Meeting of the Central Valley Flood Protection Board
February 25, 2011

Staff Report

U.S. Fish and Wildlife Service
Flood Plain and Side Channel Restoration Project, Stanislaus County

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1.0 – ITEM

Consider approval of Permit No. 18626 (Attachment B)

2.0 – APPLICANT

U.S. Fish and Wildlife Service (USFWS)

3.0 – LOCATION

The project is located on the Stanislaus River near River Mile (RM) 48, east of Oakdale, north of Lancaster Road just downstream of Buttonbush Park. (Stanislaus River, Stanislaus County, see Attachment A)

4.0 – DESCRIPTION

The applicant proposes to excavate approximately 800 cubic yards of material, screen, sort, place back in the channel and regrade; remove non-native vegetation; and place willow cuttings, large woody debris, and boulders within the Stanislaus River Designated Floodway.

5.0 – PROJECT ANALYSIS

The project site is located on the Stanislaus River, near river mile (RM) 48, accessible via Lancaster Road off Highway 108/120. Approximately 3-acres of potential floodplain and 655-feet of side channel habitat are available to be recovered. The proposed project will reclaim the remnant side channel, allowing it to flow at the 1.5-yr return interval (575-cfs). In addition, three cross-channels will be created on the existing alluvial bar to function at higher river flows (3- and 5-yr return intervals), increasing

available habitat, and connecting the reclaimed side channel and floodplain to the main river channel.

Landowners of two adjacent riparian properties (James and Teri Curtis, and Bruce and Diane Lownsbery) originally partnered with Cramer Fish Sciences (CFS) and the Anadromous Fish Restoration Program (AFRP) to conduct this floodplain and side channel habitat restoration project. Through public outreach activities, the landowners, CFS and AFRP attracted two other adjacent landowners (Elena Shepard and Lioubov Kusmenko) to participate in the restoration project. Currently, the properties have a remnant side channel and perched floodplain that inundates only during high flow periods (greater than 3,000 cfs). Following the construction of New Melones Dam, flow exceeded 3,000 cfs periodically in only 9 of the 28 years from 1980 to 2007. This project will reclaim the remnant side channel and reconnect the floodplain at flows of 575 – 1,500 cfs, and enhance juvenile salmonid rearing habitat function with more frequent inundation. Non-native invasive plants will be removed, and a restoration monitoring program will document the recovery of juvenile salmonid rearing habitat and riparian vegetation. See Attachment E for project plans and profiles.

5.1 – Project Background

As in many Central Valley Rivers, historic gold and gravel mining and extensive hydrologic development greatly altered geomorphic and hydraulic conditions salmonids evolved within the Stanislaus River. As gold was retrieved from river sediments, discarded tailings were piled on floodplains. These actions inverted in-channel gravel composition, disconnected side channels and floodplains, and heavily impacted salmon populations. By removing tailings and recovering side channel and floodplain connectivity, productive rearing habitat for juvenile salmonids can potentially be recreated. Rearing habitat is described as the physical conditions, including water temperature, dissolved oxygen (DO), turbidity, substrate size/composition, water velocity and depth, and available cover, which maintain the biological components critical to habitat productivity for fish .

Stanislaus River riparian areas historically supported a diverse, dynamic ecosystem complex of seasonal wetlands, oxbow lakes and extensive forested floodplains, with meandering side channels. A diversity of habitats existed in these shallow-water areas characterized by dense overhanging vegetation, cool water temperatures, large woody debris, low water velocity, and ample invertebrate prey production. Young salmonids exploit food resources in off-channel habitats, find optimal temperatures and escape unfavorable environmental conditions of the main channel such as predators, inadequate cover, and high turbidity. Extensive alterations to Stanislaus River beds

deeply incised the main channel, disconnected side channels and floodplains, and altered riparian vegetation. Regulated flows compounded incision, further eroded beds and banks, coarsened bed material, and degraded spawning habitat value for salmon and trout. The precipitous decline of Central Valley Pacific salmon has led to extirpation of many populations of this ecologically and commercially important fish. According to AFRP, current flood control practices require peak flood discharges to be held and released over a period of weeks. Consequently, river main stems often remain too high and turbid to provide quality rearing habitat. In addition, loss of sinuosity and braiding has reduced total habitat area and degraded remaining habitat with increased velocities. Restoration activities that include floodplain grading and side channel reconnection are among the solutions for this problem. There has been demonstrated value in recovering shallow-water habitats to improve salmonid rearing conditions. With continued loss of habitat quantity and quality, preserving or enhancing these components is vitally important.

Chinook salmon are the most abundant native salmonid within the lower Stanislaus River and demonstrate an example of a keystone species. Therefore, management actions which enhance Chinook salmon health and production will confer benefits to the overall health and production of the lower Stanislaus River and contribute to population maintenance. Juvenile fall-run Chinook salmon emerge in early to mid-winter and are immediately susceptible to the influence of flow. Displacement and dispersal to lower velocity habitats shortly follows, assuming such refugia are present. Side channel and floodplain habitats serve to dissipate flow in areas where these complex in- and off-channel habitat associations exist; thereby providing suitable refugia for newly emerged fish.

Salmonid spawning and rearing habitat in this section of the Stanislaus River has been determined to be deficient because of several limiting factors. Construction of numerous dams on the Stanislaus River has impeded the movement of coarse gravels through the river system. These series of dams and reservoirs trap natural sediment sources. This “armoring” process may render the riverbed to be unsuitable for salmon spawning. Chinook salmon and steelhead trout require these coarse gravels for successful spawning and incubation. Additional large-scale and long-term gravel augmentation has been recommended to increase Chinook salmon habitats. As a second stressor, the regulated reduction of the magnitude and duration of peak flows of winter and spring runoff flows decrease the ability for the river to transport course sediment entering lower sections of the Stanislaus River. Historic gravel mining operations within the river channels and active lower floodplains have added a third stressor to the coarse sediment recruitment and transport needs of the river by depleting the natural supply to downstream sites, altering the migration corridor, and

creating juvenile salmon predator habitat. Compounding these issues, are the perched gravel and cobble terraces left behind from historic gold mining and subsequent scouring of the active channel due to flow regulation. The unnaturally high and coarse floodplain is now effectively disconnected from the entrenched channel, reducing rearing habitat for juvenile Chinook salmon and steelhead, and reducing the ability of the floodplain to develop and support a healthy riparian system.

5.2 – Project Design Review

Board staff has reviewed the following technical documents, provided by the applicant, in preparation of this staff report:

- Flood Plain and Side Channel Restoration Project, Phase I - Design Plans
- Hydraulic Analysis Technical Memorandum s(Flood Impact Assessment)
- Restoration Monitoring Program Plan

5.3 – Hydraulic Analysis

The proposed project was analyzed using the one-dimensional HEC-RAS model. A 100-year event was used for analysis, which represented a flow of 8,000-cfs. The analysis utilized Manning's roughness coefficients of 0.045 for gravel and incised areas and 0.07 in the more vegetated floodplain and overbank areas. The proposed project does not increase the composite roughness coefficients within the floodway because there is a balance between the areas where the roughness is decreased and where willow cuttings, woody debris, and boulders will be placed.

Hydraulic impacts for the project, as designed, are minimal to non-existent. There is an overall change in water surface elevation (WSE) from 0.0-feet to a decrease in WSE of 0.10-feet for specific cross section, as shown in the Tabular hydraulic data in Attachment D. There are no hydraulic changes (i.e. WSE, velocity, etc.) in both the upstream and downstream ends of the project, therefore influence and cumulative effects are also negligible for the system.

Staff has concluded that the project has positive impacts on the floodway hydraulics and balances the environmental needs for restoration activities as well. For these reasons, staff also agrees with the applicant's use of no Long-Term Management Plan (LTMP) for this specific case, as there will be considerable monitoring used to keep an advantageous habitat for the salmonid population and because of the above conclusion that hydraulic impacts to the floodway are actually positive.

5.4 – Geotechnical Analysis

Upon completion of staff review of the design plans, staff is in agreement with the applicant's conclusion that this project does not bear any significant geotechnical impacts on the designated floodway and all work to be completed will be done in a manner that does not pose a threat to the structural integrity of the channel or floodway. All earthwork shall be completed in compliance with Permit No. 18626 (Attachment B) and Title 23 Standards.

5.5 – Project Benefits

The project has the following benefits associated with its completion:

- Rehabilitate and enhance productive juvenile salmonid rearing habitat in the Stanislaus River.
- Restore ecological processes at the proposed project site increasing the availability of productive juvenile salmonid rearing habitat.
- Create habitat conditions suitable for juvenile Chinook rearing (i.e., fry and sub-yearling smolts).
- Preserve native vegetation and utilize existing habitat features to the maximum extent possible.
- Test hypotheses about the benefit of recovered side channels and seasonally inundated floodplain habitats to juvenile salmonids and native plant recruitment.
- Provide a range of outreach opportunities to promote the value of river restoration to stakeholders and local community members.
- Incorporate the values of the community into the project (e.g., aesthetic values, flood control, socio-economic needs of the community, etc.).
- Promote a Stewardship Program for the river that integrates individual projects into the framework.

5.6 – Project Protest (Reason for Hearing)

The proposed project has received a protest from Mr. Curtis Sherrill on September 15, 2010, see Attachment H. Mr. Sherrill's property is next to the Kusmenko property, which is one of the adjacent landowner's, and public supporters to the project. Staff has reviewed Mr. Sherrill's protest and has taken his concerns (that pertain to permitting limits by this Board) into account when the technical review for the project was

conducted. After completing our review, staff has concluded that the proposed project meets both environmental and engineering standards and requirements for design and despite Mr. Sherrill's concerns (regarding clear cutting, loss of wildlife, suffering flood damage, being mislead, and various environmental concerns), as a nearby landowner, we have came to the conclusion that the project is a good representation of how both environmental and public safety needs can be balanced with positive impacts to both. There are no negative hydraulic impacts associated for this project, and staff has concluded that Mr. Sherrill will not be in any more of a flood risk after the completion of the proposed project. Board staff believes the benefits of the project outweigh the negative. This is a restoration project for an area that was historically damaged many years ago from human operations (mining, etc.) and it is a beneficial area, both environmentally and hydraulically, to reclaim habitat and restore the river to its natural state without any hydraulic impacts to the floodway. We commend Mr. Sherrill for his comments, concerns, and interest in the project and staff is encouraging the applicant to better coordinate with Mr. Sherrill, due to his interest in the project, in the future.

5.7 – Additional Staff Analysis

This project does not have a LTMP, for the reasons described in the Sections above, and Board staff is in agreement with the applicant's assessment that the project does not require a LTMP, since the hydraulics reflect the intention of the project and Permit No. 18626 (Attachment B) restricts the project activities to only those included in the project description submitted by the applicant. There will also be an extensive Monitoring Program (Attachment G) for rehabilitation that will take place after the project is completed, which will ensure the removal of non-native vegetation and support the natural recruitment reflected in the hydraulic analysis. This Plan will ensure the project will be completed and left un-attended or un-maintained following its completion. As stated in Section 5.6 above, staff has concluded that the project is an overall benefit to the floodway and the environment.

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

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

- A U.S. Army Corps of Engineers (Corps) Non-Fed letter is expected to be received prior to the February 25, 2011 Board meeting (and will be attached to the permit as Exhibit A) stating that the project does not affect a federally

constructed project and that they have no comments about the project at this time.

- The Corps has completed a letter for consent to an easement for this project, as long as the project complies with all State permitting standards as well. This letter is Attachment F, and is the reason for this project requiring a Board permit. USFWS is the applicant and a Federal agency over which the Board does not usually have regulatory powers over.

7.0 – PROPOSED CEQA FINDINGS

Board staff has prepared the following CEQA determination:

The California Regional Water Quality Control Board, as lead agency under CEQA, approved the project (Lancaster Road Side Channel and Floodplain Restoration Project, SCH No. 2010088189) on August 13, 2010 and determined that the project was categorically exempt under Class 33 Categorical Exemption (CEQA Guidelines Section 15333) covering small habitat restoration projects less than five acres.

The Board, acting as a responsible agency under CEQA, has reviewed the California Regional Water Quality Control Board determination and has independently determined that the project is exempt from CEQA under exempt under Class 33 Categorical Exemption (CEQA Guidelines Section 15333) covering small habitat restoration projects less than five acres. Compliance with CEQA Guidelines Section 15333 is based on the following:

Project plans show the project site is less than five acres in size;

(a) There would be no significant adverse impact on endangered, rare or threatened species or their habitat. The National Marine Fisheries Service June 25, 2010 consultation pursuant to the Endangered Species Act determined that the project is not likely to adversely impact critical habitat;

(b) There are no hazardous materials at or around the project site that may be disturbed or removed. The Regional Water Quality Control Board Section 401 Water Quality Certification (081610 WDID #5B50CR00049), prohibits the discharge of petroleum products or other excavated materials to surface waters and requires monitoring of water quality;

(c) The project will not result in impacts that are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. The implementation of the Lancaster Road Side Channel & Floodplain Project Restoration Monitoring Program will determine if the project was installed according to the design standards;

(d) Examples of small restoration projects may include, but are not limited to stream or river bank revegetation, the primary purpose of which is to improve habitat for amphibians or native fish. The submitted project plans and designs improves habitat for native fish.

8.0 – SECTION 8610.5 CONSIDERATIONS

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

   The Board has considered all the evidence presented in this matter, including the original and updated applications, past and present Staff Reports and attachments. The Board has also considered all letters and other correspondence received by the Board and in the Board's files related to this matter.

   The custodian of the file is Executive Officer Jay Punia at the Central Valley Flood Protection Board.

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

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

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

   This project does not have significant impacts on the State Plan of Flood Control, as the project does not impair the structural or hydraulic functions of the system.

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

There are no other foreseeable projected future events that would impact this project.

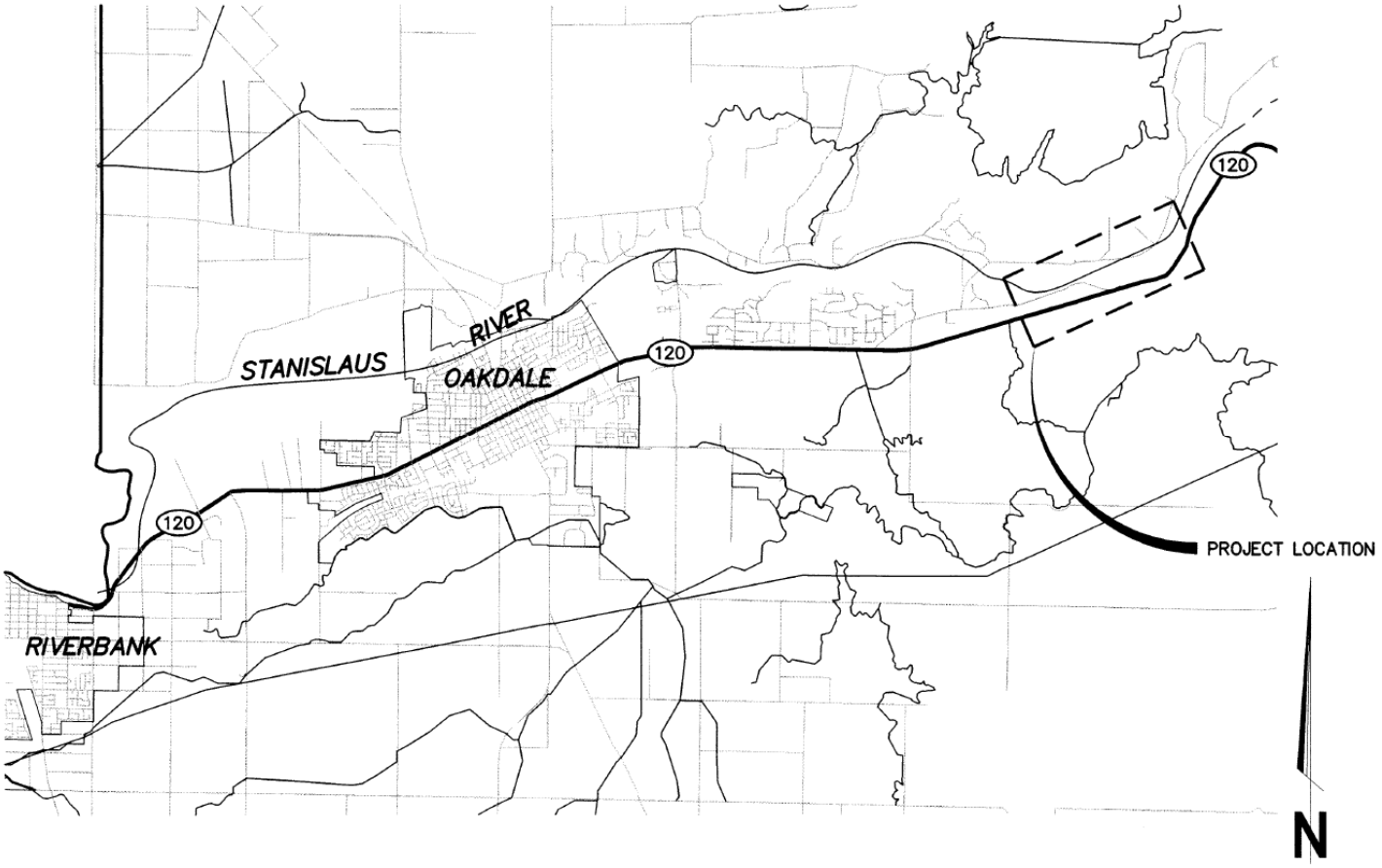
9.0 – STAFF RECOMMENDATION

Staff recommends that the Board adopt Resolution No. 11-09 (Attachment C), the Board's CEQA findings, approve Permit No. 18626, and an order to direct the Executive Officer to take necessary actions to prepare and execute the permit and to determine the project to be exempt from CEQA.

10.0 – LIST OF ATTACHMENTS

A. Location Maps
B. Draft Permit No. 18626
   Exhibit A: Corps Non-Fed Letter (expected prior to 2-25-11 Board mtg.)
C. Resolution No. 11-09
D. Hydraulic Tabular Data
E. Overall Plan and Profiles
F. Corps Consent Letter
G. Restoration Monitoring Program
H. Protest Letter from Mr. Curtis Sherrill, received on September 15, 2010
I. National Marine Fisheries Letter, received on June 29, 2010
J. California Regional Water Quality Control Board Certification
   WDID# 5B50CR00049

Design Review:	Nancy C. Moricz, P.E.
Environmental Review:	Andrea Mauro, E.S.
	James Herota, E.S.
Document Review:	David R. Williams, P.E. – Senior Engineer
	Dan S. Fua, P.E. – Supervising Engineer
	Len Marino, P.E. – Chief Engineer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RIVERBANK
PROJECT LOCATION
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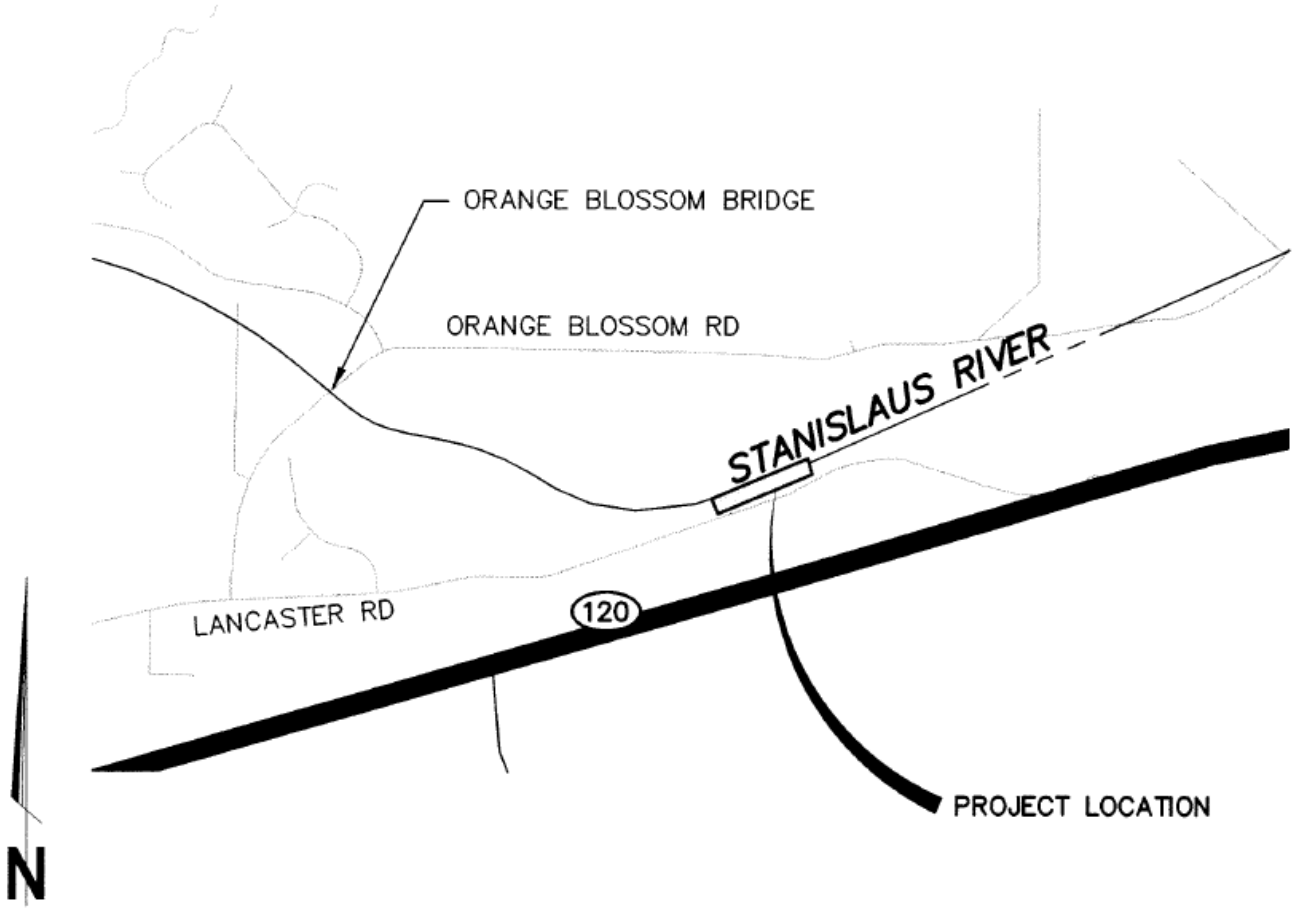
ORANGE BLOSSOM BRIDGE
ORANGE BLOSSOM RD
STANISLAUS RIVER
LANCASTER RD
120
PROJECT LOCATION
N

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STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18626 BD

This Permit is issued to:

U.S. Fish and Wildlife Service
4001 N. Wilson Way
Stockton, California 95205

To excavate approximately 800 cubic yards of material, screen, sort, place back in the channel and regrade; remove non-native vegetation; and place willow cuttings, large woody debris, and boulders within the Stanislaus River Designated Floodway. The project is located east of Oakdale, north of Lancaster Road just downstream of Buttonbush Park (Section 3, T2S, R11E, MDB&M, Stanislaus River, Stanislaus County).

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

(SEAL)

Dated: _____

_____
Executive Officer

GENERAL CONDITIONS:

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

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

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

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

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

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

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

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

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

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

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

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

SPECIAL CONDITIONS FOR PERMIT NO. 18626 BD

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

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

FIFTEEN: There shall be no plantings within the project area under this permit, except that of native grasses and willow cuttings at the locations specified on the submited drawings. The permittee shall be required to apply for a separate or modified permit for any proposed plantings within the floodway that are not given in the project description.

SIXTEEN: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

SEVENTEEN: The permittee is responsible for all liability associated with construction, operation, and maintenance of the permitted facilities and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards,

commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages arising from the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion

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

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

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

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

TWENTY-TWO: Other than with respect to work expressly permitted by this permit, the project area shall be restored to the condition that existed prior to the start of work.

TWENTY-THREE: Temporary staging, formwork, stockpiled material, equipment, and temporary buildings shall not remain in the floodway during the flood season from November 1 to July 15.

TWENTY-FOUR: The ground surface shall be kept clear of fallen trees, branches, and debris.

TWENTY-FIVE: All debris generated by this project shall be disposed of outside the floodway.

TWENTY-SIX: After each period of high water, debris that accumulates at the site shall be completely removed from the floodway.

TWENTY-SEVEN: The Central Valley Flood Protection Board may require clearing and/or pruning of trees planted within the floodway in order to minimize obstruction to floodflows.

TWENTY-EIGHT: Cleared trees and brush (or prunings therefrom) shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1 to July 15.

TWENTY-NINE: Areas where plantings are lost to erosion shall not be replanted.

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

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

remove such at the permittee's expense.

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

THIRTY-THREE: Backfill material for excavations shall be placed in 4- to 6-inch layers and compacted to at least the density of the adjacent, firm, undisturbed material.

THIRTY-FOUR: Density tests by a certified soils laboratory will be required to verify compaction of backfill within the floodway.

THIRTY-FIVE: The permittee shall submit as-built drawings to the Department of Water Resources' Flood Project Inspection Section upon completion of the project.

THIRTY-SIX: The permittee shall operate and maintain the permitted encroachment(s) and the project works within the utilized area in the manner required and as requested by the authorized representative of the Department of Water Resources or any other agency responsible for maintenance. Maintenance may include actions to preserve the integrity of the flood control system under emergency conditions. These actions will be taken at the sole expense of the permittee.

THIRTY-SEVEN: In the event that floodway or channel erosion injurious to the adopted plan of flood control occurs at or adjacent to the permitted encroachment(s), the permittee shall repair the eroded area and propose measures, to be approved by the Central Valley Flood Protection Board, to prevent further erosion.

THIRTY-EIGHT: If the proposed project result(s) in an adverse hydraulic impact, the permittee shall provide appropriate mitigation measures, to be approved by the Central Valley Flood Protection Board, prior to implementation of mitigation measures.

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

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

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

FORTY-TWO: The permittee shall be responsible for securing any necessary permits incidental to habitat manipulation and restoration work completed in the flood control project, and will provide any

biological surveying, monitoring, and reporting needed to satisfy those permits.

FORTY-THREE: All conservation easements established within this project area shall be junior to flowage and maintenance easements within the project limits.

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

FORTY-FIVE: The permittee shall contact the Department of Water Resources by telephone, (916) 574-0609, and submit the enclosed postcard to schedule a preconstruction conference. Failure to do so at least 10 working days prior to start of work may result in delay of the project.

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

FORTY-SEVEN: The permittee shall comply with all conditions, if any, set forth in the letter from the U.S. Army Corps of Engineers dated XXXXXX, which is attached to this permit as Exhibit A and is incorporated by reference.

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

ATTACHMENT B – Exhibit A: Corps Letter

The letter have not been received by Board staff; however, it is expected to arrive prior to the Board Meeting on February 25, 2011

STATE OF CALIFORNIA
THE RESOURCES AGENCY
CENTRAL VALLEY FLOOD PROTECTION BOARD

RESOLUTION NO. 11-09

FINDINGS AND DECISION AUTHORIZING ISSUANCE OF
ENCROACHMENT PERMIT NO. 18626
U.S. FISH AND WILDLIFE SERVICE

WHEREAS, U.S. Fish and Wildlife Service proposes the Lancaster Road Side Channel & Floodplain Restoration Project located east of Oakdale, north of Lancaster Road, downstream of Buttonbush Park; and

WHEREAS, U.S. Fish and Wildlife Service submitted Encroachment Permit Application 18626 to the Central Valley Flood Protection Board (Board) on August 3, 2010. The application proposes to excavate approximately 800 cubic yards of material, screen, sort, place back in the channel and regrade; remove non-native vegetation; and place willow cuttings, large woody debris, and boulders, within the Stanislaus River Designated Floodway; and

WHEREAS, the California Regional Water Quality Control Board as lead agency under the California Environmental Quality Act, Public Resources Code sections 21000 et seq. ("CEQA") determined that the project was categorically exempt under Class 33 Categorical Exemption (CEQA Guidelines Section 15333) covering small habitat restoration projects less than five acres; and

WHEREAS, the Central Valley Flood Protection Board has conducted a hearing and has reviewed the application, the Report of its staff, the documents and correspondence in its file, and the environmental documents prepared by the U.S. Fish and Wildlife Service; and

NOW, THEREFORE, BE IT RESOLVED THAT,

Findings of Fact

1. The Central Valley Flood Protection Board hereby adopts as findings the facts set forth in the Staff Report.

2. The Board has reviewed the Attachments listed in the Staff Report.

CEQA Findings

3. The Central Valley Flood Protection Board acting as a responsible agency, has independently reviewed the California Regional Water Quality Control Board determination and has independently determined that the project is categorically exempt under Class 33 Categorical Exemption (CEQA Guidelines Section 15333) covering small habitat restoration projects less than five acres.

4. The Central Valley Flood Protection Board, after consideration of the CEQA categorical exemption, adopts the project description, analysis and findings which are relevant to activities authorized by issuance of final encroachment Permit No. 18626.

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

Findings pursuant to Water Code section 8610.5

6. **Evidence Admitted into the Record**. The Board has considered all the evidence presented in this matter, including the original and updated applications, past and present Staff Reports and attachments. The Board has also considered all letters and other correspondence received by the Board and in the Board's files related to this matter.

   The custodian of the file is Executive Officer Jay Punia at the Central Valley Flood Protection Board.

7. **Best Available Science**. In making its findings, the Central Valley Flood Protection Board has used the best available science relating to the issues presented by all parties.

8. **Effects on State Plan of Flood Control**. This project does not have significant impacts on the State Plan of Flood Control, as the project does not impair the structural or hydraulic functions of the system.

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

Other Findings/Conclusions regarding Issuance of the Permit

10. This resolution shall constitute the written decision of the Central Valley Flood Protection Board in the matter of Permit No. 18626.

Approval of Encroachment Permit No. 18626

11. Based on the foregoing, the Central Valley Flood Protection Board hereby approves the Lancaster Road Side Channel & Floodplain Restoration Project and approves issuance of Encroachment Permit No. 18626 in substantially the form provided in Attachment B of the Staff Report.

12. The Central Valley Flood Protection Board directs the Executive Officer to take the necessary actions to prepare and execute the permit and related documents for the U.S. Fish and Wildlife Service, Lancaster Road Side Channel & Floodplain Restoration Project.

PASSED AND ADOPTED by vote of the Board on _____, 2011.

_____
Benjamin F. Carter
President

_____
Francis Hodgkins
Secretary

Table 1 –Modeled Water Surface Elevations at 8,000 cfs under Existing and Proposed Conditions

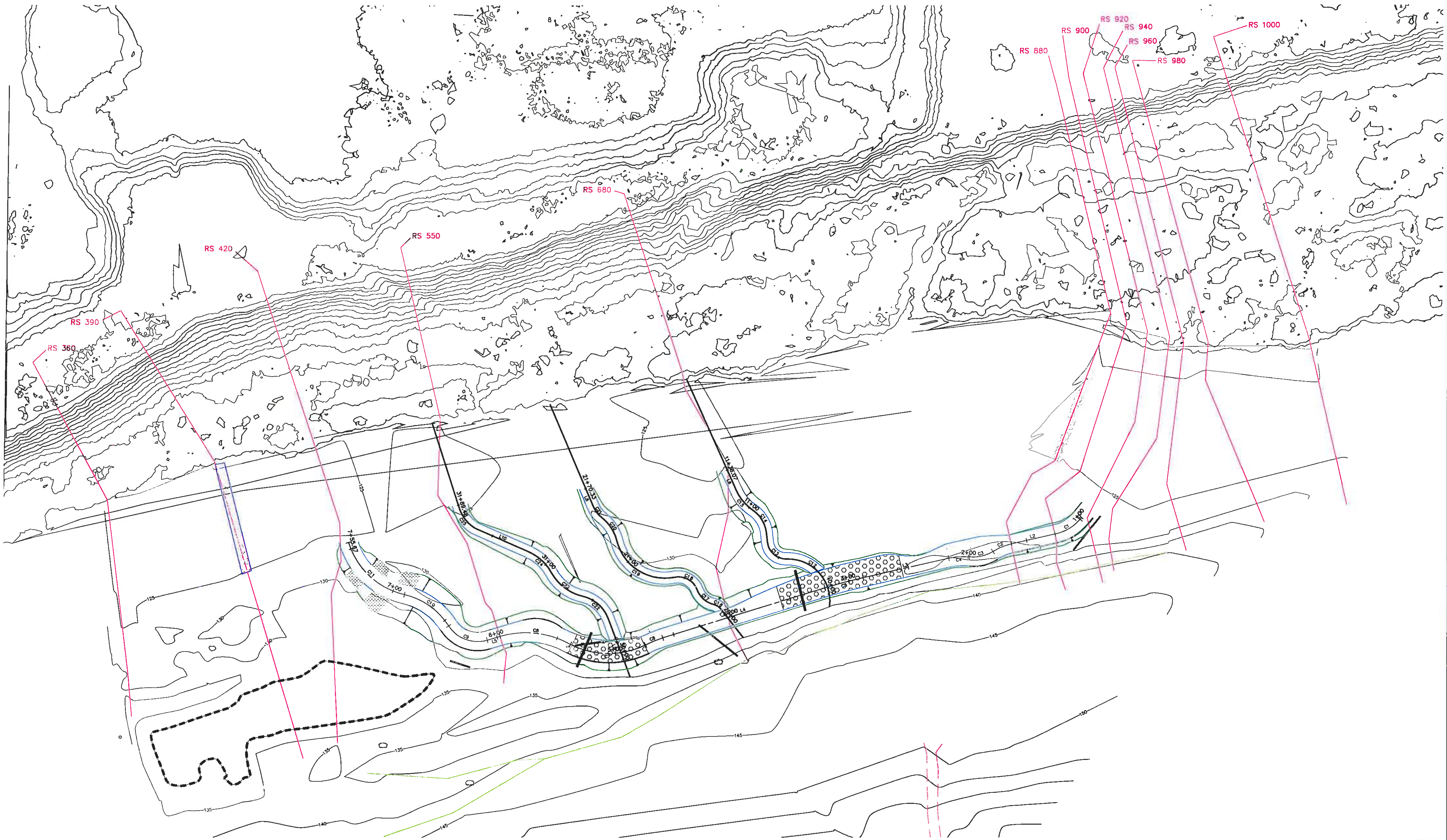
Cross-Section	Modeled Water Surface Elevation under Existing Conditions	Modeled Water Surface Elevation under Proposed Conditions
1000	135.6	135.5
980	135.6	135.5
960	135.6	135.5
940	135.4	135.4
920	135.5	135.4
900	135.4	135.4
880	135.4	135.4
680	135.1	135.0
550	134.8	134.8
420	134.8	134.8
390	134.5	134.5
360	134.4	134.4

SUMMARY

The proposed flood plain and secondary channel grading, produces little or no changes in water surface elevations throughout the project at the 8,000 cfs, as modeled in HEC-RAS. The changes are insignificant compared to the topographic data and modeling accuracy.

STANISLAUS RIVER RESTORATION

PROPOSED CONDITIONS HEC-RAS MODEL FOR MAIN AND PROPOSED SECONDARY CHANNELS



No.	REVISION	BY	DATE

FLOD PLAIN AND SIDE CHANNEL RESTORATION PROJECT, STANISLAUS RIVER, CA, PHASE I
CRAMER FISH SCIENCES
STANISLAUS COUNTY

HEC-RAS CROSS-SECTION LOCTIONS

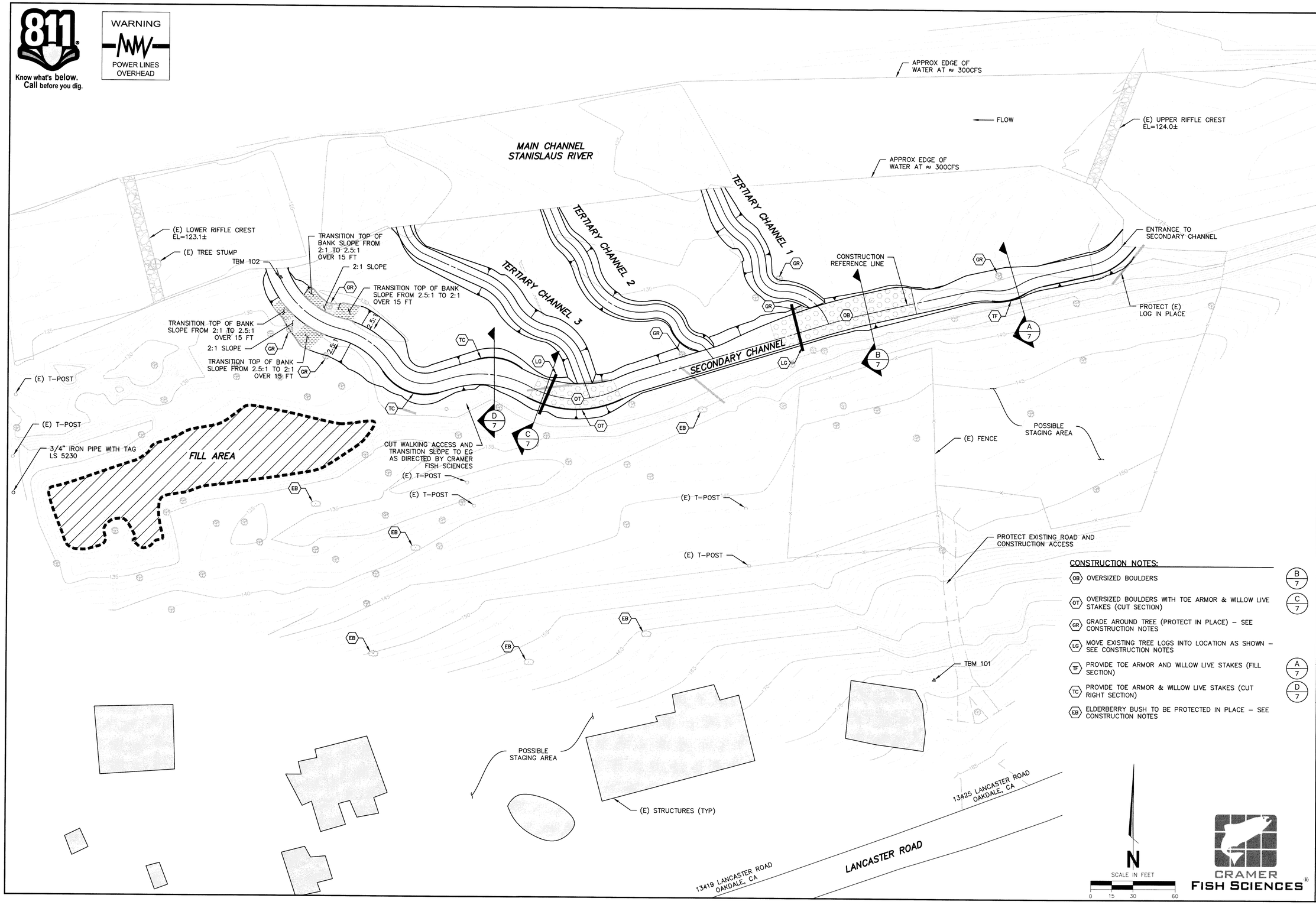
EST. 1968 PROVOST & PRITCHARD CONSULTING GROUP
An Employee Owned Company
132 S. 3RD AVENUE
OAKDALE, CALIFORNIA 95361
209/845-8700 FAX 209/845-8614
www.ppeng.com

DESIGN ENGINEER: E. ABRAHAMSEN	
LICENSE NO: CE 52,000	
DRAFTED BY: A. DAZA	CHECKED BY: S. OVERTON
SCALE: AS SHOWN	
DATE: 05/03/10	
JOB NO: 195509C1	
DWG. NO:	
SHEET 1 OF 1	

ATTACHMENT D - Hydraulic Tabular Data

811 Know what's below. Call before you dig.

WARNING
POWER LINES OVERHEAD



CONSTRUCTION NOTES:

- (OB) OVERSIZED BOULDERS — B/7
- (OT) OVERSIZED BOULDERS WITH TOE ARMOR & WILLOW LIVE STAKES (CUT SECTION) — C/7
- (GR) GRADE AROUND TREE (PROTECT IN PLACE) – SEE CONSTRUCTION NOTES
- (LG) MOVE EXISTING TREE LOGS INTO LOCATION AS SHOWN – SEE CONSTRUCTION NOTES
- (TF) PROVIDE TOE ARMOR AND WILLOW LIVE STAKES (FILL SECTION) — A/7
- (TC) PROVIDE TOE ARMOR & WILLOW LIVE STAKES (CUT RIGHT SECTION) — D/7
- (EB) ELDERBERRY BUSH TO BE PROTECTED IN PLACE – SEE CONSTRUCTION NOTES

N
SCALE IN FEET
0 15 30 60

CRAMER FISH SCIENCES

No.	REVISION	BY	DATE

REGISTERED PROFESSIONAL ENGINEER ERIC A. ABRAHAMSEN CIVIL STATE OF CALIFORNIA
DATE SIGNED: 06/24/10

FLOOD PLAIN AND SIDE CHANNEL RESTORATION PROJECT, STANISLAUS RIVER , CA, PHASE I
CRAMER FISH SCIENCES
STANISLAUS COUNTY

SITE PLAN

EST. 1955
PROVOST & PRITCHARD CONSULTING GROUP
An Employee Owned Company
132 S. 3RD AVENUE
OAKDALE, CALIFORNIA 95361
209/845-3737 FAX 209/845-3814
www.ppeng.com

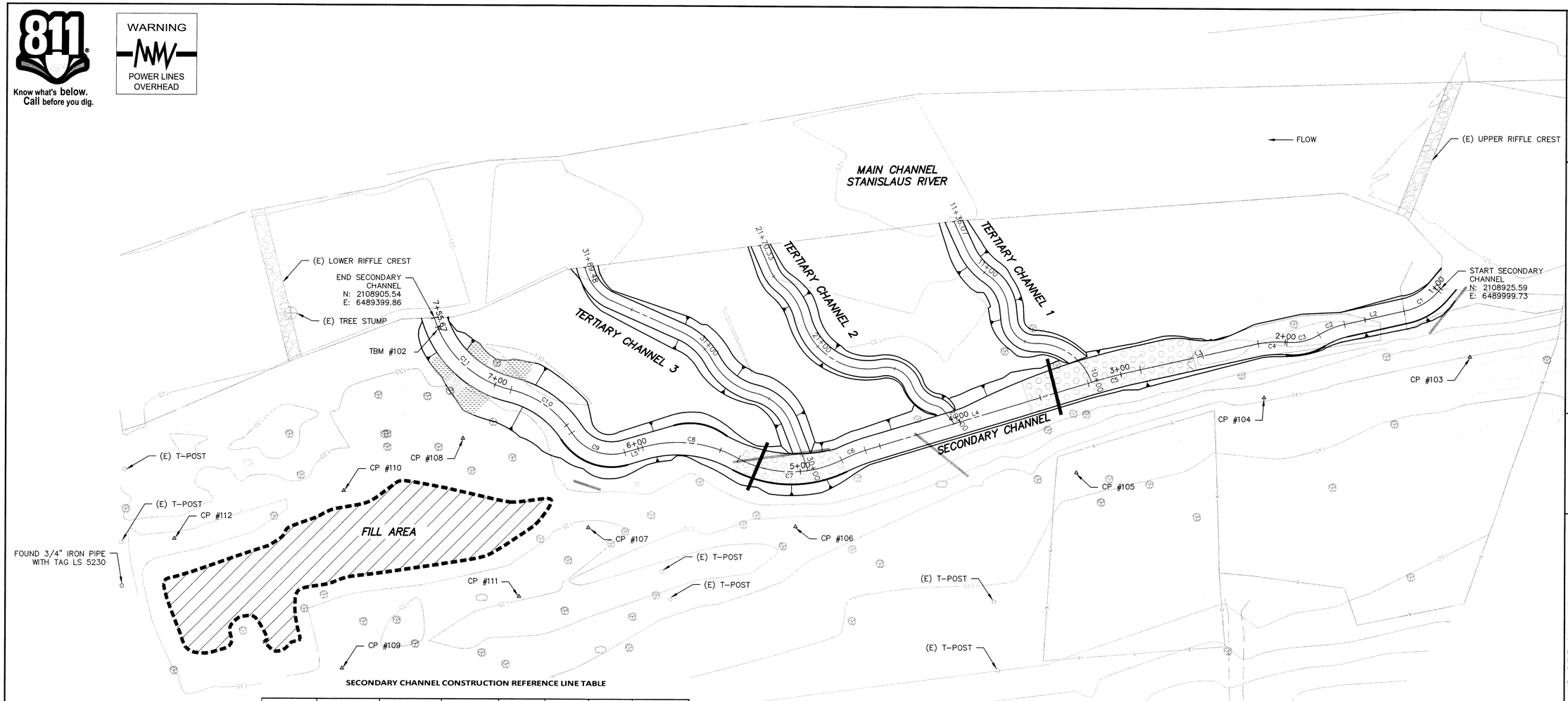
DESIGN ENGINEER:	E. ABRAHAMSEN
LICENSE NO:	CE 52,000
DRAFTED BY:	R. WAUGH
CHECKED BY:	S. OVERTON
SCALE:	AS SHOWN
DATE:	05/18/10
JOB NO:	195509C1
DWG. NO:	
SHEET	3 OF 10

6/24/2010 1:54 PM C:\Clients\cramer fish sciences-1955\195509c1-lancaster rd-stan rivr restore\DWG\SHEET\2 SITE PLAN.dwg -Vince Lucchesi

ATTACHMENT E - Overall Plans and Profiles

811 Know what's below. Call before you dig.

WARNING
POWER LINES OVERHEAD



SECONDARY CHANNEL CONSTRUCTION REFERENCE LINE TABLE

CURVE/LINE	BEGIN STA	END STA	DIRECTION	DISTANCE	DELTA	RADIUS	ARC LENGTH
L1	N 2108925.59 E 6489999.73	N 2108924.14 E 6489998.49	S40°30'29"W	1.91	--	--	--
C1	N 2108924.14 E 6489998.49	N 2108912.15 E 6489978.06	--	--	38°10'06"	36.23	24.13
L2	N 2108912.15 E 6489978.06	N 2108904.13 E 6489942.44	S77°19'24"W	36.51	--	--	--
C2	N 2108904.13 E 6489942.44	N 2108897.94 E 6489927.30	--	--	19°07'38"	49.25	16.44
C3	N 2108897.94 E 6489927.30	N 2108893.50 E 6489908.28	--	--	37°20'45"	30.5	19.88
C4	N 2108893.50 E 6489908.28	N 2108892.53 E 6489891.13	--	--	15°35'30"	63.32	17.23
L3	N 2108892.53 E 6489891.13	N 2108876.62 E 6489820.98	S77°13'31"W	71.93	--	--	--
C5	N 2108876.62 E 6489820.98	N 2108868.39 E 6489789.84	--	--	4°36'57"	399.98	32.22
L4	N 2108868.39 E 6489789.84	N 2108827.51 E 6489657.12	S72°52'43"W	138.87	--	--	--
C6	N 2108827.51 E 6489657.12	N 2108821.69 E 6489643.05	--	--	7°59'36"	109.25	15.24
C7	N 2108821.69 E 6489643.05	N 2108822.16 E 6489581.79	--	--	53°47'57"	67.7	63.57
C8	N 2108822.16 E 6489581.79	N 2108828.69 E 6489524.30	--	--	45°51'59"	74.25	59.44
L5	N 2108828.69 E 6489524.30	N 2108825.59 E 6489513.80	S73°32'39"W	10.94	--	--	--
C9	N 2108825.59 E 6489513.80	N 2108837.33 E 6489482.14	--	--	73°34'57"	28.19	36.21
C10	N 2108837.33 E 6489482.14	N 2108862.88 E 6489445.80	--	--	44°02'00"	59.25	45.54
C11	N 2108862.88 E 6489445.80	N 2108905.54 E 6489399.86	--	--	59°35'05"	63.09	65.62

CONTROL POINT TABLE

POINT #	ELEVATION	LOCATION	DESCRIPION
TBM 101	177.39	N 2108617.18 E 6489868.28	3/4" IRON PIPE DOWN 0.1' WITH 3/4" BRASS SURVEY CONTROL CAP WITH A SINGLE POINT PUNCHED
TBM 102	126.29	N 2108899.39 E 6489402.98	3/4" REBAR DOWN APPROX 0.1'
CP 103	139.88	N 2108884.96 E 6490017.39	2" X 2" WOODEN HUB WITH TACK
CP 104	141.62	N 2108860.24 E 6489894.68	3/4" REBAR DOWN APPROX 0.1'
CP 105	143.40	N 2108814.83 E 6489783.01	3/4" REBAR DOWN APPROX 0.1'
CP 106	137.44	N 2108782.01 E 6489615.70	3/4" REBAR DOWN APPROX 0.1'
CP 107	136.02	N 2108780.96 E 6489492.22	3/4" REBAR DOWN APPROX 0.1'
CP 108	132.61	N 2108833.82 E 6489417.21	2" X 2" WOODEN HUB WITH TACK
CP 109	136.41	N 2108697.22 E 6489345.45	2" X 2" WOODEN HUB WITH TACK
CP 110	133.58	N 2108802.42 E 6489346.10	2" X 2" WOODEN HUB WITH TACK
CP 111	135.34	N 2108740.21 E 6489450.97	2" X 2" WOODEN HUB WITH TACK
CP 112	136.29	N 2108773.90 E 6489245.18	2" X 2" WOODEN HUB WITH TACK

N

SCALE IN FEET
0 15 30 60

CRAMER FISH SCIENCES

No.	REVISION	BY	DATE

REGISTERED PROFESSIONAL ENGINEER ERIC V. ABRAHAMSEN CIVIL STATE OF CALIFORNIA

DATE SIGNED: 06/24/10

FLOOD PLAIN AND SIDE CHANNEL RESTORATION PROJECT, STANISLAUS RIVER , CA, PHASE I
CRAMER FISH SCIENCES
STANISLAUS COUNTY

SECONDARY CHANNEL
HORIZONTAL CONTROL PLAN

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132 S. 3RD AVENUE
OAKDALE, CALIFORNIA 95361
209/845-8700 FAX 209/845-8614
www.ppeng.com

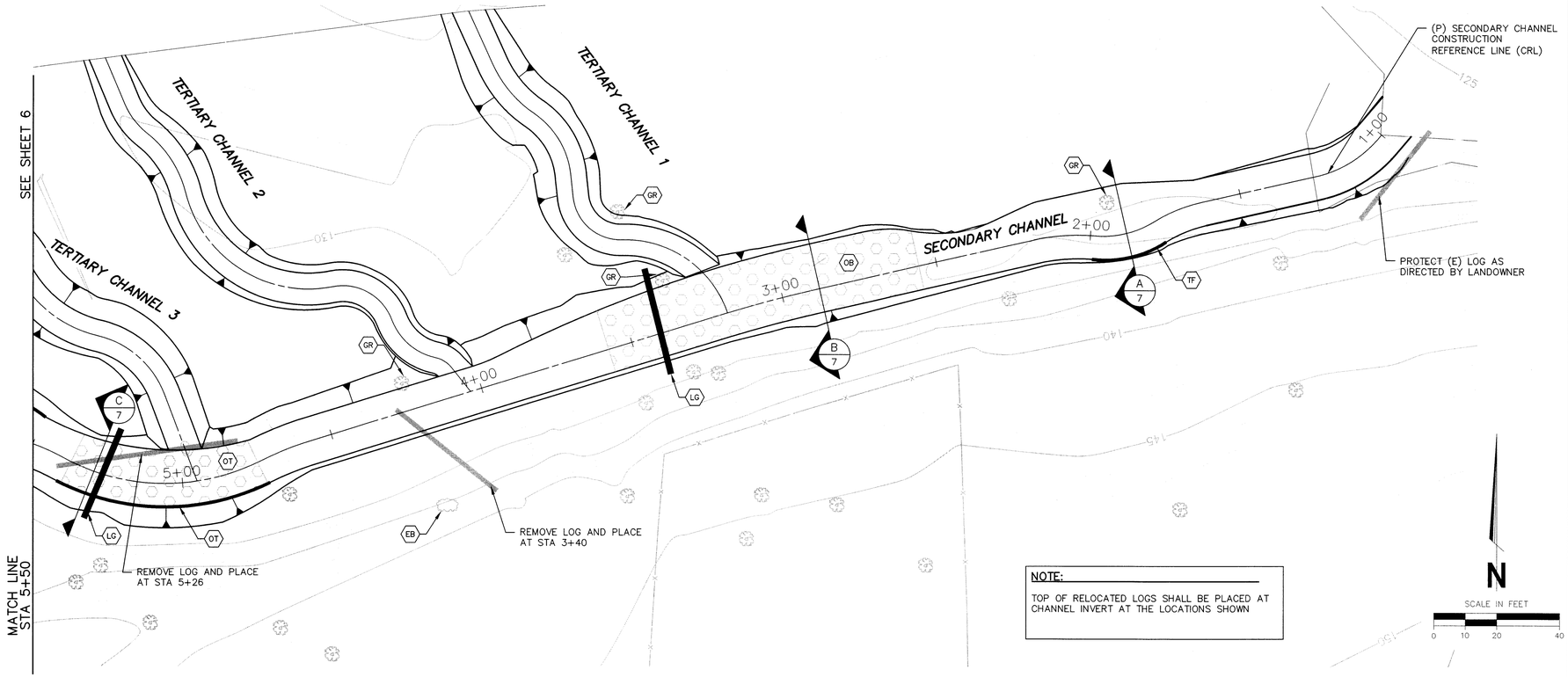
DESIGN ENGINEER: E. ABRAHAMSEN
LICENSE NO: CE 52,000
DRAFTED BY: R. WAUGH
CHECKED BY: S. OVERTON
SCALE: AS SHOWN
DATE: 05/18/10
JOB NO: 195509C1
DWG. NO:
SHEET 4 OF 10

5/20/2010 11:56 AM G:\Clients\Cramer Fish Sciences-1955\195509C1-Lancaster Rd-Stan Rvr Restore\DWG\SHEET\3 HORIZONTAL CONTROL.dwg - Alex Collins

ATTACHMENT E - Overall Plans and Profiles

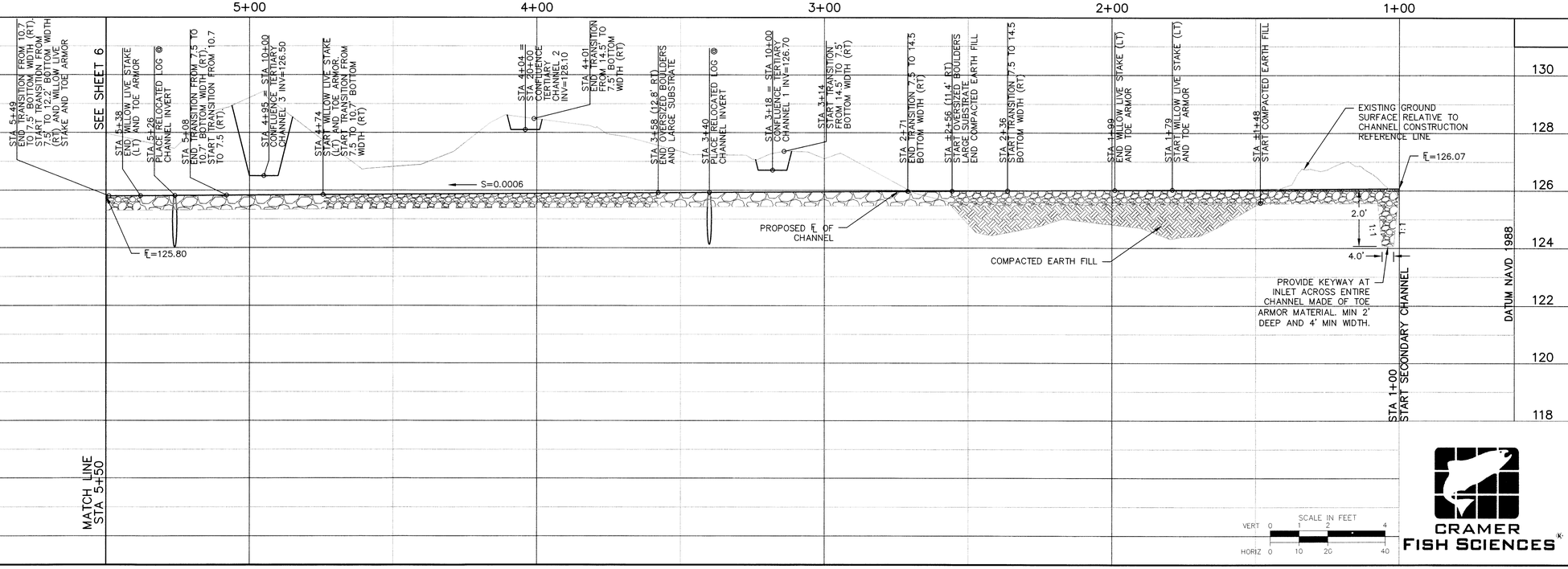
Know what's below. Call before you dig.

WARNING
POWER LINES OVERHEAD



NOTE:

TOP OF RELOCATED LOGS SHALL BE PLACED AT CHANNEL INVERT AT THE LOCATIONS SHOWN



CRAMER FISH SCIENCES

No.	REVISION	BY	DATE

REGISTERED PROFESSIONAL ENGINEER E. ABRAHAMSEN No. CE 52000 CIVIL STATE OF CALIFORNIA
DATE SIGNED: 06/24/10

FLOOD PLAIN AND SIDE CHANNEL RESTORATION PROJECT, STANISLAUS RIVER , CA, PHASE I
CRAMER FISH SCIENCES
STANISLAUS COUNTY

SECONDARY CHANNEL SHEET 1
PLAN AND PROFILE

EST. 1968 PROVOST & PRITCHARD CONSULTING GROUP
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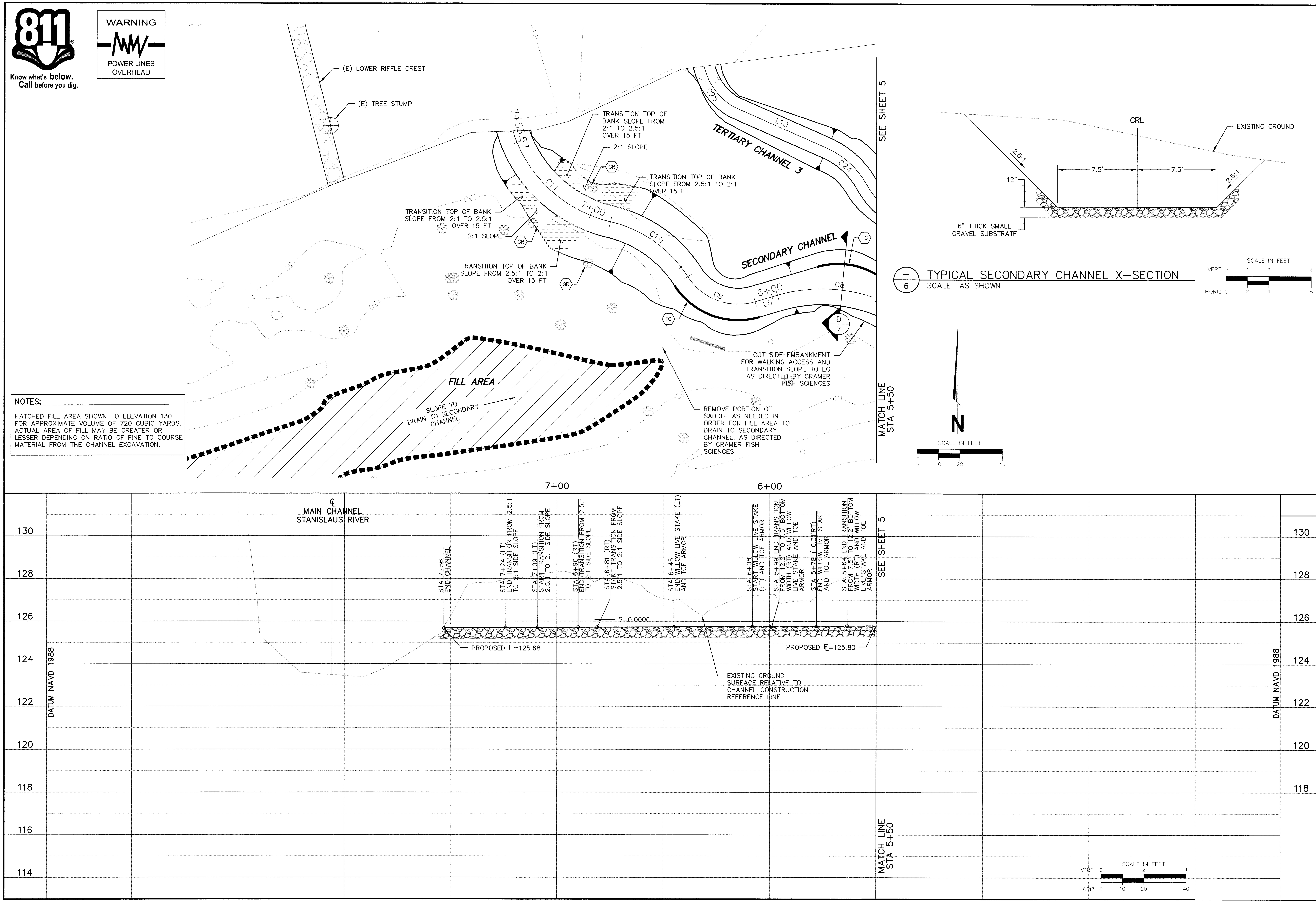
530/756-1362 FAX 530/759-8161
1234 E. Shaw Avenue, Fresno, CA 93710
209/453-8700 FAX 209/453-8708
www.ppeng.com

DESIGN ENGINEER:	E. ABRAHAMSEN
LICENSE NO:	CE 52,000
DRAFTED BY:	R. WAUGH
CHECKED BY:	S. OVERTON
SCALE:	AS SHOWN
DATE:	05/18/10
JOB NO:	195509C1
DWG. NO:	
SHEET	5 OF 10

5/20/2010 11:57 AM G:\Sheets\Cramer Fish Sciences-1955\195509C1-Lancaster Rd-Stan Rvr Restore\DWG\SHEET\3 PLAN AND PROFILE.dwg -Alex Collins

ATTACHMENT E - Overall Plans and Profiles



811
Know what's below. Call before you dig.
WARNING
POWER LINES OVERHEAD
(E) LOWER RIFFLE CREST
(E) TREE STUMP
7+55.67
TRANSITION TOP OF BANK SLOPE FROM 2:1 TO 2.5:1 OVER 15 FT
2:1 SLOPE
TRANSITION TOP OF BANK SLOPE FROM 2.5:1 TO 2:1 OVER 15 FT
TERTIARY CHANNEL 3
SECONDARY CHANNEL
TRANSITION TOP OF BANK SLOPE FROM 2:1 TO 2.5:1 OVER 15 FT
2:1 SLOPE
TRANSITION TOP OF BANK SLOPE FROM 2.5:1 TO 2:1 OVER 15 FT
7+00
6+00
CUT SIDE EMBANKMENT FOR WALKING ACCESS AND TRANSITION SLOPE TO EG AS DIRECTED BY CRAMER FISH SCIENCES
FILL AREA
SLOPE TO DRAIN TO SECONDARY CHANNEL
REMOVE PORTION OF SADDLE AS NEEDED IN ORDER FOR FILL AREA TO DRAIN TO SECONDARY CHANNEL, AS DIRECTED BY CRAMER FISH SCIENCES
SEE SHEET 5
MATCH LINE STA 5+50
NOTES:
HATCHED FILL AREA SHOWN TO ELEVATION 130 FOR APPROXIMATE VOLUME OF 720 CUBIC YARDS. ACTUAL AREA OF FILL MAY BE GREATER OR LESSER DEPENDING ON RATIO OF FINE TO COURSE MATERIAL FROM THE CHANNEL EXCAVATION.
CRL
EXISTING GROUND
2.5:1
7.5'
12"
6" THICK SMALL GRAVEL SUBSTRATE
TYPICAL SECONDARY CHANNEL X-SECTION
SCALE: AS SHOWN
SCALE IN FEET
N
MAIN CHANNEL STANISLAUS RIVER
STA 7+56 END CHANNEL
STA 7+24 (LT) END TRANSITION FROM 2.5:1 TO 2:1 SIDE SLOPE
STA 7+09 (LT) START TRANSITION FROM 2.5:1 TO 2:1 SIDE SLOPE
STA 6+90 (RT) END TRANSITION FROM 2.5:1 TO 2:1 SIDE SLOPE
STA 6+81 (RT) START TRANSITION FROM 2.5:1 TO 2:1 SIDE SLOPE
STA 6+45 END WILLOW LIVE STAKE (LT) AND TOE ARMOR
STA 6+08 START WILLOW LIVE STAKE (LT) AND TOE ARMOR
STA 5+99 END TRANSITION FROM 12.2' TO 7.5' BOTTOM WIDTH (RT) AND WILLOW LIVE STAKE AND TOE ARMOR
STA 5+78 (10.3' RT) END WILLOW LIVE STAKE AND TOE ARMOR
STA 5+64 END TRANSITION FROM 7.5' TO 12.2' BOTTOM WIDTH (RT) AND WILLOW LIVE STAKE AND TOE ARMOR
S=0.0006
PROPOSED ℄=125.68
PROPOSED ℄=125.80
EXISTING GROUND SURFACE RELATIVE TO CHANNEL CONSTRUCTION REFERENCE LINE
DATUM NAVD 1988
130
128
126
124
122
120
118
116
114

FLOOD PLAIN AND SIDE CHANNEL RESTORATION PROJECT, STANISLAUS RIVER, CA, PHASE I
CRAMER FISH SCIENCES
STANISLAUS COUNTY

SECONDARY CHANNEL SHEET 2
PLAN AND PROFILE

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EST. 1968

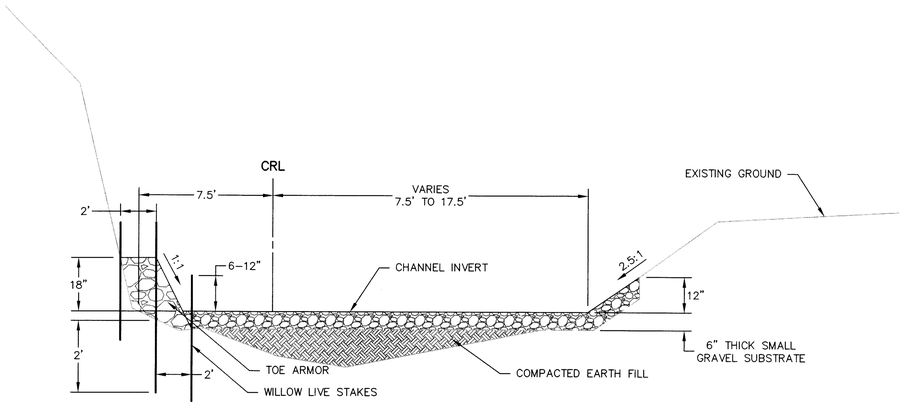
DESIGN ENGINEER:	E. ABRAHAMSEN
LICENSE NO:	CE 52,000
DRAFTED BY: R. WAUGH	CHECKED BY: S. OVERTON
SCALE:	AS SHOWN
DATE:	05/18/10
JOB NO:	195509C1
DWG. NO:	
SHEET	6 OF 10

DATE SIGNED: 06/24/10

ATTACHMENT E - Overall Plans and Profiles

Know what's below. Call before you dig.

WARNING
POWER LINES OVERHEAD

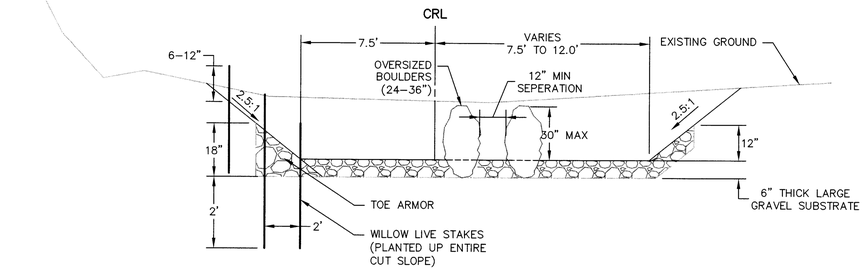


NOTE:

1. CHANNEL FILL SECTION WITH WILLOW LIVE STAKES, TOE ARMOR & SMALL GRAVEL SUBSTRATE
2. TRANSITION GRAVEL SUBSTRATE TO TOE ARMOR (THICKNESS, DEPTH & WIDTH) FROM MINIMUM 10' UPSTREAM & DOWNSTREAM OF START & STOP OF TOE ARMOR STATIONING.

A/7 CROSS SECTION A
SCALE: AS SHOWN

SCALE IN FEET
VERT 0 1 2 4
HORIZ 0 2 4 8

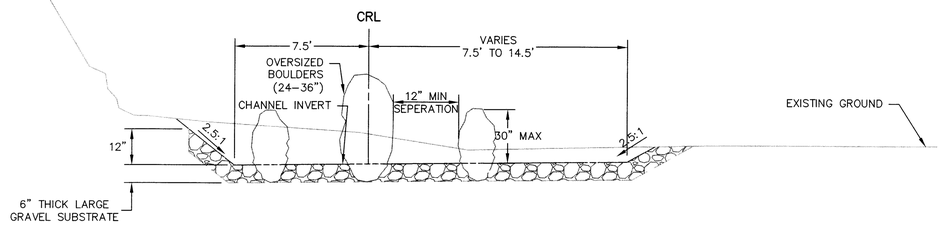


NOTE:

CHANNEL CUT SECTION WITH WILLOW LIVE STAKES, TOE ARMOR AND SMALL GRAVEL SUBSTRATE

C/7 CROSS SECTION C
SCALE: AS SHOWN

SCALE IN FEET
VERT 0 1 2 4
HORIZ 0 2 4 8

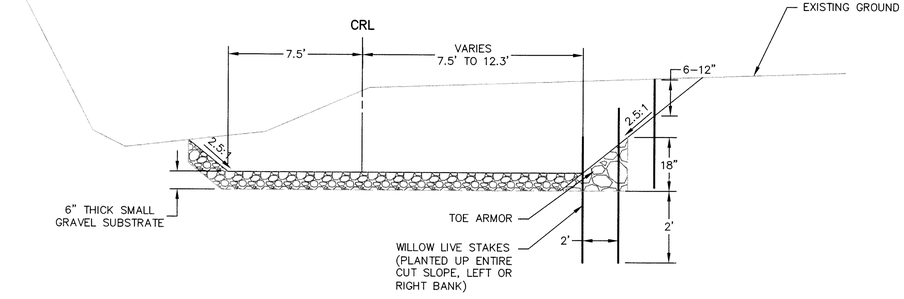


NOTE:

CHANNEL CUT SECTION WITH OVERSIZED BOULDERS AND LARGE GRAVEL SUBSTRATE

B/7 CROSS SECTION B
SCALE: AS SHOWN

SCALE IN FEET
VERT 0 1 2 4
HORIZ 0 2 4 8



NOTE:

CHANNEL CUT SECTION WITH WILLOW LIVE STAKES, TOE ARMOR & SMALL GRAVEL SUBSTRATE

D/7 CROSS SECTION D
SCALE: AS SHOWN

SCALE IN FEET
VERT 0 1 2 4
HORIZ 0 2 4 8

CRAMER FISH SCIENCES®

No.	REVISION	BY	DATE

REGISTERED PROFESSIONAL ENGINEER ERIC A. ABRAHAMSEN No. 52000 STATE OF CALIFORNIA
DATE SIGNED: 06/24/10

FLOOD PLAIN AND SIDE CHANNEL RESTORATION PROJECT, STANISLAUS RIVER , CA, PHASE I
CRAMER FISH SCIENCES
STANISLAUS COUNTY

CROSS SECTIONS

EST. 1968 PROVOST& PRITCHARD CONSULTING GROUP
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OAKDALE, CALIFORNIA 95361
209/845-8700 FAX 209/845-8614
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DESIGN ENGINEER:	E. ABRAHAMSEN
LICENSE NO:	CE 52,000
DRAFTED BY:	R. WAUGH
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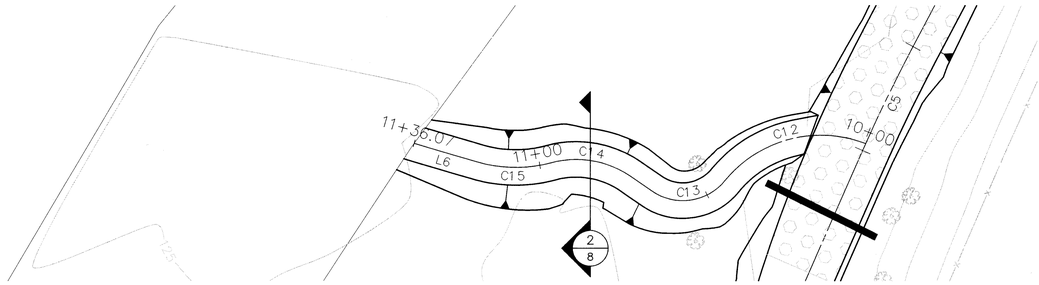
SCALE:	AS SHOWN
DATE:	05/18/10
JOB NO:	195509C1
DWG. NO:	
SHEET	7 OF 10

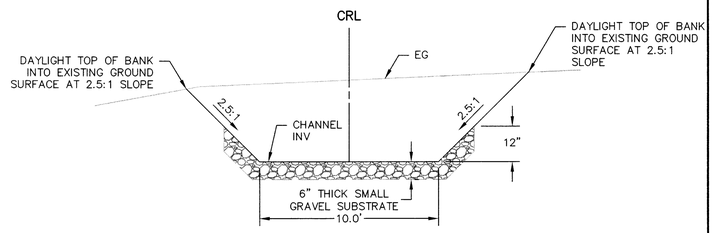
5/20/2010 11:58 AM G:\Clients\Cramer Fish Sciences-1955\195509C1-Lancaster Rd-Stan Rivr Restore\DWG\SHEETS\5 CROSS SECTIONS.dwg — Alex Collins

ATTACHMENT E - Overall Plans and Profiles

Know what's **below.**
Call before you dig.

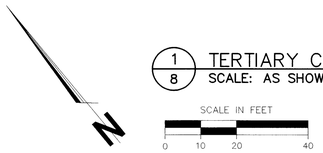
WARNING
POWER LINES
OVERHEAD



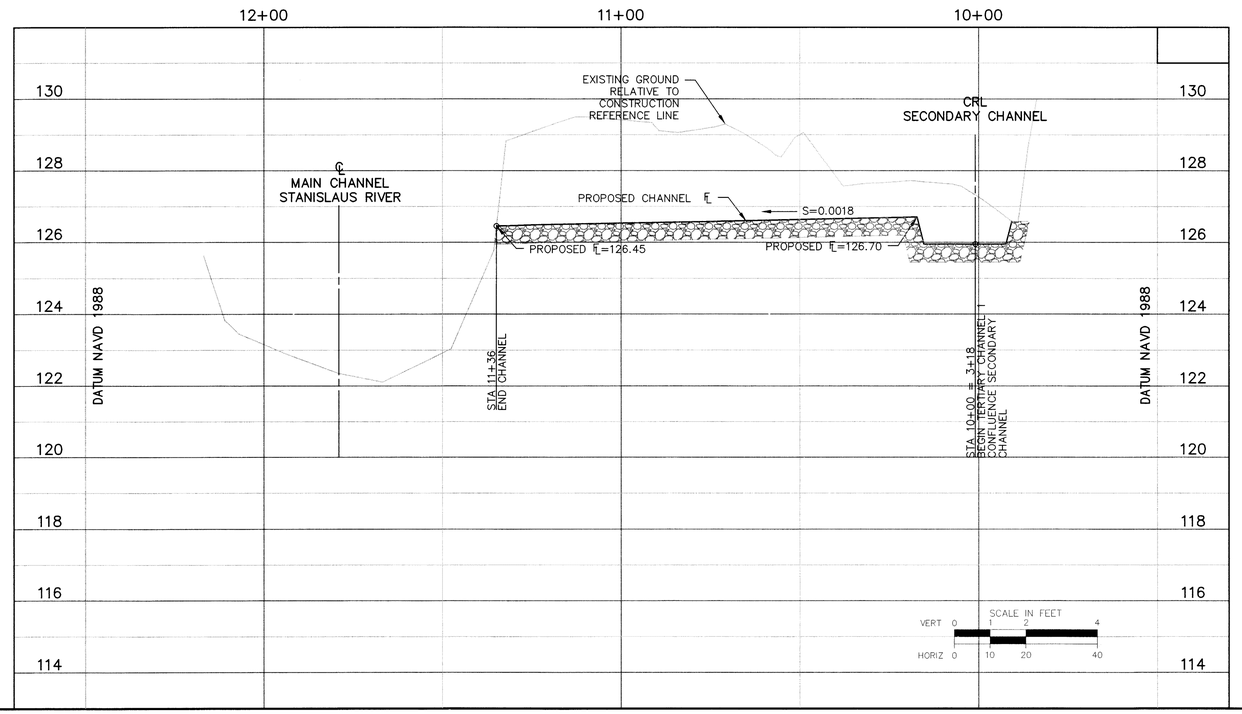


2 / 8 TERTIARY CHANNELS TYPICAL CROSS SECTION
SCALE: AS SHOWN

SCALE IN FEET
VERT 0 1 2 4
HORIZ 0 2 4 8



1 / 8 TERTIARY CHANNEL 1
SCALE: AS SHOWN



TERTIARY CHANNEL 1 CONSTRUCTION REFERENCE LINE TABLE

CURVE/LINE	START	END	DIRECTION	DISTANCE	RADIUS	LENGTH	DELTA
C12	N 2108869.00 E 6489791.83	N 2108891.99 E 6489758.25	--	--	34.49	43.53	72°18'17"
C13	N 2108891.99 E 6489758.25	N 2108905.60 E 6489742.66	--	--	15.21	22.77	85°45'42"
C14	N 2108905.60 E 6489742.66	N 2108932.08 E 6489730.27	--	--	26.76	23.03	49°18'15"
C15	N 2108932.08 E 6489730.27	N 2108947.82 E 6489716.99	--	--	37.79	20.86	31°38'06"
L6	N 2108947.82 E 6489716.99	N 2108964.62 E 6489709.39	N24°20'20"W	18.43	--	--	--

CRAMER FISH SCIENCES

No.	REVISION	BY	DATE

REGISTERED PROFESSIONAL ENGINEER E. ABRAHAMSEN CIVIL STATE OF CALIFORNIA
DATE SIGNED: 06/24/10

FLOOD PLAIN AND SIDE CHANNEL RESTORATION
PROJECT, STANISLAUS RIVER , CA, PHASE I
CRAMER FISH SCIENCES
STANISLAUS COUNTY

TERTIARY CHANNEL 1
PLAN AND PROFILE

EST. 1968
PROVOST& PRITCHARD
CONSULTING GROUP
An Employee Owned Company
双
双
OAKDALE, CALIFORNIA 95361
209/845-8700 FAX 209/845-8814
www.ppeng.com

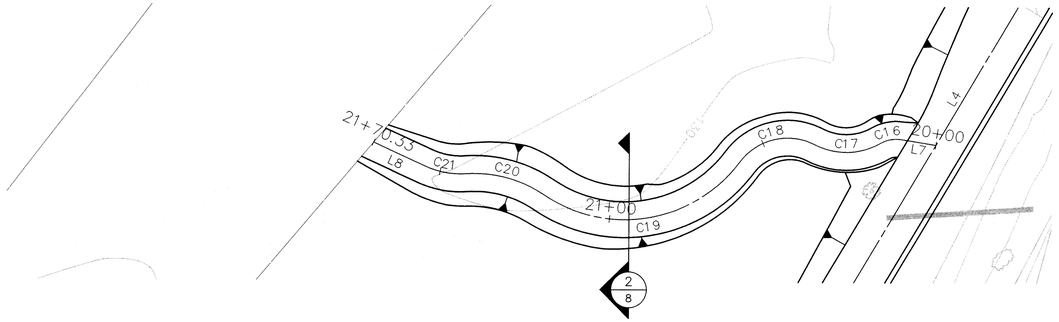
DESIGN ENGINEER: E. ABRAHAMSEN
LICENSE NO: CE 52,000
DRAFTED BY: R. WAUGH | CHECKED BY: S. OVERTON
SCALE: AS SHOWN
DATE: 05/18/10
JOB NO: 195509C1
DWG. NO:
SHEET 8 OF 10

5/20/2010 11:58 AM G:\Clients\Cramer Fish Sciences-1955\195509C1-Lancaster Rd-Stan Riv Restore\DWG\SHEET\5 PLAN AND PROFILE.dwg -Alex Collins

ATTACHMENT E - Overall Plans and Profiles

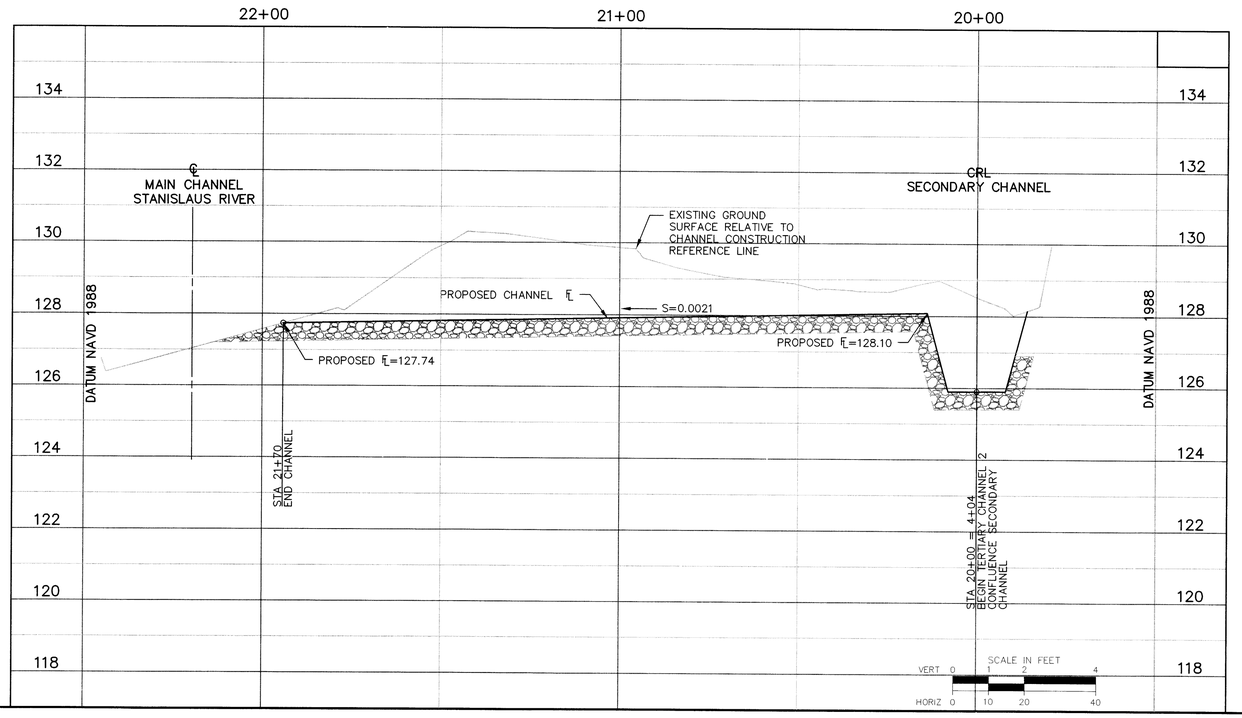
811 Know what's below. Call before you dig.

WARNING
POWER LINES OVERHEAD



1/9 TERTIARY CHANNEL 2
SCALE: AS SHOWN

SCALE IN FEET
0 10 20 40



TERTIARY CHANNEL 2 CONSTRUCTION REFERENCE LINE TABLE

CURVE/LINE	START	END	DIRECTION	DISTANCE	RADIUS	LENGTH	DELTA
L7	N 2108843.83 E 6489710.13	N 2108851.44 E 6489704.10	N38°22'02"W	9.71	--	--	--
C16	N 2108851.44 E 6489704.10	N 2108854.63 E 6489698.98	--	--	8.93	6.15	39°26'51"
C17	N 2108854.63 E 6489698.98	N 2108866.60 E 6489685.08	--	--	19.19	19.13	57°06'50"
C18	N 2108866.60 E 6489685.08	N 2108877.03 E 6489666.28	--	--	16.63	23.38	80°33'57"
C19	N 2108877.03 E 6489666.28	N 2108906.99 E 6489619.36	--	--	40.19	61.48	87°39'02"
C20	N 2108906.99 E 6489619.36	N 2108925.70 E 6489607.15	--	--	34.66	22.75	37°36'48"
C21	N 2108925.70 E 6489607.15	N 2108935.10 E 6489599.92	--	--	23.83	11.98	28°48'17"
L8	N 2108935.10 E 6489599.92	N 2108949.58 E 6489593.74	N23°08'20"W	15.74	--	--	--

CRAMER FISH SCIENCES

No.	REVISION	BY	DATE

REGISTERED PROFESSIONAL ENGINEER ERIC V. ABRAHAMSEN STATE OF CALIFORNIA

DATE SIGNED: 06/29/10

FLOOD PLAIN AND SIDE CHANNEL RESTORATION PROJECT, STANISLAUS RIVER, CA, PHASE I
CRAMER FISH SCIENCES
STANISLAUS COUNTY

TERTIARY CHANNEL 2
PLAN AND PROFILE

EST. 1968 PROVOST & PRITCHARD CONSULTING GROUP
An Employee Owned Company
1521 I STREET, SUITE 105
OAKDALE, CALIFORNIA 95361
209/845-8700 FAX 209/845-8814
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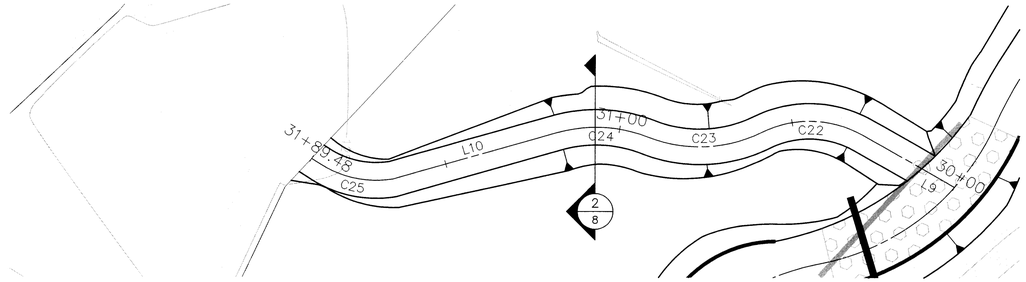
DESIGN ENGINEER: E. ABRAHAMSEN
LICENSE NO: CE 52,000
DRAFTED BY: R. WAUGH | CHECKED BY: S. OVERTON
SCALE: AS SHOWN
DATE: 05/18/10
JOB NO: 195509C1
DWG. NO:
SHEET 9 OF 10

5/20/2010 11:59 AM G:\Clients\Cramer Fish Sciences-1955\195509C1-Lancaster Rd-Stan River Restore\DWG\SHEET\6 PLAN AND PROFILE.dwg -Alex Collins

ATTACHMENT E - Overall Plans and Profiles

Know what's **below.**
Call before you dig.

WARNING
POWER LINES
OVERHEAD



3/10 TERTIARY CHANNEL 3
SCALE: AS SHOWN

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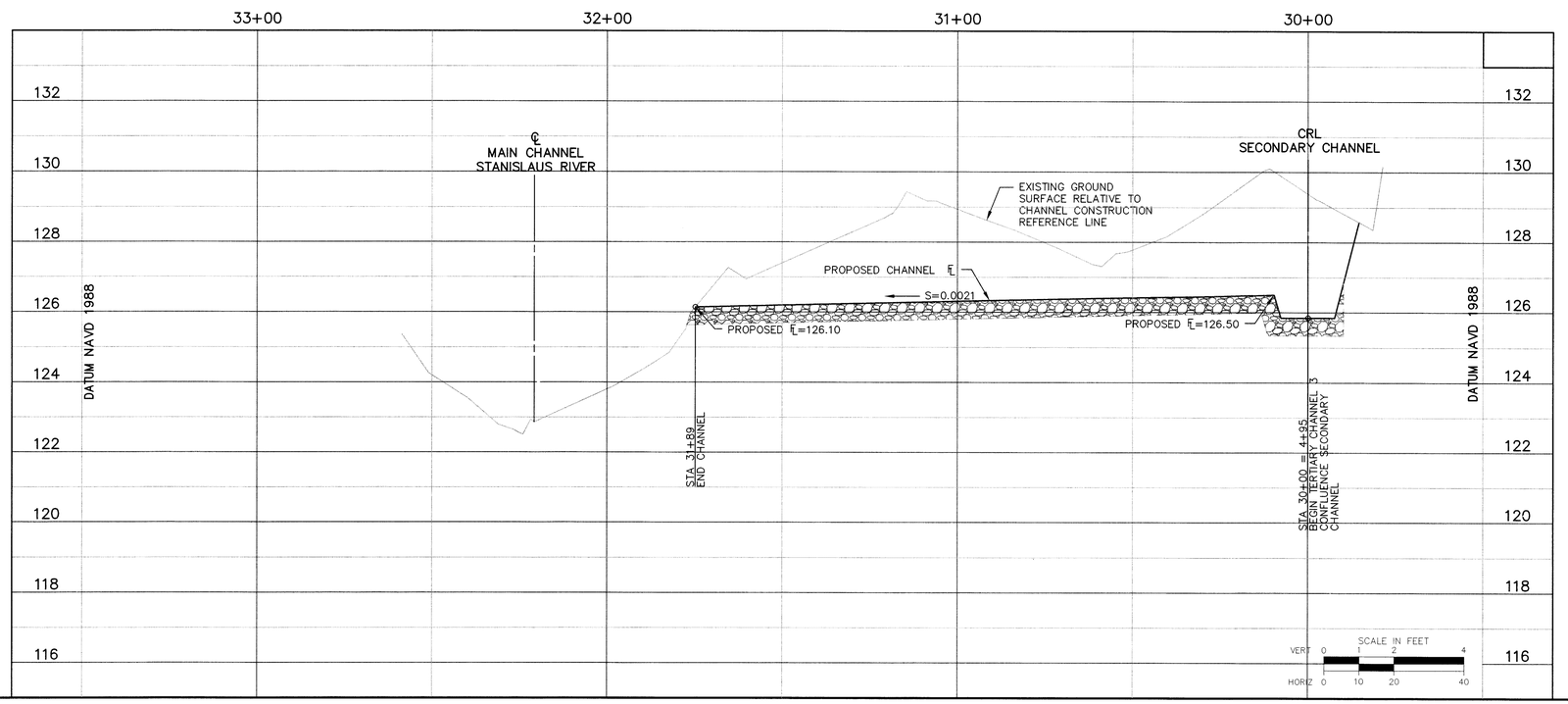
0 10 20 40

N

TERTIARY CHANNEL 3 CONSTRUCTION REFERENCE LINE TABLE

CURVE/LINE	START	END	DIRECTION	DISTANCE	RADIUS	LENGTH	DELTA
L9	N 2108815.38 E 6489623.13	N 2108842.96 E 6489612.69	N20°43'04"W	29.49	--	--	--
C22	N 2108842.96 E 6489612.69	N 2108861.57 E 6489591.42	--	--	30.00	29.43	56°12'26"
C23	N 2108861.57 E 6489591.42	N 2108880.76 E 6489566.02	--	--	39.16	32.78	47°58'17"
C24	N 2108880.76 E 6489566.02	N 2108897.91 E 6489547.20	--	--	39.71	25.92	37°24'13"
L10	N 2108897.91 E 6489547.20	N 2108917.05 E 6489503.47	N66°21'27"W	47.74	--	--	--
C25	N 2108917.05 E 6489503.47	N 2108933.10 E 6489490.51	--	--	28.80	21.09	41°57'16"
L11	N 2108933.10 E 6489490.51	N 2108935.97 E 6489489.58	N17°56'08"W	3.02	--	--	--



CRAMER FISH SCIENCES

No.	REVISION	BY	DATE

REGISTERED PROFESSIONAL ENGINEER ★ ERIC ABRAHAMSEN ★ No. CIVIL ★ STATE OF CALIFORNIA

DATE SIGNED 06/24/10

FLOOD PLAIN AND SIDE CHANNEL RESTORATION PROJECT, STANISLAUS RIVER, CA, PHASE I
CRAMER FISH SCIENCES
STANISLAUS COUNTY

TERTIARY CHANNEL 3
PLAN AND PROFILE

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DESIGN ENGINEER:	E. ABRAHAMSEN
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5/20/2010 11:59 AM G:\Clients\Cramer Fish Sciences-1955\195509C1-Lomcaster Rd-Stan Rivr Restore\DWG\SHEET\7 PLAN AND PROFILE.dwg -Alex Collins

ATTACHMENT E - Overall Plans and Profiles

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

April 14, 2010

Acquisition and Management Branch

Subject: Lower Stanislaus River Parks, CA; Consent to Easement No. DACW05-C-10-550; Tract 755E

Mr. Jesse Anderson
Cramer Fish Sciences
California Field Office
636 Hedburg Way, Suite 22
Oakdale, CA 95361

Dear Mr. Anderson:

Enclosed for your company's records is an executed copy of Consent to Easement No. DACW05-C-10-550 for channel and floodplain restoration work on Tract 755E of the Lower Stanislaus River Parks Project. The agreement will expire on April 30, 2012.

Should you have any questions or concerns regarding this agreement, please contact me by telephone at (916) 557-7013 or by email at elizabeth.a.youn@usace.army.mil.

Sincerely,

Elizabeth A. Youn
Realty Specialist

Enclosure

Consent No. DACW05-C-10-550
Lower Stanislaus River Parks
Tract No. 755E

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
SACRAMENTO DISTRICT

CONSENT TO EASEMENT STRUCTURES

WHEREAS, the United States has acquired a perpetual fish and wildlife habitat restoration easement over Tract No. 755E, Lower Stanislaus River Project by Complaint in Condemnation, CIVIL NO. CV-F-81-182MDC, filed on April 29, 1981, in the United States District Court for the Eastern District of California.

WHEREAS, said easement grants to the United States the right of prior approval for any structure to be located within the easement area and any removal, shifting or altering in any manner of gravel deposits within the easement area, which area is under the administrative control of the Sacramento District, Corps of Engineers; and

WHEREAS, the United States has been requested to give consent for the activities to reclaim approximately 640 linear feet of remnant side channel and create three cross-channels within the Stanislaus River on the above identified tract.

NOW THEREFORE, the United States hereby gives consent to CRAMER FISH SCIENCES, hereinafter referred to as the consentee, for the reclamation of approximately 640 linear feet of remnant side channel and creation of three cross-channels at the location described on Exhibit "A", attached hereto;

PROVIDED HOWEVER, that this consent is subject to the following conditions:

1. All activities conducted on the premises shall comply with all applicable Federal, state, county and municipal laws, ordinances and regulations wherein the premises are located.

2. The giving of this consent does not in any way subordinate the United States' prior easement rights. The United States shall in no case be liable for any damage or injury to the structures herein consented to, which may be caused by any action of the United States under its easement; or which may result from future operations undertaken by the United States, and no claim or right to compensation shall accrue from such exercise of the United States' easement rights.

3. The United States shall not be responsible for damages to property or injuries to persons which may arise from or be incident to the exercise of the consented activity.

Consent No. DACW05-C-10-550
Lower Stanislaus River Parks
Tract No. 755E

4. This instrument is effective only insofar as the rights of the United States in the premises are concerned; and the consentee shall obtain such permission as may be required on account of any other existing rights. It is understood that this consent does not eliminate the necessity for obtaining any Department of the Army permit that may be required pursuant to the provisions of Section 10 of the Rivers and Harbors Act of 3 March 1899 (30 Stat. 1151; 33 U.S.C. § 403), Section 404 of the Clean Water Act (33 U.S.C. § 1344) or any other permit or license that may be required by Federal, state, interstate or local laws in connection with the use of the premises.

5. This instrument is effective for a period of two (2) years commencing on May 1, 2010, and ending April 30,2012, but revocable at will by the Secretary.

IN WITNESS WHEREOF, I have hereunto set my hand by authority of the Secretary of the Army, this 13th day of APRIL, 2010.

DEPARTMENT OF THE ARMY:

Sharon Caine
Chief, Real Estate Division
U.S. Army Engineer District, Sacramento

THIS CONSENT is also executed by the grantee this 9 day of April, 2010.

CRAMER FISH SCIENCES

DR. JOSEPH E. MERZ, PH.D.

EXHIBIT A

TRACT 755E

DESCRIPTION:

A parcel of land situate in the SW 1/4 of Section 3, Township 2 South, Range 11 East, M.D.M., Stanislaus County, California, more particularly described as follows:

COMMENCING for reference at a 4" x 4" post marking the SW corner of said Section 3, and running thence S 77° 23' 00" E, 477.50 feet to a point on the Northerly right-of-way line of Lancaster Road; thence, along said right-of-way, N 69° 35' E, 2221.40 feet to a tangent curve; thence, along a curve to the left through a central angle of 07° 31' 30" having a radius of 970.00 feet to the North-South centerline of said Section 3; thence, along said centerline N 00° 19' 00" W, 117.83 feet to the POINT OF BEGINNING.

Thence, N 00° 19' 00" W, 295.13 feet to the centerline of the Stanislaus River;

Thence, downstream along said centerline the following two (2) courses:

(1) S 81° 43' 00" W. 318.06 feet;

(2) S 76° 45' 00" W, 338.00 feet to the Northeast corner of the land conveyed to Constantino Scheremetow, et al by Deed recorded October 8, 1971 in Volume 2424 of Stanislaus County Records at Page 642;

Thence, along the Easterly boundary of said land of Scheremetow, S 16° 36' E, 281.64 feet;

Thence, leaving said Easterly boundry and traversing in an Easterly direction, the following four (4) courses:

(1) N 83° 10' 00" E, 232.38 feet;

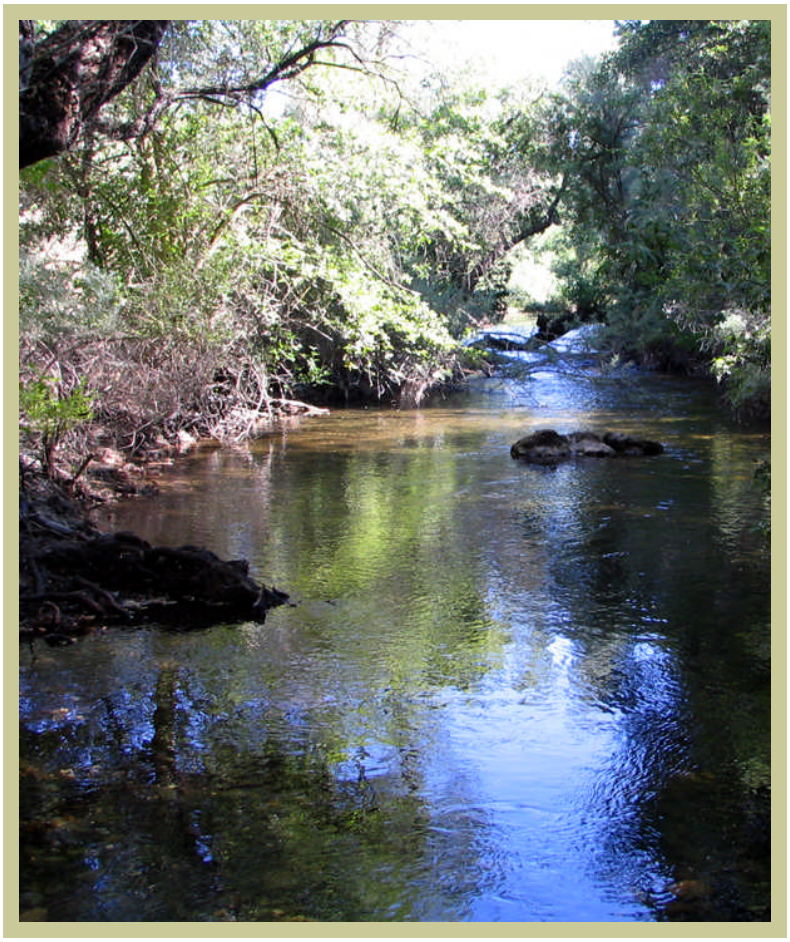
(2) N 80° 31' 30" E, 86.83 feet;

(3) N 80° 17' 50" E, 74.64 feet;

(4) N 76° 01' 30" E, 180.30 feet, more or less, to the POINT OF BEGINNING.

Containing 4.24 acres, more or less.

Lancaster Road Side Channel & Floodplain Project
Restoration Monitoring Program



Prepared by:

Cramer Fish Sciences

In Collaboration with:

U.S. Fish and Wildlife Service Anadromous Fish Restoration Program

Suggested citation: Cramer Fish Sciences (CFS). 2010. Lancaster Road (Stanislaus River, CA) Side Channel & Floodplain Project Restoration Monitoring Program. Prepared for the USFWS' Anadromous Fish Restoration Program and California Department of Fish and Game. 33 pp.

SUMMARY

The following document is intended to provide a detailed description of the monitoring program associated with the Lancaster Road Floodplain Restoration Project. The project aims to restore critical habitats for juvenile salmonids, in coordination with landowners, to promote the recovery of healthy and diverse Chinook salmon and steelhead populations in the Stanislaus River. The project is funded by the U.S. Fish and Wildlife Service (USFWS) Anadromous Fish Restoration Program (AFRP) and this vision fits into the framework of salmonid population recovery on the Stanislaus River and aligns with the following AFRP goals to: 1) involve local partners in the implementation and evaluation of restoration actions; 2) improve habitat for all anadromous life stages through improved physical habitat; and, 3) collect fish population, health, and habitat data to facilitate evaluation of restoration actions (USFWS 2001). The vision also meets objectives outlined in previous planning efforts for the Stanislaus River (CFS 2009).

The monitoring program consists of three conceptual approaches to monitoring: implementation, effectiveness, and validation. The implementation monitoring will determine if the project was installed according to the design standards. Hydrology, topography/bathymetry, sediment budget and vegetation will be assessed. The central question is: Was the project implemented according to plan? The effectiveness monitoring will determine if the project was effective in recovering habitat conditions suitable to target species. A range of physical and biological traits will be tracked before and after restoration to assess ecosystem function. The central question of effectiveness monitoring is: Was the project effective in meeting its target objectives? The final part of the monitoring program will determine if floodplain restoration projects, like the one at Lancaster Road, recover *productive* habitat for juvenile salmonids and riparian vegetation. This validation monitoring is intended to validate the underlying assumptions of the restoration work. The central question of validation monitoring is: Are the basic assumptions behind the project's conceptual model valid? This monitoring program will collect detailed physical and biological information for evaluation. This evaluation may improve our understanding of restored ecosystem function at Lancaster Road and the potential of side channel and floodplain river restoration projects to contribute to improved salmonid populations.

Metrics outlined in this plan have been focused considering the project's target objectives, the focus of AFRP, and to make use of some of the newest tools available in ecosystem science. The monitoring program for this project has been developed specifically to test hypotheses about habitat recovery processes. Several authors have noted the utility of designing restoration projects as experiments to test hypotheses regarding the physical and biological responses to restoration actions, and to develop a better understanding of process-based approaches in restoration science (Simenstad and Thom 1996; Roni et al. 2005; Merz and Moyle 2006). In order to understand the cause and effect relationships in restoring system processes, both effectiveness and validation monitoring are needed to learn from both failures and successes (Roni et al. 2005). This project integrates restoration actions, landowner partnerships, outreach and education, monitoring, and adaptive management to better restore habitat in the Stanislaus River, and provides an example for other Central Valley rivers.

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INTRODUCTION

Background

As in many Central Valley rivers, historic gold and gravel mining greatly altered geomorphic and hydraulic conditions salmonids evolved with in the Stanislaus River. As gold was retrieved from river sediments, discarded tailings were piled on floodplains (Clark 1970). These actions inverted in-channel gravel composition, disconnected side channels and floodplains, and heavily impacted salmon populations (Kondolf 1997). By removing tailings and recovering side channel and floodplain connectivity, productive rearing habitat for juvenile salmonids can be recreated (Richards et al. 1992; Heady & Merz 2007). Rearing habitat is described as the physical conditions, including water temperature, dissolved oxygen, turbidity, substrate size/composition, water velocity and depth, and available cover (Bjornn & Reiser 1991; Healey 1991; Jackson 1992), which maintain the biological components (e.g., invertebrate prey resources) critical to habitat productivity for fish (Simenstad & Cordell 2000). Stanislaus River riparian areas historically supported a diverse, dynamic ecosystem complex of seasonal wetlands, oxbow lakes and extensive forested floodplains, with meandering side channels (Elias 1924). A diversity of habitats existed in these shallow-water areas characterized by dense overhanging vegetation, cool water temperatures, large woody debris, low water velocity, and ample prey production. Young salmonids exploit food resources in off-channel habitats, find optimal temperatures and escape unfavorable environmental conditions of the main channel such as predators, inadequate cover, and high turbidity (USRFRHAC 1989; Sommer et al. 2001). Extensive alterations to Stanislaus River beds deeply incised the main channel, disconnected side channels and floodplains, and altered riparian vegetation. Regulated flows compounded incision, further eroded beds and banks, coarsened bed material, and degraded spawning habitat value for salmon and trout (Kondolf 1997). The precipitous decline of Central Valley Pacific salmon *Oncorhynchus* spp. has led to extirpation of many populations of this ecologically and commercially important fish (Nehlsen et al. 1991; Merz & Moyle 2006). According to AFRP, current flood control practices require peak flood discharges to be held and released over a period of weeks. Consequently, river mainstems often remain too high and turbid to provide quality rearing habitat. In addition, loss of sinuosity and braiding has reduced total habitat area and degraded remaining habitat with increased velocities. Restoration activities that include floodplain grading and side channel reconnection are among the solutions for this problem. Sommer et al. (2001) and Heady and Merz (2007) have demonstrated the value in recovering shallow-water habitats to improve salmonid rearing conditions. With continued loss of habitat quantity and quality, preserving or enhancing these components is vitally important.

Vision

We have developed the following vision for the Lancaster Road floodplain restoration project:

> *To restore critical habitats for juvenile salmonids, in coordination with local communities and stakeholders, to promote the recovery of healthy and diverse Chinook salmon and steelhead populations in the Stanislaus River, while helping to meet the abundance goals of the Anadromous Fish Restoration Program (AFRP).*

This vision fits into the framework of salmonid population recovery on the Stanislaus River and is aligned with the following AFRP goals to: 1) involve local partners in the implementation and evaluation of restoration actions; 2) improve habitat for all anadromous life stages through improved physical habitat; and, 3) collect fish population, health, and habitat data to facilitate evaluation of restoration actions (USFWS 2001). The vision also meets objectives outlined in previous planning efforts for the Stanislaus River (CFS 2009).

Project Goals

We developed the following goals for the Lancaster Road floodplain restoration project:

1) To serve as an example of publicly-supported applied fisheries and restoration science;
2) To rehabilitate and enhance productive juvenile salmonid rearing habitat in the Stanislaus River; and,
3) To determine project effectiveness with an efficient and scientifically robust monitoring program.

These goals fit into the framework of AFRP, and meet the AFRP and CALFED requirement to use adaptive management in planning, design, and implementation (CALFED 2001). The following provides details and information about the monitoring program, although the Target Objectives for all project goals are included here also.

Target Objectives

Realistic target objectives are an important component of our approach to clearly address project goals. Detailed actions provide the necessary steps to achieve the target objectives. Iterative review of these actions is essential to determining the reliability in each particular step to meet the parameters of the project goal. The following components (i.e., Community Outreach Plan, Design Standards, and Monitoring Plan) and associated target objectives were developed to meet the aforementioned project vision and goal for the Lancaster Road floodplain restoration project:

1) <u>Community Outreach Plan (COP)</u>: To have the project serve as an example of publicly-supported applied fisheries and restoration science, we will:

a) provide a range of outreach opportunities to promote the value of river restoration to stakeholders and local community members;
b) incorporate the values of the community into the project (e.g., aesthetic values, flood control, socio-economic needs of the community, etc.); and,
c) promote a Stewardship Program for the river that integrates individual projects into the framework.

2) <u>Design Standards</u>: To effectively rehabilitate and enhance productive juvenile salmonid rearing habitat in the Stanislaus River, we will:

a) design the project to function under current flow regimes (i.e., magnitude and duration);
b) restore ecological processes at the proposed project site to increase the availability of productive juvenile salmonid rearing habitat;

c) create habitat conditions suitable for juvenile Chinook rearing (i.e., fry and sub-yearling smolts); and,

d) preserve native vegetation and utilize existing habitat features to the maximum extent possible.

3) <u>Monitoring Plan</u>: To determine project effectiveness we will develop an efficient and scientifically-robust monitoring program to:

a) test hypotheses about the benefit of recovered side channels and seasonally inundated floodplain habitats to juvenile salmonids and native plant recruitment

The following outlines the details of our Monitoring Plan. Information on the Community Outreach Plan and Design Standards are available separately.

Monitoring Perspective

Our monitoring program will take an 'Ecosystem Perspective' as described by the Adaptive Management Forum (2002) by tracking physical and biological parameters; and the structural and functional responses by the restored ecosystem. Following suggestions from the Forum, we will consider alternative paradigms of ecosystem restoration when developing our project conceptual designs; develop an action plan to incorporate monitoring information and provide a framework for adaptive management; continue to clearly define quantifiable short- and long-term goals; and, include performance criteria (e.g., fish growth potential) to describe ecosystem function. We will ensure links in scientific input, project design, and implementation factors are intact and continuously refined.

Considerable debate about the effectiveness of restoration projects (Reeves et al. 1991; Kondolf 1995; Kaufman et al. 1997; Roni et al. 2002), in addition to the substantial investment of public funds, make it incomprehensible that monitoring is not an essential element of every restoration project (Roni and Quimby 2005). Monitoring is important to determine the environmental characteristics of a particular site. The parameters measured are critical physical and biological drivers of habitat and are intended to detect environmental change. Specific indicators (e.g., fish performance) are used that determine a value at a specific time (status), and with continued monitoring changes in the value across time at the same location (trend) can be determined. By designing monitoring programs to follow trends, the state of the system, especially restored systems, can be determined. Monitoring is critical for adaptive management. Detecting and recognizing meaningful change in complex natural systems is difficult, because the systems are dynamic and heterogeneous. Ecosystems maintain dynamic variation within predictable bounds (Chapin et al. 1996), but often these bounds are unknown with restoring systems. On-site monitoring is critical to fully understand project success and the recovery of ecosystem function (Roni and Quimby 2005).

The following monitoring program is designed to determine the success of side channel recreation at Lancaster Road in the Stanislaus River, and assess the effectiveness of the project to enhance juvenile salmonid productivity. Metrics outlined in this plan fit the focus of AFRP and make use of some of the newest tools available in ecosystem science.

Integrating with Other Monitoring Programs

This monitoring program will be designed to integrate with the other long-term monitoring occurring in the Stanislaus River, as possible. From 1996–2010, the USFWS supported CFS to monitor juvenile salmonid out-migration in the Stanislaus River. This monitoring program determines annual juvenile Chinook salmon and *O. mykiss* production using rotary screw traps (RSTs) at Caswell Memorial State Park (Caswell; rkm 13), and quantifies emigrants to the San Joaquin River (Watry et al. 2007, 2008). This data set is intended to provide a valuable source of information for evaluating fish responses to in-river management actions (CAMP 1997). The primary objectives of this project are: 1) estimate abundance of juvenile salmonid out-migrants in the lower Stanislaus River using RSTs operated near Caswell; and, 2) determine and evaluate patterns of timing, size, and abundance of juveniles relative to flow and other environmental conditions. This juvenile salmon monitoring program helps AFRP and CAMP address their goals to track population dynamics, evaluate the results of past and future habitat restoration efforts, and to understand the impacts of instream flow schedules and management on the fall-run Chinook salmon population. Tri-Dam has also funded ongoing juvenile salmonid population monitoring at Oakdale (rkm 63). The monitoring effort aims to determine in-river spawning success by tracking the number of fry produced. The effort also provides information about *O. mykiss* and other fish species able to be collected by RST.

During post-project monitoring activities at Lancaster Road, juvenile salmonids may be collected on-site, and marked during processing for additional data collection. The collection of marked fish at Caswell or Oakdale would indicate successful rearing and migration, and document the potential benefits of restored rearing habitat to the population. The size and condition of fish may also indicate improvements in rearing conditions, although a detectable signal may be difficult to obtain due to the overwhelming impact of the other limiting factors in the river. Similar protocols are being conducted in Clear Creek following floodplain rehabilitation (M. Teubert, pers. comm., 2008).

Partnering with AFRP and the Community

This monitoring program will occur with the contribution of AFRP and potentially interested community members. We anticipate AFRP staff members will assist with periodic data collections including aquatic habitat sampling, vegetation and topographic surveys. Anadromous Fish Restoration Program staff will also assist during validation experiments. We also anticipate the potential to meet interested community members at the public outreach functions who may be interested in assisting with data collection on site. Through a coordinated effort, more detailed monitoring can be accomplished and partnerships with interested parties strengthened.

STUDY AREA

The study site is located on the Stanislaus River (rkm 77) accessible via Lancaster Road off HWY 108/120 (Figure 1). Approximately 655 linear feet of remnant side channel and associated floodplain habitat are available to be restored. Owners of adjacent riparian properties (i.e., Kusmeko, Ridgewell, Curtis, and Lownsbery), have partnered with CFS and AFRP to conduct this side channel and floodplain habitat restoration project. Currently, the adjoining properties have a remnant side channel and adjacent alluvial bar that inundates only during high flow periods (e.g., >3,000 cfs). Following the construction of New Melones Dam, flow exceeded 3,000 cfs periodically in only nine of the 28 years (1980 – 2007; 32% of the time). This project will restore the remnant side channel and reconnect the floodplain at flows of >575 cfs, and enhance juvenile salmonid rearing habitat function with annual inundation. Non-native invasive plants will be removed, and the following effectiveness monitoring program will document the recovery of juvenile salmonid rearing habitat.

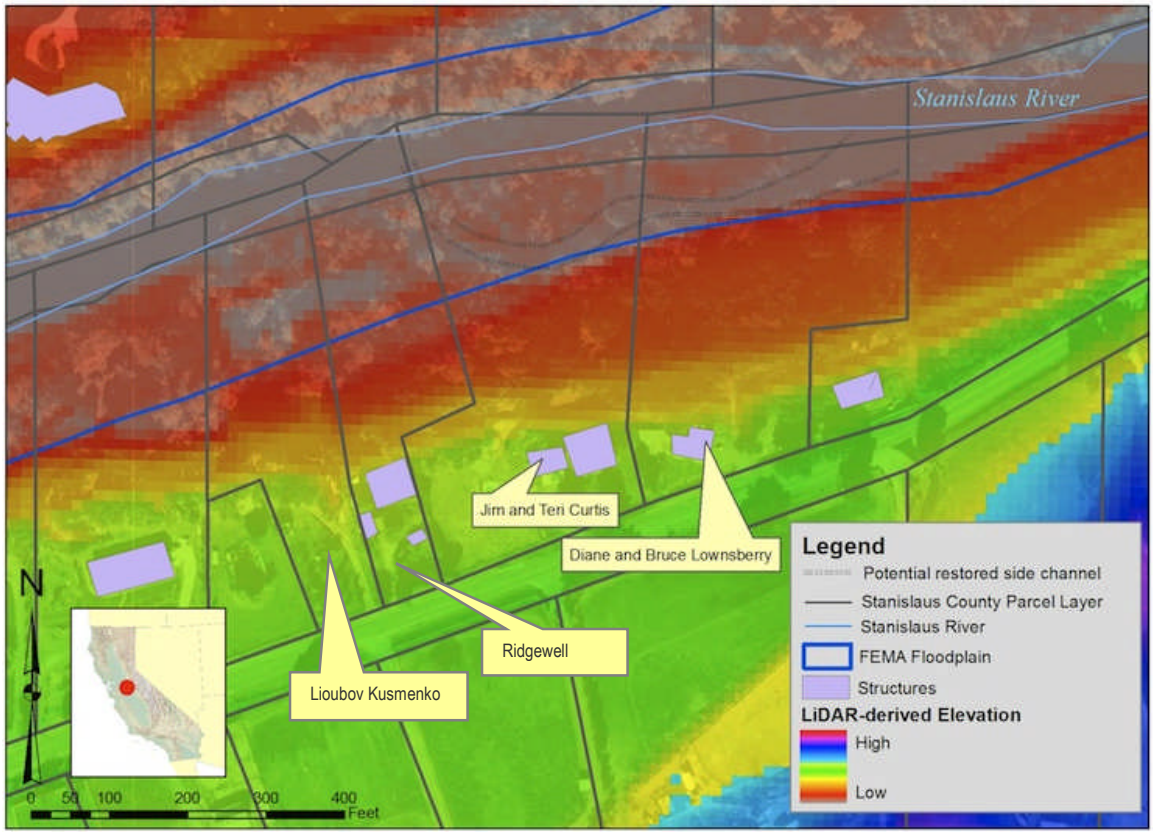

Figure 1. Lancaster Road Side Channel Restoration Project, Stanislaus River, CA with ownership parcels, FEMA floodplain, river extent, and LiDAR-derived topography (see Legend).

APPROACH

Overview

Generally, assessment of restoration actions should include three types of monitoring: implementation; effectiveness; and validation (MacDonald et al. 1991; Kershner 1997; Mulder et al. 1999). Time scales, project aspects, and objectives addressed will vary among types of monitoring, but the basic questions and time frames are included in Table 1.

Table 1. Monitoring types for restoration projects (Stillwater Sciences 2006).

Type of Monitoring	Question Addressed	Time Frame
Implementation	Was the project installed as planned?	1 – 6 months
Effectiveness	Was the project effective at meeting restoration objectives?	1 year to decades
Validation	Are the basic assumptions behind the project conceptual model valid?	5 – 10 years

With the following monitoring program for the Lancaster Road project, we will include each type of monitoring to answer critical questions about project success. Success of implementation will be carefully tracked using physical parameters, the effectiveness of the project will be assessed with a variety of physical and biological parameters important for juvenile salmonid rearing habitat, and the ultimate success of the project in terms of juvenile salmonid growth potential will be tested using a bioenergetics model. The results of the monitoring will serve to validate the basic assumptions about recovering floodplain and side channel habitat. This monitoring program is designed to determine and document project outcomes, and serve to inform fisheries scientists with a regional-level understanding of ecosystem dynamics in the Sacramento-San Joaquin watersheds.

Implementation Monitoring

Implementation monitoring will determine if the restoration project was implemented according to the design plan, and if it met the goals of the project. Generally, monitoring occurs after construction is complete, however some aspects will be carried out during implementation as a check on design appropriateness (Kershner 1997). Mid-course corrections can be made as appropriate. In addition to tracking the success of the implementation in terms of physical structure, we will also investigate the restored channel and floodplain function in terms of hydrology and flooding inundation. The frequency and duration of flooding is among the primary drivers of habitat productivity in terms of accessibility for fish, prey resource production, and habitat maintaining processes (Hill et al. 1991; Tockner et al. 2000). Projections were established during the project design planning for frequency and duration of inundation. To determine if the project was installed as planned, the following monitoring components will be addressed (Table 2):

Table 2. Implementation monitoring components (Stillwater Sciences 2006), revised.

Component	Question(s)	Parameter	Timeline
C1. Constructed topography/bathymetry match those in project design plans.	Does the constructed topography/bathymetry match design plans?	Topography and Bathymetry	During and Immediately following construction; September 2011
C2. Inundation frequency and duration matches target objectives.	Does duration and magnitude of flooding match design plans?	Discharge, flooding inundation, rate of recession	Following construction, then continuous; October 2011 – September 2014

Effectiveness Monitoring

The primary question to be answered by the effectiveness monitoring is: was the project effective at meeting restoration objectives? Site-specific effectiveness monitoring will track physical conditions and biological responses necessary to provide productive rearing for juvenile salmonids. Effectiveness monitoring is complex and requires evaluating the outcomes of multiple objectives relating physical, biological, and biogeochemical factors at work in the river-floodplain ecosystem (Stillwater Sciences 2006). It is important to include the physical parameters of the aquatic and terrestrial environments (i.e., riparian areas). Hydrology and water quality are important parameters to understand when assessing function in aquatic habitats. These physical parameters are likely controlling the biological responses (also important to determine with robust data) in the side channel and floodplain in terms of fish use and residence, invertebrate production, fish foraging success, diet composition and potential growth. Effectiveness monitoring is hypothesis driven. The effectiveness monitoring for the Lancaster Road project is designed to test the following two hypotheses (Table 3).

Table 3. Effectiveness monitoring hypotheses, questions, parameters measured, and timeline.

Hypothesis	Question(s)	Parameters Measured	Timeline
$H1_0$: *Restoring floodplain processes in the Stanislaus River does not result in improved habitat conditions for salmonid rearing habitat.* $H1_a$: *Restoring floodplain processes in the Stanislaus River results in improved habitat conditions for salmonid rearing habitat.*	Are habitat conditions in project area suitable for juvenile salmonid rearing? Are conditions following restoration significantly different than reference sites?	Flooding Inundation Water Velocity/Depth Water Temperature Dissolved Oxygen Turbidity Fish Surveys Macroinvertebrates	February, March 2010 – 2014 April, May 2010 – 2014
$H2_0$: *Restoring floodplain processes in the Stanislaus River does not result in improved conditions for native vegetation communities.* $H2_a$: *Restoring floodplain processes in the Stanislaus River does result in improved conditions for native vegetation communities.*	Was there an increase in native vegetation in the project area? Was the cover of non-native invasive plant species reduced or prevented?	Photo Points Field-Collected Vegetation Data	June, July 2010 – 2014

These questions align with the target objectives for the overall project. Those physical and biological parameters closely aligned with defining productive rearing habitat for salmonids will be tracked with the monitoring program. Those data will enable the CFS team to determine if the project was effective at recovering productive juvenile rearing habitat and conditions to maintain native plant communities. The additional experimentation in the Validation Monitoring will provide quantitative growth potential estimates to further address productivity in the restored site. By using the hypothesis testing approach and answering detailed questions associated with the project, we will be able to monitor the project's effectiveness and provide detailed information to inform ongoing restoration for salmonids throughout the Central Valley.

Validation Monitoring

Validation monitoring is carried out to verify the underlying assumptions of the project conceptual model, and as a consequence this type of monitoring has a research focus (Kershner 1997). These studies are designed to provide support to the previously stated hypothesis and to primarily address the following question: are the basic assumptions behind the project conceptual model valid (i.e., does the project contribute to increased productivity for juvenile salmonid populations in the Stanislaus River)? The studies also investigate the linkages between ecosystem processes and native plant community response to restoration.

We will use a bioenergetics model to assess juvenile Chinook salmon performance in the river mainstem and restored site, as a way to compare the potential improvement in habitat of the side channel restoration. The bioenergetics model is a powerful tool to assess habitat in terms of potential fish growth and has been used by other researchers aiming to assess restoration success (Sommer et al. 2001; Madon et al. 2001; Gray 2005). These experiments will provide critical evidence to support the hypothesis of restoring habitat productivity, and will serve to provide the robust assessment necessary to determine true project success. The model's energy-balance approach estimates growth as food consumed (C) minus the energetic costs of respiration (R), specific dynamic action (cost of processing a meal) (S), and wastes (egestion (F) and excretion (U)). Model inputs will include site-specific temperature, fish size, diet composition and prey energy content. By demonstrating the benefit available to rearing fish, the work should increase our understanding of mechanisms of channel enhancement and floodplain restoration, and the links between healthy ecosystem, hydrologic and geomorphic processes (Merz et al. 2004; Wheaton et al. 2004a, b).

The following hypotheses will be tested to determine the benefit recovered side channels and seasonally inundated floodplain habitats to juvenile salmonids (Table 4).

Table 4. Validation monitoring hypotheses, questions, parameters measured, and timeline.

Hypothesis	Question(s)	Parameters Measured	Timeline
$H1_0$: *Restoring floodplains in the Stanislaus River provide no productive salmonid rearing habitat.* $H1_a$: *Restoring floodplains in the Stanislaus River provides productive salmonid rearing habitat.*	Does restoring floodplain processes recover productive habitat for salmonid rearing?	Juvenile Growth Potential determined with Bioenergetics Model -fish size, diet composition, consumption rate, prey energy content, and temperature conditions	February, March 2012 – 2014

$H2_0$: *Restoring floodplains in the Stanislaus River does not restore ecosystem processes that lead to an increase in native vegetation cover and complexity.* $H2_a$: *Restoring floodplains in the Stanislaus River does restore ecosystem processes that lead to an increase in native vegetation cover and complexity.*	Does restoring floodplains recover ecosystem processes that affect the success of natural native plant recruitment?	Flooding inundation Sediment dynamics Woody plant recruitment Total plant species diversity	June, July 2012 – 2013

Sampling Sites and Study Design

Sampling sites will be selected in a stratified, random manner using ArcGIS (e.g., Hawth's tools) and navigating to the pre-selected sampling locations with a sub-meter GPS. The study design includes sampling from the side channel and river mainstem prior to project construction, including fish use, invertebrates, photo points, and vegetation analysis. After construction, sampling will continue in the same locations to track the physical and biological changes in these parameters after construction. Sediment permeability data will be collected following construction. A vegetation analysis will follow the survival and vigor of the native vegetation, along with documenting species composition and percent cover for three years post-implementation. An illustration of the sampling effort provides an overview of the monitoring program, although true locations of sampling are not reflected (Figure 2). Table 5 provides details about the parameters the CFS team will assess as part of this monitoring program. River discharge will be obtained from gauges at OBB and GDW, and then compared with onsite data obtained from the pressure transducers. Depth, velocity, turbidity, and DO measures are collected concurrently with invertebrate collections, however since invertebrates will be collected in the river mainstem and the side channel with randomly-selected, stratified samples those data can be used to compare conditions in the side channel and those available to rearing juvenile salmonids in the mainstem.

Relevé field sampling (CNPS 2007) is used for vegetation data collection. This protocol follows methods of vegetation community sampling developed by the California Native Plant Society and CDFG to meet the standards developed by the Federal Geographic Data Committee (Jennings et al. 2009). These standards have been submitted to the State Legislature as vegetation mapping standards for California (CDFG Item 3600-001-0001). Furthermore, the San Joaquin Valley has been identified by CDFG as a high priority area for vegetation sampling, classification and mapping (CDFG 2007). The relevé provides detailed quantitative measures of vegetation structure, composition and cover dominance that are collected efficiently, analyzed statistically and are accurately repeatable across time by trained personnel. It also collects habitat information per the California Wildlife-Habitat Relationships System (see http://www.dfg.ca.gov/biogeodata/cwhr/). Additionally, we will map woody stem recruitment within a gridded subplot of each relevé.

Before and after channel bathymetric and floodplain topographic surveys will document the dimensions and elevations within the project area. Additionally, topographic surveys will be

conducted on an annual basis to monitor the project area and fluctuations in bed elevation resulting from sediment deposition and scour and, potentially, lateral shifts of the channel. Changes are expected as part of the natural function of the river landscape, and a better understanding between the topographic characteristics and biological function will be enabled by these data collections. Cross-section and longitudinal profile surveys will provide detailed documentation of elevations, dimensions, and forms of the main channel and floodplain.

Relative fish abundance and diet composition will be evaluated at aquatic habitat sampling sites by multi-pass electrofish sampling (Van Deventer & Platts 1989; Reynolds 1993) and gastric lavage (Haley 1998; Koehler et al. 2006). These methods allow collection of information on densities and diet composition *without mortality*. Diet samples will be processed following standard procedures described in Terry (1977) and Gray et al. (2002). Diet composition information may also be available (by gastric lavage) of fish obtained during the ongoing RST operations, if necessary. A relative consumption rate will be determined by assessing the weight of the stomach contents to the weight of the fish (ration). Prey energy will be generalized using literature values. Several studies have suggested the use of models to assess habitat (Madon et al. 2001), or used it to assess relative conditions in a restored floodplain (Sommer et al. 2001). These data will provide critical information to address questions associated with implementation, effectiveness and validation. Our intent is to document that the project was implemented according to design plans, is effective in terms of providing habitat for riparian vegetation and salmonids, and validates project assumptions regarding the potential productivity for salmonids by restored river landscapes.

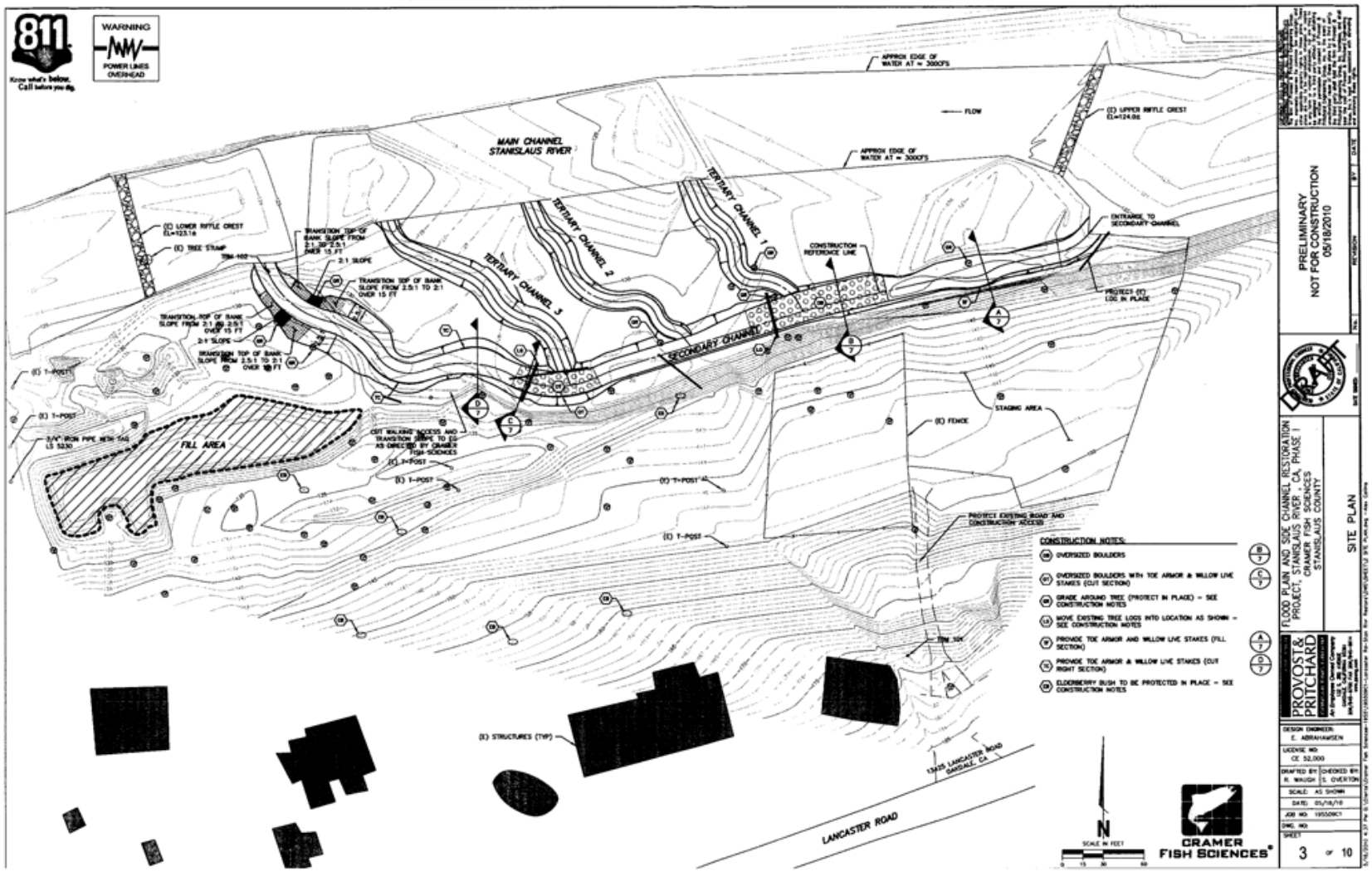

Figure 2. General overview of the Lancaster Road Floodplain Restoration project.

Table 5. Monitoring study design and additional details.

Monitoring Parameter	Description/Use	Field Equipment	Personnel	Time Period Collected	Implementation	Effectiveness	Validation
Hydrology							
Discharge	Determine outflow conditions	NA	USBR	entire project period			
Flooding Inundation and Rate of Flow Recession	Determine frequency and duration of flooding events before and after restoration actions	Pressure Sensors	CFS	entire project period	X	X	
Water Velocity	Assess instantaneous habitat conditions	Flowmeter	CFS	seasonally		X	
Water Depth	Assess instantaneous habitat conditions	Measuring Stick	CFS	seasonally		X	
Topography/Bathymetry							
Topographic Surveys	Determine elevations across project site	Survey Equipment	P&P/CFS	annually	X		
Cross-sectional Surveys	Determine elevations at several randomlly distributed cross-sections	Survey Equipment	P&P/CFS	annually	X		
Sediment Characteristics							
Permeability	Determine level of embeddedness	Stand Pipe	CFS	seasonally		X	X
Surface Composition	Determine surface substract composition	Pebble Counts	CFS	seasonally		X	X
Bulk Composition	Determine % fines	Bulk Sampling	CFS	annually		X	X
Water Quality							
Temperature	Assess instantaneous habitat conditions	TidBit Continuous Data Logger	CFS	continuously		X	X
Dissolved Oxygen	Assess instantaneous habitat conditions	DO Meter	CFS	seasonally		X	
Turbidity	Assess instantaneous habitat conditions	Turbidity Meter	CFS	seasonally		X	
Biological Conditions							
Photo Points	Document general changes in the system following restoration actions	Digitial Camera and tripod	CFS	seasonally	X	X	
Vegetation Characteristics	Track vegetation conditions in the project site and an adjacent reference	Field survey equipment	botanist	annually	X	X	X
Wildlife Surveys	Track wildlife activity and use in the project area	Binoculars, GPS	CFS	seasonally	X		
Fish Surveys	Determine juvenile fish presence and abundance at project site; Use enclosure nets to determine site-specific fish diets and consumption rates;	Beach Seine, Electrofisher, Gastric Lavage Equipment, GPS, etc.	CFS	seasonally	X	X	X
Macroinvertebrates	Determine prey resource availability and composition	Hess Sampler, Drift Collector	CFS	seasonally		X	X

METHODS

The following provides detailed descriptions of the methods used for the various monitoring efforts described in this program. Our objective is to address our questions and hypotheses with targeted, efficient sampling and robust, quality data. Standard methods will be used for most monitoring activities and statistics will be applied to the results appropriately to test our hypotheses. All field activities will be conducted with qualified personnel trained in first aid and all safety precautions.

Spatial Database

Global Position System (GPS)

The CFS team will collect as much monitoring information as possible with location information using the Trimble GeoXT™ (GeoExplorer® 2008 series). Data dictionaries will be built using the PathFinder Office™ software package to simultaneously enable easy collection of survey and location information. Data will be downloaded and post-processed immediately (within 24 – 48 hours), keeping in mind base stations are generally updated every 24 hours. Post-processed data will be checked for errors and stored with backups created periodically.

Geographic Information System (GIS)

The CFS team will use ESRI (www.esri.com) GIS to collate and summarize some of the physical and biological data collected by this monitoring program. The GIS links the spatial information obtained by GPS to photos, data tables, and other files. This spatial database system can be queried to obtain information to apply to other analyses (e.g., bioenergetics, vegetation controls, etc.). Field collected GPS data are exported into .shp files which are then opened with ArcView 9.2 software package. Exchange of data layers is facilitated by this spatial database.

Photo Points

Photo points will be established at 10 sites within the project area. Monuments to mark sites will be established. A standard height platform will be used to take photographs, so all images are collected at the same height. We will take four photos in the cardinal directions at each sampling site. Photos will be labeled and stored as part of the ArcGIS spatial database developed during monitoring activities. Qualitative conditions can be compared using the photo series and change due to restoration activities can be documented.

Hydrology

River Discharge and Flooding Inundation

Understanding the hydrology of the project area is essential for testing the project hypotheses. We will use discharge data from either Goodwin Dam or Orange Blossom Bridge (gages operated by USBR) in conjunction with stage data from pressure transducers and data collected from flow transects to determine flooding inundation in terms of duration and magnitude of flows. A series of five (5) continually recording in-channel and floodplain pressure transducers (e.g., Onset Computer, Inc.; HOBO® U20) will be installed inside channels to determine

magnitude and duration of inundation. One logger will remain on the upland as a constant record of local barometric pressure. Loggers will be downloaded monthly and data summarized to evaluate flooding inundation compared with plan estimations. Locations of all pressure transducers will be recorded with sub-meter accuracy GPS and camouflaged as well as possible to reduce chances of vandalism or theft.

Water Velocity/Depth

Depth and water velocity will be measured at each sampling site before and after gravel augmentation and floodplain regarding. A Marsh-McBirney portable velocity meter (Flo-Mate™ Model 2000; Hach® Company) will be used for taking water velocity measurements at each sampling site. The unit uses an electromagnetic sensor to measure the velocity in a conductive liquid such as water. The velocity is in one direction and displayed on a digital display as feet per second (ft/s) or meters per second (m/s). The device measures water velocity using Fixed Point Averaging (FPA), which is defined as: average velocity measured over a fixed period of time (CFS uses a 60 second time interval). At each site the depth of the velocity measurement varies depending on water depth. For depths less than 2 ft (0.6 m), water velocity is taken at 60% of depth (measured from water's surface). For depths greater than 2.0 ft (0.6 m), water velocity is taken at 20% and 80% of depth and then averaged. For each site, total water depth and average velocity is recorded.

Flow Transects

A specific site will be selected to perform flow transect measurements to determine localized river discharge. A 100 m measuring tape will be secured to the opposing banks perpendicular to the flow approximately 1 – 2 ft (0.3 – 0.6 m) above the water surface (Figure 3). The measuring tape will be pulled taught and tied off (Figure 3). Measurements will be taken every 0.5 m across the width of the wetted channel.

Figure 3. Technician stretching measuring tape across a river channel.

Discharge (*Q*) is then calculated using the following formula:

$$Q = \sum (V*D*W \text{ at each station})$$

where, V= average velocity, D=depth, W=width of station

Bathymetry and Topography

Topographic Surveys

The CFS team will work with Provost & Pritchard Consulting Group, Ltd. to document the topography of the project area, and location and extent of the existing side channel. Topographic surveys were conducted in July 2009 to inform project design plans using a Trimble RTK GPS. Results of the topographic survey were post-processed and corrected as necessary to create a digital elevation model (dem). This dem was used by the CFS project team in ArcView to determine new side channel extent and cut/fill volumes. After project implementation, topographic surveys will be repeated annually to document correct implementation and track side channel morphology for up to three years post-project.

Cross-section and Longitudinal Profile Surveys

A series of five cross-sections will be established in the project site across the mainstem side channel and surveyed annually to document changes due to restoration activities along the extent. Cross-sections will also be used to evaluate if constructed floodplain elevations provide: 1) the desired elevations from groundwater (this will be evaluated in conjunction with groundwater monitoring), and 2) floodplain and secondary channel inundation depths suitable for juvenile Chinook salmon. The surveys of these cross-sections will occur concurrently with topographic/bathymetric work when feasible.

Water Quality

Water quality and temperature monitoring will be used to track water quality conditions (i.e., temperature, dissolved oxygen, and turbidity). Restoration objectives focus on achieving water quality conditions that support rearing and spawning of juvenile Chinook salmon and steelhead. Water quality monitoring will also be a component of regulatory monitoring during project construction activities.

Water Temperature

Continuously recording data loggers (i.e., Hobo® U20; Onset Computer, Inc.) for temperature and water level (i.e., pressure) will be installed in the main channel, side channels, and floodplain to verify that the restored habitats maintain acceptable water temperatures during salmonid rearing life stages. By tracking the water temperatures, non-advantageous changes will also be detected. Specifically, providing a good understanding of the habitat conditions to ensure targets are met, and higher temperatures than expected do not lead to improvements in habitat conditions for non-native species. Data loggers will be installed during pre- and post-project monitoring work to track the temperature conditions both before and after construction activities. Data loggers will be installed at the permanent sampling locations and downloaded according to the manufacturer's specifications.

Dissolved Oxygen

During seasonal field trips, dissolved oxygen data will be collected from each sampling location monthly using a handheld dissolved oxygen instrument (i.e., YSI® Inc.; Model ProODO™). These spot measures are designed to determine if minimum criteria for water quality are met, and to meet effectiveness monitoring objectives by determining if performance criteria for dissolved oxygen are met. The CFS team will also monitor conditions during implementation to track potential impacts to water quality.

Turbidity

During field trips, instantaneous turbidity will be measured in Nephelometric Turbidity Units (NTU) using a turbidity meter (Hach® Company; Model 2100P). These spot measures are also designed to determine if minimum water quality criteria are met, and to meet effectiveness monitoring program guidelines. The CFS team will also monitor turbidity during project construction to insure water quality standards required by permitting are met.

Vegetation Characteristics

We will use two vegetation data collection methods to test project hypotheses regarding natural recruitment following restoration activities. In addition to monitoring the survival and vigor of any planted stems, we will use two vegetation data collection methods to test project hypotheses about the success of revegetation efforts and natural recruitment following restoration activities. To improve the probability of detecting changes in vegetation patterns due to project implementation, we will place permanent plots at an upstream control site and at the project site using a stratified random sampling approach. Measures of vegetation recruitment, composition, dominance and structure over time will be correlated with measures of sediment distribution, hydrology and topography to document project effects and suggest causal mechanisms.

The project area will be stratified by flood recurrence intervals as defined in the project design plans. The secondary channel is predicted to flow at the 1.5-year recurrence interval while tertiary channels 1 and 3 are predicted to flow between the 1.5- and 3-year interval. Tertiary channel 2 and the remainder of the island are predicted to flood above the 3-year recurrence interval. All sampling sites will be surveyed to provide GPS coordinates, and annual monitoring in the early summer (or peak season for herbaceous flowering plants) will occur. The number of plots will provide adequate sample sizes necessary to provide robust data for statistical tests and comparisons. A 100 m^2 (10 m x 10 m) sampling plot will be centrally located within each polygon selected for sampling. This is smaller than the standard for riparian shrub and tree vegetation (CNPS 2007) but allows for increased replication across the project area. The following protocol will be applied to the project area and upstream control sites. All plots will be marked with GPS locations, photographs, and detailed on-the-ground mapping and descriptions. Vegetation and substrate sampling will follow the California Native Plant Society Relevé Protocol (CNPS 2007). A 16 m^2 (4 m x 4 m) subplot will be placed in the northwestern corner of each relevé. A 1 m^2 grid will be laid and all woody seedlings will be mapped with location, species and diameter class. To address questions of recruitment, native and non-native cover and vegetation community organization data listed in Table 7.I, 7.II and 7.III will be collected for all plots.

Table 7. Field Collected Vegetation Data

DATA TYPE	CLASS	SUBCLASS	EXTENT
I. Vegetation. Complete composition by stratum will be identified and cover visually estimated.	Tree Shrub Herb Seedling Sapling Non-vascular		
II. Surface. The percent cover of each surface will be visually estimated.	Basal area of stems Bedrock Litter Water Soil/rock:		
		Fines Gravel Cobble Stone Boulder	<0.2 cm 0.2-7.5 cm 7.5-25 cm 25-60 cm >60 cm
III. Recruitment. Mapping and diameter of all woody seedlings within subplots.	Species Stem diameter	 <1.0 cm 1.0 -10.0 cm	 < 1.0 cm Actual diameter

Wildlife Surveys

Wildlife surveys will occur with qualified personnel following guidelines outlined by USFWS and CDFG (http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html). These surveys will meet permitting requirements for the protection of listed species, which may potentially occur in the area. There will be a total of three types of surveys before project implementation for species identified in the Environmental Assessment/Initial Study (CFS 2010). The first series of surveys will be conducted for Red legged frog, Western pond turtle, and Spadefoot toad. There will be three day surveys (2.5 hrs) and four night surveys (1 hr) for a total of 12.5 hrs (plus travel, setup time). Day surveys consist of scanning ponds or other suitable habitat to try to visually locate species of interest, and then wading through the area. Night surveys involve using a light and binoculars and locating frogs by eye shine. The second series of surveys will be conducted for California Tiger Salamander. Protocols from the USFWS recommend conducting surveys once a month in March, April, and May for two consecutive seasons. Surveys will be conducted using dipnets, seines, or minnow traps. Drift fences in fall and winter will have pit fall traps. A total of nine surveys need to be conducted which include larval surveys, and setting and collecting pit fall traps for adults for a total of 63 hrs (plus travel, setup time). The third series of surveys will document site use by Swainson's hawk, San Joaquin kit fox, American badger, and the Giant Garter snake. Swainson's hawks are searched for visually; if one is spotted then nesting trees need to be identified in the area. If nesting trees are located, their spatial information is collected with GPS. San Joaquin Kit Fox and American badger surveys must be conducted by walking transects spaced 30 – 100 ft (9.1 – 30.5 m) apart looking for dens and other indication of

animals. Once potential dens have been located 10 night surveys need to be done to determine active dens. If an active den is found, then camera/bait stations need to be set up and additional time will be required. Time to survey transects is about 4 hrs, and if any dens are located an additional 46 hrs of survey time may be needed. The USFWS survey protocols for the San Joaquin kit fox require surveyors to have 360 hrs of survey experience in traditional kit fox survey techniques. Giant Garter Snake surveys will occur concurrently with other wildlife surveys, and need to be conducted 24 hours prior to construction.

Fish Surveys

Snorkel Surveys

Snorkel surveys will be conducted to assess juvenile and adult use of the river and restored sites. Snorkeling methods will be consistent with other studies (Edmundson et al. 1968; Hankin and Reeves 1988; McCain 1992; Jackson 1992; Dolloff et al. 1996; Murphy and Willis 1996; Cavallo et al. 2003, O'Neal 2007). Sample units (i.e., 50 m in length) will be snorkeled by two divers moving upstream adjacent to each other for margin habitats and downstream for mid-channel habitats. Fish will be observed, identified and counted by size group as divers proceeded up or down the sampling unit. Counts will be compiled for all divers and recorded as a total for each sample unit. Fish will be categorized by species and size classes (0 – 50 mm, 51 – 80 mm, 81 – 100 mm, 101 – 120 mm, 121 – 150 mm, 151 – 200 mm, 201 – 300 mm, and >301 mm). In addition to the above categorizations, additional mesohabitat quality metrics were assessed. Habitat characterizations include qualitative assessments of: river margins; cover habitat; and dominant and sub-dominant substrate types.

Survey timing will coincide with juvenile Chinook salmon rearing in the early spring. Stream flow conditions must also be considered prior to conducting a survey for safety precautions. All surveys will be lead by an individual with training and experience conducting snorkel surveys. Snorkel surveys are most often conducted using teams moving through a survey area in a concerted manner to ensure complete coverage. Generally, teams spread laterally across a channel with dispersion based on underwater visibility. Teams should move at the same rate in parallel lanes to prevent double counting fish. Movement most often occurs in the upstream direction to: 1) prevent turbidly from obscuring observations; and, 2) maximize fish observations because fish most often orient facing upstream. To help minimize disturbing fish, surveyors attempt to limit fast or sudden movements and wear mud-brown colored Stream Count drysuits (O.S. Systems, Inc.). Dive slates will be used to record fish species, size categories and other observations.

All surveyors will be proficient in the identification of fish present in the Stanislaus River region (McConnell and Snyder 1972). Daytime surveys generally occur when water temperatures range between 10°C and 18°C. Daytime water visibility is generally the best between late morning and early afternoon, and cloudy or overcast days are preferred over clear sunny days to reduce the effects of shadows on the water. Nighttime surveys are preferred when water temperatures are below 10°C or above 18°C. To gather presence/absence data and baseline habitat use, only a one-pass approach is needed.

River margins will be classified according to position in the channel (i.e., left, middle, or right) and margin type (i.e., bar, bank or main channel). Bar margins are generally shallow with a

gradual slope and typically limited vegetation due to scour and regular inundation during high flow events. Bank margins are generally deeper with steep eroding banks and more extensive vegetation; these margins often occur opposite of bar areas against bluffs and levees where high flow induces greater erosion and scour. Main channel areas are away from bars and banks in the middle of the channel where velocities and depths are greater. Cover habitat will be broken down into three qualitative classes (i.e., type, size, and quality). Cover types include instream, overhead, both, or flooded terrestrial and aquatic vegetation and will be further defined by size categories of less than 15 cm, 15 – 30 cm, and greater than 30 cm. Cover quality will be defined as a combination of the percent of surveyed habitat affected by the cover and the degree to which fish depend on the cover. Dominant and sub-dominant substrate types will be defined by organic matter/silt, sand, gravel, cobble, boulder, bedrock, and rip-rap.

Side channels and floodplain habitats may be surveyed using snorkeling if sufficient water is available to facilitate the survey. Otherwise, other sampling methods will be used such as a backpack electrofisher.

Backpack Electrofishing and Seining

Small beach seines or a backpack electrofisher will be used to collect juvenile salmonids at the restored site, in-river and at a nearby reference site (i.e., Buttonbush Park). Survey timing will coincide with rearing period for juvenile Chinook salmon (March to June). Stream flow conditions must also be considered prior to conducting a survey for safety precautions. All surveys will be lead by an experienced fish biologist with training and experience conducting fish surveys. All surveyors will be proficient in fish identification in the Stanislaus River region (McConnell and Snyder 1972). Daytime surveys generally occur when water temperatures range between 10°C and 18°C. Sampling sites may be sampled using standard electrofishing methods. Cramer Fish Sciences uses a Smith-Root, Inc. Model 12B backpack electrofisher (BPS). All BPS operators and crew are trained in BPS operation according to NOAA NMFS Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act (NOAA 2000). Equipment will be inspected prior to every field use for serviceability to protect fish and ensure safety. Water temperature and conductivity will be measured and recorded prior to every electrofishing survey. No electrofishing will occur when water temperatures reach or exceed 65°F (18.3°C), or when conductivity exceeds 350 μS/cm. Initial BPS settings will be set to NOAA recommended initial settings (100 volts, 500 µs pulse width, and a 30 Hertz pulse rate). When needed, settings will be gradually increased to a minimum level necessary to capture fish. Direct current will always be used and settings will never exceed max allowable settings (400 volts, 5 ms pulse width, and a 70 Hertz pulse rate). A minimum of one assistant will aid in netting stunned fish and other aquatic vertebrates. Collected fishes will be processed following CFS standard field sampling protocol (Gray et al. 2009).

Determining Diet Composition with Gastric Lavage

Following methods described in Haley (1998) and Koehler et al. (2006), stomach contents of juvenile Chinook salmon will be obtained by gastric lavage. Captured fish will be anesthetized with MS-222 (tricaine methanesulfonate; Tricaine-S, Western Chemical Company). The fish will be weighed to the nearest 0.01 g and measured to the nearest 1 mm forklength (FL). For small fish (>50 mm) a small syringe fitted with a 3-mm diameter rubber tube will be put into the fish's esophagus. The syringe will be gently emptied to flush the stomach contents from the fish

into a 106 µm sieve, and the fish will be returned to freshwater to recover. The stomach contents are then washed into a Ziploc™ or Whirlpac™ plastic bag and preserved with 95% ethanol. Organisms in the stomach contents will be examined and identified with a light-dissecting microscope to the smallest taxonomic resolution reasonable (usually species, but in some cases to the family level). Each prey category will be enumerated and weighed (blotted wet weight to the nearest 0.001 g).

Prey Resource (Invertebrates)

A critical component of monitoring habitat function is gathering information on the available prey resource. Juvenile salmonids primarily feed on a variety of drift (available at the surface of the water) and benthic invertebrates, and other insects. Prey resource will be monitored to determine the composition and abundance of various species. Data will be evaluated to determine if the abundance and composition indicates adequate ecosystem health following restoration activities. Invertebrate sampling will occur in replication at the project site and a nearby reference site with samples collected during the rearing period. Less intensive sampling will occur before project implementation; more intensive, monthly sampling will occur during the juvenile rearing period. Benthic macroinvertebrates will be collected with a 330 mm i.d. X 400 mm high, stainless steel 363 µm nitex Hess Stream Sampler (Wildco® Company) (bottom area opening = 0.086 m2) with an attached 368 µm dolphin bucket. Samples are taken to a depth of 15 cm within the substrate. Drift invertebrates will be collected using fallout traps or drift samplers. A fallout trap consists of a shallow pan of soapy water that collects those invertebrates available to fish by falling into water. A drift sampler is used in the main river channel to collect invertebrates floating on the surface of the water. Collected samples are placed in 500 ml bottles with 95% ethanol. Samples will be transported to the laboratory and sorted under a light dissecting scope (e.g., 60X). Taxa will be identified to species as possible; size classes and life stage will be recorded. Organisms will be grouped into functional feeding categories following Merritt and Cummins (1996), Wiggins (1998), and Pennack (1989).

Figure 4. Biologists using Hess Stream Sampler to collect benthic macroinvertebrates in the Stanislaus River (left) and a typical fallout trap (right).

Juvenile Growth Potential Model

To investigate the function of juvenile habitat provided as a result of this restoration project, we will evaluate the change in habitat in terms of modeled growth potential for juvenile salmonids.

Alternative Methods for Obtaining Bioenergetics Model Data

The key parameters to run the bioenergetics model are: temperature, consumption rate, diet composition, prey quality, and fish size. Detailed temperature data will be collected as part of the effectiveness monitoring program. Information on prey quality will use established literature values unless funds support laboratory analysis on energy content. Data on consumption rate and diet composition can be obtained with a variety of methods, considering the proper assumptions.

Method 1: Up to four large enclosure nets (i.e., 10 X 20 ft and X 0.25 in mesh size) will be established in various restored-reference habitat types (as allowable by river conditions). Up to 100 juvenile Chinook salmon will be held in the enclosure nets for 16-24 hours. Diet contents of fish will be determined from samples (n=10-20) collected every eight hours following standard procedures of gastric lavage (see previous description). After 24 hours, any remaining fish will be sampled for stomach contents. Diet information will then be compiled to determine overall diet composition for that habitat type and time of year.

Method 2: Diet information may also be obtained through the fish surveys at the project and control sites. Beach seining or electrofishing may allow low impact capture of juvenile Chinook salmon that could be sampled for diet contents using gastric lavage. Information on consumption rate will have to be based on stomach fullness. Assumptions to this method include assuming the fish have been feeding for the past several hours in the area collected. This method has additional limitations in feasibility due to the very low numbers of wild fish and the inability to collect a suitable sample size.

Method 3: If Methods 1 and 2 are not available, diet information for the local area of the Stanislaus River may be obtained through sampling juvenile Chinook salmon (by gastric lavage) at the RST monitoring operations at Caswell Memorial State Park near Ripon, CA. A sub-sample of juvenile Chinook salmon (up to 10) could be collected during the out-migration. Diet composition information could be collected for early and late out-migrants. Assumptions would include that the fish collected in the RST operations have diets representative of those feeding in the project reach; however, this method would be less suitable for depicting the diets of fish feeding on the restoration floodplain, post-project.

Information from any of the above methods would be used with the "Wisconsin" computer model (Hanson et al. 1997) to simulate fish growth in response to changes in body mass, diet composition, and temperature. Results obtained from these experiments will provide a *relative* measure of potential growth at the various sites.

Data Analysis and Evaluation

Statistical analyses will be performed with several programs (e.g., S+, R, JMP, Origin, PRIMER, and Excel). Multivariate statistics will be used along with linear and multiple regressions to relate various results to explanatory variables, such as vegetation recruitment success, juvenile distribution and abundance, fish use and growth potential to physical conditions. Invertebrate

abundance and composition will be compared with univariate and multivariate statistics to evaluate the different conditions present in project site, reference, and main channel habitats. There are a variety of statistical tools available to analyze data from non-replicated BACI studies (Miao et al. 2009).

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WORK SCHEDULE

Table 8. Work schedule for pre- and post-project monitoring activities.

Date	Survey	Method	Goal and Parameters	Personnel Required	Time	Activities	Number and Processing Time of Samples
Pre-project Monitoring							
July 2009	Topography	Ground survey post-processed and integrated with LiDAR	-Document topography in project area -Collect elevation information using an RTK-GPS; post-process data, create dem, integrate with existing LiDAR data.	2 Biologist; 1 P&P surveyor subcontractor	40 hours, including travel time + subcontract	-Determine topography -Map channel extent -Map other notable features, as appropriate	N/A – Post-processing included in subcontract
June 2010 – survey will be conducted while the site is inundated, if possible. If inundation does not occur, fish sampling will be limited.	Biological	Field data collection including GPS information	-Document pre-project biological conditions -Water temperature, flooding inundation, available prey resources, and fish use.	1 Biologist; 1 Bio-Tech	32 hours each, including travel time + 180 hours of processing time	-Establish transects and photo points -Deploy temperature/pressure loggers -Deploy/collect insect fallout traps -Survey for fish use; collect stomach contents, as available	-30 invertebrate samples (10 replicates per sampling type) -up to 10 stomach samples -temperature and inundation data
July 2010	Vegetation	Relevé and recruitment plots are collected in 8-10 randomly selected locations	-Document pre-project vegetation species composition and percent cover conditions	1 Bio-Tech; 1 plant ecologist subcontractor	50 hours, including travel time + subcontract	-Collect photo point data -Determine species composition and cover along 8-10 plots	-process photos -analyze vegetation data -process temperature and inundation data

						-Download data loggers	
August 2010	Wildlife	Surveys to document wildlife community	-Document pre-project wildlife species presence/absence	1 Biologist; 1 Bio-Tech; 1 Wildlife Ecologist subcontractor	60 hours, including travel time + subcontract	-Collect day/night survey data -Determine species presence/absence along transects -Photo-documentation	-process photos -analyze data -process and summarize data
Project Implementation – circa August to September 2011							
Post-project Implementation Monitoring							
October 2011	Post-implementation Topography	Ground survey post-processed and integrated with LiDAR	-Document topography in project area -Collect elevation information using an RTK-GPS; post-process data, create dem, integrate with existing LiDAR.	1 Biologist; 1 P&P subcontractor	32 hours, including travel time + subcontract	-Determine topography -Map channel extent -Map other notable features, as appropriate	N/A – Post-processing included in subcontract
October 2011	Post-implementation Vegetation	Relevé and recruitment plots are re-collected in same 8-10 randomly selected locations	-Document vegetation species composition and percent cover conditions immediately following implementation. Survey will include assessing vegetation planted as part of restoration activities.	1 Bio-Tech; 1 plant ecologist subcontractor	50 hours, including travel time + Subcontract (includes analysis of vegetation data + 8 hours for processing other data	-Collect photo point data -Determine species composition and cover along 8-10 plots -Download data loggers	-process photos -analyze vegetation data -process temperature and inundation data
November 2011	Post-implementation	Field data collection including GPS	-Document biological conditions immediately following project	1 Biologist; 1 Bio-Tech	32 hours each, including travel	-Establish transects (5) and photo points (10)	-40 photos (10 sites, 4

	Biological	information	implementation. -Water temperature, flooding inundation, hyporheic flow, DO, turbidity will be collected in the restored side channel and river.		time + 180 hours of processing time	-Deploy additional data loggers, as needed -Collect stand pipe information	directions) -temperature and inundation data
Post-project Effectiveness and Validation Monitoring							
March to June 2012 – survey will be conducted while the site is inundated, if possible. If inundation does not occur, fish sampling will be limited.	Biological	Field data collection including GPS information	-Document post-project biological conditions -Water temperature, flooding inundation, available prey resources, and fish use.	1 Biologist; 1 Bio-Tech	32 hours each, including travel time + 180 hours of processing time	-Survey established transects and photo points -Download data loggers -Deploy/collect insect fallout traps -Collect benthic and drift invertebrates, and physical data -Survey for fish use; collect stomach samples	-40 photos (10 sites, 4 directions) -30 invertebrate samples (10 replicates per sampling type) -up to 10 stomach samples -temperature and inundation, data
March-June 2012	Validation Experiments	Determine Consumption Rate and Diets with Enclosure nets; Summarize and include temperature data; Use established values for prey energy to run model	-Determine site-specific consumption rates and diets for juvenile Chinook salmon in the project area -Use enclosure nets and marked hatchery fish to evaluate fish performance in the restored site.	1 Biologist II; 1 Biologist I	40 hours each, including travel time + 175 hours of processing time	-Deploy enclosure net and check conditions -Install water temperature logger inside net -Mark and measure 100 hatchery fish, and hold in enclosure net for 48-72 hours -Process fish according to CDFG protocols and determine stomach contents	-up to 100 stomach samples -process temperature data -determine composition rate

June-July 2012	Vegetation	Relevé and recruitment plots are re-collected in same 8-10 randomly selected locations	-Document post-project vegetation species composition and percent cover conditions	1 Bio-Tech; 1 plant ecologist subcontractor	50 hours, including travel time + subcontract	-Collect photo point data -Determine species composition and cover along 8-10 plots -Download data loggers	-process photos -analyze vegetation data -process temperature and inundation, data
November 2012	Sediment characteristics	Field data collection including GPS information	-Document sediment characteristics -Water temperature, flooding inundation, hyporheic flow, DO, turbidity will be collected in the restored side channel and river	1 Biologist; 1 Bio-Tech	32 hours each, including travel time + 180 hours of processing time	-Collect sediment samples -Download data loggers -Collect stand pipe information, if applicable	-process core sample data -process temperature and inundation data
March-June 2013 – survey will be conducted while the site is inundated, if possible. If inundation does not occur, fish sampling will be limited.	Biological	Field data collection including GPS information	-Document biological conditions following restoration -Water temperature, flooding inundation, available prey resources, and fish use -Post-implementation biological surveys will also include validation experiments to assess juvenile salmonid growth potential, if possible	1 Biologist; 1 Bio-Tech	32 hours each, including travel time + 180 hours of processing time	-Download data loggers -Deploy/collect insect fallout traps -Collect benthic and drift invertebrates, and physical data -Survey for fish use; collect stomach samples, as available	-30 invertebrate samples (10 replicates per sampling type) -up to 10 stomach samples -process temperature and inundation data
May 2013	Validation Experiments	Determine Consumption Rate and Diets with Enclosure nets; Summarize and include temperature data; Use established values	-Determine site-specific consumption rates and diets for juvenile Chinook salmon in the project area -Use enclosure nets and marked hatchery fish to evaluate fish performance in the restored site	1 Biologist II; 1 Biologist I	40 hours each, including travel time + 175 hours of processing time	-Deploy enclosure net and check conditions -Install water temperature logger inside net -Mark and measure 100 hatchery fish, and hold	-up to 100 stomach samples -process temperature data -determine

		for prey energy to run model				in enclosure net for 48-72 hours -Process fish according to CDFG protocols and determine stomach contents	composition rate
June-July 2013	Vegetation	Relevé and recruitment plots are re-collected in same 8-10 randomly selected locations	-Document post-implementation vegetation species composition and percent cover	1 Bio-Tech; 1 plant ecologist subcontractor	50 hours, including travel time + subcontract	-Collect photo points -Determine species composition and cover along 8-10 plots -Download data loggers	-process photos -analyze vegetation data -process temperature and inundation data
May 2014 survey will be conducted while the site is inundated, if possible. If inundation does not occur, fish sampling will be limited.	Biological	Field data collection including GPS information	-Document biological conditions -Water temperature, flooding inundation, available prey resources, and fish use -Post-implementation biological surveys will also include validation experiments to assess juvenile salmonid growth potential, if possible	1 Biologist; 1 Bio-Tech	32 hours each, including travel time + 180 hours of processing time	-Download data loggers -Deploy/collect insect fallout traps -Collect benthic and drift invertebrates, and physical data -Survey for fish use; collect stomach contents, as available.	-30 invertebrate samples (10 replicates per sampling type) -up to 10 stomach samples -process temperature and inundation data
May 2014	Validation Experiments	Determine Consumption Rate and Diets with Enclosure nets; Summarize and include temperature data; Use established values for prey energy to	-Determine site-specific consumption rates and diets for juvenile Chinook salmon in the project area -Use enclosure nets and marked hatchery fish to evaluate fish performance in the restored site	1 Biologist II; 1 Biologist I	40 hours each, including travel time + 175 hours of processing time	-Deploy enclosure net and check conditions -Install water temperature logger inside net -Mark and measure 100 hatchery fish, and hold in enclosure net for 48-	-up to 100 stomach samples -process temperature data -determine composition

		run model				72 hours -Process fish according to CDFG protocols and determine stomach contents	rate
June-July 2014	Vegetation	Relevé and recruitment plots are re-collected in same 8-10 randomly selected locations	-Document vegetation species composition and percent cover	1 Bio-Tech; 1 plant ecologist subcontractor	50 hours, including travel time + subcontract	-Collect photo points -Determine species composition and cover along 8-10 plots -Download data loggers	-process photos -analyze vegetation data -process temperature and inundation data

My easement deed stats that the easement is designated "HABITAT PRESERVATION AREA, NOT FOR RECREATIONAL USE – NO TRESPASSING, VIOLATORS WILL BE PROSECUTED." The installation of these signs shall be at the expense of the government. I have enclosed a list of birds and animals I have logged on my three (3) acres over the past fourteen (14) years. I believe my deed dated January 15, 1981 habitat conservation plan is working as intended.

LANCASTER ROADSIDE CHANNEL CONSTRUCTION

This is not a pre-existing or natural secondary channel. The previous owner (before Lawnsbery) removed trees of heaven and all vegetation on approximately one hundred (100) feet of river frontage. The corps has a large easement on this property and it is clear cut of everything except valley oaks. The high water of 1997-1998 cut through this area then and two or more high water years after Ranger Jason Anderson said at the time there could be law suits. One Stanislaus county public works person said fill dirt was being set aside for this problem. Obviously, nothing was done.

The first I heard about this project was when I received an invitation from Jim & Terri Curtis on May 27, 2009 to attend a meeting at their home. When I received this invitation, I went directly to Knights Ferry's Head Ranger Angie W. and asked her about the project. She stated she knew nothing about it and that it is federally funded and has nothing to do with the Corps. Two weeks later I found out the Curtis' son was working for Ranger Angie W.

My property is adjacent to Kusmenko property and has suffered no damage from high water. All high water in this area returns to the river at my property lined or before with little or no current visables.

When I attended this meeting, I only knew four (4) people – the Curtis' and the couple that own the property adjacent to me don stream. I met J.D. Wikert, Joseph Merz, Jesse Anderson and Bruce and Diane Lownsbery for the first time.

I noticed everyone arriving at the meeting greeted each other as friends. I was the only one that had to be introduced. I later found out the project was approximately a year old.

I was led to believe at this and other meetings that funding for the project would be down the line. Less than two (2) weeks later I found out from J.D. that funds were granted. Joe Merz pointed out that surveying was the first step and explained in detail what the survey would show. Then he added that they were going to survey my property, not my neighbor down stream, just my property. I informed him at this time he was not surveying my property, that I wanted nothing to do with this project. My only interest was that my property would not be damaged by diverting the power of the river directly at my property. I was told I would never see the water.

I told Joe I was worried about a burm that was in place that was serving as protection for my property being washed out. He told me they had riprap, large stones and fill left over from the project that would almost fill the fill area. At the next meeting however, he pointed out that riprap could not be used on a government project. In the last three (3) months Jesse Anderson enlightened me to the fact that the burm would disappear in approximately one hundred (100) years. I was very concerned about this and contacted Joe. He seemed surprised that Jesse said this. When I ask him how long it would take he said about twenty (20) years. There is no protection in this project for my property.

I have two hundred and forty foot (240') of river frontage that was used by the salmon almost every year. Starting from my beach a large area of small gravel on one end shaded area with moss for small fish. Six to eight (6-8) inch stones where they spawn, large rocks and hardpan, then deep fast water on the other side. Someone poisoned this area in 2004. I reported this to Ranger Angie W. The best trout fishing ever in this area; two families of sucker fish; all kinds of crawfish; river otters every day was all gone overnight. NOT ONE SAMPLE of water was taken.

Another time the river turned milky white for three (3) days. I have pictures of this if you want to see them. More to talk about here.

Every year when the rains start, large amounts of horse manure are dumped into the river. You can smell it up at our home, which is seventy feet (70') above and four hundred feet (400') away from the river. Six o'clock in the morning foam would be eight to ten inches (8-10") high and six feet (6') wide by fifteen feet (15') long across the river. I would like to show the Department of the Interior what Foster Farms Turkey Ranch puts into the river.

My neighbor down river and his neighbor did extensive tractor work on their property line. I was told they put in a boat ramp around the same time two Rangers stopped on my beach and walked up hill to where I was sitting. They said they were taking GPS shots. They went down river for a few minutes then went back up river. I talked to Ranger Angie W. and ask what they were doing on my property. She said they were doing this all up and down the river. Not so! High water that year came up to that point and water back flowed through the boat ramp and onto my property. Nothing was ever done.

I am including a letter from Ranger Nicki Allen that tells it like it is. She did not last long in Knight's Ferry, she was honest and upfront; none of the other Rangers have these qualities.

First, I would ask you to fix the break in the river with fill and riprap. Put the power of the river back where it belongs. If the project has to go in, at least put a burm at the entrance to the fill area large enough to put all the water back in the river at that point. No current into the fill area or past this point.

The fill area leaches water in and out as the river comes up and down. Mallards love the area, but left two (2) years ago because of action in the area. People measuring the river, a boat with four (4) outriggers on it making booming noises, mapping the river bottom. The nesting ducks split.

From where I sit, this project is being organized by the Corps who has never failed to mention eminent domain when I was dealing with them. I see the Corps and Cramer as a gang -- the project as a hate crime – terrorist attack and even smells of elder abuse.

Sincerely,

Curtis E. Sherrill
13319 Lancaster Road
Oakdale, CA 95361

Page 53 – C Significant impact.

55 – B Yes on my property.

57 – C You are altering the course of a river. Significant impact.

D Significant impact flooding of my property and at least two (2) more down stream.

60 – D Significant impact could wash out bottom of road to my lower property.

61 Significant impact – you have the list of birds and animals.

B & C Same as above.

66 I sit on this river two to four (2-4) hours a day. The point where the project goes back in the river has been a spot where drunken young adults stop quite often and hassle everyone on the river. They will find this off-set in the river and it will become a party spot off the river. Trash, broken bottles and noise. The homes on this area will be ransacked for sure. These people will build fires, urinate, defecate and copulate in this area and leave all the trash for someone else to clean up.

Page 72 – A Significant impact.

All the Kramer people will want to be there in the Spring when all the birds are nesting. Rafts will find their way to the hideaway. Large stands of blackberry vines taken out, which is food for birds and foxes.

D. There are thieves on the river. You cannot leave even a folding chair on the river and go to lunch. When they find out that homes are empty during the day, you will see significant impact.

BIRDS FOUND ON MY PROPERTY

1. Bald eagle (fly by) 4 or 5 times a year on river.
2. Red Tail Hawk - large nest across river from start of this project.
3. Red shouldered hawk? Medium size.
4. Cooper's hawk? At bird feeder 3-4 times a week.
5. American kestrel - cottonwoods.
6. Osprey on river daily.
7. Vultures.
8. White tailed kite - top of mature cedar tree out front.
9. Double crested cormorant - fly by on river.
10. Grebe on river.
11. Great blue heron - 2 on river.
12. Great egret - 2 on river.
13. Green heron? Small heron on river.
14. Canadian goose - pair on river last two years.
15. Wood duck - 10-12 pair to start, last year 1 pair.
16. Mallard duck - two pair babies.
17. Gold Eye on river

    Buffle Head
18. Common merganzer - up to 21 birds on river. 10 pair at one time feeing off my beach.
19. Ring necked pheasant.
20. Wild turkey on river - large oak out my back door. Gobbler sounds from project area in Spring.
21. California quail - single on property -- next year 1 male and 2 hens.
22. Plover? Small bird on river edge.

23. Rock dove pigeon - feeder.
24. Morning dove - nesting on property.
25. Ring neck dove.
26. Diamond dove - albino.
27. Barn owl.
28. Small owl?
29. Great horned owl.
30. Black chinned hummingbird.
31. Anna's hummingbird.
32. Calliope hummingbird.
33. Rufus hummingbird - part time we have 6 quart feeders we fill 3-4 times a day.
34. Belted kingfisher on river.
35. Acorn woodpecker - 10-12 in oak t one time -- saw 8 after 1 squirrel.
36. Nuttall - 3? Ladder-backed? Woodpecker - small woodpecker cleans out bird hour for winter use.
37. Northern flicker.
38. Western kingbird - yellow front - nest on transformer.
39. Black phoebe - nest on barn.
40. Hutton's verieo? - 15-20 at a time.
41. Western scrub jay - three pair.
42. Yellow billed magpie - nest on property.
43. Crow - mostly fly by.
44. Tree swallow - 29 bird houses on property - 1 to 6 pair per year.
45. Barn swallow - young every year - no nests.
46. Plain titmouse

47. White breasted nuthatch.
48. Two wren.
49. Golden crowned kinglet.
50. Western bluebird.
51. Hermit thrush.
52. Varied thrush.
53. American robin.
54. Mockingbird.
55. Cedar waxwing.
56. Phainopepla.
57. Starling.
58. Yellow rumped warbler.
59. Black throated grey warbler.
60. Western tanager.
61. Rose breasted grosbeak (5-25-02).
62. Black headed grosbeak.
63. Lazuli bunting.
64. Spotted towhee - 9 at one time.
65. California towhee - two pair (1-16-98).
66. Golden crowned sparrow.
67. White crowned sparrow.
68. Oregon junco.
69. Meadowlark.
70. Blackbird.
71. Hooded oriole.

72. Bullock's oriole.
73. Purple finch.
74. House finch.
75. Lesser bold finch.
76. American gold finch.
77. House sparrow.
78. Red breasted sapsucker (1-20-05).
79. Mountain chickadee (3-16-98).
80. Lark sparrow.
81. Western wood pewee.
82. Golden crowned kinglet.
83. Ruby crowned kinglet - full red cap (11-15-04).
84. Wilson's warbler (9-30-08).
85. Brown headed cowbird.
86. Killdeer.
87. Evening grosbeak (8-20-10).

MISCELLANEOUS ANIMALS:

1. Deer.
2. Fox.

   Red, grey and kit.
3. Brush rabbit.
4. Skunk - civi cat.
5. Coon.
6. Opossum.

7. Gopher snakes.
8. Grey rat.
9. Coyote.
10. Beaver.
11. Muskrat.
12. River otter (4).

MEMORANDUM FOR FILE

December 7, 2001

TRACT 751
Parcel 010-12-26

Owner: Curt Sherrill

Address: 13319 Lancaster Rd.
Oakdale, CA 95361

Telephone: (209) 848-3669

1. On the above date, I, Park Ranger Nicki Allen, met with Mr. Sherrill to discuss a concern expressed by neighbors that trees were being felled into the river and within the easement area. During this visit, Mr. Sherrill showed me the work he and his wife have been doing within the river bottom of their property. I saw no evidence of encroachment. Mr. Sherrill explained that he had been trimming trees since the early morning. One of the trees was within the easement area, but had been trimmed to prevent any safety hazard. Mr. Sherrill explained that his neighbors across the street had been accessing his property and that he did not want anyone to get hurt. Mr. Sherrill acted within the rights of his easement deed.

2. During my inspection of the area, it appeared that Mr. Sherrill has done a great deal of maintenance to the property in the form of clearing downed and dead vegetation which caused a significant fire hazard to his property. Mr. Sherrill explained that he would continue to maintain his property in such a manner as to avoid any fire hazard.

3. Overall, the condition of the easement has not been compromised beyond what is allowed in the deed. In speaking with the Sherrills, it was made clear that they were uncomfortable with the attention of the Corps of Engineers. This was due to several calls placed by neighbors in an effort to bring our attention to the Sherrill's and the activity on their property. However, to this date, it seems none of the inspections have yielded anything reportable.

4. A meeting was scheduled for the following Wednesday December 12, 2001 at 10:00 a.m. to discuss any further matters.

4. Further documentation will follow.

Nicki Allen
Park Ranger
Stanislaus River Parks

751E-1
751E-2
752E
POSTED 1063

43552 JAN 15 81

RECORDED AT 8 BY
Western Title Guaranty Co.
Stanislaus County Division
OFFICIAL RECORDS
STANISLAUS CO., CALIF.
DWAYNE E. LILLY,
RECORDER
BY
ASST. RECORDER

WHEN RECORDED RETURN TO:
DISTRICT ENGINEER
US ARMY ENGINEER DISTRICT, SACRAMENTO
ATTN: REAL ESTATE DIVISION
650 CAPITOL MALL
SACRAMENTO, CALIFORNIA 95814

EASEMENT DEED

THE GRANTORS, SERGEI BUZOLIN and NINA A. BUZOLIN, his wife, for and in consideration of the sum of TWENTY THOUSAND AND NO/100 DOLLARS ($20,000.00), lawful money of the UNITED STATES in hand paid to them by the UNITED STATES OF AMERICA, and the hereinafter enumerated visitor safety control measures, the receipt of which is hereby acknowledged, do by these presents grant unto the UNITED STATES OF AMERICA, and its assigns, a permanent easement and right-of-way for the purposes hereinafter stated, over and through, under, along and across, that certain parcel of land situate in the County of Stanislaus, State of California, and more particularly described as follows, to wit:

TRACT 751E-1
NEW MELONES LAKE - LOWER STANISLAUS RIVER

(For legal description, see Exhibit A-1 attached.)

Said easement and right-of-way are for the following purposes:

(For said purposes see Exhibit B-1.)

43552 JAN 15 81

TRACT 751E-2
NEW MELONES LAKE - LOWER STANISLAUS RIVER

(For legal description, see Exhibit A-2 attached.)

Said easement and right-of-way are for the following purposes:

(For said purposes see Exhibit B-2.)

TRACT 752E APN - 101-12-26
NEW MELONES LAKE - LOWER STANISLAUS RIVER

(For legal description, see Exhibit A-3 attached.)

Said easement and right-of-way are for the following purposes:

(For said purposes see Exhibit B-1.)

LOWER STANISLAUS RIVER
TRACT 752E

A parcel of land situate in the Southwest one-quarter of Section 3, Township 2 South, Range 11 East, Mount Diablo Base and Meridian, County of Stanislaus, State of California, described as follows:

COMMENCING at the Southeast corner of Parcel 1 as shown on that certain Parcel Map recorded in Book 7 at Page 78 of Stanislaus County Records, said corner being marked by a 3/4-inch iron pipe; running thence North along the East line of said Parcel 1, a distance of 456.47 feet to the TRUE POINT OF BEGINNING.

Thence, continuing along said East line North, 101.01 feet to the centerline of the Stanislaus River;

Thence, along said centerline the following two (2) courses:

(1) South 71° 15' West, 384.90 feet;

(2) South 59° 55' West, 106.40 feet to the West line of said Parcel 1;

Thence, South along said West line 107.91 feet;

Thence, leaving said West line the following five (5) courses:

(1) North 59° 23' 00" East, 42.10 feet;

(2) North 67° 16' 50" East, 85.76 feet;

(3) North 66° 47' 50" East, 130.91 feet;

(4) North 69° 32' 25" East, 152.27 feet;

(5) North 70° 39' 25" East, 82.50 feet, more or less, to the TRUE POINT OF BEGINNING.

Containing 1.11 acres, more or less.

43552 JAN 1581

EXHIBIT "A"-3

THE PERPETUAL RIGHT, power, privilege in, upon, over and across the land described in Exhibit "A-1", Tract 751E-1, Lower Stanislaus River Project, in conjunction with the operation and maintenance of the New Melones Lake Project as authorized by the Act of Congress approved 22 December 1944 (58 Stat. 887), as modified by the Act of Congress approved 23 October 1962 (72 Stat. 1191); to maintain, patrol, regulate and restore fish and wildlife habitat, together with the area covered by this easement with the landowner reserving the right to post "No Trespass" signs to public access, and to use existing road systems within said lands with the right of ingress and egress to and within said land through other lands of the owner subject to the prior approval of the landowner, for the purposes of exercising the rights herein granted; provided that, without the prior written approval of the District Engineer, U. S. Army Engineer District, Sacramento, there shall be:

a. No defoliation to any extent whatsoever of any trees, brush or other vegetation in its natural state by any cause, purposes, or means, nor any trimming, felling and cutting thereon or removal therefrom of any trees, brush or vegetation in its natural state, except as necessary for safety of the land users and the prevention of fire hazard.

b. No removing, shifting or altering in any manner of gravel deposits as they are now or may hereinafter exist on said lands, except for the maintenance of existing roads;

c. No construction of new structures or improvements nor expansion of any structures or improvements on said lands, except for the maintenance of camping sites.

PROVIDED, HOWEVER, that nothing contained herein shall prohibit the use of said lands for the reasonable grazing of livestock and maintaining horse trails.

TOGETHER WITH the perpetual right, power, privilege and easement occasionally to overflow, flood and submerge the land, to construct, operate and maintain channel improvement works in, upon, over and across the said land, without changing the existing contour of the land or the natural habitat; to clear, remove and dispose of any timber, debris and obstructions in the river which, in the opinion of the District Engineer may be detrimental to the project.

43552 JAN 1581

THE ABOVE ESTATE is taken subject to existing easements for public roads and highways, public utilities, railroads and pipelines, and shall not allow the general public any right or authority to utilize the lands granted herein as areas for public access, recreation, trails or pathways.

THE GRANTORS reserve the right to have fences, pumps and appurtenant facilities, electric power lines, docks and beach facilities; provided that no structures for human habitation shall be constructed or maintained on said land; that no other structures shall be constructed or maintained except as may be approved in writing by the District Engineer and that no excavation shall be conducted and no landfill placed on the land without approval from the District Engineer as to the location and method of excavation and/or placement of landfill.

EXHIBIT "B"-1

6

RESERVING, HOWEVER, to the Grantors, their heirs and assigns, the following rights and privileges:

a. The right to maintain existing trails, roads and pathways within said land including the privilege to trim, cut or remove therefrom any trees, brush or other vegetation that interfere with the use and enjoyment thereof; and,

b. The right to install, operate and maintain a pump and appurtenant facilities (including a right-of-way five feet (5') in width to provide power thereto) within said land for the exercise of established riparian water rights; and,

c. The right to install and maintain a "floating-type" dock within said land; and,

d. The right to place and maintain picnic tables, barbeque pit and related facilities within a forty-foot by forty-foot (40' x 40') area, including the right to remove brush and other vegetation exclusive of trees within such picnic area;

e. The right to install "log" steps not exceeding five feet (5') in width down the existing river bank.

THE FOREGOING rights are reserved with all such rights and privileges as may be used and enjoyed without interfering with the use of the project for the purposes authorized by Congress or abridging the rights and easements hereby acquired, provided further that any use of the land shall be subject to Federal and State laws with respect to pollution.

ANY DAMAGE or injury to the landowners property resulting from the employment of the right of ingress and egress to said land shall either be restored to the condition existing at the time of said damage or injury or be recompensed for such damage or injury.

THE ABOVE referred to safety control measures are as follows;

a. Prohibited activities on project land and the river will be identified by appropriate signs and barriers.

b. Signs will be placed at the entrance to each of the public access areas warning of potential hazards associated with the river.

c. Information pamphlets are to contain maps showing the location of each access area, rules governing visitor use, boating safety information including boating law, hazard warnings, river map, and safety hints should be made available at the visitor information center and the individual public access areas.

d. The Government shall post ~~several~~ SEVEN (7) signs, one below each presently existing "No Trespassing" sign, stating "HABITAT PRESERVATION AREA, NOT FOR RECREATIONAL USE, NO TRESPASSING. VIOLATORS WILL BE PROSECUTED." The installations thereof shall be at the expense of the Government.

e. Park rangers of the Corps of Engineers have citation authority for violations of the Code of Federal Regulations: Title 36, Chapter III, Part 327. Said rangers may enforce those paragraphs of Part 327 applicable to the water surface of the flowage easement areas. Enforcement of State and local laws is the responsibility of the local law enforcement agencies.

43552 JAN 15 81

EXHIBIT "B"-1

THE ABOVE ESTATE shall not allow the general public any right or authority to utilize the lands granted herein as areas for public access, recreation, trails or pathways.

THE GRANTORS COVENANT and agree with the UNITED STATES OF AMERICA and its assigns to pay all taxes and assessments on said land promptly when due and to warrant and defend said easement and right to the UNITED STATES OF AMERICA and its assigns against the lawful claims and demands of all persons whatsoever, for the full term of said easement.

THE ESTATE OF THE ABOVE described easement shall include all of the Grantors' right and interest, if any there be, in and to the banks and bed of the Stanislaus River, abutting or adjoining the property described herein.

The land is being acquired for the Department of the Army.

IN WITNESS WHEREOF, the said Grantors have hereunto set their hands this 16th day of December, 1980.

Sergei S. Buzolin
SERGEI S. BUZOLIN

Nina A. Buzolin
NINA A. BUZOLIN

83523 Jul 7501

STATE OF CALIFORNIA)
)ss.
COUNTY OF San Francisco)

On 16 December 1980, before me, the undersigned, a Notary Public in and for said State, personally appeared SERGEI S. BUZOLIN and NINA A. BUZOLIN, known to me to be the persons whose names are subscribed to the within instrument and acknowledged to me that they executed the same.

WITNESS my hand and official seal.

Raymond L. Reel
Signature

RAYMOND L. REEL
NOTARY PUBLIC
SAN FRANCISCO COUNTY, CALIFORNIA
My Commission Expires October 29, 1983

3460 87

CERTIFICATE OF ACCEPTANCE

This is to certify that the interest in real property conveyed by the Easement Deed dated 16 December, 1980 from SERGEI S. BUZOLIN and NINA A. BUZOLIN, his wife, to the UNITED STATES OF AMERICA, is hereby accepted by the undersigned officer on behalf of the UNITED STATES OF AMERICA, and the Grantee consents to recordation thereof by its duly authorized officer.

DATED: 17 December 1980

Acting, JOSEPH DUNCAN
Chief, Real Estate Division
US Army Engineer District, Sacramento

685552 JAN 16 81

9

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

JUN 25 2010

In response refer to:
2010/02518

JUN 29 2010

Paul Cadrett
Deputy Project Leader
U.S. Fish and Wildlife Service
4001 North Wilson Way
Stockton, California 95205

Dear Mr. Cadrett:

This letter is in response to your June 8, 2010, request for initiation of section 7 consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to the Endangered Species Act (ESA) concerning the Lancaster Road Floodplain Habitat Restoration project located in Stanislaus County, California. The U.S. Fish and Wildlife Service (FWS) has determined that the proposed project may affect, but is not likely to adversely affect, Central Valley (CV) steelhead (*Oncorhynchus mykiss*), or their designated critical habitat. In addition, the FWS has determined that the proposed project may adversely affect the essential fish habitat (EFH) of Pacific salmon, and has requested initiation of consultation pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA). This letter also serves as consultation under the authority of, and in accordance with, the provisions of the Fish and Wildlife Coordination act of 1934 (FWCA), as amended.

The proposed project is located in the lower Stanislaus River, downstream of Buttonbush Park, river mile (RM) 48.5, and about 0.75 mile upstream of the Orange Blossom Bridge (RM 47). The FWS proposes to improve habitat for CV steelhead and other special status salmonids in the lower Stanislaus River. The proposed project includes floodplain grading and gravel processing; side channel excavation and reconnection; and non-native plant removal and replanting with native vegetation. In addition, large woody debris (LWD) and boulders will be placed into the channel to improve rearing habitat for salmonids. The proposed project will reclaim approximately 640 feet of remnant side channel, allowing it to flow at the 1.5-year inundation interval (*i.e.*, 575 cfs). Three cross channels will be created on the existing alluvial bar to function at higher river flows (*i.e.* three- and five-year inundation intervals), increasing available habitat, and connecting the reclaimed side channel and floodplain to the main river channel. Approximately 800 yd^3 of material will be excavated from the side channel, then screened, and sorted on site. Appropriate-sized material for juvenile salmonid rearing habitat would then be placed back in the adjacent alluvial bar and the side and cross channels. Excess fine material will be used to enhance portions of the disturbed floodplain to aid with revegetation. An onsite gravel processing plant, with an approximate foot print of 50 ft. X 50 ft., will be established in the project area and removed following restoration work.

Construction will take place from August 1 to October 15, 2010, during low flow conditions and will be limited to floodplain and dewatered side channel habitat. No activity will take place within the active channel. After floodplain grading and gravel augmentation activities have been completed, the disturbed areas will be revegetated with native riparian plants at a 3:1 ratio. A detailed monitoring plan will document the pre-project conditions, rehabilitation and revegetation, and the effectiveness of the planting in terms of vigor and survival. Potential turbidity levels resulting from the proposed project activities will be monitored and machinery will be maintained to minimize deleterious contaminants from entering the channel.

ESA Section 7 Consultation

Based on our review of the material provided with your request and the best scientific and commercial information currently available, NMFS concurs that the Lancaster Road Floodplain Habitat Restoration project is not likely to adversely affect CV steelhead or their designated critical habitat. NMFS reached this determination based on the incorporation of the following measures into the project description:

1) The following minimization measures have been incorporated into the proposed project description in order to reduce the potential for water quality impacts that could potentially harm listed anadromous fish or their habitat to a level that is insignificant or discountable: Turbidity levels will be monitored and maintained to minimize water quality issues from entering the main channel that could potentially harm anadromous listed fish and their habitat.

2) Construction activities will be limited to floodplain and dewatered side-channel habitat and take place from August 1 to October 15, when flow conditions are low and CV steelhead are least likely to occur in the action area due to elevated water temperatures; and thus would not be exposed to the effects of the proposed construction activities. No activity will take place within the active channel.

3) The proposed project will enhance and benefit NMFS' anadromous listed fish and their critical habitat by providing riparian habitat, LWD, and rearing habitat for juvenile salmonids.

This concludes ESA consultation for the Lancaster Road Floodplain Habitat Restoration project. This concurrence does not provide incidental take authorization pursuant to section 7(b)(4) and section 7(o)(2) of the ESA. Re-initiation of the consultation is required where discretionary Federal agency involvement or control over the proposed project has been retained (or is authorized by law), and if: (1) new information reveals effects of the proposed project that may affect listed species or critical habitat in a manner or to an extent not considered; (2) the proposed project is subsequently modified in a manner that causes adverse effects to listed species or critical habitat; or (3) a new species is listed or critical habitat designated that may be affected by the proposed project.

EFH Consultation

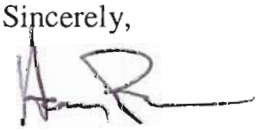
With regards to EFH consultation, the action area has been identified as EFH for Chinook salmon in Amendment 14 of the Pacific Salmon Fishery Management Plan pursuant to the MSA. Federal action agencies are mandated by the MSA (section 305(b)(2)) to consult with NMFS on all actions that may adversely affect EFH and NMFS must provide EFH conservation recommendations to those agencies (section 305(b)(4)(A)). Because the proposed project has incorporated specific measures (described above) to minimize impacts to the habitat of salmonids, NMFS has determined that the proposed project will not adversely affect EFH, and additional EFH conservation recommendations are not being provided at this time; however, if there is substantial revision to the proposed project, the lead Federal agency will need to re-initiate EFH consultation.

FWCA

The purpose of the FWCA is to ensure that wildlife conservation receives equal consideration, and is coordinated with other aspects of water resources development (16 U.S.C. 661). The FWCA establishes a consultation requirement for Federal departments and agencies that undertake any action that proposes to modify any stream or other body of water for any purpose, including navigation and drainage (16 U.S.C 662(a)). Consistent with this consultation requirement, NMFS provides recommendations and comments to Federal action agencies for the purpose of conserving fish and wildlife resources. The FWCA provides the opportunity to offer recommendations for the conservation of species and habitats beyond those currently managed under the ESA and MSA. NMFS recommends that the ESA section 7(a)(1) conservation recommendations be adopted as a FWCA measure.

Please contact Monica Gutierrez at (916) 930-3657, or via e-mail at Monica.Gutierrez@noaa.gov if you have any questions or require additional information concerning this project.

Sincerely,



For Rodney R. McInnis
Regional Administrator

cc: Copy to File ARN # 151422SWR2010SA00216
NMFS-PRD, Long Beach, CA

California Regional Water Quality Control Board
Central Valley Region
Katherine Hart, Chair

Linda S. Adams
Secretary for
Environmental
Protection

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

16 August 2010

Joseph E. Merz
Cramer Fish Sciences
636 Hedburg Way, Suite 22
Oakdale, CA 95361

CLEAN WATER ACT §401 TECHNICALLY CONDITIONED WATER QUALITY CERTIFICATION FOR DISCHARGE OF DREDGED AND/OR FILL MATERIALS FOR THE LANCASTER ROAD SIDE CHANNEL AND FLOODPLAIN RESTORATION PROJECT (WDID#5B50CR00049), STANISLAUS COUNTY

This Order responds to your 14 July 2010 application submittal for the Water Quality Certification of a channel and floodplain restoration project impacting approximately 655 linear feet of waters of the United States.

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. This certification is no longer valid if the project (as currently described) is modified, or coverage under Section 404 of the Clean Water Act has expired.

ADDITIONAL TECHNICALLY CONDITIONED CERTIFICATION CONDITIONS:

In addition to the four standard conditions, Cramer Fish Sciences shall satisfy the following:

1. Cramer Fish Sciences shall notify the Central Valley Water Quality Control Board (Central Valley Water Board) in writing 7 days in advance 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. All areas disturbed by project activities shall be protected from washout or erosion.

4. Cramer Fish Sciences shall maintain a copy of this Certification and supporting documentation (Project Information Sheet) at the Project site during construction for review by site personnel and agencies. All personnel (employees, contractors, and subcontractors) performing work on the proposed project shall be adequately informed and trained regarding the conditions of this Certification.

5. An effective combination of erosion and sediment control Best Management Practices (BMPs) must be implemented and adequately working during all phases of construction.

6. All temporarily affected areas will be restored to pre-construction contours and conditions upon completion of construction activities.

7. Cramer Fish Sciences shall perform surface water sampling: 1) When performing any in-water work; 2) In the event that project activities result in any materials reaching surface waters or; 3) When any activities result in the creation of a visible plume in surface waters. The following monitoring shall be conducted immediately upstream out of the influence of the project and 300 feet downstream of the active work area. Sampling results shall be submitted to this office within two weeks of initiation of sampling and every two weeks thereafter. The sampling frequency may be modified for certain projects with written permission from the Central Valley Water Board.

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.
Visible construction related pollutants	Observations	Visible Inspections	Continuous throughout the construction period

8. Activities shall not cause turbidity increases in surface water to exceed:

   (a) where natural turbidity is less than 1 Nephelometric Turbidity Units (NTUs), controllable factors shall not cause downstream turbidity to exceed 2 NTU;
   (b) where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU;
   (c) where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;
   (d) where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs;
   (e) 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. Averaging periods may only be assessed by prior permission of the Central Valley Water Board.

9. 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.

10. The discharge of petroleum products or other excavated materials to surface water is prohibited. Activities shall not cause visible oil, grease, or foam in the work area or downstream. Cramer Fish Sciences shall notify the Central Valley Water Board immediately of any spill of petroleum products or other organic or earthen materials.

11. Cramer Fish Sciences shall notify the Central Valley Water Board immediately if the above criteria for turbidity, settleable matter, oil/grease, or foam are exceeded.

12. Cramer Fish Sciences shall comply with all California Department of Fish and Game 1600 requirements for the project.

13. Cramer Fish Sciences must obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board for any project disturbing an area of 1 acre or greater.

14. The Conditions in this water quality certification are based on the information in the attached "Project Information." If the information in the attached Project Information is modified or the project changes, this water quality certification is no longer valid until amended by the Central Valley Water Board.

15. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under State law and section 401 (d) of the federal Clean Water Act. The applicability of any State law authorizing remedies, penalties, process, or sanctions for the violation or threatened violation constitutes a limitation necessary to ensure compliance with this Order.

a. If Cramer Fish Sciences or a duly authorized representative of the project fails or refuses to furnish technical or monitoring reports, as required under this Order, or falsifies any information provided in the monitoring reports, the applicant is subject to civil, for each day of violation, or criminal liability.

b. In response to a suspected violation of any condition of this Order, the Central Valley Water Board may require Cramer Fish Sciences to furnish, under penalty of perjury, any technical or monitoring reports the Central Valley Water Board deems appropriate, provided that the burden, including cost of the reports, shall be in reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

c. Cramer Fish Sciences shall allow the staff(s) of the Central Valley Water Board, or an authorized representative(s), upon the presentation of credentials and other documents, as may be required by law, to enter the project premises for inspection, including taking photographs and securing copies of project-related records, for the purpose of assuring compliance with this certification and determining the ecological success of the project.

16. Cramer Fish Sciences shall provide a Notice of Completion (NOC) no later than 30 days after the project completion. The NOC shall demonstrate that that the project has been carried out in accordance with the project's description (and any amendments approved). The NOC shall include a map of the project location(s), including final boundaries of any in situ restoration area(s), if appropriate, and representative pre and post construction photographs. Each photograph shall include a descriptive title, date taken, photographic site, and photographic orientation.

17. Cramer Fish Sciences shall provide the Central Valley Water Board final copies of all effectiveness monitoring reports related to this project.

18. This project must not create areas that can trap fish following high water events.

REGIONAL WATER QUALITY CONTROL BOARD CONTACT PERSON:

Daniel Worth, Environmental Scientist
11020 Sun Center Drive #200
Rancho Cordova, California 95670-6114
dworth@waterboards.ca.gov
(916) 464-4709

WATER QUALITY CERTIFICATION:

I hereby issue an order certifying that any discharge from the Cramer Fish Sciences, Lancaster Road Side Channel and Floodplain Restoration Project (WDID# 5B50CR00049) 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 Cramer Fish Sciences' project description and the attached Project Information Sheet, and (b) compliance with all applicable requirements of the *Water Quality Control Plan for the Sacramento River and San Joaquin River*, Fourth Edition, revised September 2009.

Pamela C. Creedon
Executive Officer

Enclosure: Project Information

cc: See enclosure, page 8

PROJECT INFORMATION

Application Date: 14 July 2010

Applicant: Joseph E. Merz
Cramer Fish Sciences
636 Hedburg Way, Suite 22
Oakdale, CA 95361

Applicant Representatives: Ramon Martin
U.S. Fish and Wildlife Anadromous Fish Restoration Program
4001 North Wilson Way
Stockton, CA 95205-2486

Project Name: Lancaster Road Side Channel and Floodplain Restoration Project

Application Number: WDID# 5B50CR00049

Type of Project: Restoration Project

Project Location: Section 3, Township 2 South, Range 11 East, MDB&M.
Latitude: 37°47'11.29" and Longitude: -120°44'53.33"

County: Stanislaus County

Receiving Water(s) (hydrologic unit): Stanislaus River below Goodwin Dam

Water Body Type: Streambed

Designated Beneficial Uses: The *Water Quality Control Plan for the Sacramento River and San Joaquin River*, Fourth Edition, revised September 2009 (Basin Plan) 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): The Lancaster Road Side Channel and Floodplain Restoration Project consists of floodplain and channel modifications that are designed to improve habitat for special status salmonid species. Currently, the project area consists of a remnant side channel and alluvial bar that are generally disconnected from the main river channel during most of the year. The proposed project will lower the elevation of the side channel allowing it to flow more frequently. Additionally, three cross-channels will be created on the existing alluvial bar to connect the side channel and floodplain to the main river channel. Approximately 1,230 cubic yards of river-rock and soil will be excavated during this project. The material will be screened and sorted on-site, and appropriate sized gravels and cobbles will be placed back into the newly created channels to enhance salmonid habitat. Excess material will be used to fill an old borrow pit located onsite. Construction will require approximately 1-2 weeks, and no in water work will occur due to seasonal low water levels. The project will enhance 0.792 acre of waters of the United States.

Preliminary Water Quality Concerns: Construction activities may impact surface waters with increased turbidity and settleable matter.

Proposed Mitigation to Address Concerns: Cramer Fish Sciences 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. Cramer Fish Sciences will conduct turbidity and settleable matter testing during in-water work, stopping work if the Basin Plan criteria are exceeded or are observed.

Fill/Excavation Area/Volume: Approximately 1,230 cubic yards of clean soil and rock will be excavated and then redistributed within 0.792 acre of waters of the United States (for enhancement).

U.S. Army Corps of Engineers Permit Number: Nationwide Permit #27

Department of Fish and Game Streambed Alteration Agreement: Cramer Fish Sciences applied for a Streambed Alteration Agreement on 1 July 2010.

Possible Listed Species: Colusa grass, Hartweg's golden sunburst, Conservancy fairy shrimp, Vernal pool fairy shrimp, Vernal pool tadpole shrimp, Valley elderberry longhorn beetle, Delta smelt, Chinook salmon, Central Valley steelhead, California tiger salamander, California red-legged frog, Giant garter snake, San Joaquin kit fox

Status of CEQA Compliance: This project meets Categorical Exemption criteria under Title 14, Section 15333 of the California Code of Regulations, which exempts enhancement projects less than 5 acres in size. The Central Valley Water Board filed a Notice of Exemption on 11 August 2010.

Compensatory Mitigation: This project will enhance approximately 0.792 acre of waters of the United States.

Application Fee Provided: Total fees of $640.00 have been submitted to the Central Valley Water Board as required by 23 CCR §3833b(3)(A) and by 23 CCR §2200(e).

DISTRIBUTION LIST

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