

FINAL ENVIRONMENTAL IMPACT STATEMENT

**408 PERMISSION AND 404 PERMIT TO THREE RIVERS
LEVEE IMPROVEMENT AUTHORITY**

FOR THE

**FEATHER RIVER LEVEE REPAIR PROJECT, CALIFORNIA
SEGMENT 2**

**APPENDIX B – SECTIONS 404 AND 401 OF THE CLEAN
WATER ACT, PERMITTING DOCUMENTS**

October 2008

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Preliminary Delineation of Waters of the U.S., With Wetland
Delineation Map Revisions Sept 07, Segment 2

Section 404 Individual Permit Application and Jurisdictional
Determination, Segment 2

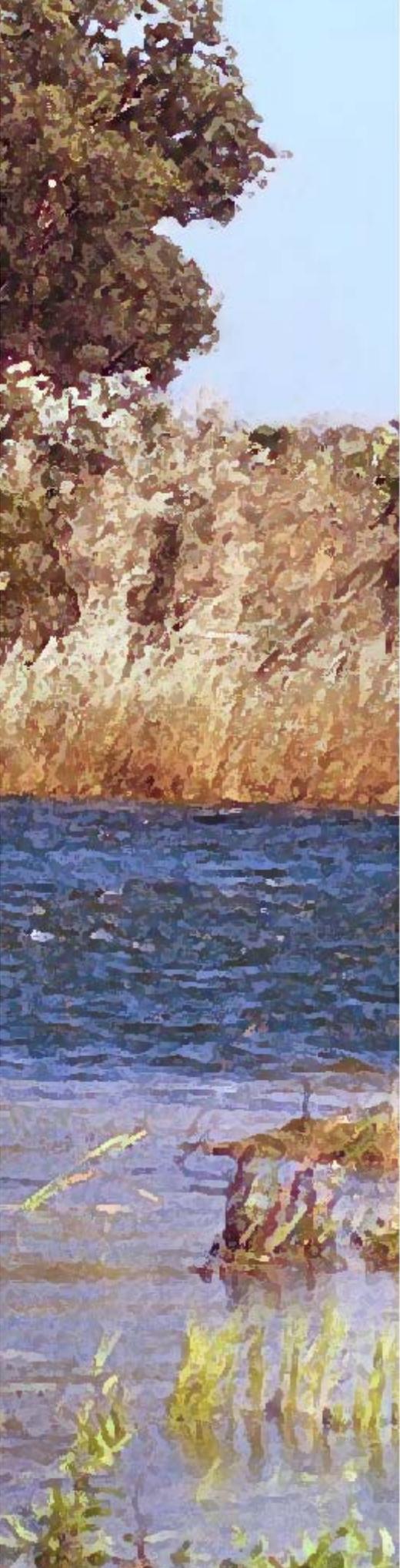
Updated Jurisdictional Determination, Segment 2, September 30, 2008

Section 404(b)(1) Alternatives Analysis, Segment 2

Section 401 Water Quality Certification Application and
Draft Agreement, Segment 2

October 2008

Preliminary Delineation of Waters of the U.S., with
Wetland Delineation Map Revisions Sept 07, Segment 2



**PRELIMINARY DELINEATION OF WATERS OF
THE UNITED STATES, INCLUDING WETLANDS**

**FOR THE
FEATHER RIVER
LEVEE REPAIR PROJECT,
SEGMENT 2**

**AN ELEMENT OF THE
YUBA-FEATHER SUPPLEMENTAL
FLOOD CONTROL PROJECT**

PREPARED FOR

**THREE RIVERS LEVEE
IMPROVEMENT AUTHORITY**

PREPARED BY

**EDAW
FLOOD CONTROL STUDY TEAM**

June 2007

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June 2007

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Acronyms and Abbreviations

AEP	Annual Exceedance Probabilities
CWA	Clean Water Act
DEM	Digital Elevation Models
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
FRLRP	Feather River Levee Repair Project
HEC-RAS	Hydrologic Engineering Center – River Analysis System
GIS	Geographic Information System
GPS	Global Positioning System
MSL	Mean Sea Level
NI	No Indicator
NL	Not Listed
OBL	Obligate
OHWM	Ordinary High Water Mark
PLM	Project Levee Mile
RD	Reclamation District
SCS	Soil Conservation Service
SDTS	Spatial Data Transfer Standard
TRLIA	Three Rivers Levee Improvement Authority
UPL	Upland
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
Y-FSFCP	Yuba-Feather Supplemental Flood Control Project

Introduction

The proposed Feather River Levee Repair Project (FRLRP) is located in unincorporated Yuba County, California. The project area is located south of Marysville and extends approximately 13 miles south along the Feather River East Levee (Exhibit 1). Regional access to the project area is readily available from State Route (SR) 70.

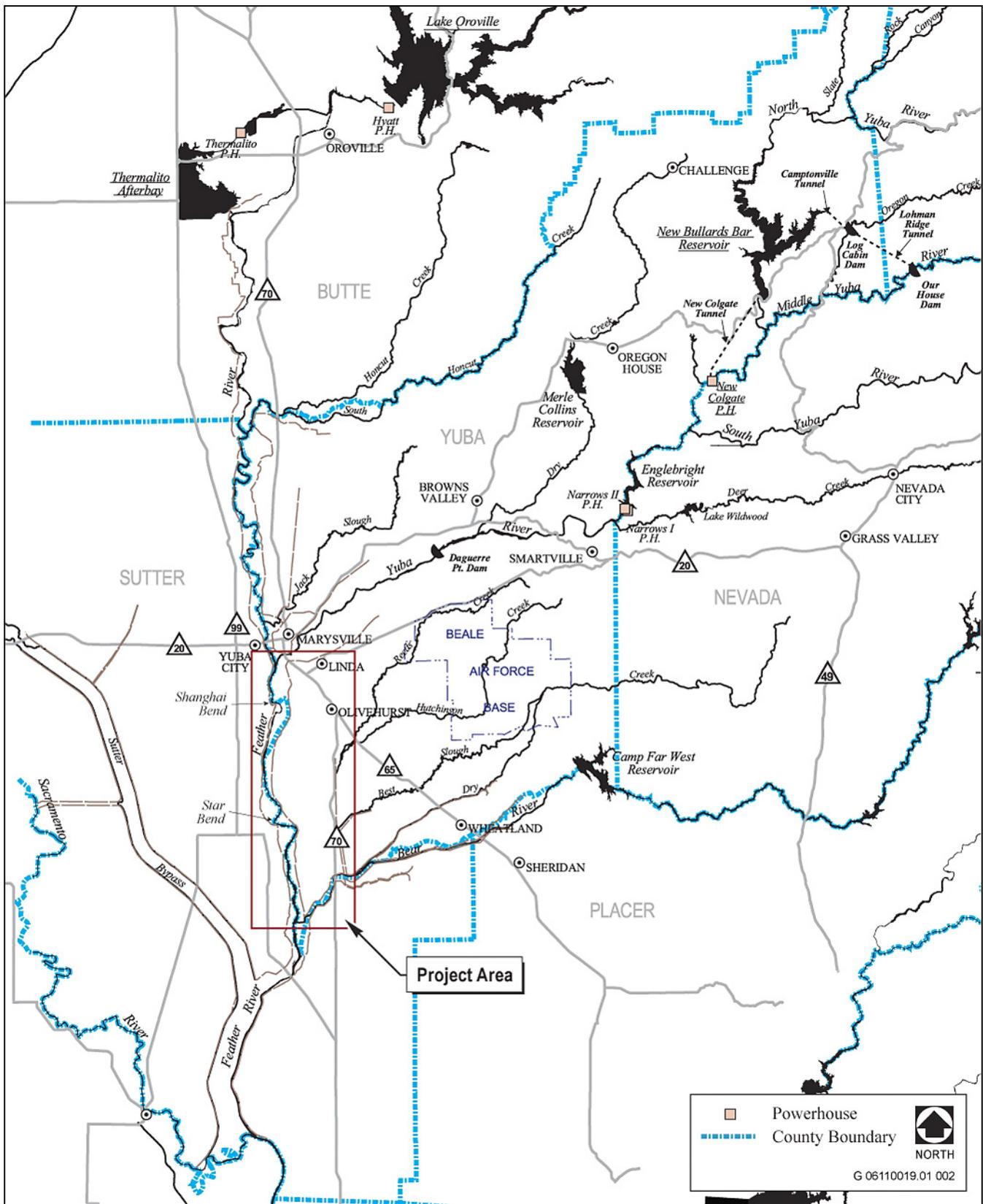
The FRLRP project area is divided into three project Segments, as shown in Exhibit 2.

- ▶ Project Segment 1 consists of the existing Feather River left bank levee from Project Levee Mile (PLM) 13.3 to PLM 17.1 (from approximately Reclamation District [RD] 784 Pump Station No. 2 upstream to Star Bend).
- ▶ Project Segment 2 consists of the existing Feather River left bank levee from PLM 17.1 to PLM 23.6 (from approximately Star Bend upstream to west of the Yuba County Airport).
- ▶ Project Segment 3 consists of the existing Feather River left bank levee from PLM 23.6 to PLM 26.1, and the Yuba River left bank levee from PLM 0.0 to PLM 0.3 (west of the Yuba County Airport to the railroad crossing adjacent to the SR 70 bridge).

Construction of a setback levee in project Segment 2, approximately following the 2003 Above Star Bend (ASB) setback levee alignment identified in the EIR for the Yuba-Feather Supplemental Flood Control Project (Y-FSFCP), is currently under consideration (Yuba County Water Agency 2003). It is anticipated that construction on Segment 2 would begin in fall 2007. This report covers all waters of the United States and wetlands present in the delineation study area along Segment 2 of the FRLRP. Information concerning waters of the United States in project Segments 1 and 3 can be found in the Preliminary Delineation of Waters of the United States, Including Wetlands for the Feather River Levee Repair Project, Segments 1 and 3 (TRLIA 2007). The Segment 2 study area covers approximately 1,996 acres; the study area extends at least 100 feet to the west of the Feather River levee toe and includes the setback area between the setback levee alignment and the existing levee (Exhibit 3). The levee setback area is described below under “Project Description.”

The study area ranges in elevation from approximately 73 feet above mean sea level (MSL) at the top of the Feather River levee to approximately 35 MSL west of the levee toe, near the Feather River channel. The study area is located within the U.S. Geological Survey (USGS) 7.5-minute Olivehurst quadrangle (Exhibit 3). The study area is characterized by the following habitats: riparian forest/scrub, elderberry savanna, seasonal wetland, pond, perennial drainages, intermittent drainages, lacustrine habitats, ruderal, orchards and other agricultural land, and developed land. The surrounding area is composed of both developed and undeveloped land including single-family housing units, roads, agricultural land, and open space.

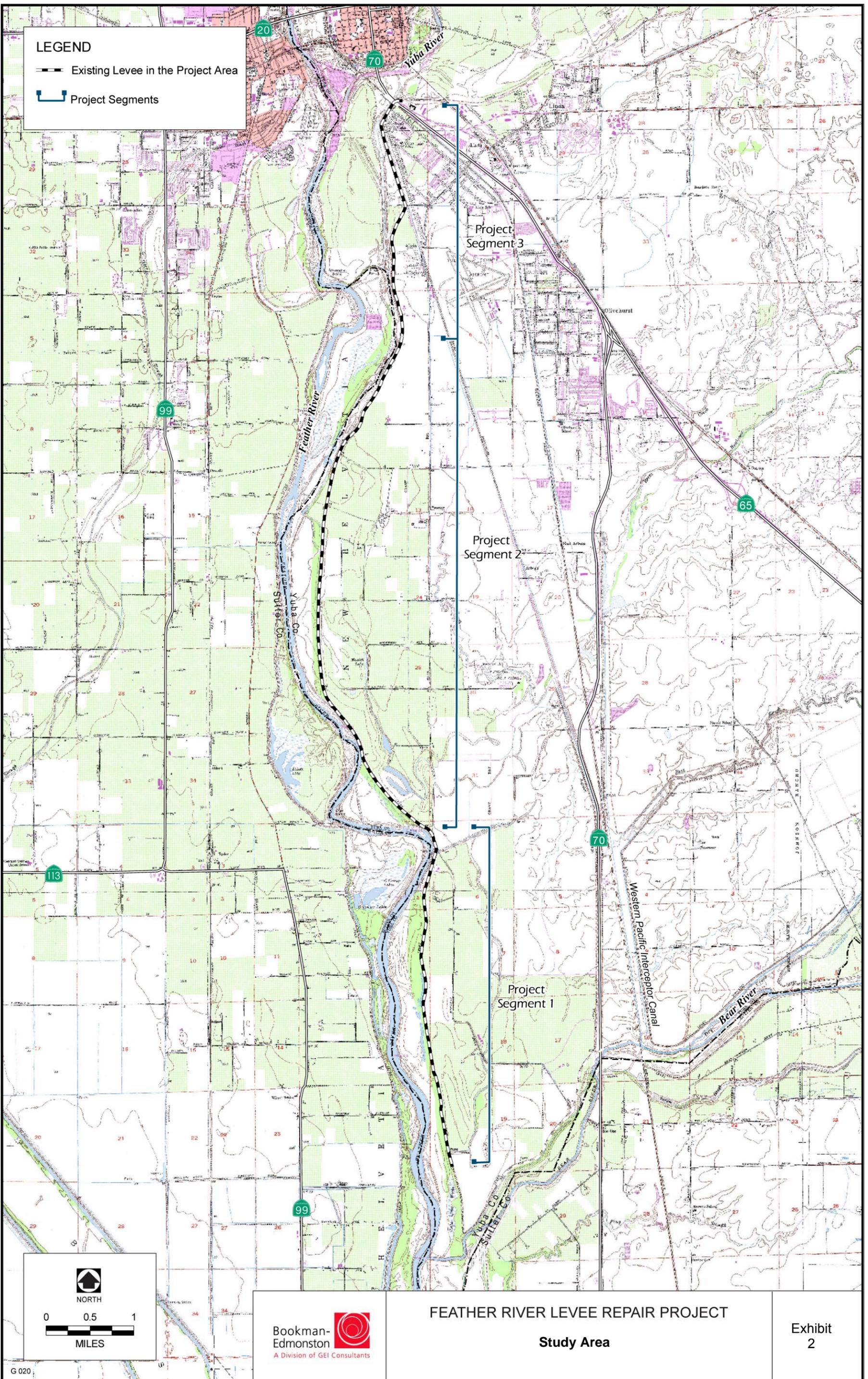
This report presents the results of the delineation of waters of the United States, as defined by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA), for the study area. It is considered preliminary until verified by the Sacramento District of the USACE.



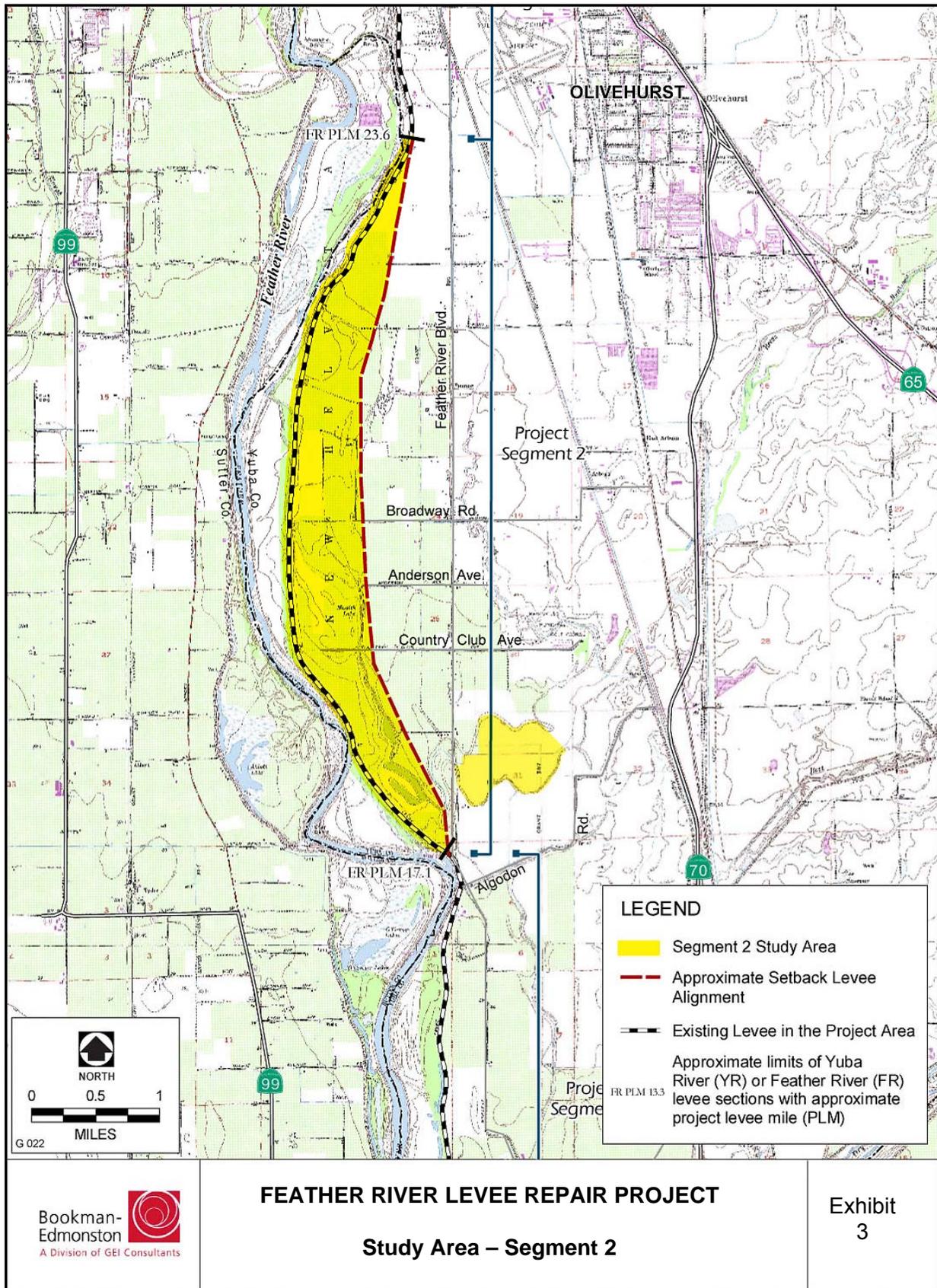
Source: EDAW 2006

Project Vicinity

Exhibit 1



Sources: EDAW 2004; GEI Consultants, Inc. 2004



Sources: EDAW 2004; GEI Consultants, Inc. 2004; Aerial provided by GEI Consultants, Inc.

Project Description

The purpose of the FRLRP is to provide increased protection from flooding from the Feather and Yuba Rivers in Yuba County. The proposed FRLRP within Segment 2 would include setting back the levee by constructing a new levee to the east of the existing Feather River levee following an alignment as shown in Exhibit 3. Portions of the existing levee would be removed once the new setback levee is complete.

The setback levee alignment was selected to achieve substantial reductions in river stage while maintaining a Feather River floodway width that is consistent with upstream and downstream reaches of the river. A second consideration was to take advantage of the existing configuration of the levee system to identify constructible locations where the setback levee could be tied into the existing levee. After the approximate alignment of the selected setback levee segment was defined by hydraulic modeling, the alignment was refined based on topographic, geologic, and socioeconomic considerations. The location of the setback levee was aligned as much as possible along a topographically elevated area formed by older, more consolidated soils, and consideration was given to reducing impacts on occupied residential units.

The setback levee would be approximately 5.9 miles long. The new levee segment would generally be set back approximately 0.5 mile to the east of the existing Feather River levee, except near the northern and southern ends, where it would join the existing levee. The area between the existing levee and the setback levee (the levee setback area) and the footprint of the setback levee would include approximately 1,600 acres. It should be noted that the final alignment of the setback levee may be adjusted slightly as the detailed design progresses to meet site-specific project needs.

Soil to build the setback levee would be taken from borrow sources developed on land within the setback area and/or east of the setback levee alignment (Exhibit 3). Soil borrow sites within the setback area would be filled with soil taken from the existing levee after construction of the setback levee is complete. Soil borrow sites outside the setback area could be filled in a similar manner, or could be for another purpose such as a stormwater detention basin or habitat creation.

Delineation Methods

Before conducting the field delineation survey of the study area, EDAW wetland ecologists reviewed a 1 inch = 200 feet scale color aerial photograph of the study area supplied by Three Rivers Levee Improvement Authority (USACE 1999) and the soil survey of Yuba County (SCS 1998) to determine areas of potential USACE jurisdiction. A wetland delineation was conducted in the study area on February 8, 2007 by EDAW wetland ecologists Dawn Cunningham and Sarah A.N. Bennett. The field survey was conducted on an overcast day with mild temperatures (approximately 50°F). The month of December and January had received less than average rainfall. Rain showers were observed in the afternoon on the day of the field survey.

The USACE 1987 wetlands delineation manual (Environmental Laboratory 1987) was used to delineate wetlands that are potentially subject to USACE jurisdiction under Section 404 of the

CWA. The 1987 manual provides technical guidelines and methods for the three-parameter approach to determining the location and boundaries of jurisdictional wetlands. This approach requires that an area support positive indicators of hydrophytic vegetation, hydric soils, and wetland hydrology to be considered a jurisdictional wetland. Additionally, the USACE Arid West Supplement was consulted where appropriate (Environmental Laboratory 2006). Routine wetland determination data forms were completed for 16 sample points and are provided in Appendix A. Potential jurisdictional areas were identified and mapped in the field and later digitized onto the aerial photograph. Sample point locations were also recorded digitally using a Global Positioning System (GPS) data logger (Thales Mobile Mapper CE) and imported onto an electronic version of the aerial photograph. GPS data was recorded in NAD 83 datum.

To determine whether the area at a sample point was dominated by hydrophytic vegetation, plant species at each sample site were recorded and the wetland indicator status was designated for the dominant species using the U.S. Fish and Wildlife Service National List of Plants that Occur in Wetlands: 1988 California (Region 0) (Reed 1988). Hydrophytic species include those listed as obligate (OBL), facultative wetland (FACW, FACW*), or facultative (FAC, FAC*, FAC+, but not FAC-), which corresponds to a percentage of a given species occurrences in wetlands. An asterisk is assigned to indicators derived from limited ecological information. The plus (+) and minus (-) designations specify the higher or lower part of the frequency range. The plant indicator categories are defined as:

- ▶ OBL—greater than 99% occurrence in wetlands,
- ▶ FACW—between 66% and 99% occurrence in wetlands, and
- ▶ FAC—between 34% and 66% occurrence in wetlands.

Although an interim document at the present time, the USACE's 2006 Arid West Supplement gives equal weight to all FAC-listed species (i.e., plus (+) and minus (-) modifiers are not used) – FAC-, FAC, and FAC+ plants are all considered to be FAC. The sample site was considered dominated by hydrophytic vegetation if the percentage of hydrophytic species was greater than 50%.

Species that usually occur in nonwetlands (67–99% estimated probability), but are occasionally found in wetlands (1–33% estimated probability), are identified as facultative upland (FACU). Obligate upland (UPL) species may occur in wetlands in another region, but occur almost always (>99%) under natural conditions in nonwetlands in California (Region 0). An NI (no indicator) is recorded for those species for which insufficient information was available to determine an indicator status. NL indicates species not listed in Reed (1988). These four indicators are used to identify species not considered hydrophytic. A species with an NL designation is considered UPL when completing the “Prevalence Index Worksheet” portion of the wetland determination data form (Environmental Laboratory 2006).

Wetland hydrology was assessed by recording observations such as drainage patterns, water marks, flooded or saturated soil conditions, and other indicators of wetland hydrology. In addition, the potentially jurisdictional areas were all evaluated in terms of their status as a navigable waterway or their adjacency or hydrological connection to a navigable waterway.

Waters of the United States were delineated based on their ordinary high water mark (OHWM). Ordinary high water marks for drainages typically correspond with characteristics such as shelving, scour lines, and other natural linear features, which define the bed and bank portion of the channel that floods under normal conditions. The OHWM for this reach of the Feather River and lower Yuba River was based on the USACE Hydrologic Engineering Center – River Analysis System (HEC-RAS) model data. A detailed description of this process is provided below.

MBK Engineers was provided a copy of the Feather River HEC-RAS model dated January 12, 2004 that was developed by the USACE Sacramento District for the Lower Feather River Floodplain Mapping Study. This model was the basis for the OHWM determination and the results are presented in Appendix B of the Draft Environmental Impact Report for the FRLRP (TRLIA 2006a) and are provided as Appendix E in this report. The HEC-RAS model was calibrated by the USACE to the January 1997 flood event. Additional information on the USACE calibration can be found in “Lower Feather River Floodplain Mapping Study” authored by the Sacramento District of the USACE, dated February 17, 2005 (USACE 2005). MBK Engineers re-calibrated the USACE HEC-RAS model for the Lower Feather River Floodplain Mapping Study to account for a vertical variation of Manning’s n value in the HEC-RAS model (MBK Engineers 2006). A vertical variation of Manning’s n value is needed in the Yuba City and Marysville reaches of the Feather and Yuba Rivers to better match the rising and falling limb of the stage hydrographs at the Feather River at Yuba City and Yuba River near Marysville.

The OHWM, as defined in this report, is based on the 1-in-2 year annual exceedance probabilities (AEP) defined by the MBK Engineers re-calibrated USACE HEC-RAS model. Water elevation data was determined for each 0.25 PLM by MBK Engineers, based on results from the modified HEC-RAS model. EDAW GIS specialists derived 10-foot contour intervals from USGS Spatial Data Transfer Standard (SDTS) Digital Elevation Models (DEMs, 10-meter) using 2-foot contour topographic lines obtained from the engineering design drawings (TRLIA 2006b). The water elevation data obtained from the hydraulic model was plotted using 10-foot contour intervals to determine the Feather River OHWM. This data is presented in Exhibit 4 and in Appendix D.

A wetland delineation was conducted and verified for the Country Club Estates project area, as defined in the *Wetland Delineation for the Country Club Estates* (JTS Communities Inc. 2005). This wetland delineation was verified in November 2006, reference number 200500660 (Appendix F). The northern portion of the potential soil borrow area east of the setback levee being considered for the FRLRP project Segment 2 overlaps with the Country Club Estates study area boundary. The area of overlap between the Country Club Estates and FRLRP Segment 2 study area is outlined on Exhibit 4. This area contains five drainage ditches which were verified as jurisdictional by the USACE; the area of overlap between the two projects was not re-examined at the time of the February 8, 2007 field survey.

Wetlands were mapped on the aerial photograph where access to property was restricted (i.e., private property). Where possible, soils were examined by digging soil test pits to determine whether positive hydric soils exist in the study area. Soils were described in terms of depth, matrix color, mottle color (when present), moisture status, and other diagnostic features indicative of hydric soils, such as the presence of concretions and oxidized rhizospheres

(a redoximorphic feature, according to Vepraskas [1992]). Hydric soil indicators were based on those provided by the 1987 USACE manual, 2006 Arid West Supplement, and Vepraskas (1992). Potential jurisdictional wetlands that did not have redoximorphic features were evaluated further to determine if they have hydric soils (SCS 1991).

Soil Survey Results

According to the Soil Survey of Yuba County, the soils within the delineation study area belong to the Columbia, Conejo, Holillipah, Horst, Kilaga, Kimball, Marysville, Perkins, and Shanghai soil series (SCS 1998). A description of these soil units is provided below; unless otherwise noted, all soil descriptions are from the Soil Survey of Yuba County, California (SCS 1998). Three soil map unit descriptions (e.g., map units 134, 165, and 166) were taken from the Soil Survey of Sutter County (SCS 1988). because these were not provided in the Soil Survey of Yuba County (SCS 1998). The county soils map showing the study area is included in Appendix B.

Columbia fine sandy loam, 0 to 1 percent slopes (map unit 137)

This very deep soil is formed on floodplains. It formed on alluvium derived from mixed sources. Included in this unit are small areas of Feather, Shanghai, and Holillipah soils; included soils comprise approximately 15 percent of the total map unit acreage. Permeability is moderately rapid. Runoff is slow and the hazard of water erosion is slight. This soil is protected by levees and subject to rare flooding. The dominant vegetation types in uncultivated areas are annual grasses, forbs, and Valley oaks. This soil map unit is designated hydric by the Natural Resource Conservation Service (NRCS) National Hydric List for the State of California (2007).

Columbia fine sandy loam, 0 to 1 percent slopes, occasionally flooded (map unit 138)

This very deep, somewhat poorly drained soil is formed on floodplains. It formed on alluvium derived from mixed sources. Included in this unit are small areas of Feather, Shanghai, and Holillipah soils; included soils comprise approximately 15 percent of the total map unit acreage. Permeability is moderately rapid. Runoff is slow and the hazard of water erosion is severe. This soil is subject to occasional brief or long periods of flooding from December through April. The native vegetation is mainly riparian trees with an understory of dense brush. This soil map unit is designated hydric by the NRCS National Hydric List for the State of California (2007).

Columbia fine sandy loam, 0 to 1 percent slopes, frequently flooded (map unit 139)

This very deep, somewhat poorly drained soil is formed on floodplains. It formed on alluvium derived from mixed sources. Included in this unit are small areas of Holillipah soils and areas of Columbia soils that are only occasionally flooded; included areas comprise approximately 15 percent of the total map unit acreage. Permeability is moderately rapid. Runoff is slow and the hazard of water erosion is slight. This soil is subject to frequent brief or long periods of flooding from December through April. The native vegetation is dominated by riparian trees with an understory of dense brush. This soil map unit is designated hydric by the NRCS National Hydric List for the State of California (2007).

Conejo loam, 0 to 2 percent slopes (map unit 141)

This very deep, well drained soil is on stream terraces. The soil formed on alluvium derived from mixed rock sources. Included in this unit are small areas of the Perkins and Horst soils. Permeability is moderately slow in the Conejo soil. The shrink-swell capacity is moderate. Runoff is slow and the hazard of water erosion is slight. This soil is protected by levees and subject to rare flooding. The dominant vegetation types in uncultivated areas are annual grasses, forbs, and Valley oaks.

Holillipah loamy sand, 0 to 2 percent slopes, occasionally flooded (map unit 134)

This very deep, somewhat excessively drained soil is on floodplains. It is formed on alluvium derived from mixed sources. Areas of this unit are cut by channels and have higher depositional bars that were created during flooding. Included in this unit are small areas of Columbia and Shanghai soils and small areas of stratified sand and gravel bars in river channels; the included areas comprise approximately 20 percent of the total map unit acreage. Permeability is rapid in this Holillipah soil. Runoff is very slow and the hazard of water erosion is severe. This soil is subject to occasional brief or long periods of flooding from December through April. The native vegetation is trees with a dense brush understory. This soil is described in the Soil Survey of Sutter County, California (SCS 1988). This soil map unit is designated hydric by the NRCS National Hydric List for the State of California (2007).

Holillipah loamy sand, 0 to 1 percent slopes, occasionally flooded (map unit 162)

This very deep, somewhat excessively drained soil is on floodplains. It is formed on alluvium derived from mixed sources. Included in this unit are small areas of Columbia and Shanghai soils and areas of Holillipah soils that are frequently flooded; the included areas comprise approximately 15 percent of the total map unit acreage. Permeability is moderately rapid in this Holillipah soil. Runoff is very slow and the hazard of water erosion is severe. This soil is subject to occasional brief or long periods of flooding from December through April. The dominant vegetation types in uncultivated areas are annual grasses, forbs, shrubs, and Valley oaks. This soil map unit is designated hydric by the NRCS National Hydric List for the State of California (2007).

Holillipah loamy sand, 0 to 1 percent slopes, frequently flooded (map unit 163)

This very deep, somewhat excessively drained soil is on floodplains. It is formed on alluvium derived from mixed sources. Included in this unit are small areas of Columbia and Shanghai soils and areas of the Holillipah soils that are occasionally flooded; the included areas comprise approximately 15 percent of the total map unit acreage. Permeability is moderately rapid in the Holillipah soil. Runoff is very slow and the hazard of water erosion is slight. This soil is subject to frequent, brief or long periods of flooding December through April. The native vegetation is dominated by riparian trees with a dense understory of brush. This soil map unit is designated hydric by the NRCS National Hydric List for the State of California (2007).

Horst silt loam, 0 to 2 percent slopes (map unit 170)

This very deep, well drained soil is on stream terraces. It is formed on alluvium derived from mixed sources. Included in this unit are small areas of Feather, Conejo, and Columbia soils; the included areas comprise approximately 10 percent of the total map unit acreage. Permeability is moderate. The shrink-swell potential of this soil is moderate. Runoff is slow and the hazard of

water erosion is slight. This soil is protected by levees and subject to rare flooding. The dominant vegetation types in uncultivated areas are annual grasses, forbs, and Valley oaks.

Kilaga clay loam, 0 to 1 percent slopes, hardpan substratum (map unit 183)

This well drained soil is on stream terraces. It has a deep hard pan located approximately 40 to 60 inches below the soil surface. Included in this unit are small areas for Conejo and Marysville soils and small areas of a soil similar to the Kilaga soil, but has a siltstone at a depth of approximately 40 to 60 inches; the included areas comprise approximately 20 percent of the total map unit acreage. This soil unit has a hardpan located below a depth of approximately 47 inches below the soil surface. Permeability is slow in the Kilaga soil. Runoff is slow and the hazard of water erosion is slight. The shrink-swell capacity of this soil is high. After heavy rain events, which occur during December through April, there is a perched water table above the lower part of the subsoil. This soil is protected by levees and subject to rare flooding. The native vegetation in uncultivated areas is annual grasses and forbs.

Kimball loam, 0 to 1 percent slopes (map unit 185)

This very deep, well drained soil is on low fan terraces. It is formed on alluvium derived from mixed sources. Included in this unit are small areas of San Joaquin soils and areas of a soil that is similar to the Kimball soil, but has a hardpan at a depth of approximately 40 to 60 inches; the included areas comprise approximately 15 percent of the total map unit acreage. Permeability is very slow. Runoff is slow and the hazard of water erosion is slight. After heavy rain events, which occur during December through April, there is a perched water table above the lower part of the subsoil. This soil is protected by levees and subject to rare flooding. The dominant vegetation types in uncultivated areas are annual grasses, forbs, and Valley oaks.

Marysville loam, 0 to 1 percent slopes (map unit 192)

This moderately deep, well drained soil is on stream terraces. It is formed on alluvium derived from mixed sources. Included in this unit are small areas of Conejo soils and areas of a soil that is similar to the Marysville soil, but has bedrock present at a depth of approximately 40 to 60 inches; the included areas comprise approximately 20 percent of the total map unit acreage. A weathered siltstone bedrock is typically found at a depth of approximately 36 inches in the Marysville loam map unit. Permeability is moderately slow. Runoff is slow and the hazard of water erosion is slight. This soil is protected by levees and subject to rare flooding. The dominant vegetation types in uncultivated areas are annual grasses, forbs, and Valley oaks.

Perkins loam, 0 to 2 percent slopes (map unit 203)

This very deep, well drained soil is on stream terraces. It is formed on alluvium derived from mixed sources. Included in this unit are small areas of Conejo soils and areas of a soil that are similar to the Perkins soil, but have a water table at a depth of approximately 40 to 60 inches or subject to rare flooding; the included areas comprise approximately 15 percent of the total map unit acreage. Permeability is moderately slow. Runoff is slow and the hazard of water erosion is slight. The shrink-swell potential of the Perkins loam map unit is moderate. This soil is subject to rare flooding. The dominant vegetation types in uncultivated areas are annual grasses and forbs.

Shanghai silt loam, 0 to 1 percent slopes, wet (map unit 166)

This very deep, somewhat poorly drained soil is on floodplains. It is formed on alluvium derived from mixed sources. Under natural conditions, the soil is somewhat poorly drained, although

drainage has been improved by open ditches and flood-control structures. Included in this unit are small areas of Columbia and Shanghai fine sandy loam soils; the included areas comprise approximately 10 percent of the total map unit acreage. Permeability is moderate in this Shanghai soil map unit. The shrink-swell capacity of this soil is moderate. Runoff is slow and the hazard of water erosion is moderate. This soil is subject to frequent, long periods of flooding from December to April. This soil map unit is used mainly for prune and pear orchards, or other orchard crops adapted to long periods of flooding and high water table. This soil is described in the Soil Survey of Sutter County, California (SCS 1988). This soil map unit is designated hydric by the NRCS National Hydric List for the State of California (2007).

Shanghai silt loam, 0 to 1 percent slopes, occasionally flooded (map unit 219)

This very deep, somewhat poorly drained soil is on floodplains. It is formed on alluvium derived from mixed sources. Under natural conditions, the soil is somewhat poorly drained, although drainage has been improved by open ditches and flood-control structures. Included in this unit are small areas of Columbia and Horst soils; the included areas comprise approximately 15 percent of the total map unit acreage. Permeability is moderate in this Shanghai map unit. The shrink-swell capacity of this soil is moderate. Runoff is very slow and the hazard of water erosion is slight. This soil is subject to occasional flooding from December through April. This soil map unit is designated hydric by the NRCS National Hydric List for the State of California (2007).

Shanghai silt loam, 0 to 2 percent slopes, frequently flooded (map unit 165)

This very deep, somewhat poorly drained soil is on floodplains. It is formed on alluvium derived from mixed sources. Under natural conditions, the soil is somewhat poorly drained, although drainage has been improved by open ditches and flood-control structures. Included in this unit are small areas of Columbia and Holillipah soils; the included areas comprise approximately 10 percent of the total map unit acreage. Permeability is moderate in this Shanghai map unit. Runoff is very slow and the hazard of water erosion is moderate. This soil is subject to frequent, long periods of flooding from December through April. This soil is described in the Soil Survey of Sutter County, California (SCS 1988). This soil map unit is designated hydric by the NRCS National Hydric List for the State of California (2007).

Shanghai silt loam, 0 to 1 percent slopes, clay substratum (map unit 220)

This very deep soil is on floodplains. It is formed on alluvium derived from mixed sources. Under natural conditions, the soil is somewhat poorly drained, although drainage has been improved by open ditches and flood-control structures. Included in this unit are small areas of Conejo and Kilaga; the included areas comprise approximately 10 percent of the total map unit acreage. Permeability is moderate to a depth of 41 inches in this Shanghai map unit, and slow beneath this depth. The shrink-swell capacity of this soil is moderate. Runoff is very slow and the hazard of water erosion is slight. The vegetation in uncultivated areas is mainly annual grasses, forbs, and Valley oaks.

Delineation Results

Sites qualifying as waters of the United States according to Section 404 of the CWA are depicted on the maps in Exhibit 4. Delineation sample sites are also cross-referenced to the wetland determination data forms provided in Appendix A. Habitat descriptions for waters of the United States and non-jurisdictional habitats are included below. Representative photographs of habitat types described below are provided in Appendix C.

A total of 103.96 acres of potentially jurisdictional waters of the United States, including wetlands, are present within the 1,996-acre study area (Table 1). The boundaries of wetland features were delineated using aerial data in some areas because of limited access to private property or dense vegetation in the area between the levee and the Feather River. Additionally,

Table 1				
Acreeges of Potentially Jurisdictional Habitats				
Habitat	ID	Hydrological Connectivity *	Acreege Total	Habitat Total
Developed	D	Feather River (C)		0.04
Drainage Ditch (DD)**	DD1	PD2 (D)	0.20	
	DD2	PD2 (D)	0.10	
	DD3	PD2 (D)	0.05	
	DD4	PD2 (D)	0.08	
	DD5	PD2 (D)	0.29	
DD Total				0.72
Elderberry Savanna (ES)		Feather River (C)		9.56
Intermittent Drainage (ID)	ID1	PD1 (D)	0.75	
	ID2	PD1 (D)	0.38	
	ID3	PD2 (D)	1.31	
	ID4	Feather River (D)	0.47	
ID Total				2.91
Lacustrine (L)				1.38
Orchard (ORC)		Feather River (C)		4.64
Perennial Drainage (PD)	PD1	PD2 (D)	16.96	
	PD2	Clark Slough (D)	3.01	19.96
Ruderal (R)		Feather River (C)		1.36
Riparian Forest/Scrub (RFC) within OHWM of Feather River		Feather River (C)		43.76
Riparian Forest/Scrub (RFC)		PD1 (A)/ ID1 (A)		19.62
Total - Waters of the United States including Wetlands				103.96
*Hydrological Connection to USACE Jurisdictional Waters of the United States C = Contiguous with, or located within, the listed feature. D = Connected by ditch or other drainage feature. A = Wetland area adjacent to a waters of the United States. **DD was previously verified by the Sacramento District USACE (Appendix F)				

waters of the United States were mapped based on topographic map information and examined on the ground where access permitted. All riparian wetlands, including the willow riparian wetland (represented by data form 16) and the slough area (represented by data form 1 and 2) are located adjacent to the unnamed perennial drainage (PD1), which is tributary to Clark Slough, and therefore subject to USACE jurisdiction under Section 404 of the CWA. Several habitat types which do not meet the three parameter wetland criteria, such as developed areas, orchard, and ruderal habitats, are potentially subject to USACE jurisdiction under Section 404 of the CWA because these habitats are located within the OHWM of the Feather River. Detailed habitat descriptions and rationale for jurisdictional determination are provided below. This delineation is considered preliminary until verified by the USACE.

Jurisdictional Habitat Types

Developed

A small-developed area located at the southern study area boundary is potentially subject to USACE jurisdiction as a waters of the United States because this area is located within the Feather River OHWM, as mapped by the HEC-RAS model. This area, totaling 0.04 acre, is the Star Bend boat ramp.

Drainage Ditches

In 2005 a wetland delineation was completed and verified for the Country Club Estates Property. A portion of this verified wetland delineation overlaps with the northern portion of the potential soil borrow area east of the setback levee alignment; this area is being considered as part of the proposed project. The overlapping area includes five drainage ditches, which are subject to USACE jurisdiction under Section 404 of the CWA. The USACE verification letter is supplied as Appendix F and the drainage features are mapped on Exhibit 4. The overlapping area was not re-surveyed on February 8, 2007.

Elderberry Savanna

Elderberry savanna is characterized by open stands of blue elderberry (*Sambucus mexicana*, FAC) with an annual grassland understory. This habitat type occurs between the levee and the Feather River, in areas of the Feather River corridor where disturbances have created large gaps in the dense canopies of the mixed and Valley oak riparian communities. Also found in this community are scattered coyote brush (*Baccharis pilularis*, NL), Valley oak (*Quercus lobata*, FAC), and prickly lettuce (*Lactuca serriola*, FAC).

Data form 15 in Appendix A provides information on the vegetation and soils present within this habitat type. Positive indicators of hydrology and hydric soils (i.e., low chroma soils) were not observed within this habitat type. Sandy loam soils (10YR 4/4) were observed at sampling point 15; this location is located above the OHWM. The USACE manual for wetland determination states that the three parameter criteria are only valid for determining wetlands located outside the OHWM (Environmental Laboratory 1987). Since the elderberry savanna area did not possess dominant hydrophytic vegetation, hydric soils, or evidence of hydrology at the time of the wetland delineation performed on February 8, 2007, water elevation data obtained from MBK Engineers must be relied upon. The adjacent upland vegetation that characterizes the levee slope and toe is characterized as ruderal. A complete habitat description of ruderal habitat can be found below in the Non-Jurisdictional Habitats section.

Based on the water elevation data, it was determined that 9.56 acres of the elderberry savanna is located within the OHWM of the Feather River, as determined by the HEC-RAS data, and is therefore subject to Section 404 of the CWA as a jurisdictional waters of the United States.

Intermittent Drainage

Four intermittent drainages were mapped within the study area. Intermittent drainages are drainages supported by both groundwater sources and rainwater runoff and that only flow for part of the year, typically during the winter rainy season.

ID1 is a small portion of the unnamed tributary to Clark Slough, which begins northwest of Messick Lake. This feature is mapped as an intermittent drainage on the USGS Olivehurst 7.5' quadrangle. A riparian forest, dominated by willow species and with a mono-floristic understory composed of Santa Barbara sedge, is present along the intermittent drainage. ID1 and the adjacent riparian forest (data form 16) are subject to USACE jurisdiction under Section 404 of the CWA as waters of the United States and adjacent wetlands.

ID2 was mapped as an intermittent drainage which supports a narrow band of riparian forest habitat. Property access was restricted in this area and the feature was mapped from the 1999 aerial photograph supplied by TRLIA (USACE 1999). ID2 connects to PD1; PD1 flows in a westerly direction and connects to the channelized remnant of Plumas Lake Canal (PD2) east of Feather River Boulevard. PD2 is hydrologically connected to Clark Slough, a tributary of the Feather River and a navigable water of the United States. ID2 is therefore subject to USACE jurisdiction under Section 404 of the CWA as a waters of the United States.

ID3 follows the edge of an agricultural field, outside the levee setback area. ID3 is characterized by hydrophytic vegetation including duckweed (*Lemna minor*, OBL), tall flat sedge (*Cyperus eragrostis*, FACW), narrowleaf cattail (*Typha angustifolia*, OBL), and curly dock (*Rumex crispus*, FACW). The drainage has an OHWM of approximately 12 feet. Data form 6 provides information on the intermittent drainage feature and data form 7 provides information on the adjacent upland agricultural habitat. ID3 is subject to USACE jurisdiction under Section 404 of the CWA, because this feature is hydrologically connected to PD2, the channelized remnant of Plumas Lake Canal.

ID4 is mapped on the USGS Olivehurst 7.5' quadrangle in the riparian forest/scrub habitat between the Feather River and the levee. This drainage was mapped based on the topographic map rather than actual field delineation due to the dense nature of the vegetation, including armed species such as Himalayan blackberry. The OHWM, approximately 8 feet wide, was estimated from aerial imagery by EDAW GIS specialists and wetland ecologists. Data forms 10 and 11 provide information on the riparian forest/scrub habitat surrounding ID4. ID4 is a tributary to the Feather River and is therefore subject to USACE jurisdiction under Section 404 of the CWA as a waters of the United States.

Lacustrine

Lacustrine habitats are inland depressions or dammed riverine channels containing standing water (Cowardin 1979). Lacustrine habitats may range in size from several square meters to large areas covering several square miles. Their depths can vary from a few centimeters to several meters deep.

Within the northern portion of the study area between the levee and the Feather River, several small lakes are present (Exhibit 4, maps 4 and 5). These areas total approximately 1.38 acres of the study area. The lacustrine habitat present in the study area formed in an area that appears to be an old channel of the Feather River or old borrow pits. The soils of the lacustrine habitat are sandy and characterized by hydric properties (10YR 5/1). Submerged rooted plants including watermilfoil (*Myriophyllum* sp., OBL) and hydrilla (*Hydrilla verticillata*, OBL) were observed. Data form 14 in Appendix A provides information on the lacustrine habitat. The lacustrine habitats present within the study area boundary, totaling approximately 1.38 acres, are subject to USACE jurisdiction under Section 404 of the CWA, because these features are regulated as waters of the United States.

Riparian Forest/Scrub

Riparian forest/scrub occurs as a broad to narrow band of vegetation within the floodplain of the Feather River. This habitat is also found adjacent to drainages, outside the existing Feather River levee, along ID1 and ID2. Riparian habitat is characterized by a complex structure and the dominance of its component species varies along the river.

Within the study area the upper canopy of the mixed riparian forest is typically dominated by Valley oak, Fremont cottonwood (*Populus fremontii*, FACW), box elder (*Acer negundo*, FACW), shining willow (*S. lucida* spp. *lasiandra*, NI), red willow (*S. laevigata*, NL), and Oregon ash (*Fraxinus latifolia*, FACW). White alder (*Alnus rhombifolia*, FACW), northern California black walnut (*Juglans californica* var. *hindsii*, FAC), and western sycamore (*Platanus racemosa*, FACW) are also present in the upper canopy.

The lower shrub canopy is very dense and thicket-like. The dominant species are California rose (*Rosa californica*, FAC+), blue elderberry, Himalayan blackberry (*Rubus discolor*, FACW), and shrub-like forms of the various willow species listed above. Lianas such as California grape (*Vitis californica*, FACW) and virgin's bower (*Clematis ligusticifolia*, FAC) are also found in the

shrub layer. The herbaceous understory ranges from very developed to sparse depending on the amount of light filtering through the upper canopies, but typically includes various grasses, sedges, and rushes. The mixed riparian forest along the existing Feather River levee is very dense and consists mostly of even-aged trees, with scattered, more established trees in some areas. The riparian forest and scrub were not mapped as separate features. Due to the dense and difficult nature of assessing these community types in the field, we classified them as an aggregate vegetative association, and are therefore referred to as riparian forest/scrub.

Data forms 10–13 in Appendix A provide information on the riparian forest/scrub found between the Feather River east bank levee and the Feather River; sampling locations 10 and 11 are located outside of the Feather River OHWM and not subject to USACE jurisdiction because these sampling points did not have hydric soils nor did these areas have evidence of hydrology. Data forms 12 and 13 provide information on the riparian forest/scrub habitat within the OHWM of the Feather River. Data forms 2, 3, 8, and 16 provide information on the riparian forest/scrub present in the levee setback area. Riparian forest/scrub habitat was determined to be potentially subject to USACE jurisdiction when the habitat met the following criteria: 1) located within the Feather River OHWM, as defined by the HEC-RAS model or 2) located adjacent to a waters of the United States (i.e., PD1, ID1, ID2, and ID3) and supported hydrophytic vegetation and hydric soils and had wetland hydrology. If active hydrology was not observed, as in the case of the willow dominated riparian forest adjacent to ID1, then vegetation and soil indicators, supported with previous experience with wetland systems, were relied upon to make a preliminary determination. Data form 16 provides information on the willow riparian forest. Because the willow riparian forest area was dominated by a willow shrub overstory, mono-species Santa Barbara sedge understory, and had hydric soil indicators including low chroma color matrix (10YR 4/2) with bright abundant mottles (7.5YR 5/8), the area was inferred to have a high spring water table. Hydrology indicators were not observed at the time of the February 8, 2007 field survey. Rainfall was below normal for the area at the time the wetland delineation was conducted. Approximately 43.76 acres of riparian forest/scrub habitat is potentially subject to USACE jurisdiction because this habitat is located within the Feather River OHWM; additionally, approximately 19.62 acres of riparian forest/scrub habitat located outside the Feather River OHWM met the three criteria parameters of vegetation, soils, and hydrology to be classified as a wetland. The riparian forest/scrub habitat located within the Feather River OHWM and/or that meets the USACE criteria (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) for wetlands are potentially jurisdiction under Section 404 of the CWA.

Perennial Drainage

Perennial drainages flow year round and are supported by both groundwater sources and precipitation events. The Feather River is the predominant perennial drainage in the project vicinity but is located outside of the project site and delineation study area. Two perennial drainages were identified within the study area; these features are discussed below.

PD1 begins immediately south of Anderson Road (Exhibit 4, map 2) and is mapped as Messick Lake on the USGS 7.5' Olivehurst quadrangle. The area mapped as Messick Lake has an OHWM of approximately 30 feet, as mapped by EDAW GIS-specialists. PD1 flows into an unnamed slough, within the levee setback area, flows across the southern study area boundary,

and becomes a channelized remnant of Plumas Lake Canal (PD2), east of Feather River Boulevard. PD2 forms the northern property boundary of the agricultural field considered as a potential soil borrow site; this area is located outside of the levee setback area. PD2 has an OHWM of approximately 40 feet in width near Feather River Boulevard. PD2 was flowing at the time of the field survey. Floating plants, including duckweed and mosquito fern (*Azolla filiculoides*, OBL), were observed covering approximately 60 percent of PD2 north of the agricultural field. The channel was surrounded by Himalayan blackberry at data sampling point 4. PD2 is hydrologically connected to Clark Slough, which is tributary to the Feather River, a navigable water of the United States. Therefore, PD1 and PD2 are subject to USACE jurisdiction under Section 404 of the CWA as waters of the United States.

Data forms 1 and 2 supply information on PD1 and the surrounding riparian forest habitat. Data form 4 provides information on PD2.

Ruderal

Ruderal habitats account for approximately 144.83 acres in the delineation study area. A small portion of ruderal habitat totaling 1.36 acres, located adjacent to the toe of the Feather River levee, may be subject to jurisdiction by the USACE because this habitat is located within the OHWM of the Feather River, a waters of the United States. The potentially jurisdictional ruderal area has the same elevation as the adjacent riparian forest habitat (approximately 52 MSL at RM 22.75 and RM 22.5, Appendix D). A detailed description of the ruderal habitat present within the study area can be found in the following Non-Jurisdictional Habitat section of this report.

Orchard

Orchards are present throughout the delineation study area, including between the Feather River and the left (east) bank levee. A small portion of the orchard habitat present within the study area, totaling 4.64 acres, may be subject to USACE jurisdiction as a waters of the United States under Section 404 of the CWA because the orchard has been mapped within the Feather River OHWM by the HEC-RAS model (Exhibit 4, map 4).

Non-Jurisdictional Habitats

The habitats discussed below are considered non-jurisdictional under Section 404 of the CWA because they do not meet the three criteria for wetlands, are located outside the OHWM of the Feather River, and/or the features are hydrologically isolated wetlands. A total of 1,891.69 acres of non-jurisdictional habitats are present within the 1,996-acre study area (Table 2). A small percentage of the developed, orchard, and ruderal habitat types may fall under USACE jurisdiction because the features occur within the Feather River OHWM as defined by the HEC-

RAS model (see the “Delineation Methods” and “Jurisdictional Habitat Types” discussions above).

Table 2 Acreages of Potentially Non-Jurisdictional Habitats		
Habitat	Hydrological Connectivity *	Acreage Total
Agricultural Field (AF)	None	136.93
Developed (D)	None	24.06
Elderberry Savanna	None	10.90
Fallow (F)	None	93.82
Orchard (ORC)	None	1,457.98
Pond	None	0.08
Ruderal (R)	None	143.47
Riparian Forest/Scrub	ID4	20.76
Seasonal Wetland	None	3.69
Total acreage of Potentially Non-Jurisdictional Habitat Types		1,891.69
*Hydrological Connection to USACE Jurisdictional Waters of the United States		

Developed

Developed areas in the project vicinity generally consist of residential structures and other buildings, yards, roads, and parking areas. Developed areas are scattered on the land side of the existing Feather River levee. Many of the developed areas are devoid of vegetation, but where vegetation exists, it ranges from sparse cover of weedy species to horticultural plantings. Developed areas were mapped from the USACE 1999 aerial photograph because these properties are privately owned and were not accessible. The developed areas within the study area, which total approximately 24.06 acres, are not likely to fall under USACE jurisdiction as wetlands or waters of the United States because these areas lack hydrophytic vegetation, indicators of hydrology, and hydric soils.

Elderberry Savanna

A detailed description of the elderberry savanna habitat is provided under the Jurisdictional Habitat section of this document. Approximately 10.90 acres of elderberry savanna habitat is located above the OWHM, as defined by the HEC-RAS model, and was not dominated by hydrophytic vegetation or hydric soils criteria of a wetland (Appendix A, data form 15). Therefore, this area is not likely to fall under USACE jurisdiction as a wetland or waters of the United States.

Riparian Forest/Scrub

Approximately 20.76 acres of riparian forest/scrub habitat between the Feather River and the east bank of the levee is located above the OHWM, as defined by the HEC-RAS model. This area is characterized by silty/sandy loam soils with a matrix color of 10YR 4/4. The riparian forest/scrub habitat does not meet the soils criteria to be classified as a wetland. Data forms 10 and 11 were taken in riparian forest/scrub habitat located above the Feather River OHWM, as mapped by the HEC-RAS model; these data points are located adjacent to an intermitted drainage identified on the Olivehurst USGS 7.5' quadrangle (Exhibit 4, map 2). Approximately 20.76 acres of riparian forest/scrub habitat are not likely subject to USACE jurisdiction under Section 404 of the CWA because these areas did not support hydrophytic vegetation, have positive indicators of hydric soils, field-observed hydrology, nor were mapped by the HEC-RAS model. Data forms 12 and 13 provide information on riparian forest/scrub habitats that are located within the Feather River OHWM.

Ruderal Areas

Ruderal areas are those that have been stripped of their native vegetative cover and that are either covered by gravel or dirt or dominated by weedy invasive species. Ruderal areas are common along the existing Feather River levee in project Segment 2 and in disturbed areas such as access roads. The levee slopes are generally dominated by nonnative grasses such as wild oats (*Avena fatua*, NL); however, native grass species such as creeping wild rye (*Leymus triticoides*, NL) can be found on levee slopes and at the levee toe. The vegetation on the levee slopes is maintained periodically through prescribed fire and/or mowing. An approximately 10- to 20-foot-wide corridor along the water side of the existing levees is routinely mowed and/or disked to keep woody riparian vegetation from becoming established. Conspicuous weeds in these ruderal areas are medusahead (*Taeniatherum caput-medusae*, NL), woolly mullein (*Verbascum thapsus*, NL), Canada thistle (*Cirsium arvense*, NL), and yellow star-thistle (*Centaurea solstitialis*, NL). Approximately 143.47 acres of ruderal areas in the study area are not likely to fall under USACE jurisdiction as a wetland or waters of the United States because this habitat is lacking hydrophytic vegetation, hydric soils, does not have wetland hydrology, and is located outside of the Feather River OHWM.

Orchards, Agricultural Fields, and Fallow Lands

The dominant habitat present in the study area is agricultural land use. Orchards dominate the area between the existing Feather River levee and Feather River Boulevard. Agricultural fields, used for purposes other than fruit and nut production, account for 136.93 acres of the study area. Orchard habitat accounts for approximately 1,457.98 acres. Data forms 5 and 7 contain information on the agricultural field and data forms 3 and 9 contain information on the orchards present within the study area. Approximately 93.82 acres of fallow habitat was mapped from aerial photography (USACE 1999) and visual inspection from adjacent public access roads. Property access was not possible on the fallow land; therefore, there are no data forms for this habitat type.

Pond

One isolated water feature was identified from the aerial photograph on private property within the setback levee alignment (Exhibit 4, map 5). This feature appears to be a stock watering pond. The feature was not available to survey because it is located on private lands where access is not currently available. It is unlikely this feature would be regulated by the USACE because it is hydrologically isolated from all other waterways.

Seasonal Wetland

One isolated seasonal wetland was identified from the aerial photograph on private property within the setback levee alignment (Exhibit 4, map 2). This feature is surrounded by fallow fields and does not have an apparent hydrological connection to other wetlands or waters of the United States. The feature was not available to survey because it is located on private lands where access is not currently available. It is unlikely this feature would be regulated by the USACE because it is hydrologically isolated from all other waterways.

Jurisdictional Determination

The study area contains approximately 103.96 acres of potentially jurisdictional waters of the United States. These areas include 19.96 acres of perennial drainages, 2.91 acres of intermittent drainages, and 0.72 acres of drainage ditches previously verified as subject to USACE jurisdiction (Appendix F). Lacustrine habitats totaling approximately 1.38 acres are present within the study area. The lacustrine habitats formed in an area of which was likely an old channel of the Feather River or old borrow pits. This habitat would be regulated under Section 404 as other waters of the United States. Between the east bank levee and the Feather River approximately 9.56 acres of elderberry savanna, 1.36 acres of ruderal habitat, 4.64 acres of orchard habitat, and 0.04 acre of developed area (i.e., the Star Bend boat ramp) may be subject to USACE jurisdiction due to the location of these habitats within the Feather River OHWM. The ruderal, orchard, and developed areas do not meet the vegetation or soils criteria for wetlands. However, these areas are located within the Feather River OHWM, as defined by the HEC-RAS model, and are potentially subject to USACE jurisdiction under Section 404 of the CWA.

Approximately 43.76 acres of riparian forest/scrub habitat is located within the Feather River OHWM and an additional 19.62 acres of riparian forest/scrub habitat located outside the Feather River OHWM meets the USACE vegetation, soils, and wetland hydrology criteria to be a wetland. These habitats are potentially subject to USACE jurisdiction as waters of the United States or wetlands because these areas are located within the Feather River OHWM or located adjacent to waters of the United States and possess wetland characteristics including hydrophytic vegetation and hydric soils.

Within the levee setback area, ID1-3 and PD1-2 are hydrologically connected to Clark Slough, a tributary to Feather River, which is a navigable waters of the United States. These features,

including the adjacent riparian habitat which meets the three parameter USACE criteria as jurisdictional wetland habitats, are subject to USACE jurisdiction under Section 404 of the CWA.

Two isolated features were identified from the aerial photograph (USACE 1999). These features were identified as a pond, totaling approximately 0.08 acre, which is associated with a developed area and a seasonal wetland, totaling approximately 3.69 acres, within a fallow field. Both features appear to be isolated and are therefore, not likely subject to USACE jurisdiction under Section 404 of the CWA. This jurisdictional determination is considered preliminary until verified by the USACE.

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Appendix A

Wetland Delineation Data Forms

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers Levee Improvement Authority State: CA Sampling Point: 1
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R3E
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): CONCAVE Slope (%): 1%
 Subregion (LRR): LRR-C Lat: 39.02374 Long: -121.58740 Datum: NAO 83
 Soil Map Unit Name: (Water) NWM classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: <u>Area appears to be connected to Messic Lake on the aerial.</u>	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Quercus lobata</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u>Salix lasiolepis</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. <u>Alnus rhombifolia</u>	<u>2</u>	<u>N</u>	<u>FACW</u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B)
4. _____				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____
Total Cover: _____				
Sapling/Shrub Stratum				OBL species _____ x 1 = _____
1. <u>Rubus ursinus</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	FACW species <u>52</u> x 2 = <u>104</u>
2. _____				FAC species <u>5</u> x 3 = <u>15</u>
3. _____				FACU species _____ x 4 = _____
4. _____				UPL species _____ x 5 = _____
5. _____				Column Totals: <u>57</u> (A) <u>119</u> (B)
Total Cover: _____				Prevalence Index = B/A = <u>2.09</u>
Herb Stratum				Hydrophytic Vegetation Indicators:
1. <u>Rumex crispus</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	<input checked="" type="checkbox"/> Dominance Test is >50%
2. _____				<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. _____				<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____				
6. _____				
7. _____				
8. _____				
Total Cover: _____				¹ Indicators of hydric soil and wetland hydrology must be present.
Woody Vine Stratum				Hydrophytic Vegetation Present? Yes <u>X</u> No _____
1. _____				
2. _____				
Total Cover: _____				
% Bare Ground in Herb Stratum <u>N/A</u> % Cover of Biotic Crust _____				

Remarks: _____

slough

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Presumed hydric - soil inundated.
 No pit examined

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): 6 in.

Water Table Present? Yes No Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes No Depth (inches): Surface

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers Levee Improvement Authority State: CA Sampling Point: 2
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R3E
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): CONCAVE Slope (%): 2.9%
 Subregion (LRR): LRR-C Lat: 39.02375 Long: -121.58731 Datum: NAD83
 Soil Map Unit Name: Shanghai silt loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year.
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland?	Yes <u>X</u>	No _____
Hydric Soil Present?	Yes <u>X</u>	No _____			
Wetland Hydrology Present?	Yes <u>X</u>	No _____			

Remarks: Sampling point is in a transition point between wetland (pt. 1) and upland (see data sheet 3).

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)																																									
1. <u>Quercus lobata</u>	<u>5</u>	<u>N</u>	<u>FAC</u>		Total Number of Dominant Species Across All Strata: _____ (B)																																								
2. <u>Salix lasiolepis</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)																																									
Total Cover: _____				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____																																									
<table border="0"> <tr><td>OBL species</td><td>_____</td><td>x 1 = _____</td></tr> <tr><td>FACW species</td><td><u>90</u></td><td>x 2 = <u>180</u></td></tr> <tr><td>FAC species</td><td><u>5</u></td><td>x 3 = <u>15</u></td></tr> <tr><td>FACU species</td><td><u>45</u></td><td>x 4 = <u>180</u></td></tr> <tr><td>UPL species</td><td>_____</td><td>x 5 = _____</td></tr> <tr><td>Column Totals:</td><td><u>140</u> (A)</td><td><u>375</u> (B)</td></tr> </table>					OBL species	_____	x 1 = _____	FACW species	<u>90</u>	x 2 = <u>180</u>	FAC species	<u>5</u>	x 3 = <u>15</u>	FACU species	<u>45</u>	x 4 = <u>180</u>	UPL species	_____	x 5 = _____	Column Totals:	<u>140</u> (A)	<u>375</u> (B)																							
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Column Totals:	<u>140</u> (A)	<u>375</u> (B)																																											
Prevalence Index = B/A = <u>2.68</u>				Hydrophytic Vegetation Indicators: Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0' Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) <u>transition area.</u> ¹ Indicators of hydric soil and wetland hydrology must be present.																																									
<table border="0"> <tr><td colspan="2">Sapling/Shrub Stratum</td></tr> <tr><td>1. <u>Rubus ursinus</u></td><td><u>40</u> <u>Y</u> <u>FACW</u></td></tr> <tr><td>2. _____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td></tr> <tr><td colspan="2">Total Cover: _____</td></tr> <tr><td colspan="2">Herb Stratum</td></tr> <tr><td>1. <u>Gallium aparine</u></td><td><u>40</u> <u>Y</u> <u>FACU</u></td></tr> <tr><td>2. <u>Poa annua</u></td><td><u>40</u> <u>Y</u> <u>FACW-</u></td></tr> <tr><td>3. <u>Sorghum halepense</u></td><td><u>5</u> <u>N</u> <u>FACU</u></td></tr> <tr><td>4. _____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td></tr> <tr><td>6. _____</td><td>_____</td></tr> <tr><td>7. _____</td><td>_____</td></tr> <tr><td>8. _____</td><td>_____</td></tr> <tr><td colspan="2">Total Cover: _____</td></tr> <tr><td colspan="2">Woody Vine Stratum</td></tr> <tr><td>1. _____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td></tr> <tr><td colspan="2">Total Cover: _____</td></tr> </table>					Sapling/Shrub Stratum		1. <u>Rubus ursinus</u>	<u>40</u> <u>Y</u> <u>FACW</u>	2. _____	_____	3. _____	_____	4. _____	_____	5. _____	_____	Total Cover: _____		Herb Stratum		1. <u>Gallium aparine</u>	<u>40</u> <u>Y</u> <u>FACU</u>	2. <u>Poa annua</u>	<u>40</u> <u>Y</u> <u>FACW-</u>	3. <u>Sorghum halepense</u>	<u>5</u> <u>N</u> <u>FACU</u>	4. _____	_____	5. _____	_____	6. _____	_____	7. _____	_____	8. _____	_____	Total Cover: _____		Woody Vine Stratum		1. _____	_____	2. _____	_____	Total Cover: _____
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1. _____	_____																																												
2. _____	_____																																												
Total Cover: _____																																													
% Bare Ground in Herb Stratum <u>15</u> % Cover of Biotic Crust _____ Hydrophytic Vegetation Present? Yes <u>X</u> No _____																																													

Remarks: Sampling point in a transition area between upland & wetland. Area meets criteria of soils and hydrology as a wetland.

edge of slough/riparian area

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5.5	10YR 4/3	70	7.5YR 5/8	30	RM	M	silty sand	
5.5-9.5	7.5YR 2.5/1	60	5YR 4/6	40	RM	M	silty clay	
9.5-17	10YR 5/2	50	10YR 5/8	50	RM	M	silty clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input checked="" type="checkbox"/> Stratified Layers (A5) (LRR C)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): No

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No Depth (inches): _____

Saturation Present? Yes No Depth (inches): 8in

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers Levee Improvement Authority State: CA Sampling Point: 3
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R3E
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): LRR-C Lat: 39.62382 Long: -121.58709 Datum: NAD83
 Soil Map Unit Name: Shanghai silt loam NMI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.) Dry year
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Upland pt. to sampling location 1 & 2.</u> <u>On the edge of an active orchard.</u>	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Quercus lobata</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. <u>Juglans California</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
4. _____				
Total Cover: _____				
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>Rubus discolor</u>	<u>2</u>	<u>N</u>	<u>FACW</u>	Total % Cover of: _____ Multiply by: _____
2. _____				OBL species _____ x 1 = _____
3. _____				FACW species <u>22</u> x 2 = <u>44</u>
4. _____				FAC species <u>10</u> x 3 = <u>30</u>
5. _____				FACU species <u>5</u> x 4 = <u>20</u>
Total Cover: _____				UPL species <u>20</u> x 5 = <u>100</u>
				Column Totals: <u>57</u> (A) <u>194</u> (B)
				Prevalence Index = B/A = <u>3.40</u>
Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Pod annua</u>	<u>20</u>	<u>N</u>	<u>FACW-NL</u>	<input type="checkbox"/> Dominance Test is >50%
2. <u>Bromus diandrus</u>	<u>20</u>	<u>N</u>	<u>NL</u>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
3. <u>Gallium aparine</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____				
6. _____				
7. _____				
8. _____				
Total Cover: _____				¹ Indicators of hydric soil and wetland hydrology must be present.
Woody Vine Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____				Yes _____ No <input checked="" type="checkbox"/>
2. _____				
Total Cover: _____				
% Bare Ground in Herb Stratum <u>20</u>		% Cover of Biotic Crust _____		

Remarks: Mostly annual grasses at the edge of the orchard.
Approximately 20 ft above the slough below.

Upland adjacent to wetland orchard.

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-5	10YR 3/3	85	10YR 6/5	15	RM	M	slty clay	
5-16	10YR 4/4						slty loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: No.
Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

many worm castings present below 6"

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary indicators (any one indicator is sufficient)

- | | | |
|--|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Flowed Soils (C6) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Shallow Aquitard (D3) |
| | | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____
 Water Table Present? Yes _____ No X Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers levee Improvement Authority State: CA Sampling Point: 4
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R4E, Section 31
 Landform (hillslope, terrace, etc.): perennial drainage Local relief (concave, convex, none): CONCAVE Slope (%): 0
 Subregion (LRR): LRR-C Lat: 39.02021 Long: -121.5797 Datum: NAD 83
 Soil Map Unit Name: Shanghai silt loam NMI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: <u>OHWM ~ 25 ft.</u> <u>2 culverts allow water to pass under Feather River Blvd. Rd.</u> <u>Waters of the United States.</u>	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	
Total Cover: _____				
Sapling/Shrub Stratum				
1. <u>Rubus discolor</u>	<u>100</u>	<u>Y</u>	<u>FACW</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>60</u> x 1 = <u>60</u> FACW species <u>100</u> x 2 = <u>200</u> FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>160</u> (A) <u>260</u> (B) Prevalence Index = B/A = <u>1.63</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover: _____				
Herb Stratum				
1. <u>Lemna minor</u>	<u>40</u>	<u>Y</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0' _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present. Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. <u>Azolla filiculoides</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Total Cover: _____				
Woody Vine Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
Total Cover: _____				
% Bare Ground in Herb Stratum <u>N/A</u>		% Cover of Biotic Crust _____		

Remarks: floating plants present.
Bank covered in RUBUS discolor.

open water channel (@ N. end of borrow site)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers Levee Improvement Authority State: CA Sampling Point: 5
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R4E, Section 31
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): flat Slope (%): 0
 Subregion (LRR): LRR-C Lat: 39.02021 Long: -121.57803 Datum: NA083
 Soil Map Unit Name: Shanghai silt loam NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: <u>Sampling point w/in agricultural field (row crops - currently fallow)</u> <u>Previous Season's crop: squash</u>	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____	_____	_____	_____	
Total Cover: _____				
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
Total Cover: _____				UPL species <u>60</u> x 5 = <u>300</u>
<u>Herb Stratum</u>				Column Totals: <u>60</u> (A) <u>300</u> (B)
1. <u>Brassica nigra</u>	<u>60</u>	<u>Y</u>	<u>NL</u>	Prevalence Index = B/A = <u>5</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Total Cover: _____				
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Indicators:
1. _____	_____	_____	_____	___ Dominance Test is >50%
2. _____	_____	_____	_____	___ Prevalence Index is ≤3.0 ¹
Total Cover: _____				___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
<u>% Bare Ground in Herb Stratum</u> <u>40</u> <u>% Cover of Biotic Crust</u> _____				___ Problematic Hydrophytic Vegetation ¹ (Explain)

Remarks: _____

Ag field - squash.

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/3	95	10YR 6/5	5	RM	M	clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): No.
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:
Many fine roots in upper 8"

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soils (C6)
- Other (Explain in Remarks)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____
 Water Table Present? Yes _____ No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes _____ No Depth (inches): _____

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers Levee Improvement Authority State: CA Sampling Point: 6
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R4E, Section 31
 Landform (hillslope, terrace, etc.): intermittent drainage Local relief (concave, convex, ~~none~~): none Slope (%): 0
 Subregion (LRR): LRR-C Lat: 39.01803 Long: -121.57287 Datum: NAD83
 Soil Map Unit Name: Perkins loam NMI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: <u>OHWM ≈ 10 ft. water of the United States</u>	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	
Total Cover: _____				
<u>Sapling/Shrub Stratum</u>				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species <u>20</u> x 1 = <u>20</u>
3. _____	_____	_____	_____	FACW species <u>15</u> x 2 = <u>30</u>
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species <u>5</u> x 4 = <u>20</u>
Total Cover: _____				UPL species _____ x 5 = _____
<u>Herb Stratum</u>				Column Totals: <u>40</u> (A) <u>70</u> (B)
1. <u>Typha angustifolia</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	Prevalence Index = B/A = <u>1.75</u>
2. <u>Cyperus erianthus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
3. <u>Rumex crispus</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
4. <u>Sorghum halepense</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
5. <u>Lemna minor</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Total Cover: _____				
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Indicators:
1. _____	_____	_____	_____	<input checked="" type="checkbox"/> Dominance Test is >50%
2. _____	_____	_____	_____	<input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹
Total Cover: _____				____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
% Bare Ground in Herb Stratum <u>20</u> % Cover of Biotic Crust _____				____ Problematic Hydrophytic Vegetation ¹ (Explain)

Remarks: floating plants present in channel.

channel @ south end of Ag. field.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers Levee Improvement Authority State: CA Sampling Point: 7
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R4E, Section 91
 Landform (hillslope, terrace, etc.): open field Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): LRR-0 Lat: 39.01804 Long: -121.57290 Datum: NAD 83
 Soil Map Unit Name: Parkins loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) dry year
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland?	Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>		
Wetland Hydrology Present?	Yes _____ No <u>X</u>		

Remarks: Paired pit to sampling pt. 6
Point taken on edge of agricultural field access road.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>50</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet:	
Total Cover: _____				Total % Cover of:	Multiply by:
Sapling/Shrub Stratum				OBL species _____	x 1 = _____
1. _____	_____	_____	_____	FACW species <u>6</u>	x 2 = <u>12</u>
2. _____	_____	_____	_____	FAC species _____	x 3 = _____
3. _____	_____	_____	_____	FACU species _____	x 4 = _____
4. _____	_____	_____	_____	UPL species <u>4</u>	x 5 = <u>20</u>
5. _____	_____	_____	_____	Column Totals:	<u>10</u> (A) <u>32</u> (B)
Total Cover: _____				Prevalence Index = B/A = <u>3.2</u>	
Herb Stratum				Hydrophytic Vegetation Indicators:	
1. <u>Brassica nigra</u>	<u>4</u>	<u>y</u>	<u>NL</u>	___ Dominance Test is >50%	
2. <u>Cynodon dactylon</u>	<u>6</u>	<u>y</u>	<u>FACW</u>	___ Prevalence Index is ≤3.0'	
3. _____	_____	_____	_____	___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
4. _____	_____	_____	_____	___ Problematic Hydrophytic Vegetation ¹ (Explain)	
5. _____	_____	_____	_____	___ Indicators of hydric soil and wetland hydrology must be present.	
6. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
Total Cover: _____					
Woody Vine Stratum					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
Total Cover: _____					
% Bare Ground in Herb Stratum <u>90</u> % Cover of Biotic Crust _____					

Remarks: Little vegetation present because point taken adjacent to channel is within the agricultural access road.

Ag. field access road - adjacent to pt. 6

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 4/4	100					sandy loam	
10-16	10YR 4/4	100					sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): No,

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Flowed Soils (C6)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____

Water Table Present? Yes _____ No Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No Depth (inches): _____

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers levee Improvement Authority State: CA Sampling Point: 8
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R3E
 Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): CONCAVE Slope (%): 0
 Subregion (LRR): LRR-G Lat: 39.03318 Long: -121.59253 Datum: NAD83
 Soil Map Unit Name: (Water) NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: <u>Bank-to-bank ≈ 95ft, Waters of the United States.</u>	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Salix laevigata</u>	<u>5</u>	<u>N</u>	<u>NL</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)	
2. _____				Total Number of Dominant Species Across All Strata: <u>3</u> (B)	
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
4. _____				Prevalence Index worksheet:	
Total Cover: _____				Total % Cover of: _____	Multiply by: _____
<u>Sapling/Shrub Stratum</u>				OBL species _____ x 1 = _____	
1. <u>Rubus discolor</u>	<u>80</u>	<u>Y</u>	<u>FACW</u>	FACW species <u>140</u> x 2 = <u>280</u>	
2. _____				FAC species _____ x 3 = _____	
3. _____				FACU species _____ x 4 = _____	
4. _____				UPL species <u>20</u> x 5 = <u>100</u>	
5. _____				Column Totals: <u>160</u> (A) <u>280</u> (B)	
Total Cover: _____				Prevalence Index = B/A = <u>2.4</u>	
<u>Herb Stratum</u>				Hydrophytic Vegetation Indicators:	
1. <u>Equisetum hyemale</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	<u>X</u> Dominance Test is >50%	
2. <u>Cornus maculatum</u>	<u>40</u>	<u>Y</u>	<u>FACW</u>	<u>X</u> Prevalence Index is ≤3.0 ¹	
3. <u>Veronica thosus</u>	<u>5</u>	<u>N</u>	<u>NL</u>	____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
4. <u>Centaurea coltitalis</u>	<u>10</u>	<u>N</u>	<u>NL</u>	____ Problematic Hydrophytic Vegetation ¹ (Explain)	
5. _____				____	
6. _____				____	
7. _____				____	
8. _____				____	
Total Cover: _____				¹ Indicators of hydric soil and wetland hydrology must be present.	
<u>Woody Vine Stratum</u>				Hydrophytic Vegetation Present? Yes <u>X</u> No _____	
1. _____					
2. _____					
Total Cover: _____					
% Bare Ground in Herb Stratum <u>2</u>		% Cover of Biotic Crust _____			

Remarks: _____

Waters of the United States - stream - Country Club Rd.

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 3/4	100					Sandy loam	
10-16	10YR 3/6	100					loamy sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): No,
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

- | | | |
|--|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Shallow Aquitard (D3) |
| | | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____
 Water Table Present? Yes _____ No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes _____ No Depth (inches): _____

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers Levee Improvement Authority State: CA Sampling Point: 10
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R3E
 Landform (hillslope, terrace, etc.): gentle slope Local relief (concave, convex, none): _____ Slope (%): 20%
 Subregion (LRR): LRR-C Lat: 39.04056 Long: -121.60276 Datum: NAD83
 Soil Map Unit Name: Holillipah loamy sand NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) any year
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: <u>Riparian scrub habitat inside existing levee.</u> <u>Pt. taken near levee toe & adjacent to levee access Rd.</u>	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33%</u> (A/B)
4. _____	_____	_____	_____	
Total Cover: _____				
Sapling/Shrub Stratum				
1. <u>Baccharis pilularis</u>	<u>20</u>	<u>Y</u>	<u>NL</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species <u>35</u> x 3 = <u>105</u> FACU species _____ x 4 = _____ UPL species <u>40</u> x 5 = <u>200</u> Column Totals: <u>75</u> (A) <u>305</u> (B) Prevalence Index = B/A = <u>4.07</u>
2. <u>Sambucus mexicana</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Total Cover: _____				
Herb Stratum				
1. <u>Geranium dissectum</u>	<u>20</u>	<u>Y</u>	<u>NL</u>	Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present. Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. <u>Ambrosia psilostachya</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Total Cover: _____				
Woody Vine Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
Total Cover: _____				
% Bare Ground in Herb Stratum <u>30</u>		% Cover of Biotic Crust _____		

Remarks: _____

Riparian scrub. Inside existing Feather River levee

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/4	100					Sandy loam	
6-16	10YR 4/4	100					loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____

Water Table Present? Yes _____ No Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No Depth (inches): _____

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers Levee Improvement Authority State: CA Sampling Point: 11
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R3E
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 10%
 Subregion (LRR): LRR-C Lat: 39.04054 Long: -121.60287 Datum: NAD83
 Soil Map Unit Name: Holillipah loamy sand NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: <u>Pt. taken ≈ 5ft lower in elevation than pt. 10</u> <u>slope to E = 18%; slope to N = 2-3%</u>	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)	
4. _____	_____	_____	_____	Total Cover: _____	
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1. <u>Rubus discolor</u>	<u>2</u>	<u>N</u>	<u>FACW</u>	Total % Cover of: _____	Multiply by: _____
2. <u>Salix laevigata</u>	<u>10</u>	<u>Y</u>	<u>NL</u>	OBL species _____ x 1 = _____	
3. <u>Baccharis pilularis</u>	<u>10</u>	<u>Y</u>	<u>NL</u>	FACW species <u>32</u> x 2 = <u>64</u>	
4. _____	_____	_____	_____	FAC species _____ x 3 = _____	
5. _____	_____	_____	_____	FACU species _____ x 4 = _____	
Total Cover: _____				UPL species <u>20</u> x 5 = <u>100</u>	
Herb Stratum				Column Totals: <u>52</u> (A) <u>164</u> (B)	
1. <u>Carex barbarae</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>	Prevalence Index = B/A = <u>3.15</u>	
2. _____	_____	_____	_____	Hydrophytic Vegetation Indicators:	
3. _____	_____	_____	_____	___ Dominance Test is >50%	
4. _____	_____	_____	_____	___ Prevalence Index is ≤3.0 ¹	
5. _____	_____	_____	_____	___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
6. _____	_____	_____	_____	___ Problematic Hydrophytic Vegetation ¹ (Explain)	
7. _____	_____	_____	_____	___ Indicators of hydric soil and wetland hydrology must be present.	
8. _____	_____	_____	_____	Total Cover: _____	
Woody Vine Stratum				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
Total Cover: _____					
% Bare Ground in Herb Stratum <u>20</u>		% Cover of Biotic Crust _____			

Remarks: _____

inside Feather River Levee - riparian scrub.

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 4/3	100					Sandy clay loam	
8-16	10YR 4/4	100					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): No,

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____

Water Table Present? Yes _____ No Depth (inches): _____

Saturation Present? (Includes capillary fringe) Yes _____ No Depth (inches): _____

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers Levee Improvement Authority State: CA Sampling Point: 12
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R3E
 Landform (hillslope, terrace, etc.): floodplain w/in levee Local relief (concave, convex, none): none Slope (%): 5%
 Subregion (LRR): LRR-c Lat: 39.67662 Long: -121.59940 Datum: NAD 83
 Soil Map Unit Name: Halilligan loamy sand NMI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.) Dry year
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>Sample point taken in the existing Feather River levee.</u>	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)	
4. _____	_____	_____	_____		
Total Cover: _____					
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1. <u>Baccharis pilularis</u>	<u>5</u>	<u>N</u>	<u>NL</u>	Total % Cover of: _____	Multiply by: _____
2. _____	_____	_____	_____	OBL species _____ x 1 = _____	
3. _____	_____	_____	_____	FACW species <u>30</u> x 2 = <u>60</u>	
4. _____	_____	_____	_____	FAC species _____ x 3 = _____	
5. _____	_____	_____	_____	FACU species _____ x 4 = _____	
Total Cover: _____				UPL species <u>45</u> x 5 = <u>225</u>	
				Column Totals: <u>75</u> (A) <u>285</u> (B)	
				Prevalence Index = B/A = <u>3.8</u>	
Herb Stratum				Hydrophytic Vegetation Indicators:	
1. <u>Verbena bonariensis</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	___ Dominance Test is >50%	
2. <u>Bromus tiliaris</u>	<u>40</u>	<u>Y</u>	<u>NL</u>	___ Prevalence Index is ≤3.0 ¹	
3. <u>Hypericum formosum</u> var. <u>scouleri</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
4. _____	_____	_____	_____	___ Problematic Hydrophytic Vegetation ¹ (Explain)	
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
Total Cover: _____					
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.	
1. _____	_____	_____	_____		
2. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	
Total Cover: _____					
% Bare Ground in Herb Stratum <u>15</u>		% Cover of Biotic Crust _____			

Remarks: _____

Riparian scrub inside levee.

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 5/3		10YR 5/8	10			loamy sand	
4-17	10YR 5/2		10YR 5/8	40		M	loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): No,

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
<u>Primary Indicators (any one indicator is sufficient)</u>	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Flowed Soils (C6)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No Depth (inches): _____

Saturation Present? Yes No Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%						
0-16	10YR 4/3	90	10YR 5/6	10	RM	M			Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): No.
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks: Site is sloping S->N towards the lake at sampling location.

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soils (C6)
- Other (Explain in Remarks)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Thin Muck Surface (C7)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No Depth (inches): _____
 Water Table Present? Yes _____ No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes _____ No Depth (inches): _____

Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers Levee Improvement Authority State: CA Sampling Point: 14
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R3E
 Landform (hillslope, terrace, etc.): lake edge Local relief (concave, convex, none): Concave Slope (%): 4
 Subregion (LRR): LLR-C Lat: 39.07250 Long: -121.59894 Datum: NAD 83
 Soil Map Unit Name: Holillipah loamy sand NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.) Dry year.
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: _____	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																																
2. _____	_____	_____	_____																																	
3. _____	_____	_____	_____																																	
4. _____	_____	_____	_____																																	
Total Cover: _____				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td align="center"><u>30</u></td> <td align="center">x 1 =</td> <td align="center"><u>30</u></td> </tr> <tr> <td>FACW species</td> <td>_____</td> <td align="center">x 2 =</td> <td>_____</td> </tr> <tr> <td>FAC species</td> <td>_____</td> <td align="center">x 3 =</td> <td>_____</td> </tr> <tr> <td>FACU species</td> <td>_____</td> <td align="center">x 4 =</td> <td>_____</td> </tr> <tr> <td>UPL species</td> <td>_____</td> <td align="center">x 5 =</td> <td>_____</td> </tr> <tr> <td align="right" colspan="2">Column Totals:</td> <td align="center">(A)</td> <td align="center">(B)</td> </tr> <tr> <td align="center" colspan="4">Prevalence Index = B/A = <u>1</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	<u>30</u>	x 1 =	<u>30</u>	FACW species	_____	x 2 =	_____	FAC species	_____	x 3 =	_____	FACU species	_____	x 4 =	_____	UPL species	_____	x 5 =	_____	Column Totals:		(A)	(B)	Prevalence Index = B/A = <u>1</u>			
Total % Cover of:		Multiply by:																																		
OBL species	<u>30</u>	x 1 =	<u>30</u>																																	
FACW species	_____	x 2 =	_____																																	
FAC species	_____	x 3 =	_____																																	
FACU species	_____	x 4 =	_____																																	
UPL species	_____	x 5 =	_____																																	
Column Totals:		(A)	(B)																																	
Prevalence Index = B/A = <u>1</u>																																				
Sapling/Shrub Stratum 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ Total Cover: _____																																				
Herb Stratum 1. <u>Hydrilla verticillata</u> <u>15%</u> <u>Yes</u> <u>OBL</u> 2. <u>Myriophyllum sp.</u> <u>15%</u> <u>Yes</u> <u>OBL</u> 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ Total Cover: _____																																				
Woody Vine Stratum 1. _____ 2. _____ Total Cover: _____																																				
% Bare Ground in Herb Stratum <u>98</u> % Cover of Biotic Crust _____																																				
Hydrophytic Vegetation Present? Yes <u>X</u> No _____																																				
Remarks: <u>only rooted submerged plants present @ lake margin.</u>																																				

inside Feather River Levee - lake margin

SOIL

Sampling Point: 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2/	10YR 2/1	100						small clay organic layer
31-14	10YR 5/1	98	10YR 3/1	2	RM	M		sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No Depth (inches): 5"

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 3"

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Point was dug at lake margin; lake is saturated.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers Levee Improvement Authority State: CA Sampling Point: 15
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R3E
 Landform (hillslope, terrace, etc.): flat Local relief (concave) convex, none): concave Slope (%): 2%
 Subregion (LRR): LRR-C Lat: 39.07717 Long: -121.59376 Datum: NAD83
 Soil Map Unit Name: Holilligan loamy sand NWM classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.) Dry year
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: _____	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____	_____	_____	_____	
Total Cover: _____				
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. <u>Rubus ursinus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	Total % Cover of: _____ Multiply by: _____
2. <u>Sambucus mexicana</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species <u>5</u> x 2 = <u>10</u>
4. _____	_____	_____	_____	FAC species <u>5</u> x 3 = <u>15</u>
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
Total Cover: _____				UPL species <u>20</u> x 5 = <u>100</u>
				Column Totals: <u>30</u> (A) <u>125</u> (B)
				Prevalence Index = B/A = <u>4.16</u>
Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Brassica nira</u>	<u>20</u>	<u>Y</u>	<u>NL</u>	___ Dominance Test is >50%
2. _____	_____	_____	_____	___ Prevalence Index is ≤3.0 ¹
3. _____	_____	_____	_____	___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. _____	_____	_____	_____	___ Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Total Cover: _____				¹ Indicators of hydric soil and wetland hydrology must be present.
Woody Vine Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes _____ No <input checked="" type="checkbox"/>
2. _____	_____	_____	_____	
Total Cover: _____				
% Bare Ground in Herb Stratum <u>30</u> % Cover of Biotic Crust _____				
Remarks: _____				

elderberry savanna

SOIL

Sampling Point: 15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	10YR 3/3	100					loam	
7-15	10YR 4/4	100					sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
 Type: No.
 Depth (inches): _____
 Hydric Soil Present? Yes _____ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (any one indicator is sufficient)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:
 Surface Water Present? Yes _____ No Depth (inches): _____
 Water Table Present? Yes _____ No Depth (inches): _____
 Saturation Present? Yes _____ No Depth (inches): _____
 (includes capillary fringe)
 Wetland Hydrology Present? Yes _____ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Feather River - Segment 2 City/County: Yuba County Sampling Date: 2/8/07
 Applicant/Owner: Three Rivers Levee Improvement Authority State: CA Sampling Point: 16
 Investigator(s): S. Bennett & D. Cunningham Section, Township, Range: T14N, R
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 1%
 Subregion (LRR): LPRuc Lat: 39.04053 Long: -121.59732 Datum: NAD83
 Soil Map Unit Name: Shanghai silt loam NMI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No (If no, explain in Remarks.) Dry 2nd con
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: <u>wetland adjacent to intermittent drainage.</u>	

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
4. _____	_____	_____	_____	
Total Cover: _____				
Sapling/Shrub Stratum				Prevalence Index worksheet:
1. <u>Salix laevigata</u>	<u>20</u>	<u>Y</u>	<u>NI</u>	Total % Cover of: _____ Multiply by: _____
2. <u>Salix lucida</u>	<u>20</u>	<u>Y</u>	<u>NI</u>	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species <u>20</u> x 2 = <u>40</u>
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
Total Cover: _____				UPL species <u>40</u> x 5 = <u>200</u>
Total Cover: _____				Column Totals: <u>60</u> (A) <u>240</u> (B)
Total Cover: _____				Prevalence Index = B/A = <u>4</u>
Herb Stratum				Hydrophytic Vegetation Indicators:
1. <u>Carex hurbachae</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	___ Dominance Test is >50%
2. _____	_____	_____	_____	___ Prevalence Index is ≤3.0'
3. _____	_____	_____	_____	___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
4. _____	_____	_____	_____	___ Problematic Hydrophytic Vegetation ¹ (Explain)
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
Total Cover: _____				¹ Indicators of hydric soil and wetland hydrology must be present.
Woody Vine Stratum				Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes <input checked="" type="checkbox"/> No _____
2. _____	_____	_____	_____	
Total Cover: _____				
% Bare Ground in Herb Stratum _____		% Cover of Biotic Crust _____		

Remarks: Willow species not listed by Reed 1988 as having indicator status, but understory is almost exclusively Santa Barbara Sedge

willow riparian forest.

SOIL

Sampling Point: 16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹ Loc ²		
Organic layer 0-2 above soil surface - Salix leaves - organic layer							
0-3	10YR 3/3					Silt loam	
3-4	10YR 4/4		7.5YR 4/6	30%		Sand loam	
4-16	10YR 4/2		7.5YR 4/6	(15%) and	7.5YR 5/8 (30%)	clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input checked="" type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: No.
Depth (Inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Secondary Indicators (2 or more required)

Primary Indicators (any one indicator is sufficient)

- | | | |
|--|--|--|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Thin Muck Surface (C7) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Shallow Aquitard (D3) |
| | | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

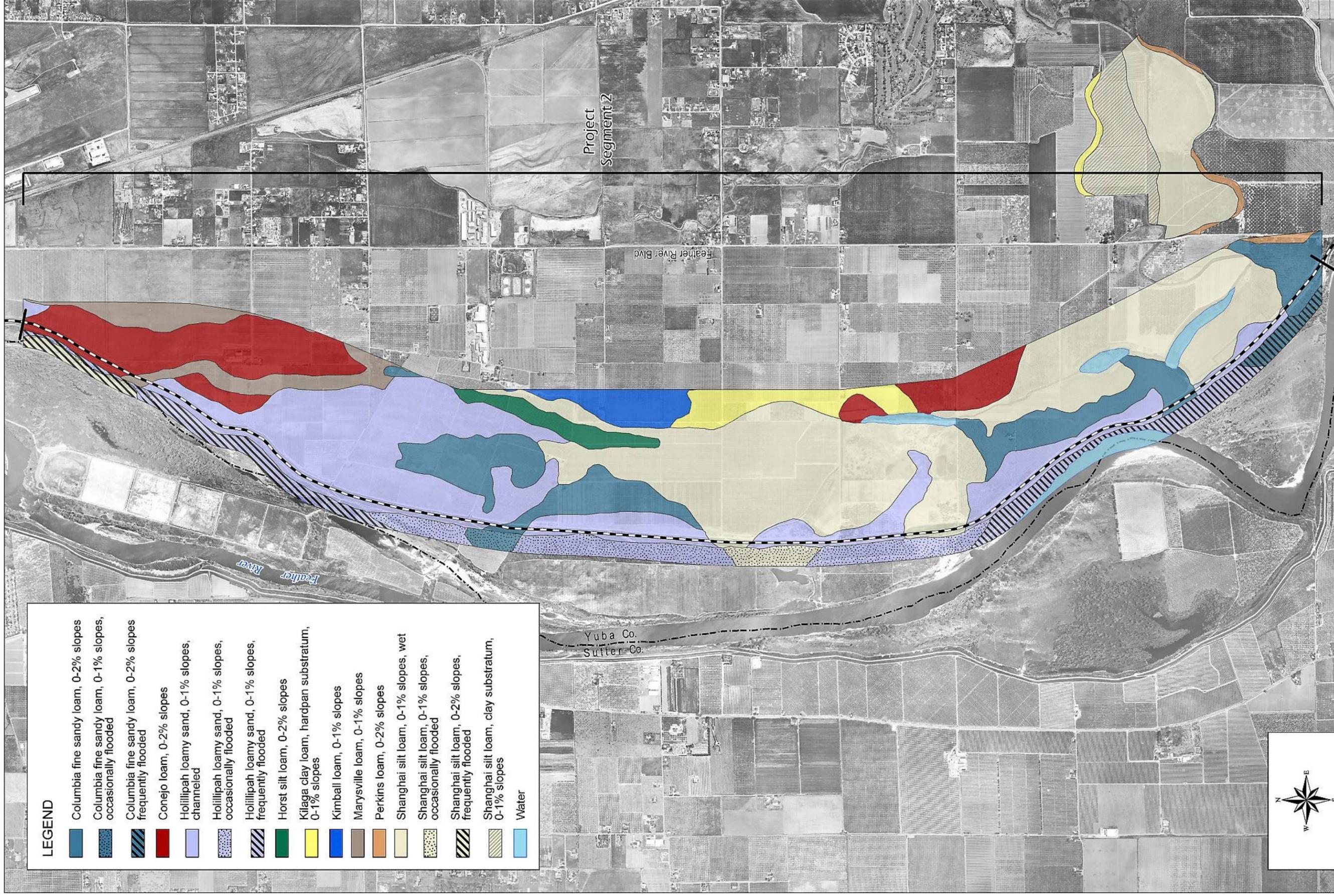
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Presumed subsurface flow due to presence of hydric soils & proximity to intermittent drainage - but no field observations

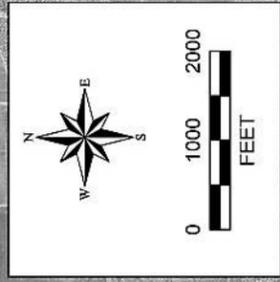
Appendix B

Soils Map



LEGEND

-  Columbia fine sandy loam, 0-2% slopes
-  Columbia fine sandy loam, 0-1% slopes, occasionally flooded
-  Columbia fine sandy loam, 0-2% slopes frequently flooded
-  Conejo loam, 0-2% slopes
-  Hoilipah loamy sand, 0-1% slopes, channeled
-  Hoilipah loamy sand, 0-1% slopes, occasionally flooded
-  Hoilipah loamy sand, 0-1% slopes, frequently flooded
-  Horst silt loam, 0-2% slopes
-  Kilaga clay loam, harpan substratum, 0-1% slopes
-  Kimball loam, 0-1% slopes
-  Marysville loam, 0-1% slopes
-  Perkins loam, 0-2% slopes
-  Shanghai silt loam, 0-1% slopes, wet
-  Shanghai silt loam, 0-1% slopes, occasionally flooded
-  Shanghai silt loam, 0-2% slopes, frequently flooded
-  Shanghai silt loam, clay substratum, 0-1% slopes
-  Water



**FEATHER RIVER LEVEE REPAIR PROJECT
Soil Types within Segment 2**

Sources: EDAW 2006; GEI Consultants, Inc. 2004; Aerial provided by USACE 1999

Appendix C

Representative Photographs



Open water present at the unnamed slough, which is hydrologically connected to PD1, is located at the western end of Rich Road.



The channelized portion of Plumas Lakes Canal (PD2) forms the northern property boundary of an agricultural squash field (data sheet 4). Floating plants, including duckweed and mosquito fern, were present in the open water channel.

Representative Photographs

Appendix C



An intermittent agricultural drainage (ID3) borders the southern margin of the agricultural field (data form 6). The drainage is characterized by narrowleaf cattail, tall flatsedge, curly dock, and willow.

Representative Photographs

Appendix C



The agricultural field is a large flat area bordered to the north by Plumas Lake Canal and to the south by an agricultural drainage.



Blackberry, horsetail, poison hemlock, and willow characterize the channel banks of the stream (PD1) present along Country Club and Anderson Roads. This stream connects to the willow riparian forest to the north (data sheet 16) and the slough near Star Bend (data sheet 2).

Representative Photographs

Appendix C



The willow riparian forest, Messic Lake, and the unnamed slough within the study area are all hydrologically connected.



Inside the Feather River Levee, the habitat is characterized by riparian forest/scrub. Dominate species include Valley oak, coyote brush, willow, Himalayan blackberry, Santa Barbara sedge, and St. John's wort. The soils inside the levee are generally sandy and do not meet the hydric soils criteria (data sheets 11-13).

Representative Photographs

Appendix C



Small lakes are visible from the aerial image. Submersed plants, including *Hydrilla verticillata* and watermilfoil, were rooted in the lake.

Appendix D

OHWL Data for the 1-in-2 Annual Exceedance Probabilities

**Appendix D Table
OHWM Data for the 1-in-2 Annual Exceedence Probabilities**

Project Levee Mile (PLM)	Ordinary High Water Mark (OHWM) in feet
27	58.13
26.75	57.95
26.5	57.64
26.25	57.35
26	57.14
25.75	56.84
25.5	56.68
25.25	56.44
25	55.87
24.75	55.84
24.5	55.64
24.25	55.45
24	55.14
23.75	54.74
23.5	54.56
23.25	53.74
23	53.4
22.75	52.8
22.5	52.31
22.25	51.91
22	51.9
21.75	51.6
21.5	51.31
21.25	50.95
21	50.72
20.75	50.42
20.5	50.15
20.25	49.96
20	49.77
19.75	49.57
19.5	49.21
19.25	49.03

**Appendix D Table
OHWM Data for the 1-in-2 Annual Exceedence Probabilities**

Project Levee Mile (PLM)	Ordinary High Water Mark (OHWM) in feet
19	48.8
18.75	48.31
18.5	47.88
18.25	47.71
18	47.21
17.75	46.96
17.5	46.78
17.25	46.46
17	45.91
16.75	45.5
16.5	45.35
16.25	44.95
16	44.68
15.75	44.41
15.5	44.07
15.25	43.71
15	43.57
14.75	43.04
14.5	42.87
14.25	42.58
14	42.36
13.75	42.21
13.5	41.81
13.25	41.38
13	41.24
12.75	40.9
12.5	40.95
12.25	40.54

HEC-RAS Plan: 2SHYGeomRev
Profile: Maximum Water Surface Elevation (OHWM)
PLM denotes a location along the Feather River, OHWM determined by the HEC-RAS model

Appendix E

Hydraulic and Hydrologic Analysis

The Hydraulic and Hydrologic Analysis that was originally included with this wetland delineation is now Appendix E of this EIS

Appendix F

USACE Verification Letter for the
Country Club Estates Wetland Delineation



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

November 27, 2006

Regulatory Branch (200500660)

Rob Aragon
JTS Communities, Incorporated
401 Watt Avenue
Sacramento, California 95864

Dear Mr. Aragon:

We are responding to your consultant's request for an approved jurisdictional determination for the Country Club Estates site. This approximately 577-acre site is located on or near Clark Slough in Section 30 And 31, Township 14 North, Range 4 East, MDB&M, Latitude 039° 01' 42.3", Longitude 121° 34' 14.7", Yuba County, California.

Based on available information, we concur with the estimate of waters of the United States, as depicted on the **September 14, 2006, Section 404 Individual Permit letter** drawing prepared by **Ecorp Consulting, Inc.** Approximately 4.146 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act since they are **adjacent or tributaries to the Bear River which is a tributary to the Feather River, a "Navigable water of the United States"**.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This letter contains an approved jurisdictional determination for your subject site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the South Pacific Division Office at the following address: Doug Pomeroy, Administrative Appeal Review Officer, Army Corps of Engineers, South Pacific Division, CESPDPDS-O, 333 Market Street, Room 923, San Francisco, California 94105-2195, Telephone: 415-977-8035 FAX: 415-977-8129.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5; and that it has been received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by January 26, 2007. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

Please refer to identification number 200500660 in any correspondence concerning this project. If you have any questions, please contact Matt Rabbe at our Sacramento Valley Office, 1325 J Street, Room 1480, Sacramento, California 95814-2922, email Matt.R.Rabbe@usace.army.mil, or telephone 916-557-5284. You may also use our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,

ORIGINAL SIGNED

Thomas J. Cavanaugh
Chief, Sacramento Valley Office

Enclosure

Copy furnished without enclosure:

✓ Craig Hiatt, ECORP Consulting, Incorporated, 2525 Warren Drive, Rocklin, California 95677

William Marshall, Storm Water and Water Quality Certification Unit, Central Valley Regional Water Quality Control Board, 11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114

Wetland Delineation Maps

Feather River Levee Repair Project (Segment 2)
Wetland Delineation
 Map 1

LEGEND

- Sample Point
- End Point
- Project Boundary
- Feather River OHWM
- Intermittent Drainage
- Perennial Drainage (RPW)
- Riparian Forest/Scrub (Wet RPW)
- Lacustrine
- Traditionally Navigable Water
- Developed
- Ruderal
- Orchard
- Elderberry Savanna
- Riparian Forest/Scrub
- Upland Riparian
- Non-Jurisdictional Feature
- Developed
- Fallow
- Ruderal
- Orchard
- Elderberry Savanna
- Riparian Forest/Scrub
- Upland Riparian

Direction from Sacramento:
 Take I-5 North to SR-99 North
 Take SR-99 North to SR-70 North
 Turn left onto Feather River Blvd
 Levee access is obtained near
 the Feather River Blvd
 intersection with Algodon Rd.

**Delineated by D. Cunningham and
 S. Bennett on Feb. 8, 2007.**
 September 17, 2007

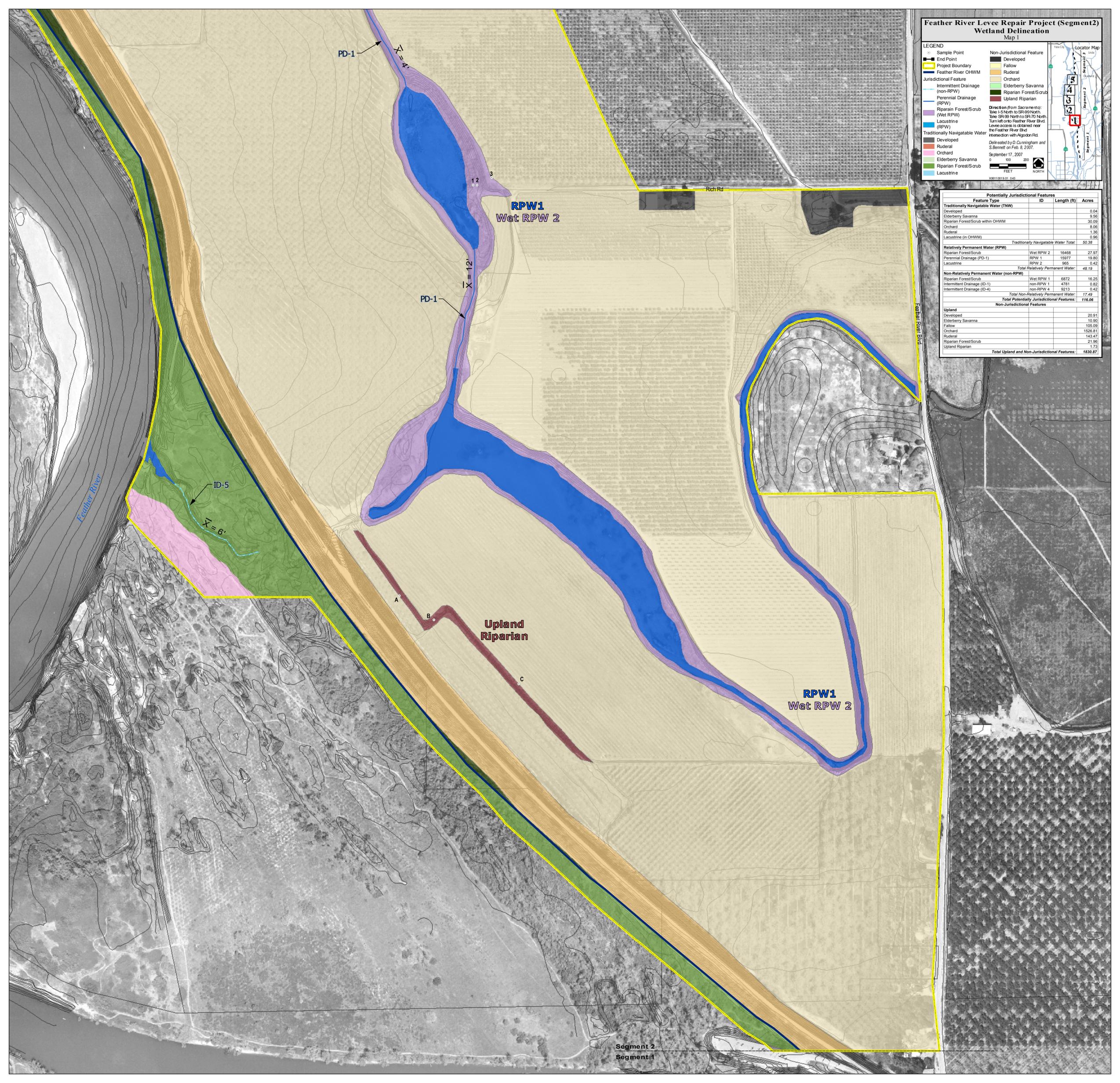
Scale: 0 100 200 FEET
 NORTH

XXX110018.01 043



Potentially Jurisdictional Features

Feature Type	ID	Length (ft)	Acres
Traditionally Navigable Water (TNW)			
Developed			0.04
Elderberry Savanna			9.96
Riparian Forest/Scrub within OHWM			30.09
Orchard			8.06
Ruderal			1.36
Lacustrine (in OHWM)			0.96
Traditionally Navigable Water Total:			50.38
Relatively Permanent Water (RPW)			
Riparian Forest/Scrub	Wet RPW 2	16468	27.97
Perennial Drainage (PD-1)	RPW 1	15977	19.80
Lacustrine	RPW 2	965	0.42
Total Relatively Permanent Water:			48.19
Non-Relatively Permanent Water (non-RPW)			
Riparian Forest/Scrub	Wet RPW 1	6872	16.25
Intermittent Drainage (ID-1)	non-RPW 1	4781	0.82
Intermittent Drainage (ID-4)	non-RPW 4	9213	0.42
Total Non-Relatively Permanent Water:			17.49
Total Potentially Jurisdictional Features:			116.06
Non-Jurisdictional Features			
Upland			
Developed			20.91
Elderberry Savanna			10.90
Fallow			105.09
Orchard			1526.81
Ruderal			143.47
Riparian Forest/Scrub			21.96
Upland Riparian			1.73
Total Upland and Non-Jurisdictional Features:			1636.87



Segment 2
 Segment 1

**Feather River Levee Repair Project (Segment 2)
Wetland Delineation
Map 2**

LEGEND

- Sample Point
- End Point
- Project Boundary
- Feather River OHWM
- Intermittent Drainage (non-RPW)
- Perennial Drainage (RPW)
- Riparian Forest/Scrub (Wet RPW)
- Lacustrine (RPW)
- Traditionally Navigatable Water
- Developed
- Ruderal
- Orchard
- Elderberry Savanna
- Riparian Forest/Scrub
- Lacustrine

Non-Jurisdictional Feature

- Developed
- Ruderal
- Orchard
- Elderberry Savanna
- Riparian Forest/Scrub
- Upland Riparian

Jurisdictional Feature

- Intermittent Drainage (non-RPW)
- Perennial Drainage (RPW)
- Riparian Forest/Scrub (Wet RPW)
- Lacustrine (RPW)
- Traditionally Navigatable Water

Direction from Sacramento:
Take I-5 North to SR-99 North
Take SR-99 North to SR-70 North
Turn left onto Feather River Blvd
Levee access is obtained near the Feather River Blvd intersection with Agodon Rd

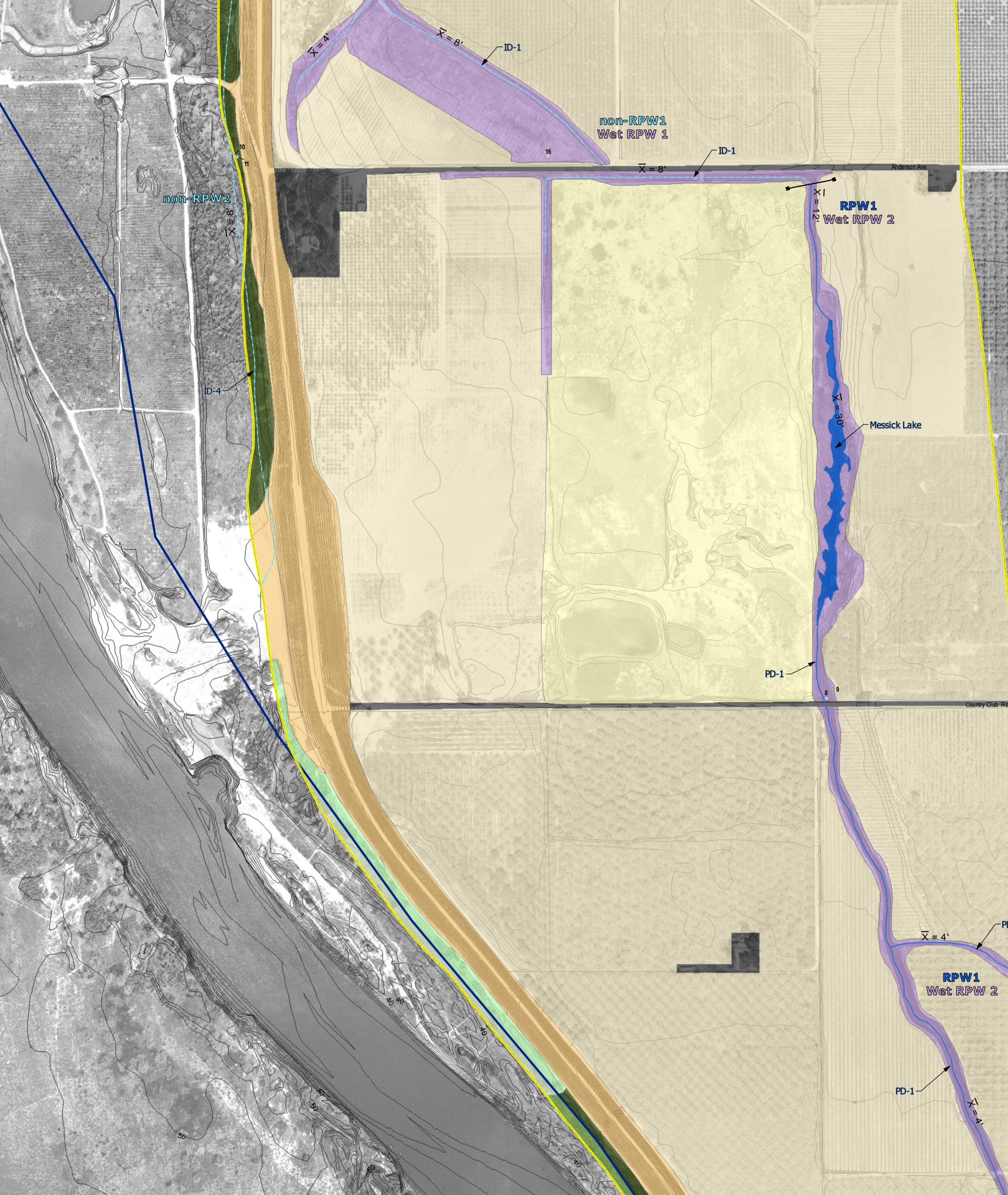
Defined by D. Cunningham and S. Bennett on Feb. 8, 2007.
September 17, 2007

0 100 200
FEET NORTH

XXXX10018.01_044

Potentially Jurisdictional Features

Feature Type	ID	Length (ft)	Acres
Traditionally Navigatable Water (TNW)			
Developed			0.04
Elderberry Savanna			9.96
Riparian Forest/Scrub within OHWM			30.09
Orchard			8.06
Ruderal			1.36
Lacustrine (in OHWM)			0.96
Traditionally Navigatable Water Total:			50.38
Relatively Permanent Water (RPW)			
Riparian Forest/Scrub	Wet RPW 2	16468	27.97
Perennial Drainage (PD-1)	RPW 1	15977	19.80
Lacustrine	RPW 2	965	0.42
Total Relatively Permanent Water:			48.19
Non-Relatively Permanent Water (non-RPW)			
Riparian Forest/Scrub	Wet RPW 1	6872	16.25
Intermittent Drainage (ID-1)	non-RPW 1	4781	0.82
Intermittent Drainage (ID-4)	non-RPW 4	9213	0.42
Total Non-Relatively Permanent Water:			17.49
Total Potentially Jurisdictional Features:			116.06
Non-Jurisdictional Features			
Upland			
Developed			20.91
Elderberry Savanna			10.90
Fallow			105.09
Orchard			1526.81
Ruderal			143.47
Riparian Forest/Scrub			21.96
Upland Riparian			1.73
Total Upland and Non-Jurisdictional Features:			1838.87



Feather River Levee Repair Project (Segment2)
Wetland Delineation
 Map 3

LEGEND

- Sample Point
- End Point
- Project Boundary
- Feather River OHWM
- Intermittent Drainage (non-RPW)
- Perennial Drainage (RPW)
- Riparian Forest/Scrub (Wet RPW)
- Lacustrine (RPW)
- Traditionally Navigable Water
- Developed
- Ruderal
- Orchard
- Elderberry Savanna
- Riparian Forest/Scrub
- Upland Riparian
- Non-Jurisdictional Feature
- Developed
- Fallow
- Ruderal
- Orchard
- Elderberry Savanna
- Riparian Forest/Scrub
- Upland Riparian

Direction from Sacramento:
 Take I-5 North to SR-99 North
 Take SR-99 North to SR-70 North
 Turn left onto Feather River Blvd
 Levee access is obtained near the Feather River Blvd intersection with Algodon Rd

Delineated by D. Cunningham and S. Bennett on Feb. 9, 2007.
 September 17, 2007

0 100 200
 FEET NORTH

XXXX10018.01 045

Potentially Jurisdictional Features			
Feature Type	ID	Length (ft)	Acres
Traditionally Navigable Water (TNW)			
Developed			0.04
Elderberry Savanna			9.96
Riparian Forest/Scrub within OHWM			30.09
Orchard			8.06
Ruderal			1.36
Lacustrine (in OHWM)			0.96
Traditionally Navigable Water Total: 50.38			
Relatively Permanent Water (RPW)			
Riparian Forest/Scrub	Wet RPW 2	16468	27.97
Perennial Drainage (PD-1)	RPW 1	15977	19.80
Lacustrine	RPW 2	965	0.42
Total Relatively Permanent Water: 48.19			
Non-Relatively Permanent Water (non-RPW)			
Riparian Forest/Scrub	Wet RPW 1	6872	16.25
Intermittent Drainage (ID-1)	non-RPW 1	4781	0.82
Intermittent Drainage (ID-4)	non-RPW 4	9213	0.42
Total Non-Relatively Permanent Water: 17.49			
Total Potentially Jurisdictional Features: 116.06			
Non-Jurisdictional Features			
Upland			
Developed			20.91
Elderberry Savanna			10.90
Fallow			105.09
Orchard			1526.81
Ruderal			143.47
Riparian Forest/Scrub			21.96
Upland Riparian			1.73
Total Upland and Non-Jurisdictional Features: 1636.87			

ID-4

non-RPW2

ID-4

non-RPW2

$\bar{X} = 2'$

non-RPW1
Wet RPW 1

ID-1

$\bar{X} = 8'$

Pumas Rd

Broadway St

Pumas Av

Feather River

Elia Ave

ID-4

non-RPW2

Potentially Jurisdictional Features			
Feature Type	ID	Length (ft)	Acres
Traditionally Navigatable Water (TNW)			
Developed			0.04
Elderberry Savanna			9.56
Riparian Forest/Scrub within OHWM			30.09
Orchard			8.06
Ruderal			1.36
Lacustrine (in OHWM)			0.96
			Traditionally Navigatable Water Total: 50.38
Relatively Permanent Water (RPW)			
Riparian Forest/Scrub	West RPW 2	16488	27.97
Perennial Drainage (PD-1)	RPW 1	19077	19.80
Lacustrine	RPW 2	965	0.42
			Total Relatively Permanent Water: 48.19
Non-Relatively Permanent Water (non-RPW)			
Riparian Forest/Scrub	West RPW 1	6872	16.25
Intermittent Drainage (ID-1)	non-RPW 1	4781	0.82
Intermittent Drainage (ID-4)	non-RPW 4	9213	0.42
			Total Non-Relatively Permanent Water: 17.49
			Total Potentially Jurisdictional Features: 116.06
Non-Jurisdictional Features			
Upland			
Developed			20.91
Elderberry Savanna			10.90
Fallow			105.09
Orchard			1526.81
Ruderal			143.47
Riparian Forest/Scrub			21.96
Upland Riparian			1.73
			Total Upland and Non-Jurisdictional Features: 1830.87

**Feather River Levee Repair Project (Segment 2)
Wetland Delineation
Map 4**

LEGEND

- Sample Point
- End Point
- Project Boundary
- Feather River OHWM
- Jurisdictional Feature
- Intermittent Drainage (non-RPW)
- Perennial Drainage (RPW)
- Riparian Forest/Scrub (West RPW)
- Lacustrine (RPW)
- Traditionally Navigatable Water
- Developed
- Orchard
- Elderberry Savanna
- Riparian Forest/Scrub
- Lacustrine
- Non-Jurisdictional Feature
- Developed
- Fallow
- Ruderal
- Orchard
- Elderberry Savanna
- Riparian Forest/Scrub
- Upland Riparian

Direction from Sacramento:
Take I-5 North to SR-99 North.
Take SR-99 North to SR-70 North.
Turn left onto Feather River Blvd.
Levee access is obtained near the Feather River Blvd at intersection with Agoston Rd.

Delineated by D. Cunningham and S. Bennett on Feb. 8, 2007.
September 17, 2007

0 100 200
FEEET
NORTH

10/21/07 10:13 AM 040

Segment 1
Segment 2

RPW 2

14

15

Murphy Rd

Potentially Jurisdictional Features			
Feature Type	ID	Length (ft)	Acres
Traditionally Navigatable Water (TNW)			
Developed			0.04
Elderberry Savanna			9.56
Riparian Forest/Scrub within OHWM			30.09
Orchard			8.06
Ruderal			1.36
Lacustrine (in OHWM)			0.96
Traditionally Navigatable Water Total:			50.38
Relatively Permanent Water (RPW)			
Riparian Forest/Scrub	West RPW 2	16488	27.97
Perennial Drainage (PD-1)	RPW 1	15977	19.90
Lacustrine	RPW 2	965	0.42
Total Relatively Permanent Water:			48.19
Non-Relatively Permanent Water (non-RPW)			
Riparian Forest/Scrub	West RPW 1	6872	16.25
Intermittent Drainage (ID-1)	non-RPW 1	4781	0.82
Intermittent Drainage (ID-4)	non-RPW 4	9213	0.42
Total Non-Relatively Permanent Water:			17.49
Total Potentially Jurisdictional Features:			116.06
Non-Jurisdictional Features			
Upland			
Developed			20.91
Elderberry Savanna			10.90
Fallow			105.09
Orchard			1526.81
Ruderal			143.47
Riparian Forest/Scrub			21.96
Upland Riparian			1.73
Total Upland and Non-Jurisdictional Features:			1830.87

**Feather River Levee Repair Project (Segment2)
Wetland Delineation
Map 5**

LEGEND

- Sample Point
- End Point
- Project Boundary
- Feather River OHWM
- Jurisdictional Feature
- Intermittent Drainage (non-RPW)
- Perennial Drainage (RPW)
- Riparian Forest/Scrub (West RPW)
- Lacustrine (RPW)
- Traditionally Navigatable Water
- Developed
- Ruderal
- Orchard
- Elderberry Savanna
- Riparian Forest/Scrub
- Lacustrine
- Non-Jurisdictional Feature
- Developed
- Fallow
- Ruderal
- Orchard
- Elderberry Savanna
- Riparian Forest/Scrub
- Upland Riparian

Direction (from Sacramento):
Take I-5 North to SR-99 North.
Take SR-99 North to SR-70 North.
Turn left onto Feather River Blvd.
Levee access is obtained near
the Feather River Blvd
intersection with Abbeville Rd.

Delineated by D. Cunningham and
S. Bennett on Feb. 8, 2007.
September 17, 2007

Scale: 0 100 200 FEET
NORTH

92011.0013 01 047

Section 404 Individual Permit Application, and
Jurisdictional Determination Segment 2

EDAW Inc
2022 J Street, Sacramento, California 95814
T 916.414.5800 F 916.414.5850 www.edaw.com

June 13, 2007

Mr. Brian Vierria
U.S. Army Corps of Engineers
Sacramento District Regulatory Branch
1325 J Street, Room 1480
Sacramento, CA 95814

Subject: Section 404 Individual Permit Application for the Feather River Levee Repair Project, Segment 2

Dear Mr. Vierria:

On behalf of the Three Rivers Levee Improvement Authority (TRLIA), we are submitting an application for dredge and fill authorization under Section 404 of the Clean Water Act for the proposed Feather River Levee Repair Project, Segment 2. The enclosed application contains the following materials:

- ▶ Application for Department of the Army Permit (ENG Form 4345) (Attachment A)
- ▶ Supplemental Information to ENG Form 4345 for the Feather River Levee Repair Project, Segment 2 (Attachment B),
- ▶ Exhibits depicting the project site and waters of the United States affected by the project (Attachment C), and
- ▶ Mailing List of Adjacent Property Owners, also on CD (Attachment D)

TRLIA is finalizing the Biological Assessment, Cultural Resources and Historic Properties Report, and draft Section 404(b)(1) alternatives analysis for the Feather River Levee Repair Project, Segment 2, and plans to submit these documents to you as soon as possible. However, in the interim, it is our hope that you can use the information in the attached application to issue the Public Notice.

We look forward to working with you on the issuance of the permit for this project. Should you have any questions or require any additional information to issue the Public Notice, please feel free to contact Cindy Davis or me at (916) 414-5800.

Sincerely,



Eric Htain
Regulatory Specialist

Mr. Brian Vierria
U.S. Army Corps of Engineers
June 13, 2007
Page 2

cc: Paul Brunner, TRLIA
Ric Reinhardt, MBK Engineers
Anja Kelsey, EIP Associates
Dan Wanket, GEI Consultants, Inc.
Alberto Pujol, GEI Consultants, Inc.
Cindy Davis, EDAW
Sean Bechta, EDAW

Attachments:

- A ENG 4345 Application Form
- B Supplement to ENG 4345 Application Form
- C Exhibits 1–4
- D Public Notice Mailing List (Also on CD)

ATTACHMENT A

ENG 4345 Application Form

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

OMB APPROVAL NO.0710-003

ENG FORM 4345

(33 CFR 325)

Expires October 1996

Public reporting burden for this collection of information is estimated to average 5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-00031), Washington, DC 20503. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in, or affecting, navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine Uses. Information provided on this form will be used in evaluating the application for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED
--------------------	----------------------	------------------	-------------------------------

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
---------------------	---

Three Rivers Levee Improvement Authority
Contact: Paul G. Brunner

EDAW, Inc.
Contact: Eric Htain, Regulatory Biologist

6. APPLICANT'S ADDRESS	9. AGENT'S ADDRESS
------------------------	--------------------

1114 Yuba Street, Suite 218
Marysville, CA 95901

2022 J Street
Sacramento, CA 95814

7. APPLICANT'S PHONE NUMBERS W/AREA CODE	10. AGENT'S PHONE NUMBER W/AREA CODE
--	--------------------------------------

a. Residence

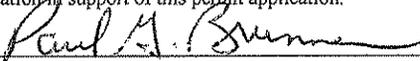
a. Residence

b. Business (530) 749-7841

b. Business (916) 414-5800

11. STATEMENT OF AUTHORIZATION

I hereby authorize EDAW, Inc. to act in behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.


APPLICANT'S SIGNATURE

June 11, 2007
DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
--

Feather River Levee Repair Project, Segment 2

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
---	--

Plumas Lake Canal, perennial drainage (Messick Lake), unnamed intermittent drainage – tributaries to the Feather River

N/A

15. LOCATION OF PROJECT

Yuba California
COUNTY STATE

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN, (see instructions)

Segment 2 of the Feather River Levee Repair Project is located in southwestern Yuba County (Exhibit 1), and encompasses a portion of the Feather River levee and lands to the east from approximately Star Bend to just south of Shanghai Bend (west of the Yuba County Airport) (Exhibit 2). The project area encompasses approximately 1,947 acres and is located in Townships 13 and 14 North, Ranges 3 and 4 East, on the U.S. Geological Survey 7.5-minute Olivehurst quadrangle. Approximate latitude and longitude coordinates at the north and south ends of the project area are: 39.090676N, -121.584302W and 39.009461N, -121.578301W. The setback levee right-of-way would consist of the setback levee (approximately 170 feet wide from toe of levee to toe of levee), a 50-foot-wide access corridor on each side of the levee, and an approximately 65-foot-wide utility corridor to the east of the landside access corridor.

17. DIRECTIONS TO THE SITE

From Sacramento, take I-5 north. Follow I-5 north and take the SR-99 north turn-off. Take the SR-70 north turn-off from SR-99. Turn left on Feather River Blvd from SR-70. Follow Feather River Blvd to the intersection of Feather River Blvd and Algodon Road. Access to the southern limit of the project is across from the intersection at the Star Bend river access. The upper limit of the project can be accessed by continuing along Feather River Blvd to a farm road approximately 0.9 mile north of Murphy Road. Turn left on the farm road and follow to the Feather River levee.

18. NATURE OF ACTIVITY (Description of Project, include all features)

See attached Supplemental Sheets for a full description of the project (nature of activity).

19. PROJECT PURPOSE (Describe the reason or purpose of the project, see instructions)

See attached Supplemental Sheets for a full description of the project purpose.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. REASON(S) FOR DISCHARGE

Discharge of fill materials to waters of the United States will be required for the construction of a new setback levee along a portion of the Feather River and relocation of a pump station in project stage 1. The setback levee is being constructed to improve flood control along a segment of the Feather River from approximately Shanghai Bend to Star Bend (north to south respectively). Additional discharge of fill materials will be required in project stage 2 to fill in portions of the Plumas Lake Canal adjacent to the new setback levee when the relocated pump station becomes operable. See the Supplemental Sheets for more details on the reason for discharge.

21. TYPE(S) OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS

Soil from local borrow sites, native soil. See Supplemental Sheets for further details on types of materials being discharged and amount.

22. SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED (see instruction)

The proposed project includes permanently affecting 2.11 acres of perennial drainage (including the Plumas Lake Canal), 0.09 acre of intermittent drainage, 10.05 acres of mixed riparian forest/scrub associated with the perennial and intermittent drainages, and 0.22 acre of a backwater to the Feather River (connected to the intermittent drainage). The proposed project also includes indirectly affecting 16.98 acres of perennial drainage, 39.13 acres of mixed riparian forest/scrub, and 0.82 acre of intermittent drainage. See Supplemental Sheets for further details.

23. IS ANY PORTION OF THE WORK ALREADY COMPLETE? YES NO IF YES DESCRIBE THE COMPLETED WORK

24. ADDRESSES OF ADJOINING PROPERTY OWNERS, LESSEES, ETC., WHOSE PROPERTY ADJOINS THE WATERBODY (if you have more that can be here, please attach a supplemental list).

See attached Individual Permit Application Mailing List for a complete list of the names and addresses of adjacent property owners to the waterbodies affected by the proposed project.

25. LIST OF OTHER CERTIFICATIONS OR APPROVAL/DENIALS RECEIVED FROM OTHER FEDERAL, STATE, OR LOCAL AGENCIES FOR WORK DESCRIBED IN THIS APPLICATION.

AGENCY	TYPE APPROVAL	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
U.S. Fish and Wildlife Service	ESA Section 7 consultation	N/A	To be submitted June 2007		
National Marine Fisheries Service	ESA Section 7 consultation	N/A	To be submitted June 2007		
Regional Water Quality Control Board	Water Quality Certification	N/A	To be submitted July 2007		
Regional Water Quality Control Board	NPDES Permit	N/A	To be submitted August 2007		
Department of Fish and Game	Streambed Alteration Agreement	N/A	To be submitted July 2007		
Department of Fish and Game	CESA consultation	N/A	To be submitted June 2007		
Reclamation Board	Encroachment Permit	N/A	May 1, 2007		

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Paul M. Brimmer June 11, 2007
 Signature of Applicant Date Signature of Agent Date

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

ATTACHMENT B

Supplement to ENG 4345 Application Form

FEATHER RIVER LEVEE REPAIR PROJECT, SEGMENT 2 SUPPLEMENTAL SHEETS TO ENG 4345 FORM

BLOCK 18: NATURE OF ACTIVITY

The Three Rivers Levee Improvement Authority (TRLIA) is proposing construction of the Feather River Levee Repair Project Segment 2 (Segment 2), which involves constructing a setback levee and degrading portions of the existing Feather River left (east) bank levee (see Exhibit 3, Attachment C). This project is a portion of the overall Feather River Levee Repair Project, which includes repairs and levee strengthening of two other segments of the left bank levee of the Feather River and a small portion of the left (south) bank levee of the Yuba River (Feather River Levee Repair Project, Segments 1 and 3). Approximately 5.7 miles of new setback levee will be constructed within Segment 2 to replace 6.2 miles of existing levee, and the new setback levee will tie into the existing levee in Segments 1 and 3.

The proposed activities in Segment 2 will be completed in two stages: Stage 1 and Stage 2. The project is being divided into two stages to accommodate schedule challenges related to beginning construction of the setback levee to replace the extremely deficient segment of existing levee, while undergoing the process for USACE and California State Reclamation Board approval to degrade the existing levee. If these processes were to take place at the same time (i.e., wait to construct the setback levee until approval to degrade the existing levee is obtained), it would delay the construction of the setback levee, which is recommended to be started as soon as possible to correct the deficiencies in the existing levee. Stage 1 of the Feather River Levee Repair Project, Segment 2, includes construction of the setback levee, relocation of Pump Station No. 3 and associated facilities, excavation of material within borrow sites (within the setback area and possibly on the land side of the setback levee), removal and relocation of existing utilities and structures within the setback area, and potential construction of a storm water runoff detention basin near the Plumas Lake Canal. Stage 2 of the project includes degradation of the existing Feather River east levee within Segment 2, fill of the Plumas Lake Canal from the new Pump Station No. 3 to the east setback levee easement and also from the west setback levee easement to where the canal opens into the pond-like feature, decommissioning of the existing Pump Station No. 3, and recontouring of portions of the levee setback area and an existing drainage to facilitate drainage of water from the levee setback area after flood events. TRLIA is also discussing the feasibility of active restoration in the setback area with the various landowners and stakeholders in the setback area as well as with the various regulatory agencies. If restoration were conducted, it would also be done as part of Stage 2.

STAGE 1 CONSTRUCTION

Setback Levee Construction

The setback levee will be approximately 5.7 miles long. The new levee segment will generally be set back approximately 0.5 mile to the east of the existing Feather River levee, except near the northern and southern ends, where it will join the existing levee. The area between the existing levee and the setback levee alignment (the levee setback area) and the footprint of the setback levee will include approximately 1,600 acres. The height of the setback levee will generally range from about 20 to 30 feet above the existing ground surface. The most common levee height above the adjacent land will be approximately 25 feet. The existing levee has been reconstructed by the USACE to provide a minimum of 3 feet of freeboard above the 1957 design profile. Because the levee setback will lower most flow profiles by widening the flow channel, it follows that the setback levee, if constructed to the crown elevations described above, will have freeboard of at least 3 feet above the 1957 design profile. Other anticipated dimensions of the setback levee are: a crown width of 20 feet; a footprint width (levee toe to levee toe) of approximately 170 feet (depending on levee height); levee slopes at a 3:1 ratio (H:V); a 12-foot-wide patrol road on levee crown; a 50-foot access corridor on each side of the setback levee; and an approximately 65-foot-wide utility corridor on the east side of the setback levee, adjacent to the east levee access corridor. Based on these parameters, the entire levee right-of-way could reach up to approximately 335 feet.

Construction of the setback levee will include three main design elements: preparation of the levee foundation, construction of a slurry cut-off wall for seepage control, and construction of the levee embankment. Preparation of the foundation of the setback levee will involve clearing and grubbing of all trees, brush, loose stone, abandoned structures, existing utilities, buried pipelines, and other deleterious materials that may exist within 10 feet of the levee toes. After clearing and grubbing, the setback levee foundation will be stripped to remove low-growing vegetation and topsoil to a depth of at least 6 inches, although local areas with extensive tree roots or deep organic soils will require excavation to a depth of 3 feet or greater. The topsoil will be placed in a designated “unsuitable material” spoil area or used for borrow area reclamation. Overall, the depth of stripping is expected to average about 1-3 feet. Construction of a slurry cutoff wall is proposed along those portions of the setback levee where widespread strata of permeable sands and gravels exist in the foundation. The purpose of the slurry cutoff wall is to dissipate the hydraulic gradient in the levee foundation and reduce seepage quantities. To achieve maximum effectiveness, the slurry cutoff wall must extend completely through the permeable strata and terminate some distance into an underlying, reasonably continuous layer with lower permeability. The slurry cutoff wall will be composed of a mixture of soil and bentonite clay. Finally, construction of the setback levee embankment will begin as soon as sufficient lengths of levee foundation are complete and weather conditions allow. The embankment will be constructed as an engineered fill, with the fill placed in horizontal lifts. Each lift will be moisture conditioned and compacted to the specified density using a suitable compactor, such as a sheepsfoot, tamping-foot, or rubber-tired roller.

Relocation of Pump Station No. 3

A pump station (Pump Station No. 3) will need to be relocated to the land side of the setback levee. The current location of Pump Station No. 3 experiences excessive seepage and boils during high-water events, making it desirable to relocate the pump station out of this area. In addition, after the setback levee is complete, the existing Pump Station No. 3 will be in the setback area and exposed to flooding after the existing levee is degraded. Therefore, as part of Stage 1 of the setback levee project, a new/replacement Pump Station No. 3 will be constructed on the land side of the setback levee (Stage 1), followed in Stage 2 by removal of the existing pump station. The location of the new pump station will be adjacent to the Plumas Lake Canal, south of Rich Road (Exhibit 3). The new Pump Station No. 3 will be a reinforced-concrete structure similar to the recently constructed Pump Station No. 2 in Reclamation District 784. The specific capacity of the new Pump Station No. 3 will be determined during detailed project design; however, preliminary design shows that the capacity of the current pump station will be able to accommodate high-water events without the threat of upstream flooding.

Utility Relocation and Structure Removal

Implementation of the setback levee project will necessitate the removal of all structures (houses, trailers, sheds, barns, other agricultural outbuildings) from the levee setback area, which would be subject to periodic flooding following removal of the existing levee. Approximately 20 structures in the levee setback area will be displaced by the project. Displaced structures include six residential dwelling units, and remaining structures include associated agricultural use buildings and dilapidated barns. Some utilities and other facilities located in the levee setback area will need to be relocated or reinforced with implementation of the levee setback. As discussed previously, RD 784 Pump Station No. 3 will be relocated to the land side of the proposed setback levee. A PG&E 115-kilovolt (kV) transmission line called the Bogue Loop crosses the levee setback area on three towers. The foundations for these steel structures will probably need to be reinforced or replaced so that their integrity will be maintained during times of flood water inundation. Other steel towers along the same transmission line are located on the water side of the existing Feather River levee and are supported by elevated steel pile foundations.

Other existing facilities that may need to be abandoned, reinforced, or relocated include roads, power distribution lines, irrigation pipelines, drainage ditches, wells, fill stations, and communications lines. Several private irrigation lines will be cut off by the construction of the setback levee, separating some lands on both sides of the setback levee that require irrigation from current water sources. During detailed design, and in coordination with landowners, appropriate water sources and irrigation infrastructure will be determined for lands where irrigation lines were cut off and that will continue to require irrigation water after project construction. Depending on site-

specific conditions, wells and fill stations in the levee setback area could be removed or maintained. Private wells and fill stations in the levee setback area that will be abandoned will be removed and filled, and new wells will be dug and fill stations built outside the levee setback area to replace the abandoned facilities, as appropriate. Wells and fill stations that will be retained in the levee setback area will be retrofitted to accommodate periodic flooding. New power lines and power poles will be required for any new wells and fill stations.

Borrow Areas

Borrow material will be obtained locally from borrow areas developed inside and outside the levee setback area and potentially from excavation of a detention basin if one is determined to be needed. It is currently estimated that a total of approximately 3.2 million cubic yards (cy) of compacted borrow material will be required to construct the setback levee in project Segment 2 and that borrow areas will be excavated to depths in the order of about of 5-10 feet.

Two general objectives are important in the selection of borrow areas: to minimize haul distances to the setback levee alignment and provide a continuous or nearly continuous borrow source, and to reduce the potential for seepage impacts at the foundation of the setback levee. Minimizing haul distances is important to minimize project construction costs, air emissions, and traffic impacts. To reduce the potential for seepage impacts at the foundation of the setback levee, a distance of 500 feet or greater from the edge of the borrow area to the toe of the proposed levee must be maintained unless there is an incised drainage channel between the setback levee alignment and the borrow area. If such an incised drainage exists, borrow excavation closer to the levee may be allowed, based on an evaluation of local site conditions. Borrow areas may also be developed closer than 500 feet from the toe of the setback levee if the borrow pit is to be subsequently backfilled.

Wide, shallow excavations (rather than deep trenches) are anticipated. At the conclusion of the work, the borrow areas will be graded to blend with the topography, leaving slopes flat enough to reduce erosion and promote conditions conducive to vegetative growth (slopes 3:1 [H:V] or flatter), or filled with material from removal of existing levees (during stage 2). If not filled, the bottom of the borrow areas will be regraded to drain away from the levee and toward the river or toward existing drainage ways. The drainage of the borrow areas will also need to ensure fish movement out of the levee setback area into the main channel of the Feather River when flood flows recede following inundating flood events. The borrow areas will be revegetated to conform to the surrounding landscape. The borrow sites will be reclaimed as appropriate. Some stockpiled topsoil, and other excess earth materials (organic soils, roots, and grass) from borrow areas and the setback levee foundation could be spread over borrow sites after excavation has been completed.

A detailed investigation of borrow areas suitable for levee embankment materials is currently underway. The location and limits of borrow areas will be determined and refined as a result of this effort. Borrow sites will be selected based on several criteria including right-of-way access, distance to the setback levee alignment, and environmental resources locations. Borrow sites will not be located where the sites could adversely affect sensitive species or waters of the United States. Borrow sites will be located in upland areas and materials taken from the borrow sites will not consist of hydric soils.

Detention Basin Construction

A portion of the stormwater runoff from the western portion of RD 784 passes into and through the setback levee area. Drainage from this area is conveyed in the Plumas Lake Canal and pumped into the Feather River at Pump Station No. 3. When flows exceed the capacity of Pump Station No. 3, there are several areas where water may pond and be temporarily stored until flow rates decline. Construction of the setback levee will cut off and remove some of the ponding area where excess drainage water is temporarily stored. At the same time, construction of the setback levee will reduce the drainage area reporting to the Plumas Lake Canal and therefore reduce the volume of runoff that requires storage or pumping. Detailed drainage studies are currently underway to assess the net effect of the setback levee on interior drainage conditions.

To mitigate the lost storage capacity, a detention basin could be constructed adjacent to the Plumas Lake Canal to allow water to be diverted from the canal into the basin when needed. The basin would be excavated to a depth of about 5-8 feet. Suitable soils excavated during construction of the detention basin would be used as borrow material for construction of the setback levee. Alternatively, if mitigation is needed but a detention basin is not constructed as part of the setback levee project, the size of the pumps in Pump Station No. 3 could be increased sufficiently to accommodate peak stormwater flows without the balancing effects of detention capacity. These alternatives are being evaluated as part of the detailed interior drainage studies now underway.

If a detention basin is needed, the location of the basin will be determined based on several criteria including right-of-way access and environmental resources locations. However, the detention basin will need to connect to the Plumas Lake Canal to reduce the threat of stormwater overflow in the canal. The detention basin would connect to the Plumas Lake Canal in two adjacent locations and would result in the need to excavate two 600 square foot (0.014 acre) sections of the existing bank of the canal so that water can flow into the basin. Again, this excavation of the bank of the Plumas Lake Canal would only be necessary if it is determined that a detention basin is required.

STAGE 2 CONSTRUCTION

Fill of Portions of the Plumas Lake Canal

Portions of the Plumas Lake Canal adjacent to the setback levee will be filled to minimize potential for underseepage that could result from having an excavated feature too close to the levee. Approximately 2,200 feet of canal will be filled on the east (land) side of the setback levee between the relocated Pump Station No. 3 and the setback levee. An additional segment of approximately 800 feet of canal on the west (water) side of the setback levee will also be filled.

Decommission of Existing Pump Station No. 3

As stated previously, after the setback levee is complete, the existing Pump Station No. 3 will be in the setback area and exposed to flooding after the existing levee is degraded. Therefore, a new Pump Station No. 3 will be constructed on the land side of the setback levee and the existing Pump Station No. 3 will be decommissioned. The existing Pump Station No. 3 will be dismantled and once the existing levee is degraded, a channel will be constructed where the pump station was located connecting the pond-like portion of the Plumas Lake Canal to the setback area drainage channel described below.

Facilitation of Setback Area Drainage

It is anticipated that a limited amount of vegetation will need to be removed from the river side of the existing levee to facilitate drainage and allow flood waters to recede from the setback area in a manner that minimizes fish stranding. At this time, an existing drainage channel that currently conveys discharges from Pump Station No. 3 is being considered for this purpose. The existing channel will likely have to be enlarged and deepened to accommodate flood flows leaving the setback area and to minimize the potential for fish stranding as flood waters recede. Whether this drainage location or another is used, the channel will be located and constructed in a manner that minimizes vegetation disturbance, fish stranding, and other environmental impacts. A site-specific drainage plan for the entire setback area will be developed in final design. Additionally, this channel will be connected to the Plumas Lake Canal to facilitate flow of flood waters back to the Feather River.

Degradation of Existing Levee

Portions of the existing levee in Segment 2 will be removed to achieve the maximum hydraulic benefits of the levee setback by allowing water to flow into and out of the levee setback area during high river stages. Where the existing levee will be excavated to allow flood waters to pass into and out of the levee setback area, the existing embankment will be excavated to the level of the adjoining ground surface in the levee access corridor. Specific

sections to be retained will be determined in final project design and will be based on factors that include possible mitigation value for project impacts on sensitive species. Those sections of the existing levee that are left in place will not be maintained. There are no plans to use material in the existing Feather River left bank levee as borrow material for the new setback levee. It is expected that for some period of time, the existing levee and the new setback levee will be in place concurrently. During this period, the setback levee will function as a “backup” levee, providing a second line of levee protection if the existing levee in Segment 2 were to breach during a flood event.

OTHER ASSOCIATED ACTIVITIES (STAGES 1 AND 2)

Staging Areas and Access Routes

It is anticipated that several staging areas will be developed along the setback levee alignment to allow for efficient use and distribution of materials and equipment. Staging areas will be located within the construction corridor and near active construction areas, so they may be relocated as construction progresses. Because the work area is essentially flat, suitable sites for construction staging are abundant. Final selection of staging areas will be based on contractor preference and environmental and land use constraints such as avoiding placing staging areas within or adjacent to waters of the United States. Personnel, equipment, and imported materials will reach the project site via SR 70 and Feather River Boulevard. At the project site, the primary construction corridor will include the setback levee alignment, soil borrow areas, and roads used for access to the work areas, including Feather River Boulevard. Access roads will consist mainly of the existing east-west lateral roads between SR 70, Feather River Boulevard, and the levee setback area.

Disposal of Excess Materials

Excess earth materials (organic soils, roots, and grass from borrow areas and the setback levee foundation; excavated material that does not meet levee embankment criteria) will be used in the reclamation of borrow areas. In addition, excess material could be used in the contouring of the setback area to facilitate drainage to the Feather River and prevent fish stranding. Cleared vegetation (i.e. trees, brush) will be hauled off-site. Debris from structure demolition, power poles, piping, and other materials requiring disposal will be hauled off-site to a suitable landfill.

Project Schedule

A period of up to approximately 22 months is planned for construction of the setback levee project, with contractor mobilization beginning in September 2007, the setback levee embankment completed in October 2008, the existing levee breached in spring/summer 2009, and final clean-up and contractor demobilization in summer 2009. A detailed schedule showing project activities by stage is provided below.

Stage 1 Construction Activities

- ▶ Mobilization: Mobilization will include setting up construction offices and transporting heavy earthmoving equipment to the site. These activities may take about 1 month.
- ▶ Levee Foundation Preparation: This activity will begin soon after mobilization. Construction will take approximately 8–9 months depending on the amount of equipment working simultaneously, weather conditions, and permit requirements.
- ▶ Slurry Cutoff Wall Construction: Installation of slurry cutoff walls along the setback levee alignment will occur simultaneously with levee foundation preparation.

- ▶ **Levee Embankment Construction:** Because the setback levee alignment is nearly 6 miles long, levee embankment construction could begin in some areas while foundation preparation is underway along other portions of the alignment. Levee embankment construction is anticipated to take approximately 8 months.
- ▶ **Borrow Material Excavation:** Excavation of borrow materials for use in the construction of the setback levee embankment could begin simultaneously with levee foundation preparation or slurry wall construction and will occur for the duration of levee embankment construction.
- ▶ **Tie-ins to Existing Levees:** Elements of tying in the setback levee to the existing levees will take place during levee foundation preparation, levee embankment construction, and potentially during slurry cutoff wall construction.
- ▶ **Pump Station No. 3 Construction:** Pump Station No. 3 will be constructed concurrent with levee embankment construction. Procurement of long-lead items (e.g. pumps, motors, valves and generator) could begin as early as 2007.
- ▶ **Detention Basin Construction:** If required, construction of a detention basin on the land side of the new setback levee will be conducted concurrent with levee embankment construction.

Stage 2 Construction Activities

- ▶ **Fill of Portions of the Plumas Lake Canal:** Filling of portions of the Plumas Lake Canal will occur for approximately 500 feet on either side of the setback levee alignment. This is required to ensure that no open channels are adjacent to the levee that could compromise the levee structure. This will be conducted concurrent with removal of the existing levee.
- ▶ **Removal of the Existing Levee:** The existing Feather River levee in the setback area will not be removed until the setback levee is complete. Removal activities will take place outside the identified Feather River flood season. It is expected that levee removal will take place in spring/summer 2009.
- ▶ **Decommission of the Existing Pump Station No. 3:** Removal of the existing pump station will be done concurrent with removal of the existing levee.
- ▶ **Facilitation of Setback Area Drainage:** Grading of the setback area to facilitate drainage of floodwaters back to the Feather River and enhancement of the setback area drainage channel will be conducted concurrent with removal of the existing levee.
- ▶ **Demobilization:** Demobilization will include removal of equipment and materials from the project site, disposal of excess materials at appropriate facilities, and restoration of staging areas and temporary access roads to pre-project conditions. Demobilization activities will likely occur in various locations as construction proceeds along the project alignment, but will be completed in June and July 2009 after removal of the existing Feather River levee is complete.

BLOCK 19: PROJECT PURPOSE

An analysis focused on the Feather River levee was performed by Kleinfelder and is described in *Problem Identification Report, TRLIA Phase 4 Feather River and Yuba River Left Bank Levees, Reclamation District No. 784 (PIR)* (Kleinfelder 2006). The PIR addresses the Feather River left (east) bank levee from near Reclamation District (RD) 784 Pump Station No. 2 to the beginning of the Yuba River left (south) bank levee, and the Yuba River left bank levee for approximately 0.3 mile. The conclusions of the PIR indicate that portions of the subject levee do not currently meet the geotechnical criteria for through-seepage or underseepage needed to secure Federal Emergency Management Agency (FEMA) accreditation.

The primary purpose of the overall Feather River Levee Repair Project is to correct identified deficiencies in the left bank levees of the Feather and Yuba Rivers, and consequently to improve flood protection for the RD 784 area of Yuba County. To a large extent, levee deficiencies in the project area relate to the potential for water to seep under (underseepage) and through (through-seepage) the levee soils during flood events, potentially leading to levee failure. The project design objectives focus on measures to bring the levees into compliance with FEMA geotechnical requirements for underseepage or through-seepage, as well as engineering and design standards of the State of California Reclamation Board and the USACE. The proposed project is also intended to address areas along the Feather River levee where erosion of the levee is a concern. These specific project design objectives are consistent with the following overall project objectives:

- ▶ To secure flood protection for at least a flood event with a 0.5% (1-in-200) annual chance of exceedance,
- ▶ To help secure FEMA accreditation for the subject reaches of levee,
- ▶ To avoid increasing downstream flow and stage during peak-flow conditions,
- ▶ To achieve these objectives as soon as possible, and
- ▶ To incorporate environmental mitigation as appropriate.

BLOCK 21: TYPES OF MATERIAL BEING DISCHARGED AND THE AMOUNT IN CUBIC YARDS

Action	Volume (cy)	Type of Material
Construction of the setback levee (fill of a portion of the Plumas Lake Canal and one other drainage) – Stage 1	12,000	Local borrow soils
Construction of new Pump Station No. 3 (excavation) – Stage 1	80,000	Native soil
Fill of Plumas Lake Canal between new Pump Station No. 3 and east levee easement and between west levee easement and pond – Stage 2	50,000	Local borrow soils
Enhancement of setback area drainage channel (fill and excavation) – Stage 2	60,000	Native soil

BLOCK 22: SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED

The proposed project is anticipated to permanently affect 12.51 acres of waters of the United States and indirectly affect 56.89 acres of waters of the United States. Permanent effects to waters of the United States will take place in two stages as described in Block 18. Indirect effects to waters of the United States will be the result of occasional flooding of the setback area.

STAGE 1 EFFECTS

Stage 1 of the project will include fill and excavation activities associated with construction of the setback levee and the new Pump Station No. 3. These activities will require filling in portions of the Plumas Lake Canal, excavating a portion of the Plumas Lake Canal, filling in a portion of a perennial drainage that flows into the Plumas Lake Canal and riparian forest/scrub associated with the Plumas Lake Canal and perennial drainage (see Exhibit 4, Attachment C and the following table). The setback levee alignment will cross portions of the Plumas Lake Canal and a perennial drainage that flows into the Plumas Lake Canal. Construction of the setback levee and associated access corridors will require the filling of the portions of those waters (totaling 2.25 acres).

Construction of the new Pump Station No. 3 will require excavation of a portion of the Plumas Lake Canal. The pump station, as shown in Exhibit 4, will be located adjacent to the setback levee access corridor and will be

constructed in upland. However, an approach channel will also need to be constructed from the Plumas Lake Canal to the new pump station. A portion of the approach channel will be constructed in the upland adjacent to the new pump station. Construction of this portion of the approach channel will be done up to approximately 10-20 feet from the existing west bank of the Plumas Lake Canal. Once this portion of the approach channel is constructed and graded to the appropriate slope, the remainder of the channel will be constructed. A 400-foot (0.07-acre) portion of the existing west bank of the Plumas Lake Canal will be excavated causing water to flow into the approach channel. Material from the excavation and other borrow material (if needed) will be placed in the Plumas Lake Canal to create the east bank of the approach channel (see Exhibit 4, Inset 3). This will isolate the downstream portion of the Plumas Lake Canal and prevent it from receiving additional flows. Once the east bank of the approach channel is created, the west bank of the approach channel will be constructed and will blend into the existing west bank of the Plumas Lake Canal above the excavated segment. Additionally, grading of a small portion of the bed of the Plumas Lake Canal (0.17-acre) in the approach channel will be required to create the appropriate slope for flows to descend to the (gravity activated) pump station. Once the new pump station is functioning, water from the Plumas Lake Canal on the land side will be pumped through the new Pump Station No. 3 into a created channel on the water side of the setback levee. This channel will be excavated in upland but will need to connect with the ponded portion of the Plumas Lake Canal. Where the channel connects to the canal, an approximately 125-foot by 50-foot section (0.14 acre) of the bank of the ponded canal and associated riparian forest/scrub will be excavated to facilitate drainage of the channel into the canal.

STAGE 2 EFFECTS

Stage 2 of the project will include fill and excavation activities associated with removal of portions of the Plumas Lake Canal, decommissioning of the existing Pump Station No. 3, and enhancement of the setback area drainage channel. As mentioned previously, portions of the existing Feather River levee will be degraded to the adjacent ground surface elevation in the levee access corridors. The levee access corridors are maintained 50-foot wide corridors off the levee toe. Levee degradation work will include excavation of the existing levee from the levee crown and land side of the levee. Since levee degradation will be done from the crown and land side of the levee, since the levee embankment will be reduced to match the surface elevation of the adjacent access corridor and will not require excavation and grading in that corridor, and since waters of the United States are located to the west of the water side access corridor, effects to those waters of the United States from levee degradation are not expected.

Stage 2 of the project will affect a total of 9.88 acres of waters of the United States including portions of the Plumas Lake Canal, an intermittent drainage on the water side of the existing levee that flows into the Feather River, a backwater to the Feather River, and riparian forest/scrub associated with these waters. To prevent the potential for underseepage or through-seepage in the new setback levee, approximately 4.1 acres of the Plumas Lake Canal must be filled in. Approximately 500 feet of the canal, on either side, must be filled in to prevent there being open trenches near the setback levee that could contribute to underseepage or through-seepage. Although only 500 feet of the canal on the land side of the setback levee is required to be filled in, because the new pump station and approach channel will re-route the Plumas Lake Canal towards the pump station and isolate the remainder of the existing canal, the entire portion of the canal between the new pump station approach channel and the setback levee corridor will be filled in. On the water side of the setback levee, the portion of the Plumas Lake Canal to be filled will extend from the setback levee access corridor to the beginning of the ponded portion of the canal.

Decommissioning of the existing Pump Station No. 3 will also affect a portion of the ponded section of Plumas Lake Canal. The existing pump station will be dismantled and removed at the same time as degradation of the existing levee. Removal of the pump station will require construction of a temporary cofferdam upstream of the pump station in the ponded section of Plumas Lake Canal. The portion of the canal between the pump station and temporary cofferdam (0.11 acre) will be dewatered so that equipment can remove some of the pump structures in the channel. The platform that the pump station sat on will also be excavated, which will result in removal of 0.17 acre of riparian forest/scrub. Additionally, excavation and grading in the dewatered channel will be required to create a slope for drainage of the setback area to the Feather River. This drainage will be achieved by enhancing a

channel on the water side of the existing levee and connecting it to the Plumas Lake Canal in the location of the removed Pump Station No. 3.

Degradation of the existing levee (in Segment 2) will result in an increase in the floodway for the Feather River. During high river stages, water from the Feather River will enter into the setback area and is expected to flood the setback area. As the river stage of the Feather River decreases after storm events and spring snowmelt, the water in the setback area must drain back to the river channel. Currently, an intermittent channel located on the water side of the existing Feather River Levee drains water from the land side of the existing levee via the existing Pump Station No. 3. TRLIA proposes to use this channel to drain the setback area by connecting it to the Plumas Lake Canal in the location of the removed Pump Station No. 3. Additionally, because there is potential for fish stranding in the setback area as flood waters recede, this setback area drainage channel will also serve as a fish passage channel. However, the current intermittent channel does not have the appropriate dimensions to facilitate drainage of the entire setback area. Therefore, enhancement of the channel will be required to increase the flow capacity and volume of water that can pass through it into the Feather River. Approximately 0.09 acre of the intermittent channel will need to be excavated and enhanced to facilitate drainage of the setback area. Because the channel will need to be widened, an additional 5.19 acres of adjacent riparian forest/scrub will need to be removed and excavated. There is also a backwater to the Feather River at the mouth of the intermittent channel that will require enhancement. This backwater drains the intermittent channel when water flows through it, and is inundated from the Feather River for the rest of the time. Approximately 0.22 acre of this backwater will need to be excavated and enhanced to adequately handle drainage of the setback area.

INDIRECT EFFECTS

Indirect effects to waters of the United States (totaling 56.89 acres) will be a result of the seasonal flooding into the setback area during and after Stage 2 of the project. When river stage exceed the elevation of the existing levee alignment (approximately 50 feet mean sea level), Feather River flood water will flow into the setback area. MBK Engineers (TRLIA 2006) indicates that flows passing downstream will enter the levee setback area approximately once every 3 years on average, when the rate of flow is approximately 50,000 cfs. This is similar to the frequency of flooding now experienced in areas that are within the currently leveed channel of the Feather River but are outside the low-flow channel. Existing waters of the United States in the setback area will be influenced by the flood water such that the hydrology of these waters will be temporarily changed. Intermittent waters that will normally recede or dry up quickly after a storm pulse will be fully inundated with flood water for a longer period of time. However, the setback area will be designed to facilitate drainage of the flood water back to the Feather River as soon as upstream flows decrease in the river. It is expected that by the end of the wet season, the waters of the United States in the setback area will return to normal conditions. It is also expected that seasonal flooding will not result in a loss of functions and values within those waters.

Acreages of Jurisdictional Waters of the United States Affected by the Feather River Levee Repair Project, Segment 2				
Project Element	Feature	Hydrological Connectivity ¹	Acreage	Total
PERMANENT EFFECTS				
STAGE 1				
Setback Levee Alignment				
	Perennial Drainage (PD-1)	Feather River (P)	0.43	
	Mixed Riparian Forest/Scrub	PD-1 (C)	1.82	
Setback Levee Alignment Total				2.25

Acreages of Jurisdictional Waters of the United States Affected by the Feather River Levee Repair Project, Segment 2				
Project Element	Feature	Hydrological Connectivity¹	Acreage	Total
Pump Station No. 3				
	Perennial Drainage (PD-1)	Feather River (P)	0.17	
	Mixed Riparian Forest/Scrub	PD-1 (C)	0.07	
Pump Station No. 3 Total				0.24
Pump Station Channel (Inside Setback Area)				
	Mixed Riparian Forest/Scrub	PD-1 (C)	0.14	
Pump Station Channel Total				0.14
Total Stage 1 Permanent Effects				2.63
STAGE 2				
Fill of Plumas Lake Canal Outside Setback Area				
	Perennial Drainage (PD-1)	Feather River (P)	1.16	
	Mixed Riparian Forest/Scrub	PD-1 (C)	1.77	
Plumas Lake Canal Outside Setback Area Total				2.93
Fill of Plumas Lake Canal Inside Setback Area				
	Perennial Drainage (PD-1)	Feather River (P)	0.24	
	Mixed Riparian Forest/Scrub	PD-1 (C)	0.93	
Plumas Lake Canal Inside Setback Area Total				1.17
Decommission of Existing Pump Station No. 3				
	Mixed Riparian Forest/Scrub	PD-1 (C)	0.17	
	Perennial Drainage (PD-1)	Feather River (P)	0.11	
Decommission of Existing Pump Station Total				0.28
Setback Area Drainage Channel				
	Mixed Riparian Forest/Scrub	ID-5 (C)	5.19	
	Intermittent Drainage (ID-5)	Feather River (F)	0.09	
	Feather River Backwater	Feather River (C)	0.22	
Setback Area Drainage Channel Total				5.50
Total Stage 2 Permanent Effects				9.88

Acreages of Jurisdictional Waters of the United States Affected by the Feather River Levee Repair Project, Segment 2				
Project Element	Feature	Hydrological Connectivity ¹	Acreage	Total
INDIRECT EFFECTS				
STAGE 2				
Setback Area Flooding				
	Perennial Drainage (PD-1)	Feather River (P)	16.98	
	Mixed Riparian Forest/Scrub	PD-1/ID-1 (C)	39.09	
	Intermittent Drainage (ID-1)	PD-1 (CV)	0.82	
Setback Area Flooding Total				56.89
Total Stage 2 Indirect Effects				56.89
Sub-Total Permanent Effects (Stage 1 and Stage 2)				12.51
Sub-Total Indirect Effects (Stage 2)				56.89
Grand Total Waters of the United States Affected by the Feather River Levee Repair Project, Segment 2				69.4
¹ Hydrological Connection to USACE Jurisdictional Waters of the United States F = Connects by surface flow during flood events. C = Contiguous with, or located within, the listed feature. D = Connected by ditch or other drainage feature. P = Connected by pump. CV = Connected, directly or indirectly, by culvert or storm drain.				

ADDITIONAL INFORMATION

Impacts on Endangered Species: The proposed project may affect the federally listed valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), giant garter snake (*Thamnophis gigas*), green sturgeon (*Acipenser medirostris*), Central Valley steelhead Evolutionarily Significant Unit (ESU) (*Oncorhynchus mykiss*), Central Valley spring-run Chinook salmon ESU (*Oncorhynchus tshawytscha*), and Sacramento River winter-run Chinook salmon ESU (*Oncorhynchus tshawytscha*). TRLIA has been in contact with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) regarding potential adverse effects of the project on these species. TRLIA will request that the U.S. Army Corps of Engineers (USACE) initiate consultation with USFWS and NMFS, pursuant to Section 7 of the Endangered Species Act (ESA) and the Fish and Wildlife Coordination Act (FWCA). Preparation of a Biological Assessment is in progress and the Biological Assessment will be submitted to USACE in support of Section 7 ESA consultation.

Essential Fish Habitat: TRLIA has spoken with NMFS regarding effects of the project on Essential Fish Habitat, as defined in the Magnuson-Stevens Fishery Conservation and Management Act. It has been determined that the proposed project has the potential to adversely affect Essential Fish Habitat for Pacific salmon. TRLIA expects that the proposed project will only have minimal adverse effects on Essential Fish Habitat and will seek concurrence from NMFS under formal Section 7 consultation pursuant to the Endangered Species Act. In fact, creation of the setback levee and degradation of the existing levee will add 1600 acres to the Feather River floodway during high river stages.

Cultural Resources and Historic Properties: There is one known cultural resource site within the project area that may be eligible for listing in the National Register of Historic Places (NRHP). There are no other known significant cultural resource sites within the project area; however, there is high potential that significant

archaeological deposits may be discovered in subsurface contexts during project construction. EDAW is currently preparing cultural resource reports on behalf of TRLIA for submission to the USACE for consultation with the State Historic Preservation Officer regarding the Area of Potential Effects (APE), the adequacy of cultural resource identification efforts, determinations of effects, and mitigation designed to avoid and/or minimize effects to historic properties.

Alternatives: TRLIA's engineering consultant prepared a comprehensive evaluation of project alternatives. This information was used in determining alternatives for California Environmental Quality Act analysis, and is being used by TRLIA to comply with Section 404(b)(1) of the Clean Water Act. Alternatives considered in the analysis for Section 404(b)(1) include: (1) a no project alternative in which levee repair and construction of the setback levee do not occur; (2) levee strengthening/repair of Segment 2 (in place), rather than construction of a setback levee; (3) construction of a setback levee on an alignment that matches the proposed project alignment to the south and an alignment that is between the proposed alignment and the existing levee to the north (intermediate setback alignment); (4) construction of the "Above Star Bend" (ASB) setback alignment rather than the proposed alignment; and (5) construction of a setback levee alignment east of the proposed alignment. The Section 404(b)(1) alternatives analysis will be submitted to USACE shortly and will demonstrate that the proposed project is the least environmentally damaging practicable alternative.

Mitigation: TRLIA is proposing to mitigate for 6.73 acres of permanent adverse effects to waters of the United States. Although the permanent effects to waters of the United States total 12.51 acres, it is our opinion that some of the permanent effects and the indirect effects described previously are self-mitigating. It is our opinion that the 0.28-acre of effects to waters of the United States from decommissioning the existing Pump Station No. 3 and the 5.5 acres of effects to waters of the United States from enhancement of the setback area drainage channel are self-mitigating. The effects in the setback area drainage channel will include removal of 5.19 acres of riparian habitat and excavation and grading in 0.31 acre of waters of the United States. However, these effects will not result in permanent loss of waters of the United States. These effects are a result of facilitation and enhancement of the existing drainage channel. Riparian habitat will be removed to allow for widening and deepening of the existing channel. Excavation of the bed and banks of the existing channel will be required to increase the size of the channel. These disturbances would affect existing waters of the United States, but would also result in an increase and enhancement of the water channel. Riparian habitat disturbed but not removed for enhancement of the drainage channel will be allowed to revegetate naturally. Thus, the enhancement of the setback area drainage channel will increase the acreage of open water even though it may decrease the acreage of adjacent riparian habitat. Therefore, it is our opinion that these effects are self-mitigating.

Decommissioning of the existing Pump Station No. 3 will result in the removal of 0.17 acre of riparian habitat and grading and excavation of approximately 0.11 acre of the ponded portion of the Plumas Lake Canal. However these effects will not result in permanent loss of waters of the United States. The grading and excavation in the 0.11 acre of the ponded portion of the Plumas Lake Canal will be done to remove the existing pump station and to facilitate connection of the Plumas Lake Canal to the setback area drainage channel. Once the existing levee is degraded, a channel will be excavated in the old levee access corridor to connect the setback area drainage channel to the Plumas Lake Canal. This will result in the addition of approximately 1.84 acre (400 linear feet) of jurisdictional water of the United States. Therefore, it is our opinion that these effects are self-mitigating.

As stated previously, seasonal flooding of the setback area will indirectly affect existing waters of the United States in the setback area. However, the seasonal flooding is temporary and is not expected to result in the loss of acreage or functions and values of the existing waters within the setback area. Additionally, by allowing flood waters to enter the setback area, the proposed project will expand the Feather River floodway by approximately 1600 acres. It is expected that the ordinary high water mark of the Feather River will extend into the setback area thus significantly expanding the jurisdictional acreage of the Feather River. Therefore, it is our opinion that these effects are self-mitigating.

Therefore, compensatory mitigation is proposed for only the 6.73 acres of effects to waters of the United States that will result in permanent loss of waters. Mitigation for the loss of the 6.73 acres of waters of the United States

is proposed to be satisfied through purchase of credits at an USACE-approved mitigation bank. Mitigation is also expected to be required for effects to federal and state-listed species and California Department of Fish and Game (DFG) jurisdictional habitats. TRLIA is proposing to establish a letter of credit with a local mitigation bank and is anticipating close coordination with USACE, USFWS, and DFG to ensure that the mitigation bank meets all mitigation requirements of these agencies.

Project Benefits: Implementation of the Feather River Levee Setback Project, Segment 2 will have the following benefits:

- ▶ The setback levee will increase flood protection for the nearby communities because the levee will be constructed on stable soils that have reduced potential for underseepage and through-seepage and because the levee will be constructed with underseepage and through-seepage countermeasures (i.e., slurry cut-off wall),
- ▶ During high river stages, the setback area will function as an increased Feather River floodway (totaling approximately 1600 acres) which will increase the river's capacity to convey flood flows and reduce the potential for bed and bank erosion along the Feather River,
- ▶ The increased floodway will increase seasonal habitat for native fish species and can provide rearing habitat and protection from large, predatory fish species, and
- ▶ The increased frequency and duration of inundation in the setback area from the Feather River can improve the habitat quality of waters of the United States within the setback area.

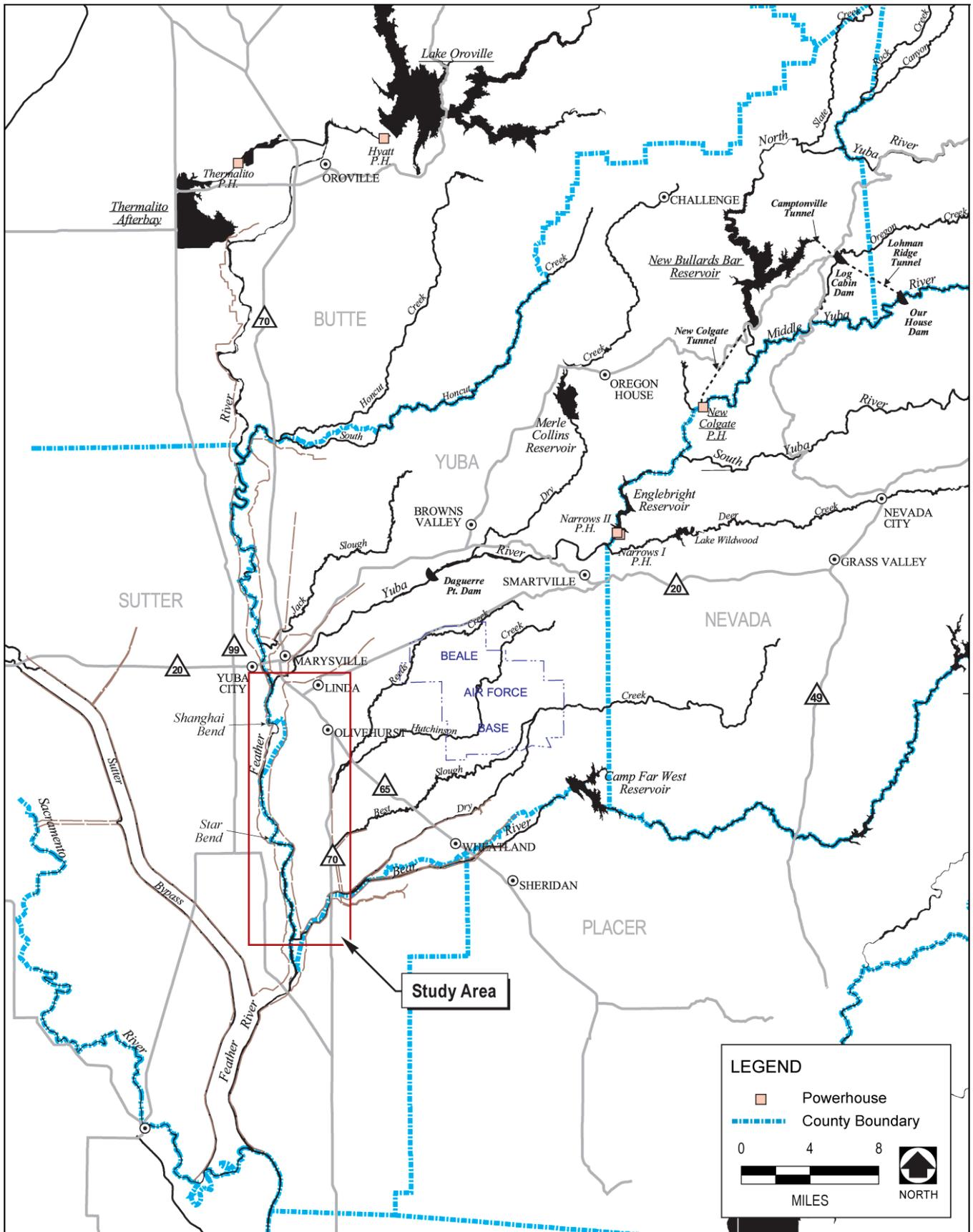
REFERENCES CITED

Kleinfelder, Inc. 2006 (February 20). *Problem Identification Report, TRLIA Phase 4 Feather River and Yuba River Left Bank Levees, Reclamation District No. 784*. Sacramento, CA.

Three Rivers Levee Improvement Authority. 2006. *Hydraulic and Hydrologic Analysis of the Three Rivers Levee Improvement Authority's Phase IV Project, Feather River Project*. Marysville, CA. MBK Engineers, Sacramento, CA.

ATTACHMENT C

Exhibits 1–4

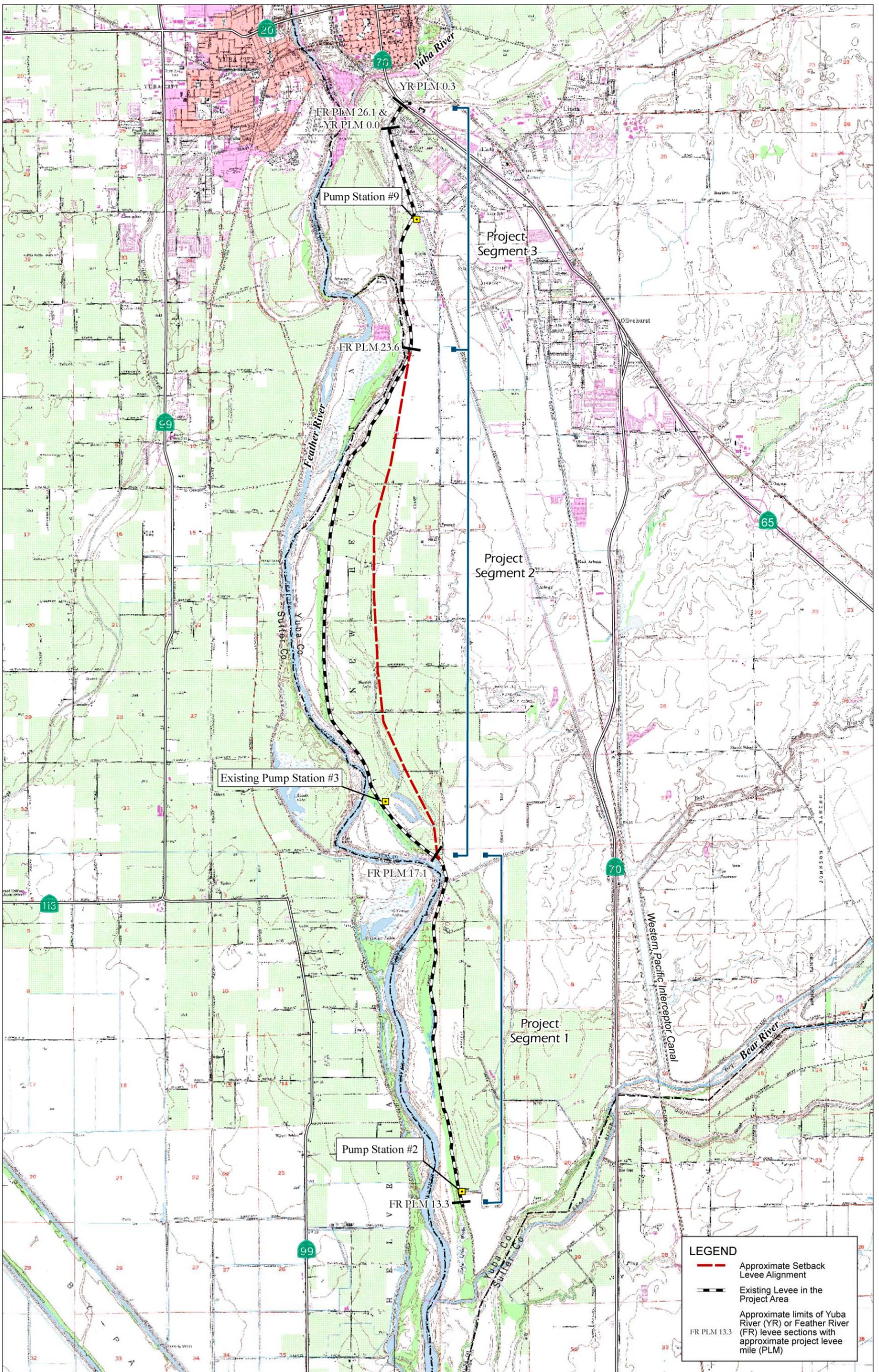


Feather River Levee Repair Project Regional Setting

THREE RIVERS LEVEE
IMPROVEMENT AUTHORITY
114 Yuba Street, Suite 218
Marysville, CA 95901

June 2007

Exhibit
1



LEGEND

- Approximate Setback Levee Alignment
- - - Existing Levee in the Project Area
- FR PLM 13.3

Approximate limits of Yuba River (YR) or Feather River (FR) levee sections with approximate project levee mile (PLM)

0 0.5 1
MILES

NORTH

Feather River Levee Repair Project

Source: Data Provided by EDAW and GEI 2007

THREE RIVERS LEVEE
IMPROVEMENT AUTHORITY

114 Yuba Street, Suite 218
Marysville, CA 95901

June 2007

Exhibit
2



June 2007

Exhibit
3

THREE RIVERS LEVEE
IMPROVEMENT AUTHORITY
1114 Yuba Street, Suite 218
Marysville, CA 95901

Feather River Levee Repair Project
Setback Levee in Project Segment 2
Feather River Setback Levee Segment 2 Alignment
Source: Data Provided by ED&AW and GEI 2007 X080

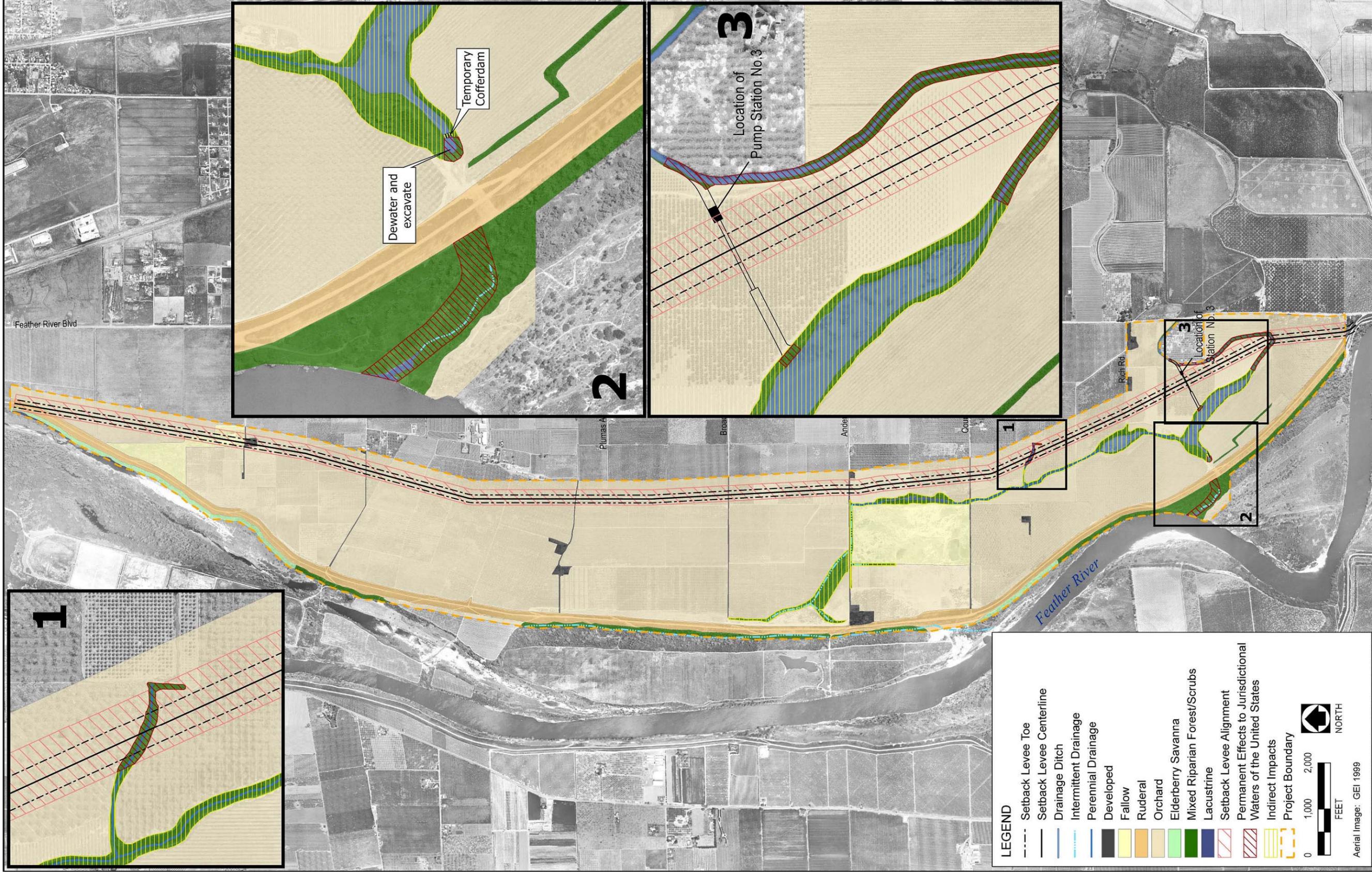
LEGEND

- Existing Levee
- New Setback Levee
- Setback Levee Toe
- Setback Levee Centerline
- - - Study Area

0 1,000 2,000
FEET

Aerial Image: GEI 1999

NORTH



LEGEND

- Setback Levee Toe
- Setback Levee Centerline
- Drainage Ditch
- Intermittent Drainage
- Perennial Drainage
- Developed
- Fallow
- Ruderal
- Orchard
- Elderberry Savanna
- Mixed Riparian Forest/Scrubs
- Lacustrine
- Setback Levee Alignment
- ▨ Permanent Effects to Jurisdictional Waters of the United States
- ▨ Indirect Impacts
- ▨ Project Boundary

0 1,000 2,000
FEET

Aerial Image: GEI 1999

NORTH

Feather River Levee Repair Project
 Setback Levee in Project Segment 2
Effects to Jurisdictional Waters of the United States

Source: Data Provided by EDAW and GEI 2007

X106

**THREE RIVERS LEVEE
 IMPROVEMENT AUTHORITY**
 1114 Yuba Street, Suite 218
 Marysville, CA 95901

June 2007
**Exhibit
 4**

ATTACHMENT D

Public Notice Mailing List

FEATHER RIVER LEVEE REPAIR PROJECT, SEGMENT 2
Individual Permit Application/Public Notice Mailing List
May 31, 2007

Landowner	Mailing Address
John M. & Marilee Smith, et al.	c/o Mike Smith 523 J Street Marysville, CA 95901
Danna Investment Company	Stephen Danna P.O. Box 729 Yuba City, CA 95992
State of California Reclamation Board	Attn: Jeffrey Fong California Department of Water Resources Division of Engineering Real Estate Branch 1416 Ninth Street, Room 425 Sacramento, CA 95814
Joga S. Mann & Rikki A. K. Mann	2210 Watt Avenue, Suite B Sacramento, CA 95825
Sacramento San Joaquin Drainage District	Attn: Jeffrey Fong California Department of Water Resources Division of Engineering Real Estate Branch 1416 Ninth Street, Room 425 Sacramento, CA 95814
Satinder N. Davit	535 Jones Road Yuba City, CA 95991
Nora Lee Terry, Trustee	3928 Ella Avenue Marysville, CA 95901
Naumes, Inc.	Attn: Robert Boggess P.O. Box 996 Medford, OR 97501
Thomas A. Rice & Jeanette L. Young	671 Plumas Avenue Marysville, CA 95901
Baldev S. Heir, et al.	4683 Windsong Street Sacramento, CA 95835
Patricia Wiggins	3920 Hoopa Place Davis, CA 95618
Sarinder Thiara	1512 Meadowlark Way Yuba City, CA 95991
Kummel Heir	809 Dederick Court San Jose, CA 95125
James R. & Mary L. Pearson, Trustees	798 Plumas Avenue Marysville, CA 95901
Daljit Hundal, SDS Farms	1793 Tuscany Drive Yuba City, CA 95993
Jacob E. Platter	60775 Moon Avenue Marysville, CA 95901
Quinn X. Dang & Andy N. Dang	5 Parnell Court Sacramento, CA 95835

FEATHER RIVER LEVEE REPAIR PROJECT, SEGMENT 2
Individual Permit Application/Public Notice Mailing List
May 31, 2007

Landowner	Mailing Address
Rajinderjit & Sukhminder Uppal, et al.	1734 Marin Court Plumas Lake, CA 95961
Richard & Ruby Webb	256 Anderson Avenue Marysville, CA 95901
Surjit & Jaspal Clar	2127 Railroad Avenue Yuba City, CA 95991
Nordic Industries	Attn: Jens Karlshoej 1437 Furneaux Road Marysville, CA 95901
David Anderson	618 Anderson Avenue Marysville, CA 95901
Berdina Anderson	644 Woodruff Lane Marysville, CA 95901
Gurdawar S. Bains	790 Anderson Avenue Marysville, CA 95901
Pat Freeman Rice	1630 Paula Drive Yuba City, CA 95993
H & H Trenching	Attn: Paul G. Hawes 2350 Mage Avenue Marysville, CA 95901
Steve & Madeline Maxey	P.O. Box 2353 Marysville, CA 95901
Tom O. Miller, Trustee	P.O. Box 304 Olivehurst, CA 95961
Harold D. Hadley Jr. Trust, et al.	c/o Sheldon Hadley P.O. Box 1308 Marysville, CA 95901
Pritam Kaur Heir, Trustee	2127 Pepperwood Drive Yuba City, CA 95993
Foster Ranch Ltd. Partnership, et al.	2160 Feather River Boulevard Marysville, CA 95901
JTS Communities, Inc.	Attn: Rob Aragon 401 Watt Avenue Sacramento, CA 95864
E. Platter and Sons, Inc.	1233 Country Club Road Marysville, CA 95901
Susanna Nieschulz	1339 Country Club Road Marysville, CA 95901
Frances Dunn Souza, Trustee	2350 Feather River Boulevard Marysville, CA 95901
Lloyd & Patricia Nieschulz	2667 Feather River Boulevard Marysville, CA 95901

FEATHER RIVER LEVEE REPAIR PROJECT, SEGMENT 2
Individual Permit Application/Public Notice Mailing List
May 31, 2007

Landowner	Mailing Address
Eleanor Herold	2052 Feather River Boulevard Marysville, CA 95901
Mark Aldrin Flores & Hermanita Flores	c/o Lorna Flores 2971 Azevedo Drive Sacramento, CA 95833
State of California	Attn: Dale Whitmore 2034 Feather River Boulevard Marysville, 95901
Robert Zwissig	1266 – 44 th Avenue San Francisco, CA 94122
Reclamation District 784	1594 Broadway Marysville, CA 95901-9632
County of Yuba	915 Eighth Street, Suite 105 Attn: Auditors Office Marysville, CA 95901-5273



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

RECEIVED

MAR 14 2008

REPLY TO
ATTENTION OF

March 11, 2008

TRIA

Regulatory Division (SPK-2007-00578)

Paul Brunner
Three Rivers Levee Improvement Authority
1114 Yuba Street, Suite 218
Marysville, California

Dear Mr. Brunner: *msb*

We are responding to your consultant's request for an approved jurisdictional determination for the Feather River Levee Repair Project (Segment 2) Project. This approximately 1,600-acre site is located in, Latitude 39° 07' 37.97" North, Longitude 121° 35' 16.86" West, near City of Olivehurst, Yuba County, California.

Based on available information, we concur with the estimate of waters of the United States, as depicted on the June 08, 2007 Feather River Levee Repair Project (Segment 2) Wetland Delineation Report drawing prepared by EDAW. Approximately 116.06 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, since they are wetlands that meet criteria as described in the 1987 Corps Wetland Delineation Manual, and Regional Supplement, and that are adjacent to other waters of the United States, which flow to the Feather River a tributary which the Corps has determined Navigable.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This letter contains an approved jurisdictional determination for your subject site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331.

A Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form is enclosed. If you request to appeal this determination you must submit a completed RFA form to the South Pacific Division Office at the following address: Administrative Appeal Review Officer, Army Corps of Engineers, South Pacific Division, CESPDPDS-O, 1455 Market Street, San Francisco, California 94103-1399, Telephone: 415-503-6574, FAX: 415-503-6646.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by 60 days from the date of this letter. It is

not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

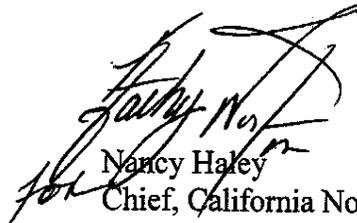
You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

We appreciate your feedback. At your earliest convenience, please complete our customer survey at http://www.spk.usace.army.mil/customer_survey.html. Your passcode is "conigliaro".

Please refer to identification number SPK-2007-00578 in any correspondence concerning this project. If you have any questions, please contact Mr. Brian Vierria at our California North Branch, 1325 J Street, Room 1480, Sacramento, California 95814, email brian.e.vierria@usace.army.mil, or telephone 916-557-7728. You may also use our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,



Nancy Haley
Chief, California North Section

Enclosure(s)

Copy furnished without enclosure(s)

AnjaKelsey, PBS&J, 1410 Rocky Ridge Drive, Suite 190,
Roseville, California 95661

Sean Bechta, EDAW, 2022 J Street, Sacramento California 95814

Robert Solecki, RWQCB, 11020 Sun Center Drive #200,
Rancho Cordova, California 95670

USFWS, Endangered Species Division, 2800 Cottage Way, Room W-2605,
Sacramento, California 95825

Applicant: Paul Brunner, TRLIA		File No.: SPK-2007-00578	Date: March 12, 2008
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
	PERMIT DENIAL		C
X	APPROVED JURISDICTIONAL DETERMINATION		D
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the DISTRICT engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the DISTRICT engineer. Your objections must be received by the DISTRICT engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the DISTRICT engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the DISTRICT engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the DISTRICT engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the DIVISION (not district) engineer (address on reverse). This form must be received by the DIVISION engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the DIVISION (not district) engineer (address on reverse). This form must be received by the DIVISION (not district) engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the DIVISION (not district) engineer (address on reverse). This form must be received by the DIVISION engineer within 60 days of the date of this notice. Exception: JD appeals based on new information must be submitted to the DISTRICT engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

If you have questions regarding this decision and/or the appeal process you may contact:

DISTRICT ENGINEER

Sacramento District, Corps of Engineers
Attn: Mr. Brian Vierria, Project Manager, Regulatory Division
1325 J Street, Room 1480, Sacramento, California 95814
916-557-7728, FAX

(Use this address for submittals to the **DISTRICT ENGINEER**)

If you only have questions regarding the appeal process you may also contact:

DIVISION ENGINEER

Army Engineer Division, South Pacific, CESP-D-CM-O
Attn: Tom Cavanaugh, Administrative Appeal Review Officer, Army
Corps of Engineers, CESP-D-PDS-O, 1455 Market Street, San
Francisco, CA 94103-1399 (415-503-6574, FAX 415-503-6646)

(Use this address for submittals to the **DIVISION ENGINEER**)

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Date:

Telephone number:

Signature of appellant or agent.

Updated Jurisdictional Determination, Segment 2,
September 30, 2008



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

September 30, 2008

Regulatory Division (SPK-2007-00578)

Mr. Paul Brunner
Three Rivers Levee Improvement Authority
1114 Yuba Street, Suite 218
Marysville, California 95901

Dear Mr. Brunner:

We are responding to your consultant's request for an approved jurisdictional determination for the Feather River Levee Repair Project (Segment 2) Project. This approximately 1,600-acre site is located in, Latitude 39^o 07' 37.97" North, Longitude 121^o 35' 16.86" West, near City of Olivehurst, Yuba County, California.

This letter supercedes our March 11, 2007 jurisdictional determination. Based on available information, we concur with the estimate of waters of the United States, as depicted on the August 14, 2008, *Feather River Levee Repair Project (Segment 2) Wetland Delineation* drawing prepared by EDAW. Approximately 114.85-acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, since they are wetlands that meet criteria as described in the 1987 Corps Wetland Delineation Manual, and Regional Supplement, and that are adjacent to other waters of the United States, which flow to the Feather River a tributary which the Corps has determined Navigable.

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This determination has been conducted to identify the limits of Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

We appreciate your feedback. At your earliest convenience, please complete our customer survey at http://www.spk.usace.army.mil/customer_survey.html. Your passcode is "conigliaro".

Please refer to identification number SPK-2007-00578 in any correspondence concerning this project. If you have any questions, please contact Mr. Brian Vierria at our California North Branch, 1325 J Street, Room 1480, Sacramento, California 95814, email brian.e.vierria@usace.army.mil, or telephone 916-557-7728. You may also use our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,

ORIGINAL SIGNED

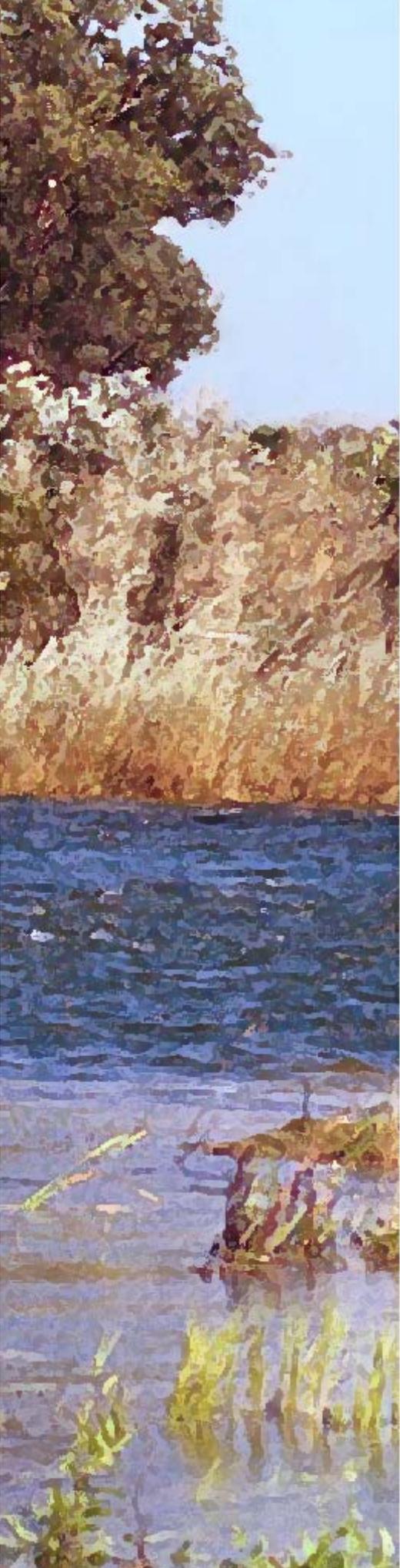
Nancy Haley
Chief, California North Section

Enclosures

Copy Furnished without enclosures:

Anja Raudabaugh, PBS&J, 1410 Rocky Ridge Drive, Suite 190, Roseville, California 95661
✓ Sean Bechta, EDAW, 2022 J Street, Sacramento California 95814
Robert Solecki, RWQCB, 11020 Sun Center Drive #200, Rancho Cordova, California 95670
Jana Milliken, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room W-2605,
Sacramento, California 95825

Section 404(b)(1) Alternatives Analysis, Segment 2

A vertical photograph on the left side of the page shows a riverbank. The top part of the image features dense green trees against a clear blue sky. Below the trees is a steep, light-colored, rocky or sandy bank. The bottom half of the image shows the surface of the river, which is dark blue with some ripples and reflections. In the foreground, there are some green plants and what appears to be a fallen log or branch partially submerged in the water.

**Clean Water Act
SECTION 404(b)(1) ALTERNATIVES ANALYSIS**

**FOR THE
FEATHER RIVER LEVEE REPAIR PROJECT
SEGMENT 2**

**AN ELEMENT OF THE
YUBA-FEATHER SUPPLEMENTAL
FLOOD CONTROL PROJECT**

PREPARED FOR

**THREE RIVERS LEVEE
IMPROVEMENT AUTHORITY**

PREPARED BY

EDAW

August 2007

**Clean Water Act
SECTION 404(b)(1) ALTERNATIVES ANALYSIS**

**FOR THE
FEATHER RIVER LEVEE REPAIR PROJECT
SEGMENT 2**

**AN ELEMENT OF THE
YUBA-FEATHER SUPPLEMENTAL
FLOOD CONTROL PROJECT**

PREPARED FOR

**THREE RIVERS LEVEE
IMPROVEMENT AUTHORITY**

**1114 Yuba Street, Suite 218
Marysville, CA 95901**

Contact: Paul Brunner

PREPARED BY

**EDAW
2022 J Street
Sacramento, CA 95814**

**Contact: Eric Htain
Regulatory Biologist
916/414-5800**

August 2007

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SUMMARY

FEATHER RIVER LEVEE REPAIR PROJECT OVERVIEW

The Three Rivers Levee Improvement Authority (TRLIA) is proposing construction of the Feather River Levee Repair Project (FRLRP). The purpose of the FRLRP is to correct deficiencies in the left-bank levees of the Feather and lower Yuba Rivers, and consequently to improve flood protection for the Reclamation District (RD) 784 area in Yuba County. The overall objectives of the project are to:

- ▶ secure flood protection for at least a flood event with a 0.5% (or 1-in-200) annual chance of exceedance,
- ▶ help secure Federal Emergency Management Agency (FEMA) accreditation of the subject reaches of levee,
- ▶ avoid increasing downstream flow and stage during peak-flow conditions,
- ▶ achieve these objectives as soon as possible, and
- ▶ incorporate environmental mitigation as appropriate.

The FRLRP area is divided into three project segments:

- ▶ Project Segment 1 refers to the existing Feather River left bank levee from Project Levee Mile (PLM) 13.3 to PLM 17.2 (from approximately RD 784 Pump Station No. 2 upstream to Star Bend).
- ▶ Project Segment 2 refers to the existing Feather River left bank levee from PLM 17.2 to PLM 23.4 (from approximately Star Bend upstream to west of the Yuba County Airport).
- ▶ Project Segment 3 refers to the existing Feather River left bank levee from PLM 23.4 to PLM 26.1, and the Yuba River left bank levee from PLM 0.0 to PLM 0.3 (west of the Yuba County Airport to the railroad crossing adjacent to the State Route [SR] 70 bridge).

Because of the regional importance of the FRLRP, TRLIA is seeking to begin construction activity as soon as possible. TRLIA proposes to conduct the FRLRP as two complete and separate projects, one project being the repair and strengthening of the existing Feather River left-bank levee in Project Segments 1 and 3, and the other being the construction of a setback levee in Project Segment 2. The U.S. Army Corps of Engineers (USACE) and other regulatory agencies held several meetings with TRLIA and ultimately agreed to permit the actions as two complete and separate projects due to the independent utility of the two actions and the temporal separation between their construction and completion.

Based on coordination and correspondence with USACE, TRLIA designed the activities associated with FRLRP Segments 1 and 3 to avoid adverse effects on waters of the United States. USACE has issued a determination that a Clean Water Act (CWA) Section 404 permit for discharge of dredged or fill materials to waters of the United States is not required for FRLRP Segments 1 and 3 (letter dated July 23, 2007, USACE# SPK-00578-SA). However, FRLRP Segment 2 will require a Section 404 permit. TRLIA submitted a 404 permit application to USACE on June 13, 2007 (USACE ID# SPK-2007-00578-SA). TRLIA anticipates that a standard individual permit will be required for this project. As part of the Section 404 individual permit process, an analysis of all practicable alternatives (pursuant to CWA Section 404[b][1]) must be prepared.

This alternatives analysis was prepared in accordance with the Section 404(b)(1) Guidelines and examines practicable alternatives for FRLRP Segment 2 only.

SUMMARY COMPARISON OF FRLRP SEGMENT 2 ALTERNATIVES

The proposed project and alternatives are summarized as follows:

- ▶ **Proposed Project (Preferred Alternative)**—A setback levee would be constructed in project Segment 2 along an alignment called the Above Star Bend (ASB) setback levee alignment. The proposed project would include approximately 1,300 acres within the expanded Feather River floodway (total site acreage is 1,600 acres when including the setback levee footprint). An existing pump station, Pump Station No. 3, would be removed and a new pump station would be installed just east of the setback levee. Soil borrow areas would be established to provide soil for setback levee construction.
- ▶ **Intermediate Setback Levee Alternative**—Under this alternative, a setback levee would be constructed in project Segment 2 along an alignment that matches the ASB setback levee alignment for approximately 1.6 miles in the south and is approximately 1,000 feet (maximum) west of the ASB setback alignment in the north. This alternative would include approximately 1,100 acres within the expanded Feather River floodway. Existing Pump Station No. 3 would be removed and a new pump station would be installed just east of the setback levee. Soil borrow areas would be established.
- ▶ **Levee Strengthening Alternative**—This alternative would involve repair and strengthening of the existing levee along project Segment 2. No setback levee would be constructed. Existing Pump Station No. 3 would be removed, and a new pump station would be installed farther east of the existing levee. Soil borrow areas would be established, although they would be substantially smaller than under the setback levee alternatives.
- ▶ **No-Action Alternative**—This alternative would retain the Feather River left bank levee in project Segment 2 in its current condition. No levee repairs or strengthening would be implemented in project Segment 2. Deficiencies, including erosion problem areas, underseepage issues, and through-seepage issues identified in project Segment 2, would remain unaddressed. Pump Station No. 3 would remain in its current condition at its current location.

Except for the No-Action Alternative, each of the project alternatives appears practicable based on the overall project objectives. Among these three alternatives, the Levee Strengthening Alternative would have the least effect on waters of the United States. However, it is considered less practicable than the other two alternatives because it entails improving the existing levee, which is located on soils with an extensive history of underseepage and through-seepage issues, despite repairs and improvements performed on the levee over the last 50 years. The Preferred Alternative entails constructing a setback levee on older, more consolidated soils of the Modesto Formation that will be more stable and less susceptible to seepage than the existing levee. Under the Intermediate Setback Levee Alternative, a setback levee would be constructed on more stable soils than are found beneath the existing levee, but less of the alignment would be situated on soils of the Modesto Formation.

Based on the project objectives, it is appropriate to consider each alternative's relative flood protection benefits, in terms of regional versus local benefits as well as the level of protection afforded the RD 784 area, and each alternative's potential for incorporation of environmental mitigation in the form of native habitat enhancement. Unlike the two levee setback alternatives, the Levee Strengthening Alternative would not improve flood protection beyond the RD 784 area or provide native habitat enhancement opportunities. Both setback levee alternatives would provide flood protection benefits to areas of Sutter County and Yuba County outside of the RD 784 area, and would provide opportunities for habitat enhancement within the levee setback area. However, the Intermediate Setback Levee Alternative would not provide these benefits to the level of the Preferred Alternative. The Intermediate Setback Levee Alternative also would have slightly greater effects on waters of the United States than the Preferred Alternative. Given these factors, the Preferred Alternative is the most practicable, least environmentally damaging alternative.

INTRODUCTION

BACKGROUND AND OVERVIEW OF THE PROJECT

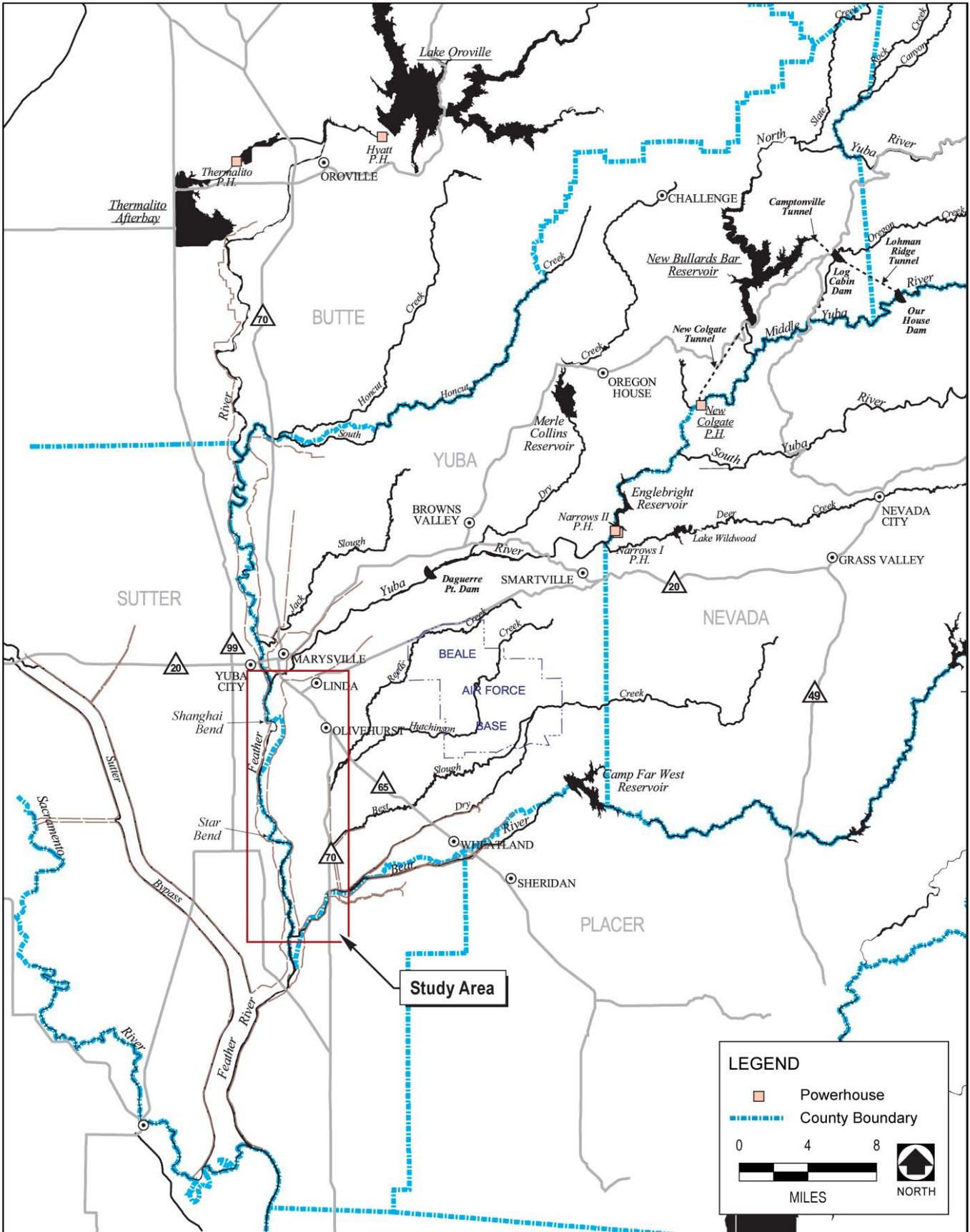
The Three Rivers Levee Improvement Authority (TRLIA) is proposing construction of the Feather River Levee Repair Project (FRLRP) (proposed project), an element of the Yuba-Feather Supplemental Flood Control Project (Y-FSFCP), to increase flood protection in the Reclamation District (RD) 784 area of Yuba County. The project would address deficiencies in the Feather River east levee, and make related improvements to the Yuba River south levee near the Feather River.

Most of the levee system in Yuba County was constructed during the 1920s using construction practices of that era. Past studies by the California Department of Water Resources (DWR), the U.S. Army Corps of Engineers (USACE), RD 784, and TRLIA have found that several reaches of the levee system protecting the RD 784 area do not satisfy the geotechnical criteria for seepage at the water surface elevation for the 100-year flood event that must be met for the Federal Emergency Management Agency (FEMA) to accredit the levees as providing protection against the 100-year event. In addition, constrictions in the Feather River have created backwater effects that raise the flood stage at upstream locations. Several projects have been completed and others are underway to address levee reliability problems and to prevent future catastrophic flooding in the RD 784 area and the region. The FRLRP is one of the flood control projects that have been proposed by TRLIA and others to increase flood protection in the region. Exhibit 1 shows the regional location of the FRLRP.

The FRLRP is proposed to provide increased protection from flooding from the Feather and lower Yuba Rivers in the RD 784 area of southern Yuba County. Catastrophic floods have occurred in Yuba County since the mid-1800s. The most recent such event occurred in January 1997, when a levee break occurred on the Feather River east bank levee north of Star Bend. The 1997 Arboga floods inundated 16,000 acres, damaged or destroyed 800 homes and businesses, and took the lives of three local residents. Following the 1997 flood, the Yuba County Water Agency (YCWA) formed a flood control study team and initiated a study of measures that could provide a higher level of protection to supplement the flood protection system for Yuba County. With California voters' passage of the Costa-Machado Water Act of 2000 (Water Act of 2000), the efforts of the study team focused on those measures that could be achieved within the budget provisions of this act. This ongoing effort, funded through Water Act of 2000 grant monies, is the Y-FSFCP.

Since 2003, various studies have been completed by RD 784, YCWA, TRLIA, USACE, and others to determine necessary actions for RD 784 levees to meet the current criteria to support FEMA accreditation. A program-level draft environmental impact report (DEIR) for the Y-FSFCP was completed in October 2003 (YCWA 2003a). It evaluated three flood control elements, including a setback of the left (east) bank levee (the levee on the left side of the river when facing downstream) of the Feather River below the Yuba River. The Y-FSFCP levee setback was proposed for two segments of the Feather River (referred to as Above Star Bend and Below Star Bend) upstream of the Bear River. Most issues related to the levee setback component of the Y-FSFCP were addressed in the EIR at a project level of detail, while some issues were addressed at a general, or "programmatic," level of detail where project description detail was not sufficient to support a more detailed analysis. The final environmental impact report (FEIR) was completed and certified and the program of elements approved by the YCWA Board in March 2004 (YCWA 2004).

In 2003, while YCWA was finishing its first level of Y-FSFCP studies of a select group of flood control elements, USACE in a separate effort identified several deficiencies in the Bear River and Western Pacific Interceptor Canal (WPIC) levees that prevented these levees from meeting the criteria for providing protection from a 100-year flood event. In addition, it was found that a 2,800-foot stretch of the Yuba River levee on the upstream side of State Route (SR) 70 did not meet slope stability requirements.



**Feather River Levee Repair Project
Regional Setting**

THREE RIVERS LEVEE
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Exhibit
1

An analysis of the Feather River left bank levee was performed by Kleinfelder and is described in *Problem Identification Report, TRLIA Phase 4 Feather River and Yuba River Left Bank Levees, Reclamation District No. 784 (PIR)* (Kleinfelder 2006). The PIR addresses the Feather River left bank levee from approximately Project Levee Mile (PLM) 13.3 near RD 784 Pump Station No. 2 to the beginning of the Yuba River left bank levee at approximately PLM 26.1, and the Yuba River left bank levee from PLM 0.0 to PLM 0.3 (Exhibit 2). The purpose of the analysis described in the PIR was to perform a feasibility-level evaluation of subsurface geotechnical conditions and levee conditions in accordance with the requirements that must be met for FEMA accreditation of the levees. The conclusions of the PIR indicate that portions of the subject levee do not currently meet the geotechnical requirements for through-seepage or underseepage.

Based on the results of these and other studies, flood control improvements were planned to be implemented in four phases. Priority was given to implementing improvements to the Yuba River levee above SR 70 (Phase 1); improvements to the upper Bear River, WPIC, and Yuba River levees, and the Olivehurst detention basin (Phase 2); and construction of a setback levee along the lower Bear River, tying into the Feather River levee just below Clark Slough and Pump Station No. 2 (Phase 3). These projects have all been completed. Phase 4 consists of the FRLRP and a separate project to provide underseepage remediation along the Yuba River levee upstream, between the UPRR (PLM 0.9) and Simpson Lane (PLM 2.1), which was constructed in 2006.

The FRLRP project area is divided into three project segments (Exhibit 2):

- ▶ Segment 1 refers to the existing Feather River left bank levee from Project Levee Mile (PLM) 13.3 to PLM 17.2 (from approximately RD 784 Pump Station No. 2 upstream to Star Bend).
- ▶ Segment 2 refers to the existing Feather River left bank levee from PLM 17.2 to PLM 23.4 (from approximately Star Bend upstream to west of the Yuba County Airport).
- ▶ Segment 3 refers to the existing Feather River left bank levee from PLM 23.4 to PLM 26.1, and the Yuba River left bank levee from PLM 0.0 to PLM 0.3 (west of the Yuba County Airport to the railroad crossing adjacent to the SR 70 bridge).

The environmental review process for the FRLRP included preparation of the *Environmental Impact Report for the Feather River Levee Repair Project, an Element of the Yuba-Feather Supplemental Flood Control Project* (FRLRP EIR) (State Clearinghouse No. 2006062071) (TRLIA 2006). The FRLRP EIR evaluated three project alternatives at an equal level of detail. The alternative approved for implementation by the TRLIA Board of Directors consists of repairing and strengthening the existing levee in project Segments 1 and 3 and setting back the project Segment 2 levee along an alignment that approximates the 2003 Above Star Bend (ASB) setback levee alignment identified in the EIR for the Y-FSFCP (Yuba County Water Agency 2003a, 2004). The FRLRP EIR concluded that certain project elements could result in impacts on waters of the United States, including wetlands, and that the project is subject to permitting by USACE under Section 404 of the Clean Water Act (CWA).

Ongoing environmental review and consultation between TRLIA, USACE, and the State of California Reclamation Board (The Reclamation Board) led to decisions that the impacts on waters of the United States from implementation of the FRLRP would be limited to the project Segment 2 area. EDAW submitted on behalf of TRLIA a delineation of waters of the United States, including wetlands, to USACE on March 9, 2007, for project Segments 1 and 3. USACE verified the delineation of waters of the United States, including wetlands, on June 1, 2007. Based on the verified delineation, it has been determined that the levee repair work in project Segments 1 and 3 has been designed to be conducted above the ordinary high water mark and outside of USACE Section 404 jurisdiction. USACE issued a letter of determination on July 23, 2007 stating that a Section 404 permit is not required for FRLRP Segments 1 and 3.

Because the levee repairs in Segments 1 and 3 and the setback levee in Segment 2 have independent utility, and because of the temporal separation between the proposed levee repairs in Segments 1 and 3 and setback levee construction in Segment 2, construction of a setback levee in Segment 2 has been determined to be a distinct

project that will be permitted separately from the work in Segments 1 and 3. On June 13, 2007, EDAW, on behalf of TRLIA, submitted to USACE a wetland delineation for Segment 2. USACE verification of the wetland delineation for Segment 2 is pending. However, USACE has indicated that based on the complexity of the project and the estimate of project effects on waters of the United States, a standard individual permit pursuant to CWA Section 404 will need to be obtained for Segment 2. Additionally, pursuant to CWA Section 404(b)(1), an analysis of practicable alternatives must be prepared to support the issuance of the Section 404 permit.

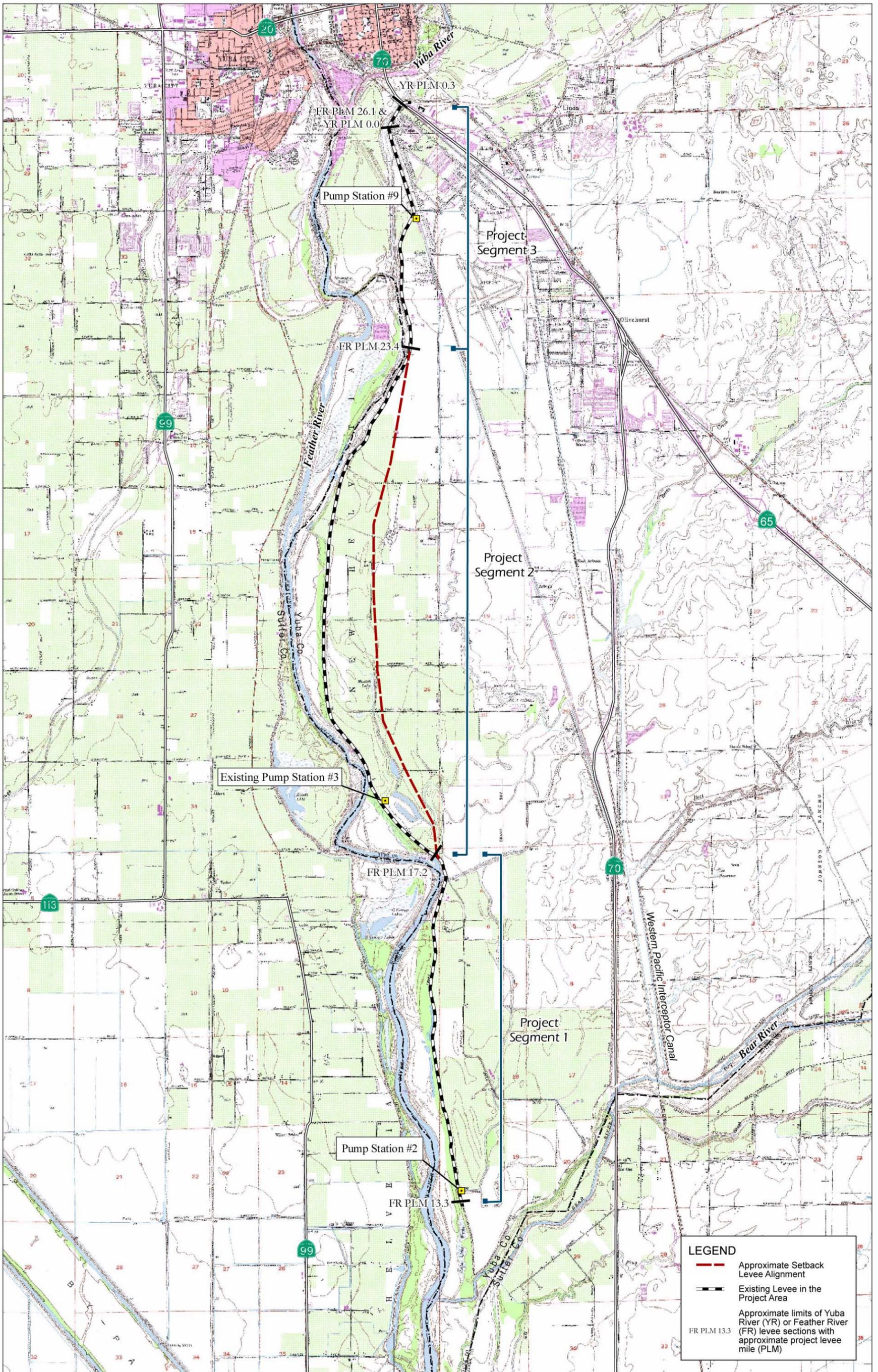
The three alternatives evaluated in the FRLRP EIR are summarized as follows:

- ▶ Levee Strengthening Alternative—Repair and strengthen the existing Feather River left bank levee from PLM 13.3 to PLM 26.1 (from approximately Pump Station No. 2 to the mouth of the Yuba River), and the Yuba River left bank levee from PLM 0.0 to PLM 0.3 (from the confluence with the Feather River to the Union Pacific Railroad crossing at the SR 70 bridge) (includes Segments 1, 2, and 3). This alternative was referred to as Alternative 1 in the FRLRP EIR.
- ▶ Levee Strengthening and ASB Setback Levee Alternative—Repair and strengthen the existing Feather River left bank levee from PLM 13.3 to PLM 17.2 (the area below Star Bend) and from PLM 23.4 to PLM 26.1 (from Shanghai Bend to the confluence with the Yuba River), and the Yuba River left bank levee from PLM 0.0 to PLM 0.3 (includes Segments 1 and 3). Construct a new setback levee (the “ASB setback levee”) between Feather River PLM 17.2 and PLM 23.4 (Segment 2). This alternative was referred to as Alternative 2 in the FRLRP EIR.
- ▶ Levee Strengthening and Intermediate Setback Levee Alternative—Repair and strengthen the existing Feather River left bank levee from PLM 13.3 to PLM 17.2 and from PLM 23.4 to PLM 26.1, and the Yuba River left bank levee from PLM 0.0 to PLM 0.3 (includes Segments 1 and 3). Construct a new setback levee between approximately Feather River PLM 17.2 and PLM 23.4 (Segment 2) along an alignment that is mostly located between the existing levee and the ASB setback levee alignment. This alternative was referred to as Alternative 3 in the FRLRP EIR.

Consistent with the FRLRP EIR, this Section 404(b)(1) Alternatives Analysis examines the following alternatives:

- ▶ Proposed Project (Preferred Alternative)
- ▶ No-Action Alternative
- ▶ Levee Strengthening Alternative
- ▶ Intermediate Setback Levee Alternative

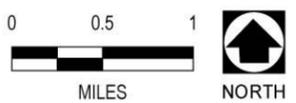
The Preferred Alternative has the same setback levee alignment as Alternative 2 in the FRLRP EIR except for several minor alignment shifts at the north end, to the east near Country Club Avenue and to the west near Anderson Avenue. These alignment adjustments were made during the detailed design process based on coordination with local landowners. Because these setback levee alignments are very close and have the same environmental impacts and hydraulic benefits, the Preferred Project and Alternative 2 of the FRLRP EIR are considered for purposes of California Environmental Quality Act compliance and this Section 404(b)(1) Alternatives Analysis to be the same.



LEGEND

- Approximate Setback Levee Alignment
- Existing Levee in the Project Area
- Approximate limits of Yuba River (YR) or Feather River (FR) levee sections with approximate project levee mile (PLM)

FR PLM 13.3



Feather River Levee Repair Project
Project Segments

Source: Data Provided by EDAW and GEI 2007

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Exhibit
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REGULATORY BACKGROUND

Section 404 of the CWA authorizes USACE to issue permits for the discharge of dredged or fill material into waters of the United States, including wetlands (33 USC 1344). The U.S. Environmental Protection Agency's (EPA's) guidelines (40 Code of Federal Regulations [CFR] 230 et seq.), the USACE's regulatory guidelines (33 CFR 320 et seq.), and the National Environmental Policy Act (NEPA) and NEPA guidelines (40 CFR 1500 et seq.) are substantive environmental criteria used to evaluate permit applications submitted to USACE. Under USACE's evaluation, an analysis of practicable alternatives is the primary screening mechanism used to determine appropriateness of permitting a discharge. USACE's evaluation also includes a public interest review and a NEPA compliance review.

EPA's guidelines prohibit discharges of dredged or fill material into waters of the United States, including wetlands, if a practicable alternative to the proposed discharge exists that would have less adverse impacts on the aquatic ecosystem, and as long as the alternative does not have other significant adverse environmental impacts (40 CFR 230[a]). An alternative is considered practicable if it is available and capable of being implemented after considering cost, existing technology, and logistics in light of overall project purposes. Practicable alternatives may include placing a project in an area not owned by the applicant that could be reasonably obtained by the project applicant to achieve the basic purpose of the project (40 CFR 230.10[a][2]).

If a project is not water dependent (i.e., does not require access to or siting in special aquatic sites to fulfill the basic purpose), and the project proposes a discharge into a special aquatic site, EPA's guidelines presume that a less environmentally damaging practicable alternative exists, unless the project applicant can clearly demonstrate otherwise (40 CFR 230.10.[a][2]). Special aquatic sites include sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes. The proposed project does not require access to and siting in jurisdictional waters of the United States to fulfill the basic project purpose; therefore, it is not a water-dependent project.

EPA's guidelines suggest a sequential approach to project planning in which mitigation measures are considered only after the project applicant shows that no practicable alternatives are available to achieve the basic project purpose with less environmental impact. Once it is determined that no practicable alternatives are available, EPA's guidelines require that appropriate and practicable steps be taken to minimize potential adverse effects on the aquatic ecosystem (40 CFR 230.10[d]). Such steps may include actions controlling discharge location; material to be discharged; fate of material after discharge or method of dispersion; and actions related to technology, plant and animal populations, or human use (40 CFR 230.70–230.77).

PROJECT LOCATION

Segment 2 of the FRLRP is located in southwestern Yuba County, and encompasses a portion of the Feather River levee and lands to the east between approximately Feather River PLM 17.2 and PLM 23.4 (Exhibit 2). The project area encompasses approximately 1,600 acres and is located in Townships 13 and 14 North, Ranges 3 and 4 East, on the U.S. Geological Survey 7.5-minute Olivehurst quadrangle.

PROJECT PURPOSE AND NEED

The primary purpose of the overall FRLRP, and therefore of the proposed project, is to correct identified deficiencies in the left bank levees of the Feather and lower Yuba Rivers, and consequently to improve flood protection for the RD 784 area of Yuba County. To a large extent, levee deficiencies in the project area relate to the potential for water to seep under (underseepage) and through (through-seepage) the levee soils during flood events, potentially leading to levee failure. The project design objectives focus on reliable measures that are sustainable over the long term to bring the levees into compliance with the geotechnical requirements for underseepage or through-seepage that must be met for FEMA to accredit the levees as providing protection against the 100-year event, as well as engineering and design standards of The Reclamation Board and the USACE. The overall FRLRP is also intended to address areas along the Feather River left bank levee in Segment 2 where erosion of the levee is a concern. These specific project design objectives are consistent with the following overall project objectives:

- ▶ to secure flood protection for at least a flood event with a 0.5% (or 1-in-200) annual chance of exceedance,
- ▶ to help secure FEMA accreditation of the subject reaches of levee,
- ▶ to avoid increasing downstream flow and stage during peak-flow conditions,
- ▶ to achieve these objectives as soon as possible, and
- ▶ to incorporate environmental enhancement/mitigation as appropriate.

PROJECT DESCRIPTION FOR THE PREFERRED ALTERNATIVE

The proposed project involves constructing a setback levee and degrading portions of the existing Feather River left bank levee (Exhibit 3). Approximately 5.7 miles of new setback levee would be constructed within Segment 2 to replace 6.2 miles of existing levee, and the new setback levee would tie into the existing levee at the northern terminus of Segment 1 and the southern terminus of Segment 3.

LEVEE ALIGNMENT

The setback levee alignment for the Preferred Alternative was delineated based on a geomorphic understanding of the project area and available performance information for the existing levee. Areas of reported heavy seepage and boils along the existing levee were identified from historical records and exhibited a good correlation with the locations of historical water bodies. The historical water bodies are indicative of recent river activity that typically deposited coarse gravels within the river channels. These coarse riverbed deposits became covered by a veneer of finer-grained soils when the river channel migrated and lakes and marshlands formed over the former channels. The 1955 Shanghai Bend and 1997 Country Club levee failures, and the Pump Station No. 3 near-failure, are located where the existing levee was constructed over these coarse river bed deposits. While it is not practicable to locate the setback levee entirely outside recent alluvial deposits, the alignment was selected to minimize levee placement over these recent water bodies, with the only clear exception at the crossing of the Plumas Lake Canal, where defensive measures (filling of the canal and a cutoff wall through the levee foundation) have been incorporated in the design, as described below.

In addition, beginning to the south of Country Club Road and extending to Plumas Avenue, the setback levee in its central two miles has been aligned in a north-south direction along the western edge of a topographically elevated area formed by older, more compact soils of the Modesto formation. This terrace is 4–8 feet higher than the recent alluvium deposits to the immediate west.

STAGED PROJECT IMPLEMENTATION

The proposed activities in Segment 2 will be completed in two stages: Stage 1 and Stage 2. The project is being divided into two stages to accommodate schedule challenges related to beginning construction of the setback levee (to replace the extremely deficient segment of existing levee) while undergoing the process for USACE and California State Reclamation Board approval to degrade the existing levee. If these processes were to take place at the same time (i.e., wait to construct the setback levee until approval to degrade the existing levee is obtained), it would delay the creation of a flood protection structure that could minimize flood damages should the existing levee fail during the approval process.

Stage 1 of the Preferred Alternative includes construction of the setback levee and associated stability berms, construction of a new Pump Station No. 3 and associated facilities, excavation of material within borrow sites (within the setback area and possibly on the land side of the setback levee), and removal and relocation of existing utilities and structures within the setback area. Stage 2 of the project includes degradation of all or portions of the existing Feather River east levee within Segment 2; filling of the Plumas Lake Canal on the water side from the setback levee to where the canal opens into the ponded area, and on the land side from the setback levee to the new Pump Station No. 3; decommissioning of the existing Pump Station No. 3; and recontouring of portions of the levee setback area and an existing drainage to facilitate drainage of water from the levee setback area after flood events. TRLIA is also discussing the feasibility of active restoration in the setback area with the various landowners and stakeholders in the setback area as well as with the various regulatory agencies. If restoration were conducted, it would be done as part of Stage 2.

STAGE 1 CONSTRUCTION

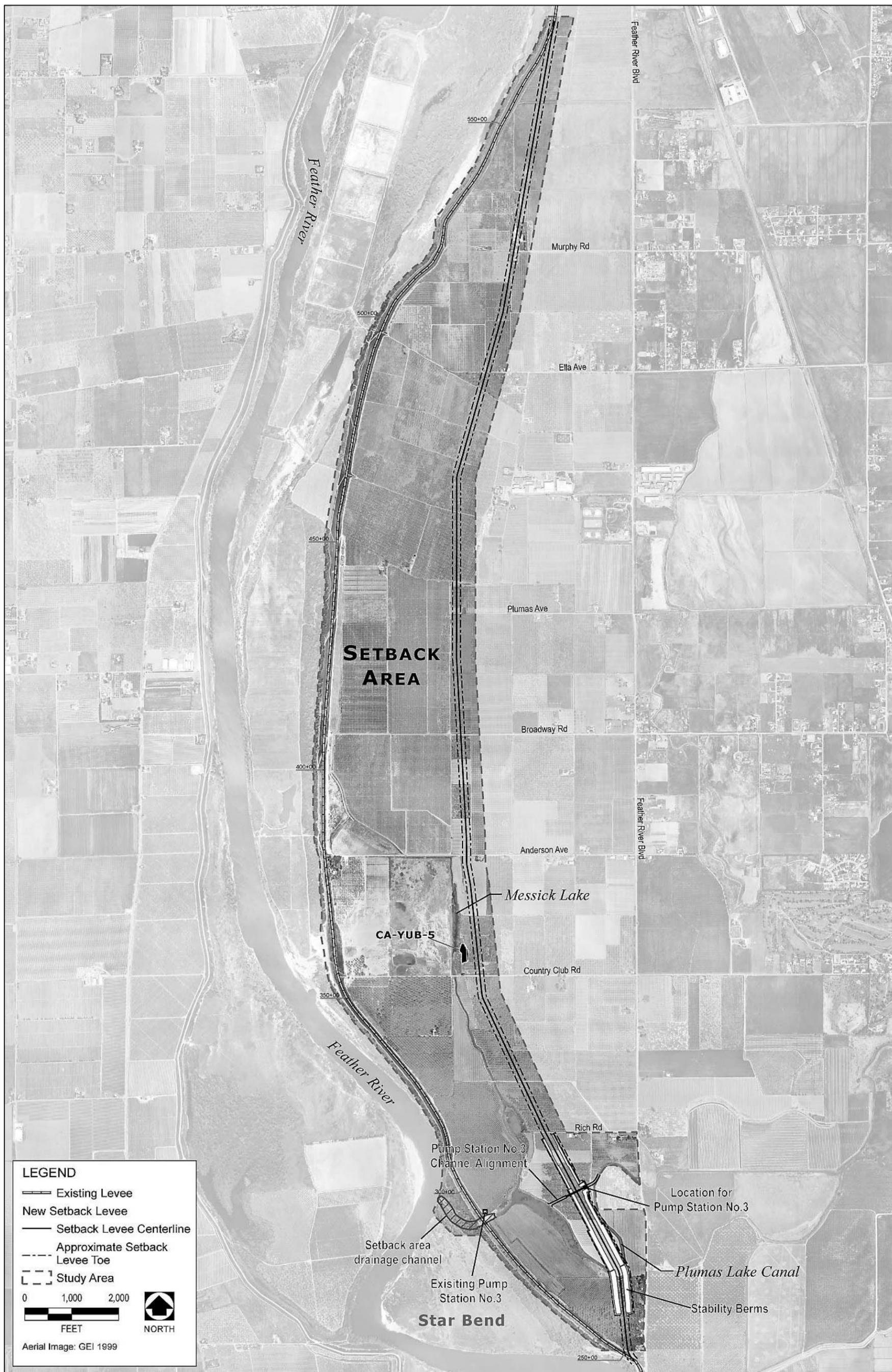
SETBACK LEVEE CONSTRUCTION

The setback levee will be approximately 5.7 miles long. The new levee segment will generally be set back approximately 0.5 mile to the east of the existing Feather River levee, except near the northern and southern ends, where it will join the existing levee. The area between the existing levee and the setback levee alignment (the levee setback area) and the footprint of the setback levee will include approximately 1,600 acres. It is anticipated that the design crown elevation of the setback levee will be the same as the crown elevation of the existing levee at each given latitude along the alignment. The height of the setback levee will generally range from about 20 to 30 feet above the existing ground surface. The most common levee height above the adjacent land will be approximately 25 feet. The existing levee has been reconstructed by the USACE to provide a minimum of 3 feet of freeboard above the 1957 design profile. Because the levee setback will lower most flow profiles by widening the flow channel, it follows that the setback levee, if constructed to the crown elevations described above, will have freeboard of at least 3 feet above the 1957 design profile. Other anticipated dimensions of the setback levee are: a crown width of 20 feet; a footprint width (levee toe to levee toe) of approximately 170 feet (depending on levee height); levee slopes at a 3:1 ratio (H:V); and a 12-foot-wide patrol road on levee crown.

Construction of the setback levee will include three main design elements: preparation of the levee foundation, construction of a slurry cut-off wall for seepage control, and construction of the levee embankment. Preparation of the foundation of the setback levee will involve clearing and grubbing of all trees, brush, loose stone, abandoned structures, existing utilities, buried pipelines, and other deleterious materials that may exist within 10 feet of the levee toes. After clearing and grubbing, the setback levee foundation will be stripped to remove low-growing vegetation and topsoil to a depth of at least 6 inches, although local areas with extensive tree roots or deep organic soils may require excavation to a depth of 3 feet or greater. The topsoil will be placed in a designated “unsuitable material” spoil area and/or used for borrow area reclamation. Overall, the depth of stripping is expected to average about 1-3 feet. Construction of a slurry cutoff wall is proposed along those portions of the setback levee where widespread strata of permeable sands and gravels exist in the foundation. The purpose of the slurry cutoff wall is to dissipate the hydraulic gradient in the levee foundation and reduce seepage quantities. To achieve maximum effectiveness, the slurry cutoff wall must extend completely through the permeable strata and terminate some distance into an underlying, reasonably continuous layer with lower permeability. The slurry cutoff wall will be composed of a mixture of soil and bentonite clay, and, in some applications, cement. Finally, construction of the setback levee embankment will begin as soon as sufficient lengths of levee foundation are complete and weather conditions allow. The embankment will be constructed as an engineered fill, with the fill placed in horizontal lifts. Each lift will be moisture conditioned and compacted to the specified density using a suitable compactor, such as a sheepsfoot, tamping-foot, or rubber-tired roller. Stability berms integral to the levee embankment will be provided in portions of the southern alignment where the foundation of the levee contains soft clay and silt deposits.

NEW PUMP STATION No. 3

An existing pump station (Pump Station No. 3) will need to be relocated to the land side of the setback levee. The current location of Pump Station No. 3 experiences excessive seepage and boils during high-water events, making it desirable to relocate the pump station out of this area. In addition, after the setback levee is complete, the existing Pump Station No. 3 will be in the setback area and exposed to flooding after the existing levee is degraded. Therefore, as part of Stage 1 of the setback levee project, a new/replacement Pump Station No. 3 will be constructed on the land side of the setback levee, followed in Stage 2 by removal of the existing pump station. The location of the new pump station will be adjacent to the Plumas Lake Canal, south of Rich Road (Exhibit 3). The new Pump Station No. 3 will be a reinforced-concrete structure similar to the recently constructed Pump Station No. 2 in RD 784. The specific capacity of the new Pump Station No. 3 will be determined during detailed project design; however, preliminary design shows that the capacity of the current pump station will be able to accommodate high-water events without the threat of upstream flooding. Once the new Pump Station No. 3 is



LEGEND

- Existing Levee
- New Setback Levee
- Setback Levee Centerline
- Approximate Setback Levee Toe
- Study Area

0 1,000 2,000
 FEET
 NORTH

Aerial Image: GEI 1999

**Feather River Levee Repair Project
 Segment 2
 Feather River Setback Levee Alignment**

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Exhibit
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built, an “approach channel” will be excavated to connect the pump station to the Plumas Lake Canal. A gravity drain has been incorporated into the design of the pump station to allow summertime gravity discharges to the lowlands on the waterside of the setback levee and the Feather River. The drain will consist of a cast-in-place 4-foot by 4-foot clear-span box culvert. Waterside of the levee toe, precast culvert sections will likely be used instead of cast-in-place concrete.

UTILITY RELOCATION AND STRUCTURE REMOVAL

Implementation of the setback levee project will necessitate the removal of all structures (houses, trailers, sheds, barns, other agricultural outbuildings) from the levee setback area, which would be subject to periodic flooding following removal of the existing levee. Approximately 20 structures in the levee setback area will be displaced by the project. Displaced structures include six residential dwelling units, and remaining structures include associated agricultural use buildings and barns. Some utilities and other facilities located in the levee setback area will need to be relocated or reinforced with implementation of the levee setback. As discussed previously, RD 784 Pump Station No. 3 will be relocated to the land side of the proposed setback levee. A PG&E 115-kilovolt (kV) transmission line called the Bogue Loop crosses the levee setback area on four towers. The foundations for these steel structures will probably need to be reinforced or replaced so that their integrity will be maintained during times of flood water inundation. Other steel towers along the same transmission line are located on the water side of the existing Feather River levee and are supported by elevated steel pile foundations.

Other existing facilities that may need to be abandoned, reinforced, or relocated include roads, power distribution lines, irrigation pipelines, drainage ditches, wells, fill stations, and communications lines. Several private irrigation lines will be cut off by the construction of the setback levee, separating some lands on both sides of the setback levee that require irrigation from current water sources. The wells within the setback area may be retained to support continuing agricultural activities, may be retained to support potential environmental enhancement activities for several years after setback levee construction, or will be destroyed in accordance with California’s water well regulations. Wells and fill stations in the levee setback area that will be abandoned will be removed and filled, and new wells will be dug and fill stations built outside the levee setback area to replace the abandoned facilities, as appropriate. Wells and fill stations that will be retained in the levee setback area will be retrofitted to accommodate periodic flooding. New power lines and power poles may be required for any new wells and fill stations.

BORROW AREAS

Borrow material will be obtained locally from borrow areas developed inside and outside the levee setback area. It is currently estimated that a total of approximately 3.4 million cubic yards (cy) of compacted borrow material will be required to construct the setback levee in project Segment 2 and that borrow areas will be excavated to depths in the order of about of 5-10 feet.

Two general objectives are important in the selection of borrow areas: to minimize haul distances to the setback levee alignment and provide a continuous or nearly continuous borrow source, and to reduce the potential for seepage impacts at the foundation of the setback levee. Minimizing haul distances is important to minimize project construction costs, air emissions, and traffic impacts. To reduce the potential for seepage impacts at the foundation of the setback levee, a distance of 400 feet or greater from the edge of the borrow area to the toe of the proposed levee must be maintained unless there is an incised drainage channel between the setback levee alignment and the borrow area. If such an incised drainage exists, borrow excavation closer to the levee may be allowed, based on an evaluation of local site conditions. Borrow areas may also be developed closer than 400 feet from the toe of the setback levee if the borrow pit is to be subsequently backfilled.

Wide, shallow excavations (rather than deep trenches) are anticipated. At the conclusion of the work, the borrow areas will be graded to blend with the topography, leaving slopes flat enough to reduce erosion and promote conditions conducive to vegetative growth (slopes 3:1 [H:V] or flatter), or filled with material from removal of

existing levees (during stage 2). If not filled, the bottom of the borrow areas will be regraded to drain away from the levee and toward the river or toward existing drainage ways. The drainage of the borrow areas will also need to ensure fish movement out of the levee setback area into the main channel of the Feather River when flood flows recede following inundating flood events. The borrow areas will be revegetated to conform to the surrounding landscape. The borrow sites will be reclaimed as appropriate. Some stockpiled topsoil, and other excess earth materials (organic soils, roots, and grass) from borrow areas and the setback levee foundation could be spread over borrow sites after excavation has been completed.

A detailed investigation of borrow areas suitable for levee embankment materials is currently underway. The location and limits of borrow areas will be determined and refined as a result of this effort. Borrow sites will be selected based on several criteria including right-of-way access, distance to the setback levee alignment, and environmental resources locations. Borrow sites will not be located where the sites could adversely affect sensitive species or waters of the United States. Borrow sites will be located in upland areas and materials taken from the borrow sites will not consist of hydric soils.

STAGE 2 CONSTRUCTION

FILL OF PORTIONS OF THE PLUMAS LAKE CANAL

During Stage 1 the new setback levee will divide the Plumas Lake Canal with portions of the canal remaining intact on either side of the setback levee. To minimize potential for underseepage that could result from having an excavated feature too close to the levee, approximately 490 feet of the canal on the west (water) side of the setback levee will be completely filled (from the west side of the setback levee alignment to where the canal opens into the ponded section of the Plumas Lake Canal). Approximately 2,200 feet of canal on the east (land) side of the setback levee will be filled between the new Pump Station No. 3 and the setback levee alignment. An approximately 2-foot-deep ditch will remain along the canal alignment to drain surface runoff from landside areas at the southern end of the setback levee to the new Pump Station No. 3.

DECOMMISSION OF EXISTING PUMP STATION No. 3

After the setback levee and Pump Station No. 3 construction is complete, the existing Pump Station No. 3 will continue to operate until the existing levee is degraded. At that time, the existing Pump Station No. 3 will be decommissioned and dismantled.

SETBACK AREA DRAINAGE SWALE

A floodplain swale will be constructed along the alignment of the existing Pump Station No. 3 discharge channel from the existing Pump Station No. 3 location to the Feather River. This swale will connect the setback area lowlands to the Feather River and thus facilitate drainage and allow flood waters to recede from the setback area in a manner that minimizes fish stranding. The existing channel will have to be enlarged and deepened to accommodate flood flows leaving the setback area and to minimize the potential for fish stranding as flood waters recede. The channel will be constructed in a manner that minimizes vegetation disturbance, fish stranding, and other environmental impacts. A site-specific drainage plan for the entire setback area will be developed in final design.

The swale will also act to allow backwater to flow into the setback area from the Feather River, increasing the inundation frequency of the setback area and resulting in high quality habitat. It is estimated that the 40-foot stage will be inundated in two out of every three years for a period of at least one week between March 15 and May 15. Floodplain land at or below this elevation will provide a broad suite of valuable ecosystem functions, including provision of nutrients and seasonal habitat for aquatic species.

DEGRADATION OF EXISTING LEVEE

All or portions of the existing levee in Segment 2 will be removed to achieve the maximum hydraulic benefits of the levee setback by allowing water to flow into and out of the levee setback area during high river stages. Where the existing levee will be excavated to allow flood waters to pass into and out of the levee setback area, the existing embankment will be excavated to the level of the adjoining ground surface in the levee access corridor. Specific sections to be retained, if any, will be determined in final project design and will be based on factors that include possible mitigation value for project impacts on sensitive species. Any sections of the existing levee that are left in place will not be maintained. There are no plans to use material in the existing Feather River left bank levee as borrow material for the new setback levee. It is expected that for some period of time, the existing levee and the new setback levee will be in place concurrently. During this period, the setback levee will function as a “backup” levee, providing a second line of levee protection if the existing levee in Segment 2 were to breach during a flood event.

OTHER ASSOCIATED ACTIVITIES (STAGES 1 AND 2)

STAGING AREAS AND ACCESS ROUTES

It is anticipated that several staging areas would be developed along the setback levee alignment to allow for efficient use and distribution of materials and equipment. Staging areas would be located within the construction corridor and near active construction areas, so they may be relocated as construction progresses. Because the work area is essentially flat, suitable sites for construction staging are abundant. Final selection of staging areas would be based on contractor preference and environmental and land use constraints such as avoiding placing staging areas within or adjacent to waters of the United States. Personnel, equipment, and imported materials would reach the project site via SR 70 and Feather River Boulevard. At the project site, the primary construction corridor would include the setback levee alignment, soil borrow areas, and roads used for access to the work areas, including Feather River Boulevard. Access roads would consist mainly of the existing east-west lateral roads between SR 70, Feather River Boulevard, and the levee setback area.

DISPOSAL OF EXCESS MATERIALS

Excess earth materials (organic soils, roots, and grass from borrow areas and the setback levee foundation; excavated material that does not meet levee embankment criteria) will be used in the reclamation of borrow areas or will be placed in a surplus material berm at the waterside toe of the setback levee. In addition, excess material could be used in the contouring of the setback area to facilitate drainage to the Feather River and prevent fish stranding. Cleared vegetation (i.e. trees, brush) will be hauled off-site. Debris from structure demolition, power poles, piping, and other materials requiring disposal will be hauled off-site to a suitable landfill.

PROJECT SCHEDULE

A period of up to approximately 22 months is planned for construction of the setback levee project, with contractor mobilization beginning in late September 2007, the setback levee embankment completed in December 2008, the existing levee breached in spring/summer 2009, and final clean-up and contractor demobilization in fall 2009. A detailed schedule showing project activities by stage is provided below.

Stage 1 Construction Activities

- ▶ Mobilization: Mobilization will include setting up construction offices and transporting heavy earthmoving equipment to the site. These activities may take about 1 month.
- ▶ Levee Foundation Preparation: This activity will begin soon after mobilization. Construction will take approximately 8–9 months depending on the amount of equipment working simultaneously, weather conditions, and permit requirements.
- ▶ Slurry Cutoff Wall Construction: Installation of slurry cutoff walls along the setback levee alignment will occur simultaneously with levee foundation preparation.
- ▶ Levee Embankment Construction (including stability berms): Because the setback levee alignment is nearly 6 miles long, levee embankment construction could begin in some areas while foundation preparation is underway along other portions of the alignment. Levee embankment construction is anticipated to take approximately 8 months.
- ▶ Borrow Material Excavation: Excavation of borrow materials for use in the construction of the setback levee embankment could begin simultaneously with levee foundation preparation or slurry wall construction and will occur for the duration of levee embankment construction.
- ▶ Tie-ins to Existing Levees: Elements of tying in the setback levee to the existing levees will take place during levee foundation preparation, levee embankment construction, and potentially during slurry cutoff wall construction.
- ▶ Pump Station No. 3 Construction: Pump Station No. 3 will be constructed concurrent with levee embankment construction. Procurement of long-lead items (e.g. pumps, motors, valves and generator) could begin as early as 2007.

Stage 2 Construction Activities

- ▶ Fill of Plumas Lake Canal: The portion of Plumas Lake Canal within the levee embankment footprint will be filled during levee foundation preparation. The portion of canal downstream of the setback levee and between the setback levee and Pump Station No. 3 will be filled concurrent with removal of the existing levee.
- ▶ Removal of the Existing Levee: The existing Feather River levee in the setback area will not be removed until the setback levee is complete. Removal activities will take place outside the identified Feather River flood season. It is expected that levee removal will take place in spring/summer 2009.
- ▶ Decommission of the Existing Pump Station No. 3: Removal of the existing pump station will be done concurrent with removal of the existing levee.
- ▶ Facilitation of Setback Area Drainage: Grading of the setback area to facilitate drainage of floodwaters back to the Feather River and enhancement of the setback area drainage swale will be conducted concurrent with removal of the existing levee.
- ▶ Demobilization: Demobilization will include removal of equipment and materials from the project site, disposal of excess materials at appropriate facilities, and restoration of staging areas and temporary access roads to pre-project conditions. Demobilization activities will likely occur in various locations as construction proceeds along the project alignment, but will be completed in fall 2009 after removal of the existing Feather River levee is complete.

EFFECTS OF THE PREFERRED ALTERNATIVE ON JURISDICTIONAL WATERS OF THE UNITED STATES

JURISDICTIONAL DETERMINATION OF WATERS OF THE UNITED STATES, INCLUDING WETLANDS, ON THE PROJECT SITE

A preliminary wetland delineation for the proposed project was prepared by EDAW on behalf of TRLIA and submitted to USACE on March 30, 2007, with the latest revisions submitted June 27, 2007. Based upon recent conversations with USACE, additional revisions to the delineation will be submitted to USACE soon. The wetland delineation has not yet been verified by USACE.

The project site encompassed by the preliminary delineation study area includes 116.11 acres of potentially jurisdictional waters of the United States. Potentially jurisdictional habitat types include mixed riparian forest/scrub, perennial drainages, intermittent drainages, and lacustrine habitat. Other potentially jurisdictional habitats in this delineation are those that do not meet the three-parameter wetland criteria (from the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual), such as developed areas, orchard, and ruderal habitats, but are potentially subject to USACE jurisdiction under CWA Section 404 because they are located below the ordinary high water mark (OHWM) of the Feather River (i.e., waterside of the existing levee).

Information on the waters of the United States in the delineation study area (which extends beyond the current project footprint) is shown in the table below and corresponds with the revised preliminary wetland delineation maps in Exhibit 4a-b. The EPA and USACE issued guidance (Guidance) on June 8, 2007, pertaining to delineations of waters of the United States and federal jurisdiction of such waters under Section 404 of the Clean Water Act, based on the Supreme Court rulings in the *Rapanos v. United States* and *Carabell v. United States* federal cases. According to the Guidance, federal waters subject to jurisdiction of USACE can now be classified into several categories:

- ▶ traditional navigable waters (TNWs);
- ▶ wetlands adjacent to traditional navigable waters (TNW wet);
- ▶ non-navigable tributaries of traditional navigable waters that are relatively permanent (i.e., have continuous flow year-round or at least 3 months of the year) (RPWs);
- ▶ wetlands that directly abut RPWs (RPW wet);
- ▶ non-navigable tributaries that are not relatively permanent (i.e., ephemeral) (non-RPWs);
- ▶ wetlands adjacent to non-RPWs (non-RPW wet); and
- ▶ wetlands that are adjacent to, but do not directly abut, an RPW (non-TNW wet).

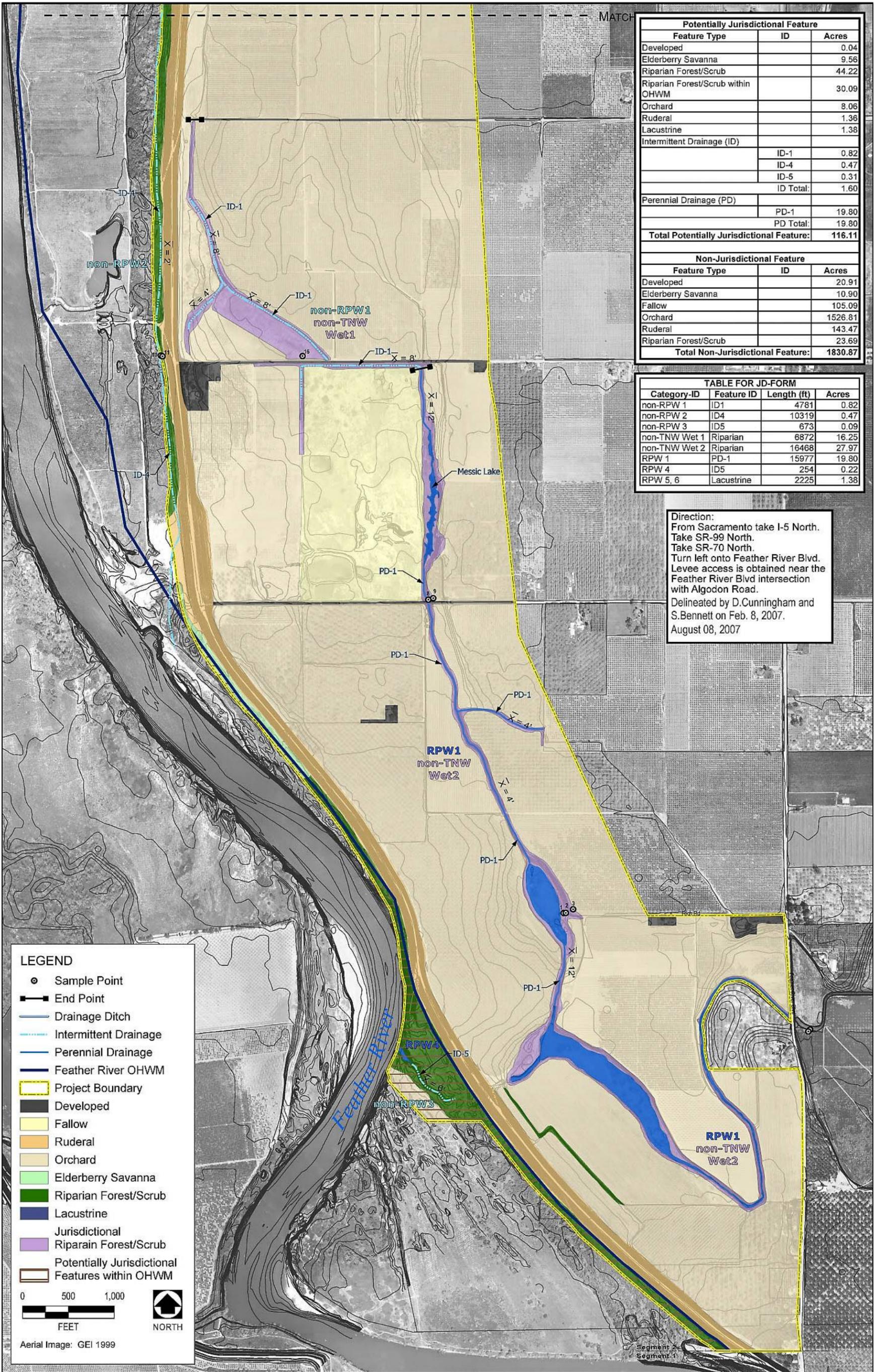
Table 1 classifies waters of the United States on the project site by habitat type and by the categories mentioned above.

Table 1 Acreages of Potentially Jurisdictional Waters of the United States on the Project Site				
Habitat Type	USACE Category ID	Feature ID	Length (ft)	Acreage Total
Mixed Riparian Forest/Scrub	Non-TNW Wet 1	--	6,872	16.25
	Non-TNW Wet 2	--	16,469	27.97
Lacustrine	RPW 5	--	743	0.42
	RPW 6	--	1,482	0.95
Intermittent Drainage	Non-RPW 1	ID-1	4,781	0.82
	Non-RPW 2	ID-4	10,319	0.47
	Non-RPW 3	ID-5	673	0.09
Perennial Drainage	RPW 1	PD-1	15,976	19.81
	RPW 4	ID-5	254	0.22
Riparian Forest/Scrub within OHWM	TNW	--	N/A	30.09
Developed	TNW	--	N/A	0.04
Elderberry Savanna	TNW	--	N/A	9.56
Orchard	TNW	--	N/A	8.06
Ruderal	TNW	--	N/A	1.36
Total – Potentially Jurisdictional Waters of the United States on the Project Site				116.11

One additional area, labeled “non-TNW Wet 6” on the preliminary wetland delineation maps (Exhibits 4a-b), is an area we are considering non-jurisdictional by USACE. This area contains vegetation typically associated with a riparian community. However, this area does not contain any surface waters or wetland hydrology. It is assumed that the vegetation obtains water from sub-surface groundwater or seepage under the existing levee.

EFFECTS OF THE PREFERRED ALTERNATIVE

The proposed project is anticipated to permanently affect 10.93 acres of waters of the United States and indirectly affect 56.89 acres of waters of the United States. Permanent effects on waters of the United States would take place in two stages, as previously described. Indirect effects on waters of the United States would be the result of occasional flooding of the setback area following removal of portions of the existing levee in Stage 2. Effects of the Preferred Alternative are shown by project stage in Table 2 and are described below.



Potentially Jurisdictional Feature		
Feature Type	ID	Acres
Developed		0.04
Elderberry Savanna		9.56
Riparian Forest/Scrub		44.22
Riparian Forest/Scrub within OHWM		30.09
Orchard		8.06
Ruderal		1.36
Lacustrine		1.38
Intermittent Drainage (ID)		
	ID-1	0.82
	ID-4	0.47
	ID-5	0.31
	ID Total:	1.60
Perennial Drainage (PD)		
	PD-1	19.80
	PD Total:	19.80
Total Potentially Jurisdictional Feature:		116.11

Non-Jurisdictional Feature		
Feature Type	ID	Acres
Developed		20.91
Elderberry Savanna		10.90
Fallow		105.09
Orchard		1526.81
Ruderal		143.47
Riparian Forest/Scrub		23.69
Total Non-Jurisdictional Feature:		1830.87

TABLE FOR JD-FORM			
Category-ID	Feature ID	Length (ft)	Acres
non-RPW 1	ID1	4781	0.82
non-RPW 2	ID4	10319	0.47
non-RPW 3	ID5	673	0.09
non-TNW Wet 1	Riparian	6872	16.25
non-TNW Wet 2	Riparian	16468	27.97
RPW 1	PD-1	15977	19.80
RPW 4	ID5	254	0.22
RPW 5, 6	Lacustrine	2225	1.38

Direction:
 From Sacramento take I-5 North.
 Take SR-99 North.
 Take SR-70 North.
 Turn left onto Feather River Blvd.
 Levee access is obtained near the
 Feather River Blvd intersection
 with Algodon Road.
 Delineated by D.Cunningham and
 S.Bennett on Feb. 8, 2007.
 August 08, 2007

LEGEND

- Sample Point
- End Point
- Drainage Ditch
- Intermittent Drainage
- Perennial Drainage
- Feather River OHWM
- Project Boundary
- Developed
- Fallow
- Ruderal
- Orchard
- Elderberry Savanna
- Riparian Forest/Scrub
- Lacustrine
- Jurisdictional Riparian Forest/Scrub
- Potentially Jurisdictional Features within OHWM

0 500 1,000
 FEET

NORTH

Aerial Image: GEI 1999

Feather River Levee Repair Project
 Segment 2
Wetland Delineation - Map 1

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 4a

Potentially Jurisdictional Feature		
Feature Type	ID	Acres
Developed		0.04
Elderberry Savanna		9.56
Riparian Forest/Scrub		44.22
Riparian Forest/Scrub within OHWM		30.09
Orchard		8.06
Ruderal		1.36
Lacustrine		1.38
Intermittent Drainage (ID)		
	ID-1	0.82
	ID-4	0.47
	ID-5	0.31
	ID Total:	1.60
Perennial Drainage (PD)		
	PD-1	19.80
	PD Total:	19.80
Total Potentially Jurisdictional Feature:		116.11

TABLE FOR JD-FORM			
Category-ID	Feature ID	Length (ft)	Acres
non-RPW 1	ID1	4781	0.82
non-RPW 2	ID4	10319	0.47
non-RPW 3	ID5	673	0.09
non-TNW Wet 1	Riparian	6872	16.25
non-TNW Wet 2	Riparian	16468	27.97
RPW 1	PD-1	15977	19.80
RPW 4	ID5	254	0.22
RPW 5, 6	Lacustrine	2225	1.38

Direction:
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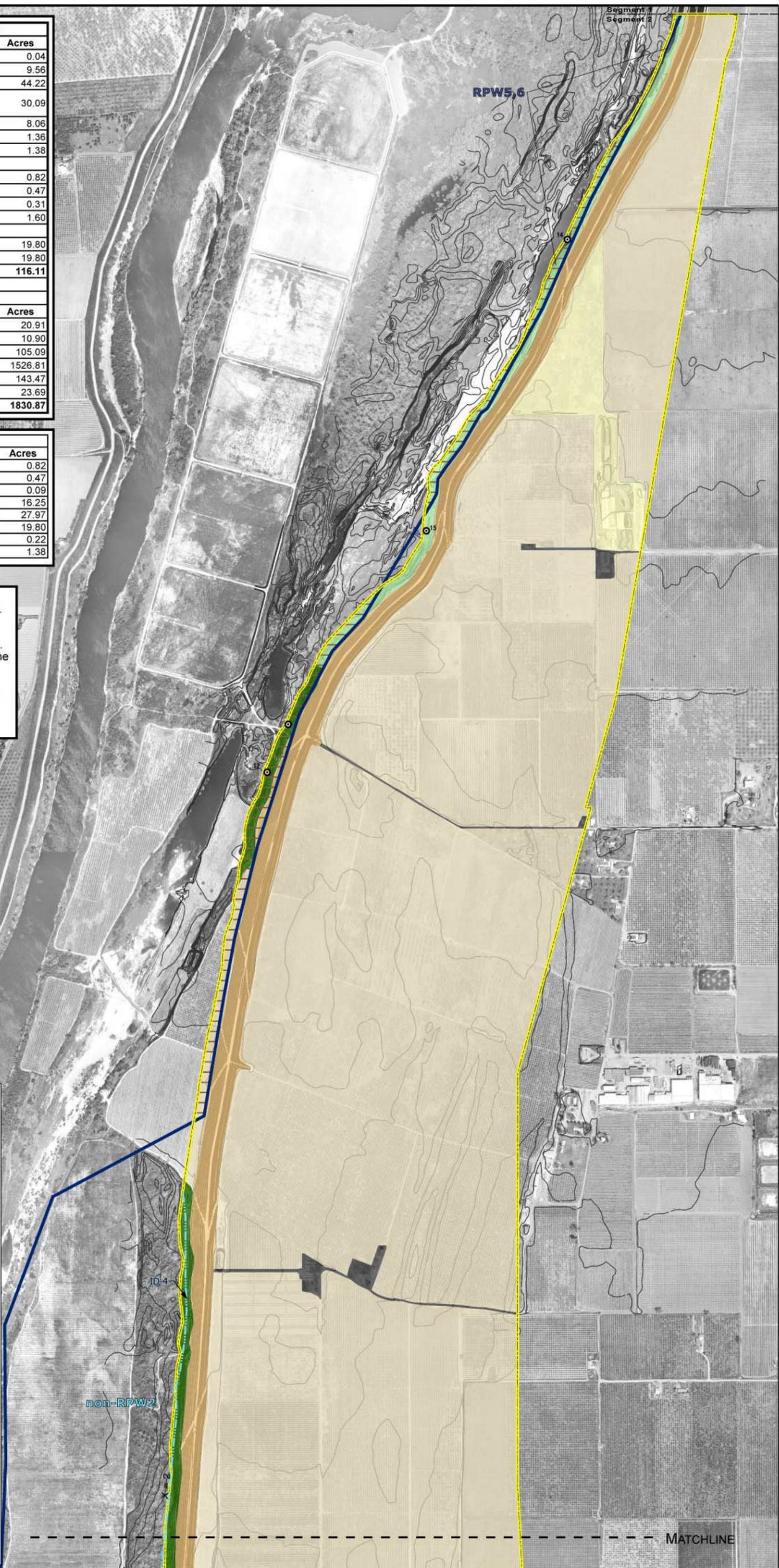
LEGEND

- Sample Point
- End Point
- Drainage Ditch
- Intermittent Drainage
- Perennial Drainage
- Feather River OHWM
- ▭ Project Boundary
- ▭ Developed
- ▭ Fallow
- ▭ Ruderal
- ▭ Orchard
- ▭ Elderberry Savanna
- ▭ Riparian Forest/Scrub
- ▭ Lacustrine
- ▭ Jurisdictional Riparian Forest/Scrub
- ▭ Potentially Jurisdictional Features within OHWM

0 500 1,000
 FEET

NORTH

Aerial Image: GEI 1999



Feather River Levee Repair Project
 Segment 2
Wetland Delineation - Map 2

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**Table 2
Acreages of Waters of the United States
Affected by the Feather River Levee Repair Project, Segment 2 (Preferred Alternative)**

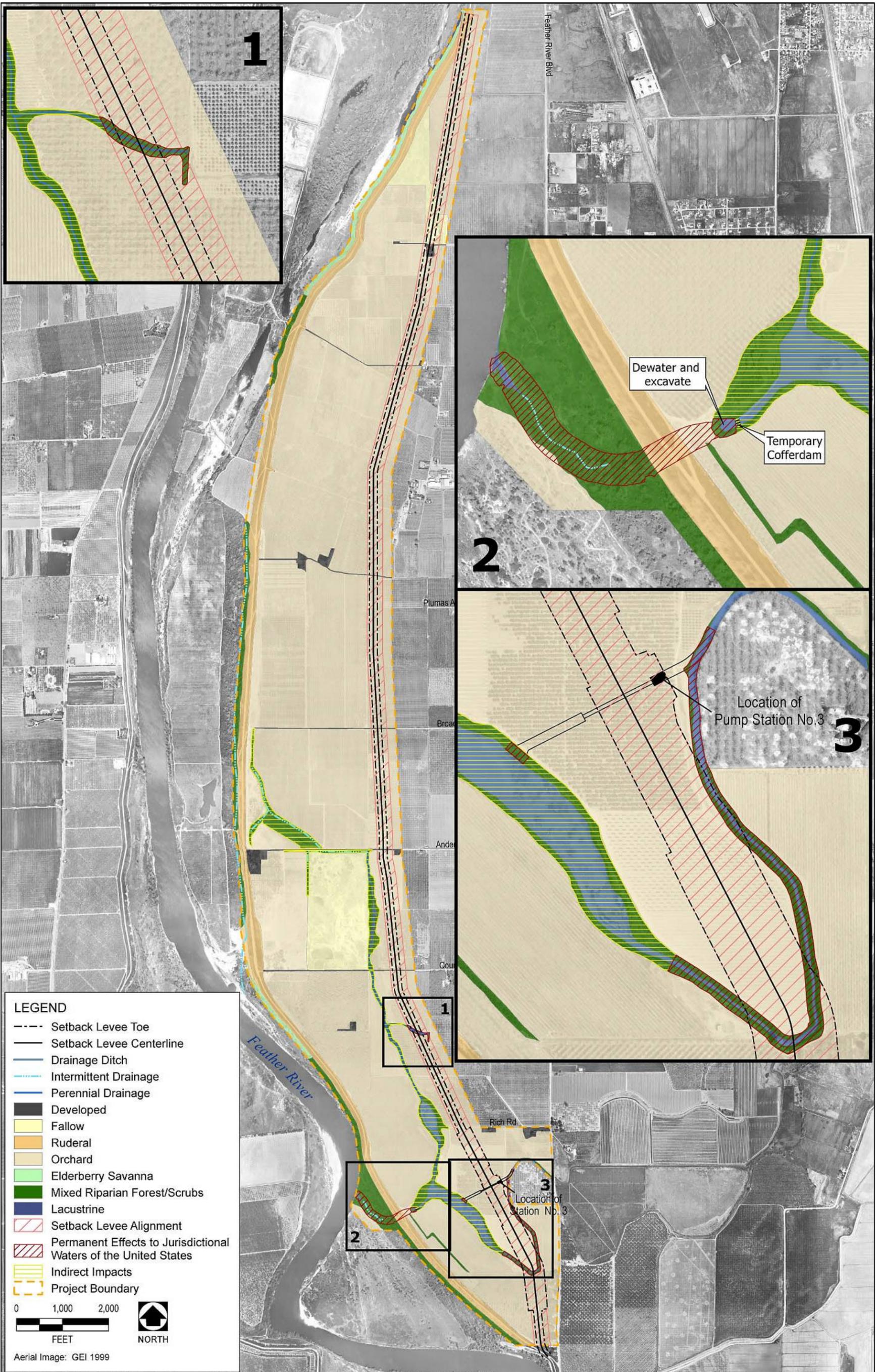
Project Element	Habitat Type	USACE Category/Feature ID	Acreage Affected	Total
PERMANENT EFFECTS				
STAGE 1				
Setback Levee Alignment				
	Perennial Drainage	RPW 1/PD-1/Plumas Lake Canal	0.79	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 2	2.30	
Setback Levee Alignment Total				3.09
Pump Station No. 3				
	Perennial Drainage	RPW 1/PD-1	0.17	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 2	0.07	
Pump Station No. 3 Total				0.24
Pump Station Channel (Inside Setback Area)				
	Mixed Riparian Forest/Scrub	Non-TNW Wet 2	0.14	
Pump Station Channel Total				0.14
Total Stage 1 Permanent Effects				3.47
STAGE 2				
Fill of Plumas Lake Canal Outside Setback Area				
	Perennial Drainage	RPW 1/PD-1/Plumas Lake Canal	0.93	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 2	1.37	
Plumas Lake Canal Outside Setback Area Total				2.30
Fill of Plumas Lake Canal Inside Setback Area				
	Perennial Drainage	RPW 1/PD-1/Plumas Lake Canal	0.20	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 2	0.73	
Plumas Lake Canal Inside Setback Area Total				0.93
Decommission of Existing Pump Station No. 3				
	Perennial Drainage	RPW 1/PD-1	0.11	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 2	0.17	
Decommission of Existing Pump Station Total				0.28

Table 2 Acreages of Waters of the United States Affected by the Feather River Levee Repair Project, Segment 2 (Preferred Alternative)				
Project Element	Habitat Type	USACE Category/Feature ID	Acreage Affected	Total
Setback Area Drainage Swale				
	Feather River Backwater	RPW 4	0.20	
	Intermittent Drainage	Non-RPW 3/ID-5	0.09	
	Mixed Riparian Forest/Scrub	N/A	3.66	
Setback Area Drainage Channel Total				3.95
Total Stage 2 Permanent Effects				7.46
INDIRECT EFFECTS				
STAGE 2				
Setback Area Flooding				
	Perennial Drainage	RPW 1/PD-1	16.98	
	Intermittent Drainage	Non-RPW 1/ID-1	0.82	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 1 and 2	39.09	
Setback Area Flooding Total				56.89
Total Stage 2 Indirect Effects				56.89
Sub-Total Permanent Effects (Stage 1 and Stage 2)				10.93
Sub-Total Indirect Effects (Stage 2)				56.89
Grand Total Waters of the United States Affected by the Feather River Levee Repair Project, Segment 2				67.82

STAGE 1 EFFECTS

Stage 1 of the project will include fill and excavation activities associated with construction of the setback levee and the new Pump Station No. 3. These activities will require filling in portions of the Plumas Lake Canal (RPW 1), excavating a portion of the Plumas Lake Canal, filling in a portion of a perennial drainage that flows into the Plumas Lake Canal (RPW 1), and removal of riparian forest/scrub associated with the Plumas Lake Canal and perennial drainage (see Exhibit 5 and Table 2 above). The setback levee alignment (including levee crown, levee slopes, stability berms, and the land side maintenance road) will cross portions of the Plumas Lake Canal and a perennial drainage that flows into the Plumas Lake Canal. Construction of the setback levee will result in filling of 0.74 acre of the Plumas Lake Canal, 0.05 acre of the perennial drainage (RPW1), and 2.30 acres of associated riparian forest/scrub.

Construction of the new Pump Station No. 3 will require four steps. The first step will be clearing of vegetation and soil grubbing along the banks of the Plumas Lake Canal at the approach channel and at the outfall. Next, the pump station and the drainage culvert under the setback levee will be constructed entirely within upland (Exhibit 5). Once the drainage culvert is constructed, the outfall structure will be formed and cast of concrete. The outfall structure will be approximately 125 feet wide by 50 feet long (0.14 acre). Water pumped from the land side of the setback levee will discharge into the ponded section of the Plumas Lake Canal through this outfall. The final portion of the pump station to be constructed is the inlet or approach channel for the station that connects to the



Feather River Levee Repair Project
Segment 2
Effects to Jurisdictional Waters of the United States

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Plumas Lake Canal. Construction of the approach channel will begin adjacent to the pump station. The channel will be excavated up to approximately 10-20 feet from the existing west bank of the Plumas Lake Canal. Once this portion of the approach channel is constructed and graded to the appropriate slope, the remainder of the channel will be constructed. A 400-foot (0.07-acre) portion of the existing west bank of the Plumas Lake Canal will be excavated last to connect the Plumas Lake Canal to the approach channel and new pump station (see Exhibit 5, Inset 3). Additionally, grading of a small portion of the bed of the Plumas Lake Canal (0.17-acre) in the approach channel will be required to create the appropriate slope for flows to descend to the (gravity activated) pump station.

STAGE 2 EFFECTS

Stage 2 of the project will include removal of all or parts of the existing levee, fill and excavation activities associated with removal and modification of portions of the Plumas Lake Canal, decommissioning of the existing Pump Station No. 3, and enhancement of the setback area drainage swale. The portions of the existing Feather River levee to be degraded will be excavated to the adjacent ground surface elevation at the landside and waterside toes. Because waters of the United States are located to the west of the waterside toe, effects to those waters of the United States from levee degradation are not expected.

Stage 2 of the project will affect a total of 7.46 acres of waters of the United States including portions of the Plumas Lake Canal (RPW 1), an intermittent drainage on the water side of the existing levee that flows into the Feather River (non-RPW 3), a backwater to the Feather River (RPW4, connected to non-RPW 3), and riparian forest/scrub associated with these waters. To prevent the potential for underseepage or through-seepage in the new setback levee, approximately 0.93 acre (490 feet) of the Plumas Lake Canal must be filled in on the west (water) side of the setback levee alignment (from the setback levee alignment to the beginning of the ponded section of the canal). The portion of the Plumas Lake Canal on the east (land) side of the setback levee alignment will also be filled from the setback levee alignment to the new Pump Station No. 3 (totaling 2.3 acres). A shallow ditch will be retained along the canal alignment to carry storm runoff from landside areas along the southern portion of the setback levee alignment to Pump Station No. 3. Riparian forest/scrub habitat will be maintained along the top bank of the canal/drainage ditch as much as possible; however riparian vegetation growing along the banks of the canal will be removed. Once the drainage ditch is created, it will operate as a seasonally wet/intermittent stream (non-RPW) and will be vegetated with grasses. This ditch will be maintained by RD 784.

Decommissioning of the existing Pump Station No. 3 will also affect a portion of the ponded section of Plumas Lake Canal (RPW 1). The existing pump station will be dismantled and removed at the same time as degradation of the existing levee. Removal of the pump station will require construction of a temporary cofferdam upstream of the pump station in the ponded section of Plumas Lake Canal. The portion of the canal between the pump station and temporary cofferdam (0.11 acre) will be dewatered so that the pump station structure can be removed. Excavation and grading in the dewatered channel will be required to create the head of the floodplain swale, which will drain the setback area to the Feather River.

Degradation of the existing levee (in Segment 2) will result in an increase in the floodway for the Feather River. The topography of the setback area presents the potential for fish stranding following high flow events. Out-of-bank flows will pass over the left bank of the Feather River and into the lower-lying southern portion of the setback area, ponding against the setback levee. The relatively high ground to the west of the existing Feather River levee would prevent the receding flows from the setback area from draining to the Feather River. To address this potential problem a swale to guide fish from the setback area to the Feather River has been included in the project design. The swale has been aligned with the outfall channel of the existing Pump Station No. 3 to minimize disturbance to riparian habitat waterside of the existing levee. The swale will have its upstream end at the existing pump station, which will be removed, and will be constructed by widening and deepening the existing pump station outfall channel. The swale will be about 200 feet wide and approximately 1,000 feet long. It will drain northwest, cutting through the area of higher floodplain adjacent to the Feather River to join the river channel at an elevation of 18 feet (Exhibit 5). Based on the wetland delineation maps (Exhibits 4a-b), the outfall

channel of the existing Pump Station No. 3 consists of an intermittent channel (non-RPW 3) that flows into a perennial backwater channel (RPW 4) connected to the Feather River. Approximately 0.09 acre of non-RPW 3 and 0.2 acre of RPW 4 will need to be widened and deepened to create the new swale. An additional 3.66 acres of adjacent riparian forest/scrub will need to be removed to create the new swale.

INDIRECT EFFECTS

Indirect effects to waters of the United States (totaling 56.89 acres) will be a result of the seasonal flooding into the setback area during and after Stage 2 of the project. When river stage exceed the elevation of the existing levee alignment (approximately 50 feet mean sea level), Feather River flood water will flow into the setback area. MBK Engineers (TRLIA 2007) indicates that flows passing downstream will enter the levee setback area approximately once every 3 years on average, when the rate of flow is approximately 50,000 cfs. This is similar to the frequency of flooding now experienced in areas that are within the currently leveed channel of the Feather River but are outside the low-flow channel. Existing waters of the United States in the setback area will be influenced by the flood water such that the hydrology of these waters will be temporarily changed. Intermittent waters that will normally recede or dry up quickly after a storm pulse will be fully inundated with flood water for a longer period of time.

However, the setback area will be designed to facilitate drainage of the flood water back to the Feather River as soon as upstream flows decrease in the river. It is expected that by the end of the wet season, the waters of the United States in the setback area will return to normal conditions. It is also expected that seasonal flooding will not result in a loss of functions and values within those waters; rather the seasonal flooding will improve ecosystem functions in the setback area.

ALTERNATIVES ANALYSIS

The analysis provided in this document must contain sufficient information to demonstrate that the proposed discharge complies with the requirements of Section 230.1(a) of the CWA Section 404(b)(1) Guidelines. This analysis documents the consideration of alternatives that could potentially be considered practicable, where “practicable” is defined as “available and capable of being implemented after taking into consideration cost, existing technology, and logistics in light of overall project purpose” (40 CFR 230.10[a][2]).

ALTERNATIVES

Three alternatives to the proposed project (Preferred Alternative) were evaluated for practicability and minimization of effects on waters of the United States (Exhibit 6). Consistent with the FRLRP EIR, this Section 404(b)(1) Alternatives Analysis examines the following alternatives:

- ▶ No-Action Alternative—This alternative would retain the Feather River left bank levee in project Segment 2 in its current condition. No levee repairs or strengthening would be implemented in project Segment 2. Deficiencies, including erosion problem areas, underseepage issues, and through-seepage issues identified in project Segment 2 would remain unaddressed. Pump Station No. 3 would remain in its current condition at its current location.
- ▶ Levee Strengthening Alternative—This alternative would involve repair and strengthening of the existing levee along project Segment 2. No setback levee would be constructed. Existing Pump Station No. 3 would be removed and a new pump station would be installed farther east of the existing levee. Soil borrow areas would be established of sufficient size to support levee repairs.
- ▶ Intermediate Setback Levee Alternative—The setback levee in project Segment 2 for this alternative would match the ASB setback levee alignment (the alignment of the Preferred Alternative) for approximately 1.6 miles in the south and then would follow an alignment approximately 1,000 feet (maximum) to the west of the ASB setback alignment. This alternative would place approximately 1,100 acres within the expanded Feather River floodway. Existing Pump Station No. 3 would be removed and a new pump station would be installed just east of the setback levee. Soil borrow areas would be established of sufficient size to support setback levee construction.

TRLIA also considered alternatives that would result in discharges of dredged or fill materials into waters of the United States in locations other than those specified in the Preferred Alternative. TRLIA determined that constructing the setback levee to the west of the alignments in the Preferred Alternative and the Intermediate Setback Levee Alternative would have adverse effects on waters of the United States equal to or greater than those of the Preferred Alternative and the Intermediate Setback Levee Alternative because moving the alignment farther west would affect more of the Plumas Lake Canal and other perennial and intermittent drainages. Constructing the setback levee alignment farther east of the alignment for the Preferred Alternative would be impracticable from logistical and cost perspectives because immediately east of the proposed alignment is a large commercial fruit processing plant belonging to the Naumes Corporation (west of Feather River Blvd, between Ella and Plumas Avenues), which would be displaced by a more eastern alignment. Construction of the setback levee through the Naumes plant property would require that TRLIA acquire the property and pay for lost business income. Such a shift would have no measurable hydraulic benefits and a very high cost because of the high commercial value of the plant and associated orchards. The resulting cost is likely to be above the reasonable cost to construct this type of project. Additionally, Feather River Boulevard runs just to the east of the Preferred Alternative alignment. An eastern shift of the setback levee alignment would impact Feather River Boulevard and occupied residences on either side of Feather River Boulevard. It is logistically impracticable to place the setback levee east of Feather River Boulevard thereby requiring realignment of Feather River Boulevard. This would also increase land acquisition needs and greatly increase project costs and complicate the construction effort.

Therefore, alternatives to the Preferred Alternative in which discharges of dredged or fill materials would be located in other locations in waters of the United States were determined to be impracticable.

The Section 404(b)(1) Guidelines specifically require that “no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences” (40 CFR 230.10[a]). An analysis of the effects of the three alternatives on environmental categories, relative to the effects of the Preferred Alternative, is provided in Appendix A. The analysis was derived partially from the analysis presented in the FRLRP EIR. The analysis determined that for the majority of environmental categories the effects of the alternatives were the same as or similar to those of the Preferred Alternative. In some cases, the Levee Strengthening Alternative had less effect on an environmental category than the Preferred Alternative because the Levee Strengthening Alternative would disturb less ground outside of the existing easements (the only ground disturbing activities in the Levee Strengthening Alternative would be the relocation of Pump Station No. 3). However, it was determined that the Levee Strengthening Alternative could not, with a high degree of certainty, meet overall project objectives over the long term, and therefore it is questionable whether it meets the definition of practicable.

Further discussion of the practicability of the alternatives and their effects on waters of the United States is presented below.

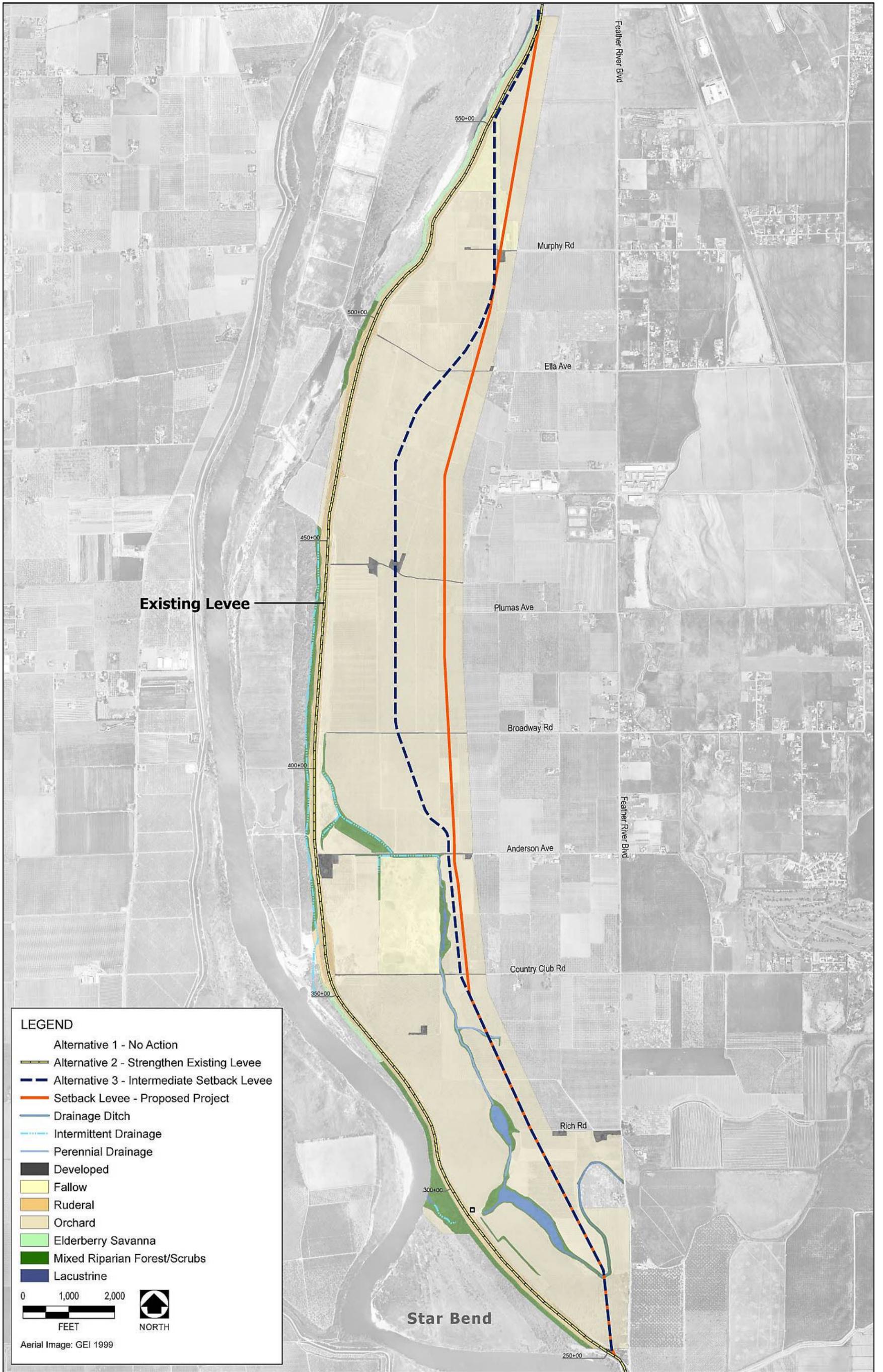
No–ACTION ALTERNATIVE

Under the No-Action Alternative, repairs to Segment 2 of the Feather River levee would not be conducted, a setback levee would not be constructed, approximately 1,300 acres of existing land on the land side of the existing levee would not be added to the floodway, 12.51 acres of waters of the United States would not be permanently adversely affected, and 56.89 acres of waters of the United States would not be indirectly affected.

Although this project alternative would not result in adverse effects on waters of the United States, it also does not meet the project purpose and objectives. As stated previously, the purpose of the project includes conducting repairs along the Feather River levee to correct deficiencies identified in the PIR (Kleinfelder 2006) and improving flood protection in the RD 784 area of Yuba County. The primary project objectives include improving flood protection in the RD 784 area to meet a 0.5% Annual Exceedance Probability (AEP) (i.e., 200-year) flood event, and helping to secure FEMA accreditation for the subject levee reaches.

The studies described in the PIR and other technical studies conducted for the FRLRP and the Y-FSFCP indicate that the existing Feather River left bank levee does not provide reliable flood protection for floods greater than about a 5% AEP (i.e., 20-year) flood event (GEI 2004). Additionally, USACE, in January 2005, issued a letter rescinding previous certification that the Feather River left bank levee affords protection for a 1% AEP (i.e., 100-year) flood event. Areas that are protected from floods up to a 1% AEP flood event are excluded from FEMA flood zone mapping when the facilities that provide flood protection are certified by USACE and/or other regulatory agencies. Based on the January 2005 USACE letter, FEMA has begun the process of revising the flood zone maps for the RD 784 area to include more lands east of the existing levee. Therefore, a No-Action Alternative would not meet the project purpose and objectives and would leave the subject levee in a condition that puts the RD 784 area at a high risk of flooding.

Table 3 summarizes the comparison of the No-Project Alternative and the Preferred Alternative with regard to practicability and impacts on waters of the United States.



Feather River Levee Repair Project
Segment 2
Feather River Setback Levee Alternative Alignments

**THREE RIVERS LEVEE
 IMPROVEMENT AUTHORITY**
 1114 Yuba Street, Suite 218
 Marysville, CA 95901

August 2007

Exhibit
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Table 3 Comparison of Preferred Alternative and No-Action Alternative		
Project Alternative	Practicability	Impacts to Waters of the United States
Preferred Alternative	Practicable, meets project purpose and all project objectives	10.93 acres permanently affected, 56.89 acres indirectly affected
No-Action Alternative	Not practicable because it does not meet project purpose or any project objectives and would leave the RD 784 area at a high risk of flooding	No waters of the United States affected

LEEVE STRENGTHENING ALTERNATIVE

The Levee Strengthening Alternative would involve implementing repairs and improvements to the existing Feather River levee. These repairs and improvements would consist of construction of slurry walls, installation of relief wells, raising and/or constructing seepage/stability berms at various locations, and correcting identified waterside erosion problem areas. Under this alternative, the existing Pump Station No. 3 would also be relocated to a new site to the east of the existing site because of problems with boils at the existing site.

EFFECTS ON WATERS OF THE UNITED STATES

Activities associated with this alternative are expected to have minimal effects on waters of the United States (Table 4). Improvement and repair of the existing Feather River levee is not expected to result in adverse effects on waters of the United States because all levee repair activities would occur within the existing levee easements, above the OHWM. However, adverse effects are expected from the relocation of Pump Station No. 3 and the decommissioning of the existing pump station. Effects from decommissioning the existing pump station would be the same as described above for the Preferred Alternative (0.28 acre of effects). According to the FRLRP EIR, the current location of Pump Station No. 3 experiences excessive seepage and boils during high-water events, making it desirable to relocate the pump station out of this area. As part of the Levee Strengthening Alternative, the existing pump station would be removed and a new/replacement Pump Station No. 3 would be constructed farther east, adjacent to the Plumas Lake Canal. The exact location would be determined during detailed project design. The new Pump Station No. 3 under this alternative is likely to be designed with the same dimensions as the pump station in the Preferred Alternative (80 feet by 50 feet), and it is assumed that the pump station would be placed in the Plumas Lake Canal like the existing station, thereby affecting 0.09 acre of waters of the United States. The segment of the Plumas Lake Canal between the current and new locations of Pump Station No. 3 would be backfilled with material of low permeability (TRLIA 2006). The relocated pump station would be placed a minimum of 100 feet east of the existing location, and it is assumed that the backfilled area would be the same size as the area affected during decommissioning of the existing pump station, or 0.28 acre. Thus, relocation of the new Pump Station No. 3 would result in a total of 0.37 acre of waters of the United States being affected.

ABILITY TO MEET PROJECT PURPOSE AND OBJECTIVES/PRACTICABILITY

It is unclear whether this alternative would meet the project purpose and all the objectives in the long-term. The existing levee in Segment 2 has historically experienced underseepage problems. USACE has made many attempts to repair the subject levee portion through installation of relief wells; construction, and subsequent enlargement, of a seepage berm; and installation of a slurry cutoff wall. These repairs have not been completely successful in controlling the seepage problem.

The existing levee in Segment 2 is located above a historical channel of the Feather River. The materials in this historical channel include gravel overlain by silt and fine sand deposits. The gravel layers are pervious to water and are connected to gravel layers under the current Feather River. During high-water events, water from the river

can enter the pervious gravel layers and then move laterally across them under the levee. Water can also enter the gravel layers from incised features in overbank areas (i.e., old borrow pits, channels, mine tunnels, etc.). In the absence of an effective cutoff wall, water seeps under the levee through the gravel layers and elevates the water table in lowlands that are now on the land side of the levee. During high water events in the Feather River water is pressurized in the gravel layers under the levee, and once the water reaches the land side of the levee, the pressure is relieved. One way pressure is relieved is by the upward movement of the water toward the surface. When this happens, it causes seepage of water on the land side of the levee that manifests in the forms of boils, sinkholes, and areas of heavy seepage. Over time, these boils, sinkholes, and areas of heavy seepage carry materials from under the levee out to the surface. If left unchecked, the boils continue to remove additional material from under the levee during flood events, which can damage the foundation of the levee and may ultimately lead to a levee breach.

Major modifications, reconstructions, and upgrades have been implemented by USACE over the past 40 years in the Segment 2 area in response to levee deficiencies identified during flood events. These modifications, reconstructions, and upgrades include the following:

- ▶ Installation of three relief wells, in early 1956, near Pump Station No. 3 to mitigate a large boil observed during the December 1955 flood.
- ▶ Installation of six additional relief wells in the vicinity of Pump Station No. 3 and in an area between Broadway and Anderson Avenue in late 1958 to mitigate additional boils detected during the February 1958 flood.
- ▶ Enlargement of landside berms just downstream of Pump Station No. 3 and Broadway to mitigate additional boils detected in these areas during the February 1963 high water event.
- ▶ As a result of the 1986 flood, elements of the Sacramento River Flood Control System Evaluation Phase II Project, consisting of the following in Segment 2:
 - raising the levee crest to original grades for approximately 6 miles of the Feather River levee (Site 7),
 - constructing a 10-foot-wide by 7- to 9-foot-high landside stability berm about 1 mile north of Murphy Road (Site 7), and
 - constructing two cutoff walls as part of Site 7 work between Broadway and Star Bend.
- ▶ Installation of a deep slurry wall and reconstruction of a portion of the levee just north of Country Club Road due to catastrophic failure of this section of levee during the 1997 flood.
- ▶ Installation of additional relief wells around the Pump Station No. 3 intake ditch in November 2006 in response to observations of additional boils during the January 2006 high-water event.

TRLIA would design the Levee Strengthening Alternative to meet the project purpose and objectives (i.e., construction of relief wells, seepage and stability berms, and slurry cutoff walls to protect against a 1-in-200 AEP flood). However, because of the poor foundation conditions and in light of the site history and the regional experience with levee problems related to underseepage, there is less certainty that additional repairs and upgrades to the existing levee would afford the level of flood protection over the long term that a setback levee constructed on a more consolidated stable foundation would provide. Given the site history, underseepage issues may again manifest along Segment 2 in the future if the Levee Strengthening Alternative is chosen, necessitating further levee repair actions.

Additionally, strengthening the existing levee would not convey flood protection benefits to areas outside the RD 784 area. Although the primary purpose of the project is to improve flood protection for the RD 784 area, it is

recognized that a setback levee would convey flood risk reduction benefits to areas of Yuba and Sutter Counties outside of the RD 784 area by lowering Feather and Yuba River flood stage elevations on a regional basis. Constructing a setback levee east of the existing levee and degrading the existing levee would allow flood waters from the Feather River to flow into the expanded floodway in the setback area (approximately 1,300 acres under the Preferred Alternative), thus reducing the flood stage elevation in the immediate area as well as upstream. The engineering alternatives analysis conducted by GEI Consultants for TRLIA (GEI 2006) indicates that flood stage elevation at Feather River Mile 23.5 (approximately adjacent to Ella Road) under a 200-year flood event is currently 71.9 feet. Under the Preferred Alternative, expanding the Feather River floodway by setting back the levee in Segment 2 would reduce the flood stage elevation by approximately 2.9 feet at this location. During a 200-year flood event, the setback levee would reduce the flood stage elevation at the confluence of the Feather and Yuba Rivers by approximately 1.6 feet. These reductions in flood stage elevations, and associated reductions in flood risk, would not only benefit the RD 784 area, but would also benefit the cities of Marysville and Yuba City just upstream of the project site, as well as other upstream portions of Yuba County and Sutter County. Flood risk downstream of the project site would not be affected.

Although implementing the Levee Strengthening Alternative would meet the basic project purpose, this alternative would not provide flood protection benefits comparable to those of the Preferred Alternative. The inundation reduction benefit analysis performed as part of the alternatives analysis (GEI 2006, Appendix VI) found that among the project alternatives, with the exception of the No-Project Alternative, the Levee Strengthening Alternative would have the highest estimated annual damage and the lowest value of inundation-reduction benefits (the value of damage prevented or cost avoided by levee improvements). The present value of the inundation-reduction benefits for the Levee Strengthening Alternative is \$52 million less than that of the Preferred Alternative at the level of current development and almost \$75 million less than that of the Preferred Alternative when future growth is taken into consideration.

The Levee Strengthening Alternative also would not provide the increased opportunities for offsetting environmental impacts and enhancing and restoring natural habitat for fish, wildlife, and native plants that would be provided by a setback levee. Frequent inundation of a setback area can allow for an increase in seasonal fish habitat within the Feather River floodway; improve habitat quality of the existing waters, wetlands, and riparian areas in the setback area; and increase habitat values for wildlife species. These benefits would not be available under the Levee Strengthening Alternative.

The ability of the Levee Strengthening Alternative to meet the overall project purpose and objectives and, therefore, the practicability of this alternative, are questionable in light of the foundation conditions underlying the existing levee. It is also questionable whether strengthening the existing levees in place can ensure long-term fulfillment of the project purpose and objectives given the higher expected annual damages from flooding and reduced value of inundation-reduction benefits shown in the inundation reduction benefit analysis for the Levee Strengthening Alternative, and the potential for habitat and flood risk reduction benefits under the Preferred Alternative that are not available under the Levee Strengthening Alternative.

Table 4 summarizes the comparison of the Levee Strengthening Alternative and the Preferred Alternative with regard to practicability and impacts on waters of the United States.

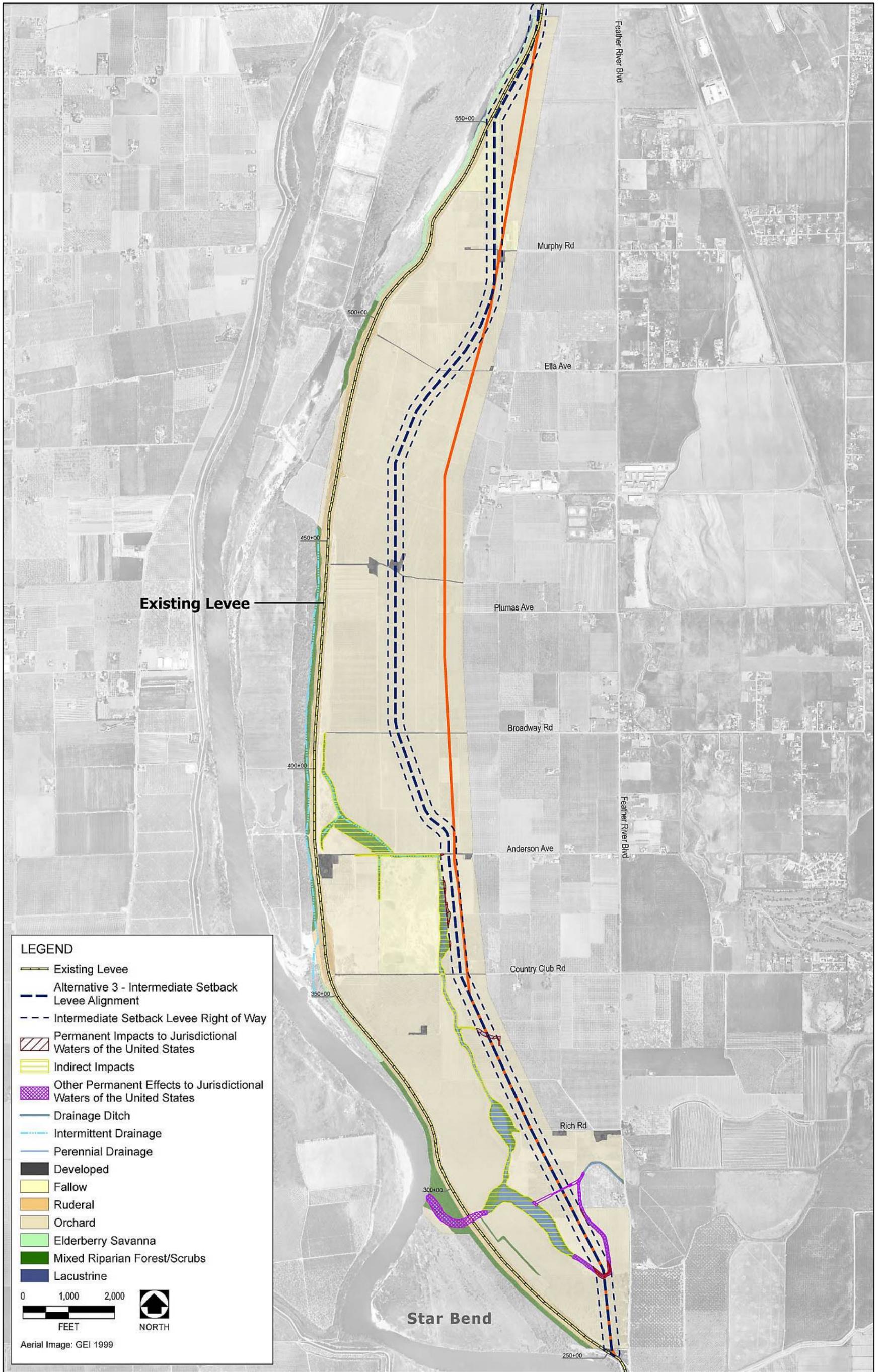
Table 4 Comparison of Preferred Alternative and Levee Strengthening Alternative		
Project Alternative	Practicability	Impacts to Waters of the United States
Preferred Alternative	Practicable, meets project purpose and all project objectives	10.93 acres permanently affected, 56.89 acres indirectly affected
Levee Strengthening Alternative	Could not meet overall project objectives over the long-term with as high a degree of certainty, has higher associated expected annual damages from flooding and would provide less inundation risk reduction value than the preferred Alternative. Therefore, it is questionable whether this alternative meets the definition of practicable	0.37 acre permanently affected, no indirect effects

ALTERNATIVE 3 – INTERMEDIATE SETBACK LEVEE ALTERNATIVE

The Intermediate Setback Levee Alternative would involve the construction of a setback levee. The southern approximately one-half of the Intermediate Setback Levee alignment would be the same as the Preferred Alternative alignment, and the northern half of the alignment would be farther west (Exhibit 7). This setback levee, at approximately 5.5 miles long, would be roughly 0.2 mile shorter than the setback levee under the Preferred Alternative. Construction of the setback levee in the Preferred Alternative alignment would result in approximately 1,300 acres of existing land becoming part of the new Feather River floodway. Construction of the setback levee in the Intermediate Setback Levee Alternative would result in approximately 1,100 acres of existing land becoming part of the new Feather River floodway. The reason for proposing an intermediate setback levee is to reduce the adverse effects on existing land uses and the extent of acquisition of land rights necessary within the setback area.

EFFECTS ON WATERS OF THE UNITED STATES

The Intermediate Setback Levee Alternative would have less indirect effects on waters of the United States than the Preferred Alternative but more adverse direct (permanent) effects. As shown in Exhibit 7, the 1.02-acre difference in indirect effects is the consequence of there being more permanent, direct effects. As also shown in Exhibit 7, because the lower half of the Intermediate Setback Levee Alternative alignment is the same as the Preferred Alternative levee alignment, disturbances pertaining to Pump Station No. 3, the setback area drainage swale, and filling of the Plumas Lake Canal on either side of the setback levee alignment would be the same or very similar under the two alternatives. Pump Station No. 3 would still need to be relocated to the land side of the new levee alignment and would need to be sited adjacent to the Plumas Lake Canal to drain the canal during storm events. A new drainage channel would need to be created to convey water from the land side of the new pump station to the setback area. The existing pump station would need to be decommissioned and, as under the Preferred Alternative, a drainage swale would need to be created to mitigate for potential fish stranding and to drain the setback area after floods. The Plumas Lake Canal would be filled on each side of the setback levee and the portion of the canal east of the setback levee would be utilized as a drainage ditch for the levee and lands to the east. Thus, the effects on waters of the United States for these project elements would be the same with implementation of the Intermediate Setback Levee Alignment and the Preferred Alternative (Table 5). However, the Intermediate Setback Levee Alternative would result in 11.91 acres of permanent adverse effects on waters of the United States compared to 10.93 acres of permanent adverse effects under the Preferred Alternative. Therefore, the Preferred Alternative is somewhat less environmentally damaging than the Intermediate Setback Levee Alternative.



Feather River Levee Repair Project
Segment 2
Effects to Waters of the United States – Alternative 3

**THREE RIVERS LEVEE
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August 2007

Exhibit
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**Table 5
Acreages of Jurisdictional Waters of the United States
Affected by the Intermediate Setback Levee Alternative**

Project Element	Habitat Type	USACE Category/Feature ID	Acreage Affected	Total
PERMANENT EFFECTS				
Setback Levee Alignment				
	Perennial Drainage	RPW 1/PD-1	0.02	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 3	0.96	
	Perennial Drainage	RPW 1/PD-1	0.05	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 3	0.76	
	Perennial Drainage	RPW 2	0.74	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 4	1.54	
Setback Levee Alignment Total				4.07
Pump Station No. 3				
	Perennial Drainage	RPW 2	0.17	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 4	0.07	
Pump Station No. 3 Total				0.24
Pump Station Channel (Inside Setback Area)				
	Mixed Riparian Forest/Scrub	Non-TNW Wet 5	0.14	
Pump Station Channel Total				0.14
Fill of Plumas Lake Canal Outside Setback Area				
	Perennial Drainage	RPW 2	0.93	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 4	1.37	
Plumas Lake Canal Outside Setback Area Total				2.30
Fill of Plumas Lake Canal Inside Setback Area				
	Perennial Drainage	RPW 2	0.20	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 4	0.73	
Plumas Lake Canal Inside Setback Area Total				0.93
Decommission of Existing Pump Station No. 3				
	Perennial Drainage	RPW 3/PD-1	0.11	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 5	0.17	
Decommission of Existing Pump Station Total				0.28

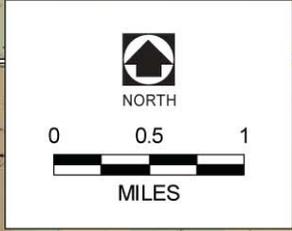
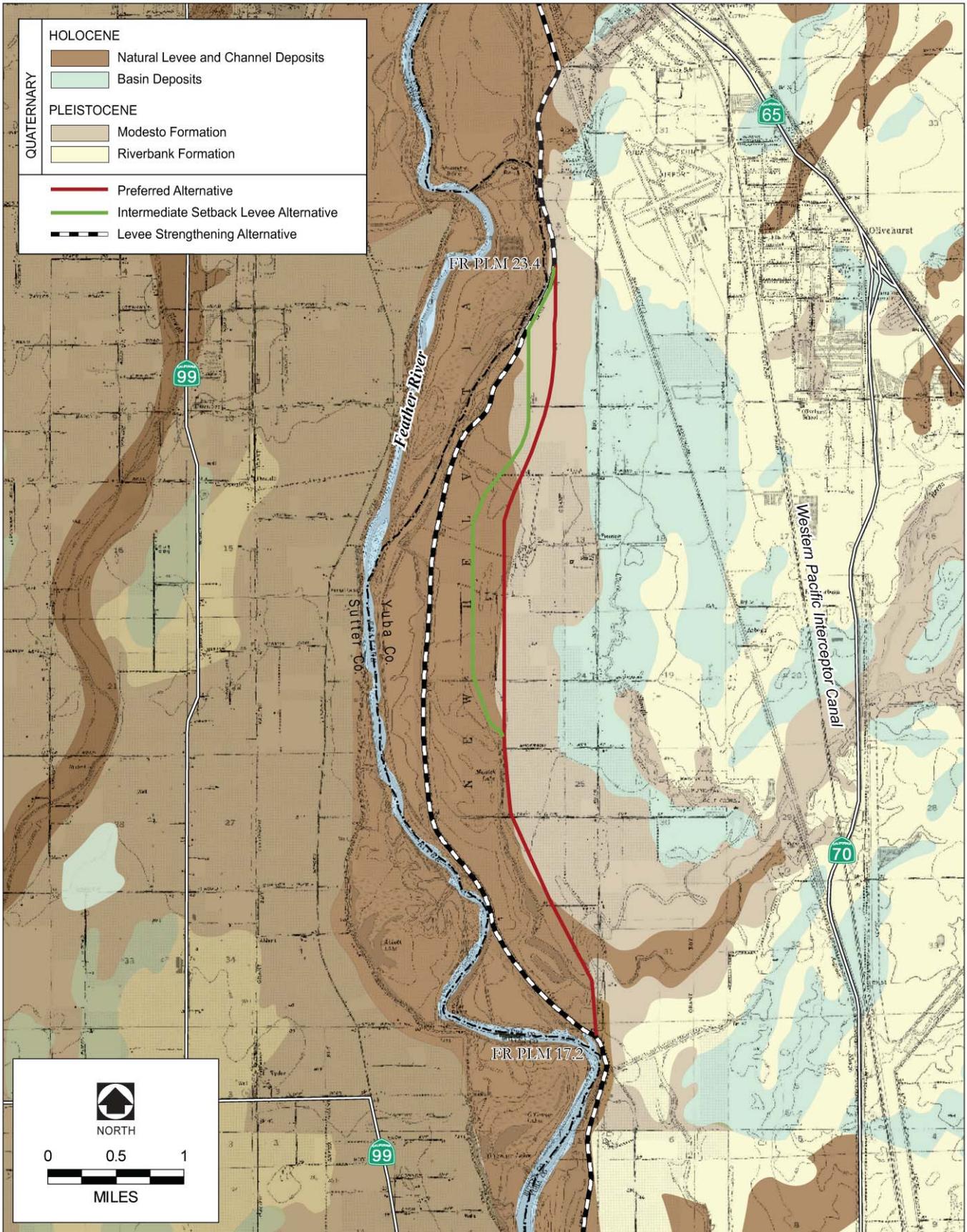
**Table 5
Acreages of Jurisdictional Waters of the United States
Affected by the Intermediate Setback Levee Alternative**

Project Element	Habitat Type	USACE Category/Feature ID	Acreage Affected	Total
Setback Area Drainage Channel				
	Mixed Riparian Forest/Scrub	N/A	3.66	
	Intermittent Drainage	Non-RPW 3/ID-5	0.09	
	Feather River Backwater	RPW 4	0.20	
Setback Area Drainage Channel Total				3.95
Subtotal Permanent Effects				11.91
INDIRECT EFFECTS				
Setback Area Flooding				
	Mixed Riparian Forest/Scrub	Non-TNW Wet 1-5	38.08	
	Perennial Drainage	RPW 1, RPW 3/PD-1	16.97	
	Intermittent Drainage	Non-RPW 1/ID-1	0.82	
Setback Area Flooding Total				55.87
Subtotal Indirect Effects				55.87
Grand Total Waters of the United States Affected by the Intermediate Setback Levee Alternative				67.78

ABILITY TO MEET PROJECT PURPOSE AND OBJECTIVES/PRACTICABILITY

A substantial portion of the Intermediate Setback Levee Alternative alignment would be located within the same geologic formation (i.e., soil types) as the existing levee (Exhibit 8). As discussed previously, the existing Feather River levee is located on soils consisting mainly of interbedded gravels associated with a historical channel of the river, which are pervious to water and provide passages for underseepage. The existing levee experiences underseepage and through-seepage problems despite numerous engineering repairs to the levee. Because several segments of the Intermediate Setback Levee Alignment would be located on the same geologic formation as the existing levee, there is a greater probability than under the Preferred Alternative that over the long-term, a constructed levee along the Intermediate Levee Setback Alternative alignment could experience persistent underseepage and/or through-seepage problems requiring additional corrective actions. In contrast, most of the setback levee in the Preferred Alternative would be located on soils in the Modesto Formation which are older, more consolidated soils. These soils are expected to have higher shear strength and less compressibility than the natural channel deposits (Yuba County Water Agency 2003). Additionally, construction of the setback levee on the Modesto Formation is expected to require smaller cutoff walls and less levee overbuilding to compensate for foundation settlement. Because of the possibility that the intermediate setback levee, over the long term, could experience underseepage and through-seepage problems similar to those of the existing levee, the Intermediate Setback Levee Alternative is considered to be a less reliable flood protection alternative than the Preferred Alternative.

Although constructing the intermediate setback levee would, like the preferred alternative, provide upstream flood stage reductions, the inundation reduction benefit analysis for this alternative shows higher expected annual damages from flooding and lower values for inundation-reduction benefits compared to the Preferred Alternative.



<h2>Feather River Levee Repair Project</h2> <h3>Segment 2</h3> <h4>Geologic Formations Under Levee Alternatives</h4>	<p>THREE RIVERS LEVEE IMPROVEMENT AUTHORITY</p> <p>114 Yuba Street, Suite 218 Marysville, CA 95901</p>	<p>August 2007</p>
	<p>Source: Saucedo and Wagner 1992</p> <p>G026</p>	<p>Exhibit 8</p>

The Intermediate Setback Levee Alternative would provide approximately 1,100 acres of additional floodway as opposed to 1,300 acres under the Preferred Alternative. As reported in the engineering alternatives analysis conducted by GEI Consultants (GEI 2006), flood stage elevation at Feather River Mile 23.5 (approximately adjacent to Ella Road) under a 200-year flood event would be 69 feet with implementation of the Preferred Alternative and 69.5 feet with implementation of the Intermediate Setback Levee Alternative. During a 200-year flood event, the Intermediate Setback Levee Alternative would reduce the flood stage elevation at the confluence of the Yuba and Feather Rivers by approximately 1.2 feet, as opposed to an approximately 1.6 foot reduction under the proposed project. Thus, the Preferred Alternative provides greater flood protection benefits and has less adverse effects on waters of the United States than the Intermediate Setback Levee Alternative.

In addition, the Preferred Alternative provides for roughly 400 more acres of potential area for natural habitat enhancement and restoration for fish, wildlife, and native plants than the Intermediate Setback Levee Alternative.

Table 6 summarizes the comparison of the Intermediate Setback levee Alternative and the Preferred Alternative with regard to practicability and impacts on waters of the United States.

Table 6 Comparison of Preferred Alternative and Intermediate Setback Levee Alternative		
Project Alternative	Practicability	Impacts to Waters of the United States
Preferred Alternative	Practicable, meets the project purpose and all project objectives	10.93 acres permanently affected, 56.89 acres indirectly affected
Alternative 3	Practicable, although some uncertainty whether it would meet project purpose and all the objectives in the long term because of amount of permeable subsoils that would underlie the levee. Expected annual damages from flooding would be higher and inundation risk reduction value would be lower than under the Preferred Alternative	11.91 acres permanently affected, 55.87 acres indirectly affected

RESULTS OF ALTERNATIVES ANALYSIS

As presented above, the alternatives to the Preferred Alternative either (1) do not meet the definition of “practicable” because they do not meet the project purpose and objectives or there is uncertainty about whether they would meet the purpose and objectives over the long-term or (2) do not result in less adverse environmental impacts than the proposed project. In light of the project purpose and objectives, engineering concerns, logistics, and effects on the aquatic ecosystem, for TRLIA’s proposed FRLRP Segment 2 project (Preferred Alternative) is the least environmentally damaging practicable alternative.

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APPENDIX A

Comparison Table of Effects of Alternatives on Environmental Categories

**Appendix A
Comparison Table of Effects of Alternatives on Environmental Categories**

Impact Description	Proposed Project (Preferred Alternative)	Alternatives Compared to the Proposed Project (Preferred Alternative)		
		Intermediate Setback Levee	Levee Strengthening	No Action
Conflicts and inconsistencies with land use planning and policies resulting from implementation of project elements.	The change in land use that would result from construction of the setback levee and related project elements would result in conflicts and inconsistencies with locally implemented policies regarding preservation of agricultural land and with the current permitted uses. However, the proposed project would benefit thousands of acres of valuable agricultural lands in the adjacent floodplain by providing increased protection from future flood damages.	Same or similar to the proposed project – This impact would be very similar under this alternative, although less agricultural land would be placed in the setback area.	Less than the proposed project – This impact would occur to a lesser degree than under the proposed project. A relatively small change in land use would result from construction of seepage/stability berms, and relocation of Pump Station No. 3. This land use change would result in inconsistencies with locally implemented policies that promote protecting productive agricultural land. Because the acreage that would be converted is relatively small, this impact would be less than that identified for the proposed project.	No change in existing conditions would occur.
Conversion of Important Farmland to nonagricultural uses.	Construction of the setback levee and related project elements could convert up to approximately 900 acres of Important Farmland to nonagricultural uses. The potential conversion of several hundred additional acres of Important Farmland to habitat within the levee setback area is not necessarily considered permanent because habitat lands, if they have no permanent conservation requirements, could conceivably be used for agriculture again some time in the future.	Same or similar to the proposed project – This impact would be similar under this alternative. A few tens of acres less could be converted under this alternative than would be converted under the proposed project. Less agricultural land would be in the setback area.	Similar to the proposed project – Up to approximately 200 acres of Important Farmland would be converted to nonagricultural uses. Although the relative quantity of agricultural land that would be permanently converted under this alternative is smaller than under the proposed project, no relative scale has been established by an agency to differentiate this land use conversion impact from the corresponding impact under the proposed project.	No change in existing conditions would occur.
Temporary effects on water quality of surface waters in the project area from soil erosion and sedimentation during construction work.	Construction activities that could cause soil erosion and sedimentation of local surface waters include removal of the existing levee, excavation of borrow material, construction of the setback levee and related project elements, relocation of Pump Station No. 3 and other related construction work.	Same or similar to the proposed project – This impact would be the same under this alternative.	Similar to the proposed project – Construction activities would include construction of project elements associated with repairing and strengthening the existing Feather and Yuba River levees, excavation of borrow material from borrow sites; and relocating or modifying other existing facilities.	No change in existing conditions would occur.
Changes to local drainage patterns in the levee setback area and along the setback levee alignment.	The setback levee would cross existing drainage infrastructure and disrupt parts of the drainage system for the local area. Drainage patterns within the setback area would change.	Greater than the proposed project – Permanent impacts to drainages within the setback levee footprint would be greater than under the proposed project. Approximately 200 fewer acres would be located within the setback area under this alternative; therefore, the total area where local drainages could be indirectly affected would be somewhat less than under the proposed project.	Not applicable to this alternative – This alternative would not entail construction of a setback levee and would not alter existing drainage patterns.	No change in existing conditions would occur.
Beneficial effect of decreased flood stages in the Feather River adjacent to project Segment 2 and upstream in both the Feather and Yuba Rivers.	Based on hydraulic simulations conducted for the FRLRP (MBK Engineers 2006, cited in TRLIA 2006), the setback levee would lower water levels in the Feather river upstream of Star Bend. For the 1-in-200 annual exceedance probability (AEP) event, the setback levee would lower the water level at the confluence of the Feather and Yuba Rivers by approximately 1.6 feet. Replacement of the existing levee with a setback levee built using up-to-date construction standards would reduce the potential for levee failures that have occurred in the past.	Somewhat less than the proposed project – This beneficial project effect would be similar under this alternative. However, the intermediate setback levee would lower water levels in the Feather river upstream of Star Bend somewhat less than would the proposed project—1.2 feet for the 1-in-200 AEP event.	Not applicable to this alternative – This alternative would not entail construction of a setback levee; therefore, this alternative would not provide the regional flood control benefit that would occur under the proposed project.	No change in existing conditions would occur.
Potential long-term effects on water quality from the levee setback.	Periodic flooding of the levee setback area could result in the release of contaminants related to historical agricultural uses into surface waters, including the Feather River. Potential contaminants include pesticides and fertilizer, and organic litter and debris containing hazardous substances.	Similar to the proposed project – This impact would be similar under this alternative. Approximately 200 fewer acres would be located within the setback area under this alternative; therefore, the total area where potential contaminants could be present would be somewhat less than under the proposed project.	Not applicable to this alternative – This alternative would not entail construction of a setback levee.	No change in existing conditions would occur.

**Appendix A
Comparison Table of Effects of Alternatives on Environmental Categories**

Impact Description	Proposed Project (Preferred Alternative)	Alternatives Compared to the Proposed Project (Preferred Alternative)		
		Intermediate Setback Levee	Levee Strengthening	No Action
Potential loss of fish habitat during construction activities.	Construction work would disturb soils in the floodplain or adjacent to drainage canals that discharge into the floodway, which could temporarily increase turbidity and sedimentation downstream of the construction sites if soils are transported in high river flows or stormwater runoff. Federally listed special-status fish species that could be affected include green sturgeon, Pacific lamprey, Central Valley steelhead, Central Valley winter-run chinook salmon, and Sacramento River spring-run chinook salmon.	Same or similar to the proposed project – This impact would be the same under this alternative.	Similar to the proposed project – Construction work along the existing Feather River levee would disturb soils along the top and the water side of the existing levee. Similar to the proposed project, erosion of soils could temporarily increase turbidity and sedimentation downstream of the construction sites, which could adversely affect federally listed special-status fish species.	No change in existing conditions would occur.
Potential effects on fish habitat if flooding of the setback area results in release of contaminants that may be present in the soil.	If contaminants are present in soil in the levee setback area or in borrow material used for the setback levee, they could be released when the area is inundated during flood events, resulting in harm to federally listed special-status fish species.	Similar to the proposed project – This impact would be similar under this alternative. Approximately 200 fewer acres would be located within the setback area under this alternative; therefore, the total area where potential contaminants could be present would be somewhat less than under the proposed project.	Not applicable to this alternative – This alternative would not entail construction of a setback levee.	No change in existing conditions would occur.
Potential for fish to be stranded in the levee setback area following flood events.	The increase in the extent of floodplain habitat potentially available to native fishes in expanded floodway is considered a beneficial effect; however, fish that enter the floodway during higher flows could become stranded in depression areas (e.g., ponds, channels and ditches) when floodwaters recede.	Same or similar to the proposed project – This impact would be the same under this alternative.	Not applicable to this alternative – This alternative would not entail construction of a setback levee.	No change in existing conditions would occur.
Loss of or disturbances to sensitive habitats.	Sensitive habitats within the project area include wetland, riparian, and open-water habitats that are under USACE jurisdiction and protected under Section 404 of the CWA. Construction of the setback levee and related project elements would fill portions of canals and ditches. Aquatic habitat within the levee setback area would be affected by floodwaters moving into and draining out of the setback area from the Feather River.	Greater than the proposed project – This impact would be greater under this alternative. This alternative has greater impacts to waters of the United States so it would not be the same impact as the preferred alternative (10.93 vs. 11.91 acres).	Less than the proposed project – Construction work on the existing levee and waterside erosion repair would primarily be restricted to the existing levee access corridors; however, effects to jurisdictional waters of the United States would be associated with the relocation of Pump Station No. 3 upstream on the Plumas Lake Canal.	No change in existing conditions would occur.
Potential loss of or disturbances to certain federally listed special-status wildlife species.	Construction of the setback levee and related project elements could result in disturbance or loss of suitable habitat for federally listed special-status wildlife species, including valley elderberry longhorn beetle, northwestern pond turtle, and giant garter snake. However, flooding of the setback area is not expected to adversely affect elderberry shrubs currently located in this area. Potential habitat for giant garter snake and northwestern pond turtle would be considered unsuitable for these species after degradation of the existing levee due to periodic flooding of the levee setback area. Some aquatic habitat for giant garter snake and northwestern pond turtle would be removed by construction of the setback levee.	Same or similar to the proposed project – This impact would be similar under this alternative, although overall aquatic habitat losses for northwestern pond turtle and giant garter snake would be slightly greater.	Similar or less than the proposed project – Levee strengthening and waterside erosion repair work could affect suitable habitat for federally listed special-status species. Sensitive habitat is located along the edge of the riparian corridor along the Feather River floodway. Replacement of Pump Station No. 3 and use of potential borrow sites could result in the permanent loss of aquatic habitat for the northwestern pond turtle and upland habitat for giant garter snake. Elderberry shrubs growing near wetland habitats could be adversely affected. However, overall impacts would likely be less than under the proposed project	No change in existing conditions would occur.
Potential damage to or destruction of cultural resources in unsurveyed areas.	Potential borrow areas outside (east of) the setback area have not been definitively identified and therefore may not have been surveyed for cultural resources. Significant cultural resources could be present in these areas, and could be damaged by project-related ground-disturbing activities. Relatively small areas within the levee setback area could not be adequately surveyed because surface visibility was obscured by dense grasses.	Same or similar to the proposed project – This impact would be similar under this alternative. Unsurveyed areas are located in areas east of the setback levee alignment for this alternative.	Same or similar to the proposed project – This impact would be similar under this alternative. Unsurveyed areas that may be used as a source of borrow material are located east of previously surveyed areas.	No change in existing conditions would occur.

**Appendix A
Comparison Table of Effects of Alternatives on Environmental Categories**

Impact Description	Proposed Project (Preferred Alternative)	Alternatives Compared to the Proposed Project (Preferred Alternative)		
		Intermediate Setback Levee	Levee Strengthening	No Action
Potential damage to or destruction of undocumented buried cultural artifacts or human remains during project construction.	Previously unidentified significant or potentially significant buried cultural artifacts could be damaged or destroyed during ground-disturbing activities. Construction activities could adversely affect undocumented buried human remains.	Same or similar to the proposed project – This impact would be similar under this alternative, with a similar extent of the project area not yet fully surveyed for cultural resources.	Similar to the proposed project – Although the construction area for this alternative would be smaller than that for the proposed project, the same potential exists for the impact to occur, and this impact would be similar to the proposed project as a result.	No change in existing conditions would occur.
Impact to air quality from construction-generated emissions of criteria pollutants during project construction.	Construction activities associated with construction of a setback levee and removal of the existing levee would cause construction emissions of reactive organic gases (ROG), oxides of nitrogen (NO _x), and respirable particulate matter (PM ₁₀) that would exceed the Feather River Air Quality Management District's (FRAQMD's) thresholds and would contribute to existing nonattainment conditions in the Northern Sacramento Valley Air Basin (NSVAB).	Same or similar to the proposed project – This impact would be the same under this alternative.	Same or similar to the proposed project – This impact would be similar under this alternative. Because this alternative does not entail construction of a new setback levee, emissions of criteria pollutants would be lower under this alternative. However, as would occur under the proposed project, emissions under this alternative would exceed the FRAQMD's thresholds.	No change in existing conditions would occur.
Potential long-term changes in emissions of criteria pollutants.	The potential cessation of agricultural uses on some lands in the levee setback area could result in a decrease in long-term pollutant emissions in this area, particularly PM ₁₀ . Emissions would not exceed federal guidelines; however, they would exceed the Feather River Air Quality Management District's (FRAQMD's) thresholds.	Same or similar to the proposed project – The potential for this beneficial project effect would be similar under this alternative.	Not applicable to this alternative – Because this alternative does not entail creation of a levee setback area with the potential for restoration of native habitat areas, the beneficial effect related to potential cessation of agricultural uses on some lands near the levee would not occur.	No change in existing conditions would occur.
Temporary increase in noise levels during construction.	Construction of the setback levee and excavation and transport of borrow material from borrow sites to the setback levee alignment may result in a noticeable temporary increase in ambient noise levels and cause annoyance of sleep disruption to occupants of residences closest to construction areas.	Same or similar to the proposed project – This impact would be the same under this alternative.	Same or similar to the proposed project – This impact would be similar under this alternative. A lesser volume of material from borrow sites would be transported to the construction area adjacent to the existing levee; therefore, construction-generated traffic, and noise generated by the traffic, would be somewhat less under this alternative.	No change in existing conditions would occur.
Damage of public utility infrastructure and disruption of service in the project area.	Potential damage to identified and unidentified water, electrical, natural-gas, and telephone infrastructure remaining in the levee setback area could occur during project construction or occasional flood events.	Same or similar to the proposed project – This impact would be similar under this alternative. Approximately 200 fewer acres would be located within the setback area under this alternative; therefore, the extent of affected facilities would be somewhat less than under the proposed project.	Less than the proposed project – The construction area is smaller for this alternative; therefore, the likelihood of affecting unidentified public utility infrastructure is reduced.	No change in existing conditions would occur.
Potential disturbance of unknown paleontological resources during earthmoving work.	Portions of the project area, including the levee setback area, are underlain by the Modesto Formation, which is a paleontologically sensitive rock formation. Pleistocene-age fossils would not be encountered until approximately 10 feet below ground surface; therefore, only construction of project elements that would include excavations deeper than 10 feet could adversely affect unknown subsurface paleontological resources. As described previously, the Modesto Formation sediments have better engineering characteristics for levee foundation construction.	Similar to or somewhat less than the proposed project – This impact would be similar under this alternative. A portion of the setback levee would be located approximately 1,000 feet further west in an area underlain by Holocene-age sediments, which are not considered to be paleontologically sensitive. However, the Holocene-age sediments consist primarily of unconsolidated sand and silt, which would provide a considerably less stable foundation for levee construction.	Less than the proposed project – Most of project Segment 2 is underlain by Holocene-age sediments, which do not contain paleontologically sensitive resources. As discussed previously, the Holocene-age sediments provide a considerably less stable foundation for levee construction. (See discussions under Alternative 2 of the report documenting past levee repairs and failures of the existing Feather River levee.)	No change in existing conditions would occur.

Source: Adapted from information contained in the Draft Environmental Impact Report for the Feather River Levee Repair Project, An Element of the Yuba-Feather Supplemental Flood Control Project (State Clearinghouse No. 2006062071) (TRLIA 2006).

Application for Section 401 Water Quality Certification,
and Draft Agreement Segment 2

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August 13, 2007

Mr. Patrick G. Gillum
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670

SUBJECT: Request for Water Quality Certification, pursuant to Section 401 of the Clean Water Act, as required for the Feather River Levee Repair Project, Segment 2

Dear Mr. Gillum:

On behalf of the Three Rivers Levee Improvement Authority (TRLIA), we are hereby requesting water quality certification, pursuant to Section 401 of the Clean Water Act, for the Feather River Levee Repair Project (FRLRP), Segment 2. TRLIA is also seeking an Individual Permit from the U.S. Army Corps of Engineers (USACE), pursuant to Section 404 of the Clean Water Act, for the FRLRP, Segment 2. The Water Quality Certification Application form is included as Attachment A and the application fee is included as Attachment B.

PROJECT LOCATION

The FRLRP, Segment 2 (proposed project) is located in southwestern Yuba County, south of the city of Marysville (Exhibit 1, Attachment C). The proposed project is one segment of the overall FRLRP, which includes a total of three segments (Exhibit 2, Attachment C). Segments 1 and 3 of the FRLRP are addressed as a separate project and compliance with Section 401 of the Clean Water Act for Segments 1 and 3 is being sought separately. The focus of this application is Segment 2 of the FRLRP.

The proposed project is located in Townships 13 and 14 North, Ranges 3 and 4 East within the Olivehurst U.S. Geological Survey (USGS) 7.5-minute quadrangle (Mount Diablo Baseline and Meridian) (Exhibit 2, Attachment C). The proposed project includes the portion of the Feather River (east) levee from Project Levee Mile (PLM) 17.2 to PLM 23.4 (approximately from Star Bend to just south of Shanghai Bend along the Feather River).

PROJECT PURPOSE

The primary purpose of the overall FRLRP, and consequently of the proposed project, is to correct identified deficiencies in the left (east) bank levee of the Feather River and the left (south) bank levee of the Yuba River, and consequently to improve flood protection for the Reclamation District (RD) 784 area of Yuba County. Studies by the California Department of Water Resources (DWR), USACE, RD 784, and TRLIA have found that several reaches of the levee system protecting the RD 784 area do not satisfy geotechnical criteria for seepage at the water surface elevation for the 100-year flood event. To a large extent, these levee "deficiencies" in the project area relate to the potential for water to seep under (underseepage) and through (through-seepage) the levee soils during flood events, potentially leading to levee failure. An analysis focused on the Feather River levee was performed by Kleinfelder and is described in *Problem Identification Report, TRLIA Phase 4 Feather River and Yuba River Left Bank Levees, Reclamation District No. 784* (PIR) (Kleinfelder 2006). The conclusions of the PIR

indicate that portions of the subject levee do not currently meet the geotechnical criteria for underseepage or through-seepage needed to bring the levee into compliance with Federal Emergency Management Agency (FEMA) requirements for accreditation.

To correct the deficiencies identified along the levee segments analyzed in the PIR and other studies, TRLIA is undertaking the FRLRP. The proposed project addresses levee problems within Segment 2 of the overall FRLRP and proposes to correct the problems by constructing a setback levee along this reach of the Feather River.

PROJECT DESCRIPTION

The proposed project involves constructing a setback levee, relocating a pump station adjacent to the existing levee, and degrading portions of the existing Feather River left bank levee (Exhibit 3, Attachment C). Approximately 5.7 miles of new setback levee would be constructed within Segment 2 to replace 6.2 miles of existing levee, and the new setback levee would tie into the existing levee at the north end of Segment 1 and the south end of Segment 3.

The proposed activities in Segment 2 will be completed in two stages: Stage 1 and Stage 2. The project is being divided into two stages to accommodate schedule challenges related to beginning construction of the setback levee (to replace the extremely deficient segment of existing levee) while undergoing the process for USACE and California State Reclamation Board approval to degrade the existing levee. If these processes were to take place at the same time (i.e., wait to construct the setback levee until approval to degrade the existing levee is obtained), it would delay the creation of a flood protection structure that could minimize flood damages should the existing levee fail during the approval process.

Stage 1 of the proposed project includes construction of the setback levee and associated stability berms, construction of a new Pump Station No. 3 and associated facilities, excavation of material within borrow sites (within the setback area and possibly on the land side of the setback levee), and removal and relocation of existing utilities and structures within the setback area. Stage 2 of the project includes degradation of all or portions of the existing Feather River east levee within Segment 2; filling of the Plumas Lake Canal on the water side from the setback levee to where the canal opens into the ponded area, and on the land side from the setback levee to the new Pump Station No. 3; decommissioning of the existing Pump Station No. 3; and recontouring of portions of the levee setback area and an existing drainage to facilitate drainage of water from the levee setback area after flood events. TRLIA is also discussing the feasibility of active restoration in the setback area with the various landowners and stakeholders in the setback area as well as with the various regulatory agencies. If restoration were conducted, it would be done as part of Stage 2.

STAGE 1 CONSTRUCTION

Setback Levee Construction

The setback levee will be approximately 5.7 miles long. The new levee segment will generally be set back approximately 0.5 mile to the east of the existing Feather River levee, except near the northern and southern ends, where it will join the existing levee. The area between the east toe of the existing levee and the west toe of the setback levee (the levee setback area) will include approximately 1,300 acres. It is anticipated that the design crown elevation of the setback levee will be the same as the crown elevation of the existing levee at each given latitude along the alignment. The height of the setback levee will generally range from about 20 to 30 feet above the existing ground surface. The most common levee height above the adjacent land will be approximately 25 feet. The existing levee has been reconstructed by the USACE to provide a minimum of 3 feet of freeboard above the 1957 design profile. Because the levee setback will lower most flow profiles by widening the flow channel, it follows

that the setback levee, if constructed to the crown elevations described above, will have freeboard of at least 3 feet above the 1957 design profile. Other anticipated dimensions of the setback levee are: a crown width of 20 feet; a footprint width (levee toe to levee toe) of approximately 170 feet (depending on levee height); levee slopes at a 3:1 ratio (H:V); and a 12-foot-wide patrol road on the levee crown.

Construction of the setback levee will include three main design elements: preparation of the levee foundation, construction of a slurry cut-off wall for seepage control, and construction of the levee embankment. Preparation of the foundation of the setback levee will involve clearing and grubbing of all trees, brush, loose stone, abandoned structures, existing utilities, buried pipelines, and other deleterious materials that may exist within 10 feet of the levee toes. After clearing and grubbing, the setback levee foundation will be stripped to remove low-growing vegetation and topsoil to a depth of at least 6 inches, although local areas with extensive tree roots or deep organic soils may require excavation to a depth of 3 feet or greater. The topsoil will be placed in a designated "unsuitable material" spoil area and/or used for borrow area reclamation. Overall, the depth of stripping is expected to average about 1–3 feet. Construction of a slurry cutoff wall is proposed along those portions of the setback levee where widespread strata of permeable sands and gravels exist in the foundation. The purpose of the slurry cutoff wall is to dissipate the hydraulic gradient in the levee foundation and reduce seepage quantities. To achieve maximum effectiveness, the slurry cutoff wall must extend completely through the permeable strata and terminate some distance into an underlying, reasonably continuous layer with lower permeability. The slurry cutoff wall will be composed of a mixture of soil and bentonite clay, and, in some applications, cement. Finally, construction of the setback levee embankment will begin as soon as sufficient lengths of levee foundation are complete and weather conditions allow. The embankment will be constructed as an engineered fill, with the fill placed in horizontal lifts. Each lift will be moisture conditioned and compacted to the specified density using a suitable compactor, such as a sheepsfoot, tamping-foot, or rubber-tired roller. Stability berms integral to the levee embankment will be provided in portions of the southern alignment where the foundation of the levee contains soft clay and silt deposits.

New Pump Station No. 3

An existing pump station (Pump Station No. 3) will need to be relocated to the land side of the setback levee. The current location of Pump Station No. 3 experiences excessive seepage and boils during high-water events, making it desirable to relocate the pump station out of this area. In addition, after the setback levee is complete, the existing Pump Station No. 3 will be in the setback area and exposed to flooding after the existing levee is degraded. Therefore, as part of Stage 1 of the setback levee project, a new/replacement Pump Station No. 3 will be constructed on the land side of the setback levee, followed in Stage 2 by removal of the existing pump station. The location of the new pump station will be adjacent to the Plumas Lake Canal, south of Rich Road (Exhibit 3, Attachment C). The new Pump Station No. 3 will be a reinforced-concrete structure similar to the recently constructed Pump Station No. 2 in RD 784. The specific capacity of the new Pump Station No. 3 will be determined during detailed project design; however, preliminary design shows that the capacity of the current pump station will be able to accommodate high-water events without the threat of upstream flooding. Once the new Pump Station No. 3 is built, an "approach channel" will be excavated to connect the pump station to the Plumas Lake Canal. A gravity drain has been incorporated into the design of the pump station to allow summertime gravity discharges to the lowlands on the waterside of the setback levee and the Feather River. The drain will consist of a cast-in-place 4-foot by 4-foot clear-span box culvert. Waterside of the levee toe, precast culvert sections will likely be used instead of cast-in-place concrete.

Utility Relocation and Structure Removal

Implementation of the setback levee project will necessitate the removal of all structures (houses, trailers, sheds, barns, other agricultural outbuildings) from the levee setback area, which would be

subject to periodic flooding following removal of the existing levee. Approximately 20 structures in the levee setback area will be displaced by the project. Displaced structures include six residential dwelling units, and remaining structures include associated agricultural use buildings and barns. Some utilities and other facilities located in the levee setback area will need to be relocated or reinforced with implementation of the levee setback. As discussed previously, RD 784 Pump Station No. 3 will be relocated to the land side of the proposed setback levee. A PG&E 115-kilovolt (kV) transmission line called the Bogue Loop crosses the levee setback area on four towers. The foundations for these steel structures will probably need to be reinforced or replaced so that their integrity will be maintained during times of flood water inundation. Other steel towers along the same transmission line are located on the water side of the existing Feather River levee and are supported by elevated steel pile foundations.

Other existing facilities that may need to be abandoned, reinforced, or relocated include roads, power distribution lines, irrigation pipelines, drainage ditches, wells, fill stations, and communications lines. Several private irrigation lines will be cut off by the construction of the setback levee, separating some lands on both sides of the setback levee that require irrigation from current water sources. The wells within the setback area may be retained to support continuing agricultural activities, may be retained to support potential environmental enhancement activities for several years after setback levee construction, or will be destroyed in accordance with California's water well regulations. Wells and fill stations in the levee setback area that will be abandoned will be removed and filled, and new wells will be dug and fill stations built outside the levee setback area to replace the abandoned facilities, as appropriate. Wells and fill stations that will be retained in the levee setback area will be retrofitted to accommodate periodic flooding. New power lines and power poles may be required for any new wells and fill stations.

Borrow Areas

Borrow material will be obtained locally from borrow areas developed inside and outside the levee setback area. It is currently estimated that a total of approximately 3.4 million cubic yards (cy) of compacted borrow material will be required to construct the setback levee in project Segment 2 and that borrow areas will be excavated to depths in the order of about of 5-10 feet.

Two general objectives are important in the selection of borrow areas: to minimize haul distances to the setback levee alignment and provide a continuous or nearly continuous borrow source, and to reduce the potential for seepage impacts at the foundation of the setback levee. Minimizing haul distances is important to minimize project construction costs, air emissions, and traffic impacts. To reduce the potential for seepage impacts at the foundation of the setback levee, a distance of 400 feet or greater from the edge of the borrow area to the toe of the proposed levee must be maintained unless there is an incised drainage channel between the setback levee alignment and the borrow area. If such an incised drainage exists, borrow excavation closer to the levee may be allowed, based on an evaluation of local site conditions. Borrow areas may also be developed closer than 400 feet from the toe of the setback levee if the borrow pit is to be subsequently backfilled.

Wide, shallow excavations (rather than deep trenches) are anticipated. At the conclusion of the work, the borrow areas will be graded to blend with the topography, leaving slopes flat enough to reduce erosion and promote conditions conducive to vegetative growth (slopes 3:1 [H:V] or flatter), or filled with material from removal of existing levees (during stage 2). If not filled, the bottom of the borrow areas will be regraded to drain away from the levee and toward the river or toward existing drainage ways. The drainage of the borrow areas will also need to ensure fish movement out of the levee setback area into the main channel of the Feather River when flood flows recede following inundating flood events. The borrow areas will be revegetated to conform to the surrounding landscape. The borrow sites will be reclaimed as appropriate. Some stockpiled topsoil, and other excess earth materials (organic soils,

roots, and grass) from borrow areas and the setback levee foundation could be spread over borrow sites after excavation has been completed.

A detailed investigation of borrow areas suitable for levee embankment materials is currently underway. The location and limits of borrow areas will be determined and refined as a result of this effort. Borrow sites will be selected based on several criteria including right-of-way access, distance to the setback levee alignment, and environmental resources locations. Borrow sites will not be located where the sites could adversely affect sensitive species, waters of the United States, or waters of the state.

STAGE 2 CONSTRUCTION

Fill of Portions of the Plumas Lake Canal

During Stage 1 the new setback levee will divide the Plumas Lake Canal with portions of the canal remaining intact on either side of the setback levee. To minimize potential for underseepage that could result from having an excavated feature too close to the levee, approximately 490 feet of the canal on the west (water) side of the setback levee will be completely filled (from the west side of the setback levee alignment to where the canal becomes ponded). Approximately 2,200 feet of canal on the east (land) side of the setback levee will be filled between the new Pump Station No. 3 and the setback levee alignment. An approximately 2-foot-deep ditch will remain along the canal alignment to drain surface runoff from landside areas at the southern end of the setback levee to the new Pump Station No. 3.

Decommission of Existing Pump Station No. 3

After the setback levee and Pump Station No. 3 construction is complete, the existing Pump Station No. 3 will continue to operate until the existing levee is degraded. At that time, the existing Pump Station No. 3 will be decommissioned and dismantled.

Setback Area Drainage Swale

A floodplain swale will be constructed along the alignment of the existing Pump Station No. 3 discharge channel from the existing Pump Station No. 3 location to the Feather River. This swale will connect the setback area lowlands to the Feather River and thus facilitate drainage and allow flood waters to recede from the setback area in a manner that minimizes fish stranding. The existing channel will have to be enlarged and deepened to accommodate flood flows leaving the setback area and to minimize the potential for fish stranding as flood waters recede. The channel will be constructed in a manner that minimizes vegetation disturbance, fish stranding, and other environmental impacts. A site-specific drainage plan for the entire setback area will be developed in final design.

The swale will also act to allow backwater to flow into the setback area from the Feather River, increasing the inundation frequency of the setback area and resulting in high quality habitat. It is estimated that the 40-foot stage will be inundated in two out of every three years for a period of at least one week between March 15 and May 15. Floodplain land at or below this elevation will provide a broad suite of valuable ecosystem functions, including provision of nutrients and seasonal habitat for aquatic species.

Degradation of Existing Levee

All or portions of the existing levee in Segment 2 will be removed to achieve the maximum hydraulic benefits of the levee setback by allowing water to flow into and out of the levee setback area during high river stages. Where the existing levee will be excavated to allow flood waters to pass into and out

of the levee setback area, the existing embankment will be excavated to the level of the adjoining ground surface in the levee access corridor. Specific sections to be retained, if any, will be determined in final project design and will be based on factors that include possible mitigation value for project impacts on sensitive species. Those sections of the existing levee that may be left in place will not be maintained. There are no plans to use material in the existing Feather River left bank levee as borrow material for the new setback levee. It is expected that for some period of time, the existing levee and the new setback levee will be in place concurrently. During this period, the setback levee will function as a "backup" levee, providing a second line of levee protection if the existing levee in Segment 2 were to breach during a flood event.

OTHER ASSOCIATED ACTIVITIES (STAGES 1 AND 2)

Staging Areas and Access Routes

It is anticipated that several staging areas will be developed along the setback levee alignment to allow for efficient use and distribution of materials and equipment. Staging areas will be located within the construction corridor and near active construction areas, so they may be relocated as construction progresses. Because the work area is essentially flat, suitable sites for construction staging are abundant. Final selection of staging areas will be based on contractor preference and environmental and land use constraints such as avoiding placing staging areas within or adjacent to waters of the United States. Personnel, equipment, and imported materials will reach the project site via State Route (SR) 70 and Feather River Boulevard. At the project site, the primary construction corridor will include the setback levee alignment, soil borrow areas, and roads used for access to the work areas, including Feather River Boulevard. Access roads will consist mainly of the existing east-west lateral roads between SR 70, Feather River Boulevard, and the levee setback area.

Disposal of Excess Materials

Excess earth materials (organic soils, roots, and grass from borrow areas and the setback levee foundation; excavated material that does not meet levee embankment criteria) will be used in the reclamation of borrow areas or will be placed in a surplus material berm at the waterside toe of the setback levee. In addition, excess material could be used in the contouring of the setback area to facilitate drainage to the Feather River and prevent fish stranding. Cleared vegetation (i.e. trees, brush) will be hauled off-site. Debris from structure demolition, power poles, piping, and other materials requiring disposal will be hauled off-site to a suitable landfill.

PROJECT SCHEDULE

A period of up to approximately 22 months is planned for construction of the setback levee project, with contractor mobilization beginning in late September 2007, the setback levee embankment completed in December 2008, the existing levee breached in spring/summer 2009, and final clean-up and contractor demobilization in fall 2009. A detailed schedule showing project activities by stage is provided below.

Stage 1 Construction Activities

- ▶ Mobilization: Mobilization will include setting up construction offices and transporting heavy earthmoving equipment to the site. These activities may take about 1 month.
- ▶ Levee Foundation Preparation: This activity will begin soon after mobilization. Construction will take approximately 8–9 months depending on the amount of equipment working simultaneously, weather conditions, and permit requirements.

- ▶ **Slurry Cutoff Wall Construction:** Installation of slurry cutoff walls along the setback levee alignment will occur simultaneously with levee foundation preparation.
- ▶ **Levee Embankment Construction (including stability berms):** Because the setback levee alignment is nearly 6 miles long, levee embankment construction could begin in some areas while foundation preparation is underway along other portions of the alignment. Levee embankment construction is anticipated to take approximately 8 months.
- ▶ **Borrow Material Excavation:** Excavation of borrow materials for use in the construction of the setback levee embankment could begin simultaneously with levee foundation preparation or slurry wall construction and will occur for the duration of levee embankment construction.
- ▶ **Tie-ins to Existing Levees:** Elements of tying in the setback levee to the existing levees will take place during levee foundation preparation, levee embankment construction, and potentially during slurry cutoff wall construction.
- ▶ **Pump Station No. 3 Construction:** Pump Station No. 3 will be constructed concurrent with levee embankment construction. Procurement of long-lead items (e.g., pumps, motors, valves and generator) could begin as early as 2007.

Stage 2 Construction Activities

- ▶ **Fill of Plumas Lake Canal:** The portion of Plumas Lake Canal within the levee embankment footprint will be filled during levee foundation preparation. The portion of canal downstream of the setback levee and between the setback levee and Pump Station No. 3 will be filled concurrent with removal of the existing levee.
- ▶ **Removal of the Existing Levee:** The existing Feather River levee in the setback area will not be removed until the setback levee is complete. Removal activities will take place outside the identified Feather River flood season. It is expected that levee removal will take place in spring/summer 2009.
- ▶ **Decommission of the Existing Pump Station No. 3:** Removal of the existing pump station will be done concurrent with removal of the existing levee.
- ▶ **Facilitation of Setback Area Drainage:** Grading of the setback area to facilitate drainage of floodwaters back to the Feather River and enhancement of the setback area drainage swale will be conducted concurrent with removal of the existing levee.
- ▶ **Demobilization:** Demobilization will include removal of equipment and materials from the project site, disposal of excess materials at appropriate facilities, and restoration of staging areas and temporary access roads to pre-project conditions. Demobilization activities will likely occur in various locations as construction proceeds along the project alignment, but will be completed in fall 2009 after removal of the existing Feather River levee is complete.

REQUEST FOR WATER QUALITY CERTIFICATION

EDAW, on behalf of TRLIA, is requesting Water Quality Certification, pursuant to Section 401 of the Clean Water Act, for the FRLRP, Segment 2.

RWQCB JURISDICTION WITHIN THE PROJECT SITE

A preliminary wetland delineation for the proposed project was prepared by EDAW and submitted to USACE on March 30, 2007, with the latest revisions submitted June 27, 2007. Based upon recent conversations with USACE, additional revisions to the delineation will be submitted to USACE soon. The wetland delineation has not yet been verified by USACE.

Based on the preliminary delineation, the study area encompassed by the delineation includes 116.11 acres of potentially jurisdictional waters of the United States. Potentially jurisdictional habitat types include mixed riparian forest/scrub, perennial drainages, intermittent drainages, and lacustrine habitat. Other potentially jurisdictional habitats identified in the delineation are those that do not meet the three parameter wetland criteria (from the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual), such as developed areas, orchard, and ruderal habitats, but are potentially subject to USACE jurisdiction under Section 404 of the CWA because these habitats are located within the ordinary high water mark (OHWM) of the Feather River (i.e., waterside of the existing levee) (Table 1 below and Attachment D). It is our opinion that the 116.11 acres of potentially jurisdictional waters of the United States also qualify as waters of the state of California.

Table 1 Acreages of Waters of the State on the Project Site				
Habitat Type	USACE Category ID	Feature ID	Length (ft)	Acreage Total
Mixed Riparian Forest/Scrub	Non-TNW Wet 1	--	6,872	16.25
	Non-TNW Wet 2	--	16,469	27.97
Lacustrine	RPW 5	--	743	0.42
	RPW 6	--	1,482	0.95
Intermittent Drainage	Non-RPW 1	ID-1	4,781	0.82
	Non-RPW 2	ID-4	10,319	0.47
	Non-RPW 3	ID-5	673	0.09
Perennial Drainage	RPW 1	PD-1	15,976	19.81
	RPW 4	ID-5	254	0.22
Riparian Forest/Scrub within OHWM	TNW	--	N/A	30.09
Developed	TNW	--	N/A	0.04
Elderberry Savanna	TNW	--	N/A	9.56
Orchard	TNW	--	N/A	8.06
Ruderal	TNW	--	N/A	1.36
Total –Waters of the State on the Project Site				116.11
Source: EDAW 2007				

Table 1 contains information on the waters of the state in the delineation study area (which extends beyond the current project footprint) and corresponds with the preliminary wetland delineation maps in Attachment D. On June 8, 2007, the U.S. Environmental Protection Agency and USACE issued new guidance (Guidance) pertaining to delineations of waters of the United States and federal jurisdiction of such waters under Section 404 of the Clean Water Act, based on the Supreme Court rulings in the *Rapanos v. United States* and *Carabell v. United States* federal cases. According to the Guidance, federal waters subject to jurisdiction of USACE can now be classified into several categories: traditional navigable waters (TNWs), wetlands adjacent to traditional navigable waters (TNW wet), non-navigable

tributaries of traditional navigable waters that are relatively permanent (i.e., have continuous flow year-round or at least three months of the year) (RPWs), wetlands that directly abut RPWs (RPW wet), non-navigable tributaries that are not relatively permanent (i.e., ephemeral) (non-RPWs), wetlands adjacent to non-RPWs (non-RPW wet), and wetlands that are adjacent to, but do not directly abut, an RPW (non-TNW wet). Table 1 classifies waters of the state by habitat type and by the categories mentioned above for comparison with waters of the United States.

One additional area, located just south of the existing Pump Station No. 3 and depicted as a linear band of riparian forest/scrub southwest of RPW-1 on the preliminary wetland delineation maps in Attachment D, is an area we are considering non-jurisdictional by USACE and RWQCB. This area contains vegetation typically associated with a riparian community. However, this area does not contain any surface waters or wetland hydrology. It is assumed that the vegetation obtains water from sub-surface groundwater or seepage under the existing levee.

EFFECTS TO WATERS OF THE STATE

Jurisdictional acreage potentially affected by the proposed activity was evaluated by placing the CAD engineering design information (provided by TRLIA's civil engineer GEI Consultants) over the aerial photograph of the project site and the wetland delineation information (including the OHWM line). Jurisdictional waters of the state (including wetlands), were considered to be adversely affected if they were present within the proposed construction boundaries.

Based on the CAD and GIS data, the proposed project is anticipated to permanently affect 10.93 acres of waters of the state and indirectly affect 56.89 acres of waters of the state. As mentioned previously, the proposed project is anticipated to be completed in two stages. Permanent effects to waters of the state will take place in both stages. Indirect effects to waters of the state will be the result of occasional flooding of the setback area after completion of Stage 2.

Stage 1 Effects

Stage 1 of the project will include fill and excavation activities associated with construction of the setback levee and the new Pump Station No. 3. These activities will require filling in portions of the Plumas Lake Canal (RPW 1), excavating a portion of the Plumas Lake Canal, filling in a portion of a perennial drainage that flows into the Plumas Lake Canal (RPW 1), and removal of riparian forest/scrub associated with the Plumas Lake Canal and perennial drainage (see Exhibit 4, Attachment C and Table 2 below).

The setback levee alignment (including levee crown, levee slopes, stability berms, and the land side maintenance road) will cross portions of the Plumas Lake Canal and a perennial drainage that flows into the Plumas Lake Canal. Construction of the setback levee will result in filling of 0.74 acre of the Plumas Lake Canal, 0.05 acre of the perennial drainage (RPW1), and 2.30 acres of associated riparian forest/scrub.

Construction of the new Pump Station No. 3 will require four steps. The first step will be clearing of vegetation and soil grubbing along the banks of the Plumas Lake Canal at the approach channel and at the outfall. Next, the pump station and the drainage culvert under the setback levee will be constructed entirely within upland (Exhibit 4, Attachment C). Once the drainage culvert is constructed, the outfall structure will be formed and cast of concrete. The outfall structure will be approximately 125 feet wide by 50 feet long (0.14 acre). Water from the land side of the setback levee will discharge into the ponded section of the Plumas Lake Canal through the culvert to the outfall. The final portion of the pump station to be constructed is the inlet or approach channel for the station that connects to the Plumas Lake

Table 2
Acreages of Waters of the State
Affected by the Feather River Levee Repair Project, Segment 2

Project Element	Habitat Type	USACE Category/Feature ID	Acreage	Total
PERMANENT EFFECTS				
STAGE 1				
Setback Levee Alignment				
	Perennial Drainage	RPW 1/PD-1/Plumas Lake Canal	0.79	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 2	2.30	
Setback Levee Alignment Total				3.09
Pump Station No. 3				
	Perennial Drainage	RPW 1/PD-1	0.17	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 2	0.07	
Pump Station No. 3 Total				0.24
Pump Station Channel (Inside Setback Area)				
	Mixed Riparian Forest/Scrub	Non-TNW Wet 2	0.14	
Pump Station Channel Total				0.14
Total Stage 1 Permanent Effects				3.47
STAGE 2				
Fill of Plumas Lake Canal Outside Setback Area				
	Perennial Drainage	RPW 1/PD-1/Plumas Lake Canal	0.93	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 2	1.37	
Plumas Lake Canal Outside Setback Area Total				2.30
Fill of Plumas Lake Canal Inside Setback Area				
	Perennial Drainage	RPW 1/PD-1/Plumas Lake Canal	0.20	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 2	0.73	
Plumas Lake Canal Inside Setback Area Total				0.93
Decommission of Existing Pump Station No. 3				
	Perennial Drainage	RPW 1/PD-1	0.11	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 2	0.17	
Decommission of Existing Pump Station Total				0.28
Setback Area Drainage Swale				
	Feather River Backwater	RPW 4	0.20	
	Intermittent Drainage	Non-RPW 3/ID-5	0.09	
	Mixed Riparian Forest/Scrub	N/A	3.66	
Setback Area Drainage Swale Total				3.95
Total Stage 2 Permanent Effects				7.46
INDIRECT EFFECTS				
STAGE 2				
Setback Area Flooding				
	Perennial Drainage	RPW 1/PD-1	16.98	
	Intermittent Drainage	Non-RPW 1/ID-1	0.82	
	Mixed Riparian Forest/Scrub	Non-TNW Wet 1 and 2	39.09	
Setback Area Flooding Total				56.89
Total Stage 2 Indirect Effects				56.89
Sub-Total Permanent Effects (Stage 1 and Stage 2)				10.93
Sub-Total Indirect Effects (Stage 2)				56.89
Grand Total Waters of the State Affected by the Feather River Levee Repair Project, Segment 2				67.82
Source: EDAW 2007				

Canal. Construction of the approach channel will begin adjacent to the pump station. The channel will be excavated up to approximately 10-20 feet from the existing west bank of the Plumas Lake Canal. Once this portion of the approach channel is constructed and graded to the appropriate slope, the remainder of the channel will be constructed. A 400-foot (0.07-acre) portion of the existing west bank of the Plumas Lake Canal will be excavated last to connect the Plumas Lake Canal to the approach channel and new pump station (see Exhibit 4, Inset 3). Additionally, grading of a small portion of the bed of the Plumas Lake Canal (0.17-acre) in the approach channel will be required to create the appropriate slope for flows to descend to the pump station.

Stage 2 Effects

Stage 2 of the project will include removal of all or parts of the existing levee, fill and excavation activities associated with removal and modification of portions of the Plumas Lake Canal, decommissioning of the existing Pump Station No. 3, and enhancement of the setback area drainage swale. The portions of the existing Feather River levee to be degraded will be excavated to the adjacent ground surface elevation at the landside and waterside toes. Because waters of the state are located to the west of the water side toe, effects to those waters from levee degradation are not expected.

Stage 2 of the project will affect a total of 7.46 acres of waters of the state including portions of the Plumas Lake Canal (RPW 1), an intermittent drainage on the water side of the existing levee that flows into the Feather River (non-RPW 3), a backwater to the Feather River (RPW4, connected to non-RPW 3), and riparian forest/scrub associated with these waters. To prevent the potential for underseepage or through-seepage in the new setback levee, approximately 0.93 acre (490 feet) of the Plumas Lake Canal (RPW 1) must be filled in on the west (water) side of the setback levee alignment (from the setback levee alignment to the beginning of the ponded section of the canal). The portion of the Plumas Lake Canal on the east (land) side of the setback levee alignment will also be filled from the setback levee alignment to the new Pump Station No. 3 (totaling 2.3 acres). A shallow ditch will be retained along the canal alignment to carry storm runoff from landside areas along the southern portion of the setback levee alignment to Pump Station No. 3. Riparian forest/scrub habitat will be maintained along the top bank of the canal/drainage ditch as much as possible; however riparian vegetation growing along the banks of the canal will be removed. Once the drainage ditch is created, it will operate as a seasonally wet/intermittent stream (non-RPW) and will be vegetated with grasses. This ditch will be maintained by RD 784.

Decommissioning of the existing Pump Station No. 3 will also affect a portion of the ponded section of Plumas Lake Canal (RPW 13). The existing pump station will be dismantled and removed at the same time as degradation of the existing levee. Removal of the pump station will require construction of a temporary cofferdam upstream of the pump station in the ponded section of Plumas Lake Canal. The portion of the canal between the pump station and temporary cofferdam (0.11 acre) will be dewatered so that the pump station structure can be removed. Excavation and grading in the dewatered channel will be required to create the head of the floodplain swale, which will drain the setback area to the Feather River.

Degradation of the existing levee (in Segment 2) will result in an increase in the floodway for the Feather River. The topography of the setback area presents the potential for fish stranding following high flow events. Out-of-bank flows will pass over the left bank of the Feather River and into the lower-lying southern portion of the setback area, ponding against the setback levee. The relatively high ground to the west of the existing Feather River levee would prevent the receding flows from the setback area from completely draining to the Feather River. To address this potential problem a swale to guide fish from the setback area to the Feather River has been included in the project design. The swale has been aligned with the outfall channel of the existing Pump Station No. 3 to minimize disturbance to riparian habitat waterside of the existing levee. The swale will have its upstream end at

the existing pump station, which will be removed, and will be constructed by widening and deepening the existing pump station outfall channel. The swale will be about 200 feet wide and approximately 1,000 feet long. It will drain northwest, cutting through the area of higher floodplain adjacent to the Feather River to join the river channel at an elevation of 18 feet (Exhibit 4, Attachment C). Based on the wetland delineation maps (Attachment D), the outfall channel of the existing Pump Station No. 3 consists of an intermittent channel (non-RPW 3) that flows into a perennial backwater channel (RPW 4) connected to the Feather River. Approximately 0.09 acre of non-RPW 3 and 0.2 acre of RPW 4 will need to be widened and deepened to create the new swale. An additional 3.66 acres of adjacent riparian forest/scrub will need to be removed to create the new swale.

Indirect Effects

Indirect effects to waters of the state (totaling 56.89 acres) will be a result of the seasonal flooding of the setback area during and after Stage 2 of the project. When river stage exceeds the elevation of the existing levee alignment (approximately 50 feet mean sea level), Feather River flood water will flow into the setback area. MBK Engineers indicates that flows passing downstream will enter the levee setback area approximately once every 3 years on average, when the rate of flow is approximately 50,000 cubic feet per second (cfs) (TRLIA 2007). This is similar to the frequency of flooding now experienced in areas that are within the currently leveed channel of the Feather River but are outside the low-flow channel. Existing waters of the state in the setback area will be influenced by the flood water such that the hydrology of these waters will be temporarily changed. Intermittent waters that will normally recede or dry up quickly after a storm pulse will be fully inundated with flood water for a longer period of time.

However, the setback area will be designed to facilitate drainage of the flood water back to the Feather River as soon as upstream flows decrease in the river. It is expected that by the end of the wet season, the waters of the state in the setback area will return to normal conditions. It is also expected that seasonal flooding will not result in a loss of functions and values within those waters; rather the seasonal flooding will improve ecosystem functions in the setback area.

AVOIDANCE AND MINIMIZATION MEASURES

Temporary erosion/runoff control measures would be implemented during construction to minimize stormwater pollution resulting from erosion and sediment migration from the construction, borrow, and staging areas. These temporary control measures may include implementing construction staging in a manner that minimizes the amount of area disturbed at any one time; secondary containment for storage of fuel and oil; and the management of stockpiles and disturbed areas by means of earth berms, diversion ditches, straw wattles, straw bales, silt fences, gravel filters, mulching, revegetation, and temporary covers as appropriate. Erosion and stormwater pollution control measures would be consistent with National Pollutant Discharge Elimination System (NPDES) permit requirements and would be included in a stormwater pollution prevention plan (SWPPP).

After completion of construction activities, the temporary facilities would be demobilized and the site would be restored and reclaimed as appropriate. Site restoration activities for areas disturbed by construction activities, including borrow areas and laydown/staging areas, may include regrading, reseeding, construction of permanent diversion ditches, use of straw wattles and bales, application of straw mulch, and other measures deemed appropriate.

COMPENSATORY MITIGATION

Per USACE definition of "permanent" effect, the project will result in 10.93 acres of permanent effects to water of the United States. However, the permanent effects associated with this project will not

necessarily result in permanent loss of these water features. As a result, our opinion is that some of the permanent effects and the indirect effects described previously are self-mitigating. It is our opinion that the 0.28-acre of effects to waters of the United States from decommissioning the existing Pump Station No. 3 and the 3.95 acres of effects to waters of the United States from enhancement of the setback area drainage swale are self-mitigating. The effects in the setback area drainage swale will include removal of 3.66 acres of riparian habitat and excavation and grading in 0.29 acre of waters of the United States. However, these effects will not result in permanent loss of waters of the United States. These effects are a result of expansion and enhancement of the existing drainage swale. Riparian habitat will be removed to allow for widening and deepening of the existing channel. Excavation of the bed and banks of the existing channel will be required to increase the size of the channel. These disturbances would affect existing waters of the United States, but would also result in an increase and enhancement of the water channel. Riparian habitat disturbed but not removed for enhancement of the drainage swale will be allowed to revegetate naturally. Thus, the enhancement of the setback area drainage swale will increase the acreage of open water even though it may decrease the acreage of adjacent riparian habitat. Therefore, it is our opinion that these effects are self-mitigating.

Decommissioning of the existing Pump Station No. 3 will result in the removal of 0.17 acre of riparian habitat and grading and excavation of approximately 0.11 acre of the ponded section of the Plumas Lake Canal. However these effects will not result in permanent loss of waters of the United States. The grading and excavation in the 0.11 acre of the ponded section of the Plumas Lake Canal will be done to remove the existing pump station and to facilitate connection of the Plumas Lake Canal to the setback area drainage swale. Once the existing levee is degraded, the existing Pump Station No. 3 outfall channel will be improved, thus hydraulically connecting the setback area with the Feather River. This will result in the addition of approximately 1.84 acre (400 linear feet) of jurisdictional water of the United States. Therefore, it is our opinion that these effects are self-mitigating.

As stated previously, seasonal flooding of the setback area will indirectly affect existing waters of the United States in the setback area. However, the seasonal flooding is temporary and is not expected to result in the loss of acreage or functions and values of the existing waters within the setback area. Additionally, by allowing flood waters to enter the setback area, the proposed project will expand the Feather River floodway by approximately 1,300 acres. It is expected that the ordinary high water mark of the Feather River will extend some distance into portions of the setback area thus expanding the jurisdictional acreage of the Feather River. Therefore, it is our opinion that these effects are self-mitigating.

Therefore, TRLIA is proposing compensatory mitigation for only the 6.7 acres of effects to waters of the United States that will result in permanent loss of waters. Mitigation for the loss of the 6.7 acres of waters of the United States is proposed to be satisfied through purchase of credits at an USACE-approved mitigation bank. Mitigation is also expected to be required for effects to federal and state-listed species and California Department of Fish and Game (DFG) jurisdictional habitats. TRLIA is proposing to establish a letter of credit with a local mitigation bank and is anticipating close coordination with USACE, USFWS, RWQCB, and DFG to ensure that the mitigation bank meets all mitigation requirements of these agencies.

DEPARTMENT OF THE ARMY PERMIT TO THE U.S. ARMY CORPS OF ENGINEERS

As mentioned previously, TRLIA is seeking an Individual Permit from USACE for the FRLRP Segment 2. The application for an Individual Permit was sent to USACE on June 13, 2007. A copy of the Individual Permit application (Form 4345) is provided as Attachment E.

NOTIFICATION TO THE CALIFORNIA DEPARTMENT OF FISH AND GAME

A request for a Streambed Alteration Agreement, pursuant to Section 1602 of the California Fish and Game Code, was submitted to the California Department of Fish and Game on July 27, 2007. A copy of the Streambed Alteration Notification application form is provided as Attachment F.

CALIFORNIA ENVIRONMENTAL QUALITY ACT DOCUMENTATION

An Environmental Impact Report was prepared for the FRLRP (including Segment 2) to comply with the California Environmental Quality Act. A Notice of Determination was issued for the project on February 6, 2007 (SCH # 2006062071). A copy of the Notice of Determination is included as Attachment G.

We look forward to hearing from you regarding the determination of need for Water Quality Certification for the Feather River Levee Repair Project. Please contact Eric Htain at (916) 414-5800 if you have any questions regarding this submission.

Respectfully submitted,



Eric Htain
Regulatory Specialist

cc: Paul G. Brunner, TRLIA
Ric Reinhardt, MBK Engineers
Larry Dacus, MBK Engineers
Anja Kelsey, EIP Associates
Alberto Pujol, GEI Consultants
Dan Wanket, GEI Consultants
Chris Huitt, DWR

Attachments:

- A—Water Quality Certification Application Form
- B—Check for Application Fee – \$27,396.50
- C—Exhibits 1–4
- D—Maps of the Preliminary Delineation of Waters of the United States
- E—Copy of the Individual Permit Application for USACE (Form 4345)
- F—Streambed Alteration Agreement Application Form
- G—Notice of Determination for the Feather River Levee Repair Project

LITERATURE CITED

Kleinfelder, Inc. 2006 (February 20). Problem Identification Report, TRLIA Phase 4 Feather River and Yuba River Left Bank Levees, Reclamation District No. 784. Sacramento, CA.

Three Rivers Levee Improvement Authority. 2007 (July). Hydraulic and Hydrologic Analysis of the Three Rivers Levee Improvement Authority's Phase IV Project, Feather River Project. Marysville, CA. Prepared by MBK, Engineers, Sacramento, CA

ATTACHMENT A

Water Quality Certification Application Form

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION**

**SECTION 401 WATER QUALITY CERTIFICATION
APPLICATION FORM**

A minimum of \$500.00 processing fee is required however additional fees in accordance with Title 23 CCR § 2200 (a)(2) may also be required. Please use the fee calculator at <http://www.swrcb.ca.gov/cwa401/docs/feecalculator.xls> to determine the total fee. Please include a check payable to the **State Water Resources Control Board**. Attach additional sheets as necessary. Submit the complete form to the appropriate Regional Board office.

1. APPLICANT INFORMATION

2. AGENT INFORMATION*

Applicant: Three Rivers Levee Improvement Authority (TRLIA)	Agent*: EDAW, Inc.
Contact Name: Paul G. Brunner	Contact Name: Eric Htain
Address: 1114 Yuba Street, Suite 218 Marysville, CA 95901	Address: 2022 J Street Sacramento, CA 95811
Phone No: (530) 749-7841	Phone No: (916) 414-5800
Fax No: (530) 749-6990	Fax No: (916) 414-5850

*Complete only if applicable

3. PROJECT DESCRIPTION

a) Project Title: Feather River Levee Repair Project, Segment 2
b) Project Location: Street location _____ (nearest intersection) _____ County: <u>Yuba</u> Section: ____ Township: <u>13N, 14N</u> Range: <u>3E and 4E</u> Latitude: <u>39.090676</u> Longitude: <u>-121.584302</u> *Attach site map with "waters" clearly indicated (e.g., USGS 7 ½ quadrangle map)
c) Project Description: (include purpose and final goal): Please see cover letter for detailed project description.
d) Proposed Schedule: (start-up, duration, and completion dates): September 2007 – October 2009
e) Total Project size: (clearing, grading, other construction activities) <u>1,600</u> acres <u>30,096</u> linear feet (if appropriate)

4. IMPACTED WATER BODIES

a) Name(s) of Receiving Water Body(ies):
Plumas Lake Canal, tributary to Feather River

b) Anticipated potential stream flow during project activity:
1-3 cfs

c) Describe potential impacts to water quality:
Potential impacts to water quality include discharge of fill and excavated materials into waters of the state. See the project description in the cover letter for further details.

d) Indicate in ACRES and LINEAR FEET (*where appropriate*) the proposed **waters of the United States** to be impacted by any discharge other than dredging, and identify the impacts(s) as permanent and/or temporary for each water body type listed below:

Water Body Type	Permanent Impacts		Temporary Impacts	
	(acres)	(linear feet)	(acres)	(linear feet)
Jurisdictional Wetland	0.00	0.00	0.00	0
Riparian	8.44	0.00	0.00	0
Streambed unvegetated	2.49	0.00	0.00	0
Lake/Reservoir	0.00	0.00	0.00	0

c) Indicate the volume of the dredged material (cubic yards) to be discharged to waters of the United States:
No **dredged** material is expected to be discharged to waters of the state. Approximately 62,000 cubic yards of material will be used to fill in waters of the state and 140,000 cubic yards of material will be excavated from waters of the state.

d) Indicate type(s) of material proposed to be discharged to waters of the United States:
Native soil, local soil from borrow areas.

5. COMPENSATORY MITIGATION

a) Indicate in ACRES and LINEAR FEET (*where appropriate*) the total quantity of **waters of the United States** proposed to be Created, Restored and/or Enhanced for purposes of providing Compensatory Mitigation:
Mitigation for loss of waters of the state is proposed to be conducted through purchase of credits at a Mitigation Bank. The details of the bank, bank agency, and cost of credits have not yet been determined.

Water Body Type	Created		Restored		Enhanced	
	(acres)	(linear ft)	(acres)	(linear ft)	(acres)	(linear ft)
Jurisdictional Wetland	0.0	0.0	0.0	0.0	0.0	0.0
Riparian	4.61	0.0	0.0	0.0	0.0	0.0
Streambed	2.09	0.0	0.0	0.0	0.0	0.0
Lake/Reservoir	0.0	0.0	0.0	0.0	0.0	0.0

b) If contributing to a Mitigation or Conservation Bank, indicate the agency, dollar amount, acreage, and water body type (*if applicable*):
Conservation Agency _____
\$ _____ for _____ acres of _____ (*water body type*)
How many acres of this mitigation area qualify as waters of the United States? _____

c) Other Mitigation (*omit if not applicable*):

How many acres of this mitigation area qualify as waters of the United States? _____

d) Location of Compensatory Mitigation Site(s) (*attach map of suitable quality and detail*):

City of Area _____ County _____

Longitude/Latitude __ Township/Range ____

6. OTHER ACTIONS/BEST MANAGEMENT PRACTICES (BMPs)

Briefly describe other actions/BMPs to be implemented to Avoid and/or Minimize impacts to waters of the United States, including preservations of habitats, erosion control measures, project scheduling, flow diversions, etc.

Use of best management practices to limit sedimentation and erosion effects that could result from construction, including perimeter controls such as silt fencing and erosion control weed-free berms and bales.

Preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) and all sedimentation, erosion, and water quality measures contained within.

Implementation of measures provided in regulatory agency permits such as the USACE Section 404 permit, Section 1602 Streambed Alteration Agreement, and NPDES permit.

7. OTHER PERMITS/AGREEMENTS/ETC

a) U.S. Army Corps of Engineers Permit

Indicate the type of ACOE permit (*check one*)

Nationwide Permit No(s)___ Individual Permit No(s): SPK-2007-00578-SA Regional Permit No(s): _____

Have you notified ACOE of project? Yes

Have you reviewed the General Conditions for your ACOE permit? Yes

Have you attached a copy of the application/notification to ACOE? Yes

b) California Department of Fish and Game Lake or Streambed Alteration Agreement

Date of Application: August 13, 2007

Have you attached a copy of the application? Yes

Has the Agreement been issued? No if so, list Agreement number: _____

8. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

a) Indicate the type of CEQA Document required for project and Lead Agency:

Categorical Exemption ___ Negative Declaration ___ Environmental Impact Report X

Has the document been certified/approved, or has a Notice of Exemption been filed? Yes the document was certified (SCH# 2006062071)

If yes date of approval/filing February 6, 2007

If no, expected approval/filing date: _____

Lead Agency Three Rivers Levee Improvement Authority

Submit final or draft copy if available*

b) Threatened or Endangered Species impacted by this project (*list potential*):

Valley elderberry longhorn beetle, giant garter snake, Central Valley steelhead, Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon

9. PAST/FUTURE PROPOSALS BY THE APPLICANT

Briefly list/describe any projects carried out in the last 5 years or planned for implementation in the next 5 years that are in any way related to the proposed activity or may impact the same receiving body of water. Include the estimated adverse impacts from the past or future projects.

The Feather-Bear Rivers Levee Setback Project began in 2006 and levee construction is complete. The project involves the construction of a 2-mile long setback levee along the north end of the Bear River, degradation of portions of the Bear River levee and Feather River levee south of the setback levee, and restoration of riparian habitat along the Bear River south of the new setback levee. This project work resulted in permanent effects to 13.5 acres of waters of the United States. However, adverse effects were mitigated by increasing the acreage of waters of the United States by removing orchard and farmland between the old levee and the new setback levee along the Bear River and by restoring the previous orchard and farmland to riparian habitat.

10. CERTIFICATION

"I certify under penalty of law that this document, including all attachments and supplemental information, were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Print Name: Paul G. Brunner Title: Executive Director

Signature:  Date: 31 July 2007

ATTACHMENT B

Check for Application Fee – \$27,396.50

805-3350-425.23-01 07/18/07 RWDCB

27,396.50

*****27,396.50

COUNTY OF YUBA - MARYSVILLE, CALIFORNIA

DOCUMENT HAS A COLORED BACKGROUND ON WHITE PAPER AND A VOID PANTOGRAPH ON THE FACE

TO THE TREASURER
COUNTY OF YUBA
MARYSVILLE, CALIFORNIA



THIS WARRANT VOID
6 MONTHS
FROM DATE ISSUED

90-2267
1211

17-374072

DATE
08/02/07

CHECK NO.
374072

AMOUNT
*****27,396.50

TWENTY SEVEN THOUSAND THREE HUNDRED NINETY SIX AND 50/100 DOLLARS

TO THE
ORDER
OF

REGIONAL WATER QUALITY CONTROL
BOARD

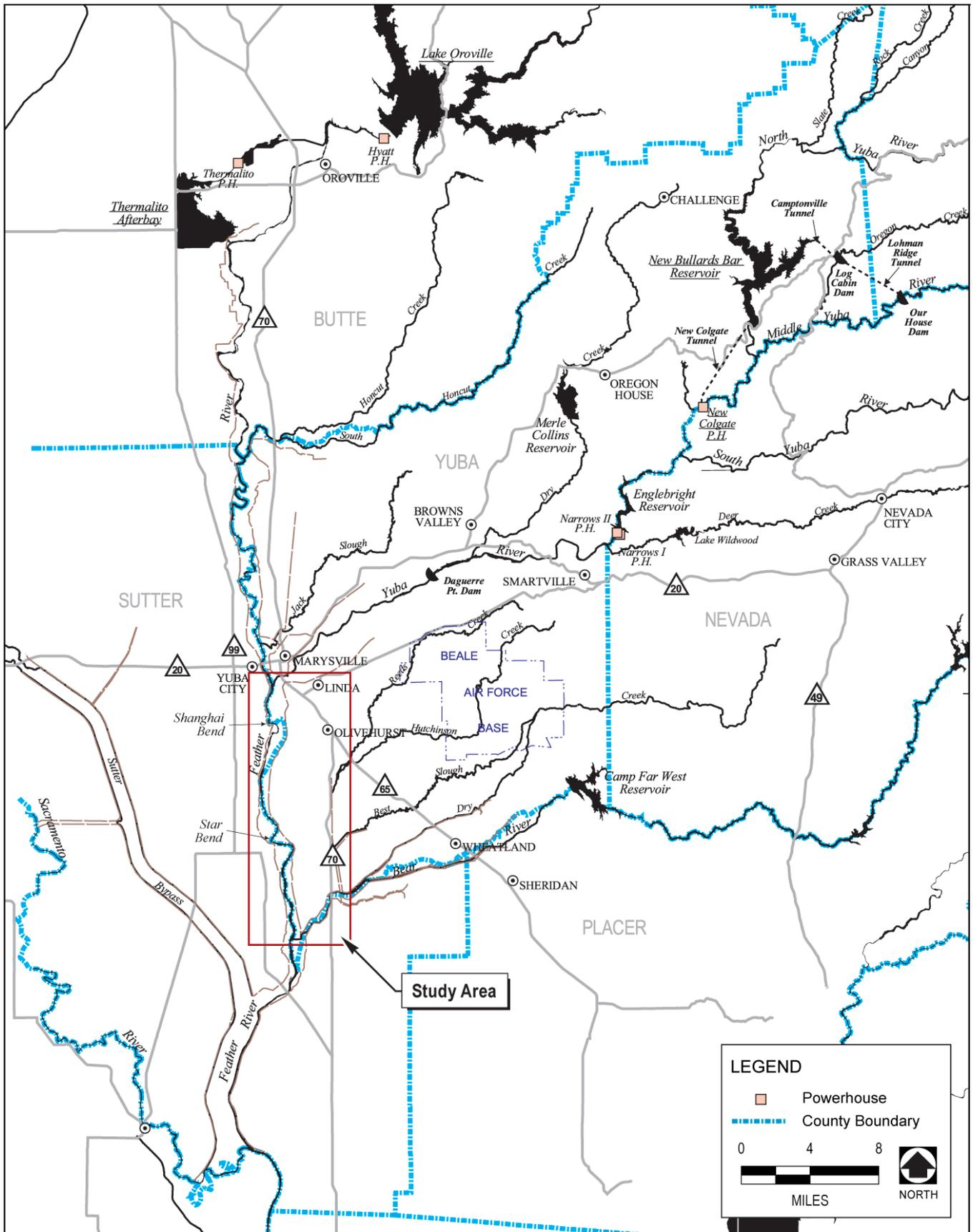
DEAN E. SELLERS, COUNTY AUDITOR-CONTROLLER



⑈17374072⑈ ⑆121122676⑆ 153401958779⑈

ATTACHMENT C

Exhibits 1-4



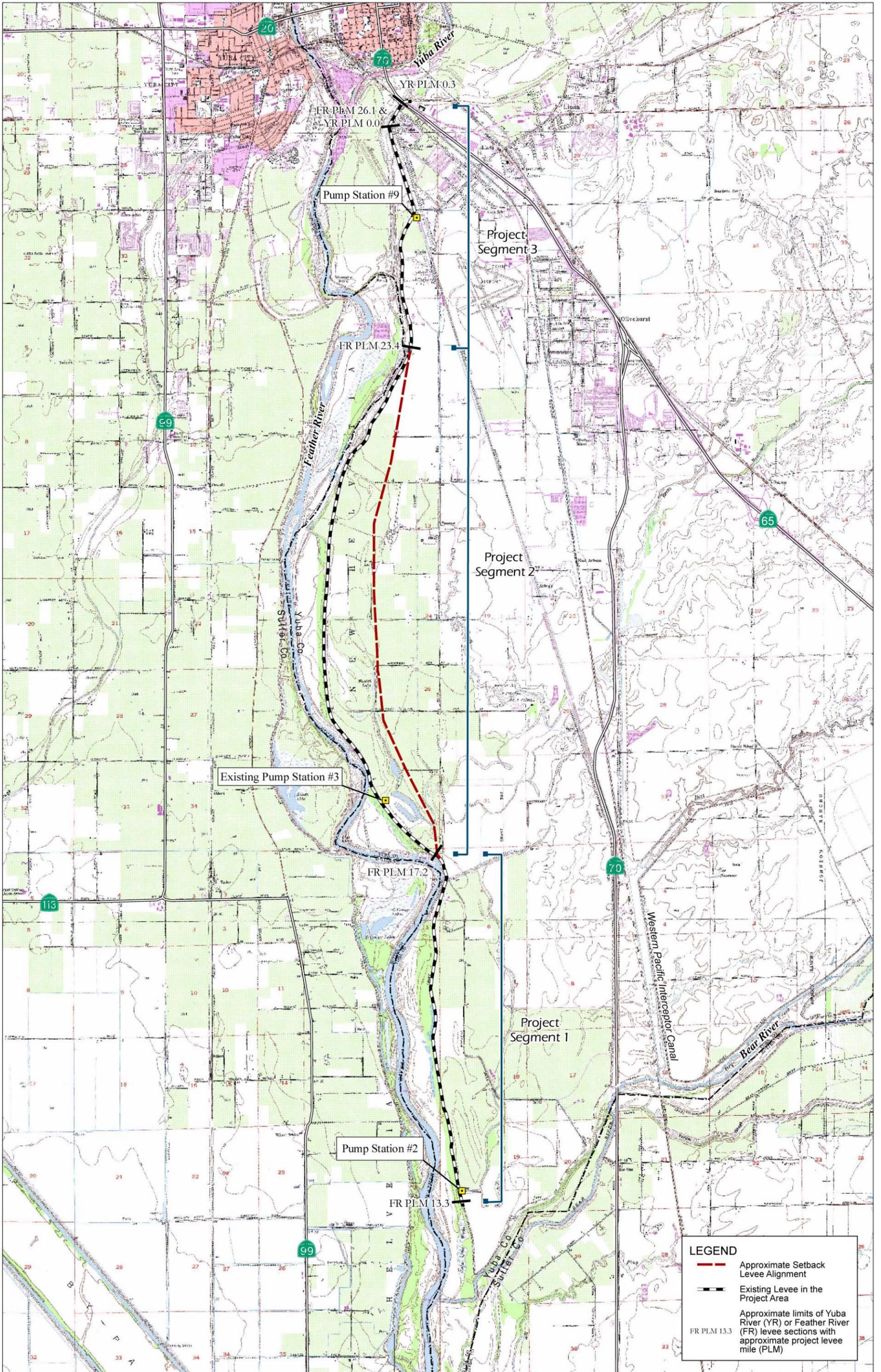
Feather River Levee Repair Project Regional Setting

THREE RIVERS LEVEE
IMPROVEMENT AUTHORITY

114 Yuba Street, Suite 218
Marysville, CA 95901

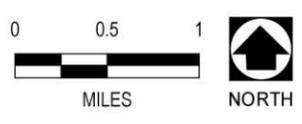
June 2007

Exhibit
1



LEGEND

- Approximate Setback Levee Alignment
- - - Existing Levee in the Project Area
- Approximate limits of Yuba River (YR) or Feather River (FR) levee sections with approximate project levee mile (PLM)



Feather River Levee Repair Project
Project Segments

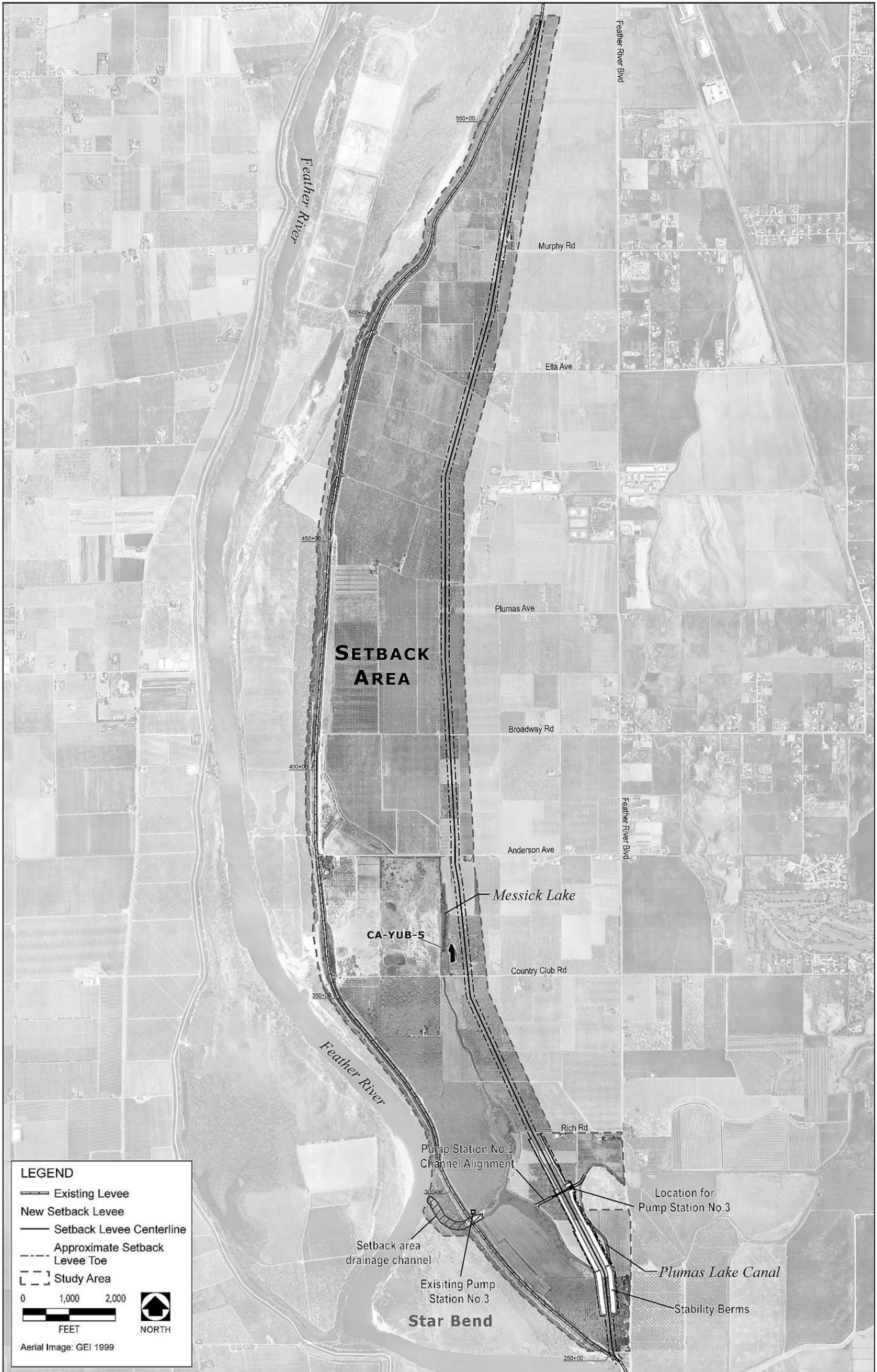
Source: Data Provided by EDAW and GEI 2007

THREE RIVERS LEVEE
IMPROVEMENT AUTHORITY

114 Yuba Street, Suite 218
Marysville, CA 95901

August 2007

Exhibit
2

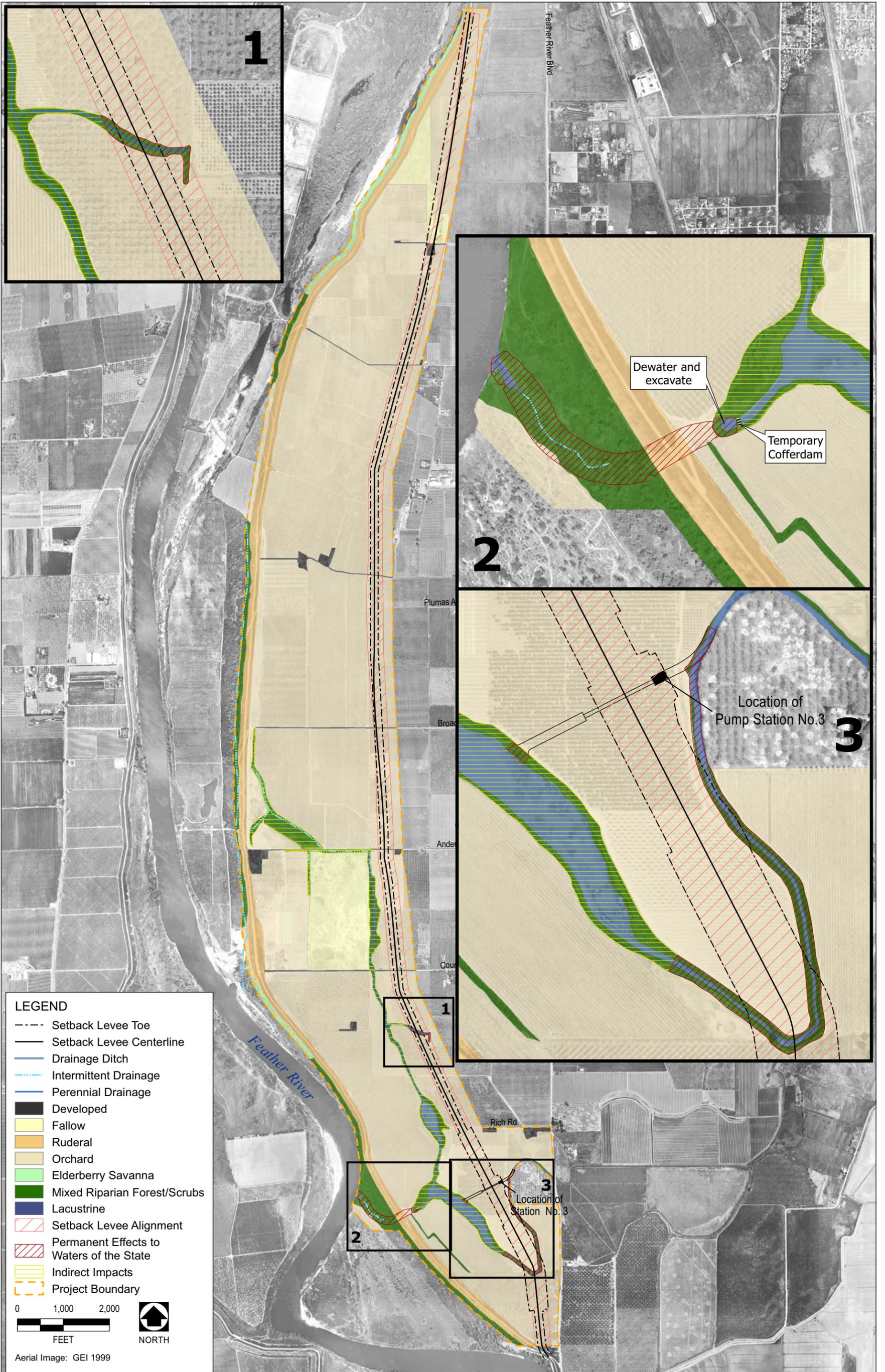


Feather River Levee Repair Project
 Setback Levee in Project Segment 2
Feather River Setback Levee Segment 2 Alignment

**THREE RIVERS LEVEE
 IMPROVEMENT AUTHORITY**
 1114 Yuba Street, Suite 218
 Marysville, CA 95901

Aug 2007

**Exhibit
 3**



Feather River Levee Repair Project
 Setback Levee in Project Segment 2
Effects to Waters of the State

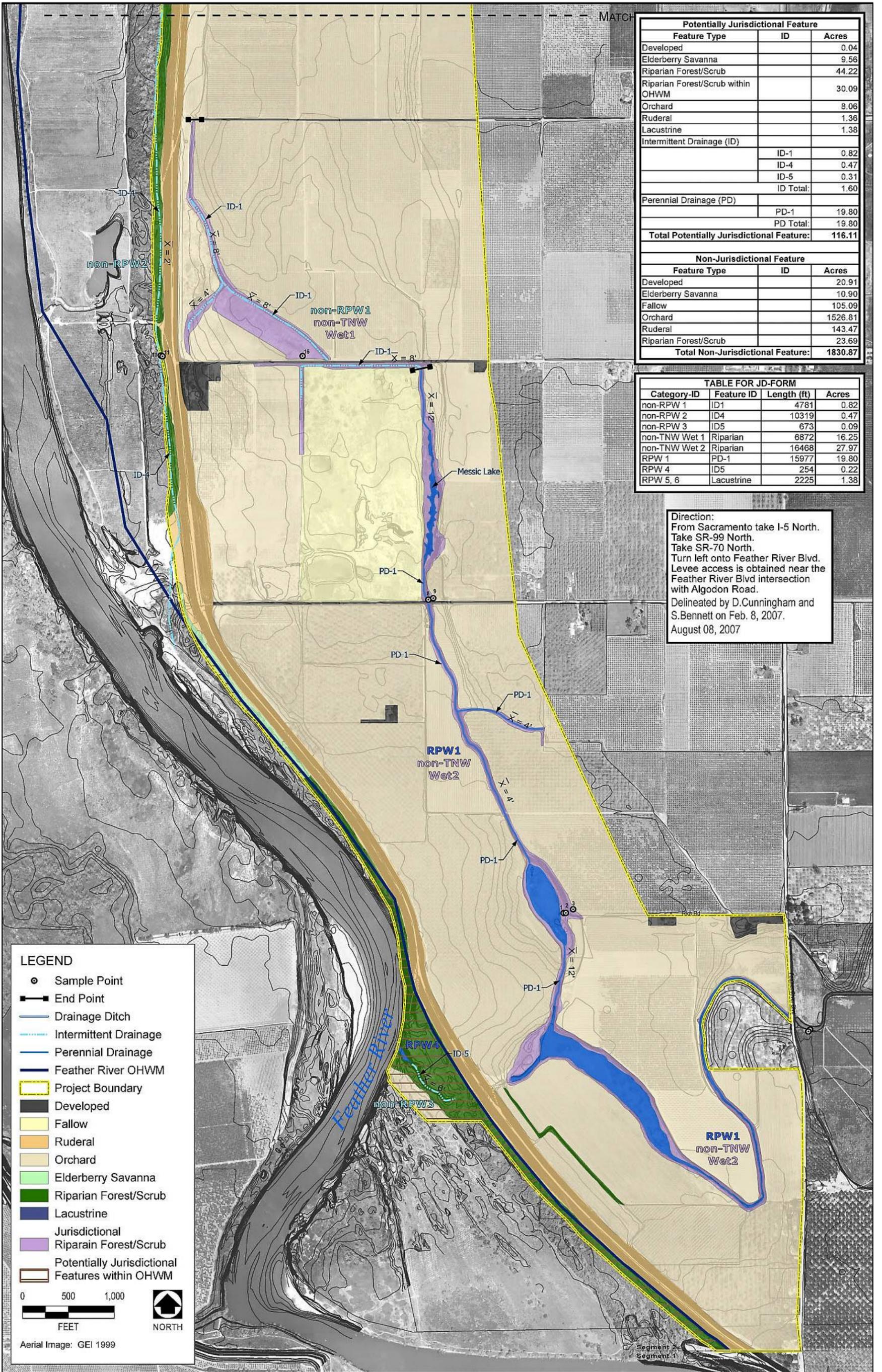
THREE RIVERS LEVEE
 IMPROVEMENT AUTHORITY
 1114 Yuba Street, Suite 218
 Marysville, CA 95901

July 2007

Exhibit
 4

ATTACHMENT D

Maps of the Preliminary Delineation of Waters of the United States



Potentially Jurisdictional Feature		
Feature Type	ID	Acres
Developed		0.04
Elderberry Savanna		9.56
Riparian Forest/Scrub		44.22
Riparian Forest/Scrub within OHWM		30.09
Orchard		8.06
Ruderal		1.36
Lacustrine		1.38
Intermittent Drainage (ID)		
	ID-1	0.82
	ID-4	0.47
	ID-5	0.31
	ID Total:	1.60
Perennial Drainage (PD)		
	PD-1	19.80
	PD Total:	19.80
Total Potentially Jurisdictional Feature:		116.11

Non-Jurisdictional Feature		
Feature Type	ID	Acres
Developed		20.91
Elderberry Savanna		10.90
Fallow		105.09
Orchard		1526.81
Ruderal		143.47
Riparian Forest/Scrub		23.69
Total Non-Jurisdictional Feature:		1830.87

TABLE FOR JD-FORM			
Category-ID	Feature ID	Length (ft)	Acres
non-RPW 1	ID1	4781	0.82
non-RPW 2	ID4	10319	0.47
non-RPW 3	ID5	673	0.09
non-TNW Wet 1	Riparian	6872	16.25
non-TNW Wet 2	Riparian	16468	27.97
RPW 1	PD-1	15977	19.80
RPW 4	ID5	254	0.22
RPW 5, 6	Lacustrine	2225	1.38

Direction:
 From Sacramento take I-5 North.
 Take SR-99 North.
 Take SR-70 North.
 Turn left onto Feather River Blvd.
 Levee access is obtained near the
 Feather River Blvd intersection
 with Algodon Road.
 Delineated by D.Cunningham and
 S.Bennett on Feb. 8, 2007.
 August 08, 2007

LEGEND

- Sample Point
- End Point
- Drainage Ditch
- Intermittent Drainage
- Perennial Drainage
- Feather River OHWM
- Project Boundary
- Developed
- Fallow
- Ruderal
- Orchard
- Elderberry Savanna
- Riparian Forest/Scrub
- Lacustrine
- Jurisdictional Riparian Forest/Scrub
- Potentially Jurisdictional Features within OHWM

0 500 1,000
 FEET

NORTH

Aerial Image: GEI 1999

Feather River Levee Repair Project
 Segment 2
Wetland Delineation - Map 1

**THREE RIVERS LEVEE
 IMPROVEMENT AUTHORITY**
 1114 Yuba Street, Suite 218
 Marysville, CA 95901

August 2007
 Attachment
 D1

Potentially Jurisdictional Feature		
Feature Type	ID	Acres
Developed		0.04
Elderberry Savanna		9.56
Riparian Forest/Scrub		44.22
Riparian Forest/Scrub within OHWM		30.09
Orchard		8.06
Ruderal		1.36
Lacustrine		1.38
Intermittent Drainage (ID)		
	ID-1	0.82
	ID-4	0.47
	ID-5	0.31
	ID Total:	1.60
Perennial Drainage (PD)		
	PD-1	19.80
	PD Total:	19.80
Total Potentially Jurisdictional Feature:		116.11

TABLE FOR JD-FORM			
Category-ID	Feature ID	Length (ft)	Acres
non-RPW 1	ID1	4781	0.82
non-RPW 2	ID4	10319	0.47
non-RPW 3	ID5	673	0.09
non-TNW Wet 1	Riparian	6872	16.25
non-TNW Wet 2	Riparian	16468	27.97
RPW 1	PD-1	15977	19.80
RPW 4	ID5	254	0.22
RPW 5, 6	Lacustrine	2225	1.38

Direction:
 From Sacramento take I-5 North.
 Take SR-99 North.
 Take SR-70 North.
 Turn left onto Feather River Blvd.
 Levee access is obtained near the
 Feather River Blvd intersection
 with Algodon Road.
 Delineated by D.Cunningham and
 S.Bennett on Feb. 8, 2007.
 August 08, 2007

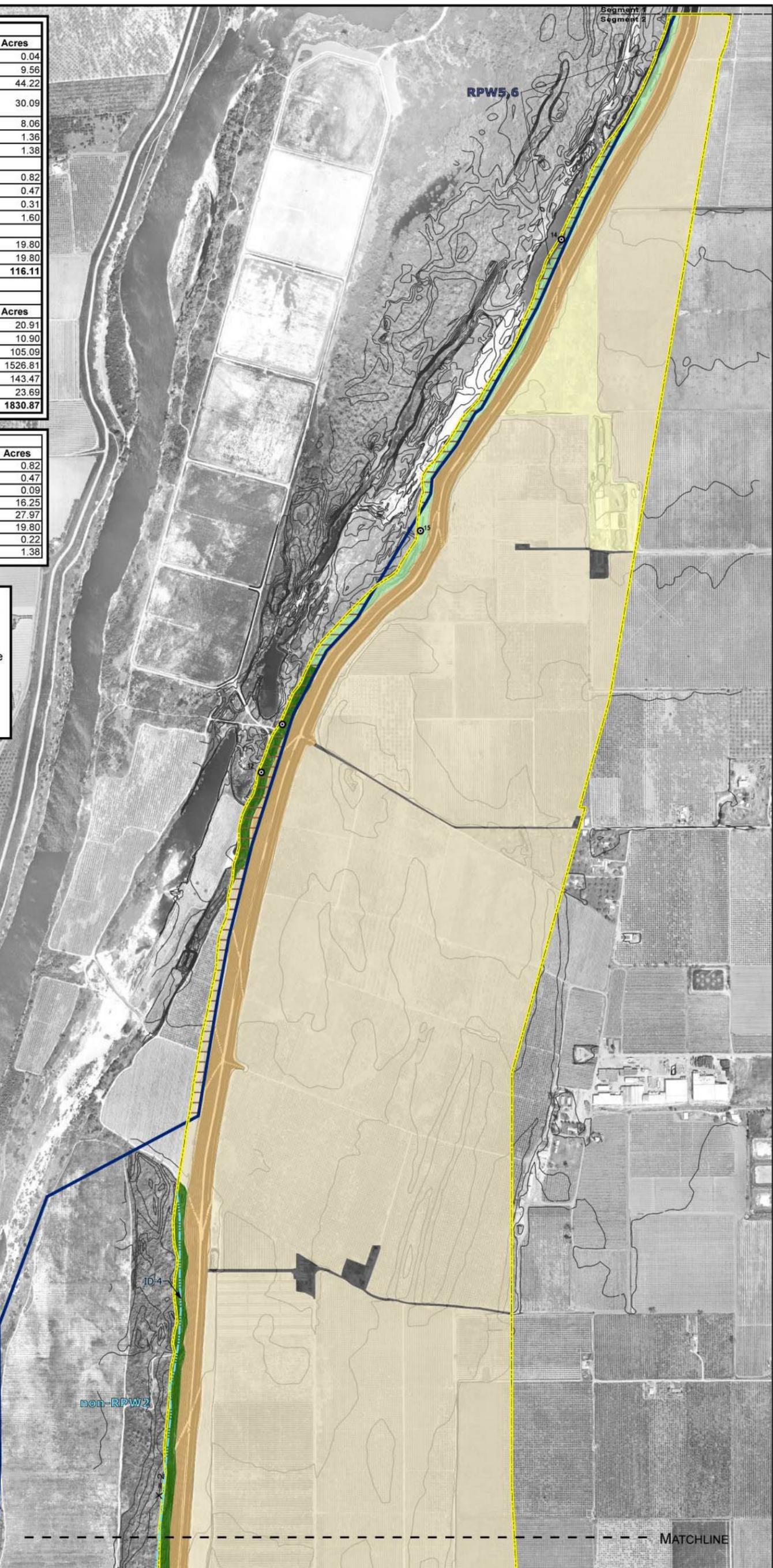
LEGEND

- Sample Point
- End Point
- Drainage Ditch
- Intermittent Drainage
- Perennial Drainage
- Feather River OHWM
- ▭ Project Boundary
- ▭ Developed
- ▭ Fallow
- ▭ Ruderal
- ▭ Orchard
- ▭ Elderberry Savanna
- ▭ Riparian Forest/Scrub
- ▭ Lacustrine
- ▭ Jurisdictional Riparian Forest/Scrub
- ▭ Potentially Jurisdictional Features within OHWM

0 500 1,000
 FEET

NORTH

Aerial Image: GEI 1999



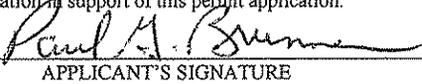
Feather River Levee Repair Project
 Segment 2
Wetland Delineation - Map 2

**THREE RIVERS LEVEE
 IMPROVEMENT AUTHORITY**
 1114 Yuba Street, Suite 218
 Marysville, CA 95901

August 2007
 Attachment
 D2

ATTACHMENT E

Copy of the Individual Permit Application for USACE (Form 4345)

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT		OMB APPROVAL NO.0710-003	
ENG FORM 4345		(33 CFR 325) Expires October 1996	
Public reporting burden for this collection of information is estimated to average 5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-00031, Washington, DC 20503. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.			
PRIVACY ACT STATEMENT			
Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in, or affecting, navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine Uses. Information provided on this form will be used in evaluating the application for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor can a permit be issued.			
One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.			
(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)			
1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED
(ITEMS BELOW TO BE FILLED BY APPLICANT)			
5. APPLICANT'S NAME Three Rivers Levee Improvement Authority Contact: Paul G. Brunner		8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required) EDAW, Inc. Contact: Eric Htain, Regulatory Biologist	
6. APPLICANT'S ADDRESS 1114 Yuba Street, Suite 218 Marysville, CA 95901		9. AGENT'S ADDRESS 2022 J Street Sacramento, CA 95814	
7. APPLICANT'S PHONE NUMBERS W/AREA CODE		10. AGENT'S PHONE NUMBER W /AREA CODE	
a. Residence		a. Residence	
b. Business (530) 749-7841		b. Business (916) 414-5800	
11. STATEMENT OF AUTHORIZATION			
I hereby authorize <u>EDAW, Inc.</u> to act in behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.			
 APPLICANT'S SIGNATURE		<u>June 11, 2007</u> DATE	
NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY			
12. PROJECT NAME OR TITLE (see instructions) Feather River Levee Repair Project, Segment 2			
13. NAME OF WATERBODY, IF KNOWN (if applicable) Plumas Lake Canal, perennial drainage (Messick Lake), unnamed intermittent drainage – tributaries to the Feather River		14. PROJECT STREET ADDRESS (if applicable) N/A	
15. LOCATION OF PROJECT <u>Yuba</u> <u>California</u> COUNTY STATE			
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN, (see instructions) Segment 2 of the Feather River Levee Repair Project is located in southwestern Yuba County (Exhibit 1), and encompasses a portion of the Feather River levee and lands to the east from approximately Star Bend to just south of Shanghai Bend (west of the Yuba County Airport) (Exhibit 2). The project area encompasses approximately 1,947 acres and is located in Townships 13 and 14 North, Ranges 3 and 4 East, on the U.S. Geological Survey 7.5-minute Olivehurst quadrangle. Approximate latitude and longitude coordinates at the north and south ends of the project area are: 39.090676N, -121.584302W and 39.009461N, -121.578301W. The setback levee right-of-way would consist of the setback levee (approximately 170 feet wide from toe of levee to toe of levee), a 50-foot-wide access corridor on each side of the levee, and an approximately 65-foot-wide utility corridor to the east of the landside access corridor.			
17. DIRECTIONS TO THE SITE From Sacramento, take I-5 north. Follow I-5 north and take the SR-99 north turn-off. Take the SR-70 north turn-off from SR-99. Turn left on Feather River Blvd from SR-70. Follow Feather River Blvd to the intersection of Feather River Blvd and Algodon Road. Access to the southern limit of the project is across from the intersection at the Star Bend river access. The upper limit of the project can be accessed by continuing along Feather River Blvd to a farm road approximately 0.9 mile north of Murphy Road. Turn left on the farm road and follow to the Feather River levee.			

18. NATURE OF ACTIVITY (Description of Project, include all features)

See attached Supplemental Sheets for a full description of the project (nature of activity).

19. PROJECT PURPOSE (Describe the reason or purpose of the project, see instructions)

See attached Supplemental Sheets for a full description of the project purpose.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. REASON(S) FOR DISCHARGE

Discharge of fill materials to waters of the United States will be required for the construction of a new setback levee along a portion of the Feather River and relocation of a pump station in project stage 1. The setback levee is being constructed to improve flood control along a segment of the Feather River from approximately Shanghai Bend to Star Bend (north to south respectively). Additional discharge of fill materials will be required in project stage 2 to fill in portions of the Plumas Lake Canal adjacent to the new setback levee when the relocated pump station becomes operable. See the Supplemental Sheets for more details on the reason for discharge.

21. TYPE(S) OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS

Soil from local borrow sites, native soil. See Supplemental Sheets for further details on types of materials being discharged and amount.

22. SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED (see instruction)

The proposed project includes permanently affecting 2.11 acres of perennial drainage (including the Plumas Lake Canal), 0.09 acre of intermittent drainage, 10.05 acres of mixed riparian forest/scrub associated with the perennial and intermittent drainages, and 0.22 acre of a backwater to the Feather River (connected to the intermittent drainage). The proposed project also includes indirectly affecting 16.98 acres of perennial drainage, 39.13 acres of mixed riparian forest/scrub, and 0.82 acre of intermittent drainage. See Supplemental Sheets for further details.

23. IS ANY PORTION OF THE WORK ALREADY COMPLETE? YES NO IF YES DESCRIBE THE COMPLETED WORK

24. ADDRESSES OF ADJOINING PROPERTY OWNERS, LESSEES, ETC., WHOSE PROPERTY ADJOINS THE WATERBODY (if you have more that can be here, please attach a supplemental list).

See attached Individual Permit Application Mailing List for a complete list of the names and addresses of adjacent property owners to the waterbodies affected by the proposed project.

25. LIST OF OTHER CERTIFICATIONS OR APPROVAL/DENIALS RECEIVED FROM OTHER FEDERAL, STATE, OR LOCAL AGENCIES FOR WORK DESCRIBED IN THIS APPLICATION.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
U.S. Fish and Wildlife Service	ESA Section 7 consultation	N/A		To be submitted June 2007	
National Marine Fisheries Service	ESA Section 7 consultation	N/A		To be submitted June 2007	
Regional Water Quality Control Board	Water Quality Certification	N/A		To be submitted July 2007	
Regional Water Quality Control Board	NPDES Permit	N/A		To be submitted August 2007	
Department of Fish and Game	Streambed Alteration Agreement	N/A		To be submitted July 2007	
Department of Fish and Game	CESA consultation	N/A		To be submitted June 2007	
Reclamation Board	Encroachment Permit	N/A		May 1, 2007	

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.



June 11, 2007

Signature of Applicant

Date

Signature of Agent

Date

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

ATTACHMENT F

Streambed Alteration Agreement Application Form

FOR DEPARTMENT USE ONLY				
Date Received	Amount Received	Amount Due	Date Complete	Notification No.
	\$	\$		



STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME
NOTIFICATION OF LAKE OR STREAMBED ALTERATION



Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

1. APPLICANT PROPOSING PROJECT

Name	Paul G. Brunner			
Business/Agency	Three Rivers Levee Improvements Authority (TRLIA)			
Street Address	1114 Yuba Street, Suite 218			
City, State, Zip	Marysville, CA 95901			
Telephone	(530) 749-7841	Fax	(530) 749-6990	
Email	pbrunner@co.yuba.ca.us			

2. CONTACT PERSON (Complete only if different from applicant)

Name	Eric Htain, EDAW, Inc.			
Street Address	2022 J Street			
City, State, Zip	Sacramento, CA 95811			
Telephone	(916) 414-5800	Fax	(916) 414-5850	
Email	eric.htain@edaw.com			

3. PROPERTY OWNER (Complete only if different from applicant)

Name	Multiple property owners in project site - please see Attachment I for list of property owners			
Street Address				
City, State, Zip				
Telephone		Fax		
Email				

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name		Feather River Levee Repair Project, Segment 2		
B. Agreement Term Requested		<input checked="" type="checkbox"/> Regular (5 years or less) <input type="checkbox"/> Long-term (greater than 5 years)		
C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (year)	Ending (year)	Start Date (month/day)	End Date (month/day)	
2007	2009	09/01	10/31	730.00

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.

A.	<input checked="" type="checkbox"/> Standard (Most construction projects, excluding the categories listed below)
B.	<input type="checkbox"/> Gravel/Sand/Rock Extraction (Attachment A) Mine I.D. Number: _____
C.	<input type="checkbox"/> Timber Harvesting (Attachment B) THP Number: _____
D.	<input type="checkbox"/> Water Diversion/Extraction/Impoundment (Attachment C) SWRCB Number: _____
E.	<input type="checkbox"/> Routine Maintenance (Attachment D)
F.	<input type="checkbox"/> DFG Fisheries Restoration Grant Program (FRGP) FRGP Contract Number: _____
G.	<input type="checkbox"/> Master
H.	<input type="checkbox"/> Master Timber Harvesting

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. *Note: The Department may not process this notification until the correct fee has been received.*

	A. Project	B. Project Cost	C. Project Fee
1	Construct setback levee and fill portions of Plumas Lake Canal	\$500,000.00	\$4,000.00
2	Construct new Pump Station No. 3 and pump station channel	\$500,000.00	\$4,000.00
3	Decommission existing Pump Station No. 3 and create setback area channel	\$500,000.00	\$4,000.00
4			
5			
		D. Base Fee (if applicable)	
		E. TOTAL FEE ENCLOSED	\$12,000.00

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

Yes (Provide the information below) No

Applicant: _____ Notification Number: _____ Date: _____

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

No Yes (Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.)

Continued on additional page(s)

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

8. PROJECT LOCATION

A. Address or description of project location. <i>(Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway)</i>				
The Feather River Levee Repair Project, Segment 2 is located in southwestern Yuba County, California. The project site encompasses approximately 1,600 acres and is generally bounded by the Feather River to the west, Shanghai Bend and the Yuba County Airport to the north, Feather River Blvd to the east, and Star Bend to the south. The project is located in Townships 13 and 14 North, Ranges 3 and 4 East, on the U.S. Geological Survey 7.5-minute Olivehurst quadrangle.				
<input type="checkbox"/> Continued on additional page(s)				
B. River, stream, or lake affected by the project.		Plumas Lake Canal, other perennial and intermittent streams		
C. What water body is the river, stream, or lake tributary to?		Feather River		
D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown		
E. County	Yuba			
F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. 1/4 Section
Olivehurst	13 N, 14 N	3 E, 4E		
<input type="checkbox"/> Continued on additional page(s)				
K. Meridian (check one)	<input type="checkbox"/> Humboldt <input checked="" type="checkbox"/> Mt. Diablo <input type="checkbox"/> San Bernardino			
L. Assessor's Parcel Number(s)				
Multiple, please see Attachment I for a list of APNs				
<input type="checkbox"/> Continued on additional page(s)				
M. Coordinates (if available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)				
Latitude/Longitude	Latitude:	39.090676°	Longitude:	-121.584302°
	<input type="checkbox"/> Degrees/Minutes/Seconds <input checked="" type="checkbox"/> Decimal Degrees <input type="checkbox"/> Decimal Minutes			
UTM	Easting:	Northing:		<input type="checkbox"/> Zone 10 <input type="checkbox"/> Zone 11
Datum used for Latitude/Longitude or UTM		<input type="checkbox"/> NAD 27		<input checked="" type="checkbox"/> NAD 83 or WGS 84

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

9. PROJECT CATEGORY AND WORK TYPE (Check each box that applies)

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bank stabilization – rip-rap/retaining wall/gabion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boat dock/pier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boat ramp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bridge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Channel clearing/vegetation management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Culvert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Debris basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diversion structure – weir or pump intake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Filling of wetland, river, stream, or lake	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geotechnical survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat enhancement – revegetation/mitigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Levee	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low water crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Road/trail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sediment removal – pond, stream, or marina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Storm drain outfall structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temporary stream crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utility crossing : Horizontal Directional Drilling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jack/bore	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open trench	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

10. PROJECT DESCRIPTION

- A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.
- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
 - Specify the type and volume of materials that will be used.
 - If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

Please see the cover letter for a detailed project description.

Continued on additional page(s)

- B. Specify the equipment and machinery that will be used to complete the project.

Scrapers, bulldozers, excavators with a long-reach boom, tanks for water storage, dump trucks, bulk bag supplies of bentonite, bentonite and cement storage silos, a cyclone mixer, pumps, generators, slurry tanks to store the blended slurries, motor graders, sheepsfoot compactors, and trailers.

Continued on additional page(s)

- C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).

Yes No (Skip to box 11)

- D. Will the proposed project require work in the wetted portion of the channel?

Yes (Enclose a plan to divert water around work site)
 No

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

12. MEASURES TO PROTECT FISH, WILDLIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

Sediment, aside from fill necessary for project activities, will be limited in watercourses through use of standard BMPS such as silt fence and weed-free straw bales and booms. BMPs used for the project will be identified in the Stormwater Pollution prevention Plan prepared by the construction contractor. Additionally, the project applicant and contractors will abide by any requirements of the National Pollutant Discharge Elimination System permit, the Water Quality Certification, and other regulatory permits.

Continued on additional page(s)

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

A number of measures will be implemented to avoid and minimize the potential for adverse effects to giant garter snake, Swainson's hawk, and valley elderberry longhorn beetle. These measures are incorporated into the California Endangered Species Act Section 2081(b) Incidental Take Permit application for the project (Attachment J).

Continued on additional page(s)

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

Mitigation for the loss of waters of the United States, riparian habitat, and habitat for special-status species is proposed to be satisfied through purchase of credits at an approved mitigation bank. TRLIA is proposing to establish a letter of credit with a local mitigation bank and is anticipating close coordination with USACE, USFWS, and DFG to ensure that the mitigation bank meets all mitigation requirements of these agencies.

In addition, there may be opportunities for native habitat enhancement in the setback area.

Continued on additional page(s)

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

- A. California Regional Water Quality Control Water Quality Certification Applied Issued
- B. State Reclamation Board Encroachment Permit Applied Issued
- C. USACE Section 404 Individual Permit Applied Issued
- D. Unknown whether local, state, or federal permit is needed for the project. (Check each box that applies)

Continued on additional page(s)

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?			
<input checked="" type="checkbox"/> Yes (Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each) <input type="checkbox"/> No (Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared)			
<input type="checkbox"/> Notice of Exemption	<input type="checkbox"/> Mitigated Negative Declaration	<input type="checkbox"/> NEPA document (type): _____	
<input type="checkbox"/> Initial Study	<input checked="" type="checkbox"/> Environmental Impact Report	<input type="checkbox"/> CESA document (type): _____	
<input type="checkbox"/> Negative Declaration	<input checked="" type="checkbox"/> Notice of Determination (Enclose)	<input checked="" type="checkbox"/> ESA document (type): <u>Bio Assessments</u>	
<input type="checkbox"/> THP/ NTMP	<input checked="" type="checkbox"/> Mitigation, Monitoring, Reporting Plan		
B. State Clearinghouse Number (if applicable)	2006062071		
C. Has a CEQA lead agency been determined?	<input checked="" type="checkbox"/> Yes (Complete boxes D, E, and F)		<input type="checkbox"/> No (Skip to box 14.G)
D. CEQA Lead Agency	Three Rivers Levee Improvement Authority		
E. Contact Person	Paul G. Brunner	F. Telephone Number	(530) 749-7841
G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan.			
<p>The Feather River Levee Repair Project (FRLRP) is an element of the Yuba-Feather Supplemental Flood Control Project (Y-FSFCP). The Y-FSFCP is intended to improve flood protection for the entire Reclamation District 784 (RD 784) area in southern Yuba County and includes levee repairs and improvements on the Yuba River, Bear River, Feather River, and WPIC.</p> <p style="text-align: right;"><input type="checkbox"/> Continued on additional page(s)</p>			
H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?			
<input checked="" type="checkbox"/> Yes (Enclose proof of payment) <input type="checkbox"/> No (Briefly explain below the reason a filing fee has not been paid)			
Provided in Attachment H			
<p><i>Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.</i></p>			

15. SITE INSPECTION

Check one box only.	
<input type="checkbox"/> In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.	
<input checked="" type="checkbox"/> I request the Department to first contact (insert name) <u>Paul G. Brunner</u> at (insert telephone number) <u>(530) 749-7841</u> to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.	

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

16. DIGITAL FORMAT

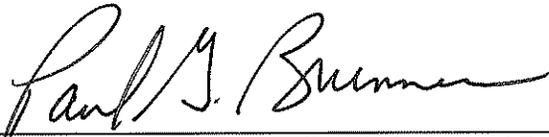
Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

Yes (Please enclose the information via digital media with the completed notification form)

No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.



Signature of Applicant or Applicant's Authorized Representative

31 July 2007

Date

Paul G. Brunner, TRLIA Executive Director

Print Name

ATTACHMENT G

Notice of Determination for the Feather River Levee Repair Project

Notice of Determination

Form C

To:

Office of Planning and Research
For U.S. Mail: Street Address:
P.O. Box 3044 1400 Tenth St.
Sacramento, CA 95812-3044 Sacramento, CA 95814

County Clerk
County of: Yuba
Address: 915 Eighth Street, Suite 107
Marysville, CA 95901

From:

Public Agency: Three Rivers Levee Improvement Authority
Address: 1114 Yuba Street, Suite 218
Marysville, CA 95901
Contact: Paul Brunner, Executive Director
Phone: (530) 749-5679

Lead Agency (if different from above):
Address:
Contact:
Phone:

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2006062071

Project Title: Feather River Levee Repair Project, An Element of the Yuba-Feather Supplemental Flood Control Project

Project Location (include county): Yuba and Feather Rivers, north of the confluence of the Bear River with the Feather River, in Yuba County

Project Description:

The project, as approved, will correct deficiencies in the left bank levees of the Feather and lower Yuba Rivers. The project extends northward from approximately Pump Station No. 2 on the Feather River to near the State Route 70 crossing of the Yuba River. The southern and northern levee segments will be strengthened in place, and the middle levee segment will be set back from approximately Algodon Road to just southwest of the Yuba County Airport.

This is to advise that the Three Rivers Levee Improvement Authority has approved the above described project on February 6, 2007 and has made the following determinations regarding the above described project:

- 1. The project [X] will [] will not have a significant effect on the environment.
2. [X] An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [X] were [] were not made a condition of the approval of the project.
4. A mitigation reporting or monitoring plan [X] was [] was not adopted for this project.
5. Findings [X] were [] were not made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval, or the negative Declaration, is available to the General Public at: the Three Rivers Levee Improvement Authority offices at the address listed above.

Signature (Public Agency) Paul M. Brunner Title Executive Director

Date 2/7/07 Date Received for filing at OPR

ENDORSED FILED

FEB 08 2007

TERRY A. HANSEN, County Clerk
BY AMANDA RUIZ
Deputy Clerk

Authority cited: Sections 21083, Public Resources Code.
Reference Section 21000-21174, Public Resources Code.

Revised 2005

Draft 401 Agreement



California Regional Water Quality Control Board Central Valley Region

Karl E. Longley, ScD, P.E., Chair



Linda S. Adams
Secretary for
Environmental Protection

Sacramento Main Office
11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Phone (916) 464-3291 • FAX (916) 464-4645
<http://www.waterboards.ca.gov/centralvalley>

Arnold
Schwarzenegger
Governor

DRAFT

Mr. Paul G. Brenner
Three Rivers Levee Improvement Authority
1114 Yuba Street, Suite 218
Marysville, CA 95901

CLEAN WATER ACT §401 TECHNICALLY CONDITIONED WATER QUALITY CERTIFICATION FOR DISCHARGE OF DREDGED AND/OR FILL MATERIALS FOR THE FEATHER RIVER LEVEE REPAIR PROJECT, SEGMENT 2, (WDID#5A58CR00046) YUBA COUNTY

WATER QUALITY CERTIFICATION STANDARD CONDITIONS:

1. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to §13330 of the California Water Code and §3867 of Title 23 of the California Code of Regulations (23 CCR).
2. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
3. The validity of any non-denial certification action shall be conditioned upon total payment of the full fee required under 23 CCR §3833, unless otherwise stated in writing by the certifying agency.
4. Certification is valid for the duration of the described project. Discharger shall notify the Regional Board in writing within 7 days of project completion

ADDITIONAL TECHNICALLY CONDITIONED CERTIFICATION CONDITIONS :

In addition to the four standard conditions, the applicant shall satisfy the following:

1. Three Rivers Levee Improvement Authority (TRLIA) shall notify the Board in writing of the start of any in-water activities.
2. Except for activities permitted by the U.S. Army Corps under §404 of the Clean Water Act, soil, silt, or other organic materials shall not be placed where such materials could pass into surface water or surface water drainage courses.
3. The discharge of petroleum products or other excavated materials to surface waters is prohibited.

California Environmental Protection Agency

4. Activities shall not cause turbidity increases in surface waters to exceed:
 - (a) where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU;
 - (b) where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;
 - (c) where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs;
 - (d) where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

Except that these limits will be eased during in-water working periods to allow a turbidity increase of 15 NTU over background turbidity as measured in surface waters 300 feet downstream from the working area. In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.

5. Activities shall not cause settleable matter to exceed 0.1 ml/l in surface waters as measured in surface waters 300 feet downstream from the project.
6. Activities shall not cause visible oil, grease, or foam in the work area or downstream.
7. All areas disturbed by project activities shall be protected from washout or erosion.
8. For any project activities that occur in surface waters or any activities resulting in incidental deposition of material into surface waters, the following monitoring shall be conducted immediately upstream and 300 feet downstream of the work site and the results reported to this office within two weeks:

Parameter	Unit	Type of Sample	Frequency of Sample
Turbidity	NTU	Grab	Every 4 hours during in water work
Settleable Material	ml/l	Grab	Same as above.

9. TRLIA shall immediately stop work and notify the Board if the above criteria for turbidity, settleable matter, oil/grease, or foam are exceeded.
10. TRLIA shall notify the Board immediately of any spill of petroleum products or other organic or earthen materials.
11. TRLIA shall comply with all Department of Fish and Game 1600 requirements for the project.
12. TRLIA must obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activities issued by the State Water Resources Control Board.
13. TRLIA must obtain regulatory coverage under the Irrigated Lands Conditional Waiver or file a Report of Waste Discharge for all parcels it owns which are irrigated and have the potential to discharge waste to surface waters.

14. TRLIA must submit a Management Plan, for review, to the Regional Water Board that addresses what practices will be utilized to prevent waste associated with agricultural operations from entering surface waters of the State.
15. TRLIA shall submit notification to the Regional Water Board when ownership of parcels enrolled in the Irrigated Lands Regulatory Program is transferred.

REGIONAL WATER QUALITY CONTROL BOARD CONTACT PERSON:

Robert J. Solecki, Environmental Scientist
11020 Sun Center Drive #200
Rancho Cordova, California 95670-6114
(916) 464-4684
rsolecki@waterboards.ca.gov

WATER QUALITY CERTIFICATION:

I hereby issue an order certifying that any discharge from the Discharger project (WDID #) will comply with the applicable provisions of §301 ("Effluent Limitations"), §302 ("Water Quality Related Effluent Limitations"), §303 ("Water Quality Standards and Implementation Plans"), §306 ("National Standards of Performance"), and §307 ("Toxic and Pretreatment Effluent Standards") of the Clean Water Act. This discharge is also regulated under State Water Resources Control Board Water Quality Order No. 2003-0017 DWQ "Statewide General Waste Discharge Requirements For Dredged Or Fill Discharges That Have Received State Water Quality Certification (General WDRs)".

Except insofar as may be modified by any preceding conditions, all certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the applicant's project description and the attached Project Information Sheet, and (b) compliance with all applicable requirements of the Regional Water Quality Control Board's Water Quality Control Plan (Basin Plan).

PAMELA C. CREEDON
Executive Officer

Enclosure: Project Information

cc: U.S. Army Corps of Engineers, Sacramento
Mr. Dave Smith, Wetlands Section Chief (WTR-8), U.S. Environmental Protection Agency, Region 9, San Francisco
U.S. Fish & Wildlife Service, Sacramento
Mr. Bill Orme, 401 Certification and Wetlands Unit Chief, State Water Resources Control Board, Sacramento
Mr. Jeff Drongesen, Department of Fish and Game, Sacramento
Mr. Bill Jennings, CA Sportfishing Protection Alliance, Stockton
Mr. Eric Htain, EDAW, Inc., Sacramento

PROJECT INFORMATION

Application Date: 14 August 2007

Applicant: Mr. Paul G. Brenner
Three Rivers Levee Improvement Authority
1114 Yuba Street, Suite 218
Marysville, CA 95901

Applicant Representatives: Mr Eric Htain
EDAW, Inc.
2022 J Street
Sacramento, CA 95811

Project Name: Feather River Levee Repair Project, Segment 2

Application Number: WDID#5A58CR00046

U.S. Army Corps File Number: #SPK-2007-00578-SA

Type of Project: Levee setback and improvement

Project Location: Township 13, 14 North, Range 3 and 4 East, MDB&M. Latitude: 39.090676° and Longitude: 121.584302°

County: Yuba County

Receiving Water(s) (hydrologic unit): Plumas Lake Canal, Messick Lake, and an unnamed intermittent drainage, which are tributary to the Feather River, Sacramento Hydrologic Basin, Marysville Hydrologic Unit #515.10, Lower Bear River HA.

Water Body Type: Wetlands, Streambed

Designated Beneficial Uses: The Basin Plan for the Central Valley Regional Board has designated beneficial uses for surface and ground waters within the region. Beneficial uses that could be impacted by the project include: Municipal and Domestic Water Supply (MUN); Agricultural Supply (AGR); Industrial Supply (IND), Hydropower Generation (POW); Groundwater Recharge, Water Contact Recreation (REC-1); Non-contact Water Recreation (REC-2); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); and Wildlife Habitat (WILD).

Project Description (purpose/goal): **[to be edited – based on additional information we're receiving]** The purpose of the Feather River Levee Repair Project (FRLRP), Segment 2 is to correct identified deficiencies in the left (east) bank levee of the Feather River and the left (south) bank levee of the Yuba River, and consequently to improve flood protection for the Reclamation District (RD) 784 area of Yuba County. The proposed project involves

Feather River Levee Repair Project
Segment 2

construction of a setback levee, relocation of an existing pump station along the existing levee, and degrading portions of the existing Feather River left bank levee.

Approximately 5.7 miles of new setback levee would be constructed within Segment 2 to replace 6.2 miles of existing levee, and the new setback levee would tie into the existing levee at the north end of Segment 1 and the south end of Segment 3. The new levee segment will generally be set back approximately 0.5 mile to the east of the existing levee, except near the northern and southern ends, where it will join the existing levee.

The proposed project will be completed in two stages. Stage 1 includes construction of the setback levee and associated stability berm, construction of a new Pump Station No. 3 and associated facilities, excavation of material within borrow sites (within the setback area and possibly on the land side of the setback levee), and removal and relocation of existing utilities and structures within the setback area. Stage 2 of the project includes degradation of all or portions of the existing Feather River east levee within Segment 2; filling of the Plumas Lake Canal on the water side from the setback levee to where the canal opens into the ponded area, and on the land side from the setback levee to the new Pump Station No. 3; decommissioning of the existing Pump Station No. 3; and recontouring of portions of the levee setback area and an existing drainage to facilitate drainage of water from the levee setback area after flood events.

The project will permanently affect 10.93 acres of waters of the state and indirectly affect 56.89 acres of waters of the state.

Stage 1 Effects

Stage 1 of the project will permanently affect 3.47 acres of state waters. The setback levee alignment will cross portions of the Plumas Lake Canal and a perennial drainage that flows into Plumas Lake Canal. Construction of the setback levee will result in filling 0.74 acres of the Plumas Lake Canal, 0.05 acres of perennial drainage (RPW1), and 2.30 acres of associated riparian forest scrub. Construction of the new pump station will require clearing of vegetation and soil grubbing along the banks of the Plumas Lake Canal at the approach channel and at the outfall. Construction of the approach channel will begin adjacent to the new pump station. Initially, the approach channel will be excavated in uplands. Then, a 400-foot (0.07 acre) portion of the existing west bank of the canal on the land side of the setback levee will be excavated to connect the canal to the approach channel and new pump station. Grading a small portion of the bed of Plumas Lake Canal (0.17-acre) in the approach channel will be required to create the appropriate slope for flows to descend to the pump station. The outfall structure will be made of concrete and will be approximately 125 feet wide by 50 feet long. It will permanently impact 0.14 acre of the ponded section of Plumas Lake Canal on the water side of the setback levee.

Stage 2 Effects

Stage 2 of the project will permanently affect 7.46 acres of state waters. To prevent the potential for underseepage or through-seepage in the new setback levee, approximately 0.93 acre (490 feet) of the Plumas Lake Canal (RPW 1) must be filled in on the west (water) side of the setback levee alignment (from the setback levee alignment to the beginning of the ponded section of the canal). The portion of the Plumas Lake Canal on the east (land) side of the setback levee alignment will also be filled from the setback levee alignment to the new Pump Station No. 3 (totaling 2.3 acres). A shallow ditch will be retained along the canal alignment to

Feather River Levee Repair Project
Segment 2

carry storm runoff from landside areas along the southern portion of the setback levee alignment to Pump Station No. 3. Riparian forest/scrub will be maintained along the top bank of the canal/drainage ditch as much as possible; however, riparian vegetation growing along the banks of the canal will be removed during excavation/modification of the ditch. Once the drainage ditch is created, it will operate as a seasonally wet/intermittent stream (non-RPW) and will be vegetated with grasses. This ditch will be maintained by RD 784.

Removal of the existing Pump Station No. 3 will require construction of a temporary cofferdam upstream of the pump station in the ponded section of Plumas Lake Canal. The portion of the canal between the pump station and temporary cofferdam (0.11 acre) will be dewatered so that the pump station can be removed. Excavation and grading in the dewatered channel will be required to create the head of the floodplain swale, which will drain the setback area to the Feather River.

The relatively high ground west of the existing Feather River levee would prevent the receding flows for the setback area from completely draining to the Feather River. To address this potential problem a swale to guide fish from the setback area to the Feather River has been included in the project design. The swale has been aligned with the outfall channel of the existing Pump station No. 3 to minimize disturbance to riparian habitat on the water side of the existing levee. The swale will have its upstream end at the existing pump station, which will be removed, and will be constructed by widening and deepening the existing pump station outfall channel. The swale will be about 200 feet wide and approximately 1,000 feet long. Based on the wetland delineation maps, the outfall channel of the existing Pump Station No. 3 consists of an intermittent channel (non-RPW 3) that flows into a perennial backwater channel (RPW 4) connected to the Feather River. Approximately 0.09 acres of non-RPW 3 and 0.2 acre of RPW 4 will need to be widened and deepened to create the new swale. An additional 3.66 acres of adjacent riparian forest/scrub will need to be removed to create the new swale.

Preliminary Water Quality Concerns: Construction activities may impact surface waters with increased turbidity and settleable matter.

Proposed Mitigation to Address Concerns: TRLIA will implement Best Management Practices (BMPs) to control sedimentation and erosion. All temporary affected areas will be restored to pre-construction contours and conditions upon completion of construction activities. TRLIA will conduct turbidity and settleable matter testing during in water work, stopping work if Basin Plan criteria are exceeded or are observed.

Fill/Excavation Area: [waiting for information]

Dredge Volume: None

U.S. Army Corps of Engineers Permit Number: Individual Permit

Department of Fish & Game Streambed Alteration Agreement: TRLIA applied for a Streambed Alteration Agreement on 31 July 2007.

Possible Listed Species: Valley elderberry longhorn beetle, giant garter snake, Central Valley steelhead, Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon. **[to be edited based on info in B.A.]**

Status of CEQA Compliance: TRLIA approved the Final Environmental Impact Report for the Feather River Levee Repair Project, An Element of the Yuba-Feather Supplemental Flood Control Project, on 7 February 2007 (State Clearinghouse Number 2006062071). The Notice of Determination was filed with the Yuba County Clerk on 8 February 2007.

Compensatory Mitigation: **[Waiting for information]**

Application Fee Provided: Total fees of \$23,999.50 have been submitted as required by 23 CCR §3833b(2)(A) and by 23 CCR § 2200(e).

DRAFT

DISTRIBUTION LIST

U.S. Army Corp of Engineers
Sacramento District Office
Regulatory Section, Room 1480
1325 J Street
Sacramento, CA 95814-2922

Mr. Dave Smith
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