

**Meeting of the Central Valley Flood Protection Board
December 2, 2011**

**Staff Report – Encroachment Permit
West Sacramento Area Flood Control Agency – The Rivers EIP
Mitigation Plantings and Appurtenances
West Sacramento, Yolo County, CA**

1.0 – ITEM

Consider approval of Permit No. 18313-2-1 (formerly numbered 18313-2a), see Attachment B.

2.0 – APPLICANT

West Sacramento Area Flood Control Agency (WSAFCA)

3.0 – LOCATION

The project is located in West Sacramento along the right (south) bank of the Sacramento River approximately 1.5 miles upstream from the American River outfall along the Riverbank Road, in Yolo County (see Attachment C). This reach of the levee is maintained by Maintenance Area (MA) 4.

4.0 – DESCRIPTION

The City of West Sacramento purposes to mitigate for the loss of riparian vegetation associated with the Rivers levee modification project and the River Walk project mitigation improvements (West Sacramento Bridge District Levee Access Road and River Walk Trail). The two sites will be mitigated at The Rivers EIP site recently permitted by the CVFPB by permit number 18313-2. All recreational improvements and their construction activities will occur above the ordinary high water mark.

The work will include a paved 12-ft. wide bicycle/ pedestrian trail; landside embankment ramps; paved 6-ft wide pedestrian trail; paved landing; 1-inch to 2-inch irrigation pipes; and 1,360 trees and plants.

5.0 – PROJECT ANALYSIS

The following project analyses have been made based on the review of the available technical information provided by the applicant and the applicants engineer MBK Engineers.

The newly constructed levee, cutoff wall, construction and utility relocations was designed and constructed in accordance with United States Army Corps of Engineers (USACE), Department of Water Resources (DWR) Interim Levee Design Criteria (ILDC), and Central Valley Flood Protection Board (Board) standards and was permitted under Board Permit 18313-2. The levee modification has a cutoff wall for under-seepage. The construction will be completed in this single construction season and includes all of the above improvements as well as the recreational features, tree mitigation and utility improvements provided in this proposed permit application.

5.1 – Background

The West Sacramento Basin is bounded by the Sacramento bypass on the north, the Sacramento River on the east, the Yolo Bypass and Sacramento Deep Water Ship Channel (DWSC) on the west and the South Cross Levee on the south. The West Sacramento Basin is divided into the north and south basins. The levee system that protects these basins is a part of the Sacramento River Flood Control Project (SRFCP) and includes over 50 miles of levees in Reclamation District (RD) 900, RD 537, Maintenance Area 4, and DWSC. Its primary purpose is to prevent Sacramento River and Yolo Bypass flood flows from entering the City. The Rivers site is part of the Sacramento River North West Levee and is referred to as “The Rivers” EIP site.

The West Sacramento flood protection system was originally constructed by the U.S. Army Corps of Engineers as a part of the Sacramento River Flood Control Project. The non-federal sponsor of the flood control system is the Central Valley Flood Protection Board, however, the project is maintained and operated by the California Department of Water Resources (DWR), RD 900 and RD 537.

The West Sacramento Area Flood Control Agency (WSAFCA) and the City of West Sacramento City Council defined a policy of achieving a minimum 200-year flood protection for the City by adopting Ordinance 07-11 at a City Council Meeting on May 2, 2007. The City of West Sacramento, through a team of consultants lead by HDR Engineering, has evaluated the levee system and found it to be inadequate for protecting the City from a 200-year flood event.

The City’s overall levee improvement program includes identification of candidate sites for the State Flood Control System Program, Early Implementation Projects (EIP). These are projects that are to be built in advance of publication of the State Plan of Flood Control scheduled for 2012. EIP sites are assumed to conform to the eventual requirements defined by the State Plan of Flood Control. The Rivers EIP site was identified for improvement as part of the EIP program.

Land use in the proposed project area is primarily residential with a school and parks nearby. There is also a large riparian strip of land adjacent to the Sacramento River. The impacts to private landowners will be compensated, and public lands will be used where possible for outfall location, and valuable riparian habitat will be avoided as well.

Maintenance Area (MA) 4 has endorsed this project and construction has been initiated on one other phase of the WSAFCA to the south of the proposed project. The River's Project (permit No. 18313-2BD) and the CHP Police Academy Levee (permit No. 18313-1BD) along the south bank of the Sacramento Bypass was the next phase of improvements scheduled for the WSAFCA. The third project approved and constructed was permit number 18336. This initial Early Implementation Project was to construct a 600 foot long seepage cutoff wall on the right (west) bank of the Sacramento River south of the "I" Street Bridge (also known as the River Walk).

5.2 – Hydraulic Analysis

The design hydraulic study for this project was prepared by MBK Engineering dated October 11, 2011 utilizing a UNET Model and a higher flow rate. Originally the site was modeled on March 8, 2011 for the levee construction anticipating that the Sacramento Weir would be open, reducing the flow.

The COE had issue with the flow rate used and the proposed worst case scenario. The issue is that the O&M manual for unit 124 (attached) states that this section of the system is designed to handle 107,000 cfs. The O&M manual does not capture the fact that in the portion of the system being analyzed has an authorized design flow of 18,000 cfs. The project is located in the portion of the system where the Sacramento Rivers flows toward the Sacramento Bypass during large flood events.

MBK's analysis shows that for the 200-year Design WSE that the proposed plantings have no hydraulic impacts. MBK makes the necessary assumptions that forces 107,000 cfs through this portion of the system to satisfy the comments from the COE. The fact is that MBK's professional opinion is that the assumptions that would have to be made are unlikely to ever occur. The analysis will essentially have to show that almost no flow is coming from the American River while the Sacramento River is experiencing a 100-year event.

The USACOE requested a Hydraulic Impact Analysis with a flow of 107,000 cfs for this project on or about October 14, 2011. The USACOE noted that the O&M Manual (Supplement to Standard Operation and Maintenance Manual, Sacramento River Flood Control Project, Unit No. 124, Sacramento District, Corps of Engineers. June 1953) for this reach states that the project design flood in this reach is 107,000 cfs. The O&M Manual states:

“the project design flood for the Sacramento River is 107,000 cubic feet per second and the project design flood for the American River is 180,000 cubic feet per second within

the limits of this levee unit. In the event of high water as reflected on the U.S. Weather Bureau gauge at the "I" Street Bridge, the Sacramento Weir is opened in order to control the flood stage in the river to 29.0 insofar as possible. With the Sacramento Weir in operation, flows in that portion of the Sacramento River from Sacramento Weir to the American River may vary from 107,000 cubic feet per second in a downstream direction to as much as 80,000 cubic feet per second in an upstream direction."

The scenario developed that resulted in a maximum flow of 107,000 cfs in the Project reach was as follows, and is referred to in shorthand as "100-yr/<2-yr":

- 100-year Sacramento River at latitude of Sacramento centering hydrology for all but American River,
- American River: 2-year Sacramento River at latitude of Sacramento centering hydrology reduced by 30%,
- No influence from the Sacramento Weir.

The 200-year event was produced utilizing 110,500 cfs and is referred to as "200-yr/2-yr".

The expanded hydraulic impact analysis presented by the consultant based on the proposed fill locations and mitigation plantings will have no hydraulic impacts. The minor fill and mitigation plantings are in an ineffective flow area.

SUMMARY: Maximum Water Surface Elevation Impact

Location River Mile	Design Condition			200-yr/2-yr		
	W/out	With	Impact (ft.)	W/out	With	Impact (ft.)
63.44 [1]	34.03	34.03	0	35.12	35.13	+0.01
62.25 [2]	34.06	34.06	0	35.61	35.61	0.00
62.15	34.06	34.06	0	35.57	35.56	-0.01
62.00	34.07	34.07	0	35.48	35.48	0.00
61.75	34.07	34.07	0	35.32	35.31	-0.01
61.65	34.08	34.08	0	35.29	35.27	-0.02
61.50 [3]	34.08	34.08	0	35.12	35.12	0.00
60.60 [4]	34.10	34.10	0	35.74	35.74	0.00

- [1] Sacramento River below Sacramento Weir
- [2] Upstream end of the Project
- [3] Downstream end of the Project
- [4] Sacramento River at the American River

<u>Velocity Range (Ft/Sec.)</u>	<u>With-out Project</u>	<u>With Project</u>
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For 100-yr/2-yr = 107,300 cfs	4.52 to 5.29	4.53 to 5.28
For 200-yr/2-yr = 110,500 cfs	4.63 to 5.36	4.64 to 5.43

5.3– Geotechnical Summary

This geotechnical review has been made based upon the documentations provided by WSAFCA for the improvement of the Rivers Site (from STA 71+00 to STA 101+50) along the Sacramento River, Yolo County, California. In particular, the review is based on the data presented in the geotechnical data and Design Document Report, and partially on the Technical Memorandum Analysis Summary and Recommendations.

The proposed levee re-configuration varies in re-compacted height from 10 to 15 feet. Top widths are 20 feet wide at the crest with 12 feet of 3 inch A.C. on 9 inches of AB. Landside slopes are designed to be 3:1 and waterside slopes vary from 3:1 to ~10:1. The soil cement bentonite (SCB) cut-off wall will be positioned along the centerline of the reconstructed levee and consist of a clay cap and 95 percent compacted soil benched and keyed into the existing levee.

Models for analysis of the Rivers Site levee were selected at station 87+50, 97+50 and 114+00. The model cross sections were developed at each location using available topographic data provided by HDR Engineering. The stratigraphy and soil property parameters for the models were selected using available subsurface data gathered from the exploration locations and presented in the Technical Memorandum provided by West Sacramento and dated September 9, 2009. The subsurface data includes borings and cone penetration tests (CPTs) performed by URS in 2006, CPTs performed by DWR in 2006 and 2007, and borings and CPTs performed by Kleinfelder in 1988, 1989, 1992, 2007, and 2009.

Based on the general subsurface conditions, cross sections at stations 87+50, 97+50, and 114+00 were analyzed for seepage and slope stability as provided in the Rivers Site Technical Memorandum by DWR and Kleinfelder.

The geotechnical analyses conducted were seepage analysis, slope stability analysis, settlement analysis, seismic analysis, and cutoff wall trench stability analysis during construction. The seepage and slope stability analyses were conducted based on both USACE and DWR Interim Levee Design (ILDC - 2009) criteria. A deterministic 200-year water surface elevation by MBK Engineers, were used in the models. The analyses were generally in agreement with the standard of practice in the Sacramento area, and as per required regulatory guidelines.

5.4 – The Riparian Mitigation Site

ICF International (a sub-consultant to WSAFCA for tree plantings) provided

90 % Plans and Design Submittal for Riparian Mitigation which were presented to Board Staff in June 2011 after ACOE approval at Washington D.C. for the bulk of the project development. It is intended by the USACOE and WSAFCA to permit the vegetative work under the ACOE 208.10 process and this proposed permit.

WSAFCA’s rationale is that the major civil work will be constructed first under an initial construction contract followed by the site vegetative plantings at the latter part of the contract which is typical in these types of projects. Therefore, it is WSAFCA’s intent to hire a separate qualified Landscape Contractor to do this final mitigation work at a savings for the contract. WSAFCA did not want to risk delays in construction for the levee improvements due to the approval of the mitigation features.

The scope of work under this Riparian Mitigation will be to:

- Clear & grub the 4.77 acres of mitigation land within the project area.
- Provide erosion control for the mitigation area.
- Prepare the soil.
- Plant approximately 1,360 trees and plants as shown on the planting plan.
- Prepare a temporary irrigation system for the establishment period.
- Provide plant maintenance for the establishment period.

5.5 – The Riparian Mitigation Site Quantities

The River’s Project accounts for 89% of the mitigation and The River Walk Project accounts for 11% of the mitigation.

	<u>The Rivers Project</u>	<u>River Walk Project</u>	<u>Sub Total</u>
Trees required	1,007	122	1,129
Large Shrubs required			231
Small shrubs required			<u>3,914</u>
Total plants			5,274

Total planting area = 207,892 SF = 4.77 acres

All proposed Fremont Cottonwood (*Populus fremontii*) trees shall be no closer than 100 feet from the waterside levee hinge point as shown on the approved drawings dated June 2011.

Seeding will be utilized within the restoration area (all disturbed areas) as shown on the 18 drawings dated June 2011 and made up of 7 different seed types at the rate of 30 lbs per acre.

There is approximately 3,315 linear feet (scaled from the plans) of irrigation mainline which is 3-inch diameter, class 315, buried 18" with warning tape. Irrigation laterals will vary between 1" to 2" diameter schedule 40 pvc. Irrigation pipe sleeves, when used, will be a minimum of 2 times the diameter of the actual irrigation pipe. There are 160 Bubbler valves through-out the project.

All electrical lines; irrigation filters; gate vales; control valves; quick coupling valves, and irrigation lines shall be as shown on the approved drawings. Variations from material type, location, and sizes shall be pre-approved and shown on the final As-Built Drawings.

5.6 – Project Design Review

The Flood System Improvements Section staff completed a technical review of the following documents:

- 90% Plans and Specifications for the Rivers Site, Station 71+50 to 101+00.
- Permit Application, submitted by WSAFCA dated May 2011.
- 90% Project Specification dated June 2011, by ICF International.
- H&H UNET Model (MBK ftp web site) July 27, 2011

<ftp://ftp.mbkengineers.com/Outgoing/Larsen/WSAFCA/CVFPB/18313-2a> (The Rivers-Mitigation Features)

- Subsequent e-mails between the Corps of Engineers and MBK Engineers; revised hydraulics. October 11 thru 14, 2011.
- Hydrology / Hydraulic Technical Memorandum, dated March 8, 2011 – MBK Engineers;

This technical review concluded that the designs for the Rivers Site are in accordance with Board, USACE standards, and DWR Interim Levee Design Criteria (ILDC Version 4).

5.7 – Staff Comments

The project has little effect on the Flood Control System and is an improvement. The mitigation effort provides beneficial effect on both flora and fauna while address the needs of recreation for the public.

6.0 – AGENCY COMMENTS AND ENDORSEMENTS:

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

- The U.S. Army Corps of Engineers 208.10 comment letter has not yet been received for this application. Staff expects to receive a letter indicating that the District Engineer has no objection to the project, subject to conditions, and will incorporate the letter into the permit as Exhibit A.
- The Department of Water Resources under Maintenance Area-4 will be the Long Term Maintenance Agency. Their concerns are addressed in the Board's permit.

7.0 – PROPOSED CEQA FINDINGS:

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. 2007102130, May 2009) and Final Environmental Impact Statement/Final Environmental Impact Report (FEIS/FEIR, December 2010) for the West Sacramento Levee Improvements Program – CHP Academy and The Rivers Early Implementation Projects submitted by the West Sacramento Areas Flood Control Agency. The West Sacramento Areas Flood Control Agency, as the lead agency, determined that the project would have a significant effect on the environment and adopted Resolution 11-03-01 (which includes Findings, Facts in Support of Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Plan) on March 10, 2011 and subsequently filed a Notice of Determination on March 11, 2011 with the Yolo County Clerk. These documents, including project design and WSAFCA resolutions, may be viewed or downloaded from the Central Valley Flood Protection Board website at <http://www.cvfpb.ca.gov/meetings/2011/12-02-2011.cfm> under a link for this agenda item. The documents are also available for review in hard copy at the Board and City of West Sacramento offices.

7.1 – Impacts that can be Mitigated

The significant impacts and the mitigation measures to reduce them to less than significant are adopted in WSAFCA Resolution 11-03-01 dated March 11, 2011 (which includes Findings, Facts in Support of Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Plan). Based on its independent review of the DEIS/DEIR and FEIS/FEIR and the WSAFCA Resolution 11-03-01, 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 DEIS/DEIR and FEIS/FEIR. Moreover, such changes or alterations are within the responsibility and

jurisdiction of the WSAFCA and such changes have been adopted by that agency. The following are the significant impacts and the mitigation measures to reduce them to less than significant:

- Flood Control and Geomorphic Conditions – The project proponent will coordinate with owners and operators, prepare drainage studies as needed, and remediate effects of the alteration of existing drainage patterns through project design.
- Water Quality and Groundwater Resources – The project proponent will implement a Stormwater Pollution Prevention Plan (SWPPP), Bentonite Slurry Spill Contingency Plan (BSSCP), and a Spill Prevention, Control, and Countermeasures Plan (SPCCP) to mitigate for effects on groundwater or drinking water quality resulting from construction and operation.
- Transportation and Navigation – The effects of temporary road closures or restricted access to parking on the levee crown or roads that run adjacent to levee will be mitigated by implementing the environmental commitments of a Traffic Control Plan, coordination to ensure minimal overlap in disturbances to traffic during construction, and notification of construction area closure.
- Noise and Vibration – Implementation of noise-reducing construction practices and employ measures to prevent exposure of buildings and structures to excessive groundborne vibration.
- Biological Resources – The project proponent will install protective barrier fencing around sensitive wetland/riparian habitats, comply with the City of West Sacramento Tree Preservation Ordinance, conduct mandatory Contractor/Worker Awareness Training for construction personnel, retain a Biological Monitor during construction, and conduct Pre-Construction Surveys for listed species and nesting migratory birds to minimize the effects on their respective habitats. Compensation plans for the loss of woody riparian habitat and wildlife will be completed post construction.
- Visual Resources – The proposed Revegetation Plan will minimize the changes to the existing visual character or quality of the site and its surroundings as a result of construction, operations, and maintenance.
- Utilities and Public Services – The project proponent will verify utility locations, coordinate with utility providers, prepare a Response Plan and conduct worker training to minimize damage of public utility infrastructure and disruption of service during construction.
- Hazards and Hazardous Materials – To minimize effects of exposure to hazardous materials encountered at the project site, the project proponent will implement measures to maintain surface water quality and groundwater quality,

provisions for dewatering, and complete Phase I and Phase II (if necessary) Environmental Site Assessment Investigations. The project proponent will notify Washington Unified School District and applicable schools located within 0.25 Mile of project construction activities to minimize the effects of emissions or handling of hazardous materials substances, or waste, within 0.25 mile of an existing or proposed school.

- Geologic and Soils Resources – The project proponent will implement the corrective actions identified as part of a project-specific Geotechnical Report to minimize the effects of expansive soils.

7.2 – Significant Unavoidable Adverse Impacts of the Project

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

- Effects on Residents - Construction-related socioeconomic effects on residents will potentially disrupt day to day activities that, even though temporary, may still cause substantial inconvenience.
- Result in a New Source of Light or Glare - During construction, residents across the Sacramento River and the landside of the levee would temporarily experience a new source of light or glare that would affect their viewshed.
- Change in the Significance of an Archaeological Resource - Project proponent will implement Inadvertent Discovery Procedures of the WSLIP Program Historic Properties Management Plan.
- Disturbance of Native American and Historic-Period Human Remains - Project proponent will implement Human Remains Discovery Procedures of the WSLIP Program Historic Properties Management Plan.
- Cumulative Effects on Air Quality - Project proponent will implement measures to reduce exhaust emissions, and a fugitive dust control plan.

The Board finds that the specific economic, legal, social, technological or other benefits of the project outweigh the unavoidable adverse environmental effects, which are thus considered to be “acceptable.”

7.3 – Statement of Overriding Considerations

WSAFCA adopted Resolution 11-03-01 which included the Statement of Overriding Considerations. The Board concurs with this Statement.

The Board has independently considered the significant and unavoidable environmental impacts of the proposed project. The Board has also considered the benefits of the

project, including achieving 200-year flood protection, incremental levee improvements that will bring the levees protecting the city of West Sacramento up to current Federal standards, and providing recreation opportunities that are compatible with flood improvement actions that also meet the city's recreation and open space goals. The Board finds that economic, legal, social, technological, or other benefits of the proposed project outweigh the unavoidable adverse environmental effects of the project, and the adverse environmental effects are considered acceptable when these benefits of the project are considered.

The documents and other materials which constitute the record of the Central Valley Flood Protection Board's proceedings in this matter are in the custody of 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:

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

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

Climate change issues have not been taken into account in the hydraulic analysis for this project; however, it is assumed to be inland past the point tidal influence raises in WSE, and due to the excessive amount of freeboard in the channel at this location, the project would have an ample factor of safety built into it. Climate change WSE raises are only estimated from 6-inches to 1-foot of impact and would be well within the freeboard of this project in the event that tidal influences did reach

further inland than expected. There are no other foreseeable projected future events that would impact this project.

9.0 – STAFF RECOMMENDATION

Staff recommends that the Board adopt the CEQA findings, approve the permit conditioned upon receipt and review of a favorable U.S. Army Corps of Engineers 208.10 comment letter and direct staff to file a Notice of Determination with the State Clearinghouse.

10.0 – LIST OF ATTACHMENTS

- A. Resolution No. (None required under consent items)
- B. Draft Permit No. 18313-2-1
 - Exhibit A – USACE 208.10 Comment Letter
- C. Location Map
- D. Vicinity Map
- E. Drawing cover sheet
- F. Planting Plan
- G. Irrigation Plan
- H. Water surface Profile
- I. Photos
- J. Supplement to Standard O&M Manual, Unit 124, COE

Report Completed by:	David R. Williams, P.E.
Design Review:	David R. Williams, P.E.
Environmental Review:	James Herota, E.S. and Andrea Mauro, E.S.
Document Review:	Eric Butler, P.E. – Supervising Engineer Len Marino, P.E. – Chief Engineer

STATE OF CALIFORNIA
THE RESOURCES AGENCY
THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18313-2-1 BD

This Permit is issued to:

West Sacramento Area Flood Control Agency
1420 Merkley Avenue, Suite 4
West Sacramento, California 95691

The City of West Sacramento purpose to mitigate for the loss of riparian vegetation associated with the Rivers Levee Modification Project and the River-Walk Project Mitigation Improvements (West Sacramento Bridge District, LeveeAccess Road and River Walk Trail). The two sites will be mitigated at The Rivers E.I.P. site, recently permitted by the CVFPB by permit number 18313-2. All recreational improvements and there construction activities will occur above the ordinary high water mark.

The work will include a paved 12-ft. wide bicycle/ pedestrian trail; landside embankment ramps; paved 6-ft. wide pedestrian trail; paved landing; 1-inch to 2-inch irrigation pipes; and 5,274 trees and plants. Township is 38d 36m 6.45s N -- 38d 36m 12.01s N and Range is 121d 32m 11.34s W -- 121d 31m 21.59s W. Proposed work is located approximately 200 feet north of River Bank Road between Todhunter Avenue and Fountain Drive in West Sacramento Yolo 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. 18313-2-1 BD

THIRTEEN: Within three years from completion of the construction of the work authorized under this permit, the permittee shall provide the Sacramento and San Joaquin Drainage District, acting by and through the Central Valley Flood Protection Board of the State of California, a permanent easement and/or a joint use agreement granting all flood control rights upon, over and across the property that is or will be occupied by the existing or to-be-constructed levee including the area of the cutoff wall and levee raise and realignment fill areas. The easement must include the following: 1)the levee section; 2) an area ten (10) feet in width from the waterside levee toe; the area ten (10) feet in width adjacent to the existing and new landward levee toes, if the areas are not presently encumbered by a Central Valley Flood Protection Board easement. For information regarding existing Central Valley Flood Protection Board Easements, please contact Angelica Aguilar at (916) 653-5782.

FOURTEEN: No construction work within the easement or rights of way, both existing and to be provided under this permit, of flood control features, including levees and seepage berms shall be done during the flood season from November 1 to April 15 without prior approval of the Central Valley Flood Protection Board.

FIFTEEN: All work approved by this permit shall be in accordance with the (100%/90%) 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: All addendums or other changes made to the submitted drawings or specifications by the permittee after issuance of this permit are subject to submittal and review for approval by the Central Valley Flood Protection Board prior to incorporation into the permitted project. Upon review and approval of any new submitted drawings or specifications the permit shall be revised, if needed, prior to construction related to the proposed changes. The Central Valley Flood Protection Board shall have up to 90 days after receipt of any documents, plans, drawings, and specifications for the review process. The Central Valley Flood Protection Board and/or the Department of Water Resources may extend this review period by written notification.

SEVENTEEN: 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.

EIGHTEEN: The permittee shall be responsible for repair of any damages to the project levee and other flood control facilities due to construction, operation, or maintenance of the proposed project.

NINETEEN: All proposed recreational features and asphalt pavement on the finished levee and the recreational / pedestrian ramps and roads will be maintained in total by the City of West Sacramento.

TWENTY: The mitigation measures approved by the CEQA lead agency and the permittee are found in its Mitigation and Monitoring Reporting Program (MMRP) adopted by the CEQA lead agency. The permittee shall implement all such mitigation measures.

TWENTY-ONE: The permittee shall provide construction supervision and inspection services acceptable to the Central Valley Flood Protection Board.

TWENTY-TWO: Prior to commencement of excavation, the permittee shall create a photo record, including associated descriptions, of the levee conditions. The photo record shall be certified (signed and stamped) by a licensed land surveyor or professional engineer, registered in the State of California, and submitted to the Central Valley Flood Protection Board within 30 days of beginning the project.

TWENTY-THREE: The permittee shall contact the U.S. Army Corps of Engineers regarding inspection of the project during construction as the proposed work is an alteration to the existing Federal Flood Control Project that will be incorporated into the Sacramento River Flood Control Project, an adopted plan of flood control.

TWENTY-FOUR: FEMA certification of the levee by the Corps of Engineers is being considered, the project proponent should contact the U. S. Army Corps of Engineers regarding inspection of this project during construction for FEMA certification purposes.

TWENTY-FIVE: The stability of the levee shall be maintained at all times during construction.

TWENTY-SIX: 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 1 to April 15.

TWENTY-SEVEN: No material stockpiles, temporary buildings, or equipment shall remain in the floodway during the flood season from November 1 to April 15 without prior CVFPB authorization.

TWENTY-EIGHT: The permittee shall cooperate with the Central Valley Flood Protection Board to ensure that any encroachment that must be relocated, modified or otherwise altered to accommodate construction of the improvements permitted herein are relocated, modified or otherwise altered in a manner that complies with current applicable state and federal standards. If the affected encroachment has an existing Board permit or is subject to some other applicable Board authorization, the permittee shall cooperate with the Board to ensure the permit or other authorization is appropriately amended to reflect the changed condition as shown on as-built drawings for the encroachment and the overall project. If the encroachment does not have a Board permit or other Board authorization, the permittee shall cooperate with the Board to determine whether a Board permit is required. If so, permittee shall cooperate with the Board to ensure that required permit application is made and, if granted, the permit reflects the changed condition as shown on as-built drawings for the encroachment and the overall project.

TWENTY-NINE: During demolition of the project, any and all anticipated or unanticipated conditions encountered which may impact levee integrity or flood control shall be brought to the attention of the Flood Project Inspector 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 Inspector and the Early Implementation Project (EIP) Construction Supervisor.

THIRTY: The permittee shall be responsible for all damages due to settlement, consolidation, or heave from any construction-induced activities.

THIRTY-ONE: A profile of the levee crown roadway and access ramp that will be utilized for access to and from the borrow area shall be submitted to the Central Valley Flood Protection Board prior to commencement of construction.

THIRTY-TWO: The haul ramps and utilized levee crown roadway shall be maintained in a manner prescribed by the authorized representative of the Department of Water Resources, or any other agency responsible for maintenance.

THIRTY-THREE: Any damage to the levee section, crown, roadway, or access ramps that will be utilized for access for this project shall be promptly repaired to the condition that existed prior to this project.

THIRTY-FOUR: Excavations, of four feet or greater, below the design flood plane and within the levee section or within fifty (50) feet of the projected waterward and landward levee slopes, excluding the cutoff wall trench, shall have side slopes no steeper than 1 horizontal to 1 vertical. Flatter slopes may be required to ensure stability of the excavation.

THIRTY-FIVE: Fluid pressures and flow rates shall be carefully monitored and controlled to minimize

the potential for hydrofracturing.

THIRTY-SIX: Fill on the levee slope shall be keyed into the existing levee section with each lift.

THIRTY-SEVEN: Fill material shall be placed only within the area indicated on the approved plans.

THIRTY-EIGHT: All fill material shall be impervious material with a minimum of 30 percent or more passing the No. 200 sieve, a plasticity index of 8 to 30, and a liquid limit of less than 55 and free of lumps or stones exceeding 3 inches in greatest dimension, vegetative matter, or other unsatisfactory material.

THIRTY-NINE: Density tests by a certified soils laboratory will be required to verify compaction of backfill within the floodway and within 10 feet of the levee toes.

FORTY: The fill surface area shall be graded to direct drainage away from the toe of the levee.

FORTY-ONE: Backfill material for excavations within the, existing and to be constructed, levee section and within ten (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 95 percent relative compaction as measured by ASTM Method D698.

FORTY-TWO: Any pipe or conduit being reinstalled in the levee section and within fifty (50) feet of both the waterward and landward levee toes shall meet Title 23 standards.

FORTY-THREE: Where appropriate the new and reconstructed levee crown roadway and access ramps shall be surfaced with a minimum of 4 inches of compacted, Class 2, aggregate base (Caltrans Specification 26-1.02A).

FORTY-FOUR: In the event existing revetment on the channel bank or levee slope is disturbed or displaced, it shall be restored to its original condition upon completion of the proposed installation.

FORTY-FIVE: 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-SIX: The landscaping, appurtenances, and maintenance practices shall conform to standards contained in Section 131 of the Central Valley Flood Protection Board's Regulations.

FORTY-SEVEN: As per the approved planting plan (June/July 2011 by ICF International), no Fremont Cottonwood trees shall be planted on the waterside of the levee, any closer than 100 feet from the waterside levee hinge point.

FORTY-EIGHT: All fencing, gates and signs removed during construction of this project shall be replaced in kind and at the original locations. If it is necessary to relocate any fence, gate or sign, the permittee is required to obtain written approval from the Central Valley Flood Protection Board prior to installation at a new location.

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

FIFTY: All debris generated by this project shall be disposed of outside the floodway and off the levee section.

FIFTY-ONE: 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 with the exception of habitat debris, which may remain.

FIFTY-TWO: 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.

FIFTY-THREE: In the event that permitted improvements cause levee or bank erosion injurious to the adopted plan of flood control to occur at or adjacent to the permitted encroachment(s), the permittee shall repair the eroded area and propose measures, to be approved by the Central Valley Flood Protection Board, to prevent further erosion.

FIFTY-FOUR: Any vegetative material, living or dead, that interferes with the successful execution, functioning, maintenance, or operation of the adopted plan of flood control must be removed by the permittee at permittee's expense upon request by the Central Valley Flood Protection Board or Department of Water Resources. If the permittee does not remove such vegetation or trees upon request, the Central Valley Flood Protection Board reserves the right to remove such at the permittee's expense.

FIFTY-FIVE: Thorny plant will be removed from the planting pallet so inspections and maintenance are not impacted.

FIFTY-SIX: 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.

FIFTY-SEVEN: The permitted encroachment(s) shall not interfere with operation and maintenance of the current or future 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.

FIFTY-EIGHT: According to the permittee, the improvements herein permitted will control flood flows from a storm with a probability of occurrence of 0.005 in any year (200-year protection). Permittee's design assumed that non-urban existing levees upstream of Natomas will not be raised above the current design for the Sacramento River Flood Control Project as shown on the 1957 profile. Permittee's design flow therefore, reflects upstream flood water losses from levee overtopping where the water surface elevation for the permittee's design storm exceeds the top of levee elevation shown on the 1957 profile. Permittee acknowledges that a Central Valley Flood Protection Plan will be

developed, adopted, and regularly updated by the State and the plan and subsequent updates could include improvements that would change the flow and water level associated with permittee's design storm, possibly reducing the level of protection provided by the permitted improvements. Permittee agrees to participate in future modifications to the West Sacramento levees as may be required by the Central Valley Flood Protection Plan and its subsequent updates. Permittee's level of participation shall be equivalent to the level required of other local jurisdictions by the plan. Permittee further agrees that should the Plan include measures that reduce the level of protection provided by the permitted improvements, permittee shall have no basis for a claim of hydraulic impacts.

FIFTY-NINE: Within 120 days of completion of the project, the permittee shall submit to the Central Valley Flood Protection Board a certification report, stamped and signed by a professional civil engineer registered in the State of California, certifying the work was performed and inspected in accordance with the Central Valley Flood Protection Board permit conditions and submitted drawings and specifications.

SIXTY: Within 120 days of completion of the project, the permittee shall submit to the Central Valley Flood Protection Board proposed revision to the U.S. Army Corps of Engineers, Supplement to Standard Operation and Maintenance Manual, West Sacramento River Flood Control Project, and the associated "as-built" drawings for system alterations that are to be incorporated into the federal West Sacramento River Flood Control Project.

SIXTY-ONE: The permittee is responsible for all liability associated with damage to the permitted facilities resulting from flood fight, operation, maintenance, inspection or emergency repair and shall defend, indemnify, and hold the Central Valley Flood Protection Board, the Department of Water Resources, the State of California, and Maintenance Area 4, including their agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "agencies"), 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 agencies expressly reserve the right to supplement or take over their defense, in their sole discretion.

SIXTY-TWO: This permit is not valid until the Central Valley Flood Protection Board has received 33 U.S.C. Section 208.10 approval and letter of permission from the U.S. Army Corps of Engineers (Corps). The permittee shall comply with all conditions set forth in the letter of permission from the Corps, when it is received, which shall be attached to this permit as Exhibit A and incorporated by reference.

SIXTY-THREE: 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 Early Implementation Project (EIP) Construction Supervisor by telephone, (916)574-2646 to initiate inspection of the work.

SIXTY-FOUR: 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.

SIXTY-FIVE: If the permittee or successor does not comply with the conditions of the permit and an

enforcement by the Central Valley Flood Protection Board is required, the permittee or successor shall be responsible for bearing all costs associated with the enforcement action, including reasonable attorney's fees.

SIXTY-SIX: 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.

SIXTY-SEVEN: Any additional encroachment(s) in the floodway, on or in the levee section, and within ten (10) feet of the landside levee toe and berm toes, require an approved permit from the Central Valley Flood Protection Board and shall be in compliance with the Central Valley Flood Protection Board's regulations (Title 23 California Code of Regulations).

SIXTY-EIGHT: By acceptance of this permit, the permittee (West Sacramento Area Flood Control Agency) acknowledges the authority of the Central Valley Flood Protection Board to regulate all future encroachments along this levee reach, including those that may encroach upon alterations approved by this permit to incorporation into the federal West Sacramento River Flood Control Project by the U.S. Army Corps of Engineers.

SIXTY-NINE: The applicant must adopt a resolution within 18 months from the date of issuance of this permit, that complies with Board Resolution No. 11-15, regarding the Board's Joint Powers Agreement (JPA) Policy, and the resolution must be to the satisfaction of the Board.

SEVENTY: Prior to construction, the applicant, West Sacramento Area Flood Control Agency (WSAFCA), shall have obtained legal possession of all property where work to be performed under this permit is located.

SEVENTY-ONE: Survey markers are to be installed to delineate easement boundaries and a GIS shapefile of the boundaries is to be provided to DWR within 120 days of construction completion.

SEVENTY-TWO: WSAFCA or the City of West Sacramento must enter into an agreement with DWR Sacramento Maintenance Yard for use of power and water throughout the project including vegetation irrigation following construction.

SEVENTY-THREE: City of West Sacramento will provide a letter to DWR assuring perpetual maintenance of vegetation within the project boundaries.

SEVENTY-FOUR: A copy of this permit shall be included as an attachment to any Long-Term Management Plan for the permitted project area.

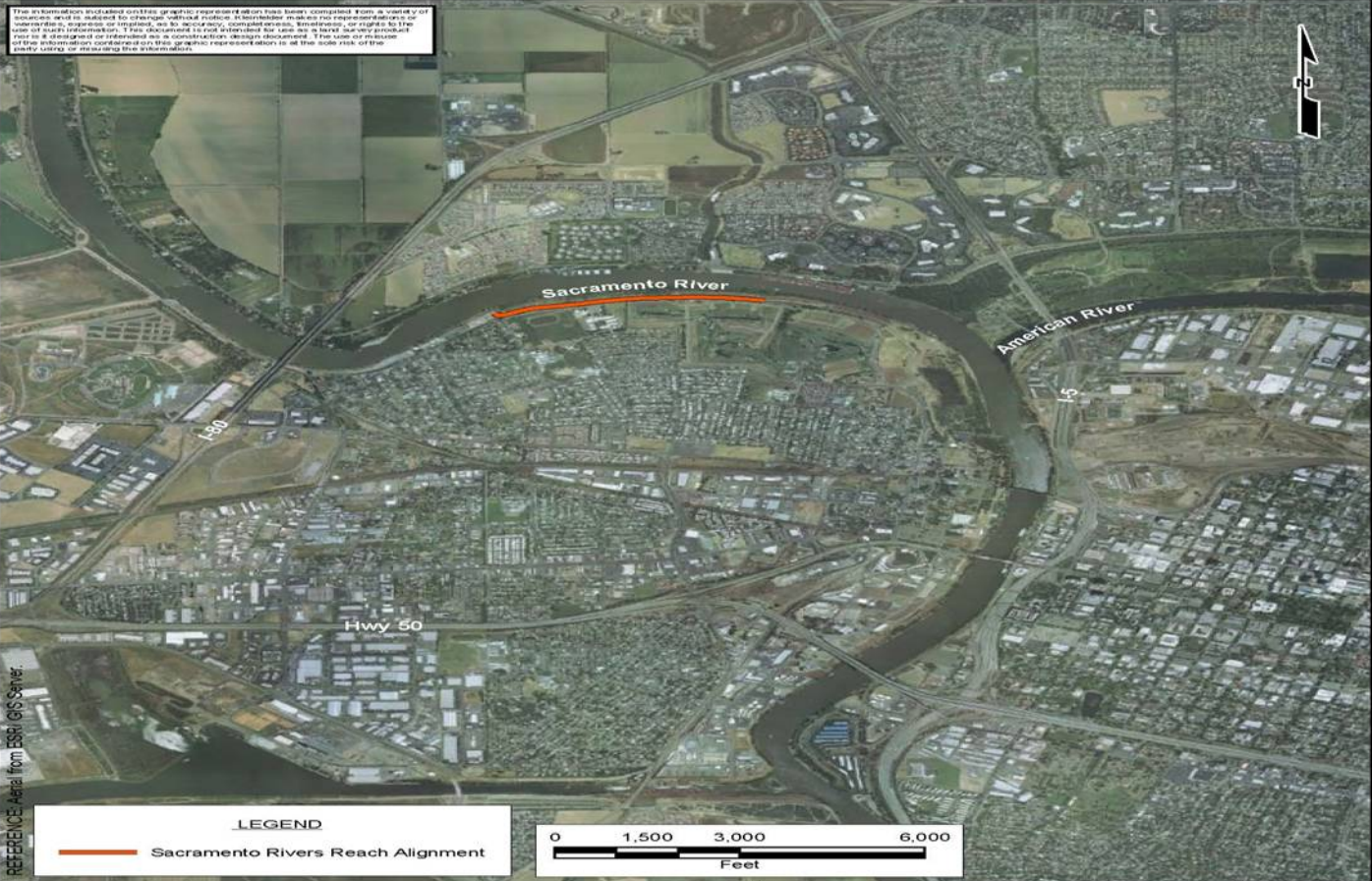
SEVENTY-FIVE: This permit shall run with the land and all conditions are binding on permittee's successors and assigns.

Attachment-B, Exhibit- A

USACOE

208.19 LETTER OF PERMISSION

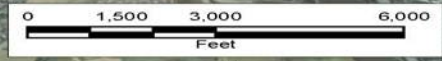
This information including contents or not to be used or about this item, compared from a variety of locations and is subject to change without notice. It is not intended to be used as a representation of ownership, access or control, and is not to be used, copied, printed, reproduced, or rights to the use of such information. This document is not intended for use as a legal survey product and is not intended or intended as a construction, design or document. The use of this information constitutes a risk of which representatives to be the sole risk of the party using or receiving the information.



REFERENCE: Aerial from ESRI GIS Server.

LEGEND

— Sacramento Rivers Reach Alignment



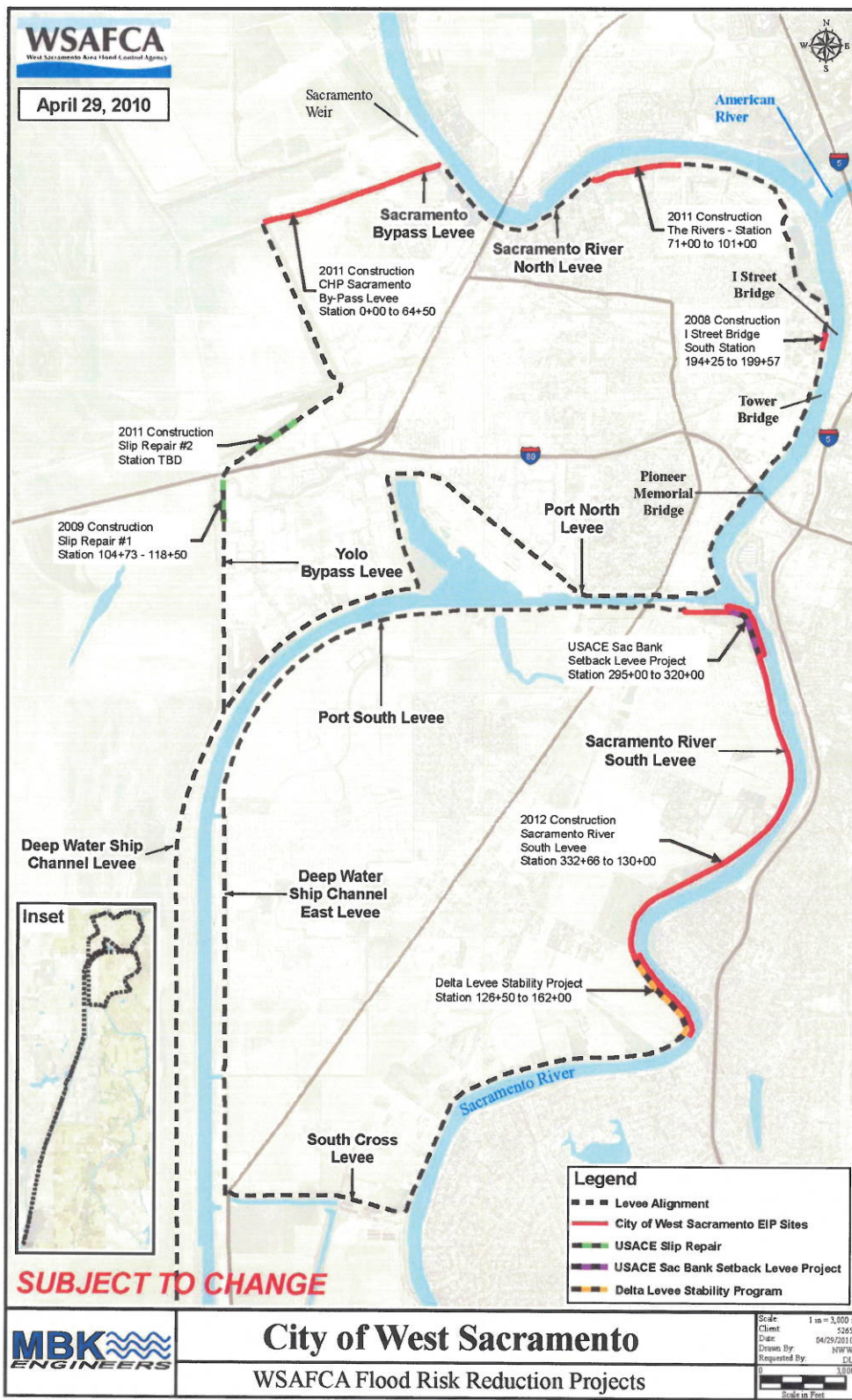
PROJECT NO.	101153-riv
DRAWN:	6/22/09
DRAWN BY:	D. Anderson
CHECKED BY:	B. Anderson
FILE NAME:	101153 BOD Riv SLM.mxd

SITE LOCATION MAP

DRAFT GEOTECHNICAL BASIS OF DESIGN REPORT
THE RIVERS SITE, SRWNL STA 70+00 TO STA 115+00
WEST SACRAMENTO LEVEE IMPROVEMENT PROGRAM
WEST SACRAMENTO, CALIFORNIA

PLATE
1-1

PLATE 1: WSLIP Construction Phasing Map



WEST SACRAMENTO LEVEE IMPROVEMENT PROGRAM

THE RIVERS RIPARIAN MITIGATION SITE

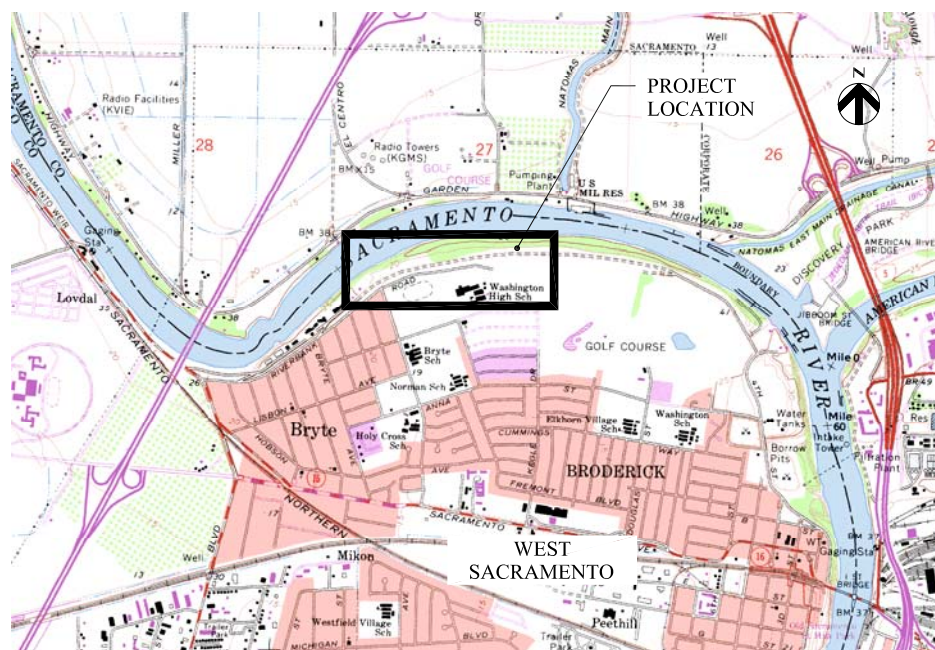
SACRAMENTO RIVER NORTH WEST LEVEE:
LEVEE MILE 0.73 TO 1.29
(STA 71+50 TO STA 101+00)

WSAFCA

WEST SACRAMENTO AREA FLOOD CONTROL AGENCY

JUNE 2011

90% SUBMITTAL



VICINITY MAP
NTS



CALIFORNIA STATE LOCATION MAP
NTS

SHEET INDEX

- SP-01 SITE PREPARATION PLAN - STATION 70+90 TO 76+50
- SP-02 SITE PREPARATION PLAN - STATION 76+50 TO 85+50
- SP-03 SITE PREPARATION PLAN - STATION 85+50 TO 94+00
- SP-04 SITE PREPARATION PLAN - STATION 94+00 TO 101+50

- I-01 IRRIGATION NOTES AND PROGRAM
- I-02 IRRIGATION PLAN - STATION 70+90 TO 76+50
- I-03 IRRIGATION PLAN - STATION 76+50 TO 85+50
- I-04 IRRIGATION PLAN - STATION 85+50 TO 94+00
- I-05 IRRIGATION PLAN - STATION 94+00 TO 101+50

- P-01 PLANTING NOTES AND PROGRAM
- P-02 PLANTING PLAN - STATION 70+90 TO 76+50
- P-03 PLANTING PLAN - STATION 76+50 TO 85+50
- P-04 PLANTING PLAN - STATION 85+50 TO 94+00
- P-05 PLANTING PLAN - STATION 94+00 TO 101+50

- D-01 DETAILS - MISCELLANEOUS
- D-02 DETAILS - IRRIGATION
- D-03 DETAILS - IRRIGATION CONT
- D-04 DETAILS - PLANTING

MITIGATION QUANTITIES			
	RIVERS	RIVER WALK	TOTAL PROJECT
TREES REQUIRED	1007	122	1129
TOTAL TREES AND LARGE SHRUBS BEING PLANTED	-	-	1360
PLANTING AREA (SF)	-	-	207,892

* RIVERS ACCOUNTS FOR 89% OF THE MITIGATION,
RIVER WALK ACCOUNTS FOR 11% OF THE MITIGATION

SUBMITTED BY

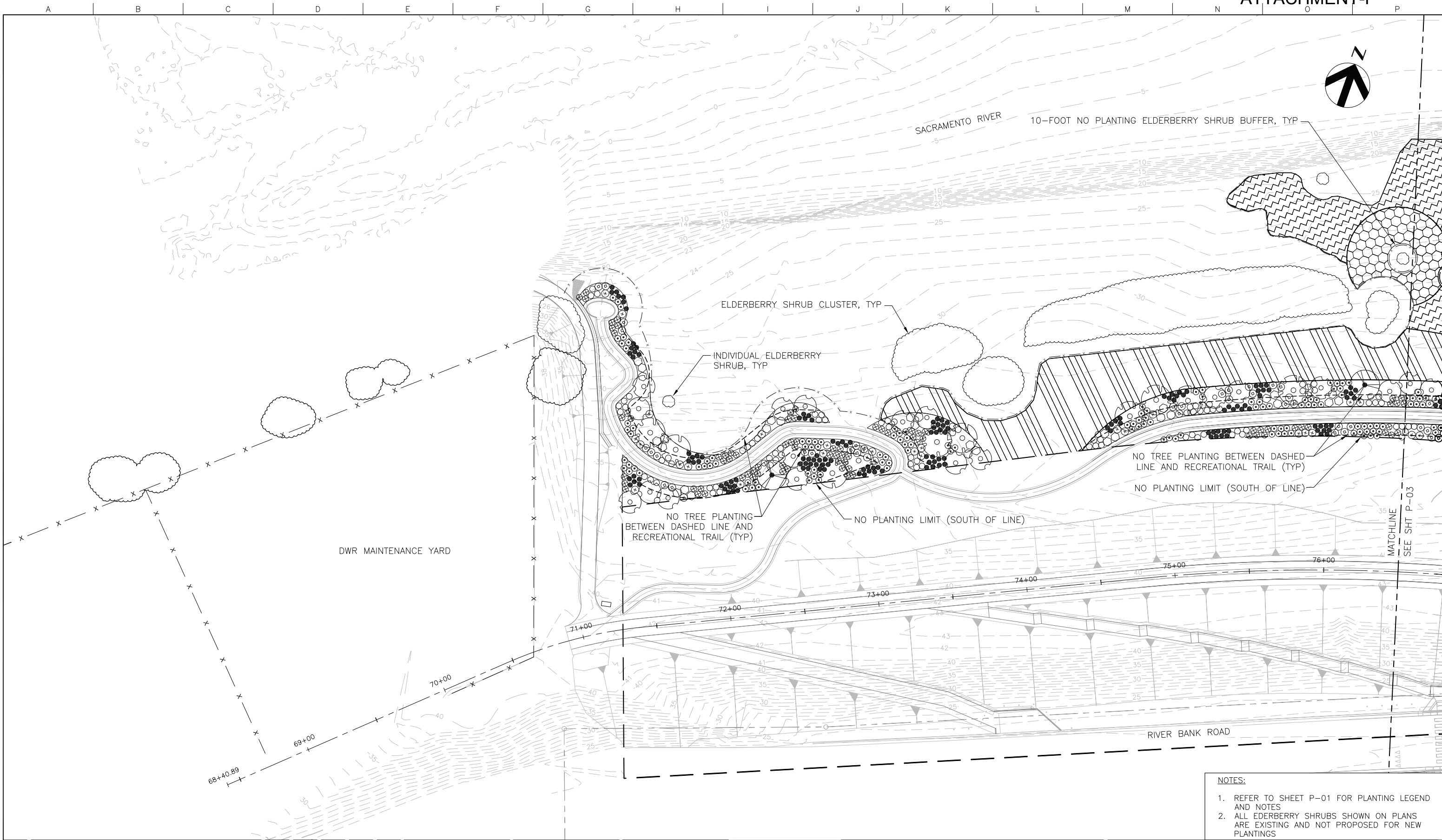
MICHAEL VECCHIO RCE 74245 _____ DATE _____

KRISTIN LANTZ RLA 5400 _____ DATE _____

SUBMITTED BY

MICHAEL W. BESSETTE _____ DATE _____
CITY OF WEST SACRAMENTO RCE 53088

KEN RUZICH _____ DATE _____
WSAFCA, GENERAL MANAGER



- NOTES:**
1. REFER TO SHEET P-01 FOR PLANTING LEGEND AND NOTES
 2. ALL ELDERBERRY SHRUBS SHOWN ON PLANS ARE EXISTING AND NOT PROPOSED FOR NEW PLANTINGS

Issue No.	Description	Date	Drawn	Chkd.	Resp. Engr.	Proj. Mgr.

HORIZONTAL DATUM IS THE CALIFORNIA COORDINATE SYSTEM, ZONE 2 (NAD 83)
 VERTICAL DATUM IS NAVD 88
 EL NAVD 88 = EL NGVD 29+2.6'



Project Manager
M. VECCHIO
 Designed
K. LANTZ
 Checked
H. OAKES
 Drawn
K. LANTZ

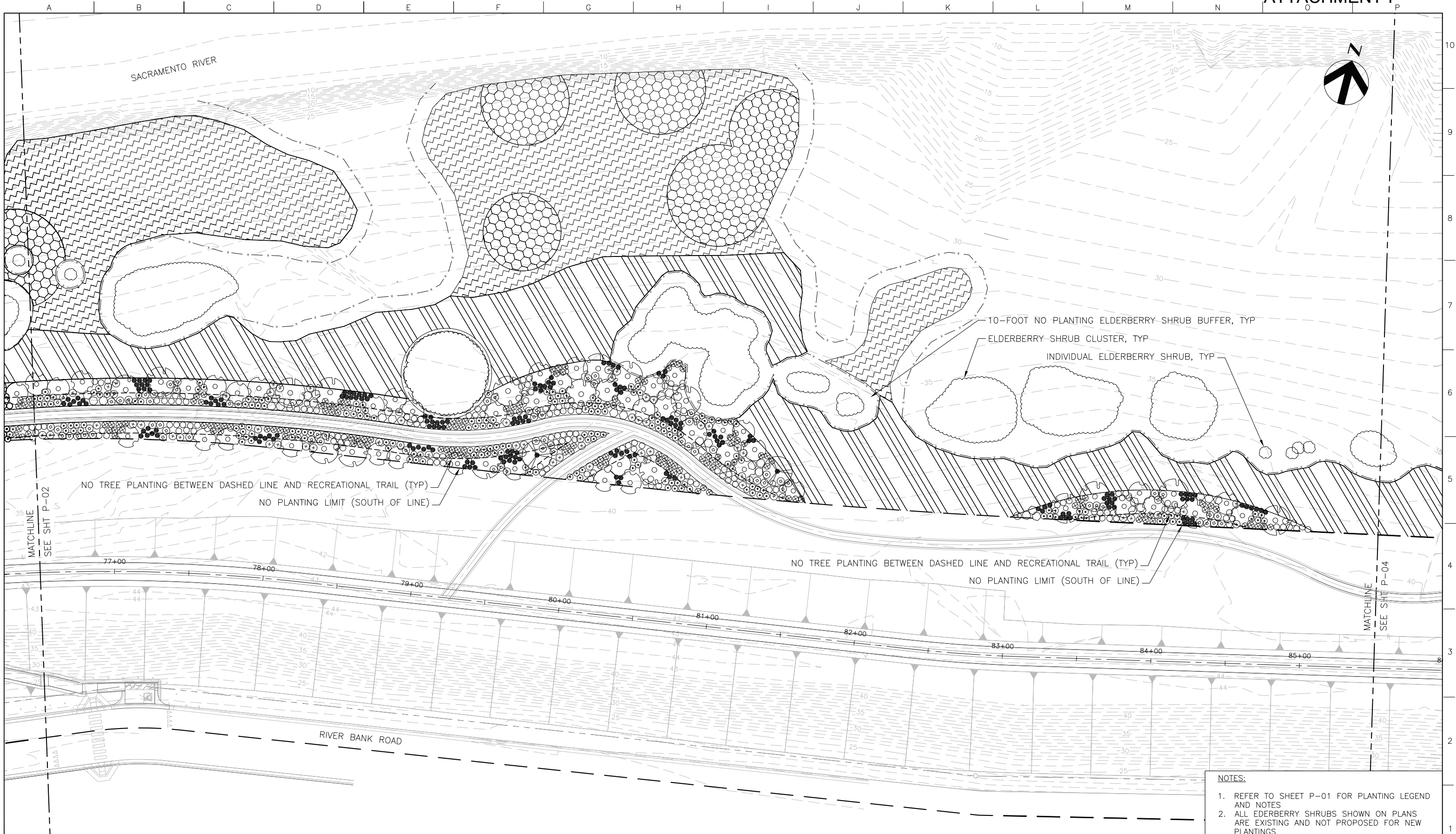
West Sacramento Area Flood Control Agency
 Levee Improvement Program
 Early Implementation Project
 The Rivers Phase 1 Site

PRELIMINARY
 THESE PLANS ARE NOT ISSUED FOR BID OR CONSTRUCTION. THEY ARE ISSUED FOR REVIEW AND COMMENT ONLY.

WEST SACRAMENTO EIP - RIVERS RIPARIAN MITIGATION SITE

PLANTING PLAN
STATION 70+90 TO 76+50

Date JUNE 2011	Project No. 007436-101209-141	Drawing No. P-02	Issue X
Scale 1" = 30'	File Name P-2.dwg		



- NOTES:
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 EL NAVD 88 = EL NGVD 29+2.6'



Project Manager
M. VECCHIO
 Designed
K. LANTZ
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H. OAKES
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K. LANTZ

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WEST SACRAMENTO EIP - RIVERS RIPARIAN MITIGATION SITE

PLANTING PLAN
STATION 76+50 TO 85+50

Date	JUNE 2011	Project No.	007436-101209-141	Drawing No.	P-03	Issue	X
Scale	1" = 30'	File Name	P-3.dwg				



ELDERBERRY SHRUB CLUSTER, TYP
 10-FOOT NO PLANTING ELDERBERRY SHRUB BUFFER, TYP
 INDIVIDUAL ELDERBERRY SHRUB, TYP

NO TREE PLANTING BETWEEN DASHED LINE AND RECREATIONAL TRAIL (TYP)
 NO PLANTING LIMIT (SOUTH OF LINE)

- NOTES:**
- REFER TO SHEET P-01 FOR PLANTING LEGEND AND NOTES
 - ALL ELDERBERRY SHRUBS SHOWN ON PLANS ARE EXISTING AND NOT PROPOSED FOR NEW PLANTINGS

Issue No.	Description	Date	Drawn	Chkd.	Resp. Engr.	Proj. Mgr.

HORIZONTAL DATUM IS THE CALIFORNIA COORDINATE SYSTEM, ZONE 2 (NAD 83)
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 EL NAVD 88 = EL NGVD 29+2.6'



Project Manager	M. VECCHIO
Designed	K. LANTZ
Checked	H. OAKES
Drawn	K. LANTZ

West Sacramento Area Flood Control Agency
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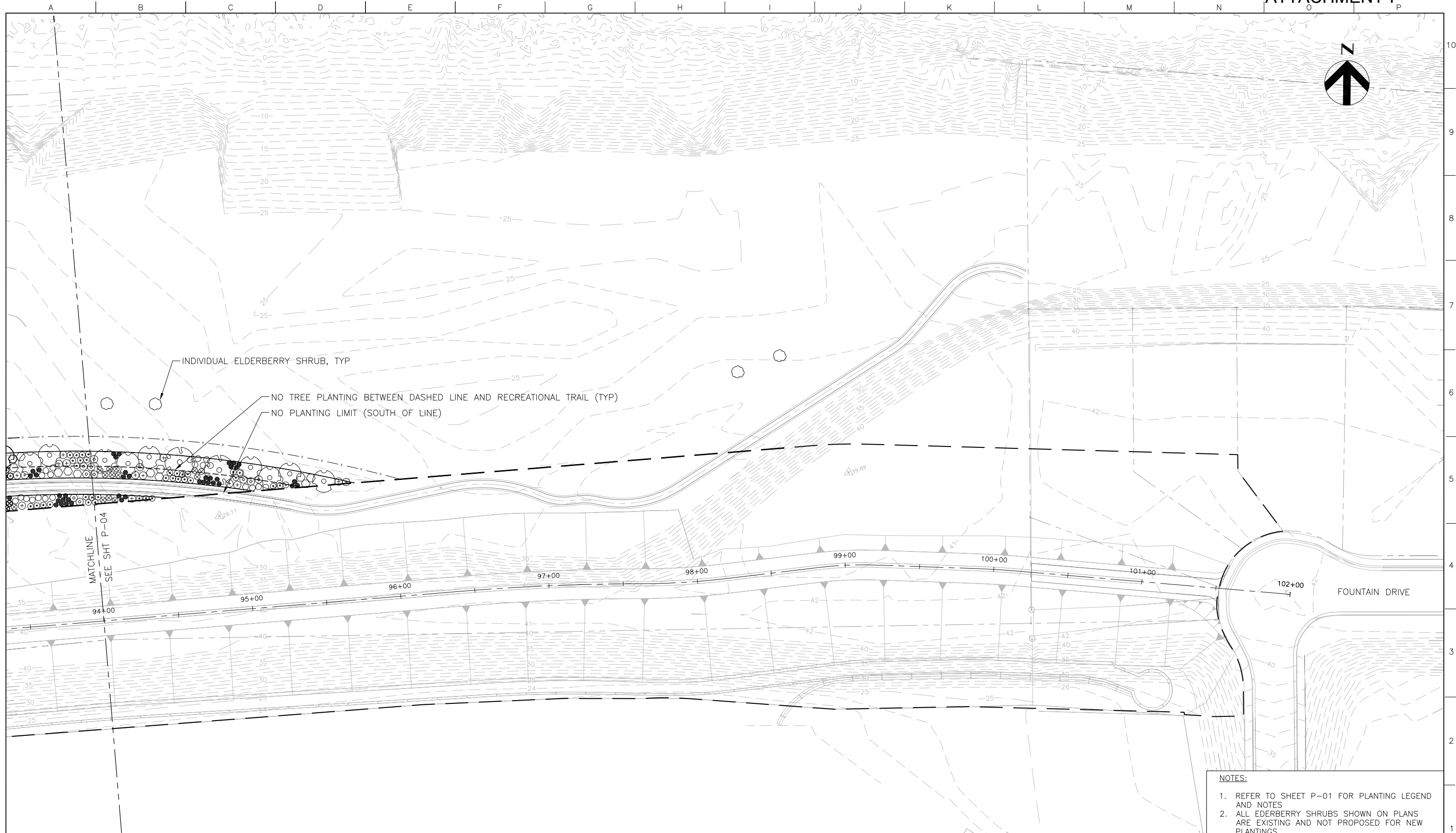
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WEST SACRAMENTO EIP - RIVERS RIPARIAN MITIGATION SITE

PLANTING PLAN

STATION 85+50 TO 94+00

Date	JUNE 2011	Project No.	007436-101209-141	Drawing No.	P-04	Issue	X
Scale	1" = 30'	File Name	P-4.dwg				



INDIVIDUAL ELDERBERRY SHRUB, TYP

NO TREE PLANTING BETWEEN DASHED LINE AND RECREATIONAL TRAIL (TYP)

NO PLANTING LIMIT (SOUTH OF LINE)

MATCHLINE
SEE SHT P-04

- NOTES:**
- REFER TO SHEET P-01 FOR PLANTING LEGEND AND NOTES
 - ALL ELDERBERRY SHRUBS SHOWN ON PLANS ARE EXISTING AND NOT PROPOSED FOR NEW PLANTINGS

Issue No.	Description	Date	Drawn	Chkd.	Resp. Engr.	Proj. Mgr.

HORIZONTAL DATUM IS THE CALIFORNIA COORDINATE SYSTEM, ZONE 2 (NAD 83)

VERTICAL DATUM IS NAVD 88

EL NAVD 88 = EL NGVD 29+2.6'



Project Manager	M. VECCHIO
Designed	K. LANTZ
Designed	
Checked	H. OAKES
Drawn	K. LANTZ

West Sacramento Area Flood Control Agency
Levee Improvement Program
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PRELIMINARY

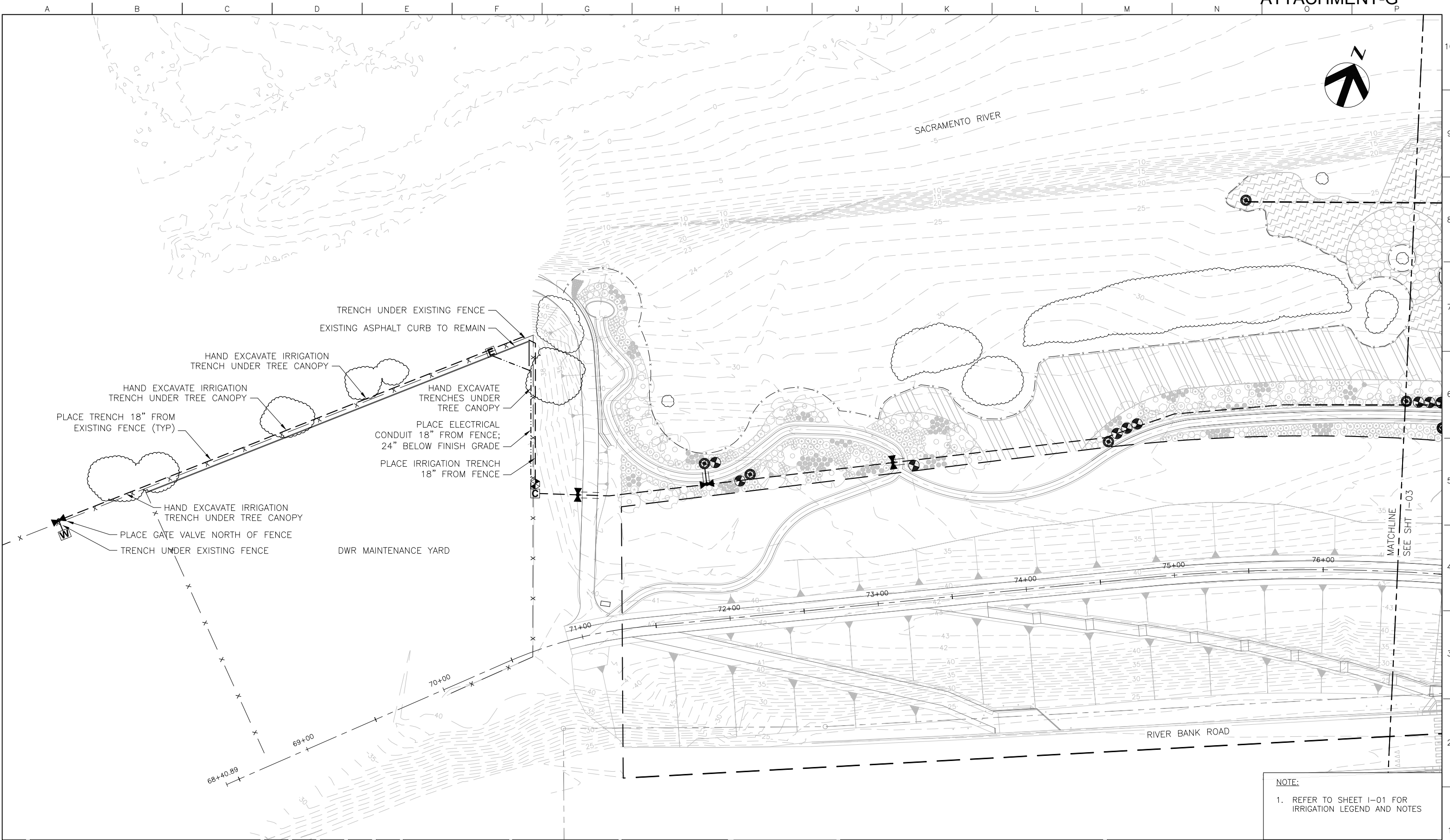
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WEST SACRAMENTO EIP - RIVERS RIPARIAN MITIGATION SITE

PLANTING PLAN

STATION 94+00 TO 101+50

Date	JUNE 2011	Project No.	007436-101209-141	Drawing No.	P-05	Issue	X
Scale	1" = 30'	File Name	P-5.dwg				



TRENCH UNDER EXISTING FENCE
 EXISTING ASPHALT CURB TO REMAIN
 HAND EXCAVATE IRRIGATION TRENCH UNDER TREE CANOPY
 HAND EXCAVATE IRRIGATION TRENCH UNDER TREE CANOPY
 PLACE TRENCH 18" FROM EXISTING FENCE (TYP)
 HAND EXCAVATE IRRIGATION TRENCH UNDER TREE CANOPY
 PLACE GATE VALVE NORTH OF FENCE
 TRENCH UNDER EXISTING FENCE

DWR MAINTENANCE YARD

NOTE:
 1. REFER TO SHEET I-01 FOR IRRIGATION LEGEND AND NOTES

Issue No.	Description	Date	Drawn	Chkd.	Resp. Engr.	Proj. Mgr.

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Project Manager	M. VECCHIO
Designed	K. LANTZ
Checked	H. OAKES
Drawn	K. LANTZ

West Sacramento Area Flood Control Agency
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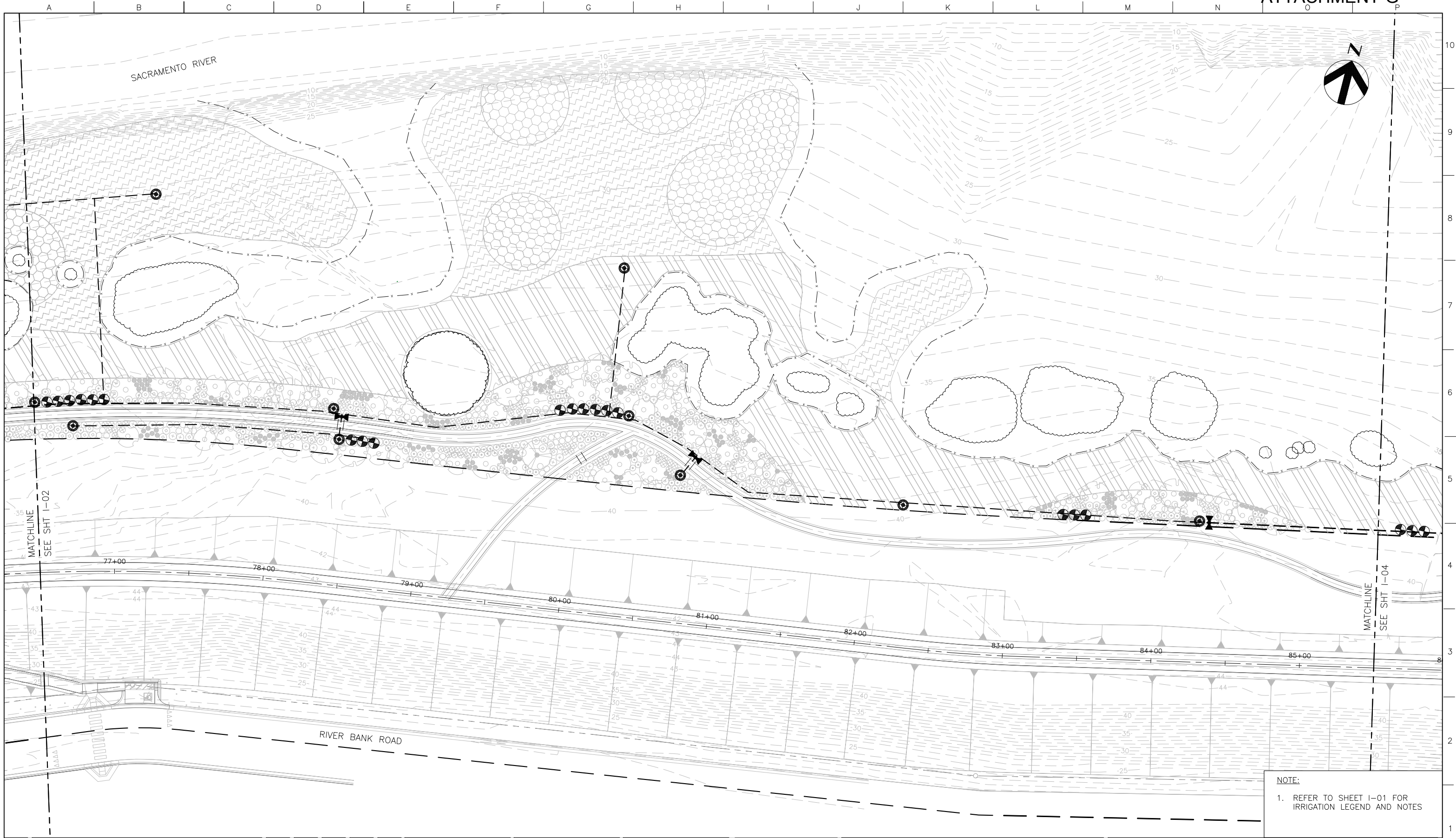
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WEST SACRAMENTO EIP - RIVERS RIPARIAN MITIGATION SITE

IRRIGATION PLAN

STATION 70+90 TO 76+50

Date	JUNE 2011	Project No.	007436-101209-141	Drawing No.	I-02	Issue	X
Scale	1" = 30'	File Name	I-2.dwg				



NOTE:
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Issue No.	Description	Date	Drawn	Chkd.	Resp. Engr.	Proj. Mgr.

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VERTICAL DATUM IS NAVD 88
EL NAVD 88 =
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Project Manager	M. VECCHIO
Designed	K. LANTZ
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Drawn	K. LANTZ

West Sacramento Area Flood Control Agency
Levee Improvement Program
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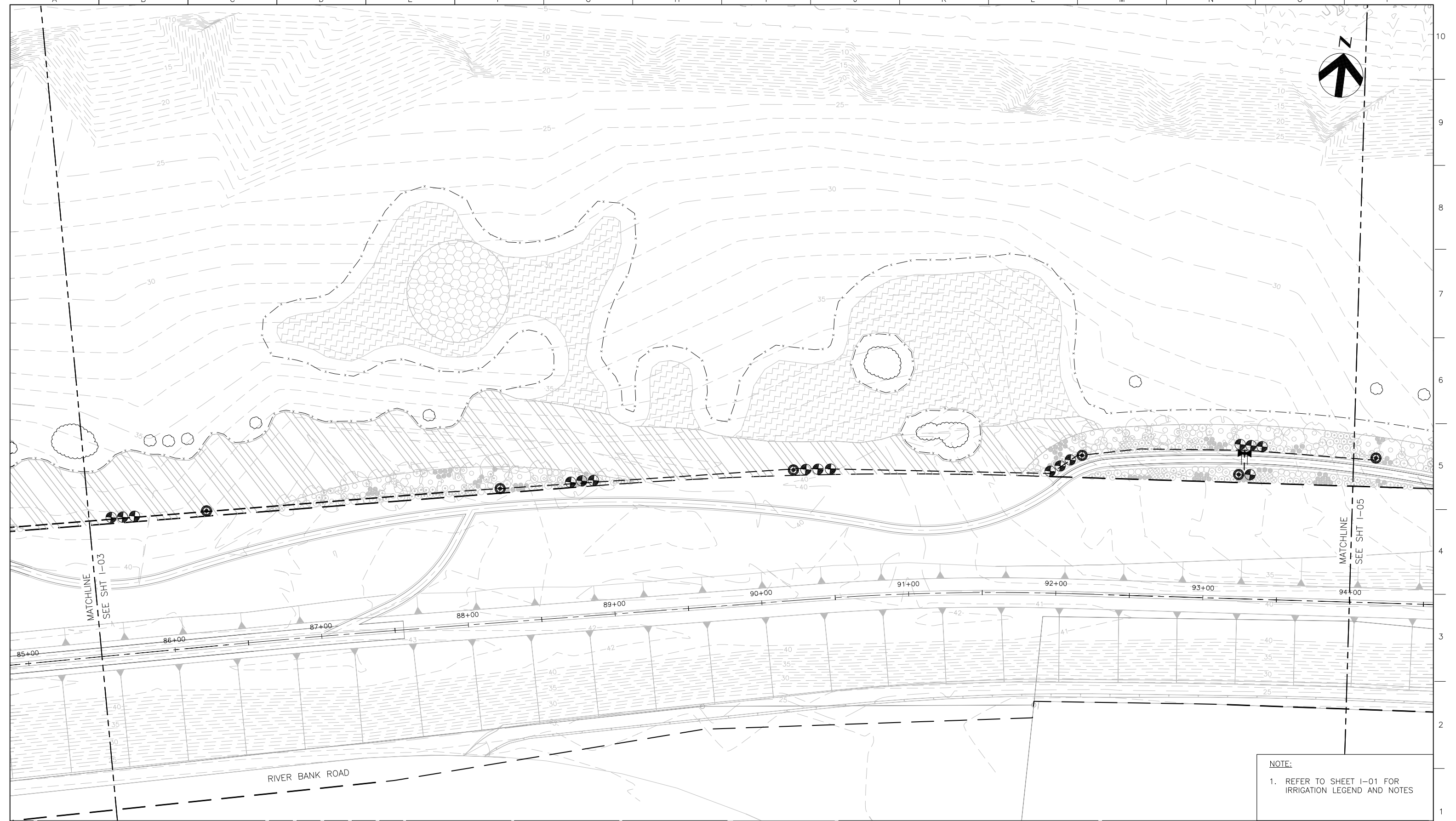
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WEST SACRAMENTO EIP - RIVERS RIPARIAN MITIGATION SITE

IRRIGATION PLAN

STATION 76+50 TO 85+50

Date	JUNE 2011	Project No.	007436-101209-141	Drawing No.	I-03	Issue	X
Scale	1" = 30'	File Name	I-3.dwg				



NOTE:
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Issue No.	Description	Date	Drawn	Chkd.	Resp. Engr.	Proj. Mgr.

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West Sacramento Area Flood Control Agency
Levee Improvement Program
Early Implementation Project
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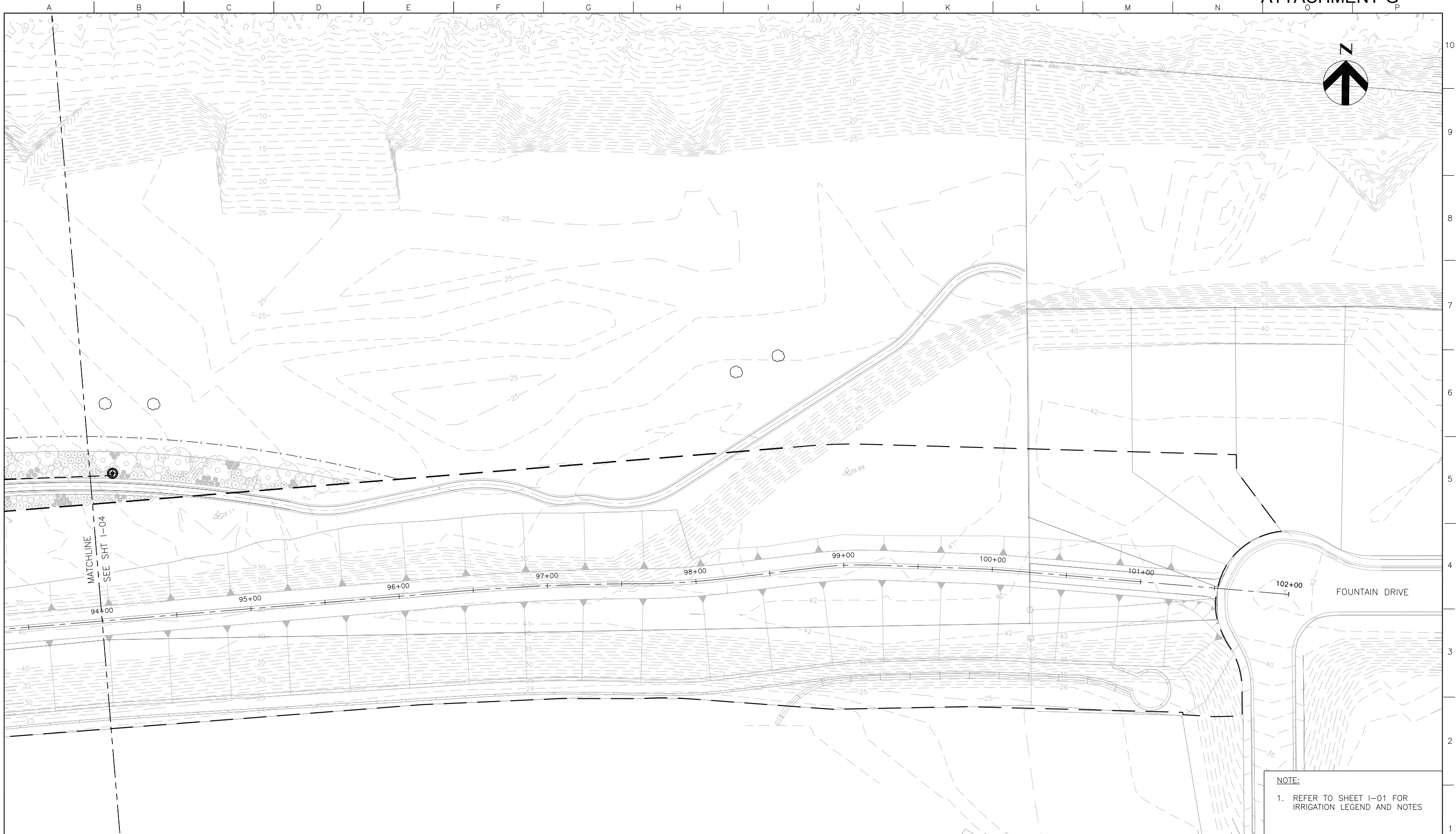
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WEST SACRAMENTO EIP - RIVERS RIPARIAN MITIGATION SITE

IRRIGATION PLAN

STATION 85+50 TO 94+00

Date JUNE 2011	Project No. 007436-101209-141	Drawing No. I-04	Issue X
Scale 1" = 30'	File Name I-4.dwg		



NOTE:
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Issue No.	Description	Date	Drawn	Chkd.	Resp. Engr.	Proj. Mgr.

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PRELIMINARY
THESE PLANS ARE NOT ISSUED FOR BID OR CONSTRUCTION. THEY ARE ISSUED FOR REVIEW AND COMMENT ONLY.

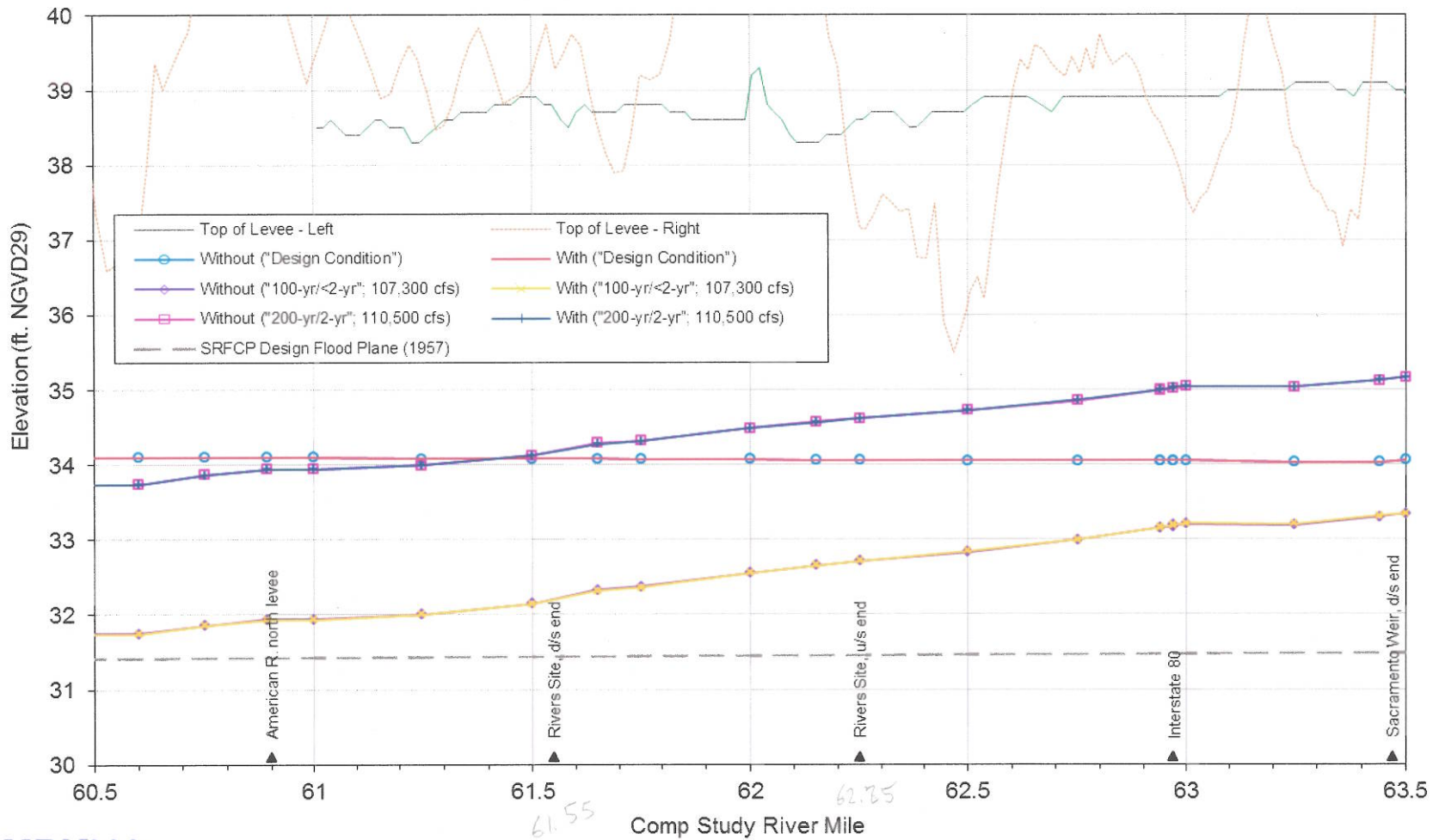
WEST SACRAMENTO EIP - RIVERS RIPARIAN MITIGATION SITE

IRRIGATION PLAN

STATION 94+00 TO 101+50

Date	JUNE 2011	Project No.	007436-101209-141	Drawing No.	I-05	Issue	X
Scale	1" = 30'	File Name	I-5.dwg				

Maximum Water Surface Elevation Profiles Sacramento River at West Sacramento Rivers Site





Horton

Book G

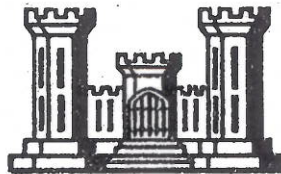
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SUPPLEMENT TO STANDARD
OPERATION AND MAINTENANCE
MANUAL

SACRAMENTO RIVER
FLOOD CONTROL PROJECT

UNIT NO. 124

NORTH LEVEE OF AMERICAN RIVER
FROM
NATOMAS EAST CANAL TO THE SACRAMENTO RIVER
AND
EAST LEVEE OF THE SACRAMENTO RIVER
FROM
NATOMAS CROSS CANAL TO AMERICAN RIVER



SACRAMENTO DISTRICT
CORPS OF ENGINEERS
U. S. ARMY
SACRAMENTO, CALIFORNIA

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15 March 1954

SUBJECT: Operation and Maintenance Manuals

MEMORANDUM TO: CHIEF, CONSTRUCTION-OPERATIONS DIVISION

A Supplement to the Standard Operation and Maintenance Manual for the Sacramento River Flood Control Project, Unit No. 124, entitled, "North Levee of the American River from Natomas East Canal to the Sacramento River and East Levee of the Sacramento River from Natomas Cross Canal to the American River," is submitted herewith.

1. Incl

1. O & M Manual

cc: Levees

F. J. Kochis
 F. KOCHIS
 Chief, Engineering Division

Copies furnished: —

<i>State Reclamation Board</i>	<i>2 copies</i>
<i>Water Resources</i>	<i>2 "</i>
<i>Division Engineer</i>	<i>2 "</i>

CORPS OF ENGINEERS
U. S. ARMY

SUPPLEMENT TO STANDARD
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SACRAMENTO RIVER FLOOD CONTROL PROJECT

UNIT NO. 124
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FROM
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AND
EAST LEVEE OF THE SACRAMENTO RIVER
FROM
NATOMAS CROSS CANAL TO AMERICAN RIVER

Prepared by the Sacramento District
Corps of Engineers, U. S. Army
Sacramento, California, dated June 1953

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SECTION I - INTRODUCTION

1-01. Location. - The improvement covered by this manual is that part of the Sacramento River Flood Control Project which includes the North levee of the American River from Natomas Canal to the Sacramento River and the East levee of the Sacramento River from Natomas Cross Canal to the mouth of the American River. The levees of this unit form a portion of the boundary of Reclamation District No. 1000 and are located in Sacramento and Sutter Counties, California. The location of the completed unit covered by this manual is shown on Exhibit A-1 and is in the general vicinity of the Town of Verona and the City of Sacramento.

1-02. Protection provided. - The levees of this unit provide direct protection to agricultural lands against high water of the Sacramento River and the American River. The grade of the adopted flood plane profile along the main channel of the Sacramento River varies from elevation 41.0 at Natomas Cross Canal to elevation 34.7 at the mouth of the American River. The grade of the adopted flood plane profile in the American River varies from elevation 36.0 at Natomas East Canal to elevation 34.7 at the junction with the Sacramento River. Allowance for freeboard along both levees is in excess of 3 feet. The project design flood for the Sacramento River is 107,000 cubic feet per second and the project design flood for the American River is 180,000 cubic feet per second within the limits of this levee unit. In the event of high water as reflected on the U. S. Weather Bureau gage at the "I" Street Bridge, the Sacramento Weir is opened in order to control the flood stage in the river to 29.0 insofar as possible. With the Sacramento Weir in operation, flows in that portion of the Sacramento River from Sacramento Weir to the American River may vary from 107,000 cubic feet per second in a downstream direction to as much as 80,000 cubic feet per second in an upstream direction.

