Meeting of the Central Valley Flood Protection Board
June 22, 2012

Staff Report – Encroachment Permit

Reclamation District 1000
RD-1000 Pump Station No. 2 Reconstruction, Sacramento County

1.0 – ITEM

Consider approval of Permit No. 18719 (see Attachment B).

2.0 – APPLICANT

Reclamation District 1000

3.0 – LOCATION

The project is located along on the left (east) bank of the Sacramento River near River Mile 75.1.
(Sacramento River, Sacramento County, see Attachment A)

4.0 – DESCRIPTION

Applicant proposes to abandon a deep 60-inch diameter RCP drain under the levee; To install two new drain pipes, 30-inch and 42-inch diameter, up and over the levee(s); To construct a new outfall structure, all in conjunction with the reconstruction of RD-1000's Pump Station No. 2.

5.0 – PROJECT ANALYSIS

The proposed project involves the reconstruction of RD-IOOO's Pumping Plant No.2 on the landside of the Sacramento River East Levee near River Mile 75.1. This facility replaces an existing pumping plan which was removed during the 2006 declared flood emergency due to significant boils and seepage at the site which threatened the stability of the adjacent levee. The proposed capacity of the pumping plant is the same as the replaced plant, though the pumps and motors are larger due to the longer pipe distance

and higher discharge head to meet Corps standards. Other permits associated with the RD 1000 pumping plant 2 include Board Order 2829 issued in August 1958 and Board Orders 2829A and 2829 B both issued in August 1960.

The proposed project consists of an intake structure, a pump station, a sump, piping over the levee, and an outfall structure. Only the discharge piping over the levee and the new outfall structure need to be covered by Permit No. 18719. The intake is located at the western terminus of the North Drainage Canal with a concrete sump and two bays fitted with trash racks and automatic trash racks. The sump is approximately 610 feet landside of the Garden Highway at its closest point. The facility also includes a separate 75 cfs irrigation recirculation pump, in the southern bay, operated by Natomas Central Mutual Water Company (NCMWC) which discharges to the Elkhorn Irrigation Canal with all associated facilities more than 600 feet landside of Garden Highway. RD 1000 operates a 40 cfs and an 80 cfs vertical mixed flow drainage pump (120 cfs total station capacity) which are connected to 30-inch and or 42-inch minimum nominal diameter high density polyethylene (HDPE). The pipes transition to welded steel (one 42-inch and one 30inch outside diameter) approximately 25 feet from the landside levee toe and cross through the levee crown above the 200-year water surface elevation. The two pipes will discharge into the Sacramento River from a new concrete outfall structure that will be located in the Sacramento River bank above the remaining portion of the 60-inch diameter reinforced concrete pipe (RCP) that was left in place when the original pumping plant was removed in 2006. The depth of the RCP is such, approximately 40-feet, that removal would be difficult so the abandoned RCP will be grouted in-place. Mitigation plantings will be placed upstream and downstream of the new outfall structure. Ten trees, 157-schrubs, and 76 live pole cuttings will be planted and maintained by RD-1000. The proposed project conforms to all Title 23 Standards.

5.1 – Hydraulic Analysis

The purpose of the analysis was to determine the potential impacts from the currently proposed RD-1000 Pump Station No. 2 project and the future proposed Prichard Pumping Plant project using the SRFCP design flood and the Urban Levee Design Criteria (ULDC) [DWR 2011] flood (200-year with no upstream levee failures). The SRFCP design flood discharge in the project reach is 107,000 cubic feet per second (cfs) [USACE 1957]. Rather than using the SRFCP design flood discharge, the consultant used an existing model simulation with a peak flow at the project site of 112,000 cfs. The hydraulic model cross-section at RM 75.50 was duplicated and used in the pre- and post-project conditions at RM 75.56 (Pritchard Pumping Plant) and RM 75.59 (RD-1000 Outfall). For the pre-project condition the model conservatively assumed the existing Pritchard Pumping Plant did not exist. In addition, the model cross-section at the RD-1000 Outfall was modified to represent the existing grade. For the post-project condition, the model cross-sections at RM 75.56 and RM 75.59 were modified to represent the proposed projects.

The computed pre-project and post-project maximum water surface elevations showed no measurable increase in water surface elevation at and near the project site for the

design flood or the 200-year event. Computed maximum velocities indicate a maximum increase of 0.14 and 0.82 feet per second for the design flood and the 200-year event respectively. It should be noted that the calculated velocity values represent an average cross-sectional velocity. The velocities near the river banks will be lower than what was calculated. The results of the analysis show that the proposed projects would have no adverse impact on the SRFCP design flood or the ULDC flood water surface elevations and small increases in the stream velocities.

5.2 – Geotechnical Analysis

Compaction of all excavations will conform to Title 23 standards. A specific geotechnical analysis was not required because the Natomas setback levee was recently constructed using current standards.

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

The comments and endorsements associated with this project, from all pertinent agencies are shown below:

- Reclamation District-1000 is the local maintaining agency and the permitee.

- The U.S. Army Corps of Engineers 208.10 comment letter has not been received for this application. Staff anticipates receipt of a letter indicating that the USACE District Engineer has no objection to the project, subject to conditions. Upon receipt of the letter, staff will review to ensure conformity with the permit language and incorporate it into the permit as Exhibit A.

7.0 – CEQA ANALYSIS

Board staff has prepared the following CEQA Findings:

The Board, acting as a responsible agency under CEQA, has independently reviewed the Draft Environmental Impact Statement /Draft Environmental Impact Report (DEIS/DEIR) (SCH No. 2008072060, February 2009) and the Final Environmental Impact Statement/ Environmental Impact (FEIS/EIR) (SCH No. 2008072060, May 2009) on the Natomas Levee Improvement Program Phase 3 Landside Improvements Project, that includes the proposed Reclamation District 1000 RD-1000 Pump Station No. 2 Reconstruction project. SAFCA as the lead agency determined that the project would have a significant effect on the environment and adopted Resolution 09-059 dated May 21, 2009 (which includes a Statement of Facts, Findings, and Mitigation Measures,

Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Program). These documents including project design and SAFCA resolution may be viewed or downloaded from the Central Valley Flood Protection Board website at http://www.cvfpb.ca.gov/meetings/2012/06-22-2012.cfm under a link for this agenda item. The documents are also available for review in hard copy at the Board and SAFCA offices.

Impacts that can be Mitigated

The significant impacts and the mitigation measures to reduce them to less than significant are adopted in the SAFCA Resolution 09-059, dated May 21, 2009 (which includes a Statement of Facts, Findings, Impacts and Mitigation Measures, Statement of Overriding Considerations and Mitigation Monitoring and Reporting Program). Based on its independent review of the FEIR and SAFCA Resolution 09-059, the Board finds that for each of the significant impacts described, changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effects as identified in the FEIR. Moreover, such changes or alterations are within the responsibility and jurisdiction of another public agency, SAFCA, and such changes have been adopted by that agency.

Significant Unavoidable Impacts of the Project

The following impacts of the proposed project remain significant following adoption and implementation of the mitigation measures described in the FEIR:

Farmland Conversion -The proposed project would covert farmland from agricultural production - Contiguous parcels of agricultural land of sufficient size to support their efficient use for continued agricultural production shall be retained to the extent practicable and feasible;

Potential to Physically Divide or Disrupt an Established Community - Residents and businesses would experience temporary disruption due to road closures, detours, construction, and boat launch facility temporary closure. Therefore, this impact would remain significant and unavoidable;

Loss of Woodland Habitats - The proposed project would result in the loss of woodland habitats - SAFCA shall coordinate with USFWS, DFG, and Sacramento County Airport System (if on Airport property) to ensure that all woodland habitat conservation components of the NLIP are created and managed;

Impacts on Swainson's Hawk and Other Special-Status Birds - The creation and preservation of nesting and foraging habitat would reduce long-term impacts to a less-

than-significant level. However, in the short-term, this impact would remain significant and unavoidable because replacement plantings would likely require a minimum of 10 to 15 years before providing important habitat components such as structure and shade;

Potential Damage to or Destruction of Previously Undiscovered Cultural Resources from Ground-Disturbance or Other Construction – Ground disturbing work associated with the levee improvements could affect several prehistoric sites by disturbing interred human skeletal remains and associated grave goods. Because of the complex and stratified geomorphology of the area as well as the magnitude of the construction, implementation of all mitigation may not fully reduce impacts to a less-than-significant level. For example, buried components may not be susceptible to adequate documentation prior to intrusive work. Therefore, this impact would remain significant and unavoidable;

Potential Discovery of Human Remains during Construction – The construction methods and procedures involved in the levee improvements preclude complete advance investigation for human remains, so previously unknown buried human remains may be unearthed, damaged, or destroyed during project construction and excavation of borrow. Ground-disturbing work could disinter and damage human remains. Therefore, this impact would remain significant and unavoidable;

Temporary Increase in Traffic on Local Roadways - Before the start of construction in each construction season, SAFCA and its primary contractors for engineering and construction shall develop a coordinated construction traffic safety and control plan to minimize the simultaneous use of roadways by different construction contractors for material hauling and equipment delivery to the extent feasible and to avoid and minimize potential traffic hazards on local roadways during construction;

Temporary Emissions - The project would result in temporary construction related emissions of reactive organic gases, nitrogen oxides, and particulate matter that could expose nearby sensitive receptors to substantial pollutant concentrations and/or substantially contribute a violation of an air quality standard;

Generation of Temporary, Short-Term Construction Noise - Project levee and canal improvements could result in temporary, short-term noise levels that exceed the applicable daytime and nighttime standards for non-transportation sources, resulting in increased annoyance and/or sleep disruption to occupants of residential buildings and other sensitive receptors;

Exposure of Sensitive Receptors to or Generation of Excessive Ground borne Vibration - At one residence located near the Pumping Plant No.2 site, pile driving activities could temporarily cause vibration levels that exceed the Federal Transit Administration's (FTA's) human disturbance-based standard. Mitigation may not reduce the impact to the affected residential structure to levels below applicable standards. Therefore, this impact would remain significant and unavoidable;

Short-term Exposure of Residents to Increased Traffic Noise Levels from Hauling Activity - Project construction would generate high volumes of haul truck trips on area roads, temporarily causing noise levels to exceed exterior noise standards at residential land uses and potentially resulting in temporary sleep disturbance at nearby residences. The mitigated noise levels could still exceed local exterior noise standards for residential land uses. Therefore, this impact would remain potentially significant and unavoidable;

New Sources of Light and Glare that Adversely Affect Views - Temporary, short-term use of nighttime lighting for construction could impact adjacent residences, particularly if construction 24 hours a day, seven days a week is required.

The Board further finds that none of the significant unavoidable adverse impacts of the project are within the Board's jurisdiction. The Board also finds that the specific economic, legal, social, technological or other benefits of the project, as listed above, outweigh the unavoidable adverse environmental effects, which are thus considered to be "acceptable."

Statement of Overriding Considerations

Pursuant to CEQA Guidelines sections 15096(h) and 15093, the Board has balanced the economic, social, technological and other benefits described in the Natomas Levee Improvement Program Phase 3 - Landside Improvement Project including the impacts from the reconstruction of the RD 1000 Pump Station No. 2 against its significant and unavoidable impacts, and finds that the benefits of the project outweigh these impacts and they may, therefore, be considered "acceptable".

The documents and other materials which constitute the record of the Board's proceedings in this matter are in the custody of Mr. Jay Punia, Executive Officer, Central Valley Flood Protection Board, 3310 El Camino Ave., Rm. 151, Sacramento, California 95821.

8.0 – SECTION 8610.5 CONSIDERATIONS

1. Evidence that the Board admits into its record from any party, State or local public agency, or nongovernmental organization with expertise in flood or flood plain management:

   The Board will make its decision based on the evidence in the permit application and attachments, this staff report, and any other evidence presented by any individual or group.

2. The best available science that related to the scientific issues presented by the executive officer, legal counsel, the Department or other parties that raise credible scientific issues.

   The accepted industry standards for the work proposed under this permit as regulated by Title 23 have been applied to the review of this permit.

3. Effects of the decision on the entire State Plan of Flood Control:

   There will be little to no effect on the State Plan of Flood Control as the proposed project replaces an existing discharge site.

4. Effects of reasonable projected future events, including, but not limited to, changes in hydrology, climate, and development within the applicable watershed:

   Three will be no effects from reasonable projected future events on the proposed outfall structure. Pumping Plant No. 2 is located on the landside of the levee.

9.0 – STAFF RECOMMENDATION

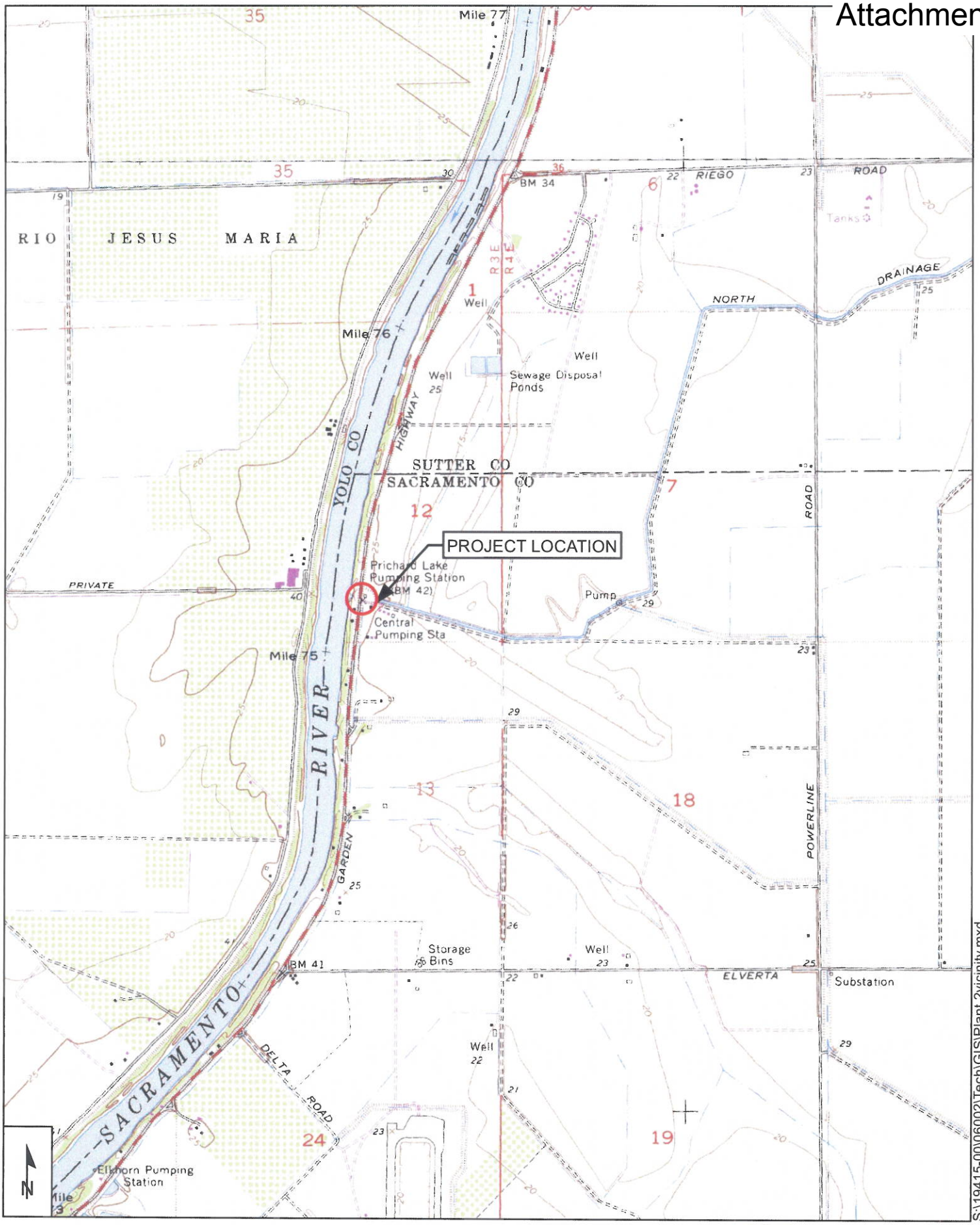
Based on the submitted information Staff recommends that the CVFPB adopt Resolution No. 2012-29, which constitutes the written findings and decision in the matter of Permit No. 18719. The resolution contains the CEQA findings; Findings of Fact; and approval of Permit No. 18719, conditioned upon receipt of a U.S. Army Corps of Engineers comment letter indicating that the District Engineer has no objection to the project, subject to conditions; and directs the Executive Office to take necessary actions to prepare and execute the permit and related documents and to prepare and file a Notice of Determination with the State Clearinghouse.

10.0 – LIST OF ATTACHMENTS

A. Location Maps and Photos
B. Draft Permit No. 18719
C. Construction Drawings
D. Hydraulic Analysis
E. Maintenance Plan for Mitigation Plantings and drawings
F. Resolution No. 2012-29

Design Review:	Gary W. Lemon P.E.
Environmental Review:	Andrea Mauro, James Herota
Document Review:	Mitra Emami P.E., Len Marino P.E.

Attachment A



S:\19415-00006002\Tech\GIS\Plant 2vicinity.mxd

Project Vicinity Map

Reclamation District No. 1000 Pumping Plant No. 2

SACRAMENTO AREA FLOOD CONTROL AGENCY

Natomas Levee Improvement Program

0 5001,000 2,000 3,000 Feet

Mead & Hunt

Photograph 1: Pumping Plant No. 2 site from recently constructed adjacent levee (River Mile 75.1).

Photograph 2: Standing near Pumping Plant No. 2 site looking south towards existing discharge pipe.

Photograph 3: Looking west towards Sacramento River at Pumping Plant No. 2 outfall.

Photograph 4: Looking east from waterside towards Garden Highway and adjacent levee.

Photograph 5: Looking east from top of adjacent levee at the North Drainage Canal.

Photograph 6: Looking east from towards North Drainage Canal.

DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18719 BD

This Permit is issued to:

Reclamation District 1000
1633 Garden Highway
Sacramento, California 95833

To abandon a deep 60-inch diameter RCP drain under the levee; To install two new drain pipes, 30-inch and 42-inch diameter, up and over the levee(s); To construct a new outfall structure, all in conjunction with the reconstruction of RD-1000's Pump Station No. 2. The project is located on the left (east) bank of the Sacramento River near River Mile 75.1 (Section 12, T10N, R3E, MDB&M, Reclamation District 1000, Sacramento River, Sacramento County).

NOTE: Special Conditions have been incorporated herein which may place limitations on and/or require modification of your proposed project as described above.

(SEAL)

Dated: _____

_____
Executive Officer

GENERAL CONDITIONS:

ONE: This permit is issued under the provisions of Sections 8700 – 8723 of the Water Code.

TWO: Only work described in the subject application is authorized hereby.

THREE: This permit does not grant a right to use or construct works on land owned by the Sacramento and San Joaquin Drainage District or on any other land.

FOUR: The approved work shall be accomplished under the direction and supervision of the State Department of Water Resources, and the permittee shall conform to all requirements of the Department and The Central Valley Flood Protection Board.

FIVE: Unless the work herein contemplated shall have been commenced within one year after issuance of this permit, the Board reserves the right to change any conditions in this permit as may be consistent with current flood control standards and policies of The Central Valley Flood Protection Board.

SIX: This permit shall remain in effect until revoked. In the event any conditions in this permit are not complied with, it may be revoked on 15 days' notice.

SEVEN: It is understood and agreed to by the permittee that the start of any work under this permit shall constitute an acceptance of the conditions in this permit and an agreement to perform work in accordance therewith.

EIGHT: This permit does not establish any precedent with respect to any other application received by The Central Valley Flood Protection Board.

NINE: The permittee shall, when required by law, secure the written order or consent from all other public agencies having jurisdiction.

TEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the State of California, or any departments thereof, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, the permittee shall defend and shall hold each of them harmless from each claim.

ELEVEN: The permittee shall exercise reasonable care to operate and maintain any work authorized herein to preclude injury to or damage to any works necessary to any plan of flood control adopted by the Board or the Legislature, or interfere with the successful execution, functioning or operation of any plan of flood control adopted by the Board or the Legislature.

TWELVE: Should any of the work not conform to the conditions of this permit, the permittee, upon order of The Central Valley Flood Protection Board, shall in the manner prescribed by the Board be responsible for the cost and expense to remove, alter, relocate, or reconstruct all or any part of the work herein approved.

SPECIAL CONDITIONS FOR PERMIT NO. 18719 BD

THIRTEEN: The permittee should contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250, as compliance with Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act may be required.

FOURTEEN: If the construction project extends onto land owned in fee and/or easement by the Sacramento and San Joaquin Drainage District acting by and through the Central Valley Flood Protection Board (Board), the permittee should secure an easement, license, or temporary entry permit from the Board prior to commencement of work. Contact the DWR Real Estate Branch at (916) 653-5782.

FIFTEEN: All work approved by this permit shall be in accordance with the submitted drawings and specifications except as modified by special permit conditions herein. No further work, other than that approved by this permit, shall be done in the area without prior approval of the Central Valley Flood Protection Board.

SIXTEEN: The permittee is responsible for all liability associated with construction, operation, and maintenance of the permitted facilities and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages arising from the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

SEVENTEEN: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe

and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

EIGHTEEN: The Central Valley Flood Protection Board and the Department of Water Resources shall not be held liable for any damages to the permitted encroachment(s) resulting from flood fight, inspection, or emergency repair.

NINETEEN: No construction work of any kind shall be done during the flood season from November 1st to April 15th without prior approval of the Central Valley Flood Protection Board.

TWENTY: Upon receipt of a signed copy of the issued permit the permittee shall contact the Department of Water Resources by telephone, (916) 574-0609, and submit the enclosed postcard to schedule a preconstruction conference. Failure to do so at least 10 working days prior to start of work may result in delay of the project. The applicant is also required to contact the DWR Construction Supervisor by telephone at (916) 574-2646 to initiate inspection of the work.

TWENTY-ONE: Cleared trees and brush shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1st to April 15th.

TWENTY-TWO: Excavations below the design flood plane and within the levee section or within 10 feet of the projected waterward and landward levee slopes shall have side slopes no steeper than 1 horizontal to 1 vertical. Flatter slopes may be required to ensure stability of the excavation.

TWENTY-THREE: Concrete backfill for the abandoned pipe shall be at least a 3-sack cement mix with 6- to 8-inch slump and all aggregate smaller than the 3/8-inch sieve. Only the minimum pressure needed to fill the pipe with concrete shall be applied.

TWENTY-FOUR: Pipes and joints shall be designed to withstand all anticipated loading conditions.

TWENTY-FIVE: The pipe installed in the levee section(s) and within 10 feet of the levee toes shall be new steel and at least 7 gauge for the 30-inch diameter pipe and at least 3 gauge for the 42-inch diameter pipe. Steel pipe shall be corrosion-proofed externally with a coating of coal-tar enamel; asphalt-saturated felt wrap; cement mortar; or PVC or polyethylene tape wrapped to a thickness of 30 mils. Steel pipe shall be corrosion-proofed internally with a continuous lining of cement mortar or asphalt or equivalent.

TWENTY-SIX: The pipe(s) shall be installed through the levee section at a right angle to the centerline of the levee(s).

TWENTY-SEVEN: The invert of the pipe(s) through the setback levee section shall be above the 200-year flood plane elevation of 40.4-feet, NGV Datum.

TWENTY-EIGHT: The pipe shall be buried at least 12 inches below the levee slopes and 24 inches below the levee crown.

TWENTY-NINE: All pipe joints within the levee section shall be butt welded.

THIRTY: Backfill material for excavations within the levee section and within 10 feet of the levee toes shall be placed in 4- to 6-inch layers, moisture conditioned above optimum moisture content, and compacted to a minimum of 90 percent relative compaction as measured by ASTM Method D1557-91.

THIRTY-ONE: Compaction tests by a certified soils laboratory will be required to verify compaction of backfill within the levee section or within 10 feet of the levee toe.

THIRTY-TWO: A positive-closure device that is readily accessible during periods of high water shall be installed on the waterward side of the levee.

THIRTY-THREE: A suitable siphon breaker and protective housing shall be installed on the apex of the pipe and shall be located off the levee patrol road.

THIRTY-FOUR: The pipeline shall be tested and confirmed free of leaks by X-ray, pressure tests, or other approved methods during construction or anytime after construction upon request by the Central Valley Flood Protection Board.

THIRTY-FIVE: In the event that existing rock revetment on the river bank is disturbed or displaced during construction, it shall be restored to its preconstruction condition.

THIRTY-SIX: All revetment shall be quarry stone and shall meet the following grading:

Quarry Stone Stone Size	Percent Passing
15 inches;	100
8 inches;	80-95
6 inches;	45-80
4 inches;	15-45
2 inches;	0-15

THIRTY-SEVEN: The revetment shall not contain any reinforcing steel, floatable, or objectionable material. Asphalt or other petroleum-based products may not be used as fill or erosion protection on the levee section or within the floodway.

THIRTY-EIGHT: All debris generated by this project shall be disposed of outside the project works.

THIRTY-NINE: The project area shall be restored to at least the condition that existed prior to commencement of work.

FORTY: All temporary fencing, gates and signs shall be removed upon completion of the project.

FORTY-ONE: The permittee shall replant or reseed the levee slopes to restore sod, grass, or other non-woody ground covers if damaged during project work.

FORTY-TWO: During project construction, any and all anticipated or unanticipated conditions encountered which may impact levee integrity or flood control shall be brought to the attention of the Department of Water Resources' Construction Supervisor immediately and prior to continuation. Any encountered abandoned encroachments shall be completely removed or properly abandoned under the direction of the Department of Water Resources' Construction Supervisor.

FORTY-THREE: The permittee shall maintain the permitted encroachment(s) and the project works within the utilized area in the manner required and as requested by the authorized representative of the Department of Water Resources or any other agency responsible for maintenance.

FORTY-FOUR: Debris that may accumulate on the permitted encroachment(s) and related facilities shall be cleared off and disposed of outside the floodway after each period of high water.

FORTY-FIVE: The permitted encroachment(s) shall not interfere with operation and maintenance of the flood control project. If the permitted encroachment(s) are determined by any agency responsible for operation or maintenance of the flood control project to interfere, the permittee shall be required, at permittee's cost and expense, to modify or remove the permitted encroachment(s) under direction of the Central Valley Flood Protection Board or Department of Water Resources. If the permittee does not comply, the Central Valley Flood Protection Board may modify or remove the encroachment(s) at the permittee's expense.

FORTY-SIX: In the event that bank erosion occurs at or adjacent to the abandoned RCP, the permittee shall repair the eroded area and propose measures, to be approved by the Central Valley Flood Protection Board, to prevent further erosion.

FORTY-SEVEN: If any of the approved encroachments create an adverse hydraulic impact, the permittee shall provide appropriate mitigation measures, to be approved by the Central Valley Flood Protection Board, prior to implementation of mitigation measures.

FORTY-EIGHT: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted encroachment(s) if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with any present or future flood control plan or project or if damaged by any cause. If the permittee does not comply, the Central Valley Flood Protection Board may remove the encroachment(s) at the permittee's expense.

FORTY-NINE: If the project, or any portion thereof, is to be abandoned in the future, the permittee or successor shall abandon the project under direction of the Central Valley Flood Protection Board and Department of Water Resources, at the permittee's or successor's cost and expense.

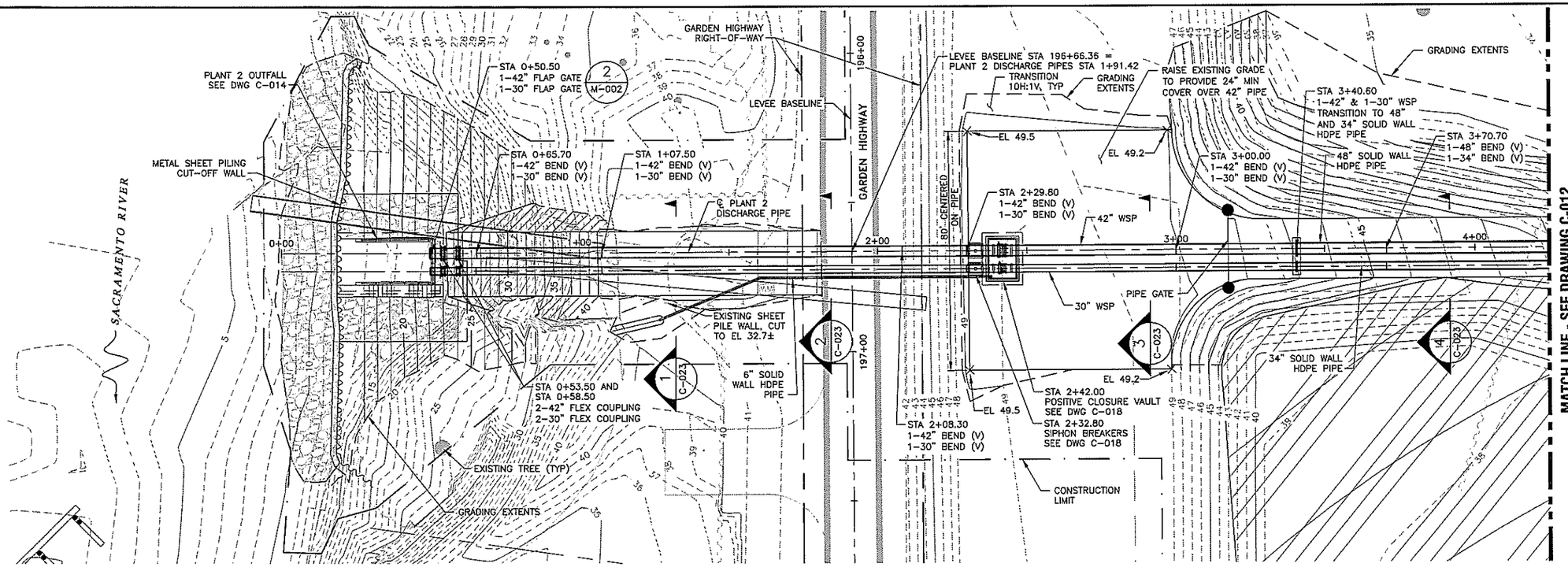
FIFTY: The permittee shall comply with all conditions set forth in the letter from the Department of the Army dated June xx, 2012, which is attached to this permit as Exhibit A and is incorporated by reference.

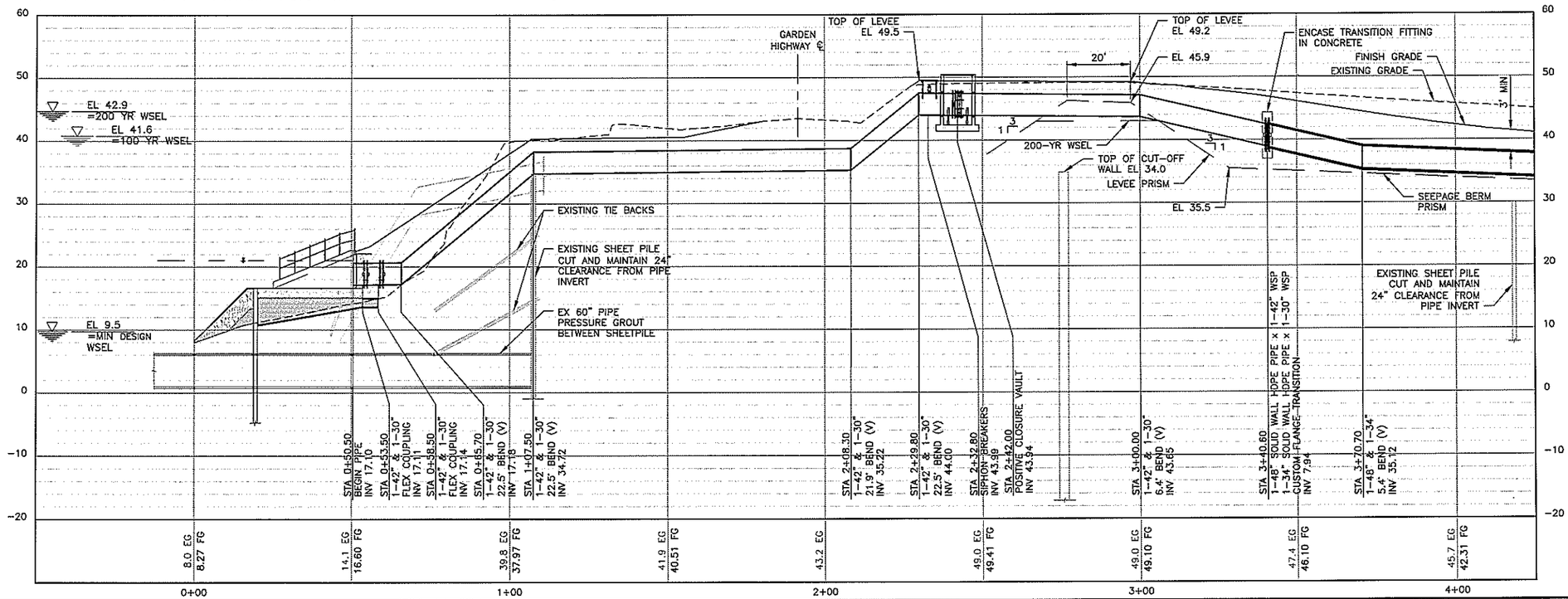
FIFTY-ONE: Upon completion of the project, the permittee shall submit as-constructed plans to: Department of Water Resources, Flood Project Inspection Section, 3310 El Camino Avenue, Suite 256, Sacramento, California 95821.

This page intentionally left blank.

Attachment C

NOTE:
1. TOP OF LEVEE ELEVATIONS ARE TO TOP OF EMBANKMENT WITHOUT PATROL ROAD AB.





GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
Horiz. 1 inch = 20 ft.
Vert. 1 inch = 10 ft.

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION
D	4/12/12	STAFF	CLS	SRS	100% SUBMITTAL
C	3/23/12	STAFF	CLS	SRS	90% SUBMITTAL
B	2/22/12	STAFF	CLS	SRS	60% SUBMITTAL
A	1/20/12	STAFF	CLS	SRS	30% SUBMITTAL

DESIGNED BY: KLV
DRAWN BY: STAFF
CHECKED BY: CLS
IN CHARGE: SRS
DATE: 04/12/12

REGISTERED PROFESSIONAL ENGINEER STEPHEN R. SILVA 50581 Exp. JUN. 2013 CIVIL STATE OF CALIFORNIA

Mead & Hunt
www.meadhunt.com
Mead & Hunt, Inc.
180 Promenade Circle, Suite 240
Sacramento, CA 95834
916.971.3961
fax: 916.971.0578

SUBMITTED
APPROVED

RECLAMATION DISTRICT NO. 1000

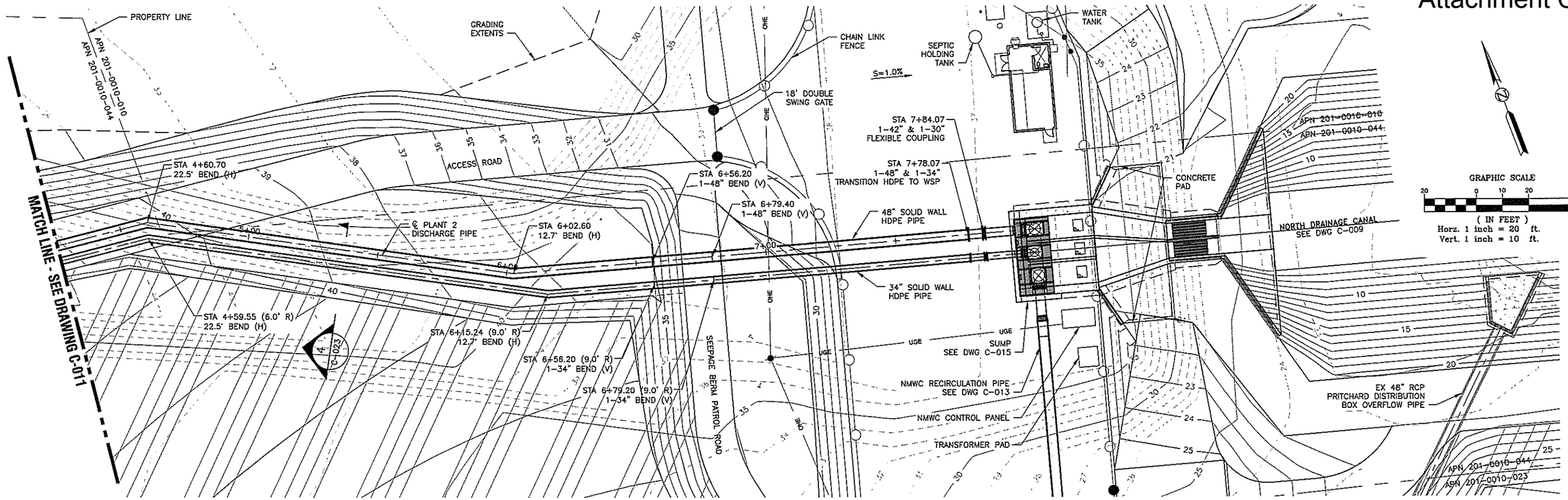
VOL 2: SREL PHASE 2E IMPROVEMENT PLANS
RD1000 PUMPING PLANT NO. 2 RECONSTRUCTION
DISCHARGE PIPES STA 0+00 TO 4+25

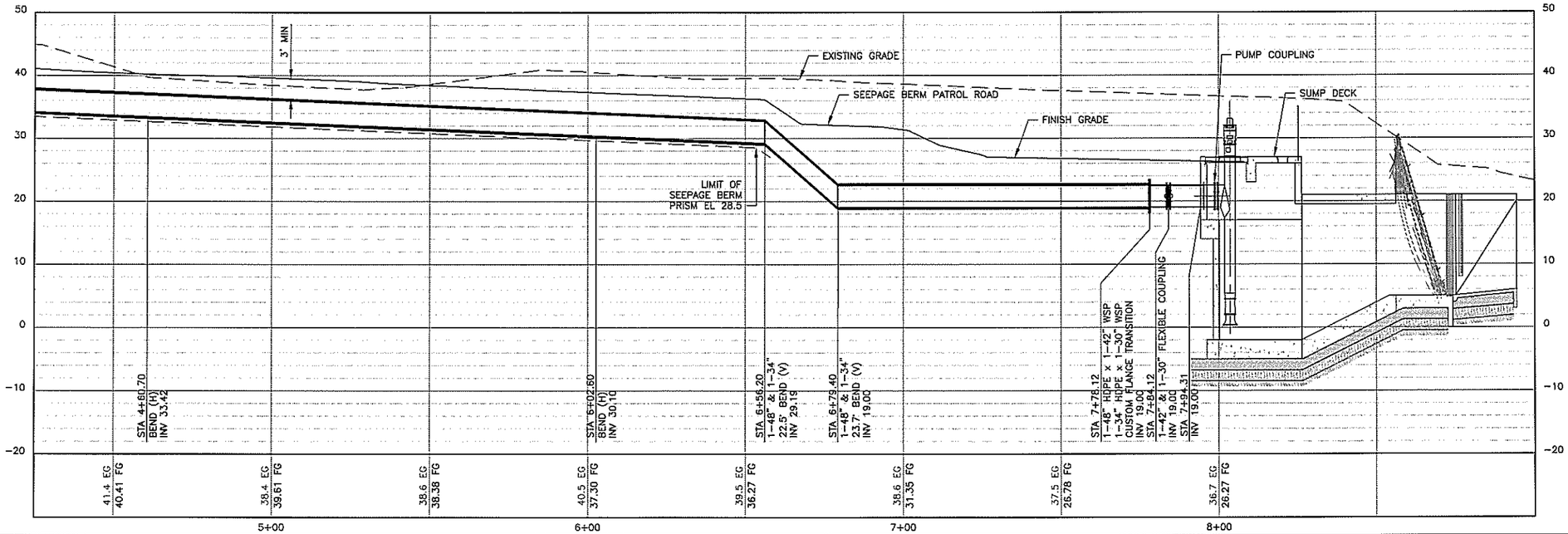
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

DRAWING NO. C-011
SHEET 18

S:\19415-00\0600\TECH\CAD\DWG\Plant 2 Redesign\P2R-C-011.dwg - 4/10/2012 10:51 AM - 1245rss

Attachment C





REV.	DATE	BY	CHK.	APPR.	DESCRIPTION
C	3/23/12	STAFF	CLS	SRS	90% SUBMITTAL
B	2/22/12	STAFF	CLS	SRS	60% SUBMITTAL
A	1/20/12	STAFF	CLS	SRS	30% SUBMITTAL

DESIGNED BY: KLV
DRAWN BY: STAFF
CHECKED BY: CLS
IN CHARGE: SRS
DATE: 03/23/12

REGISTERED PROFESSIONAL ENGINEER STEPHEN R. SULLIVAN 50581 EXP. JUN. 2013 CIVIL STATE OF CALIFORNIA

Mead & Hunt
www.meadhunt.com
Mead & Hunt, Inc.
180 Promenade Circle, Suite 240
Sacramento, CA 95834
916.971.3961
fax: 916.971.0578

SUBMITTED

APPROVED

RECLAMATION DISTRICT NO. 1000

VOL 2: SREL PHASE 2E IMPROVEMENT PLANS
RD1000 PUMPING PLANT NO. 2 RECONSTRUCTION
DISCHARGE PIPES STA 4+25 TO END

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS
0 1"

DRAWING NO. C-012
SHEET 19

S:\19415-00\VB0011\TECH\CADD\DWG\Plant 2 Redesign\P2R-C-012.dwg - 4/6/2012 4:04 PM - 12457ss

MBK ENGINEERS

Water Resources • Flood Control • Water Rights

M E M O R A N D U M

TO: Natomas Mutual Water Company, c/o Dee Swearingen
Reclamation District No. 1000, c/o Paul Devereux

DATE: March 27, 2012

FROM: George Preston, P.E.

SUBJECT: Hydraulic Impact Analysis of Proposed Pritchard Pumping Plant Replacement and RD 1000 Pump Plant 2 Outfall Replacement on the Sacramento River

Purpose

The purpose of the analysis documented in this Technical Memorandum was to determine the potential hydraulic impacts on the Sacramento River Flood Control Project (SRFCP) from the replacement of the Natomas Mutual Water Company Pritchard Pumping Plant and the RD 1000 Pump Plant 2 Outfall (RD 1000 Outfall). The Pritchard Pumping Plant is located on the east levee (left bank) of Sacramento River, 4.6 miles upstream of Interstate 5 and 3.6 miles downstream of the Natomas Cross Canal. The RD 1000 Outfall is located 150 feet upstream of the Pritchard Pumping Plant on the same levee. These structures are shown in Figure 1. Preliminary design drawings of the proposed replacement pumping plant and outfall structure are provided in Figure 2 and Figure 3.

Hydraulic Model

The MBK version of the Sacramento and San Joaquin River Basins Comprehensive Study (Comp Study) Sacramento River UNET model, which was originally developed by the United States Army Corps of Engineers (USACE) [USACE 2002], was used for this analysis. This model was used to determine the design water surface elevations for the Natomas Levee Improvement Project [MBK 2008a] and the West Sacramento Levee Improvement Project [MBK 2008b]. The extents of the hydraulic model are shown in Figure 4.

The Pritchard Pumping Plant is located at Comp Study River Mile (RM) 75.56, and the RD 1000 Outfall is located at RM 75.59. The nearest hydraulic model cross-section for both structures is at RM 75.50, as shown in Figure 5.

Procedure

The purpose of the analysis was to determine the potential impacts from the proposed project using the SRFCP design flood and the Urban Levee Design Criteria (ULDC) [DWR 2011] flood (200-year with no upstream levee failures). The SRFCP design flood discharge in the project reach is 107,000 cubic feet per second (cfs) [USACE 1957]. Rather than perform an iterative

analysis to adjust upstream model inputs to achieve a flow of 107,000 cfs at the project site for the SRFCP design flood analysis, an existing model simulation with a peak flow at the project site of 112,000 cfs was used.

The hydraulic model cross-section at RM 75.50 was duplicated and used in the pre- and post-project conditions at RM 75.56 (Pritchard Pumping Plant) and RM 75.59 (RD 1000 Outfall). For the pre-project condition the model conservatively assumed the existing Pritchard Pumping Plant did not exist. In addition, the model cross-section at the RD 1000 Outfall was modified to represent the existing grade. For the post-project condition, the model cross-sections at RM 75.56 and RM 75.59 were modified to represent the proposed projects as shown in Figure 6 and Figure 7.

Results

The computed pre-project and post-project maximum water surface elevations at and near the project site are shown in Tables 1 and 2 for the SRFCP design flood and ULDC flood, respectively, while computed maximum velocities are shown in Tables 3 and 4. It should be noted that the velocity values presented herein are average cross-sectional velocities. The velocities near the river banks will be lower than those shown in the table. The results of the analysis show that the proposed projects would have no adverse impact on the SRFCP design flood or the ULDC flood water surface elevations and small increases in the stream velocities.

Table 1. Project Impact on SRFCP Design Flood Event Maximum Water Surface Elevation

Location (Comp Study River Mile)	Computed Maximum Water Surface Elevation (ft. NAVD 88)		Project Impact (ft.)
	Pre-project	Post-project	
76.00	41.88	41.88	0
75.75	41.79	41.79	0
75.59 (RD 1000 Outfall)	41.75	41.74	-0.01
75.56 (Pritchard Pumping Plant)	41.67	41.55	-0.12
75.50	41.65	41.65	0
75.25	41.51	41.51	0
75.00	41.44	41.43	-0.01
74.75	41.31	41.31	0

Table 2. Project Impact on ULDC Flood Event Maximum Water Surface Elevation			
Location (Comp Study River Mile)	Computed Maximum Water Surface Elevation (ft. NAVD 88)		Project Impact (ft.)
	Pre-project	Post-project	
76.00	43.02	43.02	0
75.75	42.91	42.92	0.01
75.59 (RD 1000 Outfall)	42.87	42.86	-0.01
75.56 (Pritchard Pumping Plant)	42.78	42.63	-0.15
75.50	42.76	42.75	-0.01
75.25	42.60	42.59	-0.01
75.00	42.54	42.54	0

Table 3. Project Impact on SRFCP Design Flood Event Maximum Velocity[1]			
Location (Comp Study River Mile)	Computed Maximum Velocity (fps)		Project Impact (fps)
	Pre-project	Post-project	
76.00	4.93	4.93	0
75.75	4.68	4.68	0
75.59 (RD 1000 Outfall)	4.35	4.48	0.13
75.56 (Pritchard Pumping Plant)	4.86	5.60	0.74
75.50	4.83	4.83	0
75.25	4.94	4.94	0
75.00	4.63	4.63	0
[1] Average cross-sectional velocity.			

Table 4. Project Impact on ULDC Flood Event Maximum Velocity[1]

Location (Comp Study River Mile)	Computed Maximum Velocity (fps)		Project Impact (fps)
	Pre-project	Post-project	
76.00	5.37	5.37	0
75.75	5.08	5.08	0
75.59 (RD 1000 Outfall)	4.73	4.87	0.14
75.56 (Pritchard Pumping Plant)	5.29	6.11	0.82
75.50	5.25	5.25	0
75.25	5.37	5.36	-0.01
75.00	4.91	4.91	0

[1] Average cross-sectional velocity.

References

California Department of Water Resources. Urban Levee Design Criteria, draft. November 15, 2011. [DWR 2011]

MBK Engineers. Supplemental Report for the Design Water Surface Profile for the Natomas Levee Improvement Program. June 17, 2008. [MBK 2008a]

MBK Engineers. Supplemental Report for the City of West Sacramento Levee Alternatives Hydraulic Analysis. December 4, 2008. [MBK 2008b]

United States Army Corps of Engineers. Sacramento River Flood Control Project Levee and Channel Profiles, Sheet No. 1. March 15, 1957, revised August 1969. [USACE 1957]

United States Army Corps of Engineers. Sacramento and San Joaquin River Basins Comprehensive Study. December 2002. [USACE 2002]

Prepared by:

Reviewed by:

GP/ps
3522/MBK MEMO PRITCHARD HIA 2012-03-27.DOCX

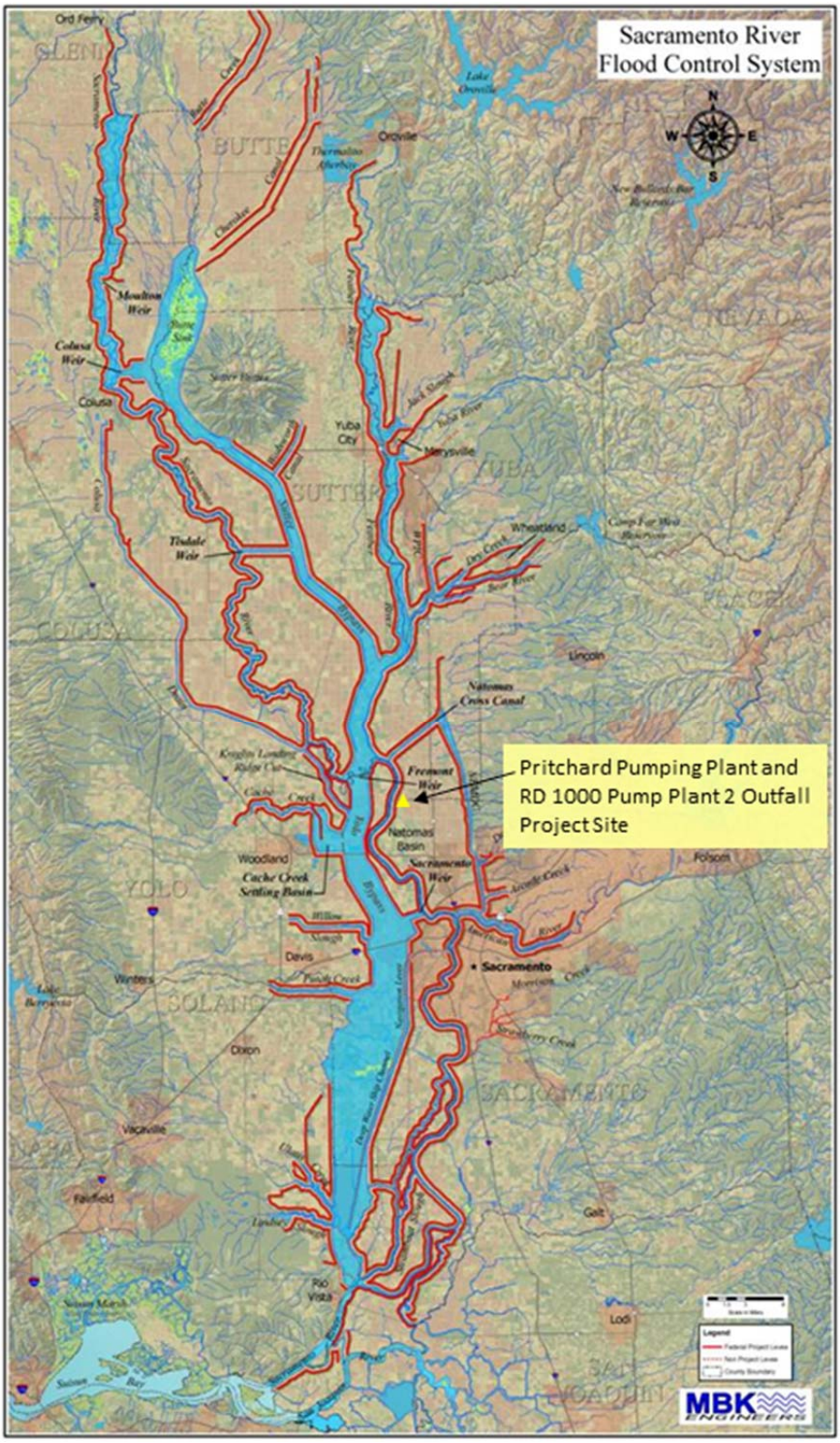


Figure 1. Location Map

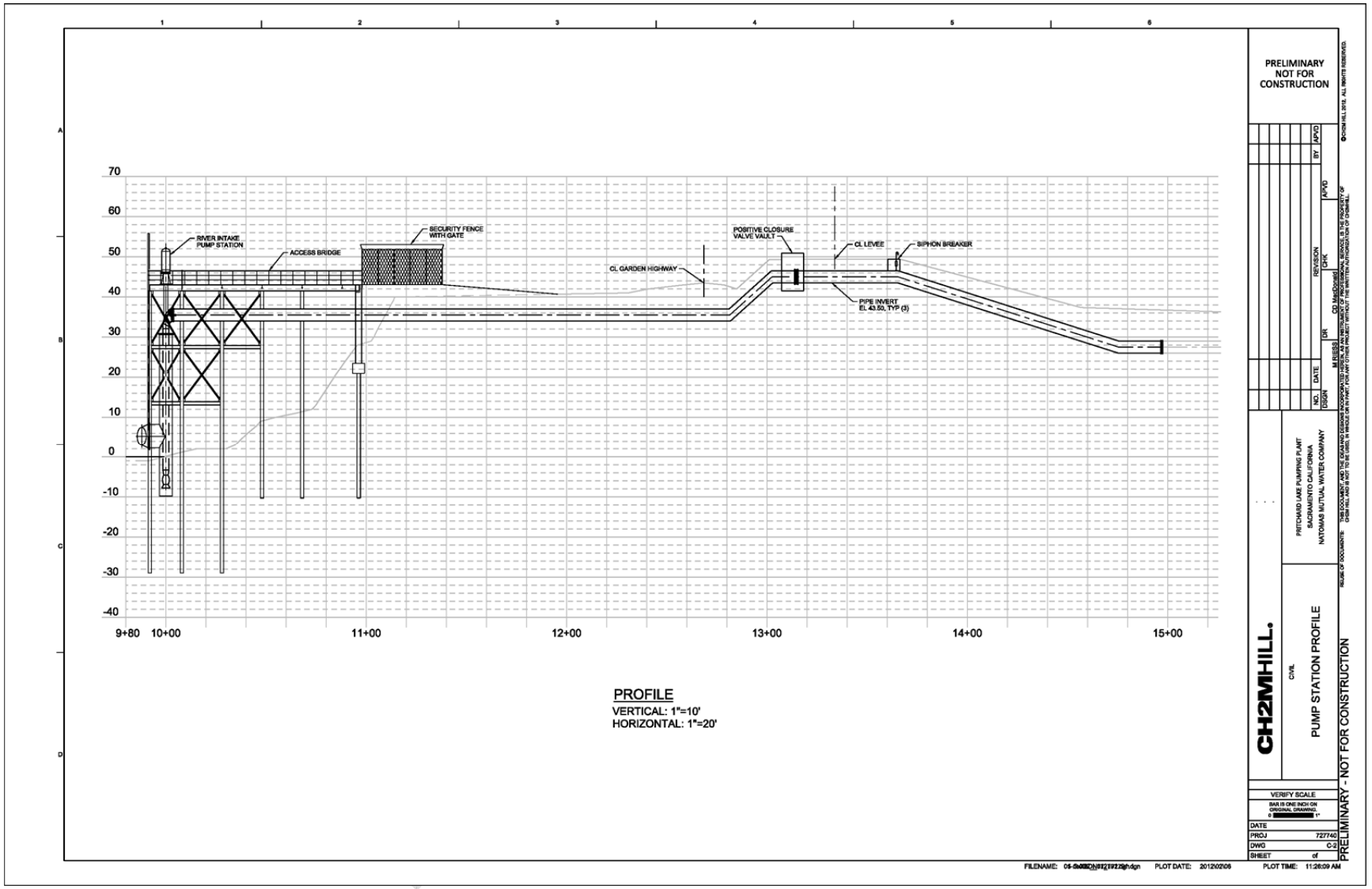


Figure 2. Pritchard Pumping Plant Design Profile (CH2MHILL)

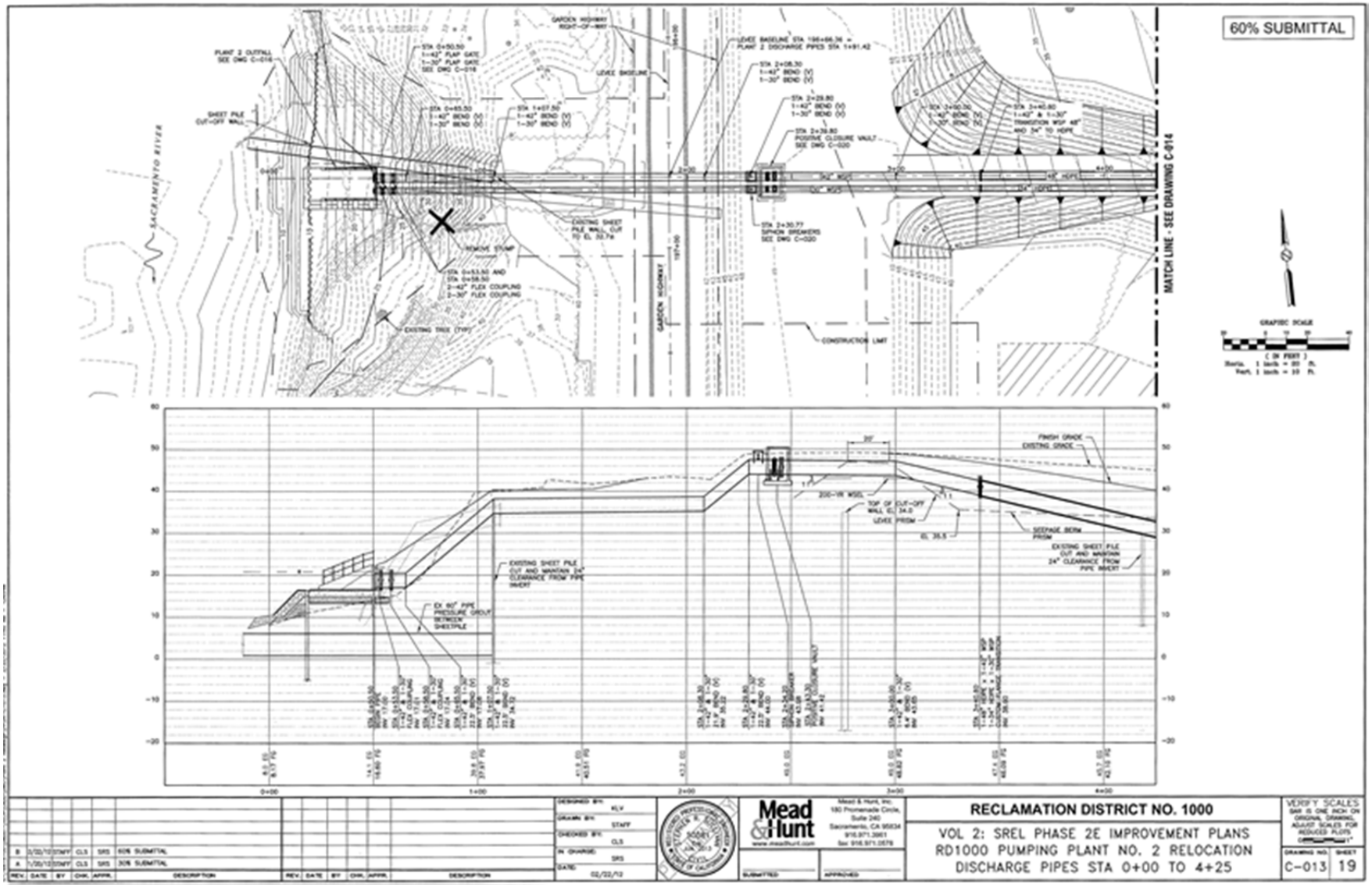


Figure 3. RD 1000 Pump Plant 2 Design (Mead & Hunt)

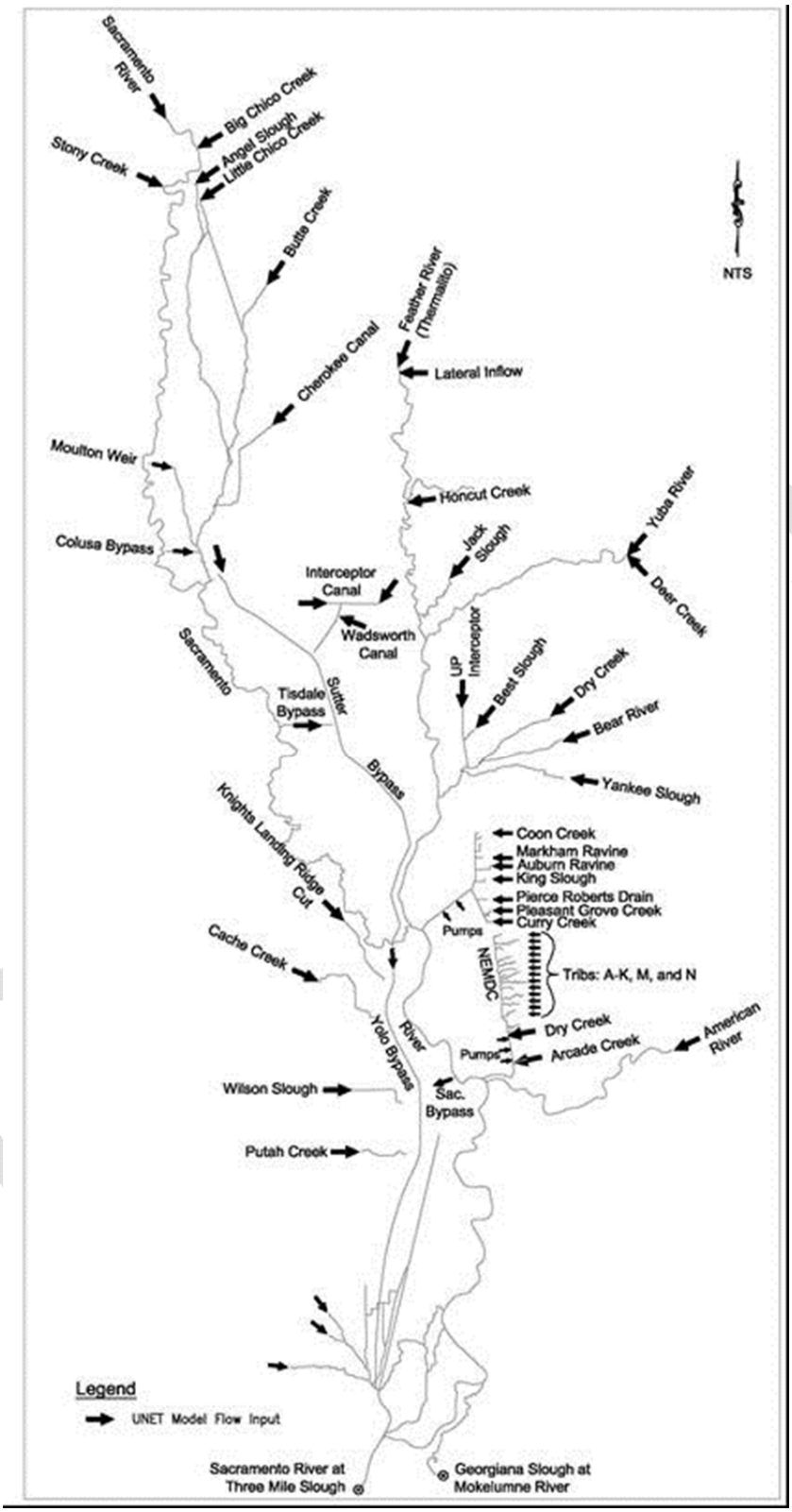


Figure 4. Hydraulic Model Extents

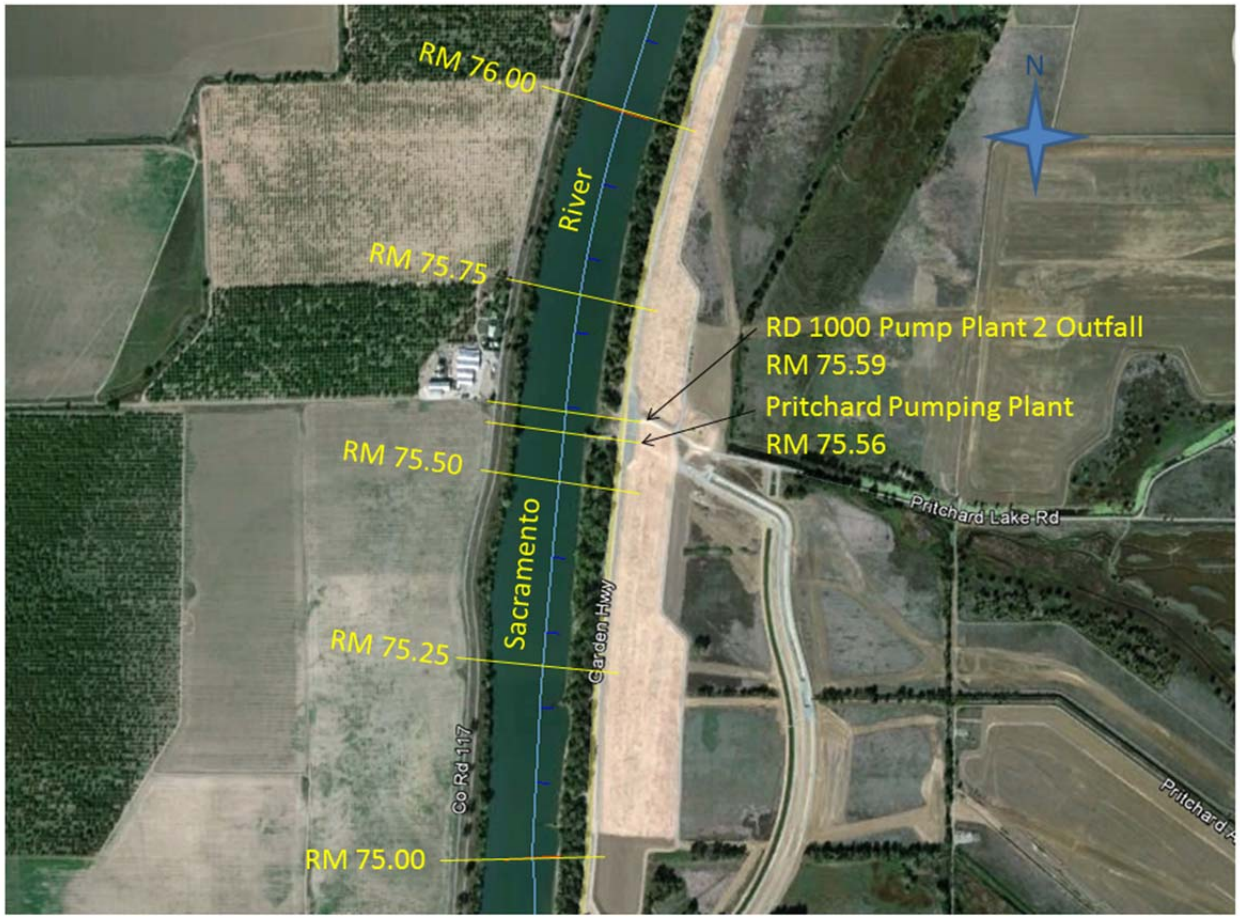


Figure 5. Hydraulic Model Cross-section Locations in Vicinity of Project

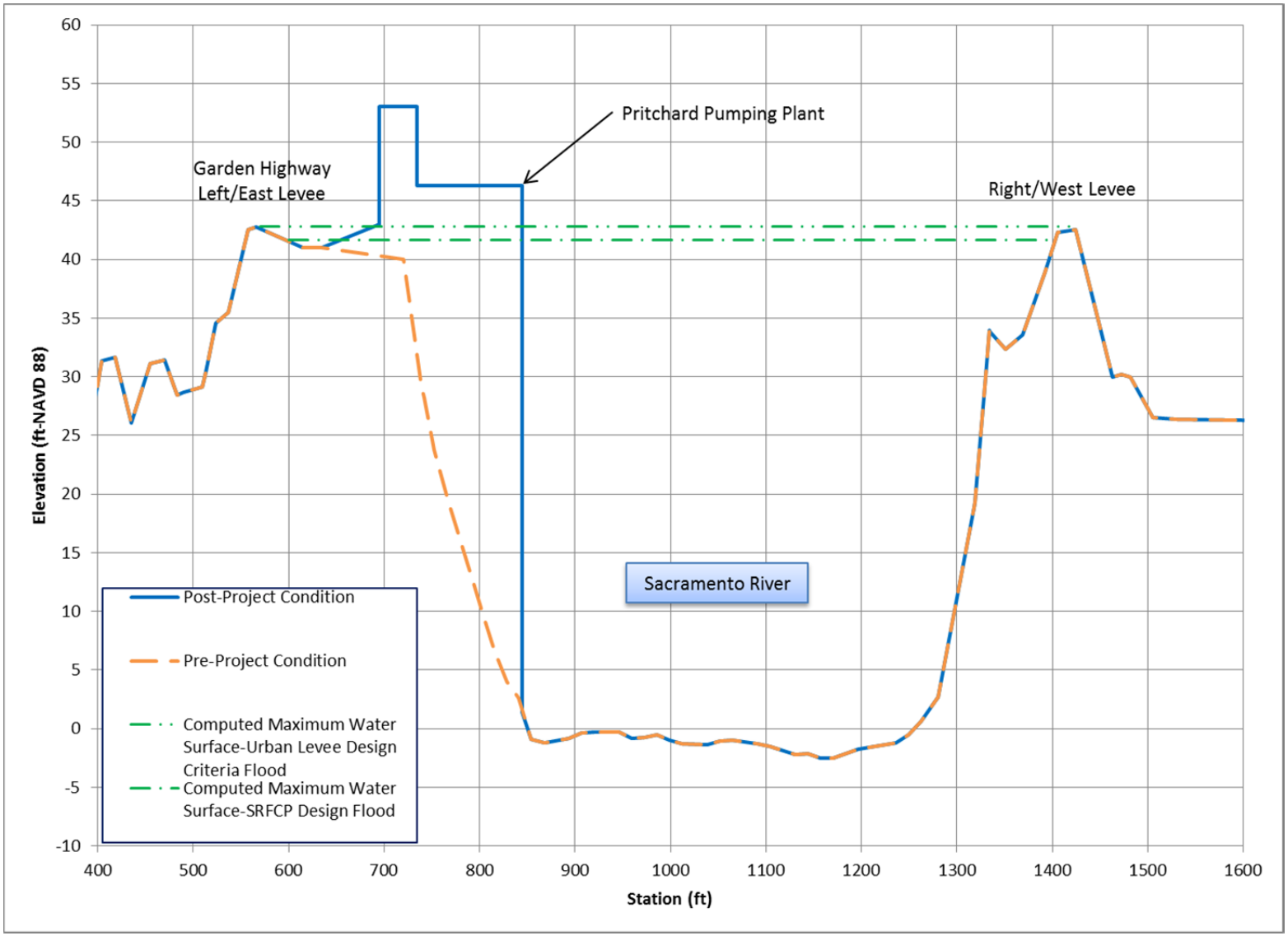


Figure 6. Pre-Project and Post-Project Cross-Section at Pritchard Pumping Plant (looking downstream)

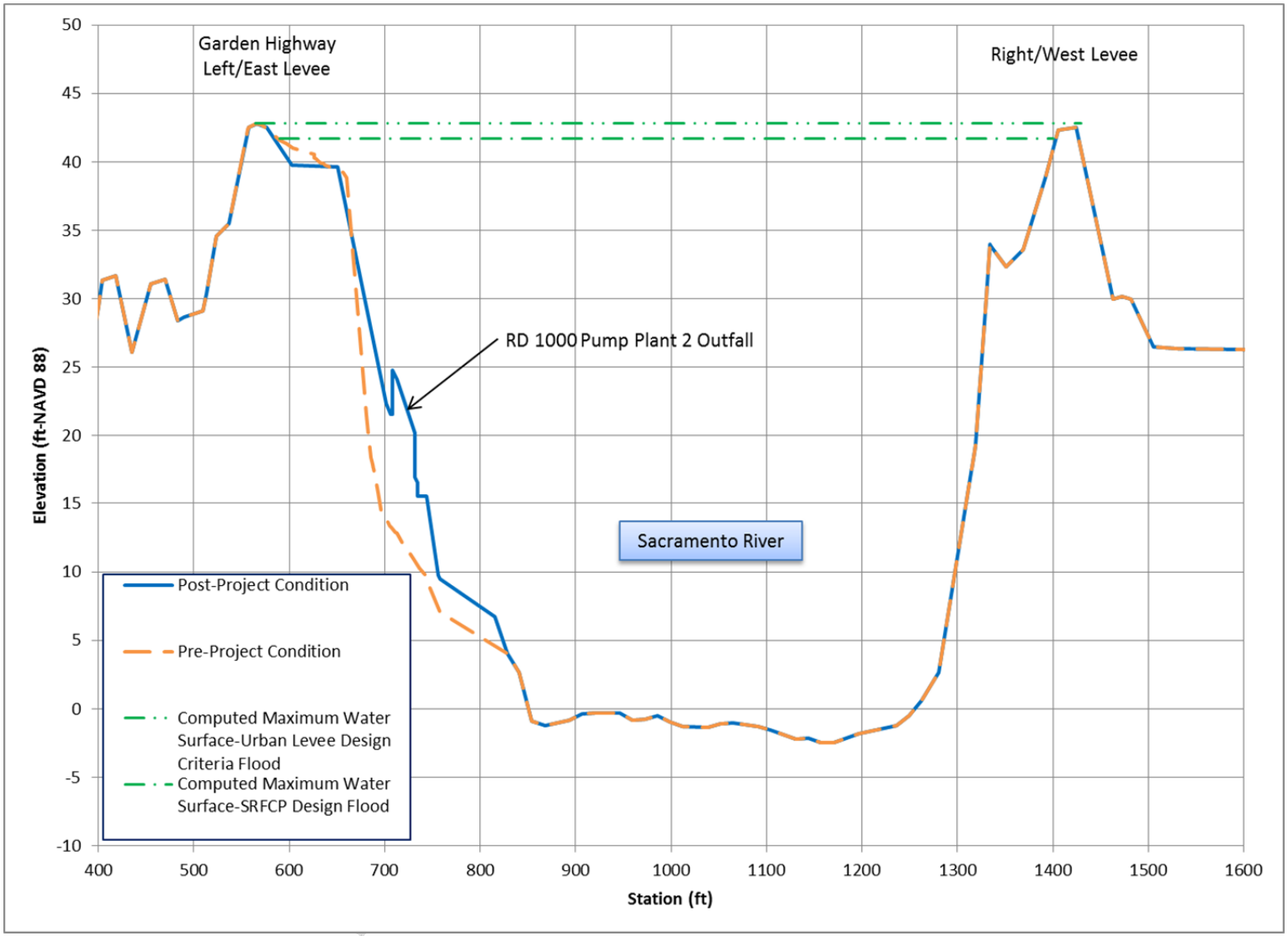


Figure 7. Pre-Project and Post-Project Cross-Section at RD 1000 Pump Plant 2 Outfall (looking downstream)

Attachment E

RD1000

RECLAMATION
DISTRICT 1000

June 5, 2012

Mr. Gary W. Lemon, P.E.
Floodway Protection Section
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, CA 95821

Subject: Reclamation District 1000 Pumping Plant No. 2 Outfall Plantings

Dear Mr. Lemon:

As requested, included herein are the planned establishment and maintenance procedures for the Pumping Plant No. 2 Outfall Plantings. The outfall plantings project consists of three major phases: Construction, Maintenance, and Long-term Maintenance. The components and responsibility for each phase are outlined below.

Construction

The Construction Period refers to the work completed in association with site preparation, irrigation system, planting, and seeding before Construction Acceptance. The Contractor shall be responsible for the complete installation of plants and seeding areas. Any unacceptable plants, or planting operations shall be corrected as directed by Reclamation District 1000 (RD1000) and at the Contractor's expense before the Construction Acceptance. Prior to Construction Acceptance, the Contractor shall provide a written guarantee against defects resulting from poor installation or related materials to RD1000 for a one-year Maintenance Period after Construction Acceptance by RD1000.

Maintenance Period

The Maintenance Period is a one year period following Construction Acceptance by RD1000 for maintaining the seeded and planted areas. The Contractor shall be responsible for ensuring that the plants are properly watered before, during, and after the installation to maintain the plants in a healthy and vigorous condition during the entire Maintenance Period. Specific maintenance actions required will be based on seasonality and the time of the calendar year. These actions include: watering plants to maintain specified moisture conditions (April-October); appropriate site weeding methods (hand pulling, string trimming, and herbicide application), beaver fence maintenance; reseeding herbaceous cover; replanting trees and shrubs; trash removal; and any other actions necessary to successfully establish the habitats and their components. The Contractor shall submit plant maintenance reports to RD1000 on a semimonthly basis. The reports will contain information about the Contractor's ongoing maintenance actions and shall include a weekly log of all maintenance actions (i.e., weeding, watering events) performed onsite per location.

1633 GARDEN HIGHWAY
SACRAMENTO, CA 95833
916-922-1449

Mr. Gary W. Lemon, P.E.
Floodway Protection Section, Central Valley Flood Protection Board
June 5, 2012

Post Maintenance Period Acceptance
RD1000's acceptance of project site from the planting contractor will occur at the conclusion of the Maintenance Period. The end of the Contractor's maintenance period will be based upon satisfactory achievement of the performance standards. The target survival rate for all established container plants and cuttings shall meet the following performance standards: 90% Native Herbaceous Cover (% relative cover) and 95% Survival of Container Plants and Cuttings by Area as shown on the construction plans.

If the performance standards indicated are not met at the end of the Maintenance Period, replacement plants shall be planted with the minimum number of plants required to achieve the survivorship standards. If the performance standards are not met at the time of Project Final Acceptance, the project will not be accepted until the identified remedial actions are implemented by the Contractor as directed by the RD1000. These could include additional weed control, or additional planting, using adaptive management to identify those plants best suited to the site. All remedial actions shall be conducted in coordination with, and upon the approval of, RD1000. The Contractor shall be responsible for the work as required by the construction documents, until RD1000 gives acceptance of the restored site in writing.

Long-term Maintenance
Following the Maintenance Period Acceptance, RD1000 will be responsible for the Long-term Maintenance of the Pumping Plant No. 2 outfall plantings. RD1000 has committed to maintain the planted habitat such that it matures into full canopy coverage with a woody scrub understory.

We trust that the information included herein is sufficient to facilitate your review. Should you have any questions or require additional information, please contact Marieke Armstrong of Mead & Hunt at marieke.armstrong@meadhunt.com or (916) 971-3961 or me at (916) 922-1449.

Sincerely,

Paul Devereux, P.E.
General Manager/District Engineer

cc: Andrea Mauro, Environmental Scientist, Central Valley Flood Protection Board
Vance Howard, AECOM
Marieke Armstrong, Mead & Hunt, Inc.

NOTES:

1. INSTALL WILLOW WATTLES IN THREE ROWS SET ON NEW CONTOURS, SECURED WITH LIVE POLE CUTTINGS AND WOOD STAKES 1 FOOT ON CENTER.
2. SEE PLANT SCHEDULE ON SHEET L-003 FOR ADDITIONAL INFORMATION.
3. SEED ALL DISTURBED AREAS WATERSIDE OF LEVEE WITH NATIVE GRASS SEED MIX.
4. SEE SHEET L-002 FOR SECTIONS.

INSTALLATION SEQUENCE:

1. CREATE TRENCH FOR WILLOW WATTLES THAT SHALL BE KEYED INTO NEW EXISTING BANK SOIL.
2. INSTALL WILLOW WATTLES.
3. INSTALL LIVE POLE CUTTINGS.
4. CREATE WATER BASINS FOR CONTAINER PLANTS
5. INSTALL TREEBANDS AND TREE POTS.
6. APPLY SEED MIX BY HYDROSEEDING.

PLANT KEY (SEE PLANT SCHEDULE, SHEET L-003 FOR MORE INFORMATION):

	BOTANICAL NAME	COMMON NAME
AC NE	ACER NEGUNDO	BOX ELDER
AL RH	ALNUS RHOMBIFOLIA	WHITE ALDER
CA BA	CAREX BARBARAE	SANTA BARBARA SEDGE
MU RI	MUHLENBERGIA RIGENS	DEER GRASS
SA LAE	SALIX LAEVIGATA	RED WILLOW
SA LAS	SALIX LASIANDRA	PACIFIC WILLOW
SA LAP	SALIX LASIOLEPIS	ARROYO WILLOW

LEGEND

- 2 / L-003 — PLANTING DETAILS SEE SHEET L-003
- SEEDING
- WILLOW WATTLES, SEE DETAIL 1 SHEET L-003
- CONTAINER TREES
- CONTAINER SHRUBS
- CONTAINER PLANTING LIMIT OF WORK

ISSUED FOR BID

GRAPHIC SCALE
10 0 5 10 20
(IN FEET)
1 inch = 10 ft.

SACRAMENTO RIVER

EXISTING CONTOURS
FOR DETAIL, SEE DWG 2/L-003: AL RH 3, AC NE 2
INSTALL 40 TOTAL LIVE POLE CUTTINGS FOR DETAIL, SEE DWG 1/L-003: SA LAE 12, SA LAS 14, SA LAP 14
FOR DETAIL, SEE DWG 2/L-003: CA BA 30, MU RI 8
FOR DETAIL, SEE DWG 2/L-003: CA BA 10
SEED SLOPE
BEAVER FENCING
A / L-002
NO WILLOWS OR OTHER TREES INSTALLED WITHIN 20' TOTAL, FROM OUTFALL STRUCTURE (TYP) — 3/L-003
CONCRETE OUTFALL STRUCTURE
25 LF OF TYPE 3 ROCK SLOPE PROTECTION ARMOR CENTERED ON OUTFALL
B / L-002
STEPS
APPROXIMATE EXTENT OF EXISTING PILING/DEBRIS
NO WILLOWS OR OTHER TREES INSTALLED WITHIN 20' TOTAL, FROM OUTFALL STRUCTURE (TYP) — 3/L-003
SEED SLOPE TO EDGE OF RIP RAP TYPICAL
SEED SLOPE
BEAVER FENCING
FOR DETAIL, SEE DWG 2/L-003: AL RH 3, AC NE 2
TYPE 2 ROCK SLOPE PROTECTION, 3' THICK
CONSTRUCTION LIMIT
FOR DETAIL, SEE DWG 2/L-003: CA BA 9
FOR DETAIL, SEE DWG 2/L-003: CA BA 9, MU RI 5
INSTALL 36 TOTAL LIVE POLE CUTTINGS FOR DETAIL, SEE DWG 1/L-003: SA LAE 12, SA LAS 12, SA LAP 12
APN 201-0010-044
APN 201-0010-023
CONSTRUCTION LIMIT
ALL DISTURBED AREAS ON THE LANDSIDE OF THE LEVEE SHALL BE SEEDED WITH SEED MIX TYPE 2, EXCEPT THE AREAS WITH SOME OTHER SURFACE TREATMENT (ROCK SLOPE PROTECTION AND AGGREGATE BASE).
42" WSP
30" WSP
6" SOLID WALL HDPE
SEEDING ALL DISTURBED AREAS ON THE WATERSIDE OF THE LEVEE SHALL BE SEEDED, EXCEPT THE AREAS WITH SOME OTHER SURFACE TREATMENT (ROCK SLOPE PROTECTION AND AGGREGATE BASE).
℄ LEVEE BASELINE
GARDEN HIGHWAY R/W
℄ GARDEN HIGHWAY
GARDEN HIGHWAY
196+00
197+00
2+00
0+00

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION
E	4/25/12	STAFF	CLS	SRS	ISSUED FOR BID
D	4/12/12	STAFF	CLS	SRS	100% SUBMITTAL
C	3/23/12	STAFF	CLS	SRS	90% SUBMITTAL
B	2/22/12	STAFF	CLS	SRS	60% SUBMITTAL
A	1/20/12	STAFF	CLS	SRS	30% SUBMITTAL

DESIGNED BY: SC/KC
DRAWN BY: KC/JD
CHECKED BY: SC/DB
IN CHARGE: SRS
DATE: 04/25/12

REGISTERED PROFESSIONAL ENGINEER — STEPHEN R. SULLIVAN — 50581 — Exp. JUN. 2013 — CIVIL — STATE OF CALIFORNIA

Mead & Hunt
www.meadhunt.com
Mead & Hunt, Inc.
180 Promenade Circle, Suite 240
Sacramento, CA 95834
916.971.3961
fax: 916.971.0578

TIM BUSCH — SUBMITTED
STEPHEN SULLIVAN — APPROVED

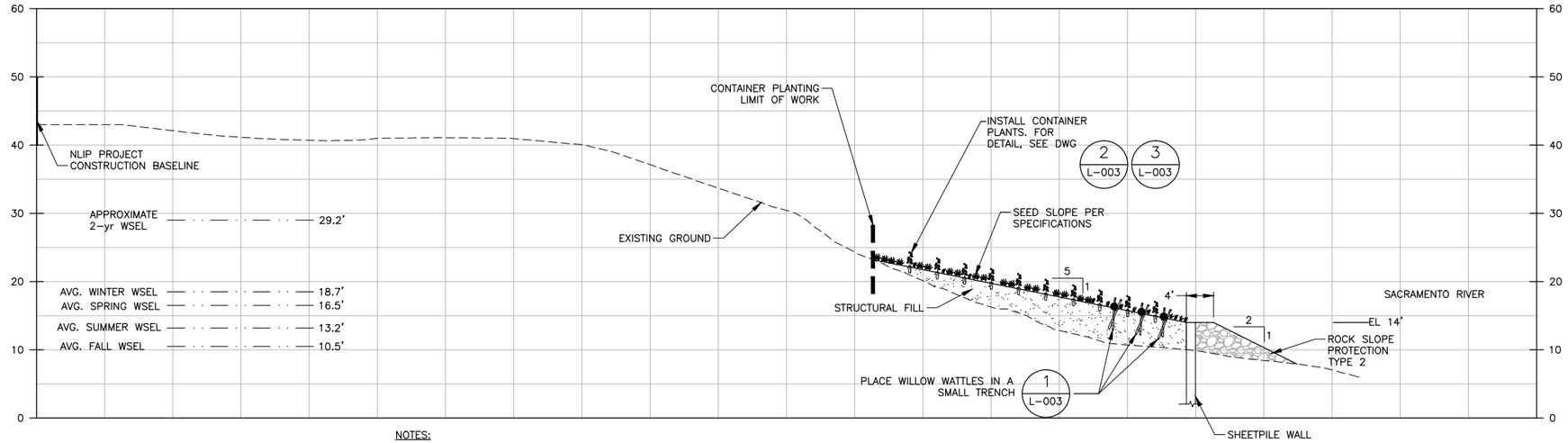
RECLAMATION DISTRICT NO. 1000

VOL 2: SREL PHASE 2E IMPROVEMENT PLANS
RD1000 PUMPING PLANT NO. 2 RECONSTRUCTION
PLANT NO. 2 OUTFALL PLANTING PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

DRAWING NO. L-001 | SHEET 63

S:\19415-00\08001\TECH\CAD\DWG\Plant 2 Redesign\PP2R-L-001.dwg - 4/24/2012 11:18 AM - 135eld



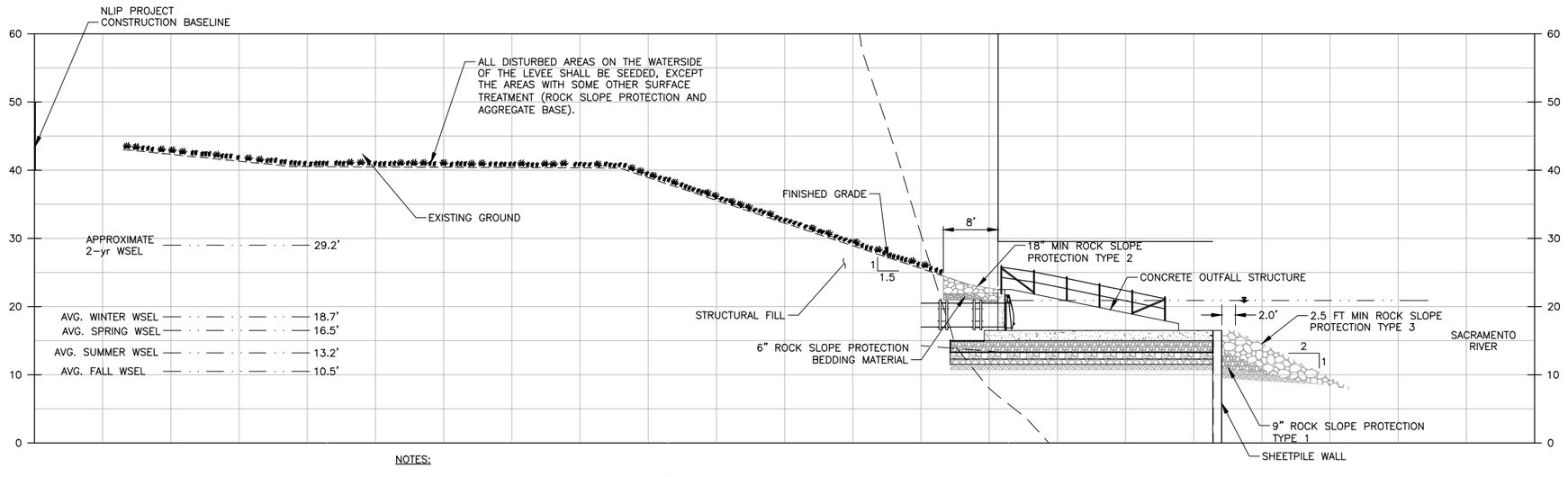
NOTES:

1. SEE PLANT LEGEND SHEET C-031 FOR ADDITIONAL INFORMATION.
2. NO WILLOWS OR OTHER TREES SHALL BE INSTALLED WITHIN 20' OF THE OUTFALL STRUCTURE.

TYPICAL SECTION
196+05 TO 196+42 AND 196+92 TO 197+30

A

SCALE: 1"=10'



NOTES:

1. SEE PLANT LEGEND SHEET C-031 FOR ADDITIONAL INFORMATION.
2. NO WILLOWS OR OTHER TREES SHALL BE INSTALLED WITHIN 20' OF THE OUTFALL STRUCTURE.

SECTION AT OUTFALL STRUCTURE

B

SCALE: 1"=10'

NOTES:

1. ALL CROSS SECTION OFFSETS ARE MEASURED PERPENDICULAR TO THE CONSTRUCTION STATION LINE.
2. ELEVATIONS ARE GIVEN FOR FINISHED ANGULAR ROCK SURFACES.
3. SEASONAL WATER SURFACE ELEVATIONS ARE MEDIAN VALUES BASED ON I-STREET GAGE RECORD. ACTUAL WATER SURFACE ELEVATIONS MAY VARY.

ISSUED FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION
E	4/25/12	STAFF	CLS	SRS	ISSUED FOR BID
D	4/12/12	STAFF	CLS	SRS	100% SUBMITTAL
C	3/23/12	STAFF	CLS	SRS	90% SUBMITTAL
B	2/22/12	STAFF	CLS	SRS	60% SUBMITTAL
A	1/20/12	STAFF	CLS	SRS	30% SUBMITTAL

DESIGNED BY: SC/KC
DRAWN BY: KC/JD
CHECKED BY: SC/DB
IN CHARGE: SRS
DATE: 04/25/12

REGISTERED PROFESSIONAL ENGINEER
STEPHEN R. SULLIVAN
50581
Exp. 6/30
JUN. 2013
CIVIL
STATE OF CALIFORNIA

Mead & Hunt
www.meadhunt.com
Mead & Hunt, Inc.
180 Promenade Circle,
Suite 240
Sacramento, CA 95834
916.971.3961
fax: 916.971.0578

TIM BUSCH
SUBMITTED

STEPHEN SULLIVAN
APPROVED

RECLAMATION DISTRICT NO. 1000

VOL 2: SREL PHASE 2E IMPROVEMENT PLANS
RD1000 PUMPING PLANT NO. 2 RECONSTRUCTION
OUTFALL PLANTING DETAILS

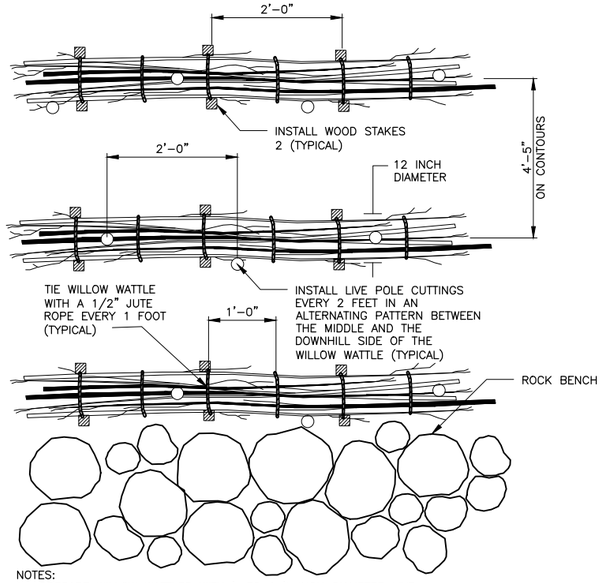
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

DRAWING NO. L-002
SHEET 64

S:\19415-00\08001\TECH\CAD\DWG\Plant 2 Redesign\PP2R-L-002.dwg - 4/25/2012 10:05 AM - 1158jh

PLANT SCHEDULE

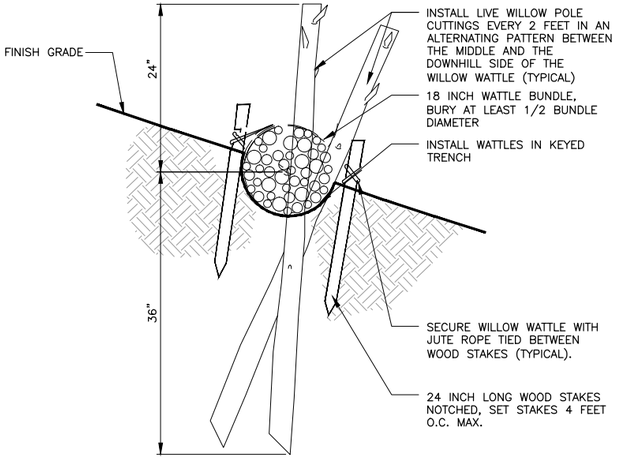
SYMBOL	TREATMENT	DETAILS	KEY	CONTAINER PLANTS			QUANTITIES	PLANT SPACING
				BOTANICAL NAME	COMMON NAME	PLANT SIZE		
⊕	CONTAINER TREES	2/– 3/–	AC NE	ACER NEGUNDO	BOX ELDER	TREEPOT4	4	5' O.C.
			AL RH	ALNUS RHOMBIFOLIA	WHITE ALDER	TREEPOT4	6	5' O.C.
◎	CONTAINER SHRUBS	2/– 3/–	CA BA	CAREX BARBARAE	SANTA BARBARA SEDGE	TREE BAND	(30 x 3) = 90	5' O.C.(3 PER CLUMP)
			MU RI	MUHLENBERGIA RIGENS	DEER GRASS	TREE BAND	23	5' O.C.
			CA BA	CAREX BARBARAE	SANTA BARBARA SEDGE	TREE BAND	(18 x 3) = 54	5' O.C.(3 PER CLUMP)
	LIVE POLE CUTTINGS WITHIN WILLOW WATTLES	1/–	SA LAE	SALIX LAEVIGATA	RED WILLOW	CUTTING	24	2' O.C.
			SA LAS	SALIX LASIANDRA	PACIFIC WILLOW	CUTTING	26	2' O.C.
			SA LAP	SALIX LASIOLEPIS	ARROYO WILLOW	CUTTING	26	2' O.C.



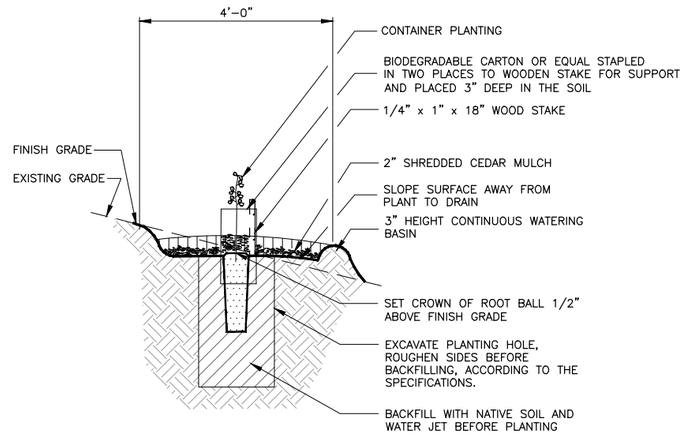
NOTES:
1. PREPARE WILLOW WATTLES WITH ½ TO 1 ½ INCH DIAMETER LIVE CUTTINGS AT 5 FEET LENGTHS.
2. ARRANGE CUTTINGS IN ALTERNATING DIRECTIONS.
3. WILLOW WATTLES SHALL BE 6 TO 30 FEET LONG.

WATTLE LAYOUT ON SLOPE AND LIVE POLE CUTTING IN WATTLE INSTALLATION

1/– NOT TO SCALE



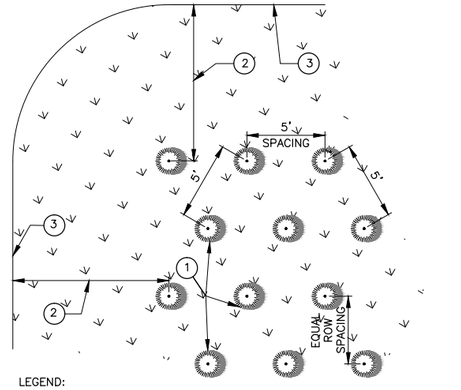
NOTES:
1. WILLOW POLE CUTTINGS SHALL BE 5 FEET IN LENGTH, INSTALLED WITH BUD SIDE UP.



NOTES:
1. LAYOUT CONTAINER PLANTS ON SLOPES AS SHOWN. SEE SHEET C–029 FOR PLANTING LAYOUT, AND THIS SHEET FOR PLANT SPECIES AND ADDITIONAL INFORMATION.
2. SLOPE MAY VARY FOR INSTALLATION OF CONTAINERS..

PLANT DETAIL ON SLOPE

2/– NOT TO SCALE



LEGEND:
1. LOCATE PLANT MATERIAL SPACED EQUAL DISTANCE FROM EACH OTHER, DISTANCE TO BE AS SHOWN ON PLANTING LEGEND.
2. OFFSET DISTANCE OF WILLOWS AND OTHER TREES AND SHRUBS 20' FROM ALL STRUCTURES.
3. EDGE OF STRUCTURE.

NOTES:
1. INSTALL CONTAINER PLANTS ON SLOPES AS SHOWN. SEE DETAIL 2/– FOR PLANTING LAYOUT, AND THIS SHEET FOR PLANT SPECIES AND ADDITIONAL INFORMATION.
2. REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

EROSION CONTROL PLANT LAYOUT

3/– NOT TO SCALE

ISSUED FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION
E	4/25/12	STAFF	CLS	SRS	ISSUED FOR BID
D	4/12/12	STAFF	CLS	SRS	100% SUBMITTAL
C	3/23/12	STAFF	CLS	SRS	90% SUBMITTAL
B	2/22/12	STAFF	CLS	SRS	60% SUBMITTAL
A	1/20/12	STAFF	CLS	SRS	30% SUBMITTAL

DESIGNED BY: SC/KC
DRAWN BY: KC/JD
CHECKED BY: SC/DB
IN CHARGE: SRS
DATE: 04/25/12

REGISTERED PROFESSIONAL ENGINEER STEPHEN R. SULLIVAN 50581 Exp. JUN. 2013 CIVIL STATE OF CALIFORNIA

Mead & Hunt
www.meadhunt.com
Mead & Hunt, Inc.
180 Promenade Circle, Suite 240
Sacramento, CA 95834
916.971.3961
fax: 916.971.0578

TIM BUSCH — SUBMITTED
STEPHEN SULLIVAN — APPROVED

RECLAMATION DISTRICT NO. 1000

VOL 2: SREL PHASE 2E IMPROVEMENT PLANS
RD1000 PUMPING PLANT NO. 2 RECONSTRUCTION
OUTFALL PLANTING DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
0 1"

DRAWING NO. L–003 | SHEET 65

S:\19415–00\08001\TECH\CADD\DWG\Plant 2 Redesign\PP2R–L–003.dwg – 4/24/2012 11:20 AM – 1358eid

This page intentionally left blank.

STATE OF CALIFORNIA
THE RESOURCES AGENCY
CENTRAL VALLEY FLOOD PROTECTION BOARD

RESOLUTION NO. 2012-29

FINDINGS AND DECISION AUTHORIZING ISSUANCE OF
ENCROACHMENT PERMIT NO. 18719
RECLAMATION DISTRICT 1000
PUMP STATION NO. 2 RECONSTRUCTION PROJECT
SACRAMENTO COUNTY

WHEREAS, The Reclamation District 1000 (RD 1000) submitted Application No. 18719 to the Central Valley Flood Protection Board on March 19, 2012 to abandon a 60-inch diameter drain under the levee; install two new drain pipes, 30-inch and 42-inch diameter, up and over the levee(s); construct a new outfall structure, all in conjunction with the reconstruction of RD-1000's Pump Station No. 2; grout-in-place the existing 60-inch diameter reinforced concrete drain pipe that remains from the previous Reclamation District No. 1000 Pump Station No. 2 that was removed during the 2006 high water event; and

WHEREAS, The Sacramento Area Flood Control Agency, (SAFCA) as lead agency under the California Environmental Quality Act, Public Resources Code sections 21000 *et seq*. ("CEQA") prepared a Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) (SCH No. 2008072060, February 2009) and Final Environmental Impact Statement/ Environmental Impact (FEIS/EIR) (SCH No. 2008072060, May 2009) and Report Mitigation Monitoring and Reporting Plan (MMRP) on the Natomas Levee Improvement Program - Phase 3 Landside Improvements Project, including the impacts from the reconstruction of the RD 1000 Pump Station No. 2. (incorporated herein by reference and available at the Central Valley Flood Protection Board offices or SAFCA offices); and

WHEREAS, The SAFCA prepared the Natomas Levee Improvement Program - Phase 3 Landside Improvements Project FEIS/EIR, and certified the FEIS/EIR on May 11, 2009; and

WHEREAS, The SAFCA, approved the Natomas Levee Improvement Program - Phase 3 Landside Improvements Project (SAFCA Resolution 09-059); FEIS/EIR, MMRP, approved findings and a statement of overriding considerations pursuant to CEQA and the CEQA Guidelines (incorporated herein by reference); and

WHEREAS, The U.S. Army Corps of Engineers (USACE) 208.10 comment letter has not been received for this application. Staff anticipates receipt of a letter indicating that the USACE District Engineer has no objection to the project, subject to conditions. Upon receipt of the letter, staff will review to ensure conformity with the permit language and incorporate it into the Permit; and

WHEREAS, Board staff completed a technical review of Permit Application No. 18719; and

WHEREAS, The Board has conducted a public hearing on Permit Application No. 18719 and has reviewed the Reports of its staff, the documents and correspondence in its file, and the environmental documents prepared by the SAFCA;

NOW, THEREFORE, BE IT RESOLVED THAT,

Findings of Fact.

1. The Board hereby adopts as findings the facts set forth in the Staff Report.

2. The Board has reviewed all Attachments, Exhibits, Figures, and References listed in the Staff Report

CEQA Findings.

3. The Board, as a responsible agency, has independently reviewed the analyses in the DEIS/DEIR (SCH No. 2008072060, February 2009) and the FEIS/EIR (August 2009) which includes the MMRP, and SAFCA Lead Agency findings, and has reached its own conclusions.

4. The Board, after consideration of the DEIS/DEIR (SCH No. 2008072060, February 2009) and the FEIS/EIR (August 2009) on the Natomas Levee Improvement Program - Phase 3 Landside Improvements Project, submitted by RD 1000, and the SAFCA Lead Agency findings, adopts the project description, analysis and findings which are relevant to the project.

5. **Findings regarding Significant Impacts**. Pursuant to CEQA Guidelines sections 15096(h) and 15091, the Board determines that the SAFCA findings, attached to the Staff Report, and incorporated herein by reference, summarize the FEIS/EIR determinations regarding impacts of the Natomas Levee Improvement Program Phase 3 - Landside Improvement Project including the Pump Station No. 2 Reconstruction Project, before and after mitigation. Having reviewed the FEIS/EIR, the SAFCA findings, the Board makes its findings as follows:

a. **Findings Regarding Significant and Unavoidable Impacts.** The Board finds that the Natomas Levee Improvement Program Phase 3 - Landside Improvement Project, may have the following significant, unavoidable impacts, as more fully described in the SAFCA findings. Mitigation has been adopted for each of these impacts, although it does not reduce the impact to less than significant. The impacts and mitigation measures are set forth in more detail in the SAFCA findings.

   A. Farmland Conversion -The proposed project would covert farmland from agricultural production - Contiguous parcels of agricultural land of sufficient size to support their efficient use for continued agricultural production shall be retained to the extent practicable and feasible;

B. Potential to Physically Divide or Disrupt an Established Community - Residents and businesses would experience temporary disruption due to road closures, detours, construction, and boat launch facility temporary closure. Therefore, this impact would remain significant and unavoidable;

C. Loss of Woodland Habitats - The proposed project would result in the loss of woodland habitats - SAFCA shall coordinate with USFWS, DFG, and SCAS (if on Airport property) to ensure that all woodland habitat conservation components of the NLIP are created and managed;

D. Impacts on Swainson's Hawk and Other Special-Status Birds - The creation and preservation of nesting and foraging habitat would reduce long-term impacts to a less-than-significant level. However, in the short-term, this impact would remain significant and unavoidable because replacement plantings would likely require a minimum of 10 to 15 years before providing important habitat components such as structure and shade;

E. Potential Damage to or Destruction of Previously Undiscovered Cultural Resources from Ground-Disturbance or Other Construction - Ground-disturbing work associated with the levee improvements could affect several prehistoric sites by disturbing interred human skeletal remains and associated grave goods. Because of the complex and stratified geomorphology of the area as well as the magnitude of the construction, implementation of all mitigation may not fully reduce impacts to a less-than-significant level. For example, buried components may not be susceptible to adequate documentation prior to intrusive work. Therefore, this impact would remain significant and unavoidable;

F. Potential Discovery of Human Remains during Construction - The construction methods and procedures involved in the levee improvements preclude complete advance investigation for human remains, so previously unknown buried human remains may be unearthed, damaged, or destroyed during project construction and excavation of borrow. Ground-disturbing work could disinter and damage human remains. Therefore, this impact would remain significant and unavoidable;

G. Temporary Increase in Traffic on Local Roadways - Before the start of construction in each construction season, SAFCA and its primary contractors for engineering and construction shall develop a coordinated construction traffic safety and control plan to minimize the simultaneous use of roadways by different construction contractors for material hauling and equipment delivery to the extent feasible and to avoid and minimize potential traffic hazards on local roadways during construction;

H. Temporary Emissions - The project would result in temporary construction related emissions of reactive organic gases, nitrogen oxides, and particulate matter that could expose nearby sensitive receptors to substantial pollutant concentrations and/or substantially contribute a violation of an air quality standard;

I. Generation of Temporary, Short-Term Construction Noise - Project levee and canal improvements could result in temporary, short-term noise levels that exceed the applicable daytime and nighttime standards for non-transportation sources, resulting in increased annoyance and/or sleep disruption to occupants of residential buildings and other sensitive receptors;

J. Exposure of Sensitive Receptors to or Generation of Excessive Ground borne Vibration - At one residence located near the Pumping Plant No. 2 site, pile driving activities could temporarily cause vibration levels that exceed the Federal Transit Administration's (FTA's) human disturbance-based standard. Mitigation may not reduce the impact to the affected residential structure to levels below applicable standards. Therefore, this impact would remain significant and unavoidable;

K. Short-term Exposure of Residents to Increased Traffic Noise Levels from Hauling Activity - Project construction would generate high volumes of haul truck trips on area roads, temporarily causing noise levels to exceed exterior noise standards at residential land uses and potentially resulting in temporary sleep disturbance at nearby residences. The mitigated noise levels could still exceed local exterior noise standards for residential land uses. Therefore, this impact would remain potentially significant and unavoidable;

L. New Sources of Light and Glare that Adversely Affect Views - Temporary, short-term use of nighttime lighting for construction could impact adjacent residences, particularly if construction 24 hours a day, seven days a week is required.

Finding: The Board finds that changes or alterations have been required in, or incorporated into, the project which substantially lessen such impacts, as set forth more fully in the SAFCA findings, but that each of the above impacts remains significant after mitigation. Such mitigation measures are within the responsibility of another agency, or SAFCA, and should implement the described mitigation measures. Specific economic, legal, social, technological or other considerations, rendered infeasible mitigation or alternatives that would have reduced these impacts to less than significant.

b. Findings regarding Significant Impacts that can be reduced to Less Than Significant.

The significant impacts and the mitigation measures to reduce them to less than significant are adopted in the SAFCA Resolution 09-059, dated May 21, 2009 (which includes a Statement of Facts, Findings, Impacts and Mitigation Measures, Statement of Overriding Considerations and Mitigation Monitoring and Reporting Program). Based on its independent review of the FEIR and SAFCA Resolution 09-059, the Board finds that for each of the significant impacts described, changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effects as identified in the FEIR. Moreover, such changes or alterations are within the responsibility and jurisdiction of another public agency, or SAFCA, and such changes have been adopted by that agency. It is hereby determined that

the impacts addressed by these mitigation measures will be mitigated to a less-than-significant level or avoided by incorporation of these mitigation measures into the project.

6. As a responsible agency, the Central Valley Flood Protection Board has responsibility for mitigating or avoiding only the direct or indirect environmental effects of those parts of the Project which it decides to carry out, finance, or approve. The Board confirms that it has reviewed the MMRP, and confirmed that SAFCA has adopted and committed to implementation of the measures identified therein. The Board agrees with the analysis in the MMRP and confirms that there are no feasible mitigation measures within its powers that would substantially lessen or avoid any significant effect the project would have on the environment. None of the mitigation measures in the MMRP require implementation by the Board directly, although continued implementation of the MMRP shall be made a condition of issuance of the Permit. However, the measures in the MMRP may be modified to accommodate changed circumstances or new information not triggering the need for subsequent or supplemental analysis under CEQA Guidelines sections 15062 or 15063.

7. **Statement of Overriding Considerations.** Pursuant to CEQA Guidelines sections 15096(h) and 15093, the Board has balanced the economic, social, technological and other benefits of the Project described in Permit Application No. 18719, against its significant and unavoidable impacts, listed in paragraph 5(a) above, and finds that the benefits of the Project outweigh these impacts and they may, therefore, be considered "acceptable".

   The Central Valley Flood Protection Board finds that there is an immediate need to protect the people and property at risk in the project area. The Natomas Basin floodplain is occupied by over 83,000 residents and $10 billion in damageable property. The area is presently vulnerable to flooding in a less than 100-year flood event along the Sacramento River or American River. The Natomas Basin is a deep floodplain and depending on the circumstances, flood depths in the Natomas Basin could reach life-threatening levels. The disruption in transportation that would result from a major flood would affect the Sacramento International Airport, interstate and state highways, and rail service.

   The health and safety benefits of the project, which would significantly reduce the risk of an uncontrolled flood in the Natomas Basin that would result in a catastrophic loss of property and threat to residents of the area, outweigh the remaining unavoidable environmental impacts.

8. **Custodian of Record.** The custodian of the CEQA record for the Board is its Executive Officer, Jay Punia, at the Central Valley Flood Protection Board Offices at 3310 El Camino Avenue, Room 151, Sacramento, California 95821.

Considerations pursuant to Water Code section 8610.5.

9. **Evidence Admitted into the Record**. The Board has considered all the evidence presented in this matter, including the original application for Permit No. 18719 and technical documentation provided by RD 1000 on the Pump Station No. 2 Reconstruction Project past and present Staff Reports and attachments, the original Environmental Impact Report on the

Natomas Levee Improvement Program – Landside Improvements Phase 3, Project (Draft and Final Versions), SAFCA Resolution 09-059 including findings, Statement of Overriding Considerations, and the MMRP.

10. **Best Available Science**. In making its findings, the Board has used the best available science relating to the issues presented by all parties and the design is in compliance with these standards.

11. **Effects on State Plan of Flood Control**. This project has no negative impacts on the State Plan of Flood Control. Both hydraulic and geotechnical impacts from the project construction are negligible.

12. **Effects of Reasonably Projected Future Events**. There are no other foreseeable projected future events that would impact this project.

Other Findings/Conclusions regarding Issuance of the Permit.

13. This resolution shall constitute the written decision of the Board in the matter of Permit No. 18719.

Approval of Encroachment Permit No. 18719.

15. Based on the foregoing, the Board hereby conditionally approves issuance of Permit No. 18719 in substantially the form provided in the Staff Report for Permit 18719, subject to receipt of USACE comment letter indicating that the District Engineer has no objection to the project.

16. The Board directs the Executive Officer to take the necessary actions to prepare and execute Permit No. 18719 and all related documents and to prepare and file a Notice of Determination under the California Environmental Quality Act for the Pump Station No. 2 Reconstruction Project.

PASSED AND ADOPTED by vote of the Board on _____, 2012

_____
Bill Edgar
President

_____
Jane Dolan
Secretary