES:</b>  Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or				X
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.				X

### **Environmental Setting**

CRM Tech (CRM) completed a cultural resources records search to identify prehistoric or historic-period resources within one mile of the Project site (CRM, March 31, 2017). Native American input during the study did not identify any sites of traditional cultural value in the vicinity, and no notable cultural features were known to exist in the Project area throughout the historic period. Based on these considerations, the CRM research concluded that no “historic properties,” “historical resources,” or “tribal cultural resources” are present within or adjacent to the Project area.

### **Impact Analysis**

*a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k),*

**No Impact.** There are no resources that have been identified as eligible for listing to the California Register of Historic Places. Therefore, there is no impact.

*b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.*

**No Impact.** There are no resources supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. Therefore, there is no impact.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XVIII. UTILITIES AND SERVICE SYSTEMS:</b> Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			X	
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			X	
f) Be served by a landfill(s) with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	
g) Comply with federal, state, and local statutes and regulations related to solid waste?				X

### **Environmental Setting**

The project is to replace an existing structure in a stream that is used for water conservation activities.

### **Impact Analysis**

a) *Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.*

**No Impact.** The Project will not result in the generation of wastewater that will require treatment.

b) *Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*

**No Impact.** No structures requiring wastewater collection or treatment services would be developed as part of the proposed Project. The proposed Project would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities. There is no impact to this criterion.



- c) *Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*

**No Impact.** The proposed Project would not contribute to the need for additional storm drainage facilities. No impact is identified.

- d) *Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?*

**Less Than Significant.** Construction activities may require water for some activities, including dust suppression. However, the SBVWCD's existing entitlements and resources would be adequate to support potential demand as it has historically. The Project would have sufficient water supplies to service construction needs, and no new or expanded entitlements would be needed.

- e) *Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*

**Less Than Significant.** The proposed Project will utilize a wastewater "porta potty" vendor to accommodate construction employees. Construction activities are anticipated to have very few employees and can be serviced with existing wastewater resources. The impact is less than significant.

- f) *Be served by a landfill(s) with sufficient permitted capacity to accommodate the project's solid waste disposal needs?*

**Less Than Significant.** Construction activities may generate small quantities of solid waste, inert materials, and green waste. All waste would be properly disposed of in accordance with federal, state, and local statutes and regulations. Therefore, the impact is less than significant.

- g) *Comply with federal, state, and local statutes and regulations related to solid waste?*

**No Impact.** All solid waste generated by the Project during construction activities would be handled in accordance with all applicable Federal, State, and local statutes and regulations. No impacts would occur under this criterion.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
<b>XVIII. MANDATORY FINDINGS OF SIGNIFICANCE:</b>				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X		
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?		X		
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		X		

**SUBSTANTIATION:**

- a) *Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*

Based on the native habitat components and known occurrence and persistence of sensitive species within or adjacent to the Project area, this project could result in impacts to these resources. Further, this project has potential to impact federally listed threatened or endangered species and its habitat. The purpose this initial study is to provide data in support of securing the required regulatory permits for such impacts to State or federally protected species, sensitive habitats, streambeds, natural drainages, wetlands, waters of the U.S. or waters of the State. Mitigation measures are included in this document to address the potential impacts and reduce them to a less than significant impact level. With implementation of these measures, no significant adverse impacts to biological resources will result from project implementation. Similarly, no cultural resources with significant values were found in the project footprint. However, a potential exists to accidentally expose subsurface cultural resources during construction. Contingency mitigation measures are included in this document to address this potential impact and reduce it to a less than significant impact level. With implementation of the cultural resources mitigation measures (including paleontological impacts), no significant adverse impacts to cultural resources will result from project implementation.

- b) *Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*

There are no projects that have been identified to occur within Mill Creek during the time of the proposed construction of the improved Diversion facilities. Potential impacts have been identified in the categories of air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials. The evaluation contained in this document determined that potential impacts to the environment can be reduced to a less than significant level with implementation of the identified mitigation measures. Based on data provided in this document, including the type of project proposed and its location, it is concluded that implementation of the proposed project will not result in impacts that are either individually or cumulatively considerable or significant when viewed in relation to past, present or probable future projects.

*c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

The proposed project will not result in any identifiable substantial adverse effects on humans either directly or indirectly. The goal of the proposed Project is to keep existing water conservation facilities reliable by replacing a key Diversion structure. The issues for which mitigation has been provided to control potential harm to humans are air quality, geology, hazards and hazardous materials. With implementation of the required mitigation no substantial adverse effect to humans will result from carrying out the proposed project.

Therefore, based on the findings in this Initial Study, the SBVWCD, acting as the CEQA lead agency for this proposed project, will process a Mitigated Negative Declaration (MND) as the appropriate CEQA environmental determination for the proposed project. The SBVWCD will issue a Notice of Intent to Adopt a Mitigated Negative Declaration and circulate the MND package for review for the required 30-day period. Following receipt of comments, the SBVWCD will compile responses to any comments and prepare a final MND package for consideration by SBVWCD. Based on the final MND package, the SBVWCD will consider whether implementation of the proposed project as defined in this document can proceed as determined by the SBVWCD at the completion of the review process.

If you or your agency comments on this proposed MND, you or your agency will be provided responses to comments and notified of the date of the SBVWCD's final review and decision. A decision by the SBVWCD to approve the MND would be based on all of the information available in the whole of the record before the SBVWCD at the conclusion of the CEQA environmental review process for this proposed project. Completion of the CEQA review process would allow implementation of the proposed project in accordance with any approved mitigation measures and conditions of approval for the project.

## **XIX. SUMMARY OF MITIGATION MEASURES**

The following mitigation measures were identified to reduce impacts to less than significant:

### **BIOLOGICAL RESOURCES:**

- BIO-1 Exclusion fence should be installed around the entire proposed construction footprint, including all work areas, to exclude SBKR from entering the work zone from adjacent areas. Specifications for the fencing will be to the goal of SBKR exclusion and will be approved by the USFWS.
- BIO-2 A qualified biologist should perform a visual pre-construction survey within the construction footprint immediately prior to ground disturbing activities.
- BIO-3 A qualified biologist must be present on site to monitor all initial ground disturbance, rough grading, and work that could potentially affect sensitive biological resources that may occur within the project area.
- BIO-4 Worker Environmental Awareness Program (WEAP) training should be developed and implemented by a biologist familiar with CAGN and SBKR and associated habitat. WEAP training shall be provided for all construction personnel. For the life of the project, each employee (including temporary contractors and subcontractors) will receive WEAP training prior to conducting any work on the site.
- BIO-5 The entire proposed project footprint including disturbance limits should be visually delineated prior to ground disturbance, using brightly colored flagging, orange construction fence, or similar visual marker. All project activities shall be restricted to the work area and existing access roads. No personnel or equipment shall venture outside the marked boundaries.
- BIO-6 Within the exclusionary fence installed per BIO-1, prior to ground disturbing activities, a qualified biologist should conduct a nocturnal and diurnal preconstruction survey for western spadefoot and California glossy snake within the fenced footprint. If either species is found they will be relocated outside of the work area.
- BIO-7 During initial ground disturbing activities, a qualified biological monitor should be present to relocate any Western spadefoot and California glossy snake out of harm's way.
- BIO-8 Conduct a preconstruction survey for BUOW to verify that no BUOW have moved into the project area prior to the commencement of any proposed project activities.
- BIO-9 The SBVWCD will remove invasive species in all Project areas subject to grading for a period of two years after Project completion.
- BIO-10 Any grubbing, brushing or tree removal should be conducted outside of the State identified nesting season for migratory birds, which is typically March 15 through September 1. If work cannot be conducted outside of nesting season, a migratory nesting bird survey within and adjacent to the project site shall be conducted by a qualified biologist within three (3) days

prior to initiating the construction activities. If active nests are found during the pre-construction nesting bird surveys, a Nesting Bird Plan (NBP) will be prepared and implemented. At a minimum, the NBP will include guidelines for addressing active nests, establishing buffers, monitoring, and reporting. The NBP will include a copy of maps showing the location of all nests and an appropriate buffer zone around each nest sufficient to protect the nest from direct and indirect impact. The size and location of all buffer zones, if required, shall be determined by the biologist in consultation with the CDFW, and shall be based on the nesting species, its sensitivity to disturbance, and expected types of disturbance. The nests and buffer zones shall be field checked weekly by a qualified biological monitor. The approved buffer zone shall be marked in the field with construction fencing, within which no vegetation clearing or ground disturbance shall commence until the qualified biologist has determined the young birds have successfully fledged and a monitoring report has been submitted to the CDFW for review and approval. Construction within the designated buffer area shall not proceed until the applicant has received written authorization from CDFW.

### **CULTURAL RESOURCES:**

- CUL 1 In the event that evidence of historic activities is unearthed during construction activities, work in the immediate vicinity of the find will be stopped and a qualified archaeologist will be contacted to assess the find and recommend appropriate mitigation. No disturbance shall occur in the vicinity of the find until the site is evaluated by the archaeologist and the find is recorded or treated per the recommendations of the qualified archaeologist.
- CUL-2 In the event that human remains are discovered, there shall be no disposition of such human remains, other than in accordance with the procedures and requirements set forth in California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98. These code provisions require notification of the County Coroner and the Native American Heritage Commission, who in turn must notify those persons believed to be most likely descended from the deceased Native American for appropriate disposition of the remains. Excavation or disturbance may continue in other areas of the project site that are not reasonably suspected to overlie adjacent remains or archaeological resources.
- CUL-3 Tribal monitoring should be implemented during ground disturbing activities associated with this project.

### **GEOLOGY AND SOILS**

- GEO-1 The contractor will provide to the County of San Bernardino an Erosion Control Report (ECR) that will identify the Best Management Practices (BMPs) for managing the stockpiles. The BMPs may include but not be limited to the following:
- Locate stockpiles away from active drainage courses, drain inlets or concentrated flows of storm water.
  - For wind erosion control, apply water or other dust palliative to stockpiles. Smaller stockpiles may be covered as an alternative.
  - Place bagged materials on pallets under cover.

- During the rainy season, non-active silty or highly erodible soil stockpiles will be covered with heavy plastic and the stockpile contained within a temporary perimeter sediment barrier, such as berms, dikes, silt fences, or sandbag barriers. A soil stabilization measure may be used in lieu of cover.
- During the non-rainy season prior to the onset of rain, the silty or highly erodible stockpile should either be covered or protect them with temporary perimeter sediment barriers.
- Year-round, active silty or highly erodible soil stockpiles will be protected with temporary linear sediment barriers prior to the onset of rain.
- The main haul road will be graded and watered at least once per day, or as often as necessary to control dust as required by the South Coast Air Quality Management District (SCAQMD).

### **HAZARDS AND HAZARDOUS MATERIALS**

- HAZ-1 The Department of Toxic Substances Control (DTSC) and San Bernardino County Fire Department Hazardous Materials Division shall be immediately notified in the event malodorous or discolored soils, liquids, containers, or other materials known or suspected to contain hazardous materials and/or contaminants are encountered during activities associated with the proposed project. Earthmoving activities in the vicinity of said material shall be halted until the extent and nature of the suspect material is determined by qualified personnel (as determined by the DTSC). The removal and/or disposal of any such contaminants shall be in accordance with all applicable local, State, and Federal standards. HAZ-2 In the event of any identification of or spill of hazardous materials and/or contaminants in the construction area, the party whose activity resulted in the spill or release shall notify the SBVWCD of the location, extent, and nature of the spill or release. The SBVWCD shall thereupon assess the depth to groundwater in the area of the release, and if it appears that groundwater tables are high enough to create a potential for exposure of the groundwater table to the spill or release, will modify its recharge operations as much as feasible to prevent groundwater table intersection with the identified spill or release.
- HAZ-2 During construction, all staging areas, welding areas, or areas slated for construction using spark-producing equipment will be cleared of dried vegetation or other material that could ignite. Spark arresting equipment shall be in good working order. SBVWCD shall require all vehicles and crews working at the project site to have access to functional fire extinguishers at all times. In addition, construction crews are required to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. The contractor also shall provide a safety plan for the implementation of additional protocols when the National Weather Service issues a Red Flag Warning. Such protocols should address smoking and fire rules, storage and parking areas, use of gasoline-powered tools, use of spark arresters on construction equipment, road closures, use of a fire guard, fire suppression tools, fire suppression equipment, and training requirements.

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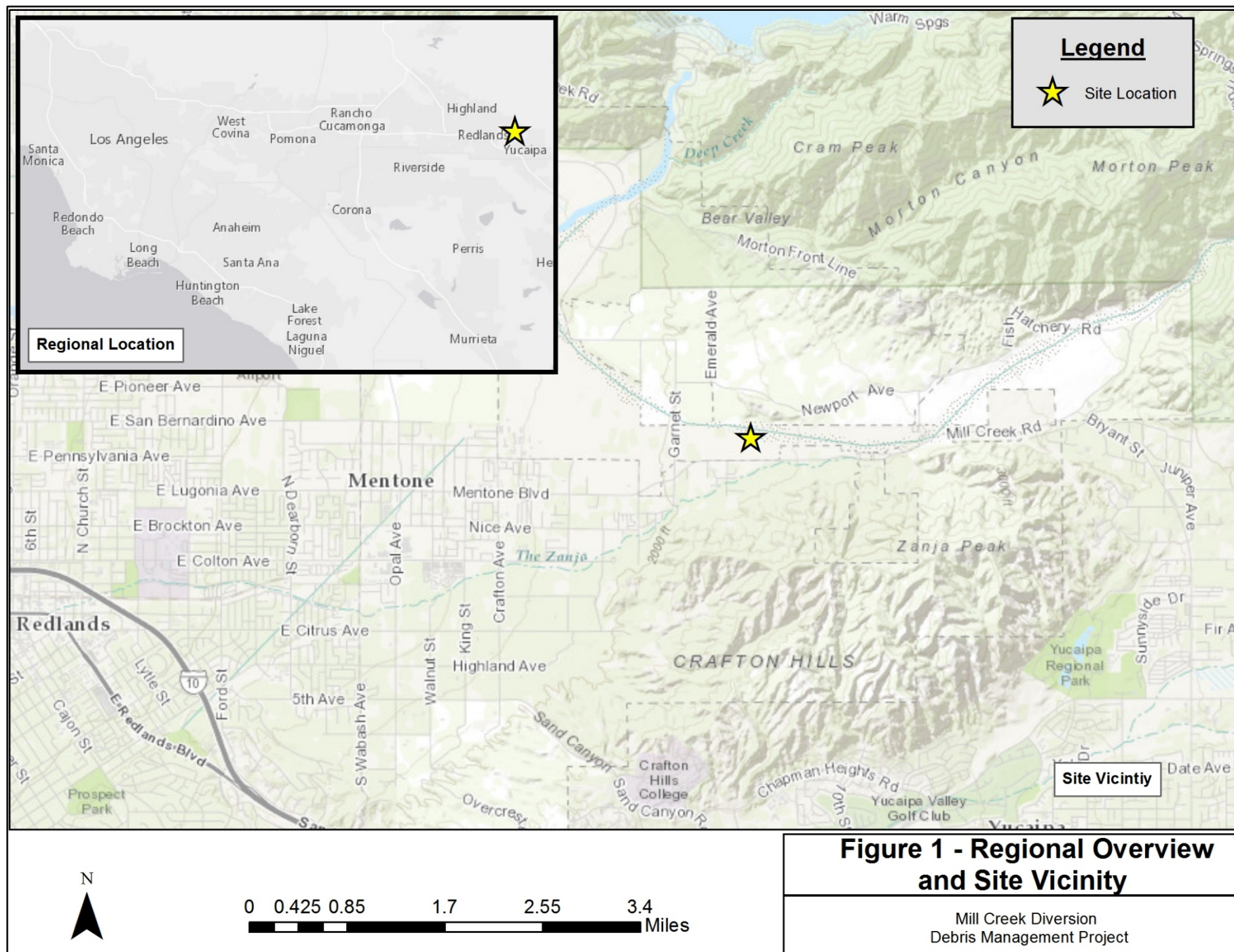
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# FIGURES

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Figure 2

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FIGURE 3

# Mill Creek Diversion and Debris Management Improvement Plan Area

Coordinate System: StatePlane California V FIPS 0405 Feet 2007  
Projection: Lambert Conformal Conic  
Datum: North American 1983  
Scale: 1:24,000  
Source: SBVWCD GIS  
GIS Contact: Katelyn Scholte  
May 1, 2017



Limits of Impact	Concrete Structures	Other Elements
Limit of Grading (0.64 acres)	2" thick grouted rip rap (0.15 acres)	Cat Walk
Limit of Work (0.70 acres)	2' thick light class rip rap (0.19 acres)	Reinforced Concrete Wall
Limit of Rip Rap (0.49 acres)	Rip Rap Toe Down	Bypass Berm
	PCC Slab (0.08 acres)	Diverter Wall
	Road/ PCC Slab (0.05 acres)	Existing Metal Door
	PCC Cut off wall	Trash Rack
		Existing Road
		Gates

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## Figure 4

Soft Plug Locations

### Legend

● Soft Plug

Google earth

© 2016 Google

600 ft



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# APPENDICES

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**Appendix 1**  
**Diversion Structure Photos**



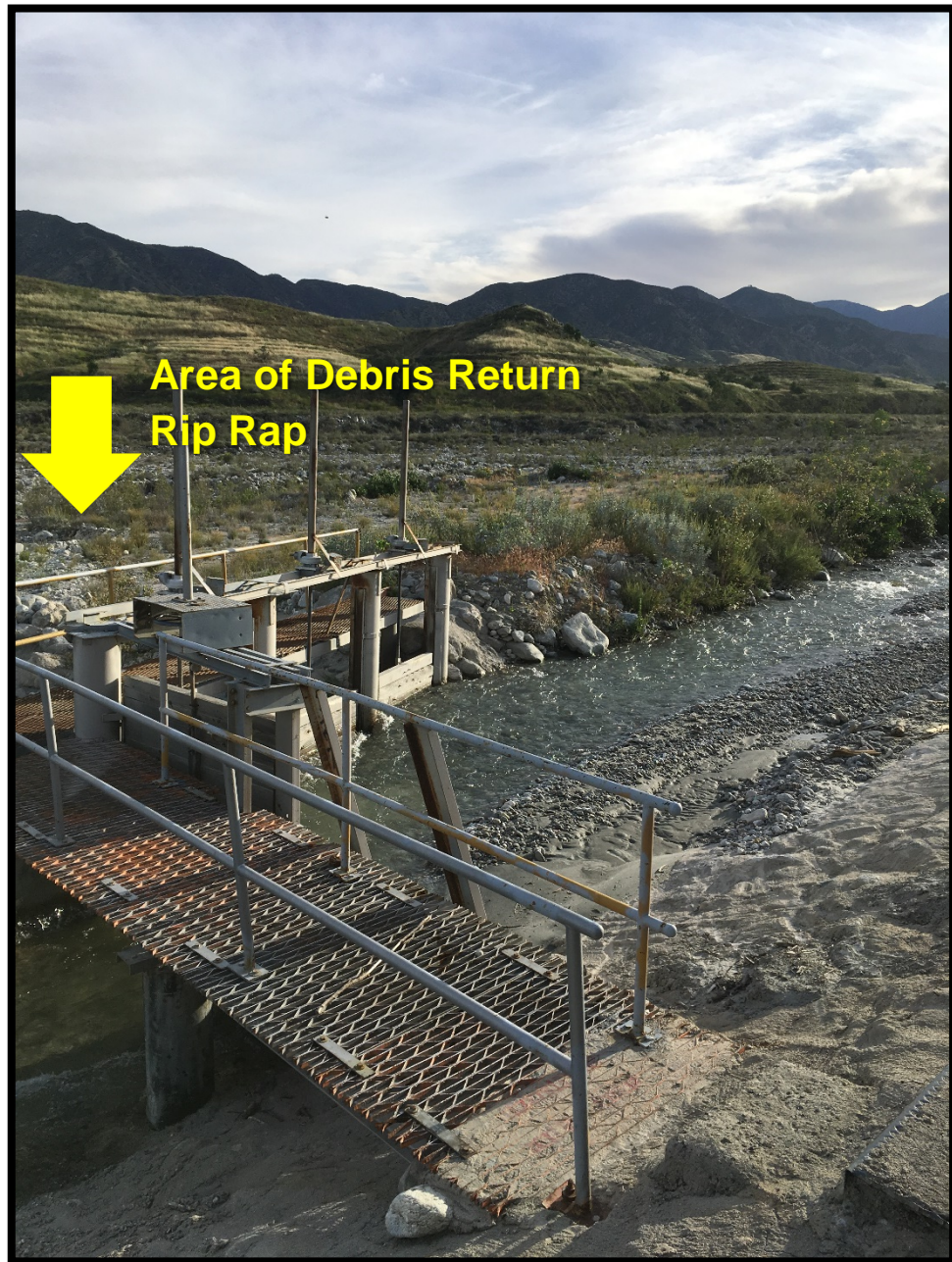


Photo 1 – Diversion Structure (area of work).





Photo 2 – Downstream of Diversion Structure. Corps constructed levee consists of the concrete wall on left and the slope. The Diversion channel concrete wall is pictured to the right of the channel. Photo depicts the water channel downstream of the Diversion Structure, where the final flows are directed from the Structure to the turnout that leads to the water conservation basin south of the levee.





Photo 3 – Upstream of the Diversion Structure (Area of Work). Corps Levee consists of the concrete wall and the rip rap slope pictured on the right.





Photo 4 – Existing Conditions, Area of Debris Return, immediately north and adjacent to the Diversion Structure.



Photo 5 – Diversion Structure during a typical high-flow event.





Photo 6 – Diversion Structure during a typical high-flow event. The wooden gates are lowered during normal operations to allow water to flow downstream to the turnout. The wooden gates are manually raised during storms to allow debris to return to Mill Creek. This demonstrates that the gates are undersized for a typical large event as the larger debris collects at the undersized gates. Photo also shows the location of the facility and the Corps levee slope.





Photo 7 – Diversion Structure during a typical high-flow event.





Photo 8 – Existing conditions of Debris Return Area during a typical high-flow event. Rip rap will be placed in this area for better debris flow and debris management.

**Appendix 2**  
**Biological Resources Report & SBKR Survey Report**

# General Biological Resources Report And Habitat Assessment For the Mill Creek Diversion Project

City of Redlands  
San Bernardino County, California

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Prepared for:

San Bernardino Valley Water Conservation District  
Attn: Jeffrey Beehler  
1630 W. Redlands Boulevard  
Redlands, California 92373

*Prepared on April, 2017*

Prepared by:



Jericho Systems, Inc.  
Shay Lawrey, President  
47 1st Street, Suite 1  
Redlands, CA 92373

# Certification

Jericho Systems, Inc.  
47 1<sup>st</sup> Street, Suite 1  
Redlands, CA 92373  
(909) 915-5900



Contact: Shay Lawrey, President and Ecologist/Regulatory Specialist

Certification: I hereby certify that the statements furnished herein, and in the attached exhibits present data and information required for this Biological Resources Report to the best of my ability, and the facts, statements, and information presented are true and correct to the best of my knowledge and belief. This report was prepared in accordance with professional requirements and standards. Fieldwork conducted for this assessment was performed by me. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project proponent and that I have no financial interest in the project.

A handwritten signature of Shay Lawrey is located below the certification text. The signature is written in black ink and is somewhat stylized.

---

Shay Lawrey, Ecologist/Regulatory Specialist



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# 1 Introduction

On behalf of the San Bernardino Valley Water Conservation District (SBVWCD), Jericho Systems, Inc. (Jericho) conducted a biological resources and habitat assessment for the SBVWCD's proposed Mill Creek Diversion Debris Management Project (project), located in the City of Redlands, San Bernardino County, California. The purpose of the biological resources and habitat assessment was to identify the following: potential for sensitive species or sensitive habitat within the project area; need for focused surveys; and need for required regulatory permits.

The SBVWCD is charged with operating and maintaining its existing facilities in the Santa Ana River and Mill Creek for groundwater recharge, as it has since approximately the 1920s. These facilities generally consist of a series of gates and weirs to divert water from the Santa Ana River and Mill Creek into large spreading basins owned by the District where water can percolate into the regional groundwater basin.

Mill Creek originates in the San Bernardino Mountains. Most local storms are flashy and carry high quantities of organic debris and sediments ranging from silts to boulders. The organic debris is mainly logs 10-20 feet in length ranging from two to 12 inches in diameter. There is a high content of debris in the initial flows. Currently, there are a series of berms that direct water from Mill Creek toward the diversion structure where flows can be directed into two separate channels. The first channel has three 5-foot wide gates that allow flow back to the natural Mill Creek. The second channel has one 5-foot wide gate that routes flows to the spreading grounds. The existing gates are manually operated sluice/slide gates made from wooden planks. Accumulation of organic material, silt, sand, cobble, and small boulders behind the gates significantly impacts operations and has caused levee failure.

The SBVWCD is currently proposing to construct improvements to the Mill Creek Diversion gate system to reduce maintenance, environmental impact and costs related to debris management. The goal of the project is to construct a modified diversion system that redirects debris and sediment back to the Mill Creek channel system, while allowing flows to be rerouted to the existing spreading grounds for groundwater recharge.

The proposed project involves creating a sediment bypass channel with a slide gate upstream of the existing structures. The gate would be used to control outflow from this channel. The existing system will be demolished and replaced so that the overflow height is increased by 3 feet with ponding to an additional 2 feet above the weir. Increasing the height will increase the ponding depth to promote sediment settling and prevent sediments from being transported to the spreading grounds. The three existing 5-foot by 4-foot weir gates would be replaced with a one large gate. Baffle walls would be added to direct debris toward the return weir. A trash rack would also be utilized at the diversion gate that conveys flows to the spreading grounds. The area around the proposed channel would also be reinforced with concrete. The earthen berm along the north bank of the Mill Creek Diversion Channel would be hardened along with the channel bottom. Additionally, rocks would be placed downstream of the existing grouted area located downstream of the diversion back to Mill Creek to prevent further erosion.

## 1.1 Location

The survey area considered the entire project site, which is approximately 0.49 acres, as well as the immediate vicinity. The project is in the eastern portion of the City of Redlands, about 0.54 miles east of Garnet Street and 0.16 miles north of California State Route 38. The diversion is located within Reach 1 of Mill Creek, approximately 2 miles upstream of the confluence with Santa Ana River Reach 5 (Figure 1). The site is depicted on the U.S. Geological Survey (USGS) *Yucaipa 7.5'* Topographic Map, within the northeast ¼ of Section 21, Township 1 South, Range 2 West, San Bernardino Base and Meridian, in

the County of San Bernardino, State of California (Figure 1).

## 1.2 Environmental Setting

The project area is within the Southern California Mountains and Valleys Ecological Section (Subsection M262Bg San Gorgonio Mountains) of California, which includes mountains, hills and valleys of the Transverse Ranges and the Peninsular Ranges that are near the Pacific Ocean, but not bordering it. Much of the section is close enough to the Pacific Ocean for the climate to be modified moderately marine influence. This subsection comprises the lower and warmer parts of the San Bernardino Mountains, which are between the southern branch of the San Andreas Fault on the south-southwest and the Mojave Desert on the north. It extends from the Cajon Pass eastward to near the Pipes Canyon fault. It includes mountains between the Mission Creek fault and the Banning fault on the south. The climate is hot to temperate and subhumid. Marine effects on climate are moderate on the south-southwest side and slight on the north and east sides of the mountains.

The elevation within the proposed project area is approximately 2,130 feet above mean sea level. The terrain consists of floodplain, sloping downward from the east to the west. The area under consideration is surrounded by rugged foothill topography and alluvial fan. The local area climate is semi-arid, with an average annual temperature of 67°F and a range from 25-110°F. The rainy season begins in November and continues through March, with the quantity and frequency of rain varying from year to year. The average annual rainfall is approximately 18.1 inches. The general vicinity consists of open space, undeveloped land, orchards, mixed suburban and rural residential community, flood control facilities and recharge basins.

## 1.3 Site Conditions

The project site is within the Mill Creek floodplain. The area adjacent the northern boundary of the site consists of Mill Creek, flood control levee, and undeveloped land. Land to the east of the site consists of consists of Mill Creek and flood control levee. To the south of the site is rural residential development, utility infrastructure, and undeveloped land. West of the proposed project site, land use consists of Mill Creek, flood control levee, recharge basins and undeveloped land (Figures 1-2).

Habitat within the survey area primarily consists of sandy river wash and scale broom scrub (*Lepidospartum squamatum* Shrubland Alliance), or Riversidean Alluvial Fan Sage Scrub (RAFSS). The project area is within and adjacent existing SBVWCD facilities and is subject to past and ongoing human disturbances associated with the maintenance of the facilities. There is an existing dirt access road that provides access to the project site and much of the site has been previously graded.

## 2 Methods

### 2.1 Literature review

Prior to performing the surveys, available databases and documentation relevant to the project site was reviewed for documented occurrences of sensitive species in the area. The U.S. Fish and Wildlife Service (USFWS) threatened and endangered species occurrence data overlay, as well as the most recent versions of the California Natural Diversity Database (CNDDB) and California Native Plant Society Electronic Inventory (CNPSEI) databases were searched for sensitive species data on the *Redlands* and *Yucaipa* USGS 7.5-minute series quadrangles. The proposed project site is situated in the eastern portion of the *Yucaipa* quad. The site's proximity to the *Redlands* quad to the west, lead to its inclusion in the review. These databases contain records of reported occurrences of State- and/or federally-listed species or otherwise sensitive species and habitats that may occur within the vicinity of the project. The literature

review included a review of standard field guides and texts on sensitive and non-sensitive biological resources, as well as the following sources:

1. *The Status and Known Distribution of the San Bernardino Kangaroo Rat (Dipodomys merriami parvus): Field surveys conducted between 1987 and 1996.* McKernan 1997.
2. *U.S. Fish and Wildlife Service, 1998c. Endangered and Threatened Wildlife and Plants; Final Rule to List the San Bernardino Kangaroo Rat as Endangered, Vol. 63, No. 185, pp. 51005 - 51017.*

Other available technical information on the biological resources of the area was also reviewed including previous trapping surveys and recent findings.

## 2.2 Site Review

Jericho biologists Daniel Smith and Shay Lawrey conducted biological resource and habitat assessments on March 7<sup>th</sup>, April 6<sup>th</sup> and April 11<sup>th</sup>, 2017. The surveys included general coverage of the site and surrounding areas and were focused on the following objectives: (1) recording of dominant vegetation communities; (2) floristic plant surveys; (3) general wildlife surveys; and habitat assessment for sensitive species. Wildlife species were detected during field surveys by sight, calls, tracks, scat, or other sign. In addition to species observed, expected wildlife usage of the site was determined according to known habitat preferences of regional wildlife species and knowledge of their relative distributions in the area.

The primary focus of the general biological surveys was to identify potential habitat for special status wildlife within the project area. In addition to the general biological resources assessment of the site, habitat assessments were conducted for several sensitive species for which potentially suitable habitat exists on-site and/or within the vicinity of the site. The suitability of habitat on-site was assessed for these species, taking into consideration the different habitat requirements and any Primary Constituent Elements (PCEs) defined for these species. Scientific nomenclature and common names for vertebrate species referred to in this report follow Collins (1997) and Fisher (2001) for amphibians and reptiles, Jones, et al., (1992) for mammals and American Ornithologists' Union (AOU) Check-list (2006) for birds.

In addition to the general biological surveys, a focused trapping survey was conducted within the project area on March 8<sup>th</sup> through the 12<sup>th</sup>, 2017, to determine the presence or absence of the federally-listed as endangered San Bernardino kangaroo rat (*Dipodomys merriami parvus* [SBKR]). This focused live-trapping survey was conducted by permitted biologist Shay Lawrey, per protocols established for the SBKR and as outlined in her federal 10a permit number TE-094308-3. The result of the focused survey was negative for SBKR.

## 3 Results

### 3.1 Literature review

According to the CNDDDB, CNPSEI, and other relevant literature and databases, approximately 57 sensitive species and eight sensitive habitats have been documented to occur in the *Redlands* and *Yucaipa* USGS 7.5-minute series quadrangles. This list of sensitive species and habitats includes any State- and/or federally-listed threatened or endangered species, California Department of Fish and Wildlife (CDFW) designated Species of Special Concern (SSC), and otherwise Special Animals. "Special Animals" is a general term that refers to all the taxa the CNDDDB is interested in tracking, regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special status species." The CDFW considers the taxa on this list to be those of greatest conservation need.

Based on the literature review and personal observations made in the immediate vicinity, 18 sensitive species have a moderate to high potential to occur within the project area. The only sensitive habitat documented and/or observed on-site is RAFSS. The only sensitive species documented and/or observed on-site is the San Diego pocket mouse (*Chaetodipus fallax*).

Of the approximately 57 sensitive species identified in the *Redlands* and *Yucaipa* quadrangles, 14 (five plant species and nine animal species) are State- and/or federally-listed as threatened or endangered species. Table 1 lists the federally-listed species documented in the *Redlands* and *Yucaipa* quadrangles and provides a project impact affects determination. The following State- and/or federally-listed species and designated critical habitats have been documented within the project vicinity (approximately 3 miles):

- San Bernardino kangaroo rat (*Dipodomys merriami parvus*);
- coastal California gnatcatcher (*Polioptila californica californica*);
- southwestern willow flycatcher (*Empidonax traillii extimus*);
- least Bell's vireo (*Vireo bellii pusillus*);
- Santa Ana River woolly-star (*Eriastrum densifolium* var *santorum*);
- slender-horned spineflower (*Dodecahema leptoceras*);
- Santa Ana sucker (*Catostomus santaanae*) Critical Habitat; and
- San Bernardino kangaroo rat Critical Habitat

Although not a State- or federally-listed as threatened or endangered species, burrowing owl (*Athene cunicularia*) are considered a State and federal SSC and are a migratory bird protected by the international treaty under the Migratory Bird Treaty Act of 1918 and by State law under the California Fish and Game Code (CDFG Code #3513 & #3503.5). Burrowing owl have been documented within similar flood control facilities. Additionally, there two herp (reptiles and amphibians) SSC documented within the preproject vicinity: California glossy snake (*Arizona elegans occidentalis*) and western spadefoot (*Spea hammondi*). These species are considered particularly sensitive within the region. Therefore, burrowing owl, California glossy snake western spadefoot will be included in the discussion below.

An analysis of the likelihood for occurrence of all sensitive species is provided in Table 2. This analysis considers species range as well as documentation within the vicinity of the project area.

## 3.2 Site Review

The project area is located within the foothills of the southern slopes of the San Bernardino Mountains and the Mill Creek floodplain, approximately 2.2 miles east (upstream) of the Mill Creek/Santa Ana River confluence. Habitat within the project area consists of disturbed RAFSS and sandy river wash. Disturbances observed within the project area during survey include dirt roads, grading, and existing flood control and SBVWCD facilities.

### 3.2.1 Soils

NRCS soil surveys show the entire project site consists of Psamments, Fluvents and frequently flooded soils. Psamments are somewhat excessively drained soils comprised of sand, fine sand, and stratified gravelly sand to gravelly loamy sand, derived from sandy alluvium. Fluvents are comprised of gravelly sand and stratified gravelly sand to gravelly loam, derived from alluvium. These soil types have a very low runoff class and are typical of drainageways. These soils are not considered prime farmland.

### 3.2.2 Vegetation

The RAFSS habitat found within the project area is dominated by deerweed (*Acmispon glaber*),

California sagebrush (*Artemisia californica*), mulefat (*Baccharis salicifolia*), California croton (*Croton californicus*), brittlebush (*Encelia farinosa*), hairy yerba santa (*Eriodictyon trichocalyx*), California buckwheat (*Eriogonum fasciculatum*), chaparral yucca (*Hesperoyucca whipplei*) and scale broom (*Lepidospartum squamatum*). Several small Fremont cottonwoods (*Populus fremontii*) and black elderberry (*Sambucus nigra*) are also present within the project area. A complete list of plant species observed during survey is provided in Appendix A.

### 3.2.3 Wildlife

Birds were the most observed wildlife group during survey. Common wildlife species observed or otherwise detected on or in the vicinity of the site during the reconnaissance-level and focused surveys included red-tailed hawk (*Buteo jamaicensis*), Anna's hummingbird (*Calypte anna*), common raven (*Corvus corax*), greater roadrunner (*Geococcyx californianus*), house finch (*Haemorrhous mexicanus*), California towhee (*Melospiza crissalis*), bushtit (*Psaltiriparus minimus*), San Diego pocket mouse (*Chaetodipus fallax*), Cactus mouse (*Peromyscus eremicus*), deer mouse (*Peromyscus maniculatus*) and side-blotched lizard (*Uta stansburiana elegans*). Wildlife detections or signs included those for amphibians, reptiles, birds, and mammals. A complete list of wildlife species observed or otherwise detected during survey is provided in Appendix B.

### 3.2.4 Sensitive Habitats

#### *Riversidean Alluvial Fan Sage Scrub*

The only sensitive habitat community present within the project area is RAFSS, which is a rare and sensitive plant community that is adapted to the harsh conditions of flooding. It grows on sandy, rocky alluvium deposited by streams that experience infrequent episodes of flooding. Scale broom (*Lepidospartum squamatum*) is the indicator species for this habitat type and is dominant, co-dominant, or conspicuous in the shrub canopy. Because alluvial fan sage scrub is characterized by its diversity, it can also be described as an intermediate between chaparral and sage scrub habitats, in that all three vegetation communities share similar floral components. However, the distinguishing factor is that alluvial fan sage scrub undergoes periodic scouring from frequent flooding events, creating three seral stages; pioneer, intermediate, and mature. The RAFSS habitat found within the project area is pioneer to intermediate stage.

*Findings:* Approximately 0.1 acres of the proposed project footprint will be restricted to areas currently comprised of existing structures. The remaining 0.39 acres of the proposed project footprint is within RAFSS habitat. Therefore, the project will likely result in approximately 0.39 acres of permanent impact to RAFSS habitat.

### 3.2.5 Special Status Plants

#### *Santa Ana River woollystar*

The State- and federally-listed as endangered Santa Ana River woollystar (woollystar) is a short-lived, perennial subshrub of *Polemoniaceae* (phlox family). It has a basally branched, generally erect or spreading form, occasionally reaching 1 meter (3.3 feet) in height. The entire plant, including the blue to violet-blue inflorescence, is covered with woolly pubescence, giving it a silvery-white appearance. This woollystar is found in alluvial scrub plant communities along the Santa Ana River and Lytle and Cajon Creek flood plains from the base of the San Bernardino Mountains in San Bernardino County southwest along the Santa Ana River through Riverside County into the Santa Ana Canyon of northeastern Orange County (USFWS 1987). It requires periodic flooding. Associated perennial plants include California

croton (*Croton californicus*), California buckwheat (*Eriogonum fasciculatum*), fastigiata golden aster (*Heterotheca sessiliflora* ssp. *fastigiata*), and scale-broom (*Lepidospartum squamatum*). This woollystar typically blooms between May and August but most heavily in June (Muñoz 1991). However, woollystar is readily identifiable throughout the year.

**Findings:** Per the literature review, the nearest documented woollystar occurrence (2010) is approximately 0.9 miles west (downstream) of the project area, along the south side of Mill Creek. No woollystar were observed within the project area during the survey, which included 100% coverage of the proposed project footprint. This survey was conducted prior to the bloom period for this species (May – August). However, woollystar is readily identifiable throughout the year. Therefore, woollystar is considered absent from the project site and the project **will not affect** this species.

### ***Slender-horned spineflower***

The State- and federally-listed as endangered slender-horned spineflower (spineflower) is an annual plant in the *Polygonaceae* (buckwheat family). Plants have a distinctive basal rosette of leaves ranging from 3 to 8 centimeters (1.2 to 3.1 inches) in diameter. The leaves frequently become reddish at maturity. The flower stalks are branched and erect 3 to 10 centimeters (1.2 to 4 inches) tall and the flowers are white to pink in color. This spineflower is found in drought prone habitats where germination is likely related to rainfall. This spineflower is typically found in alluvial fan scrub on benches and terraces away from active channels in areas receiving little surface disturbance from flooding, but subject to sheet or overland flows (Boyd *et al.* 1989; Rey-Vizgirdas 1994; Wood and Wells 1997). Within San Bernardino County, there are currently only eight (8) occurrences of this species known to be extant, within three (3) drainages; the upper Santa Ana River, Lytle Creek, and Cajon Canyon (USFWS 2010). This spineflower typically blooms between April and June. Individual plants are difficult to detect because they are small and occur in relatively small, isolated patches across often extensive floodplain habitat. Additionally, plant densities may be low during drought conditions.

**Findings:** Per the literature review, the nearest documented spineflower occurrence (1992) is approximately 2.7 miles northwest (downstream) of the project area, within an upper terrace on the north side of the Santa Ana River Wash, downstream of the Mill Creek/Santa Ana River confluence. The survey was conducted during the bloom period for this species (April – June) and a reference population was visited prior to the survey. Spineflower were detected at the reference site. However, no spineflower were observed within the project area during the survey. Furthermore, this species has not been documented in Mill Creek. Therefore, spineflower is considered absent from the project site and the project **will not affect** this species.

### **3.2.6 Special Status Wildlife**

According to the CNDDDB, and other relevant literature and databases, four State- and/or federally-listed threatened or endangered wildlife species are documented within 3 miles of the project site. Additionally, there are several other sensitive wildlife species that are particularly important in this region, which are either documented to occur on the vicinity or have a high likelihood of occurring on the site. These special status wildlife species are described below.

#### ***San Bernardino kangaroo rat***

The federally-listed as endangered SBKR is one of three recognized subspecies of Merriam's kangaroo rat (*D. merriami*) in California. The Merriam's kangaroo rat is a small, burrowing rodent species that can be found within inland valleys and deserts of southwest United States of America and northern Mexico.

The Dulzura kangaroo rat (*Dipodomys simulans*), the Pacific kangaroo rat (*Dipodomys agilis*) and the Stephens kangaroo rat (*Dipodomys stephensi*) occur in areas occupied by SBKR, but these other species have a wider habitat range. The SBKR, however, has a restricted southern California distribution, confined to certain inland valley scrub communities and, more particularly, to scrub communities occurring along rivers, streams, and drainages within the San Bernardino, Menifee, and San Jacinto valleys. Most of these drainages have been historically altered due to a variety of reasons including, mining, off-road vehicle use, road and housing development, and flood control efforts. This increased use of river floodplain resources resulted in a reduction in both the amount and quality of habitat available for the SBKR.

The USFWS listed the SBKR as endangered on September 24, 1998 and set aside 33,295 acres of critical habitat for the SBKR in 2002. The USFWS then revised that decision in 2008 after a lawsuit and cut the designation down to 7,779 acres in Riverside and San Bernardino counties. On January 10, 2011, a federal court struck down the 2008 designation. The ruling concluded that the USFWS improperly relied on “core habitat” to define critical habitat for the SBKR rather than specifying the physical and biological features essential for the kangaroo rat’s conservation, as the law requires. The ruling reinstated the 2002 designation. The 2002 critical habitat rule for SBKR defined four Primary Constituent Elements (PCEs) that are essential to the conservation of SBKR. These PCEs are as follows: 1) Soil series consisting predominantly of sand, loamy sand, sandy loam, or loam; 2) Alluvial sage scrub and associated vegetation, such as coastal sage scrub and chamise chaparral, with a moderately open canopy; 3) River, creek, stream, and wash channels; alluvial fans; floodplains; floodplain benches and terraces; and historic braided channels that are subject to dynamic geomorphological and hydrological processes typical of fluvial systems within the historical range of the San Bernardino kangaroo rat; and 4) Upland areas proximal to floodplains with suitable habitat.

*Findings:* Per the literature review, the nearest documented SBKR occurrence (2008) is approximately 0.7 miles west (downstream) of the project site along the south side of Mill Creek. There is an additional occurrence (2001) approximately 1.1 miles east (upstream) of the project site, along the north side of Mill Creek. The project site does contain habitat that is considered suitable for SBKR for the following reasons:

- *The site is located within the historic range of SBKR;*
- *The site is located within designated critical habitat for SBKR;*
- *The site is located within proximity of where SBKR have been found in the last 10 years;*
- *The soil series consists predominantly of sand and friable soils;*
- *There is alluvial sage scrub and associated vegetation, such as RAFSS with a moderately open canopy;*
- *A river and floodplain bench/terrace subject to dynamic geomorphological and hydrological processes typical of fluvial systems occurs in the area; and*
- *Upland areas proximal to the floodplains with suitable habitat occurs nearby*

Focused live-trapping surveys were conducted within the project area on March 8<sup>th</sup> through the 12<sup>th</sup>, 2017, to determine the presence or absence of SBKR on site. The surveys were conducted by permitted biologist Shay Lawrey, per protocols established for the SBKR and as outlined in her federal 10a permit number TE-094308-3. The result of the focused survey was negative for SBKR. Therefore, SBKR are considered absent from the project area and the project **will not affect** this species.

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### *Coastal California gnatcatcher*



The federally-listed as threatened coastal California gnatcatcher (CAGN) is a resident (non-migratory) small songbird (passerine) which typically nests and forages in coastal sage scrub vegetation in southern California year-round. CAGN occurs in scrub habitats such as chaparral, grassland, riparian areas, in proximity to sage scrub habitats. The CAGN was federally listed as threatened in 1993 and critical habitat for this species was designated by the USFWS in 2000 and revised in 2007. The PCEs identified by the USFWS for CAGN consist of the following: 1) Dynamic and successional sage scrub habitats: Venturan coastal sage scrub, Diegan coastal sage scrub, Riversidean sage scrub, Riversidean alluvial fan sage scrub, maritime succulent scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub in Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties that provide space for individual and population growth, normal behavior, breeding, reproduction, nesting, dispersal and foraging; and 2) Non-sage scrub habitats such as chaparral, grassland, riparian areas, in proximity to sage scrub habitats as described for PCE 1 above that provide space for dispersal, foraging, and nesting.

***Findings:*** Per the literature review, the nearest documented CAGN occurrence (1997) is adjacent the east side of the project site, within suitable sage scrub habitat along the south side of Mill Creek. There is an additional occurrence (2015) approximately 0.6 miles west (downstream) of the project site, along the south side of Mill Creek. The project site and immediate vicinity does contain suitable habitat for this species for the following reasons:

- *The site is located within the historic range of CAGN;*
- *The site is located adjacent where CAGN have been previously documented; and*
- *Dynamic and successional sage scrub habitat (RAFSS) suitable for individual and population growth, normal behavior, breeding, reproduction, nesting, dispersal and foraging is present within the site and surrounding area.*

The PCEs for CAGN including RAFSS habitat are present within the project site and surrounding area. Due to the presence of suitable habitat within the project area, as well as the adjacent documented occurrence, it is assumed that the adjacent areas are occupied by CAGN. Therefore, the project **may affect, but is not likely to adversely affect** this species.

### ***Southwestern willow flycatcher***

The southwestern willow flycatcher (SWFL) is a State- and federally-listed endangered species. This small passerine bird has a grayish-green back and wings, whitish throat, a light gray-olive breast, and pale yellowish belly. The SWFL is a neotropical migrant that breeds in the southwestern United States from mid-April to early-September. In the fall, it migrates south to its wintering grounds in portions of South America, Central America and Mexico. (60 FR 10694). The SWFL breeds in dense riparian habitats along rivers, streams, and other wetlands at elevations ranging from sea level to 8,500 feet (Sogge 1997). Plant species closely associated with the SWFL include willows (*Salix* sp.), boxelder (*Acer negundo*), seepwillow (*Baccharis* sp.), with an overstory of cottonwood (*Populus fremontii*) (62 FR 39129). Occupied habitat is generally dominated by shrubs and trees 13 to 23 feet or more in height, which provide dense lower and mid-story vegetation approximately 10 to 13 feet aboveground. This dense vegetation is often interspersed with open water, small openings, or sparse vegetation, creating a mosaic that is not uniformly dense (62 FR 39129). The SWFL was listed as federally endangered on February 27, 1995, under the federal Endangered Species Act (ESA) (60 FR 10694) and the USFWS has designated critical habitat for the species.

***Findings:*** Per the literature review, the nearest documented SWFL occurrence (2011) is

approximately 1.6 miles north of the project site, within Morton Canyon. There is no suitable riparian habitat for SWFL within the project area. Therefore, this species is not likely to occur within the project site or surrounding area. No potential direct or indirect impacts to SWFL can be identified and no further action is required. The project **will not affect** this species.

### ***Least Bell's vireo***

The least Bell's vireo (LBVI) is a State- and federally-listed endangered bird species. This species is a small, olive-gray migratory songbird that nests and forages almost exclusively in riparian woodland habitats. LBVI nesting habitat typically consists of well-developed overstory, understory, and low densities of aquatic and herbaceous cover. The understory frequently contains dense sub-shrub or shrub thickets. These thickets are often dominated by plants such as narrow-leaf willow, mulefat, young individuals of other willow species such as arroyo willow or black willow, and one or more herbaceous species. LBVI generally begin to arrive from their wintering range in southern Baja California and establish breeding territories by mid-March to late-March. The LBVI was listed as federally endangered on May 2, 1986, under the ESA (51 FR 16483) and the USFWS has designated critical habitat for the species.

*Findings:* Per the literature review, the nearest documented LBVI occurrence (2010) is approximately 0.5 miles northwest of the project site, within suitable riparian habitat along the north side of Mill Creek. There is no suitable riparian habitat for LBVI within the project area. Therefore, this species is not likely to occur within the project site or surrounding area. No potential direct or indirect impacts to LBVI can be identified and no further action is required. The project **will not affect** this species.

### ***Burrowing owl***

The burrowing owl (BUOW) is a ground dwelling owl typically found in arid prairies, fields, and open areas where vegetation is sparse and low to the ground. The BUOW is heavily dependent upon the presence of mammal burrows, with ground squirrel burrows being a common choice, in its habitat to provide shelter from predators, inclement weather and to provide a nesting place (Coulombe 1971). They are also known to make use of human-created structures, such as cement culverts and pipes, for burrows. BUOW spend a great deal of time standing on dirt mounds at the entrance to a burrow, or perched on a fence post or other low to the ground perch from which they hunt for prey. They feed primarily on insects such as grasshoppers, June beetles and moths, but will also take small rodents, birds, and reptiles. They are active during the day and night, but are considered a crepuscular owl; generally observed in the early morning hours or at twilight. The breeding season for BUOW is February 1 through August 31.

Throughout its range, the BUOW is vulnerable to habitat loss, predation, vehicular collisions, and destruction of burrow sites and poisoning of ground squirrels (Grinnell and Miller 1944, Zarn 1974, Remsen 1978). BUOW have disappeared from significant portions of their range in the last 15 years and, overall, nearly 60% of the breeding groups of owls known to have existed in California during the 1980s had disappeared by the early 1990s (Burrowing Owl Consortium 1993). The BUOW is not listed under the State or federal ESA, but is considered both a State and federal SSC. The BUOW is a migratory bird protected by the international treaty under the Migratory Bird Treaty Act of 1918 and by State law under the California Fish and Game Code (CDFG Code #3513 & #3503.5).

*Findings:* Per the literature review, the nearest documented BUOW occurrence (2013) is approximately 13 miles west of the project area, at the old Norton Air Force Base and within City Creek along the south side of 3<sup>rd</sup> Street, west of Palm Avenue, in the City of San Bernardino.

There are no BUOW occurrences documented in the project area.

The assessment survey was structured, in part, to detect BUOW. The survey consisted of walking transects spaced to provide 100% visual coverage of the project site. The result of the survey was that no evidence of BUOW was found in the survey area. No BUOW individuals or sign including burrows, pellets, feathers or white wash were observed. Per the definition provided in the 2012 CDFG Staff Report on Burrowing Owl Mitigation, “Burrowing owl habitat generally includes, but is not limited to, short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey.”

Although the project area is mostly comprised of short, sparse vegetation and well-drained, friable soils, no suitably-sized burrows, burrow surrogates, or host burrowers were observed within the project area. Therefore, the project site is not suitable to support BUOW. No potential direct or indirect impacts to BUOW can be identified and no further action is required.

### ***Western spadefoot***

The western spadefoot is a moderate-sized greenish, brown, cream, or gray toad that has a glossy black spade, shaped like a wedge or teardrop, present on each hind foot. The western spadefoot is considered a SSC by the CDFW. These animals are nocturnal and almost completely terrestrial, entering water only to breed. This species is endemic to California and northern Baja California, ranging from near Redding south throughout the Great Valley and its associated foothills, through the South Coast Ranges into coastal southern California south of the Transverse mountains and west of the Peninsular mountains, into northwest Baja California (Jennings and Hayes 1994). This species prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains from sea level to 4,500 feet. The western spadefoot can inhabit hot dry environments by burrowing underground (> 1 m below the surface) using the hardened spades on its hind feet. They are rarely seen, spending most of their life buried underground in earth-filled burrows, and are active for only a short period each year, typically between October and May, immediately following heavy rainfall (Nafis 2013). Western spadefoots breed in temporary rain pools and require standing water for a minimum of 30 days to complete metamorphosis.

In southern California, more than 80% of the previously occupied habitat for this species has been developed or converted to incompatible uses and this species was once thought to be extirpated from San Bernardino County (Jennings and Hayes 1994). However, in recent years it western spadefoots have been documented in several areas along the foothills of the San Bernardino Mountains from northern San Bernardino to Mentone. Much of the western spadefoot breeding habitat probably now consists of man-made structures such as agricultural drainages, roadside ditches, and flood control facilities.

**Findings:** Per the literature review, the nearest documented western spadefoot occurrences (2015) are approximately 0.5 miles northwest and northeast of the project site, within suitable upland habitat north of Mill Creek. This area north of the project site represents one of the few areas in the region where this species has been documented and Mr. Smith has observed western spadefoots breeding in rain pools and foraging in this area in 2015, 2016 and early 2017. Potentially suitable habitat for this species exists within the recharge basins and adjacent areas southwest of the project site.

### ***California glossy snake***

The California glossy snake is a moderately-sized snake (26-70 in.) that has smooth, glossy scales, with a faded or bleached-out appearance, a tan or light brown ground color with dark brown blotches with dark edges on the back and sides and a pale, unmarked underside. California glossy snake are nocturnal and very sensitive to artificial light (Perry & Fisher, 2006). This species burrows and will spend the daytime hiding underground. It ranges from the eastern part of the San Francisco Bay Area south to northwestern Baja California, occurring in arid scrub, rocky washes, grasslands, chaparral (Nafis 2013). This species typically inhabits sandy bottom habitats with little light pollution (R. Fisher, pers. comm.).

The California glossy snake is one of the most critically sensitive species in southern California and has experienced severe and ongoing declines (> 80% reduced), leading to extirpations throughout large parts of its range (Case & Fisher, 2001; Wells, M., 1998). Loss of habitat due to ongoing development has contributed to declines in this species, however the most significant threat to this species is probably light pollution (Perry & Fisher, 2006). The California glossy snake is considered a SSC by the CDFW.

***Findings:*** The upper Santa Ana River and its tributaries contain habitat suitable for California glossy snake and this species has recently (2013-15) been documented in several locations along the Santa Ana River and Lytle Creek. Per the literature review, the nearest documented California glossy snake occurrence (2014) is approximately 3 miles northwest of the project site, along Greenspot Road. This area north of the Santa Ana River Wash represents one of the few areas in the region where this species has been documented and Mr. Smith has observed California glossy snakes within and adjacent the upper Santa Ana River Wash from 2013-2015. Potentially suitable habitat for this species exists within the project site and throughout the lower portions of Mill Creek as well.

### **3.2.7 USFWS Designated Critical Habitat**

#### ***SBKR Critical Habitat***

The 2002 critical habitat rule for SBKR defined four (4) PCEs that are essential to the conservation of SBKR. These PCEs are as follows:

- 1) Soil series consisting predominantly of sand, loamy sand, sandy loam, or loam;
- 2) Alluvial sage scrub and associated vegetation, such as coastal sage scrub and chamise chaparral, with a moderately open canopy;
- 3) River, creek, stream, and wash channels; alluvial fans; floodplains; floodplain benches and terraces; and historic braided channels that are subject to dynamic geomorphological and hydrological processes typical of fluvial systems within the historical range of the San Bernardino kangaroo rat; and
- 4) Upland areas proximal to floodplains with suitable habitat.

The 2002 critical habitat designation for the SBKR encompasses 33,295 acres of land in Riverside and San Bernardino counties, California. The areas designated as critical habitat for SBKR are identified in four separate units. The four units are within the geographical range of the SBKR and support the habitat the species requires for foraging, sheltering, reproduction, rearing of young, dispersal, and genetic exchange. The project site falls within the Santa Ana River critical habitat Unit (Unit 1), located in San Bernardino County. Unit 1 encompasses approximately 8,935 ac, and includes the Santa Ana River and portions of City, Plunge, and Mill Creeks. It is bounded by Seven Oaks Dam to the northeast. Although

Seven Oaks Dam impedes sediment transport and reduces the magnitude, frequency, and extent of flood events, the system still retains partial fluvial dynamics because contributions from Mill Creek are not impeded by a dam or debris basin. This unit contains upland refugia and tributaries that are occupied by the species, active hydrological channels, floodplain terraces, and areas of habitat immediately adjacent to floodplain terraces.

***Findings:*** The entire project site is mapped within Unit 1 of designated SBKR critical habitat (Figure 3). Approximately 0.1 acres of the proposed project footprint will be restricted to areas currently comprised of existing structures. The remaining 0.39 acres of the proposed project footprint is within RAFSS habitat that still contains the PCEs for SBKR. Therefore, the project will likely result in the loss of approximately 0.39 acres of suitable SBKR critical habitat.

The proposed construction would affect approximately 0.39 acres of SBKR critical habitat. As such, the project would affect approximately 0.004 percent of the total 8,935 acres of SBKR critical habitat that comprise Unit 1.

### ***Santa Ana sucker (SAS) Critical Habitat***

The SAS is a sucker fish found only in a handful of rivers in southern California. The SAS's range is extremely restricted; they are native only to the Los Angeles, San Gabriel, Santa Ana, and Santa Clara River systems in Southern California. Populations have been lost from several parts of the rivers, so that they now only live in the upper portion of the Los Angeles and San Gabriel drainages, and the lower part of the Santa Ana River in Reaches 4 thru 2, especially in areas with additional treated wastewater effluent from sewage treatment plants. Limiting factors for the SAS are hydrology and sediment. The USFWS listed the SAS as threatened on April 12, 2000 (65 FR 19686 19698) and designated critical habitat for this species on February 26, 2004 (69 FR 8839 8861) which was revised on January 4, 2005 (70 FR 425). On December 9, 2009, the USFWS proposed another revised critical habitat designation for the SAS (70 FR 426 458), which was finalized December 14, 2010 (75 FR 77962 78027). The December 2010 final rule designated a total of 9,331 acres as SAS critical habitat within portions of creeks and rivers in San Bernardino, Los Angeles, and Riverside counties, California. Unit 1 encompasses portions of the Santa Ana River in San Bernardino, Riverside, and Orange Counties including upper, mainstem and lower portions of the Santa Ana River as well as portions of the Rialto Drain and Sunnyslope Creek. Unit 1 is divided into three (3) subunits 1A, 1B and 1C.

One of the key issues identified in earlier rules of the USFWS to designate critical habitat for the SAS was sediment load and sediment transport. Per the sediment transport analysis prepared by EIP Associates in their evaluation of the final rule to designate critical habitat for the SAS, the primary sediment sources for Reaches 3 and 4 of the Santa Ana River originate from Mill Creek, Plunge Creek, City Creek Lytle /Cajon Creek and Reche Canyon Channel (April 26, 2004 Comments to USFWS submitted by SBVMWD, Western Municipal Water District of Riverside County, San Bernardino County Flood Control District). As sediments travel down the Santa Ana River, much of the sediment load falls out at the I-10 freeway overcrossing. The Corps installed dissipation structures to protect the I-10 freeway overcrossing of the Santa Ana River. As designed, the dissipaters slow the surface flow velocities down. The results are sediment deposition at the dissipaters and downstream channel bed degradation.

In 2004, EIP Associates evaluated the Final Rule to designate critical habitat for the SAS (69 FR 8839). In this evaluation EIP showed that the channel degradation in a 10-mile stretch downstream of the dissipaters currently averages 0.6 inches of degradation per year. The EIP evaluation also showed that even with the 40% reduction in sediment load caused by the Seven Oaks Dam, the remaining sediment

sources were substantial. The conclusion of EIP's evaluation was that substantial sediment sources exist in the tributaries identified above and that transport of those sediments into occupied SAS habitat in the Santa Ana River is sufficient to sustain their populations.

***Findings:*** The project site is adjacent (south) to Subunit 1A, which is not occupied by the SAS, but is essential to its conservation (Figure 3). 1,559 acres of critical habitat have been designated as part of Subunit 1A. Subunit 1A provides essential sources of water and coarse sediment to occupied portions of the unit downstream. Upper Santa Ana River Subunit 1A is located near the Cities of Highland, Mentone, and Redlands in San Bernardino County, California. This subunit includes: 7 mi (12 km) of City Creek (measured from its confluence with the SAR), 12 mi (19 km) of Mill Creek (measured from its confluence with the SAR), and 10 mi (17 km) of the SAR from below the Seven Oaks Dam to near Tippecanoe Avenue.

Per the USFWS critical habitat overlay, the project site is situated south and outside of the Upper Santa Ana River Subunit 1A critical habitat for SAS. Therefore, the project will not result in any loss or adverse modification of SAS critical habitat.

### **3.2.8 Jurisdictional Waters**

The proposed project site is within the Mill Creek floodplain. In October 2014, a formal Jurisdictional Delineation (JD) was conducted by Jericho's Shay Lawrey for the entire SBVWCD Mill Creek Spreading Grounds, which included the Diversion Project area (Jericho 2014). The result of the 2014 JD analysis was that all Mill Creek Water Conservation Facilities (including the diversion structure) located north of the flood wall levee are within the active Mill Creek floodplain and therefore, are considered Waters of the U.S. (Jericho 2014). Mill Creek is a perennial stream that is tributary to the Santa Ana River and is considered a jurisdictional water subject to the Clean Water Act (CWA) and Fish and Game Code under the jurisdictions of the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and CDFW respectively. Any project related impacts to Mill Creek will likely require a Streambed Alteration Agreement from the CDFW, and CWA Sections 401/404 permits from the RWQCB and USACE respectively.

## **4 Relevant Regulatory Agencies**

### **4.1 U.S. Army Corps of Engineers**

The USACE regulates discharges of dredged or fill material into waters of the United States. Waters of the United States include wetlands and non-wetland bodies of water that meet specific criteria. The USACE's regulatory jurisdiction pursuant to Section 404 of the Federal CWA is founded on a connection, or nexus, between the water body in question and interstate commerce. This connection may be direct through a tributary system linking a stream channel with traditional navigable waters used in interstate or foreign commerce, or may be indirect, through a nexus identified in the USACE regulations. One of the mechanisms adopted by Congress to achieve restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters is a prohibition on the discharge of any pollutants, including dredged or fill material, into "navigable waters" except in compliance with other specified sections of the Act.

### **4.2 Regional Water Quality Control Board**

The RWQCB's regulatory jurisdiction is pursuant to Section 401 of the Federal CWA. The RWQCB typically regulates discharges of dredged or fill material into *Waters of the United States*, however they also have regulatory authority over waste discharges into Waters of the State, which may be isolated,

under the Porter-Cologne Water Quality Control Act issued by the State Water Resources Board. In the absence of a nexus with the USACE, the Regional Board requires the submittal of a Waste Discharge Requirement (WDR) application, which must include a copy of the project Stormwater Pollution Prevention Plan (SWPPP) and a copy of the project Water Quality Management Plan (WQMP), otherwise called a Standard Urban Stormwater Management Plan (SUSMP). The Regional Board's role is to ensure that disturbances in the stream channel do not cause water quality degradation.

### **4.3 California Department of Fish and Wildlife (formerly Fish and Game)**

Unlike the USACE, CDFW regulates not only the discharge of dredged or fill material, but all activities that alter streams and lakes and their associated habitats. The CDFW, through provisions of the California Fish and Game Code (Sections 1601-1603), is empowered to issue agreements for any alteration of a river, stream, or lake where fish or wildlife resources may be adversely affected. Streams (and rivers) are defined by the presence of a channel bed and banks, and at least an intermittent flow of water. The CDFW typically extends the limits of their jurisdiction laterally beyond the channel banks for streams that support riparian vegetation. In these situations, the outer edge of the riparian vegetation is generally used as the lateral extent of the stream and CDFW jurisdiction. CDFW regulates wetland areas only to the extent that those wetlands are a part of a river, stream, or lake as defined by CDFW.

Provisions within the California Fish and Game Code protect all native birds of prey and their nests (FGC §3503.5), and all non-game birds (other than those not listed as Fully Protected) that occur naturally in the State (§3800). The handful of species, such as the California condor, that are designated by the State as "fully protected" received this rare designation through special legislation. There is no mechanism allowed for CDFW to issue take authorization for a fully protected species. SSC is an informal designation used by CDFW for some declining wildlife species that are not proposed for listing as threatened or endangered, such as the burrowing owl. If a project proposes impacts to burrowing owl, then a Memorandum of Understanding issued by the CDFW is required to address and mitigate the proposed impacts.

### **4.4 U.S. Fish and Wildlife Service**

The USFWS, in coordination with the CDFW, State Fish and Game Code §3503.5 and §3800, administers the Migratory Bird Treaty Act (MBTA), which provides protection for nesting birds that are both residents and migrants, whether or not they are considered sensitive by resource agencies. The MBTA prohibits take of nearly all native birds. "Take" in this law has been construed by the courts much more narrowly than under the enacted ESA. Under the MBTA, "take" means only to kill, harm, or destroy individuals or eggs, or cause failure of a nesting effort. Permits are available through USFWS, but are generally only given for emergency repairs where potential loss of human life or safety is regulations are applied selectively by public agencies as a practical matter, as it would be impossible to pursue every action threatening any bird or nest. The most common situations in which MBTA is applied are: (1) as an additional regulatory requirement in projects which hold the potential for substantial environmental degradation; (2) as an additional tool when prosecuting willful violation of other biological resource regulations such as the ESA or hunting regulations; (3) to provide protection of colonially nesting species, such as herons, terns, and swallows; and (4) to provide protection of nesting birds of prey.

## 5 Conclusions and Recommendations

### 5.1 Sensitive Biological Resources

No State- and/or federally-listed threatened or endangered species were observed on site during the reconnaissance-level field survey. One sensitive species (San Diego pocket mouse) was observed on site during focused SBKR live-trapping efforts. Additionally, one of the sensitive habitats identified during the literature review (RAFSS) exists within the project site.

#### *San Bernardino kangaroo rat*

SBKR have been documented in the project vicinity and there is suitable habitat within the project area. However, focused trapping surveys were conducted on March 8<sup>th</sup> through the 12<sup>th</sup>, 2017., to determine the presence or absence of SBKR on site. The result of those surveys was negative for SBKR and this species is considered absent from the project site. The project **will not affect** this species. Although SBKR were not detected on site during focused survey efforts, the following measures are recommended to avoid and/or minimize any potential impacts to SBKR:

- Exclusion fence should be installed around the entire proposed project footprint, including all work areas, to exclude SBKR from entering the work zone from adjacent areas. Specifications for the fencing will be to the goal of SBKR exclusion and will be approved by the USFWS.
- A qualified biologist should perform a visual pre-construction survey within the construction footprint immediately prior to ground disturbing activities.
- An employee education program for all construction personnel will be developed and implemented by a biologist familiar with SBKR and its habitat. For the life of the Project, each employee (including temporary contractors and subcontractors) will receive a training/awareness program prior to conducting any work on the site.

#### *Coastal California gnatcatcher*

The State- and federally-listed threatened CAGN is documented to occur close to the project area. Furthermore, the PCEs for this species (RAFSS with proximal non-sage scrub habitats) are present within the project site and surrounding areas. Therefore, CAGN are assumed to be present adjacent the project area. The project **may affect, but is not likely to adversely affect** this species. Since there is a potential for indirect impacts to CAGN, such as habitat removal/alteration and other construction-related disturbances, consultation with the USFWS will likely be required. In addition, the following avoidance/minimization measures are recommended:

- Worker Environmental Awareness Program (WEAP) training should be developed and implemented by a biologist familiar with CAGN and its habitat and provided for all construction personnel. For the life of the project, each employee (including temporary contractors and subcontractors) will receive WEAP training prior to conducting any work on the site.
- The entire proposed project footprint including disturbance limits should be visually delineated prior to ground disturbance, using brightly colored flagging, orange construction fence, or similar



visual marker. All project activities shall be restricted to the work area and existing access roads and no personnel or equipment shall venture outside the marked boundaries.

- It is recommended that a qualified biologist be present on site to monitor all initial ground disturbance, rough grading, and work that could potentially affect sensitive biological resources that may occur within the project area.

### ***Burrowing Owl***

No BUOW individuals or sign have been observed within the vicinity of the subject property, nor have BUOW been historically (within the last 3 years) identified on or adjacent to the site. Based on information presented above, BUOW are considered absent from the proposed project area and there is no risk of the proposed project resulting in a “taking” of this species. No focused surveys for this species are recommended. However, as a matter of typical prudent procedures, a preconstruction survey for this species is recommended to verify that no BUOW have moved into the project area prior to the commencement of any proposed project activities.

### ***Western spadefoot and California glossy snake***

The western spadefoot and California glossy snake are both considered SSC by the CDFW. Both species have been documented and/or observed within the project vicinity, which is one of the few areas in the region where these species are still known to occur. Direct and indirect impacts to these species potentially resulting from the proposed project include direct take and habitat removal/alteration. Neither of these species are State- or federally-listed as threatened or endangered. Therefore, no State or federal “Take” permits would be required for impacts to these species, if present, and presence of these species would not be considered a constraint to the project. However, impacts to these species could be considered significant by a California Environmental Quality Act (CEQA) lead agency, such as the CDFW if they are present within the limits of land disturbance, and if the size and status of the population warrant a finding of significance under CEQA. Mitigation for significant impacts may include avoidance, relocation with monitoring, or purchase of offsite habitat containing this species to complement existing open space areas.

### ***Nesting birds***

Vegetation suitable for nesting birds does exist within the project site and adjacent areas. As discussed, most birds are protected by the MBTA. In general, impacts to all bird species (common and special status) can be avoided by conducting work outside of the nesting season, which is generally January/February to August/September, and by conducting a worker environmental awareness training. However, if all work cannot be conducted outside of nesting season, a project-specific Nesting Bird Management Plan can be prepared to determine suitable buffers. Preconstruction Nesting Bird Surveys are recommended prior to the commencement of any project activities that may occur within the nesting season (January to September), to avoid any potential project-related impacts to nesting birds within the project area.

## **5.2 USFWS Designated Critical Habitat**

The project site is within USFWS designated critical habitat for SBKR and approximately 0.39 acres of the proposed project footprint contains the PCEs described by the USFWS for SBKR critical habitat. Therefore, it is likely the project will result in the loss of 0.39 acres, or 0.004 percent of the total 8,935

acres of SBKR critical habitat that comprise Unit 1, consultation with the USFWS will likely be required.

### **5.3 Jurisdictional Waters**

Mill Creek is a jurisdictional feature subject to the CWA and FGC under the jurisdictions of the USACE, RWQCB, and CDFW respectively. The project site is located entirely within the Mill Creek floodplain (Jericho 2014). The project will result in permanent impacts to Mill Creek and permits or authorizations from the USACE, RWQCB, and/or CDFW will be required.

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## **TABLES**

**Table 1.**  
**Federally-listed as Threatened, Endangered, Proposed, or Candidate Species**  
**Documented in the *Redlands* and *Yucaipa*, USGS 7.5-minute Quadrangles,**  
**San Bernardino County, California**

Common Name	Scientific Name	Status	Documented Locally	Found Adjacent	Found on Site	Suitable Habitat	Determination of Project Affects
<b>Plants</b>							
marsh sandwort	<i>Arenaria paludicola</i>	FE/SE	No	No	No	No	No Affect
Nevin's barberry	<i>Berberis nevinii</i>	FE/SE	No	No	No	Yes	No Affect
salt marsh bird's-beak	<i>Chloropyron maritimum</i> <i>ssp. maritimum</i>	FE/SE	No	No	No	No	No Affect
slender-horned spineflower	<i>Dodecahema leptoceras</i>	FE/SE	Yes	No	No	Yes	No Affect; species not detected on site
Santa Ana River woollystar	<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	FE/SE	Yes	No	No	Yes	No Affect; species not detected on site
<b>Amphibians</b>							
Southern mountain yellow-legged frog	<i>Rana muscosa</i>	FE/SE	Yes	No	No	No	No Affect
<b>Birds</b>							
Western yellow-billed cuckoo	<i>Coccyzus americanus</i> <i>occidentalis</i>	FT/SE	No	No	No	No	No Affect
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE/SE	Yes	No	No	No	No Affect

Common Name	Scientific Name	Status	Documented Locally	Found Adjacent	Found on Site	Suitable Habitat	Determination of Project Affects
coastal California gnatcatcher	<i>Poliophtila californica californica</i>	FT	Yes	Yes	Unknown; no focused surveys conducted	Yes	May affect, but not likely to adversely affect; assumed present adjacent
least Bell's vireo	<i>Vireo bellii pusillus</i>	FE/SE	Yes	No	No	No	No Affect
<b>Mammals</b>							
San Bernardino kangaroo rat	<i>Dipodomys merriami parvus</i>	FE	Yes	No	No	Yes	No Affect; focused surveys were negative
Stephen's kangaroo rat	<i>Dipodomys stephensi</i>	FE/ST	No	No	No	No	No Affect
lesser long-nosed bat	<i>Leptonycteris yerbabuenae</i>	FE	No	No	No	No	No Affect

**Table 2. CNDDDB Sensitive Species Documented in the *Redlands* and *Yucaipa*, USGS 7.5-minute Quadrangles**

Scientific Name	Common Name	Listing Status Federal/ State	Other Listings	Habitat	Occurrence Potential
<i>Accipiter cooperii</i>	Cooper's hawk	None/ None	G5; S4; CDFW: WL	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	No suitable nesting habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Aimophila ruficeps canescens</i>	southern California rufous-crowned sparrow	None/ None	G5T3; S3; CDFW: WL	Resident in Southern California coastal sage scrub and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass & forb patches.	There is some suitable habitat for this species within the project area. However, this species typically frequents steep hillsides. Occurrence potential is <b>moderate</b> .
<i>Anniella pulchra pulchra</i>	silvery legless lizard	None/ None	G3G4T3T4Q; S3; CDFW: SSC	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. they prefer soils with a high moisture content.	There is suitable habitat for this species within the project area. Occurrence potential is <b>high</b> .
<i>Antrozous pallidus</i>	pallid bat	None/ None	G5; S3; CDFW: SSC	Deserts, grasslands, shrublands, woodlands & forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Due to the existing disturbances on site and the lack of suitable roosts, no suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Arenaria paludicola</i>	marsh sandwort	Endangered/ Endangered	G1; S1; CNPS: 1B.1	Marshes and swamps. Growing up through dense mats of <i>Typha</i> , <i>Juncus</i> , <i>Scirpus</i> , etc. in freshwater marsh. Sandy soil. 3-170 m.	The project area is outside the elevation range for this species and the habitats this species is associated with are not present within the project area. Occurrence potential is <b>low</b> .
<i>Arizona elegans occidentalis</i>	California glossy snake	None/ None	G5T2; S2; CDFW: SSC	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular Ranges, south to Baja California. Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	There is suitable habitat for this species within the project area. Occurrence potential is <b>high</b> .



Scientific Name	Common Name	Listing Status Federal/ State	Other Listings	Habitat	Occurrence Potential
<i>Aspidoscelis hyperythra</i>	orange-throated whiptail	None/ None	G5; S2S3; CDFW: WL	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. Prefers washes & other sandy areas with patches of brush & rocks. Perennial plants necessary for its major food-termites.	There is some suitable habitat for this species within the project area. However, the project site is near the known range limit for this species. Occurrence potential is <b>moderate</b> .
<i>Aspidoscelis tigris stejnegeri</i>	coastal whiptail	None/ None	G5T5; S3; CDFW: SSC	Found in deserts & semiarid areas with sparse vegetation and open areas. Also found in woodland & riparian areas. Ground may be firm soil, sandy, or rocky.	There is suitable habitat for this species within the project area. Occurrence potential is <b>high</b> .
<i>Athene cunicularia</i>	burrowing owl	None/ None	G4; S3; CDFW: SSC	Open, dry annual or perennial grasslands, deserts & scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Due to the lack of suitable burrows, burrow surrogates and host burrowers on site, no suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Berberis nevinii</i>	Nevin's barberry	Endangered/ Endangered	G1; S1; CNPS: 1B.1	Chaparral, cismontane woodland, coastal scrub, riparian scrub. On steep, N-facing slopes or in low grade sandy washes. 290-1575 m.	There is some suitable habitat for this species within the project area, but the nearest documented occurrence (2009) is approx. 7.5 miles SW of the project site. Occurrence potential is <b>low</b> .
<i>Bombus crotchii</i>	Crotch bumble bee	None/ None	G3G4; S1S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include <i>Antirrhinum</i> , <i>Phacelia</i> , <i>Clarkia</i> , <i>Dendromecon</i> , <i>Eschscholzia</i> , and <i>Eriogonum</i> .	Some food plants for species are present within the project area, but the nearest documented occurrence (1977) is approx. 5.2 miles S of the project site. Occurrence potential is <b>low</b> .
<i>Buteo swainsoni</i>	Swainson's hawk	None/ Threatened	G5; S3	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	The project site is outside the known breeding range for this species. Occurrence potential is <b>low</b> .

Scientific Name	Common Name	Listing Status Federal/ State	Other Listings	Habitat	Occurrence Potential
<i>Calochortus plummerae</i>	Plummer's mariposa-lily	None/ None	G4; S4; CNPS: 4.2	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest. Occurs on rocky and sandy sites, usually of granitic or alluvial material. Can be very common after fire. 60-2500 m.	There is some suitable habitat for this species within the project area and this species has been documented within approx. 1.2 miles S of the project site. Occurrence potential is <b>moderate</b> .
Canyon Live Oak Ravine Forest	Canyon Live Oak Ravine Forest	None/ None	G3; S3.3		The habitat does not exist within the project area.
<i>Carolella busckana</i>	Busck's gallmoth	None/ None	G1G3; SH		Species lacks sufficient information to make a determination.
<i>Centromadia pungens</i> ssp. <i>laevis</i>	smooth tarplant	None/ None	G3G4T2; S2; CNPS: 1B.1	Valley and foothill grassland, chenopod scrub, meadows and seeps, playas, riparian woodland. Alkali meadow, alkali scrub; also in disturbed places. 5-1170 m.	The habitats this species is associated with are not present within the project area. Occurrence potential is <b>low</b> .
<i>Chaetodipus fallax fallax</i>	northwestern San Diego pocket mouse	None/ None	G5T3T4; S3S4; CDFW: SSC	Coastal scrub, chaparral, grasslands, sagebrush, etc. in western San Diego Co. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	This species is <b>present</b> within the project area.
<i>Chloropyron maritimum</i> ssp. <i>maritimum</i>	salt marsh bird's-beak	Endangered/ Endangered	G4?T1; S1; CNPS: 1B.2	Marshes and swamps, coastal dunes. Limited to the higher zones of salt marsh habitat. 0-10 m.	The project area is outside the elevation range for this species and the habitats this species is associated with are not present within the project area. Occurrence potential is <b>low</b> .
<i>Chorizanthe parryi</i> var. <i>parryi</i>	Parry's spineflower	None/ None	G3T3; S3; CNPS: 1B.1	Coastal scrub, chaparral, cismontane woodland, valley and foothill grassland. Dry slopes and flats; sometimes at interface of two vegetation types, such as chaparral and oak woodland; dry, sandy soils. 225-1220 m.	There is some suitable habitat for this species within the project area, and this species has been documented (2006) in the immediate vicinity. Occurrence potential is <b>high</b> .
<i>Chorizanthe xanti</i> var. <i>leucotheca</i>	white-bracted spineflower	None/ None	G4T3; S3; CNPS: 1B.2	Mojavean desert scrub, pinyon-juniper woodland, coastal scrub (alluvial fans). Sandy or gravelly places. 300-1200 m.	There is some suitable habitat for this species within the project area and this species has been documented within approx. 1.5 miles NE of the project site. Occurrence potential is <b>moderate</b> .

Scientific Name	Common Name	Listing Status Federal/ State	Other Listings	Habitat	Occurrence Potential
<i>Coccyzus americanus occidentalis</i>	western yellow-billed cuckoo	Threatened/ Endangered	G5T2T3; S1	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, w/ lower story of blackberry, nettles, or wild grape.	No suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Crotalus ruber</i>	red-diamond rattlesnake	None/ None	G4; S3; CDFW: SSC	Chaparral, woodland, grassland, & desert areas from coastal San Diego County to the eastern slopes of the mountains. Occurs in rocky areas & dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	There is suitable habitat for this species within the project area. Occurrence potential is <b>high</b> .
<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	Peruvian dodder	None/ None	G5T4T5; SH; CNPS: 2B.2	Marshes and swamps (freshwater). Freshwater marsh. 15-280 m.	The project area is outside the elevation range for this species and the habitats this species is associated with are not present within the project area. Occurrence potential is <b>low</b> .
<i>Diadophis punctatus modestus</i>	San Bernardino ringneck snake	None/ None	G5T2T3Q; S2?	Most common in open, relatively rocky areas. Often in somewhat moist microhabitats near intermittent streams. Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous veg.	There is suitable habitat for this species within the project area. Occurrence potential is <b>high</b> .
<i>Dipodomys merriami parvus</i>	San Bernardino kangaroo rat	Endangered/ None	G5T1; S1; CDFW: SSC	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains. Needs early to intermediate seral stages.	There is suitable habitat for this species within the project area and this species has been documented within 1 mile of the project site. However, recent focused surveys (March 2017) conducted for this species within the project area were negative. This species is considered <b>absent</b> from the project site.
<i>Dipodomys stephensi</i>	Stephens' kangaroo rat	Endangered/ Threatened	G2; S2	Primarily annual & perennial grasslands, but also occurs in coastal scrub & sagebrush with sparse canopy cover. Prefers buckwheat, chamise, brome grass & filaree. Will burrow into firm soil.	The project site is outside the known range for this species. Occurrence potential is <b>low</b> .

Scientific Name	Common Name	Listing Status Federal/ State	Other Listings	Habitat	Occurrence Potential
<i>Dodecahema leptoceras</i>	slender-horned spineflower	Endangered/ Endangered	G1; S1; CNPS: 1B.1	Chaparral, cismontane woodland, coastal scrub (alluvial fan sage scrub). Flood deposited terraces and washes; associates include <i>Encelia</i> , <i>Dalea</i> , <i>Lepidospartum</i> , etc. Sandy soils. 200-765 m.	There is some suitable habitat for this species within the project area. However, the nearest documented occurrence (1992) is approx. 2.7 miles NW of the project site and this species has not been documented in Mill Creek. Furthermore, the project site was surveyed in April 2017 and no spineflower were detected. This species is considered <b>absent</b> from the project site.
<i>Elanus leucurus</i>	white-tailed kite	None/ None	G5; S3S4; CDFW: FP	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	No suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Empidonax traillii extimus</i>	southwestern willow flycatcher	Endangered/ Endangered	G5T2; S1	Riparian woodlands in Southern California.	No suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Eremophila alpestris actia</i>	California horned lark	None/ None	G5T4Q; S4; CDFW: WL	Coastal regions, chiefly from Sonoma Co. to San Diego Co. Also, main part of San Joaquin Valley & east to foothills. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	No suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	Santa Ana River woollystar	Endangered/ Endangered	G4T1; S1; CNPS: 1B.1	Coastal scrub, chaparral. In sandy soils on river floodplains or terraced fluvial deposits. 180-700 m.	There is suitable habitat for this species within the project area. However, recent focused surveys (April 2017) conducted for this species within the project area were negative. This species is considered <b>absent</b> from the project site.
<i>Eumops perotis californicus</i>	western mastiff bat	None/ None	G5T4; S3S4; CDFW: SSC	Many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral etc. Roosts in crevices in cliff faces, high buildings, trees & tunnels.	No suitable roosting habitat for this species exists in the project area. Occurrence potential is <b>low</b> .

Scientific Name	Common Name	Listing Status Federal/ State	Other Listings	Habitat	Occurrence Potential
<i>Icteria virens</i>	yellow-breasted chat	None/ None	G5; S3; CDFW: SSC	Summer resident; inhabits riparian thickets of willow & other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 feet of ground.	No suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Imperata brevifolia</i>	California satintail	None/ None	G4; S3; CNPS: 2B.1	Coastal scrub, chaparral, riparian scrub, Mojavean desert scrub, meadows and seeps (alkali), riparian scrub. Mesic sites, alkali seeps, riparian areas. 3-1495 m.	The only documented occurrence for this species within the vicinity is an 1891 collection from approx. 2.5 miles W of the project site and this occurrence has likely been extirpated. Occurrence potential is <b>low</b> .
<i>Lampropeltis zonata</i> ( <i>parvirubra</i> )	California mountain kingsnake (San Bernardino population)	None/ None	G4G5; S2?; CDFW: WL	Bigcone spruce & chaparral at lower elev. Black oak, incense cedar, Jeffrey pine & ponderosa pine at higher elevations. Well-lit canyons with rocky outcrops or rocky talus.	No suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Lanius ludovicianus</i>	loggerhead shrike	None/ None	G4; S4; CDFW: SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, & riparian woodlands, desert oases, scrub & washes. Prefers open country for hunting, with perches for scanning, and dense shrubs and brush for nesting.	There is suitable habitat for this species within the project area. Occurrence potential is <b>high</b> .
<i>Lasiurus xanthinus</i>	western yellow bat	None/ None	G5; S3; CDFW: SSC	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees, particularly palms. Forages over water and among trees.	No suitable roosting habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Lepidium virginicum</i> var. <i>robinsonii</i>	Robinson's pepper-grass	None/ None	G5T3; S3; CNPS: 4.3	Chaparral, coastal scrub. Dry soils, shrubland. 4-1435 m.	There is some suitable habitat for this species within the project area and this species has been documented within approx. 2 miles NW of the project site. Occurrence potential is <b>moderate</b> .

Scientific Name	Common Name	Listing Status Federal/ State	Other Listings	Habitat	Occurrence Potential
<i>Leptonycteris yerbabuenae</i>	lesser long-nosed bat	Endangered/ None	G4; S1	Arid regions such as desert grasslands and shrub land. Suitable day roosts (caves & mines) and suitable concentrations of food plants (columnar cacti & agaves) are critical resources. No maternity roosts known from California; may only be vagrant. Caves and mines are used as day roosts. Caves, mines, rock crevices, trees & shrubs, and abandoned buildings are used as night roosts for digesting meals. Nectar, pollen, and fruit eating bat; primarily feeding on agaves, saguaro, and organ pipe cactus.	The project site is outside the known range for this species. The only documented occurrence is thought to possibly be a vagrant. Occurrence potential is <b>low</b> .
<i>Malacothamnus parishii</i>	Parish's bush-mallow	None/ None	GXQ; SX; CNPS: 1A	Chaparral, coastal sage scrub. In a wash. 305-455 m.	The project area is outside the elevation range for this species. Occurrence potential is <b>low</b> .
<i>Monardella macrantha</i> ssp. <i>hallii</i>	Hall's monardella	None/ None	G5T3; S3; CNPS: 1B.3	Broadleaved upland forest, chaparral, lower montane coniferous forest, cismontane woodland, valley and foothill grassland. Dry slopes and ridges in openings. 700-1770 m.	The habitats this species is associated with are not present within the project area. Occurrence potential is <b>low</b> .
<i>Neotoma lepida intermedia</i>	San Diego desert woodrat	None/ None	G5T3T4; S3S4; CDFW: SSC	Coastal scrub of Southern California from San Diego County to San Luis Obispo County. Moderate to dense canopies preferred. They are particularly abundant in rock outcrops & rocky cliffs & slopes.	There is suitable habitat for this species within the project area. Occurrence potential is <b>high</b> .
<i>Nyctinomops femorosaccus</i>	pocketed free-tailed bat	None/ None	G4; S3; CDFW: SSC	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Rocky areas with high cliffs.	No suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Perognathus longimembris brevinasus</i>	Los Angeles pocket mouse	None/ None	G5T1T2; S1S2; CDFW: SSC	Lower elevation grasslands & coastal sage communities in and around the Los Angeles Basin. Open ground with fine sandy soils. May not dig extensive burrows, hiding under weeds & dead leaves instead.	There is some suitable habitat for this species within the project area. However, the project site is near the known range limit for this species. Occurrence potential is <b>moderate</b> .

Scientific Name	Common Name	Listing Status Federal/ State	Other Listings	Habitat	Occurrence Potential
<i>Phrynosoma blainvillii</i>	coast horned lizard	None/ None	G3G4; S3S4; CDFW: SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, & abundant supply of ants & other insects.	There is suitable habitat for this species within the project area. Occurrence potential is <b>high</b> .
<i>Polioptila californica californica</i>	coastal California gnatcatcher	Threatened/ None	G4G5T2Q; S2; CDFW: SSC	Obligate, permanent resident of coastal sage scrub below 2,500 feet in Southern California. Low, coastal sage scrub in arid washes, on mesas & slopes. Not all areas classified as coastal sage scrub are occupied.	There is suitable habitat for this species within the project area and this species has been documented in the immediate vicinity. Occurrence potential is <b>high</b> .
<i>Rana muscosa</i>	southern mountain yellow-legged frog	Endangered/ Endangered	G1; S1; CDFW: WL	Federal listing refers to populations in the San Gabriel, San Jacinto & San Bernardino Mountains (southern DPS). Northern DPS was determined to warrant listing as endangered, Apr 2014, effective Jun 30, 2014. Always encountered within a few feet of water. Tadpoles may require 2 - 4 years to complete their aquatic development.	This species requires a year-round water source, which is lacking within the project area. Therefore, no suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Rhinichthys osculus</i> ssp. 3	Santa Ana speckled dace	None/ None	G5T1; S1; CDFW: SSC	Headwaters of the Santa Ana and San Gabriel rivers. May be extirpated from the Los Angeles River system. Requires permanent flowing streams with summer water temps of 17-20° C. Usually inhabits shallow cobble and gravel riffles.	This species requires a year-round water source, which is lacking within the project area. Therefore, no suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Ribes divaricatum</i> var. <i>parishii</i>	Parish's gooseberry	None/ None	G4TX; SX; CNPS: 1A	Riparian woodland. Salix swales in riparian habitats. 65-300 m.	The project area is outside the elevation range for this species and the habitats this species is associated with are not present within the project area. Occurrence potential is <b>low</b> .
Riversidian Alluvial Fan Sage Scrub	Riversidian Alluvial Fan Sage Scrub	None/ None	G1; S1.1		This habitat exists within the project area.

Scientific Name	Common Name	Listing Status Federal/ State	Other Listings	Habitat	Occurrence Potential
<i>Salvadora hexalepis virgultea</i>	coast patch-nosed snake	None/ None	G5T4; S2S3; CDFW: SSC	Brushy or shrubby vegetation in coastal Southern California. Require small mammal burrows for refuge and overwintering sites.	There is suitable habitat for this species within the project area. Occurrence potential is <b>high</b> .
<i>Setophaga petechia</i>	yellow warbler	None/ None	G5; S3S4; CDFW: SSC	Riparian plant associations near water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	No suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Sidalcea hickmanii</i> ssp. <i>parishii</i>	Parish's checkerbloom	None/ Rare	G3T1; S1; CNPS: 1B.2	Chaparral, cismontane woodland, lower montane coniferous forest. Disturbed burned or cleared areas on dry, rocky slopes, in fuel breaks & fire roads along the mountain summits. 1095-2135 m.	The project area is outside the elevation range for this species and the habitats this species is associated with are not present within the project area. Occurrence potential is <b>low</b> .
<i>Sidalcea neomexicana</i>	Salt Spring checkerbloom	None/ None	G4; S2; CNPS: 2B.2	Playas, chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub. Alkali springs and marshes. 0-1530 m.	The habitats this species is associated with are not present within the project area. Occurrence potential is <b>low</b> .
Southern Coast Live Oak Riparian Forest	Southern Coast Live Oak Riparian Forest	None/ None	G4; S4		This habitat does not exist within the project area.
Southern Cottonwood Willow Riparian Forest	Southern Cottonwood Willow Riparian Forest	None/ None	G3; S3.2		This habitat does not exist within the project area.
Southern Riparian Forest	Southern Riparian Forest	None/ None	G4; S4		This habitat does not exist within the project area.
Southern Riparian Scrub	Southern Riparian Scrub	None/ None	G3; S3.2		This habitat does not exist within the project area.
Southern Sycamore Alder Riparian Woodland	Southern Sycamore Alder Riparian Woodland	None/ None	G4; S4		This habitat does not exist within the project area.
Southern Willow Scrub	Southern Willow Scrub	None/ None	G3; S2.1		This habitat does not exist within the project area.



Scientific Name	Common Name	Listing Status Federal/ State	Other Listings	Habitat	Occurrence Potential
<i>Spea hammondi</i>	western spadefoot	None/ None	G3; S3; CDFW: SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	There is some suitable habitat for this species within the adjacent areas, and this species has been documented (2017) within approx. 0.5 miles of the project site. Occurrence potential is <b>moderate – high</b> .
<i>Streptanthus campestris</i>	southern jewelflower	None/ None	G3; S3; CNPS: 1B.3	Chaparral, lower montane coniferous forest, pinyon-juniper woodland. Open, rocky areas. 900-2300 m.	The project area is outside the elevation range for this species and the habitats this species is associated with are not present within the project area. Occurrence potential is <b>low</b> .
<i>Taxidea taxus</i>	American badger	None/ None	G5; S3; CDFW: SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils & open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	The only documented occurrence for this species (1908) is approx. 2 miles SW of the project site. Due to the ongoing human disturbances within this area, it is unlikely that this species occurs here. Occurrence potential for this species is <b>low</b> .
<i>Thamnophis hammondi</i>	two-striped gartersnake	None/ None	G4; S3S4; CDFW: SSC	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 feet elevation. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	This species requires a year-round water source, which is lacking within the project area. Therefore, no suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .
<i>Vireo bellii pusillus</i>	least Bell's vireo	Endangered/ Endangered	G5T2; S2	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2,000 feet. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, <i>Baccharis</i> , mesquite.	No suitable habitat for this species exists in the project area. Occurrence potential is <b>low</b> .

## Coding and Terms

E = Endangered    T = Threatened    C = Candidate    FP = Fully Protected    SSC = Species of Special Concern    R = Rare

**State Species of Special Concern:** An administrative designation given to vertebrate species that appear to be vulnerable to extinction because of declining populations, limited acreages, and/or continuing threats. Raptor and owls are protected under section 3502.5 of the California Fish and Game code: "It is unlawful to take, possess or destroy any birds in the orders Falconiformes or Strigiformes or to take, possess or destroy the nest or eggs of any such bird."

**State Fully Protected:** The classification of Fully Protected was the State's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

### Global Rankings (Species or Natural Community Level):

G1 = Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2 = Imperiled – At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3 = Vulnerable – At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4 = Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 = Secure – Common; widespread and abundant.

**Subspecies Level:** Taxa which are subspecies or varieties receive a taxon rank (T-rank) attached to their G-rank. Where the G-rank reflects the condition of the entire species, the T-rank reflects the global situation of just the subspecies. For example: the Point Reyes mountain beaver, *Aplodontia rufa* ssp. *phaea* is ranked G5T2. The G-rank refers to the whole species range i.e., *Aplodontia rufa*. The T-rank refers only to the global condition of ssp. *phaea*.

### State Ranking:

S1 = Critically Imperiled – Critically imperiled in the State because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the State.

S2 = Imperiled – Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the State.

S3 = Vulnerable – Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the State.

S4 = Apparently Secure – Uncommon but not rare in the State; some cause for long-term concern due to declines or other factors.

S5 = Secure – Common, widespread, and abundant in the State.

### California Rare Plant Rankings (CNPS List):

1A = Plants presumed extirpated in California and either rare or extinct elsewhere.

1B = Plants rare, threatened, or endangered in California and elsewhere.

2A = Plants presumed extirpated in California, but common elsewhere.

2B = Plants rare, threatened, or endangered in California, but more common elsewhere.

3 = Plants about which more information is needed; a review list.

4 = Plants of limited distribution; a watch list.

### Threat Ranks:

.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 = Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

.3 = Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

## **FIGURES**

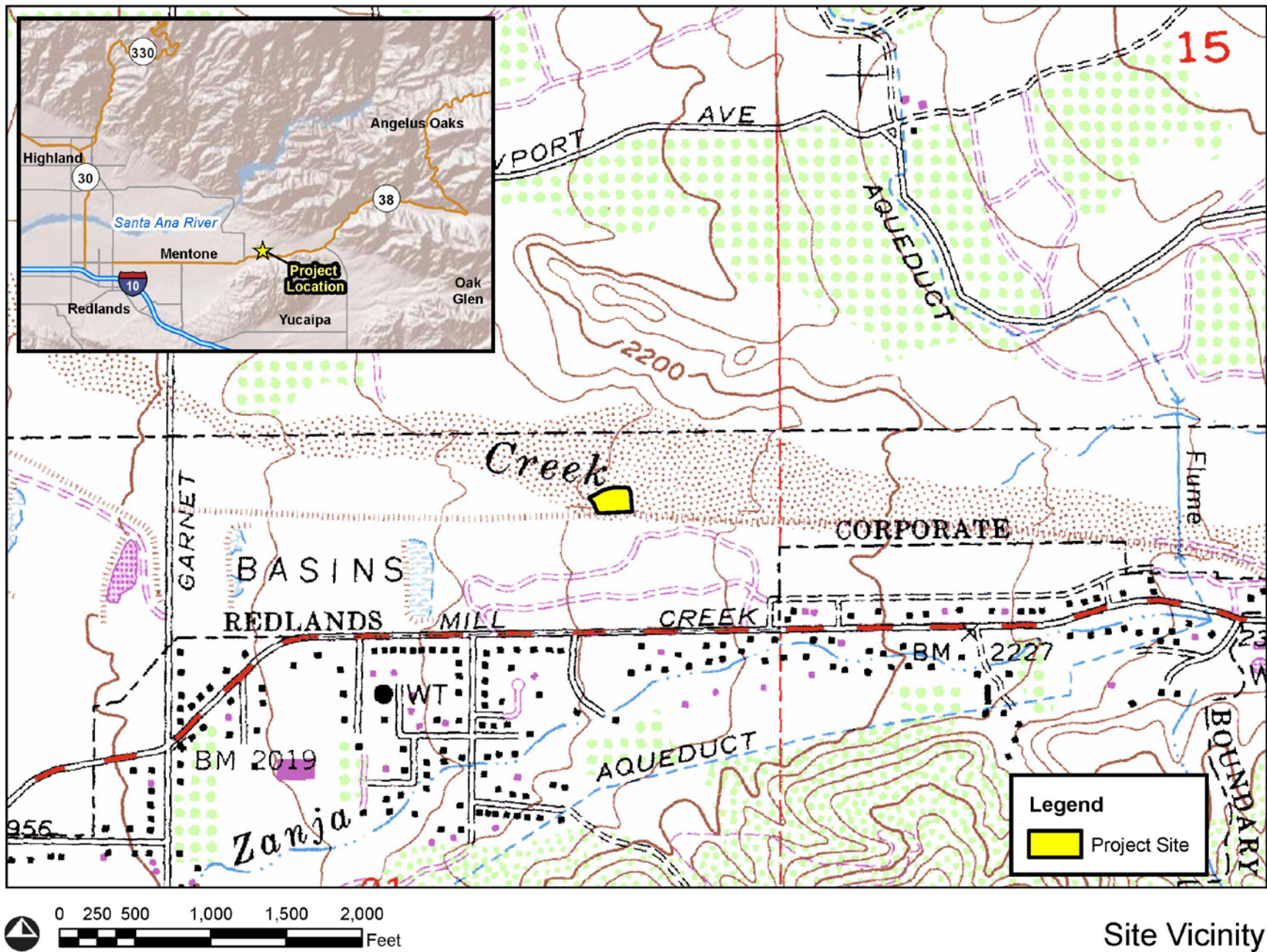


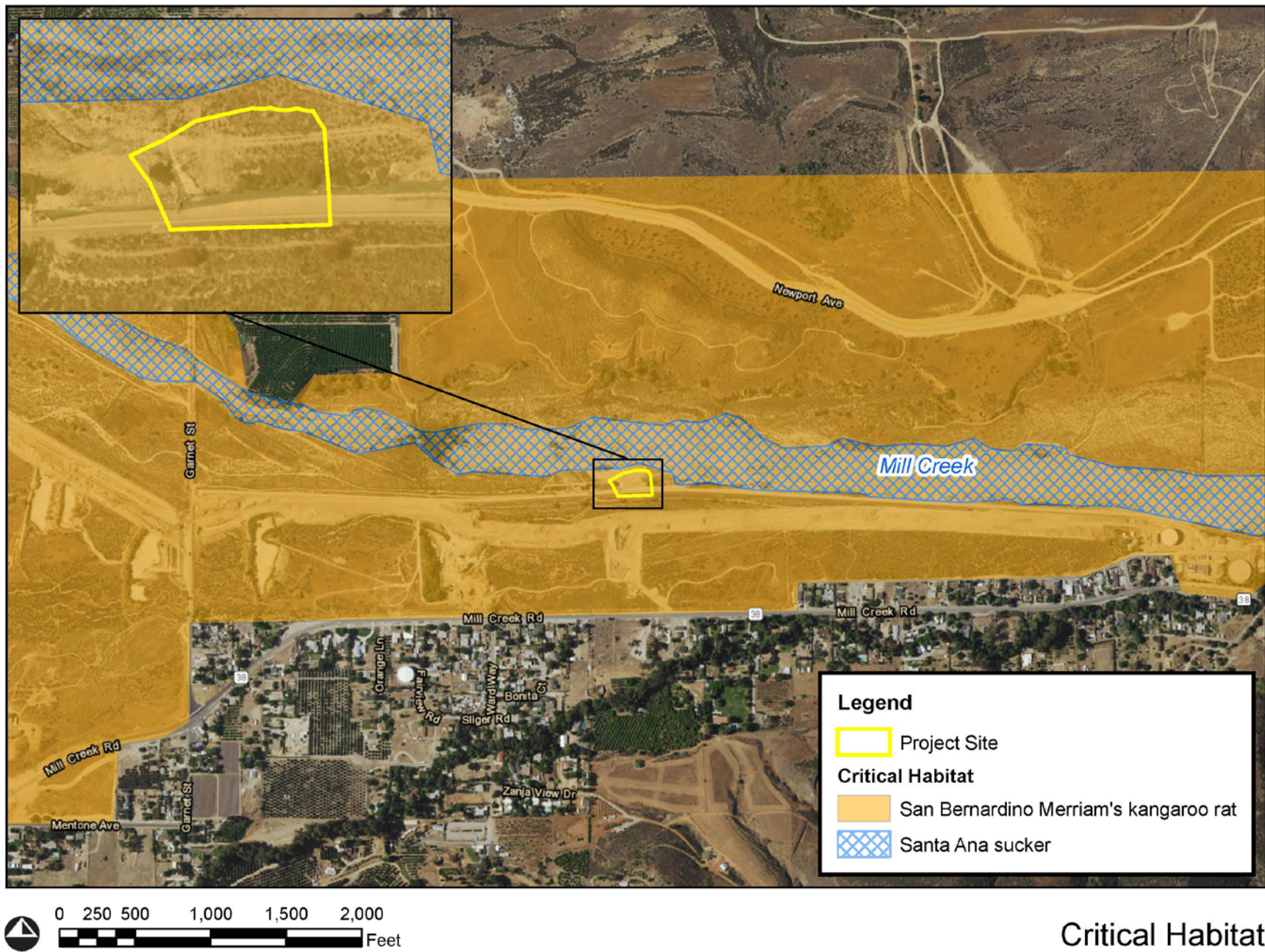
Figure 1





Figure 2





Critical Habitat

Figure 3



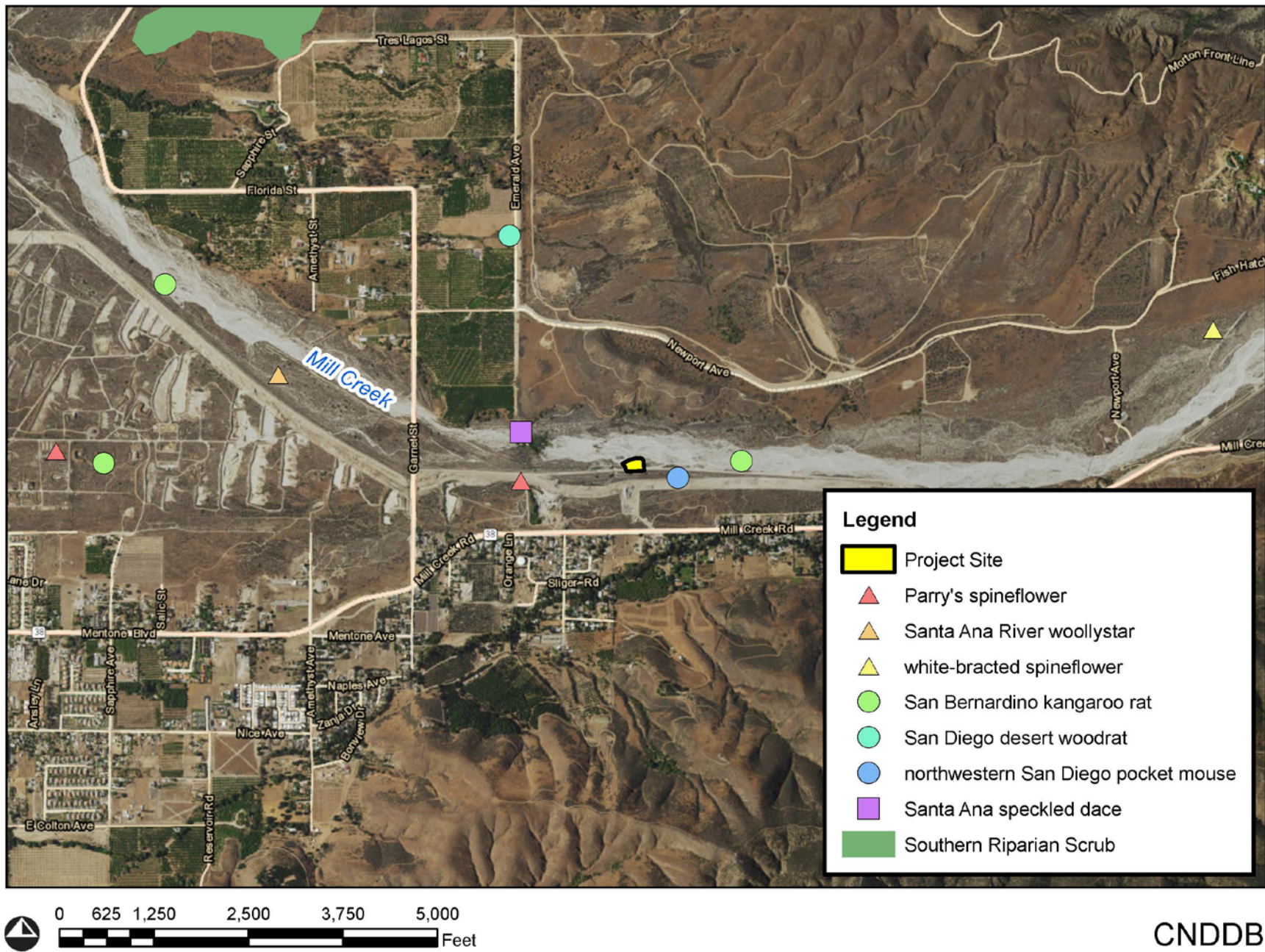
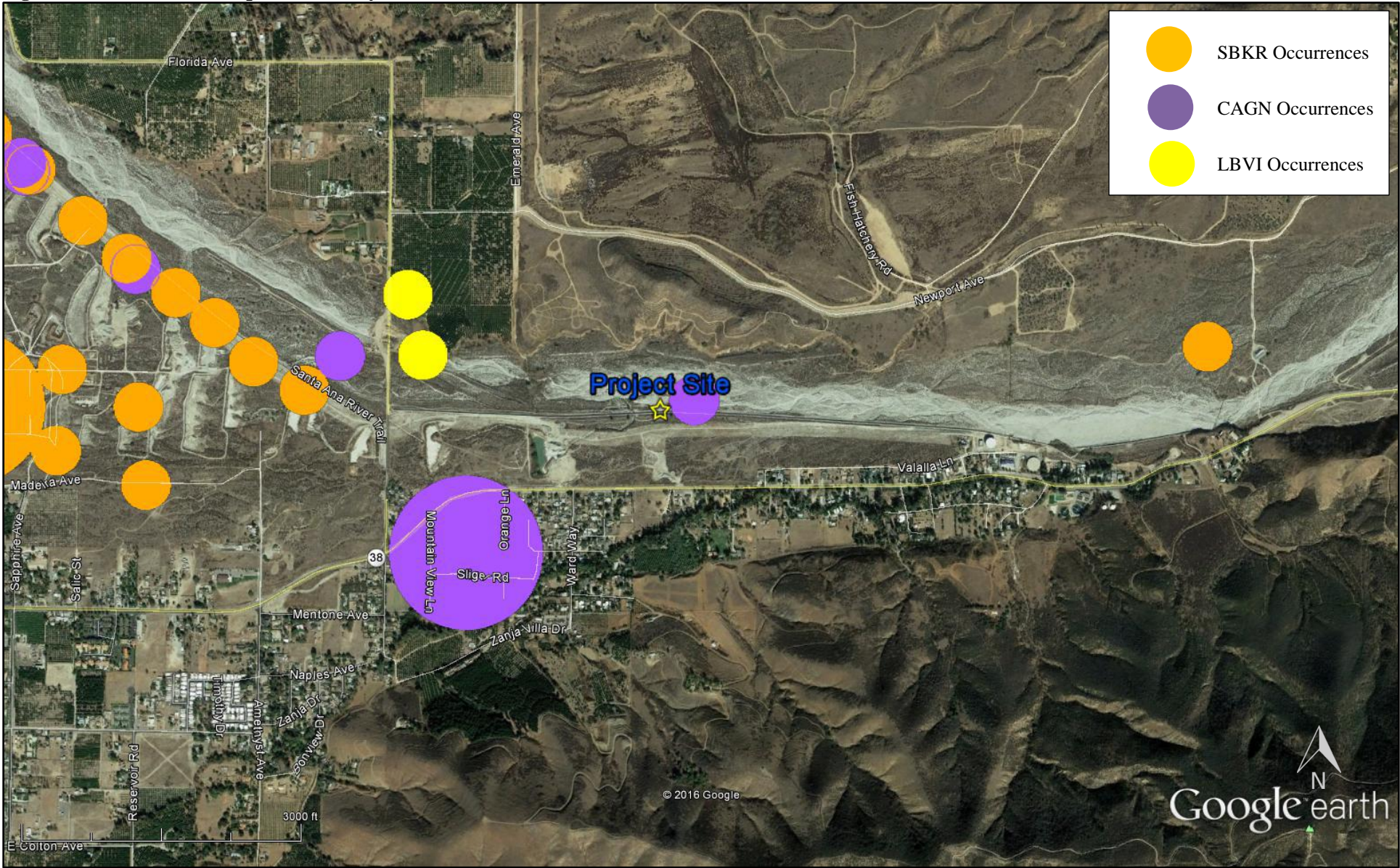


Figure 4



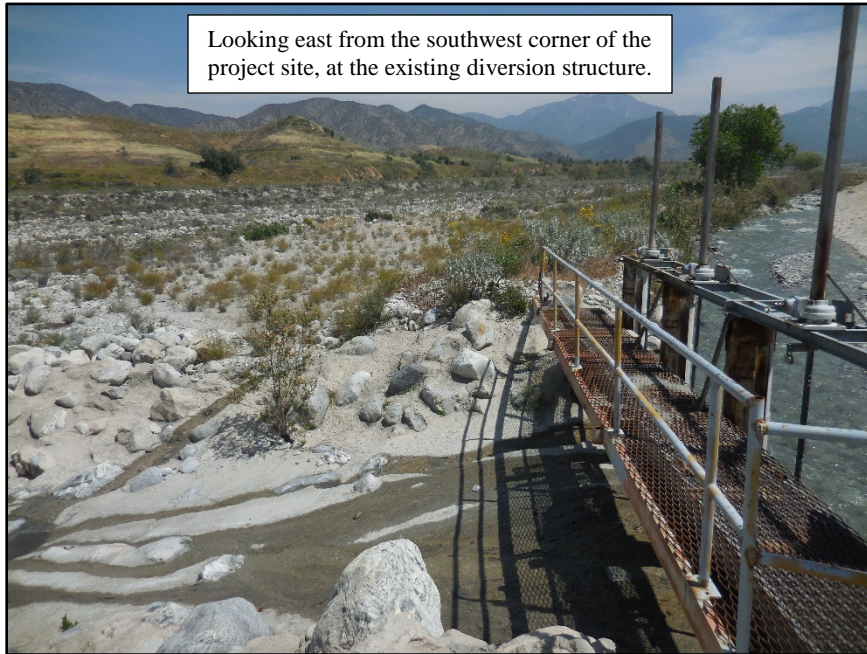
Figure 5. USFWS Listed Species Overlay





**SITE  
PHOTOGRAPHS**

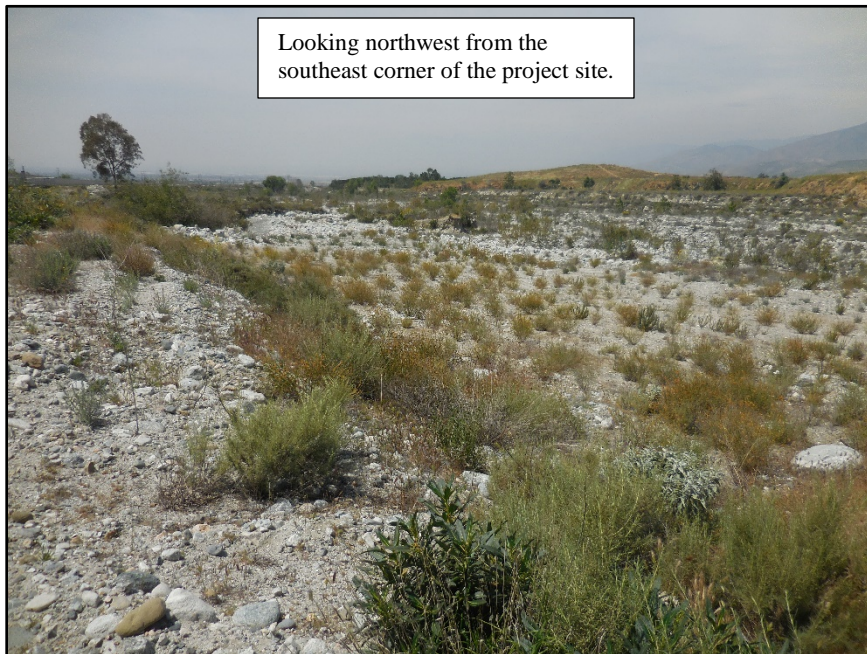




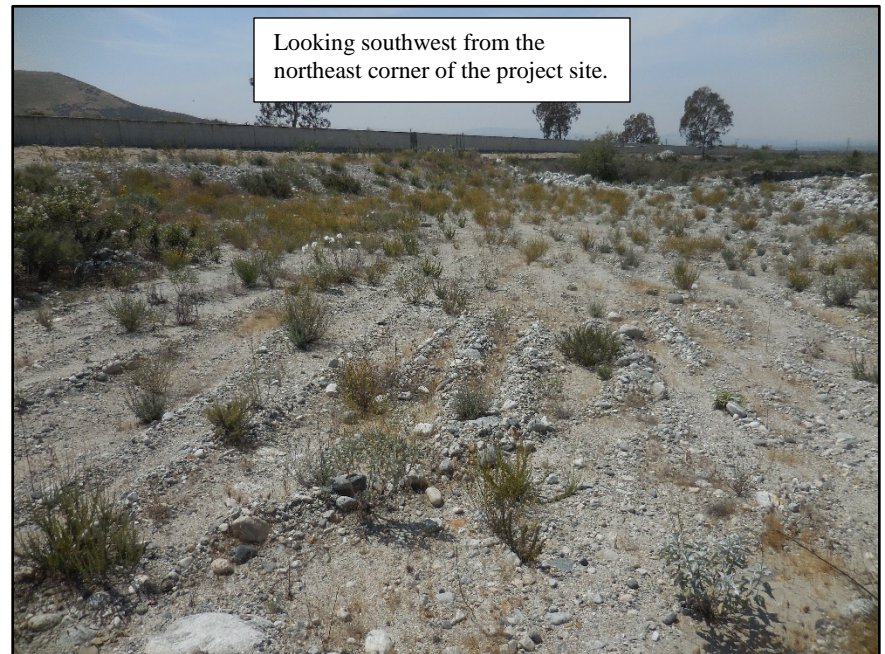
Looking east from the southwest corner of the project site, at the existing diversion structure.



Looking west along the existing access road, from the west side of the project site.



Looking northwest from the southeast corner of the project site.



Looking southwest from the northeast corner of the project site.



## **APPENDICES**

## Appendix A – Plant Species Observed

Scientific Name	Common Name
<i>Acmispon glaber</i>	deerweed
<i>Amsinckia menziesii</i>	common fiddleneck
<i>Argemone munita</i>	prickly poppy
<i>Artemisia californica</i>	coastal sagebrush
<i>Artemisia dracunculus</i>	tarragon
<i>Avena barbata</i>	slender wild oat
<i>Avena fatua</i>	common wild oat
<i>Baccharis salicifolia</i>	mulefat
<i>Bebbia juncea</i>	sweetbush
<i>Brickellia californica</i>	California brickellbush
<i>Bromus carinatus</i>	California brome
<i>Bromus diandrus</i>	ripgut grass
<i>Bromus madritensis</i> ssp. <i>rubens</i>	foxtail chess
<i>Calyptridium monandrum</i>	common pussypaws
<i>Chaenactis glabriuscula</i> var. <i>glabriuscula</i>	yellow pincushion
<i>Corethrogyne filaginifolia</i>	common sandaster
<i>Croton californicus</i>	California croton
<i>Croton sagiterus</i>	doveweed
<i>Cryptantha intermedia</i>	clearwater cryptantha
<i>Cylindropuntia californica</i>	California cholla
<i>Datura wrightii</i>	jimsonweed
<i>Encelia farinosa</i>	brittlebush
<i>Erigeron canadensis</i>	Canada horseweed
<i>Eriodictyon trichocalyx</i> var. <i>trichocalyx</i>	hairy yerba santa
<i>Eriogonum fasciculatum</i>	California buckwheat
<i>Erodium botrys</i>	longbeak stork's bill
<i>Erodium cicutarium</i>	red-stemmed filaree
<i>Erodium moschatum</i>	white-stemmed filaree
<i>Pseudognaphalium californicum</i>	California everlasting
<i>Hazardia squarrosa</i>	sawtooth goldenbush
<i>Hesperoyucca whipplei</i>	Our Lord's candle
<i>Heterotheca grandiflora</i>	telegraphweed
<i>Hirschfeldia incana</i>	shortpod mustard
<i>Lamarckia aurea</i>	goldentop
<i>Lepidospartum squamatum</i>	California broomsage
<i>Nicotiana glauca</i>	tree tocabbo
<i>Platanus racemosa</i>	California sycamore
<i>Populus fremontii</i> ssp. <i>fremontii</i>	Fremont cottonwood
<i>Ricinus communis</i>	castor bean
<i>Salsola tragus</i>	prickley Russian thistle
<i>Salvia apiana</i>	white sage
<i>Salvia mellifera</i>	black sage
<i>Sambucus nigra</i>	black elderberry
<i>Schismus barbatus</i>	Mediterranean grass
<i>Solanum douglassii</i>	Douglas' nightshade
<i>Vulpia myuros</i>	rattail fescue

## Appendix B – Wildlife Species Observed

Scientific Name	Common Name
<b>Class Aves</b>	<b>Birds</b>
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Calypte anna</i>	Anna's hummingbird
<i>Carduelis psaltria</i>	lesser goldfinch
<i>Carpodacus mexicanus</i>	house finch
<i>Charadrius valisineria</i>	killdeer
<i>Chordeiles minor</i>	common nighthawk
<i>Corvus corax</i>	common raven
<i>Falco sparverius</i>	American kestrel
<i>Geococcyx californianus</i>	greater roadrunner
<i>Melospiza melodia</i>	song sparrow
<i>Melospiza crissalis</i>	California towhee
<i>Mimus polyglottos</i>	Northern mockingbird
<i>Myiarchus cinerascens</i>	ash-throated flycatcher
<i>Passer domesticus</i>	house sparrow
<i>Pipilo maculatus</i>	spotted towhee
<i>Psaltirius minimus</i>	bushtit
<i>Regulus calendula</i>	ruby-crowned kinglet
<i>Salpinctes obsoletus</i>	rock wren
<i>Sayornis nigricans</i>	black phoebe
<i>Tyrannus verticalis</i>	Western kingbird
<i>Zenaidura macroura</i>	mourning dove
<b>Class Mammalia</b>	<b>Mammals</b>
<i>Chaetodipus fallax</i>	San Diego pocket mouse
<i>Peromyscus eremicus</i>	cactus mouse
<i>Peromyscus maniculatus</i>	deer mouse
<b>Class Reptilia</b>	<b>Reptiles</b>
<i>Aspidocelis tigris stegnegeri</i>	coastal whiptail
<i>Sceloporus occidentalis longipes</i>	Great Basin fence lizard
<i>Uta stansburiana elegans</i>	Western side-blotched lizard

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Appendix 3  
Cultural Resources Report

**IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES**

**MILL CREEK DIVERSION DEBRIS  
MANAGEMENT PROJECT**

**City of Redlands  
San Bernardino County, California**

**For Submittal to:**

San Bernardino Valley Water Conservation District  
1630 West Redlands Boulevard  
Redlands, CA 92373

*and*

United States Army Corps of Engineers  
Los Angeles District  
915 Wilshire Boulevard  
Los Angeles, CA 90017

**Prepared for:**

Jericho Systems, Inc.  
47 North First Street  
Redlands, CA 92373

**Prepared by:**

CRM TECH  
1016 East Cooley Drive, Suite A/B  
Colton, CA 92324

Bai “Tom” Tang, Principal Investigator  
Michael Hogan, Principal Investigator

March 31, 2017  
CRM TECH Contract No. 3185



**Title:** Identification and Evaluation of Historic Properties: Mill Creek Diversion  
Debris Management Project, City of Redlands, San Bernardino County,  
California

**Author(s):** Bai “Tom” Tang, Principal Investigator/Historian  
Deirdre Encarnación, Archaeologist/Report Writer  
Daniel Ballester, Archaeologist  
Nina Gallardo, Archaeologist/Native American Liaison

**Consulting Firm:** CRM TECH  
1016 East Cooley Drive, Suite A/B  
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**Date:** March 31, 2017

**For Submittal to:** San Bernardino Valley Water Conservation District  
1630 West Redlands Boulevard  
Redlands, CA 92373  
(909) 793-2503  
*and*  
United States Army Corps of Engineers  
Los Angeles District  
915 Wilshire Boulevard  
Los Angeles, CA 90017  
(213) 452-3333

**Prepared for:** Shay Lawrey  
Jericho Systems, Inc.  
47 North First Street  
Redlands, CA 92373  
(909) 307-5633

**USGS Quadrangle:** Yucaipa, Calif., 7.5’ quadrangle (Section 21, T1S R2W, San Bernardino  
Baseline and Meridian)

**Project Size:** Approximately one acre

**Keywords:** Eastern San Bernardino Valley region; Phase I historical/archaeological  
resources survey; no “historic properties,” “historical resources,” or “tribal  
cultural resources” affected

## MANAGEMENT SUMMARY

In February and March 2017, at the request of Jericho Systems, Inc., CRM TECH performed a cultural resources study for the proposed Mill Creek Diversion Debris Management Project in the easternmost portion of the City of Redlands, San Bernardino County, California. The Area of Potential Effects (APE) consists of three small tracts of vacant land containing the facilities involved in the undertaking. Measuring approximately one acre in total, the APE is located on the south bank of Mill Creek and along the Mill Creek Diversion Channel, roughly 0.54 miles east of Garnet Street and 0.16 miles north of State Route 38 (Mill Creek Road), within the northeast quarter of Section 21, T1S R2W, San Bernardino Baseline and Meridian.

The objective of the undertaking is the phased replacement of a manually-operated sluice/slide-type gate currently in use through the development of an improved water diversion system for the Mill Creek spreading basins that would reduce or prevent debris from accumulating at this diversion gate. The eastern portion of the APE represents the location of the new gate to be installed, the middle portion contains the existing gate, and the west portion will be the site of a 20'x46" corrugated pipe within the existing diversion canal to complete an all-weather access road to the new gate.

The study is a part of the environmental review process for the undertaking. The purpose of the study is to provide the United States Army Corps of Engineers (COE) and the San Bernardino Valley Water Conservation District (WCD), as the federal and local lead agencies for the undertaking, with the necessary information and analysis to determine whether the proposed undertaking would have an adverse effect on any "historic properties," as defined by 36 CFR 800.16(l), or "historical resources"/"tribal cultural resources," as defined by PRC §5020.1(j) and §21074, that may exist in or near the APE.

In order to identify such properties, CRM TECH conducted a historical/archaeological resources records search, pursued historical and geoarchaeological background research, contacted Native American representatives, and carried out an intensive-level field survey. Throughout these research procedures, no potential "historic properties," "historical resources," or "tribal cultural resources" were encountered within or adjacent to the APE, and the geoarchaeological analysis suggests that the subsurface sediments within the APE are low in sensitivity for prehistoric archaeological deposits.

Based on these findings, and pursuant to 36 CFR 800.4(d)(1) and Calif. PRC §21084.1-2, CRM TECH recommends to the COE and the WCD a conclusion that *no "historic properties," "historical resources," or "tribal cultural resources" will be affected by the proposed undertaking.* No further cultural resources investigation is recommended for the undertaking unless construction plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are encountered during any earth-moving operations associated with the undertaking, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

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## INTRODUCTION

In February and March 2017, at the request of Jericho Systems, Inc., CRM TECH performed a cultural resources study for the proposed Mill Creek Diversion Debris Management Project in the easternmost portion of the City of Redlands, San Bernardino County, California (Fig. 1). The Area of Potential Effects (APE) consists of three small tracts of vacant land containing the facilities involved in the undertaking (Figs. 2, 3). Measuring approximately one acre in total, the APE is located on the south bank of Mill Creek and along the Mill Creek Diversion Channel, roughly 0.54 miles east of Garnet Street and 0.16 miles north of State Route 38 (Mill Creek Road), within the northeast quarter of Section 21, T1S R2W, San Bernardino Baseline and Meridian (Figs. 2, 3).

The objective of the undertaking is the phased replacement of a manually-operated sluice/slide-type gate currently in use through the development of an improved water diversion system for the Mill Creek spreading basins that would reduce or prevent debris from accumulating at this diversion gate. The eastern portion of the APE represents the location of the new gate to be installed, the middle portion contains the existing gate, and the west portion will be the site of a 20'x46" corrugated pipe within the existing diversion canal to complete an all-weather access road to the new gate.

The study is a part of the environmental review process for the undertaking. The purpose of the study is to provide the United States Army Corps of Engineers (COE) and the San Bernardino Valley Water Conservation District (WCD), as the federal and local lead agencies for the undertaking, with the necessary information and analysis to determine whether the proposed undertaking would have an adverse effect on any "historic properties," as defined by 36 CFR

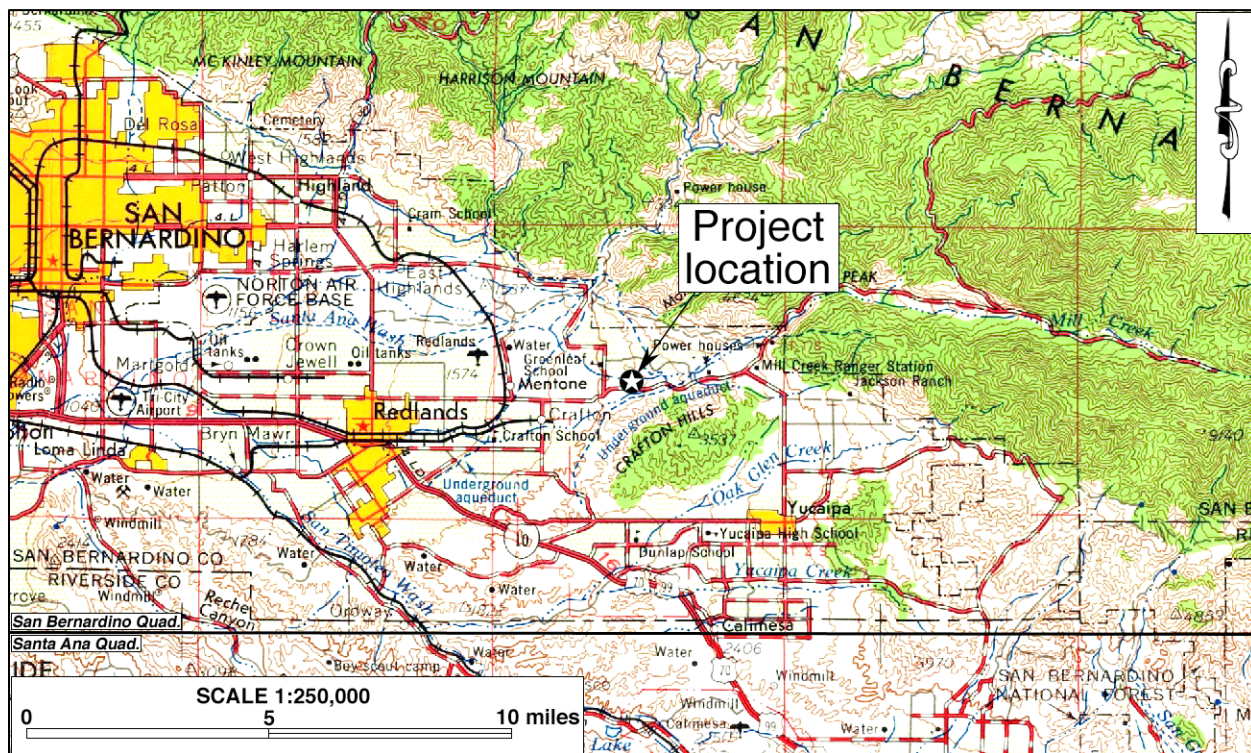


Figure 1. Project vicinity. (Based on USGS San Bernardino and Santa Ana, Calif., 1:250,000 quadrangles [USGS 1969; 1979])



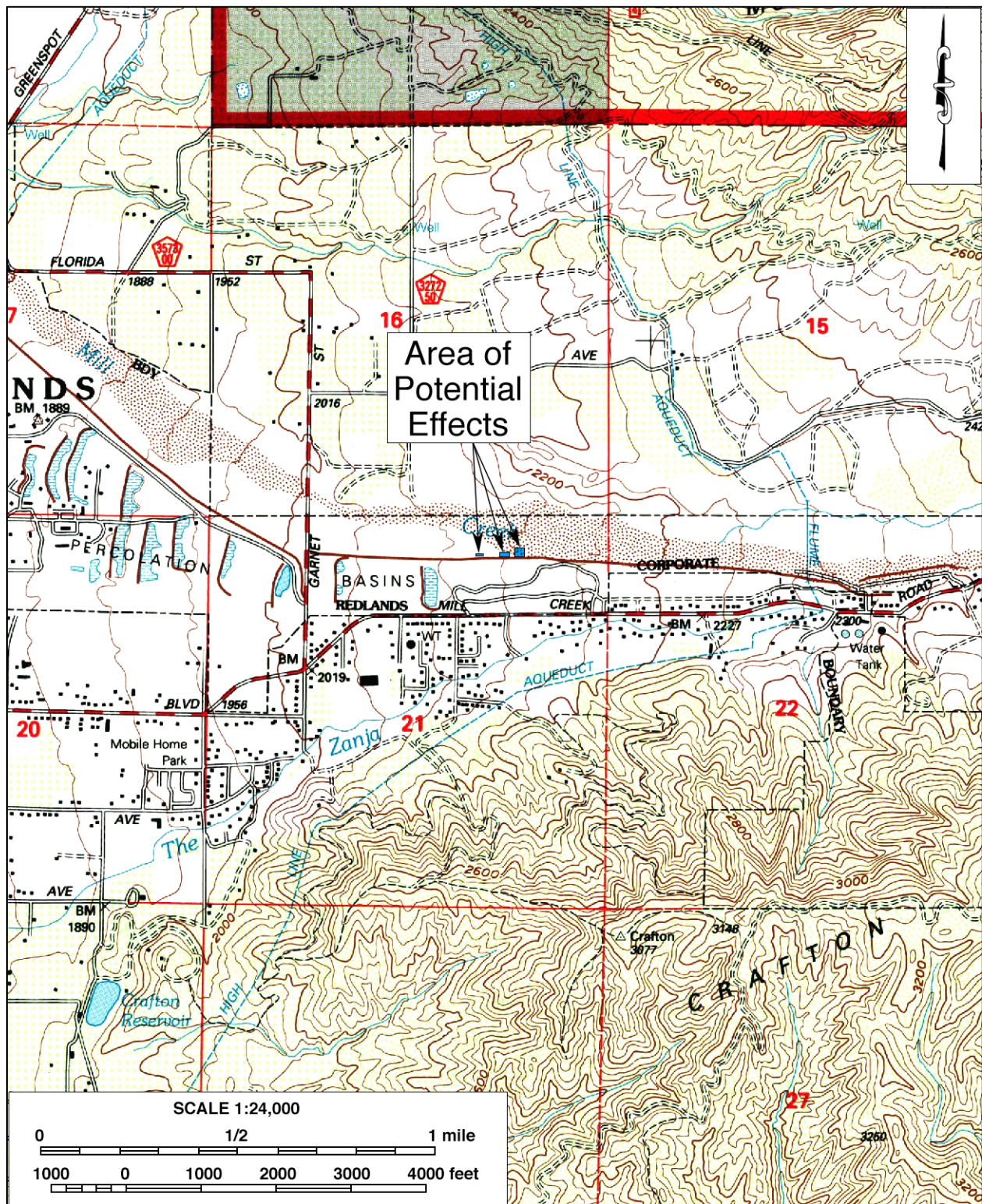


Figure 2. Area of Potential Effects. (Based on USGS Yucaipa, Calif., 1:24,000 quadrangle [USGS 1988])





Figure 3. Aerial view of the APE.



800.16(l), or “historical resources”/“tribal cultural resources,” as defined by PRC §5020.1(j) and §21074, that may exist in or near the APE.

In order to identify such properties, CRM TECH conducted a historical/archaeological resources records search, pursued historical and geoarchaeological background research, contacted Native American representatives, and carried out an intensive-level field survey. The following report is a complete account of the methods and results of the various avenues of research, and the final conclusion of the study.

## **SETTING**

### **CURRENT NATURAL SETTING**

The APE is situated in the eastern end of the San Bernardino Valley, a broad inland valley defined by the San Bernardino-San Gabriel Mountain Ranges on the north and a series of low rocky hills on the south. The environment of the region is characterized by its temperate Mediterranean climate, with the average maximum temperature in July reaching above 90° Fahrenheit and the average minimum temperature in January hovering around 35°. Annual rainfall is typically less than 20 inches, most of which occurs between November and March.

More specifically, the APE lies within the Mill Creek Wash, in a narrow canyon between the foot of the San Bernardino Mountains and the Crafton Hills. Elevations in the APE range from approximately 2,110 feet above mean sea level in the western portion to approximately 2,130 feet in the eastern portion. The ground surface in the APE has been extensively disturbed by past construction and maintenance activities associated with the existing diversion and intake structure, canal, and levee, and is clearly subject to fluvial erosion (Fig. 4). Vegetation observed in the APE



Figure 4. Typical landscape in the APE. (Photo taken on March 7, 2017; view to the southwest across the eastern portion)

consists solely of small shrubs and grasses, featuring a mixture of native plants such as buckwheat, mule fat, and sages with invasive species such as foxtails and wild mustard (Fig. 4).

## **CULTURAL SETTING**

### **Prehistoric Context**

The earliest evidence of human occupation in the so-called Inland Empire region was discovered below the surface of an alluvial fan in the northern portion of the Lakeview Mountains, overlooking the San Jacinto Valley, with radiocarbon dates clustering around 9,500 B.P. (Horne and McDougall 2008). Another site found near the shoreline of Lake Elsinore, close to the confluence of Temescal Wash and the San Jacinto River, yielded radiocarbon dates between 8,000 and 9,000 B.P. (Grenda 1997). Additional sites with isolated Archaic dart points, bifaces, and other associated lithic artifacts from the same age range have been found in the Cajon Pass area, typically atop knolls with good viewsheds (Basgall and True 1985; Goodman and McDonald 2001; Goodman 2002; Milburn et al. 2008).

The cultural prehistory of southern California has been summarized into numerous chronologies, including those developed by Chertkoff and Chertkoff (1984), Warren (1984), and others. Specifically, the prehistory of the Inland Empire region has been addressed by O'Connell et al. (1974), McDonald et al. (1987), Keller and McCarthy (1989), Grenda (1993), Goldberg (2001), and Horne and McDougall (2008). Although the beginning and ending dates of different cultural horizons vary regionally, the general framework of can be broken into three primary periods:

- Paeloindian Period (ca. 18,000-9,000 B.P.): Native peoples of this period created fluted spearhead bases designed to be hafted to wooden shafts. The distinctive method of thinning bifaces and spearhead preforms by removing long, linear flakes leaves diagnostic Paleoindian markers at tool-making sites. Other artifacts associated with the Paleoindian toolkit include choppers, cutting tools, retouched flakes, and perforators. Sites from this period are very sparse across the landscape and most are deeply buried.
- Archaic Period (ca. 9,000-1,500 B.P.): Archaic sites are characterized by abundant lithic scatters of considerable size with many biface thinning flakes, bifacial preforms broken during manufacture, and well-made groundstone bowls and basin metates. As a consequence of making dart points, many biface thinning waste flakes were generated at individual production stations, which is a diagnostic feature of Archaic sites.
- Late Prehistoric Period (ca. 1,500 B.P.-contact): Sites from this period typically contain small lithic scatters from the manufacture of small arrow points, expedient groundstone tools such as tabular metates and unshaped manos, wooden mortars with stone pestles, acorn or mesquite bean granaries, ceramic vessels, shell beads suggestive of extensive trading networks, and steatite implements such as pipes and arrow shaft straighteners.

### **Ethnohistoric Context**

The Redlands area lies in the traditional homeland of the Serrano Indians, although the Native population found in the area at the time of European contact are believed to have been Gabrielinos from the San Gabriel Valley, who were later succeeded by Mountain Cahuillas from the San Jacinto



and Santa Rosa Mountains around 1846 (Strong 1929:8). The Serranos' territory is centered at the San Bernardino Mountains, but also includes the southern rim of the Mojave Desert, extending from today's Victorville eastward to Twentynine Palms. The name "Serrano" was derived from a Spanish term meaning "mountaineer" or "highlander." The basic written sources on Serrano culture are Kroeber (1925), Strong (1929), and Bean and Smith (1978).

Prior to European contact, the Serranos were primarily gatherers and hunters, and occasional fishers, who settled mostly where flowing water emerged from the mountains. They were loosely organized into exogamous clans, which were led by hereditary heads, and the clans in turn were affiliated with one of two exogamous moieties. The exact nature of the clans, their structure, function, and number are not known, except that each clan was the largest autonomous political and landholding unit, the core of which was the patrilineage. There was no pan-tribal political union among the clans. Despite their linguistic differences from the Serranos, the Gabrielino and Cahuilla societies exhibited many of the same characteristics in social organization and material culture.

Although contact with Europeans may have occurred as early as 1771 or 1772, Spanish influence on Native lifeways in this area was negligible until the 1810s, when a mission *asistencia* was established on the western edge of present-day Redlands. Between then and the end of the mission era in 1834, almost all of the Native Americans in the area were removed to the nearby missions, including most of the Serranos in the San Bernardino Mountains. At present, most Serrano descendants are found on the San Manuel and the Morongo Indian Reservations, where they participate in ceremonial and political affairs with other Native American groups on an inter-reservation basis.

## **Historic Context**

The San Bernardino Valley, including the Redlands area, received its first European visitors in 1772, when a small force of Spanish soldiers traveled through the area under the command of Pedro Fages, the military *comandante* of Alta California. The name "San Bernardino" was bestowed on the valley when the San Bernardino *asistencia*, along with a mission rancho bearing the same name, came into being in 1819. In 1842, after secularization of the mission system, the Mexican authorities in Alta California granted Rancho San Bernardino, along with several other adjacent former mission ranchos, to members of a prominent Los Angeles family, the Lugos.

After nine years of cattle raising on their 35,000-acre domain, the Lugo family sold the entire rancho in 1851 to Amasa M. Lyman and Charles C. Rich, leaders of a Mormon colony that was to become today's City of San Bernardino. In the early 1880s, Frank E. Brown and Edward G. Judson purchased a portion of the rancho and, combining it with other land acquisitions in the vicinity, founded the town of Redlands. Thanks to the great southern California land boom of the 1880s, a thriving citrus industry that began in the 1870s, and especially the construction of the Bear Valley Reservoir in 1883-1884, the new town was an instant success. The City of Redlands, incorporated in 1888, soon became the best-known winter retreat in the nation. The influx of affluent winter residents from the eastern United States perpetuated for Redlands a popular image characterized by vast stretches of citrus groves surrounding the elegant mansions of the "gentlemen farmers."

Since the mid-20th century, with the increasing diversification of Redlands' economic livelihood, much of the once extensive citrus acreage has given way to urban expansion. Over the last few

decades of the 20th century, like many other former small rural towns in southern California, Redlands increasingly took on the characteristics of a “bedroom community.” Nevertheless, the “citrus culture” that developed during the late 19th and early 20th centuries continues to be an integral part of the City’s identity to the present time.\*

## **RESEARCH METHODS**

### **RECORDS SEARCH**

On March 6, 2017, CRM TECH archaeologist Nina Gallardo (see App. 1 for qualifications) completed the records search at the South Central Coastal Information Center (SCCIC), California State University, Fullerton. During the records search, Gallardo examined maps and records on file at the SCCIC for previously identified cultural resources and existing cultural resources reports within a one-mile radius of the APE. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or San Bernardino County Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory.

### **GEOARCHAEOLOGICAL ANALYSIS**

As part of the research procedures, CRM TECH archaeologist Deirdre Encarnación pursued geoarchaeological analysis to assess the APE’s potential for the deposition and preservation of subsurface cultural deposits from the prehistoric period, which cannot be detected through a standard surface archaeological survey. Sources consulted for this purpose included primarily topographic and geologic maps and reports pertaining to the surrounding area. Findings from these sources were used to develop a geomorphologic history of the APE and address geoarchaeological sensitivity of the vertical APE.

### **NATIVE AMERICAN PARTICIPATION**

On March 2, 2017, CRM TECH submitted a written request to the State of California’s Native American Heritage Commission (NAHC) for a records search in the commission’s sacred lands file. Following the NAHC’s recommendation and previously established consultation protocol, CRM TECH further contacted a total of 25 tribal representatives in the region, both in writing and by telephone, on March 9-29 for additional information on potential Native American cultural resources in the vicinity of the APE. Records of correspondence between CRM TECH and the Native American representatives are attached to this report as Appendix 2.

### **HISTORICAL BACKGROUND RESEARCH**

Historical background research was conducted by CRM TECH principal investigator/historian Bai “Tom” Tang (see App. 1 for qualifications) on the basis of published literature in local and regional history as well as historic maps and aerial photographs of the project vicinity. Among maps

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\* For further information on the history of Redlands, see Schuiling (1984), Moore (1987), and Burgess and Gonzales (2004).

consulted for this study were U.S. General Land Office (GLO) land survey plat map dated 1882 and U.S. Geological Survey (USGS) topographic maps dated 1901-1988. These maps are collected at the Science Library of the University of California, Riverside, and the California Desert District of the U.S. Bureau of Land Management, located in Moreno Valley. The aerial photographs, taken in 1938-2016, are available at the NETR Online website and through the Google Earth software.

## **FIELD SURVEY**

On March 7, 2017, CRM TECH archaeologist Daniel Ballester carried out the intensive-level field survey of the APE. The survey was conducted on foot by walking a series of parallel east-west transects spaced 10 meters (approximately 33 feet) apart wherever practicable. In areas where regular transects were impracticable due to dense vegetation growth, the survey was conducted as closely to the original course of the transects as possible. In this way, the ground surface in the entire APE was systematically and carefully examined for any evidence of human activities dating to the prehistoric or historic period (i.e., 50 years or older). Ground visibility was relatively poor (0-25%) due to the thick, low-lying vegetation growth at the time of the survey.

## **RESULTS AND FINDINGS**

### **RECORDS SEARCH**

According to SCCIC records, the entire APE was evidently included in an archaeological resources survey completed in 1987, but no historical/archaeological resources were previously recorded within or adjacent to the APE. Within a one-mile radius of the APE, SCCIC records indicate some 20 other previous studies on various tracts of land and linear features (Fig. 5). In all, more than half of the land within the scope of the records search has been surveyed, resulting in the identification of 49 historical/archaeological sites and one isolate—i.e., a locality with fewer than three artifacts—within the one-mile radius.

Only one of these previously recorded resources was of prehistoric—i.e., Native American—origin, specifically the isolate, described as a unifacial granite mano. All 49 of the recorded sites dated exclusively to the historic period. The overwhelming majority of these sites—27 in total—consisted of water conveyance features, including the historic Mill Creek Zanja, constructed in circa 1819-1820, and the Bear Valley High Line Aqueductm constructed in 1892, attesting to the importance of the Mill Creek to the agricultural development of the surrounding area.

In other sites in the vicinity of the APE included refuse scatters, roads, ranches, structural foundations, a bridge, and a survey bench marker. None of the 49 sites was found in the immediate vicinity of the APE, nor was the isolate. Therefore, none of these known cultural resources requires further consideration during this study.

### **GEOARCHAEOLOGICAL ANALYSIS**

According to available geologic maps, the entire APE lies upon sediments identified as *Qg*, or gravel and sand of stream channels (Dibblee 1974). These sediments are deposited by running water during relatively recent geologic times (USGS n.d.). While Native Americans undoubtedly used the Mill



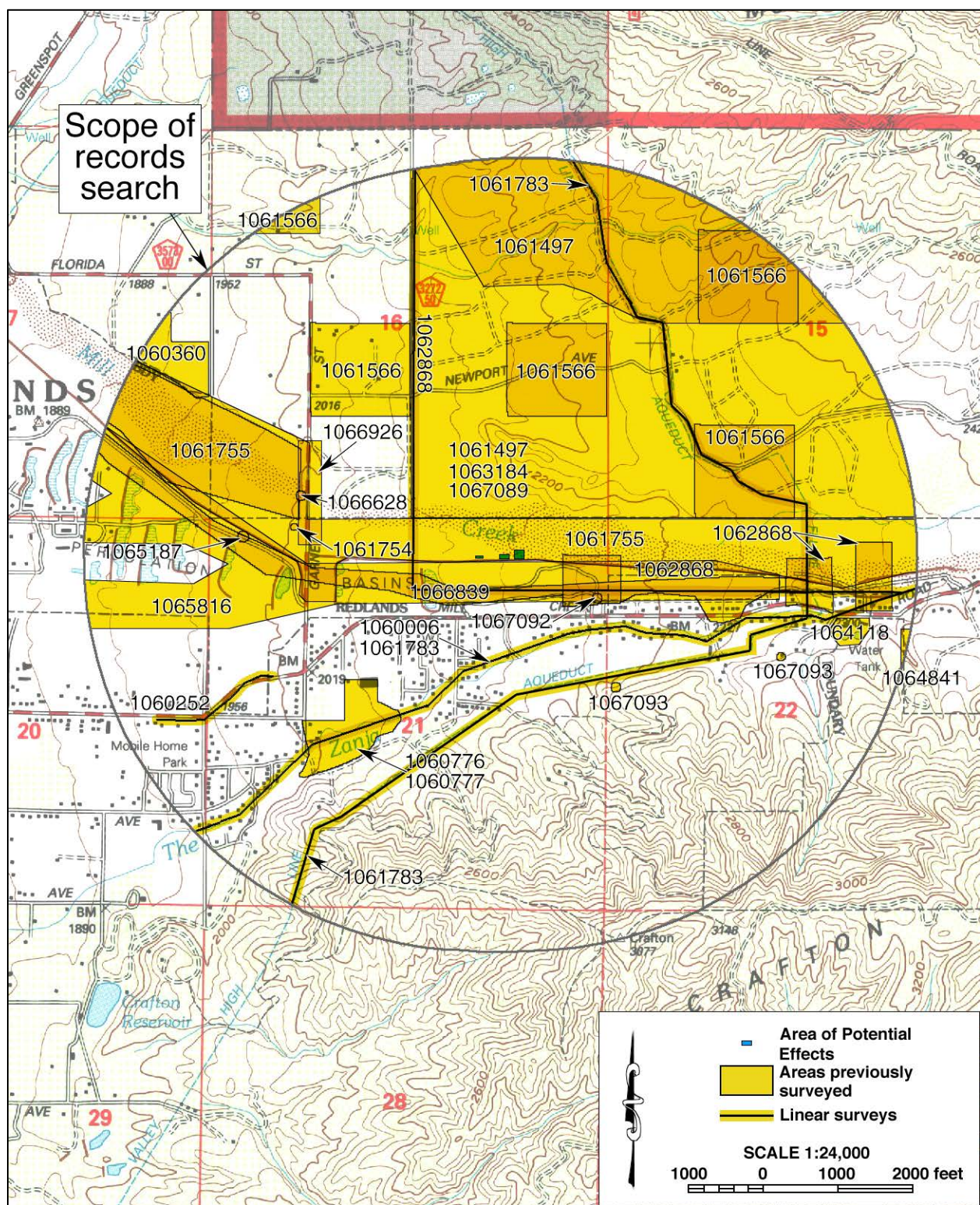


Figure 5. Previous cultural resources studies in the vicinity of the APE, listed by SCCIC file number. Locations of historical/archaeological sites are not shown as a protective measure.

Creek area for resource procurement in prehistoric times, the location of the APE within an active streambed renders it to be neither favorable for long-term aboriginal settlement nor conducive for the preservation of prehistoric cultural remains.

Furthermore, much of the Mill Creek Wash in the vicinity of the APE have been channelized, and the APE itself is located mostly in and around existing water diversion or flood-control facilities, where the surface and near-surface soils have been heavily disturbed. Some of the surface and near-surface sediments, in fact, consist of engineered fill. Based on these observations, the likelihood of encountering any intact subsurface archaeological deposits of prehistoric origin within the vertical APE is considered to be relatively low. Therefore, the subsurface component of the APE is considered to be low in sensitivity for buried deposits of potentially significant archaeological remains, especially those of prehistoric origin.

## **NATIVE AMERICAN PARTICIPATION**

In response to CRM TECH's inquiry, the NAHC reported in a letter dated March 6, 2017, that the sacred lands record search yielded negative results for Native American cultural resources within the APE, but recommended that local Native American groups be contacted for further information. For that purpose, the NAHC provided a list of potential contacts in the region (see App. 2). Upon receiving the NAHC's response, CRM TECH initiated consultation with all 19 individuals on the referral list and the organizations they represent. In addition, as referred by the appropriate tribal government staff, the following six designated tribal spokespersons were also contacted:

- David L. Saldivar, Tribal Government Affairs Manager, Augustine Band of Cahuilla Indians;
- Judy Stapp, Director of Cultural Affairs, Cabazon Band of Mission Indians;
- Andreas Heredia, Cultural Director, Cahuilla Band of Indians;
- Anthony Madrigal, Interim Cultural Director, Cahuilla Band of Indians;
- Raymond Huaute, Cultural Resource Specialist, Morongo Band of Mission Indians;
- Gabriella Rubalcava, Environmental Director, Santa Rosa Band of Cahuilla Indians.

The written requests for comments were sent to the tribal representatives on March 9, 2017, and follow-up telephone solicitations were carried out on March 23-29, 2017. As of this time, three of the tribal representatives contacted have responded in writing, and two others have provided their comments via telephone (see App. 2). Among them, Judy Stapp of the Cabazon Band of Mission Indians stated that the tribe had no specific information on any sites of Native American traditional cultural value in the APE. Michael Mirelez, Cultural Resources Coordinator for the Torres Martinez Desert Cahuilla Indians, stated that the tribe would defer to the San Manuel Band of Mission Indians.

Katie Croft, Archaeologist with the Tribal Historic Preservation Office of the Agua Caliente Band of Cahuilla Indians, identified the APE to be a part of the tribe's traditional use area. According to Ms. Croft, records maintained by the tribe showed that the APE had been surveyed previously with no cultural resources found. The Agua Caliente Band also deferred further consultation to the San Manuel Band of Mission Indians.



Goldie Walker, Chairperson of the Serrano Nation of Indians, found the APE to be in a culturally sensitive area and requested to be notified if any cultural resources were encountered. Joseph Ontiveros, Director of Cultural Resources for the Soboba Band of Luiseño Indians, also found the APE to be culturally sensitive due to its location “in proximity to known sites,” and claimed it as a part of the tribe’s traditional use area. Therefore, he requested further consultation with the lead agencies and Native American monitoring of ground-disturbing activities in the APE by a member of the Soboba Band’s Cultural Resources Department.

## HISTORICAL BACKGROUND RESEARCH

Historical sources consulted for this study suggest that the APE is relatively low in sensitivity for cultural resources from the historic period. As Figures 6-9 show, no man-made features were observed in or near the APE between the 1880s and the 1950s. Aerial photographs confirm that the APE was a part of the largely unaltered streambed at this location during the 1930s-1950s, and a dirt road along Mill Creek in the 1960s appears to have been the earliest man-made feature to be observed in the vicinity of the APE (NETR Online 1938-1968). Other than this road, the existing gate, canal, and levee, which evidently date to the 1980-1995 era (NETR Online 1980; 1995), are the only man-made features known to be present within or adjacent to the APE.

## FIELD SURVEY

The intensive-level field survey produced negative results for potential cultural resources. The entire APE was closely inspected for any evidence of human activities dating to the prehistoric or historic

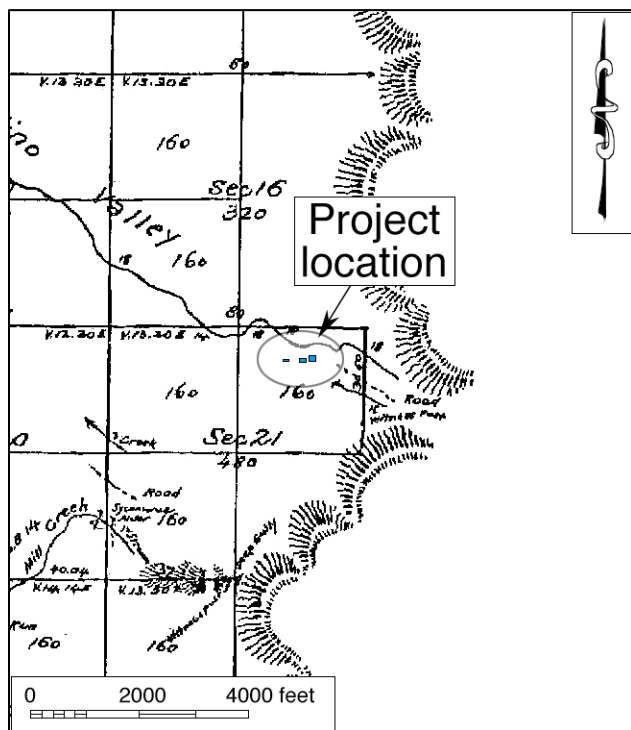


Figure 6. The APE and vicinity in 1882. (Source: GLO 1882)

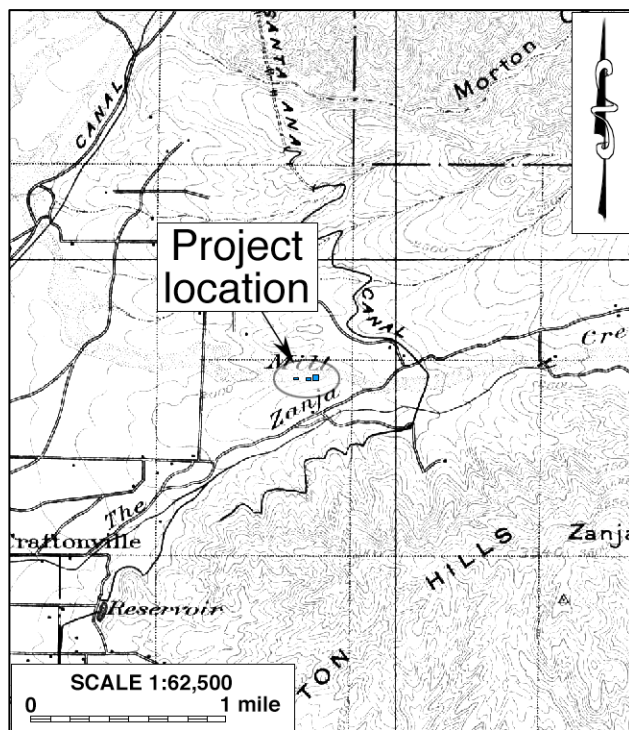


Figure 7. The APE and vicinity in 1898-1899. (Source: USGS 1901)

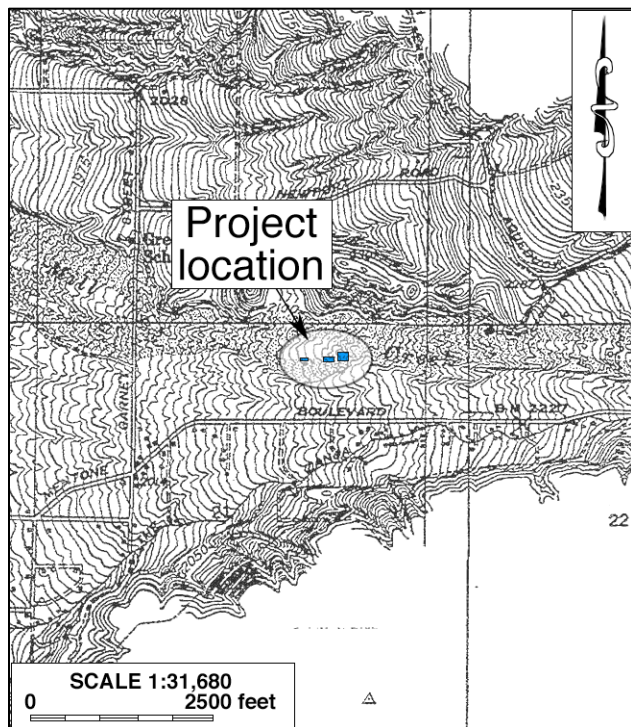


Figure 8. The APE and vicinity in 1939. (Source: USGS 1943)

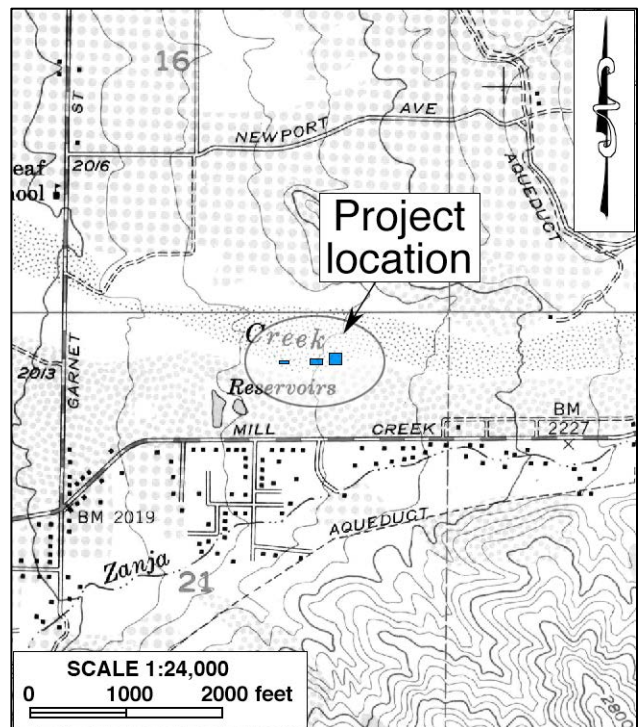


Figure 9. The APE and vicinity in 1952-1954. (Source: USGS 1954)

period, but none was found. As noted above, the APE has been extensively disturbed by the construction and maintenance of the existing water diversion and flood-control facilities. As infrastructure features of modern origin and standard design and construction, these facilities demonstrate no potential for historic significance and are not considered potential cultural resources. No buildings, structures, objects, sites, features, or artifacts more than 50 years of age were encountered during the survey.



Figure 10. Existing facilities in the APE. (Photo taken on March 7, 2017; view to the northwest)

## DISCUSSION

The purpose of this study is to identify and evaluate any “historic properties,” “historical resources,” or “tribal cultural resources” that may exist within or adjacent to the APE. “Historic properties,” as defined by the Advisory Council on Historic Preservation, include “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior” (36 CFR 800.16(l)). The eligibility for inclusion in the National Register is determined by applying the following criteria, developed by the National Park Service as per provision of the National Historic Preservation Act:



The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and

- (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) that are associated with the lives of persons significant in our past; or
- (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) that have yielded, or may be likely to yield, information important in prehistory or history. (36 CFR 60.4)

For CEQA-compliance considerations, the State of California's Public Resources Code (PRC) establishes the definitions and criteria for "historical resources" and "tribal cultural resources," which require similar protection to what NHPA Section 106 mandates for "historic properties." "Historical resources," according to PRC §5020.1(j), "includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California."

More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the lead agency (Title 14 CCR §15064.5(a)(1)-(3)). Regarding the proper criteria of historical significance, CEQA guidelines mandate that "generally a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

- (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- (2) Is associated with the lives of persons important in our past.
- (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- (4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

For "tribal cultural resources," PRC §21074, enacted and codified as part of a 2014 amendment to CEQA through Assembly Bill 52, provides the statutory definition as follows:

"Tribal cultural resources" are either of the following:

- (1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
  - (A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
  - (B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

- (2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

In summary of the research results outlined above, no cultural resources were previously identified within or adjacent to the APE, and none was encountered during this survey. Native American input during this study did not identify any sites of traditional cultural value in the vicinity, and no notable cultural features were known to exist in the APE throughout the historic period. Furthermore, the subsurface sediments in the APE appear to be low in sensitivity for buried deposits of potentially significant archaeological remains, especially those of prehistoric origin. Based on these considerations, the present study concludes that no “historic properties,” “historical resources,” or “tribal cultural resources” are present within or adjacent to the APE.

## **CONCLUSION AND RECOMMENDATIONS**

Section 106 of the National Historic Preservation Act mandates that federal agencies take into account the effects of their undertakings on historic properties and seek ways to avoid, minimize, or mitigate any adverse effects on such properties (36 CFR 800.1(a)). Similarly, CEQA establishes that a project that may cause a substantial adverse change in the significance of a “historical resource” or a “tribal cultural resource” is a project that may have a significant effect on the environment (PRC §21084.1-2). “Substantial adverse change,” according to PRC §5020.1(q), “means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.”

In summary of the research results discussed above, this study did not encounter any potential “historic properties,” “historical resources,” or “tribal cultural resources” within or adjacent to the APE, and the subsurface sediments in the vertical APE appear to be low in archaeological sensitivity. Therefore, CRM TECH presents the following recommendations to the COE and the WCD:

- No “historic properties,” “historical resources,” or “tribal cultural resources” will be affected by the proposed undertaking.
- No further cultural resources investigation will be necessary for the undertaking unless construction plans undergo such changes as to include areas not covered by this study.
- If buried cultural materials are inadvertently discovered during the undertaking, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the find.

## **REFERENCES**

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## **APPENDIX 1: PERSONNEL QUALIFICATIONS**

### **PRINCIPAL INVESTIGATOR/HISTORIAN Bai “Tom” Tang, M.A.**

#### **Education**

- 1988-1993 Graduate Program in Public History/Historic Preservation, UC Riverside.  
1987 M.A., American History, Yale University, New Haven, Connecticut.  
1982 B.A., History, Northwestern University, Xi’an, China.
- 2000 “Introduction to Section 106 Review,” presented by the Advisory Council on Historic Preservation and the University of Nevada, Reno.  
1994 “Assessing the Significance of Historic Archaeological Sites,” presented by the Historic Preservation Program, University of Nevada, Reno.

#### **Professional Experience**

- 2002- Principal Investigator, CRM TECH, Riverside/Colton, California.  
1993-2002 Project Historian/Architectural Historian, CRM TECH, Riverside, California.  
1993-1997 Project Historian, Greenwood and Associates, Pacific Palisades, California.  
1991-1993 Project Historian, Archaeological Research Unit, UC Riverside.  
1990 Intern Researcher, California State Office of Historic Preservation, Sacramento.  
1990-1992 Teaching Assistant, History of Modern World, UC Riverside.  
1988-1993 Research Assistant, American Social History, UC Riverside.  
1985-1988 Research Assistant, Modern Chinese History, Yale University.  
1985-1986 Teaching Assistant, Modern Chinese History, Yale University.  
1982-1985 Lecturer, History, Xi’an Foreign Languages Institute, Xi’an, China.

#### **Cultural Resources Management Reports**

Preliminary Analyses and Recommendations Regarding California’s Cultural Resources Inventory System (with Special Reference to Condition 14 of NPS 1990 Program Review Report). California State Office of Historic Preservation working paper, Sacramento, September 1990.

Numerous cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

## **PRINCIPAL INVESTIGATOR/ARCHAEOLOGIST**

**Michael Hogan, Ph.D., RPA\***

### **Education**

- 1991 Ph.D., Anthropology, University of California, Riverside.
- 1981 B.S., Anthropology, University of California, Riverside; with honors.
- 1980-1981 Education Abroad Program, Lima, Peru.
  
- 2002 Section 106—National Historic Preservation Act: Federal Law at the Local Level. UCLA Extension Course #888.
- 2002 “Recognizing Historic Artifacts,” workshop presented by Richard Norwood, Historical Archaeologist.
- 2002 “Wending Your Way through the Regulatory Maze,” symposium presented by the Association of Environmental Professionals.
- 1992 “Southern California Ceramics Workshop,” presented by Jerry Schaefer.
- 1992 “Historic Artifact Workshop,” presented by Anne Duffield-Stoll.

### **Professional Experience**

- 2002- Principal Investigator, CRM TECH, Riverside/Colton, California.
- 1999-2002 Project Archaeologist/Field Director, CRM TECH, Riverside.
- 1996-1998 Project Director and Ethnographer, Statistical Research, Inc., Redlands.
- 1992-1998 Assistant Research Anthropologist, University of California, Riverside
- 1992-1995 Project Director, Archaeological Research Unit, U. C. Riverside.
- 1993-1994 Adjunct Professor, Riverside Community College, Mt. San Jacinto College, U.C. Riverside, Chapman University, and San Bernardino Valley College.
- 1991-1992 Crew Chief, Archaeological Research Unit, U. C. Riverside.
- 1984-1998 Archaeological Technician, Field Director, and Project Director for various southern California cultural resources management firms.

### **Research Interests**

Cultural Resource Management, Southern Californian Archaeology, Settlement and Exchange Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural Diversity.

### **Cultural Resources Management Reports**

Author and co-author of, contributor to, and principal investigator for numerous cultural resources management study reports since 1986.

### **Memberships**

\* Register of Professional Archaeologists; Society for American Archaeology; Society for California Archaeology; Pacific Coast Archaeological Society; Coachella Valley Archaeological Society.

**PROJECT ARCHAEOLOGIST/REPORT WRITER**  
**Deirdre Encarnación, M.A.**

**Education**

- |      |  |
|------|--|
| 2003 | M.A., Anthropology, San Diego State University, California.                                |
| 2000 | B.A., Anthropology, minor in Biology, with honors; San Diego State University, California. |
| 1993 | A.A., Communications, Nassau Community College, Garden City, N.Y.                          |
| 2001 | Archaeological Field School, San Diego State University.                                   |
| 2000 | Archaeological Field School, San Diego State University.                                   |

**Professional Experience**

- |           |  |
|-----------|--|
| 2004-     | Project Archaeologist/Report Writer, CRM TECH, Riverside/Colton, California. |
| 2001-2003 | Part-time Lecturer, San Diego State University, California.                  |
| 2001      | Research Assistant for Dr. Lynn Gamble, San Diego State University.          |
| 2001      | Archaeological Collection Catalog, SDSU Foundation.                          |

**Memberships**

Society for California Archaeology; Society for Hawaiian Archaeology.

**PROJECT ARCHAEOLOGIST/NATIVE AMERICAN LIAISON**  
**Nina Gallardo, B.A.**

**Education**

- |      |  |
|------|--|
| 2004 | B.A., Anthropology/Law and Society, University of California, Riverside. |
|------|--|

**Professional Experience**

- |       |  |
|-------|--|
| 2004- | Project Archaeologist, CRM TECH, Riverside/Colton, California. <ul style="list-style-type: none"><li>• Surveys, excavations, construction monitoring, field recordation, mapping, records searches, and Native American liaison.</li></ul> |
|-------|--|

**Honors and Awards**

- |           |  |
|-----------|--|
| 2000-2002 | Dean's Honors List, University of California, Riverside. |
|-----------|--|



**PROJECT ARCHAEOLOGIST/FIELD DIRECTOR**  
**Daniel Ballester, M.S.**

**Education**

2013	M.S., Geographic Information System (GIS), University of Redlands, California.
1998	B.A., Anthropology, California State University, San Bernardino.
1997	Archaeological Field School, University of Las Vegas and University of California, Riverside.
1994	University of Puerto Rico, Rio Piedras, Puerto Rico.
2007	Certificate in Geographic Information Systems (GIS), California State University, San Bernardino.
2002	“Historic Archaeology Workshop,” presented by Richard Norwood, Base Archaeologist, Edwards Air Force Base; presented at CRM TECH, Riverside, California.

**Professional Experience**

2002-	Field Director/GIS Specialist, CRM TECH, Riverside/Colton, California.
1999-2002	Project Archaeologist, CRM TECH, Riverside, California.
1998-1999	Field Crew, K.E.A. Environmental, San Diego, California.
1998	Field Crew, A.S.M. Affiliates, Encinitas, California.
1998	Field Crew, Archaeological Research Unit, University of California, Riverside.

**APPENDIX 2**

**CORRESPONDENCE WITH  
NATIVE AMERICAN REPRESENTATIVES\***

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\* A total of 25 local Native American representatives were contacted; a sample letter is included in this appendix.

## SACRED LANDS FILE & NATIVE AMERICAN CONTACTS LIST REQUEST

### NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd, Suite 100  
West Sacramento, CA 95691  
(916) 373-3710  
(916) 373-5471 – Fax  
nahc@nahc.ca.gov

**Project:** Mill Creek Diversion Debris Management Project (CRM TECH Contract No. 3185)

**County:** San Bernardino

**USGS Quadrangle Name:** Yucaipa, Calif.

**Township** 1 South **Range** 2 West **SB BM; Section(s)** 21

**Company/Firm/Agency:** CRM TECH

**Contact Person:** Nina Gallardo

**Street Address:** 1016 E. Cooley Drive, Suite A/B

**City:** Colton, CA **Zip:** 92324

**Phone:** (909) 824-6400 **Fax:** (909) 824-6405

**Email:** ngallardo@crmtech.us

**Project Description:** The primary component of the project is to make infrastructure improvements in three small areas located within the Mill Creek Wash, along the north side of the Santa Ana River Trail, and east of Garnet Street, in the City of Redlands, San Bernardino County.

*March 2, 2017*

**NATIVE AMERICAN HERITAGE COMMISSION**

1550 Harbor Blvd., Suite 100  
West Sacramento, CA 95691  
(916) 373-3710  
Fax (916) 373-5471



March 6, 2017

Nina Gallardo  
CRM Tech

Sent by Email: ngallardo@crmtech.us

RE: Proposed Mill Creek Diversion Debris Management Project, City of Redlands; Yucaipa  
USGS Quadrangle, San Bernardino County, California

Dear Ms. Gallardo:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.

Attached is a list of tribes culturally affiliated to the project area. I suggest you contact all of the listed Tribes. If they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: [gayle.totton@nahc.ca.gov](mailto:gayle.totton@nahc.ca.gov).

Sincerely,

A handwritten signature in blue ink that reads "Gayle Totton".

for Gayle Totton, M.A., PhD.  
Associate Governmental Program Analyst

**Native American Heritage Commission  
Tribal Contact List  
San Bernardino County  
3/6/2017**

***Agua Caliente Band of Cahuilla  
Indians***

Patricia Garcia-Plotkin, Director  
5401 Dinah Shore Drive                      Cahuilla  
Palm Springs, CA, 92264                      Luiseno  
Phone: (760) 699 - 6907  
Fax: (760) 699-6924  
ACBCI-THPO@aguacaliente.net

***Agua Caliente Band of Cahuilla  
Indians***

Jeff Grubbe, Chairperson  
5401 Dinah Shore Drive                      Cahuilla  
Palm Springs, CA, 92264                      Luiseno  
Phone: (760) 699 - 6800  
Fax: (760) 699-6919

***Augustine Band of Cahuilla  
Mission Indians***

Amanda Vance, Chairperson  
P.O. Box 846                                      Cahuilla  
Coachella, CA, 92236  
Phone: (760)398-4722  
Fax: (760)369-7161

***Cabazon Band of Mission  
Indians***

Doug Welmas, Chairperson  
84-245 Indio Springs Parkway              Cahuilla  
Indio, CA, 92203  
Phone: (760)342-2593  
Fax: (760)347-7880

***Cahuilla Band of Indians***

Luther Salgado, Chairperson  
52701 U.S. Highway 371                      Cahuilla  
Anza, CA, 92539  
Phone: (951) 763 - 5549  
Fax: (951) 763-2808  
Chairman@cahuilla.net

***Los Coyotes Band of Mission  
Indians***

Shane Chapparosa, Chairperson  
P.O. Box 189                                      Cahuilla  
Warner Springs, CA, 92086-0189  
Phone: (760)782-0711  
Fax: (760)782-0712  
Chapparosa@msn.com

***Los Coyotes Band of Mission  
Indians***

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Director  
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Warner Springs, CA, 92086  
Phone: (760) 782 - 0712  
Fax: (760) 782-2730

***Morongo Band of Mission  
Indians***

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Manager  
12700 Pumarra Road                              Cahuilla  
Banning, CA, 92220                              Serrano  
Phone: (951) 849 - 8807  
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dtorres@morongo-nsn.gov

***Morongo Band of Mission  
Indians***

Robert Martin, Chairperson  
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Mission Indians***

Joseph Hamilton, Chairperson  
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admin@ramonatribe.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Mill Creek Diversion Debris Management Project, San Bernardino County.

**Native American Heritage Commission  
Tribal Contact List  
San Bernardino County  
3/6/2017**

**Ramona Band of Mission  
Indians**

John Gomez, Environmental  
Coordinator  
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jgomez@ramonatribe.com

Cahuilla

**Soboba Band of Luiseno  
Indians**

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Resource Department  
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jontiveros@soboba-nsn.gov

Cahuilla  
Luiseno

**San Fernando Band of Mission  
Indians**

John Valenzuela, Chairperson  
P.O. Box 221838  
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tsen2u@hotmail.com

Kitanemuk  
Serrano  
Tataviam

**Soboba Band of Luiseno  
Indians**

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carrieg@soboba-nsn.gov

Cahuilla  
Luiseno

**San Manuel Band of Mission  
Indians**

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Resources  
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Serrano

**Soboba Band of Luiseno  
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Cahuilla  
Luiseno

**Santa Rosa Band of Mission  
Indians**

Steven Estrada, Chairperson  
P.O. Box 391820  
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Phone: (951)659-2700  
Fax: (951)659-2228

Cahuilla

**Torres-Martinez Desert Cahuilla  
Indians**

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Thermal, CA, 92274  
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Cahuilla

**Serrano Nation of Mission  
Indians**

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P.O. Box 343  
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Phone: (909)528-9027

Serrano

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Mill Creek Diversion Debris Management Project, San Bernardino County.

March 9, 2017

Jeff Grubbe, Chairperson  
Agua Caliente Band of Cahuilla Indians  
5401 Dinah Shore Drive  
Palm Springs, CA 92264

RE: Mill Creek Diversion Debris Management Project  
0.6 Acres in the Community of Mentone  
San Bernardino County, California  
CRM TECH Contract #3185

Dear Mr. Grubbe:

I am writing to bring your attention to an ongoing Section 106-compliance study for the proposed project referenced above. The project entails the removal of invasive plants and re-establishment of native vegetation at three noncontiguous locations within Mill Creek Wash. The Area of Potential Effect (APE) for the undertaking collectively covers approximately 0.6 acres of undeveloped land located north of State Highway 38 and east of Garnet Street. The accompanying map, based on the USGS Yucaipa, Calif., 7.5' quadrangle, depicts the location of the APE in Section 21, T1S R2W, SBBM.

According to records on file at the South Central Coastal Information Center (SCCIC), there are no known historical/archaeological sites within the boundaries of the APE. Outside the APE boundaries but within a one-mile radius, SCCIC records show that 49 historical/archaeological sites and one isolate—i.e., a locality with fewer than three artifacts—were previously recorded. None of the 49 sites were of prehistoric—i.e., Native American—origin, but the isolate was described as a unifacial granite mano. The 49 sites included several water conveyance features (one of them being the Mill Creek Zanja), foundations, a bridge, survey bench marker, and several ranches, groves, roads, and refuse scatters. During an intensive-level field survey conducted on March 7, 2017, no potential historical/archaeological resources were encountered within or adjacent to the APE.

In a letter dated March 6, 2017, the Native American Heritage Commission reports that the sacred lands record search identified no Native American cultural resources within the APE, but recommends that local Native American groups be contacted for further information (see attached). Therefore, as part of the cultural resources study for this project, I am writing to request your input on potential Native American cultural resources in or near the APE.

Please respond at your earliest convenience if you have any specific knowledge of sacred/religious sites or other sites of Native American traditional cultural value in or near the APE, or any other information to consider during the cultural resources investigations. Any information or concerns may be forwarded to CRM TECH by telephone, e-mail, facsimile, or standard mail. Requests for documentation or information we cannot provide will be forwarded to our client and/or the lead agency, namely the San Bernardino Valley Water Conservation District.



We would also like to clarify that, as the cultural resources consultant for the project, CRM TECH is not involved in the AB 52-compliance process or in government-to-government consultations. The purpose of this letter is to seek any information that you may have to help us determine if there are cultural resources in or near the project area that we should be aware of and to help us assess the sensitivity of the APE. Thank you for your time and effort in addressing this important matter.

Respectfully,

Nina Gallardo  
Project Archaeologist/Native American liaison  
CRM TECH  
Email: [ngallardo@crmtech.us](mailto:ngallardo@crmtech.us)

Encl.: NAHC response letter and project location map



March 16, 2017

Nina Gallardo  
CRM TECH  
1016 E. Cooley Drive, Suite A/B  
Colton, CA 92324

Re.: Mill Creek Diversion Debris Management Project  
0.6 Acres in the Community of Mentone  
San Bernardino County, California  
CRM TECH Contract #3185

Dear Ms. Gallardo:

Thank you for contacting the Cabazon Band of Mission Indians concerning cultural resource information relative to the above referenced project.

The project is located outside of the Tribe's current reservation boundaries. The Tribe has no specific archival information on the site indicating that it may be a sacred/religious site or other site of Native American traditional cultural value within the project area.

We look forward to continued collaboration in the preservation of cultural resources or areas of traditional cultural importance.

Best regards,

Judy Stapp  
Director of Cultural Affairs

MAR 17 2017





03-033-2017-001

March 22, 2017

[VIA EMAIL TO:ngallardo@crmtech.us]  
CRM TECH  
Ms. Nina Gallardo  
1016 E. Cooley Drive, Suite A/B  
Colton, CA 92324

**Re: Mill Creek Diversion Debris Management**

Dear Ms. Nina Gallardo,

The Agua Caliente Band of Cahuilla Indians (ACBCI) appreciates your efforts to include the Tribal Historic Preservation Office (THPO) in the Mill Creek Diversion Debris Management project. The project area is not located within the boundaries of the ACBCI Reservation. However, it is within the Tribe's Traditional Use Area (TUA). A records check of the ACBCI registry indicates this area has been previously surveyed for cultural resources but no cultural resources were identified. In consultation, the ACBCI THPO requests the following:

\*At this time ACBCI defers to the San Manuel Band of Mission Indians. This letter shall conclude our consultation efforts.

Again, the Agua Caliente appreciates your interest in our cultural heritage. If you have questions or require additional information, please call me at (760)699-6829. You may also email me at [acbc-thpo@aguacaliente.net](mailto:acbc-thpo@aguacaliente.net).

Cordially,

Katie Croft  
Archaeologist  
Tribal Historic Preservation Office  
AGUA CALIENTE BAND  
OF CAHUILLA INDIANS

From: Jessica Valdez [mailto:JValdez@soboba-nsn.gov]  
Sent: Wednesday, March 29, 2017 4:18 PM  
To: Nina Gallardo  
Cc: Joseph Ontiveros  
Subject: Mill Creek Diversion Debris Management Project (CRM TECH Contract #3185)

Nina,

Per our telephone conversation this morning, please see the attached letter from Joseph Ontiveros, Cultural Resource Director, for the Soboba Band of Luiseño Indians, regarding the Mill Creek Diversion Debris Management Project (CRM TECH Contract #3185). The project area is considered sensitive by the people of Soboba, as there are existing sites in the surrounding areas. An in-house database search identified multiple areas of potential impact. Specifics will be discussed in direct consultation with the lead agency. To ensure that Soboba's correspondence and concerns are reflected in your documentation for this project, the tribe requests that the attached letter be forwarded to the lead agency and summarized in your final report. A hard copy will be mailed, for your records. The Soboba Band of Luiseño Indians appreciates your observance of Tribal Cultural Resources and their preservation in your project. Feel free to contact us with any additional questions or concerns.

Jessica Valdez, Cultural Resource Specialist  
Soboba Band of Luiseño Indians  
Cultural Resources Department  
Office: (951)-654-5544 Ext: 4139  
JValdez@soboba-nsn.gov

March 29, 2017

Attn: Nina Gallardo, Project Archaeologist/NA Liaison  
CRM TECH  
1016 East Cooley Drive, Suite A/B  
Colton, CA 92324



**RE: Mill Creek Diversion Debris Management Project – north of State Highway 38 and east of Garnet Street – 0.6 Acres in the Community of Mentone, San Bernardino County, CA – CRM TECH Contract #3185**

The Soboba Band of Luiseño Indians appreciates your observance of Tribal Cultural Resources and their preservation in your project. The information provided to us on said project has been assessed through our Cultural Resource Department, where it was concluded that although it is outside the existing reservation, the project area does fall within the bounds of our Tribal Traditional Use Areas. This project location is in proximity to known sites, is a shared use area that was used in ongoing trade between the tribes, and is considered to be culturally sensitive by the people of Soboba.

Soboba Band of Luiseño Indians is requesting the following:

1. To initiate a consultation with the project proponents and lead agency.
2. The transfer of information to the Soboba Band of Luiseno Indians regarding the progress of this project should be done as soon as new developments occur.
3. Soboba Band of Luiseño Indians continues to act as a consulting tribal entity for this project.
4. Working in and around traditional use areas intensifies the possibility of encountering cultural resources during the construction/excavation phase. For this reason the Soboba Band of Luiseño Indians requests that Native American Monitor(s) from the Soboba Band of Luiseño Indians Cultural Resource Department to be present during any ground disturbing proceedings. Including surveys and archaeological testing.
5. Request that proper procedures be taken and requests of the tribe be honored  
(Please see the attachment)

Multiple areas of potential impact were identified during an in-house database search. Specifics to be discussed in consultation with the lead agency.

Sincerely,

A handwritten signature in black ink, appearing to read "JOE", with a long horizontal line extending to the right.

Joseph Ontiveros, Director of Cultural Resources  
Soboba Band of Luiseño Indians  
P.O. Box 487  
San Jacinto, CA 92581  
Phone (951) 654-5544 ext. 4137  
Cell (951) 663-5279  
[jontiveros@soboba-nsn.gov](mailto:jontiveros@soboba-nsn.gov)



**Cultural Items (Artifacts).** Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer should agree to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.

The Developer should waive any and all claims to ownership of Native American ceremonial and cultural artifacts that may be found on the Project site. Upon completion of authorized and mandatory archeological analysis, the Developer should return said artifacts to the Soboba Band within a reasonable time period agreed to by the Parties and not to exceed (30) days from the initial recovery of the items.

**Treatment and Disposition of Remains.**

A. The Soboba Band shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and grave goods shall be treated and disposed of with appropriate dignity.

B. The Soboba Band, as MLD, shall complete its inspection within twenty-four (24) hours of receiving notification from either the Developer or the NAHC, as required by California Public Resources Code § 5097.98 (a). The Parties agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes.

C. Reburial of human remains shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The Soboba Band, as the MLD in consultation with the Developer, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains.

D. All parties are aware that the Soboba Band may wish to rebury the human remains and associated ceremonial and cultural items (artifacts) on or near, the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The Developer should accommodate on-site reburial in a location mutually agreed upon by the Parties.

E. The term "human remains" encompasses more than human bones because the Soboba Band's traditions periodically necessitated the ceremonial burning of human remains. Grave goods are those artifacts associated with any human remains. These items, and other funerary remnants and their ashes are to be treated in the same manner as human bone fragments or bones that remain intact

**Coordination with County Coroner's Office.** The Lead Agencies and the Developer should immediately contact both the Coroner and the Soboba Band in the event that any human remains are discovered during implementation of the Project. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c).

**Non-Disclosure of Location Reburials.** It is understood by all parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r). Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer agrees to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.



**Confidentiality:** The entirety of the contents of this letter shall remain confidential between Soboba and the San Bernardino Valley Water Conservation District, as well as hired consultant (CRM TECH). No part of the contents of this letter may be shared, copied, or utilized in any way with any other individual, entity, municipality, or tribe, whatsoever, without the expressed written permission of the Soboba Band of Luiseño Indians.



**TELEPHONE LOG**

<b>Name</b>	<b>Tribe/Affiliation</b>	<b>Telephone Contacts</b>	<b>Comments</b>
Patricia Garcia-Plotkin, Tribal Historic Preservation Officer	Agua Caliente Band of Cahuilla Indians	None	Katie Croft, Archaeologist with the Tribal Historic Preservation Office, responded on behalf of the tribe in a letter dated March 22, 2017 (copy attached).
Jeff Grubbe, Chairperson	Agua Caliente Band of Cahuilla Indians	None	Patricia Garcia-Plotkin is the designated spokesperson for the tribe (see above).
Amanda Vance, Chairperson	Augustine Band of Cahuilla Mission Indians	None	David L. Saldivar is the designated spokesperson for the tribe (see below).
David L. Saldivar, Tribal Government Affairs Manager	Augustine Band of Cahuilla Mission Indians	3:08 pm, March 23, 2017; 9:49 am, March 29, 2017	Left voice messages; no response to date.
Judy Stapp, Director of Cultural Affairs	Cabazon Band of Mission Indians	None	Ms. Stapp responded in a letter dated March 16, 2017 (copy attached).
Doug Welmas, Chairperson	Cabazon Band of Mission Indians	None	Judy Stapp is the designated spokesperson for the tribe (see above).
Andreas Heredia, Cultural Director	Cahuilla Band of Indians	3:10 pm, March 23, 2017	Mr. Heredia no longer works for the tribe; Anthony Madrigal is the Interim Cultural Director, according to the tribal office receptionist.
Anthony Madrigal, Interim Cultural Director	Cahuilla Band of Indians	3:11 pm, March 23, 2017; 9:53 am, March 29, 2017	Left a voice messages; no response to date.
Luther Salgado, Sr., Chairperson	Cahuilla Band of Indians	None	Anthony Madrigal is the designated spokesperson for the tribe (see above).
Shane Chapparosa, Chairman	Los Coyotes Band of Cahuilla and Cupeño Indians	3:12 pm, March 23 2017; 9:58 am, March 29, 2017	Left messages with Patricia, Tribal Administrative Assistant, and Angeline, Tribal Secretary; no response to date.
John Perada, Environmental Director	Los Coyotes Band of Cahuilla and Cupeño Indians	None	Mr. Perada is no longer the Environmental Director for the tribe.
Raymond Huaute, Cultural Resource Specialist	Morongo Band of Mission Indians	3:27 pm, March 23, 2017; 10:17 am, March 29, 2017	Left voice messages; no response to date.

Robert Martin, Chairperson	Morongo Band of Mission Indians	None	Raymond Huaute is the designated spokesperson for the tribe (see above).
Denisa Torres, Cultural Resource Manager	Morongo Band of Mission Indians	None	Raymond Huaute is the designated spokesperson for the tribe (see above).
Joseph Hamilton, Chairman	Ramona Band of Cahuilla Indians	None	John Gomez, Jr., is the designated spokesperson for the tribe (see below).
John Gomez, Jr., Cultural Resource Coordinator	Ramona Band of Cahuilla Indians	3:30 pm, March 23, 2017; 10:19 am, March 29, 2017	Mr. Gomez stated on March 29 that he planned to review this project soon.
John Valenzuela, Chairman	San Fernando Band of Mission Indians	3:34 pm, March 23, 2017; 10:21 am, March 29, 2017	Left voice messages; no response to date.
Lee Clauss, Cultural Resources Management Director	San Manuel Band of Mission Indians	3:37 pm, March 23, 2017; 10:24 am, March 29, 2017	Left voice messages; no response to date.
Steven Estrada, Chairman	Santa Rosa Band of Cahuilla Indians	None	Gabriella Rubalcava is the designated spokesperson for the tribe (see below).
Gabriella Rubalcava, Environmental Director	Santa Rosa Band of Cahuilla Indians	3:46 pm, March 23, 2017; 10:27 am, March 29, 2017	Ms. Rubalcava stated on March 23 that she planned to review this project soon; a message was left with Alexis, Tribal Bookkeeper on March 29; no response to date.
Goldie Walker, Chairperson	Serrano Nation of Indians	3:39 pm, March 23, 2017	Ms. Walker stated that the APE was in a culturally sensitive area and requested to be notified if any cultural resources were found.
Carrie Garcia, Cultural Resources Manager	Soboba Band of Luiseño Indians	None	Joseph Ontiveros is the designated spokesperson for the tribe (see below).
Rosemary Morillo, Chairperson	Soboba Band of Luiseño Indians	None	Joseph Ontiveros is the designated spokesperson for the tribe (see below).
Joseph Ontiveros, Cultural Resources Director	Soboba Band of Luiseño Indians	3:47 pm, March 23, 2017; 10:33 am, March 29, 2017	Mr. Ontiveros responded in a letter dated March 29, 2017 (copy attached).
Michael Mirelez, Cultural Resources Coordinator	Torres Martinez Desert Cahuilla Indians	3:50 pm, March 23, 2017	Mr. Mirelez stated that the tribe would defer to the San Manuel Band of Mission Indians for further consultation.

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## Appendix 4

### Hydrology Report

# Hydrology Study & Drainage Analysis

## Mill Creek Diversion and Debris Management Improvements

Mentone, CA 92359  
APN(s): 0168-342-03

### **Prepared For:**



San Bernardino Valley Water Conservation District  
1630 West Redlands Boulevard  
Redlands, California, 92373

Telephone: (909) 793-2503

### **Prepared By:**

Joseph E. Bonadiman & Associates, Inc.  
234 North Arrowhead Avenue  
San Bernardino, CA 92408  
Telephone: (909) 885-3806  
Fax: (909) 381-1721

[www.bonadiman.com](http://www.bonadiman.com)

June 2017



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# Exhibits

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Exhibit	No.
HEC-RAS Model Study Map	A
Max. Flow Depth & Inundation Limits Comparison	B
FEMA - National I Flood Hazard Layer FIRMette	C
Improvement Plans	D



## Attachments

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Attachments	No.
100-Year Event Hydrograph	1
Existing Conditions HEC-RAS Cross Sections	2
Proposed Conditions HEC-RAS Cross Sections	3
Existing vs. Proposed Conditions Cross Sections Comparison Table	4

## A. Introduction

### 1.1 Purpose & Scope

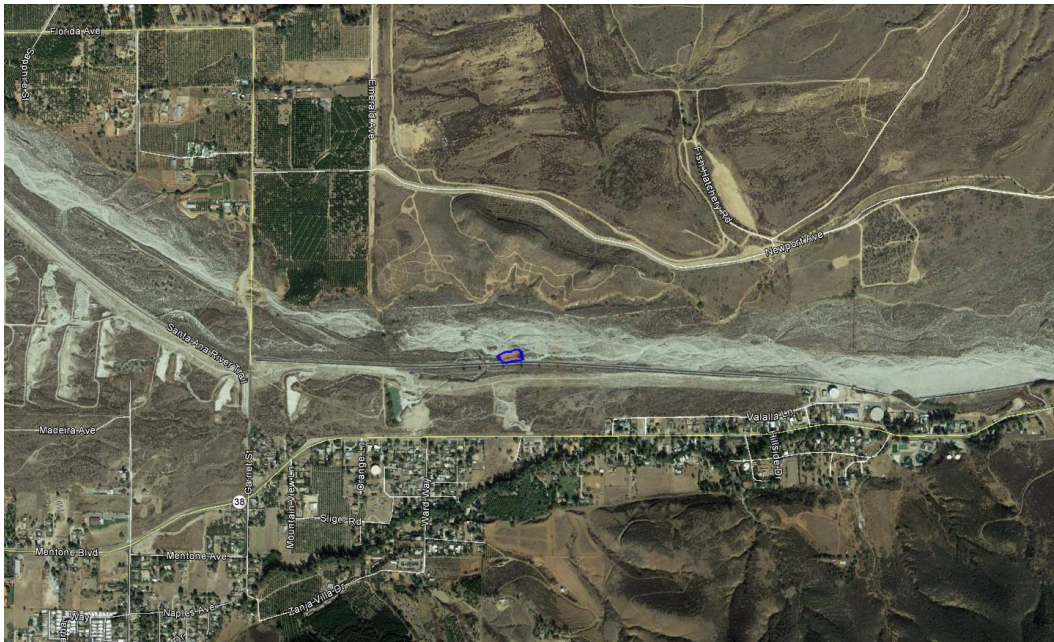
The following Hydrology & Hydraulics Study has been prepared for the redevelopment of the Mill Creek Diversion Debris Management Project located along Mill Creek in the City of Mentone, CA. This report has been prepared to assess the effect that the proposed improvements will have on the existing storm water flows and levee capacity of Mill Creek at the project site.

#### **The scope of this Study is as follows:**

- Existing conditions 100-year event HEC-RAS hydraulic analysis of the Mill Creek wash.
- Proposed conditions 100-year event HEC-RAS hydraulic analysis of the Mill Creek wash.
- Comparison of existing vs. proposed HEC-RAS cross sections to determine any impact to the Mill Creek wash resulting from the proposed improvements.
- Summary of Findings

### 1.2 Project Overview

The project site is located approximately 0.17 miles north of Highway 38 and 0.55 miles east of Garnet Street, along the south bank of Mill Creek. The proposed project entails the redevelopment of an existing diversion and debris management structure along Mill Creek.



Site Location

### 1.3 Existing Conditions Off-Site Areas

The project site is located in the Mill Creek wash. The flows to site originate in the San Bernardino Mountains at Galena Peak, and flow through Forest Falls and Mountain Home Village before reaching the project site. Most local storms are short duration and high intensity and carry high quantities of organic debris and sediments ranging from silts to boulders. The organic debris is mainly logs 10-20 feet in length ranging from two to 12 inches in diameter.



Photo 1 – East of Existing Diversion Structure Looking East along Levee

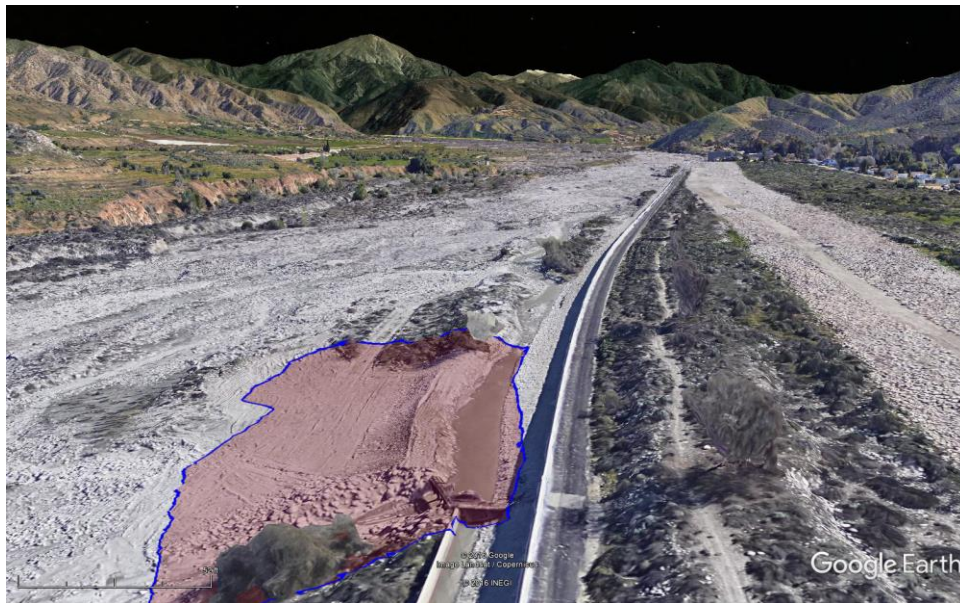


Photo 2 – Above Site Looking East in Google Earth 3D View





Photo 3 – South Side of Mill Creek looking Northwest at Existing Diversion Structure



Photo 4 – On Existing Diversion Structure looking North at Mill Creek

## 1.4 Existing Conditions On-Site Areas

There are currently a series of berms that direct water from Mill Creek towards the diversion structure where flows can be directed into two separate channels. The first channel has three 5-foot wide gates that allow flow back to the natural Mill Creek. The second channel has one 5-foot wide gate that routes flows to the spreading grounds. The existing gates are manually operated sluice/slide gates made from wooden planks. Accumulation of organic material, silt, sand, cobble, and small boulders behind the gates significantly impacts operations and has caused system failure.





Photo 5 – Southside of Mill Creek Looking North at Existing Diversion Structure



Photo 6 – Southside of Mill Creek Looking North at Existing Diversion Structure



Photo 7 – Southside of Mill Creek Looking Northwest at Existing Diversion Structure

## 1.5 Proposed Conditions

The proposed off-site conditions will remain the same as existing. The proposed on-site improvements will consist of upgrading and replacement of existing debris management devices at the Mill Creek diversion structure. Refer to Exhibit “D” for a copy of the improvement plans by CWE.

## 1.6 References

The following documents have been referenced by this study and pertinent portions have been included:

- 1.) CWE. (08-15-2016). Mill Creek Diversion and Debris Management Improvements. Grading plans.
- 2.) FEMA. (09-02-2016). FEMA FIRMette Maker,  
<[https://p4.msc.fema.gov/arcgis/rest/directories/arcgisjobs/nfhl\\_print/print\\_nfhl\\_gpserver/jb9420f2501ae45e5915cc06046c68b82/scratch/NFHLMap\\_fbc7df2e-4bc5-11e7-9f04-001b21bbe86d.pdf](https://p4.msc.fema.gov/arcgis/rest/directories/arcgisjobs/nfhl_print/print_nfhl_gpserver/jb9420f2501ae45e5915cc06046c68b82/scratch/NFHLMap_fbc7df2e-4bc5-11e7-9f04-001b21bbe86d.pdf)>  
(Jun. 7, 2017).
- 3.) CWE. (12-16-2015). Debris Management Improvement and Design for Mill Creek Diversion.
- 4.) Moffatt & Nichol Engineers. (July 1989). The Oaks Development Mill Creek Bridge Project Hydraulic Analysis.
- 5.) RBF Consulting. (May 2015). Mill Creek Crossing At Garnet Street, Redlands, California Hydrology and Hydraulics. County of San Bernardino.
- 6.) San Bernardino County Flood Control. (August 1986). San Bernardino County Hydrology Manual. Williamson and Schmid, Civil Engineers, County of San Bernardino.
- 7.) US Army Corp of Engineers, Los Angeles District. (August 1988). Design Memorandum No. 1 Volume 4 - Mill Creek Levee. Santa Ana River Mainstream including Santiago Creek, California Phase II General Design Memorandum.
- 8.) San Bernardino County Synthetic Unit Hydrology Method (UNSBC). (2004). CivilDesign Corporation, San Bernardino, CA.
- 9.) HEC-RAS River Analysis System. (September 2016). U.S. Army Corps of Engineering Institute for Water Resources Hydrologic Engineering Center.



## B. Methodology

---

### 1.1 General Methodology

Comparative (existing and proposed conditions) hydraulic analyses were performed on an approximately 4,770 ft. reach of the Mill Creek wash (approx. 2,170 ft. upstream and 2,600 ft. downstream of the proposed improvement area). FEMA FIRM No. 06071C8730J identifies this reach as Zone "A" (1% Annual Chance Flood). Per FEMA FIS Study No. 06071CV001D, the mapped Zone "A" shown was determined using approximate methods (i.e., no detailed hydraulic analysis). Refer to Exhibit "C" for FIRMette of FEMA FIRM No. 06071C8730J.

For both existing and proposed conditions, the same 97 cross sections were used along the reach in question to ensure an accurate comparative analysis. 15 cross sections were used along the proposed project improvement area, identified as Reach Stations 2208.87 through 2500.08, to reflect topographic changes resulting from the proposed improvements. All other cross sections upstream and downstream were the same for existing and proposed conditions. Refer to Exhibit "A" for an illustrative study map of the study reach.

### 1.2 Sources of Topography

Topographic LiDAR data of existing condition off-site area was provided by San Bernardino County Flood Control. Mapping of existing condition on-site area and topographic contours were provided by CWE. For the developed conditions on-site areas, proposed grades provided by CWE was used.

### 1.3 Hydrology

An existing 100-year, 24-hour unit hydrograph analysis of the Mill Creek watershed tributary to the project site was used to establish the peak flow rate for the existing and proposed hydraulic analyses. The hydrograph used is included as Attachment No. 1 and identifies a peak flow rate of 26,092 c.f.s.

### 1.4 Hydraulics

Steady-state hydraulics calculations for existing and proposed conditions were performed in HEC-RAS. Normal depth ( $s = 0.04$ ) was used for the upstream and downstream boundary conditions based on identified channel slope upstream and downstream of the project reach. A Manning's coefficient of 0.04 was used for all channel stations. A mixed flow regime was used for the steady state calculations.

## C. Hydraulic Calculations Summary

---

Existing and proposed HEC-RAS cross sections are included as Attachment No. 2 and Attachment No. 3, respectively. Reach Stations 2208.87 through 2500.08 (area of proposed improvements) indicate that the topographic changes resulting from the proposed improvements are effectively outside of the calculated 100-year channel flows, and therefore have no material impact on the channel hydraulics. Attachment No. 3 is a comparison of calculated water surface elevations and flow velocities for all cross sections, for existing and proposed conditions. This comparison shows a maximum water surface elevation increase of 0.10 feet (at Reach Station 1821.46) and a maximum flow velocity increase of 0.6 f.p.s. (at Reach Station 1899.24).

Exhibit "B" illustrates a comparison between 100-year existing and proposed conditions flow depths and inundation limits for the study reach. No identifiable change between existing and developed conditions is shown (note the project improvement area is effectively outside of the calculated flow inundation limits).

## D. Conclusion

---

Based on the 100-year HEC-RAS flow calculations performed in this study, the proposed project improvements are not expected to have a negative impact on the hydraulics of the existing Mill Creek wash.

**(END)**

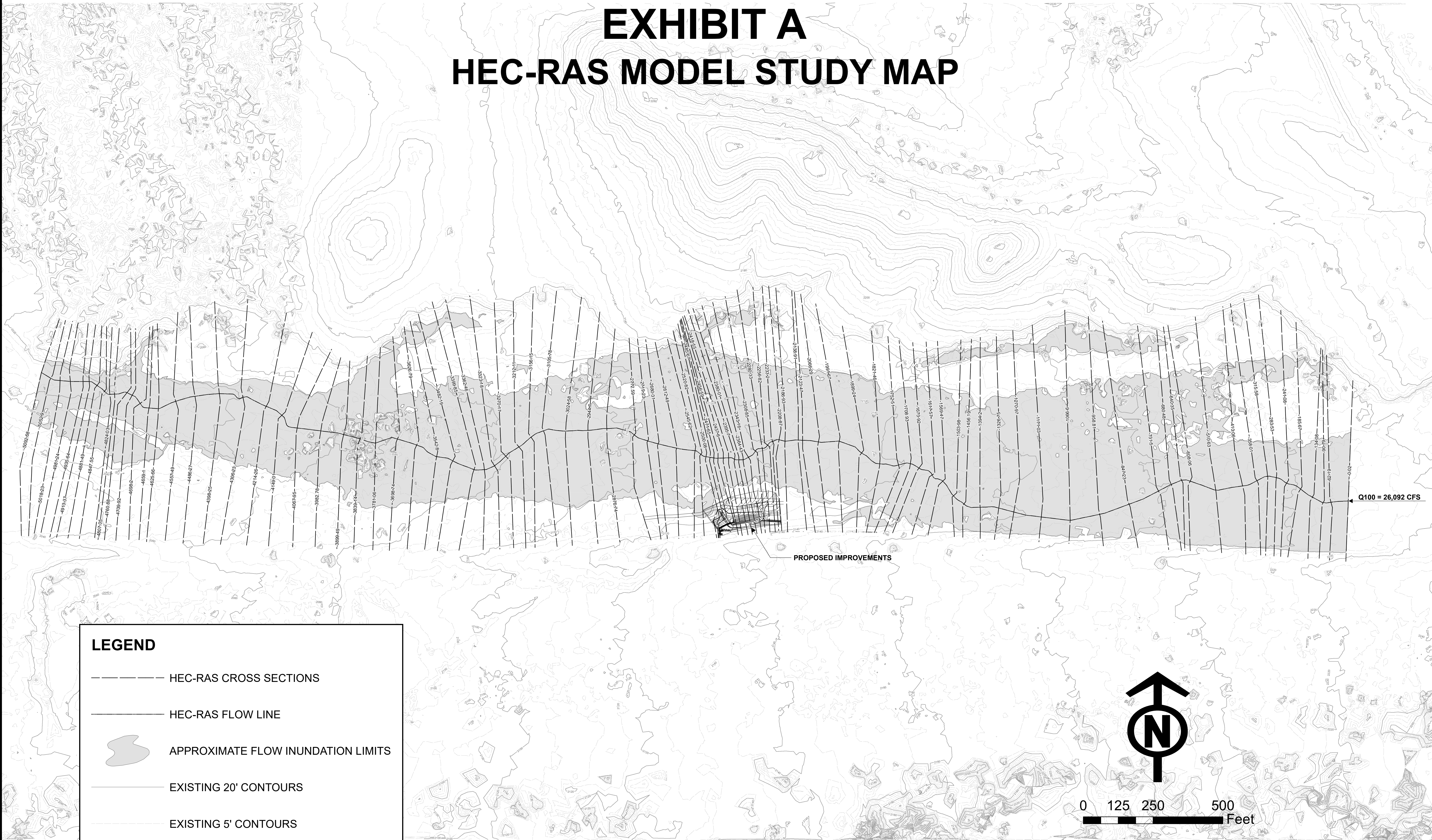
# **EXHIBIT “A”**

## **HEC-RAS Model Study Map**



# EXHIBIT A

## HEC-RAS MODEL STUDY MAP

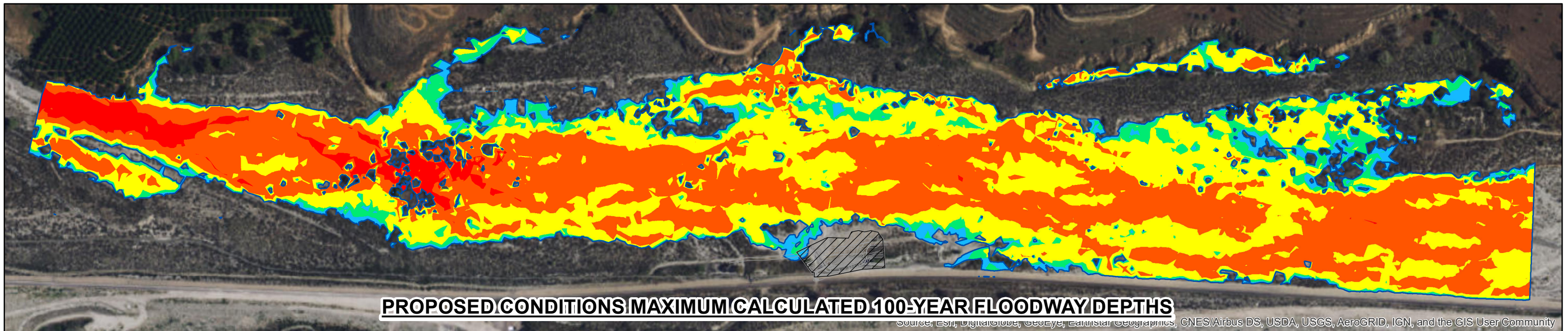
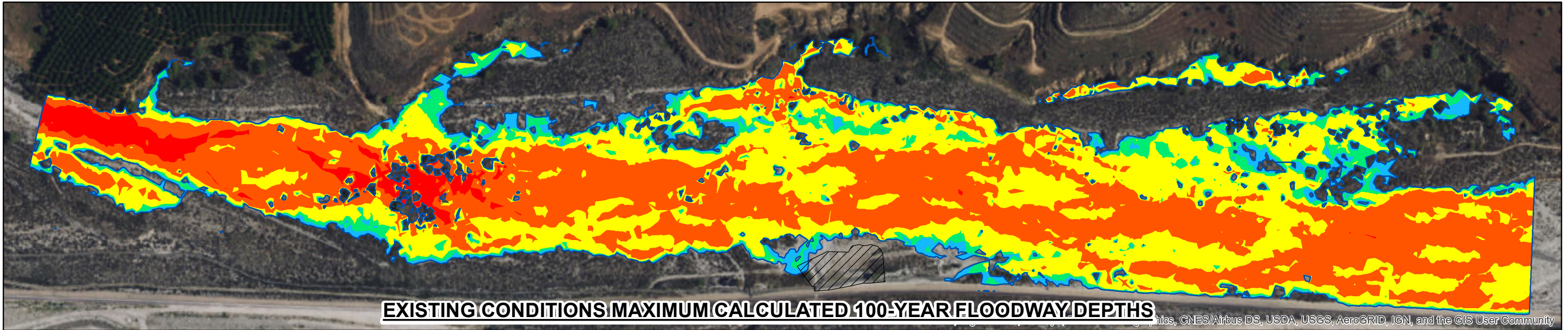











# **EXHIBIT “B”**

## **Max. Flow Depths & Inundation Limits Comparison**





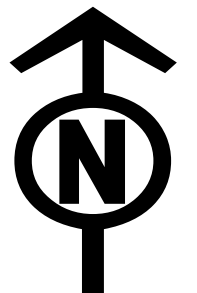
-  PROJECT SITE
-  CALCULATED INUNDATION LIMITS
-  < 10' FLOW DEPTH
-  1' - 2' FLOW DEPTH
-  2' - 5' FLOW DEPTH
-  5' - 10' FLOW DEPTH
-  > 10' FLOW DEPTH

## **EXHIBIT B**

### **MAXIMUM FLOW DEPTH & INUNDATION LIMITS**

**MILL CREEK FLOODWAY  
100-YEAR EVENT**

**HEC-RAS STEADY-STATE PEAK FLOW: 26,092 C.F.S.**



1 inch = 300 feet

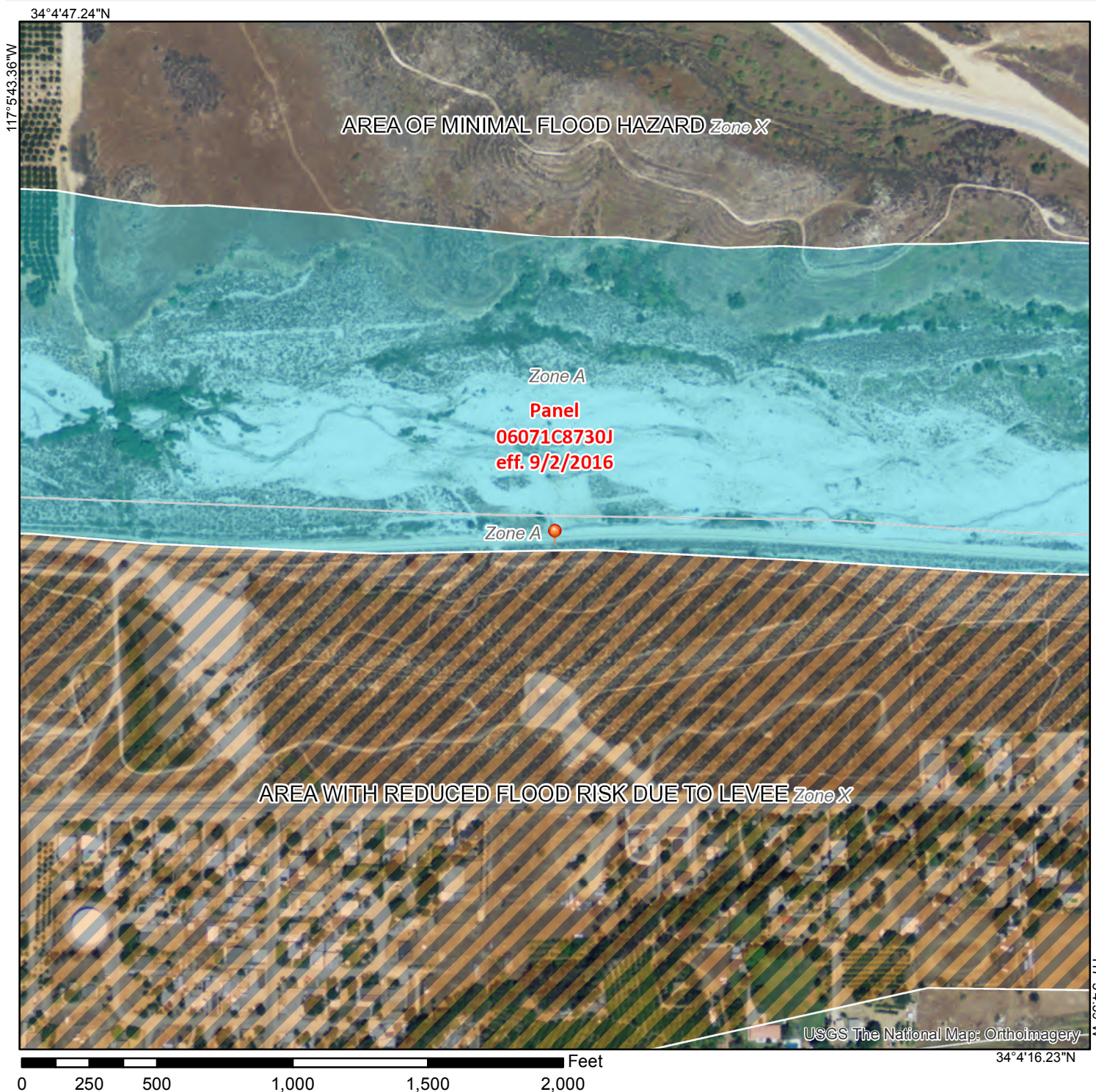


# **EXHIBIT “C”**

FEMA National I Flood Hazard Layer  
FIRMette



# National Flood Hazard Layer FIRMette



## Legend

- Cross-Sections
- Base Flood Elevations

### Flood Hazard Zones

- 1% Annual Chance Flood
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee

### LOMRs

- Effective

### Map Panels

- Digital Data
- Unmodernized Maps
- Unmapped

This map complies with FEMA's standards for the use of digital flood maps. The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. The base map shown complies with FEMA's base map accuracy standards.

The NFHL is a living database, updated daily, and this map represents a snapshot of information at a specific time.

Flood risks are dynamic and can change frequently due to a variety of factors, including weather patterns, erosion, and new development. FEMA flood maps are continually updated through a variety of processes. Users should always verify through the Map Service Center (<http://msc.fema.gov>) or the Community Map Repository that they have the current effective information.

NFHL maps should not be created for unmapped or unmodernized areas.



# FEMA

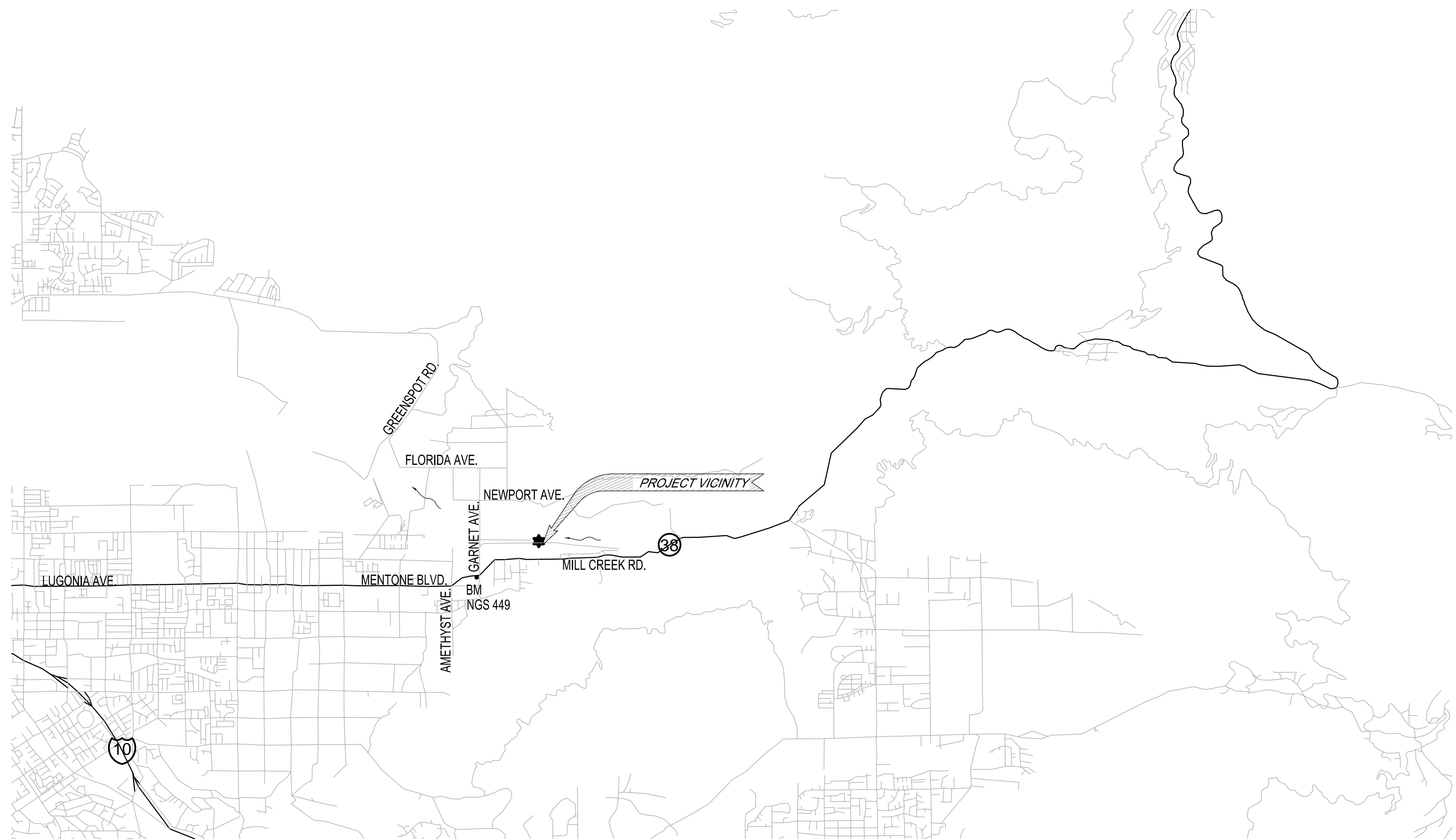
# **EXHIBIT “D”**

## **Improvement Plans**



# SAN BERNARDINO VALLEY WATER CONVERSATION DISTRICT

## MILL CREEK DIVERSION AND DEBRIS MANAGEMENT IMPROVEMENT

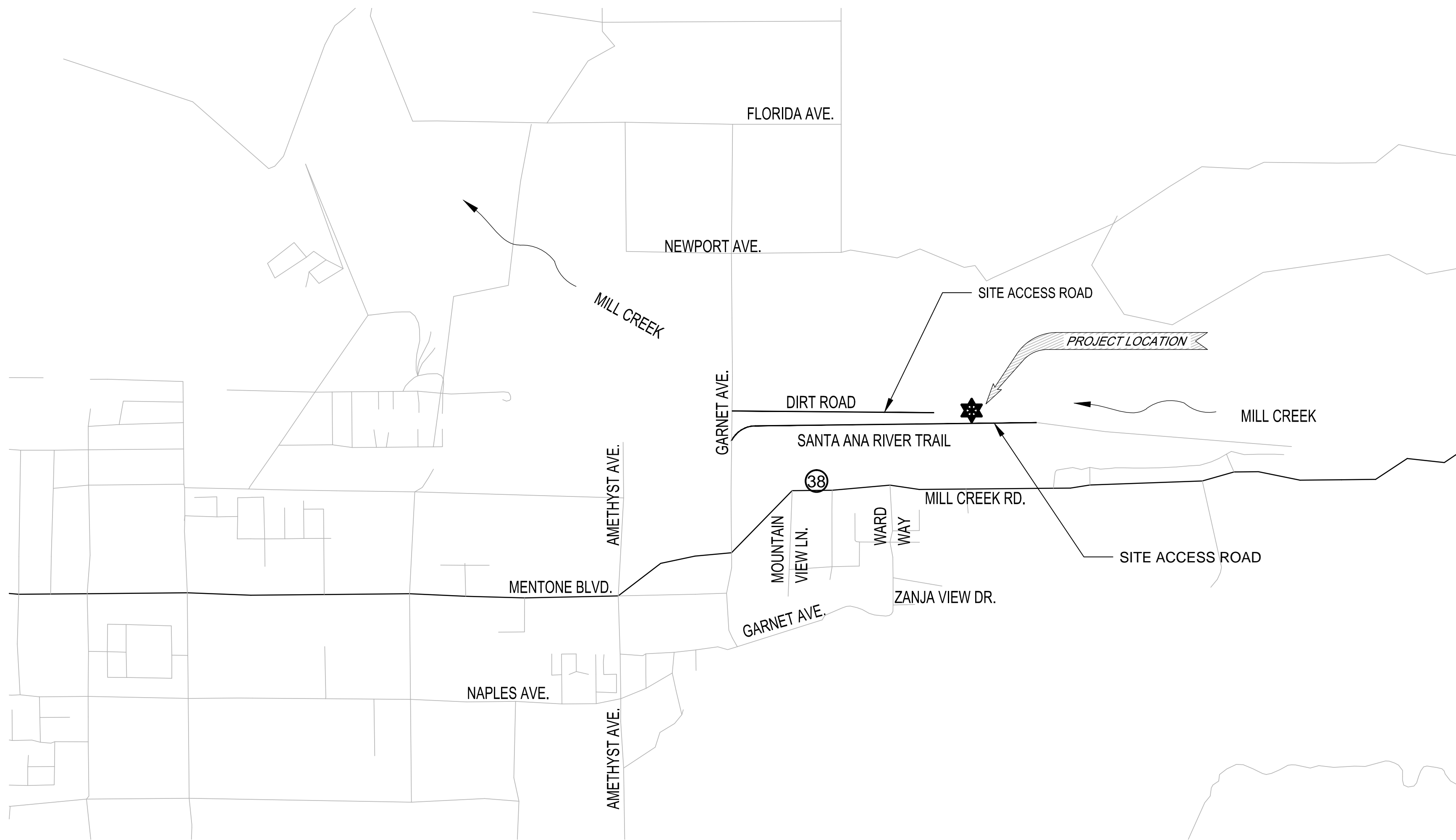


VICINITY MAP

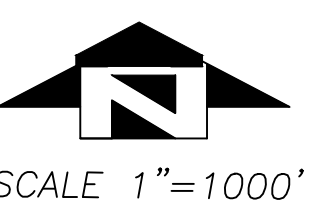


PRIVATE ENGINEER'S NOTICE TO CONTRACTOR(S)

- THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES AND/OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. APPROVAL OF THESE PLANS BY THE SAN BERNARDINO VALLEY WATER CONVERSATION DISTRICT DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OR COMPLETENESS OF THE LOCATION OR THE EXISTENCE OR NON-EXISTENCE OF ANY UTILITY AND/OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THE CONTRACTOR IS REQUIRED TO TAKE ALL DUE PRECAUTIONARY MEANS TO PROTECT THE UTILITIES OF RECORD OR NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
- THE GRADING CONTRACTOR SHALL SATISFY HIMSELF AS TO THE GRADING QUANTITY AS SHOWN ON THIS PLAN AS PART OF HIS BID.
- IT IS REQUESTED THAT THE GRADING CONTRACTOR NOTIFY THIS PRIVATE ENGINEER BY CALLING AT LEAST 48 HOURS BEFORE COMPLETION OF THE GRADING OPERATION IN ORDER THAT THIS OFFICE MAY PERFORM A FINAL INSPECTION WITH OUR GRADE CERTIFICATION COMMITMENT TO THE CITY OF IRVINE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS PRIOR TO COMMENCEMENT OF GRADING OPERATIONS.
- UNAUTHORIZED CHANGES AND USES: THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS AND THE SAN BERNARDINO VALLEY WATER CONVERSATION DISTRICT.



LOCATION MAP



PLAN INDEX	DESCRIPTION	SHT. NO.
TITLE SHEET		1
GRADING PLAN		2
DETAIL SHEET 1		3
DETAIL SHEET 2		4
DETAIL SHEET 3		5

LEGEND	
	2' THICK LAYER LIGHT CLASS RIP-RAP
	2' THICK LAYER GROUTED LIGHT CLASS RIP-RAP
	PCC SLAB
	EXISTING PCC SLAB TO BE REMOVED
	CATWALK GRATING
	TRASH RACK
	LIMITS OF WORK
	LIMITS OF GRADING
	PCC CUT-OFF WALL
	RIP-RAP TOE DOWN AND LIMITS OF GROUTED RIP-RAP
	LIMITS OF UNGROUTED RIP-RAP
	EXISTING PCC DIVERSION CHANNEL WALL

**UNDERGROUND SERVICE ALERT**  
CALL TOLL FREE  
**1-800-227-2600**  
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK  
BM NO. NGS 449 (EV1475) ELEVATION = 2021.83 FEET  
(NAVD 88) YUCAIPA (1996)  
BENCH MARK DISK STAMPED S 449 1949 SET IN BUILDING WALL, 2 MILES E. FROM MENTONE, 1.95 MILES E. ALONG STATE HWY 38 FROM THE POST OFFICE AT MENTONE, 4.1 MILES E/O THE CURRIER GYMNASIUM OF THE UNIVERSITY OF REDLANDS AT REDLANDS. AT THE INT. OF GARNET ST. AT THE GREEN SPOT TRADING POST FLYING SERVICE STATION. SET VERTICALLY IN THE N.W. FACE OF THE SERVICE STATION BUILDING, 1.3' S.W. OF THE N.W. CORNER OF THE BUILDING, AND 2.6' ABOVE THE GROUND.  
COORDINATES ARE BASED UPON NAD 83, STATE PLAN COORDINATE SYSTEM, CALIFORNIA ZONE 5, EPOCH 2007.

NO.	DATE	REVISIONS	APPROVED	DATE
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SUBMITTED BY: WILLIAM F. YOUNG, PE, RCE No. 35715 DATE: 08-15-16  
SAN BERNARDINO VALLEY WATER CONVERSATION DISTRICT  
REVIEWED BY: XXXXXXX XXXXXXX, PE, RCE No. XXXXX DATE: XX-XX-XX  
APPROVED BY: XXXXXXX XXXXXXX, PE, RCE No. XXXXX DATE: XX-XX-XX  
ACCEPTED BY: XXXXXXX XXXXXXX, PE, RCE No. XXXXX DATE: XX-XX-XX

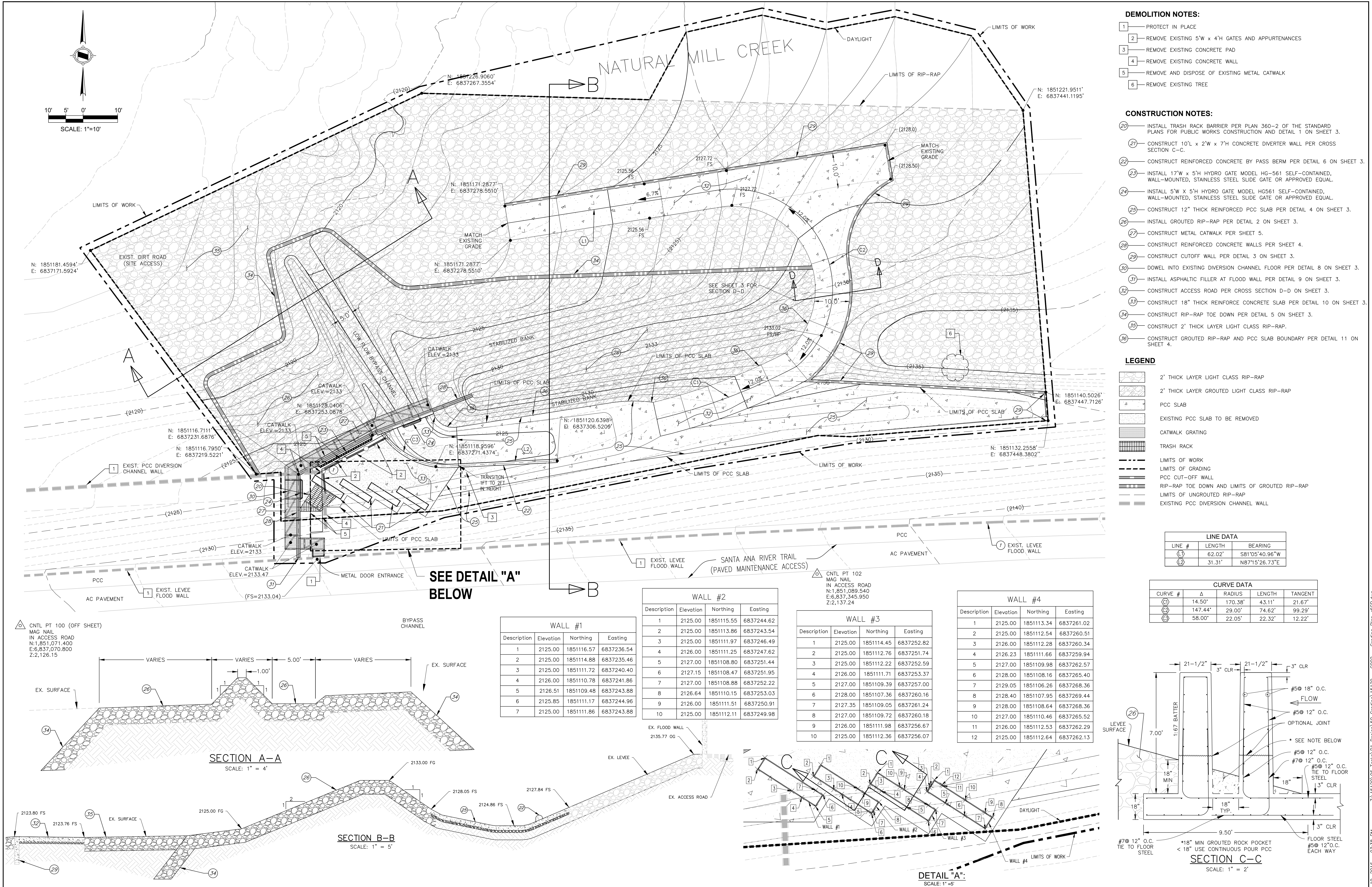


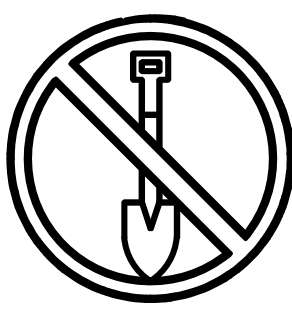
PREPARED BY: 1561 E. ORANGETHORPE AVE. SUITE 240 FULLERTON, CA 92831 TEL (714) 525-7500 www.cwecorp.com  
DRAWN BY: M. NGUYEN DATE: 10-19-16  
DESIGNED BY: C. PENDROY DATE: 10-19-16  
CHECKED BY: W. YOUNG DATE: 10-19-16

SAN BERNARDINO VALLEY WATER CONVERSATION DISTRICT  
MILL CREEK DIVERSION AND DEBRIS MANAGEMENT IMPROVEMENT  
TITLE SHEET AND GENERAL NOTES

PROJECT NO. 15129  
SHEET 1 OF 5







**UNDERGROUND SERVICE ALERT**  
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SUBMITTED BY:  
WILLIAM F. YOUNG, PE, REG. NO. 35715  
SAN BERNARDINO VALLEY  
WATER CONSERVATION DISTRICT

REVIEWED BY:  
XXXXXX XXXXXX, PE, REG. NO. XXXXX

APPROVED BY:  
XXXXXX XXXXXX, PE, REG. NO. XXXXX

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CHECKED BY: W. YOUNG

DATE: 10-19-16  
DATE: 10-19-16  
DATE: 10-19-16

**SAN BERNARDINO VALLEY  
WATER CONSERVATION DISTRICT**

**MILL CREEK DIVERSION AND  
DEBRIS MANAGEMENT IMPROVEMENT**

**GRADING PLAN**

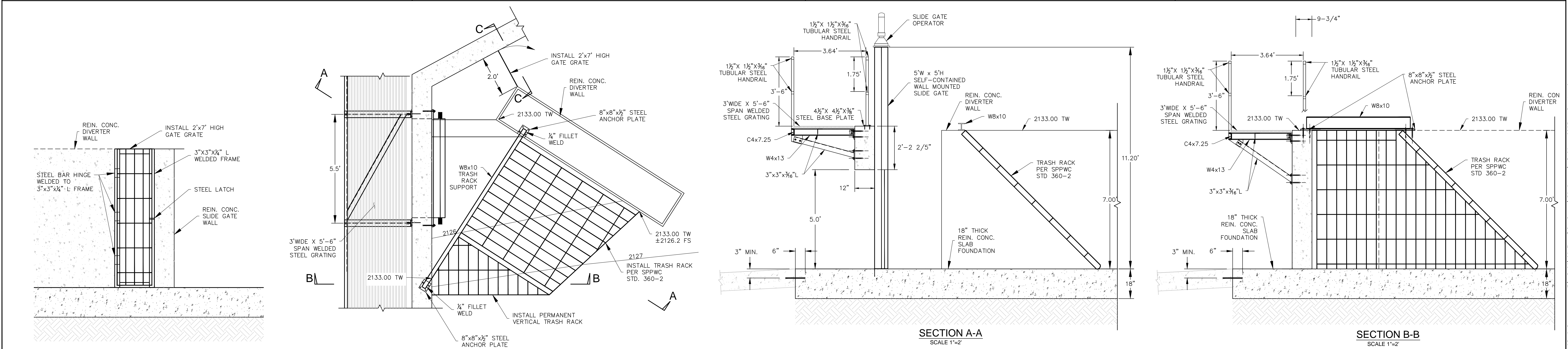
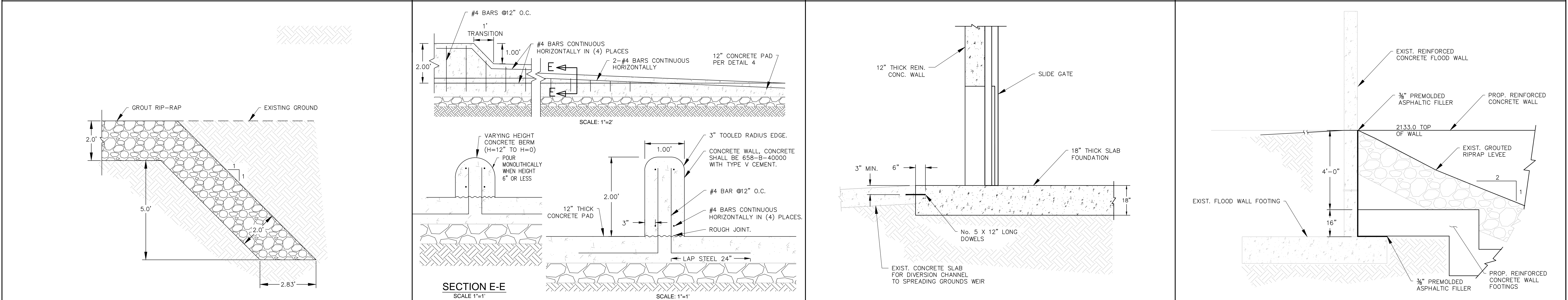
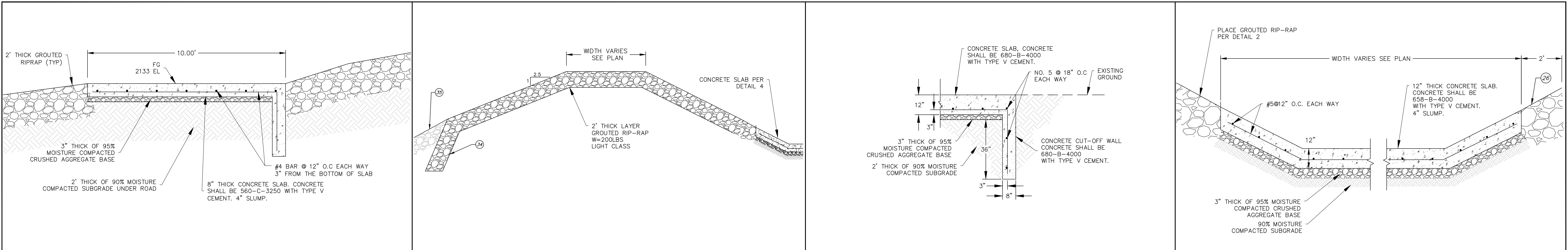
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Oct. 19, 2016 03:38 PM Z:\15129\06 Tasks\01 Design\Grading\15129 - C002 - Grading Plan.dwg Plotted by: Chendroy





**UNDERGROUND SERVICE ALERT**  
CALL TOLL FREE  
**1-800-227-2600**  
TWO WORKING DAYS BEFORE YOU DIG

**BENCH MARK**

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SUBMITTED BY: WILLIAM F. YOUNG, PE, RCE No. 35715  
**SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT**

REVIEWED BY: XXXXXXXX XXXXXXXX, PE, RCE No. XXXXX

APPROVED BY: XXXXXXXX XXXXXXXX, PE, RCE No. XXXXX

ACCEPTED BY: XXXXXXXX XXXXXXXX, PE, RCE No. XXXXX

DATE: 08-15-16  
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PREPARED BY: 1561 E. ORANGETHORPE AVE., SUITE 240, FULLERTON, CA 92831  
TEL (714) 525-7500  
www.cwecorp.com

**CWE**

DRAWN BY: M. NGUYEN  
DESIGNED BY: C. PENDROY  
CHECKED BY: W. YOUNG

DATE: 10-19-16  
DATE: 10-19-16  
DATE: 10-19-16

**SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT**

**MILL CREEK DIVERSION AND DEBRIS MANAGEMENT IMPROVEMENT**

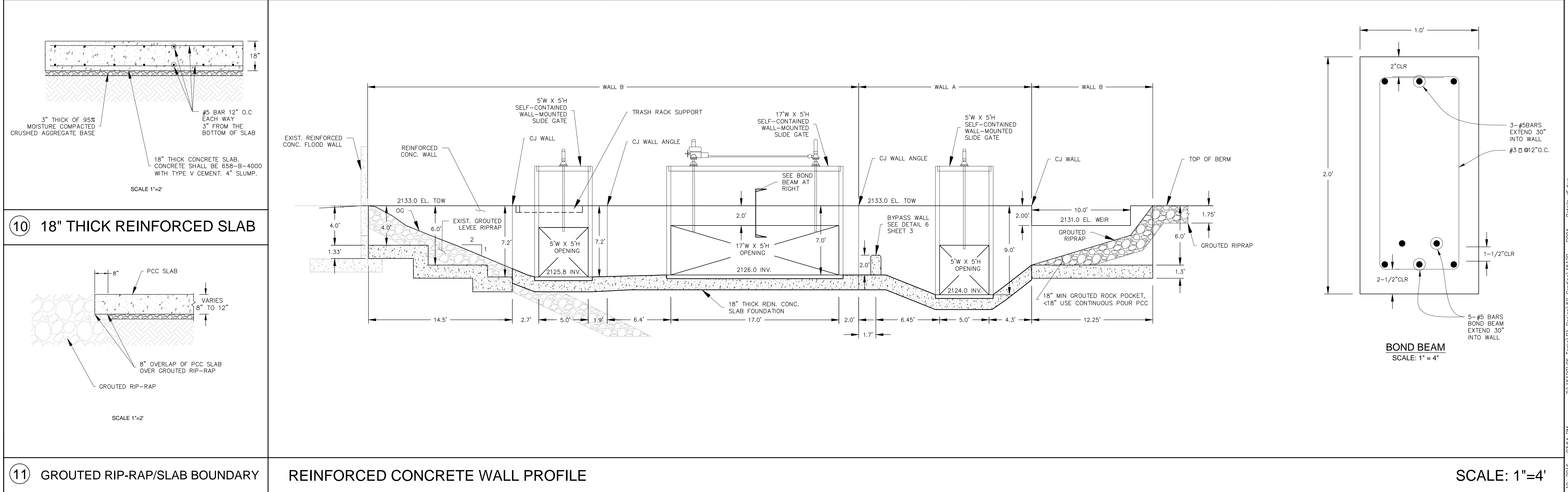
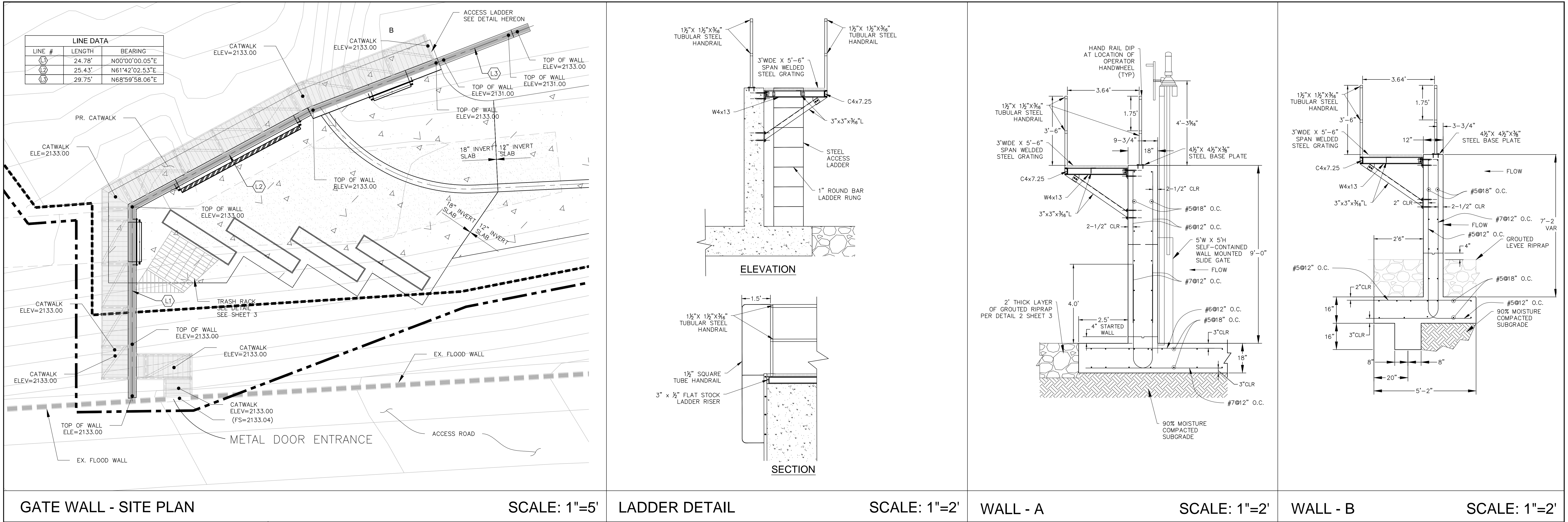
**DETAILS**

PROJECT NO. 15129

SHEET 3 OF 5

FINAL SUBMITTAL





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SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT

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ACCEPTED BY: XXXXXXX XXXXXXX, PE, RCE No. XXXXX

DATE: 08-15-16

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SAN BERNARDINO VALLEY WATER CONVERSATION DISTRICT

MILL CREEK DIVERSION AND DEBRIS MANAGEMENT IMPROVEMENT

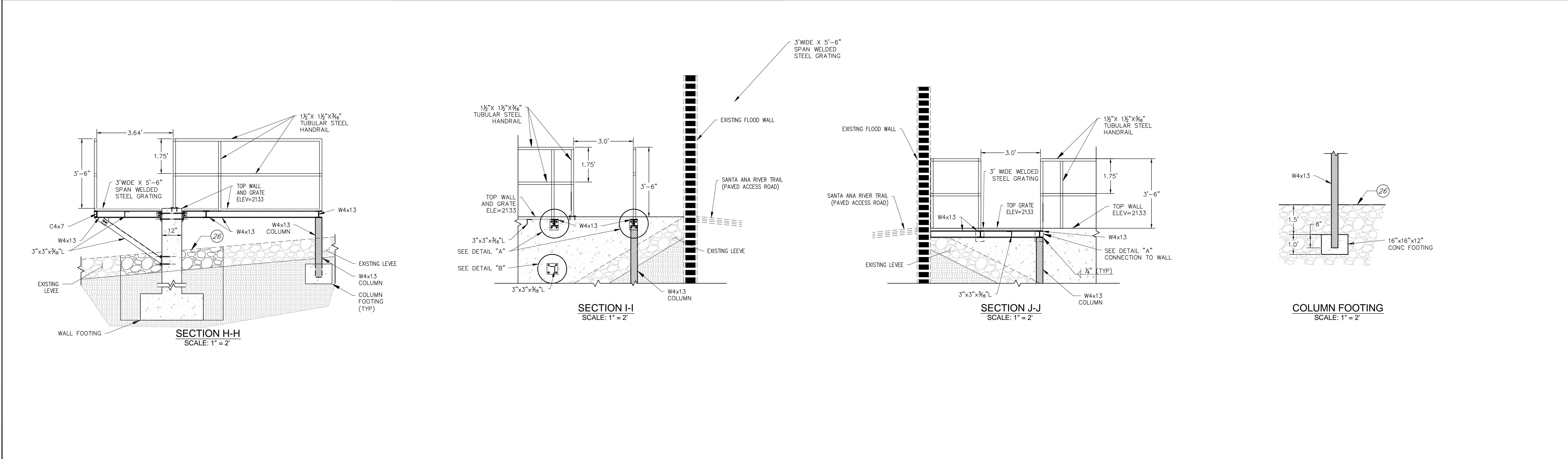
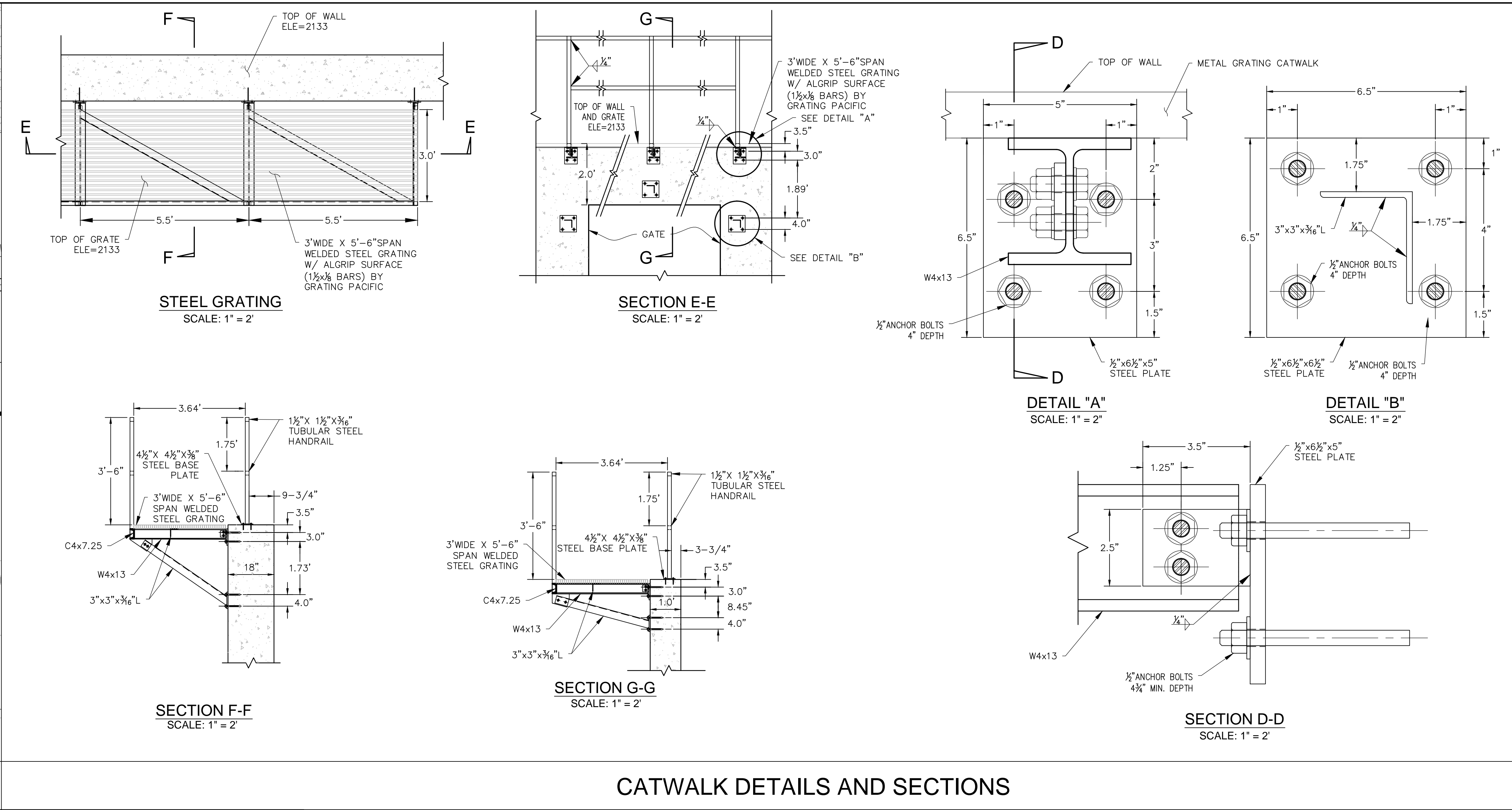
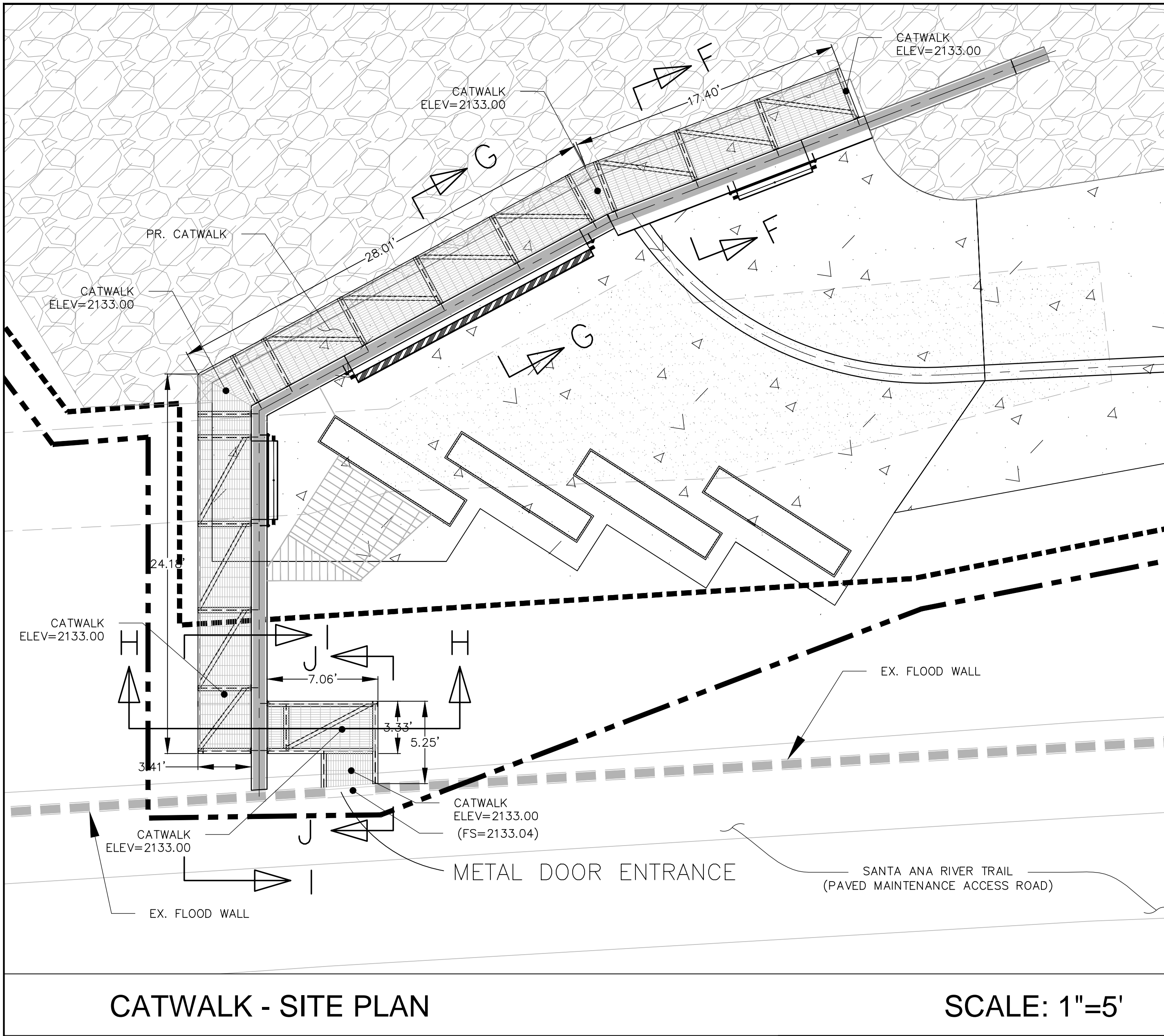
DETAILS

PROJECT NO. 15129

SHEET 4 OF 5

FINAL SUBMITTAL





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WATER CONSERVATION DISTRICT

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SAN BERNARDINO VALLEY  
WATER CONSERVATION DISTRICT

MILL CREEK DIVERSION AND  
DEBRIS MANAGEMENT IMPROVEMENT

DETAILS

PROJECT NO.  
15129

SHEET  
5

OF  
5

# **ATTACHMENT 1**

## 100-Year Event Hydrograph



Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0

Study date 09/18/12

+++++

San Bernardino County Synthetic Unit Hydrology Method  
Manual date - August 1986

Program License Serial Number 6221

-----  
093548 - GEOSCIENCE VALLEY DISTRICT - COUNTY OF SAN BERNARDINO, CA  
MILL CREEK WATERSHED TRIBUTARY TO APPROX. CAPTURE LOCATION  
100-YEAR, 24-HOUR STORM RETURN FREQUENCY/DURATION  
BY: JDN, DATE: 09-18-12  
-----

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
224.00	1	1.25
3209.00	1	1.35
2239.00	1	1.45
1717.00	1	1.55
4129.00	1	1.65
12277.00	1	1.75
8205.00	1	1.80

-----		
Rainfall data for year 100		
1184.00	6	3.25
3827.00	6	3.75
1833.00	6	4.25
2106.00	6	4.75
6301.00	6	5.50
1277.00	6	5.75
7441.00	6	6.25
8031.00	6	6.50

-----		
Rainfall data for year 100		
1134.00	24	7.75
3815.00	24	9.00
2837.00	24	11.00
2692.00	24	13.00
3005.00	24	15.00
4341.00	24	17.00
7947.00	24	18.50
6229.00	24	19.00

+++++

\*\*\*\*\* Area-averaged max loss rate, Fm \*\*\*\*\*

SCS curve No. (AMCII)	SCS curve NO. (AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
82.0	95.2	32000.00	1.000	0.094	1.000	0.094

Area-averaged adjusted loss rate Fm (In/Hr) = 0.094

\*\*\*\*\* Area-Averaged low loss rate fraction, Yb \*\*\*\*\*

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
32000.00	1.000	82.0	95.2	0.50	0.962

Area-averaged catchment yield fraction, Y = 0.962

Area-averaged low loss fraction, Yb = 0.038

```

+++++
Watercourse length = 91800.00(Ft.)
Length from concentration point to centroid = 48667.00(Ft.)
Elevation difference along watercourse = 8930.00(Ft.)
Mannings friction factor along watercourse = 0.040
Watershed area = 32000.00(Ac.)
Catchment Lag time = 2.019 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 4.1280
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.094(In/Hr)
Average low loss rate fraction (Yb) = 0.038 (decimal)
MOUNTAIN S-Graph Selected
Computed peak 5-minute rainfall = 0.795(In)
Computed peak 30-minute rainfall = 1.360(In)
Specified peak 1-hour rainfall = 1.675(In)
Computed peak 3-hour rainfall = 3.480(In)
Specified peak 6-hour rainfall = 5.522(In)
Specified peak 24-hour rainfall = 15.424(In)

```

Rainfall depth area reduction factors:  
Using a total area of 32000.00(Ac.) (Ref: fig. E-4)

```

5-minute factor = 0.437      Adjusted rainfall = 0.347(In)
30-minute factor = 0.475     Adjusted rainfall = 0.646(In)
1-hour factor = 0.502        Adjusted rainfall = 0.841(In)
3-hour factor = 0.845        Adjusted rainfall = 2.939(In)
6-hour factor = 0.930        Adjusted rainfall = 5.138(In)
24-hour factor = 0.956       Adjusted rainfall = 14.753(In)

```

#### Unit Hydrograph

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+++++
Interval      'S' Graph      Unit Hydrograph
Number        Mean values      ((CFS))
-----
(K = 387000.00 (CFS))

```

1	0.454	1757.299
2	1.362	3514.598
3	2.270	3514.598
4	3.212	3643.209
5	4.516	5046.730
6	5.919	5431.652
7	7.415	5787.432
8	9.024	6229.164
9	10.730	6599.533
10	13.001	8788.816
11	15.942	11381.036
12	19.079	12141.340
13	22.281	12393.095
14	25.583	12776.326
15	28.885	12780.358
16	32.165	12692.777
17	34.961	10820.309
18	37.561	10064.532
19	39.929	9162.511
20	41.865	7492.253
21	43.791	7455.209
22	45.710	7425.001
23	47.366	6407.819
24	48.893	5910.915
25	50.309	5478.766
26	51.474	4509.414
27	52.630	4473.125
28	53.785	4468.319
29	54.862	4170.424
30	55.894	3993.862
31	56.880	3814.845
32	57.740	3328.893
33	58.593	3301.592
34	59.446	3301.204
35	60.283	3239.628
36	61.109	3195.089
37	61.898	3054.648
38	62.568	2592.360
39	63.229	2556.072
40	63.889	2556.072
41	64.550	2556.072
42	65.210	2556.072
43	65.852	2485.480
44	66.421	2202.297
45	66.983	2172.661
46	67.544	2172.661
47	68.106	2172.661
48	68.667	2172.661
49	69.218	2133.909

		MI LLCRK. out
50	69. 720	1942. 859
51	70. 216	1917. 054
52	70. 711	1917. 054
53	71. 207	1917. 054
54	71. 702	1917. 054
55	72. 189	1885. 804
56	72. 627	1694. 106
57	73. 056	1661. 447
58	73. 486	1661. 447
59	73. 915	1661. 447
60	74. 344	1661. 447
61	74. 767	1636. 893
62	75. 141	1446. 160
63	75. 504	1405. 839
64	75. 867	1405. 839
65	76. 231	1405. 839
66	76. 594	1405. 839
67	76. 955	1396. 507
68	77. 291	1302. 430
69	77. 622	1278. 036
70	77. 952	1278. 036
71	78. 282	1278. 036
72	78. 612	1278. 036
73	78. 940	1267. 850
74	79. 232	1129. 877
75	79. 513	1086. 330
76	79. 793	1086. 330
77	80. 074	1086. 330
78	80. 355	1086. 330
79	80. 634	1081. 679
80	80. 891	992. 598
81	81. 138	958. 527
82	81. 386	958. 527
83	81. 634	958. 527
84	81. 881	958. 527
85	82. 128	955. 610
86	82. 353	870. 238
87	82. 568	830. 723
88	82. 783	830. 723
89	82. 997	830. 723
90	83. 212	830. 723
91	83. 426	830. 723
92	83. 641	830. 723
93	83. 856	830. 723
94	84. 070	830. 723
95	84. 285	830. 723
96	84. 500	830. 723
97	84. 714	829. 904
98	84. 904	735. 482
99	85. 078	670. 969
100	85. 251	670. 969
101	85. 424	670. 969
102	85. 598	670. 969
103	85. 771	670. 969
104	85. 945	670. 969
105	86. 118	670. 969
106	86. 291	670. 969
107	86. 465	670. 969
108	86. 638	670. 969
109	86. 811	670. 969
110	86. 981	655. 344
111	87. 146	639. 020
112	87. 311	639. 018
113	87. 476	639. 018
114	87. 641	639. 018
115	87. 806	639. 018
116	87. 971	639. 018
117	88. 137	639. 018
118	88. 302	639. 018
119	88. 467	639. 018
120	88. 632	639. 018
121	88. 797	639. 018
122	88. 950	589. 911
123	89. 082	512. 187
124	89. 214	511. 214
125	89. 346	511. 214
126	89. 478	511. 214
127	89. 610	511. 214
128	89. 742	511. 214
129	89. 874	511. 214
130	90. 007	511. 214
131	90. 139	511. 214
132	90. 271	511. 214
133	90. 403	511. 214
134	90. 533	501. 882
135	90. 657	480. 151
136	90. 780	479. 263
137	90. 904	479. 263



		MI LLCRK. out
138	91. 028	479. 263
139	91. 152	479. 263
140	91. 276	479. 263
141	91. 400	479. 263
142	91. 523	479. 263
143	91. 647	479. 263
144	91. 771	479. 263
145	91. 895	479. 263
146	92. 015	465. 683
147	92. 124	419. 232
148	92. 231	415. 362
149	92. 338	415. 362
150	92. 446	415. 362
151	92. 553	415. 362
152	92. 660	415. 362
153	92. 768	415. 362
154	92. 875	415. 362
155	92. 982	415. 362
156	93. 090	415. 362
157	93. 197	415. 362
158	93. 303	410. 710
159	93. 403	386. 797
160	93. 502	383. 411
161	93. 601	383. 411
162	93. 700	383. 411
163	93. 799	383. 411
164	93. 898	383. 411
165	93. 997	383. 411
166	94. 097	383. 411
167	94. 196	383. 411
168	94. 295	383. 411
169	94. 394	383. 411
170	94. 491	377. 577
171	94. 577	329. 989
172	94. 659	319. 509
173	94. 742	319. 509
174	94. 824	319. 509
175	94. 907	319. 509
176	94. 989	319. 509
177	95. 072	319. 509
178	95. 154	319. 509
179	95. 237	319. 509
180	95. 320	319. 509
181	95. 402	319. 509
182	95. 484	317. 924
183	95. 561	295. 055
184	95. 635	287. 558
185	95. 709	287. 558
186	95. 783	287. 558
187	95. 858	287. 558
188	95. 932	287. 558
189	96. 006	287. 558
190	96. 081	287. 558
191	96. 155	287. 558
192	96. 229	287. 558
193	96. 304	287. 558
194	96. 378	287. 558
195	96. 452	287. 558
196	96. 527	287. 558
197	96. 601	287. 558
198	96. 675	287. 558
199	96. 749	287. 558
200	96. 824	287. 558
201	96. 898	287. 558
202	96. 972	287. 558
203	97. 047	287. 558
204	97. 121	287. 558
205	97. 195	287. 558
206	97. 270	287. 558
207	97. 344	287. 558
208	97. 418	287. 558
209	97. 492	287. 558
210	97. 567	287. 558
211	97. 641	287. 558
212	97. 715	287. 558
213	97. 790	287. 558
214	97. 864	287. 558
215	97. 938	287. 558
216	98. 013	287. 558
217	98. 087	287. 558
218	98. 161	287. 558
219	98. 236	287. 558
220	98. 310	287. 558
221	98. 384	287. 558
222	98. 458	287. 558
223	98. 533	287. 558
224	98. 607	287. 558
225	98. 681	287. 558

		MI LLCRK. out
226	98. 756	287. 558
227	98. 830	287. 558
228	98. 904	287. 558
229	98. 979	287. 558
230	99. 053	287. 558
231	99. 127	287. 558
232	99. 201	287. 558
233	99. 276	287. 558
234	99. 350	287. 558
235	99. 424	287. 558
236	99. 499	287. 558
237	99. 573	287. 558
238	99. 647	287. 558
239	99. 722	287. 558
240	99. 796	287. 558
241	99. 870	287. 558
242	99. 945	287. 558
243	100. 000	214. 731

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0. 3468	0. 3468
2	0. 4412	0. 0944
3	0. 5079	0. 0667
4	0. 5613	0. 0533
5	0. 6065	0. 0452
6	0. 6461	0. 0396
7	0. 6852	0. 0391
8	0. 7210	0. 0358
9	0. 7541	0. 0331
10	0. 7850	0. 0309
11	0. 8140	0. 0290
12	0. 8415	0. 0275
13	0. 9218	0. 0803
14	1. 0029	0. 0811
15	1. 0849	0. 0819
16	1. 1676	0. 0827
17	1. 2510	0. 0834
18	1. 3351	0. 0841
19	1. 4199	0. 0848
20	1. 5052	0. 0854
21	1. 5912	0. 0860
22	1. 6778	0. 0865
23	1. 7649	0. 0871
24	1. 8525	0. 0876
25	1. 9406	0. 0881
26	2. 0292	0. 0886
27	2. 1183	0. 0891
28	2. 2078	0. 0895
29	2. 2978	0. 0900
30	2. 3883	0. 0904
31	2. 4791	0. 0908
32	2. 5703	0. 0912
33	2. 6620	0. 0916
34	2. 7540	0. 0920
35	2. 8464	0. 0924
36	2. 9392	0. 0928
37	3. 0048	0. 0656
38	3. 0701	0. 0653
39	3. 1350	0. 0649
40	3. 1996	0. 0646
41	3. 2639	0. 0643
42	3. 3279	0. 0640
43	3. 3916	0. 0637
44	3. 4550	0. 0634
45	3. 5182	0. 0631
46	3. 5810	0. 0629
47	3. 6436	0. 0626
48	3. 7060	0. 0623
49	3. 7681	0. 0621
50	3. 8299	0. 0618
51	3. 8915	0. 0616
52	3. 9529	0. 0614
53	4. 0140	0. 0611
54	4. 0750	0. 0609
55	4. 1357	0. 0607
56	4. 1961	0. 0605
57	4. 2564	0. 0603
58	4. 3165	0. 0601
59	4. 3764	0. 0599
60	4. 4360	0. 0597
61	4. 4955	0. 0595
62	4. 5548	0. 0593
63	4. 6139	0. 0591
64	4. 6728	0. 0589
65	4. 7316	0. 0587
66	4. 7902	0. 0586
67	4. 8486	0. 0584

		MI LLCRK. out
68	4. 9068	0. 0582
69	4. 9649	0. 0581
70	5. 0228	0. 0579
71	5. 0805	0. 0577
72	5. 1381	0. 0576
73	5. 1923	0. 0542
74	5. 2463	0. 0540
75	5. 3002	0. 0539
76	5. 3539	0. 0537
77	5. 4074	0. 0535
78	5. 4607	0. 0533
79	5. 5139	0. 0532
80	5. 5669	0. 0530
81	5. 6198	0. 0529
82	5. 6725	0. 0527
83	5. 7251	0. 0526
84	5. 7775	0. 0524
85	5. 8297	0. 0523
86	5. 8818	0. 0521
87	5. 9338	0. 0520
88	5. 9856	0. 0518
89	6. 0373	0. 0517
90	6. 0889	0. 0515
91	6. 1403	0. 0514
92	6. 1915	0. 0513
93	6. 2427	0. 0511
94	6. 2937	0. 0510
95	6. 3446	0. 0509
96	6. 3953	0. 0508
97	6. 4459	0. 0506
98	6. 4964	0. 0505
99	6. 5468	0. 0504
100	6. 5971	0. 0503
101	6. 6472	0. 0501
102	6. 6972	0. 0500
103	6. 7471	0. 0499
104	6. 7969	0. 0498
105	6. 8466	0. 0497
106	6. 8961	0. 0496
107	6. 9456	0. 0494
108	6. 9949	0. 0493
109	7. 0441	0. 0492
110	7. 0932	0. 0491
111	7. 1422	0. 0490
112	7. 1911	0. 0489
113	7. 2399	0. 0488
114	7. 2886	0. 0487
115	7. 3372	0. 0486
116	7. 3857	0. 0485
117	7. 4341	0. 0484
118	7. 4824	0. 0483
119	7. 5306	0. 0482
120	7. 5787	0. 0481
121	7. 6267	0. 0480
122	7. 6746	0. 0479
123	7. 7225	0. 0478
124	7. 7702	0. 0477
125	7. 8178	0. 0476
126	7. 8653	0. 0475
127	7. 9128	0. 0475
128	7. 9602	0. 0474
129	8. 0074	0. 0473
130	8. 0546	0. 0472
131	8. 1017	0. 0471
132	8. 1487	0. 0470
133	8. 1957	0. 0469
134	8. 2425	0. 0468
135	8. 2893	0. 0468
136	8. 3359	0. 0467
137	8. 3825	0. 0466
138	8. 4290	0. 0465
139	8. 4755	0. 0464
140	8. 5218	0. 0464
141	8. 5681	0. 0463
142	8. 6143	0. 0462
143	8. 6604	0. 0461
144	8. 7065	0. 0460
145	8. 7524	0. 0460
146	8. 7983	0. 0459
147	8. 8441	0. 0458
148	8. 8899	0. 0457
149	8. 9355	0. 0457
150	8. 9811	0. 0456
151	9. 0266	0. 0455
152	9. 0721	0. 0454
153	9. 1175	0. 0454
154	9. 1628	0. 0453
155	9. 2080	0. 0452

		MI LLCRK. out
156	9. 2532	0. 0452
157	9. 2983	0. 0451
158	9. 3433	0. 0450
159	9. 3883	0. 0450
160	9. 4331	0. 0449
161	9. 4780	0. 0448
162	9. 5227	0. 0448
163	9. 5674	0. 0447
164	9. 6120	0. 0446
165	9. 6566	0. 0446
166	9. 7011	0. 0445
167	9. 7455	0. 0444
168	9. 7899	0. 0444
169	9. 8342	0. 0443
170	9. 8785	0. 0442
171	9. 9226	0. 0442
172	9. 9668	0. 0441
173	10. 0108	0. 0441
174	10. 0548	0. 0440
175	10. 0988	0. 0439
176	10. 1426	0. 0439
177	10. 1864	0. 0438
178	10. 2302	0. 0438
179	10. 2739	0. 0437
180	10. 3175	0. 0436
181	10. 3611	0. 0436
182	10. 4047	0. 0435
183	10. 4481	0. 0435
184	10. 4915	0. 0434
185	10. 5349	0. 0434
186	10. 5782	0. 0433
187	10. 6214	0. 0432
188	10. 6646	0. 0432
189	10. 7078	0. 0431
190	10. 7508	0. 0431
191	10. 7939	0. 0430
192	10. 8368	0. 0430
193	10. 8798	0. 0429
194	10. 9226	0. 0429
195	10. 9654	0. 0428
196	11. 0082	0. 0428
197	11. 0509	0. 0427
198	11. 0935	0. 0427
199	11. 1362	0. 0426
200	11. 1787	0. 0426
201	11. 2212	0. 0425
202	11. 2637	0. 0425
203	11. 3061	0. 0424
204	11. 3484	0. 0424
205	11. 3907	0. 0423
206	11. 4330	0. 0423
207	11. 4752	0. 0422
208	11. 5173	0. 0422
209	11. 5594	0. 0421
210	11. 6015	0. 0421
211	11. 6435	0. 0420
212	11. 6855	0. 0420
213	11. 7274	0. 0419
214	11. 7692	0. 0419
215	11. 8111	0. 0418
216	11. 8528	0. 0418
217	11. 8946	0. 0417
218	11. 9362	0. 0417
219	11. 9779	0. 0416
220	12. 0195	0. 0416
221	12. 0610	0. 0415
222	12. 1025	0. 0415
223	12. 1440	0. 0415
224	12. 1854	0. 0414
225	12. 2268	0. 0414
226	12. 2681	0. 0413
227	12. 3094	0. 0413
228	12. 3506	0. 0412
229	12. 3918	0. 0412
230	12. 4329	0. 0412
231	12. 4740	0. 0411
232	12. 5151	0. 0411
233	12. 5561	0. 0410
234	12. 5971	0. 0410
235	12. 6381	0. 0409
236	12. 6790	0. 0409
237	12. 7198	0. 0409
238	12. 7606	0. 0408
239	12. 8014	0. 0408
240	12. 8421	0. 0407
241	12. 8828	0. 0407
242	12. 9235	0. 0407
243	12. 9641	0. 0406

MI LLCRK. out

244	13. 0047	0. 0406
245	13. 0452	0. 0405
246	13. 0857	0. 0405
247	13. 1261	0. 0405
248	13. 1666	0. 0404
249	13. 2069	0. 0404
250	13. 2473	0. 0403
251	13. 2876	0. 0403
252	13. 3278	0. 0403
253	13. 3680	0. 0402
254	13. 4082	0. 0402
255	13. 4484	0. 0401
256	13. 4885	0. 0401
257	13. 5286	0. 0401
258	13. 5686	0. 0400
259	13. 6086	0. 0400
260	13. 6485	0. 0400
261	13. 6885	0. 0399
262	13. 7283	0. 0399
263	13. 7682	0. 0398
264	13. 8080	0. 0398
265	13. 8478	0. 0398
266	13. 8875	0. 0397
267	13. 9272	0. 0397
268	13. 9669	0. 0397
269	14. 0065	0. 0396
270	14. 0461	0. 0396
271	14. 0857	0. 0396
272	14. 1252	0. 0395
273	14. 1647	0. 0395
274	14. 2042	0. 0395
275	14. 2436	0. 0394
276	14. 2830	0. 0394
277	14. 3224	0. 0394
278	14. 3617	0. 0393
279	14. 4010	0. 0393
280	14. 4402	0. 0393
281	14. 4795	0. 0392
282	14. 5186	0. 0392
283	14. 5578	0. 0392
284	14. 5969	0. 0391
285	14. 6360	0. 0391
286	14. 6751	0. 0391
287	14. 7141	0. 0390
288	14. 7531	0. 0390

Uni t Period (number)	Uni t Rainfal l (In)	Uni t Soi l -Loss (In)	Effect i ve Rainfal l (In)
1	0. 0390	0. 0015	0. 0375
2	0. 0390	0. 0015	0. 0375
3	0. 0391	0. 0015	0. 0376
4	0. 0391	0. 0015	0. 0376
5	0. 0392	0. 0015	0. 0377
6	0. 0392	0. 0015	0. 0377
7	0. 0393	0. 0015	0. 0378
8	0. 0393	0. 0015	0. 0378
9	0. 0394	0. 0015	0. 0379
10	0. 0394	0. 0015	0. 0379
11	0. 0395	0. 0015	0. 0380
12	0. 0395	0. 0015	0. 0380
13	0. 0396	0. 0015	0. 0381
14	0. 0396	0. 0015	0. 0381
15	0. 0397	0. 0015	0. 0382
16	0. 0397	0. 0015	0. 0382
17	0. 0398	0. 0015	0. 0383
18	0. 0398	0. 0015	0. 0383
19	0. 0399	0. 0015	0. 0384
20	0. 0400	0. 0015	0. 0384
21	0. 0400	0. 0015	0. 0385
22	0. 0401	0. 0015	0. 0385
23	0. 0401	0. 0015	0. 0386
24	0. 0402	0. 0015	0. 0386
25	0. 0403	0. 0015	0. 0387
26	0. 0403	0. 0015	0. 0388
27	0. 0404	0. 0015	0. 0388
28	0. 0404	0. 0015	0. 0389
29	0. 0405	0. 0015	0. 0389
30	0. 0405	0. 0015	0. 0390
31	0. 0406	0. 0016	0. 0391
32	0. 0407	0. 0016	0. 0391
33	0. 0407	0. 0016	0. 0392
34	0. 0408	0. 0016	0. 0392
35	0. 0409	0. 0016	0. 0393
36	0. 0409	0. 0016	0. 0393
37	0. 0410	0. 0016	0. 0394
38	0. 0410	0. 0016	0. 0395



			MI LLCRK. out
39	0. 0411	0. 0016	0. 0395
40	0. 0412	0. 0016	0. 0396
41	0. 0412	0. 0016	0. 0397
42	0. 0413	0. 0016	0. 0397
43	0. 0414	0. 0016	0. 0398
44	0. 0414	0. 0016	0. 0398
45	0. 0415	0. 0016	0. 0399
46	0. 0415	0. 0016	0. 0400
47	0. 0416	0. 0016	0. 0400
48	0. 0417	0. 0016	0. 0401
49	0. 0418	0. 0016	0. 0402
50	0. 0418	0. 0016	0. 0402
51	0. 0419	0. 0016	0. 0403
52	0. 0420	0. 0016	0. 0404
53	0. 0421	0. 0016	0. 0405
54	0. 0421	0. 0016	0. 0405
55	0. 0422	0. 0016	0. 0406
56	0. 0423	0. 0016	0. 0406
57	0. 0424	0. 0016	0. 0407
58	0. 0424	0. 0016	0. 0408
59	0. 0425	0. 0016	0. 0409
60	0. 0426	0. 0016	0. 0409
61	0. 0427	0. 0016	0. 0410
62	0. 0427	0. 0016	0. 0411
63	0. 0428	0. 0016	0. 0412
64	0. 0429	0. 0016	0. 0412
65	0. 0430	0. 0016	0. 0413
66	0. 0430	0. 0016	0. 0414
67	0. 0431	0. 0016	0. 0415
68	0. 0432	0. 0016	0. 0415
69	0. 0433	0. 0017	0. 0416
70	0. 0434	0. 0017	0. 0417
71	0. 0435	0. 0017	0. 0418
72	0. 0435	0. 0017	0. 0419
73	0. 0436	0. 0017	0. 0420
74	0. 0437	0. 0017	0. 0420
75	0. 0438	0. 0017	0. 0421
76	0. 0439	0. 0017	0. 0422
77	0. 0440	0. 0017	0. 0423
78	0. 0441	0. 0017	0. 0424
79	0. 0442	0. 0017	0. 0425
80	0. 0442	0. 0017	0. 0426
81	0. 0444	0. 0017	0. 0427
82	0. 0444	0. 0017	0. 0427
83	0. 0446	0. 0017	0. 0429
84	0. 0446	0. 0017	0. 0429
85	0. 0448	0. 0017	0. 0430
86	0. 0448	0. 0017	0. 0431
87	0. 0450	0. 0017	0. 0432
88	0. 0450	0. 0017	0. 0433
89	0. 0452	0. 0017	0. 0434
90	0. 0452	0. 0017	0. 0435
91	0. 0454	0. 0017	0. 0436
92	0. 0454	0. 0017	0. 0437
93	0. 0456	0. 0017	0. 0439
94	0. 0457	0. 0017	0. 0439
95	0. 0458	0. 0017	0. 0441
96	0. 0459	0. 0018	0. 0441
97	0. 0460	0. 0018	0. 0443
98	0. 0461	0. 0018	0. 0444
99	0. 0463	0. 0018	0. 0445
100	0. 0464	0. 0018	0. 0446
101	0. 0465	0. 0018	0. 0447
102	0. 0466	0. 0018	0. 0448
103	0. 0468	0. 0018	0. 0450
104	0. 0468	0. 0018	0. 0451
105	0. 0470	0. 0018	0. 0452
106	0. 0471	0. 0018	0. 0453
107	0. 0473	0. 0018	0. 0455
108	0. 0474	0. 0018	0. 0456
109	0. 0475	0. 0018	0. 0457
110	0. 0476	0. 0018	0. 0458
111	0. 0478	0. 0018	0. 0460
112	0. 0479	0. 0018	0. 0461
113	0. 0481	0. 0018	0. 0463
114	0. 0482	0. 0018	0. 0464
115	0. 0484	0. 0018	0. 0465
116	0. 0485	0. 0019	0. 0466
117	0. 0487	0. 0019	0. 0468
118	0. 0488	0. 0019	0. 0469
119	0. 0490	0. 0019	0. 0471
120	0. 0491	0. 0019	0. 0472
121	0. 0493	0. 0019	0. 0474
122	0. 0494	0. 0019	0. 0476
123	0. 0497	0. 0019	0. 0478
124	0. 0498	0. 0019	0. 0479
125	0. 0500	0. 0019	0. 0481
126	0. 0501	0. 0019	0. 0482

			MI LLCRK. out
127	0. 0504	0. 0019	0. 0485
128	0. 0505	0. 0019	0. 0486
129	0. 0508	0. 0019	0. 0488
130	0. 0509	0. 0019	0. 0489
131	0. 0511	0. 0020	0. 0492
132	0. 0513	0. 0020	0. 0493
133	0. 0515	0. 0020	0. 0496
134	0. 0517	0. 0020	0. 0497
135	0. 0520	0. 0020	0. 0500
136	0. 0521	0. 0020	0. 0501
137	0. 0524	0. 0020	0. 0504
138	0. 0526	0. 0020	0. 0506
139	0. 0529	0. 0020	0. 0508
140	0. 0530	0. 0020	0. 0510
141	0. 0533	0. 0020	0. 0513
142	0. 0535	0. 0020	0. 0515
143	0. 0539	0. 0021	0. 0518
144	0. 0540	0. 0021	0. 0520
145	0. 0576	0. 0022	0. 0554
146	0. 0577	0. 0022	0. 0555
147	0. 0581	0. 0022	0. 0558
148	0. 0582	0. 0022	0. 0560
149	0. 0586	0. 0022	0. 0563
150	0. 0587	0. 0022	0. 0565
151	0. 0591	0. 0023	0. 0568
152	0. 0593	0. 0023	0. 0570
153	0. 0597	0. 0023	0. 0574
154	0. 0599	0. 0023	0. 0576
155	0. 0603	0. 0023	0. 0580
156	0. 0605	0. 0023	0. 0582
157	0. 0609	0. 0023	0. 0586
158	0. 0611	0. 0023	0. 0588
159	0. 0616	0. 0024	0. 0593
160	0. 0618	0. 0024	0. 0595
161	0. 0623	0. 0024	0. 0600
162	0. 0626	0. 0024	0. 0602
163	0. 0631	0. 0024	0. 0607
164	0. 0634	0. 0024	0. 0610
165	0. 0640	0. 0024	0. 0616
166	0. 0643	0. 0025	0. 0618
167	0. 0649	0. 0025	0. 0625
168	0. 0653	0. 0025	0. 0628
169	0. 0928	0. 0035	0. 0892
170	0. 0924	0. 0035	0. 0889
171	0. 0916	0. 0035	0. 0881
172	0. 0912	0. 0035	0. 0878
173	0. 0904	0. 0035	0. 0870
174	0. 0900	0. 0034	0. 0866
175	0. 0891	0. 0034	0. 0857
176	0. 0886	0. 0034	0. 0852
177	0. 0876	0. 0033	0. 0843
178	0. 0871	0. 0033	0. 0838
179	0. 0860	0. 0033	0. 0827
180	0. 0854	0. 0033	0. 0821
181	0. 0841	0. 0032	0. 0809
182	0. 0834	0. 0032	0. 0802
183	0. 0819	0. 0031	0. 0788
184	0. 0811	0. 0031	0. 0780
185	0. 0275	0. 0010	0. 0264
186	0. 0290	0. 0011	0. 0279
187	0. 0331	0. 0013	0. 0318
188	0. 0358	0. 0014	0. 0344
189	0. 0396	0. 0015	0. 0381
190	0. 0452	0. 0017	0. 0435
191	0. 0667	0. 0025	0. 0641
192	0. 0944	0. 0036	0. 0908
193	0. 3468	0. 0079	0. 3390
194	0. 0533	0. 0020	0. 0513
195	0. 0391	0. 0015	0. 0376
196	0. 0309	0. 0012	0. 0297
197	0. 0803	0. 0031	0. 0772
198	0. 0827	0. 0032	0. 0796
199	0. 0848	0. 0032	0. 0815
200	0. 0865	0. 0033	0. 0832
201	0. 0881	0. 0034	0. 0848
202	0. 0895	0. 0034	0. 0861
203	0. 0908	0. 0035	0. 0874
204	0. 0920	0. 0035	0. 0885
205	0. 0656	0. 0025	0. 0631
206	0. 0646	0. 0025	0. 0621
207	0. 0637	0. 0024	0. 0613
208	0. 0629	0. 0024	0. 0605
209	0. 0621	0. 0024	0. 0597
210	0. 0614	0. 0023	0. 0590
211	0. 0607	0. 0023	0. 0584
212	0. 0601	0. 0023	0. 0578
213	0. 0595	0. 0023	0. 0572
214	0. 0589	0. 0023	0. 0567

MI LLCRK. out

215	0.0584	0.0022	0.0562
216	0.0579	0.0022	0.0557
217	0.0542	0.0021	0.0521
218	0.0537	0.0020	0.0516
219	0.0532	0.0020	0.0512
220	0.0527	0.0020	0.0507
221	0.0523	0.0020	0.0503
222	0.0518	0.0020	0.0498
223	0.0514	0.0020	0.0494
224	0.0510	0.0019	0.0491
225	0.0506	0.0019	0.0487
226	0.0503	0.0019	0.0483
227	0.0499	0.0019	0.0480
228	0.0496	0.0019	0.0477
229	0.0492	0.0019	0.0473
230	0.0489	0.0019	0.0470
231	0.0486	0.0019	0.0467
232	0.0483	0.0018	0.0465
233	0.0480	0.0018	0.0462
234	0.0477	0.0018	0.0459
235	0.0475	0.0018	0.0456
236	0.0472	0.0018	0.0454
237	0.0469	0.0018	0.0451
238	0.0467	0.0018	0.0449
239	0.0464	0.0018	0.0447
240	0.0462	0.0018	0.0444
241	0.0460	0.0018	0.0442
242	0.0457	0.0017	0.0440
243	0.0455	0.0017	0.0438
244	0.0453	0.0017	0.0436
245	0.0451	0.0017	0.0434
246	0.0449	0.0017	0.0432
247	0.0447	0.0017	0.0430
248	0.0445	0.0017	0.0428
249	0.0443	0.0017	0.0426
250	0.0441	0.0017	0.0424
251	0.0439	0.0017	0.0423
252	0.0438	0.0017	0.0421
253	0.0436	0.0017	0.0419
254	0.0434	0.0017	0.0418
255	0.0432	0.0017	0.0416
256	0.0431	0.0016	0.0414
257	0.0429	0.0016	0.0413
258	0.0428	0.0016	0.0411
259	0.0426	0.0016	0.0410
260	0.0425	0.0016	0.0408
261	0.0423	0.0016	0.0407
262	0.0422	0.0016	0.0405
263	0.0420	0.0016	0.0404
264	0.0419	0.0016	0.0403
265	0.0417	0.0016	0.0401
266	0.0416	0.0016	0.0400
267	0.0415	0.0016	0.0399
268	0.0413	0.0016	0.0397
269	0.0412	0.0016	0.0396
270	0.0411	0.0016	0.0395
271	0.0409	0.0016	0.0394
272	0.0408	0.0016	0.0393
273	0.0407	0.0016	0.0391
274	0.0406	0.0015	0.0390
275	0.0405	0.0015	0.0389
276	0.0403	0.0015	0.0388
277	0.0402	0.0015	0.0387
278	0.0401	0.0015	0.0386
279	0.0400	0.0015	0.0385
280	0.0399	0.0015	0.0384
281	0.0398	0.0015	0.0383
282	0.0397	0.0015	0.0382
283	0.0396	0.0015	0.0381
284	0.0395	0.0015	0.0380
285	0.0394	0.0015	0.0379
286	0.0393	0.0015	0.0378
287	0.0392	0.0015	0.0377
288	0.0391	0.0015	0.0376

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Total soil rain loss = 0.56(In)  
Total effective rainfall = 14.20(In)  
Peak flow rate in flood hydrograph = 26092.17(CFS)  
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24 - H O U R S T O R M  
R u n o f f H y d r o g r a p h  
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Hydrograph in 5 Minute intervals ((CFS))  
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0+ 5	0.4539	65.90	Q				
0+10	1.8159	197.77	Q				
0+15	4.0872	329.80	Q				
0+20	7.3022	466.81	Q				
0+25	11.8245	656.64	VQ				
0+30	17.7551	861.12	VQ				
0+35	25.1877	1079.22	VQ				
0+40	34.2383	1314.14	V Q				
0+45	45.0047	1563.27	V Q				
0+50	58.0543	1894.81	V Q				
0+55	74.0596	2323.97	V Q				
1+ 0	93.2205	2782.17	V Q				
1+ 5	115.6063	3250.41	V Q				
1+10	141.3199	3733.61	V Q				
1+15	170.3667	4217.60	V Q				
1+20	202.7285	4698.93	V Q				
1+25	237.9260	5110.68	V Q				
1+30	275.7680	5494.65	V Q				
1+35	316.0249	5845.30	V Q				
1+40	358.2687	6133.81	V Q				
1+45	402.4929	6421.34	V Q				
1+50	448.6921	6708.13	V Q				
1+55	496.6067	6957.19	V Q				
2+ 0	546.1107	7187.99	V Q				
2+ 5	597.0950	7402.91	V Q				
2+10	649.3113	7581.81	V Q				
2+15	702.7524	7759.64	V Q				
2+20	757.4188	7937.56	V Q				
2+25	813.2356	8104.60	V Q				
2+30	870.1590	8265.28	V Q				
2+35	928.1447	8419.52	V Q				
2+40	987.0689	8555.79	V Q				
2+45	1046.9263	8691.29	V Q				
2+50	1107.7183	8827.00	V Q				
2+55	1169.4307	8960.65	V Q				
3+ 0	1232.0537	9092.86	V Q				
3+ 5	1295.5527	9220.05	V Q				
3+10	1359.8098	9330.13	V Q				
3+15	1424.8173	9439.09	V Q				
3+20	1490.5765	9548.24	V Q				
3+25	1557.0891	9657.63	V Q				
3+30	1624.3565	9767.22	V Q				
3+35	1692.3620	9874.40	V Q				
3+40	1761.0339	9971.17	V Q				
3+45	1830.3663	10067.06	V Q				
3+50	1900.3603	10163.14	V Q				
3+55	1971.0177	10259.45	V Q				
4+ 0	2042.3397	10355.95	V Q				
4+ 5	2114.3179	10451.24	V Q				
4+10	2186.9045	10539.57	V Q				
4+15	2260.0943	10627.16	V Q				
4+20	2333.8886	10714.94	V Q				
4+25	2408.2891	10802.96	V Q				
4+30	2483.2972	10891.17	V Q				
4+35	2558.9064	10978.45	V Q				
4+40	2635.0685	11058.74	V Q				
4+45	2711.7768	11138.05	V Q				
4+50	2789.0326	11217.54	V Q				
4+55	2866.8376	11297.28	V Q				
5+ 0	2945.1931	11377.22	V Q				
5+ 5	3024.0945	11456.48	V Q				
5+10	3103.4938	11528.78	V Q				
5+15	3183.3824	11599.83	V Q				
5+20	3263.7616	11671.06	V Q				
5+25	3344.6331	11742.54	V Q				
5+30	3425.9982	11814.22	V Q				
5+35	3507.8564	11885.80	V Q				
5+40	3590.1846	11954.06	V Q				
5+45	3672.9784	12021.66	V Q				
5+50	3756.2392	12089.46	V Q				
5+55	3839.9687	12157.53	V Q				
6+ 0	3924.1684	12225.80	V Q				
6+ 5	4008.8375	12293.96	V Q				
6+10	4093.9419	12357.16	V Q				
6+15	4179.4722	12418.99	V Q				
6+20	4265.4298	12481.04	V Q				
6+25	4351.8166	12543.36	V Q				
6+30	4438.6341	12605.90	V Q				
6+35	4525.8830	12668.55	V Q				
6+40	4613.5420	12728.08	V Q				
6+45	4701.6041	12786.62	V Q				
6+50	4790.0710	12845.39	V Q				
6+55	4878.9446	12904.45	V Q				
7+ 0	4968.2265	12963.74	V Q				
7+ 5	5057.9182	13023.23	V Q				
7+10	5147.9991	13079.75	V Q				
7+15	5238.4612	13135.10	V Q				

7+20	5329.3062	13190.69	V	Q
7+25	5420.5362	13246.60	V	Q
7+30	5512.1530	13302.76	V	Q
7+35	5604.1588	13359.25	V	Q
7+40	5696.5554	13415.99	V	Q
7+45	5789.3452	13473.07	V	Q
7+50	5882.5299	13530.42	V	Q
7+55	5976.1120	13588.12	V	Q
8+ 0	6070.0934	13646.10	V	Q
8+ 5	6164.4764	13704.41	V	Q
8+10	6259.2386	13759.47	V	Q
8+15	6354.3658	13812.47	V	Q
8+20	6449.8601	13865.77	V	Q
8+25	6545.7241	13919.45	V	Q
8+30	6641.9599	13973.44	V	Q
8+35	6738.5702	14027.82	V	Q
8+40	6835.5572	14082.51	V	Q
8+45	6932.9237	14137.62	V	Q
8+50	7030.6720	14193.05	V	Q
8+55	7128.8050	14248.91	V	Q
9+ 0	7227.3250	14305.11	V	Q
9+ 5	7326.2352	14361.75	V	Q
9+10	7425.5339	14418.17	V	Q
9+15	7525.2201	14474.44	V	Q
9+20	7625.2963	14531.07	V	Q
9+25	7725.7659	14588.19	V	Q
9+30	7826.6316	14645.69	V	Q
9+35	7927.8967	14703.70	V	Q
9+40	8029.5641	14762.11	V	Q
9+45	8131.6373	14821.04	V	Q
9+50	8234.1194	14880.40	V	Q
9+55	8337.0140	14940.30	V	Q
10+ 0	8440.3243	15000.65	V	Q
10+ 5	8544.0541	15061.57	V	Q
10+10	8648.1940	15121.12	V	Q
10+15	8752.7281	15178.34	V	Q
10+20	8857.6594	15236.03	V	Q
10+25	8962.9922	15294.32	V	Q
10+30	9068.7301	15353.14	V	Q
10+35	9174.8775	15412.60	V	Q
10+40	9281.4381	15472.61	V	Q
10+45	9388.4168	15533.30	V	Q
10+50	9495.8173	15594.56	V	Q
10+55	9603.6448	15656.54	V	Q
11+ 0	9711.9033	15719.14	V	Q
11+ 5	9820.5981	15782.48	V	Q
11+10	9929.7312	15846.13	V	Q
11+15	10039.3025	15909.75	V	Q
11+20	10149.3165	15974.03	V	Q
11+25	10259.7790	16039.15	V	Q
11+30	10370.6949	16105.00	V	Q
11+35	10482.0706	16171.75	V	Q
11+40	10593.9113	16239.26	V	Q
11+45	10706.2235	16307.73	V	Q
11+50	10819.0130	16377.03	V	Q
11+55	10932.2866	16447.34	V	Q
12+ 0	11046.0506	16518.53	V	Q
12+ 5	11160.3495	16596.20	V	Q
12+10	11275.2233	16679.67	V	Q
12+15	11390.6670	16762.42	V	Q
12+20	11506.6884	16846.30	V	Q
12+25	11623.3246	16935.58	V	Q
12+30	11740.5902	17026.96	V	Q
12+35	11858.5001	17120.51	V	Q
12+40	11977.0702	17216.39	V	Q
12+45	12096.3164	17314.54	V	Q
12+50	12216.2918	17420.43	V	Q
12+55	12337.0595	17535.46	V	Q
13+ 0	12458.6418	17653.75	V	Q
13+ 5	12581.0518	17773.94	V	Q
13+10	12704.3032	17896.10	V	Q
13+15	12828.3981	18018.58	V	Q
13+20	12953.3410	18141.72	V	Q
13+25	13079.1016	18260.43	V	Q
13+30	13205.6722	18378.05	V	Q
13+35	13333.0447	18494.48	V	Q
13+40	13461.1935	18607.21	V	Q
13+45	13590.1306	18721.67	V	Q
13+50	13719.8670	18837.73	V	Q
13+55	13850.3953	18952.72	V	Q
14+ 0	13981.7184	19068.11	V	Q
14+ 5	14114.1554	19229.85	V	Q
14+10	14248.0029	19434.66	V	Q
14+15	14383.2403	19636.47	V	Q
14+20	14519.8782	19839.82	V	Q
14+25	14658.1511	20077.22	V	Q
14+30	14798.1059	20321.44	V	Q
14+35	14939.7776	20570.73	V	Q

			MI LLCRK. out	
14+40	15083.2102	20826.41	V	Q
14+45	15228.4372	21086.95	V	Q
14+50	15375.8152	21399.29	V	Q
14+55	15525.7544	21771.18	V	Q
15+ 0	15678.3196	22152.46	V	Q
15+ 5	15833.4690	22527.70	V	Q
15+10	15991.1755	22898.98	V	Q
15+15	16151.3366	23255.40	V	Q
15+20	16313.8366	23595.00	V	Q
15+25	16477.6307	23782.91	V	Q
15+30	16641.9095	23853.28	V	Q
15+35	16806.5132	23900.46	V	Q
15+40	16971.1088	23899.28	V	Q
15+45	17135.2291	23830.26	V	Q
15+50	17298.8185	23753.19	V	Q
15+55	17461.8923	23678.32	V	Q
16+ 0	17624.7844	23651.93	V	Q
16+ 5	17790.6500	24083.68	V	Q
16+10	17958.1517	24321.25	V	Q
16+15	18123.0246	23939.55	V	Q
16+20	18285.4113	23578.55	V	Q
16+25	18448.0916	23621.17	V	Q
16+30	18609.6691	23461.06	V	Q
16+35	18770.2195	23311.92	V	Q
16+40	18930.2615	23238.09	V	Q
16+45	19091.5056	23412.64	V	Q
16+50	19257.9701	24170.65	V	Q
16+55	19430.3308	25026.78	V	Q
17+ 0	19605.3661	25415.13	V	Q
17+ 5	19781.4696	25570.22	V	Q
17+10	19958.8005	25748.44	V	Q
17+15	20137.4392	25938.34	V	Q
17+20	20317.1373	26092.17	V	Q
17+25	20494.5529	25760.74	V	Q
17+30	20672.1304	25784.25	V	Q
17+35	20849.6284	25772.71	V	Q
17+40	21025.9414	25600.64	V	Q
17+45	21203.6963	25810.01	V	Q
17+50	21382.2329	25923.52	V	Q
17+55	21559.0181	25669.21	V	Q
18+ 0	21734.3897	25463.96	V	Q
18+ 5	21908.2762	25248.31	V	Q
18+10	22079.6758	24887.22	V	Q
18+15	22250.0284	24735.21	V	Q
18+20	22419.1681	24559.08	V	Q
18+25	22586.6814	24322.93	V	Q
18+30	22752.6427	24097.58	V	Q
18+35	22917.0866	23877.25	V	Q
18+40	23079.7371	23616.86	V	Q
18+45	23241.3701	23469.12	V	Q
18+50	23401.9218	23312.09	V	Q
18+55	23561.3258	23145.46	V	Q
19+ 0	23719.5218	22970.06	V	Q
19+ 5	23876.3093	22765.55	V	Q
19+10	24031.2782	22501.49	V	Q
19+15	24185.2615	22358.37	V	Q
19+20	24338.3538	22229.00	V	Q
19+25	24490.6164	22108.54	V	Q
19+30	24641.9559	21974.50	V	Q
19+35	24792.2291	21819.66	V	Q
19+40	24941.1807	21627.77	V	Q
19+45	25089.3251	21510.57	V	Q
19+50	25236.7482	21405.83	V	Q
19+55	25383.4770	21305.03	V	Q
20+ 0	25529.4723	21198.51	V	Q
20+ 5	25674.6570	21080.82	V	Q
20+10	25818.8476	20936.48	V	Q
20+15	25962.3624	20838.35	V	Q
20+20	26105.2182	20742.65	V	Q
20+25	26247.4235	20648.22	V	Q
20+30	26388.9586	20550.89	V	Q
20+35	26529.7495	20442.84	V	Q
20+40	26669.5661	20301.37	V	Q
20+45	26808.7359	20207.45	V	Q
20+50	26947.3436	20125.84	V	Q
20+55	27085.3914	20044.54	V	Q
21+ 0	27222.8243	19955.25	V	Q
21+ 5	27359.5669	19855.02	V	Q
21+10	27495.3622	19717.48	V	Q
21+15	27630.5219	19625.19	V	Q
21+20	27765.1482	19547.73	V	Q
21+25	27899.2505	19471.66	V	Q
21+30	28032.8057	19392.21	V	Q
21+35	28165.7851	19308.60	V	Q
21+40	28298.0792	19209.11	V	Q
21+45	28429.8398	19131.64	V	Q
21+50	28561.1241	19062.49	V	Q
21+55	28691.9343	18993.64	V	Q



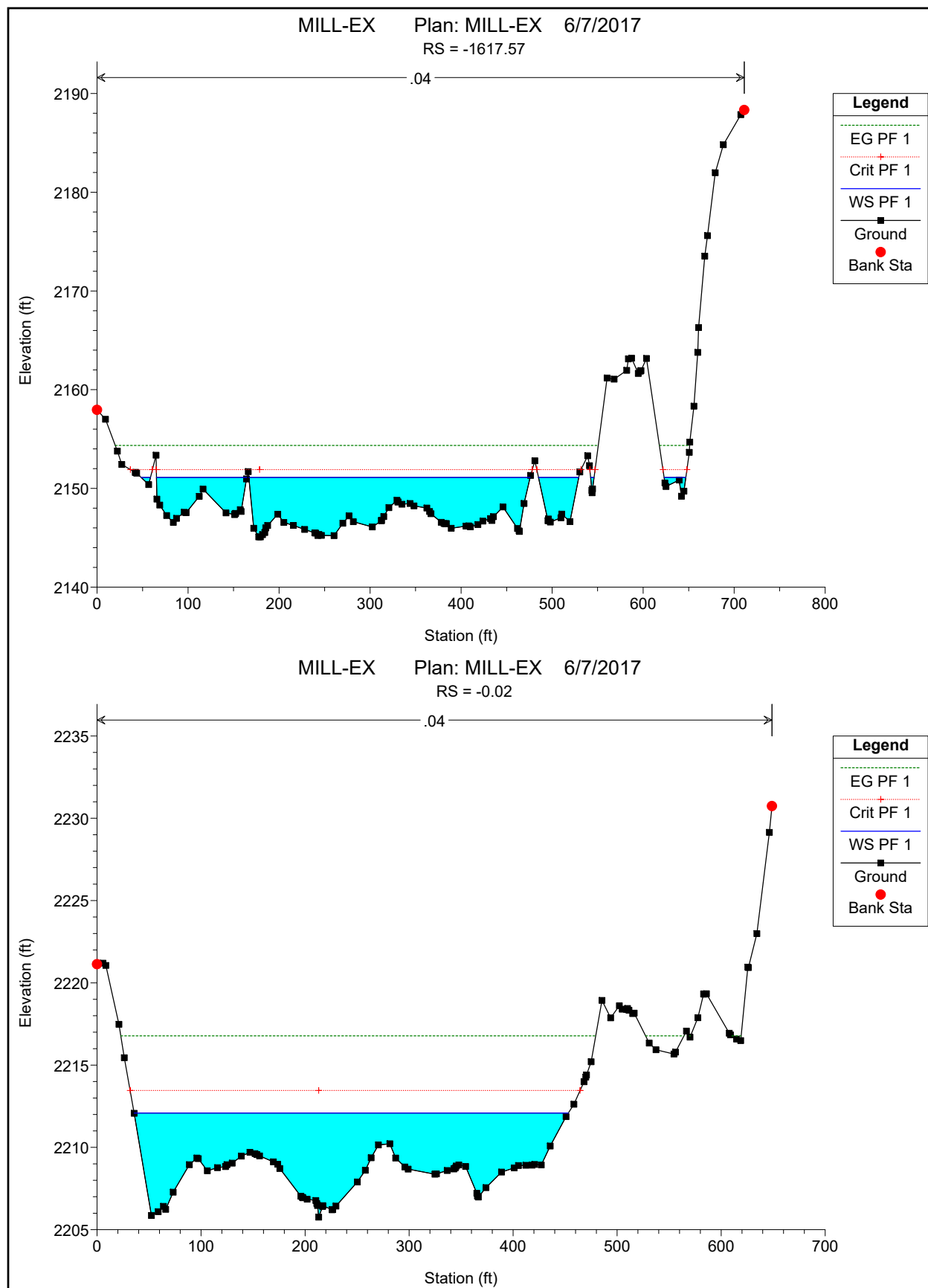
			MI LLCRK. out	
22+ 0	28822.2524	18922.19		Q V
22+ 5	28952.0387	18844.97		Q V
22+10	29081.0890	18738.09		Q V
22+15	29209.5994	18659.72		Q V
22+20	29337.6726	18596.22		Q V
22+25	29465.3181	18534.12		Q V
22+30	29592.5129	18468.69		Q V
22+35	29719.2306	18399.41		Q V
22+40	29845.3416	18311.32		Q V
22+45	29970.9698	18241.21		Q V
22+50	30096.1915	18182.19		Q V
22+55	30221.0117	18123.88		Q V
23+ 0	30345.3918	18060.00		Q V
23+ 5	30469.2983	17991.22		Q V
23+10	30592.6111	17905.03		Q V
23+15	30715.4411	17834.90		Q V
23+20	30837.8788	17777.96		Q V
23+25	30959.9360	17722.71		Q V
23+30	31081.6236	17669.04		Q V
23+35	31202.9527	17616.99		Q V
23+40	31323.9391	17567.22		Q V
23+45	31444.5880	17518.23		Q V
23+50	31564.8984	17469.07		Q V
23+55	31684.8674	17419.49		Q V
24+ 0	31804.4812	17367.93		Q V
24+ 5	31923.2613	17246.87		Q V
24+10	32040.5953	17036.90		Q V
24+15	32156.5590	16837.92		Q V
24+20	32271.2622	16654.92		Q V
24+25	32384.3604	16421.86		Q V
24+30	32495.7394	16172.23		Q V
24+35	32605.2975	15907.83		Q V
24+40	32712.9267	15627.76		Q V
24+45	32818.5366	15334.57		Q V
24+50	32921.5672	14960.04		Q V
24+55	33021.3553	14489.24		Q V
25+ 0	33117.7106	13990.79		Q V
25+ 5	33210.5721	13483.49		Q V
25+10	33299.8376	12961.35		Q V
25+15	33385.5280	12442.25		Q V
25+20	33467.7110	11932.98		Q V
25+25	33546.8837	11495.88		Q V
25+30	33623.2637	11090.37		Q V
25+35	33697.1135	10722.99		Q V
25+40	33768.8694	10418.95		Q V
25+45	33838.5436	10116.70		Q V
25+50	33906.1471	9816.03		Q V
25+55	33971.9441	9553.71		Q V
26+ 0	34036.0576	9309.28		Q V
26+ 5	34098.5834	9078.75		Q V
26+10	34159.6797	8871.19		Q V
26+15	34219.3189	8659.60		Q V
26+20	34277.6622	8471.44		Q V
26+25	34334.8025	8296.78		Q V
26+30	34390.7807	8128.03		Q V
26+35	34445.6278	7963.80		Q V
26+40	34499.4699	7817.87		Q V
26+45	34552.3144	7673.03		Q V
26+50	34604.1621	7528.28		Q V
26+55	34655.0291	7385.90		Q V
27+ 0	34704.9263	7245.07		Q V
27+ 5	34753.8865	7109.01		Q V
27+10	34802.0185	6988.78		Q V
27+15	34849.3247	6868.85		Q V
27+20	34895.8495	6755.41		Q V
27+25	34941.6005	6643.04		Q V
27+30	34986.5832	6531.49		Q V
27+35	35030.8274	6424.25		Q V
27+40	35074.4080	6327.90		Q V
27+45	35117.3325	6232.64		Q V
27+50	35159.6010	6137.40		Q V
27+55	35201.2133	6042.10		Q V
28+ 0	35242.1669	5946.46		Q V
28+ 5	35282.4639	5851.12		Q V
28+10	35322.1243	5758.69		Q V
28+15	35361.1000	5659.27		Q V
28+20	35399.4778	5572.46		Q V
28+25	35437.2726	5487.81		Q V
28+30	35474.4863	5403.43		Q V
28+35	35511.1219	5319.49		Q V
28+40	35547.2291	5242.76		Q V
28+45	35582.8161	5167.23		Q V
28+50	35617.8828	5091.69		Q V
28+55	35652.4293	5016.14		Q V
29+ 0	35686.4544	4940.44		Q V
29+ 5	35719.9609	4865.15		Q V
29+10	35752.9884	4795.59		Q V
29+15	35785.5208	4723.70		Q V

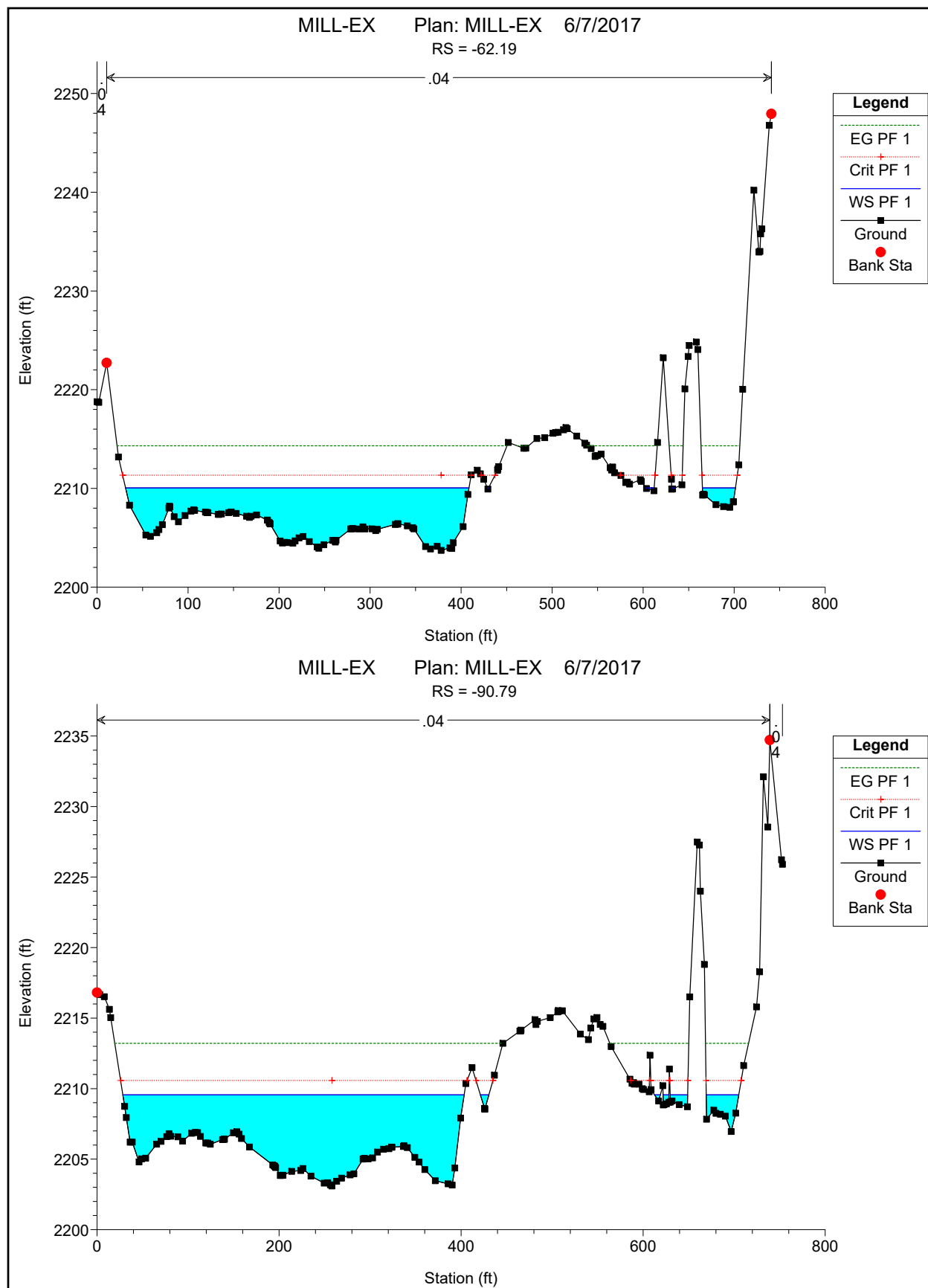
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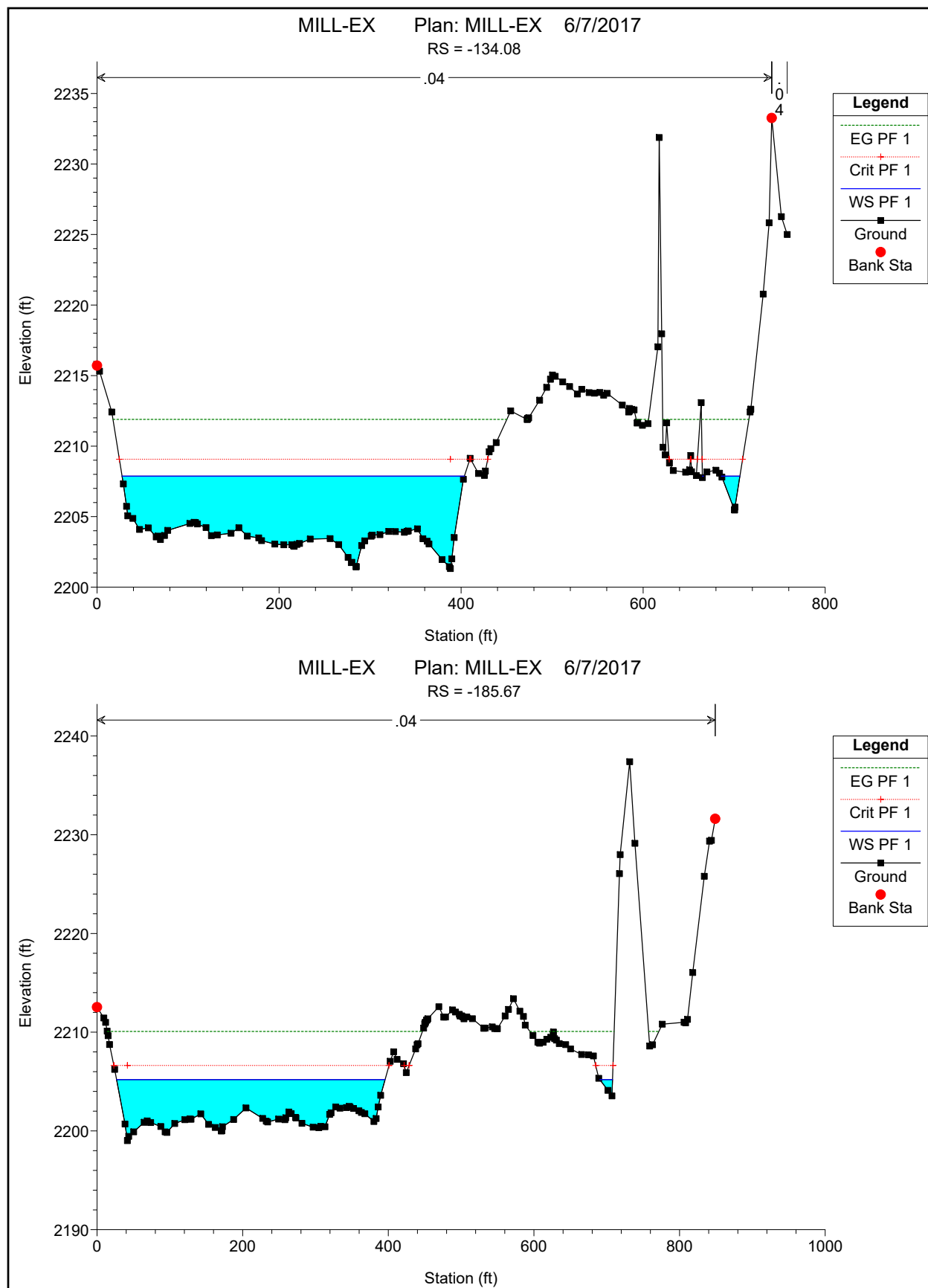
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29+25	35849.2400	4593.99	Q			V
29+30	35880.4416	4530.48	Q			V
29+35	35911.2187	4468.83	Q			V
29+40	35941.5980	4411.07	Q			V
29+45	35971.5850	4354.11	Q			V
29+50	36001.1789	4297.04	Q			V
29+55	36030.3789	4239.83	Q			V
30+ 0	36059.1825	4182.29	Q			V
30+ 5	36087.5849	4124.03	Q			V
30+10	36115.6032	4068.26	Q			V
30+15	36143.1829	4004.57	Q			V
30+20	36170.4024	3952.27	Q			V
30+25	36197.2884	3903.84	Q			V
30+30	36223.8437	3855.84	Q			V
30+35	36250.0635	3807.10	Q			V
30+40	36275.9692	3761.51	Q			V
30+45	36301.5686	3717.03	Q			V
30+50	36326.8606	3672.41	Q			V
30+55	36351.8443	3627.63	Q			V
31+ 0	36376.5181	3582.63	Q			V
31+ 5	36400.8787	3537.17	Q			V
31+10	36424.9412	3493.87	Q			V
31+15	36448.6875	3447.95	Q			V
31+20	36472.1525	3407.13	Q			V
31+25	36495.3541	3368.87	Q			V
31+30	36518.2941	3330.88	Q			V
31+35	36540.9659	3291.94	Q			V
31+40	36563.3670	3252.64	Q			V
31+45	36585.4974	3213.34	Q			V
31+50	36607.3570	3174.01	Q			V
31+55	36628.9457	3134.69	Q			V
32+ 0	36650.2635	3095.35	Q			V
32+ 5	36671.3106	3056.04	Q			V
32+10	36692.1116	3020.30	Q			V
32+15	36712.6867	2987.51	Q			V
32+20	36733.0331	2954.30	Q			V
32+25	36753.1511	2921.14	Q			V
32+30	36773.0409	2888.00	Q			V
32+35	36792.7028	2854.90	Q			V
32+40	36812.1368	2821.82	Q			V
32+45	36831.3431	2788.76	Q			V
32+50	36850.3218	2755.71	Q			V
32+55	36869.0730	2722.67	Q			V
33+ 0	36887.5966	2689.62	Q			V
33+ 5	36905.8926	2656.58	Q			V
33+10	36923.9650	2624.11	Q			V
33+15	36941.8185	2592.33	Q			V
33+20	36959.4530	2560.53	Q			V
33+25	36976.8684	2528.72	Q			V
33+30	36994.0645	2496.87	Q			V
33+35	37011.0410	2465.00	Q			V
33+40	37027.7977	2433.07	Q			V
33+45	37044.3343	2401.11	Q			V
33+50	37060.6503	2369.08	Q			V
33+55	37076.7454	2337.02	Q			V
34+ 0	37092.6192	2304.87	Q			V
34+ 5	37108.2711	2272.67	Q			V
34+10	37123.7133	2242.21	Q			V
34+15	37138.9524	2212.71	Q			V
34+20	37153.9499	2177.64	Q			V
34+25	37168.7071	2142.74	Q			V
34+30	37183.2255	2108.07	Q			V
34+35	37197.5062	2073.57	Q			V
34+40	37211.5510	2039.31	Q			V
34+45	37225.3612	2005.23	Q			V
34+50	37238.9384	1971.42	Q			V
34+55	37252.2842	1937.80	Q			V
35+ 0	37265.4003	1904.46	Q			V
35+ 5	37278.2884	1871.35	Q			V
35+10	37290.9528	1838.88	Q			V
35+15	37303.4010	1807.48	Q			V
35+20	37315.6355	1776.44	Q			V
35+25	37327.6581	1745.68	Q			V
35+30	37339.4715	1715.31	Q			V
35+35	37351.1031	1688.90	Q			V
35+40	37362.6284	1673.48	Q			V
35+45	37374.0436	1657.48	Q			V
35+50	37385.3417	1640.48	Q			V
35+55	37396.5172	1622.68	Q			V
36+ 0	37407.5621	1603.73	Q			V

# **ATTACHMENT 2**

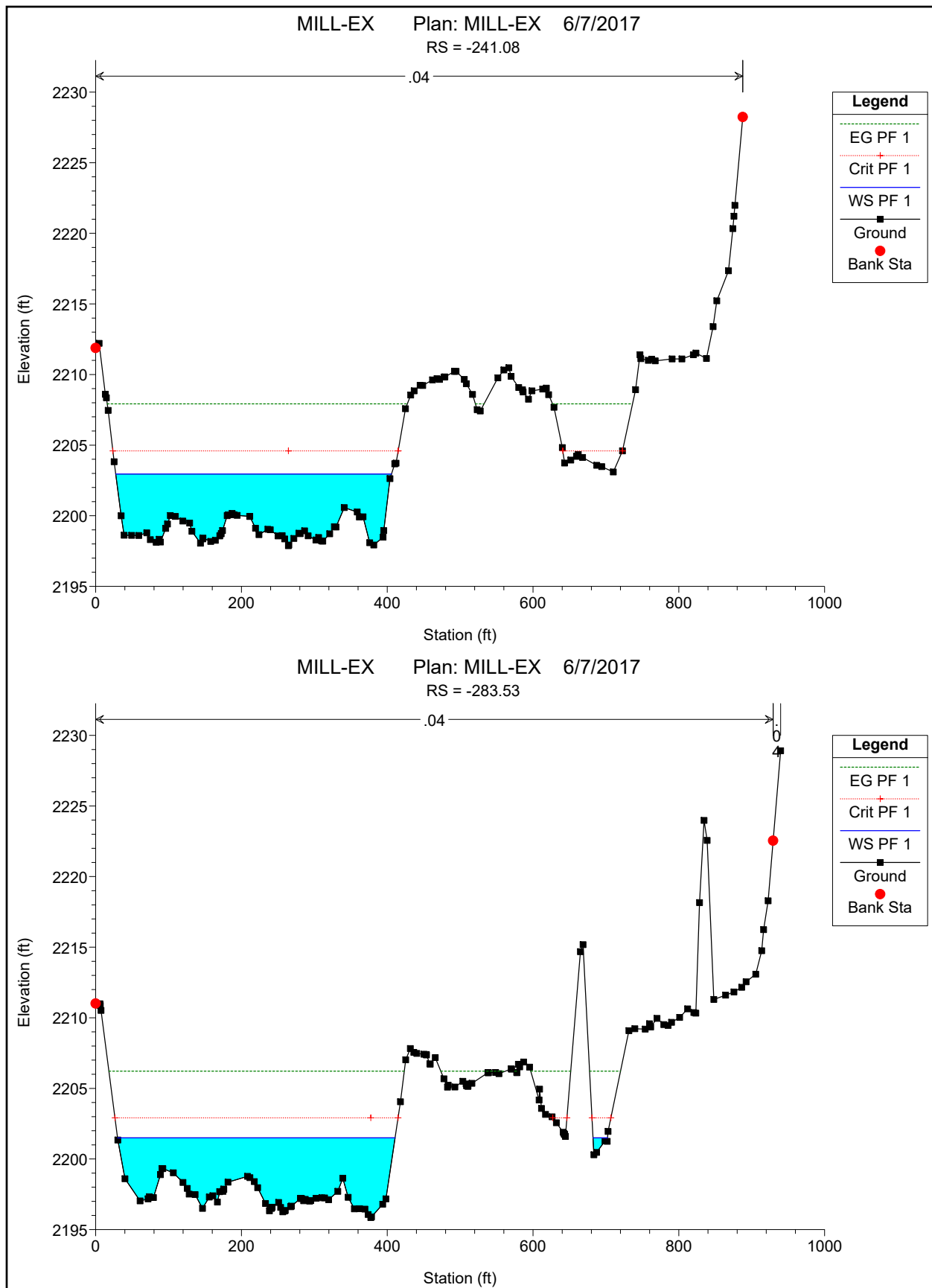
Existing Conditions  
HEC-RAS Cross Sections

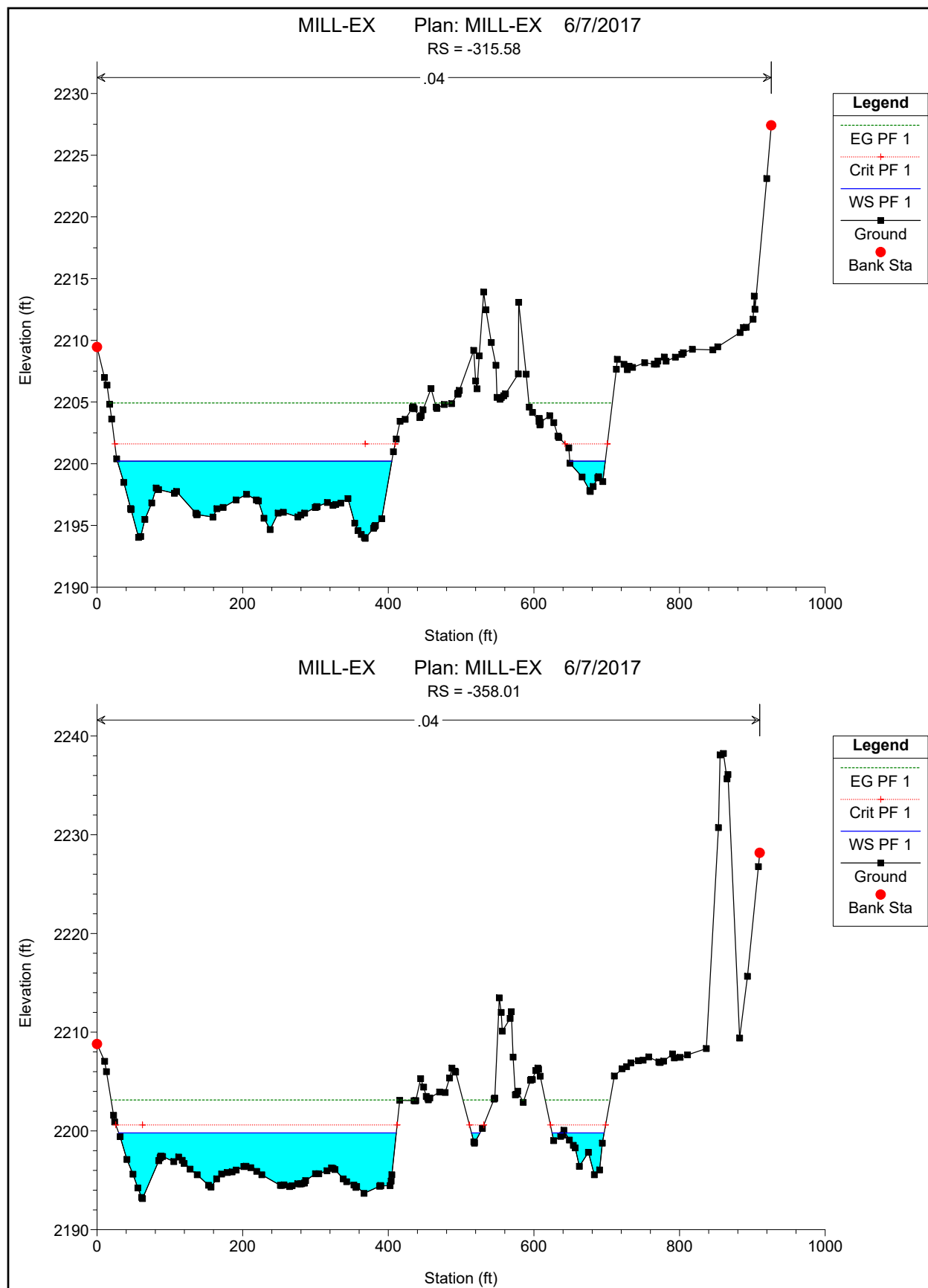






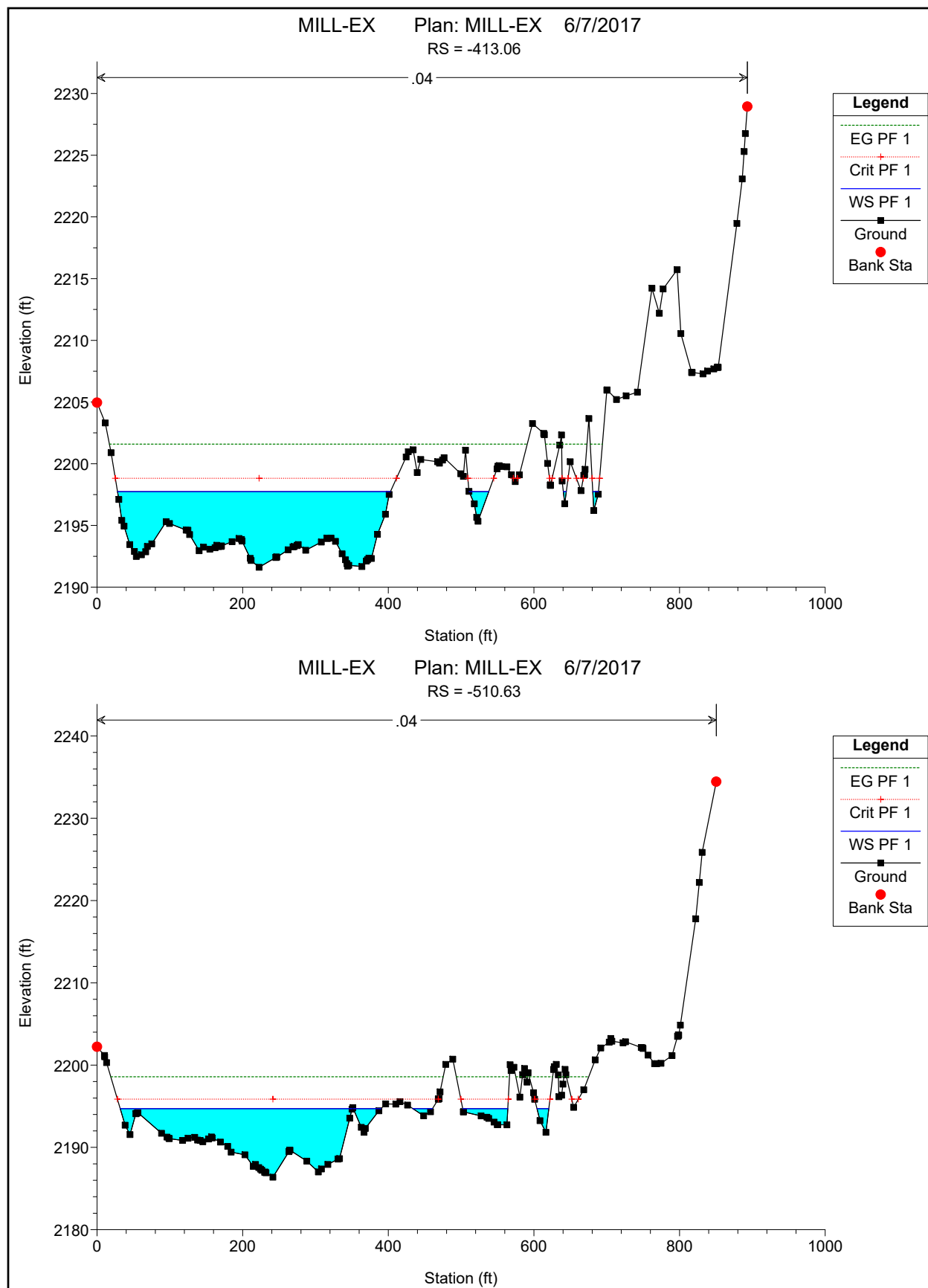


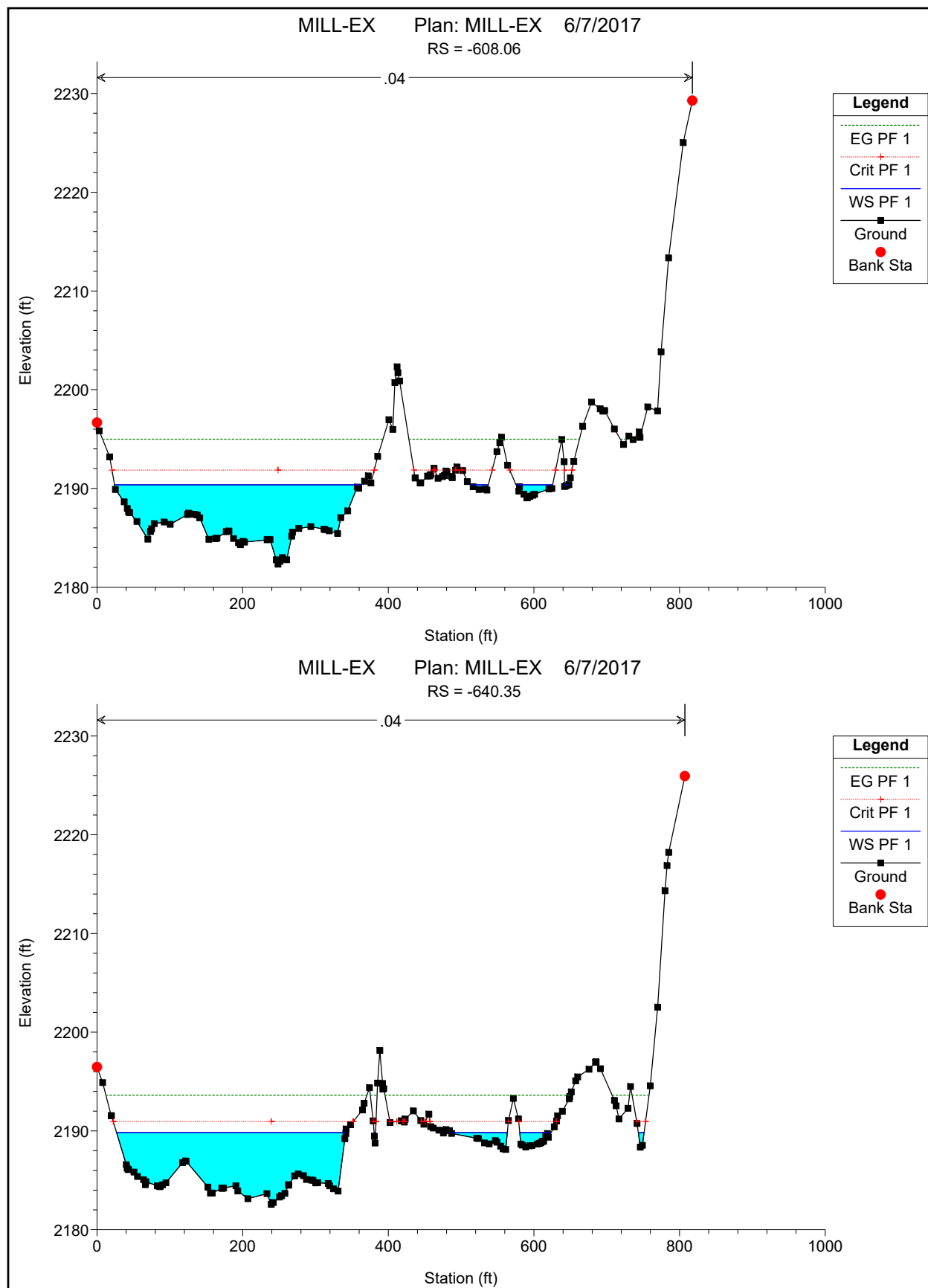


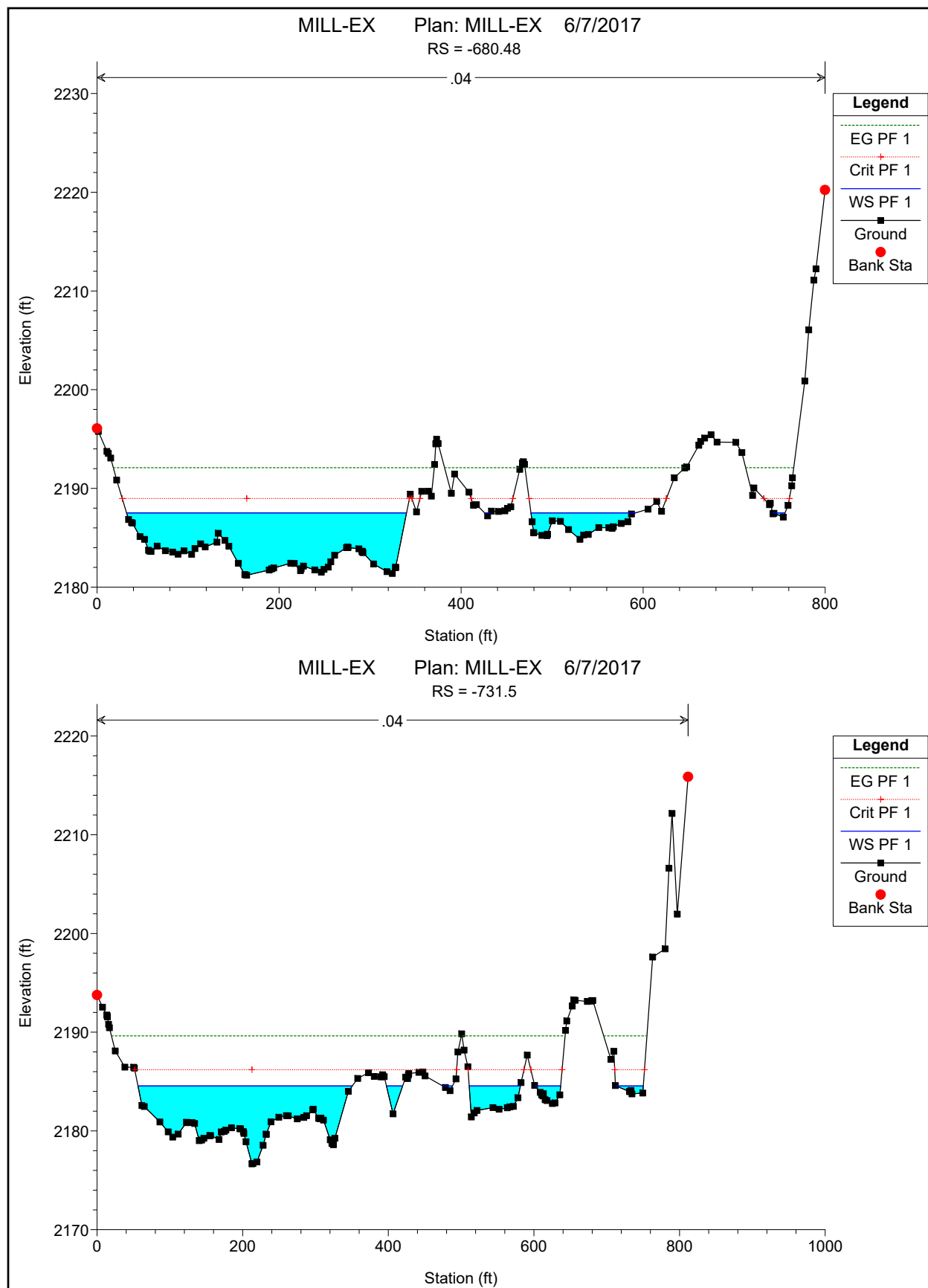


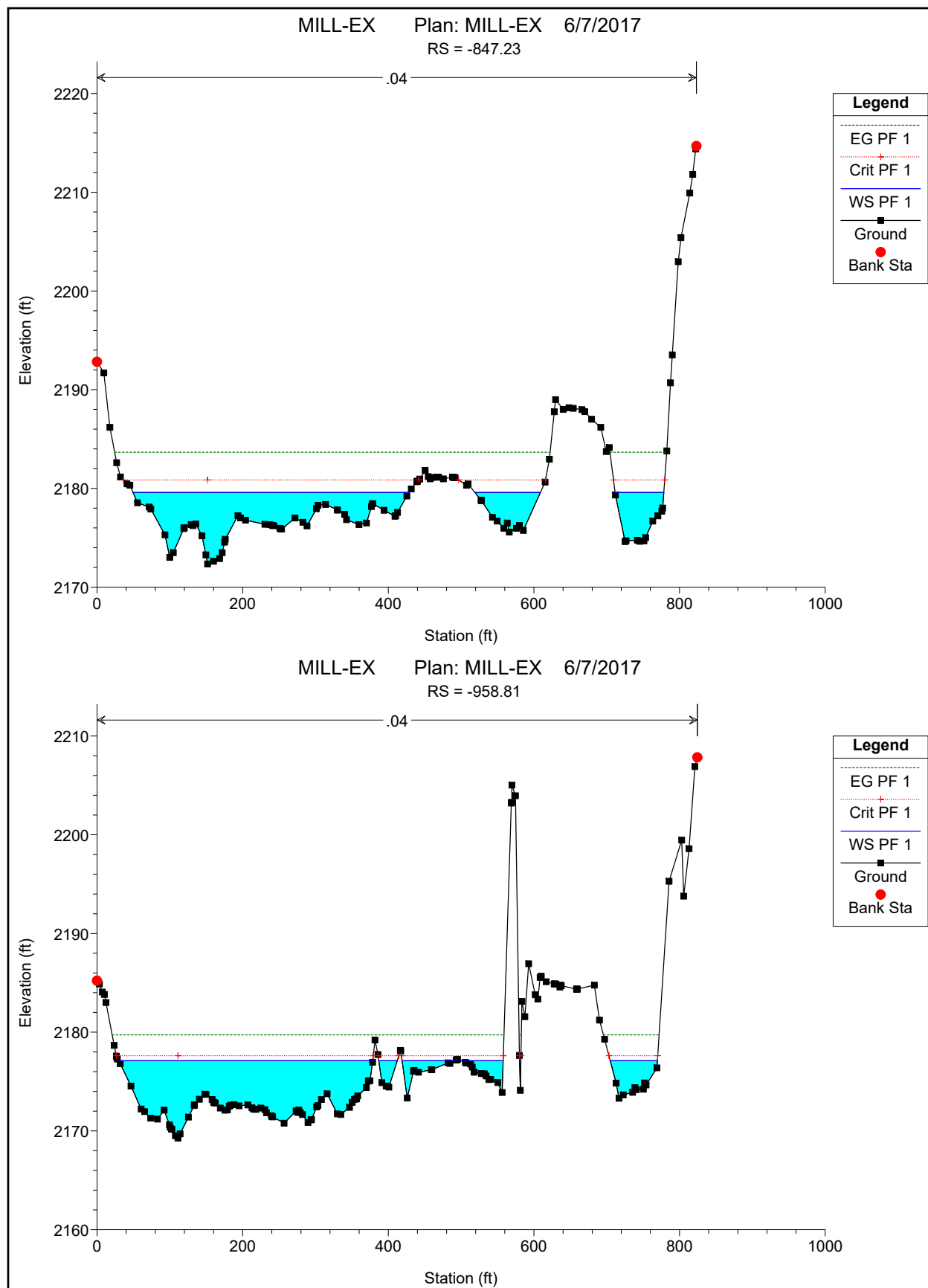
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta

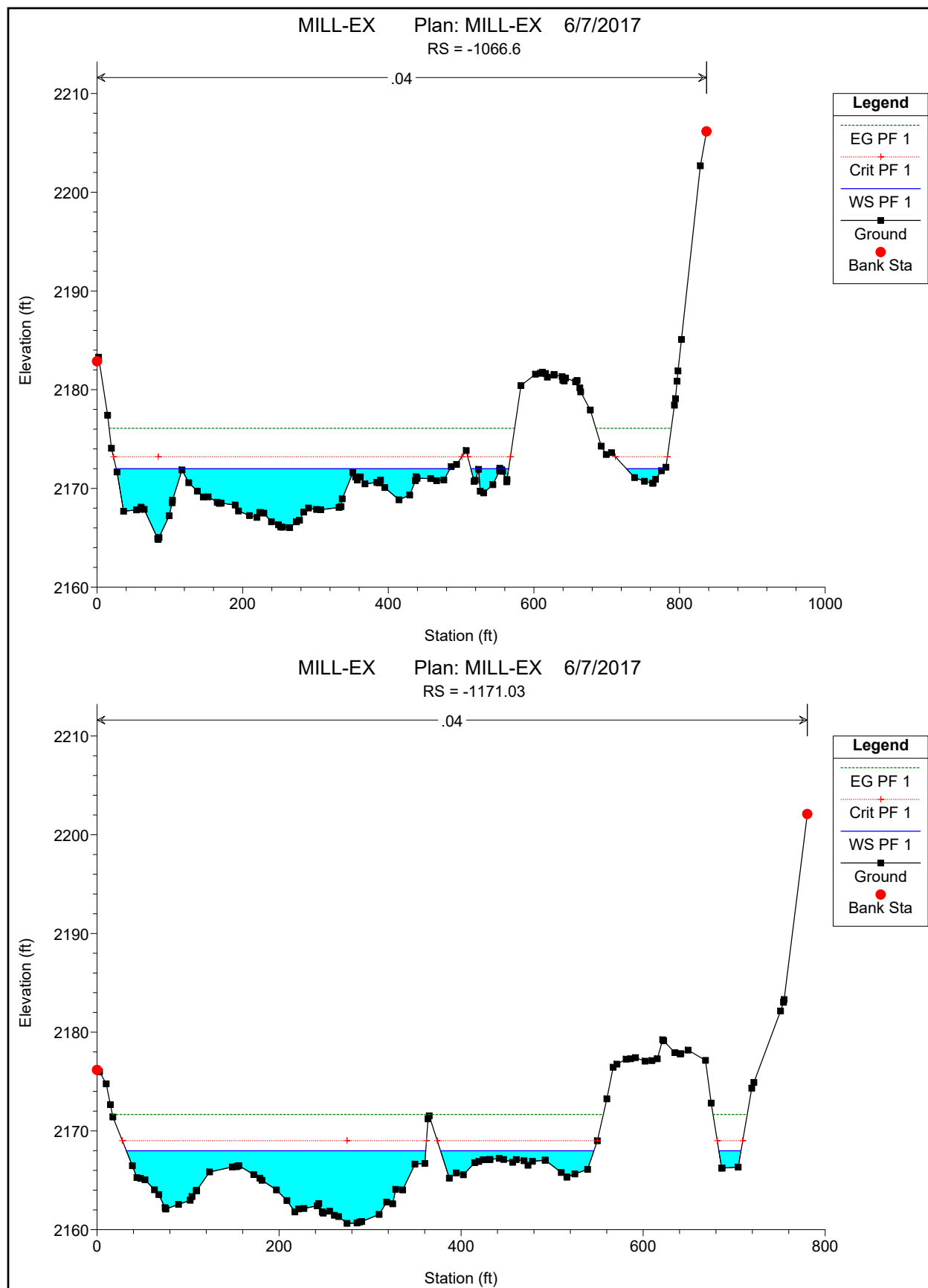


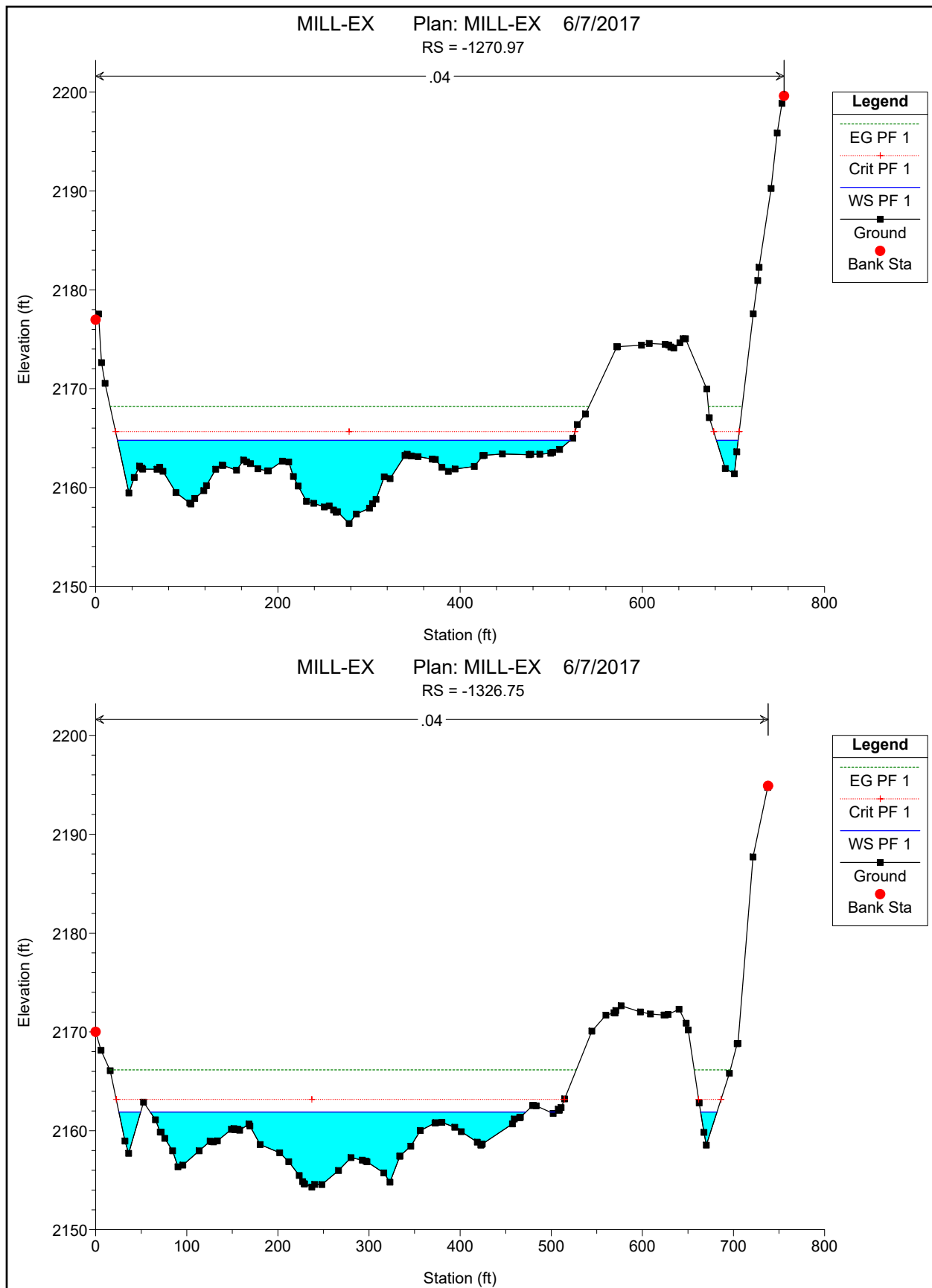


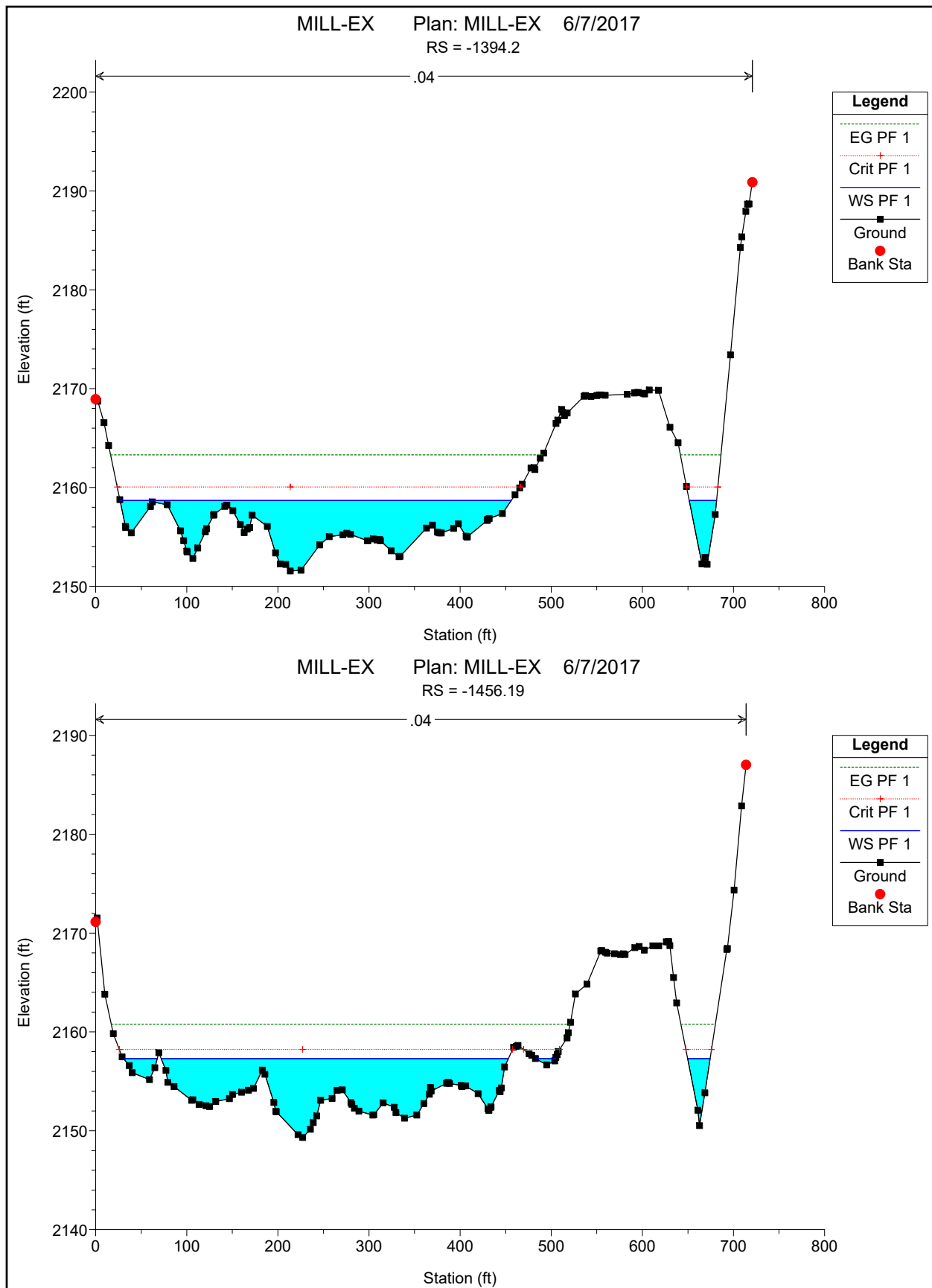


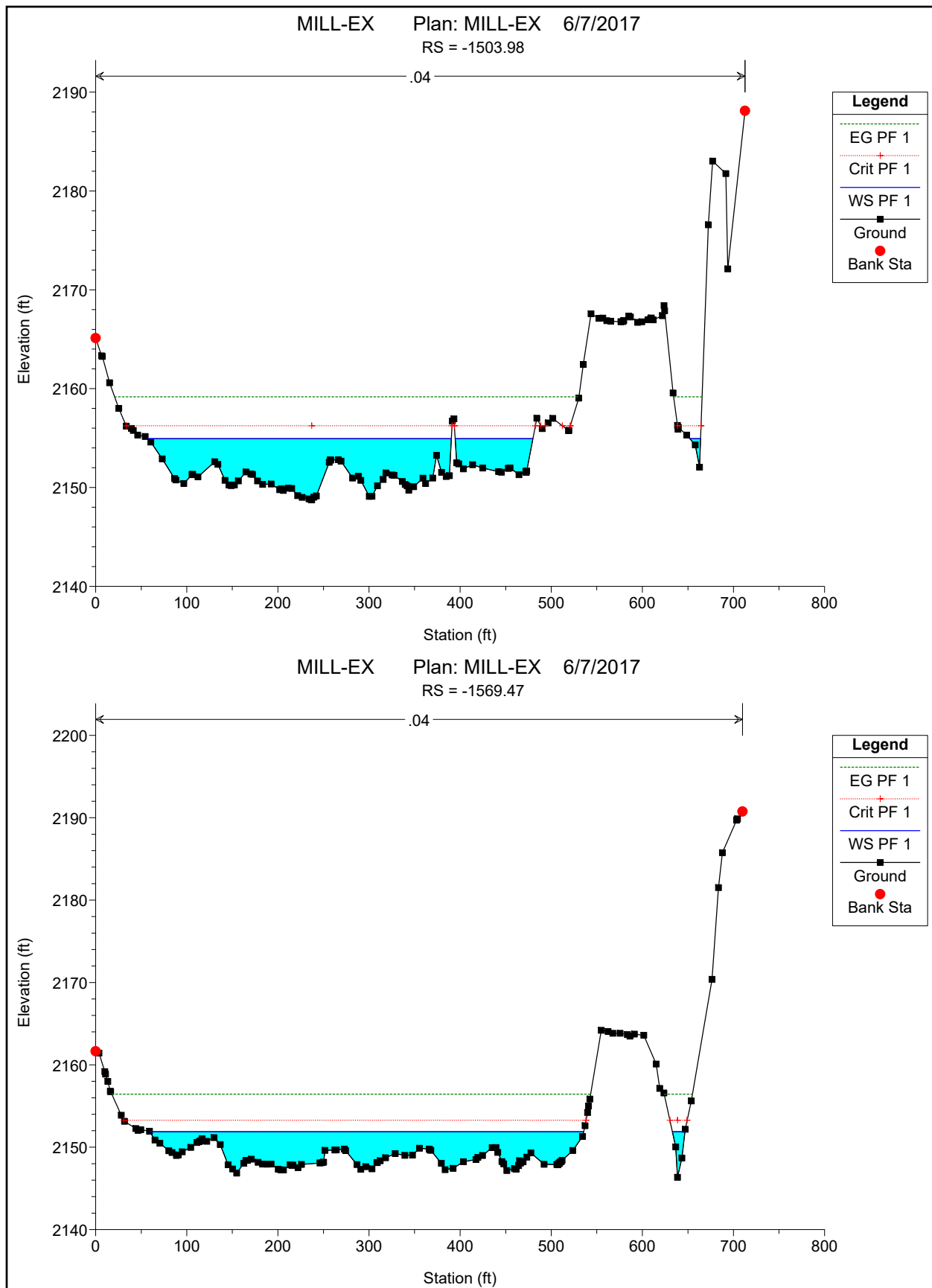


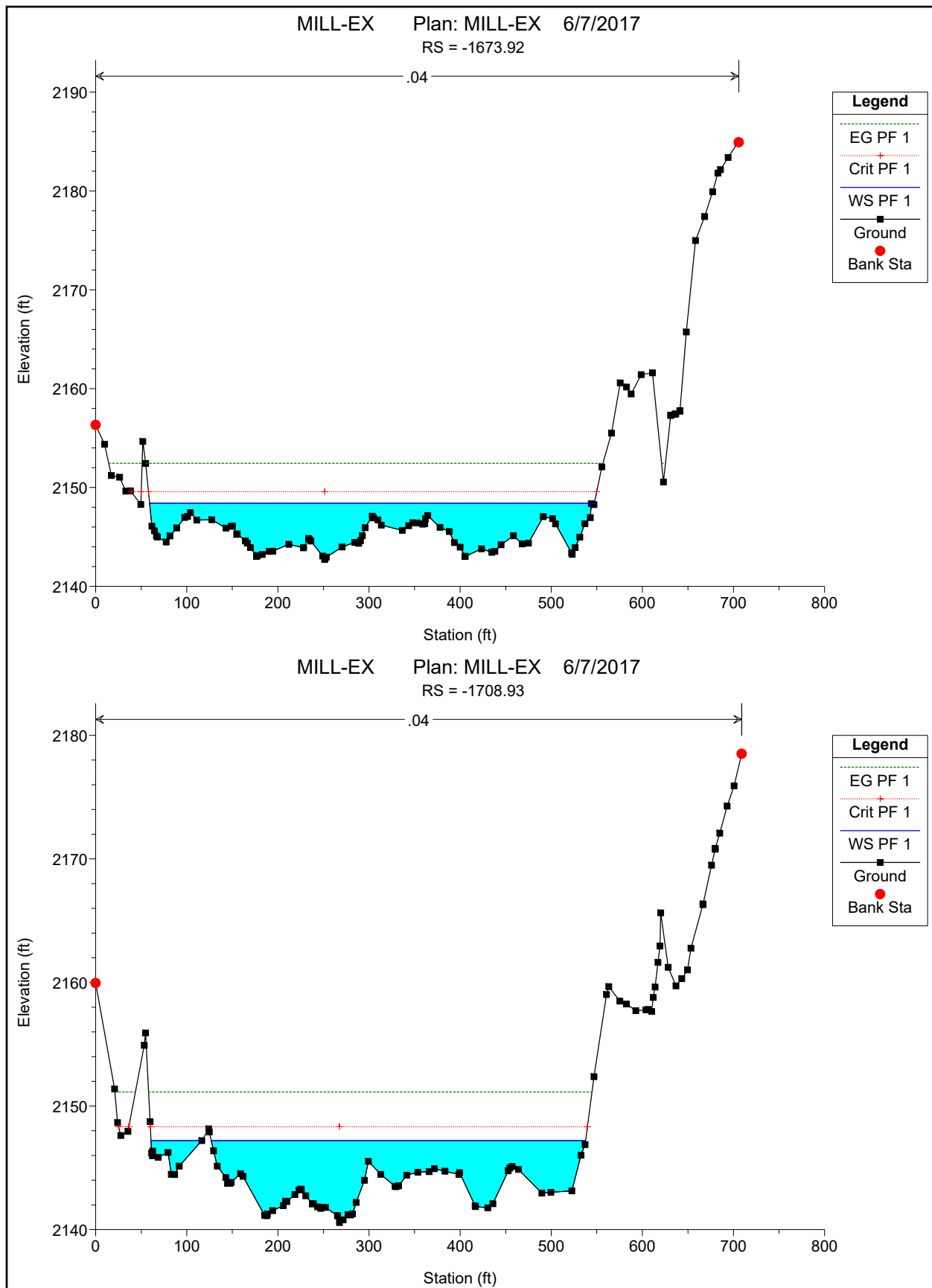


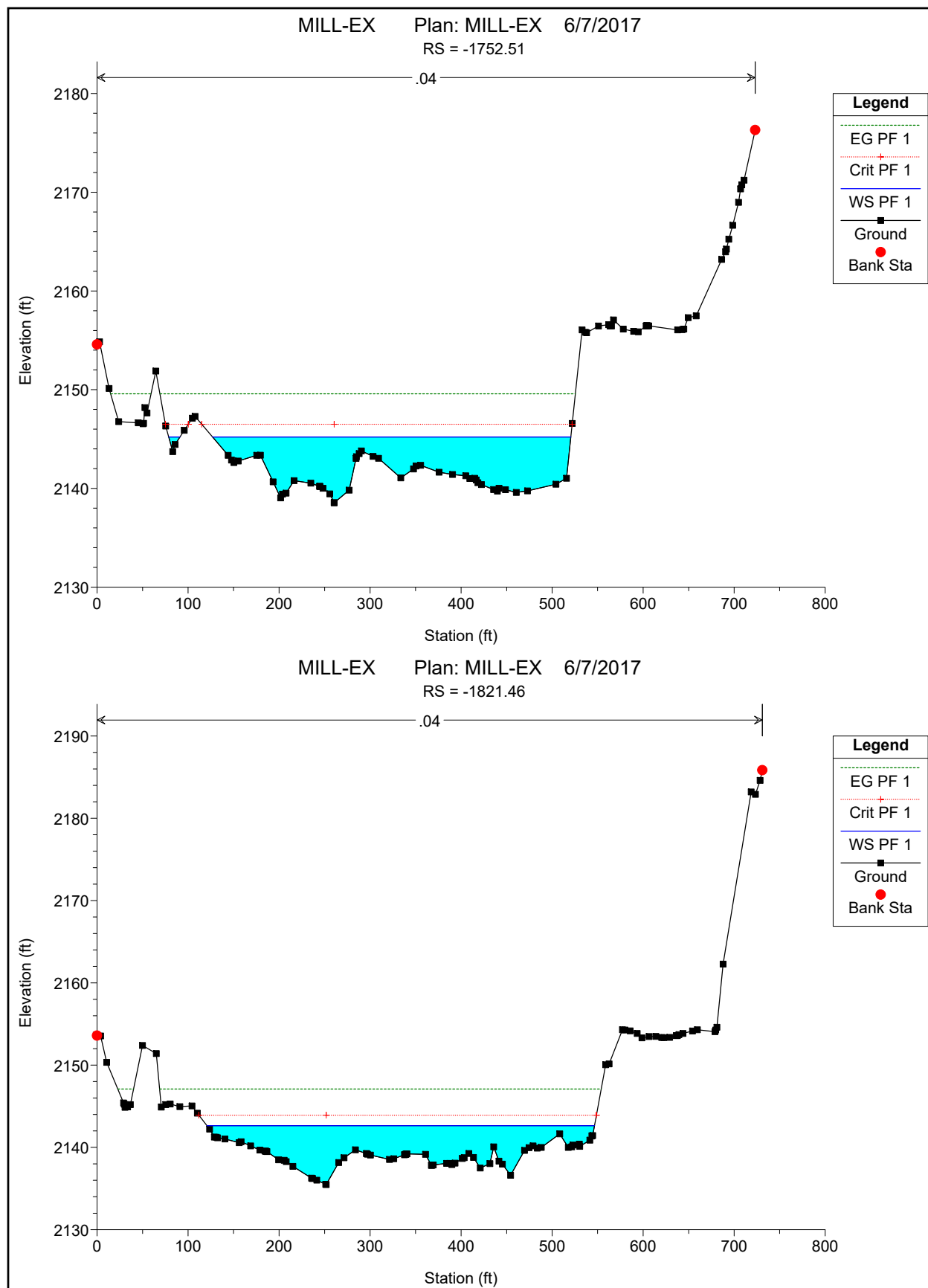




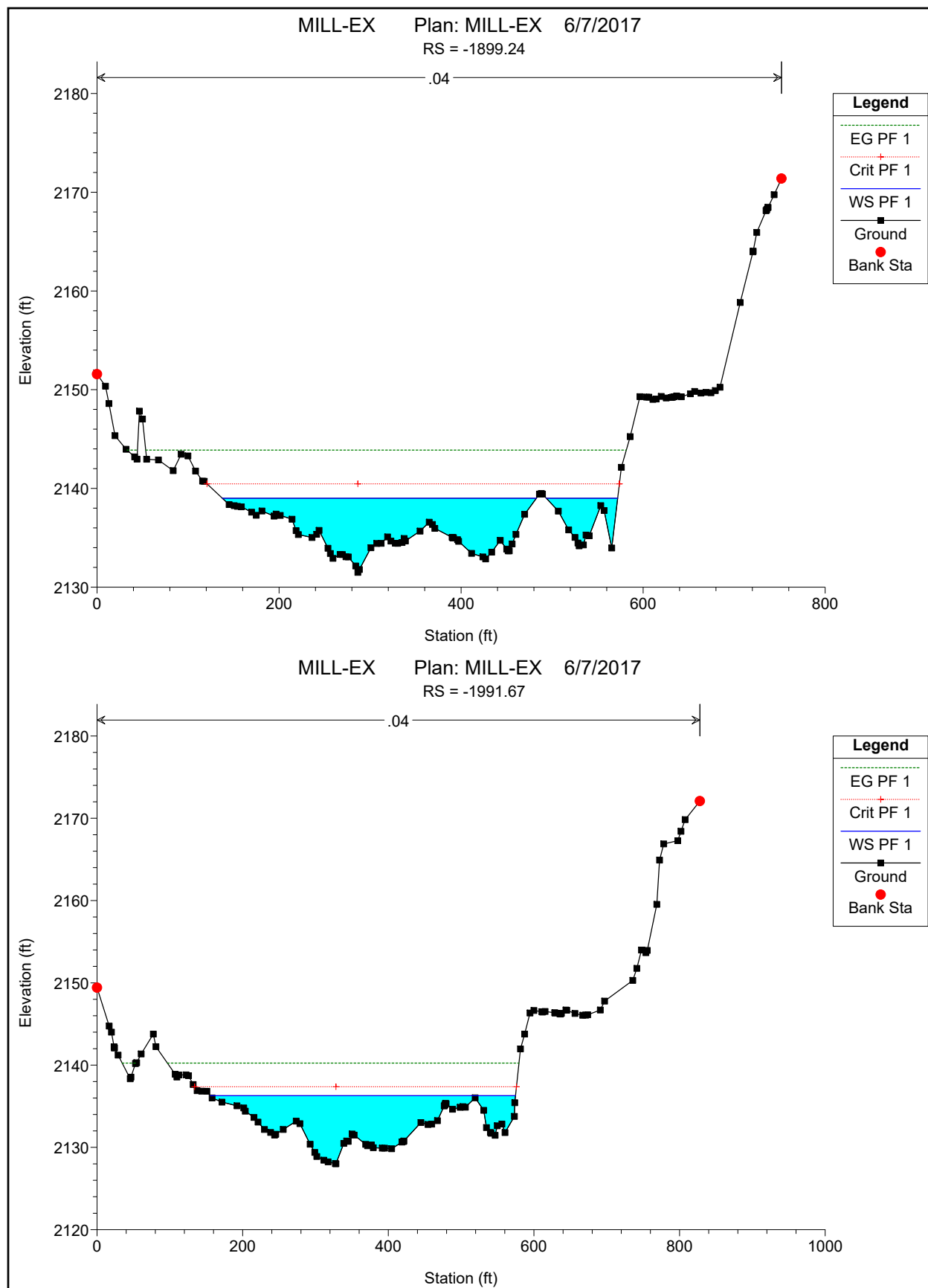


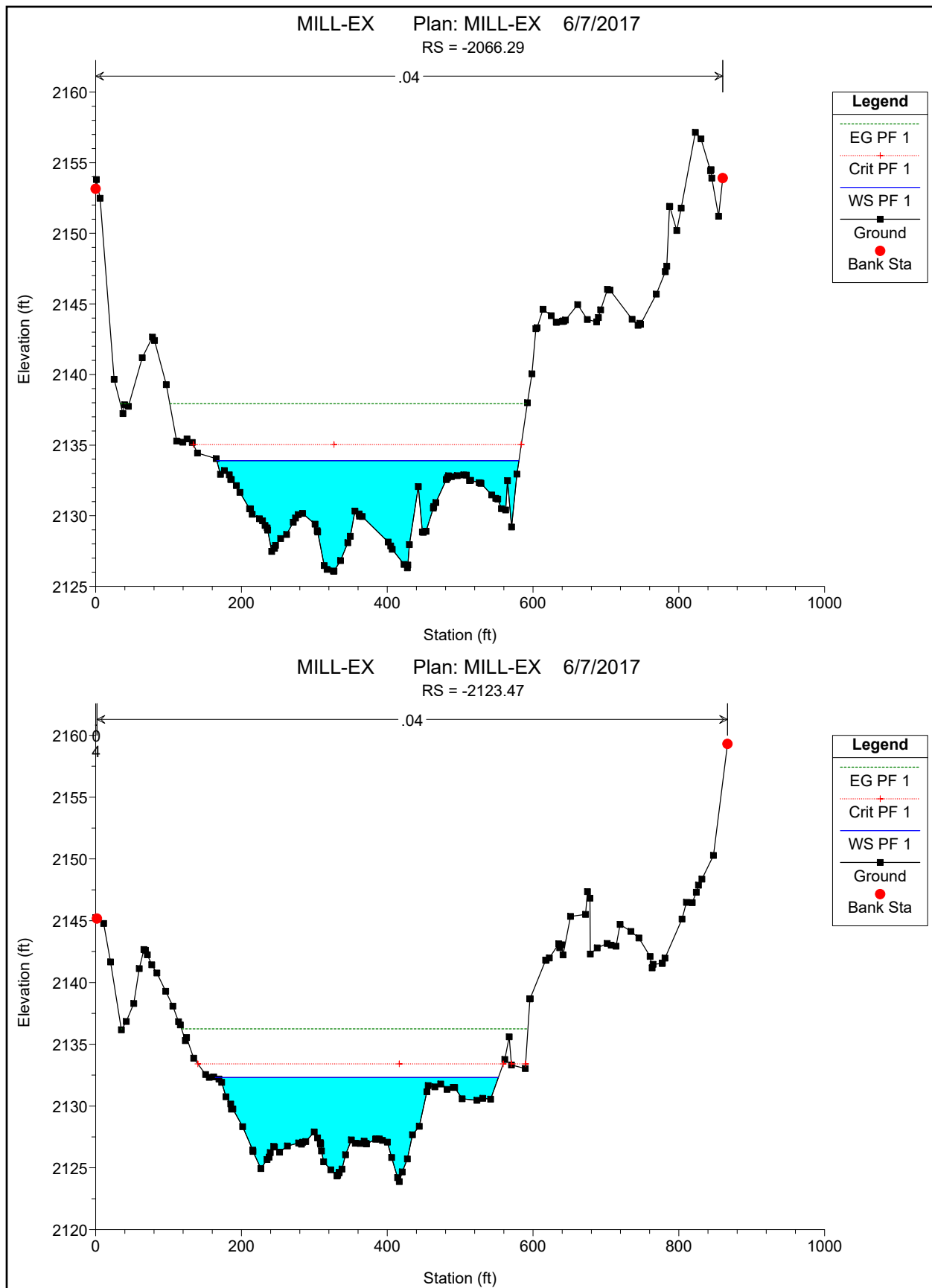


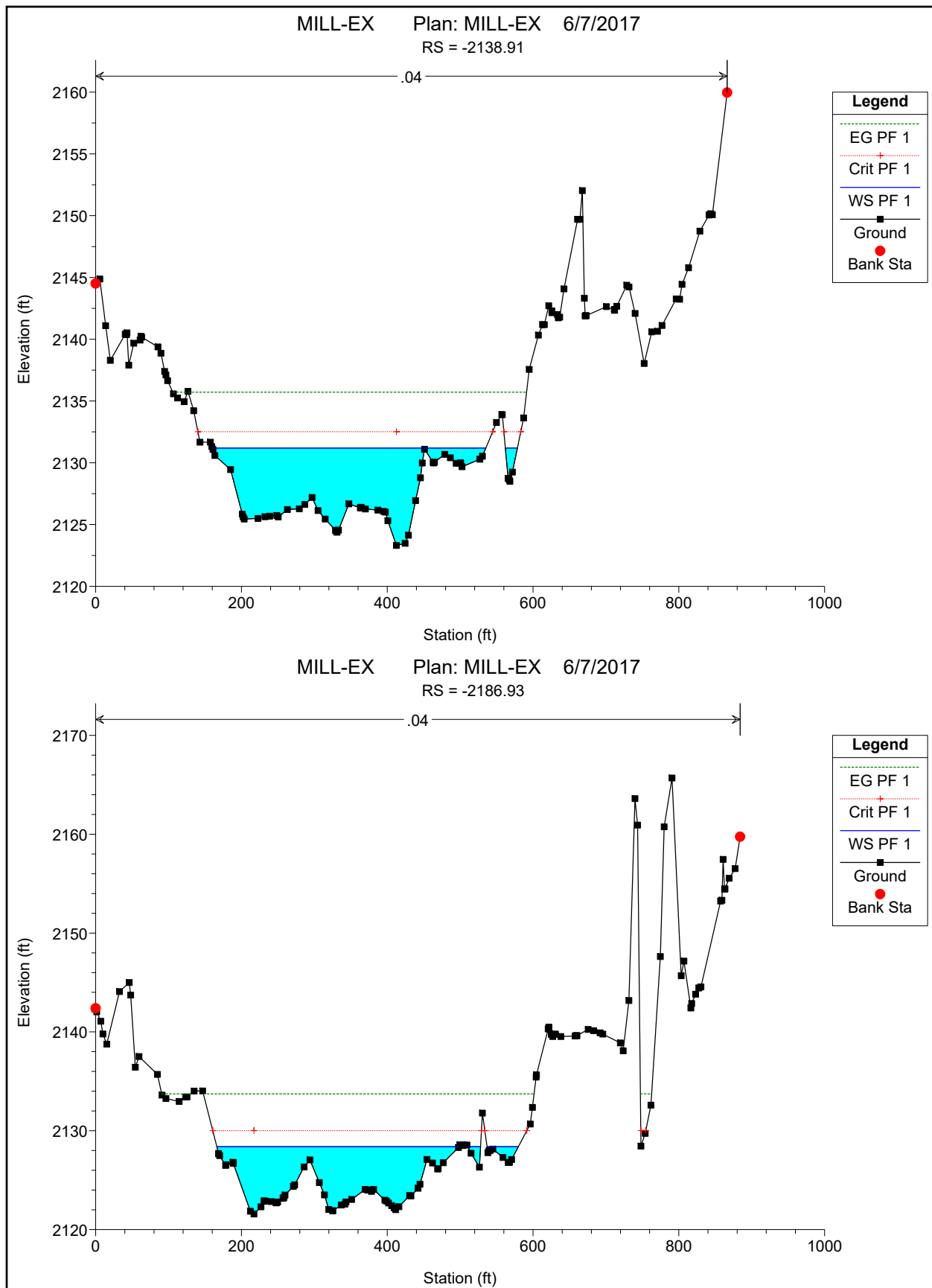


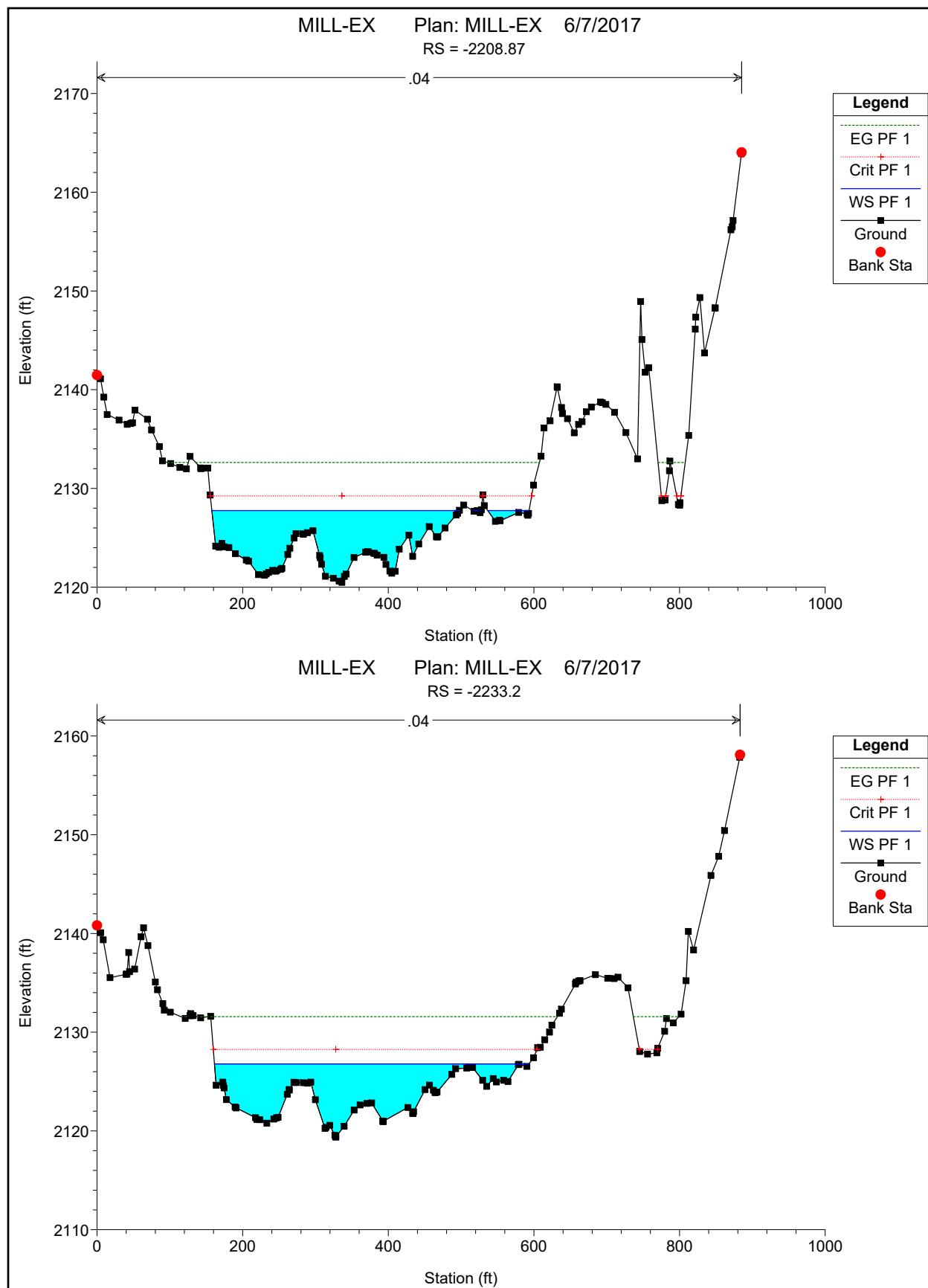


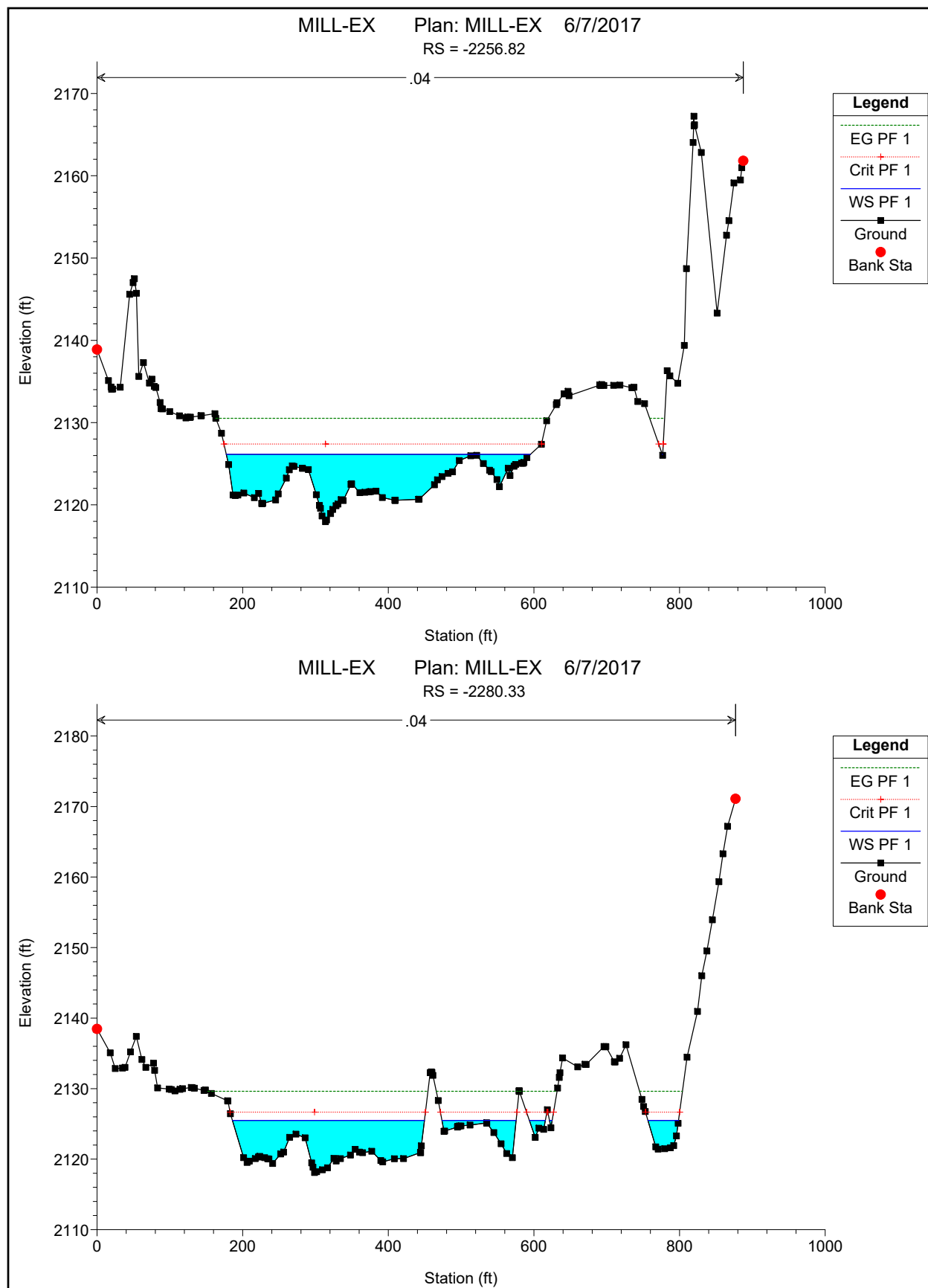


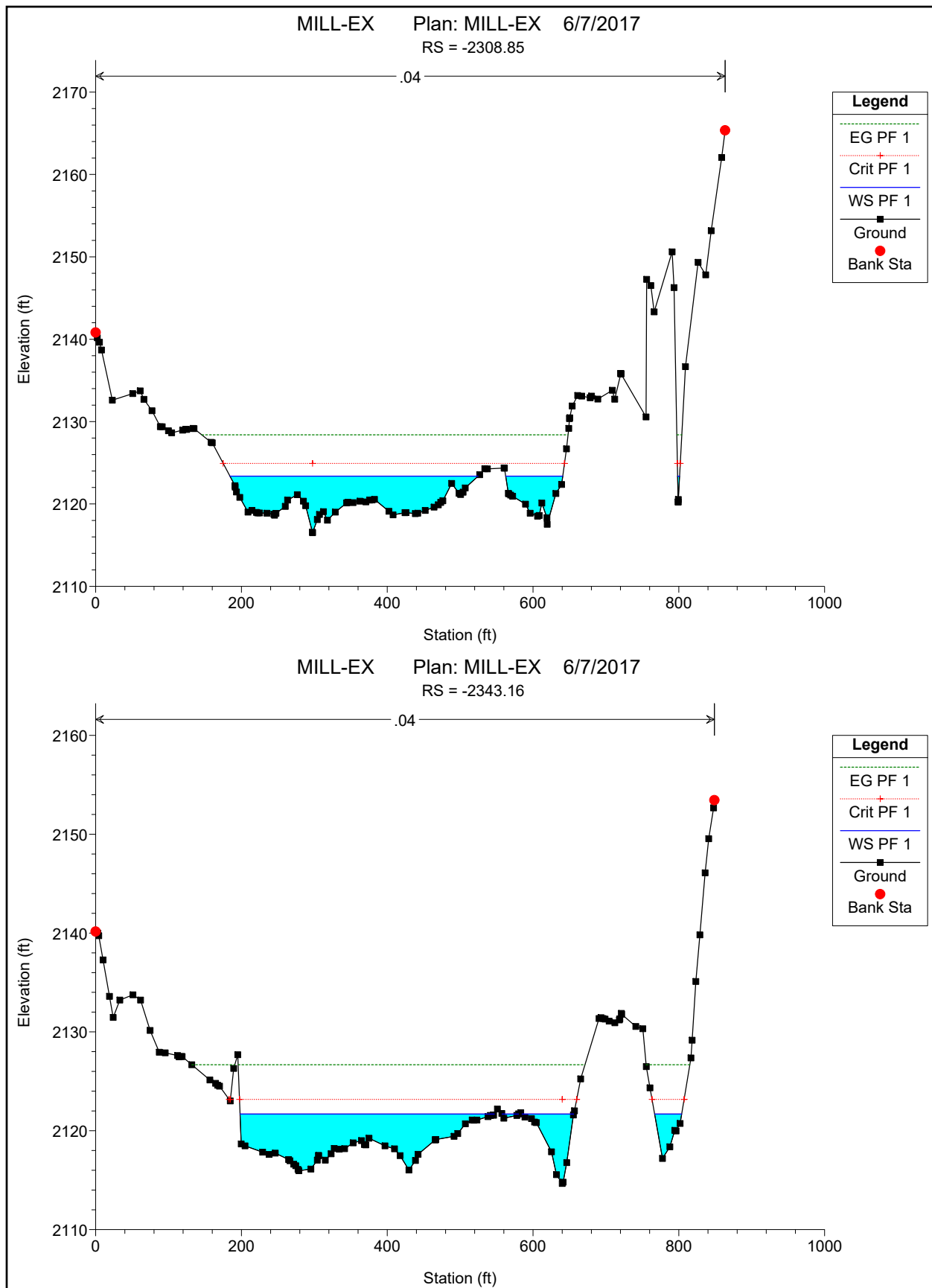




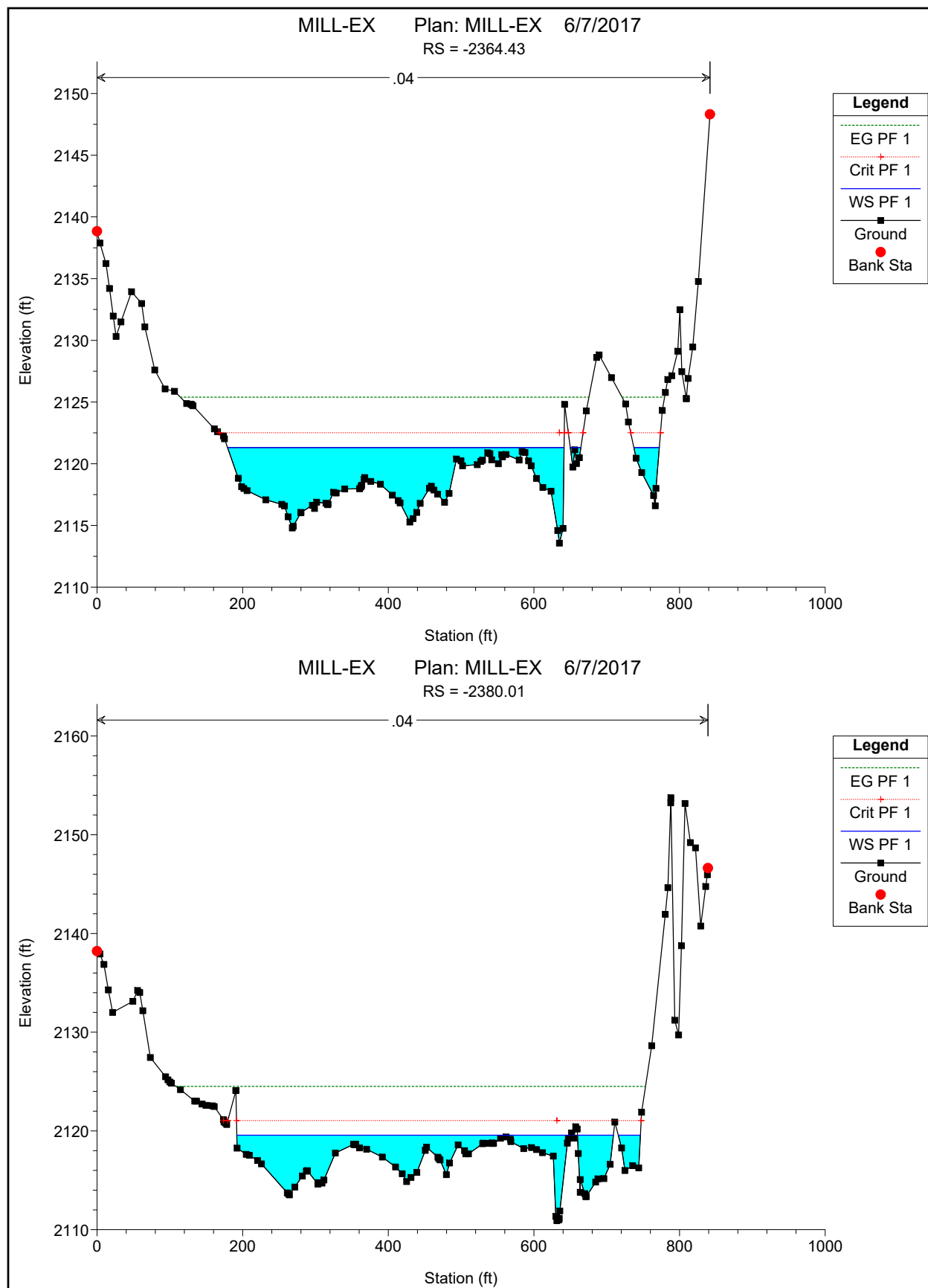


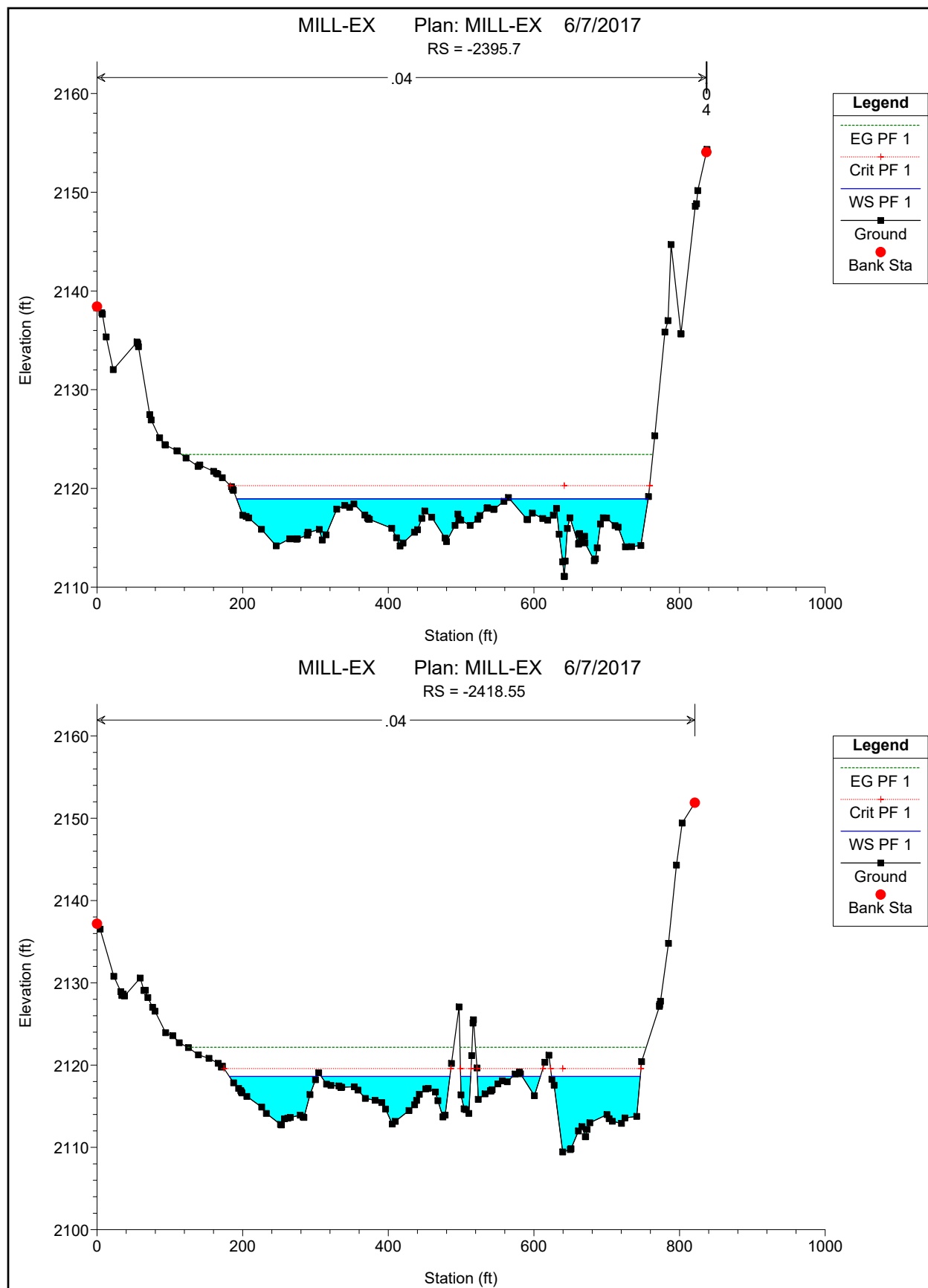


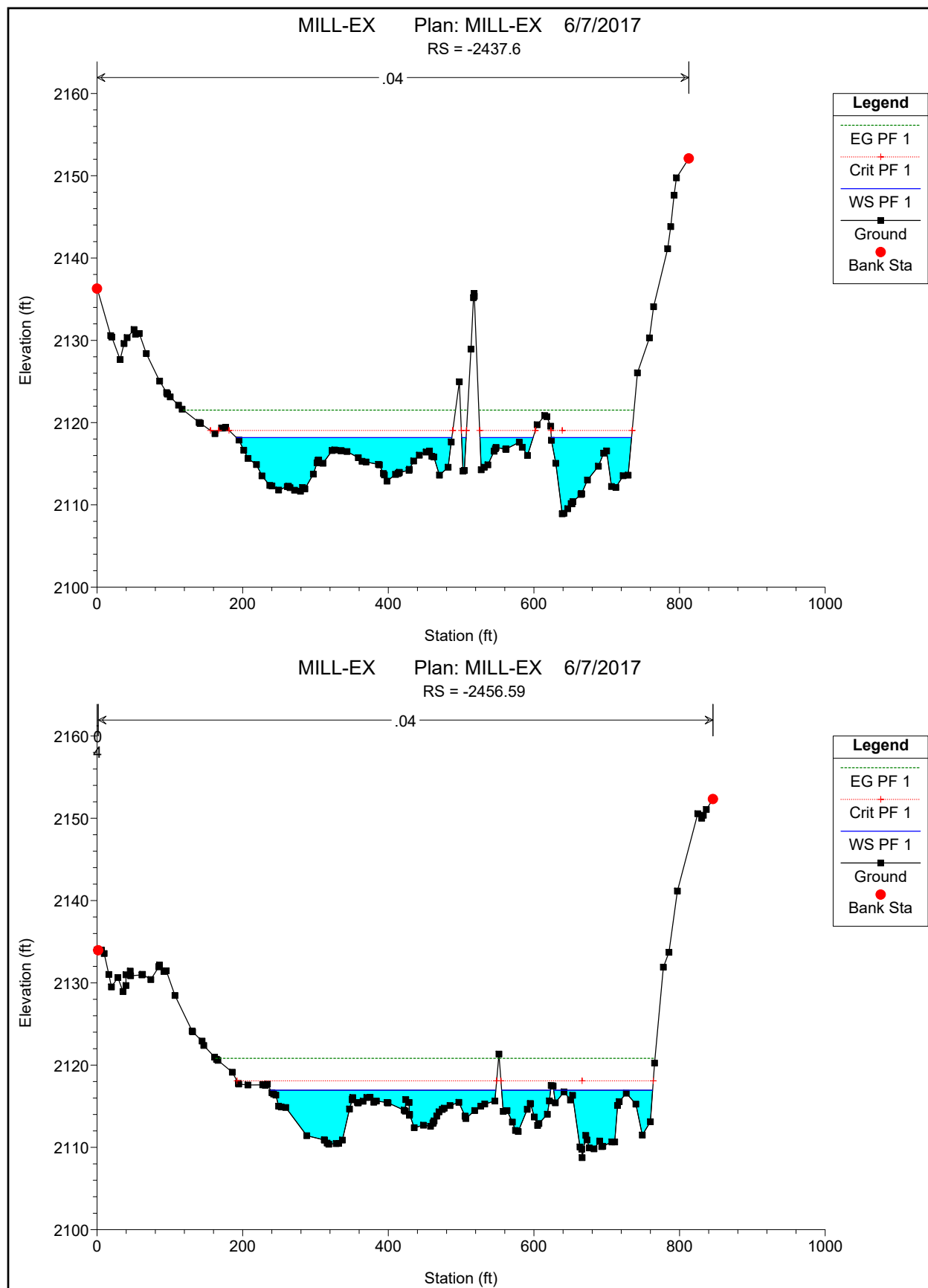


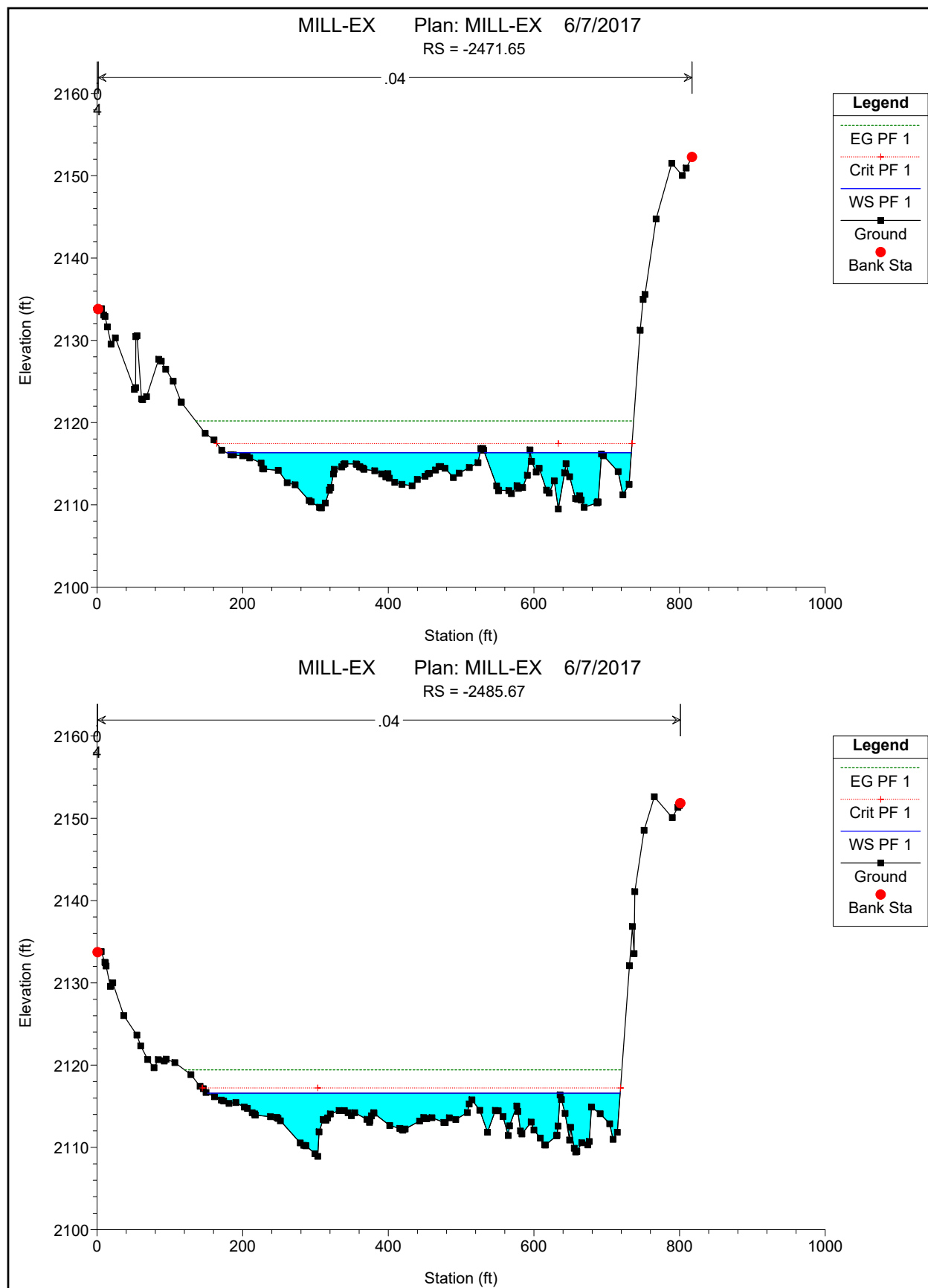


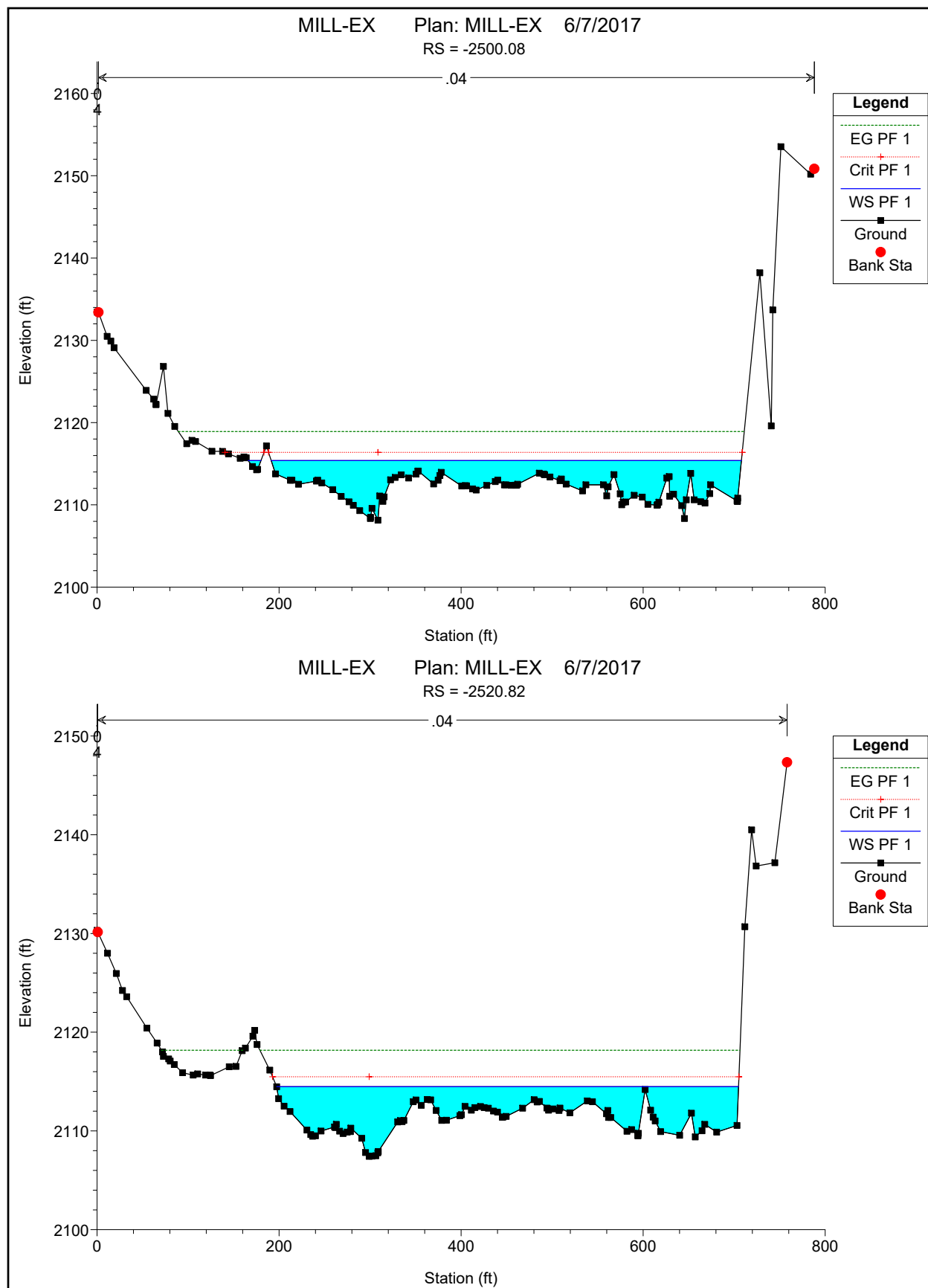


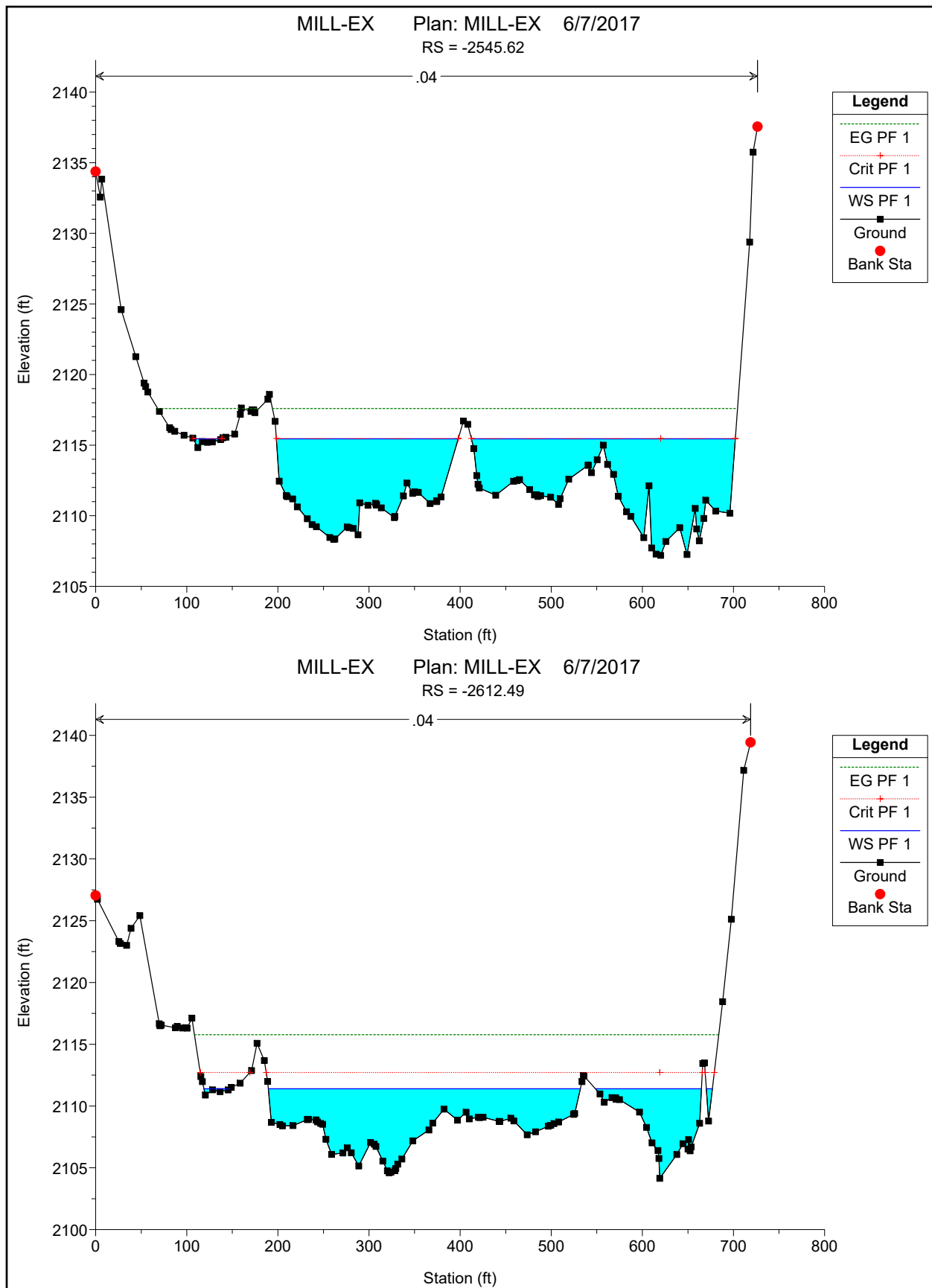




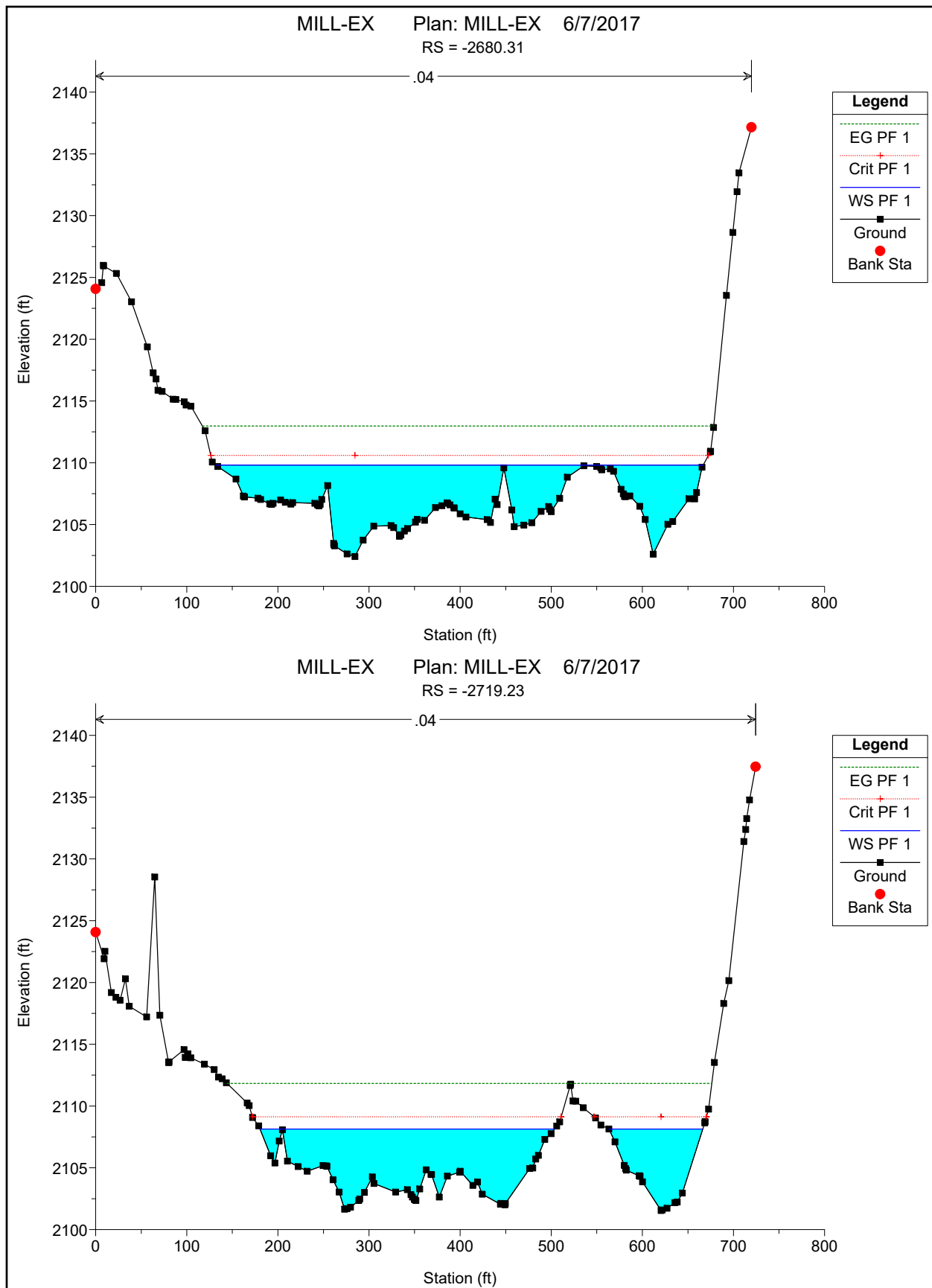


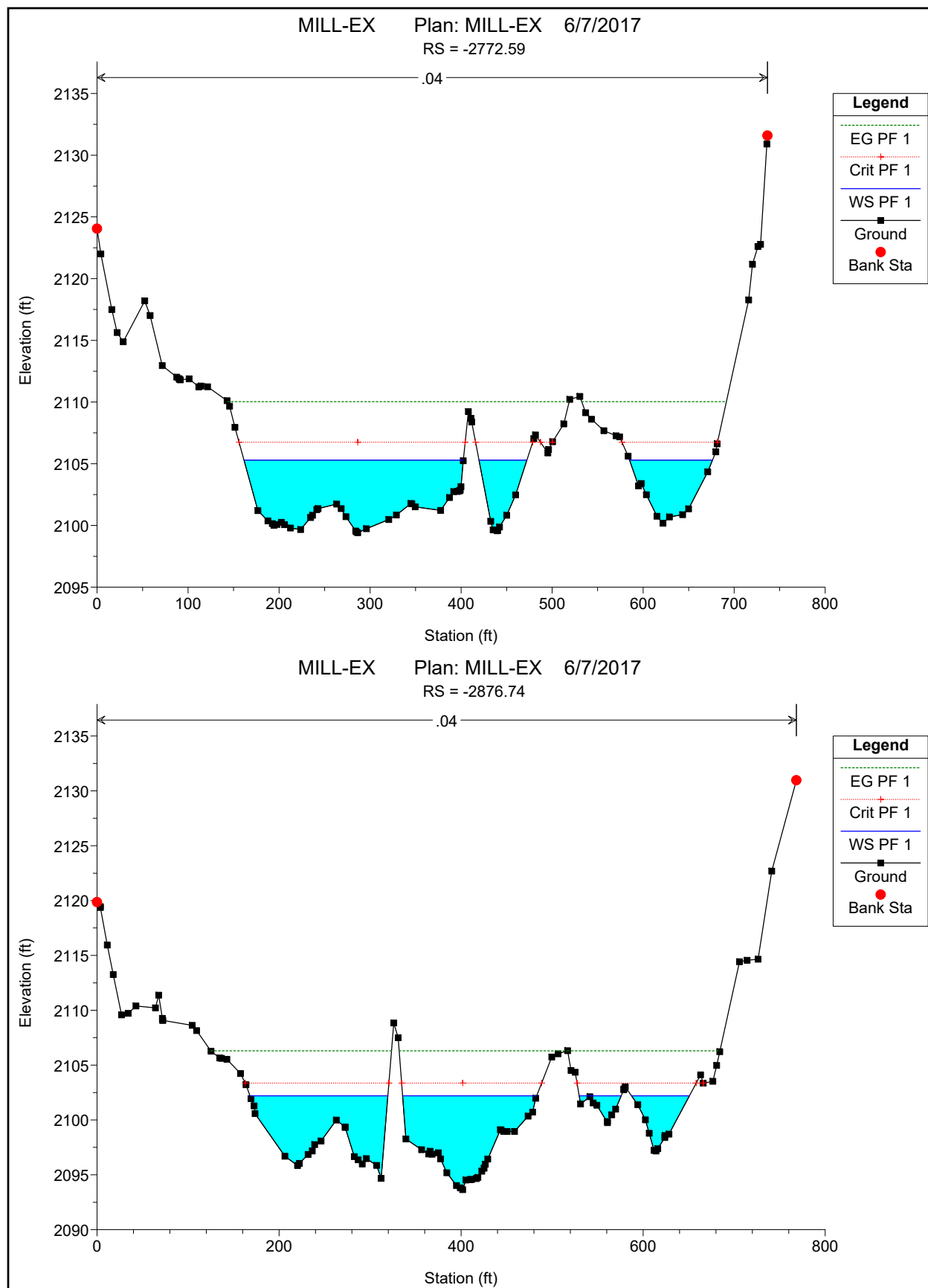


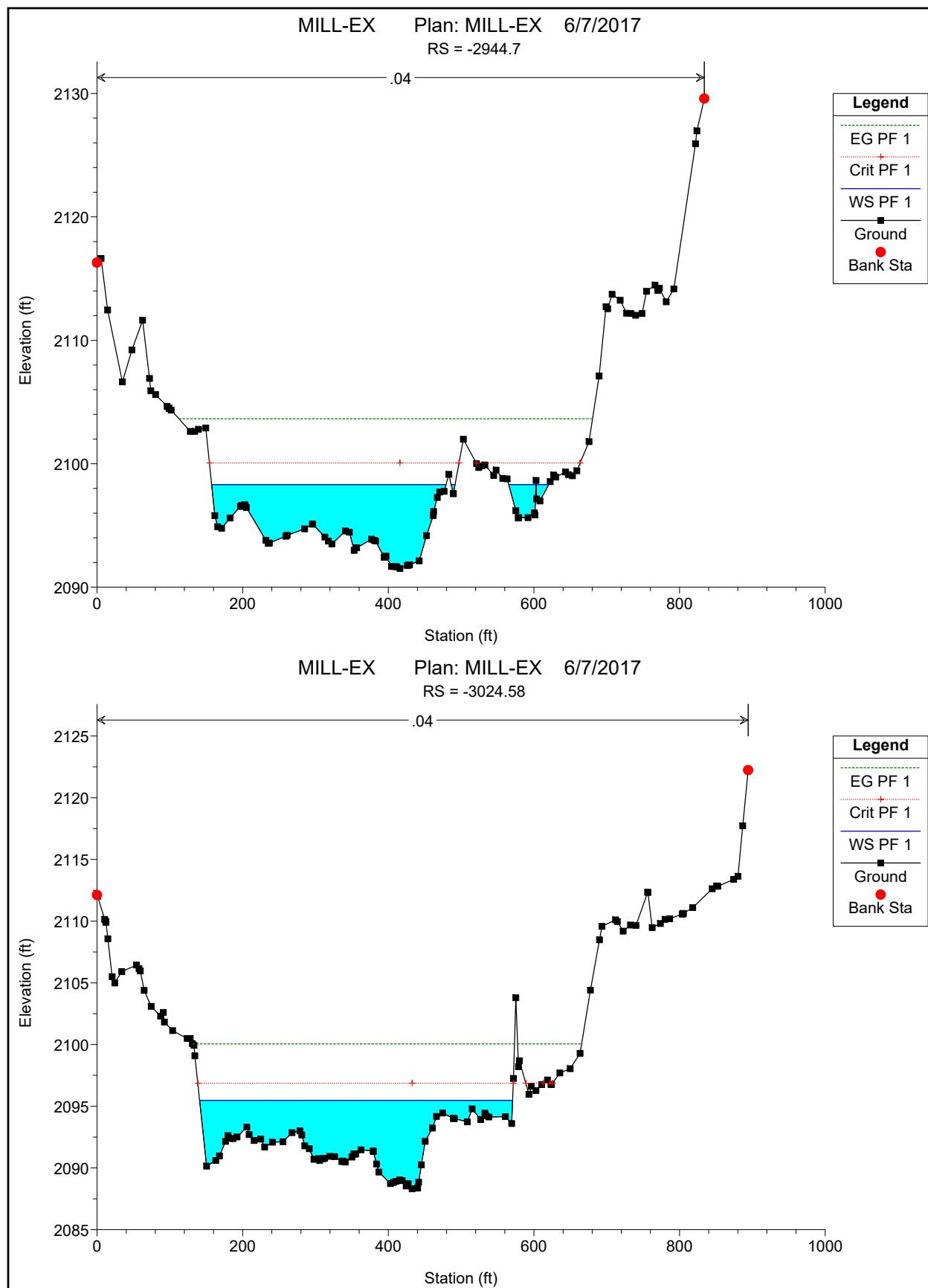


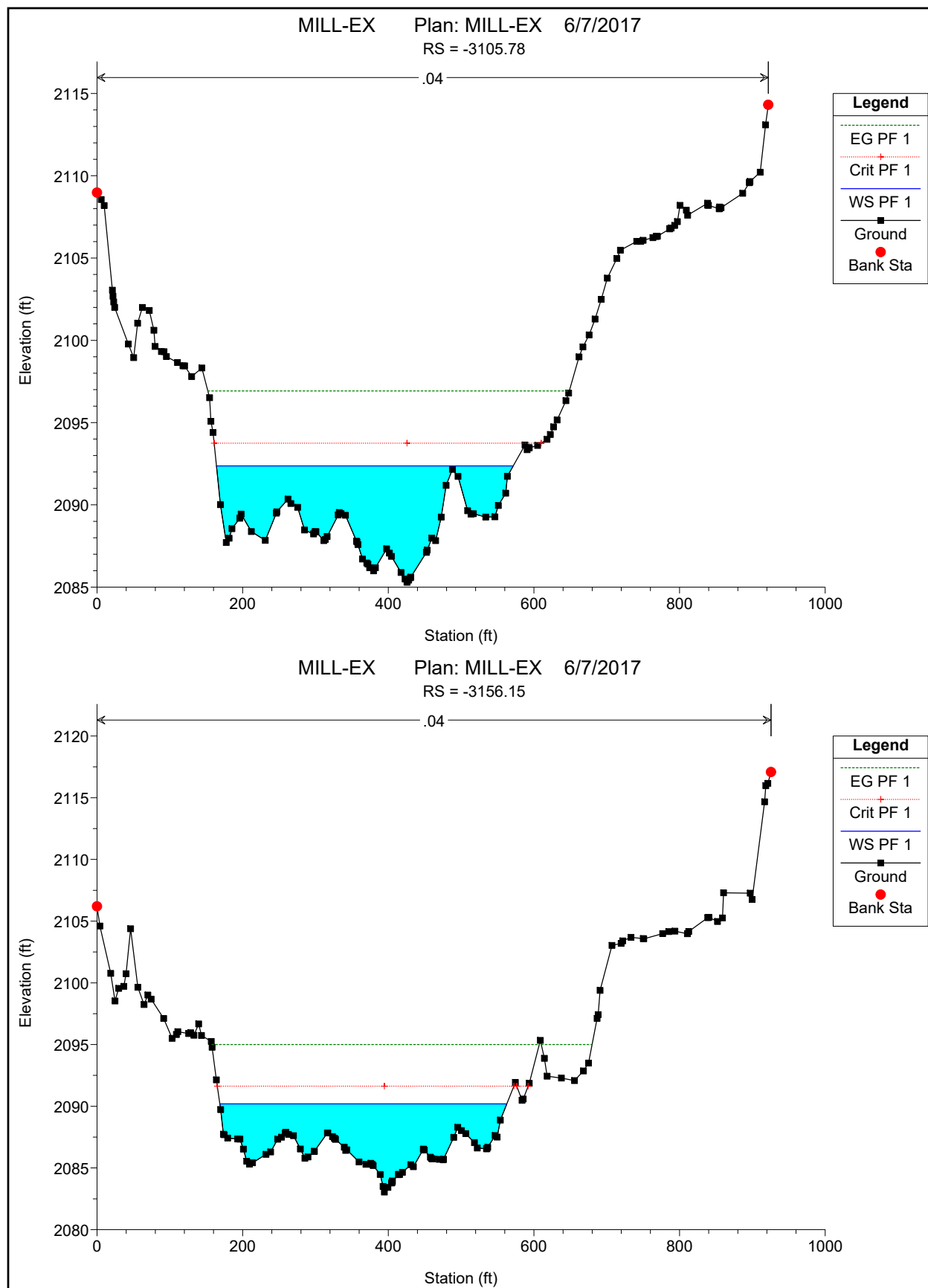


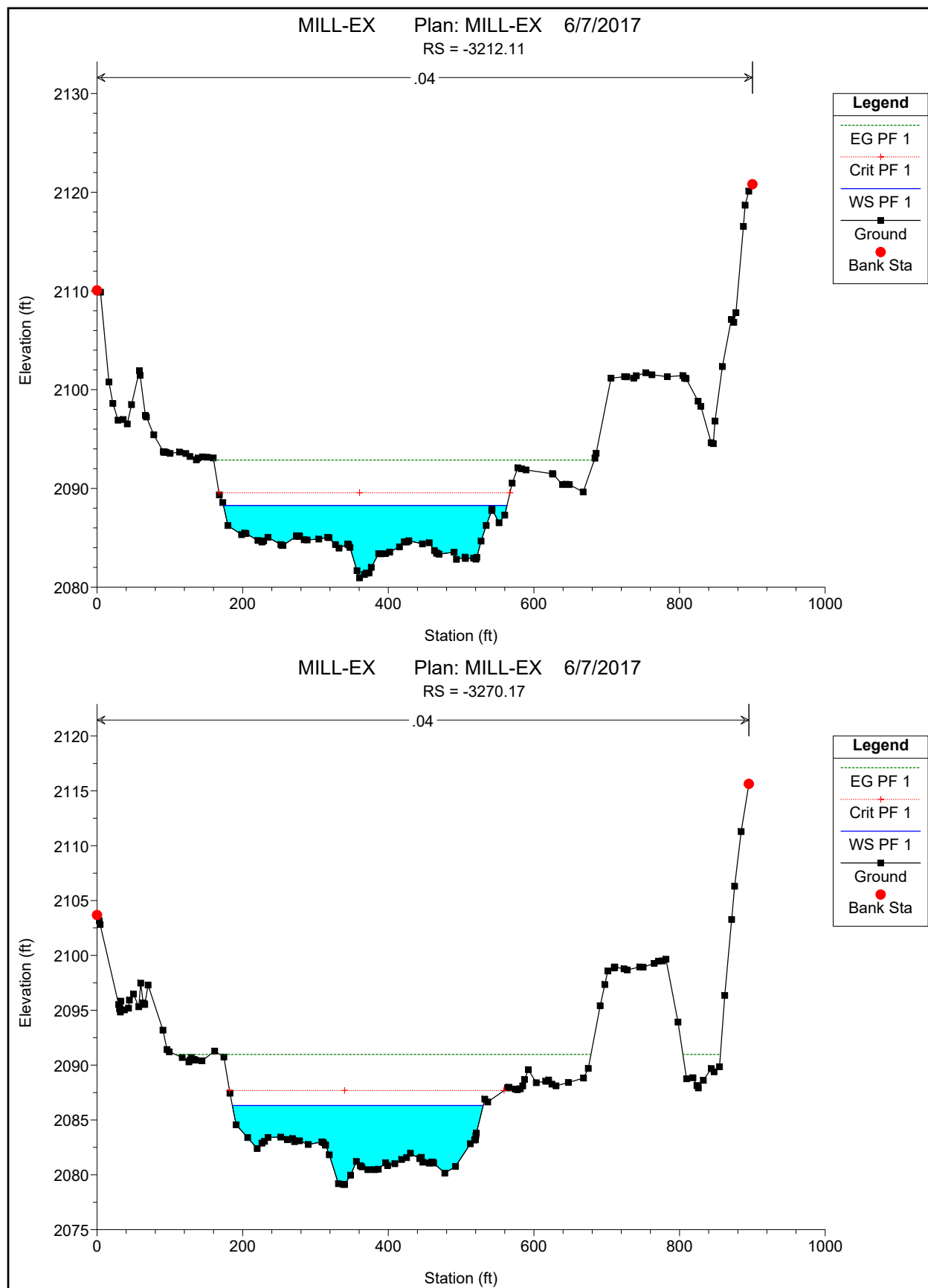


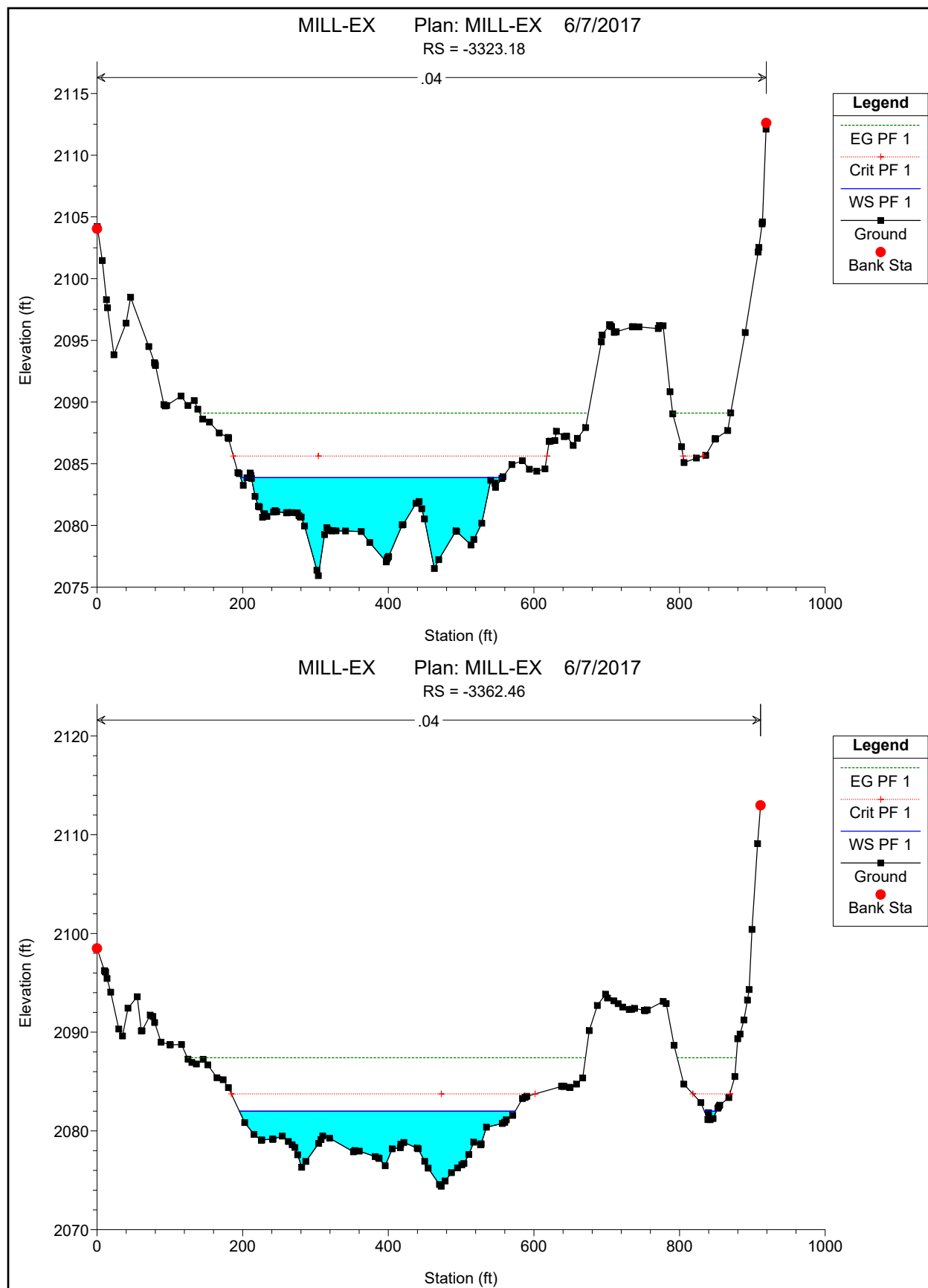




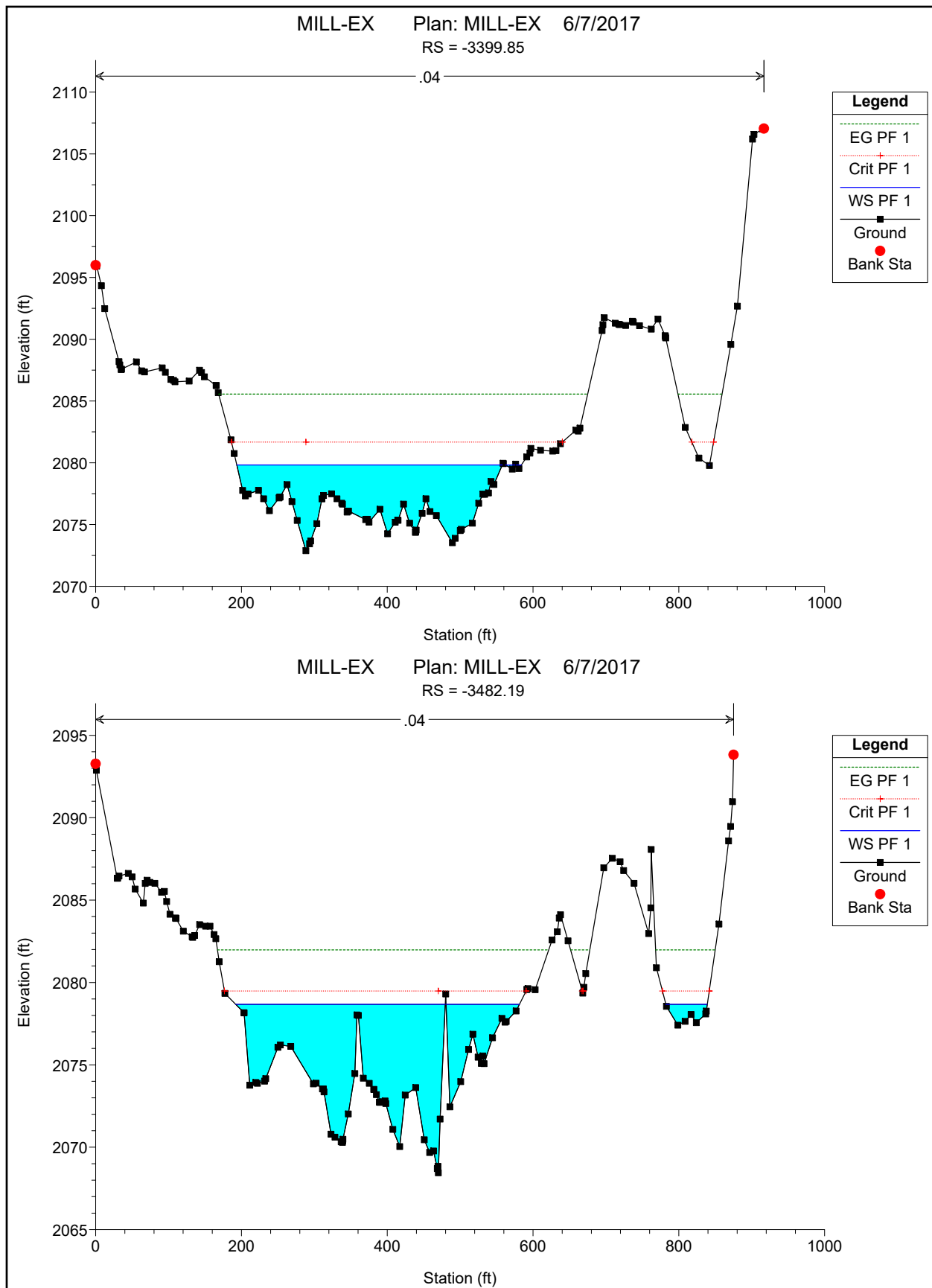


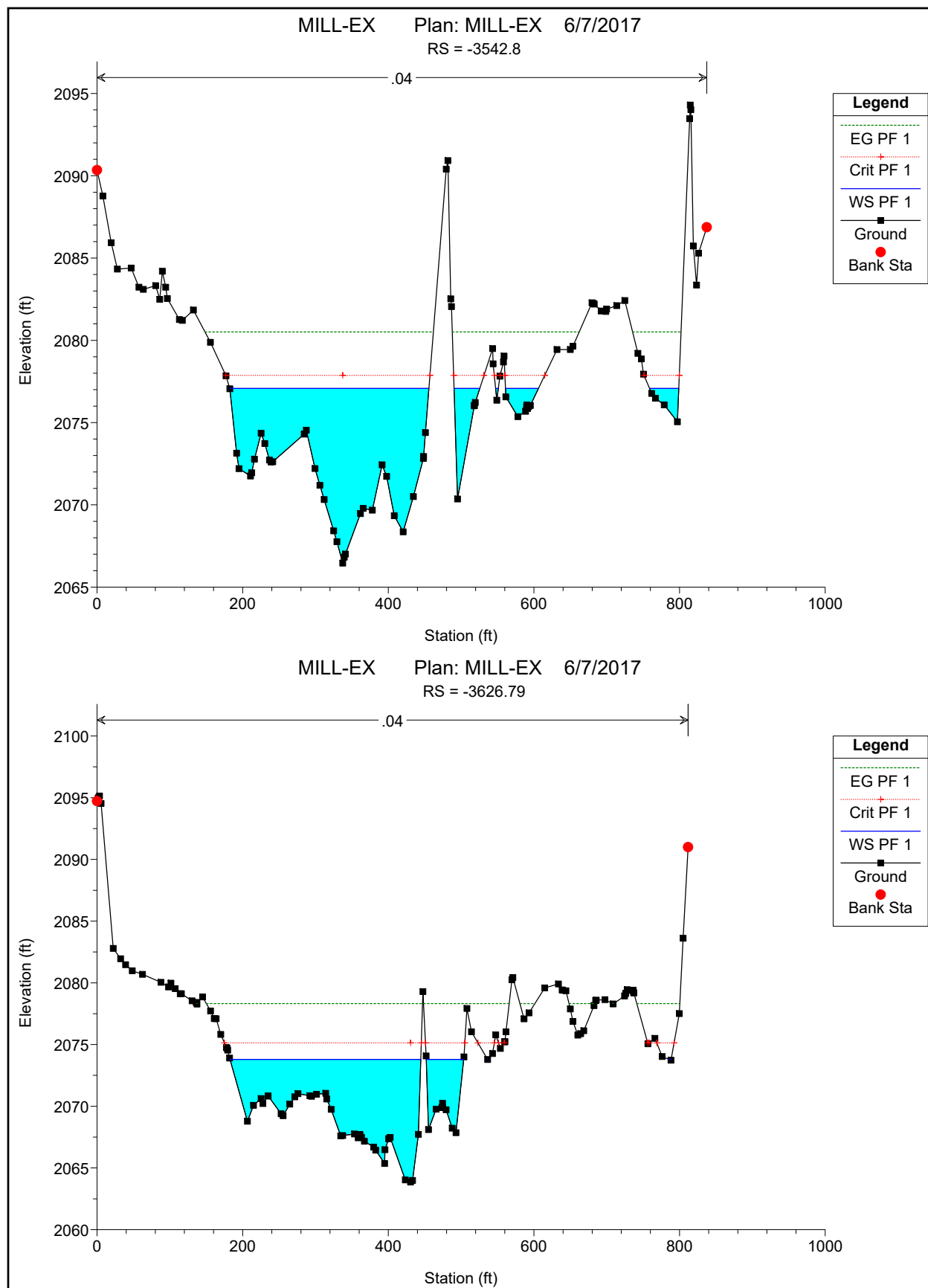


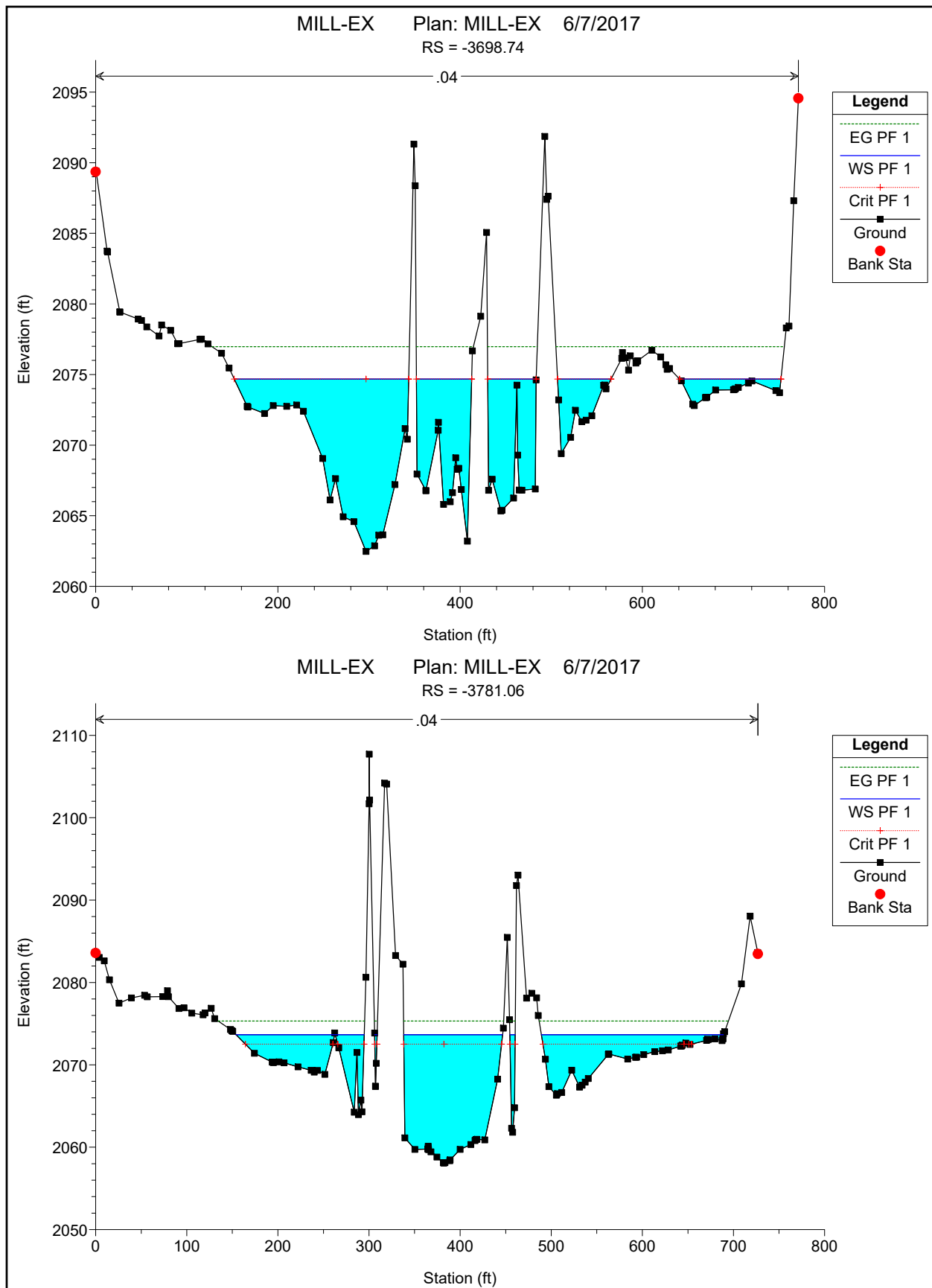


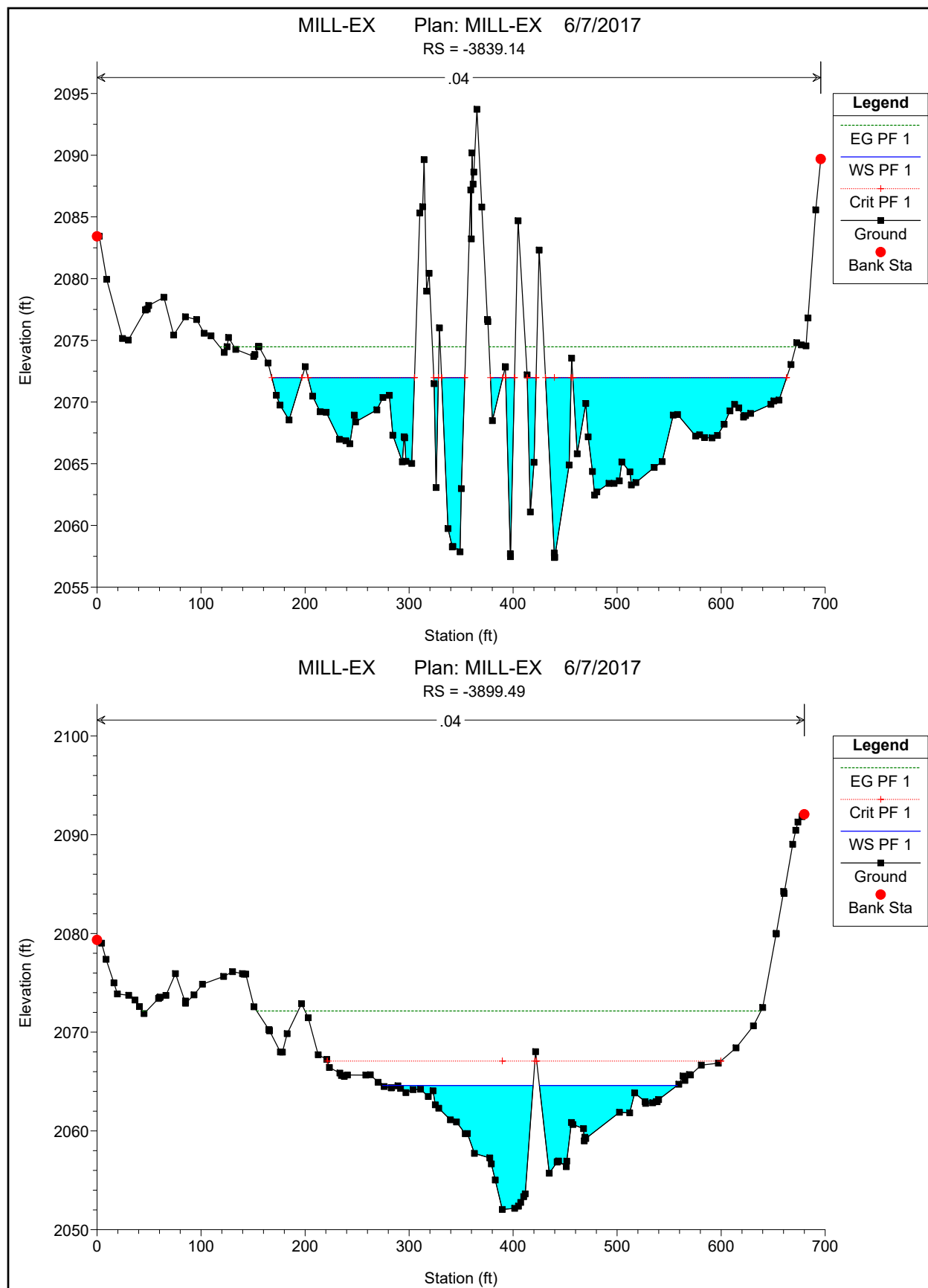


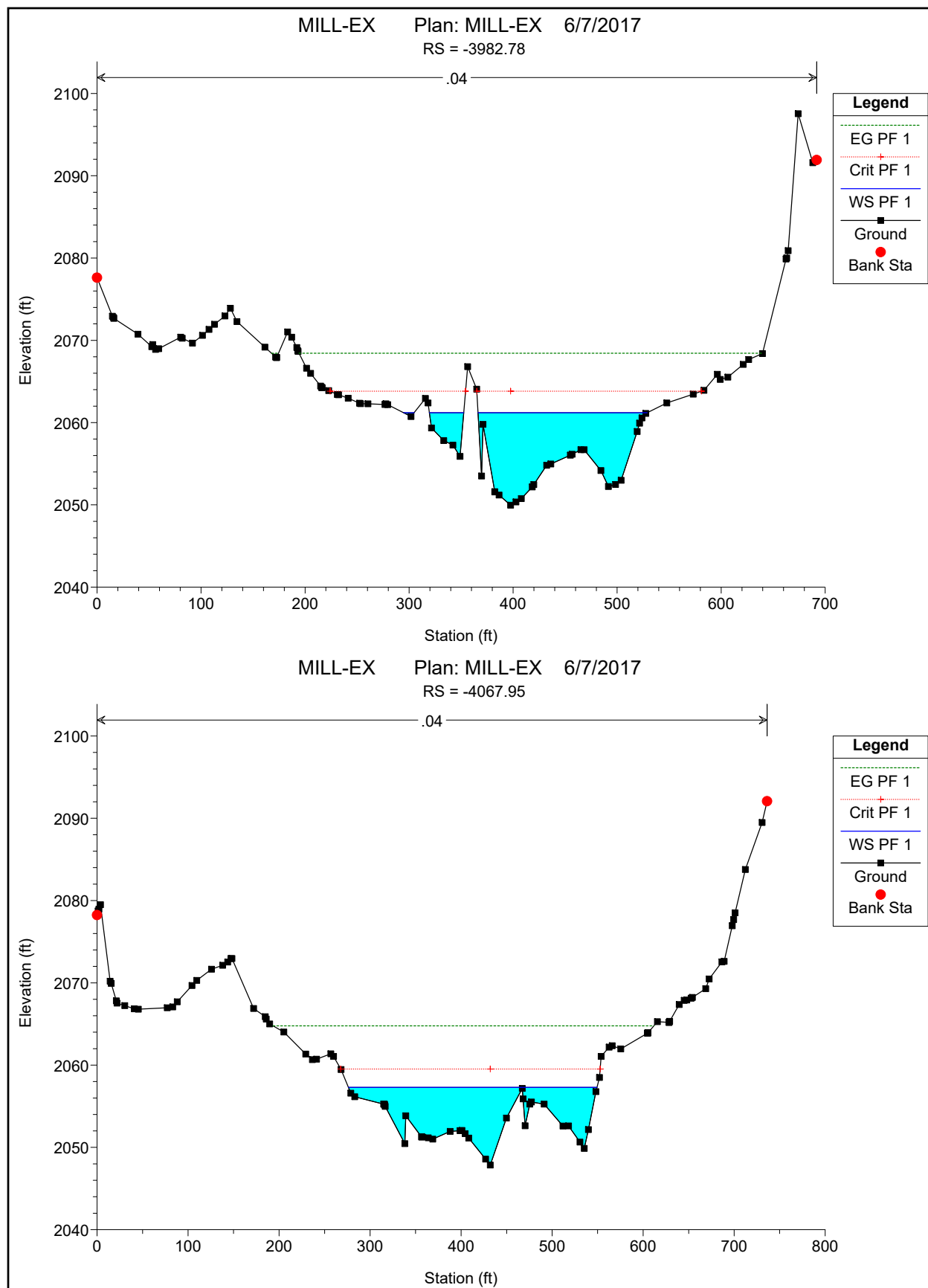


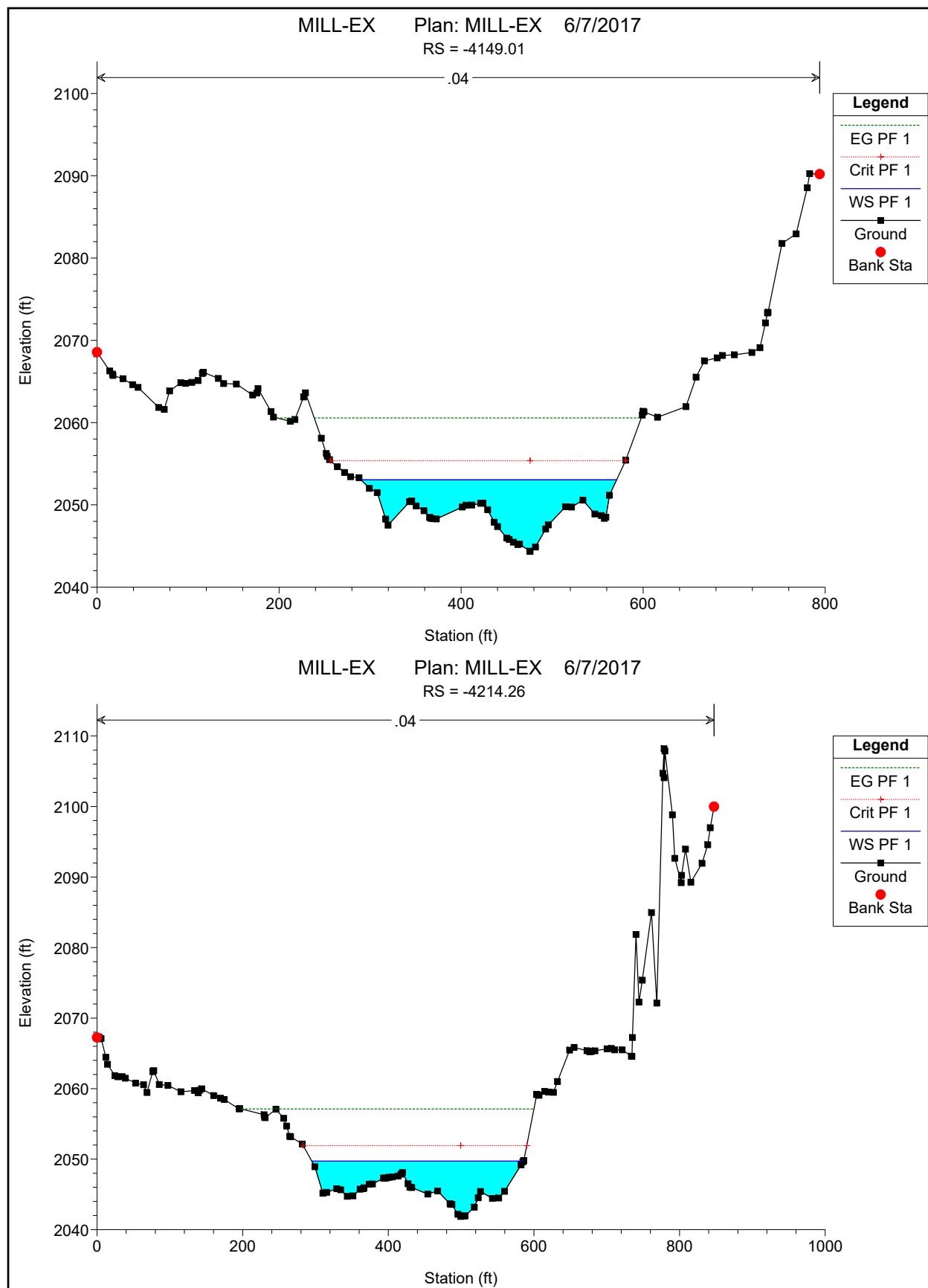




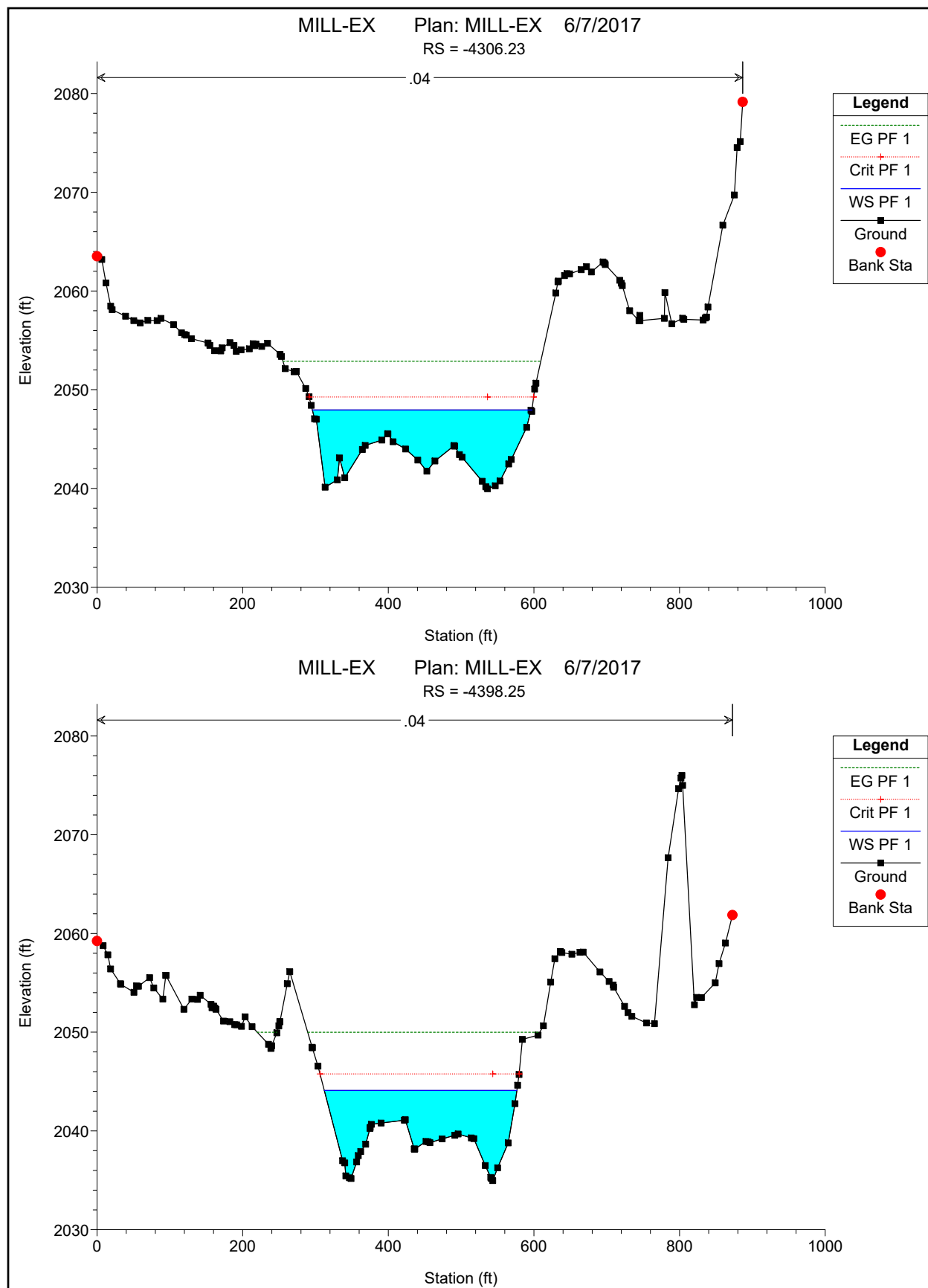


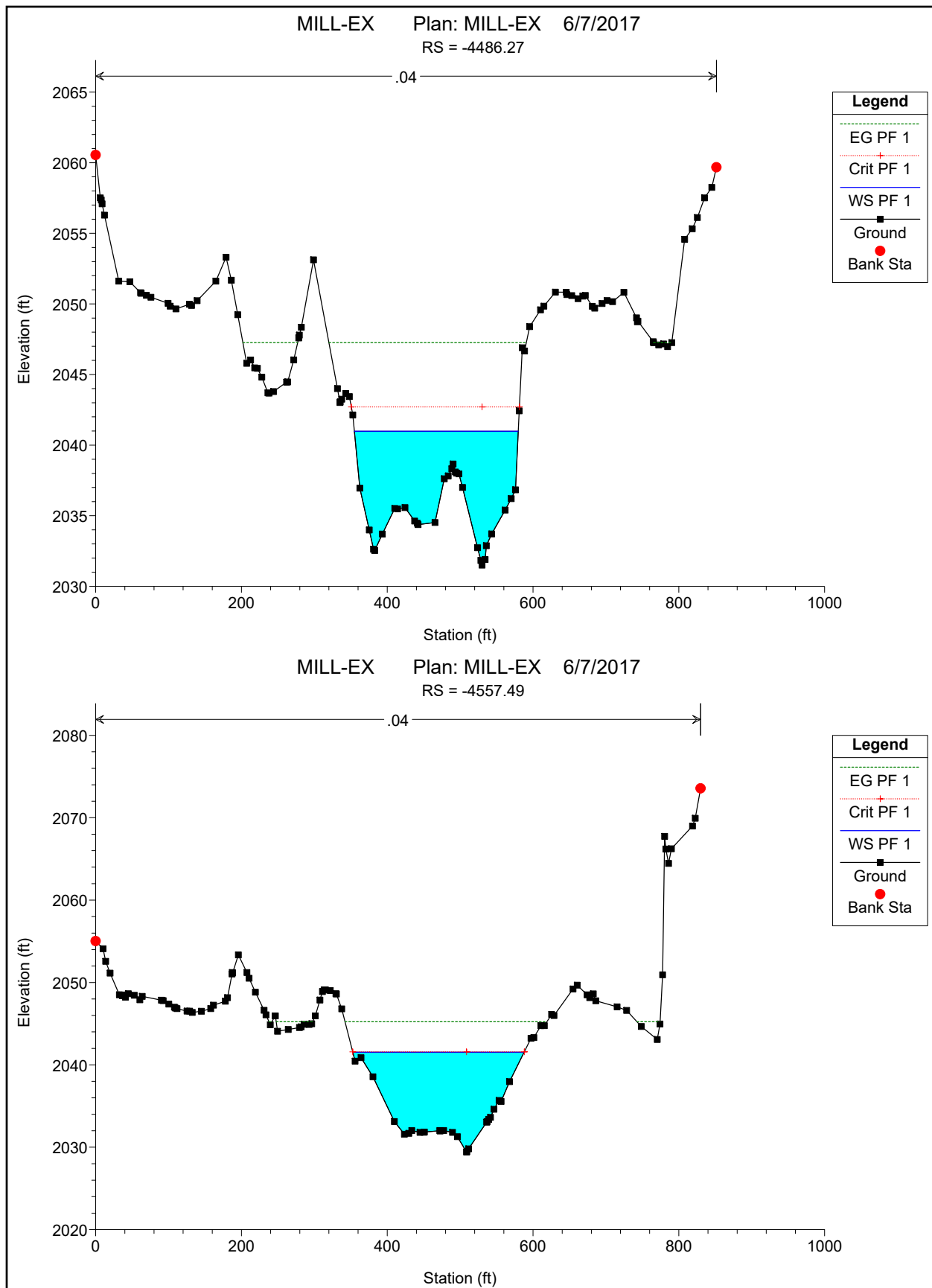


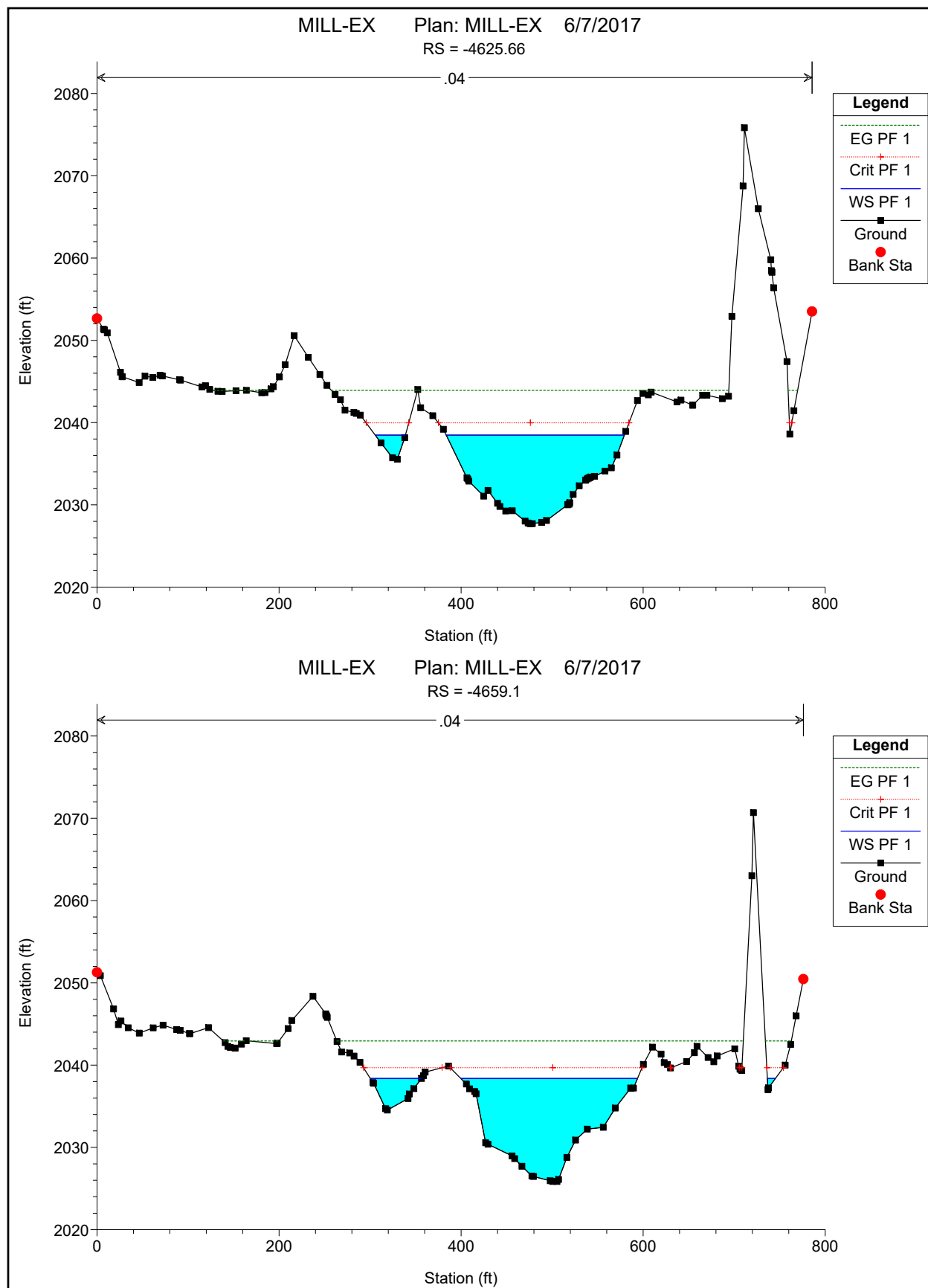


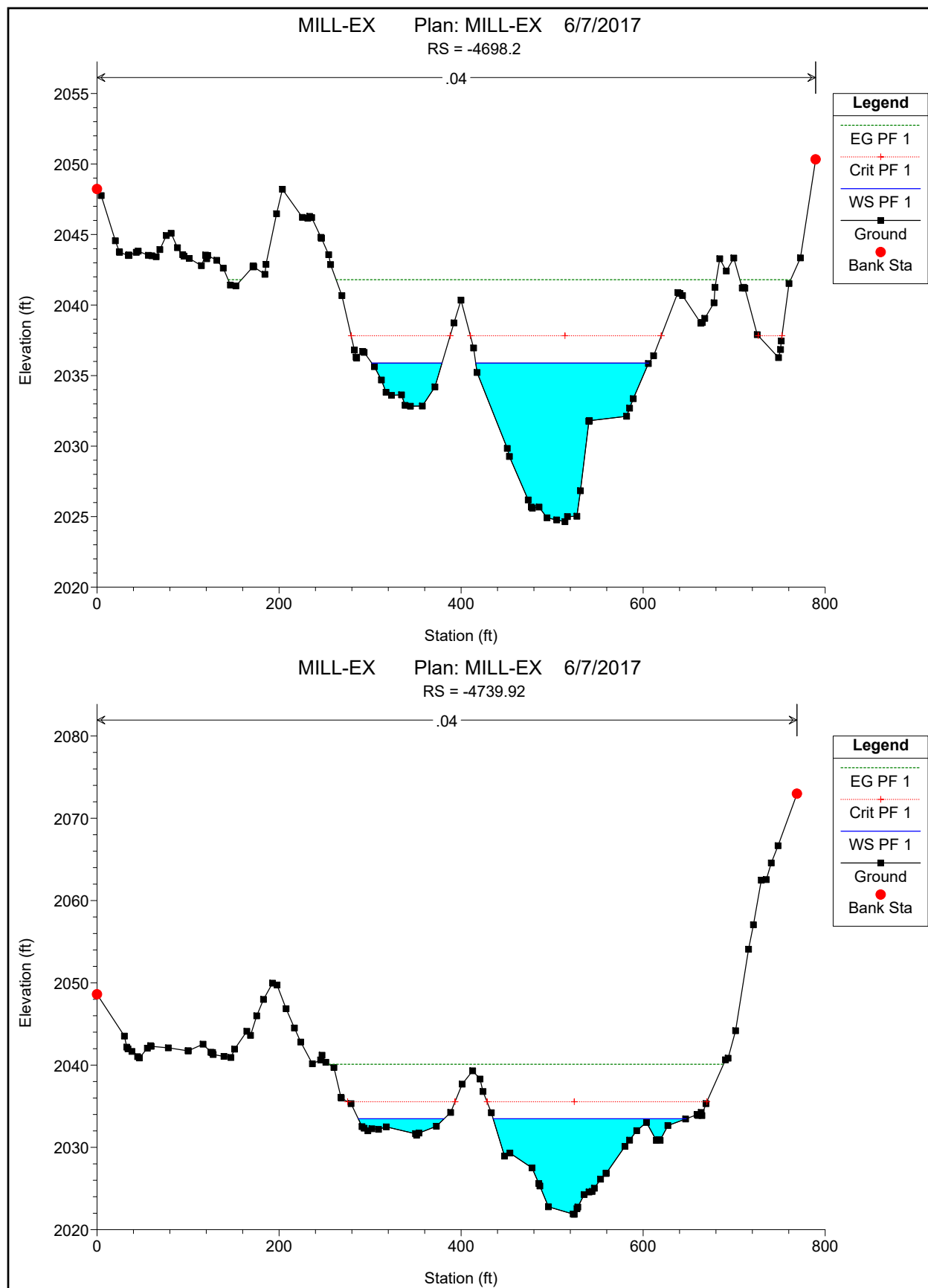


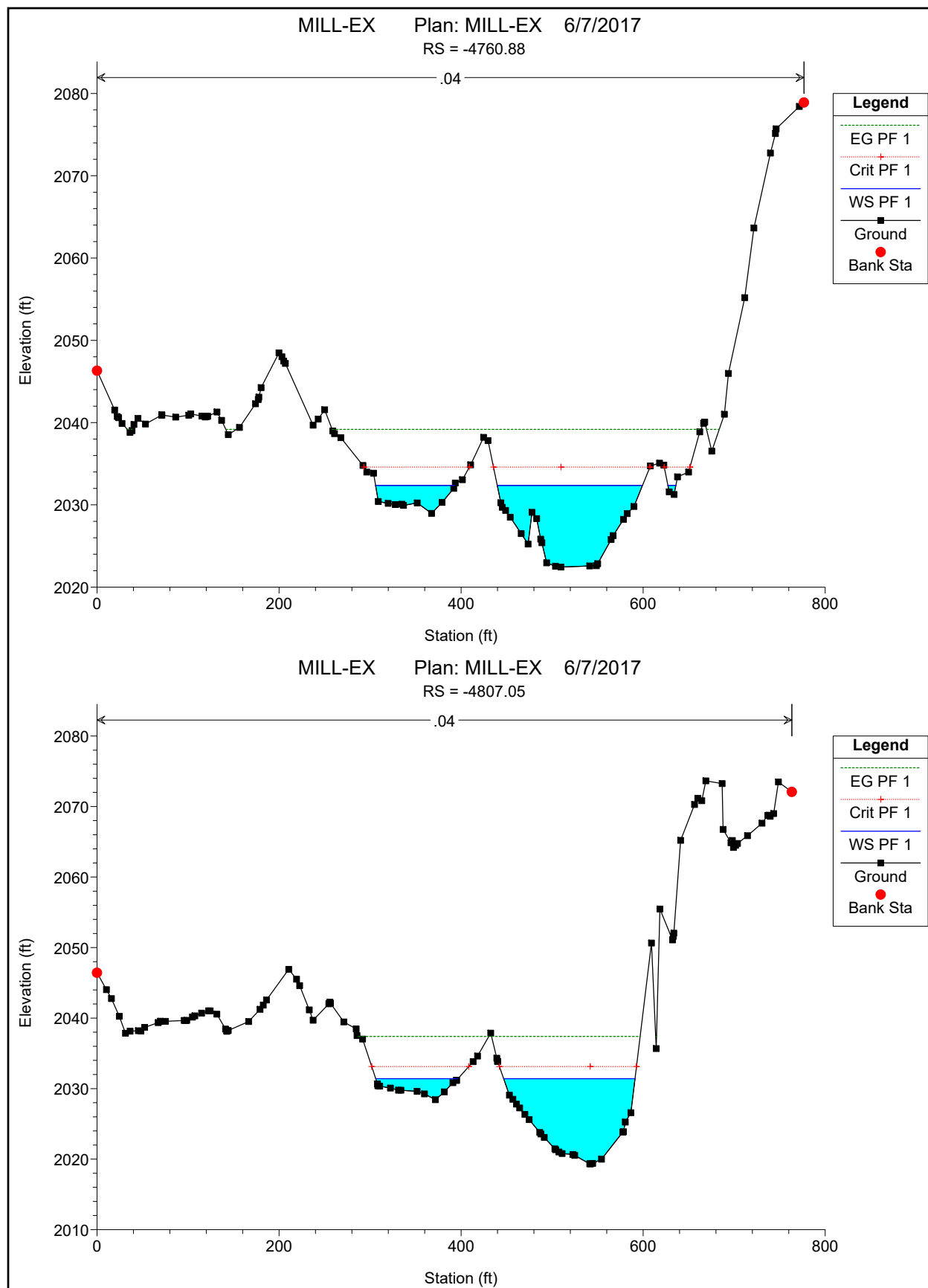


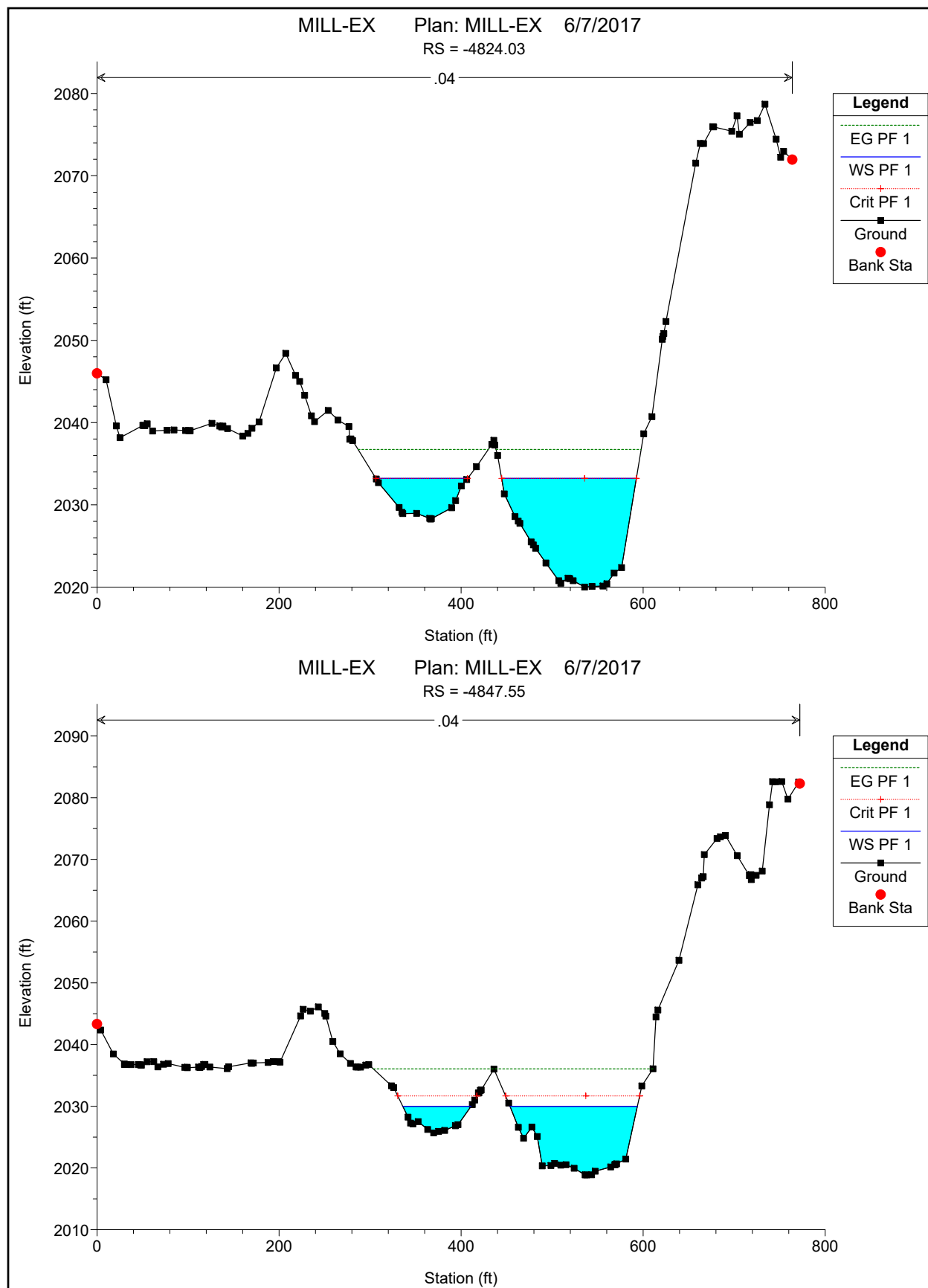




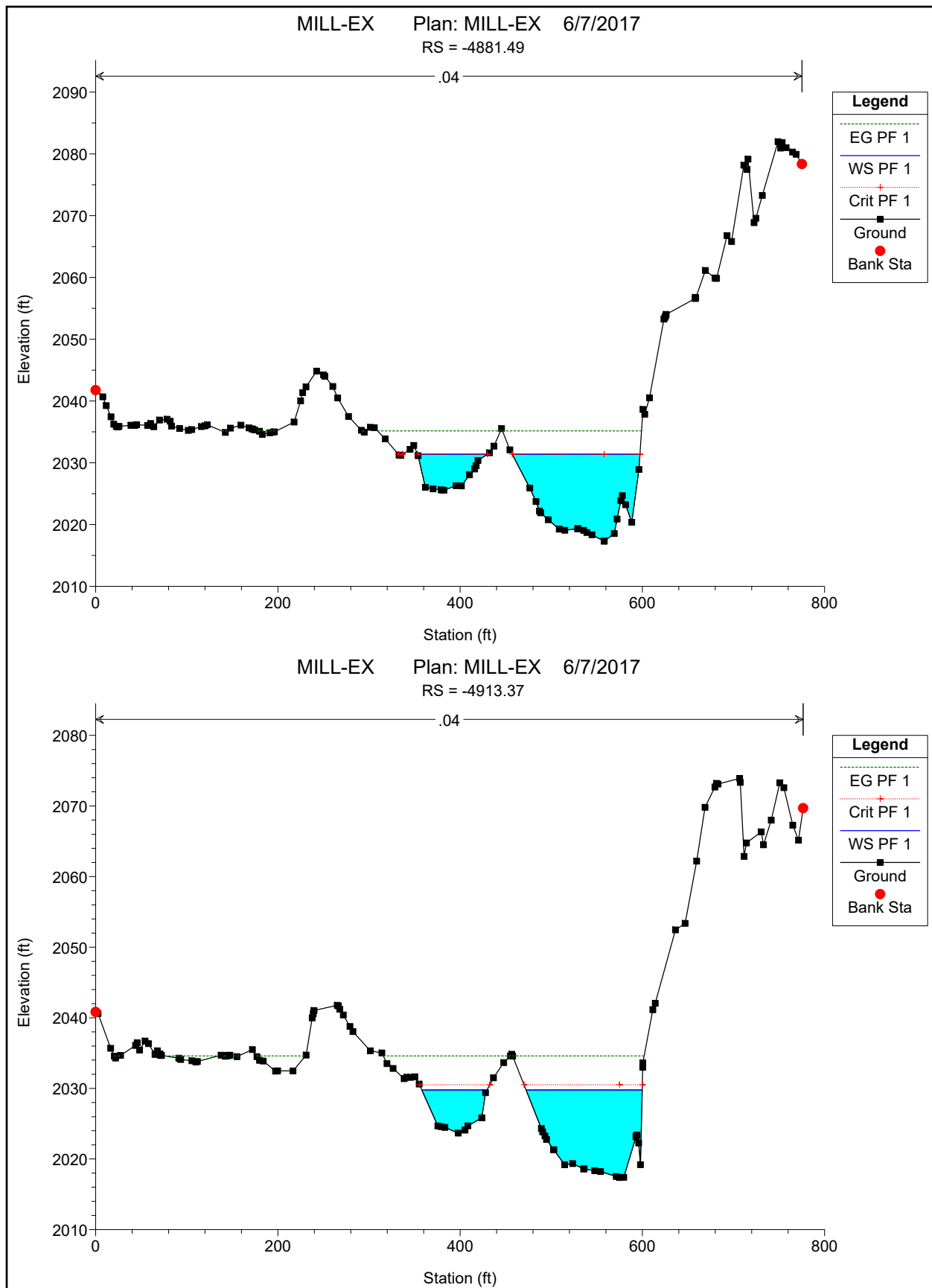


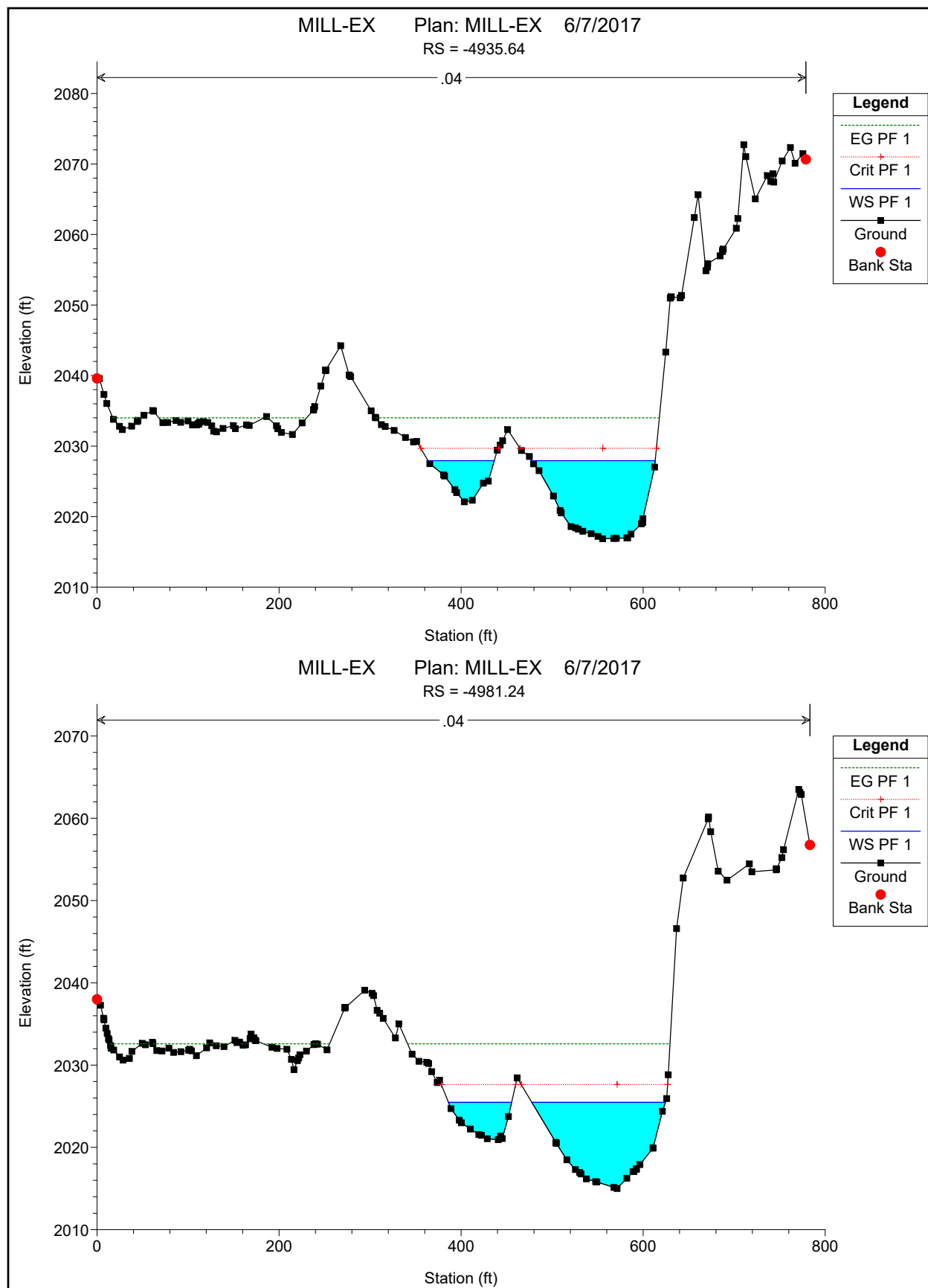


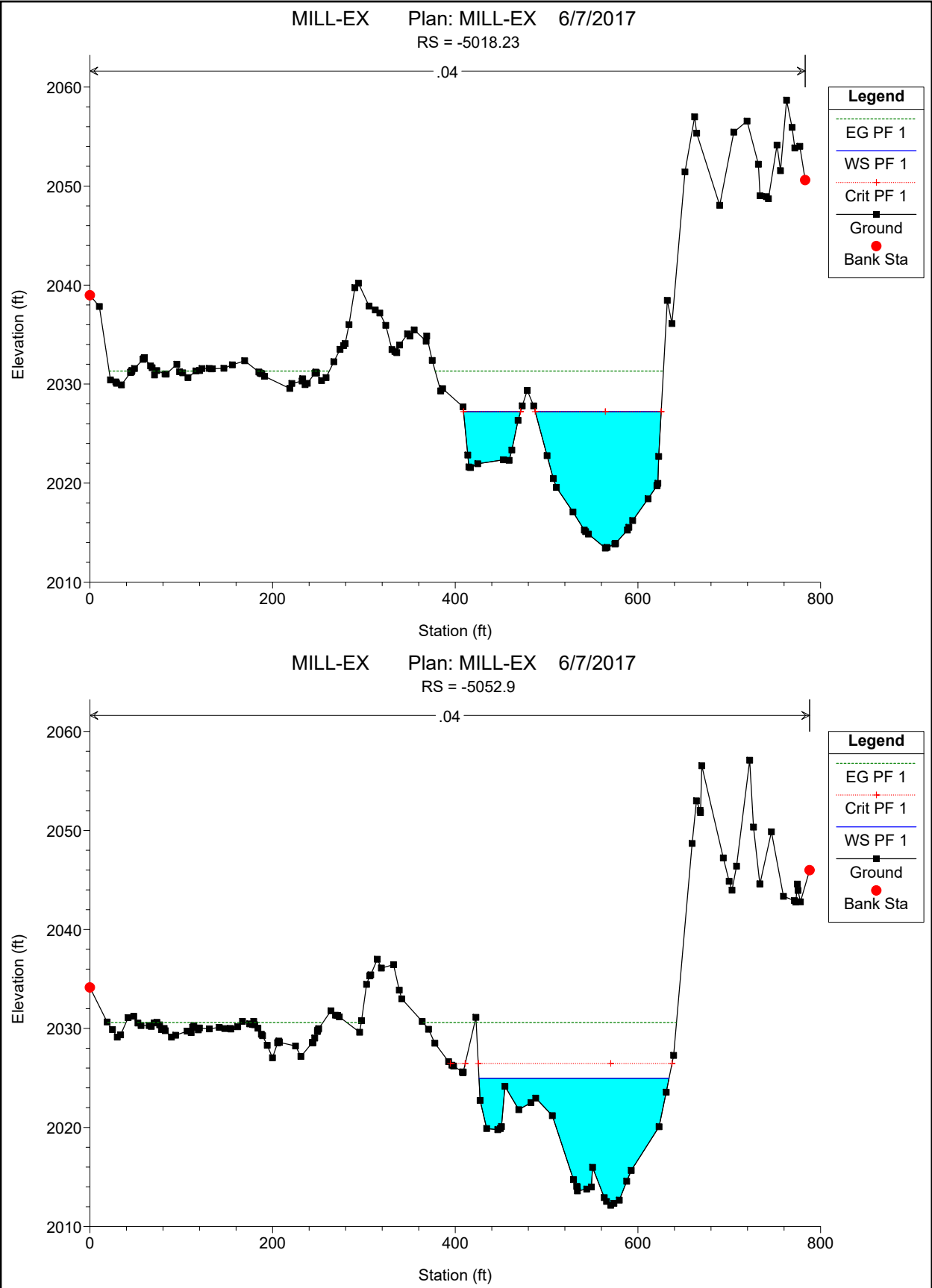




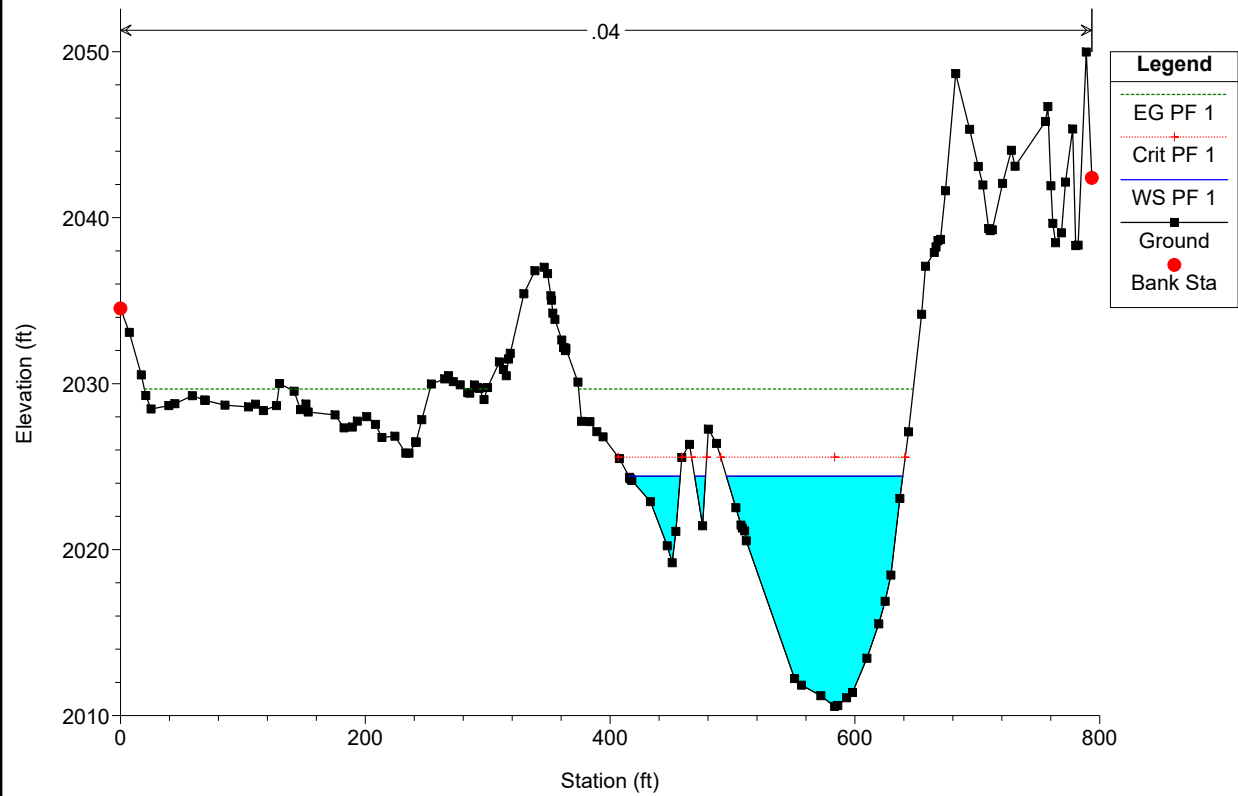






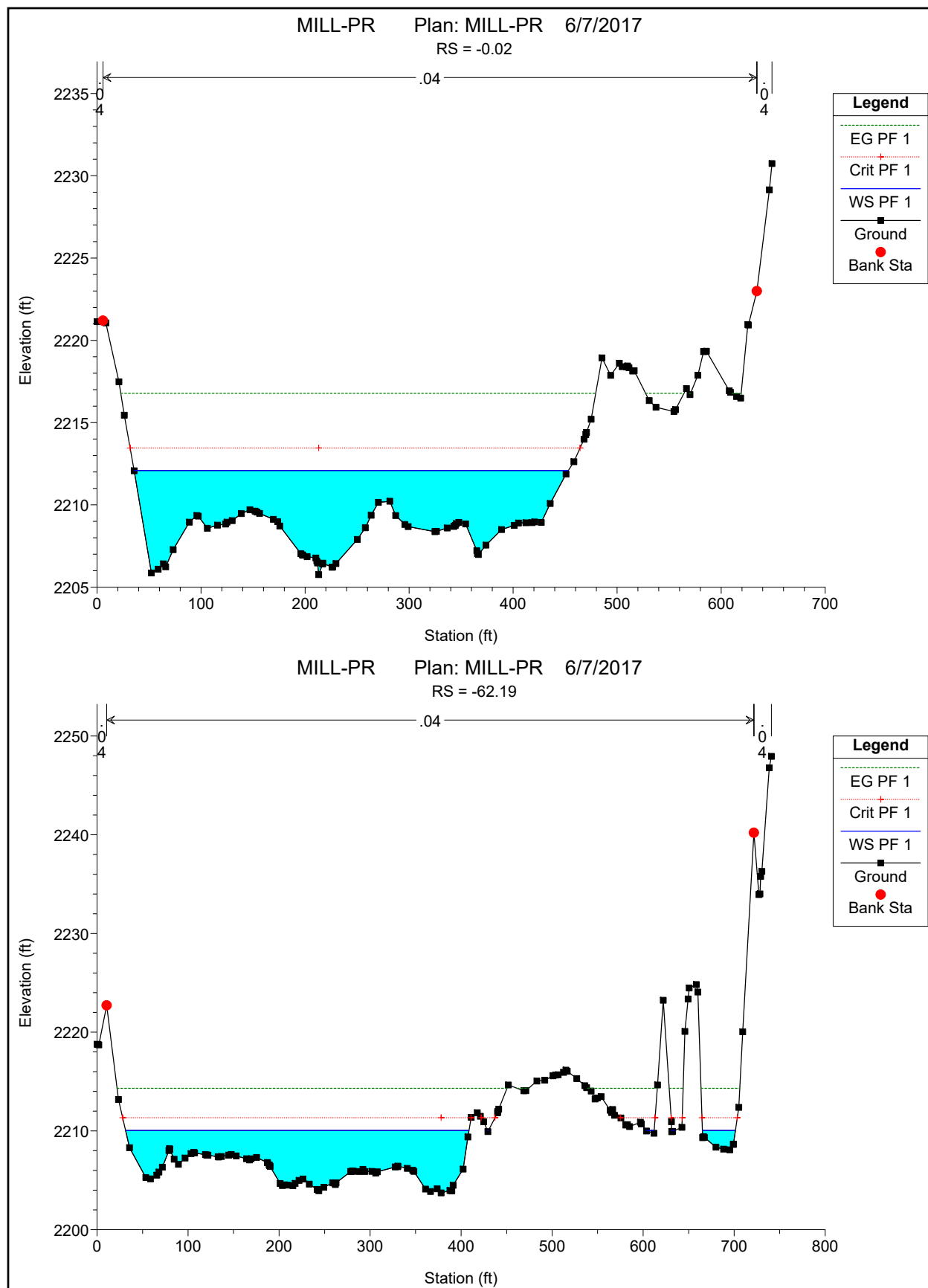


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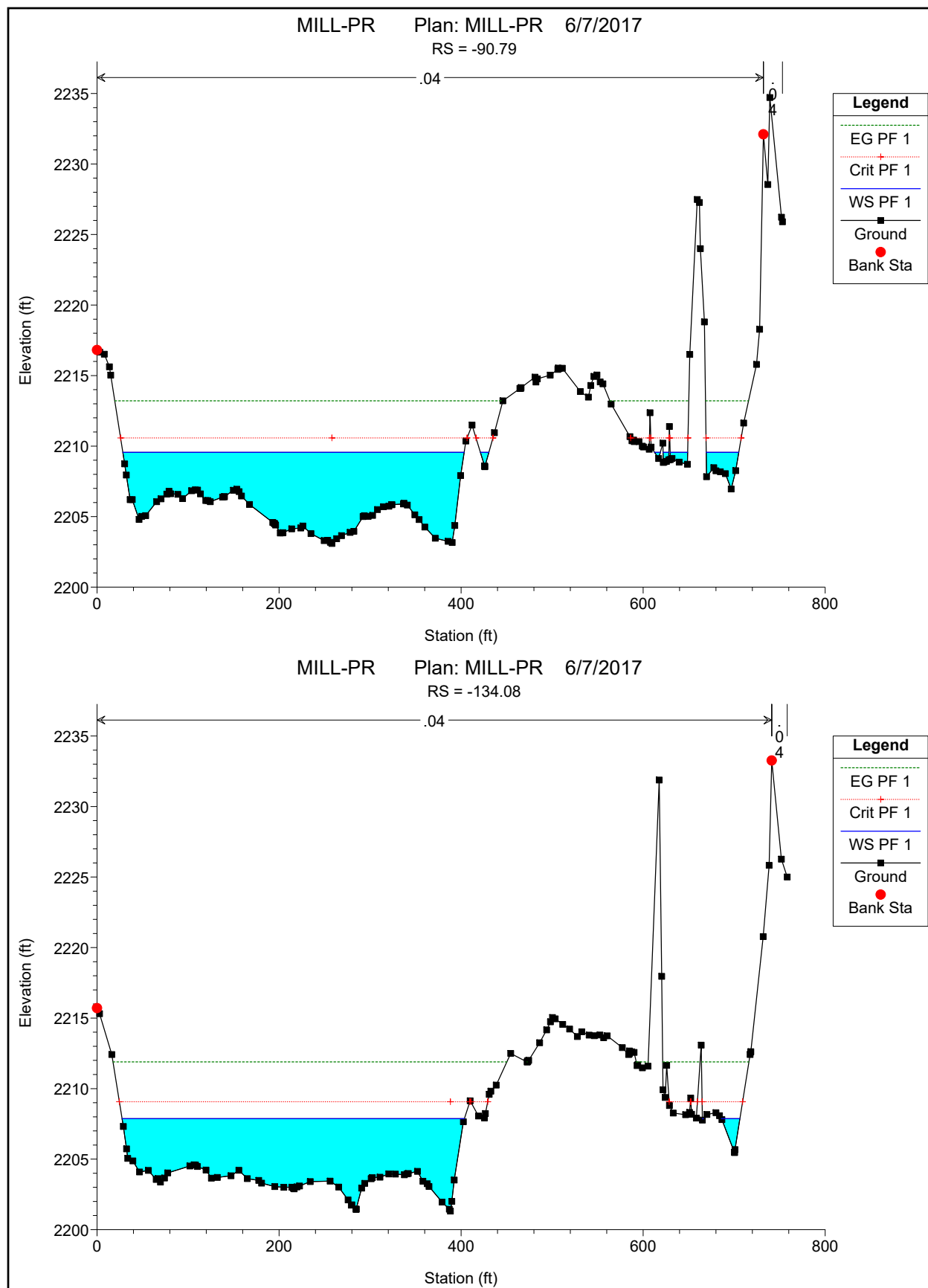


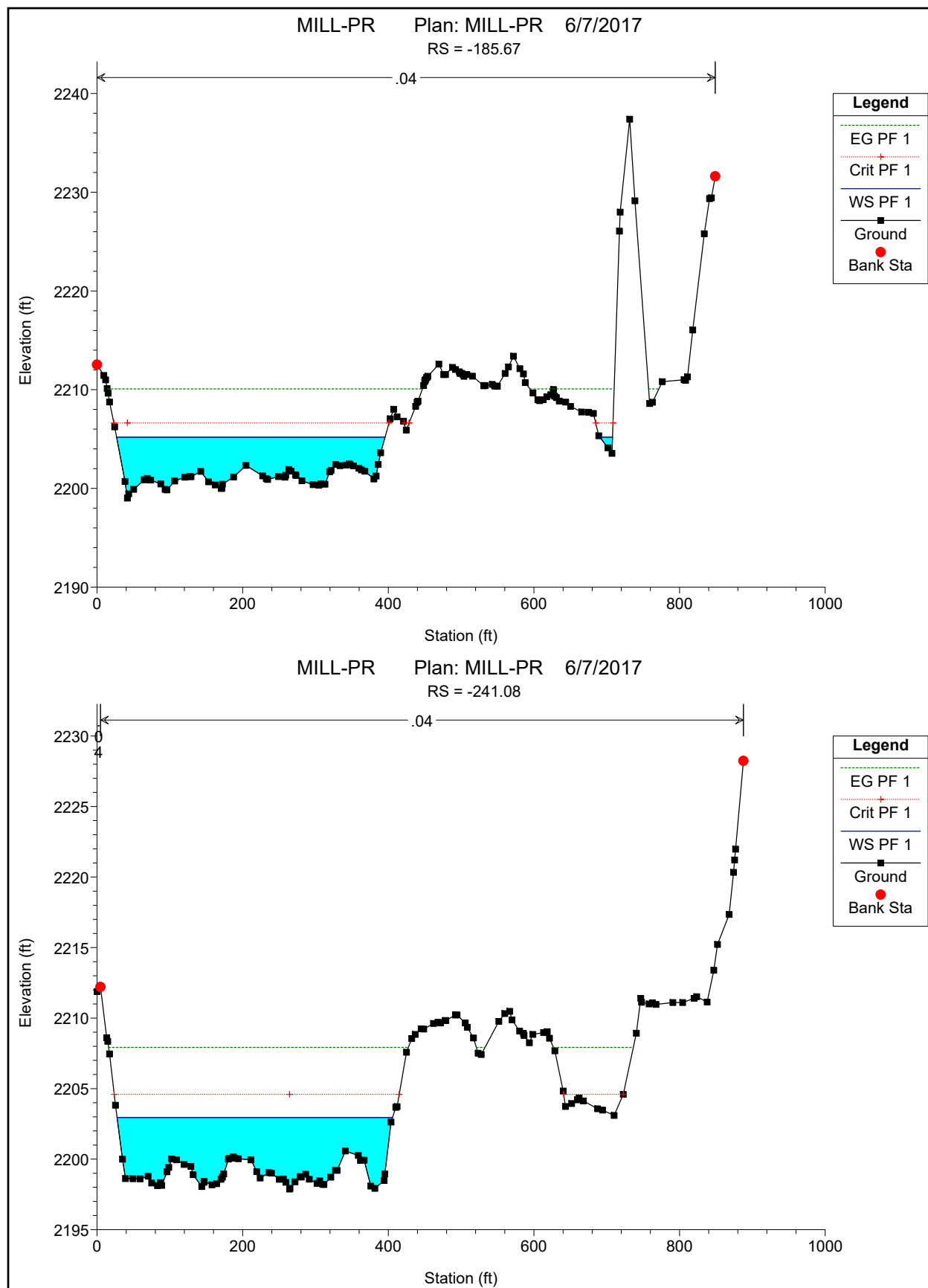
# **ATTACHMENT 3**

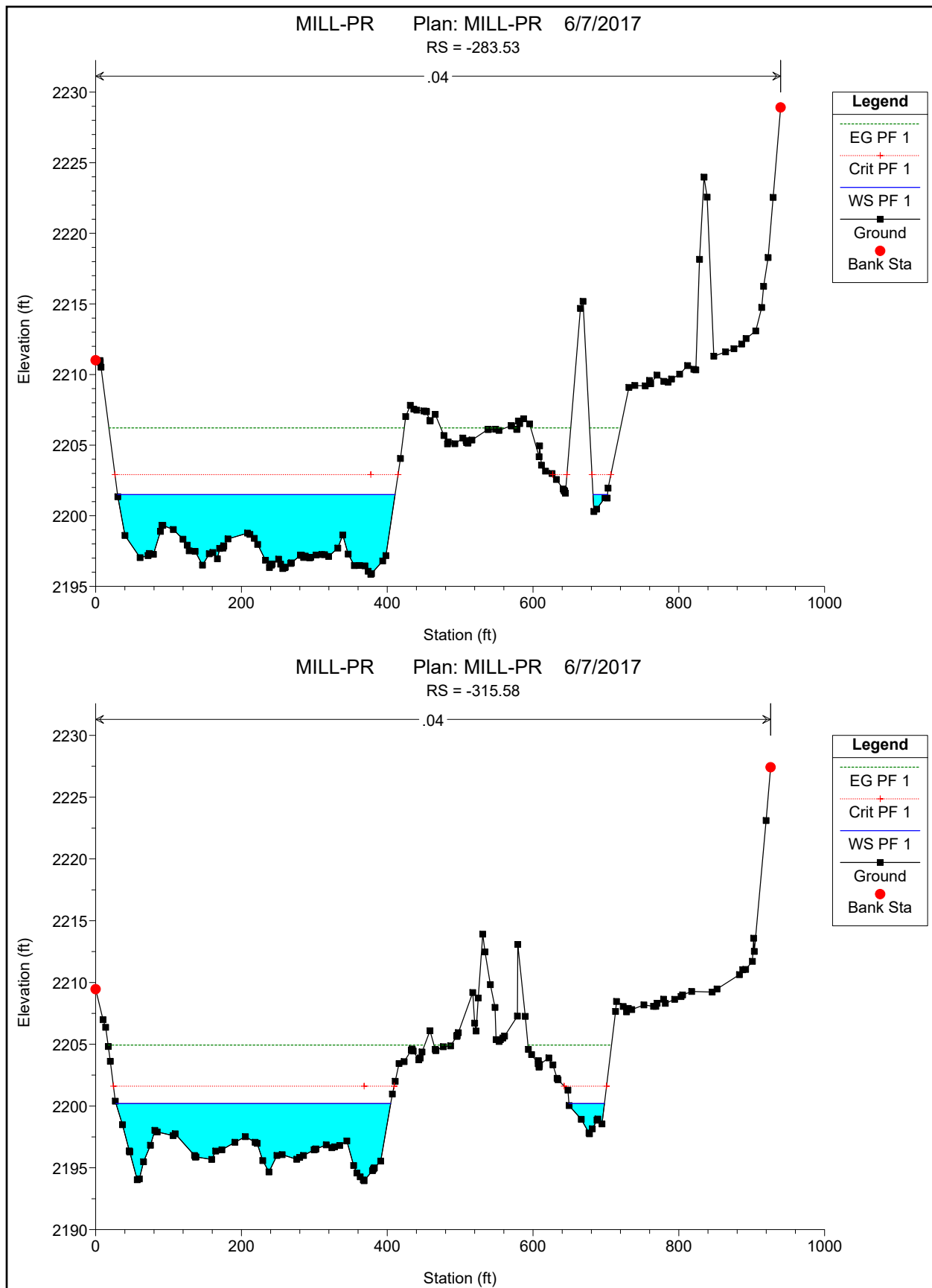
Proposed Conditions  
HEC-RAS Cross Sections

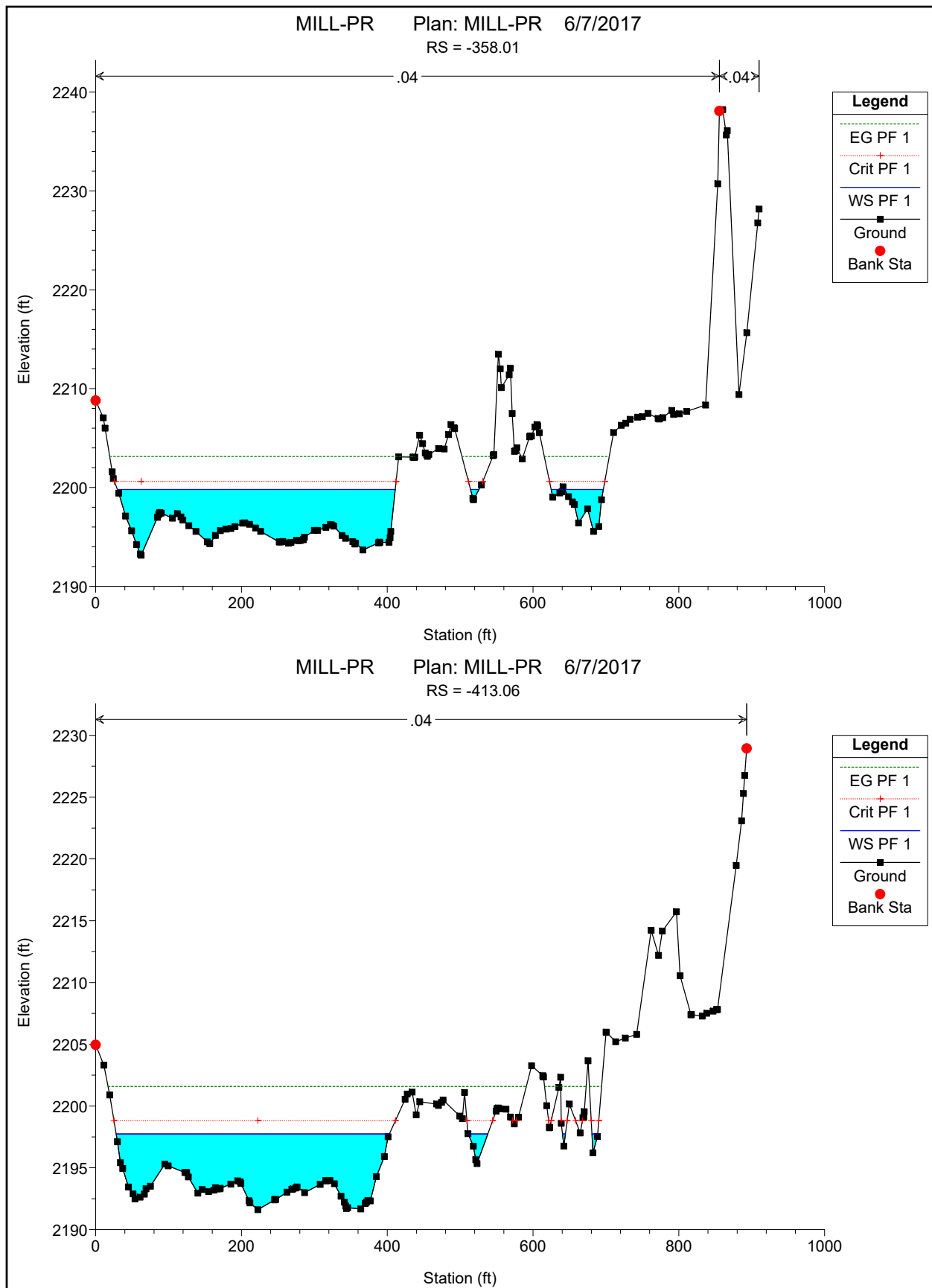


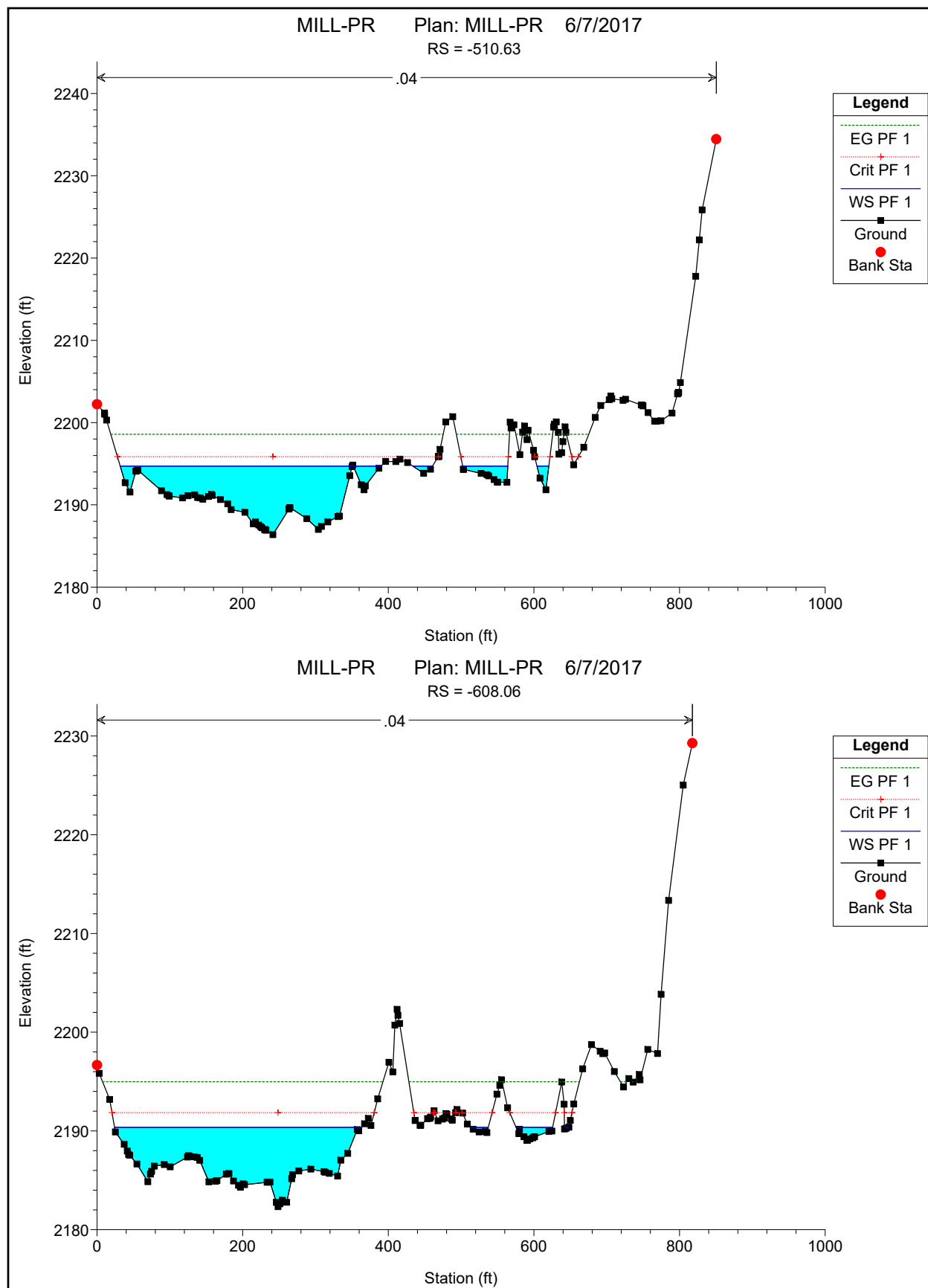


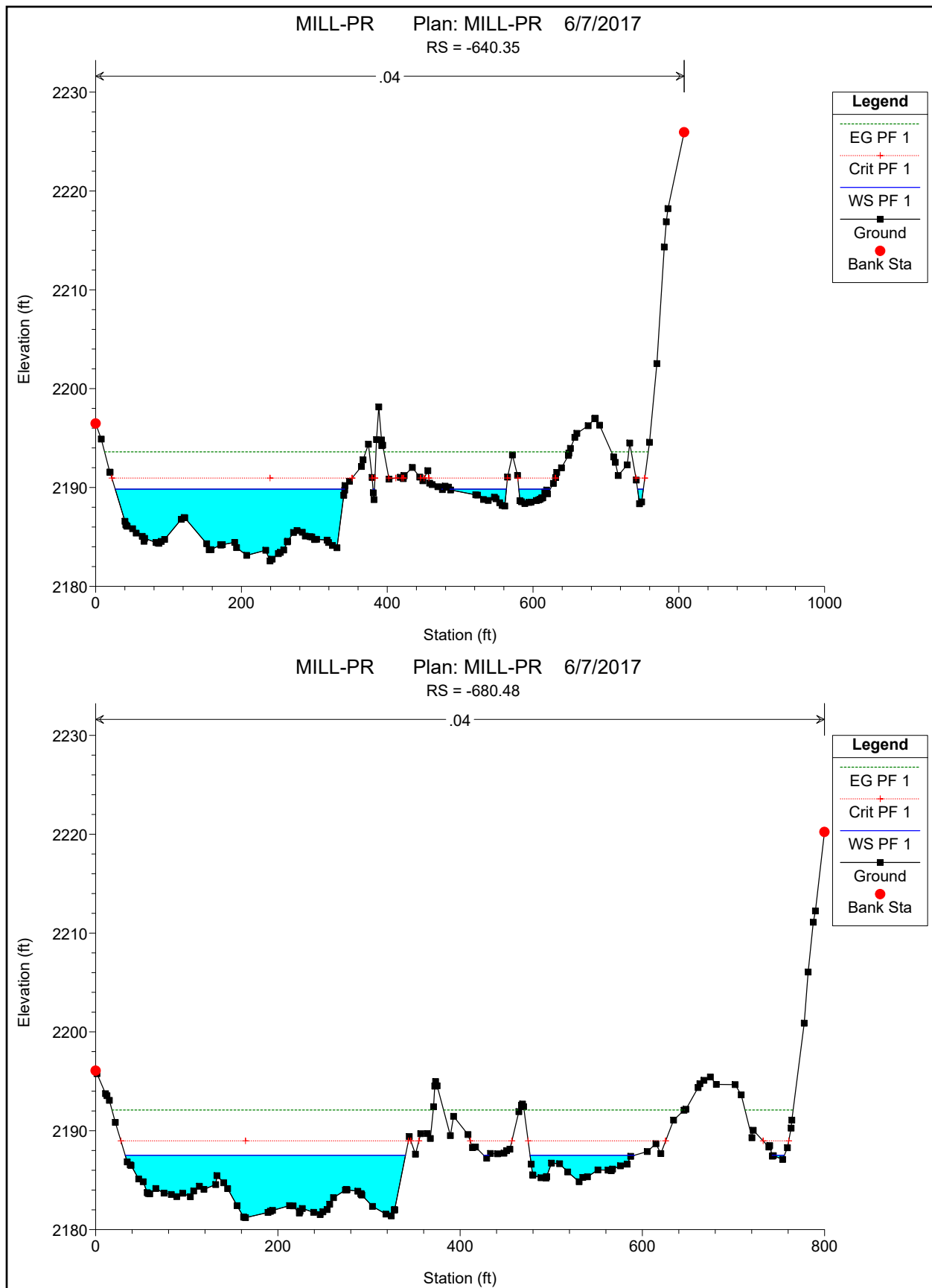


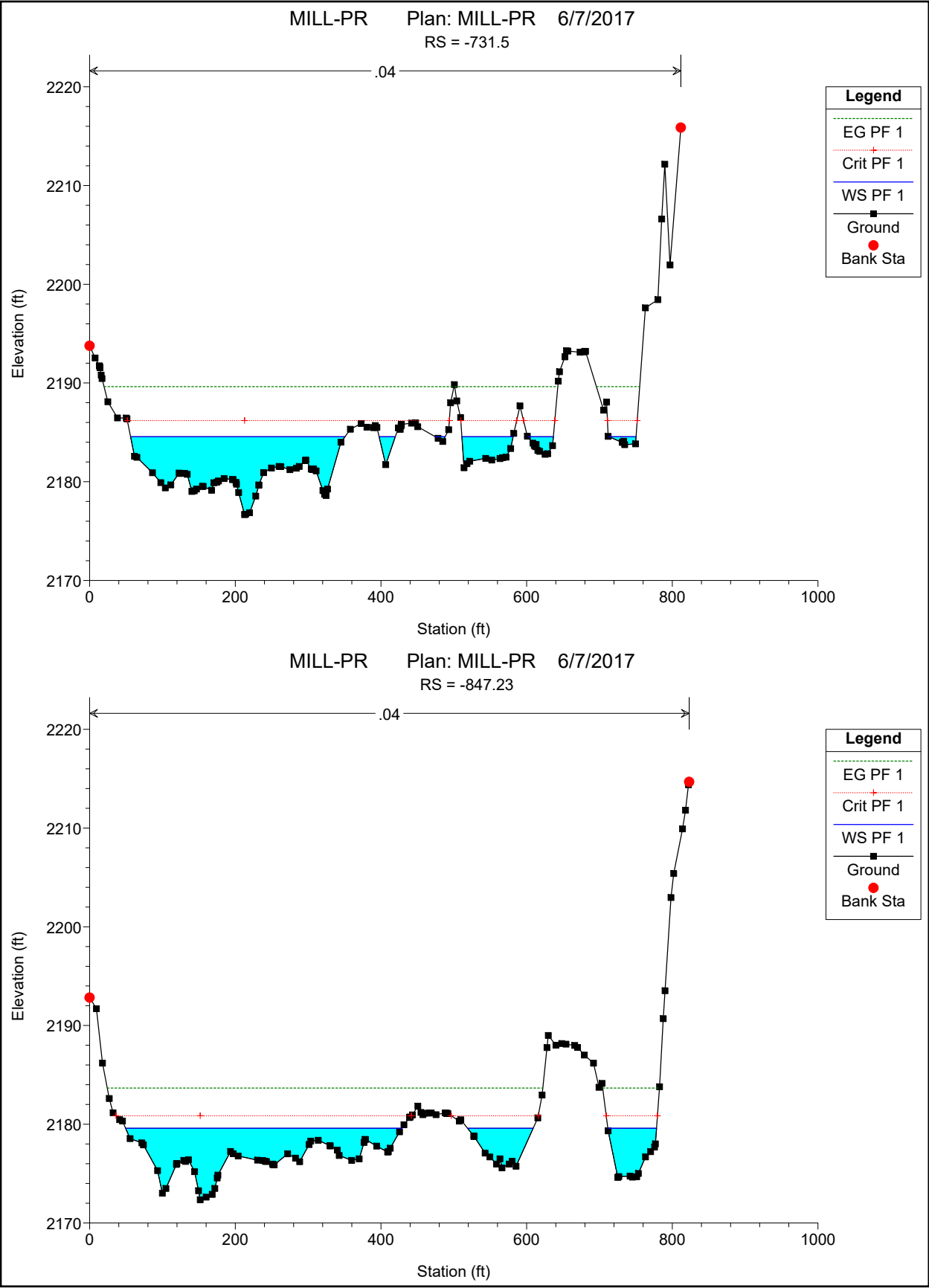




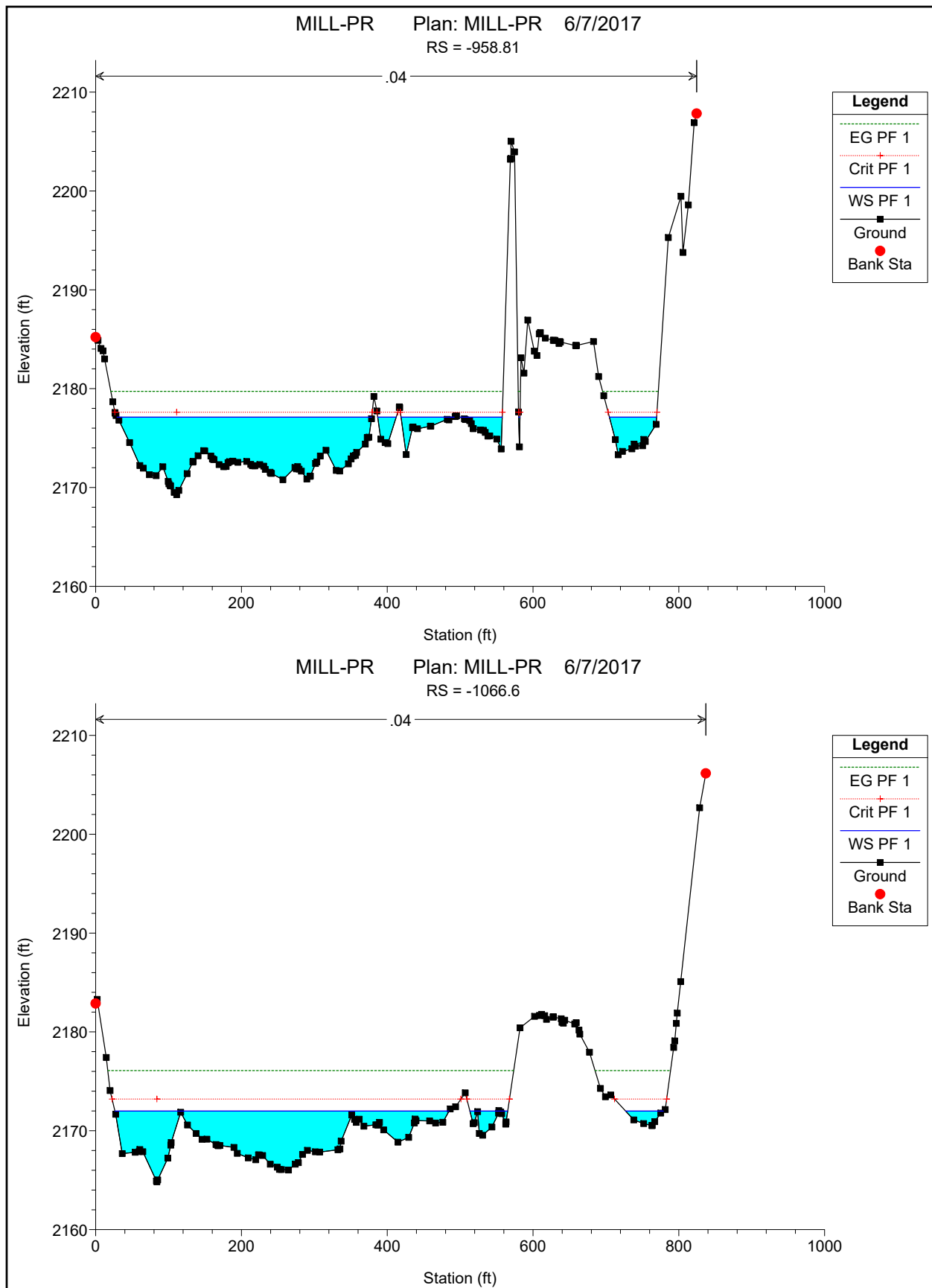


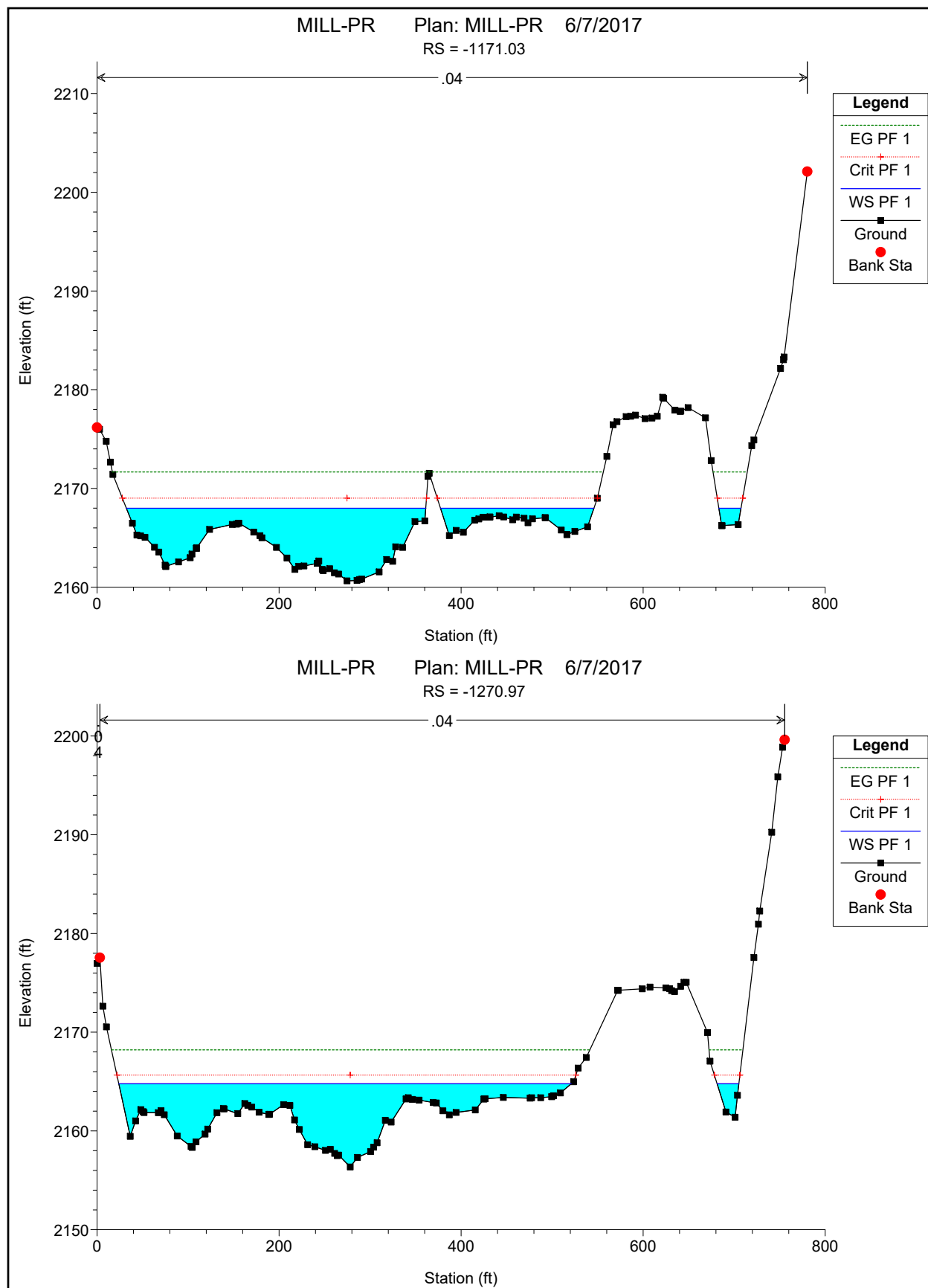


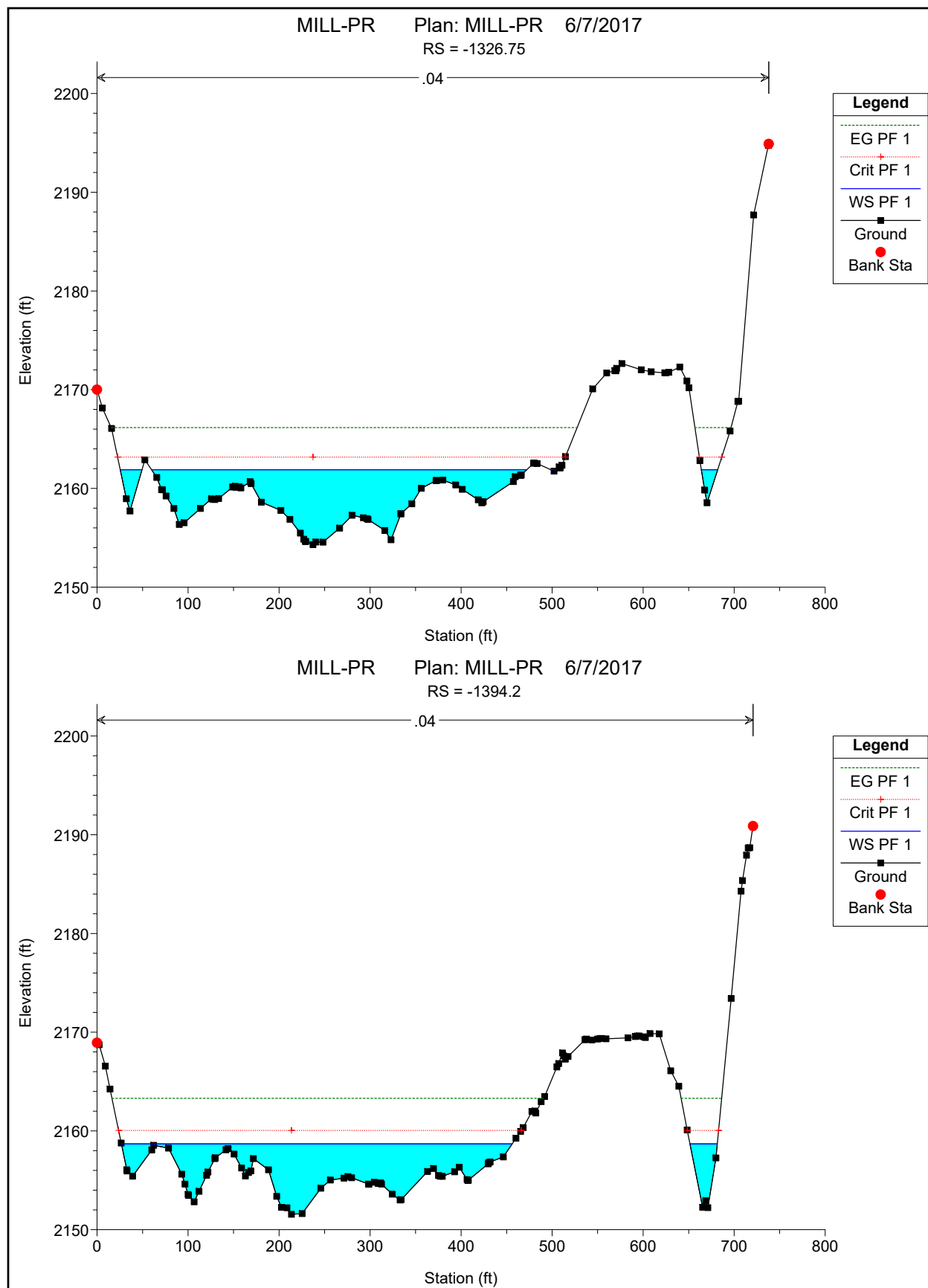


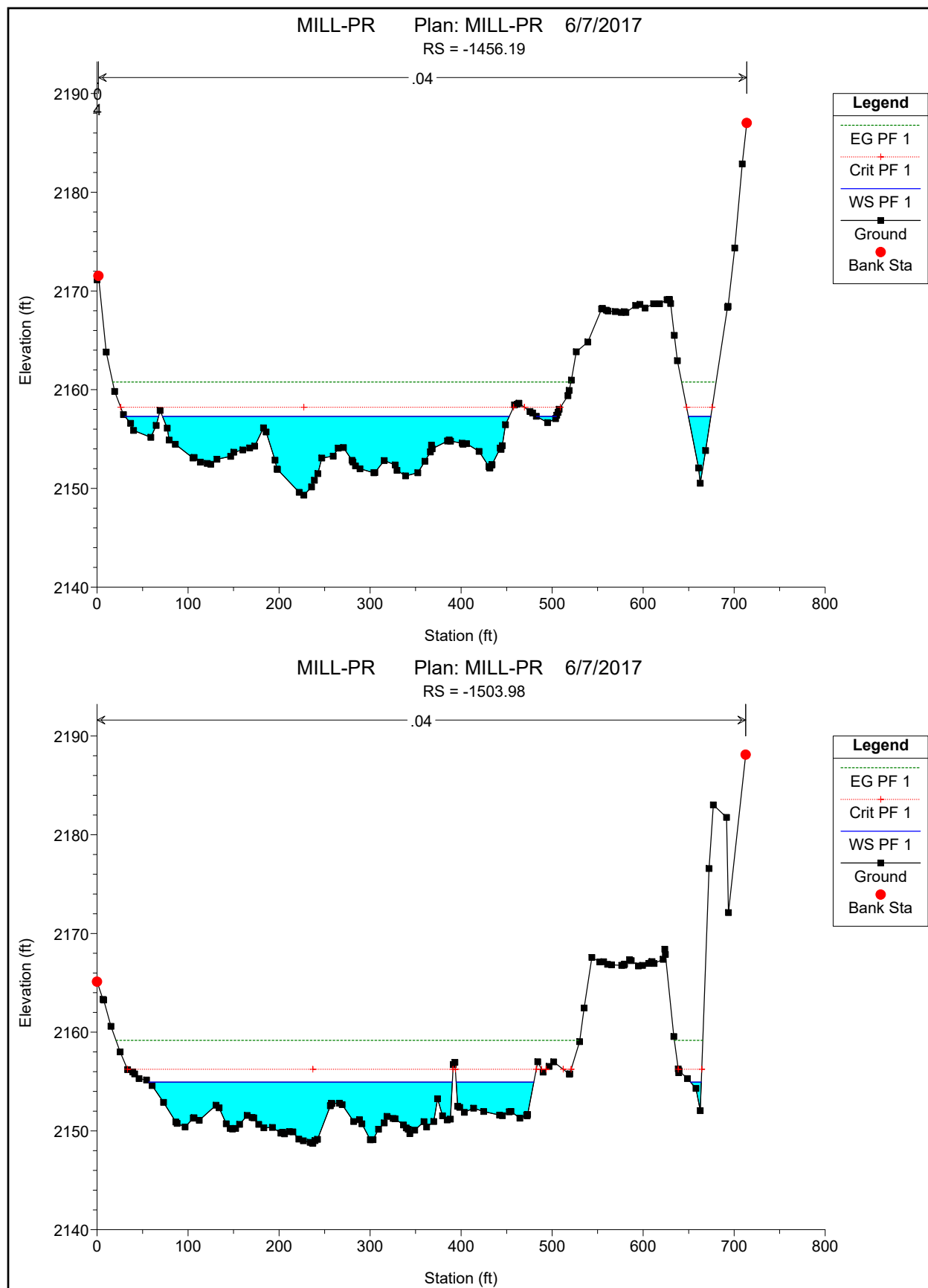


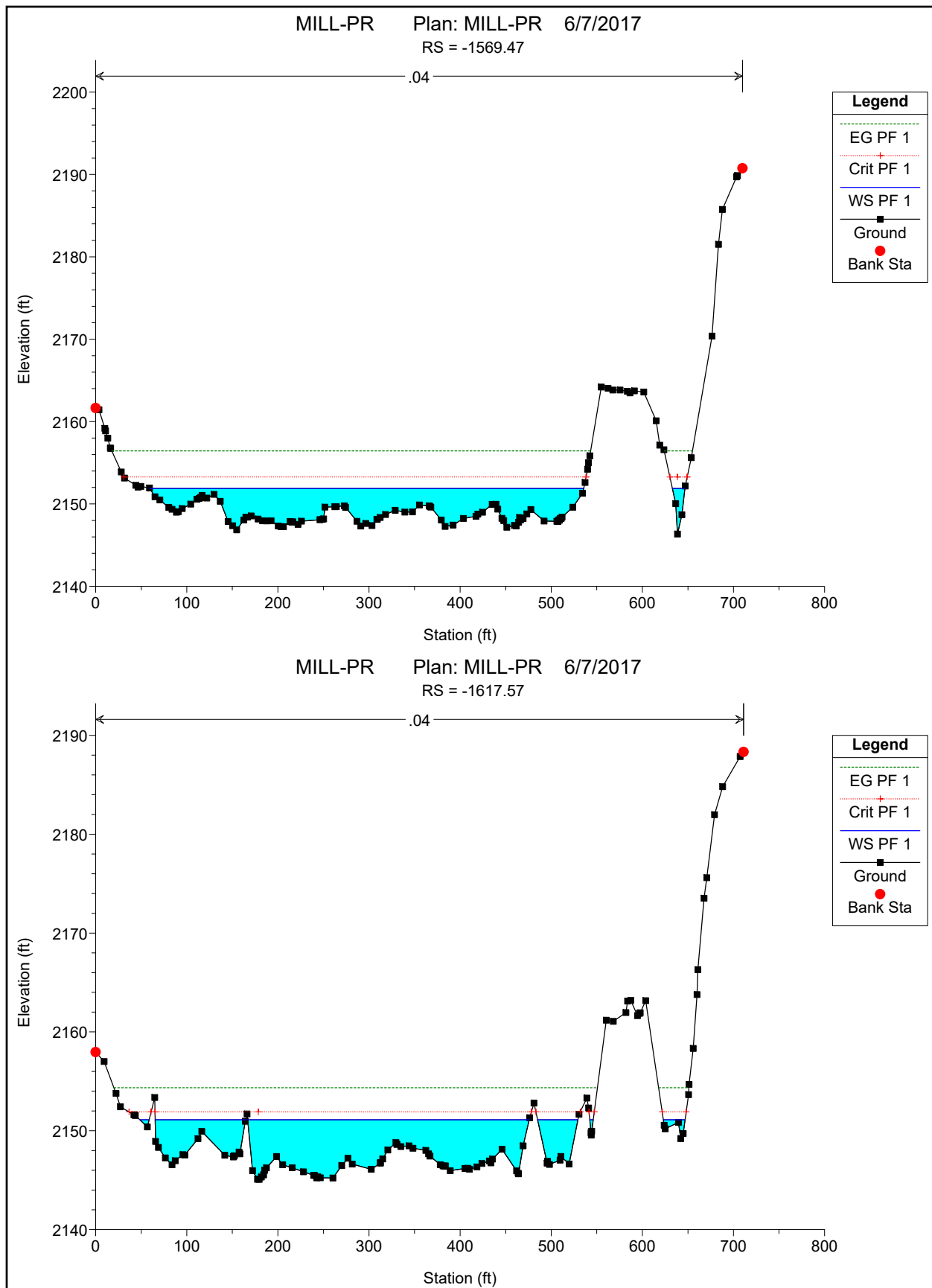


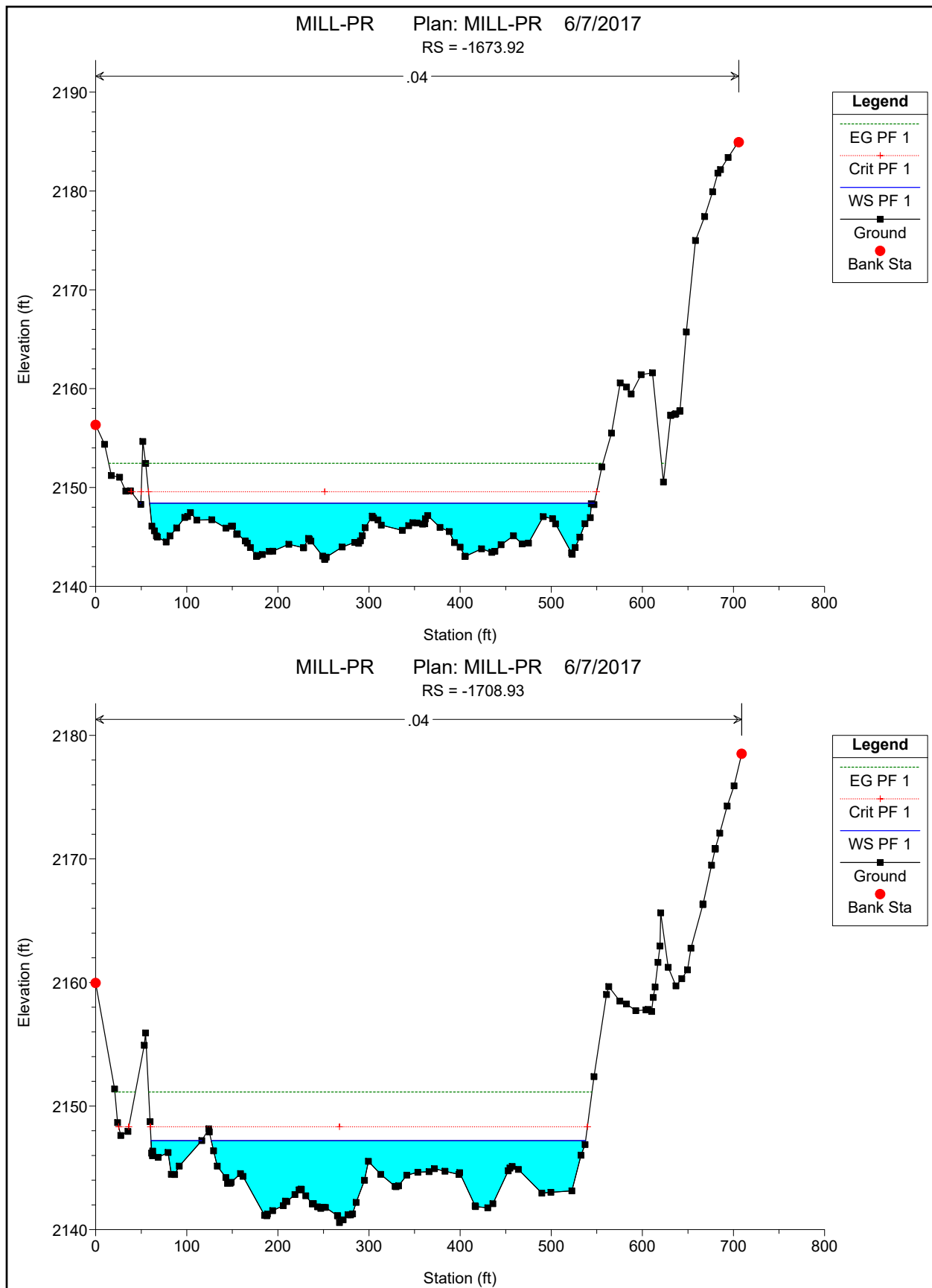


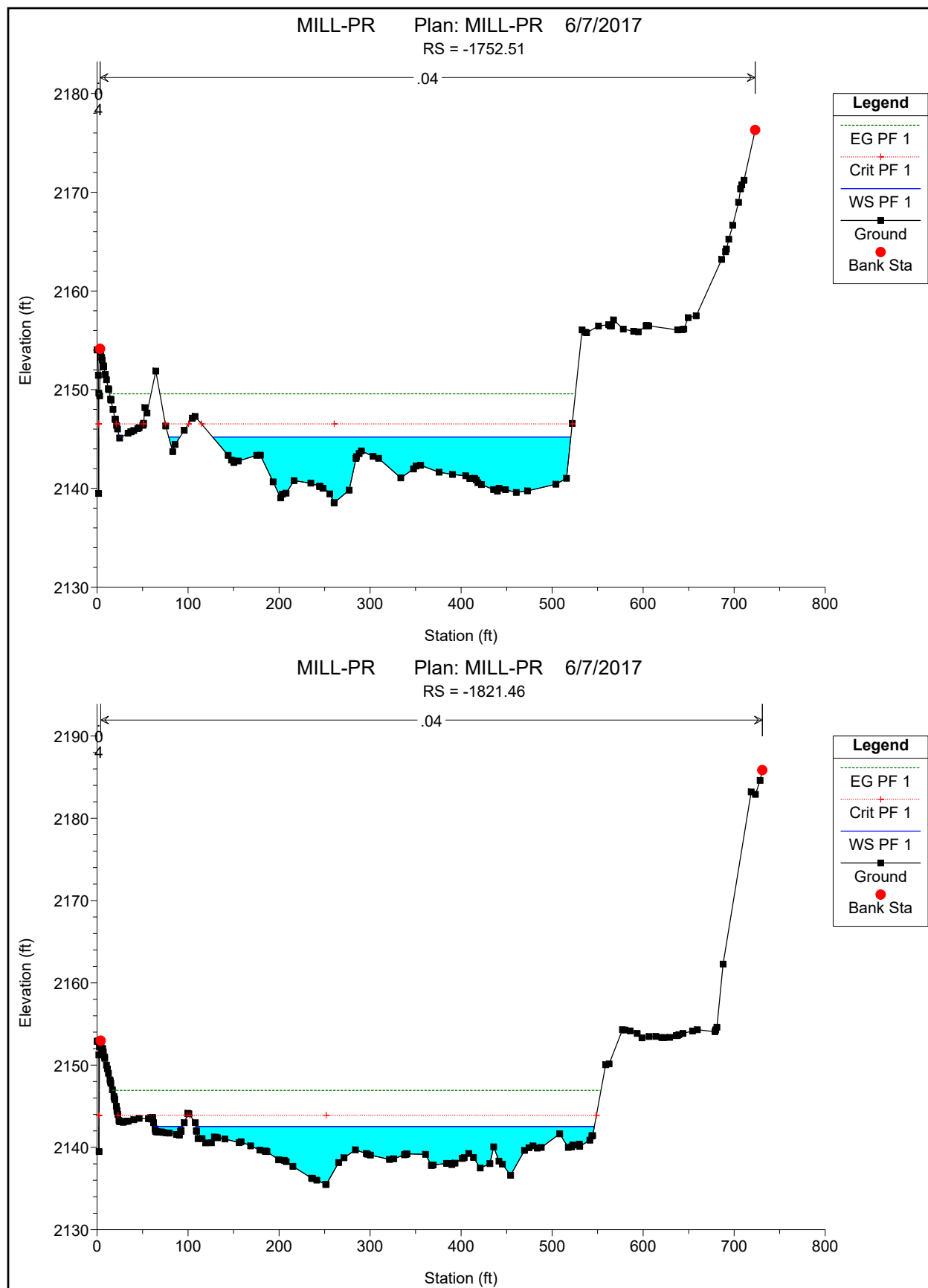




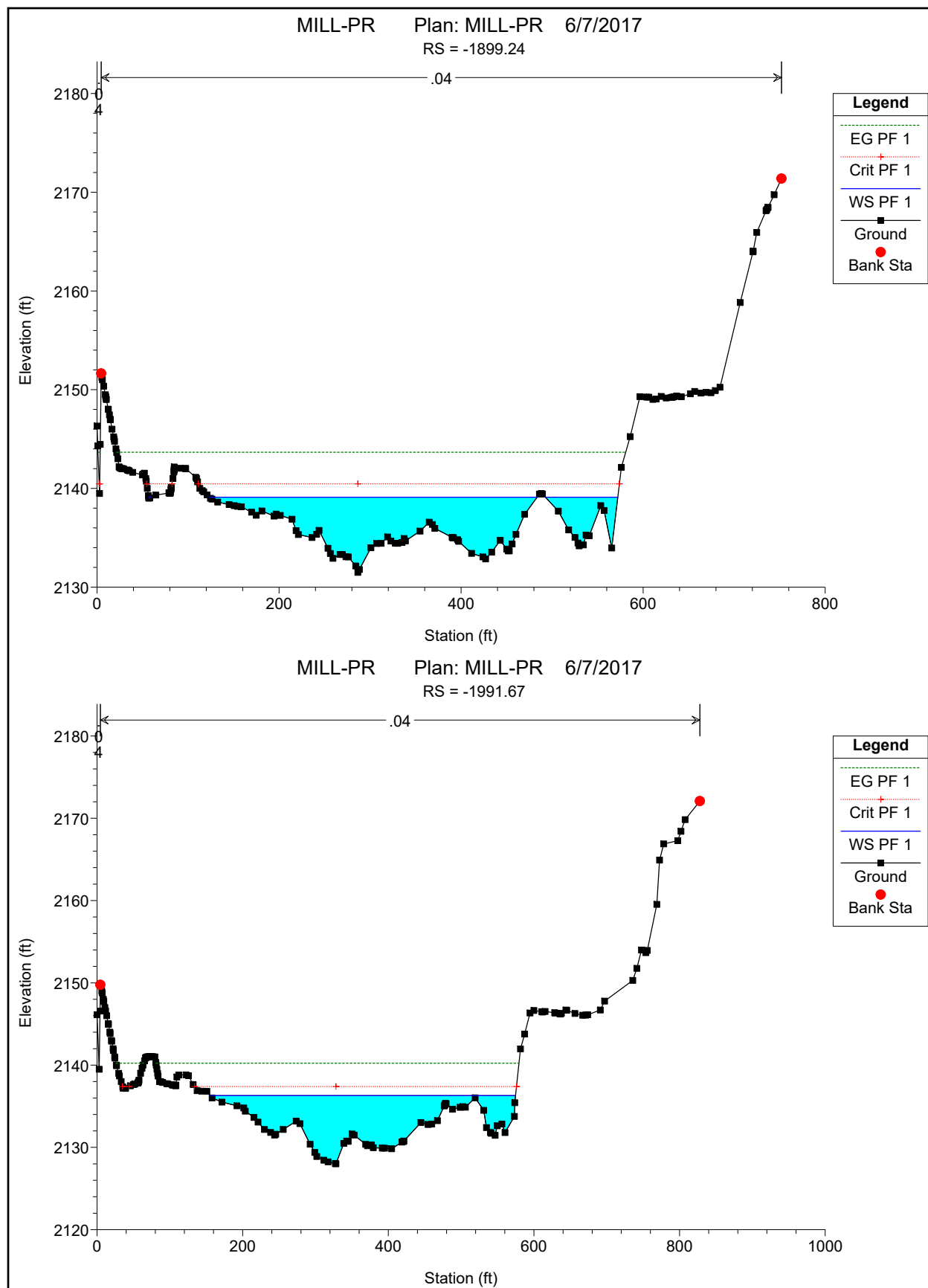


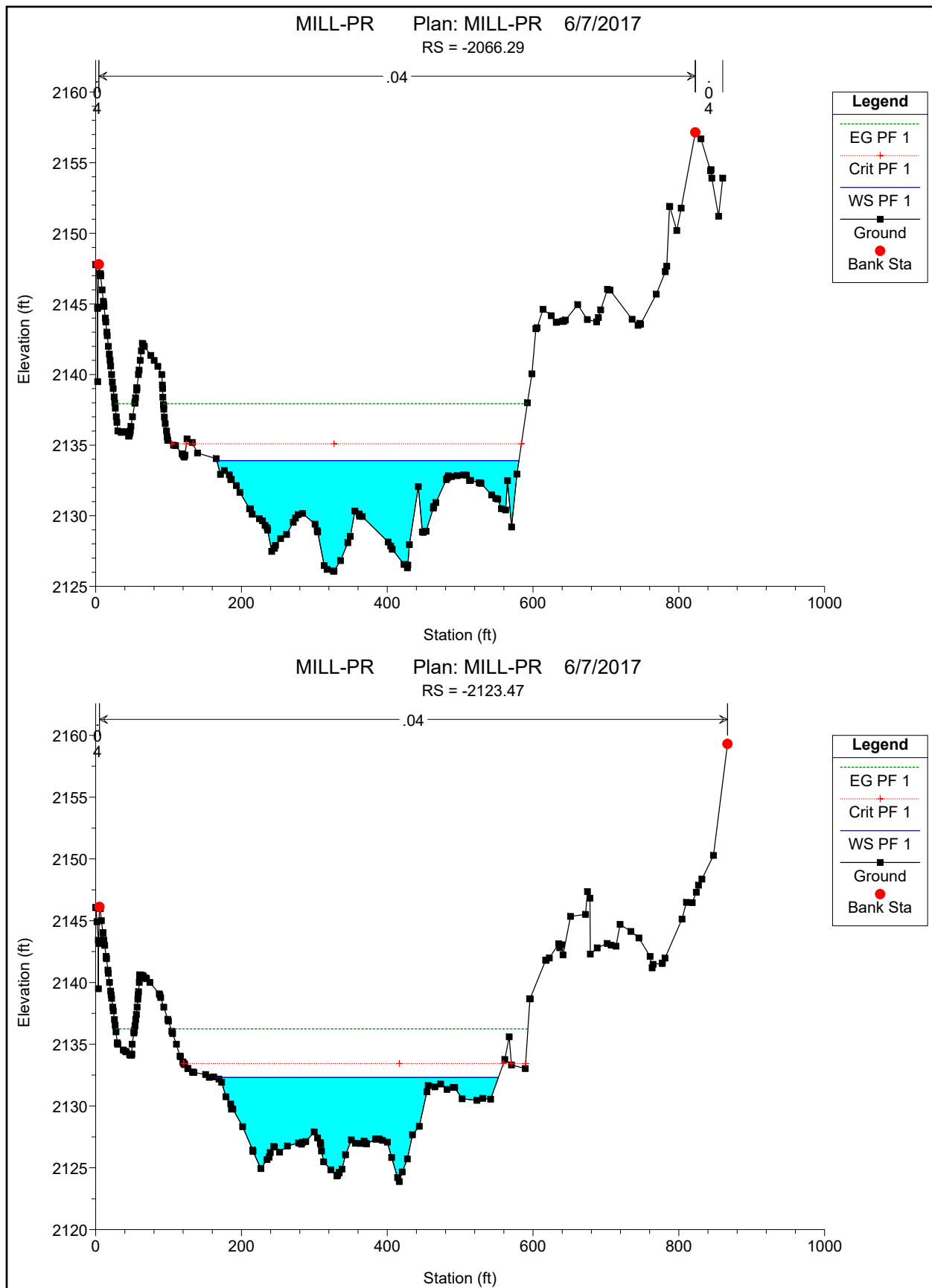


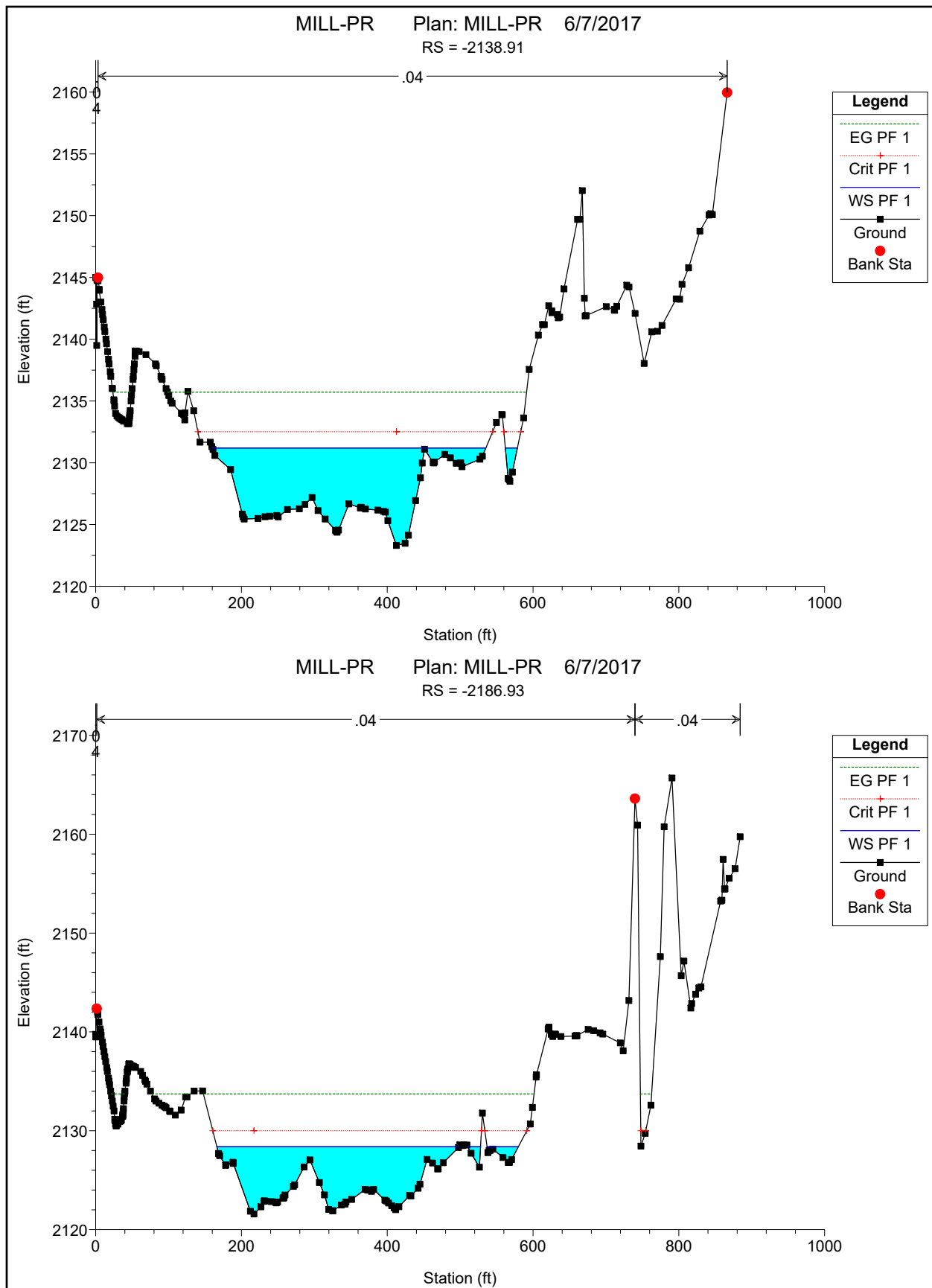


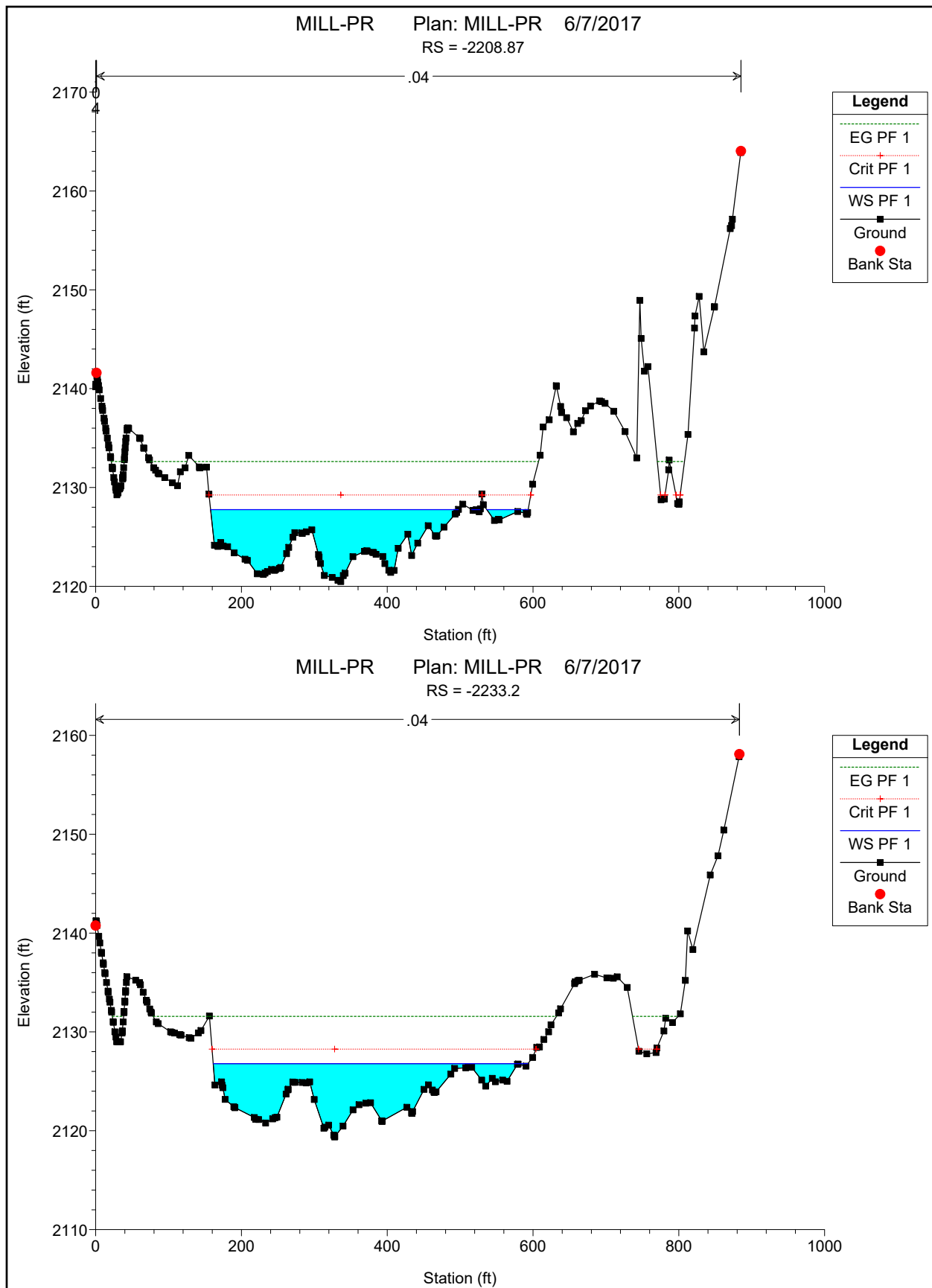


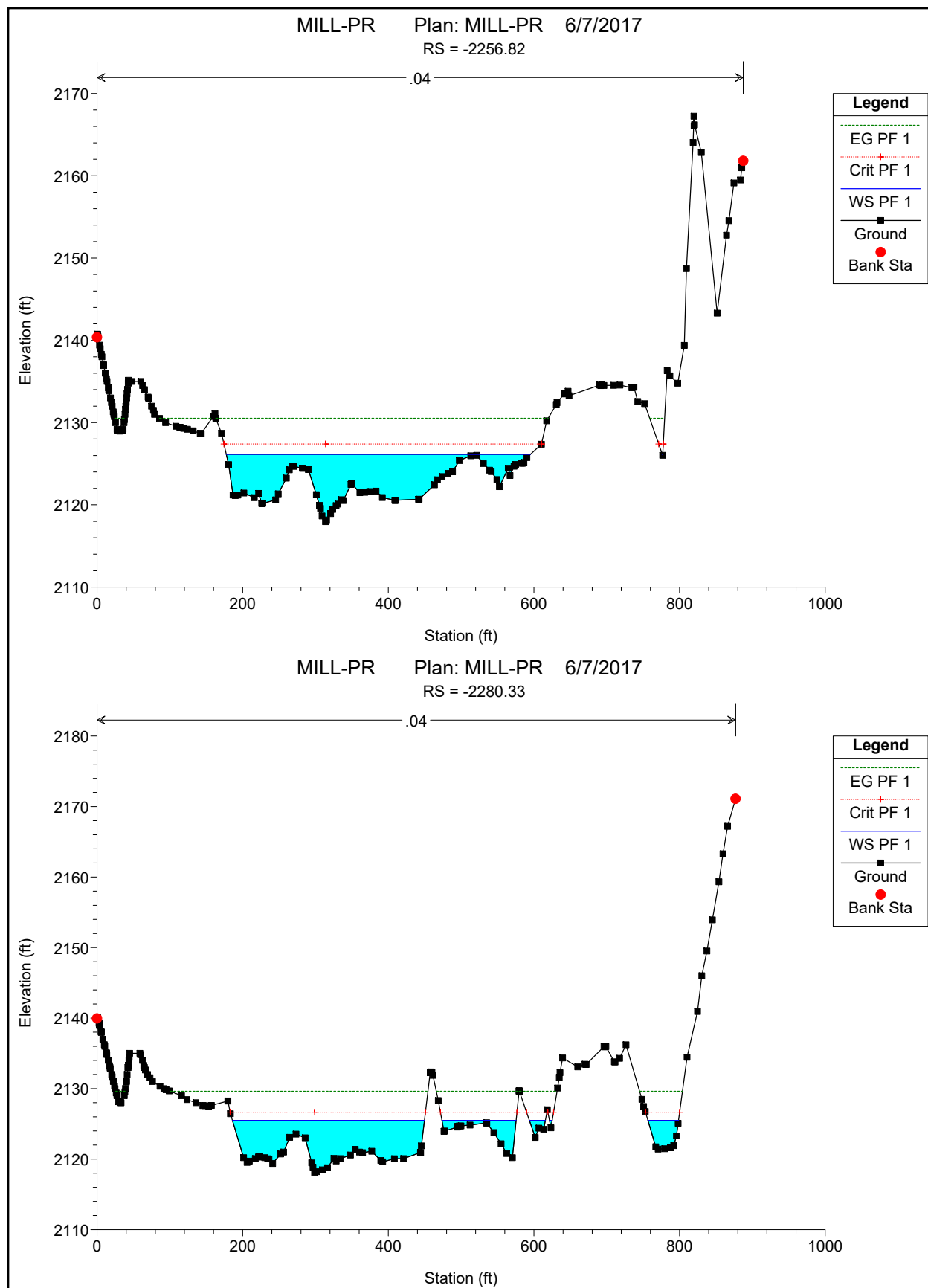


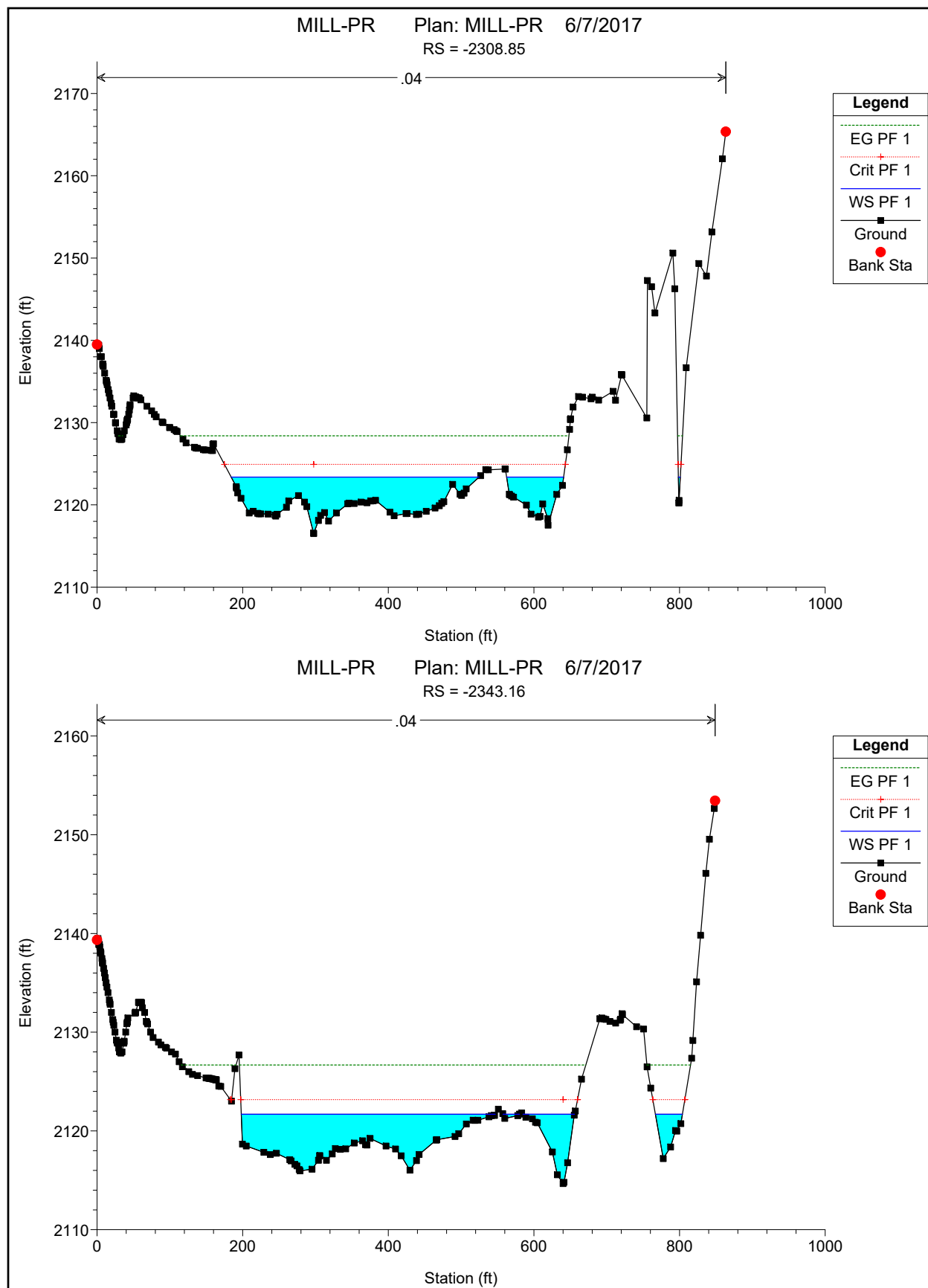


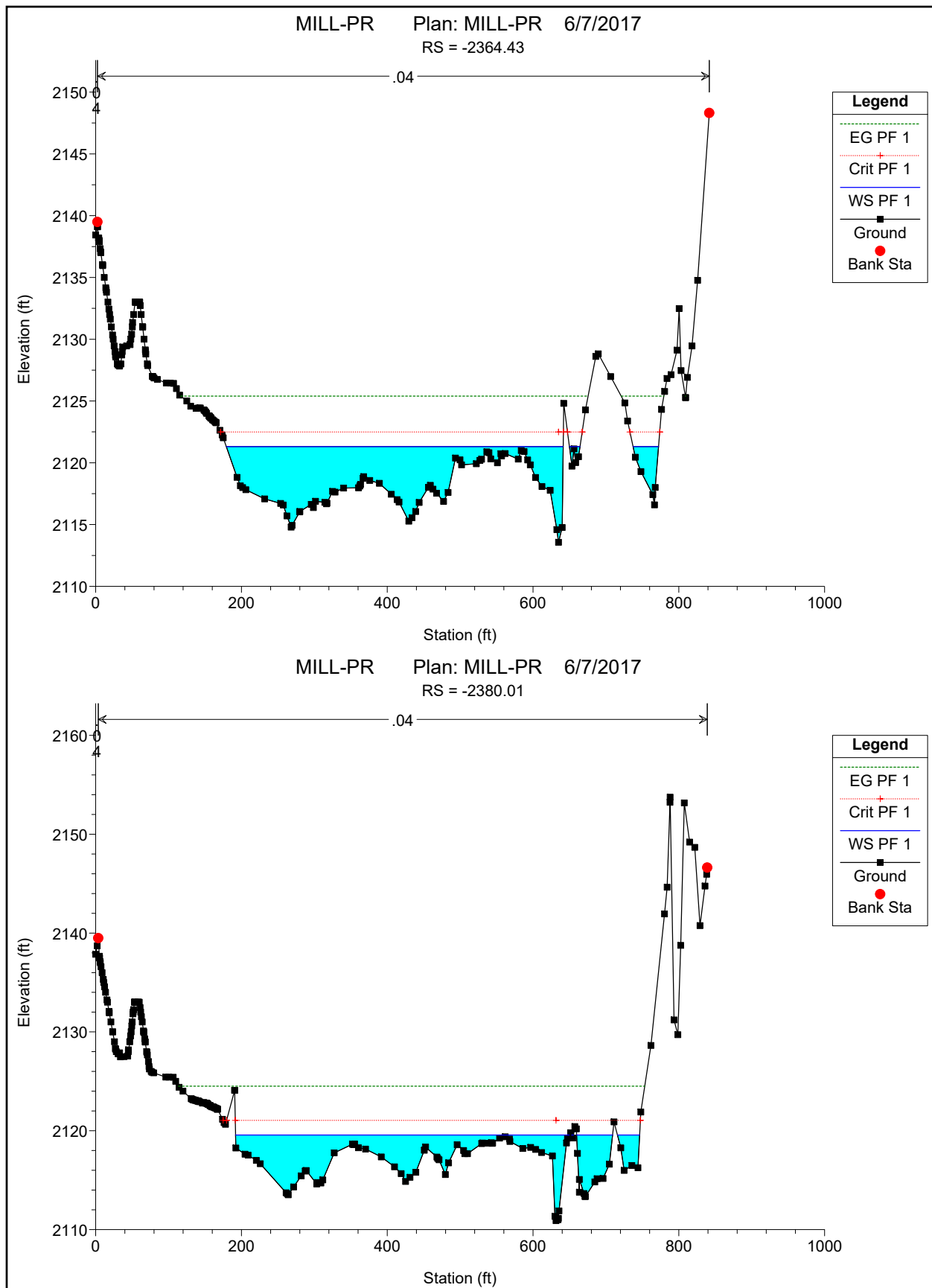




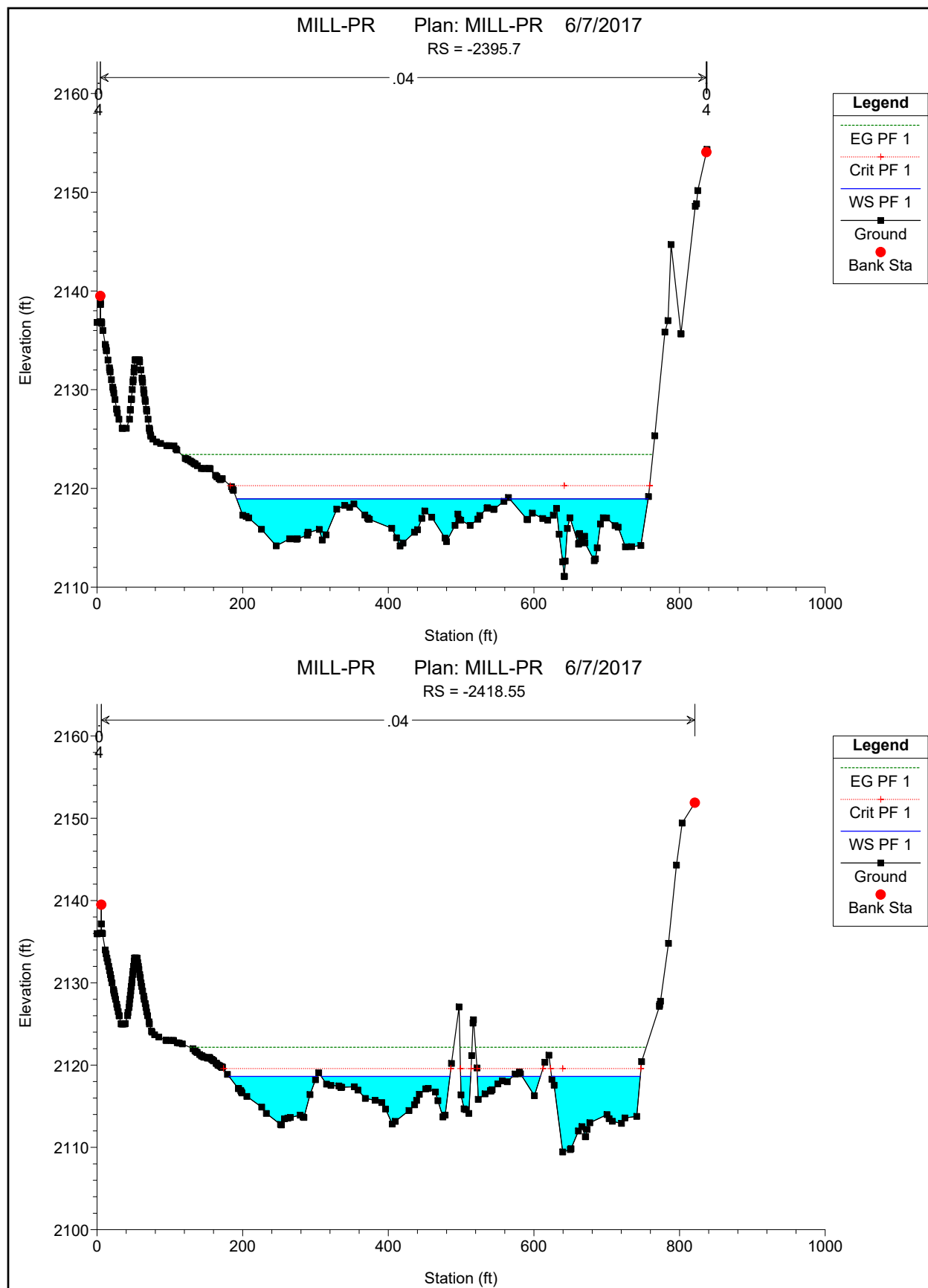


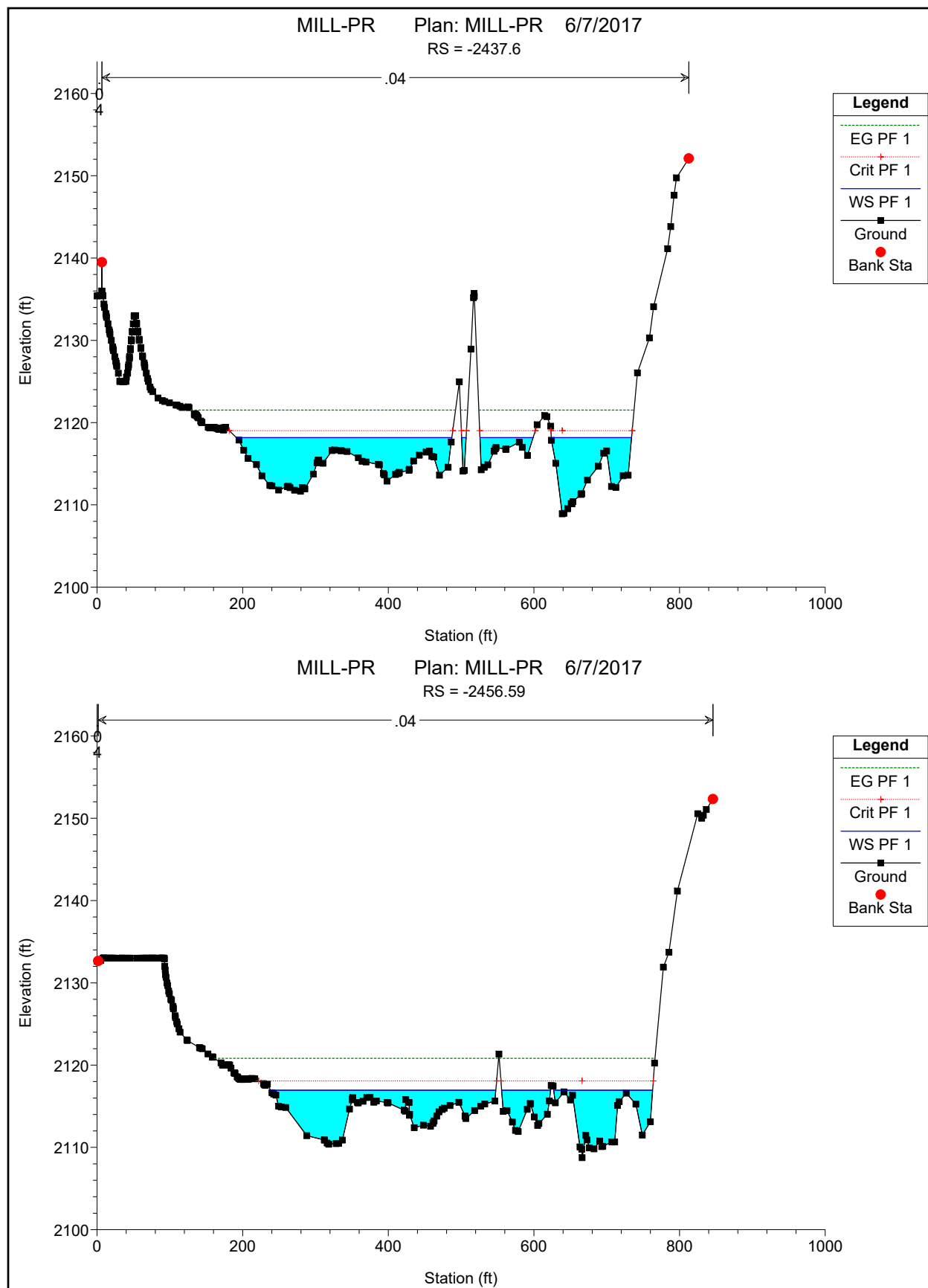


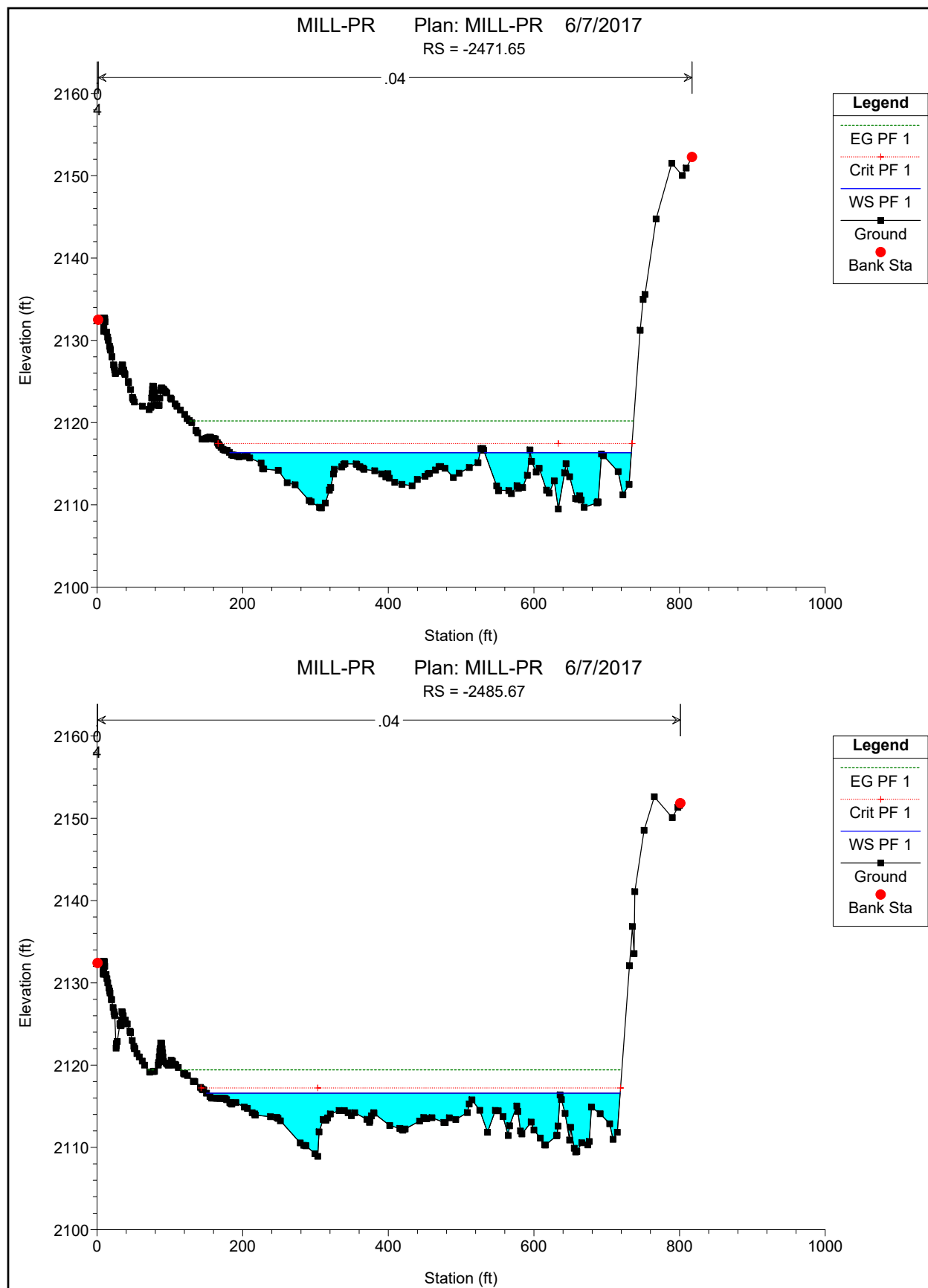


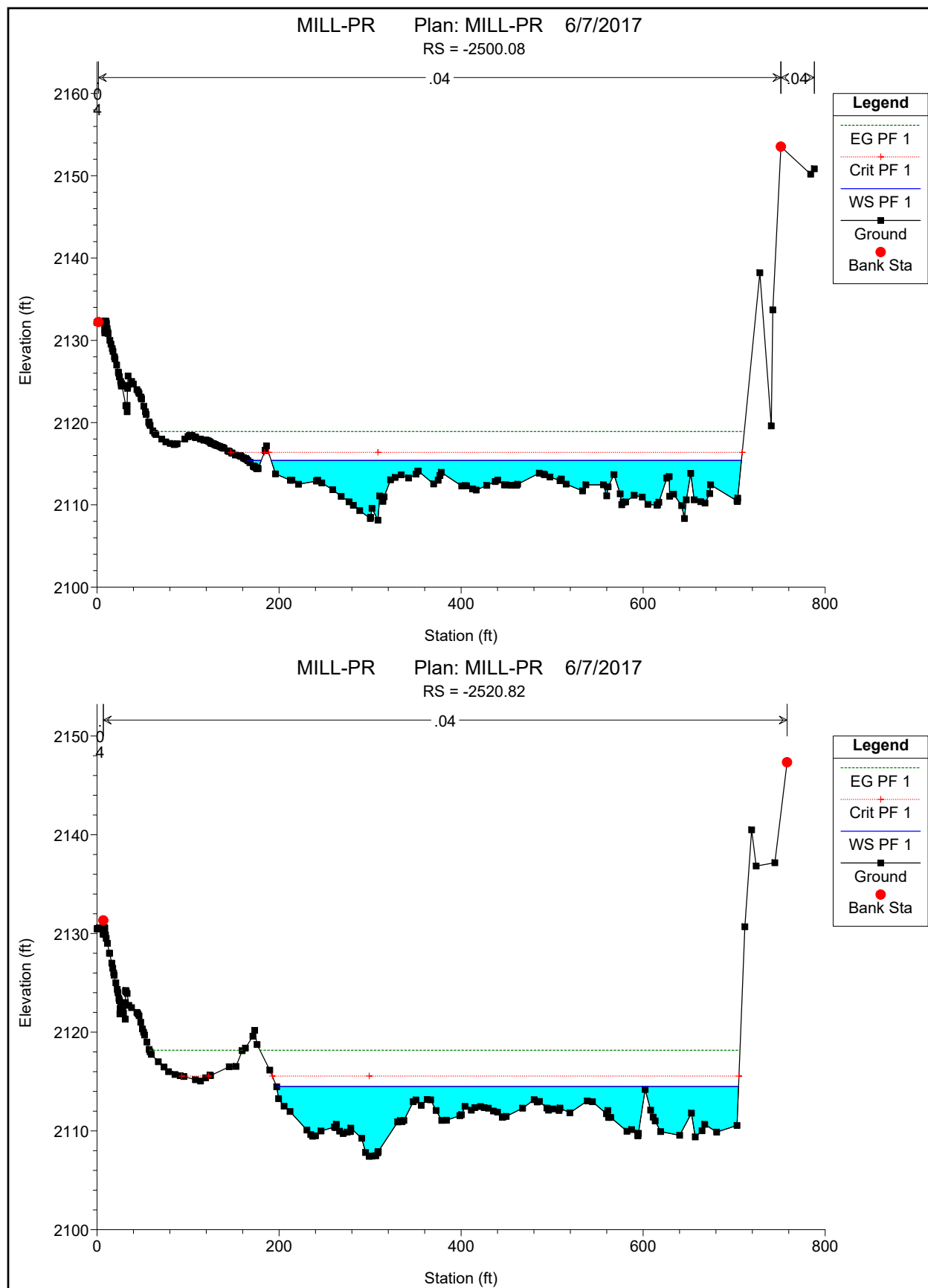


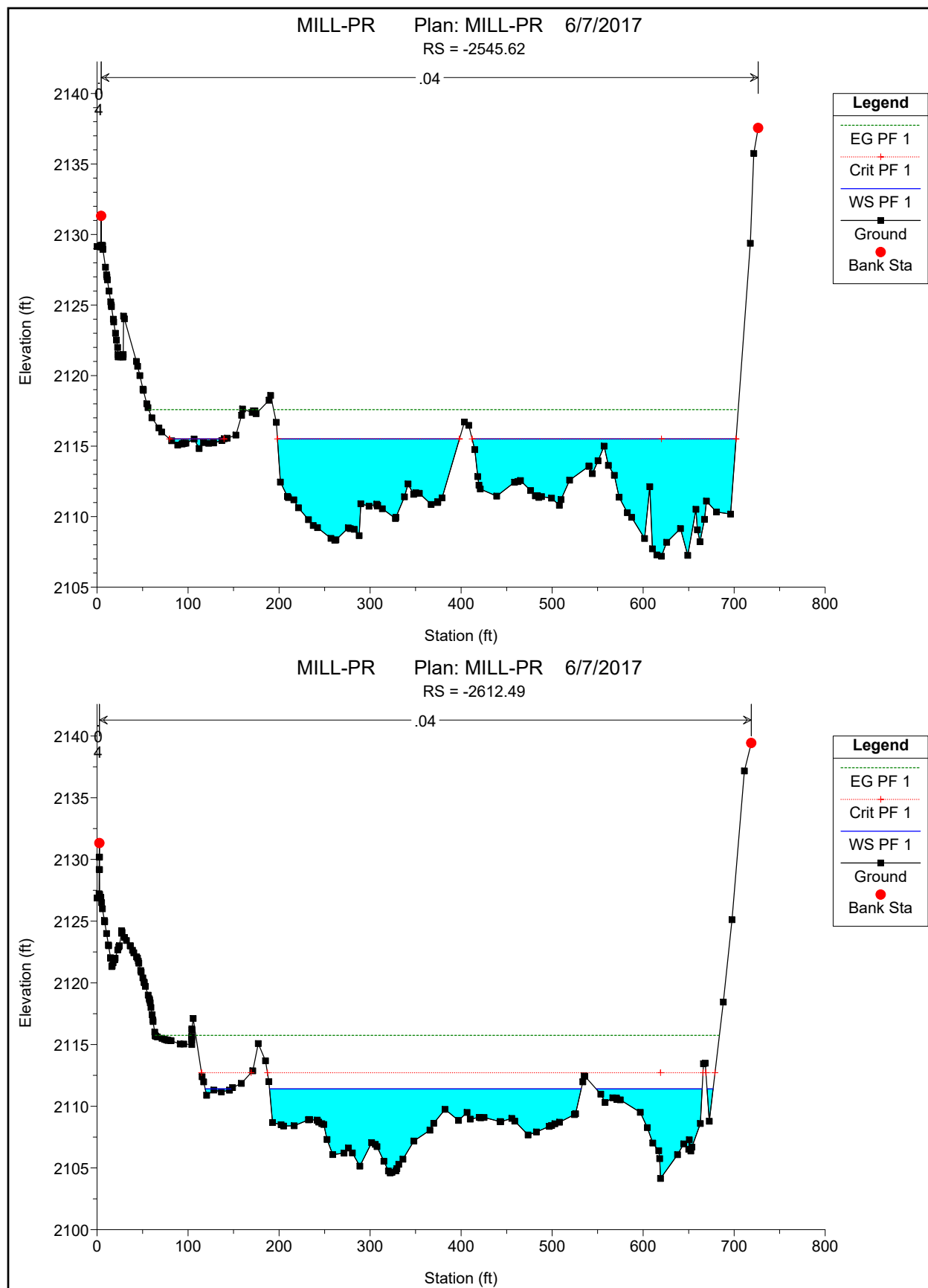


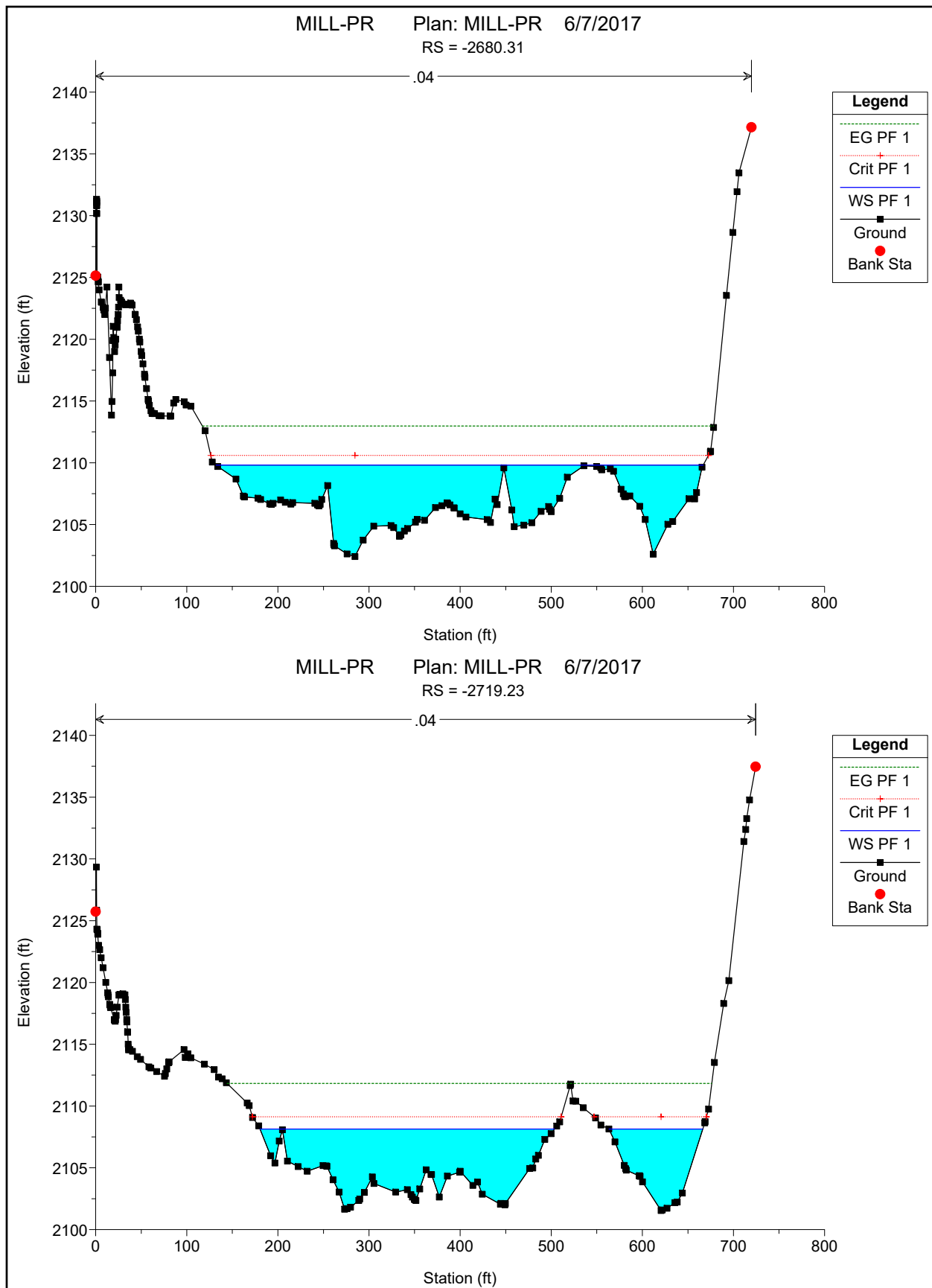


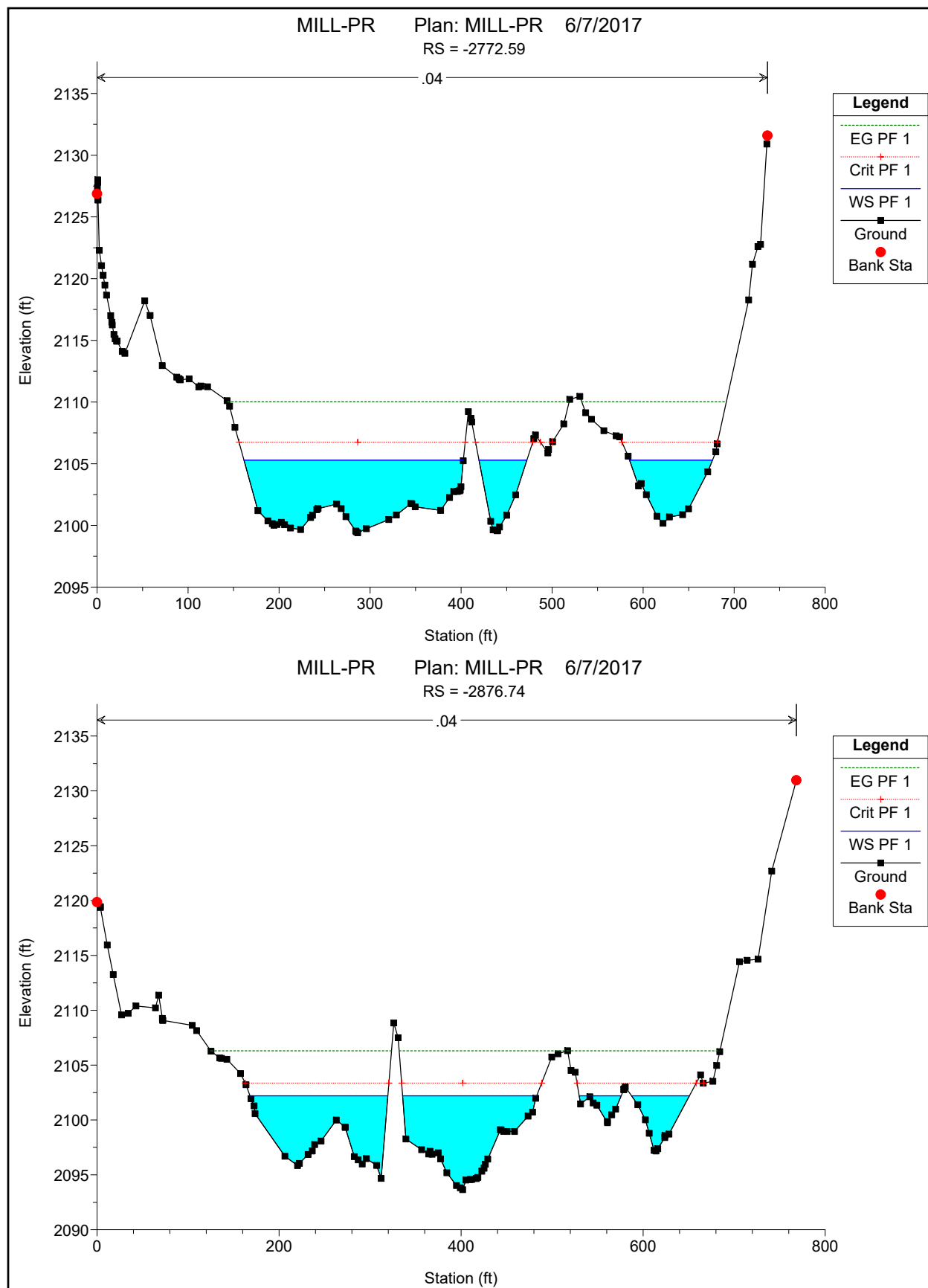




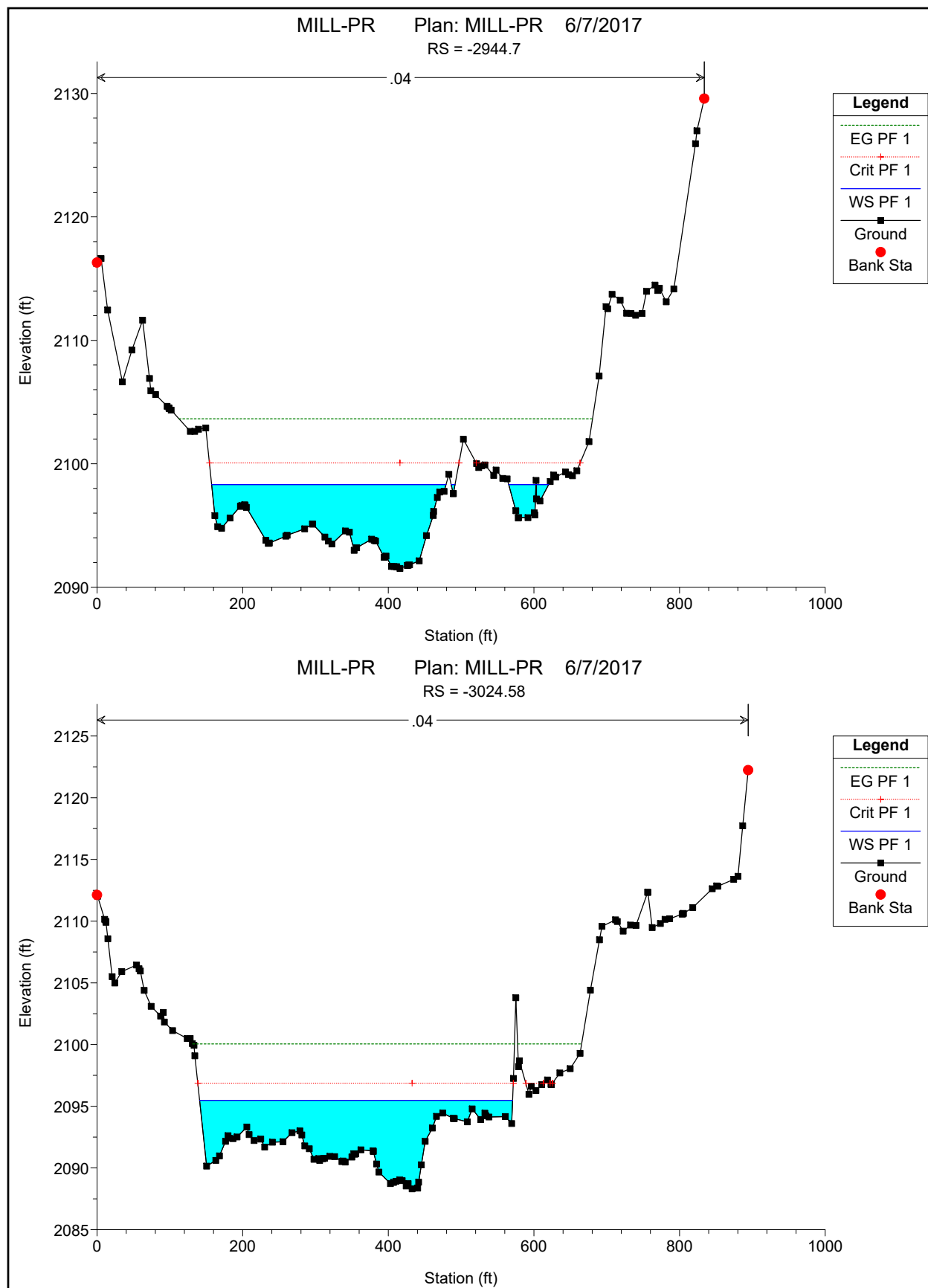


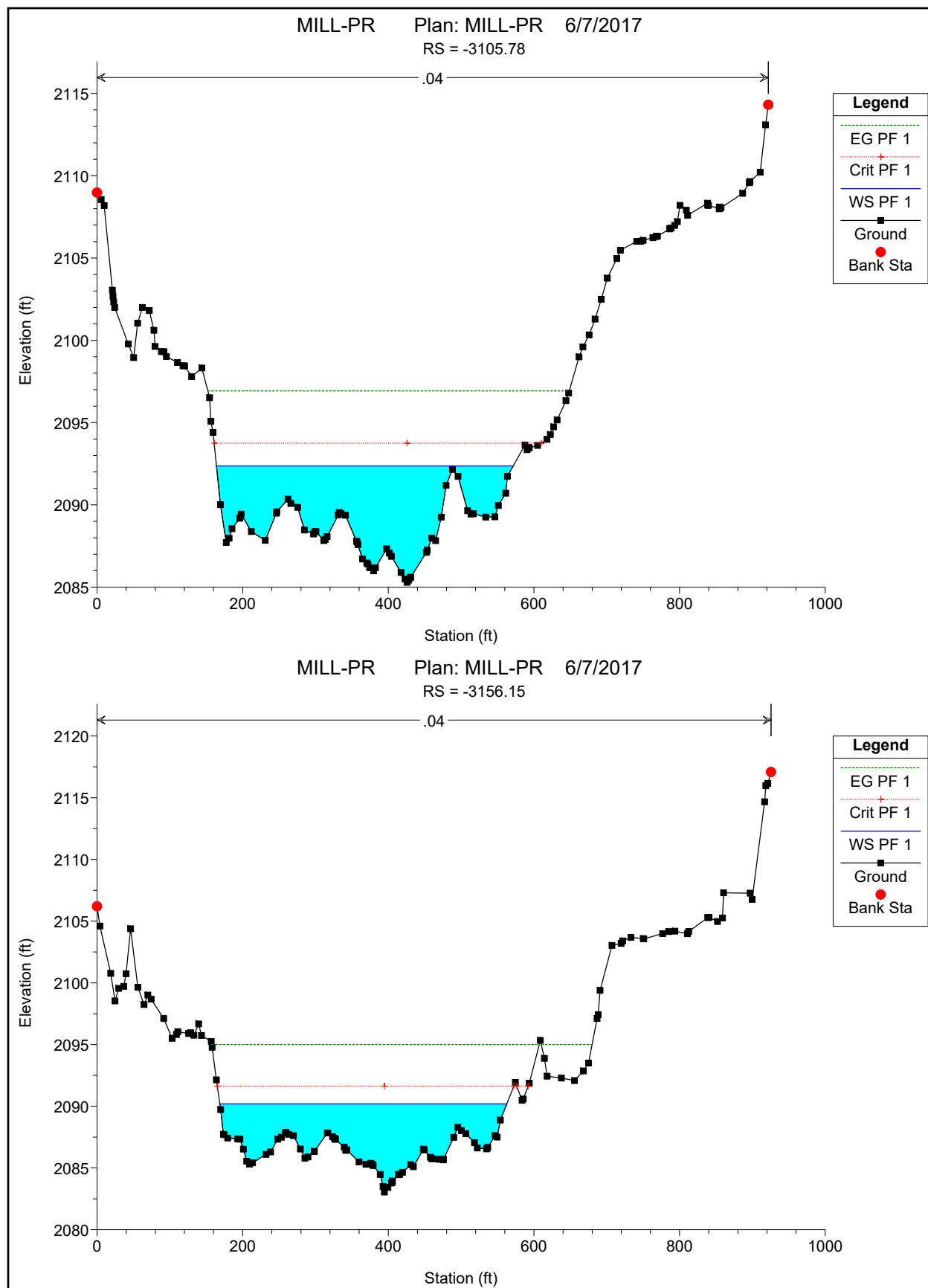


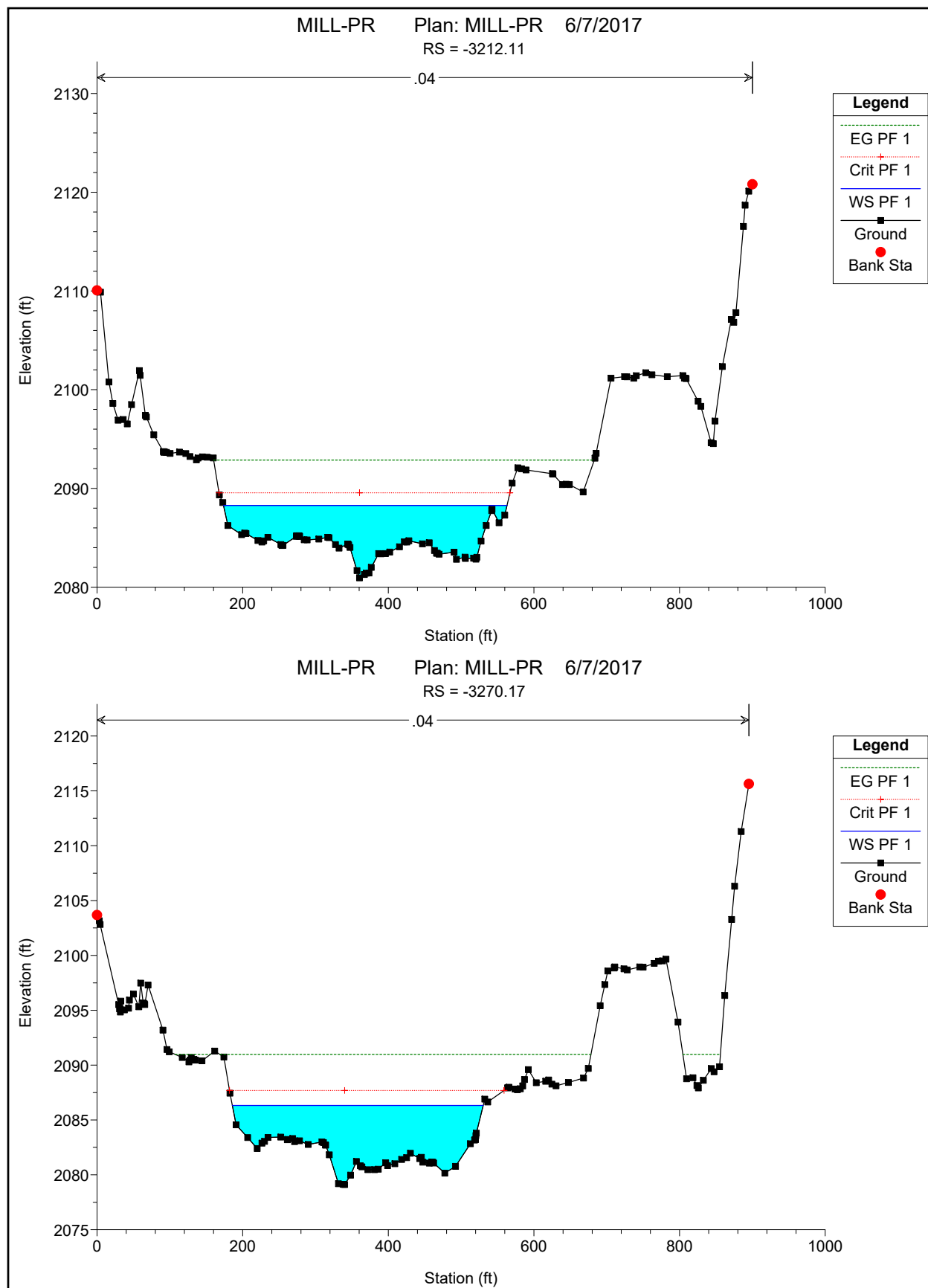


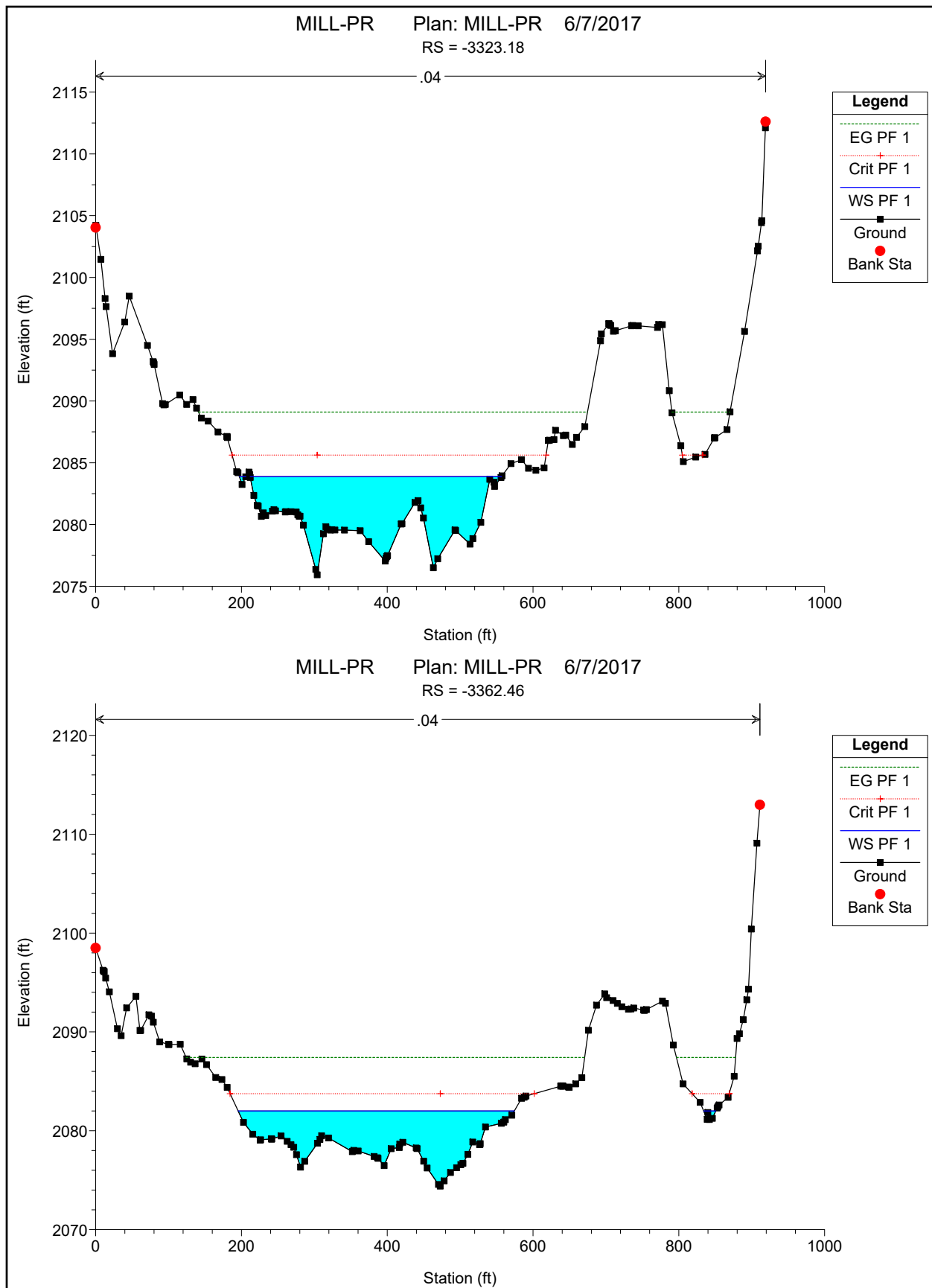


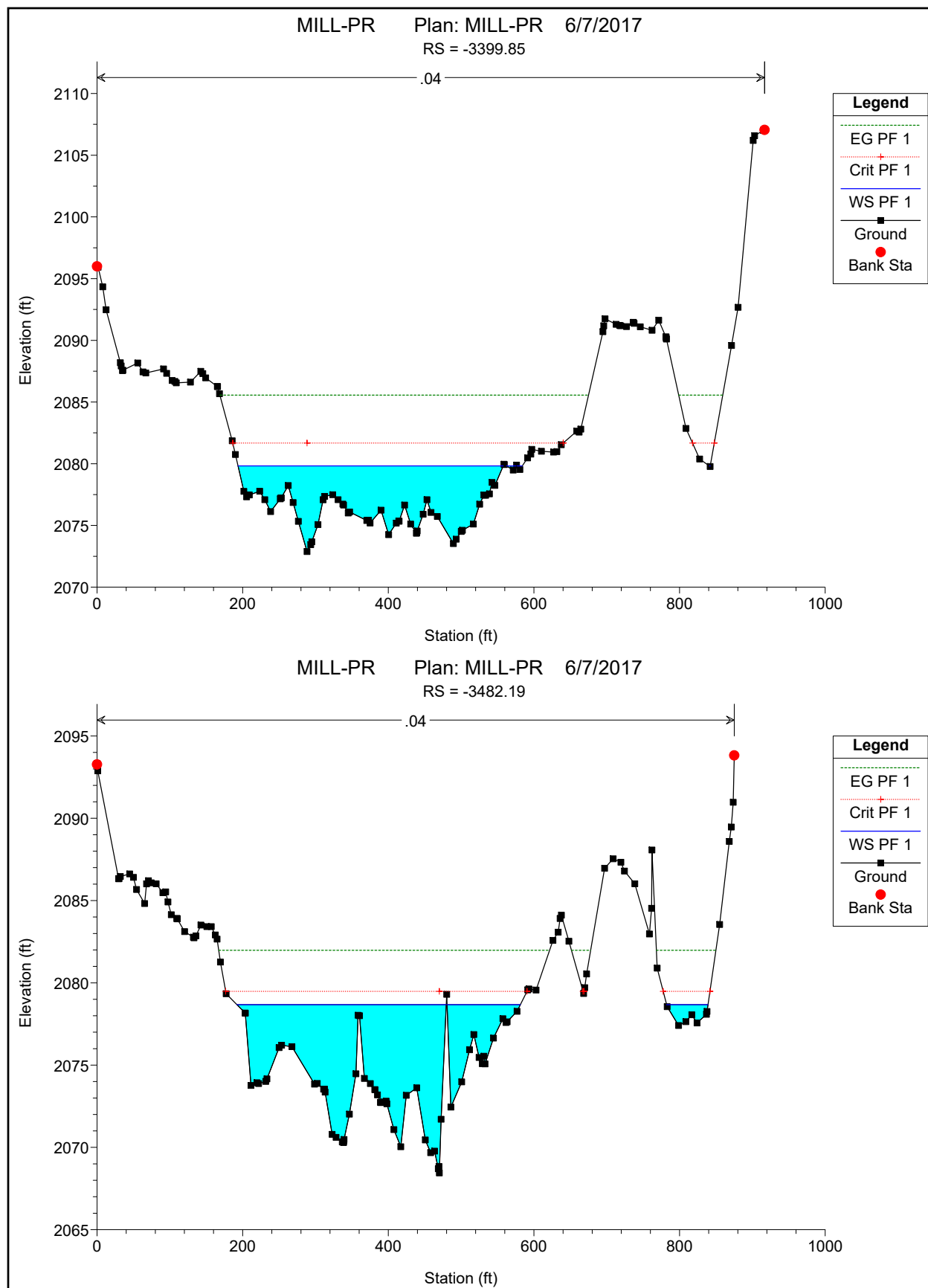


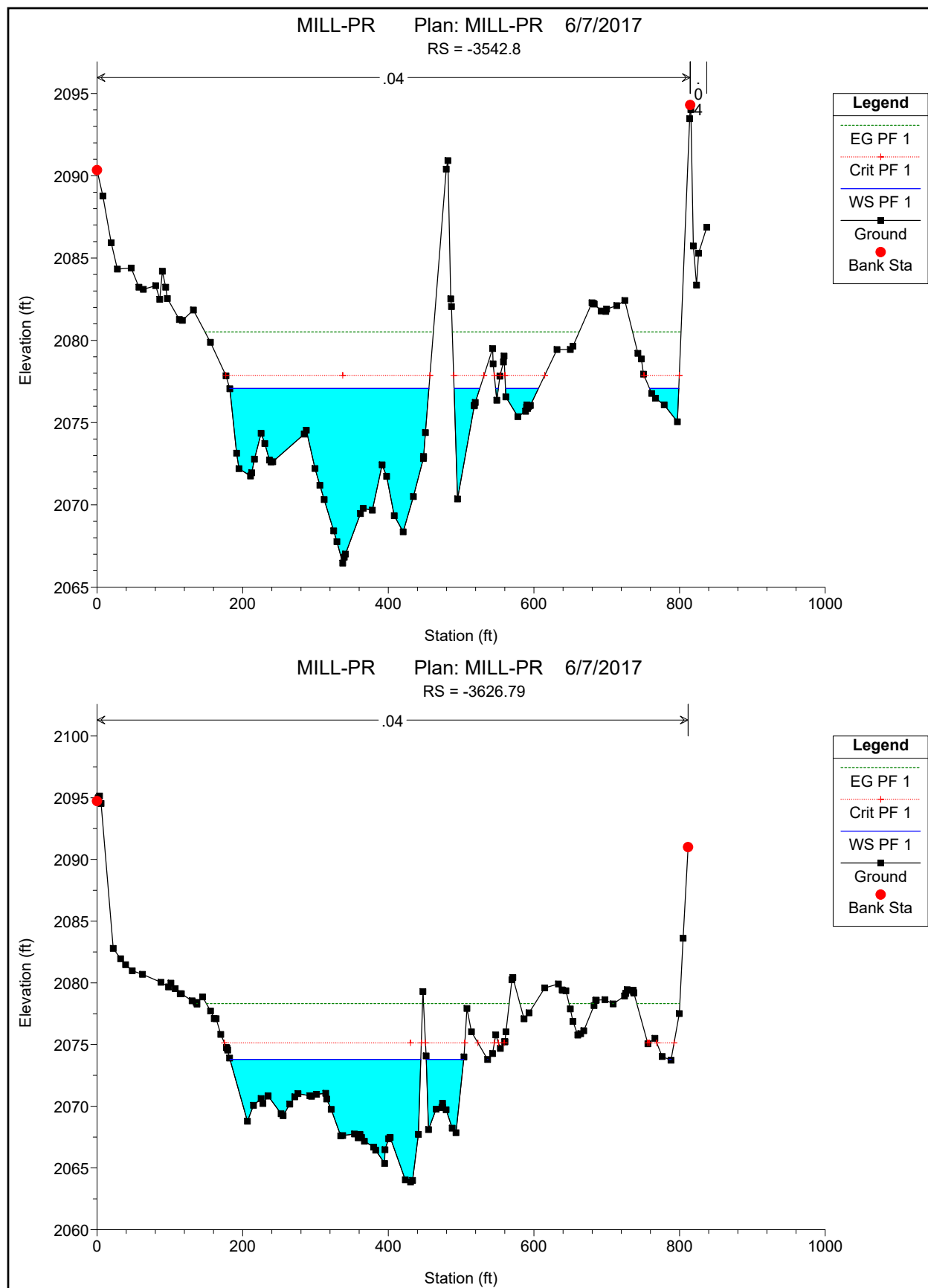


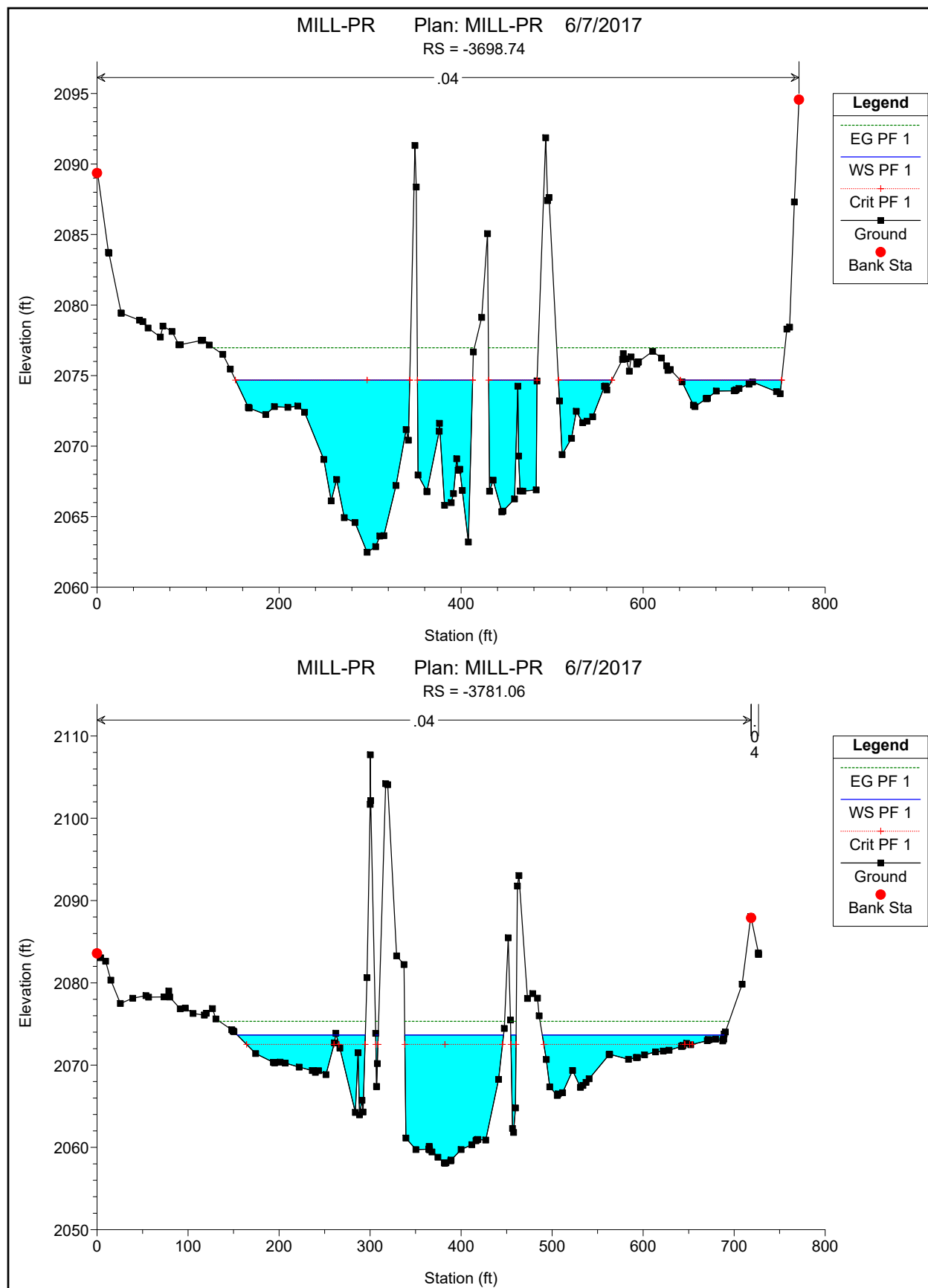




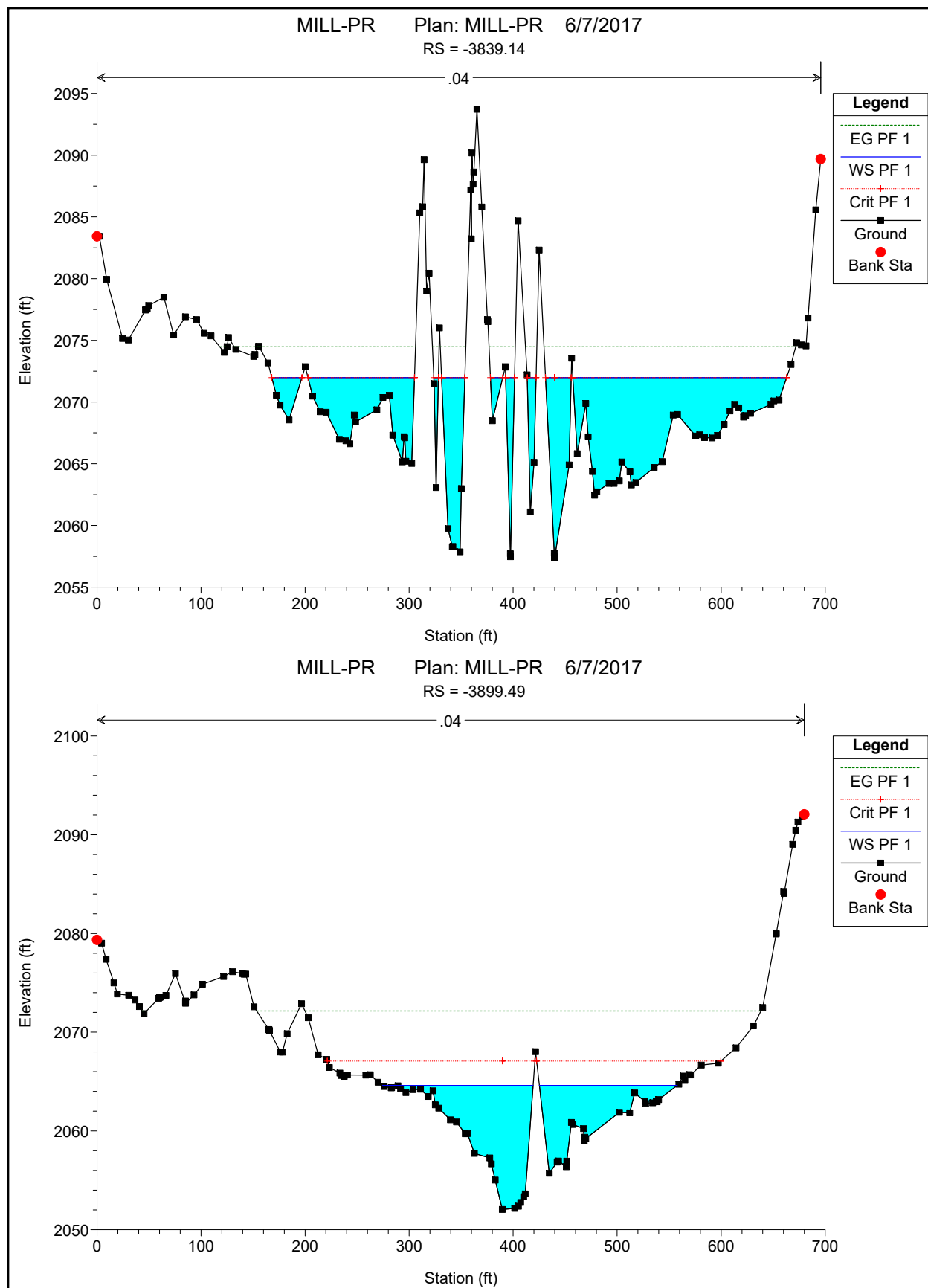




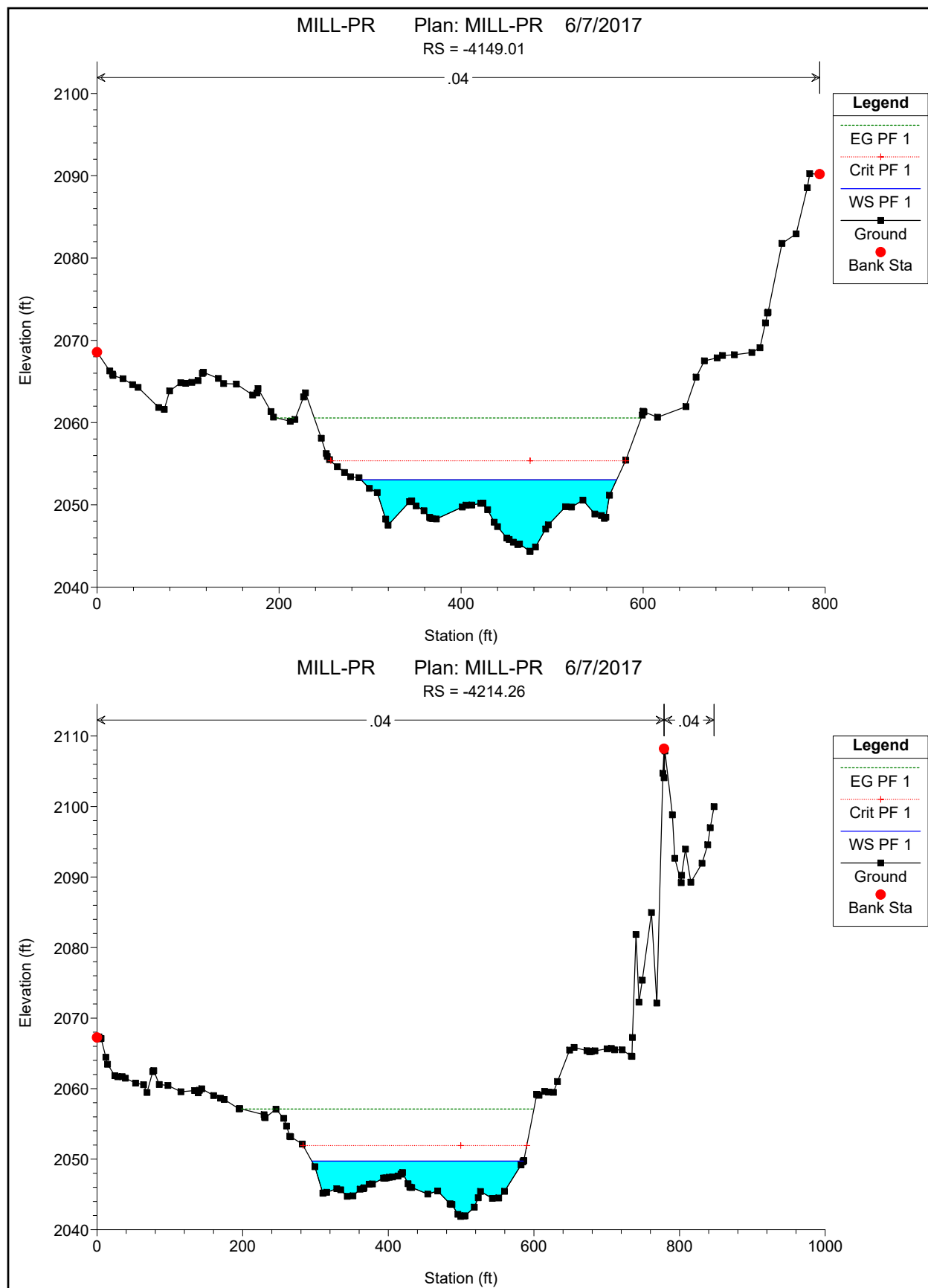


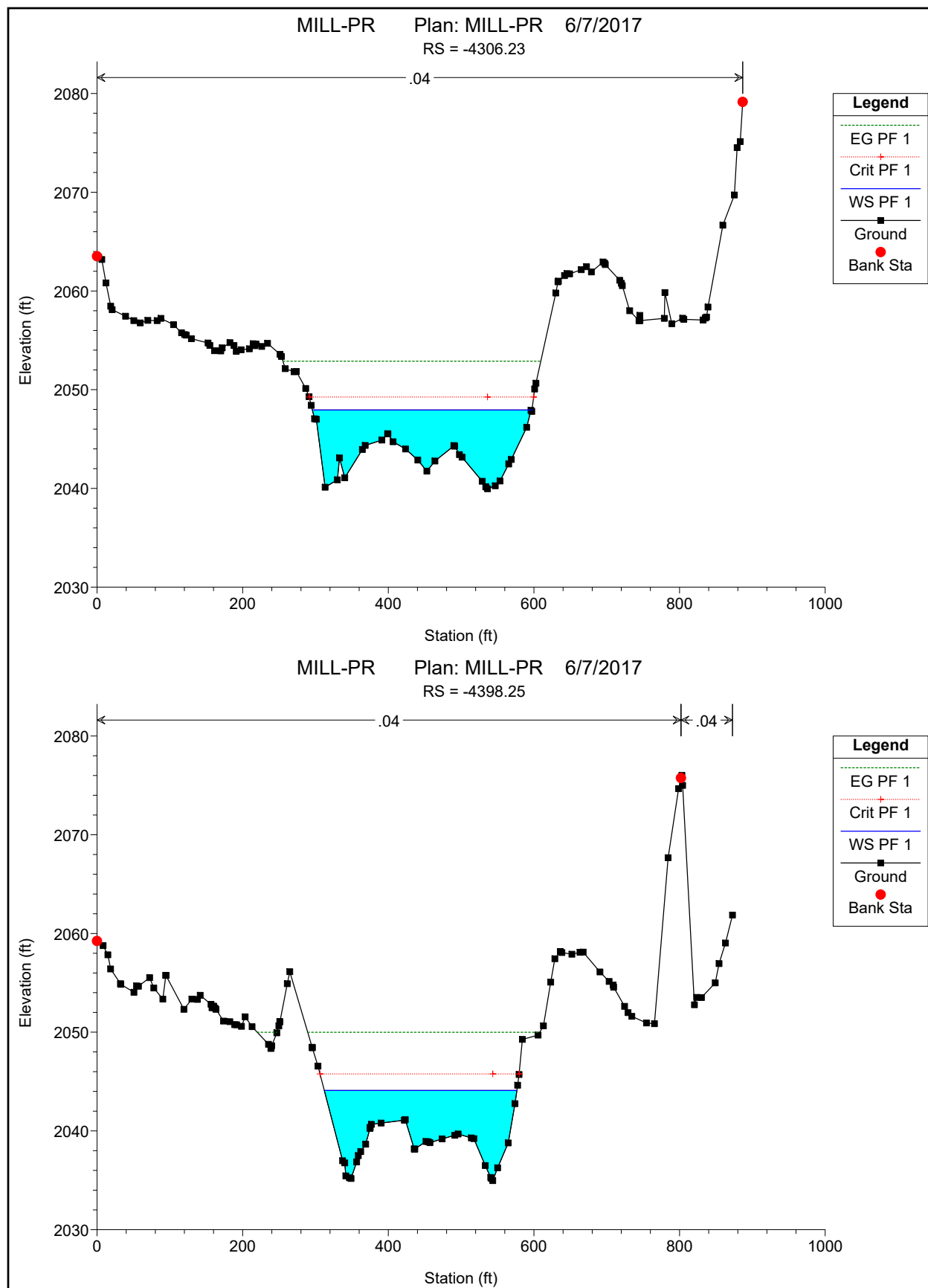


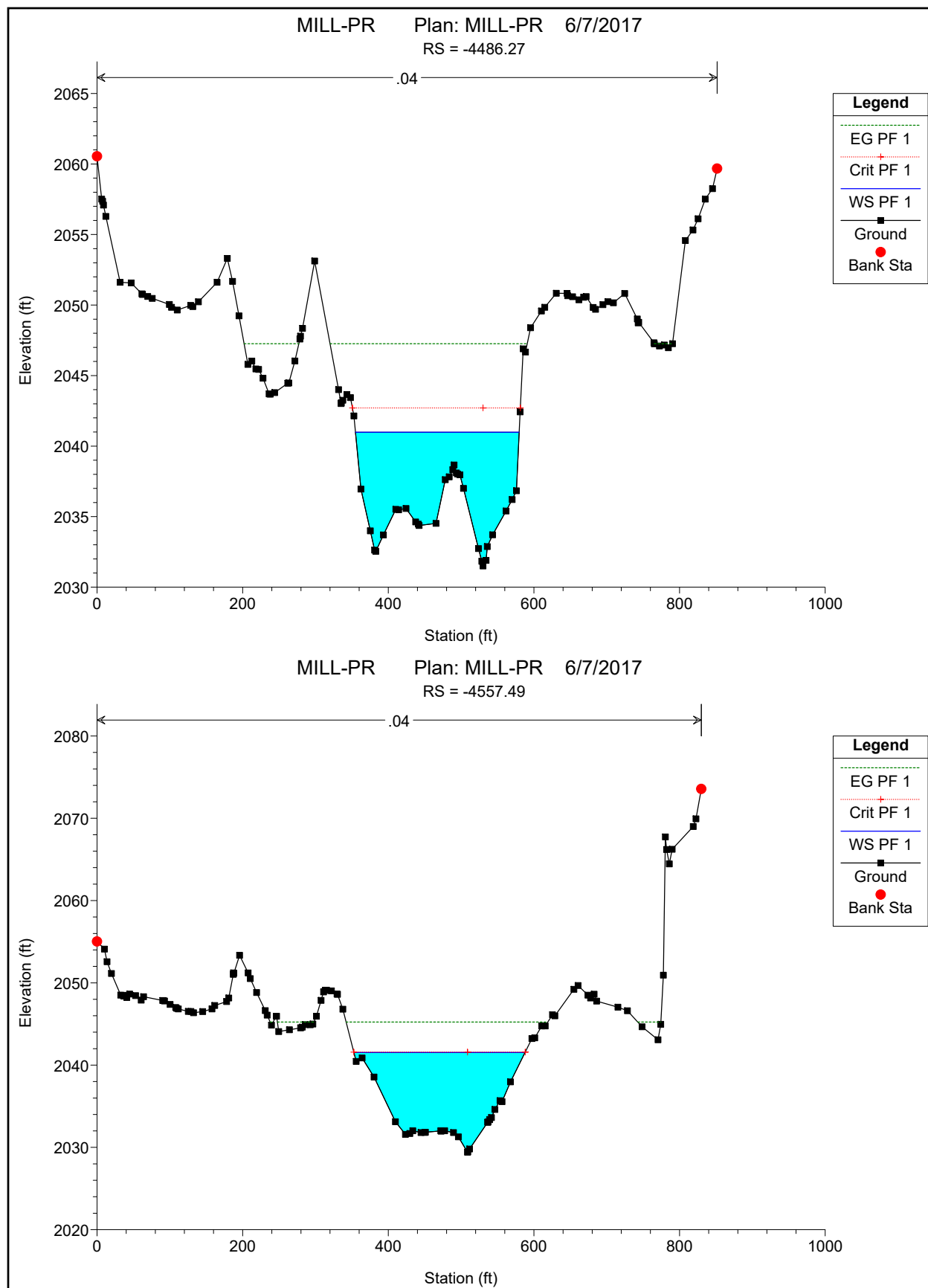


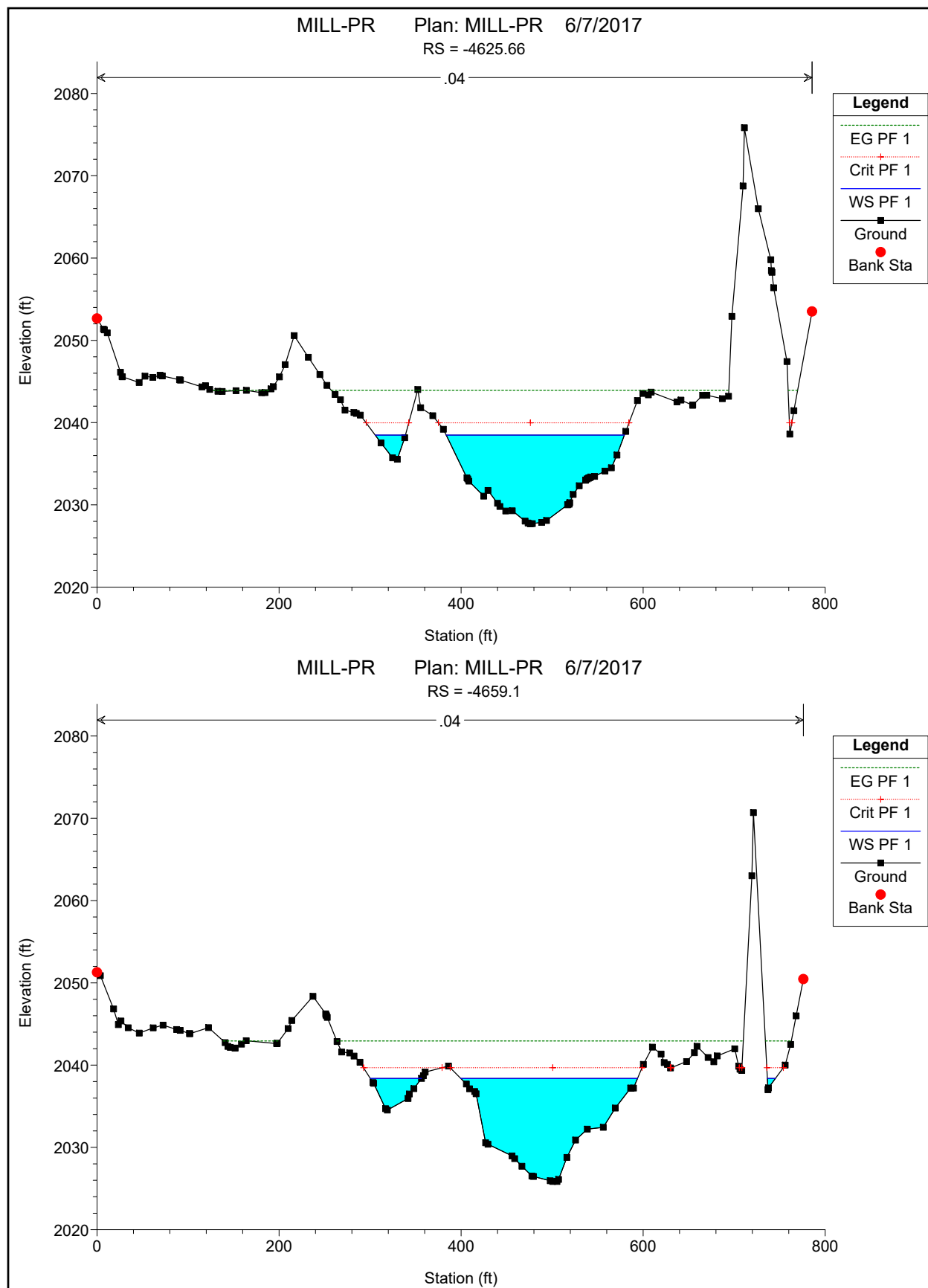


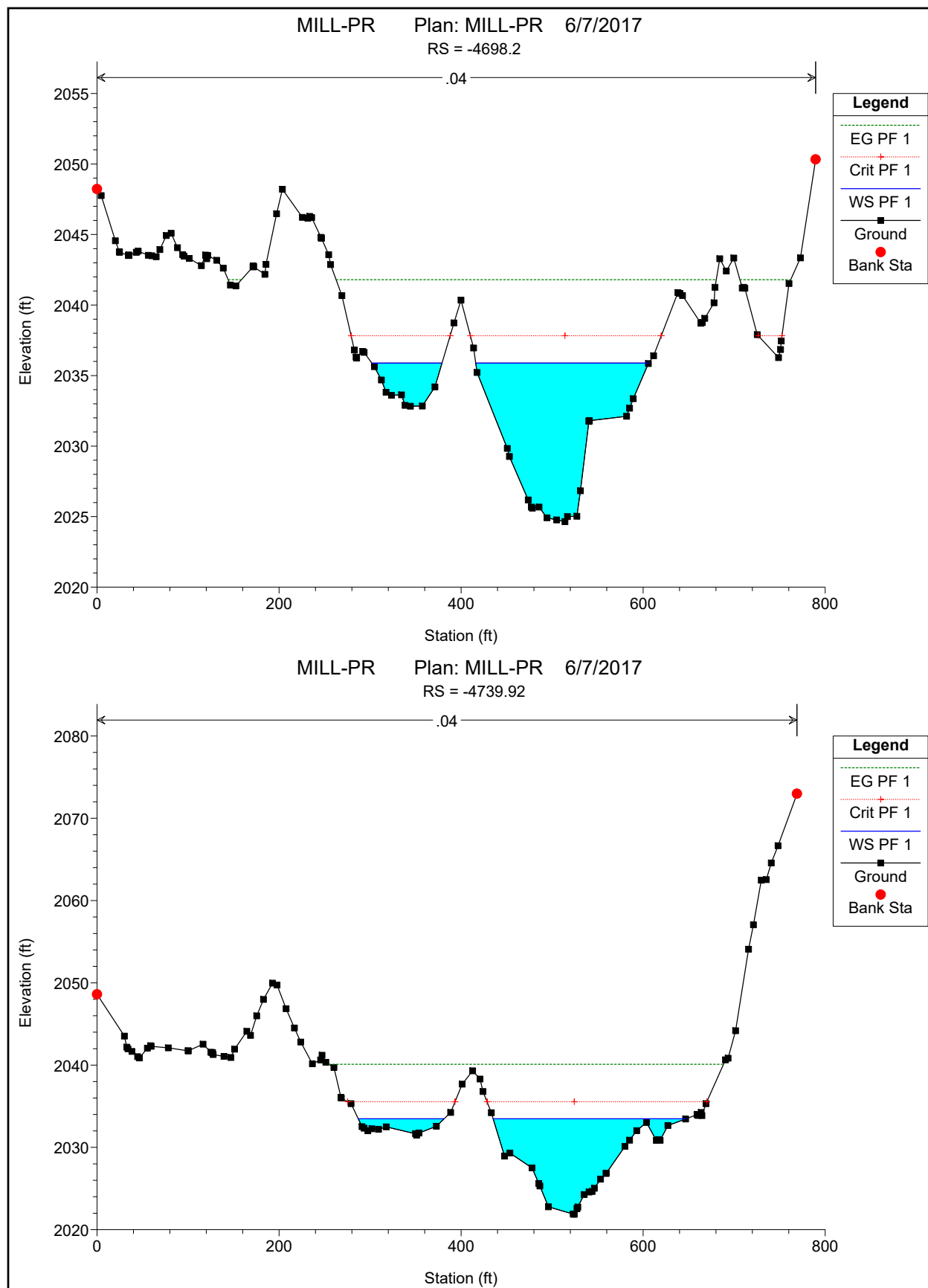




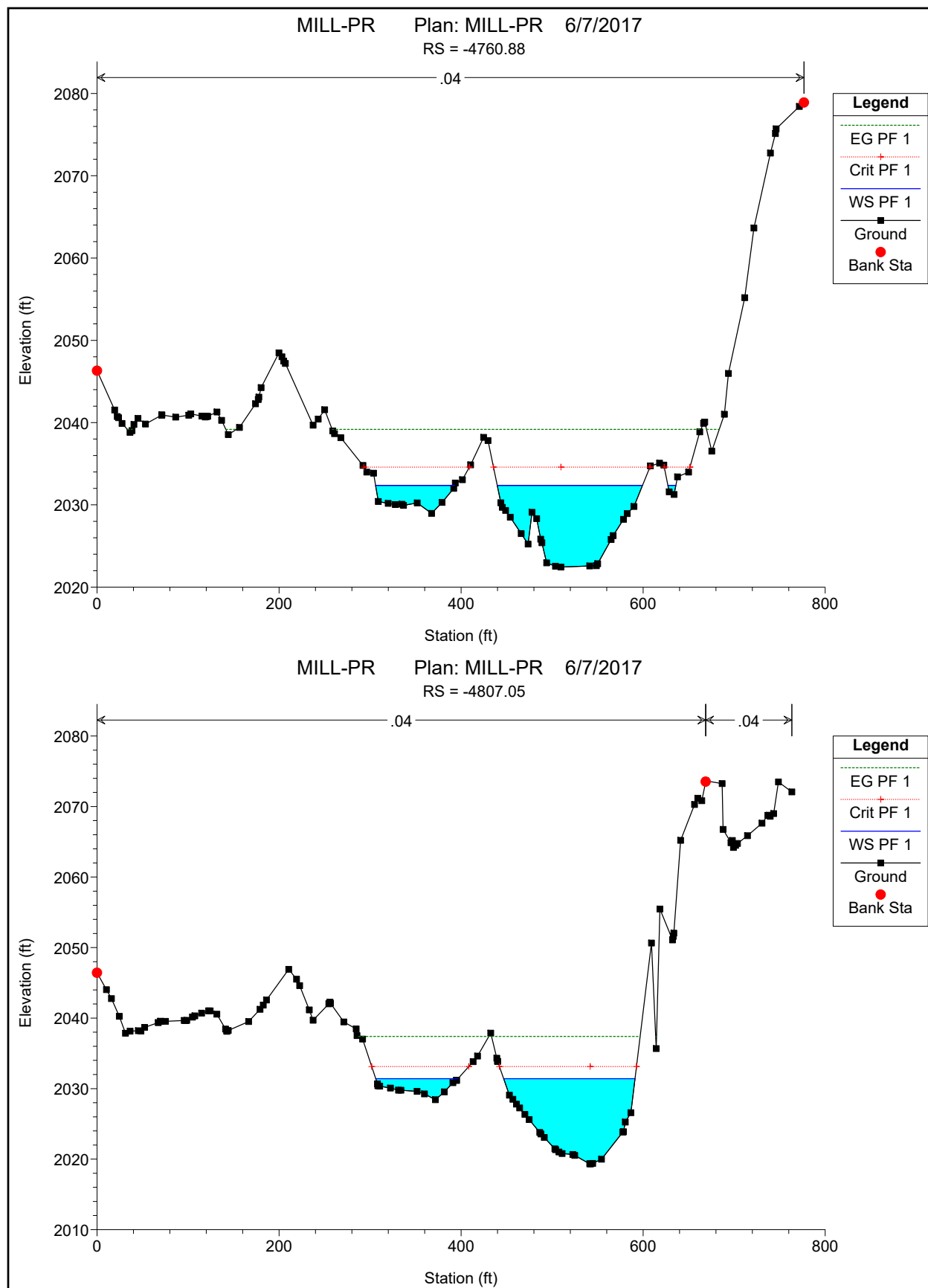


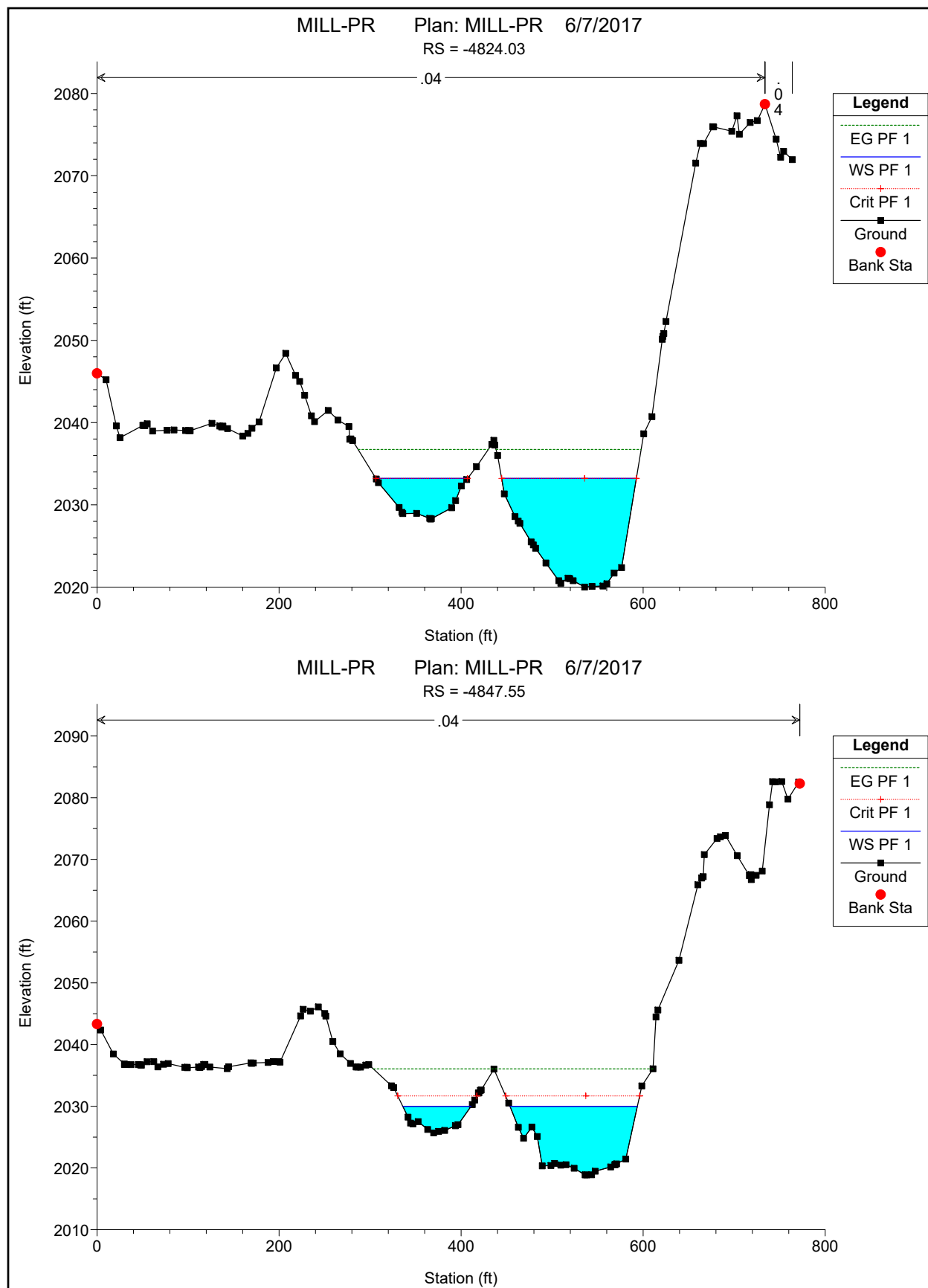


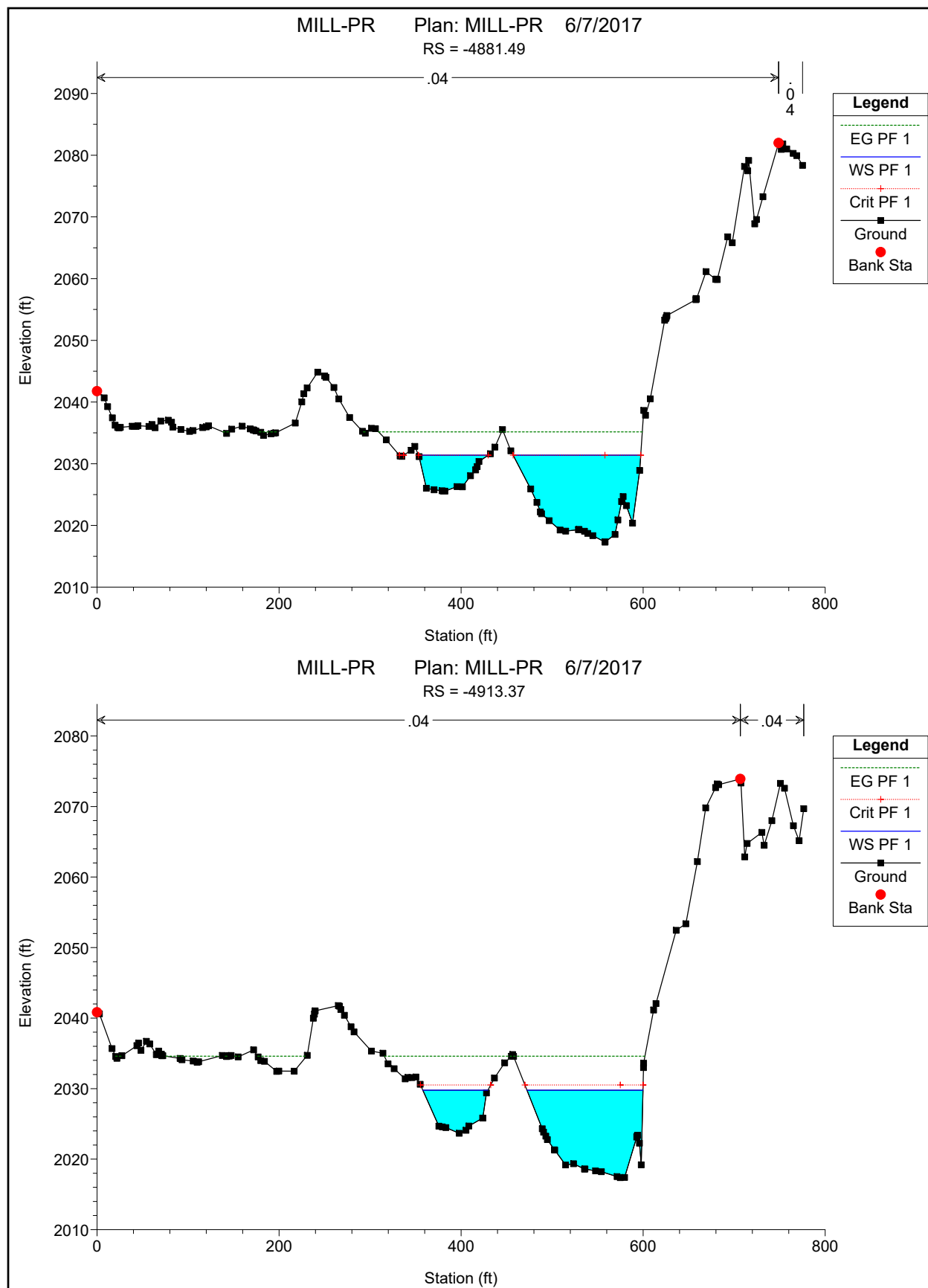


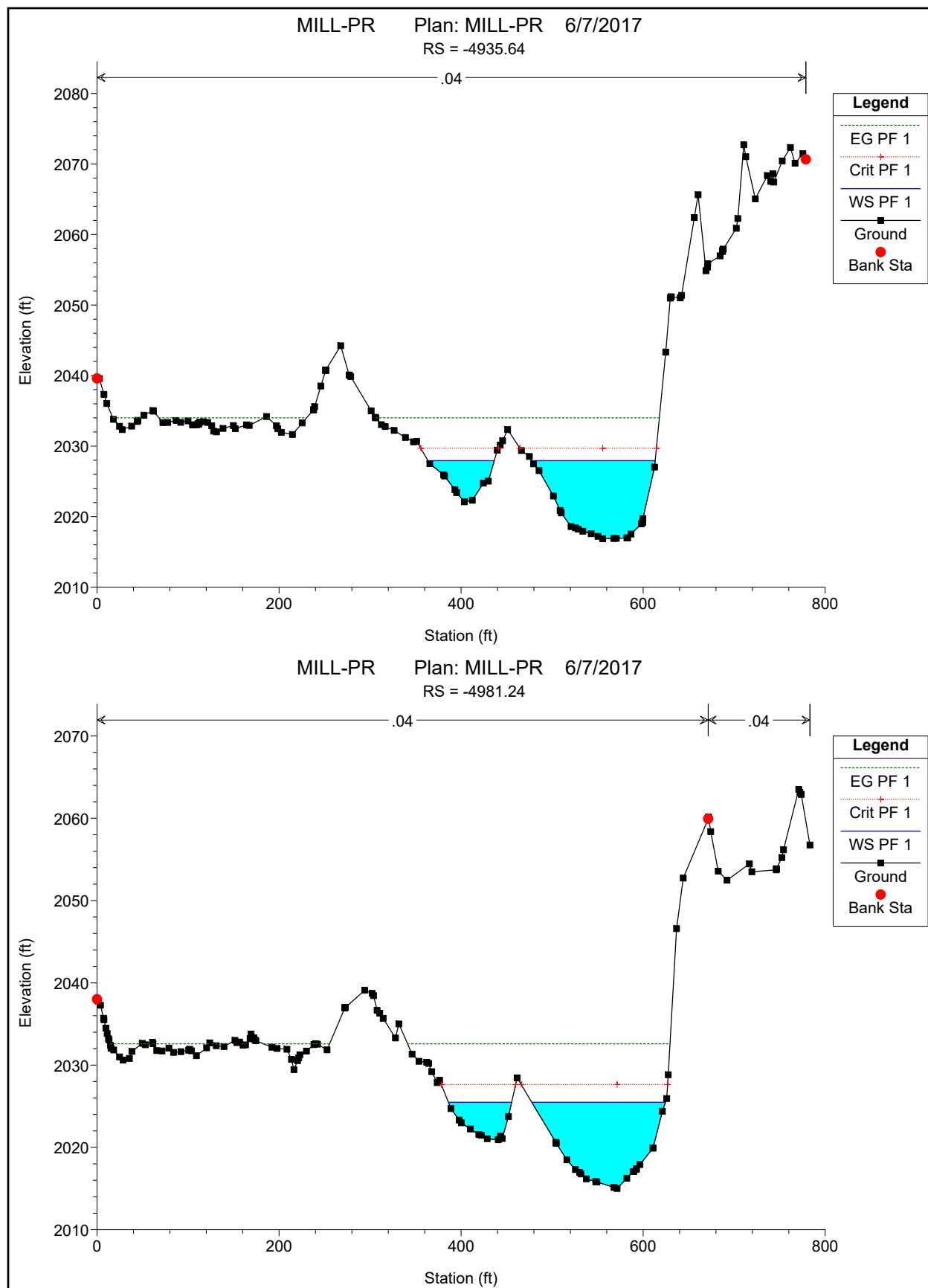


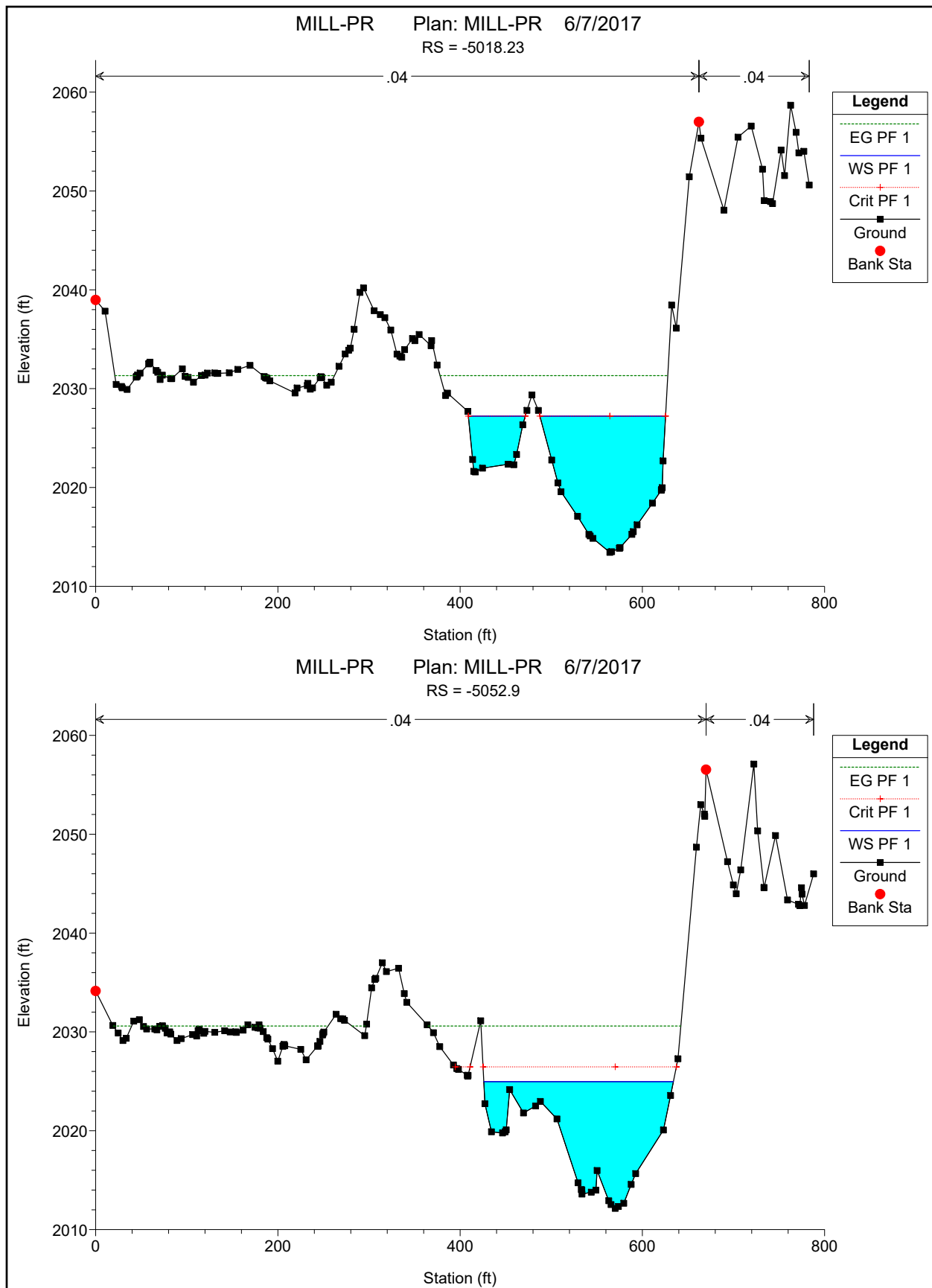














# **ATTACHMENT 4**

## **Existing vs. Proposed Conditions Cross Sections Comparison Table**



EXISTING VS. PROPOSED CONDITIONS CROSS SECTIONS COMPARISON  
100-YEAR EVENT

XS STATION	EX. COND. W.S.E. (FT.)	PR. COND. W.S.E. (FT.)	CHANGE (FT.)	EX. COND. VELOCITY (F.P.S.)	PR. COND. VELOCITY (F.P.S.)	CHANGE (F.P.S.)
-0.02	2212.09	2212.09	0	17.38	17.38	0
-62.19	2210.05	2210.05	0	16.57	16.57	0
-90.79	2209.56	2209.56	0	15.32	15.32	0
-134.08	2207.87	2207.87	0	16.09	16.09	0
-185.67	2205.19	2205.19	0	17.74	17.74	0
-241.08	2202.96	2202.96	0	17.88	17.88	0
-283.53	2201.49	2201.49	0	17.44	17.44	0
-315.58	2200.21	2200.2	0.01	17.43	17.45	-0.02
-358.01	2199.8	2199.8	0	14.66	14.67	-0.01
-413.06	2197.74	2197.74	0	15.72	15.73	-0.01
-510.63	2194.71	2194.71	0	15.77	15.77	0
-608.06	2190.36	2190.36	0	17.25	17.24	0.01
-640.35	2189.83	2189.83	0	15.6	15.59	0.01
-680.48	2187.52	2187.52	0	17.16	17.16	0
-731.5	2184.56	2184.56	0	18.06	18.06	0
-847.23	2179.6	2179.6	0	16.18	16.18	0
-958.81	2177.12	2177.12	0	12.96	12.96	0
-1066.6	2172	2172	0	16.23	16.23	0
-1171.03	2167.99	2167.99	0	15.37	15.37	0
-1270.97	2164.77	2164.77	0	14.87	14.87	0
-1326.75	2161.9	2161.9	0	16.55	16.55	0
-1394.2	2158.69	2158.69	0	17.24	17.24	0
-1456.19	2157.3	2157.29	0.01	14.97	14.97	0
-1503.98	2154.94	2154.94	0	16.51	16.51	0
-1569.47	2151.89	2151.89	0	17.11	17.11	0
-1617.57	2151.12	2151.12	0	14.42	14.42	0
-1673.92	2148.42	2148.42	0	16.11	16.11	0
-1708.93	2147.21	2147.21	0	15.91	15.91	0
-1752.51	2145.2	2145.21	-0.01	16.79	16.78	0.01
-1821.46	2142.64	2142.54	0.1	16.93	16.83	0.1
-1899.24	2139	2139.11	-0.11	17.73	17.13	0.6
-1991.67	2136.28	2136.31	-0.03	15.98	15.89	0.09
-2066.29	2133.9	2133.9	0	16.12	16.1	0.02
-2123.47	2132.31	2132.31	0	15.92	15.92	0
-2138.91	2131.19	2131.19	0	17.07	17.07	0
-2186.93	2128.38	2128.38	0	18.54	18.54	0
-2208.87	2127.77	2127.77	0	17.68	17.68	0
-2233.2	2126.79	2126.79	0	17.55	17.55	0
-2256.82	2126.14	2126.14	0	16.8	16.8	0
-2280.33	2125.48	2125.49	-0.01	16.31	16.3	0.01
-2308.85	2123.37	2123.37	0	17.97	17.97	0
-2343.16	2121.69	2121.69	0	17.92	17.92	0
-2364.43	2121.3	2121.31	-0.01	16.23	16.23	0
-2380.01	2119.56	2119.56	0	17.84	17.84	0
-2395.7	2118.94	2118.94	0	17.01	17.01	0

EXISTING VS. PROPOSED CONDITIONS CROSS SECTIONS COMPARISON  
100-YEAR EVENT

-2418.55	2118.62	2118.62	0	15.12	15.12	0
-2437.6	2118.17	2118.18	-0.01	14.68	14.68	0
-2456.59	2116.95	2116.95	0	15.81	15.81	0
-2471.65	2116.34	2116.34	0	15.76	15.77	-0.01
-2485.67	2116.59	2116.59	0	13.53	13.52	0.01
-2500.08	2115.39	2115.4	-0.01	15.07	15.06	0.01
-2520.82	2114.49	2114.49	0	15.4	15.39	0.01
-2545.62	2115.45	2115.51	-0.06	11.77	11.56	0.21
-2612.49	2111.39	2111.41	-0.02	16.79	16.7	0.09
-2680.31	2109.81	2109.81	0	14.27	14.27	0
-2719.23	2108.14	2108.14	0	15.41	15.41	0
-2772.59	2105.3	2105.3	0	17.45	17.45	0
-2876.74	2102.2	2102.2	0	16.23	16.23	0
-2944.7	2098.31	2098.31	0	18.52	18.52	0
-3024.58	2095.48	2095.48	0	17.15	17.15	0
-3105.78	2092.37	2092.37	0	17.13	17.13	0
-3156.15	2090.19	2090.19	0	17.6	17.6	0
-3212.11	2088.28	2088.28	0	17.19	17.19	0
-3270.17	2086.33	2086.33	0	17.29	17.29	0
-3323.18	2083.88	2083.88	0	18.34	18.34	0
-3362.46	2082	2082	0	18.66	18.66	0
-3399.85	2079.82	2079.82	0	19.21	19.21	0
-3482.19	2078.68	2078.68	0	14.58	14.58	0
-3542.8	2077.08	2077.08	0	14.87	14.87	0
-3626.79	2073.8	2073.8	0	17.06	17.06	0
-3698.74	2074.68	2074.68	0	12.16	12.16	0
-3781.06	2073.66	2073.66	0	10.32	10.32	0
-3839.14	2071.98	2071.98	0	12.68	12.68	0
-3899.49	2064.61	2064.61	0	22.02	22.02	0
-3982.78	2061.2	2061.2	0	21.56	21.56	0
-4067.95	2057.3	2057.3	0	21.93	21.93	0
-4149.01	2053.04	2053.04	0	22	22	0
-4214.26	2049.71	2049.71	0	21.81	21.81	0
-4306.23	2047.95	2047.94	0.01	17.82	17.83	-0.01
-4398.25	2044.1	2044.1	0	19.48	19.48	0
-4486.27	2040.98	2040.98	0	20.1	20.1	0
-4557.49	2041.53	2041.53	0	15.43	15.43	0
-4625.66	2038.48	2038.48	0	18.71	18.71	0
-4659.1	2038.39	2038.39	0	17.11	17.1	0.01
-4698.2	2035.88	2035.88	0	19.51	19.51	0
-4739.92	2033.48	2033.48	0	20.64	20.64	0
-4760.88	2032.37	2032.37	0	20.94	20.94	0
-4807.05	2031.42	2031.42	0	19.61	19.61	0
-4824.03	2033.21	2033.21	0	15.05	15.05	0
-4847.55	2029.97	2029.97	0	19.79	19.79	0
-4881.49	2031.38	2031.38	0	15.61	15.61	0

EXISTING VS. PROPOSED CONDITIONS CROSS SECTIONS COMPARISON  
100-YEAR EVENT

-4913.37	2029.78	2029.78	0	17.62	17.62	0
-4935.64	2027.94	2027.94	0	19.77	19.77	0
-4981.24	2025.47	2025.47	0	21.41	21.41	0
-5018.23	2027.23	2027.23	0	16.23	16.23	0
-5052.9	2024.97	2024.97	0	19.02	19.02	0
-5092.68	2024.43	2024.42	0.01	18.39	18.39	0

Appendix 5  
Response to Comments  
(reserved)

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## **CORRESPONDENCE WITH NATIVE AMERICAN REPRESENTATIVES**

See Appendix 3 Cultural Resources in the Initial Study for the cultural records search and Native American consultation for the project. Records of correspondence between the District and the Native American representatives are attached below.

May 1, 2017

Ms. Goldie Walker  
Chairperson  
Serrano Nation of Mission Indians  
P.O. Box 343  
Patton, CA 92369

Subject: Formal Notification of Mill Creek Diversion Structure Improvements

Dear Ms. Walker:

The San Bernardino Valley Water Conservation District (SBVWCD) is responding to your request for formal notification of the SBVWCD's "CEQA projects" pursuant to AB 52, Public Resources Code section 21080.3.1, subsection (b), which stated that the SBVWCD is located within the Tribes' ancestral territory.

Therefore, Pursuant to Public Resources Code section 21080.3.1, subsection (d), this letter is to notify you that the SBVWCD is proposing to redesign and reconstruct various improvements to the existing Mill Creek Diversion Structure. A Project Description and Project Map is provided in Attachment 1. The Cultural Resources Report prepared for the Project is provided in Attachment 2. The SBVWCD is charged with operating and maintaining its existing facilities in the Santa Ana River and Mill Creek for groundwater recharge, as it has since approximately the 1920s.

The Serrano Nation of Mission Indians has 30 days to request formal consultation regarding the Project in writing under Public Resources Code 21080.3.1, subsections (b) and (d). Such request should be directed to:

Jeff Beehler  
San Bernardino Valley Water Conservation District  
1630 West Redlands Blvd., Suite A  
Redlands, California 92373  
Phone: 909.793.2503  
Email: JBeehler@sbvwcd.org>

If we do not receive notification within the 30-day period, we will assume that the Serrano Nation of Mission Indians has no tribal cultural resource concerns for the Project and we will proceed with the public review of a Mitigated Negative Declaration in accordance with California Environmental Quality Act procedures.



Ms. Goldie Walker  
May 1, 2017  
Page 2

Please do not hesitate to contact me with any questions or concerns regarding the above.

Sincerely,

Jeff Beehler

Attachments:

Attachment 1 - Project Description and Project Map

Attachment 2 – Cultural Resources Report

May 1, 2017

Mr. Joseph Ontiveros  
Director of Cultural Resources  
Soboba Band of Luiseño Indians  
P.O. Box 487  
San Jacinto, CA 92581

Subject: Formal Notification of Mill Creek Diversion Structure Improvements

Dear Mr. Ontiveros:

The San Bernardino Valley Water Conservation District (SBVWCD) is responding to your request for formal notification of the SBVWCD's "CEQA projects" pursuant to AB 52, Public Resources Code section 21080.3.1, subsection (b), which stated that the SBVWCD is located within the Tribes' ancestral territory.

Therefore, Pursuant to Public Resources Code section 21080.3.1, subsection (d), this letter is to notify you that the SBVWCD is proposing to redesign and reconstruct various improvements to the existing Mill Creek Diversion Structure. A Project Description and Project Map is provided in Attachment 1. The Cultural Resources Report prepared for the Project is provided in Attachment 2. The SBVWCD is charged with operating and maintaining its existing facilities in the Santa Ana River and Mill Creek for groundwater recharge, as it has since approximately the 1920s.

The Soboba Band of Luiseño Indians has 30 days to request formal consultation regarding the Project in writing under Public Resources Code 21080.3.1, subsections (b) and (d). Such request should be directed to:

Jeff Beehler  
San Bernardino Valley Water Conservation District  
1630 West Redlands Blvd., Suite A  
Redlands, California 92373  
Phone: 909.793.2503  
Email: [JBeehler@sbvwcd.org](mailto:JBeehler@sbvwcd.org)

If we do not receive notification within the 30-day period, we will assume that the Soboba Band of Luiseño Indians has no tribal cultural resource concerns for the Project and we will proceed with the public review of a Mitigated Negative Declaration in accordance with California Environmental Quality Act procedures.

Mr. Joseph Ontiveros  
May 1, 2017  
Page 2

Please do not hesitate to contact me with any questions or concerns regarding the above.

Sincerely,

Jeff Beehler

Attachments:

Attachment 1 - Project Description and Project Map

Attachment 2 – Cultural Resources Report

May 1, 2017

Mr. Daniel F. McCarthy, RPA  
Director-CRM Department  
San Manuel Band of Mission India  
26569 Community Ce  
Highland, CA 92346.

Subject: Formal Notification of Mill Creek Diversion Structure Improvements

Dear Mr. McCarthy:

The San Bernardino Valley Water Conservation District (SBVWCD) is responding to your request for formal notification of the SBVWCD's "CEQA projects" pursuant to AB 52, Public Resources Code section 21080.3.1, subsection (b), which stated that the SBVWCD is located within the Tribes' ancestral territory.

Therefore, Pursuant to Public Resources Code section 21080.3.1, subsection (d), this letter is to notify you that the SBVWCD is proposing to redesign and reconstruct various improvements to the existing Mill Creek Diversion Structure. A Project Description and Project Map is provided in Attachment 1. The Cultural Resources Report prepared for the Project is provided in Attachment 2. The SBVWCD is charged with operating and maintaining its existing facilities in the Santa Ana River and Mill Creek for groundwater recharge, as it has since approximately the 1920s.

The San Manuel Band of Mission India has 30 days to request formal consultation regarding the Project in writing under Public Resources Code 21080.3.1, subsections (b) and (d). Such request should be directed to:

Jeff Beehler  
San Bernardino Valley Water Conservation District  
1630 West Redlands Blvd., Suite A  
Redlands, California 92373  
Phone: 909.793.2503  
Email: JBeehler@sbvwcd.org>

If we do not receive notification within the 30-day period, we will assume that the San Manuel Band of Mission India has no tribal cultural resource concerns for the Project and we will proceed with the public review of a Mitigated Negative Declaration in accordance with California Environmental Quality Act procedures.

Mr. Daniel F. McCarthy, RPA  
May 1, 2017  
Page 2

Please do not hesitate to contact me with any questions or concerns regarding the above.

Sincerely,

Jeff Beehler

Attachments:

Attachment 1 - Project Description and Project Map

Attachment 2 – Cultural Resources Report

May 1, 2017

Mr. Andrew Salas  
Chairman  
Gabrieleno Band of Mission Indian  
PO Box 393  
Covina, CA 91723

Subject: Formal Notification of Mill Creek Diversion Structure Improvements

Dear Mr. Salas:

The San Bernardino Valley Water Conservation District (SBVWCD) is responding to your request for formal notification of the SBVWCD's "CEQA projects" pursuant to AB 52, Public Resources Code section 21080.3.1, subsection (b), which stated that the SBVWCD is located within the Tribes' ancestral territory.

Therefore, Pursuant to Public Resources Code section 21080.3.1, subsection (d), this letter is to notify you that the SBVWCD is proposing to redesign and reconstruct various improvements to the existing Mill Creek Diversion Structure. A Project Description and Project Map is provided in Attachment 1. The Cultural Resources Report prepared for the Project is provided in Attachment 2. The SBVWCD is charged with operating and maintaining its existing facilities in the Santa Ana River and Mill Creek for groundwater recharge, as it has since approximately the 1920s.

The Gabrieleno Band of Mission Indian has 30 days to request formal consultation regarding the Project in writing under Public Resources Code 21080.3.1, subsections (b) and (d). Such request should be directed to:

Jeff Beehler  
San Bernardino Valley Water Conservation District  
1630 West Redlands Blvd., Suite A  
Redlands, California 92373  
Phone: 909.793.2503  
Email: JBeehler@sbvwcd.org>

If we do not receive notification within the 30-day period, we will assume that the Gabrieleno Band of Mission Indian has no tribal cultural resource concerns for the Project and we will proceed with the public review of a Mitigated Negative Declaration in accordance with California Environmental Quality Act procedures.

Mr. Andrew Salas  
May 1, 2017  
Page 2

Please do not hesitate to contact me with any questions or concerns regarding the above.

Sincerely,

Jeff Beehler

Attachments:

Attachment 1 - Project Description and Project Map

Attachment 2 – Cultural Resources Report

May 1, 2017

Mr. Raymond Huaute  
Cultural Resource Specialist  
Morongo Band of Mission Indians  
12700 Pumarra Road  
Banning, CA 9222

Subject: Formal Notification of Mill Creek Diversion Structure Improvements

Dear Mr. Huaute:

The San Bernardino Valley Water Conservation District (SBVWCD) is responding to your request for formal notification of the SBVWCD's "CEQA projects" pursuant to AB 52, Public Resources Code section 21080.3.1, subsection (b), which stated that the SBVWCD is located within the Tribes' ancestral territory.

Therefore, Pursuant to Public Resources Code section 21080.3.1, subsection (d), this letter is to notify you that the SBVWCD is proposing to redesign and reconstruct various improvements to the existing Mill Creek Diversion Structure. A Project Description and Project Map is provided in Attachment 1. The Cultural Resources Report prepared for the Project is provided in Attachment 2. The SBVWCD is charged with operating and maintaining its existing facilities in the Santa Ana River and Mill Creek for groundwater recharge, as it has since approximately the 1920s.

The Morongo Band of Mission Indians has 30 days to request formal consultation regarding the Project in writing under Public Resources Code 21080.3.1, subsections (b) and (d). Such request should be directed to:

Jeff Beehler  
San Bernardino Valley Water Conservation District  
1630 West Redlands Blvd., Suite A  
Redlands, California 92373  
Phone: 909.793.2503  
Email: JBeehler@sbvwcd.org>

If we do not receive notification within the 30-day period, we will assume that the Morongo Band of Mission Indians has no tribal cultural resource concerns for the Project and we will proceed with the public review of a Mitigated Negative Declaration in accordance with California Environmental Quality Act procedures.



Mr. Raymond Huaute  
May 1, 2017  
Page 2

Please do not hesitate to contact me with any questions or concerns regarding the above.

Sincerely,

Jeff Beehler

Attachments:

Attachment 1 - Project Description and Project Map

Attachment 2 – Cultural Resources Report

## NATIVE AMERICAN HERITAGE COMMISSION

Environmental and Cultural Department  
1550 Harbor Blvd., Suite 100  
West Sacramento, CA 95691  
Phone (916) 373-3710  
Fax (916) 373-5471



June 13, 2017

Daniel Cozad  
San Bernardino Valley Water Conservation District  
1630 W. Redlands Boulevard  
Redlands, CA 92373

Sent via e-mail: cdcozad@sbvwcd.org



Re: SCH# 2017061021, Mill Creek Diversion and Debris Maintenance Improvement Project, Communities of Redlands and Mentone; San Bernardino County, California

Dear Mr. Cozad:

The Native American Heritage Commission (NAHC) has reviewed the Mitigated Negative Declaration prepared for the project referenced above. The review included the Introduction and Project Description, the Initial Study Environmental Checklist, and Appendix 2, Cultural Report prepared by Jericho Systems, Inc. and CRM Tech for the San Bernardino Valley Water Conservation District. We have the following concerns:

1. There are no mitigation measures specifically addressing inadvertent finds of Tribal Cultural Resources. Mitigation measures must take Tribal Cultural Resources into consideration as required under AB-52, **with or without consultation** occurring. Mitigation language for archaeological resources is not always appropriate for or similar to measures specifically for handling Tribal Cultural Resources.

The California Environmental Quality Act (CEQA)<sup>1</sup>, specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment.<sup>2</sup> If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared.<sup>3</sup> In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended in 2014 by Assembly Bill 52. (AB 52).<sup>4</sup> **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** AB 52 created a separate category for "tribal cultural resources"<sup>5</sup>, that now includes "a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment."<sup>6</sup> Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.<sup>7</sup> Your project may also be subject to **Senate Bill 18 (SB 18)** (Burton, Chapter 905, Statutes of 2004), Government Code 65352.3, if it also involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space. **Both SB 18 and AB 52 have tribal consultation requirements.** Additionally, if your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966<sup>8</sup> may also apply.

**Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

Agencies should be aware that AB 52 does not preclude agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52. For that reason, we urge you to continue to request Native American Tribal Consultation Lists and Sacred Lands File searches from the NAHC. The request forms can be found online at: <http://nahc.ca.gov/resources/forms/>. Additional information regarding AB 52 can be found online at [http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation\\_CalEPAPDF.pdf](http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf), entitled "Tribal Consultation Under AB 52: Requirements and Best Practices".

<sup>1</sup> Pub. Resources Code § 21000 et seq.

<sup>2</sup> Pub. Resources Code § 21084.1; Cal. Code Regs., tit. 14, § 15064.5 (b); CEQA Guidelines Section 15064.5 (b)

<sup>3</sup> Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1); CEQA Guidelines § 15064 (a)(1)

<sup>4</sup> Government Code 65352.3

<sup>5</sup> Pub. Resources Code § 21074

<sup>6</sup> Pub. Resources Code § 21084.2

<sup>7</sup> Pub. Resources Code § 21084.3 (a)

<sup>8</sup> 154 U.S.C. 300101, 36 C.F.R. § 800 et seq.

The NAHC recommends lead agencies consult with all California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources.

A brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments is also attached.

Please contact me at [gayle.totton@nahc.ca.gov](mailto:gayle.totton@nahc.ca.gov) or call (916) 373-3710 if you have any questions.

Sincerely,



Gayle Totton, B.S., M.A., Ph.D  
Associate Governmental Project Analyst

Attachment

cc: State Clearinghouse

## **Pertinent Statutory Information:**

### **Under AB 52:**

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a **lead agency** shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice.

A **lead agency** shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project,<sup>9</sup> and **prior to the release of a negative declaration, mitigated negative declaration or environmental impact report**. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18).<sup>10</sup>

The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- a. Alternatives to the project.
- b. Recommended mitigation measures.
- c. Significant effects.<sup>11</sup>

1. The following topics are discretionary topics of consultation:

- a. Type of environmental review necessary.
- b. Significance of the tribal cultural resources.
- c. Significance of the project's impacts on tribal cultural resources.

If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency.<sup>12</sup>

With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process **shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10**. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public.<sup>13</sup>

If a project may have a significant impact on a tribal cultural resource, **the lead agency's environmental document shall discuss both of the following:**

- a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
- b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource.<sup>14</sup>

Consultation with a tribe shall be considered concluded when either of the following occurs:

- a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
- b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.<sup>15</sup>

Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 **shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program**, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable.<sup>16</sup>

If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, **the lead agency shall consider feasible mitigation** pursuant to Public Resources Code section 21084.3 (b).<sup>17</sup>

An environmental impact report **may not be certified**, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

- a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
- b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

<sup>9</sup> Pub. Resources Code § 21080.3.1, subds. (d) and (e)

<sup>10</sup> Pub. Resources Code § 21080.3.1 (b)

<sup>11</sup> Pub. Resources Code § 21080.3.2 (a)

<sup>12</sup> Pub. Resources Code § 21080.3.2 (a)

<sup>13</sup> Pub. Resources Code § 21082.3 (c)(1)

<sup>14</sup> Pub. Resources Code § 21082.3 (b)

<sup>15</sup> Pub. Resources Code § 21080.3.2 (b)

<sup>16</sup> Pub. Resources Code § 21082.3 (a)

<sup>17</sup> Pub. Resources Code § 21082.3 (e)

- c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days.<sup>18</sup>  
***This process should be documented in the Tribal Cultural Resources section of your environmental document.***

**Under SB 18:**

Government Code § 65352.3 (a) (1) requires consultation with Native Americans on general plan proposals for the purposes of "preserving or mitigating impacts to places, features, and objects described § 5097.9 and § 5091.993 of the Public Resources Code that are located within the city or county's jurisdiction. Government Code § 65560 (a), (b), and (c) provides for consultation with Native American tribes on the open-space element of a county or city general plan for the purposes of protecting places, features, and objects described in Sections 5097.9 and 5097.993 of the Public Resources Code.

- SB 18 applies to **local governments** and requires them to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: [https://www.opr.ca.gov/docs/09\\_14\\_05\\_Updated\\_Guidelines\\_922.pdf](https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf)
- **Tribal Consultation:** If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.**<sup>19</sup>
- **There is no Statutory Time Limit on Tribal Consultation under the law.**
- **Confidentiality:** Consistent with the guidelines developed and adopted by the Office of Planning and Research,<sup>20</sup> the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction.<sup>21</sup>
- **Conclusion Tribal Consultation:** Consultation should be concluded at the point in which:
  - The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
  - Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation.<sup>22</sup>

**NAHC Recommendations for Cultural Resources Assessments:**

- Contact the NAHC for:
  - A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
  - A Native American Tribal Contact List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.
    - The request form can be found at <http://nahc.ca.gov/resources/forms/>.
- Contact the appropriate regional California Historical Research Information System (CHRIS) Center ([http://ohp.parks.ca.gov/?page\\_id=1068](http://ohp.parks.ca.gov/?page_id=1068)) for an archaeological records search. The records search will determine:
  - If part or the entire APE has been previously surveyed for cultural resources.
  - If any known cultural resources have been already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

<sup>18</sup> Pub. Resources Code § 21082.3 (d)

<sup>19</sup> (Gov. Code § 65352.3 (a)(2)).

<sup>20</sup> pursuant to Gov. Code section 65040.2,

<sup>21</sup> (Gov. Code § 65352.3 (b)).

<sup>22</sup> (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

**Examples of Mitigation Measures That May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:**

- Avoidance and preservation of the resources in place, including, but not limited to:
  - Planning and construction to avoid the resources and protect the cultural and natural context.
  - Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
- Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
  - Protecting the cultural character and integrity of the resource.
  - Protecting the traditional use of the resource.
  - Protecting the confidentiality of the resource.
- Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
- Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed.<sup>23</sup>
- Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated.<sup>24</sup>

The lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

- Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources.<sup>25</sup> In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
- Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
- Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subs. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

<sup>23</sup> (Civ. Code § 815.3 (c)).

<sup>24</sup> (Pub. Resources Code § 5097.991).

<sup>25</sup> per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)).

May 30, 2017

Attn: Jeff Beehler  
San Bernardino Valley Water Conservation District  
1630 West Redlands Boulevard, Suite A  
Redlands, CA 92373



**RE: AB 52 Consultation; Mill Creek Diversion Structure Improvements**

The Soboba Band of Luiseño Indians has received your notification pursuant under Assembly Bill 52.

Soboba Band of Luiseño Indians is requesting to initiate formal consultation with the San Bernardino Valley Water Conservation District. A meeting can be scheduled by contacting me via email or phone. All contact information has been included in this letter.

I look forward to hearing from and meeting with you soon.

Sincerely,

A handwritten signature in black ink, appearing to read "Joe", with a long horizontal line extending to the right.

Joseph Ontiveros, Director of Cultural Resources  
Soboba Band of Luiseño Indians  
P.O. Box 487  
San Jacinto, CA 92581  
Phone (951) 654-5544 ext. 4137  
Cell (951) 663-5279  
[jontiveros@soboba-nsn.gov](mailto:jontiveros@soboba-nsn.gov)

Confidentiality: The entirety of the contents of this letter shall remain confidential between Soboba and the San Bernardino Valley Water Conservation District. No part of the contents of this letter may be shared, copied, or utilized in any way with any other individual, entity, municipality, or tribe, whatsoever, without the expressed written permission of the Soboba Band of Luiseño Indians.





# GABRIELEÑO BAND OF MISSION INDIANS - KIZH NATION

Historically known as The San Gabriel Band of Mission Indians  
recognized by the State of California as the aboriginal tribe of the Los Angeles basin

San Bernardino Valley Water Conservation District  
1630 W. Redlands Blvd, Suite A

June 7, 2017

Re: AB52 Consultation request for Mill Creek Diversion Structure Improvements

Dear Jeff Beehler,

Please find this letter as a written request for consultation regarding the above-mentioned project pursuant to Public Resources Code § 21080.3.1, subd. (d). Your project lies within our ancestral tribal territory, meaning descending from, or a higher degree of kinship than traditional or cultural affiliation. Your project is located within a sensitive area and may cause a substantial adverse change in the significance of our tribal cultural resources. Most often, a records search for our tribal cultural resources will result in a "no records found" for the project area. The Native American Heritage Commission, ethnographers, historians, and professional archaeologists can only provide limited information that has been previously documented about California Native Tribes. This is the reason the Native American Heritage Commission (NAHC) will always refer the lead agency to the respective Native American Tribe of the area because the NAHC is only aware of general information and are not the experts on each California Tribe. Our Elder Committee & tribal historians are the experts for our Tribe and are able to provide a more complete history (both written and oral) regarding the location of historic villages, trade routes, cemeteries and sacred/religious sites in the project area. Therefore, to avoid adverse effects to our tribal cultural resources, we would like to consult with you and your staff to provide you with a more complete understanding of the prehistoric use(s) of the project area and the potential risks for causing a substantial adverse change to the significance of our tribal cultural resources.

Consultation appointments are available on Wednesdays and Thursdays at our offices at 901 N. Citrus Ave. Covina, CA 91722 or over the phone. Please call toll free 1-844-390-0787 or email [gabrielenoindians@yahoo.com](mailto:gabrielenoindians@yahoo.com) to schedule an appointment.

\*\* Prior to the first consultation with our Tribe, we ask all those individuals participating in the consultation to view a video produced and provided by CalEPA and the NAHC for sensitivity and understanding of AB52. You can view the video at: <http://nahc.ca.gov/2015/12/ab-52-tribal-training/>

With Respect,

Andrew Salas, Chairman

Andrew Salas, Chairman

Albert Perez, treasurer

PO Box 393, Covina, CA 91723

Nadine Salas, Vice-Chairman

Martha Gonzalez Lemos, treasurer

[www.gabrielenoindians.org](http://www.gabrielenoindians.org)

Christina Swindall Martinez, secretary

Richard Gradias, Chairman of the Council of Elders

[gabrielenoindians@yahoo.com](mailto:gabrielenoindians@yahoo.com)



**From:** [Lee Clauss](#)  
**To:** [Jeff Beehler](#)  
**Subject:** Mill Creek Diversion Structure Improvements and Debris Management Project  
**Date:** Monday, June 05, 2017 10:59:23 PM  
**Attachments:** [image299994.PNG](#)

---

Good evening, Jeff,

Thank you for providing the San Manuel Band of Mission Indians (SMBMI) Cultural Resources Management Department with a formal notification of SBVWCD's proposal to redesign and construct various improvements to the existing Mill Creek Diversion Structure. Our Department had previously corresponded with CRM Tech regarding this proposed project and any Tribal Cultural Resource-based concerns SMBMI might have. As our CRM Field Specialist, Ann Brierty, informed Nina Gallardo of CRM Tech on April 4-5, 2017, the project exists within Serrano ancestral territory and the Tribe is acutely aware of the cultural sensitivity of the area. At that time, Ms. Brierty also requested to receive a copy of the Historic Properties Survey Report (HPSR) and noted that Tribal monitoring would likely need to be conducted during construction, via an individual representing SMBMI interests and concerns.

Having not received the requested HPSR as of May 5, 2017, and based on the Tribe's continuing concerns about the project, our Departmental Consulting Archaeologist, Dr. Joan Schneider, then followed up with CRM Tech, and requested to consult directly with both the CEQA- and NHPA-based Lead Agencies on the project.

Your communication was greatly appreciated, as it both initiated consultation between SMBMI and SBVWCD and provided a copy of the previously requested HPSR.

The CRM Department has reviewed the HPSR and its content has reinforced our previously stated recommendation that Tribal monitoring should be implemented during all ground disturbing activities associated with this project. This is particularly important given the lack of ground visibility and subsurface testing during the Phase I survey effort and the proximity of the project area to the Mill Creek Zanja--a Traditional Cultural Property of the Serrano people.

That said, we also have some questions about the removal and re-establishment of plants as part of this project, an activity which is not noted in the Project Description you provided, but was mentioned in the initial scoping letter received from CRM Tech in March 2017.

Finally, as we have now been made aware of the Soboba Band of Luiseno Indians' requested treatment protocols (as described in their letter of March 29, 2017) and are

aware of how these suggestions both similarly reflect and substantially diverge from the treatment protocols SMBMI would offer, I am proposing that we meet (or conduct a conference call) to discuss this subject (and the larger project) further.

My best dates over the next two weeks are as follows:

June 8, 11:30 AM-3:30 PM

June 13, 10 AM-4 PM

June 16, 1 PM-3 PM

June 20, 2 PM- 4 PM

Please let me know if any of these dates/times works for you and if you would prefer an in-person meeting or a conference call. And, please know I am happy to travel to your office, should you like to meet.

Additionally, should you have any questions or require clarification prior to a meeting or call, please do not hesitate to contact me at your convenience as I will be SBVWCD 's (and the COE's ) Point of Contact (POC) moving forward.

Respectfully,

Lee

## Lee Clauss

DIRECTOR, CRM

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26569 Community Center Drive, Highland California 92346

**SAN MANUEL**  
BAND OF  MISSION INDIANS

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# SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT

Established 1932

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June 13, 2017

## **VIA E-MAIL AND FIRST CLASS MAIL**

Mr. Andrew Salas  
Chairman  
Gabrieleño Band Of Mission Indians – Kizh Nation  
P.O. Box 393  
Covina, CA 91723

Mr. Lee Clauss  
Director, CRM  
San Manuel Band of Mission Indians  
26569 Community Center Drive  
Highland, CA 92346

Mr. Joseph Ontiveros  
Director of Cultural Resources  
Soboba Band of Luiseño Indians  
P.O. Box 487  
San Jacinto, CA 92581

Re: AB 52 Consultation Request for Mill Creek Diversion Structure Improvements

Dear Colleagues:

I am writing to you jointly in response to your requests for consultation under AB 52 in connection with the San Bernardino Valley Water Conservation District's ("District") proposed "Mill Creek Diversion Debris Management Project" ("Project"). I do so in compliance with the requirements under Public Resources Code section 21080.3.1 and 21080.3.2.

In connection with this Project, the District has received requests for consultation from the Gabrieleño Band of Mission Indians, the Soboba Band of Luiseño Indians, and the San Manuel Band of Mission Indians. The District appreciates each of your interests in its Project, and wishes to initiate the consultation with you as requested.

As an initial matter, the District would appreciate your identification of what tribal cultural resources (as defined under Public Resources Code Section 21074) you believe are existing, or may exist, within the identified area of the Project. Once we have an idea of the potential nature of these resources, we believe we will be in a better position to identify potentially sensitive areas within the Project's proposed disturbance areas, in order to provide for the most efficient monitoring and handling of any tribal cultural resources found.

Second, our initial study included a cultural resources survey and report prepared by CRM TECH, dated March 31, 2017. If you have not already had the opportunity to review that report, I attach a copy, and request that you do so. While the District understands that the report

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Daniel B. Cozad

is not finally determinative of the possibility of tribal cultural resources or items of historical significance in the Project area, we believe it is a helpful starting point for focusing our efforts on monitoring and areas where such resources are most apt to be encountered.

Third, with three tribes having requested consultation, it appears that there may be a significant possibility of shared tribal resources. The District would request that a representative of each of the three responding tribes attend a joint meet-and-confer session at the District's offices, to provide further background on the project, and begin to frame appropriate mitigation measures to assure the integrity of any cultural resources affected. The District would hope this discussion could include exploring whether a single tribe's representative for construction monitoring purposes will suffice for all, or whether a commonly-accepted consultant, versed in the respective tribes' cultural resources and appropriate handling of same, might appropriately be utilized in a construction monitoring capacity. At least initially, the District believes that having a single monitor will protect tribal interests, and still serve the purposes of time and cost efficiency in connection with the implementation of the Project.

We look forward to speaking with you further regarding the AB 52 consultation you have requested. Please contact me at your earliest convenience so that we might schedule a joint meeting and decide best how to move this process forward.

Very truly yours,

A handwritten signature in dark ink, appearing to read 'Jeff Beehler', with a long horizontal flourish extending to the right.

Jeff Beehler  
Land Resources Manager

DBC:mrs

cc: Daniel B. Cozad, General Manager; SBVWCD

**From:** [Jeff Beehler](#)  
**To:** [Jennifer Zhou](#)  
**Subject:** FW: Mill Creek - AB52 Constultation  
**Date:** Wednesday, July 05, 2017 10:18:54 AM  
**Attachments:** [image001.png](#)

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**From:** Lee Clauss [mailto:LClauss@sanmanuel-nsn.gov]  
**Sent:** Thursday, June 29, 2017 3:59 PM  
**To:** Jeff Beehler  
**Cc:** jontiveros@soboba-nsn.gov  
**Subject:** Re: Mill Creek- AB52 Constultation

Good afternoon, Jeff,

Thanks again for the site visit and meeting yesterday on the subject of the Mill Creek Diversion Structure Improvements project.

To memorialize our conversation, per the content of the Cultural Resources Report from CRM Tech and our in-depth discussions yesterday regarding the location and nature of construction activities to be involved in this proposed project, San Manuel Band of Mission Indians' CRM Department does not find there to be a need for archaeological or Native American monitoring during the implementation of this project.

As I shared in detail yesterday, this general area in and around Mill Creek is culturally sensitive for Serrano peoples--both ethnographically and archaeologically. However, given the fact that the activities to be undertaken will not impact native soils, but rather occur on top of and within fill soils, berm, existing roadway, existing channel, and concrete, the CRM staff does not believe monitoring to be necessary.

As noted, however, we remain interested in this project and do ask to be contacted if by chance any Native cultural materials, deposits, or ancestral remains are encountered during project implementation.

Should you have any additional questions or should the project change in scope in any way, please contact us to consult further.

Respectfully,  
Lee

**Lee Clauss**

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On Jun 15, 2017, at 2:39 PM, Jeff Beehler <[JBeehler@sbvwcd.org](mailto:JBeehler@sbvwcd.org)> wrote:

Please see attached. This was sent via USPS with additional attachments.

Jeffrey Beehler

San Bernardino Valley Water Conservation District

<06 13 2017 AB 52-Response Packet.pdf>

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