



United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, California 95825-1898

IN REPLY
REFER TO:

MP-153
ENV-3.00

OCT 17 2006

RECEIVED

OCT 18 2006

Contra Costa Water Dist.
Planning

Mr. Mark A. Seedall
Senior Planner
Contra Costa Water District
2411 Bisso Lane
Concord, California 94524

Subject: Final Contra Costa Canal Encasement Project Memorandum of Agreement, Contra
Costa County, California

Dear Mr. Seedall: *Mark*

The Bureau of Reclamation is pleased to enclose a copy of the final, signed memorandum of agreement (MOA) for the subject undertaking. According to the 36 CFR Part 800 regulations we will submit a copy of this MOA to the Advisory Council on Historic Preservation. Reclamation looks forward to working with the Contra Costa Water District to fulfill the stipulations identified in this MOA.

Please contact Mr. Patrick Welch, at 916-978-5040 or pwelch@mp.usbr.gov, for information about the implementation of this MOA.

Sincerely,

for Michael Nepstad
Acting Regional Environmental Officer

Enclosure

**MEMORANDUM OF AGREEMENT
BETWEEN
THE BUREAU OF RECLAMATION AND
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER REGARDING THE
MITIGATION OF ADVERSE EFFECTS TO A PORTION OF THE CONTRA COSTA CANAL,
CONTRA COSTA COUNTY, CALIFORNIA**

WHEREAS, the Bureau of Reclamation (Reclamation) has determined that the encasement in concrete pipe of the first four miles of the Contra Costa Canal from the Rock Slough intake to pumping plant 1 constitutes an Undertaking, as defined in 36 CFR Part 800.3(a), that will have an adverse effect on a historic property, the Contra Costa Canal; and

WHEREAS, Reclamation, in consultation with the California State Historic Preservation Officer (SHPO), has established the area of potential effect (APE), as defined at 36 CFR Part 800.16(d), to be the proposed pipe and closure of the first 4.0 miles of the Contra Costa Canal and adjacent berms from the canal's beginning at Rock Slough to the terminus of the closure at pumping plant No 1; and

WHEREAS, Reclamation has consulted with the SHPO and notified the Advisory Council on Historic Preservation (Council) of the adverse effect in accordance with 36 CFR Part 800 regulations, effect August 30, 2004, implementing Section 106 of the National Historic Preservation Act (16U.S.C.470f); and

WHEREAS, the Contra Costa Water District (CCWD) is responsible for the operation and maintenance of the Contra Costa Canal and is proposing the Undertaking for operational and environmental reasons and is invited to sign this memorandum of agreement (MOA) as a concurring party; and

WHEREAS, the definitions listed in 36 CFR 800.16 are applicable throughout this MOA;

NOW, THEREFORE, Reclamation and the SHPO agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the effects of the Undertaking on historic properties, and further agree that these stipulations shall govern the Undertaking and all of its parts until this MOA expires or is terminated.

Stipulations

Reclamation shall ensure that the following measures are carried out:

I. TREATMENT OF HISTORIC PROPERTIES

A. Recordation of Historic Properties

Prior to the start of any work that could adversely affect any characteristics that qualify the Contra Costa Canal as an historic property, Reclamation shall ensure that the recordation measures specified in this stipulation are completed. Reclamation will prepare a site record, DPR 523, for the entire length of the Contra Costa Canal and it will prepare specific documentation of the affected portion of the Contra Costa Canal within the APE as follows:

1. The mitigation treatment proposed for the first 4.0 miles of the Contra Costa Canal will include the preparation of a report that involves research to determine the construction history of the canal, in general and the 4.0 mile portion of the canal, specifically. This report will include a historic context that will place the 4 mile segment of the APE within the entire context to the Contra Costa Canal based upon the initial survey report, Cultural Resources Report, Contra Costa Canal, Encasement Project (JRP 2006).
2. If the research reveals the presence of an original engineering report that describes construction of the Contra Costa Canal, then the portion of the report that includes the APE shall be incorporated in the report as appropriate.
3. The report will include typical elevation and cross-section drawings of that portion of the canal located within the APE. Original drawings, if they exist, shall be used to document this data.
4. Representative examples of canal structures within the APE shall be documented, including a search for historical drawings of these structures, a photographic record as described below, and written data derived from archival research about the Contra Costa Canal. If no such historic drawings are located then the documentation of these structures shall be limited to photographs, as described below.
5. Large-format, 4" x 5" (or larger negative size), black and white photographs showing the Contra Costa Canal in context as well as details of its significant engineering and design elements. Photographs shall be processed for archival permanence in accordance with the HAER photographic specifications.
6. Reclamation shall reproduce historic construction photographs, plans, elevations, and selected details from the original construction drawings for the Contra Costa Canal, if these are available, in 8 ½" by 11" format, for inclusion in the report cited in stipulation I.A.

B. Subsurface Testing

Reclamation shall ensure that subsurface testing will take place at archeologically high sensitivity areas (Waechter 2006: Figure 4) before construction-related excavations affect native soils located below fill deposits. Native soils are defined as those soils that have not been disturbed, prior or subsequent to construction of the unlined portion of the Contra Costa Canal. Back hoe testing will precede construction activities, as appropriate and, in consultation with Reclamation, and take place only when CCWD engineers determine that it is safe to conduct such tests without adversely impacting the flood protection and water conveyance qualities of the Contra Costa Canal.

If these test excavation results are negative, then Reclamation will notify SHPO of these findings. If the test excavations are positive, then Reclamation will initiate consultation with SHPO under the 36 CFR Part 800 regulations and proceed with evaluation of the resource. Reclamation will ensure that any identified archeological resources are assessed for inclusion in the National Register, and if they are found to be historic properties, that adverse effects will be resolved in consultation with SHPO.

II. UNANTICIPATED DISCOVERIES

If Reclamation determines after construction has commenced, that the undertaking will affect a previously unidentified property that may be eligible for inclusion in the National Register of Historic Places, Reclamation will address the discovery in accordance with 36 CFR § 800.13(b)(3).

Reclamation may assume the discovered property to be eligible for the National Register in accordance with 36 CFR § 800.13(c).

VII. STANDARDS

- A. *Professional Qualifications.* All historic preservation activities implemented pursuant to this MOA shall be carried out by or under the direct supervision of a person or persons meeting, at a minimum, *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* for Professional Qualifications Standards (48 FR 44738–44739) in the appropriate disciplines. However, nothing in this stipulation may be interpreted to preclude Reclamation or FRWA or any agent or contractor thereof from using the properly supervised services of persons who do not meet the Professional Qualifications Standards.
- B. *Curation of Recovered Data.* Reclamation recommends that all materials and records resulting from the implementation of this MOA are curated or otherwise treated in accordance with 36 CFR 79.

III. REPORTING REQUIREMENTS

A. *Notice to Proceed.* Once Reclamation has completed field work associated with documentation of the Contra Costa Canal pipe and closure APE, they will notify SHPO, describe their mitigation measures, and submit draft photographs for review of adequacy during a 30-day review period. Reclamation will authorize the CCWD to proceed with construction-related activities for the Contra Costa Canal pipe and closure only after Reclamation has received written notification from SHPO that the submitted documentation is appropriate, or after the 30-day review period has elapsed with no comments received from SHPO.

Reclamation will consult with SHPO regarding the results of the subsurface testing at high potential areas. If the results of testing are negative, then construction may proceed after SHPO is notified, in writing, of these results. If the results are positive, then construction may proceed only after Reclamation completes the section 106 process in consultation with SHPO and resolves adverse effects, if a historic property is found. Reclamation may authorize construction in the area of the find only after it has received written concurrence from SHPO regarding the resolution of adverse effects, if a historic property is identified. Reclamation will authorize CCWD, in writing, to proceed with construction in the high probability area after it receives concurrence or comment from SHPO.

B. *Comment Period.* The SHPO will have 60 days following receipt of the historic context to comment on the documentation. Reclamation shall modify the documentation in accordance with any SHPO comments provided within the time frame. Failure of SHPO to comment within the specified time frame shall be deemed by Reclamation to constitute SHPO approval of the documentation.

C. *Distribution.* A copy of the documentation identified in Stipulation I will be sent by Reclamation to the Northwest Information Center at Sonoma State University, Contra Costa Historical Society, the California State Department of Water Resources, and to other appropriate archives designated by Reclamation and SHPO.

IV. ADMINISTRATIVE PROVISIONS

A. *Dispute Resolution.* Should any signatory to this MOA object at any time to the manner in which the terms of the MOA are implemented, Reclamation shall consult with the objecting party to resolve the objection. If Reclamation determines, within 15 days after consultation begins, that such objection cannot be resolved, Reclamation will either:

- a. Render a decision regarding the dispute within 30 days after it has determined that the dispute could not otherwise be resolved. Reclamation will notify all parties of its decision in writing within this time frame. In reaching its decision, Reclamation will take all comments from the objecting party regarding the dispute into account. Reclamation's decision will be final; or
- b. Forward all documentation relevant to the dispute to the Council in accordance with 36 CFR 800.2(b)(2). Any Council comment, and all comments from either party to this MOA, will be taken into account by Reclamation in reaching a final decision regarding the dispute. Reclamation's decision will be final.

B. *Public Objection.* At any time during implementation of the terms of this MOA, should an objection pertaining to this MOA be raised by a member of the public, Reclamation shall immediately notify the other signatories in writing of the objection and take the objection into account. Reclamation shall consult with the objecting party and if the objecting party so requests, with the other signatory, for no more than 30 (calendar) days. Within 14 (calendar) days following closure of the consultation period, Reclamation will render a decision regarding the objection and notify all parties of this decision in writing. In reaching its decision, Reclamation will take all comments from the parties into account. Reclamation's decision regarding resolution of the objection will be final.

C. *Amendments, Non-Compliance and Termination.* If any party believes that the terms of this MOA cannot be carried out or that an amendment to its terms should be made, that party shall immediately consult with the other parties to develop amendments to this MOA pursuant to 36 CFR 800.6(c)(7) and 800.6(c)(8). No amendments shall take effect without the unanimous consent of the signatories. If this MOA is not amended as provided for in this stipulation, either signatory party may terminate it, whereupon Reclamation shall proceed in accordance with 36 CFR 800.6(c)(8).

D. *Duration of the MOA.* Unless terminated pursuant to Stipulation VII, above, this MOA will be in effect until Reclamation, in consultation with the other signatories, determines that all of its terms have been satisfactorily fulfilled. Upon a determination by Reclamation that all of the terms of this MOA have been satisfactorily fulfilled, this MOA will terminate and have no further force or effect. Reclamation will promptly provide the other signatories with written notice of its determination and of termination of the MOA.

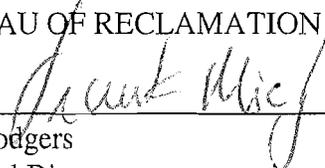
F. *Effective Date.* This MOA will take effect on the date that it has been executed by Reclamation and the SHPO.

G. *Anti-Deficiency Act*. Any requirement for the payment or obligation of funds by the Government established by the terms of this agreement shall be subject to availability of appropriated funds. No provision in this agreement shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 USC Section 1341.

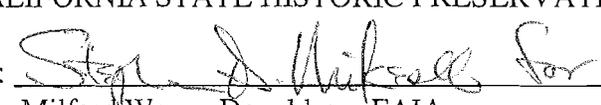
EXECUTION of this MOA by Reclamation and the SHPO, its transmittal to the Council and subsequent implementation of its terms, evidences that Reclamation has afforded the Council a reasonable opportunity to comment on the Undertaking and its effects on historic properties, that Reclamation has taken into account the effects of the Undertaking on historic properties, and that Reclamation has satisfied its responsibilities under Section 106 of the National Historic Preservation Act and applicable implementing regulations.

SIGNATORY PARTIES:

U.S. BUREAU OF RECLAMATION

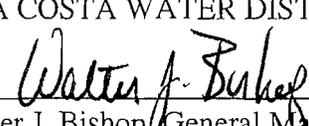
By:  Date: 9/20/06
Kirk Rodgers
Regional Director

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER

By:  Date: 10/12/06
Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

CONCURRING PARTY:

CONTRA COSTA WATER DISTRICT

By:  Date: 9/5/06
Walter J. Bishop, General Manager
Contra Costa Water District

Reference:

JRP Historical Consulting

2006 Cultural Resources Report, Contra Costa Canal, Encasement Project. Unpublished report on file at the Bureau of Reclamation, Mid-Pacific Region, Sacramento, California.

Weachter, S.

2006 Cultural Resources Study for the Proposed Contra Costa Water District-Canal Encasement Project. In Cultural Resources Report: Contra Costa Canal Encasement Project by JRP Historical Consulting and Far Western Anthropological Research Group, Inc. Unpublished report on file at the Mid-Pacific Region, Bureau of Reclamation, Sacramento, California.



California Regional Water Quality Control Board Central Valley Region

Karl E. Longley, SeD, P.E., Chair



Linda S. Adams
Secretary for
Environmental
Protection

Sacramento Main Office
11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Phone (916) 464-3291 • FAX (916) 464-4645
<http://www.waterboards.ca.gov/centralvalley>

Arnold
Schwarzenegger
Governor

26 March 2007

Mr. Mark Seedall
Contra Costa Water District
P.O. Box H20
Concord, CA 94524

ACTION ON REQUEST FOR CLEAN WATER ACT §401 WATER QUALITY CERTIFICATION FOR DISCHARGE OF DREDGED AND/OR FILL MATERIALS FOR THE CONTRA COSTA CANAL REPLACEMENT PROJECT, (WDID#5B07CR00081) CONTRA COSTA COUNTY

ACTION:

- 1. Order for Standard Certification
- 2. Order for Technically-conditioned Certification
- 3. Order for Denial of Certification

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. The Contra Costa Water District shall notify the Regional Board in writing within 7 days of project completion.

California Environmental Protection Agency



Mr. Mark Seedall
Contra Costa Water District

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ADDITIONAL CONDITIONS :

In addition to the four standard conditions, the applicant shall satisfy the following:

1. Contra Costa Water District shall notify the Board in writing of the start of any in-water activities.
2. Except for activities permitted by the U.S. Army Corps under §404 of the Clean Water Act, soil, silt, or other organic materials shall not be placed where such materials could pass into surface water or surface water drainage courses.
3. The discharge of petroleum products or other excavated materials to surface waters is prohibited.
4. Activities shall not cause turbidity increases in surface waters to exceed:
 - (a) where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU;
 - (b) where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;
 - (c) where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs;
 - (d) where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

Except that these limits will be eased during in-water working periods to allow a turbidity increase of 15 NTU over background turbidity as measured in surface waters 300 feet downstream from the working area. In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.

5. Activities shall not cause settleable matter to exceed 0.1 ml/l in surface waters as measured in surface waters 300 feet downstream from the project.
6. Activities shall not cause visible oil, grease, or foam in the work area or downstream.
7. All areas disturbed by project activities shall be protected from washout or erosion.
8. In the event that project activities result in the deposition of soil materials or creation of a visible plume in surface waters, the following monitoring shall be conducted immediately upstream and 300 feet downstream of the work site and the results reported to this office within two weeks:

Parameter	Unit	Type of Sample	Frequency of Sample
Turbidity	NTU	Grab	Every 4 hours during in water work
Settleable Material	ml/l	Grab	Same as above.

Mr. Mark Seedall
Contra Costa Water District

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9. Contra Costa Water District shall notify the Board immediately if the above criteria for turbidity, settleable matter, oil/grease, or foam are exceeded.
10. Contra Costa Water District shall notify the Board immediately of any spill of petroleum products or other organic or earthen materials.
11. Contra Costa Water District shall comply with all Department of Fish and Game 1600 requirements for the project.
12. Contra Costa Water District must obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activities issued by the State Water Resources Control Board.

REGIONAL WATER QUALITY CONTROL BOARD CONTACT PERSON:

Patrick G. Gillum, Environmental Scientist
11020 Sun Center Drive #200
Rancho Cordova, California 95670-6114
(916) 464-4709
pgillum@waterboards.ca.gov

WATER QUALITY CERTIFICATION:

I hereby issue an order certifying that any discharge from the Contra Costa Water District, Contra Costa Canal Replacement Project (WDID #5B07CR00081) 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 Regional Board Resolution No. R5-2003-0008 "*Waiver of Reports of Waste Discharge and Waste Discharge Requirements for Specific Types of Discharge: Type 12 Projects for which Water Quality Certification is issued by the Regional Board,*" which requires compliance with all conditions of this Water Quality Certification.

Except insofar as may be modified by any preceding conditions, all certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the applicant's project description and the attached Project Information Sheet, and (b) compliance with all applicable requirements of the Regional Water Quality Control Board's Water Quality Control Plan (Basin Plan).



for PAMELA C. CREEDON
Executive Officer

Enclosure: Project Information

cc: U.S. Army Corps of Engineers, Sacramento
Mr. Timothy Vendlinski, Wetlands Section Chief (WTR-8), U.S. Environmental
Protection Agency, Region 9, San Francisco
U.S. Fish & Wildlife Service, Sacramento
Ms. Jenny Chen, Certification Unit, State Water Resources Control Board,
Sacramento

Mr. Mark Seedall
Contra Costa Water District

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26 March 2007

PROJECT DESCRIPTION

Application Date: 8 January 2007

Applicant: Mr. Mark Seedall
Contra Costa Water District
P.O. Box H20
Concord, CA 94524

Project Name: Contra Costa Canal Replacement Project

Application Number: WDID#5B07CR00081

US. Corps File Number: 200500599

Type of Project: Canal Replacement

Project Location: Township 2 North, Ranges 2, and 3 East, MDB&M. Latitude: 38°00'00"
and Longitude: 121°41'00".

County: Contra Costa County

Receiving Water(s) (hydrologic unit): Contra Costa Canal, San Joaquin Hydrologic Basin,
San Joaquin Delta Hydrologic Unit #544.00

Water Body Type: Wetlands

Designated Beneficial Uses: The Basin Plan for the Central Valley Regional Board has designated beneficial uses for surface and ground waters within the region. Beneficial uses that could be impacted by the project include: Municipal and Domestic Water Supply (MUN); Agricultural Supply (AGR); Industrial Supply (IND), Hydropower Generation (POW); Groundwater Recharge, Water Contact Recreation (REC-1); Non-contact Water Recreation (REC-2); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); and Wildlife Habitat (WILD).

Project Description (purpose/goal): The Contra Costa Canal Replacement project involves installing up to 3.97 miles of buried pipeline to replace an existing unlined portion of the Contra Costa Canal, a water supply aqueduct. The project will permanently fill approximately 4 acres of in channel freshwater marsh and 43 acres of open canal water. Approximately 7 acres of wetlands will be temporarily affected during construction.

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

Proposed Mitigation to Address Concerns: Contra Costa Water District 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

Mr. Mark Seedall
Contra Costa Water District

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26 March 2007

construction activities. Contra Costa Water District will conduct turbidity and settleable matter testing during in water work, stopping work if Basin Plan criteria are exceeded or are observed.

Fill/Excavation Area: Up to 750,000 cubic yards of clean soil will be placed (to fill in the canal) into approximately 27,000 linear feet of jurisdictional wetland.

Dredge Volume: <0.0 cubic yards

U.S. Army Corps of Engineers Permit Number: 200500599

Department of Fish & Game Streambed Alteration Agreement: Contra Costa Water District applied for a Streambed Alteration Agreement on 8 January 2007.

Possible Listed Species: None

Status of CEQA Compliance: The Contra Costa Water District signed a Mitigated Negative Declaration for this project on 29 November 2006.

Compensatory Mitigation: There will be 47.00 acres (1:1 ratio) of in-kind wetland created, with improved habitat function, less than 1.25 miles away on the "Holland Tract". The applicant will conduct preconstruction surveys for nesting birds, Burrowing Owls, Northwestern Pond Turtles, and giant Garter snakes. The Holland Tract mitigation project will provide additional habitat to mitigate any sensitive species if found to be present during the site survey.

Application Fee Provided: A fee of \$500 was submitted on 9 January 2007 with the initial application. An additional \$39,500 was submitted on 28 February 2007 to supplement the application fee to a total of \$40,000 as required by 23 CCR §3833b(2)(A) and by 23 CCR § 2200(e).

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Sacramento Area Office
650 Capitol Mall, Suite 8-300
Sacramento, California 95814-4706

June 11, 2007

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Kathy Wood
Chief, Resources Management Division
U.S. Bureau of Reclamation
South-Central California Area Office
1243 N Street
Fresno, California 93721-1813

Dear Ms. Wood:

This letter is in response to your letter dated March 19, 2007, requesting confirmation of a previous concurrence letter written by NOAA's National Marine Fisheries Service (NMFS). On January 23, 2006 (see attached), NMFS sent a letter to the U.S. Bureau of Reclamation (BOR) concurring with a "not likely to adversely affect" for the proposed joint BOR and Contra Costa Canal Replacement project (151422SWR2004SA9129:BFO). Since that time, the applicant, Contra Costa Water District (CCWD), has modified the project description (see Action Specific Implementation Plan dated March 21, 2007). BOR has determined that those changes would not alter any of the previous effects determinations.

The proposed action is the same as previously described in our January 23, 2006, letter with the exception of the nine changes summarized below:

- (1) Duration of project: the project will take nine years instead of five years, with three to five phases beginning in July 2007.
- (2) The number of pipelines has been reduced from two to one pipeline ten feet in diameter.
- (3) 47 acres of wetland mitigation for terrestrial species was added, but not for fish species.
- (4) Cofferdam construction will take place from July to November.
- (5) Dewatering and fish rescue will occur in March and April 2008.
- (6) Groundwater wells to dewater the construction site are now proposed with the discharge onto adjacent agricultural lands instead of Marsh Creek or sloughs that drain to the delta.
- (7) Minor modifications to Pumping Plant 1 are proposed to accommodate the new pipeline.
- (8) Bypass culverts are only proposed for Marsh Creek, due to one-way tide gates and existing pipelines that prevent water flowing upstream near the tidal slough crossings.
- (9) A separate waiver of the existing "No fill and No Diversion" periods will be made for each phase of the construction to comply with existing biological opinions.

The NMFS has reviewed the final Action Specific Implementation Plan (ASIP) dated March 21, 2007, containing the changes to the project description listed above and concurs with BOR's

Classification: ENV-700
Project: CVF
Control No.: 01040558
Federal ID: 1031097



determination that all of the short term effects are “not likely to adversely affect” or small enough as to be wholly insignificant. The long-term effects of the project are considered beneficial as a reduction in entrainment and predation through the currently unscreened diversion will occur through removal of the tidal influence (*i.e.*, construction of a pipeline instead of an open canal) and lowering of the approach velocities. Flows through the headworks at Rock Slough will be reduced from a range of 450 to 800 cubic feet per second (cfs) to 0 to 350 cfs. Tidal inflows will be nearly eliminated at the headworks. The resulting approach velocities with a pipeline in place range from nearly 0 to 0.55 ft per second. Therefore, listed fish species that encounter the diversion are less likely to be entrained into the proposed pipeline.

Confirmation of the BOR’s original determination is based on the proposed construction periods occurring when listed fish species are not present, Table 2-2 (ASIP) below. In addition, the proposed pipeline construction will occur behind cofferdams that have been screened of all fish species. NMFS will work with CCWD to design the most appropriate bypass criteria for Marsh Creek and review the Fish Rescue Plan for behind the cofferdams. NMFS does not expect listed fish species to be caught behind the cofferdam due to timing of the cofferdam construction and past experience with similar projects on the Sacramento River and American River where listed fish are more abundant yet none have been caught.

Table 2.2. from 2007 ASIP.

Illustrative Construction Timing for the Canal Replacement Project		
Months	Activity Type	Construction Duration
July to November 2007	Coffer dam, access road	Less than 1 month
March to April 2008	Dewatering	Less than 1 week
April 2008	Topple berms, construct road	1 month
March to April 2008	Fish rescue	1 week
April 2008	Install groundwater wells	1 month
July to September 2008	Pipeline construction at Marsh Creek	1 to 2 months
May to October 2008	Pipeline construction	Up to 6 months
October 2008 to June 2009	Surface restoration	1 to 2 months
October 2008 to June 2009	Power line replacement	1 month

The proposed best management practices will reduce sedimentation, turbidity and noise and the spill prevention plan will protect aquatic habitat from contamination. The proposed discharge location for groundwater pumping will eliminate false attraction flows in Marsh Creek and no aquatic habitat containing listed fish species will be affected by the proposed 47 acre wetland mitigation plan (*i.e.*, located behind levees on Holland Tract). The use of aquatic herbicides in the Contra Costa Canal will be eliminated by the proposed pipeline, thus indirect impacts from current maintenance practices to critical habitat in Rock Slough will be reduced.

BOR has determined that the proposed action will have insignificant adverse effects on Essential Fish Habitat (EFH) for fall run Chinook salmon as described in Amendment 14 of the Pacific salmon fishery Management Plan pursuant to the Magnuson-Stevens Act. The 3.97 miles of

Contra Costa Canal proposed to be replaced with a pipeline and Marsh Creek are considered to be EFH. The proposed pipeline will result in reduced productivity due to removal of the emergent vegetation and possible food supply. However, that same emergent vegetation is considered of poor quality, lacking in primary constituent elements and high in predation impacts. Since the benefits of reduced predation outweigh the loss of the emergent vegetation the proposed project is considered beneficial for juvenile fall-run Chinook salmon. Indirect construction impacts, such as the Marsh Creek crossing are expected to be minimized through the use of a bypass during the construction phase. Short term construction impacts will be limited to the time period in which adult and juvenile fall-run Chinook are not present in Marsh Creek and Rock Slough (ASIP Table 2.2). Therefore, NMFS confirms that the changes made to the proposed project will not alter the previous concurrence determination. The proposed conservation measures provide for EFH recommendations, thus a written response is not required. Should additional information reveal that the project may affect EFH and/or impact salmonids in a way not previously considered, or should the action be modified in a way that may cause additional effects to EFH, this confirmation may be reconsidered.

Please contact Mr. Bruce Oppenheim at (916) 930-3603, or via e-mail at Bruce.Oppenheim@noaa.gov, if you have any questions concerning this project or require additional information.

Sincerely,

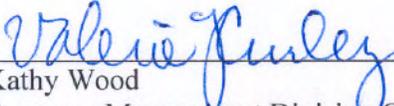


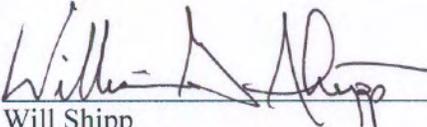
Maria Rea
Sacramento Area Supervisor

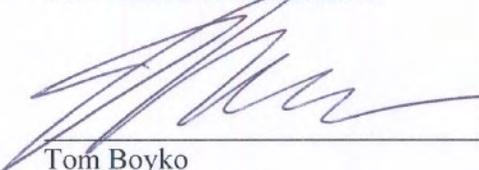
cc: Copy to file: ARN 151422SWR2004SA9129
NMFS-PRD, Long Beach, CA

**FINDING OF NO SIGNIFICANT IMPACT
FOR THE CONTRA COSTA CANAL REPLACEMENT PROJECT, CONTRA
COSTA COUNTY, CALIFORNIA**

Recommended by:  Date: 6-24-07
Shane Hunt
Environmental Specialist
Mid-Pacific Regional Office
U.S. Bureau of Reclamation

Concurred by:  Date: 6-25-07
Acting Kathy Wood
Resource Management Division Chief
South Central California Area Office
U.S. Bureau of Reclamation

Approved by:  Date: 6/26/07
Will Shipp
Deputy Area Manager
South Central California Area Office
U.S. Bureau of Reclamation

Approved by:  Date: 7/11/07
Tom Boyko
Regional Manager
Sierra Nevada Region, Western Area Power Administration

FONSI No. 07-05-MP

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FINDING OF NO SIGNIFICANT IMPACT

**CONTRA COSTA CANAL REPLACEMENT PROJECT,
CONTRA COSTA COUNTY, CALIFORNIA**

In accordance with section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended, the South-Central California Area Office of the U.S. Bureau of Reclamation (Reclamation) and Sierra Nevada Region of the Western Area Power Administration (Western), have determined that the proposed Contra Costa Canal replacement project is not a major Federal action significantly affecting the quality of the human environment; therefore an environmental impact statement is not required. This Finding of No Significant Impact is supported by Reclamation and Western's Draft Environmental Assessment (EA), *Contra Costa Canal Replacement Project, Contra Costa County, California* and is hereby incorporated by reference.

Background

The Contra Costa Water District (CCWD) has requested that the United States Bureau of Reclamation (Reclamation) permit CCWD to replace the unlined portion (3.97 miles) of the Contra Costa Canal, a Reclamation-owned facility, with a buried pipeline within Reclamation's existing Right of Way (ROW) by granting CCWD a permit (MP-620 add/alt permit), a short-term license, and a long-term easement for the new replacement pipeline to CCWD. In addition CCWD is requesting Reclamation approval of various licenses and or easements as appropriate for third-party crossing agreements over the pipeline as it is constructed. Under CCWD's proposal CCWD would own the new pipeline, and Reclamation would grant CCWD an easement for the pipeline. Reclamation would retain ownership of the land and all other Reclamation-owned facilities. Additionally, replacing the unlined portion of the Contra Costa Canal with a buried pipeline would require Western to issue a Utility Relocation Agreement to CCWD for Western to plan, design, and relocate as many as 40 structures of their existing Tracy-Contra Costa 69-kilovolt (kV) transmission line (T-line) within the vicinity of mile 13 through 17 of Western's ROW. The new structures will be in-line with the existing T-lines within the ROW.

Findings

Aesthetics: The proposed project involves replacing the unlined earthen canal with an underground pipe in or adjacent to the existing canal ROW, so it would not affect any trees, rock outcroppings, or historic buildings. No scenic resources would be damaged. Following implementation of the proposed project, the project site would be more visually consistent with the areas adjacent to the canal, which are primarily open space. There will be no noticeable change due to the replacement of Western's Tracy-Contra Costa 69-kV T-line located within the ROW since it is proposed to be at a slightly lower grade.

Minor and temporary changes in the amount and duration of water level fluctuation in Los Vaqueros Reservoir could occur during construction phases causing an increase to the width of the exposed shoreline below the reservoir high water mark.

These impacts are considered minor due to the small scale of adverse impacts at Los Vaqueros and the improved consistency of the area after completion of the project in the vicinity of the canal therefore the proposed action would not result in any significant impacts to aesthetic resources.

Air Quality: Impacts to air quality resulting from the use of equipment would be below established Clean Air Act *de minimus* thresholds, localized and short term in nature. The minor emissions increases during construction periods are not expected to result in additional degradation of the air quality in the region. Once construction is complete only minor, intermittent vehicle emissions would occur during monitoring and maintenance activities. Therefore, there would be no significant effect to air quality.

Biological Resources including Threatened and Endangered Species: The proposed action will temporarily affect valley riverine aquatic, non-tidal freshwater permanent emergent, natural seasonal wetland and managed seasonal wetland habitats. These habitats will be restored. There will be a permanent loss of tidal perennial aquatic habitat, tidal freshwater emergent habitat and valley foothill riparian. Non-tidal wetland habitats will be created and/or enhanced to mitigate for the losses of the tidal habitats, preventing a net loss of wetland habitats. Although the mitigation will not include tidal wetlands, the current value of the tidal wetlands that would be lost is low, due to the operations and maintenance of the unlined portion of the canal. Valley foothill riparian habitat will be created and some will be enhanced off-site. There will be a gain in grassland habitat acreage.

The proposed action may affect and is likely to adversely affect the delta smelt, giant garter snake, Swainson's hawk, California black rail, western burrowing owl, western pond turtle, other sensitive bird species (such as the tricolored blackbird) and the Suisun Marsh aster. Adverse effects will be avoided or minimized by the implementation of appropriate conservation measures, developed in consultation with the USFWS, NMFS and DFG. These measures include scheduling construction windows to minimize potential exposure of listed fish species and minimizing impacts to garter snakes during their inactive period. This will ensure compliance with Section 7 of the Endangered Species Act of 1973, as amended. Migratory birds will be protected by avoiding take of individuals and eggs, ensuring compliance with the Migratory Bird Treaty Act. Compensation habitat will be provided for affected bird species, the giant garter snake, the western pond turtle and the Suisun Marsh Aster. In the long term, there will be a reduction in entrainment and predation on the juvenile salmonids due to removal of tidal influence (lowering of maximum and mean approach velocities) and loss of open water (containing non-native predators) in the dead-end canal which are considered beneficial effects. The proposed action will not adversely affect the San Joaquin kit fox or the California red-legged frog.

The USFWS has issued a final non-jeopardy biological opinion on the delta smelt. The USFWS has determined that the proposed action will not result in the adverse modification or destruction of delta smelt critical habitat, due to the absence of primary constituent elements in the unlined canal. NMFS has concurred with Reclamation's determination that the proposed action is not likely to adversely affect federally listed anadromous fishes and their critical habitat. Essential fish habitat for the Central Valley fall-run Chinook salmon will be protected by the timing of construction within Marsh Creek.

As a result of the implementation of conservation measures, including avoidance, minimization and in some cases, mitigation, the proposed action will not have a significant impact on biological resources, either directly, indirectly or cumulatively. Although some fishing opportunities by trespassers may be lost, the common fish species whose habitat will be removed will continue to be abundant elsewhere in the vicinity of the City of Oakley. Therefore, there will be no significant impacts on common fish species or sportfishing.

Cultural Resources: The unlined portion of the Contra Costa Canal will experience adverse effects from the encasement project. The mitigating measures identified in the memorandum of agreement (MOA) with the California State Historic Preservation Office under Section 106 of the National Historic Preservation Act for this undertaking are being implemented. Subsurface archeological testing will occur prior to construction in sensitive areas as stipulated in the MOA.

CCWD will not be allowed to construct the project prior to receiving a permit from the U.S. Army Corps of Engineers (USACE). USACE cannot issue CCWD's permit until they have completed the Section 106 process for the Holland Tract wetland mitigation site.

Western will issue the Utility Relocation Agreement to CCWD after Western has completed the Section 106 process for Western's action to plan, design, and relocate as many as 40 structures of their existing Tracy-Contra Costa 69-kilovolt (kV) transmission line (T-line) within the project vicinity. The new structures will be in-line with the existing T-lines within the ROW.

The impacts to cultural resources will/have been mitigated through the Section 106 process for the project resulting in no significant impact to cultural resources.

Environmental Justice: Implementing the project would not result in human health impacts. The population in the project area is not considered to be predominately low income or minority. Therefore the temporary impacts expected to occur would not disproportionately affect any minority or disadvantaged populations within the project area and no significant impacts related to environmental justice would occur.

Geology & Soils: The area within the Reclamation ROW for the canal was heavily disturbed and modified when the canal was constructed. Once the project is complete the

ROW will be more consistent with surrounding land elevation and less intensively managed than under existing conditions. The Holland Tract site will be revegetated and managed to provide wildlife habitat. Soils excavated to create wetland areas on the Holland Tract will be retained within the 145.07-acre area.

These impacts are considered minor due to the small scale and scope of the impacts therefore the proposed action would not result in any significant impacts to geology or soils.

Hydrology and Water Quality: Construction activities could impair water quality temporarily because grading and construction activities would disturb soil and expose potential contaminants to stormwater and runoff. Soil and associated contaminants that enter stream channels can increase turbidity, stimulate the growth of algae, increase sedimentation of aquatic habitat, and introduce compounds that are toxic to aquatic organisms. Construction operations along the canal would require the temporary rerouting of surface flows in the drainages and sloughs in the project area: Marsh Creek, Emerson Slough, and Dutch Slough. It will be necessary to shut down the Rock Slough intake facility for up to approximately 12 months, for any given phase of the project, while the pipeline is being installed. The groundwater would be discharged to existing agricultural areas for irrigation or temporarily stored for percolation adjacent to the project site but outside of the 200-foot staging and construction area consistent with the Central Valley Regional Water Quality Control Board (RWQCB) Waiver of Waste Discharge Requirements for Specific Types of Discharge and under agreement with adjacent landowners.

A Storm Water Pollution Prevention Plan (SWPPP) will be developed as required by the RWQCB under the statewide NPDES General Permit for Discharges of Storm Water Associated with Construction Activity. The SWPPP would include measures identified by the Central Valley Regional Water Board as Best Available Technology Economically Available (BAT) and Best Conventional Pollution Control Technology (BCT) to reduce or eliminate stormwater pollution.

During construction, a water quality compliance monitoring station may be dewatered, stagnant, or otherwise non-representative of water quality in Rock Slough and therefore not controllable by the California Department of Water Resources and Reclamation, who are responsible for compliance pursuant to D-1641. Before construction begins, CCWD will consult with State Water Board staff and request to temporarily move the measurement location. After completion of the project, the compliance location would return to the present location at PP1, and there will be no impacts on CCWD, DWR, or Reclamation as a result of implementing this project.

Minor changes in the amount and duration of water level fluctuation in Los Vaqueros Reservoir could occur. CCWD estimates up to 7,000 acre-feet of additional draw down of the reservoir during each construction phase. CCWD does not expect this amount of potential increased drawdown to affect their ability to meet water demand within their service area.

Through permits from the RWQCB and implementation requirements of these permits impacts to water quality and hydrology will be minimized. All impacts to water quality and hydrology are expected to be localized and temporary. Therefore, there would be no significant impacts to water quality or hydrology as a result of the proposed action.

Indian Trust Assets: There are no tribes possessing legal property interests held in trust by the United States in the areas involved with this action, therefore Indian trust assets are not affected by this action.

Land Use: The project would pose no conflict with any applicable land use plans, policies, or regulations. The project would ensure the canal's compatibility with plans associated with the development planned for the project area. No impact would occur.

Noise: Some homes could be affected by construction related noise. Noise levels for individual equipment can range from 79 to 101 dBA at 50 feet. Construction contractors will be required to ensure that, to the extent feasible, construction equipment is properly maintained and equipped with noise control devices, such as mufflers, in accordance with manufacturers' specifications. Construction contractors shall be limited construction activities to the hours of 7:30 a.m. to 5:30 p.m. Monday through Friday, during which such activities are exempt from noise levels identified in applicable standards. To the extent that contractors work outside of these hours, noise levels will be limited so as not to cause any disruption to nearby residences. CCWD shall designate a disturbance coordinator during construction. The disturbance coordinator's telephone number shall be conspicuously posted around the project site and supplied to nearby rural and developing, occupied residences. The disturbance coordinator shall receive all public complaints and be responsible for determining the cause of the complaint and implementing any feasible measures to alleviate the problem.

Noise generated at the site will primarily be confined to daytime hours in compliance with applicable regulations. Noise generated from the project would only occur during construction periods and would be localized and temporary. Therefore no significant impacts from noise would occur.

Recreation: CCWD will coordinate with the East Bay Regional Park District to keep the trail crossing over Marsh Creek available as long as conditions are safe. It is expected that the trail will need to be closed temporarily when Marsh Creek is open cut to install the replacement pipeline. Efforts will be made to restore the trail as soon as construction across Marsh Creek is completed. This impact would not be significant since the area that would be impacted is small, the impacts would be temporary and other recreational trails exist in the area.

Wetlands: Implementation of the project would result in fill of jurisdictional waters of the United States, including wetlands subject to USACE jurisdiction under the Federal Clean Water Act, and Section 10 waters of the United States, including the canal, isolated freshwater marsh and seasonal wetland, irrigation/drainage ditches, and human-induced ponded areas. Permanent impacts from the project would total 42.92 acres of open waters and 3.84 acres of in-channel freshwater marsh and 0.23 acres of seasonal

wetland/drainage ditches. The remaining wetlands impacts would be temporary, including impacts to perennial drainages, seasonal wetlands, irrigation/drainage ditches, out-of-channel freshwater marsh, and seasonally wet meadow totaling an additional 6.64 acres in the vicinity of the canal and 3.07 acres of season wetland/drainage ditches at the Holland Tract site.

A mosaic of 47 acres of wetlands and waters will be created with improved habitat function on 145.07 acres at the 263-acre Holland Tract site to achieve minimum waters of the United States and wetland creation to impact ratio of 1:1. The off-site wetland creation property will be made available concurrently with each phase of project construction. The wetland mitigation features are expected to have higher functional value than the wetland habitats being impacted. The mitigation area will not be managed as a water conveyance facility where it is necessary to minimize aquatic vegetation. The existing wetland areas within the unlined canal are fragmented and narrow in width and this limits high habitat function. Given the higher functional value expected from the mitigation wetlands coupled with no net loss of overall wetland acreage the impacts to wetlands from the project are not considered significant.

Cumulative Effects: Historical, ongoing, and planned development in the eastern Contra Costa County area and throughout the Sacramento/San Joaquin River Delta (Delta) area have impacted wetlands area and habitats. Cumulatively, the reclamation of Delta islands and urban development have greatly reduced wetland acreage. The mitigation wetlands are expected minimize any contribution this project would have to cumulative effects on wetland resources and habitats.

Approval would not have highly controversial or uncertain environmental effects or involve unique or unknown environmental risks. Impacts associated with the proposed action are minor, short-term, localized, or temporary nature of the impacts associated with this project with the exception of wetlands and wildlife habitat. Impacts to wetlands and habitats will be mitigated through the Holland Tract mitigation site, therefore there will be no significant cumulative impacts associated with this project.

Permittee: Contra Costa Water District
Attn: Mark Seedall
Permit Number: 200500599
Issuing Office: U.S. Army Engineer District, Sacramento
Corps of Engineers
1325 "J" Street
Sacramento, California 95814-2922

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below. A notice of appeal options is enclosed.

Project Description:

To replace approximately 21,000 linear feet of the unlined portion of the Contra Costa Canal, water supply aqueduct, with an underground pipeline.

All work is to be completed in accordance with the attached plan(s).

Project Location:

The project is located in Township 2 North, Ranges 2 and 3 East, MDB&M, in Contra Costa County, California.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on August 1, 2017. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. This Corps permit does not authorize you to take an endangered species, specifically delta smelt (*Hypomesus transpacificus*), California red-legged frog (*Rana aurora draytonii*), California tiger salamander (*Ambystoma californiense*), giant garter snake (*Thamnophis gigas*), and San Joaquin kit fox (*Vulpes macrotis mutica*, or designated critical habitat. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (e.g., an Endangered Species Act Section 10 permit, or a Biological Opinion under Endangered Species Act Section 7, with "incidental take" provisions with which you must comply). The enclosed Fish and Wildlife Service Biological Opinions number 1-1-07-F-0149, dated May 8, 2007, and June 21, 2007, contain mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the Biological Opinion. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached Biological Opinion, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the Biological Opinion, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The Fish and Wildlife Service and National Marine Fisheries Service is the appropriate authority to determine compliance with the terms and conditions of its Biological Opinion, and with the Endangered Species Act. The permittee must comply with all conditions of this Biological Opinion.

2. To insure your project complies with the Federal Endangered Species Act, you must implement all of the mitigating measures identified in the enclosed National Marine Fisheries Service letters of concurrence (number 151422SWR2004SA9129:BFO, dated January 23, 2006). If you are unable to implement any of these measures, you must immediately notify this office and the Fish and Wildlife Service so we may consult as appropriate, prior to initiating the work, in accordance with Federal law.

3. You shall develop a final comprehensive mitigation and monitoring plan, which must be approved by the Army Corps of Engineers prior to initiation of construction activities. The plan shall include mitigation location and design drawings, vegetation plans, including target species to be planted, and final success criteria, presented in the format of the Sacramento District's Habitat Mitigation and Monitoring Proposal Guidelines, dated October 25, 1996. The purpose of this requirement is to insure replacement of functions and values of the aquatic environment that would be lost through project implementation.

4. All terms and conditions of the March 26, 2007, 401 CERTIFICATION Section 401 Water Quality Certification are expressly incorporated as conditions of this permit.

5. The permittee understands and agrees, that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural

work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - (x) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
 - (x) Section 404 of the Clean Water Act (33 U.S.C. 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. Limits of this authorization.
 - a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal projects.
3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
 - a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
 - b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
 - c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - d. Design or construction deficiencies associated with the permitted work.
 - e. Damage claims associated with any future modification, suspension, or revocation of this permit.
4. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant.

Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.

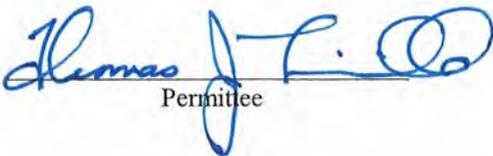
b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

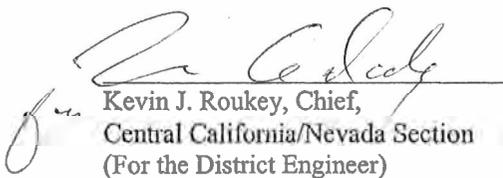
6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.


Permittee

August 1, 2007
Date

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.


Kevin J. Roukey, Chief,
Central California/Nevada Section
(For the District Engineer)

3 Aug 2007
Date

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

Transferee

Attachments:

January 20, 2007 Public Notice

January 23, 2006 National Marine Fisheries Service Letter of Concurrence number
151422SWR2004SA9129:BFO

May 8, 2007 United Fish and Wildlife Service Biological Opinion number 1-1-07-0149

June 21, 2007 United Fish and Wildlife Service Biological Opinion number 1-1-07-0149

March 26, 2007, California Regional Water Quality Control Board Central Valley Region 401 Water
Quality Certification

Notice of Determination

Form C

To: Office of Planning and Research
 PO Box 3044, 1400 Tenth Street, Room 212
 Sacramento, CA 95812-3044

County Clerk
 County of Contra Costa
 822 Main Street
 Martinez, CA 94553

From: (Public Agency) Contra Costa Water
1311 Concord Ave
Concord, CA 94520
 (Address)

Subject:

Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

Contra Costa Canal Replacement Project

Project Title

200604082	Mark A. Seedall	925 688-8119
State Clearinghouse Number (If submitted to Clearinghouse)	Lead Agency Contact Person	Area Code/Telephone/Extension

City of Oakley and unincorporated Contra Costa County

Project Location (include county)

Project Description:

The project involves installing up to 3.97 miles of buried pipeline in place of the existing unlined portion of the Contra Costa Canal (between PP1 and the trash rack near Rock Slough).

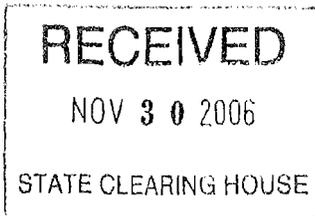
This is to advise that the Contra Costa Water District has approved the above described project on
November 29, 2006 Lead Agency Responsible Agency
 (Date) and has made the following determinations regarding the above described project:

1. The project [will will not] have a significant effect on the environment.
2. An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
 A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [were were not] made a condition of the approval of the project.
4. A statement of Overriding Considerations [was was not] adopted for this project.
5. Findings [were were not] made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval is available to the General Public at:
 1331 Concord Ave, Concord CA 94520

 November 30, 2006 Assistant General Manager
 Signature (Public Agency) Date Title

Date received for filing at OPR:



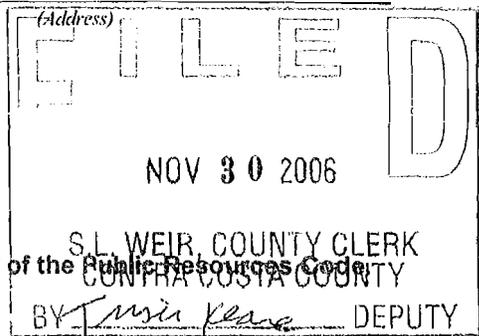
January 2004

Notice of Determination

Form C

To: [X] Office of Planning and Research
PO Box 3044, 1400 Tenth Street, Room 212
Sacramento, CA 95812-3044
[X] County Clerk
County of Contra Costa
822 Main Street
Martinez, CA 94553

From: (Public Agency) Contra Costa Water
1311 Concord Ave
Concord, CA 94520



Subject: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code
Contra Costa Canal Replacement Project

Project Title

200604082 Mark A. Seedall 925 688-8119
State Clearinghouse Number Lead Agency Area Code/Telephone/Extension
(If submitted to Clearinghouse) Contact Person

City of Oakley and unincorporated Contra Costa County

Project Location (include county)

Project Description:

The project involves installing up to 3.97 miles of buried pipeline in place of the existing unlined portion of the Contra Costa Canal (between PP1 and the trash rack near Rock Slough).

This is to advise that the Contra Costa Water District has approved the above described project on November 29, 2006 [X] Lead Agency [] Responsible Agency and has made the following determinations regarding the above described project:
(Date)

- 1. The project [] will [X] will not have a significant effect on the environment.
2. [] An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
[X] A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [X] were [] were not made a condition of the approval of the project.
4. A statement of Overriding Considerations [] was [X] was not adopted for this project.
5. Findings [] were [X] were not made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval is available to the General Public at: 1331 Concord Ave, Concord CA 94520

[Signature] November 30, 2006 Assistant General Manager
Signature (Public Agency) Date Title

Date received for filing at OPR:

January 2004

REC'T # 0003507508
November 30, 2006 15:53:06

CONTRA COSTA Co Recorder Office
STEPHEN L. WEIR, Clerk-Recorder

Document # 06-WATER

Check Number 1211
REQD BY

Fish and Game \$1,250.00
Total fee \$1,250.00
Amount Tendered... \$1,250.00

Change \$0.00
cnn,CP/L/O

REC'T # 0003507503
November 30, 2006 15:51:33

CONTRA COSTA Co Recorder Office
STEPHEN L. WEIR, Clerk-Recorder

Document # 06-WATER

Check Number 904021
REQD BY

Envir Qual \$25.00
Total fee \$25.00
Amount Tendered... \$25.00

Change \$0.00
cnn,CP/L/O



STATE OF CALIFORNIA - THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME
ENVIRONMENTAL FILING FEE CASH RECEIPT
DFG 753.5a (8-03)

261472

Lead Agency: CONTRA COSTA WATER Date: NOV 30 2006
County / State Agency of Filing: CCC CLERKS OFFICE Document No.: _____
Project Title: CONTRA COSTA CANAL Replacement Project
Project Applicant Name: 311 CONCORD AVE CONCORD CA 94520 Phone Number: _____
Project Applicant Address: CONTRA COSTA WATER
Project Applicant (check appropriate box): Local Public Agency School District Other Special District
State Agency Private Entity

CHECK APPLICABLE FEES:

- () Environmental Impact Report \$850.00 \$ _____
- () Negative Declaration \$1,250.00 \$ 1250
- () Application Fee Water Diversion (State Water Resources Control Board Only) \$850.00 \$ _____
- () Projects Subject to Certified Regulatory Programs \$850.00 \$ _____
- () County Administrative Fee \$25.00 \$ 25.00
- () Project that is exempt from fees

Rec # 3507508
rec # 3507503

TOTAL RECEIVED \$ _____

Signature and title of person receiving payment: Tina Keane DEPUTY COUNTY CLERK



California Department of Fish and Game
POST OFFICE BOX 47
7329 SILVERADO TRAIL
YOUNTVILLE CALIFORNIA 94599
California Endangered Species Act
Incidental Take Permit No. 2081-2007-027-03
CANAL REPLACEMENT PROJECT, PHASE I
CONTRA COSTA WATER DISTRICT

Authority: This California Endangered Species Act ("CESA") Incidental Take Permit ("Permit") is issued by the Department of Fish and Game ("Department") pursuant to Fish and Game Code sections 2081(b) and 2081(c), and California Code of Regulations, title 14, section 783 et seq. CESA prohibits the take¹ of any species of wildlife designated as an endangered, threatened, or candidate species² by the Fish and Game Commission. The Department, however, may authorize the take of such species by permit if the conditions set forth in Fish and Game Code sections 2081(b) and 2081(c) are met. (See also Cal. Code Regs., tit. 14, § 783.4.)

Permittee: Contra Costa Water District

Name and title of principal officer: Mr. Mark Seedall
Contact person: Mr. Mark Seedall

Mailing address: 1331 Concord Avenue
Post Office Box H20
Concord, CA 94524

Effective Date and Expiration Date of Permit:

This Permit shall be executed in duplicate original form and shall become effective once a duplicate original is acknowledged by signature of the Permittee on the last page of the Permit and returned to the Department's Office of the General Counsel. Unless renewed by the Department, this Permit's authorization to take the Covered Species shall expire on **December 31, 2010**. This Permit provides take authorization for Phase I of the Project as set forth below. However, the Department and the Permittee anticipate that by amending this Permit take coverage could be allowed for future phases of construction contingent on the Permittee providing additional mitigation and funding assurances proportional in extent to the impacts upon the species from that phase or phases.

¹Pursuant to Fish and Game Code section 86, "Take" means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill."

²"Candidate species" are species of wildlife that have not yet been placed on the list of endangered species or the list of threatened species, but which are under formal consideration for listing pursuant to Fish and Game Code section 2074.2.

Project Location:

The proposed Canal Replacement Project ("Project") is located in northeastern Contra Costa County. Approximately 44 miles of the Contra Costa Canal are lined, and 3.97 miles are unlined. The Project involves only the unlined portion of the canal, which begins at the Rock Slough headworks and extends west 3.97 miles to Pumping Plant 1 (PP 1) near State Route (SR) 4 in the city of Oakley. (Brentwood USGS 7.5 minute quadrangle.) At this time the applicant proposes to implement Phase I of the Project which will replace the portion of the Canal between PP 1 and Marsh Creek, a distance of approximately 2,000 linear feet (hereafter, "Phase I").

Project Description:

Contra Costa Water District (CCWD) proposes to ultimately replace the unlined portion of the Contra Costa Canal with up to 3.97 miles (approximately 21,000 feet) of buried pipeline between the Rock Slough trash rack and PP1. The Canal will be filled with a 10-foot diameter pipe, bedding, gravel, and approximately 750,000 cubic yards of native soil. After the pipeline is completed, a permanent, all-weather maintenance road will be constructed along the length of the Right of Way (ROW), the Western Area Power Association 69 kV power poles will be replaced and the ROW will be protected by a 6-foot chain-link fence. The pipeline will be installed largely under the northern berm of the unlined Canal. The footprint for Phase I of the Project is approximately 19 acres including the 200-foot temporary construction easement north of the Canal ROW. CCWD proposes beginning Phase I activities in the fall of 2007 and completing Phase I by November 2008.

During Phase I a cofferdam will be installed across the canal to isolate the area between PP1 and Marsh Creek and exclude fish from the construction segment. Installation will occur in the fall of 2007 using divers to secure the cofferdam to the bottom of the canal. If pilings need to be used, they will be installed using a vibratory hammer. Vegetation clearing in the area will also be conducted during the fall of 2007. Dewatering of the area upstream of the cofferdam and any fish rescue will occur in the spring of 2008, approximately late-April to early-May. Pipeline installation will begin following dewatering activities. Pipeline installation includes mobilization of pipe-laying equipment (excavators, a crane, and haul trucks), removal of soft sediment at the bottom of the canal as needed and transport of the sediment to drying ponds, placement of pipe bedding material, pipe laying, backfill in the pipe zone with aggregate base, and trench zone backfilling using the material from the berms and sediment from the canal.

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Covered Species:

This Permit covers the following species:

Name

Status³

Reptiles

Giant garter snake (*Thamnophis gigas*)

Threatened

This species and only this species is hereinafter referred to as "Covered Species."

Impacts to Covered Species:

Implementation of Phase I will result in impacts to giant garter snake (GGS) and its habitat related to increased personnel and vehicle traffic during vegetation clearing, construction of the access road, pipeline staging, pipeline installation, and project-caused habitat losses. During Phase I, approximately 4.45 acres of aquatic habitat suitable for GGS will be permanently impacted by the Project. Additionally, approximately 8.7 acres of upland habitat suitable for GGS will be temporarily impacted by Phase I construction activities along the canal ROW including use of heavy equipment for pipeline installation and backfilling of the canal once the pipeline is installed.

Incidental Take Authorization:

The Department authorizes the Permittee, its employees, contractors, and agents to take Covered Species incidentally in carrying out Phase I of the Project, subject to the limitations described in this section and the conditions of approval identified below. This Permit does not authorize any take of Covered Species from activities outside the scope of Phase I as described above; take of Covered Species resulting from violation of this Permit; or intentional take of Covered Species except for capture and relocation of Covered Species as required by this Permit.

Conditions of Approval:

The Department's issuance of this Permit and Permittee's authorization to take the Covered Species are subject to Permittee's compliance with and implementation of the following conditions of approval:

1. Permittee shall comply with all applicable state, federal, and local laws in existence on the effective date of this Permit or adopted thereafter.

³Refers to status under CESA. Under CESA, a species may be on the list of endangered species, the list of threatened species, or the list of candidate species. All other species are "unlisted."

2. Permittee shall fully implement and adhere to the conditions of this Permit within the time frames set forth in Attachment 1, the Mitigation Monitoring and Reporting Program ("MMRP"), and shall comply with any measures in the MMRP that are not otherwise set forth in this Permit.
3. Permittee shall implement and adhere to the mitigation measures in the Biological Resources section of the Mitigated Negative Declaration and Initial Study adopted by the Contra Costa Water District for the Project on November 29, 2006 and the Action Specific Implementation Plan (ASIP), dated March 21, 2007 (Attachment 2).
4. Permittee shall fully implement and adhere to the following conditions:

4.1. General Provisions:

- 4.1.1. Before initiating ground-disturbing activities, the Permittee shall designate a representative (Designated Representative) responsible for communications with the Department and for overseeing compliance with this Permit. The Department shall be notified in writing prior to commencement of ground-disturbing activities of the representative's name, business address, and contact information, and shall be notified in writing if a substitute representative is designated.
- 4.1.2. The Permittee shall hire a biologist knowledgeable and experienced in the biology and natural history of the Covered Species (Designated Biologist). The Designated Biologist shall monitor construction activities within the Phase I area. At least 30 days prior to ground-disturbing activities, the Permittee shall submit to the Department in writing the proposed Designated Biologist's name, qualifications, business address, and contact information for review and approval. The Permittee shall not commence ground-disturbing activities until the Department approves the Designated Biologist.
- 4.1.3. The Designated Biologist shall have authority to require Project-related personnel to immediately stop any activity that is not in compliance with this Permit, and to order any reasonable measure to avoid the take of an individual of the Covered Species.
- 4.1.4. The Permittee shall limit activities related to installation of the sheetpile cofferdam in the Contra Costa Canal to July 1 through November 30. Work behind/downstream of the cofferdam to dewater, rescue fish, and install pipeline may occur outside of this work period. The Permittee shall use a vibratory hammer to install the cofferdam.

- 4.1.5. Erosion control measures shall be utilized throughout all phases of construction in areas where soil, silt, dirt and/or sediment from project activities threatens to enter waters of the State. At no time shall any of these materials be allowed to enter the stream or be placed where it may enter the stream. Erosion control matting will not include monofilament or plastic; the matting will be composed of jute, straw, coconut matting, or other natural fibers.
- 4.1.6. Staging and storage areas for equipment, materials, fuels, lubricants and solvents, will be located outside of the stream channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the stream will be positioned over drip pans. Any equipment or vehicles driven and/or operated within or adjacent to the stream will be checked and maintained daily to prevent leaks of materials that if introduced to water could be deleterious to aquatic life. Vehicles will be moved away from the stream prior to refueling and lubrication.
- 4.1.7. Poured concrete shall be excluded from the wetted channel for a period of 30 days after it is poured. During that time the poured concrete shall be kept moist, and runoff from the concrete shall not be allowed to enter a live stream. Commercial sealants (e.g. Deep Seal, Elasto-Deck BT Reservoir Grade) may be applied to the poured concrete surface where difficulty in excluding water flow for a long period may occur. If sealant is used, water shall be excluded from the site until the sealant is dry.
- 4.1.8. The Permittee shall conduct an education program for all persons who will work on-site during Phase I implementation and construction. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology of the Covered Species, the habitat needs of the Covered Species, their status under CESA, and the Conditions of Approval of this Permit. A fact sheet containing this information shall also be prepared and distributed. Upon completion of the program, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be filed at the Canal Replacement Project work site office and shall be made available to the Department upon request.
- 4.1.9. Project-related personnel shall access the Phase I site during construction and development activities using existing routes and shall not cross outside of pre-approved access roads. To the extent possible, the Permittee shall use previously disturbed areas within the Phase I site for temporary storage areas, laydown sites, and any other surface-disturbing activities. If construction of offsite routes of travel will be required, the Department shall be contacted prior to carrying out such an activity. The Department may require an amendment to

this Permit if additional take of Covered Species may result from Project modification.

4.1.10. The Permittee shall provide Department representatives with reasonable access to the Project site and mitigation lands under its control, and shall otherwise fully cooperate with Department efforts to verify compliance with or effectiveness of mitigation measures set forth in the Permit. Neither the Designated Biologist, nor the Department shall be liable for any costs incurred in complying with the management measures, including cease-work orders issued by the Department or as provided in the Permit.

4.1.11. Upon completion of Phase I, the Permittee shall remove from the site and properly dispose of all construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.

4.1.12. Notwithstanding any expiration date on this Permit's take authorization, the Permittee's obligations under this Permit do not end until the Department accepts the Final Mitigation Report as complete.

4.2. Notification and Reporting:

4.2.1. The Permittee shall notify the Department and shall document compliance with all pre-construction Conditions of Approval before initiating ground-disturbing activities.

4.2.2. The Designated Representative shall provide the Department with a single weekly status report on all activities authorized by this Permit. The status report shall list the schedule of events (beginning dates, work in progress, and completion dates). The status report shall be submitted to the Department every Monday until the list of authorized activities is complete or there are scheduled periods of inactivity. The status report shall be sent via email transmittal to aboertien@dfg.ca.gov.

4.2.3. The Permittee shall immediately notify the Department in writing if it determines that it is not in compliance with any condition of approval of this Permit, including but not limited to any actual or anticipated failure to implement mitigation measures within the time periods indicated in this Permit and/or the MMRP.

4.2.4. All observations of Covered Species and their sign during Phase I activities shall be conveyed to the Permittee's Designated Representative or Designated

Biologist. This information shall be included in the next weekly compliance report submitted to the Department by the Permittee.

4.2.5. Beginning with issuance of the Permit and continuing until the Department accepts the Final Mitigation Report described in Condition 4.2.6, Permittee shall provide the Department an annual Status Report no later than January 31 of every year. Each Status Report shall include, at a minimum: 1) a general description of the status of the Phase I site and construction activities, including actual or projected completion dates, if known; 2) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; and 3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for Phase I impacts.

4.2.6. No later than 45 days after completion of Phase I, including completion of all mitigation measures, Permittee shall provide the Department with a Final Mitigation Report. The Final Mitigation Report shall be prepared by the Designated Biologist and shall include, at a minimum: 1) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; 2) all available information about Phase I -related incidental take of Covered Species; 3) information about other Phase I impacts on the Covered Species; 4) construction dates; 5) an assessment of the effectiveness of the Permit's conditions of approval in minimizing and mitigating for Phase I impacts; 6) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future projects on the Covered Species; and 7) any other pertinent information, including the level of take of the Covered Species associated with Phase I.

4.2.7. If a Covered Species is killed by project-related activities during construction, or if a Covered Species is otherwise found dead, the Designated Biologist shall be immediately notified and a written report will be sent to the Department within two (2) calendar days. The report will include the date, time of the finding or incident, location of the carcass, and the circumstances.

4.3. Take Minimization and Mitigation Measures for giant garter snake

4.3.1. The Permittee may conduct construction activities within potential GGS habitat past October 15, during the inactive GGS period, if the Permittee notifies the Department and the USFWS and implements the following minimization measures:

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- 4.3.1.1. Initiates construction activities prior to October 15;
 - 4.3.1.2. The Designated Biologist shall monitor construction activities from 2 to 5 days per week consistent with Department and USFWS guidance;
 - 4.3.1.3. Construction activities shall be limited to the minimum area necessary to carry out fish salvage and dewatering; and,
 - 4.3.1.4. Dewatered areas must remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling the dewatered area.
- 4.3.2. The Designated Biologist shall conduct focused surveys for GGS prior to initiation of any ground-disturbing activities. The pre-construction surveys will be conducted within 24 hours before the start of construction in Phase I or the mitigation site is scheduled for ground-disturbing activities. Pre-construction surveys will be reinitiated if construction is suspended for 2 or more weeks and then restarted. If GGS are present, they will be allowed to move away from the construction activities on their own or will be relocated as directed by the Department or USFWS.
- 4.3.3. The Permittee anticipates implementing the Project and mitigation/conservation in three phases. In total, the Permittee anticipates constructing a mosaic of 47 acres of wetlands and waters on 145.07 acres at the 263-acre mitigation site property known as the Holland Tract, which is located just outside of Oakley city limits in northeastern Contra Costa County, approximately 3 miles east of SR 4, north of Rock Slough and east of Sand Mound Slough. The Permittee shall obtain Department approval for, and record a conservation easement on the Holland Tract mitigation site not more than 6 months after the start of Phase I activities. The conservation easement shall, at a minimum, permanently protect the amount of habitat required in Condition 5 to mitigate Phase I impacts on GGS.
- 4.3.4. The Permittee will provide for Department approval an updated Habitat Mitigation and Monitoring Plan (HMMP) for the Holland Tract mitigation site prior to the start of Phase I site disturbance or construction. The Permittee shall additionally provide design drawings for Holland Tract for each phase prior to the start of wetland construction on Holland Tract. If the Department has not approved the Final HMMP within 60 days after the start of Phase I site disturbance or construction and prior to the start of wetland construction on the Holland Tract mitigation site, Phase I construction will be suspended until the Department approves a Final HMMP.
- 4.3.5. The Permittee shall perform all species monitoring as described in the Final HMMP, once approved, and the ASIP dated March 21, 2007. Interim management and monitoring as described in the Final HMMP will begin

concurrent with wetland construction on Holland Tract.

4.3.6. It is anticipated that for future phases of construction, the Permittee will provide additional mitigation proportional in extent to the impacts upon the species from that phase or phases and funding assurances for that mitigation in the form of an irrevocable letter of credit or other form of security approved by the Department's Office of the General Counsel ("Security"). Provided however that the amount of mitigation and Security due will take into account the acreage of wetlands already constructed and the mitigation success achieved to date (as measured in accordance with the criteria specified in the Final HMMP). The Permittee may apply for an amendment to this Permit for any future phase of the Project prior to site disturbance or construction of that phase. Each amendment request shall include a detailed description of the phase, proposed mitigation, and draft proposed Security adequate to meet the mitigation requirement linked to that phase.

5. Prior to initiating Phase I ground-disturbing activities, or no later than 6 months from the effective date of this Permit if Security is provided pursuant to Condition 6 below, the Permittee shall acquire and permanently preserve **20 acres** of Habitat Management Lands ("HM Lands"), consisting of 6 acres of aquatic and 14 acres of upland habitat, that the Department has determined will provide suitable mitigation for impacts to GGS. The acreage amount is based upon the Department's estimate of the acreage required to provide for adequate biological carrying capacity at a replacement location as a means of fully mitigating Phase I impacts on the Covered Species. The Permittee proposes to create, manage, and permanently protect these HM Lands at Holland Tract. As part of this condition, Permittee shall:

- a) Transfer fee title to the HM Lands to the Department or record a conservation easement over the HM Lands under terms approved by the Department. Alternatively, the transfer may be to another public entity or non-profit corporation approved by the Department under terms approved by the Department.
- b) Provide a recent preliminary title report, initial hazardous materials survey report, and other necessary documents (see Attachments 3A and 3B). All documents conveying the HM Lands and all conditions of title are subject to the approval of the Department and, if applicable, the Department of General Services.
- c) Provide for the initial creation/construction of the HM Lands' improvements and the interim management and monitoring of the HM Lands' construction as described in the Final HMMP. The Department estimates initial creation costs at approximately \$67,000.00 and interim management and monitoring costs at \$37,462.00. These

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amounts are based on the current HMMP as of August 10, 2007. The final amounts will be based on the final, Department approved HMMP.

- d) Provide the Department with payment in the form of a check in an amount approved by the Department and based on the Final HMMP for use as principal for a permanent capital endowment. This amount is currently estimated to be \$619,318.00. Interest from this amount shall be available for the operation, management and protection of the HM Lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action designed to protect or improve the habitat values of the HM Lands. The endowment principal shall not be drawn upon unless such withdrawal is deemed necessary by the Department to ensure the continued viability of the species on the HM Lands. Monies received by the Department pursuant to this provision shall be deposited in a special deposit account established pursuant to Fish and Game Code section 13014. The Department may pool the endowment with other endowments for the operation, management and protection of HM Lands for local populations of the Covered Species. The Permittee has requested the Wildlife Heritage Foundation (WHF) be approved to hold the endowment as an alternative to the Department holding the endowment. If WHF is approved by the Department as the long term endowment holder, the Permittee shall pay to the WHF the final long term endowment amount approved by the Department and based on the Final HMMP. WHF estimates the necessary endowment principal will be \$302,778 if WHF is approved as the endowment holder.
 - e) Reimburse the Department for reasonable expenses incurred during title and documentation review, expenses incurred from other state agency reviews, and overhead related to transfer of HM Lands to the Department. The Department estimates that this Project will create an additional cost to the Department of no more than \$3,000 for every fee title deed or easement processed.
6. Permittee may proceed with ground-disturbing Phase I activities before completing all of the required mitigation (including acquisition of HM Lands), monitoring, and reporting activities only if Permittee ensures funding to complete those activities by providing to the Department prior to commencing ground-disturbing activities or within 30 days after the effective date of this Permit, whichever occurs first, one or more irrevocable letters of credit in the form of Attachment 4, alone or in combination with another form of Security approved by the Department's Office of the General Counsel. The Security shall allow the Department to draw on the principal sum if the Department, at its sole discretion, determines that Permittee has failed to comply with the Conditions of Approval of this Permit. The Security shall be in the amount of **\$837,780.00** based on the following

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estimated costs of implementing the Permit's mitigation, monitoring and reporting, and long-term management requirements:

- a) Land acquisition costs for impacts to habitat, calculated at \$5,700/acre for 20 acres: **\$114,000.00.**
- b) Costs of constructing/creating HM Lands, calculated at \$3,350.00/acre for 20 acres: **\$67,000.00.**
- c) Costs of interim management and monitoring of HM Lands, calculated at \$1,873.10/acre for 20 acres: **\$37,462.00.**
- d) Endowment principal, estimated at \$30,965.90/acre for 20 acres: **\$619,318.00.**

Amendment

This Permit may be amended without the concurrence of the Permittee if the Department determines that continued implementation of the Project under existing permit conditions would jeopardize the continued existence of a Covered Species. The Department may also amend the Permit at any time without the concurrence of the Permittee as required by law.

Stop-Work Order

The Department may issue Permittee a written stop-work order to suspend any activity covered by this Permit for an initial period of up to 25 days to prevent or remedy a violation of Permit conditions (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition obligations) or to prevent the illegal take of an endangered, threatened, or candidate species. Permittee shall comply with the stop-work order immediately upon receipt thereof. The Department may extend a stop-work order under this provision for a period not to exceed 25 additional days, upon written notice to the Permittee. The Department shall commence the formal suspension process pursuant to California Code of Regulations, Title 14, section 783.7 within five working days of issuing a stop-work order.

Compliance with Other Laws

This Permit contains the Department's requirements for the Project pursuant to CESA. This permit does not necessarily create an entitlement to proceed with the Project. The Permittee is responsible for complying with all other applicable state, federal, and local laws.

Notices

Written notices, reports and other communications relating to this Permit shall be delivered to the Department by first class mail at the following addresses, or at addresses the Department may subsequently provide the Permittee. Notices, reports, and other communications should reference the Project name, Permittee, and Permit Number (2081-2007-027-03) in a cover

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letter and on any other associated documents.

Original cover with attachment(s) to:

Regional Manager
Department of Fish and Game
Post Office Box 47
Yountville, CA 94599
FAX (707) 944-5563

Copy of cover without attachment(s) to:

General Counsel
Department of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

And:

Habitat Conservation Branch
1416 Ninth Street, Suite 1260
Sacramento, CA 95814

Unless the Permittee is notified otherwise, the Department's Regional Representative for purposes of addressing issues that arise during implementation of permit conditions is:

Ms. Andrea Boertien
4001 N Wilson Way
Stockton, California 95205
(209) 942-6070 phone
(209) 946-6355 fax

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Compliance with the California Environmental Quality Act

The Department's issuance of the Permit is subject to the California Environmental Quality Act, Public Resources Code, section 21000 et seq. ("CEQA"). The Department is a responsible agency under CEQA with respect to the Permit because of prior environmental review of the Project by the lead agency, Contra Costa Water District. (See generally Pub. Resources Code, §§ 21067, 21069.) The lead agency's prior environmental review of the Project is set forth in the Canal Replacement Project Mitigated Negative Declaration, that Contra Costa Water District adopted on November 29, 2006. At the time the lead agency adopted the Mitigated Negative Declaration and approved the Project it also adopted all mitigation measures identified in the Mitigated Negative Declaration and ASIP (dated March 21, 2007) as conditions of project approval.

In fulfilling its obligations as a responsible agency, the Department's obligations under CEQA are more limited than the lead agency. (CEQA Guidelines, § 15096, subd. (g)(1).)⁴ The Department, in particular, is responsible for considering only the effects of those activities involved in Phase I of the Project which it is required by law to carry out or approve and mitigating or avoiding only the direct or indirect environmental effects of those parts of the Project which it decides to carry out, finance, or approve. (Pub. Resources Code, § 21002.1, subd. (d); CEQA Guidelines, § 15096, subds. (f), (g)(1).) Accordingly, because the Department's exercise of discretion is limited to issuance of the Permit, the Department is responsible for considering only the environmental effects that fall within its permitting authority under CESA.

This Permit, along with the Department's CEQA findings for the Permit and Phase I, which are available as a separate document, document the Department's consideration of the lead agency's Mitigated Negative Declaration for the Project and the environmental effects related to issuance of the Permit. (CEQA Guidelines, § 15096, subd. (f).) The Department finds that issuance of the Permit will not result in any previously undisclosed potentially significant effects on the environment or a substantial increase in the severity of any potentially significant environmental effects previously disclosed by the lead agency. Furthermore, to the extent the potential for such effects exists, the Department finds adherence to and implementation of the lead agency's conditions of approval as well as adherence to and implementation of the conditions of approval of the Permit will avoid or reduce to below a level of significance any such potential effects. The Department consequently finds that issuance of the Permit will not result in any significant, adverse impacts on the environment.

⁴ The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

CESA Findings

With respect to CESA, the Department finds that, in issuing the Permit, all of the following conditions have been met:

- (1) Take of Covered Species as defined in the Permit will be incidental to the otherwise lawful activities covered under the Permit;
- (2) Impacts of the taking of the Covered Species will be minimized and fully mitigated through the implementation of measures required by this Permit and as described in MMRP. Measures include: 1) weekly compliance reports; 2) creation, management, and protection in perpetuity of habitat for giant garter snake; and 3) an education program for all persons working on-site.
- (3) The take avoidance and mitigation measures required pursuant to the conditions of this Permit and its attachments are roughly proportional in extent to the impact of Permittee's take.
- (4) The measures required by this Permit maintain Permittee's objectives to the greatest extent possible;
- (5) All required measures are capable of successful implementation;
- (6) The Permit is consistent with any regulations adopted pursuant to Fish and Game Code sections 2112 and 2114;
- (7) Permittee has ensured adequate funding to implement the measures required by the Permit as well as for monitoring compliance with, and the effectiveness of, those measures for Phase I of the Project; and
- (8) Issuance of the Permit will not jeopardize the continued existence of the Covered Species based on the best scientific and other information reasonably available, and this finding includes consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (a) known population trends; (b) known threats to the species; and (c) reasonably foreseeable impacts on the species from other related projects and activities. Moreover, the Department's finding is based, in part, on the Department's express authority to amend the terms and conditions of the Permit without concurrence of the Permittee as necessary to avoid jeopardy and as required by law.

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Attachments:

ATTACHMENT 1	Mitigation Monitoring and Reporting Program
ATTACHMENT 2	Action Specific Implementation Plan
ATTACHMENT 3A	Habitat Management Lands Checklist
ATTACHMENT 3B	Proposed Lands for Acquisition Form
ATTACHMENT 4	Irrevocable Letter of Credit Form

ISSUED BY THE CALIFORNIA DEPARTMENT OF FISH AND GAME

on OCT 11 2007 .



CHARLES ARMOR, Regional Manager .
BAY DELTA REGION

APPROVED AS TO FORM:



STEPHEN ADAMS
Deputy General Counsel

ACKNOWLEDGMENT

The undersigned: 1) warrants that he or she is acting as a duly authorized representative of the Permittee, 2) acknowledges receipt of this Permit, and 3) agrees on behalf of the Permittee to comply with all terms and conditions of the Permit.

By _____ Date: _____

Printed Name: _____ Title _____

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Attachment 1

DEPARTMENT OF FISH AND GAME MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

CALIFORNIA INCIDENTAL TAKE PERMIT NO. 2081-2007-027-03

PERMITTEE: Contra Costa Water District

PROJECT: Canal Replacement Project – Phase I

PURPOSE OF THE MMRP

The purpose of the MMRP is to ensure that the impact minimization and mitigation measures required by the Department of Fish and Game (“Department”) for any Phase of the above-referenced Project are properly implemented, and thereby to ensure compliance with section 2081(b) of the Fish and Game Code and section 21081.6 of the Public Resources Code. A table summarizing the mitigation measures required by the Department is attached. This table is a tool for use in monitoring and reporting on implementation of mitigation measures, but the descriptions in the table do not supersede the mitigation measures set forth in the California Incidental Take Permit (“Permit”) and in attachments to the Permit, and the omission of a permit requirement from the attached table does not relieve the Permittee of the obligation to ensure the requirement is performed.

OBLIGATIONS OF PERMITTEE

Mitigation measures must be implemented within the time periods indicated in the table that appears below. Permittee has the primary responsibility for monitoring compliance with all mitigation measures and for reporting to the Department on the progress in implementing those measures. These monitoring and reporting requirements are set forth in the Permit itself and are summarized at the front of the attached table.

VERIFICATION OF COMPLIANCE, EFFECTIVENESS

The Department may, at its sole discretion, verify compliance with any mitigation measure or independently assess the effectiveness of any mitigation measure.

TABLE OF MITIGATION MEASURES

The following items are identified for each mitigation measure: Mitigation Measure, Source, Implementation Schedule, Responsible Party, and Status/Date/Initials. The "Mitigation Measure" column summarizes the mitigation requirements of the Permit. The "Source" column identifies the Permit document that sets forth the mitigation measure. The "Implementation Schedule" column shows the date or phase when each mitigation measure will be implemented. The "Responsible Party" column identifies the person or agency that is primarily responsible for implementing the mitigation measure. The "Status/Date/Initials" column shall be completed by the Permittee during preparation of each Status Report and the Final Mitigation Report, and must identify the implementation status of each mitigation measure, the date that status was determined, and the initials of the person determining the status.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
PRE-PROJECT					
1	Before initiating ground-disturbing activities, Permittee shall designate a representative ("Designated Representative") responsible for communications with the Department and for overseeing compliance with this Permit. The Department shall be notified in writing prior to commencement of ground-disturbing activities of the representative's name, business address, and contact information, and shall be notified in writing if a substitute representative is designated.	Permit	Before commencing ground-disturbing activities Entire project	Permittee	
2	The Permittee shall hire a biologist knowledgeable and experienced in the biology and natural history of the Covered Species (Designated Biologist). The Designated Biologist shall monitor construction activities within the Project area. At least 30 days prior to ground-disturbing activities, the Permittee shall submit to the Department in writing the proposed Designated Biologist's name, qualifications, business address, and contact information for review and approval. The Permittee shall not commence ground-disturbing activities until the Department approves the Designated Biologist.	Permit	Before commencing ground-disturbing activities Entire project	Permittee	
3	The Designated Biologist shall conduct focused surveys for giant garter snake (GGS) prior to initiation of any ground-disturbing activities. The pre-construction surveys will be conducted within 24 hours before the start of construction in any portion of the project or mitigation site scheduled for ground-disturbing activities. Pre-construction surveys will be reinitiated if construction is suspended for 2 or more weeks and then restarted. If GGS are present, they will be allowed to move away from the construction activities on their own or will be relocated as directed by the Department or United States Fish and Wildlife Service (USFWS).	Permit	24 hours before commencing ground-disturbing activities Entire project	Permittee	
4	The Permittee will provide for Department approval an updated Habitat Mitigation and Monitoring Plan (HMMP) for the Holland Tract mitigation site prior to the start of Phase I site disturbance or construction. The Permittee shall additionally provide design drawings for Holland Tract for each phase prior to the start of wetland construction on Holland Tract. If the Department has not approved the Final HMMP within 60 days after the start of Phase I site disturbance or construction and prior to the start of wetland construction on the Holland Tract mitigation site, Phase I construction will be suspended until the Department approves a Final HMMP.	Permit	Before commencing ground-disturbing activities 60 days after commencing ground-disturbing activities	Permittee	
5	Prior to initiating Phase I ground-disturbing activities, or no later than 6 months from the effective date of the Permit if Security is provided pursuant to Condition 6 below, the Permittee shall acquire and permanently preserve 20 acres of Habitat Management Lands ("HM Lands"), consisting of 6 acres of aquatic and 14 acres of upland habitat, that the Department has determined will provide suitable mitigation for impacts to the Covered Species. The acreage amount is based upon the Department's estimate of the acreage required to provide for adequate biological carrying capacity at a replacement location as a means of fully mitigating Phase I impacts on the Covered Species. The Permittee proposes to create, manage, and permanently protect these HM Lands at Holland Tract. HM lands shall be transferred to the Department in accordance with Condition 5 of the Permit, including providing the endowment fund described in 5(d).	Permit	Before commencing ground-disturbing or vegetation-disturbing activities (or within 6 months of issuance of the Permit if Security is provided)	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
6	<p>Permittee may proceed with ground-disturbing Phase I activities before completing all of the required mitigation (including acquisition of HM Lands), monitoring, and reporting activities only if Permittee ensures funding to complete those activities by providing to the Department prior to commencing ground-disturbing activities or within 30 days after the effective date of this Permit, whichever occurs first, one or more irrevocable letters of credit in the form of Attachment 4, alone or in combination with another form of Security approved by the Department's Office of the General Counsel. The Security shall allow the Department to draw on the principal sum if the Department, at its sole discretion, determines that Permittee has failed to comply with the Conditions of Approval of the Permit. The Security shall be in the amount of \$837,780.00 based on the following estimated costs of implementing the Permit's mitigation, monitoring and reporting, and long-term management requirements:</p> <p>a) Land acquisition costs for impacts to habitat, calculated at \$5,700/acre for 20 acres: \$114,000.00.</p> <p>b) Costs of constructing/creating HM Lands, calculated at \$3,350.00/acre for 20 acres: \$67,000.00.</p> <p>c) Costs of interim management and monitoring of HM Lands, calculated at \$1,873.10/acre for 20 acres: \$37,462.00.</p> <p>d) Endowment principal, estimated at \$30,965.90/acre for 20 acres: \$619,318.00</p>	Permit	Prior to commencing ground-disturbing activities		
7	<p>The Permittee shall conduct an education program for all persons who will work on-site during Project implementation and construction. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology of the Covered Species, the habitat needs of the Covered Species, its status under CESA, and the management measures provided in this Permit. A fact sheet containing this information shall also be prepared and distributed. Upon completion of the program, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be filed at the Canal Replacement Project work site office and shall be made available to the Department upon request.</p>	Permit	Prior to commencing ground-disturbing activities	Permittee	
DURING CONSTRUCTION					
8	<p>The Permittee shall limit activities related to installation of the sheetpile cofferdam in the Contra Costa Canal to July 1 through November 30. Work behind/downstream of the cofferdam to dewater, rescue fish, and install pipeline may occur outside of this work period. The Permittee shall use a vibratory hammer to install the cofferdam</p>	Permit	Entire project	Permittee	
9	<p>The Permittee shall notify the Department and shall document compliance with all pre-construction Conditions of Approval before initiating ground-disturbing activities.</p>	Permit	Entire project	Permittee	
10	<p>The Designated Representative shall provide the Department with a single weekly status report on all activities authorized by this Agreement. The status report shall list the schedule of events (beginning dates, work in progress, and completion dates). The status report shall be submitted to the Department every Monday until the list of authorized activities is complete or there are scheduled periods of inactivity. The status report shall be sent via email transmittal to aboertien@dfg.ca.gov.</p>	Permit	Entire project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
11	Permittee shall immediately notify the Department in writing if it determines that any of the mitigation measures were not implemented during the period indicated here or in the Permit, or if Permittee anticipates for any reason that measures may not be implemented within the time period indicated.	Permit	Entire project	Permittee	
12	The Designated Biologist shall have authority to immediately stop any activity that is not in compliance with this permit, and to order any reasonable measure to avoid the take of an individual of a Covered Species	Permit	Entire project	Permittee	
13	The Permittee may conduct construction activities within potential GGS habitat past October 15, during the inactive GGS period, if the Permittee notifies the Department and the USFWS and implements the following minimization measures: a) Initiates construction activities prior to October 15; b) The Designated Biologist shall monitor construction activities from 2 to 5 days per week consistent with Department and USFWS guidance; c) Construction activities shall be limited to the minimum area necessary to carry out fish salvage and dewatering; and, d) Dewatered areas must remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling the dewatered area	Permit	Entire project	Permittee	
14	The Designated Biologist shall conduct focused surveys for GGS prior to initiation of any ground-disturbing activities. The pre-construction surveys will be conducted within 24 hours before the start of construction in any portion of the project or mitigation site scheduled for ground-disturbing activities. Pre-construction surveys will be reinitiated if construction is suspended for 2 or more weeks and then restarted. If GGS are present, they will be allowed to move away from the construction activities on their own or will be relocated as directed by the Department or USFWS	Permit	Entire Project	Permittee	
15	The Permittee shall perform all species monitoring as described in the Final HMMP, once approved, and the ASIP dated March 21, 2007. Interim management and monitoring as described in the Final HMMP will begin concurrent with wetland construction on Holland Tract.	Permit	Entire project	Permittee	
16	Beginning with issuance of the Permit and continuing until the Department accepts the Final Mitigation Report described below, Permittee shall provide the Department an annual Status Report no later than January 31 of every year. Each Status Report shall include, at a minimum: 1) a general description of the status of the Project site and construction activities, including actual or projected completion dates, if known; 2) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; and 3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for Project impacts.	Permit	Entire project	Permittee	
17	All observations of Covered Species and their sign during Project activities shall be conveyed to the Permittee's Designated Representative or Designated Biologist. This information shall be included in the next weekly compliance report submitted to the Department by the Permittee.	Permit	Entire project	Permittee	
18	If a Covered Species is killed by project-related activities during construction, or if a Covered Species is otherwise found dead, the Designated Biologist shall be immediately notified and a written report will be sent to the Department within two (2) calendar days. The report will include the date, time of the finding or incident, location of the carcass, and the circumstances.	Permit	Entire project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
19	The Department may issue Permittee a written stop-work order to suspend any activity covered by this permit for an initial period of up to 25 days to prevent or remedy a violation of Permit conditions (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition obligations) or to prevent the illegal take of an endangered, threatened, or candidate species. Permittee shall comply with the stop-work order immediately upon receipt thereof. The Department may extend a stop-work order under this provision for a period not to exceed 25 additional days, upon written notice to the Permittee. The Department shall commence the formal suspension process pursuant to California Code of Regulations, Title 14, §783.7 within five working days of issuing a stop-work order.	Permit	Entire project	Department of Fish and Game	
POST-CONSTRUCTION					
20	No later than 45 days after completion of the project, including completion of all mitigation measures, Permittee shall provide the Department with a Final Mitigation Report. The Final Mitigation Report shall be prepared by the Designated Biologist and shall include, at a minimum: 1) a copy of this table with notes showing when each of the mitigation measures was implemented; 2) all available information about project-related incidental take of species named in the Permit; 3) information about other project impacts on the species named in the Permit; 4) construction dates; 5) an assessment of the effectiveness of each mitigation measure in minimizing and compensating for project impacts; 6) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future projects on the species; and 7) any other pertinent information. Permittee's monitoring and reporting obligations under this MMRP will end only after the Department accepts the Final Mitigation Report as complete.	Permit	Post-construction and after completion of mitigation	Permittee	
21	The Department accepts the Final Mitigation Report as complete.	Permit	Post-construction	Department of Fish and Game	

ATTACHMENT 3A
DEPARTMENT OF FISH AND GAME

HABITAT MANAGEMENT LAND ACQUISITION PACKAGE CHECKLIST FOR PROJECT APPLICANTS

The following checklist is provided to inform you of what documents are necessary to expedite Department processing of your Habitat Management Land acquisition proposal. Any land acquisition processing requests which are incomplete when received, will be returned. The Region contact will review and approve the document package and forward it to the Lands and Facilities Branch (LFB) Realty Services Coordinator with a request to process the land acquisition for formal acceptance.

To: _____
Regional Manager, Region Name

From: _____
Project Applicant

Phone: _____

Tracking #: _____
CDFG assigned permit or agreement #

Project Name: _____

Enclosed is the complete package for the Conservation Easement OR Grant Deed

Documents in this package include:

- Fully executed, approved as to form Conservation Easement Deed or Grant Deed.
Date executed: _____
- Proposed Lands for Acquisition Form (PLFAF)
- Phase I Environmental Site Assessment Report Date on report: _____
(An existing report may be used, but it must be less than two years old.)
- Preliminary Title Report(s) for subject property is enclosed and has been reviewed for encumbrances and other easements. The title report must be less than six months old when final processing is conducted.
Included are additional documents:
 - document(s) to support title exceptions
 - document(s) to explain title encumbrances
 - a plot or map of easements/encumbrances on the property
- Policy of Title Insurance (an existing title policy is not acceptable)
- County Assessor Parcel Map(s) for subject property
- Site Location Map (Site location with property boundaries outline on a USGS 1:24,000 scale topo)
- Final Permit or Agreement (or other appropriate instrument)
Type of agreement: Bank Agreement Mitigation Agreement
 Permit _____ Other: _____
(write in type of permit)
- Final Management Plan (if required prior to finalizing permit or agreement or if this package is for a Grant Deed)
- Biological Resources Report
- Draft Summary of Transactions hard copy electronic copy (both are required)

PROPOSED LANDS FOR ACQUISITION FORM ("PLFAF")

Date: _____

TO: Regional Representative

Facsimile:

FROM: _____

Applicant proposes that the following parcel of land be considered for approval by the Department as suitable for purposes of habitat management lands to replace the adverse environmental impacts of the Project:

<u>Section</u>	<u>Township</u>	<u>Range</u>	<u>Number of Acres</u>
----------------	-----------------	--------------	------------------------

_____	_____	_____	_____
-------	-------	-------	-------

Current Legal Owner(s), include Parcel Number(s):

Location of Parcel:

APPROVED _____
REJECTED _____

By: _____
_____ Region

DATE: _____

Explanation: _____

ATTACHMENT 4

IRREVOCABLE "STANDBY" LETTER OF CREDIT

ISSUER:

ACCOUNT PARTY/CUSTOMER:

IRREVOCABLE LETTER OF CREDIT NO.: _____ Dated: _____

TO BENEFICIARY:

California Department of Fish and Game
1416 9th Street, 12th Floor
Sacramento, California 95814
Attention: Director

Dear Sirs:

1. At the request and on the instructions of our CUSTOMER, _____ ("Applicant"), we hereby establish in favor of the BENEFICIARY, the California Department of Fish and Game (the "Department"), this Irrevocable Standby Letter of Credit ("CREDIT") in the Principal Sum of \$ _____.

2. This CREDIT is and has been established for the sole benefit of the Department pursuant to the terms of the Incidental Take Permit ("Permit") issued by the Department on _____.

3. This CREDIT is intended by the Applicant and the Department to serve as a security device for the performance by Applicant of its obligations under the Permit.

4. Upon any failure by Applicant to comply with conditions of approval of the Permit, as determined by the Department in its sole discretion, the Department shall be entitled to draw upon this CREDIT by presentation of a duly executed CERTIFICATE FOR DRAWING in substantially the same form as Attachment A, attached hereto, at our office located at _____.

5. The CERTIFICATE shall be completed and signed by an "Authorized Representative" as defined in paragraph 12. Presentation by the Department of a completed CERTIFICATE may be made in person or by registered mail, return receipt requested.

6. Upon presentation of a duly executed CERTIFICATE as above provided, payment shall be made to the Department, or to an account designated by the Department, in immediately available funds, at such time and place as the Department

shall specify.

7. Funds may be drawn in one or more drawings not to exceed the Principal Sum.

8. If a demand for payment does not conform to the terms of this CREDIT, we shall give the Department prompt notice that the demand for payment was not effected in accordance with the terms of this CREDIT, state the reasons therefor, and await further instructions.

9. Upon being notified that the demand for payment was not effected in conformity with the CREDIT, the Department may correct any such non-conforming demand for payment.

10. All drawings under this CREDIT shall be paid with our funds. Each drawing honored by us hereunder shall reduce, pro tanto, the Principal Sum. By paying to the Department an amount demanded in accordance herewith, we make no representations as to the correctness of the amount demanded.

11. This CREDIT will be cancelled in whole or in part upon receipt by us of a CERTIFICATE OF CANCELLATION, which (i) shall be in the form of Attachment B attached hereto, and (ii) shall be completed and signed by any person purporting to be an Authorized Representative, as defined in the next paragraph.

12. An "Authorized Representative" shall mean one of the following persons: Director of the Department of Fish and Game, or the General Counsel of the Department of Fish and Game.

13. Communications with respect to this CREDIT shall be in writing and addressed to us at

specifically referring upon such writing to this CREDIT by number.

14. This CREDIT may not be transferred or assigned, either in whole or in part.

15. This CREDIT shall be deemed a contract made under the laws of the State of California.

16. This CREDIT shall, if not cancelled as provided herein, expire no later than _____ of the date of its execution.

THEREFORE, _____

has executed and delivered this IRREVOCABLE STANDBY LETTER OF CREDIT to the BENEFICIARY as of the ____ day of _____, 20____.

CERTIFICATE FOR DRAWING

ISSUER:

ACCOUNT PARTY/CUSTOMER:

IRREVOCABLE LETTER OF CREDIT NO.: _____

BENEFICIARY:

California Department of Fish and Game
1416 9th Street, 12th Floor
Sacramento, California 95814

The undersigned, a duly Authorized Representative of the California Department of Fish and Game (the Department) (as defined in the above-referenced CREDIT), hereby certifies to the ISSUER that:

1. In the opinion of the Department, Applicant has failed to comply with conditions of approval in the Permit.

2. The undersigned is authorized under the terms of the above-referenced CREDIT to present this CERTIFICATE as the sole means of demanding payment on the CREDIT.

3. The Department is therefore making a drawing under the above-referenced CREDIT in the amount of \$ _____

4. The amount demanded does not exceed the Principal Sum.

5. Sums received shall be used by the Department in accordance with the terms of the Permit.

THEREFORE, the Department has executed and delivered this CERTIFICATE as of the _____ day of _____, 20____.

DEPARTMENT OF FISH AND GAME
OF THE STATE OF CALIFORNIA

By: _____

Title: _____

Authorized Representative

CERTIFICATE FOR CANCELLATION

ISSUER:

ACCOUNT PARTY/CUSTOMER:

IRREVOCABLE LETTER OF CREDIT NO.: _____

BENEFICIARY:

California Department of Fish and Game
1416 9th Street, 12th Floor
Sacramento, California 95814

The undersigned, a duly Authorized Representative of the California Department of Fish and Game (the Department) (as defined in the above-referenced CREDIT), hereby certifies to the ISSUER that:

1. Pursuant to the Permit issued to _____ ("Applicant") and the Department, Applicant has presented documentary evidence of full compliance with the terms and conditions of the Permit, or, the natural expiration of the CREDIT has occurred.

2. The Department therefore requests the cancellation of the above-referenced CREDIT.

THEREFORE, the Department of the State of California has executed and delivered this CANCELLATION as of the _____ day of _____, 20__.

DEPARTMENT OF FISH AND GAME
OF THE STATE OF CALIFORNIA

By: _____

Title: _____

Authorized Representative



DEPARTMENT OF FISH AND GAME

<http://www.dfg.ca.gov>

POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
(707) 944-5500



October 11, 2007

RECEIVED

Mr. Mark Seedall
Contra Costa Water District
1331 Concord Avenue
Post Office Box H20
Concord, CA 94524

OCT 15 2007

Contra Costa Water Dist.
Planning

Dear Mr. Seedall:

Subject: Contra Costa Water District Canal Replacement Project, Phase I
2081-2007-027-03

Enclosed are two originals of the Incidental Take Permit for the subject project.
The Acknowledgement on Page 15 needs to be signed and dated on both copies.
Please return one original to:

Tina Cannon Leahy
Office of the General Counsel
Department of Fish and Game
1416 Ninth Street, Suite 1341
Sacramento, CA 95814

This Permit will not take effect until this Acknowledgment is received by the
Department of Fish and Game.

If you have any questions, please contact Ms. Anna Holmes, Environmental
Scientist, at (209) 948-7163; or Mr. Brad Burkholder, Senior Environmental
Scientist, at (209) 948-7068.

Sincerely,

Charles Armor
Regional Manager
Bay Delta Region

Enclosures

cc: Tina Cannon Leahy
Office of General Counsel

Conserving California's Wildlife Since 1870





California Regional Water Quality Control Board Central Valley Region

Karl E. Longley, ScD, P.E., Chair



Linda S. Adams
Secretary for
Environmental
Protection

11020 Sun Center Drive #200, Rancho Cordova, California 95670-1114
Phone (916) 464-3291 • FAX (916) 464-4645
<http://www.waterboards.ca.gov/centralvalley>

RECEIVED

Arnold
Schwarzenegger
Governor

JUN 18 2009

16 June 2009

Contra Costa Water Dist.
Planning

CERTIFIED MAIL
7008 1140 0002 8805 7630

Mr. Mark Seedall
Contra Costa Water District
P.O. Box H2O
Concord, CA 94524

CERTIFIED MAIL
7008 1140 0002 8805 7647

Mr. Robert Pedlar
Dept. of Water Resources
1416 9th Street, Rm. 215-26
Sacramento, CA 95814

CERTIFIED MAIL
7008 1140 0002 8805 7654

Mr. Thomas Williams
Ironhouse Sanitary District
P.O. Box 1105
Oakley, CA 94561

**NOTICE OF APPLICABILITY: WATER QUALITY ORDER NO. 2003-0003-DWQ-0007,
CONTRA COSTA CANAL REPLACEMENT DEWATERING DISCHARGE TO LAND,
CONTRA COSTA COUNTY**

On 6 December 2007, the Central Valley Regional Water Quality Control Board (Central Valley Board) adopted Resolution No. R5-2007-0178, which is a conditional waiver of waste discharge requirements for land discharge of extracted groundwater during Phase I of the Contra Costa Canal Replacement Project. On 26 June 2008, Contra Costa Water District submitted an amended Report of Waste Discharge to change the land discharge area owned by Ironhouse Sanitary District. In February 2009, Contra Costa Water District requested that the waiver revision include additional phases of the project and an extension to the full five year term allowed by the California Water Code.

Based on the information provided in the RWD and amendments thereto, the proposed land discharge of extracted groundwater satisfies the general and specific conditions of the State Water Resources Control Board's Water Quality Order No. 2003-0003-DWQ for the category of small/temporary dewatering projects. Therefore, this serves as formal notice that the Water Quality Order No. 2003-0003-DWQ is applicable to the sites and discharge described below. You are hereby assigned General Order No. 2003-0003-DWQ-0007 for this discharge.

A copy of the General Order is enclosed. You can also find the General Order on the State Water Board's website at

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/wqo03.shtml

You are urged to familiarize yourself with the contents of the entire General Order. The discharge must be managed in accordance with the requirements contained in the General Order and with the information submitted in the RWD.

It is expected that the Central Valley Water Board will rescind Resolution No. R5-2007-0178 at it 6/7 August 2009 meeting. Only Water Quality Order No. 2003-0003-DWQ will apply to the discharge described herein.

DISCHARGE DESCRIPTION

The Contra Costa Canal Replacement Project is along the alignment of the existing Contra Costa Canal between Rock Slough and Pumping Station No. 1, which is on the east side of Oakley. The project will include excavation of the existing canal and dewatering along its entire length to facilitate placement of a 10-foot diameter reinforced concrete pipeline at an approximate depth of 20 feet to replace the unlined canal. Shallow groundwater will be extracted through shallow wells to facilitate pipeline construction, and will be discharged to designated disposal areas for percolation.

The entire project site, including the dewatering discharge areas, encompasses portions of Sections 24 and 25, T2N, R2E and Sections 19, 28, 29, 30 and 33, T2N, R3E and MDB&M, and is depicted on Attachments A and B, which form part of this Notice by reference. The dewatering discharge sites are owned by Ironhouse Sanitary District (approximately 90 acres on Assessors Parcel Numbers 037-191-033, 037-191-034, 037-192-011, and 037-192-009) and the California Department of Water Resources (approximately 426 acres on Assessors Parcel Number 037-191-036).

Shallow groundwater is typically five to eight feet below the surrounding grade along the entire pipeline alignment. Regional groundwater flow is generally northward towards the river. Proposed dewatering discharge rates will vary between approximately 0.5 and 2.1 million gallons per day (mgd) during the months of May through October, with minimal dewatering, if any, from November through April. Extracted groundwater will be conveyed by temporary pipelines to the designated disposal areas and will be land applied using flood irrigation methods. The existing berms and levees surrounding the discharge sites and management of discharge rates and schedules will be used to contain the water at all times.

Extracted groundwater will primarily be discharged to the land owned by the California Department of Water Resources (the former Emerson Dairy site), and the Ironhouse Sanitary District property will be used as a secondary discharge area during peak flows as necessary. Discharges of extracted groundwater to the former Emerson Dairy site will temporarily replace the use of irrigation water from Emerson Slough. Discharges to the land owned by Ironhouse Sanitary District will not impact Ironhouse Sanitary District's effluent disposal capacity. The RWD includes an adequate operation and maintenance plan with best management practices and a water balance that demonstrates adequate disposal capacity for anticipated discharge rates using a reasonably conservative numerical model.

Based on groundwater monitoring data collected by Ironhouse Sanitary District, shallow groundwater quality along the north side of the canal under Ironhouse Sanitary District's former effluent recycling areas is very saline with high concentrations of dissolved solids (1,400 to 8,100 mg/L), sodium (280 to 1,400 mg/L), chloride (190 to 2,400 mg/L), magnesium (56 to 450 mg/L), and sulfate (320 to 4,700 mg/L). These conditions are partly due naturally occurring salinity.

Based on limited data collected by Contra Costa Water District, shallow groundwater quality along the north side of the canal on the former Emerson Dairy site is saline with high concentrations of dissolved solids (970 to 1,500 mg/L), sodium (300 to 360 mg/L), chloride (160 to 430 mg/L). Nitrate nitrogen concentrations are also elevated at up to 25 mg/L. There

is no evidence to suggest that these conditions are not widespread under the former dairy, which ceased operation within the last six years.

Due to the fact that shallow groundwater will be extracted from, and discharged back into, the same aquifer with little potential for evapoconcentration and in or near the same area from which it was extracted, the discharge poses little or no threat to water quality if the water is discharged under conditions that prevent discharge to surface water.

MONITORING AND REPORTING PROGRAM

The Dischargers shall comply with the monitoring and reporting requirements prescribed in Monitoring and Reporting Program No. R5-2009-0827, which replaces Monitoring and Reporting Program No. 2003-0003-DWQ.

GENERAL INFORMATION AND REQUIREMENTS

The Dischargers shall comply with the Prohibitions, Discharge Specifications, Provisions, and Standard Provisions of Water Quality Order No. 2003-0003-DWQ.

Please review this Notice of Applicability carefully to ensure that it completely and accurately reflects the proposed project and dewatering discharge. If the discharge violates the terms or conditions, the Central Valley Water Board may take enforcement action, including assessment of administrative civil liability. If the method of waste disposal changes from that described in the RWD, you must submit a new RWD.

Contra Costa Water District will generate the waste subject to the terms and conditions of Water Quality Order No. 2003-0003-DWQ and will maintain exclusive control over the discharge. Ironhouse Sanitary District and the California Department of Water Resources are named as co-dischargers because these entities own the land where the discharge will occur. As such, Contra Costa Water District is primarily responsible for compliance with Water Quality Order No. 2003-0003-DWQ.

Failure to comply with the requirements in the Order could result in an enforcement action as authorized by provisions of the California Water Code. Discharge of wastes other than those described in the RWD is prohibited.

The required annual fee specified in the annual billing from the State Water Board shall be paid until this NOA is officially terminated. You must notify this office in writing if the discharge regulated by this Order ceases so that we may terminate coverage and avoid unnecessary billing.

All monitoring reports, submittals, discharge notifications, and questions regarding compliance and enforcement should be directed to Guy Childs at (916) 464-4648 or gchilds@waterboards.ca.gov. Questions regarding the permit should be directed to Robin Merod at (916) 464-4697 or rmerod@waterboards.ca.gov.



Pamela C. Creedon
Executive Officer

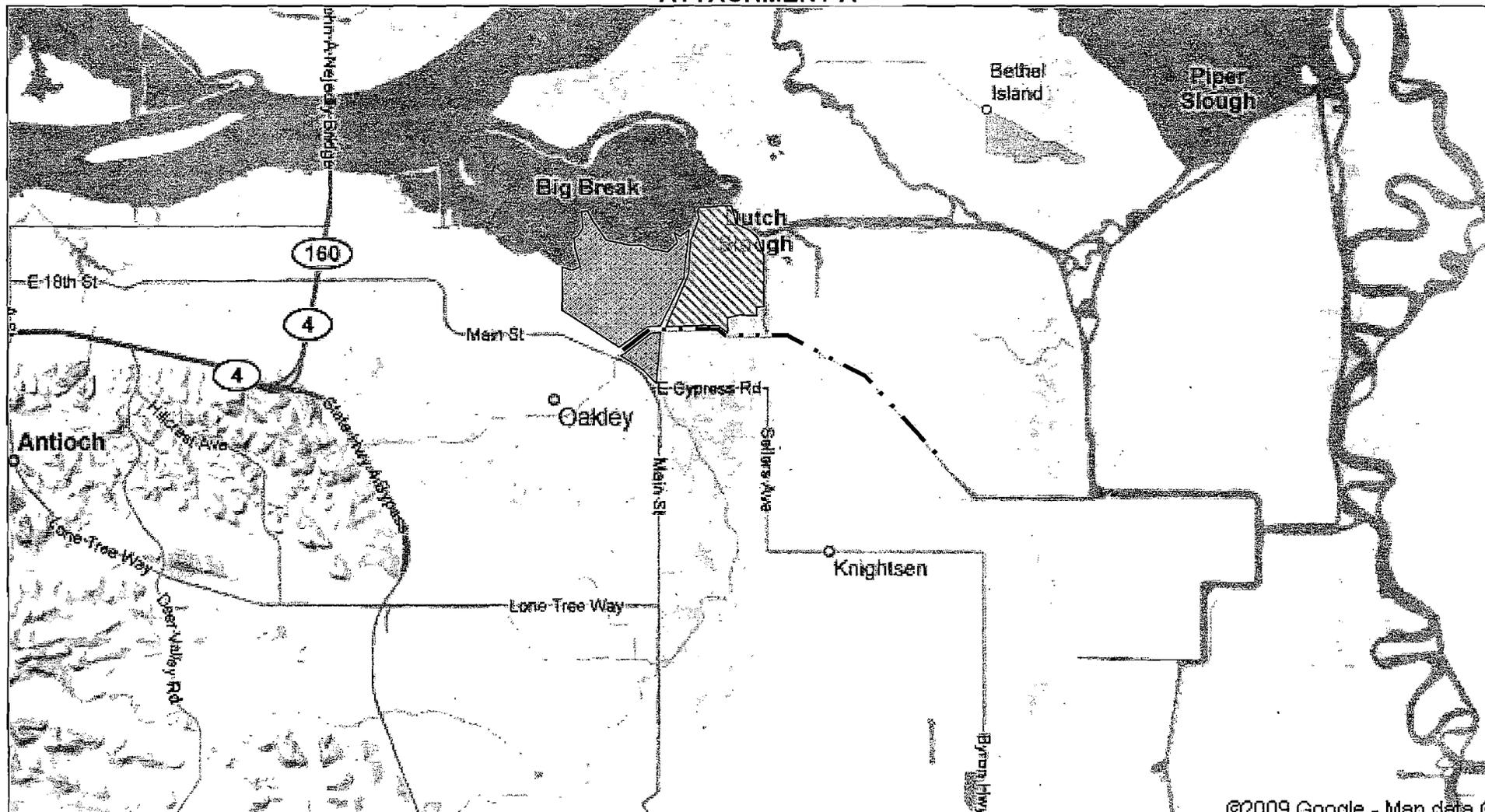
Enclosures Monitoring and Reporting Program No. R5-2009-0827
Water Quality Order No. 2003-0003-DWQ

cc w/o enc.:

Gordon Innes, Division of Water Quality, State Water Board, Sacramento
Department of Fish and Game, Rancho Cordova
Betty Graham, Department of Health Services, Richmond
Sherman Quinlan, Contra Costa Environmental Health Department, Concord

alo:6/15/09

ATTACHMENT A



©2009 Google - Map data ©

LEGEND

-  Contra Costa Canal (Planned Pipeline)
-  Ironhouse Sanitary District Property
-  CA Dept. of Water Resources Property

SITE VICINITY MAP

CONTRA COSTA WATER DISTRICT
 CONTRA COSTA CANAL REPLACEMENT PROJECT
 CONTRA COSTA COUNTY

ORDER NO. 2003-0003-DWQ-0007



Approx. Scale:
 1" = 6,600'

ATTACHMENT B



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LEGEND	
◆	Shallow monitoring well
—	Primary discharge areas
⋯	Secondary discharge area
ISD	Ironhouse Sanitary District
DWR	California Department of Water Resources

SITE PLAN	
CONTRA COSTA WATER DISTRICT	
CONTRA COSTA CANAL REPLACEMENT PROJECT	
CONTRA COSTA COUNTY	
ORDER NO. 2003-0003-DWQ-0007	

N



Approx. Scale:
1" = 1,500'

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2009-0827
FOR

CONTRA COSTA WATER DISTRICT, CALIFORNIA DEPARTMENT OF WATER
RESOURCES AND IRONHOUSE SANITARY DISTRICT
CONTRA COSTA CANAL REPLACEMENT DEWATERING DISCHARGE TO LAND
CONTRA COSTA COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring reclaimed water and reclaimed water reuse areas. This MRP is issued pursuant to Water Code Section 13267. The Dischargers shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

DEWATERING DISCHARGE AREA MONITORING

The Dischargers shall monitor the dewatering discharge areas in accordance with the following. Monitoring shall be performed at least weekly and the results shall be included in the monthly monitoring report. Erosion, ground saturation, the effectiveness of containment berms and levees, and nuisance conditions shall be evaluated weekly and discussed in the report. The discharge shall also be monitored to estimate hydraulic loading rates.

<u>Parameter</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
Flow from extraction wells to each discharge area ¹	Gallons and inches	Estimation	Weekly	Monthly
Rainfall	inches	Measurement	Weekly	Monthly
Net acreage receiving the discharge ¹	acres	Estimation	Weekly	Monthly

¹ Specific discharge areas shall be identified on a scaled map.

REPORTING

In reporting monitoring data, the Dischargers shall arrange the data in tabular form so that the date and monitoring results are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with the conditions of Water Quality Order No. 2003-0003-DWQ. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Central Valley Water Board.

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Central Valley Water Board on the **1st day of the second month following monitoring** (i.e. the January Report is due by 1 March). At a minimum, the monthly monitoring reports shall include the results of dewatering discharge area monitoring, as specified above.

B. Annual Report

An Annual Report shall be prepared for each calendar year. The Annual Report shall be submitted to the Central Valley Water Board by **1 February** each year and shall include the following:

1. Tabular and graphical summaries of all monitoring data collected during the year.
2. An evaluation of the discharge areas and discussion of any structural or operational improvements needed for future use of these areas.
3. A discussion of compliance and the corrective action taken.
4. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.

A letter transmitting the self-monitoring reports shall accompany each report. The letter shall include a discussion of all problems found during the reporting period, and actions taken or planned for correcting them, such as operation or facility modifications. If the Dischargers have previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the following certification statement by the Dischargers or the Dischargers' authorized agents:

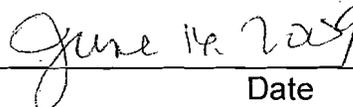
"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of the those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

The Discharger shall implement the above monitoring program as of the date of signature.

Ordered by:



PAMELA C. CREEDON, Executive Officer



Date

**STATE WATER RESOURCES CONTROL BOARD
WATER QUALITY ORDER NO. 2003 – 0003 - DWQ**

**STATEWIDE GENERAL WASTE DISCHARGE
REQUIREMENTS (WDRs) FOR DISCHARGES TO LAND WITH
A LOW THREAT TO WATER QUALITY (GENERAL WDRs)**

The State Water Resources Control Board (SWRCB) finds that:

1. Section 13260(a) of the California Water Code (CWC) requires that any person discharging waste or proposing to discharge waste within any region, other than to a community sewer system, which could affect the quality of the waters of the State¹, file a report of waste discharge (ROWD).
2. The discharges to land with a low threat to water quality listed in Table 1 are low volume discharges with minimal pollutant concentrations and are disposed of by similar means. These discharges are appropriately regulated under General WDRs.

Table 1. Categories of Low Threat Discharges

CATEGORY
Wells/Boring Waste
Well Development Discharge
Monitoring Well Purge Water Discharge
Boring Waste Discharge
Clear Water Discharges
Water Main/ Water Storage Tank/ Water Hydrant Flushing
Pipelines/Tank Hydrostatic Testing Discharge
Commercial and Public Swimming Pools
Small Dewatering Projects
Small /Temporary Dewatering Projects (such as excavations during construction)
Miscellaneous
Small Inert Solid Waste Disposal Operations
Cooling Discharge

See Attachment 1 to these General WDRs for discharge category definitions.

3. All WDRs must implement the Regional Water Quality Control Board (Regional Board) Water Quality Control Plan (Basin Plan) for the Region affected by the discharge. These General WDRs require Dischargers to comply with all applicable Basin Plan provisions, including any prohibitions and water quality objectives governing the discharge.

¹ "Waters of the State" as defined in CWC Section 13050(e)

4. These General WDRs establish minimum standards for the discharges listed in Table 1. The Discharger must comply with any more stringent standards in the applicable Basin Plan. In the event of a conflict between the provisions of these General WDRs and the applicable Basin Plan, the more stringent provision prevails.
5. The beneficial uses for the groundwaters of the State include, **but** are not limited to: municipal supply (MUN), industrial service supply (IND), industrial process supply (PROC), fresh water replenishment (FRESH), groundwater recharge (GWR), and agricultural supply (AGR).
6. The discharges listed in Table 1 have the lowest Threat to Water Quality (TTWQ) and Complexity, as defined in Section 2200, Title 23 of the California Code of Regulations (CCR). Discharges with the lowest TTWQ are those discharges of waste that could degrade water quality without violating water quality objectives or cause a minor impairment of designated beneficial uses. Low threat discharges that do not require any chemical, biological, or physical treatment have the lowest Complexity rating.
7. Dischargers seeking coverage under these General WDRs must file with the appropriate Regional Board: (a) a Notice of Intent (NOI) to **comply** with the terms and conditions of these General WDRs or a ROWD², (b) the applicable first annual fee as required by Title 23, CCR, Section 2200, (c) a project **map**, (d) evidence of California Environmental Quality Act (CEQA) compliance, **and** (e) a discharger monitoring plan. Upon review by Regional Board staff, a **determination** will be made as to whether or not coverage under these General WDRs is **appropriate**. The Discharger will be notified by a letter from the Regional Board Executive Officer³ when coverage under these General WDRs has begun.
8. Dischargers with low threat discharges listed in Table 1 **currently** covered by waivers or individual WDRs need not apply for coverage under these **General** WDRs unless requested to do so by the Regional Board.
9. Although a discharge may be eligible for coverage under these **General** WDRs, the Regional Board may elect to regulate the discharge under other **WDRs** or a conditional waiver. If the Regional Board has established WDRs or a **conditional** waiver, these General WDRs are not applicable.
10. The following discharge categories from Table 1 are exempt from SWRCB promulgated Title 27 requirements: Wells/Boring Waste Discharges, Clear Water Discharges, Small Dewatering Projects, and Cooling Discharges (Section 20090).

² If a ROWD is submitted instead of an NOI, the discharger must complete Sections VII-XV and **XVII** of the NOI (Attachment 3) and submit them to the Regional Board.

³ Regional Board Executive Officer or designee.

11. Title 27, Section 20230 of CCR exempts dischargers of inert solid wastes from the requirement to discharge at classified solid waste sites. Section 20230 also gives Regional Boards the option to assign individual or general WDRs for inert solid waste discharges.
12. Discharges to lands that have been listed as hazardous materials sites, pursuant to Government Code Section 65962.5, are not eligible for coverage under these General WDRs. Discharges that will significantly physically divide an established community, significantly conflict with any applicable land use plan/policy/regulation of an agency with jurisdiction over the project, or significantly conflict with any applicable habitat/community conservation plan are not eligible for coverage under these General WDRs.
13. Discharges that could have a significant impact on Biological Resources⁴, Cultural Resources⁵, Aesthetics⁶, Air Quality⁷ or that could significantly alter the existing drainage pattern of the discharge site or surrounding area are not eligible for coverage under these General WDRs.
14. Small inert waste disposal operations and small temporary dewatering operations located on unstable geologic units/soils or expansive soils are not eligible for coverage under these General WDRs. Small inert waste disposal operations and small temporary dewatering operations that could significantly conflict with existing zoning for agriculture use or a Williamson Act contract are not eligible for coverage under these General WDRs.
15. Small inert waste disposal operations that are within the boundaries of a comprehensive airport land use plan or, if a comprehensive airport land use plan has not been adopted, within two nautical miles of a public airport or public use airport are not eligible for coverage under these General WDRs.
16. A Negative Declaration in compliance with CEQA has been adopted for these General WDRs. The environmental impacts from new discharges authorized by these General WDRs have been found to be less than significant.
17. Potential Dischargers and all other known interested parties have been notified of the intent to prescribe WDRs as described in these General WDRs.
18. All comments pertaining to the proposed discharges have been heard and considered in a public meeting.

IT IS HEREBY ORDERED, that the Discharger, in order to meet the provisions contained in Division 7 of CWC and regulations adopted thereunder, shall comply with the following:

⁴ As defined by the CEQA, Environmental Checklist Form, Title 14, California Code of Regulation, Appendix G, Section IV.

⁵ As defined by the CEQA, Environmental Checklist Form, Title 14, California Code of Regulation, Appendix G, Section V.

⁶ As defined by the CEQA, Environmental Checklist Form, Title 14, California Code of Regulation, Appendix G, Section I.

⁷ As defined by the CEQA, Environmental Checklist Form, Title 14, California Code of Regulation, Appendix G, Section III

A. PROHIBITIONS:

1. The discharge of any waste to surface waters is prohibited.
2. The disposal of wastes shall not cause pollution, contamination, or nuisance as defined in CWC Section 13050.
3. Discharge of wastes to lands not owned or controlled by the discharger is prohibited, unless the discharger has a written lease or an agreement with the owner.
4. The discharge of waste classified as “hazardous” or “designated” as defined in Title 22 CCR, Section 66261 and CWC Section 13173, is prohibited.
5. The discharge of waste shall not cause, wholly or in combination with any other discharge(s), the applicable Regional Board’s Basin Plan objectives for ground or surface waters to be exceeded.
6. The discharge of waste causing the spread of groundwater contamination is prohibited.
7. The discharge of water main, water storage tank, water hydrant pipeline flushing, or hydrostatic testing water from tanks or pipelines that have been used to store or convey any medium other than potable water is prohibited, unless the Discharger has demonstrated to the Regional Board that all residual pollutant concentrations have been reduced to levels below Regional Board Basin Plan groundwater quality objectives.
8. The discharge of wastes at Small Inert Solid Waste Disposal Operations that are not listed in Attachment 2 to these General WDRs or approved by the Regional Board is prohibited.

B. DISCHARGE SPECIFICATIONS:

Table 1 discharges, except monitoring well purge water and boring waste dischargers, shall not contain concentrations of pollutants in excess of the Basin Plan ground water quality objectives. Dischargers of boring waste shall not threaten an exceedance of applicable Basin Plan ground water quality objectives.

C. PROVISIONS:

1. The following provisions apply to Small Inert Solid Waste Operations:
 - a. Inert solid waste facilities shall only accept inert solid wastes that are listed in Attachment 2 to these General WDRs or that are approved by the Regional Board.

- b. Access to the facility shall be limited to ensure that all types of inert solid wastes accepted at the site are in compliance with these General WDRs.
 - c. Inert solid waste facilities shall develop and implement a load checking program to ensure that all the types of waste accepted at the site are in compliance with these General WDRs.
 2. Discharges of boring waste, drilling mud, and cuttings from well-drilling operations shall be discharged to on-site sumps and shall not contain halogenated solvents. At the end of drilling operations, the Discharger shall either:
 - a. Remove all wastes from the sump; or
 - b. Remove all free liquid from the sump and cover residual solid and semi-solid wastes, provided that representative sampling of the sump contents after liquid removal shows residual solid wastes to be nonhazardous. Residual wastes shall be disposed at the proper Title 27, CCR classified waste disposal facility or onsite. Residual wastes discharged onsite shall meet the following requirements: (1) the discharge must be located greater than 5 feet above local groundwater level, (2) the discharge must be covered by a minimum of 1 foot of clean soil, and (3) the discharge must be located at least 100 feet from the nearest surface water. If the sump has appropriate containment features, it may be reused.
 3. Monitoring well purge water shall be discharged at the monitoring well facility⁸ and shall not degrade underlying groundwater. Monitoring well purge water shall not be discharged in a manner causing ponding or threatening a discharge to surface waters.
 4. A minimum freeboard of two feet shall be maintained at all wastewater disposal ponds and wastewater storage ponds.
 5. All storage and disposal facilities shall be protected against erosion, overland runoff, and other impacts resulting from storm events.
 6. Dischargers applying for coverage under these General WDRs shall submit with their NOI a discharge monitoring plan (DMP). The DMP shall include the following information:
 - a. All pollutants believed to be present in the discharge
 - b. Approximate concentration of pollutants in the discharge
 - c. Monitoring locations
 - d. Monitoring frequencies

⁸ A facility where monitoring well(s) have been installed to monitor the migration or levels of a pollutant or the effects and/or migration of a particular discharge.

- e. Report schedule (dates that reports will be submitted to the Regional Board).

Material Safety Data Sheets (MSDS) and additional laboratory analysis may be required by the Regional Board to evaluate the discharge and approve the DMP.

The DMP will be subject to Regional Board Executive Officer⁹ approval. The discharge may not be initiated until the Regional Board Executive Officer approves the DMP and sends notification of this approval by letter.

7. Dischargers of well development water, boring waste, and clear water discharges shall provide written notice to the Regional Board before initiating any discharge to a new site. Dischargers shall certify that the new discharge site is in compliance with these General WDRs and the requirements established by Sections VII-XVI of Attachment 3 (NOI). All other dischargers covered under these General WDRs are prohibited from discharging to sites not described in their NOI or ROWD.
8. Discharges of liquids derived from the purging, development, or sampling of groundwater from monitoring wells shall not contain nonaqueous phase liquids (i.e., concentrations of pollutants above the solubility limits).

D. APPLICATION:

1. Discharges described in the Findings are eligible for coverage under these General WDRs provided that the discharger submits to the appropriate Regional Board¹⁰ the following:
 - a. An NOI to comply with these General WDRs (Attachment 3 to these General WDRs) or an ROWD¹¹.
 - b. A project map.
 - c. Evidence of compliance with CEQA, if any other public agency has required the project to comply with CEQA.
 - d. A first annual fee as described in Finding No. 6.
 - e. A DMP, as described in Provision C.6.
 - f. Any other additional information requested by the Regional Board to evaluate the discharge.

⁹ Regional Board Executive Officer or designee.

¹⁰ Appropriate Regional Board is the Regional Board that regulates discharges of pollutants to waters of the State for the area that the proposed discharge will occur.

¹¹ If an ROWD is submitted instead of an NOI, the discharger must complete Sections VII-XV and XVII of the NOI (Attachment 3) and submit them to the Regional Board.

E. STANDARD PROVISIONS:

1. A copy of these General WDRs shall be kept at the discharge facility for reference by operating personnel. Key operating and site management personnel shall be familiar with its contents.
2. The Discharger shall develop a discharge management plan incorporating contingency measures, should sampling results show violation of water quality standards. In no case shall the discharge continue to impair beneficial uses or violate water quality standards or cause a possible nuisance condition.
3. The Discharger shall take all reasonable steps to prevent any discharge in violation of these General WDRs.
4. The Discharger shall properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) at all times to assure compliance with these General WDRs. Proper operation and maintenance also include adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems when necessary to assure compliance with the conditions of these General WDRs.
5. Prior to any modifications in the Discharger's facility, that would result in a material change in the quality or quantity of waste discharged or any material change in the location of the discharge, the Discharger shall report in writing to the appropriate Regional Board all pertinent information and obtain confirmation from the Regional Board that such modifications do not disqualify the Discharger from coverage under these General WDRs. Confirmation or new WDRs shall be obtained before any modifications are implemented.
6. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the discharger, the discharger shall notify the succeeding owner or operator of the existence of these General WDRs by letter, a copy of which shall be immediately forwarded to the appropriate Regional Board office. The discharger shall also submit a Notice of Termination (Attachment No. 4 to these General WDRs) to the appropriate Regional Board.
7. These General WDRs do not convey any property rights or exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, do not protect the Discharger from liability under federal, State, or local laws, and do not create a vested right to continue to discharge wastes.
8. These General WDRs do not relieve the Discharger from the responsibility to obtain other necessary local, State, and federal permits to construct facilities necessary for compliance with these General WDRs, nor do these General WDRs prevent imposition of additional standards, requirements, or conditions by any other regulatory agency.

9. The Discharger shall allow the Regional Board or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to do the following:
 - a. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of these General WDRs,
 - b. Access and copy, at reasonable times, any records that must be kept under the conditions of these General WDRs;
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under these General WDRs; and
 - d. Sample or monitor, at reasonable times, for the purposes of assuring compliance with these General WDRs or as otherwise authorized by the CWC any substances or parameters at any location.
10. After notice and opportunity for a hearing, coverage of an individual discharge under these General WDRs may be terminated or modified for cause, including but not limited to, the following:
 - a. Violation of any term or condition of these General WDRs;
 - b. In obtaining these General WDRs, misrepresentation or failure to disclose all relevant facts; and
 - c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
11. The filing of a request by the Discharger for an Order to modify, revoke and reissue, or terminate the filing of or a notice of planned changes or anticipated noncompliance does not stay any condition of these General WDRs.
12. The Discharger shall comply with Monitoring and Reporting Program for Water Quality Order No. 2003-0003-DWQ, the approved DMP, and any revisions as prescribed thereto by the Regional Board Executive Officer.
13. Where the Discharger becomes aware that it failed to submit any relevant facts in a ROWD/NOI or submitted incorrect information in an ROWD/NOI or in any report to the Regional Board, it shall promptly submit the required facts or information.
14. The Discharger shall furnish, within a reasonable time, any information the Regional Board or SWRCB may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the Discharger's coverage under these General WDRs. The Discharger shall also furnish to the Regional Board or SWRCB, upon request, copies of records required to be kept by these General WDRs.

15. The CWC provides that any person failing or refusing to furnish technical or monitoring program reports, as required under these General WDRs, or falsifying any information provided in the monitoring reports is subject to civil liability for each day of violation.
16. The Discharger shall take all necessary steps to minimize or correct any adverse impact on the environment resulting from noncompliance with these General WDRs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncompliance.
17. All reports, NOI, other documents required by these General WDRs, and other information requested by the Regional Board shall be signed by a person described below or by a duly authorized representative of that person.
 - a. For a corporation: by a responsible corporate officer such as (1) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function; (2) any other person who performs similar policy or decision-making functions for the corporation; or (3) the manager of one or more manufacturing, production, or operating facilities if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor.
 - c. For a municipality, State, federal, or other public agency: by either a principal executive officer or ranking elected official.
18. Any person signing a document under Provision E.17 makes the following certification, whether written or implied:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."
19. The Discharger shall immediately report any noncompliance potentially endangering public health or the environment. Any information shall be provided orally to the Regional Board within 24 hours of the time the Discharger becomes aware of the occurrence. A written report shall also be submitted to the Regional Board Executive Officer within five (5) calendar days of the time the Discharger becomes aware of the occurrence. The written report shall contain (a) a description of the noncompliance and its cause; (b) the period of the noncompliance event, including dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and (c) steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

20. The Discharger shall report all instances of noncompliance not reported under Provision No. E.19 at the time monitoring reports are submitted. The reports shall contain any applicable information listed in Provision No. E.19.
21. The Discharger shall give notice to the Regional Board as soon as possible of any planned alterations to the permitted facility that may change the nature or concentration of pollutants in the discharge.
22. The Discharger shall comply with all of the conditions of these General WDRs. Any noncompliance with these General WDRs constitutes a violation of the CWC and is grounds for an enforcement action.

CERTIFICATION

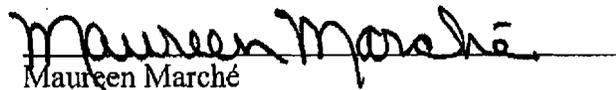
The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on April 30, 2003.

AYE: Arthur G. Baggett, Jr.
Peter S. Silva
Richard Katz
Gary M. Carlton

NO: None

ABSENT: None

ABSTAIN: None


Maureen Marché
Clerk to the Board

DISCHARGE CATEGORY DEFINITIONS

1. Well Development Discharge is any discharge of water to land during the development of a water well.
2. Monitoring Well Purge Water Discharge is any discharge of well water to land in the immediate vicinity of the monitoring well site during monitoring well sampling.
3. Boring Waste Discharge is any discharge of drilling mud and cuttings from well-drilling operations or any other borings in uncontaminated soils.
4. Water main, storage tank, and hydrant flushing discharges are discharges of potable or untreated clear water to land from water line and tank flushing operations.
5. Pipeline and Tank Hydrostatic Testing Discharges are discharges of potable or untreated clear water to land from hydrostatic testing of pipelines and tanks.
6. Commercial and Public Swimming Pool Discharges are discharges of swimming pool water to land.
7. Small Temporary Dewatering Projects are projects that discharge groundwater to land from small construction projects, excavation projects, or dewatering of underground utility vaults.
8. Small Inert Solid Waste Disposal Operations are operations or facilities, covering two acres of land or less, that accept wastes, which do not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives and do not contain significant quantities of decomposable waste.
9. Cooling Discharge is non-contact cooling water discharge, air conditioner condensate discharge, discharge from evaporators, and discharge from heat exchangers.

INERT SOLID WASTES LIST

1. Inert mining wastes, including native geological materials generated during aggregate mining activities at or in the vicinity of the site
2. Uncontaminated soil, inert rock, and gravel
3. Broken concrete
4. Bricks
5. Glass and ceramics not containing lead
6. Inert plastics
7. Broken asphalt paving fragments (asphalt shall not be discharged to standing water nor shall it be placed below the highest anticipated groundwater elevation)

**ATTACHMENT 3
TO WQ ORDER
NO. 2003-0003-DWQ**

**State of California
State Water Resources Control Board**

**NOTICE OF INTENT
TO COMPLY WITH THE TERMS OF WATER QUALITY ORDER NO. 2003-0003-DWQ
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS (WDRs)
FOR DISCHARGES TO LAND WITH A LOW THREAT TO WATER QUALITY**

Mark Only One Item	1. <input type="checkbox"/> New Discharge 2. <input type="checkbox"/> Change of Information-WDID # _____
--------------------	---

I. **Property Owner**

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person				

II. **Facility Owner**

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person				

III. **Billing Address**

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person				

STATE USE ONLY

WDID: □□□□□□□□□□	Regional Board Office: □□	Date NOI Received: _____	
		Check #: _____	

IV. Site Operator

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person				

V. Site Location

Street (including address, if any)	
Nearest Cross Street(s)	
County:	Total Size of Site (acres):
Township/Range/Section B&M T _____, R _____, Section _____,	
Latitude/Longitude (From Center): _____ Deg. _____ Min. _____ Sec N. _____ Deg. _____ Min. _____ Sec. W	
Attach a map of at least 1:24000 (1" = 2000") showing the proposed application site (e.g., USGS 7.5" topographic map).	

VI. Discharge Information

Subject	Notes
Low Threat Discharge Category:	See Table 1 of General Order 2003-0003-DWQ
Description of Operations:	
Approximate Volume of Discharge (for liquid discharges), or Flowrate: <input type="checkbox"/> Intermittent Discharge <input type="checkbox"/> Continuous Discharge.	Gal/day, gal
Pollutants/Constituents Present in the Discharge and their Approximate Concentration*:	Mg/L
Land Use Zone:	
Adjacent Land Use Zones:	

Attach additional pages to characterize the discharge if necessary.

- VII. Does the proposed discharge have the potential to adversely impact a scenic vista, substantially damage scenic resources within a state scenic highway, or substantially degrade the existing visual character/quality of the discharge site/surroundings?
 YES NO
- VIII. Would the proposed discharge conflict with existing zoning for agricultural use or a Williamson Act contract?
 YES NO
- IX. Does the proposed discharge have the potential to significantly impact an applicable air quality plan, significantly violate any air quality standard or contribute to an existing violation, result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard, or significantly expose sensitive receptors to substantial pollutant concentrations?
 YES NO
- X. Do any locations within the proposed discharge site contain biologically unique or sensitive natural communities?
 YES NO
- XI. Does the discharge have the potential to cause a substantial adverse change in the significance of a historical or archeological resource (CCR Section 15064.5), directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, or disturb any human remains?
 YES NO
- XII. Is the proposed discharge site located on unstable geologic units/soils or expansive soils?
 YES NO
- XIII. Is the proposed discharge site located on a hazardous materials site, as defined by Government Code Section 65962.5?
 YES NO
- XIV. Does the proposed discharge have the potential to substantially alter the existing drainage pattern of the discharge site?
 YES NO
- XV. Does the proposed discharge have the potential to significantly physically divide an established community, significantly conflict with any applicable land use plan/policy/regulation of an agency with jurisdiction over the project, or conflict with any applicable habitat/community conservation plan?
 YES NO
- XVI. California Environmental Quality Act (CEQA) (If any other public agency has required the project to comply with CEQA, dischargers must submit evidence of CEQA compliance to be eligible for coverage under these General WDRs).
- a. Name of Lead Agency: _____
- b. Has a public agency determined that the proposed project is exempt from CEQA?
 YES NO
- Basis for Exemption/Agency: _____
- c. Has a "Notice of Determination" been filed under CEQA?
 YES NO

If yes, enclose a copy of the CEQA document, Environmental Impact Report (EIR), or Negative Declaration. If no, identify the expected type of CEQA document and expected date of completion.

d. EIR Negative Declaration expected CEQA completion date: _____

e. Expected CEQA documents: _____

Please submit the following with the Notice of Intent to the appropriate Regional Water Quality Control Board:

- a. Project map
- b. Evidence of compliance with the CEQA, if any other public agency has required the project to comply with CEQA
- c. First annual fee as described in Finding No. 6
- d. A DMP, as described in Provision C.6

XVII. CERTIFICATION

<p>"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify that the provisions of the General WDRs, including the criteria for eligibility, will be complied with."</p>	
Signature of Owner/Operator	Title
Printed or Typed Name	Date
Signature of Property Owner	Title
Printed or Typed Name	Date
Signature of Site Operator/Manager	Title
Printed or Typed Name	Date

State Water Resources Control Board

NOTICE OF TERMINATION
TO COMPLY WITH THE TERMS OF WATER QUALITY ORDER NO. 2003-0003-DWQ
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS
FOR DISCHARGES TO LAND WITH A LOW THREAT TO WATER QUALITY

WDID # _____

I. Property Owner

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person				

II. Facility Owner

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person				

III. Site Location

Street (including address, if any)
Nearest Cross Street(s)
County:

IV. CERTIFICATION

<p>"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."</p>	
Signature of Facility Owner	Title
Printed or Typed Name	Date
Signature of Property Owner	Title
Printed or Typed Name	Date

STATE USE ONLY

WDID: □□□□□□□□□□	Regional Board Office: □□	Date NOT Received: _____	Date NOT Processed: _____
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DEPARTMENT OF FISH AND GAME

BAY DELTA REGION

(7) 944-6620

Mailing address:

POST OFFICE BOX 47

YOUNTVILLE CALIFORNIA 94599

Street address:

7329 SILVERADO TRAIL

NAPA CALIFORNIA 94558



September 18, 2007

Notification Number: 1600-2007-0022-3

Walter J. Bishop/Contra Costa Water District
Post Office Box H2O
Concord, CA 94524
Fax 925-688-8142

1602 LAKE AND STREAMBED ALTERATION AGREEMENT

This agreement is issued by the Department of Fish and Game pursuant to Division 2, Chapter 6 of the California Fish and Game Code:

WHEREAS, the applicant Walter Bishop, Contra Costa Water District, hereafter called the Operator, submitted a signed NOTIFICATION proposing to substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed or lake of the following water: Contra Costa Canal, located in Brentwood Quad, SECTION 24.25, TOWNSHIP 2N, RANGE 2E, 3E, in the County of Contra Costa, State of California; and

WHEREAS, the Department has determined that such operations may substantially adversely affect existing fish and wildlife resources including water quality, hydrology, aquatic or terrestrial plant or animal species; and

WHEREAS, the project has undergone the appropriate review under the California Environmental Quality Act; and

WHEREAS, the Operator shall undertake the project as proposed in the signed PROJECT DESCRIPTION and PROJECT CONDITIONS (attached). If the Operator changes the project from that described in the PROJECT DESCRIPTION and does not include the PROJECT CONDITIONS, this agreement is no longer valid; and

WHEREAS, the agreement shall expire on December 31, 2028; with the work to occur between July 1 and November 20 in the Contra Costa Canal and all other work to occur between April 15 and October 1; and

WHEREAS, nothing in this agreement authorizes the Operator to trespass on any land or property, nor does it relieve the Operator of the responsibility for compliance with applicable Federal, State, or local laws or ordinances. Placement, or removal, of any material below the level of ordinary high water may come under the jurisdiction of the U. S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act;

THEREFORE, the Operator may proceed with the project as described in the PROJECT DESCRIPTION and PROJECT CONDITIONS. A copy of this agreement, with attached PROJECT DESCRIPTION and PROJECT CONDITIONS, shall be provided to contractors and subcontractors and shall be in their possession at the work site.

Failure to comply with all conditions of this agreement may result in legal action.

This agreement is approved by:


Charles Armor
Regional Manager
Bay Delta Region

cc: Janice Gan
Warden Garrett
Lieutenant Christensen

STATE OF CALIFORNIA THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

BAY DELTA REGION
(707) 944-5520
Mailing address:
POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
Street address:
7329 SILVERADO TRAIL
NAPA, CALIFORNIA 94558

ARNOLD SCHWARZENEGGER, *Governor*



Notification Number: 1600-2007-0022-3
Contra Costa Canal, Contra Costa County

Walter J. Bishop
General Manager
Contra Costa Water District
PO Box H20
Concord, CA 94524-2099
925 688-8142 (fax)
wbishop@ccwater.com

PROJECT DESCRIPTION and PROJECT CONDITIONS

Project Description

Contra Costa Canal Replacement Project

The proposed project is located in northeastern Contra Costa County. Approximately 44 miles of the Contra Costa Canal are lined, and 3.97 miles are unlined. The proposed action involves only the unlined portion of the canal, which begins at the Rock Slough headworks and extends west 3.97 miles (21,000 feet) to Pumping Plant 1 (PP 1) near State Route (SR) 4 in the city of Oakley. The project area is characterized by annual grassland intersected by drainages and seasonal wetlands. The surrounding area is largely rural, consisting of rangeland, perennial drainages, marshes, and sloughs.

The project footprint is the earthen (unlined) section of the canal within an approximately 300-foot Right of Way (ROW). The ROW, owned by the United States Bureau of Reclamation ("Reclamation"), is surrounded by either chain-link or three-strand barbed wire fence. Contra Costa Water District (CCWD) is proposing to install a 10-foot-inside-diameter pipeline in the open water or under the northern berm of the unlined canal. The unlined canal would be permanently dewatered and backfilled.

The 200-foot temporary construction easement would be located north of the ROW. This easement would be used for storing construction equipment and materials and for storing soil spoils. The project site covers approximately 189 acres.

The unlined portion of the Contra Costa Canal will be replaced with up to 3.97 miles (approximately 21,000 feet) of buried pipeline between the Rock Slough trash rack and Pumping Plant No. 1. The Canal will be filled with a 10-foot inside-diameter pipe, bedding, gravel, and

approximately 750,000 CY of native soil. After the pipeline is completed, a permanent, all-weather maintenance road will be constructed along the length of the ROW, the Western Area Power Association 69 kV power poles will be replaced and the ROW will be protected by a 6-foot chain-link fence.

Currently, siphons allow the Canal to pass below Marsh Creek, Sellers Avenue and an adjacent drainage ditch, Little Dutch Slough, and a drainage/irrigation ditch at the intersection of Jersey Island and East Cypress roads. All of these siphons will be replaced by the pipeline using open cut methods across the ditches and roadways with the appropriate safeguards to minimize effects on existing habitats.

A bypass pipeline will be used during construction at Marsh Creek. Sheet piles likely will be used to isolate work areas from the more stagnant ditch adjacent to Sellers Avenue, Little Dutch Slough, and the Jersey Island Road drainage/irrigation ditch. The creek and drainages will be restored to pre-project conditions after the replacement pipeline is installed and buried. The restoration will be completed in the same construction season as the impacts in these areas. The area characterized by freshwater marsh vegetation adjacent to Sellers Avenue is an artificial drainage ditch totaling 0.26 acres. The Little Dutch Slough ditch is 0.777 acres. The Jersey Island Road drainage/irrigation ditch is a manmade ditch constructed and used for irrigation purposes; the open portions of this ditch located within the project area totals 0.44 acre (the ditch is converted to a pipeline as it passes under East Cypress Road and over the Canal siphons). As is shown in Table 1 below, it is expected that the project will have only temporary impacts to the 0.44 acre ditch. However, it is expected to be necessary to completely fill in this ditch area to construct the new road and levees required for the East Cypress Corridor.

The equipment required for construction of the pipeline includes crane, excavators, backhoes, dump trucks, scrapers, compactors and trucks to haul construction materials.

The applicant will implement the project and mitigation/conservation in phases.

In total, California Department of Fish and Game (DFG) jurisdictional areas that will be permanently affected by the Contra Costa Canal Replacement Project (Project) total 46.94 acres and include the unlined portion of the Contra Costa Canal (open water, Valley/foothill riparian habitat, and in-channel freshwater marsh) and one irrigation/drainage ditch (D1). The DFG-jurisdictional areas that are within the Canal Replacement Project area and may be temporarily affected by the Project total 5.156 acres and include Marsh Creek, out-of-channel Valley/foothill riparian habitat, several irrigation/drainage ditches (D2-D5, D7-D9, D11-D12), the ditch adjacent to Sellers Avenue, Little Dutch Slough, and the Jersey Island Road drainage/irrigation ditch (PD 6).

The 46.94 acres of DFG jurisdictional areas will be converted to uplands that may provide habitat for Swainsons Hawk and Burrowing Owl. This area will be managed to benefit these species through actions such as no rodent control, mowing instead of discing, as long as these actions do not conflict with required maintenance. The unlined canal right of way will be

managed in accord with the USFWS February 17, 2005 biological opinion addressing the operations and maintenance program occurring on Bureau of Reclamation lands and in particular the Contra Costa Canal.

Table 1 is a summary of the aquatic features associated with the Canal Replacement Project and provides an estimate of the temporary and permanent impacts to DFG-jurisdiction at each location.

Table 1

Acreages of Waters of the State of California in the Contra Costa Canal Replacement Project					
Habitat	Aquatic Features	Hydrological Connectivity ¹	Adjacency ¹	Acreage	Total All Phases
Contra Costa Canal (PI)					
	Canal	Rock Slough	CV	42.920	
	Canal Total				42.920
In-channel Freshwater Marsh (FM) (PI)					
	In-channel FM	Contra Costa Canal	C	3.844	
	FM Total				3.844
Perennial Drainage (PD) (TI)					
	Marsh Creek	Big Break	C	0.864	
	Little Dutch Slough	San Joaquin River	C	0.777	
	Sellers Ditch	Emerson Slough	C	0.260	
	PD 6 at JIR	Dutch Slough	C	0.439	
	PD Total				2.340
Irrigation/Drainage Ditches (D)					
	D1 (PI)	Not evident		0.036	
	D2 (TI)	PD6	CV	0.124	
	D3 (TI)	D4 and D5	CV	0.214	
	D4 (TI)	D3 and D2	CV	0.057	
	D5 (TI)	Not evident		0.033	
	D7 (TI)	Not evident		1.098	

**Acreeages of Waters of the State of California
in the Contra Costa Canal Replacement Project**

Habitat	Aquatic Features	Hydrological Connectivity ¹	Adjacency ¹	Acreage	Total All Phases
	D8 (TI)	D7	CV	0.002	
	D9 (TI)	Isolated		0.201	
	D11 (TI)	PD6	CV	0.327	
	D12 (TI)	Not evident		0.690	
	D Total				2.782
Valley/Foothill Riparian					
	In-Channel VFR (PI)	Contra Costa Canal		0.14	
	Out-of-Channel VFR (TI)	Not evident		0.07	
	VFR Total				0.21

Notes:

PI = permanent impact.

TI = temporary impact (either no impact or estimated disturbance time of approximately 3 months).

In-Channel Freshwater Marsh

In-channel freshwater marsh, totaling 3.844 acres, is present on the project site along a small bench between the mean watermark (MWM) and ordinary high-water mark (OHWM) in the Contra Costa Canal. A conservative average width of 6 feet of hydrophytic vegetation along all banks of the canal that did not contain riprap was used to calculate the total acreage of this wetland feature on the project site. The hydrophytic vegetation along the canal is strongly associated with the small bench of substrate located between the MWM and OHWM. Dominant hydrophytic vegetation in the in-channel freshwater marsh includes common rush (*Juncus effuses*, OBL), yellow flag (*Iris psuedocoras*, OBL), curly dock (*Rumex crispus*, FACW), dallis grass (*Paspalum dilatatum*, FAC), bulrush (*Scirpus acutus*, OBL), and common cattail (*Typha latifolia*, OBL).

¹ Adjacency / Hydrological Connection to Corps Jurisdictional Waters of the United States

C = Contiguous with, or located within, the listed feature.

CV = Connected, directly or indirectly, by culvert or storm drain.

For Phase 1, there is 5.494 acres permanent impact for Canal and freshwater marsh, 0.864 acres of temporary impact for perennial drainage, 0.36 acres permanent impact for irrigation/drainage ditches, and 0.01 acres permanent impact for valley/foothill riparian.

The impacts on Marsh Creek, the ditch adjacent to Sellers Avenue, Little Dutch Slough, the drainage/irrigation ditches (with the exception of D1), and the Jersey Island Road

drainage/irrigation ditch (PD 6) are temporary, and these crossings/features will be restored during the winter season after the new pipeline is completed. Mitigation for temporary impacts will be accomplished through on-site restoration. These areas are under Reclamation ownership and intercept various easements; therefore no conservation easements may be placed on them at this time. In addition, up to 2.171 acre of isolated out-of-channel freshwater marsh, seasonally wet meadow, and seasonal wetland habitats will be disturbed by the project and restored to pre-project conditions as described above with the exception of a 0.078 acre area. Approximately 46.94 acres of upland habitat will be created within the ROW with placement of the Canal in a buried pipe.

Holland Tract

The entire Holland Tract mitigation site encompasses 263 acres, and wetland creation would occur on portions of the site to satisfy mitigation requirements for the Canal Replacement Project. It is anticipated that other portions of the site will provide mitigation for the East Cypress Corridor Specific Plan project.

Wetland and upland mitigation for all phases of the Contra Costa Canal project will occur on 145.07 acres of Holland Tract which is located just outside of Oakley city limits in northeastern Contra Costa County, approximately 3 miles east of SR 4, north of Rock Slough and east of Sand Mound Slough.

For Phase 1, the applicant will provide 6 acres of wetlands and 14 acres of uplands at the Holland Tract.

For future phases impacts to wetlands and waters will be mitigated at a minimum ratio of 1:1. Approximately 84 acres of associated upland habitat will be conserved and managed to mitigate for the future phases of the Contra Costa Canal project.

Soil removed from the CCWD wetland creation areas within the 145 acre Holland Tract site will be used to enhance the 84.9 acres of preserved uplands. Excavated soils will also be utilized to construct a small area of upland refugia contiguous to the large central dune, which will sit at 8 feet above sea level outside of the phase 1 mitigation area.

Transport of excavated soils from the wetland mitigation site to the East Cypress Corridor project site immediately west of Sand Mound Slough may occur via a 100-foot-wide conveyor belt route that would traverse a privately held parcel immediately adjacent to the west, a portion of an abandoned county road, and a 70-foot-wide and 360-foot-long saltwater intrusion barrier in Sand Mound Slough. Alternatively, the excavated soils may be trucked off-site using public roads.

In the entire 145 acre conservation/mitigation area, approximately 22 acres of shallow seasonal wetlands will be constructed in the southwestern portion of the Holland Tract mitigation site and be placed in a conservation easement as mitigation for the Project. During the Phase 1, six (6) of

the 22 acres of shallow seasonal wetlands will be constructed along with 14 acres of associated uplands. An additional 25 acres of seasonal marsh, created perennial marsh, and open water habitat will be constructed and included in the canal project conservation easement. Phase 1 will not include any seasonal marsh, created perennial marsh, or open water habitat.

Seasonal wetland construction would entail shallow excavation of soils in locations suitable for creation of self-sustaining wetlands that would be supported by direct precipitation and subsurface runoff from the adjacent dunes and sandy soils. Excavation of 7–13 feet of soil and intersecting the groundwater table would create the seasonal/perennial marsh and open water habitat complex in the northeastern portion of the site.

Approximately 0.49 acres of existing Valley/foothill riparian habitat will be avoided and preserved at the Holland Tract mitigation area. Fifteen additional riparian trees, Fremont cottonwoods, will be planted in this area to provide potential nesting habitat for raptor species.

The equipment required for construction of the wetlands includes bulldozers, scrapers, excavators, dump trucks and other large earthmoving vehicles for excavation.

There are 9,860 linear feet of drainage ditches – comprising 1.75 acres (76,662 square feet) – that fall under DFG jurisdiction at the Holland Tract mitigation area. In addition, 11.56 acres of shallow seasonal wetlands are present. There will be temporary impacts associated with the wetland creation on Holland Tract to a total 1.9 acres including 1.1 acre of manmade drainage ditches and 0.8 acre of seasonal wetlands. Creation of wetlands will also result in a loss of approximately 45.10 acre of upland habitat.

Conditions

1. Work within the stream/riparian corridor and in all jurisdictional areas, other than the Contra Costa Canal, and associated riparian corridor shall be confined to the period of April 15 to October 1 in the years 2007 through 2028, except as otherwise stipulated in this Agreement. The time limit for completing work to install cofferdam in the Contra Costa Canal shall be confined to the period of July 1 through November 30 in the years 2007-2028 except as otherwise stipulated in this Agreement. Work behind/downstream of the coffer dam to dewater, rescue fish, and install pipeline may occur outside of this work period. Work periods and measures to protect giant garter snake and burrowing owl remain in effect upstream of the coffer dam. Revegetation work is not confined to these periods but must be completed in the year that vegetation is removed. If the Applicant needs a variance from a time period, authorization shall be requested from Environmental Scientist, Janice Gan at jgan@dfg.ca.gov or the Yountville office at (707) 944-5520.
2. The applicant will provide an updated Habitat Mitigation and Monitoring Plan (HMMP) for the Holland Tract Preserve prior to the start of project site disturbance or construction. Design drawings for Holland tract will be provided for each phase prior to start of wetland construction. A DFG approved HMMP will be required within 60 days after the start of site

disturbance or project construction on the canal replacement project and prior to the start of wetland construction on Holland Tract. DFG will provide comments in a timely manner. Project construction for the canal project will be suspended if DFG has not approved the HMMP within 60 days of the start of site disturbance or project construction on the canal project.

3. Long term agreement Status Report

Pursuant to the California Fish and Game Code Section 1605 (g) a Status Report shall be submitted to the Department every four years during the term of this Agreement, until the Agreement expires, no later than 90 days prior to the end of each four year period (**first status report due September, 2011**).

The submittal shall include the following:

- A. A copy of the original Agreement.
- B. A fee of \$2500
- C. The status of the activity covered by the Agreement.
- D. An evaluation of the success or failure of the measures in the Agreement to protect the fish and wildlife resources that the activity may substantially adversely affect.
- E. A discussion of any factors that could increase the predicted adverse impacts on fish and wildlife resources, and a description of the resources that may be adversely affected.
- F. Reports shall include photo documentation consisting of pre-established photo stations of the mitigation area.
- G. Upon receipt of the Status Report, the Department will have the option to contact the Applicant to schedule an onsite inspection by Department staff, to confirm that the Applicant is in compliance with the terms of this Agreement, and that the Agreement is adequately protecting fish and wildlife resources.
- H. Following review of the Status Report and the onsite inspection, if the Department determines that the measures in the Agreement no longer protect the fish and wildlife resources that are being substantially adversely affected by the activity, the Department may impose one or more new measures to protect the fish and wildlife resources affected by the activity.
- I. In addition to the above monitoring and reporting requirements, the Department requires that the Applicant:

- a. Immediately notify the Department in writing if monitoring reveals that any of the protective measures were not implemented during the period indicated in this program, or if it anticipates that measures will not be implemented within the time period specified.
 - b. Immediately notify the Department if any of the protective measures are not providing the level of protection that is appropriate for the impact that is occurring, and recommendations, if any, for alternative protective measures.
4. The Applicant will, in the manner described below, acquire, preserve and provide secured funding for management in perpetuity of approximately 145 acres of land known as Holland Tract mitigation site for the benefit of habitats and species impacted by the proposed project. The mitigation property is located just outside of Oakley city limits in northeastern Contra Costa County, approximately 3 miles east of SR 4, north of Rock Slough and east of Sand Mound Slough.
 5. The Applicant will implement the project and mitigation/conservation in phases. Wetland construction on Holland Tract will begin and the conservation easement for Phase 1 will be recorded, not more than 6 months after dewatering operations start for Phase 1 of the Canal project or project construction for the canal project will be suspended.

In total, the applicant will be responsible for construction of a mosaic of 47 acres of wetlands and waters on 145.07 acres at the 263-acre Holland Tract mitigation site. Approximately 22 acres of shallow seasonal wetlands in the southwestern portion of the Holland Tract mitigation site will be constructed by Wildlands, Inc. In addition, 25.2 acres of seasonal/perennial marsh and open water habitat will be created as part of a larger wetland complex in the northeast corner of the property and included as part of the Canal Replacement Project mitigation area. Drainage ditches totaling 1.1 acre will be enhanced, and 11.38 acres of existing seasonal wetlands and associated drainage ditches will be preserved within the mitigation area. Wetland creation within the Holland Tract site will avoid existing wetlands to the extent feasible. The 0.8 acre of managed seasonal wetland to be temporarily disturbed will be restored as part of the open water/marsh mosaic, and the 1.1 acre of drainage ditch that will require disturbance for habitat enhancement will be recreated into aquatic habitat of greater complexity and a higher value. Dirt removed from the CCWD wetland creation areas within the 145 acre Holland Tract site will be used to enhance the 84.9 acres of preserved uplands. Excavated soils will also be utilized to construct a small area of upland refugia contiguous to the large central dune, which will sit at 8 feet above sea level. Construction of CCWD's wetlands by Wildland's Inc is expected to occur in phases as outlined in the HMMP. Transport of excavated soils from the wetland mitigation site to the East Cypress Corridor project site immediately west of Sand Mound Slough may occur via a 100-foot-wide conveyor belt route that would traverse a privately held parcel immediately adjacent to the west, a portion of an abandoned county road, and a 70-foot-wide and 360-

foot-long saltwater intrusion barrier in Sand Mound Slough. Alternatively, the excavated soils may be trucked off-site using public roads.

For Phase 1, the applicant will provide 6 acres of wetlands and 14 acres of uplands.

For future phases impacts to wetlands and waters will be mitigated at a minimum ratio of 1:1. Approximately 84 acres of associated upland habitat will be conserved and managed to mitigate for the future phases of the Contra Costa Canal project.

6. Holland Tract will be managed to provide wetland habitat and habitat for Western Burrowing owl. Other species that may benefit include Swainson's hawk, giant garter snake, Western pond turtle and other sensitive species that will be impacted by construction of the project and mitigation area according to the Final HMMP and Action Specific Implementation Plan (ASIP). Interim management and monitoring as described in the Final HMMP will begin concurrent with wetland construction or as soon thereafter as possible, as approved by DFG.
7. Fifteen riparian trees, Fremont cottonwoods, will be planted to provide potential nesting habitat for raptor species at a location on Holland Tract approved by DFG and selected to minimize impacts to burrowing owls. In addition, the project will create 46.94 additional acres of upland habitat within the Canal ROW that will provide some foraging and nesting opportunities for species that occur in the region including Swainson's hawks. This area will be managed to benefit these species through actions such as no rodent control, mowing instead of discing, as long as these actions do not conflict with required maintenance. The unlined canal right of way will be managed in accord with the USFWS February 17, 2005 biological opinion addressing the operations and maintenance program occurring on Bureau of Reclamation lands and in particular the Contra Costa Canal.
8. All work shall be done according to the project description stated above and discussed with Janice Gan of DFG, as well as the Draft Habitat Mitigation and Monitoring plan dated April 5, 2007 and Action Specific Implementation Plan, dated March 21, 2007, submitted to DFG unless otherwise noted in this permit. The applicant will provide an updated HMMP for the Holland Tract Preserve prior to the start of project site disturbance or construction.
9. All species monitoring will be done as described above and in the Final HMMP (pending) and ASIP dated March 21, 2007.

The Applicant shall provide the following financial assurances for Phase 1 in the form of DFG approved Irrevocable "Standby" Letters of Credit. The letters of credit for land acquisition and wetland and upland habitat construction will be provided prior to the start of site disturbance or project construction and the letters of credit for interim and long term site management and monitoring will be provided within 30 days of DFG's approval of the final HMMP to ensure that the Holland Tract mitigation will be created and managed as described in condition 5 above:

- i. \$114,000 for land acquisitions
- ii. \$67,000 for wetland and upland habitat construction
- iii. \$37,462 for the interim site management and monitoring
- iv. \$619,318 for the long term endowment

These amounts are estimates. The final amounts will be based on the final HMMP.

The Applicant may submit to DFG a request for a Certificate for Cancellation, along with supporting documentation that a DFG approved conservation easement has been recorded. This easement will be in favor of the WHF or another entity acceptable to DFG and U.S. Fish and Wildlife Service. DFG, after determining that the Applicant's documentation is adequate, will release the letter of credit, by duly and timely executing the applicable Certificate for Cancellation for the letter of credit for land acquisition of 20 acres for Phase 1 of the canal project as specified in the letter of credit (estimated at this time to be \$114,000)

The Applicant may submit to DFG a request for a Certificate for Cancellation, along with supporting documentation that construction of the wetland and upland mitigation has been completed and these areas have met success criteria. DFG, after determining that the Applicant's documentation is adequate, will release the LOC in phases as typical success criteria, which may include depth and duration of ponding, vegetative cover, species composition, as agreed to in the Final HMMP, are achieved for the created wetlands and uplands in the 20 acres area defined as Phase 1, by duly and timely executing the applicable Certificate for Cancellation for the letter of credit for the construction of the wetland and upland habitat of 20 acres for Phase 1 of the canal project as specified in the letter of credit (estimated at this time to be \$67,000)

The Applicant may submit to DFG a request for a Certificate for Cancellation, along with supporting documentation that interim management has been completed, that any success criteria required during the interim management period as agreed to in the Final HMMP has been met, and that the long term management period has begun with a fully funded endowment. DFG, after determining that the Applicant's documentation is adequate, will release the letter of credit, by duly and timely executing the applicable Certificate for Cancellation for the letter of credit for the interim management of 20 acres for Phase 1 of the canal project as specified in the letter of credit (estimated at this time to be \$37,462).

The Applicant has submitted a request for the Wildlife Heritage Foundation (WHF) to be the long term endowment holder and DFG is considering this request. After the decision regarding alternatives to DFG as the long term endowment holder is finalized, the Applicant may submit to DFG a request for a Certificate for Cancellation, along with supporting documentation. DFG, after determining that CCWD's documentation is adequate, will release the letter of credit, by duly and timely executing the applicable Certificate for Cancellation as specified in the letter of credit, and consistent with the following conditions:

If WHF is approved as the long term endowment holder, the applicant shall pay to the WHF the final non-DFG long term endowment amount approved by DFG and based on the Final HMMP. This amount is currently estimated to be \$302,778.

If WHF is not approved as the long term endowment holder, the applicant shall pay to DFG the final DFG long term endowment amount described in the final HMMP. This amount is currently estimated to be \$619,318.

The applicant records a DFG approved Conservation Easement in favor of the WHF or another entity acceptable to DFG and U.S. Fish and Wildlife Service.

The payment of the long term endowment to either DFG or WHF by the applicant shall represent the full and complete payment required for the initial phase, Phase 1, of wetlands construction and associated uplands and site management and monitoring. No additional payment shall be required of the applicant for the long term endowment for Phase 1 mitigation.

Future phases of the Canal Replacement Project

- The Applicant will provide created wetlands consistent with project impacts (each acre of Canal Replacement wetland impacts will be replaced by a minimum of an acre of created wetlands and associated uplands at Holland Tract mitigation site) prior to or concurrent with project construction.
- It is assumed for purposes of this permit that the future phases of Canal Replacement will occur after DFG makes a decision regarding WHF as the long term endowment holder. If this is not correct, then the applicant will provide additional letters of credit in amounts approved by DFG that are sufficient to ensure interim and long term management and monitoring of the additional created wetlands and uplands in a manner consistent with the approach described above for the Phase 1 of construction.
- CCWD will provide additional wetland creation and upland enhancement and management for future Phases of the Canal Project. The estimated long term endowment for the remaining CCWD mitigation wetlands and uplands to be constructed, enhanced and managed is currently estimated to be \$564,364 assuming that DFG is the endowment holder and \$275,911 if the WHF is the endowment holder. Because the timing of subsequent phases of the project are allowed by this permit to be completed over the next 20 years, the amount of the final long term endowment for future Phases of the Canal Project must be approved by DFG at the time the endowment is paid based on the costs of the requirements described in the Final HMMP as adjusted for inflation.
- The payment of the long term endowment to either DFG or WHF by the applicant shall

represent the full and complete payment required for the mitigation, monitoring and management of the uplands and wetlands in the areas which provide mitigation for future Phases of the Canal Project. No additional payment shall be required of the applicant for the long term endowment.

A DFG approved conservation easement will be recorded for the areas of Holland Tract providing mitigation for future Phases of the Canal Project before site disturbance or project construction begins on the future phase of the Canal Project. This easement will be in favor of the WHF or another entity acceptable to DFG and U.S. Fish and Wildlife Service. The conservation easement for Phase 1 must be recorded no more than 6 months after beginning dewatering activity in the Contra Costa Canal.

10. The Applicant shall submit for written approval, any modifications made to the plans submitted to DFG that pertain to impacts to the creek, riparian corridor, or wetland features. All modifications to engineered plans, and/or modifications for creek and wetland construction shall be submitted to DFG for approval prior to the commencement of work.
11. The time limit for completing the work in all jurisdictional areas, other than the Contra Costa Canal, and associated riparian corridor shall be confined to the period of April 15 to October 1 of any year, except as otherwise stipulated in this Agreement. Any exception to this time restriction shall be handled on an individual site-specific basis and shall only extend the work period of the general time window from October 1 to October 15 of any year. This request shall be in written form and submitted at least 10 days in advance of proposed time extension period. The Applicant will notify Janice Gan 209-835-6910, jgan@dfg.ca.gov, of the date of commencement of operations and the date of completion of operations.
12. The time limit for completing work to install cofferdam in the Contra Costa Canal shall be confined to the period of July 1 through November 30 of any year. Work behind/downstream of the coffer dam to dewater, rescue fish, and install pipeline may occur outside of this work period. Work periods and measures to protect giant garter snake and burrowing owl remain in effect upstream of the coffer dam.
13. The Applicant shall conduct a fish rescue operation for the Contra Costa Canal for each section to be dewatered and replaced with a pipeline.
 - a) Prior to installing a cofferdam, acoustic equipment, in combination with sweep and block nets, will be used through the section of the canal to be dewatered, allowing fish to vacate toward Rock Slough.
 - b) Prior to dewatering the Canal, remaining fish not swept out of the work area will be rescued. Efforts will be made to reduce collecting and handling stress, minimize the time that fish are held in buckets, and minimize handling stress during processing and release. Fish will be captured using a system of block nets.

Fish collection efforts will continue in the area until multiple pass collections document substantial depletion of captured fish. Immediately after collection, fish will be placed in aerated 5-gallon buckets and/or coolers filled with canal water, identified measured, and counted. Rescued fish will be released upstream of the coffer dam within the Contra Costa Canal, or other location as approved by NMFS, USFWS, and DFG, as soon as possible after processing. Chemical additives may be added to holding buckets to reduce potential bacterial infection and to lower stress in aquatic species during rescue efforts.

- c) No employee or contractor shall remove any fish, dead or alive, from the site for personal use. All efforts to reduce the time that live fish are out of the water will be made so as to reduce the chances of incidental take during the fish rescue. All fish are to be promptly returned to the water with the exception of any dead Chinook salmon, steelhead, or delta smelt.
- d) Chinook salmon, steelhead, and delta smelt will be processed first and released as soon as possible. Up to 50 individuals each of Chinook salmon, steelhead, and delta smelt and up to 30 individuals of all other captured species will be measured for fork length and recorded. Individuals exceeding 50 or 30, respectively, will be "plus counted." Species name and length data will be recorded on data sheets, as well as time, date, location, gear type, water temperature, and any other pertinent observations of the fish.
- e) If sacrificed or dead fish cannot be positively identified in the field, the fish will be bagged, labeled, and brought to USFWS or DFG laboratories for positive identification. Bagged fish will be kept as cold as possible. If identification will not occur on the same day as capture, the fish will be placed in a freezer. Each bag shall have a waterproof paper tag with date, time, and location caught.
- f) During the fish rescue, there is potential for fish mortality. If any special status species suffers mortality, the individuals will be preserved via freezing or placing in a container with 10 percent formalin solution. Information on time and exact location of any incidental take, method of take, length of time from death to preservation, water temperature, and any other relevant information will be recorded in writing.
- g) After completing the fish rescue, a brief documentation report will be prepared. The report will include information on the personnel conducting the fish rescue, methods used, numbers of each species collected and relocated, length data, and estimate of the survival of fish immediately after release. Photographs of the site and rescue operations will be included. Any incidental take of special status species will be documented. The report will be provided by CCWD to NMFS, USFWS, and the Department within 30 days of completing the fish rescue.
- h) After the fish rescue effort is completed, dewatering of the area downstream of the cofferdam will continue. The fish rescue biologist will provide a worker education program in the event that additional fish may remain within the dewatering area. The fish rescue biologist will return to the site to rescue additional fish if the workers observe them within the dewatering area.
- i) If any turtles are captured during fish rescue, they will be relocated to the fish

release site(s). Turtles will not be placed in buckets with chemical additives.

14. The project site has been identified as an area that is inhabited by listed species and species of special concern. This agreement does not allow for the take, or incidental take of any State or Federal listed threatened or endangered species, or species of special concern. Liability for any take or incidental take of such listed species remains the responsibility of the Applicant for the duration of the project. Any unauthorized take of such listed species may result in prosecution and nullify this agreement. Prior State authorization is recommended for the relocation of Western Pond Turtle or exclusion of Burrowing Owl.
15. Preconstruction surveys and avoidance measures will be implemented in accordance with Conservation Measures included in the ASIP, dated March 21, 2007.
16. If any wildlife is encountered during the course of construction said wildlife shall be allowed to leave the construction area unharmed or relocated with DFG permission and oversight. Aquatic life (except threatened or endangered) stranded within any dewatered work area shall be relocated to an appropriate upstream or downstream location, upon completion of the diversion and prior to start of work. If any special-status species are observed before or during project implementation, the Applicant shall submit Natural Diversity Data Base (NDDDB) forms to the NDDDB for all preconstruction survey data within five working days of the sightings, and provide DFG Region 3 with copies of the NDDDB forms and survey maps.
17. The Applicant shall not remove vegetation within the stream, cut down any trees, or grade within 300 feet of any active raptor nest sites or nearby other nesting birds, to avoid impacts to them without DFG approval. A minimum 50 foot non-disturbance buffer shall be maintained around active non-raptor nests and a 250 foot non-disturbance buffer shall be maintained around burrows occupied by burrowing owl during the breeding season, unless otherwise agreed to by DFG. If construction, grading, or other project-related improvements are scheduled during the nesting season of protected raptors and migratory birds (February 1 to August 31), a focused survey for active nests of such birds shall be conducted by a qualified biologist (as determined by a combination of academic training and professional experience in biological sciences and related resource management activities) within 15 days prior to the beginning to project-related activities. The results of the survey shall be faxed to (707) 944-5595 and (209) 835-6910. Refer to Notification Number 1600-2007-0022-3 when submitting the survey to DFG. If active nests are found, the applicant shall install barrier fencing at distances specified above and remain in place until the young have fledged. If a lapse in project-related work occurs, another focused survey will be required, and if active nests are found installation of barrier fencing at the distance specified above will be done before work can be reinitiated. The lapse period will vary with time of year and will be determine in consultation with DFG.
18. The Applicant shall use temporary construction fencing to identify the limits of grading.
19. Erosion control measures shall be utilized throughout all phases of operation in areas where

soil, silt, dirt and/or sediment from project activities threatens to enter waters of the State. At no time shall any of these materials be allowed to enter the stream or be placed where it may enter the stream.

20. The Contractor shall have readily available plastic sheeting or visquine and will cover exposed spoil piles and exposed areas to prevent these areas from losing loose soil into the stream. These covering materials shall be applied when it is evident rainy conditions threaten to erode loose soils into the stream.
21. Silty/turbid water from the excavation and/or project activities shall not be discharged into the stream or into storm drains. Such water shall be pumped into a holding facility or into a settling pond located in flat stable areas outside of the stream channel, sprayed over a large area outside the stream channel to allow for natural filtration of sediments. At no time shall turbid water from settling ponds be allowed to enter back into the stream channel until water is clear of silt.
22. The Applicant shall place and maintain silt barriers, such as straw hay bales, around the storm drain inlets until completion of grading operations or until the threat of erosion from surrounding drainage ceases, whichever comes first. The applicant shall remove silt collected around the silt barriers on an as needed basis to prevent silty/turbid water from flowing around the silt barriers during storm events.
23. A silt filter barrier shall be constructed immediately downstream of the work area prior to the beginning of any work. The barrier shall consist of either hay bales or clean river rock (less than 15% fines).
24. In ephemeral streams, all construction will be done while the work site is dry. Vehicles will not be driven or equipment operated in water covered portions of the stream, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, except as otherwise provided for in the agreement. If the stream is flowing at the time work is to be done, the Contractor shall implement a water diversion plan which allows stream flows to gravity flow around or through the work site using temporary culverts. In lieu of a gravity flow diversion system, stream flow may be pumped around the work site using pumps and hoses. Cofferdams shall be constructed no more than 20' up or downstream from the project area. Flows shall be diverted only when construction of the diversion is completed. Cofferdams constructed shall only be built from materials such as clean gravel, sandbags or sheet piling, which will cause little or no siltation. Cofferdams shall be installed both upstream and downstream of the work site. Cofferdam construction shall be adequate to prevent seepage into or from the work area. The entire work area shall be dewatered. Sandbags shall be filled with clean sand. Cofferdams shall be placed and removed by hand. The cofferdam dewatering system shall remain in place until all creek work is complete. Normal flows will be restored to the affected stream immediately upon completion of work at that location by removing the dewatering system.

25. No other diversion method shall be used without authorization of DFG. If another diversion method is preferred, the applicant must submit a plan detailing the desired diversion method. Authorization of any other diversion method shall be at the discretion of DFG.
26. When any dam or other artificial obstruction is being constructed, maintained, or placed in operation, sufficient water shall at all times be allowed to pass downstream to maintain aquatic life below the dam pursuant to Fish and Game Code Section 5937. Marsh Creek is a permanent watercourse, and the creek is known to be used by fall-run chinook salmon. CCWD will evaluate the feasibility of jack-and-bore methods below Marsh Creek. If jack-and-bore methods are not feasible and Marsh Creek needs to be open cut, then temporary construction impacts at the Marsh Creek site will be minimized through the use of a NMFS-approved bypass pipeline. It is anticipated that the bypass pipeline system at Marsh Creek will be in place between June 1 and October 1 consistent with Contra Costa County Flood Control District (CCCFCD) guidance. The new pipeline that will replace the canal siphons under Marsh Creek will be installed while the bypass is operational. The area between temporary cofferdams on Marsh Creek will be surveyed for stranded aquatic species by a qualified biologist when the area is being dewatered. Any stranded aquatic species shall be moved to below the downstream cofferdam. Efforts will be made to complete installation of the new pipe near the creek and drainages by October 1, consistent with CCCFCD and NMFS requirements. CCWD will consult with DFG and NMFS during design and development of the bypass pipeline. The bypass pipeline will be removed as quickly as possible after construction beneath the creek is completed. Marsh Creek will be restored to pre-project conditions or better immediately after work in Marsh Creek is completed. Notwithstanding anything to the contrary, nothing in conditions 25, 26, or 27 of this Agreement shall be construed to apply to any portion of the Contra Costa Canal.
27. Staging and storage areas for equipment, materials, fuels, lubricants and solvents, will be located outside of the stream channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the stream will be positioned over drip pans. Any equipment or vehicles driven and/or operated within or adjacent to the stream will be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life. Vehicles will be moved away from the stream prior to refueling and lubrication.
28. At no time shall drill cuttings, drilling mud, and/or materials or water contaminated with bentonite or any other substance deemed deleterious to fish or wildlife be allowed to enter the stream or be placed where they may be washed into the stream. Any contaminated water/materials from the drilling and/or project activities shall be pumped or placed into a holding facility and removed for proper disposal.
29. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, wildlife, or riparian habitat resulting from the project related activities shall be prevented from contaminating the soil and/or entering the waters of the State. Any of these materials

placed, within or where they may enter a stream or lake, by the Applicant or any party working under contract may be subject to a citation.

30. Poured concrete shall be excluded from the wetted channel for a period of 30 days after it is poured. During that time the poured concrete shall be kept moist, and runoff from the concrete shall not be allowed to enter a live stream. Commercial sealants (e.g. Deep Seal, Elasto-Deck BT Reservoir Grade) may be applied to the poured concrete surface where difficulty in excluding water flow for a long period may occur. If sealant is used, water shall be excluded from the site until the sealant is dry.
31. The Contractor shall not dump any litter or construction debris within the riparian/stream zone. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site.
32. All disturbed slopes around and on the banks (with the exception of Marsh Creek that, consistent with Contra Costa County Flood Control District requirements, will not be reseeded) shall be seeded, mulched and fertilized with the proposed erosion control seed mix approved by DFG. Seeding shall be completed as set forth in condition 34.
33. All planting shall be done during the winter following the construction season in which impacts occur (i.e. for impacts occurring in 2007, planting shall occur during the winter of 2007-2008 etc.). CCWD will revegetate with appropriate native vegetation (plant, shrub, and tree species) all areas along the drainages that are subject to temporary vegetation removal (with the exception of Marsh Creek, which, consistent with CCCFCD requirements, will not be reseeded). Revegetation will occur after construction activities are completed in each construction phase as stated above. All required planting will be done between October 15 and December 31, or as required by DFG and USFWS according to a DFG- and USACE-approved plan.
34. Failure to implement the mitigation (planting or creation) during the required time period will result in additional mitigation being required for the temporal loss of habitat. The additional mitigation will be equal to that already agreed to at an off-site location or may be in the form of a contribution to an alternate DFG approved project.
35. The Applicant will provide written notification to DFG 3 months before the expiration of any of the letters of credit required by this Agreement or as specified in the letters of credit. The Applicant will also provide an extension or renewal of the letters of credit to DFG before the current letter expires or as specified in the letters of credit. If the Applicant fails to provide this notification and a renewal/extension to continue the letter of credit, a fee equal to the amount that is 25% of the original letter of credit, will be provided by the Applicant to a DFG approved conservation effort, within 10 days of notification by DFG.
36. The Applicant will provide written notification 10 days prior to the start of site disturbance

or construction for each phase of the project and after any extended period of inactivity on the project (30 days or more).

37. A copy of this Agreement must be provided to all contractors and subcontractors and the Applicant's project supervisors. Copies of this Agreement shall be available at the project site during all periods of active work and must be presented to Department personnel upon demand. Department personnel shall be allowed onto the work site at any time during and after construction of the project for the purposes of establishing compliance with this Agreement.
38. Any other written information the Applicant must submit to DFG under this Agreement shall be mailed to the following address:

Department of Fish and Game
Bay Delta Region
P.O. Box 47
Yountville, California 94599

Attn: 1600 Program (2007-0022/ Contra Costa County / Contra Costa Canal)

39. In the event that the project scope, nature, or environmental impact is altered by the imposition of subsequent permit conditions by any federal, state or local regulatory authority (such as the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service or National Marine Fisheries Service), the Applicant shall notify DFG of any imposed project modifications that interfere with compliance to DFG conditions.
40. A copy of this agreement must be provided to the Contractor and all subcontractors who work within the project area and must be in their possession at the work site.
41. If, in the opinion of DFG, conditions arise, or change, in such a manner as to be considered deleterious to the stream or wildlife, operations shall cease until corrective measures approved by DFG are taken.
42. DFG personnel or its agents may inspect the work site at any time.
43. The Applicant is liable for compliance with the terms of this Agreement, including violations committed by the contractors and/or subcontractors. DFG reserves the right to suspend and/or revoke and /or amend this agreement if DFG determines any of the following has occurred.
- A). Failure to comply with any of the conditions of this Agreement.
 - B). The information provided by the Applicant is incomplete or inaccurate.
 - C). New information becomes available that was not known when preparing this agreement (i.e. the presence of a sensitive species).
 - D). The project as described above has changed.

Any violation of the terms of this Agreement may result in the project being stopped, a citation being issued, or charges being filed with the District Attorney. Contractors and subcontractors may also be liable for violating the conditions of this agreement.

If the Applicant finds more time is needed to complete the authorized activity, the work period may be extended on a day-to-day basis by the local Department of Fish and Game representative, Janice Gan 209-835-6920, jgan@dfg.ca.gov or the Yountville office at 707-944-5520.

Amendments

The Applicant shall notify DFG before any modifications are made in the project plans submitted to DFG. Project modifications may require an amendment or a new notification.

To modify the project, a written request for an amendment must be submitted to DFG (1600 Program, Post Office Box 47, Yountville, California 94599). The Fee Schedule can be obtained at www.dfg.ca.gov/1600 or by phone at (707) 944-5520. Amendments to the original Agreement are issued at the discretion of DFG.

Please note that you may not proceed with construction until your proposed project has undergone CEQA review and DFG signs the Agreement.

I, the undersigned, state that the above is the final description of the project I am submitting to DFG for CEQA review, leading to an Agreement, and agree to implement the conditions above required by DFG as part of that project. I will not proceed with this project until DFG signs the Agreement. I also understand that the CEQA review may result in the addition of measures to the project to avoid, minimize, or compensate for significant environmental impacts:

Applicant's name (print): WALTER J. BISHOP

Walter J. Bishop
Applicant's signature:

Signed the 6TH day of SEPTEMBER, 2007

FOR DEPARTMENT USE ONLY

Date Received	Amount Received	Amount Due	Date Complete	Notification No.
1/1/07	\$6,400.00	\$		1600-2007-0022-3



#136168

CONTRA COSTA

WATER DISTRICT

STATE OF CALIFORNIA

DEPARTMENT OF FISH AND GAME

GAN
BESS

K.T. CHRISTENSEN

NOTIFICATION OF LAKE OR STREAMBED ALTERATION



Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

Fish & Game

1. APPLICANT PROPOSING PROJECT

Name	Mark Seedall	JAN 11 2007		
Business/Agency	Contra Costa Water District	Yountville		
Street Address	PO Box H2O (Mailing)			
City, State, Zip	Concord, CA 94524			
Telephone	(925) 688-8119	Fax	(925) 688-8142	
Email	mseedall@ccwater.com			

CONTACT PERSON (Complete only if different from applicant)

Name	Same as Applicant.			
Street Address				
City, State, Zip				
Telephone		Fax		
Email				

3. PROPERTY OWNER (Complete only if different from applicant)

Name	Kathy Wood, U.S. Department of the Interior, Bureau of Reclamation (South-Central CA Area Office)			
Street Address	1243 N. Street			
City, State, Zip	Fresno, CA 93721-1813			
Telephone	(559) 487-5103	Fax	(559) 487-5397	
Email	kwood@mp.usbr.gov			

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name		Contra Costa Canal Replacement Project		
B. Agreement Term Requested		<input type="checkbox"/> Regular (5 years or less) <input checked="" type="checkbox"/> Long-term (greater than 5 years)		
C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (year)	Ending (year)	Start Date (month/day)	End Date (month/day)	
2007	2028	10/01	09/30	700.00

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.

A.	<input checked="" type="checkbox"/> Standard (Most construction projects, excluding the categories listed below)
B.	<input type="checkbox"/> Gravel/Sand/Rock Extraction (Attachment A) Mine I.D. Number: _____
C.	<input type="checkbox"/> Timber Harvesting (Attachment B) THP Number: _____
D.	<input type="checkbox"/> Water Diversion/Extraction/Impoundment (Attachment C) SWRCB Number: _____
E.	<input type="checkbox"/> Routine Maintenance (Attachment D)
F.	<input type="checkbox"/> DFG Fisheries Restoration Grant Program (FRGP) FRGP Contract Number: _____
G.	<input type="checkbox"/> Master
H.	<input type="checkbox"/> Master Timber Harvesting

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. **Note: The Department may not process this notification until the correct fee has been received.**

	A. Project	B. Project Cost	C. Project Fee
1	Contra Costa Canal Replacement Project - (project cost is greater than \$500K)	\$500,000.00	\$4,000.00
2			
3			
4			
5			
		D. Base Fee (if applicable)	\$2,400.00
		E. TOTAL FEE ENCLOSED	\$6,400.00

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

Yes (Provide the information below) No

Applicant: _____ Notification Number: _____ Date: _____

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

No Yes (Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.)

Continued on additional page(s)

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

PROJECT LOCATION

A. Address or description of project location.

(Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway)

The project site is located in the south Sacramento-San Joaquin River Delta in eastern Contra Costa County, in the City of Oakley or its sphere of influence. The project involves only the unlined portion of the canal, which begins at Rock Slough and extends west 3.97 miles to PP1 near SR4 in the city of Oakley. Please refer to the enclosed CEQA document for maps and detailed information on project location.

Driving Directions: Interstate 5 to SR 4. West on SR 4 to City of Oakley. Project site is located to the left of SR 4.

Continued on additional page(s)

B. River, stream, or lake affected by the project. Contra Costa Canal, Marsh Creek, Emerson Sough, Dutch Slough

C. What water body is the river, stream, or lake tributary to? Old River, Dutch Slough and San Joaquin River

D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts? Yes No Unknown

E. County Contra Costa County

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Brentwood Quadrangle	T2N	R2E	24,25	SE, NE (respective)
Brentwood Quadrangle	T2N	R3E	Various	Various

Continued on additional page(s)

K. Meridian (check one) Humboldt Mt. Diablo San Bernardino

L. Assessor's Parcel Number(s)

See attached list of APN's.

Continued on additional page(s)

M. Coordinates (If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)

Latitude/Longitude	Latitude: 38/00/00	Longitude: 121/41/00		
	<input checked="" type="checkbox"/> Degrees/Minutes/Seconds <input type="checkbox"/> Decimal Degrees <input type="checkbox"/> Decimal Minutes			
UTM	Easting:	Northing:	<input type="checkbox"/> Zone 10 <input type="checkbox"/> Zone 11	
Datum used for Latitude/Longitude or UTM		<input checked="" type="checkbox"/> NAD 27 <input type="checkbox"/> NAD 83 or WGS 84		

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bank stabilization – rip-rap/retaining wall/gabion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boat dock/pier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boat ramp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bridge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Channel clearing/vegetation management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Culvert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Debris basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diversion structure – weir or pump intake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Filling of wetland, river, stream, or lake	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geotechnical survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat enhancement – revegetation/mitigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Levee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low water crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Road/trail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sediment removal – pond, stream, or marina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Storm drain outfall structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temporary stream crossing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utility crossing : Horizontal Directional Drilling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jack/bore	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open trench	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

7. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

CCWD's Project involves installing up to 3.97 miles (approximately 21,000 feet) of buried pipeline in place of the existing unlined portion of the Contra Costa Canal (Canal), a water supply aqueduct. The pipeline installation would occur between the Rock Slough trash rack and Pumping Plant No. 1 (PP1). The new pipeline will be installed within United States Bureau of Reclamation's (Reclamation's) approximately 300-foot Canal right-of-way (ROW).

Construction of the first phase of the project will begin in September 2007 and will involve installing the pipeline from PP1 to east of Marsh Creek, a distance of approximately 3,000 to 5,000 feet. The first phase may include replacement of an additional 500-700 feet of the unlined canal under the Cypress Road crossing. The first phase is estimated to be completed by November 2008.

The timing of future phases of the project is dependent upon the availability of funding from a combination of grants and fees and is not known at this time.

A detailed project description is provided in the enclosed CEQA document.

Continued on additional page(s)

B. Specify the equipment and machinery that will be used to complete the project.

Equipment needed to complete the project include a crane, excavators, backhoes, dump trucks, scrapers, compactors, and trucks to haul construction materials. Details on equipment and machinery that will be used to complete the project are provided in the enclosed CEQA document.

Continued on additional page(s)

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).

Yes No (Skip to box 11)

D. Will the proposed project require work in the wetted portion of the channel?

Yes (Enclose a plan to divert water around work site)
 No

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

The proposed project includes permanently filling 3.844 acres of in-channel fresh water marsh and 42.92 acres of navigatable water of the United States (i.e., the unlined canal), for a total impact of approximately 47 acres. Detailed information is included in the attached CEQA document.

Continued on additional page(s)

B. Will the project affect any vegetation? Yes (Complete the tables below) No

Vegetation Type	Temporary Impact	Permanent Impact
See ASIP.	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)
See ASIP.		

Continued on additional page(s)

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

Yes (List each species and/or describe the habitat below) No Unknown

Full descriptions are in the ASIP.

Continued on additional page(s)

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

See ASIP.

Continued on additional page(s)

E. Has a biological study been completed for the project site?

Yes (Enclose the biological study) No

Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.

F. Has a hydrological study been completed for the project or project site?

Yes (Enclose the hydrological study) No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

12. MEASURES TO PROTECT FISH, WILDLIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

Mitigation and conservation measures to prevent sediment from entering watercourses during and after construction are described in the attached CEQA document. Full descriptions are also provided in the ASIP.

Continued on additional page(s)

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Project avoidance and minimization measures to protect fish, wildlife, and plant resources are described in the attached CEQA document. Full descriptions are also provided in the ASIP.

Continued on additional page(s)

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

Project mitigation and compensation measures to protect fish, wildlife, and plant resources are described in the attached CEQA document. Full descriptions are also provided in the ASIP.

Continued on additional page(s)

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

- A. RWQCB 401 Water Quality Certification Applied Issued
- B. Army Corps of Engineers Section 404 permit Applied Issued
- C. RWQCB General Constr. Activities SW Permit - Will apply prior to constr. Applied Issued
- D. Unknown whether local, state, or federal permit is needed for the project. (Check each box that applies)

Continued on additional page(s)

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?			
<input checked="" type="checkbox"/> Yes (Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each)			
<input checked="" type="checkbox"/> No (Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared)			
<input type="checkbox"/> Notice of Exemption	<input checked="" type="checkbox"/> Mitigated Negative Declaration	<input checked="" type="checkbox"/> NEPA document (type):	EA/FONSI
<input checked="" type="checkbox"/> Initial Study	<input type="checkbox"/> Environmental Impact Report	<input checked="" type="checkbox"/> CESA document (type):	CD/2081
<input type="checkbox"/> Negative Declaration	<input type="checkbox"/> Notice of Determination (Enclose)	<input checked="" type="checkbox"/> ESA document (type):	BO (ASIP)
<input type="checkbox"/> THP/ NTMP	<input checked="" type="checkbox"/> Mitigation, Monitoring, Reporting Plan		
B. State Clearinghouse Number (if applicable)		200604082	
C. Has a CEQA lead agency been determined?		<input checked="" type="checkbox"/> Yes (Complete boxes D, E, and F)	<input type="checkbox"/> No (Skip to box 14.G)
D. CEQA Lead Agency	Contra Costa Water District		
E. Contact Person	Mark Seedall	F. Telephone Number	(925) 688-8119
G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan.			
This section is not applicable to this project.			
<input type="checkbox"/> Continued on additional page(s)			
H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?			
<input checked="" type="checkbox"/> Yes (Enclose proof of payment)		<input type="checkbox"/> No (Briefly explain below the reason a filing fee has not been paid)	
Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.			

15. SITE INSPECTION

Check one box only.	
<input type="checkbox"/> In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.	
<input checked="" type="checkbox"/> I request the Department to first contact (insert name) <u>Mark Seedall</u> at (insert telephone number) <u>(925) 688-8119</u> to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.	

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

Yes (Please enclose the information via digital media with the completed notification form)

No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.



Signature of Applicant or Applicant's Authorized Representative

01/08/07

Date

Mark Seedall

Print Name



United States Department of the Interior

RECEIVED

JUN 25 2007



FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

Contra Costa Water
Planning

In reply refer to:

JUN 22 2007

Memorandum

To: Area Manager, South Central Area Office, Bureau of Reclamation,
Fresno, California (Attn: Kathy Wood)

From: *Michael B. Jovan*
Acting Field Supervisor, Sacramento Fish and Wildlife Office,
Sacramento, California

Subject: Fish and Wildlife Coordination Act Report for the U.S. Bureau of Reclamation's
and Contra Costa Water District's Contra Costa Canal Replacement Project

The U.S. Fish and Wildlife Service (Service) provides this Fish and Wildlife Coordination Act Report under authority of, and in accordance with, provisions of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

The Service's review and analysis of this proposed project is based in part on engineering, hydrological, biological, and related information provided by the Bureau of Reclamation (Reclamation) and Contra Costa Water District (CCWD) through May 14, 2007; from participation in associated planning processes; and as a result of site visits to construction and proposed mitigation areas. This report also utilizes information contained in the April 5, 2007, working draft habitat mitigation and monitoring proposal for the Holland Tract and Preserve, the March 2007 Action Specific Implementation Plan (ASIP) for the Contra Costa Canal Replacement Project, and the draft Environmental Assessment and Finding of no Significant Impact for the Contra Costa Canal Replacement Project, dated April 27, 2007. The analysis contained in this report is abbreviated as the Service has participated extensively in development of the proposed action, and the ASIP which is included by reference.

The CCWD and Reclamation are proposing construction of the Contra Costa Canal Replacement Project (proposed project). The Contra Costa Canal was designed in the mid-1930s and put into service to convey industrial and irrigation water to central and eastern Contra Costa County as part of the Central Valley Project in 1940. About 44 miles of the Contra Costa Canal are lined, and 3.97 miles are unlined. The proposed project involves only the unlined portion of the canal, which begins at the Rock Slough headworks and trash rack, and extends west 3.97 miles

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(21,000 feet) to CCWD's Pumping Plant 1 near State Route 4 in the city of Oakley. The project area ranges in elevation from about mean sea level (msl) to 10 feet above msl and is located in the U.S. Geological Survey 7.5-minute Brentwood quadrangle. The proposed project involves installing up to 3.97 miles of buried pipeline in place of the existing unlined portion of the Contra Costa Canal.

As currently proposed, CCWD would install a new pipeline within Reclamation's 300-foot-wide canal right-of-way (ROW). However, using areas outside the ROW would be considered if it improves constructability without incurring significant environmental impacts. The ultimate pipeline alignment would be determined during the final design process.

The new pipeline facility would be a large-diameter pipe (inside diameter about 10 feet and outside diameter of about 12 feet) that would be buried in the existing canal cross section. The new pipe would have a total capacity of 350 cubic feet per second. The pipeline would be connected to CCWD's existing pumping plant. No changes to the pumping plant's pumping capacity or footprint are proposed by this action. The existing trash-rack located near Rock Slough and within the existing canal would remain unchanged.

On completion of pipeline installation, the canal cross-section area (about 46.76 acres of shallow water aquatic habitat) would be filled. Following construction, the ROW and disturbed areas would be graded consistent with surrounding grades and contours and restored to an elevation about equal to that of the surrounding area.

Mitigation for project impacts will occur through creation of 46.76 acres of annual grassland onsite within the project ROW and preservation and enhancement of 118.95 acres of annual grasslands and creation and enhancement of 59.48 acres of wetlands offsite, on the Holland Tract. The following table (Table 1) identifies impacted habitats and acreages and the proposed mitigation habitats and acreages for the proposed project.

As the Federal lead agency for implementing the proposed action, Reclamation has assessed environmental effects of the proposed action, pursuant to the National Environmental Policy Act. The Service has assessed the proposed project for environmental affects pursuant to the FWCA and the Endangered Species Act of 1973, as amended. Given the measures developed in the Environmental Assessment and ASIP to avoid, minimize, and compensate for impacts to fish and wildlife resources, the Service finds no need to provide additional recommendations pursuant to the FWCA. The current status of other environmental compliance is as follows:

1. The proposed project ASIP and the associated conservation measures were developed in collaboration with the California Department of Fish and Game, Reclamation, Service, National Marine Fisheries Service, and CCWD. A final ASIP document was released in March 2007. The conservation measures contained in the ASIP address impacts to habitats

Habitat Type	Approximate Acreage Potentially Affected by Proposed Action (acres)		Mitigation Acreage Provided by Proposed Action (acres)	
	Temporary	Permanent	Created	Preserved and Enhanced
Tidal Perennial Aquatic	0	42.920	0	0
Tidal Freshwater Emergent	0	3.844	0	0
Valley Riverine Aquatic	1.686	0	0	0
Non-Tidal Freshwater Permanent Emergent	0.349	0	5.10	1.10
Natural Seasonal Wetland	0.514	0	33.20	0
Managed Seasonal Wetland	5.852	0	0	11.38
Lacustrine (Non-tidal Permanent Aquatic)	0	0	8.70	0
Total USACE Jurisdictional Wetlands	8.401	46.764	47.0	12.48
Annual Grasslands	128.45	0	46.76 ²	118.95

¹ Based on the quality of the wetlands in the unlined canal action area and in consultation with the U.S. Army Corps of Engineers, California Department of Fish and Game, and Reclamation, out-of-kind aquatic habitat (wetland) replacement was determined to be acceptable for all wetland habitat impacts. An overall wetland creation ratio requirement of 1:1 was agreed to by all the parties under the assumption that the created wetlands would be of a higher ecological function than those impacted by the project

² 46.76 acres of annual grasslands would be created within the cross section of the existing Contra Costa Canal.

affected by the proposed action and state and/or federally listed threatened or endangered species including: giant garter snake, white-tailed kite, Swainson's hawk, steelhead, spring-run Chinook salmon, winter-run Chinook salmon, green sturgeon, and delta smelt.

- Section 7 consultation under the Endangered Species Act of 1973, as amended, for the proposed project has been completed with the Service for federally listed threatened delta smelt (*Hypomesus transpacificus*) and giant garter snake (*Thamnophis gigas*). The final biological opinion (1-1-07-F-0149) is attached.

If you have any questions regarding this report, please contact Mark Littlefield of my staff at (916) 414-6520.

Attachment

cc:

U.S. Bureau of Reclamation, Sacramento, California (Shane Hunt)
California Department of Fish and Game, Stockton, California (Anna Holmes)
Contra Costa Water District, Concord, California (Mark Seedall)



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In reply refer to:
1-1-07-F-0149

JUN 21 2007

Memorandum

To: Area Manager, South Central Area Office, Bureau of Reclamation, Fresno, California (Attn.: Kathy Wood)

From: *FOL*
Acting Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California *Ch. Nagan*

Subject: Formal Consultation on the Contra Costa Water District Contra Costa Canal Replacement Project, Contra Costa County, California

This memorandum is in response to your March 14, 2007, and subsequent email dated March 26, 2007, requesting formal section 7 consultation on the proposed Contra Costa Water District (CCWD) Contra Costa Canal Replacement Project, located east of the City of Oakley in Contra Costa County, California. Your letter was received in our office on March 16, 2007. This document represents the U.S. Fish and Wildlife Service's (Service) biological opinion on the effects of the action on the threatened delta smelt (*Hypomesus transpacificus*) and its critical habitat, California red-legged frog (*Rana aurora draytonii*) California tiger salamander (*Ambystoma californiense*) and giant garter snake (*Thamnophis gigas*). The Service has also determined that the project may affect the endangered San Joaquin kit fox (*Vulpes macrotis mutica*). This response is in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act).

The Service concurs with The Bureau of Reclamation's determination that the proposed action will have no effect on the California tiger salamander and California red-legged frog. The Service has determined that the project may affect but is not likely to adversely affect the San Joaquin kit fox due to the lack of suitable habitat along the Contra Costa Canal between the headworks/trash rack and CCWD's Pumping Plant Number 1 (PP1), Rock Slough, and Holland Tract (project footprint) and because no activities are proposed within the action area which are likely to adversely affect the species or its habitat.

The following sources of information were used to develop this biological opinion: (1) the September 2005 Contra Costa Canal Improvement Project Biological Resources Report; (2) the Contra Costa Canal Replacement Project final California Environmental Quality Assessment

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(CEQA) Initial Study and Mitigated Negative Declaration dated November 2007; (3) the February 16, 2007 administrative draft Contra Costa Canal Replacement Project Action Specific Implementation Plan; (4) the final Contra Costa Canal Replacement Project Action Specific Implementation Plan dated March 21 2007 (ASIP); (5) various meetings and correspondence between the U.S. Bureau of Reclamation (Reclamation), the National Marine Fisheries Service (NMFS), the California Department of Fish and Game (DFG), CCWD, Sycamore Associates, EDAW Inc., Tenera Environmental, Wildlands Inc., and the Service; and (6) other information available to the Service.

Consultation History

- September 9, 1993 The Service completed formal endangered species consultation on the effects of the proposed Los Vaqueros Reservoir Project on delta smelt, Contra Costa County, California (consultation # 1-1-93-F-35). This opinion required Reclamation to screen the Rock Slough intake by October 1998, in accordance with the Central Valley Project Improvement Act (Section 3406[b][5]).
- February 16, 2005 The Service issued a nonjeopardy biological opinion with regard to effects on the threatened delta smelt and its critical habitat as a result of the proposed revised operations for the Coordinated Central Valley Project and State Water Project Operations Criteria and Plan (OCAP), (consultation #1-1-05-F-0055). The Service concurred that the proposed action was not likely to adversely affect riparian brush rabbit, riparian woodrat, salt marsh harvest mouse, California clapper rail, giant garter snake, California red-legged frog, valley elderberry longhorn beetle, soft bird's-beak, and Suisun thistle.
- February 17, 2005: The Service completed formal endangered species consultation on the operations and maintenance program occurring on Bureau of Reclamation lands within the South-Central California Area Office (consultation # 1-1-04-F-0368). This consultation included, in part, the effects of CCWD's operations and maintenance activities associated with the Contra Costa Canal.
- February-November 2005: The Service participated in various meetings and informal consultations where the proposed project was discussed.
- November 17, 2005: The Service received the Contra Costa Canal Improvement Project Biological Resources Report and request for concurrence under section 7 of the Endangered Species Act that the project may affect the San Joaquin kit fox, giant garter snake and the delta smelt.
- November 2005-April 2006 The Service participated in various meetings, engaged in various

- email and telephone correspondences regarding the proposed project.
- May 11, 2006 The Service attended a site visit with CCWD DFG to assess habitat function along the Contra Costa Canal
- May 16, 2006 The Service received the CCWD's Clean Water Act section 404 application as filed with the U.S. Army Corps of Engineers (Corps).
- June 2006-September 2006 The Service participated in various email and telephone correspondences regarding the proposed project.
- September 12, 2006 The Service met with the Corps, CCWD and their representatives, Environmental Protection Agency (EPA), DFG, and Reclamation regarding a potential 263 acre compensation site located on Holland Tract.
- January 19, 2007 Site visit to Holland Tract with Corps CCWD and their representatives, Environmental Protection Agency (EPA), DFG, and Reclamation regarding a potential 263 acre compensation site located on Holland Tract. Revisited Contra Costa Canal site with Reclamation, CCWD and EPA.
- January 26, 2007 The Service provided written comments regarding the ASIP to CCWD and reviewed comments from other resource agencies.
- February 6, 2007 The Service participated in a meeting to review comments on the ASIP with Reclamation and their representatives, CCWD, CDFG.
- March 16, 2007 The Service received a request to initiate section 7 consultation pursuant to the Endangered Species Act on the Contra Costa Canal Replacement Project (memorandum dated March 14, 2007).
- March 23, 2007 The Service received the final ASIP for the Contra Costa Canal Replacement Project.
- April 9, 2007 The Service received the administrative draft of the Habitat Mitigation and Monitoring proposal for Holland Tract Preserve.

Interrelated and Interdependent Actions

1. Formal Consultation on Effects of the Proposed Los Vaqueros Reservoir Project on Delta Smelt, Contra Costa County, California (1-1-93-F-35)

This opinion, issued by the Service in 1993, required Reclamation to screen the Rock Slough intake by October 1998, in accordance with the Central Valley Project Improvement Act (Section 3406[b][5]). The completion date was later extended to 2003, then to December 31, 2008. As mitigation in the most recent extension, it was required that Reclamation pay \$50,000 per year into the East Contra Costa County Habitat Conservation Plan until the construction of the screen by the set completion date of December 31, 2008.

2. Formal Endangered Species Consultation on the Operations and Maintenance Program Occurring on Reclamation Lands within the South-Central California Area Office(1-1-04-F-0368).

The Service issued this opinion, dated February 17, 2005, for routine operations and maintenance activities on Reclamation lands in San Joaquin, Stanislaus, Merced, Madera, Fresno, Santa Clara, San Benito, and Contra Costa Counties. The opinion addressed effects on California tiger salamander, vernal pool fairy shrimp, valley elderberry longhorn beetle, giant garter snake, vernal pool tadpole shrimp, San Joaquin woolly-threads, California red-legged frog, giant garter snake, San Joaquin kit fox, and proposed critical habitat for California tiger salamander and California red-legged frog. The Service concurred that the proposed action was not likely to adversely affect Conservancy fairy shrimp, longhorn fairy shrimp, fleshy owl's-clover and its critical habitat, Hoover's spurge and its critical habitat, giant kangaroo rat, California condor, bald eagle, delta smelt, San Joaquin adobe sunburst, California clapper rail, salt marsh harvest mouse, Greene's tuctoria and its critical habitat, San Joaquin Valley Orcutt grass and its critical habitat, and critical habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp.

The opinion does not define levels of take for individual species by facility. However, effects on the giant garter snake as a result of blading and discing along the unlined portions of the Contra Costa Canal were specifically identified for spring and fall.

3. Los Vaqueros Project NMFS Biological Opinion for Sacramento River Winter-Run Chinook Salmon

NMFS issued this nonjeopardy opinion on March 18, 1993. It addressed effects on Sacramento River winter-run chinook salmon and authorized incidental take. This opinion included requirements for monitoring of incidental take at the Rock Slough, Mallard Slough, and Old River intakes.

Actions Related to Existing Biological Opinions

Construction of the pipeline would occur in phases over many years. Each construction period is expected to span the summer months, which typically coincide with the highest water demand for CCWD. Each phase of the project may take as long as 1 year, including isolation of the affected area of the canal to prevent special-status fish species from entering the construction zone and replacement of the canal with a pipeline. During each phase, the canal would be taken out of service during construction and would not be available to provide water to meet customer demands. When the canal is shut down during construction, customer demands would be served

from the Old River pump station and the Los Vaqueros Reservoir and, to a limited extent if water quality permits, from the Mallard Slough pump station.

1. Before construction of any phase of the Canal Replacement Project, CCWD and Reclamation as appropriate would notify the resources agencies in writing of the requirement to waive the no-fill and no-diversion constraints associated with the Service's and NMFS's 1993 and 1995 Los Vaqueros biological opinions and 1994 memorandum of understanding.
2. A temporary waiver of the no-fill and no-diversion periods specified in the 1993 Service's and NMFS Los Vaqueros biological opinions and in the 1994 memorandum of understanding would be required to ensure that sufficient water is available to meet demand during the construction period. A waiver of the no-fill and no-diversion restrictions during canal construction would reduce the chance that storage in the reservoir would fall to emergency levels. All of CCWD's deliveries during construction would be through state-of-the-art screened intakes at Old River or Mallard Slough.

Formal Consultation for the Coordinated Central Valley Project and State Water Project Operations Criteria and Plan (OCAP) (1-1-05-F-0055).

The Service issued a nonjeopardy biological opinion with regard to effects on the threatened delta smelt and its critical habitat as a result of the proposed revised operations for the Coordinated Central Valley Project and State Water Project, (consultation #1-1-05-F-0055). The Service concurred that the proposed action was not likely to adversely affect riparian brush rabbit, riparian woodrat, salt marsh harvest mouse, California clapper rail, giant garter snake, California red-legged frog, valley elderberry longhorn beetle, soft bird's-beak, and Suisun thistle.

The OCAP describes the coordinated operation of the CVP and State Water Project (SWP) by Reclamation and DWR. On July 30, 2004, the Service issued biological opinion 1-1-04-F-0140, which addressed the effects of operating the CVP/SWP and delivering CVP water for renewing water contracts and other actions on the threatened delta smelt. On February 15, 2005, the Service issued biological opinion (1-1-05-F-0055) in response to Reclamation's November 3, 2004 request for reinitiation of formal consultation on the OCAP to address potential critical habitat issues and effects of the OCAP on delta smelt.

On April 7, 2006, NOAA Fisheries Service listed the southern distinct population segment of North American green sturgeon as threatened under the Act. The operators of the CVP and SWP facilities may be required to alter the releases from the dams or to change the pumping regime from the Delta to avoid affecting this species or habitat suitable for its use. Because this newly listed species had not been consulted on under Section 7 of the Act; Reclamation requested that the NMFS consultation on OCAP be reinitiated. Because of the potential for revising the OCAP, Reclamation requested that the Service also reinitiate consultation on delta smelt. This formal request was received by the Service on July 6, 2006.

Subsequent to receiving this request for reinitiation consultation, Reclamation and the Natural Resources Defense Counsel (NRDC) et al reached a settlement on the long-standing lawsuit over the reestablishment of flows in the San Joaquin River from Friant Dam to the confluence with the Merced River.

As a result of the changes to the operating regime that will result from these two actions, the OCAP consultation is re-analyzing the effects of numerous new actions on the delta smelt and its designated critical habitat, including storage of CVP and SWP water in reservoirs, water releases from reservoirs, river operations, operation of the Federal/State diversion facilities, and the CVP/SWP export-pumping operations in and through the Delta. The OCAP consultation will address the operation of the CVP/SWP in the Sacramento Valley, and included all commitments of the SWP and CVP, such as meeting requirements of the CVPIA Programmatic Biological Opinion (Service 2000), the obligations contained in the Central Valley Water Quality Control Board water right permits, obligations of CVP water service contracts, Sacramento River Settlement contracts, San Joaquin exchange contracts, the Friant Settlement, and other requirements. Therefore, the OCAP BO will address all the aquatic effects of operating the CVP/SWP. The OCAP Biological Opinion will address the effects of Reclamation's and CCWD's operations at Rock Slough.

BIOLOGICAL OPINION

Description of the Proposed Action

Project Summary

The CCWD in conjunction with the United States Bureau of Reclamation (Reclamation), is proposing construction of the Contra Costa Canal Replacement Project (proposed project). The Contra Costa Canal was designed in the mid-1930s and put into service to convey industrial and irrigation water to central and eastern Contra Costa County as part of the CVP in 1940. About 44 miles of the Contra Costa Canal are lined, and 3.97 miles are unlined. The proposed project involves only the unlined portion of the canal, which begins at the Rock Slough headworks and trash rack, and extends west 3.97 miles (21,000 feet) to PP1 near State Route (SR) 4 in the city of Oakley. The project area ranges in elevation from about mean sea level (msl) to 10 feet above msl and is located in the U.S. Geological Survey 7.5-minute Brentwood quadrangle. The proposed project involves installing up to 3.97 miles of buried pipeline in place of the existing unlined portion of the Contra Costa Canal.

CCWD would install the new pipeline in Reclamation's 300-foot wide canal right-of-way (ROW). CCWD may construct portions of the pipeline outside of the open waters channel but within the canal ROW, as well as adjacent to Reclamation's ROW, if use of portions of adjacent property would improve constructability without incurring significant environmental impacts. The ultimate pipeline alignment would be determined during the final design process.

The existing berms that line both sides of the canal would be reduced in height to facilitate access to the canal before pipe installation. The berms would then be used as backfill for the pipeline.

On completion of pipeline installation, the canal cross-section area (about 46.76 acres) would be filled, compacted, and restored to an elevation about equal to that of the surrounding area. Following construction, the ROW or disturbed areas would be graded consistent with surrounding grades and contours.

The proposed project would protect and improve the quality of CCWD's drinking water source in the Contra Costa Canal, improve public safety, increase system security, reduce seepage into and out of the canal, and reduce flood risks along the unlined portion of the Contra Costa Canal.

The proposed project is needed to address water quality degradation to the unlined portion of the Contra Costa Canal and to ensure long-term compatibility with planned land uses in the project vicinity. By hydraulically isolating drinking water supplies in a pipeline instead of conveying supplies through an unlined, porous, open canal, the proposed project would ensure water quality improvement to CCWD's 500,000 customers. Without the proposed project, CCWD's water supplies in the unlined portion of the Contra Costa Canal would be vulnerable to degradation and additional safety, security, and liability risks as development in this area increases.

Proposed Facilities

The new conveyance facility would be a large-diameter pipe (inside diameter about 10 feet and outside diameter of about 12 feet) that would be buried in the existing canal cross section. The new pipe would have a total capacity of up to 350 cubic feet per second (cfs). The pipeline would be connected to CCWD's existing pumping plant. No changes to the pumping plant's pumping capacity or footprint are proposed by this action. The existing trash-rack located near Rock Slough and within the existing canal will remain unchanged.

After the pipeline has been constructed and backfilled, an all-weather ROW access road would be constructed in the ROW replacing the two existing access roads, and the ROW would be protected by a 6-foot high chain-link fence.

Utilities

The Western Area Power Administration would need to approve replacement of the 69-kV power poles in the ROW after the pipeline is constructed so that the new power poles are at the same grade as the Reclamation ROW.

Access

Site access would be via the existing levee roads, Cypress Road, or existing north-south roads located off of Cypress Road such as Sellers Avenue. The levee access roads may be surfaced with aggregate base rock to improve access during all weather conditions, but otherwise would not be modified.

Road and Stream Crossings

Siphons currently allow water in the canal to pass below Marsh Creek, Emerson Slough/Sellers Avenue, Dutch Slough, and Jersey Slough/Cypress Road. All siphons are expected to eventually be replaced by the pipeline using open-cut methods across the ditches and roadways with the appropriate safeguards to minimize effects on existing habitats. A bypass pipeline would be used during construction at Marsh Creek. Sheet piles likely would be used to isolate work areas from the more stagnant Emerson Slough/Sellers Avenue, Dutch Slough, and Jersey Slough at Cypress Road. The creek and drainages would be restored to pre-project conditions or to the design standard of the jurisdiction's entity after the conduit is installed and buried. Because of the large pipeline diameter, the small size of the ditches, and the need to protect the drainages from the dewatering system used to install the pipeline, open cut construction appears to be most efficient and practical; however, the construction contractors are not precluded from installing the pipelines beneath water features using jack-and-bore methods.

Construction Access and Staging

Some of the existing access roads may require minimal repairs to make them suitable for construction equipment. In addition, although it is possible in good weather with proper equipment to drive along the berms for the entire length of the canal, the berms generally are not accessible in all weather, are not durable enough to withstand large construction activities, and are not wide enough to accommodate all the anticipated construction activities. About 1.5-miles of gravel road on the east end of the canal (between the trash rack and East Cypress Road) might be wide enough and sufficiently durable to withstand these construction activities; however, most of the areas next to the canal, including portions of the berms, would be compacted and an aggregate base or crushed rock would be applied to facilitate construction access on the action site. After the pipeline is installed, access roads would be repaired, if necessary, to preconstruction conditions to prevent future erosion, and the temporary construction access roads would be removed. In addition, a permanent all-weather road with a permeable surface would be constructed along the length of the ROW on the action site to allow access for maintenance activities.

Staging areas for construction equipment, materials, fuels, lubricants, and solvents would be established along the project site during construction to allow more efficient use and distribution of materials and equipment. No staging areas would be established in undisturbed areas. All staging areas would be located in the project vicinity; in previously cleared, graded, or paved areas; or in level areas where grading and vegetation clearing are not required.

Construction Schedule

Construction of the proposed action would begin in late 2007, when a cofferdam is erected to ensure that sensitive aquatic species are isolated from the portion of the unlined canal being replaced with a pipeline (Table 1). Fish rescue (fish to be rescued are not expected to be special-status fish) and dewatering of the construction area are expected to begin in spring 2008, with the

first phase of construction completed by fall 2008. Although the timing and extent of future phases of pipeline construction depend on the availability of funding, the entire unlined canal is estimated to be replaced by a pipeline by the end of 2016. Regulatory and environmental approval and permitting for installation of the proposed pipeline is scheduled for completion by summer 2007. All permits and approvals would be secured before construction commences in areas where permits or other regulatory approvals are required.

Phase	Location	Distance in Feet	Timing
1	PP1 to beyond Marsh Creek	3,000	2007–2008
2	East Cypress Road crossing	500–1,000	2009–2010
3	East Cypress Road to the Rock Slough Headworks	7,000	2011–2012
4	Marsh Creek to East Cypress Road	10,000	2015–2016

Note: The ultimate construction phasing will depend on funding. At this time, only Phase 1 is adequately funded. CCWD is requesting a Corps permit and a long-term DFG streambed alteration agreement in the event that project construction extends beyond 2016.

Construction is expected to occur in three to five phases, with each phase expected to last up to 12 months. Preliminary work on the project site, including construction of the cofferdam, would ensure that no sensitive aquatic species are affected and would occur in the fall for each phase; the fish rescue and dewatering would begin in the early spring and would be followed by flattening of portions of the berms (Table 2). Construction of on-site access roads would be completed in the spring, with installation of the pipeline expected to be completed in the fall. Construction is expected to be substantially complete before the onset of winter rains, which typically begin in mid-November to late November.

Month(s) of Activity	Activity Type	Construction Duration
July through November 2007	Coffer dam, access road	Less than 1 month
March through April 2008	Dewatering	Less than 1 week
April 2008	Topple berms, construction road	1 month
March through April 2008	Fish rescue	1 week
April 2008	Install groundwater dewatering wells	1 month
July through September 2008	Pipeline construction through Marsh Creek	1–2 months
May through October 2008	Pipeline construction	Up to 6 months
October 2008 through June 2009	Surface restoration	1–2 months
October 2008 through June 2009	WAPA power line replacement	1 month

Note: The table provides an illustration of the timing of various construction activities that would occur during any phase of project construction for the Canal Replacement Project.

The first phase of the Canal Replacement Project would occur in 2007/2008 and would involve construction of the pipeline from PP1 to beyond Marsh Creek with an estimated distance of about 3,000 feet. The first phase may include an additional 500–1,000 feet of the unlined canal to be replaced under the Cypress Road crossing. The second phase of construction is expected to

begin in 2012 and would involve replacement of the unlined canal from Cypress Road to the trash rack structure on Rock Slough (estimated at 7,000 feet). It is also possible that the Cypress Road crossing work would take place between the first and second phases. The final phase is anticipated to begin in 2016 and would replace the remaining unlined canal between Phases 1 and 2 (estimated to be about 10,000 feet from the end of Phase 1 to Cypress Road).

Pipeline installation would be expected to progress at a rate between 50 and 100 linear feet per day. Minor adjustments to the length of pipeline installed during each phase (and location on the action site) may be made at the time of construction bidding.

Restoration of Stream, Drainage, and Wetland Crossings

The pipeline would cross Marsh Creek and three other drainages. CCWD would ensure that drainages or wetlands to be crossed receive proper permits and approval by the Corps and DFG before construction. In addition, CCWD would coordinate with and obtain an encroachment permit from the Contra Costa County Flood Control District for the Marsh Creek crossing to ensure that the creek banks are in service consistent with flood protection requirements.

After the pipeline installation is completed, the pipeline trench would be partially backfilled, and the drainage channel would be recontoured to its preinstallation grades and bed conditions or to other design standards per the requirements of jurisdiction agencies. The beds and banks of the drainages would be restored in a manner that allows vegetation to reestablish to its preinstallation conditions. Where necessary, either riprap or a biodegradable erosion control blanket made of jute would be used to protect and stabilize streambanks. The edges of the erosion control blankets would be installed firmly in the soil. No plastic material would be used. All excess erosion control measures would be disposed of properly when no longer needed. Riprap would be used only where existing stream channels consist of rock armoring and lack riparian vegetation. Erosion control blankets would be used on slopes or where the soils otherwise have a high erosion potential. The type and locations for these measures would be identified during design or determined in the field with input by the construction inspector.

Waiver of the No-Fill and No-Diversion Provisions

Each construction period is expected to span the summer months, which typically coincide with the highest water demand for CCWD. Each phase of the project may take as long as 1 year, including isolation of the affected area of the canal to prevent special-status fish species from entering the construction zone and replacement of the canal with a pipeline. During each phase, the canal would be taken out of service during construction and would not be available to provide water to meet customer demands. When the canal is shut down during construction, customer demands would be served from the Old River pump station and the Los Vaqueros Reservoir and, to a limited extent if water quality permits, from the Mallard Slough pump station.

Before construction of any phase of the Canal Replacement Project, CCWD and Reclamation as appropriate would notify the resources agencies in writing of the requirement to waive the no-fill and no-diversion constraints associated with the Los Vaqueros biological opinions and memorandum of understanding.

A temporary waiver of the no-fill and no-diversion periods specified in the Service's 1993 biological opinion (1-1-93-F-35) and NMFS's Los Vaqueros biological opinions and in the 1994 memorandum of understanding between CCWD and DFG would be required to ensure that sufficient water is available to meet demand during the construction period. A waiver of the no-fill and no-diversion restrictions during canal construction would reduce the chance that storage in the reservoir would fall to emergency levels. All of CCWD's deliveries during construction would be through state-of-the-art screened intakes at Old River or Mallard Slough.

The standard 75-day no-fill period (March 15 through May 31) and the standard 30-day no-diversion period (April 1 through April 30) were set in the 1993 biological opinions and the January 1994 California Endangered Species Act (CESA) memorandum of understanding to protect sensitive species. During the no-fill period, CCWD is not allowed to fill Los Vaqueros Reservoir and can divert water only to supply the demands of its customers. During the no-diversion period, CCWD is not allowed to divert any water other than minimal flows for maintenance purposes. The resources agencies may change the standard set dates of the no-fill, no-diversion periods each year. The agencies set the 2001 no-fill periods to be February 15 through March 18 (32 days) and April 17 through May 30 (43 days), and the 2001 no-diversion period from February 21 through March 7 (15 days) and from May 8 through May 15 (15 days). The agencies waived the 2001 no-fill period of April 17 through May 30 and the no-diversion period of May 8 through May 15 because of the state power crisis. In late 2002, the agencies waived the 2003 no-fill and no-diversion periods because of construction on the Contra Costa Canal. Monitoring occurred behind the screens at the Old River Intake during both the 2001 and 2003 March-through-May periods.

Conservation Measures

- I. CCWD has identified that they will implement the following measures during construction to minimize potential impacts on special-status fish species and aquatic habitats:
 - (a) CCWD will secure a Section 1602 Streambed Alteration Agreement from DFG for construction and filling in the portion of the Contra Costa Canal that is unlined as well as construction work within Marsh Creek.
 - (b) CCWD will minimize construction impacts through the implementation of a fish salvage operation. As sections of the canal are dewatered, salvage operations for protected fish will be implemented:
 1. All personnel involved with fish salvage operations will have a valid scientific collecting permit issued by DFG.
 2. Acoustic equipment, in combination with sweep and block nets, will be used through the section of the canal to be dewatered, allowing fish to vacate toward Rock Slough before placement of a cofferdam and commencement of dewatering. CCWD will secure the work area from sensitive fish consistent with guidance from NMFS, the Service, and DFG. For each phase of project construction, CCWD expects to begin the fish rescue in

the spring, assuming that a cofferdam and fish barrier has been constructed in the prior year's nonsensitive fish season (July through November).

3. CCWD will coordinate with NMFS, the Service, DFG, California Department of Water Resources (DWR), and Reclamation fish salvage teams to remove and relocate fish trapped in the cofferdam area before dewatering is complete. The use of acoustic equipment in combination with sweep and block nets will minimize the chance that fish would be present in a section of the canal when it is dewatered. A block net will be installed downstream of the proposed construction area, and then acoustical methods through the use of a hydrophone will drive fish upstream. Following the use of hydrophones, sweep nets will be provided that also would keep fish moving upstream, out of the construction area. A block net will be installed outside of the upstream location beyond where the cofferdam will be constructed as soon as the sweeping of the canal is complete.
4. A cofferdam will be built as proposed upstream and, if needed, downstream of the area to be dewatered. The cofferdam and fish barrier will be built during the nonsensitive period for aquatic species (July through November), and the canal will continue to operate until the fish rescue begins prior to dewatering and draining the canal. PP1 will be used to drain the canal to the greatest extent possible. Portable electric pumps will be used to dewater the cofferdam area, and the pumps will be screened to protect aquatic species. When the water depth beyond the cofferdam is low enough (estimated to be about 2 feet), qualified biologists and/or technicians retained by CCWD will salvage any remaining fish in the construction zone.
5. Specific efforts will be made to reduce collection and handling stress, minimize the time that fish are held in buckets, and minimize handling stress during processing and release. Fish will be captured using a system of block nets. Fish collection efforts will continue in the area until multiple pass collections document substantial depletion of the fish population. Immediately after collection, fish will be placed in aerated 5-gallon buckets and/or coolers filled with canal water, identified, counted, measured, and transported to a location outside of the cofferdam for release at a location directed by NMFS, the Service, and DFG. Chemical additives may be used in the holding buckets to reduce potential bacterial infection and to lower stress to aquatic species during rescue efforts.
6. All captured fish will be handled pursuant to the standard NMFS protocols under the Act. Standard protocol for the fish rescue operation is that no employee or contractor will remove any fish, either dead or alive, from the site for personal use. In addition, all efforts to reduce the time that live fish are out of the water will be made so as to reduce the chances of incidental take during the fish rescue. All fish are to be promptly returned to the water with the exception of any dead chinook salmon, steelhead, or delta smelt.
7. Chinook salmon, steelhead, and delta smelt will be processed first, according to the procedures discussed below, and released as soon as possible. Up to 50 percent each of captured chinook salmon, steelhead, and delta smelt and up to 30 percent each of all other captured species will be measured. The use of anesthetics during the handling of these

species will help to reduce any potential mortality. Dip nets or buckets will be used to remove fish from the nets and transferred to buckets or coolers for release.

8. If sacrificed or dead fish cannot be positively identified, even after consulting on-site reference materials, the fish will be bagged, labeled, and brought to the laboratory for positive identification. Bagged fish, excluding as much water as is possible from the bag, will be kept as cold as possible, and if not identified on the same day, will be put into a freezer box. Large quantities of fish exceeding 30 individuals for all species other than salmon, steelhead, and delta smelt will be "plus counted." Salmon, steelhead, and delta smelt will be plus counted after the number of fish exceeds 50.
9. Species name and length data will be recorded on data sheets, and any unidentified fish returned to the laboratory will be labeled with appropriate collection information listed below. Time, date, location, fork length, and gear type will be recorded on the field sheet, along with any other pertinent observations of the fish.
10. During the fish rescue, there is the potential for some fish mortality despite the precautions taken to rescue all fish. If any special-status species suffers mortality, the individuals will be preserved via freezing or placing in a container with 10 percent formalin solution. Information on time and exact location of any incidental take, the method of take, length of time from death to preservation, water temperature, and any other relevant information will be recorded in writing.
 - i. For any incidental take of delta smelt, the written documentation of the incidental take, along with the specimen(s), will then be delivered to the Service Law Enforcement Division via the Service's Sacramento Fish and Wildlife Office (attn: Chief, Endangered Species), or alternative delivery arrangements made.
11. After completing the fish rescue, a brief documentation report will be prepared. The report will include information on the personnel conducting the fish rescue, methods used, numbers of each species collected and relocated, length information for nonlisted species, and estimate of the survival of fish immediately after release. Photographs showing the site and rescue operation will be included. Any incidental take of a special-status species will be documented. The report will be provided by CCWD to NMFS, the Service, and DFG within 30 days of completing the fish rescue.
12. After the initial fish rescue effort is completed, dewatering of the cofferdam will continue while a qualified biologist remains on-site to observe and monitor conditions in the area to be dewatered.
13. Block nets will be maintained outside of the cofferdam, and it is expected that the noise and turbidity associated with continuous construction activity would discourage use by fish of the canal area adjacent to the construction zone.

II. CCWD shall develop a Storm Water Pollution Prevention Plan (SWPPP) as required by the Central Valley Regional Water Board under the statewide NPDES General Permit for

Discharges of Storm Water Associated with Construction Activity. The SWPPP shall include measures identified by the Central Valley Regional Water Board as Best Available Technology Economically Available and Best Conventional Pollution Control Technology to reduce or eliminate stormwater pollution. The SWPPP may include, but is not limited to, the following elements:

- ▶ Temporary erosion control measures (such as silt fences, staked straw bales, detention basins, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) shall be employed for disturbed areas.
- ▶ No disturbed surfaces shall be left without erosion control measures in place during the winter and spring months.
- ▶ Sediment shall be retained on-site by a system of sediment basins, traps, or other appropriate measures.
- ▶ Standard operating procedures shall be developed for the handling of hazardous materials on the construction site to eliminate or reduce discharge of materials to storm drains.
- ▶ Storm drains shall be protected from sediment intrusion with the use of straw bales or silt fences.
- ▶ Dirt and debris shall be swept from paved streets in the construction zone before rainfall.
- ▶ Grass or other vegetative cover shall be established on the construction site as soon as possible after disturbance.

1. Because of the locally high groundwater table and highly porous/transmissive soils, dewatering of the canal may affect water levels in the adjacent drainages. Temporarily placing the drainages into short pipelines would isolate them from changes to local groundwater levels and is the most efficient method to ensure that the drainages are protected from the dewatering operation associated with removal of the existing structures and construction of the pipeline. The replacement of the canal where it crosses each drainage would involve temporary (4 weeks) placement of a short reach (100–200 feet) of each drainage into a large-diameter bypass pipeline near the canal crossing to protect these water resources while the existing 6-foot by 7-foot concrete box culverts (siphons) are removed and the new pipeline is installed. After the installation, the drainages will be restored to preproject or original design (for Marsh Creek) conditions. If the drainages are dry at the time of construction, no bypass system will be used, instead sheet piles would be used to isolate work areas from Emerson Slough/Sellers Avenue, Dutch Slough, and Jersey Slough at Cypress Road.

2. Temporary construction impacts on Little Dutch Slough, Emerson Slough, and Jersey Slough will be minimized through the use of bypass pipelines if appropriate. A portion or all of these drainages can be dry during the non-rainy season.

3. Marsh Creek is a permanent watercourse, and the creek is known to be used by fall-run chinook salmon. CCWD will obtain an encroachment permit from the Contra Costa County Flood Control District (CCCFCFCD) for work within the Marsh Creek ROW. CCWD will evaluate the feasibility of jack-and-bore methods below Marsh Creek. If jack-and-bore methods are not feasible and Marsh Creek needs to be open cut, then temporary construction impacts at the Marsh Creek site will be minimized through the use of a NMFS-approved bypass pipeline. It is anticipated that the bypass pipeline system at Marsh Creek will be installed between June 1 and October 1 or other appropriate time consistent with the CCCFCFCD encroachment permit. The new pipeline that will replace the canal siphons under Marsh Creek will be installed while the bypass is operational. Efforts will be made to complete installation of the new pipe near the creek and drainages by October 1, consistent with CCCFCFCD and NMFS requirements. CCWD will consult with NMFS during design and development of the bypass pipeline. The pipeline will be wide enough to accommodate adult salmon, will be as short as possible, and will have riffles to facilitate passage, but it also shall be designed to discourage spawning in the bypass. This bypass pipeline will maintain tidal connectivity while the conduit is placed under Marsh Creek. The bypass pipeline will be removed as quickly as possible after construction beneath the creek is completed.

III CCWD will implement the following measures to minimize potential impacts on giant garter snake:

1. Before any ground-disturbing construction activities begin, CCWD will retain a qualified biologist, approved by DFG and the Service, to conduct focused surveys for giant garter snake to confirm there are no giant garter snakes present in the action area where ground-disturbing construction activities would begin. A preconstruction survey will be conducted by a DFG- and Service-approved biologist within 24 hours before the start of construction in any portion of the project or mitigation site slated for ground-disturbing activities. Preconstruction surveys will be reinitiated if construction adjacent to suitable habitat is suspended for 2 or more weeks and then restarted. If giant garter snakes are present, they will be allowed to move away from construction activities on their own or will be relocated if directed by the Service. Surveys must be conducted every year in which project construction activities occur.
2. If giant garter snakes are not found on the project or mitigation site, a letter report documenting survey methods and findings will be submitted to DFG and the Service.
3. Following the preconstruction survey, and assuming the absence of giant garter snakes, the contractor will mobilize construction activities in this area and will excavate a portion of the berms and install dewatering wells. Construction sites in areas that are excavated will remain active and disturbed to ensure that it is highly unlikely that the giant garter snake would return and hibernate in the construction area.
4. Initial construction activity within potential giant garter snake habitat will be conducted between May 1 and October 1, the active period for giant garter snakes. If present, potential effects are lessened because snakes are actively moving and can avoid danger. More danger

is posed to snakes during their inactive period because they are occupying underground burrows and crevices and are more susceptible to direct effects, especially during excavation activities. CCWD expects to continue construction during the inactive giant garter snake period (between October 2 and April 30) in areas that have undergone fish salvage (see Conservation Measure 1), have been dewatered, and are under active construction. If construction continues past October 1, CCWD will notify the Service and implement the following protective measures:

A qualified biologist, approved by DFG and Service, shall monitor construction activities from 2 to 5 days per week consistent with DFG and the Service guidance.

A weekly monitoring report shall be sent to DFG and the Service.

5. Any dewatered areas must remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered area.
6. Before construction each year, a worker environmental training awareness program will be conducted by a qualified biologist approved by DFG and the Service. The training will include instruction regarding species identification, natural history, habitat, and protection needs. Colored photographs of the snake will be distributed during the training session for posting on the job site. New workers will be provided information from the training program concerning species identification, natural history, habitat, and protection needs.
7. Erosion control matting will not include monofilament or plastic; the matting will be composed of jute, straw, coconut matting, or other natural fibers.
8. Monitoring in accordance with established protocols and survey procedures will be performed by a qualified DFG- and the Service-approved biologist. A monitoring report of all activities associated with surveys for this species will be submitted to DFG and the Service no later than 2 weeks after each construction phase is completed.
9. If a snake is found at the construction site, work in the immediate area will be halted; DFG, the Service, and Reclamation will be notified; and work will not resume in the immediate area until appropriate corrective measures, including moving the animal to a safe location, are implemented. The biologist will report any snakes encountered and any incidental take of the snakes to the Chief of the Endangered Species Division at the Sacramento Fish and Wildlife Service Office immediately (within 3 working days).
10. 47 acres of created wetlands will be provided at Holland Tract to offset wetland and species impacts. About 25 acres are a mosaic of seasonal marsh, perennial freshwater marsh, and perennial open water habitat with islands of upland refugia that will be created on the mitigation site. The wetland mosaic, along with the other created and enhanced aquatic and upland habitat components of the mitigation site, will more than compensate for the potential loss of potential giant garter snake dispersal habitat within the heavily managed and maintained unlined canal. Potential refugia and winter retreat habitat will be provided by the 84.90 acres of preserved uplands. In addition, 1.1 acre of existing drainage ditches will be

enhanced to provide self-sustaining permanent water that can support prey, a bench with emergent vegetation for refuge, and open banks for basking. The 33.18 acres of combined preserved and created shallow seasonal wetland habitat will also provide potential areas for foraging and refuge during overland movements or dispersal.

IV. CCWD will implement the following measures to avoid effects to the San Joaquin kit fox:

1. 48 hours before any ground-disturbing construction activities begins, CCWD will retain a qualified biologist to conduct focused surveys for San Joaquin kit fox to determine the presence or absence of this species on the project site. Surveys must be conducted every year in which project construction activities occur.
2. If kit fox are not detected on the project site, a letter report documenting survey methods and findings will be submitted to DFG and Service, and no further compensation will be necessary.
3. If kit fox are detected, any potential dens or areas with kit fox sign will be marked. Service, DFG, and Reclamation will be contacted immediately.
4. If a kit fox or kit fox den is observed at the construction site at any time during construction, then work in the immediate area will cease, and the Service, DFG, and Reclamation will be contacted immediately for further instructions.
5. Before construction each year, a worker environmental training awareness program will be conducted by a qualified biologist. The training will include instruction regarding species identification, natural history, habitat, and protection needs. Any new workers will be provided information from the training program concerning species identification, natural history, habitat, and protection needs.
6. A monitoring report of all activities associated with surveys for this species will be submitted to DFG and the Service no later than 2 weeks after each construction phase is completed.

V. CCWD will implement the following measures to avoid effects to the California red-legged frog:

1. Prior to construction activities in the action area, a qualified DFG- and Service-approved biologist will survey the ROW for California red-legged frogs to determine the presence/absence of the species in the vicinity of Marsh Creek and other wetlands adjacent to the open water of the Contra Costa Canal, consistent with direction from Service and DFG. If any red-legged frogs are found, DFG and the Service will be contacted immediately and consulted regarding appropriate action.
2. Before construction each year, a worker environmental training awareness program will be conducted by a qualified biologist. The training will include instruction regarding species

identification, natural history, habitat, and protection needs. New workers will be provided information from the training program concerning species identification, natural history, habitat, and protection needs.

3. If a California red-legged frog is encountered in the action area during construction, then work in the immediate area will cease, the Service and DFG will be contacted immediately, and the animal will be moved to a safe location.

Action Area

The action area is defined in 50 CFR § 402.02, as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” For the proposed action, the action area includes the CCWD’s water conveyance system to include Los Vaqueros Reservoir and CCWD’s pumping facility located on Old River; Sand Mound Slough and Rock Slough; the Sacramento/San Joaquin river delta and the 3.97 miles of the earthen portion of the Contra Costa Canal (from the Headworks [Rock Slough intake] to PP1); the staging areas; the areas for storing construction equipment; the areas for storing spoils; the local streets within or immediately adjacent to the site; the Holland Tract mitigation site and associated wetland construction staging and access routes; and portions of Marsh Creek, Emerson Slough, Dutch Slough, and Jersey Slough that would be disturbed during the proposed work.

The 145.07 acre mitigation site on the Holland Tract will have a conservation easement established on it as part of the proposed action. Construction equipment access to the Holland Tract mitigation site occurs via a bridge over Rock Slough, Holland Tract Road, and the dirt road immediately west of the property. Construction equipment storage and staging would occur on the Holland Tract mitigation site parcel adjacent to the wetland creation sites. Transport of the excavated soils to the East Cypress Corridor project site immediately west of Sand Mound Slough would occur via a 100-foot-wide conveyor belt route that would traverse a privately held parcel immediately adjacent to the west, an about 40-foot-wide portion of an abandoned county road, and a 70-foot-wide and 360-foot-long saltwater intrusion barrier in Sand Mound Slough.

Status of the Species

Delta Smelt

Delta smelt was federally listed as a threatened species on March 5, 1993 (Service 1993a). Critical habitat for delta smelt was designated on December 19, 1994 (Service 1994). The Sacramento-San Joaquin Delta Native Fishes Recovery Plan was completed in 1996 (Service 1996). The Five Year Status Review for the delta smelt was completed on March 31, 2004 (Service 2004).

Description. Delta smelt are slender-bodied fish that typically reach 60-70 mm standard length (measured from tip of the snout to origin of the caudal fin), although a few may reach 120 mm

standard length. The mouth is small, with a maxilla that does not extend past the midpoint of the eye. The eyes are relatively large; with the orbit width contained about 3.5-4 times in the head length. Small, pointed teeth are present on the upper and lower jaws. The first gill arch has 27-33 gill rakers and there are 7 branchiostegal rays (paired structures on either side and below the jaw that protect the gills). Counts of branchiostegal rays are used by taxonomists to identify fish.

The pectoral fins reach less than two-thirds of the way to the bases of the pelvic fins. There are 9-10 dorsal fin rays, 8 pelvic fin rays, 10-12 pectoral fin rays, and 15-17 anal fin rays. The lateral line is incomplete and has 53-60 scales along it. There are 4-5 pyloric caeca. Live fish are nearly translucent and have a steely-blue sheen to their sides. Occasionally there may be one chromatophore (cellular organelle containing pigment) between the mandibles, but usually there is none. Delta smelt belong to the family Osmeridae, a more ancestral member of the order Salmoniformes which also includes the family Salmonidae (salmon, trout, whitefish, and graylings) (Moyle and Cech 1988).

Distribution. Delta smelt are endemic to the upper Sacramento-San Joaquin estuary. They occur in the Delta primarily below Isleton on the Sacramento River, below Mossdale on the San Joaquin River, and in Suisun Bay. They move into freshwater when spawning (ranging from January to July) and can occur in: (1) the Sacramento River as high as Sacramento, (2) the Mokelumne River system, (3) the Cache Slough region, (4) the Delta, and, (5) Montezuma Slough, (6) Suisun Bay, (7) Suisun Marsh, (8) Carquinez Strait, (9) Napa River, and (10) San Pablo Bay. It is not known if delta smelt in San Pablo Bay are a permanent population or if they are washed into the Bay during high outflow periods. Since 1982, the center of delta smelt abundance has been the northwestern Delta in the channel of the Sacramento River. In any month, two or more life stages (adult, larvae, and juveniles) of delta smelt have the potential to be present in Suisun Bay (Department of Water Resources (DWR) and Reclamation 1994; Molye 1976; Wang 1991). Delta smelt are also captured seasonally in Suisun Marsh.

Habitat Requirements. Delta smelt are euryhaline (a species that tolerates a wide range of salinities) fish that generally occur in water with less than 10-12 parts per thousand (ppt) salinity. However, delta smelt have been collected in the Carquinez Strait at 13.8 ppt and in San Pablo Bay at 18.5 ppt (DFG 2000). In recent history, they have been most abundant in shallow areas where early spring salinities are around 2 ppt. However, prior to the 1800's before the construction of levees that created the Delta Islands, a vast fluvial marsh existed in the Delta and the delta smelt probably reared in these upstream areas. During the recent drought (1987-92), delta smelt were concentrated in deep areas in the lower Sacramento River near Emmaton, where average salinity ranged from 0.36 to 3.6 ppt for much of the year (DWR and Reclamation 1994). During years with wet springs (such as 1993), delta smelt may continue to be abundant in Suisun Bay during summer even after the 2 ppt isohaline (an artificial line denoting changes in salinity in a body of water) has retreated upstream (Sweetnam and Stevens 1993). Fall abundance of delta smelt is generally highest in years when salinities of 2 ppt are in the shallows of Suisun Bay during the preceding spring ($p < 0.05$, $r = 0.50$) (Herbold 1994) (p is a statistical abbreviation for the probability of an analysis showing differences between variables, r is a statistical abbreviation for the correlation coefficient, a measure of the linear relationship of two variables). Herbold (1994) found a significant relationship between number of days when 2 parts per thousand was in Suisun Bay during April with subsequent delta smelt abundance ($p < 0.05$, $r = 0.49$), but noted

that autocorrelations (interactions among measurements that make relationships between measurements difficult to understand) in time and space reduce the reliability of any analysis that compares parts of years or small geographical areas. It should also be noted that the point in the estuary where the 2 ppt isohaline is located (X2) does not necessarily regulate delta smelt distribution in all years. In wet years, when abundance levels are high, their distribution is normally very broad. In late 1993 and early 1994, delta smelt were found in Suisun Bay region despite the fact that X2 was located far upstream. In this case, food availability may have influenced delta smelt distribution, as evidenced by the *Eurytemora* found in this area by DFG. In Suisun Marsh, delta smelt larvae occur in both large sloughs and small dead end sloughs. New studies are under way to test the hypothesis that adult fall abundance is dependent upon geographic distribution of juvenile delta smelt. The core juvenile distribution, regardless of water year type, is usually centered upstream of X2 in eastern Suisun Bay and the lower Sacramento River to about Three-Mile Slough (Sweetnam 1999; Dege and Brown 2004).

Critical thermal maxima for delta smelt was reached at 25.4 degrees Celsius in the laboratory (Swanson et al., 2000); and at water temperatures above 25 degrees Celsius delta smelt are no longer found in the delta (DFG, pers. comm.).

Life History. Wang (1986) reported spawning taking place in fresh water at temperatures of about 7°-15° Celsius (C). However, ripe delta smelt and recently hatched larvae have been collected in recent years at temperatures of 15°-22°C, so it is likely that spawning can take place over the entire 7°-22° C range. Temperatures that are optimal for survival of embryos and larvae have not yet been determined, although R. Mager, University of California at Davis (UCD), (unpublished data) found low hatching success and embryo survival from spawns of captive fish collected at higher temperatures. Delta smelt of all sizes are found in the main channels of the Delta and Suisun Marsh and the open waters of Suisun Bay where the waters are well oxygenated and temperatures relatively cool, usually less than 20°-22°C in summer. When not spawning, they tend to be concentrated near the zone where incoming salt water and out flowing freshwater mix (mixing zone). This area has the highest primary productivity and is where zooplankton populations (on which delta smelt feed) are usually most dense (Knutson and Orsi 1983; Orsi and Mecum 1986). At all life stages delta smelt are found in greatest abundance in the top 2 m of the water column and usually not in close association with the shoreline.

Delta smelt inhabit open, surface waters of the Delta and Suisun Bay, where they presumably school. In most years, spawning occurs in shallow water habitats in the Delta. Shortly before spawning, adult smelt migrate upstream from the brackish-water habitat associated with the mixing zone to disperse widely into river channels and tidally-influenced backwater sloughs (Radtke 1966; Moyle 1976, 2002; Wang 1991). Migrating adults with nearly mature eggs were taken at the Central Valley Projects's (CVP) Tracy Pumping Plant, located in the south Delta, from late December 1990 to April 1991 (Wang 1991). In February 2000, gravid adults were found at both CVP and the State Water Projects' (SWP) fish facilities in the south Delta. Spawning locations appear to vary widely from year to year (DWR and Reclamation 1993). Sampling of larval smelt in the Delta suggests spawning has occurred in the Sacramento River, Barker, Lindsey, Cache, Georgiana, Prospect, Beaver, Hog, and Sycamore sloughs, in the San Joaquin River off Bradford Island including Fisherman's Cut, False River along the shore zone

between Frank's and Webb tracts, and possibly other areas (Wang 1991). In years of moderate to high Delta outflow, smelt larvae are often most abundant in Suisun Bay and sloughs of Suisun Marsh, but it is not clear the degree to which these larvae are produced by locally spawning fish and the degree to which they originate upstream and are transported by river currents to the bay and marsh. Some spawning probably occurs in shallow water habitats in Suisun Bay and Suisun Marsh during wetter years (Sweetnam 1999 and Wang 1991). Spawning has also been recorded in Montezuma Slough near Suisun Bay (Wang 1986) and also may occur in Suisun Slough in Suisun Marsh (P. Moyle, UCD, unpublished data).

The spawning season varies from year to year, and may occur from late winter (December) to early summer (July). Pre-spawning adults are found in Suisun Bay and the western delta as early as September (DWR and Reclamation 1994). Moyle (1976, 2002) collected gravid adults from December to April, although ripe delta smelt were common in February and March. In 1989 and 1990, Wang (1991) estimated that spawning had taken place from mid-February to late June or early July, with peak spawning occurring in late April and early May. A recent study of delta smelt eggs and larvae (Wang and Brown 1993 as cited in DWR and Reclamation 1994) confirmed that spawning may occur from February through June, with a peak in April and May. Spawning has been reported to occur at water temperatures of about 7° to 15° C. Results from a UCD study (Swanson and Cech 1995) indicate that although delta smelt tolerate a wide range of temperatures (<8° C to >25° C), warmer water temperatures restrict their distribution more than colder water temperatures.

Delta smelt spawn in shallow, fresh, or slightly brackish water upstream of the mixing zone (Wang 1991). Most spawning occurs in tidally-influenced backwater sloughs and channel edgewater (Moyle 1976, 2002; Wang 1986, 1991; Moyle *et al.* 1992). Although delta smelt spawning behavior has not been observed in the wild (Moyle *et al.* 1992), some researchers believe the adhesive, demersal eggs attach to substrates such as cattails, tules, tree roots, and submerged branches in shallow waters (Moyle 1976, 2002; Wang 1991).

Laboratory observations have indicated that delta smelt are broadcast spawners (DWR and Reclamation 1994) and eggs are demersal (sinks to the bottom) and adhesive, sticking to hard substrates such as: rock, gravel, tree roots or submerged branches, and submerged vegetation (Moyle 1976, 2002; Wang 1986). At 14°-16° C, embryonic development to hatching takes 9 -14 days and feeding begins 4-5 days later (R. Mager, UCD, unpublished data). Newly hatched delta smelt have a large oil globule that makes them semi-buoyant, allowing them to maintain themselves just off the bottom (R. Mager, UCD, unpublished data), where they feed on rotifers (microscopic crustaceans used by fish for food) and other microscopic prey. Once the swimbladder (a gas-filled organ that allows fish to maintain neutral buoyancy) develops, larvae become more buoyant and rise up higher into the water column. At this stage, 16-18 mm total length, most are presumably washed downstream until they reach the mixing zone or the area immediately upstream of it. Growth is rapid and juvenile fish are 40-50 mm long by early August (Erkkila *et al.* 1950; Ganssle 1966; Radtke 1966). By this time, young-of-year fish dominate trawl catches of delta smelt, and adults become rare. Delta smelt reach 55-70 mm standard length in 7-9 months (Moyle 1976, 2002). Growth during the next 3 months slows down considerably (only 3-9 mm total), presumably because most of the energy ingested is being

directed towards gonadal development (Erkkila *et al.* 1950; Radtke 1966). There is no correlation between size and fecundity, and females between 59-70 mm standard lengths lay 1,200 to 2,600 eggs (Moyle *et al.* 1992). The abrupt change from a single-age, adult cohort during spawning in spring to a population dominated by juveniles in summer suggests strongly that most adults die after they spawn (Radtke 1966 and Moyle 1976, 2002). However, in El Nino years when temperatures rise above 18° C before all adults have spawned, some fraction of the unspawned population may also hold over as two-year-old fish and spawn in the subsequent year. These two-year-old adults may enhance reproductive success in years following El Nino events.

In a near-annual fish like delta smelt, a strong relationship would be expected between number of spawners present in one year and number of recruits to the population the following year. Instead, the stock-recruit relationship for delta smelt is weak, accounting for about a quarter of the variability in recruitment (Sweetnam and Stevens 1993). This relationship does indicate, however, that factors affecting numbers of spawning adults (e.g., entrainment, toxics, and predation) can have an effect on delta smelt numbers the following year.

Delta smelt feed primarily on (1) planktonic copepods (small crustaceans used by fish for food), (2) cladocerans (small crustaceans used by fish for food), (3) amphipods (small crustaceans used by fish for food) and, to a lesser extent, (4) on insect larvae. Larger fish may also feed on the opossum shrimp (*Neomysis mercedis*). The most important food organism for all sizes seems to be the euryhaline copepod (*Eurytemora affinis*), although in recent years the exotic species, *Pseudodiaptomus forbesi*, has become a major part of the diet (Moyle *et al.* 1992). Delta smelt are a minor prey item of juvenile and subadult striped bass (*Morone saxatilis*) in the Sacramento-San Joaquin Delta (Stevens 1966). They also have been reported from the stomach contents of white catfish (*Ameiurus catus*) (Turner 1966 in Turner and Kelley (eds) 1966) and black crappie (*Pomoxis nigromaculatus*) (Turner 1966 in Turner and Kelley 1966) in the Delta.

Abundance. The smelt is endemic to Suisun Bay upstream of San Francisco Bay and throughout the Delta, in Contra Costa, Sacramento, San Joaquin, Solano and Yolo counties, California. Historically, the smelt is thought to have occurred from Suisun Bay and Montezuma Slough, upstream to at least Verona on the Sacramento River, and Mossdale on the San Joaquin River (Moyle *et al.* 1992, Sweetnam and Stevens 1993).

Since the 1850s, however, the amount and extent of suitable habitat for the delta smelt has declined dramatically. The advent in 1853 of hydraulic mining in the Sacramento and San Joaquin rivers led to an increase in siltation and the alteration of the circulation patterns of the Estuary (Nichols *et al.* 1986, Monroe and Kelly 1992). The reclamation of Merritt Island for agricultural purposes, in the same year, marked the beginning of the present-day cumulative loss of 94% of the Estuary's tidal marshes (Nichols *et al.* 1986, Monroe and Kelly 1992). The extensive levee system in the Delta has led to a loss of seasonally flooded habitat and significantly changed the hydrology of the Delta ecosystem, restricting the ability of suitable habitat substrates to revegetate.

Delta smelt were once one of the most common pelagic (living in open water away from the bottom) fish in the upper Sacramento-San Joaquin estuary, as indicated by its abundance in DFG

trawl catches (Erkkila *et al.* 1950; Radtke 1966; Stevens and Miller 1983). Delta smelt abundance from year to year has fluctuated greatly in the past, but between 1982 and 1992 their population was consistently low. The decline became precipitous in 1982 and 1983 due to extremely high outflows and continued through the drought years 1987-1992 (Moyle *et al.* 1992). In 1993, numbers increased considerably, apparently in response to a wet winter and spring. During the period 1982-1992, most of the population was confined to the Sacramento River channel between Collinsville and Rio Vista (D. Sweetnam, DFG unpublished data). This was still an area of high abundance in 1993, but delta smelt were also abundant in Suisun Bay. The actual size of the delta smelt population is not known. However, the pelagic life style of delta smelt, short life span, spawning habits, and relatively low fecundity indicate that a fairly substantial population probably is necessary to keep the species from becoming extinct. Recreation in the Delta has resulted in the presence and propagation of predatory non-native fish such as striped bass. Additionally, recreational boat traffic has led to a loss of habitat from the building of docks and an increase in the rate of erosion resulting from boat wakes. In addition to the loss of habitat, erosion reduces the water quality and retards the production of phytoplankton in the Delta.

In addition to the degradation and loss of estuarine habitat, delta smelt have been increasingly subject to entrainment, upstream or reverse flows of waters in the Delta and San Joaquin River, and constriction of low salinity habitat to deep-water river channels of the interior Delta (Moyle *et al.* 1992). These adverse conditions are primarily a result of the steadily increasing proportion of river flow being diverted from the Delta by the Projects, and occasional droughts (Monroe and Kelly 1992).

Reduced water quality from agricultural runoff, effluent discharge and boat effluent has the potential to harm the pelagic larvae and reduce the availability of the planktonic food source. When the mixing zone is located in Suisun Bay where there is extensive shallow water habitat within the euphotic zone (depths less than four meters), high densities of phytoplankton and zooplankton may accumulate (Arthur and Ball 1978, 1979, 1980). The introduction of the Asian clam (*Potamocorbula amurensis*), a highly efficient filter feeder, presently reduces the concentration of phytoplankton in this area.

According to seven abundance indices which provide information on the status of the delta smelt, this species was consistently at low population levels through the 1980's (Stevens *et al.* 1990). These same indices also showed a pronounced decline from historical levels of abundance (Stevens *et al.* 1990). For a large part of its annual life span, this species is associated with the freshwater edge of the mixing zone, where the salinity is about 2 ppt. (also described as X2) (Ganssle 1966, Moyle *et al.* 1992, Sweetnam and Stevens 1993). The relationship between the portion of the smelt population west of the Delta as sampled in the summer townet survey and the natural logarithm of Delta outflow from 1959 to 1988, indicates the summer townet index increased dramatically when outflow was between 34,000 and 48,000 cubic feet per second, placing X2 between Chipps and Roe islands (DWR and Reclamation 1994).

Specifically, the summer townet abundance index constitutes one of the more representative indices because the data have been collected over a wide geographic area (from San Pablo Bay

upstream through most of the Delta) for the longest period of time (since 1959) (DFG 2001). The summer townet abundance index measures the abundance and distribution of juvenile delta smelt and provides data on the recruitment potential of the species (DFG 2001). Since 1983, (except for 1986, 1993, and 1994), this index has remained at consistently lower levels than previously found (DFG 2001). These consistently lower levels correlate with the 1983 to 1992 mean location of X2 upstream of the confluence (DFG 2001). The final summer townet index for 2000 was 8.0, a decline from the 11.9 index for the 1999 summer townet. Both of these indices represent an increase from the 1998 index of 3.3. These higher townet indices were followed by the 2001 (3.5), 2002 (4.7), 2003 (1.6), 2004 (2.9) and 2005 (0.3) indices which were well below the pre-decline average of 20.4 (1959-1981, no sampling in 1966-68) (DFG 2005).

The second longest running survey (since 1967), the fall midwater trawl survey (FMWT), measures the abundance and distribution of late juveniles and adult delta smelt in a large geographic area from San Pablo Bay upstream to Rio Vista on the Sacramento River and Stockton on the San Joaquin River (Stevens *et al.* 1990, DFG 1999). The FMWT indicates the abundance of the adult population just prior to upstream spawning migration (DFG 1999). The index calculated from the FMWT uses numbers of sampled fish multiplied by a factor related to the volume of the area sampled (DFG 1999). Until recently, except for 1991, this index has declined irregularly over the past 20 years (DFG 1999). Since 1983, the delta smelt population has exhibited more low FMWT abundance indices, for more consecutive years, than previously recorded (DFG 1999). The 1994 FMWT index of 101.2 was a continuation of this trend (DFG 1999). This occurred despite the high 1994 summer townet index for reasons unknown (DFG 1999). The low 1995 summer townet index value of 3.3 was followed by a high FMWT index of 839 reflecting the benefits of higher flows due to an extremely wet year (DFG 1999, 2001). The 1999 FMWT index of 717, which is an increase from 1998's index (417.6), is the third highest since the start of decline of delta smelt abundance in 1982 (DFG 1999). The FMWT abundance index (127) for 1996 represented the sixth lowest on record (DFG 1999). The 1997 abundance index (360.8) almost tripled since the 1996 survey, despite the low summer townet index (4.0) (DFG 1999, 2001).

Both 2001 TNS and FMWT abundance indices for delta smelt decreased from 2000 (Souza and Bryant 2002, DFG 1999 and 2001). The 2001 TNS delta smelt index (3.5) is less than 1999 (11.9) and 2000 (8.0) but comparable to recent years (1995, 1997, and 1998) when the index ranged from 3.2 to 4.0 (Souza and Bryant 2002, DFG 2001). The 2001 FMWT delta smelt index (603) decreased by 20% from 2000 (756) (Souza and Bryant 2002, DFG 2001). Both surveys exhibited an overall trend of decline in the last three years, but this decline seems more pronounced in the TNS where the 2001 delta smelt index is 95% lower than the greatest index of record (62.5) in 1978 (Souza and Bryant 2002, DFG 2001). The 2002 TNS was 4.7 and then dropped to 1.6 in 2003. The 2002 FMWT index (139) was the seventh lowest on record and the 2003 index was 210. The 2004 TNS index increase to 2.9 but then fell in 2005 to 0.3. The 2005 and 2006 FMWT abundance indices fell to their lowest levels of 26 and 41 respectively. The lowest indices on record for both surveys occurred in 2005 (DFG 2005).

In response to the recent dramatic declines of several species in the Delta, the Interagency Ecological Program (IEP) was instructed to prepare and implement a series of studies to define

and understand the nature of the declines, known as the Pelagic Organism Decline (POD). A conceptual model has been constructed based on three factors acting individually or in concert to lower pelagic productivity. They are: 1) contaminants, 2) introduced or invasive species, and 3) water project operations including diverting water for use in Southern California. A triage approach was chosen for 2005 to gain preliminary information that could identify potential causes of these population declines, and to help prioritize future investigations (DFG and DWR 2005). Studies have continued in 2006 and 2007 in an effort to identify the causes of the decline.

The Delta Smelt Larval Survey (DSLS), an additional survey initiated in 2005 by DFG, will help determine timing, distribution, and abundance of larvae within the upper San Francisco Estuary. The new survey will also help estimate larval delta smelt losses and determine the magnitude of entrainment of larval delta smelt at the CVP and SWP intakes.

Swimming Behavior. Observations of delta smelt swimming in a swimming flume and in a large tank show that these fish are unsteady, intermittent, slow speed swimmers (Swanson and Cech 1995). At low velocities in the swimming flume (<3 body lengths per second), and during spontaneous, unrestricted swimming in a 1 m tank, smelt consistently swam with a "stroke and glide" behavior. This type of swimming is very efficient; Weihs (1974) predicted energy savings of about 50% for "stroke and glide" swimming compared to steady swimming. However, the maximum speed smelt are able to achieve using this mode of swimming is less than 3 body lengths per second, and the fish did not readily or spontaneously swim at this or higher speeds (Swanson and Cech 1995). Although juvenile delta smelt appear to be stronger swimmers than adults, forced swimming at 3 body lengths per second in a swimming flume was apparently stressful; the smelt were prone to swimming failure and extremely vulnerable to impingement (Swanson and Cech 1995). Delta smelt swimming performance was limited by behavioral rather than physiological or metabolic constraints (Brett 1976).

Summary of the Five Year Review. In summary, the threats of the destruction, modification, or curtailment of its habitat or range resulting from extreme outflow conditions, the operations of the State and Federal water projects, and other water diversions as described in the original listing remain. The only new information concerning the delta smelt's population size and extinction probability indicates that the population is at risk of falling below an effective population size and therefore in danger of becoming extinct. Although the Vernalis Adaptive Management Program and Environmental Water Account have helped to ameliorate these threats, it is unclear how effective these will continue to be over time based on available funding and future demands for water. In addition, there are increased water demands outside the CVP and the SWP, which could also impact delta smelt. The increases in water demands are likely to result in less suitable rearing conditions for delta smelt, increased vulnerability to entrainment, and less water available for maintaining the position of X2. The importance of exposure to toxic chemicals on the population of delta smelt is highly uncertain. Therefore, a recommendation to delist the delta smelt is inappropriate.

In addition, many potential threats have not been sufficiently studied to determine their effects, such as predation, disease, competition, and hybridization. Therefore, a recommendation of a change in classification to endangered is premature.

In his August 24, 2003, letter, the foremost delta smelt expert, Dr. Peter B. Moyle, stated that the delta smelt should continue to be listed as a threatened species (Moyle 2003). In addition, in their January 23, 2004, letter, DFG fully supported that the delta smelt should retain its threatened status under the Act (DFG 2004).

Delta Smelt Critical Habitat

In determining which areas to designate as critical habitat, the Service considers those physical and biological features that are essential to a species' conservation and that may require special management considerations or protection (50 CFR §424.12(b)).

The Service is required to list the known primary constituent elements together with the critical habitat description. Such physical and biological features include, but are not limited to, the following:

1. space for individual and population growth, and for normal behavior;
2. food, water, air, light, minerals, or other nutritional or physiological requirements;
3. cover or shelter;
4. sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and
5. generally, habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

In designating critical habitat for the delta smelt, the Service identified the following primary constituent elements essential to the conservation of the species: physical habitat, water, river flow, and salinity concentrations required to maintain delta smelt habitat for spawning, larval and juvenile transport, rearing, and adult migration. Specific areas that have been identified as important delta smelt spawning habitat include Barker, Lindsey, Cache, Prospect, Georgiana, Beaver, Hog, and Sycamore sloughs and the Sacramento River in the Delta, and tributaries of northern Suisun Bay.

Larval and juvenile transport. Adequate river flow is necessary to allow larvae from upstream spawning areas to move to rearing habitat in Suisun Bay and to ensure that rearing habitat is maintained in Suisun Bay. To ensure this, X2 must be located westward of the confluence of the Sacramento-San Joaquin Rivers, located near Collinsville (Confluence), during the period when larvae or juveniles are being transported, according to historical salinity conditions. X2 is important because the "entrapment zone" or zone where particles, nutrients, and plankton are "trapped," leading to an area of high productivity, is associated with its location. Habitat conditions suitable for transport of larvae and juveniles may be needed by the species as early as February 1 and as late as August 31, because the spawning season varies from year to year and may start as early as December and extend until July.

Rearing habitat. An area extending eastward from Carquinez Strait, including Suisun, Grizzly, and Honker bays, Montezuma Slough and its tributary sloughs, up the Sacramento River to its confluence with Three Mile Slough, and south along the San Joaquin River including Big Break, defines the specific geographic area critical to the maintenance of suitable rearing habitat. Three Mile Slough represents the approximate location of the most upstream extent of historical tidal incursion. Rearing habitat is vulnerable to impacts of export pumping and salinity intrusion from the beginning of February to the end of August.

Adult migration. Adequate flow and suitable water quality is needed to attract migrating adults in the Sacramento and San Joaquin river channels and their associated tributaries, including Cache and Montezuma sloughs and their tributaries. These areas are vulnerable to physical disturbance and flow disruption during migratory periods.

The Service's 1994 and 1995 biological opinions on the operations of the CVP and SWP provided for adequate larval and juvenile transport flows, rearing habitat, and protection from entrainment for upstream migrating adults (Service 1994c, 1995). Please refer to 59 FR 65255 for additional information on delta smelt critical habitat.

Giant Garter Snake

Listing. The Service published a proposal to list the giant garter snake as an endangered species on December 27, 1991 (56 FR 67046). The Service reevaluated the status of the snake before adopting the final rule, which listed as a threatened species on October 20, 1993 (58 FR 54053).

Description. The giant garter snake is one of the largest garter snakes species reaching a total length of about 64 inches. Females tend to be slightly longer and proportionately heavier than males. Generally, the snakes have a dark dorsal background color with pale dorsal and lateral stripes, although coloration and pattern prominence are geographically and individually variable (Hansen 1980; Rossman *et al.* 1996).

Historical and Current Range. Giant garter snakes formerly occurred throughout the wetlands that were extensive and widely distributed in the Sacramento and San Joaquin Valley floors of California (Fitch 1940; Hansen and Brode 1980; Rossman and Stewart 1987). The historical range of the snake is thought to have extended from the vicinity of Chico, Butte County, southward to Buena Vista Lake, near Bakersfield, in Kern County (Fitch 1940; Fox 1948; Hansen and Brode 1980; Rossman and Stewart 1987). Early collecting localities of the giant garter snake coincide with the distribution of large flood basins, particularly riparian marsh or slough habitats and associated tributary streams (Hansen and Brode 1980). Loss of habitat due to agricultural activities and flood control have extirpated the snake from the southern one third of its range in former wetlands associated with the historic Buena Vista, Tulare, and Kern lake beds (Hansen 1980; Hansen and Brode 1980).

Upon federal listing in 1993, the Service identified 13 separate populations of giant garter snakes, with each population representing a cluster of discrete locality records (Service 1993b).

The 13 populations largely coincide with historical flood basins and tributary streams throughout the Central Valley: (1) Butte Basin, (2) Colusa Basin, (3) Sutter Basin, (4) American Basin, (5) Yolo Basin/Willow Slough, (6) Yolo Basin/Liberty Farms, (7) Sacramento Basin, (8) Badger Creek/Willow Creek, (9) Caldoni Marsh/White Slough, (10) East Stockton--Diverting Canal & Duck Creek, (11) North and South Grasslands, (12) Mendota, and (13) Burrel/Lanare.

The known range of the giant garter snake has changed little since the time of listing. In 2005, giant garter snakes were observed at the City of Chico's wastewater treatment facility, about ten miles north of what was previously believed to be the northernmost extent of the species' range (D. Kelly pers. comm. 2006; E. Hansen pers. comm. 2006). The southernmost known occurrence is at the Mendota Wildlife Area in Fresno County. No sightings of giant garter snakes south of Mendota Wildlife Area within the historic range of the species have been made since the time of listing (Hansen 2002).

Essential Habitat Components. Endemic to wetlands in the Sacramento and San Joaquin valleys, the giant garter snake inhabits marshes, sloughs, ponds, small lakes, low gradient streams, and other waterways and agricultural wetlands, such as irrigation and drainage canals, rice fields and the adjacent uplands (Service 1999). Essential habitat components consist of: (1) wetlands with adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) upland habitat with grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for over-wintering habitat with escape cover (vegetation, burrows) and underground refugia (crevices and small mammal burrows) (Hansen 1988). Snakes are typically absent from larger rivers and other bodies of water that support introduced populations of large, predatory fish, and from wetlands with sand, gravel, or rock substrates (Hansen 1988; Hansen and Brode 1980; Rossman and Stewart 1987). Riparian woodlands do not provide suitable habitat because of excessive shade, lack of basking sites, and absence of prey populations (Hansen 1988).

Foraging Ecology. Giant garter snakes are the most aquatic garter snake species and are active foragers, feeding primarily on aquatic prey such as fish and amphibians (Fitch 1941). Because the giant garter snake's historic prey species are either declining, extirpated, or extinct, the predominant food items are now introduced species such as carp (*Cyprinus carpio*), mosquitofish (*Gambusia affinis*), larval and sub-adult bullfrogs (*Rana catesbiana*), and Pacific chorus frogs (*Pseudacris regilla*) (Fitch 1941; Hansen 1988; Hansen and Brode 1980, 1993; Rossman *et al.* 1996).

Reproductive Ecology. The giant garter snake breeding season extends through March and April, and females give birth to live young from late July through early September (Hansen and Hansen 1990). Although growth rates are variable, young typically more than double in size by one year of age, and sexual maturity averages three years in males and five years for females (Service 1993b).

Movements and Habitat Use. The giant garter snake is highly aquatic but also occupies a terrestrial niche (Service 1999; Wylie *et al.* 2004a). The snake typically inhabits small mammal

burrows and other soil and/or rock crevices during the colder months of winter (i.e., October to April) (Hansen and Brode 1993; Wylie *et al.* 1995; Wylie *et al.* 2003a), and also uses burrows as refuge from extreme heat during its active period (Wylie *et al.* 1997; Wylie *et al.* 2004a). While individuals usually remain in close proximity to wetland habitats, the Biological Resource Division of the U.S. Geological Survey (BRD) has documented snakes using burrows as much as 165 feet away from the marsh edge to escape extreme heat, and as far as 820 feet from the edge of marsh habitat for over-wintering habitat (Wylie *et al.* 1997).

In studies of marked snakes in the Natomas Basin, snakes moved about 0.25 to 0.5 miles per day (Hansen and Brode 1993). Total activity, however, varies widely between individuals; individual snakes have been documented to move up to 5 miles over a few days in response to dewatering of habitat (Wylie *et al.* 1997) and to use up to more than 8 miles of linear aquatic habitat over the course of a few months. Home range (area of daily activity) averages about 61 acres in both the Natomas Basin and the Colusa National Wildlife Refuge (NWR) (Wylie 1998a; Wylie *et al.* 2002), yet can be as large as 9,252 acres (Wylie and Martin 2004).

Rice fields have become important habitat for giant garter snakes, particularly associated canals and their banks for both spring and summer active behavior and winter hibernation (Hansen 2004; Wylie 1998b). While within the rice fields, snakes forage in the shallow water for prey, utilizing rice plants and vegetated berms dividing rice checks for shelter and basking sites (Hansen and Brode 1993). In the Natomas Basin, habitat used consisted almost entirely of irrigation ditches and established rice fields (Wylie 1998a; Wylie *et al.* 2004b), while in the Colusa NWR, snakes were regularly found on or near edges of wetlands and ditches with vegetative cover (Wylie *et al.* 2003a). Telemetry studies also indicate that active snakes use uplands extensively, particularly where vegetative cover exceeds 50 percent in the area (Wylie 1998b).

Predators. Giant garter snakes are killed and/or eaten by a variety of predators, including raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), opossums (*Didelphis virginiana*), bull frogs (*Rana catesbeiana*), hawks (*Buteo* sp.), egrets (*Casmerodius albus*, *Egretta thula*), river otters (*Ludra canadensis*), and great blue herons (*Ardea herodias*) (Dickert 2003; Wylie *et al.* 2003c; G. Wylie pers. comm. 2006). Many areas supporting snakes have been documented to have abundant predators; however, predation does not seem to be a limiting factor in areas that provide abundant cover, high concentrations of prey items, and connectivity to a permanent water source (Hansen and Brode 1993; Wylie *et al.* 1995).

Reasons for Decline and Threats to Survival. The current distribution and abundance of the giant garter snake is much reduced from former times (Service 1999). Prior to reclamation activities beginning in the mid- to late-1800s, about 60 percent of the Sacramento Valley was subject to seasonal overflow flooding providing expansive areas of snake habitat (Hinds 1952). Now, less than 10 percent, or about 319,000 acres, of the historic 4.5 million acres of Central Valley wetlands remain (U.S. Department of Interior 1994), of which very little provides habitat suitable for the giant garter snake. Loss of habitat due to agricultural activities and flood control have extirpated the snake from the southern one-third of its range in former wetlands associated with the historic Buena Vista, Tulare, and Kern lakebeds (Hansen 1980; Hansen and Brode 1980).

Valley flood wetlands are now subject to cumulative effects of upstream watershed modifications, water storage and diversion projects, as well as urban and agricultural development. The CVP, the largest water management system in California, created an ecosystem altered to such an extent that remaining wetlands depend on highly managed water regimes (U.S. Department of Interior 1994). Further, the implementation of CVP has resulted in conversion of native habitats to agriculture, and has facilitated urban development through the Central Valley (Service 1999). For instance, residential and commercial growth with the Central Valley is consuming an estimated 15,000 acres of Central Valley farmland each year (American Farmland Trust 1999), with a project loss of more than one million acres by the year 2040 (USGS 2003). Environmental impacts associated with urbanization include loss of biodiversity and habitat, alternation of natural fire regimes, fragmentation of habitat from road construction, and degradation due to pollutants. Further, encroaching urbanization can inhibit rice cultivation (J. Roberts pers. comm. 2006). Rapidly expanding cities within the snake's range include Chico, Yuba City, the Sacramento area, Galt, Stockton, Gustine, and Los Banos.

Ongoing maintenance of aquatic habitats for flood control and agricultural purposes eliminates or prevents the establishment of habitat characteristics required by snakes (Hansen 1988). Such practices can fragment and isolate available habitat, prevent dispersal of snakes among habitat units, and adversely affect the availability of the snake's food items (Hansen 1988; Brode and Hansen 1992). For example, tilling, grading, harvesting and mowing may kill or injure giant garter snakes (Service 2003; Wylie *et al.* 1997). Biocides applied to control aquatic vegetation reduce cover for the snake and may harm prey species (Wylie *et al.* 1995). Rodent control threatens the snake's upland estivation habitat (Wylie *et al.* 1995; Wylie *et al.* 2004a). Restriction of suitable habitat to water canals bordered by roadways and levee tops renders snakes vulnerable to vehicular mortality (Wylie *et al.* 1997). Rolled erosion control products, which are frequently used as temporary berms to control and collect soil eroding from constriction sites, can entangle and kill snakes (Stuart *et al.* 2001; Barton and Kinkead 2005). Livestock grazing along the edges of water sources degrades water quality and can contribute to the elimination and reduction of available quality snake habitat (Hansen 1988; E. Hansen, pers. comm., 2006), and giant garter snakes have been observed to avoid areas that are grazed (Hansen 2003). Fluctuation in rice and agricultural production affects stability and availability of habitat (Paquin *et al.* 2006; Wylie and Casazza 2001; Wylie *et al.* 2003b, 2004b).

Other land use practices also currently threaten the survival of the snake. Recreational activities, such as fishing, may disturb snakes and disrupt thermoregulation and foraging activities (E. Hansen pers. comm. 2006). While large areas of seemingly suitable snake habitat exist in the form of duck clubs and waterfowl management areas, water management of these areas typically does not provide the summer water needed by the species (Beam and Menges 1997; Dickert 2005; Paquin *et al.* 2006).

Nonnative predators, including introduced predatory game fish, bullfrogs, and domestic cats, can threaten snake populations (Dickert 2003; Hansen 1986; Service 1993b; Wylie *et al.* 1996; Wylie *et al.* 2003c). Nonnative competitors, such as the introduced water snake (*Nerodia fasciata*) in the American River and associated tributaries near Folsom, may also threaten the giant garter

snake (Stitt *et al.* 2005).

The disappearance of giant garter snakes from much of the west side of the San Joaquin Valley was about contemporaneous with the expansion of subsurface drainage systems in this area, providing circumstantial evidence that the resulting contamination of ditches and sloughs with drainwater constituents (principally selenium) may have contributed to the demise of giant garter snake populations. Dietary uptake is the principle route of toxic exposure to selenium in wildlife, including giant garter snakes (Beckon *et al.* 2003). Many open ditches in the northern San Joaquin Valley carry subsurface drainwater with elevated concentrations of selenium, and green sunfish (*Lepomis cyanellus*) have been found to have concentrations of selenium within the range of concentrations associated with adverse affects on predator aquatic reptiles (Hopkins *et al.* 2002; Saiki 1998). Studies on the effects of selenium on snakes suggest that snakes with high selenium loads in their internal organs can transfer potentially toxic quantities of selenium to their eggs (Hopkins *et al.* 2004) and also demonstrate higher rates of metabolic activity than uncontaminated snakes (Hopkins *et al.* 1999).

Status with Respect to Recovery. The draft recovery plan for the giant garter snake subdivides its range into three proposed recovery units (Service 1999): (1) Sacramento Valley Recovery Unit; (2) Mid-Valley Recovery Unit; (3) San Joaquin Valley Recovery Unit; and (4) South Valley Recovery Unit.

The Sacramento Valley Unit at the northern end of the species' range contains sub-populations in the Butte Basin, Colusa Basin, and Sutter Basin (Service 1999; Service 2006). Protected snake habitat is located on State refuges and refuges of the Sacramento National Wildlife Refuge (NWR) Complex in the Colusa and Sutter Basins. Suitable snake habitat is also found in low gradient streams and along waterways associated with rice farming. This northernmost recovery unit is known to support relatively large, stable sub-populations of giant garter snakes (Wylie *et al.* 1995; Wylie *et al.* 1997; Wylie *et al.* 2002; Wylie *et al.* 2003a; Wylie *et al.* 2004a). Habitat corridors connecting subpopulations, however, are either not present or not protected, and are threatened by urban encroachment.

The Mid-Valley Unit includes sub-populations in the American, Yolo, and Delta Basins (Service 1999; Service 2006). The status of Mid-Valley sub-populations is very uncertain; each is small, highly fragmented, and located on isolated patches of limited quality habitat that is increasingly threatened by urbanization (E. Hansen 2002, 2004; Service 1993b; Wylie 2003; Wylie and Martin 2004; Wylie *et al.* 2004b; Wylie *et al.* 2005; G. Wylie pers. comm. 2006). The American Basin sub-population, although threatened by urban development, receives protection from the Metro Air Park and Natomas Basin Habitat Conservation Plans, which share a regional strategy to maintain a viable snake sub-population in the basin.

The San Joaquin Valley Unit, which includes sub-populations in the San Joaquin Basin, formerly supported large snake populations, but numbers have severely declined, and recent survey efforts indicate numbers are extremely low compared to Sacramento Valley sub-populations (Dickert 2002, 2003; Hansen 1988; Williams and Wunderlich 2003; Wylie 1998a). Giant garter snakes currently occur in the northern and central San Joaquin Basin within the Grassland Wetlands of

Merced County and the Mendota Wildlife Area of Fresno County; however, these sub-populations remain small, fragmented, and unstable, and are probably decreasing (Dickert 2003, 2005; G. Wylie pers. comm., 2006).

The South Valley Unit included sub-populations in the Tulare Basin, however, agricultural and flood control activities are presumed to have extirpated the snake from the Tulare Basin (Hansen 1995). Comprehensive surveys for this area are lacking and where habitat remains, the giant garter snake may be present.

Since 1995, BRD has studied snake sub-populations at the Sacramento, Delevan, and Colusa NWRs and in the Colusa Basin Drain within the Colusa Basin, at Gilsizer Slough within the Sutter Basin, at the Badger Creek area of the Cosumnes River Preserve within the Badger Creek/Willow Creek area of the Delta Basin, and in the Natomas Basin within the American Basin (Hansen 2003, 2004; Wylie 1998a, 1998b, 2003; Wylie *et al.* 1995; Wylie *et al.* 2002; Wylie *et al.* 2003a, 2004a; Wylie *et al.* 2003b, 2004b). These areas contain the largest extant giant garter snake sub-populations. Outside of protected areas, however, snakes are still subject to all threats identified in the final rule. The other sub-populations are distributed discontinuously in small, isolated patches, and are vulnerable to extirpation by stochastic environmental, demographic, and genetic processes (Goodman 1987).

The revised draft recovery criteria require multiple, stable sub-populations within each of the three recovery units, with sub-populations well-connected by corridors of suitable habitat. This entails that corridors of suitable habitat between existing snake sub-populations be maintained or created to enhance sub-population interchange to offset threats to the species (Service 2003). Currently, only the Sacramento Valley Recovery Unit is known to support relatively large, stable giant garter snake populations. Habitat corridors connecting sub-populations, even in the Sacramento Valley Recovery Unit, are either not present or not protected. Overall, the future availability of habitat in the form of canals, ditches, and flooded fields are subject to market-driven crop choices, agricultural practices, and urban development, and are, thus, uncertain and unpredictable.

Summary of the Five Year Review. The abundance and distribution of giant garter snakes has not changed significantly since the time of listing. Although some snakes have been rediscovered in several southern populations that were thought to be extirpated, these populations remain in danger of extirpation because their numbers remain very low and the habitat is of low quality.

By far the most serious threats to giant garter snake continue to be loss and fragmentation of habitat from urban and agricultural development and loss of habitat associated with changes in rice production. Activities such as water management that are associated with habitat loss are also of particular concern because they exacerbate the losses from development and from loss of rice production. The remaining threats (such as from introduced predators, roads, erosion control) are secondary to such habitat loss although habitat fragmentation could become a critical issue in the snake's survival should large scale habitat changes occur. Populations range-wide are largely isolated from one another and from remaining suitable habitat. Without hydrologic links to suitable habitat during periods of drought, flooding, or diminished habitat quality, the

snake's status will decline.

Because the giant garter snake continues to be threatened by various forms of habitat loss, we believe that it continues to meet the definition of a threatened species and recommend that its status be unchanged.

Environmental Baseline

Delta Smelt

Adult delta smelt spawn in central Delta sloughs from February through August in shallow water areas having submersed aquatic plants and other suitable substrates and refugia. These shallow water areas have been identified in the Delta Native Fishes Recovery Plan (Recovery Plan) (Service 1996) as essential to the long-term survival and recovery of delta smelt and other resident fish. A no net loss strategy of delta smelt population and habitat is proposed in this Recovery Plan.

The delta smelt is adapted to living in the highly productive Estuary where salinity varies spatially and temporally according to tidal cycles and the amount of freshwater inflow. Despite this tremendously variable environment, the historical Estuary probably offered relatively consistent spring transport flows that moved delta smelt juveniles and larvae downstream to the mixing zone (P. Moyle, UCD pers. comm.). Since the 1850's, however, the amount and extent of suitable habitat for the delta smelt has declined dramatically. The advent in 1853 of hydraulic mining in the Sacramento and San Joaquin rivers led to increased siltation and alteration of the circulation patterns of the Estuary (Nichols *et al.* 1986, Monroe and Kelly 1992). The reclamation of Merritt Island for agricultural purposes, in the same year, marked the beginning of the present-day cumulative loss of 94 percent of the Estuary's tidal marshes (Nichols *et al.* 1986, Monroe and Kelly 1992).

In addition to the degradation and loss of estuarine habitat, the delta smelt has been increasingly subject to entrainment, upstream or reverse flows of waters in the Delta and San Joaquin River, and constriction of low salinity habitat to deep-water river channels of the interior Delta (Moyle *et al.* 1992). These adverse conditions are primarily a result of drought and the steadily increasing proportion of river flow being diverted from the Delta by the CVP and SWP (Monroe and Kelly 1992). The relationship between the portion of the delta smelt population west of the Delta as sampled in the summer townet survey and the natural logarithm of Delta outflow from 1959 to 1988 (Department and Reclamation 1994). This relationship indicates that the summer townet index increased dramatically when outflow was between 34,000 and 48,000 cfs which placed X2 between Chipps and Roe islands. Placement of X2 downstream of the Confluence, Chipps and Roe islands provides delta smelt with low salinity and protection from entrainment, allowing for productive rearing habitat that increases both smelt abundance and distribution.

The results of seven surveys conducted by the IEP corroborate the dramatic decline in delta smelt. Existing baseline conditions, as mandated for delta smelt under the Service's consultations on CVP operations (Service 1994b, 1995), provide sufficient Delta outflows from

February 1 through June 30 to allow larval and juvenile delta smelt to move out of the “zone of influence” of the CVP and SWP pumps, and provide them low salinity, productive rearing habitat. This zone of influence has been delineated by DWR’s Particle Tracking Model and expands or contracts with CVP and SWP combined pumping increases or decreases, respectively (DWR and Reclamation 1993). With tidal effects contributing additional movement, the influence of the pumps may entrain larvae and juveniles as far west as the Confluence.

According to seven abundance indices designed to record trends in the status of the delta smelt, this species was consistently at low population levels during the last ten years (Stevens *et al.* 1990). These same indices also show a pronounced decline from historical levels of abundance (Stevens *et al.* 1990). The summer townet abundance index constitutes one of the more representative indices because the data have been collected over a wide geographic area (from San Pablo Bay upstream through most of the Delta) for the longest period of time (since 1959). The summer townet abundance index measures the abundance and distribution of juvenile delta smelt and provides data on the recruitment potential of the species. Except for three years since 1983 (1986, 1993, and 1994), this index has remained at consistently lower levels than experienced previously. As indicated, these consistently lower levels correlate with the 1983 to 1992 mean location of X2 upstream of the Confluence, Chipps and Roe islands.

The second longest running survey (since 1967), the fall midwater trawl survey (FMWT), measures the abundance and distribution of late juveniles and adult delta smelt in a large geographic area from San Pablo Bay upstream to Rio Vista on the Sacramento River and Stockton on the San Joaquin River (Stevens *et al.* 1990). The fall midwater trawl provides an indication of the abundance of the adult population just prior to upstream spawning migration. The index that is calculated from the FMWT survey uses numbers of sampled fish multiplied by a factor related to the volume of the area sampled. Until recently, except for 1991, this index has declined irregularly over the past 20 years. Since 1983, the delta smelt population has exhibited more low fall midwater trawl abundance indices, for more consecutive years, than previously recorded. The 1994 FMWT index of 101.7 is a continuation of this trend. This occurred despite the high 1994 summer townet index for reasons unknown. The 1995 summer townet was a low index value of 319 but resulted in a high FMWT index of 898.7 reflecting the benefits of large transport and habitat maintenance flows with the Bay-Delta Accord in place and a wet year. The abundance index of 128.3 for 1996 represented the fourth lowest on record. The abundance index of 305.6 for 1997 demonstrated that the relative abundance of delta smelt almost tripled over last years results, and delta smelt abundance continued to rise, peaking in 1999 to an abundance index of 863, only to fall back down to the low abundance. The lowest indices on record for both surveys occurred in 2005. The summer townet index was 0.3 and the fall midwater index was 26 (DFG 2005). The 2006 summer townet index for delta smelt is 0.4. Additional sampling outside of the historical sampling area indicates that this index may be biased low due to fish outside the sampling area (DFG 2006).

The project is within delta smelt critical habitat. Service and DFG studies have recorded delta smelt in vicinity of the project site and other study sites. Therefore, the Service has determined that delta smelt may occur within the action area.

Giant Garter Snake

The overall status of the giant garter snake has not improved since its listing. Based on scarcity of suitable habitat and limited population size, at listing, threats to the Delta Basin population were considered imminent (Service 1993b). The status of the Delta Basin sub-population has been, and continues to be, impacted by past and present Federal, state, private, and other human activities.

A number of State, local, private, and unrelated Federal actions have occurred within the action area and adjacent regions affecting the environmental baseline of the species. Some of these projects have been subject to prior section 7 consultation. These actions have resulted in both direct and indirect effects to snake habitat within the region. Projects affecting the environment in and around the action area include the improvement of the Northgate Boulevard/Arden-Garden Connector Intersection, the widening of Bond Road, construction of the Interstate 5/Consumnes River Boulevard Interchange, the Freeport Regional Water Diversion project, the Rivermont Drive Bridge project, the Rio Vista Northwest Wastewater Treatment project, the widening of Calvine Road, and the Kramer Ranch North project. In the past ten years, the Service has authorized take resulting in the permanent loss of more than 21 acres of aquatic and 53 acres of upland snake habitat, as well as temporary alteration of over 1,700 acres of aquatic and 650 acres of upland snake habitat in the Delta Basin.

Numerous recent development projects have been constructed in or near snake habitat in the rapidly developing areas in and around the cities of Sacramento, Elk Grove, Galt, and Stockton. Urban and commercial development results in direct habitat loss and also may expose snakes to secondary effects including water pollution from urban run-off and increased vehicular mortality, both of which act in concert with rapid habitat loss and degradation to further threaten the snake in the Delta Basin. Also, development promotes road widening and bridge replacements, such as those authorized under section 7, which result in direct alteration of snake habitat. Most documented snake localities and/or movement corridors have been adversely impacted by development, including freeway construction, flood control projects, and commercial development. Further, several former localities are known to have been lost and/or depleted to that extent that continued viability is in question (Brode and Hansen 1992). The scarcity of remaining suitable habitat, flooding, stochastic processes, and continued threats of habitat loss pose a severe imminent threat to giant garter snakes in the Delta Basin.

Ongoing agricultural and flood control activities in the Delta Basin may decrease and degrade the remaining snake habitat affecting the environmental baseline for the snake. Such activities are largely not subject to section 7 consultation. Although rice fields and agricultural waterways can provide valuable seasonal foraging and upland habitat for the snake, agricultural activities such as waterway maintenance, weed abatement, rodent control, and discharge of contaminants into wetlands and waterways can degrade snake habitat and increase the risk of snake mortality (Service 2003). On-going maintenance of agricultural waterways can also eliminate or prevent establishment of snake habitat, eliminate food resources for the snake, and fragment existing habitat and prevent dispersal of snakes (Service 2003).

Flood control and maintenance activities which can result in snake mortality and degradation of habitat include levee construction, stream channelization, and rip-rapping of streams and canals (Service 2003). Flood control programs are administered by the U.S. Army Corps of Engineers (Corps), and the Corps has typically consulted on previous projects and is expected to continue to do so for future projects. The ongoing nature of these activities and the administration under various programs, however, makes it difficult to determine the continuing and accumulative effects of these activities.

In addition to projects already discussed, projects affecting the environment in and around the action area include transportation projects with Federal, county, or local involvement. The Federal Highway Administration and/or the Corps have consulted with the Service on the issuance of wetland fill permits for several transportation-related projects within the Delta Basin that affected snake habitat. The direct effect of these projects is often small and localized, but the effects of transportation projects, which improve access and therefore indirectly affect snakes by facilitating further development of habitat in the area and by increasing snake mortality via vehicles, are not quantifiable.

The proposed project is located within the Delta Basin snake population, in the Mid Valley Recovery Unit (Service 1999). Twenty-five CNDDDB (2006) records are known from the Delta Basin. These records include Laguna Creek, Morrison Creek, Snodgrass Slough, Beach Lake, creeks in the City of Elk Grove, Badger and Willow Creeks, Consumnes River Preserve, Caldoni Marsh, White Slough, Duck Creek and other locations within the Basin.

During a field reconnaissance in April 2002, a giant garter snake was observed on the southwestern levee of Webb Tract. Since then, habitat evaluations and snake surveys have been conducted on Webb Tract and Bacon Island (Patterson 2004; Patterson and Hansen 2003). Potential snake habitat in the area exists in the form of contiguous linear irrigation canals and ditches. However, although both islands possess the essential snake habitat components, two years of surveys resulted in no further sightings or capture of giant garter snakes.

Recent genetic work on giant garter snake population structure indicates three genetic entities within the species which follow the pattern of subdivision revealed by the snake's mitochondrial DNA and color pattern variants: north, central, and south (Paquin 2001; Paquin *et al.* 2006). Interestingly, evidence of historical gene flow between northern and southern populations exists; however, mitochondrial DNA data reveal that the central population, analogous to the Delta Basin, is genetically isolated from both northern and southern populations. High frequencies of unique mitochondrial DNA haplotypes in the central population increase the conservation value for the Delta Basin, particularly as a source for giant garter snake genetic diversity.

Laguna and Morrison Creek, Duck Creek, the Elk Grove creeks, as well as Beach Lake, Snodgrass Slough, Caldoni Marsh, White Slough and associated tributaries, are important snake habitat and movement corridors for the animal. Such waterways and associated wetlands provide vital permanent aquatic and upland habitat for snakes in areas with otherwise limited habitat. The recovery strategy for the snake includes maintenance and/or creation of habitat corridors between existing sub-populations to enhance population interchange and offset threats to the

species (Service 2003).

According to the CNDDDB (2006), the nearest snake record to the proposed project site is within 3.5 miles from the proposed project footprint. Snakes have been documented to move up to 5 miles over a few days in response to dewatering of habitat (Wylie *et al.* 1997) and to use up to more than 8 miles of linear aquatic habitat over the course of a few months (Wylie and Martin 2004). The action area contains habitat components that can be used by the snake for feeding, resting, mating, and other essential behaviors, as well as for a movement corridor. Because of the biology and ecology of the snake, the presence of suitable habitat within the proposed project, and observations of the species, the Service has determined that the snake is reasonably certain to occur within the action area.

Effects of the Proposed Action

Delta smelt

In water construction activities would increase exposure of delta smelt and other species to sound pressure levels, turbidity, suspended sediment, and possibly other contaminants. While these levels are estimated to occur below levels that have been reported to cause adverse effects to Chinook salmon little is known about the sensitivity on delta smelt. The dewatering of the cofferdam has the potential to strand delta smelt and its food source. These effects would be minimized by working in the in-water work window and implementing the conservation measures in the project description.

The canal has an open hydrological connection to Rock Slough with a trash rack as a barrier for large materials and sediment. Delta smelt and other fish species fish can enter the canal through the unscreened intake and are carried by tidal and pumping action toward PP1. Fish including delta smelt, entering the canal are exposed to predation and the effects of the operation of the pumps at PP1. The project would encase a portion of the canal that has been documented to have both low numbers of sensitive species (Morinaka 1998; CCWD 1999, 2000a, 2000b, 2001, 2003, 2004, 2005, 2006; Tenera unpublished data for 2006) and high fish mortality rates from predation (Morinaka 1998). It would be expected that the project would have minimal long-term impacts on the status of delta smelt.

The proposed action could have a beneficial effect on delta smelt by potentially reducing net mortality from predation and by reducing tidal flow which draws fish into the canal, where they can become entrained at the unscreened PP1. Approach velocities near the entrance to the canal would be reduced after the project is implemented. Replacing the canal with a buried pipeline would nearly eliminate tidal action at the headworks/trash rack because the pipeline would always remain full of water (the bottom of the pipeline would be 5 feet lower than the bottom of the canal). Further, the dimensions of the inlet at the headworks/trash rack would not be modified. Therefore, the only flow past the headworks/trash rack would be derived from pumping at PP1, resulting in a maximum approach velocity at the headworks/trash rack of about 0.55 fps. This maximum approach velocity with the project is below the minimum value of 0.71

fps twice per day occurring under existing conditions without adding the affects of pumping at PP1.

Although 46.76 acres of aquatic habitat would be lost with implementation of the proposed action, the fish community composition within the canal is dominated by predatory species and provides minimal primary food production and rearing habitat for salmon, steelhead, and delta smelt. Current operations associated with the canal and use of PP1 result in predation and high mortality rates of special-status fish species present as documented by in-channel survival experiments (Morinaka 1998). The proposed action would have a potentially beneficial effect on delta smelt by reducing mortality by predation as a result of reducing tidal flow, which draws fish into the canal, where they can become entrained at the unscreened PP1. Project construction and implementation/operation of the completed project would not be expected to increase net mortality. The proposed action would be expected to provide better survivability for delta smelt by reducing the high mortality rates that has been documented to occur within the canal.

Delta Smelt Critical Habitat

This biological opinion does not rely on the regulatory definition of “destruction or adverse modification” of critical habitat at 50 CFR 402.02. Instead we have relied upon the statutory provisions of the Act to complete the following analysis with respect to critical habitat.

The Contra Costa Canal is within designated delta smelt critical habitat (i.e. the legal delta) (Service 1994). The proposed project will result in direct effects and loss of about 46.76 acres of shallow water habitat (SWH). SWH is defined as all waters between Mean High Water and 3-meters below Mean Lower Low Water mark.

Since 1993 (prior to critical habitat designation for the delta smelt) the Service has required that CCWD provide a fish screen for the canal to prevent listed species from entering the facility and being transported to PP1 (consultation # 1-1-93-F-35) and thereby isolating the canal from the rest of the Delta. While the screen has yet to be constructed the Service continues to require that the facility be screened to prevent the loss of federally listed species.

We believe that the primary constituent element of larval and juvenile transport for delta smelt is not met within the canal, as adequate river flow is not present to transport larvae from the canal to rearing areas within Suisun Bay. Because of inadequate flows away from the canal toward Rock Slough and Franks Tract, any larvae intercepted by the canal will likely be impinged by CCWD’s PP1. As a result of the decision to require screening of the facility, and because one or more primary constituent element is not met by the habitat conditions present in the canal, the Service does not believe that the current action will result in the loss of habitat critical to the survival or recovery of the species.

Giant garter snake

The proposed project involves installing up to 3.97 miles of buried pipeline in place of the existing unlined portion of the Contra Costa Canal. Giant garter snakes could be injured or killed during construction and related excavation activities as a result of construction equipment

running over or burying individual snakes during construction activities.

The proposed project would result in the permanent loss 3.84 acres of potential giant garter snake habitat within and immediately adjacent to the canal. There would be a temporal loss of about 128.45 acres of upland habitat. Permanent and temporal loss of habitat would be phased over the life of the project.

Giant garter snakes could also be taken by the use of mats and rolled erosion control products containing net-like mesh made of fibers such as nylon, plastic or jute twine, which hold materials such as straw and jute. These products have been found to be hazardous to several species of snakes (Stuart *et al.* 2001, Barton and Kinkead 2005). The snakes' scales catch on the netting, preventing the snakes from escaping by backing out of the mesh; the snakes then move forward into the small mesh opening which can trap the animals. The resulting lacerations from trying to escape and subsequent overheating or exposure to predators can result in death of the snakes (Stuart *et al.* 2001, Barton and Kinkead 2005).

The effects on giant garter snakes as a result of the proposed project would be minimized by implementing the conservation measures in the project description.

47 acres of created wetlands will be provided at Holland Tract to offset wetland and species impacts. About 25 acres are a mosaic of seasonal marsh, perennial freshwater marsh, and perennial open water habitat with islands of upland refugia that will be created on the mitigation site. The created seasonal marsh within the wetland mosaic at Holland Tract is expected to be perennial in wetter years, and the permanent aquatic areas can support small fish and amphibians, providing a potential food source for giant garter snake. The dendritic design of the open water flanked by emergent freshwater marsh vegetation provides habitat complexity and creates areas for snakes to successfully conceal themselves and forage.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Delta smelt

Any continuing or future non-Federal diversions of water that may entrain adult or larval fish would have cumulative effects to the smelt. Water diversions through intakes serving numerous small, private agricultural lands contribute to these cumulative effects. These diversions also include municipal and industrial uses. State or local levee maintenance may also destroy or adversely modify spawning or rearing habitat and interfere with natural long term habitat-maintaining processes (Service 2000).

Additional cumulative effects result from the impacts of point and non-point source chemical contaminant discharges. These contaminants include but are not limited to selenium and numerous pesticides and herbicides as well as oil and gasoline products associated with discharges related to agricultural and urban activities. Implicated as potential sources of mortality for smelt, these contaminants may adversely affect fish reproductive success and survival rates. Spawning habitat may also be affected if submersed aquatic plants, used a substrates for adhesive egg attachment, are lost due to toxic substances.

Other cumulative effects could include: the dumping of domestic and industrial garbage may present hazards to the fish because they could become trapped in the debris, injure themselves, or ingest the debris; golf courses reduce habitat and introduce pesticides and herbicides into the environment; oil and gas development and production remove habitat and may introduce pollutants into the water; agricultural uses on levees reduce riparian and wetland habitats; and grazing activities may degrade or reduce suitable habitat, which could reduce vegetation in or near waterways. These cumulative effects further contribute to reducing the respective environmental baselines for the smelt.

Giant garter snake

Because the giant garter snake inhabits wetlands and adjacent uplands in highly modified portions of the Central Valley, the Service anticipates that a wide range of activities will affect this species. An undetermined number of future land use conversions and routine agricultural practices are not subject to Federal permitting processes and may convert or otherwise alter habitat or disturb, kill, or injure snakes. These cumulative effects include: (1) fluctuations in acres aquatic habitat due to water management or acres of ricelands in production; (2) diversion of water; (3) levee repairs; (4) riprapping or lining of canals and stream banks; (5) dredging, clearing and spraying to remove vegetation adjacent to canals and streams; (7) use of burrow fumigants on levees and other potential upland refugia; (8) release of contaminated runoff from agriculture and urbanization; (9) use of plastic erosion control netting; (10) use of herbicides and pesticides in ricelands and other agricultural lands that provide snake habitat, or which are adjacent to and/or drain into snake habitat; (11) increased vehicular traffic on roads and levees; (12) human intrusion into habitat; and (13) predation by feral animals and pets.

Conclusion

After reviewing the current status of the delta smelt and giant garter snake, environmental baselines for the species, the effects of the proposed action, and the cumulative effects on these species, it is the Service's biological opinion that the proposed construction of the Contra Costa Canal Replacement Project, as described herein, is not likely to jeopardize the continued existence of the delta smelt or giant garter snake. The proposed action is located in delta smelt critical habitat, but will not result in adverse modification of delta smelt critical habitat, because the primary constituent element of larval and juvenile transport for delta smelt is not met within the canal, as adequate river flow is not present to transport larvae from the canal to rearing areas within Suisun Bay. Critical habitat for the giant garter snake has not been proposed or

designated; therefore, none will be adversely modified or destroyed.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are nondiscretionary and must be implemented by Reclamation so they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. Reclamation has a continuing duty to regulate the activity that is covered by this incidental take statement. If Reclamation (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service expects that incidental take of delta smelt will be difficult to detect or quantify for the following reasons: the small size of delta smelt eggs and larvae; their occurrence in aquatic habitat makes them difficult to detect; and the low likelihood of finding dead or impaired specimens. Due to the difficulty in quantifying the number of delta smelt that will be taken as a result of the proposed action, the Service is quantifying take incidental to the project in terms of acres of habitat that will become unsuitable for the species as a result of the action. Therefore, the Service estimates that 46.76 acres of shallow water habitat will become unsuitable as a result of the proposed project. In addition, an unquantifiable number of delta smelt eggs, larvae and adults may be killed, harmed, or harassed as a result of the construction activities and on-going operations of the water diversions at the proposed intake. The Service has developed the following incidental take statement based on the premise that the reasonable and prudent measures will be implemented. Upon implementation of the following reasonable and prudent measures, incidental take associated with the construction and implementation of the proposed

intake structure the form of 46.76 acres of shallow water habitat will become exempt from the prohibitions described under section 9 of the Act.

The Service anticipates that incidental take of the giant garter snake will be difficult to detect or quantify for the following reasons: giant garter snakes are cryptically colored, secretive, and known to be sensitive to human activities. Snakes may avoid detection by retreating to burrows, soil crevices, vegetation, or other cover. Individual snakes are difficult to detect unless they are observed, undisturbed, at a distance. Most close-range observations represent chance encounters that are difficult to predict. It is not possible to make an accurate estimate of the number of snakes that will be harassed or harmed during construction activities. In instances when take is difficult to detect, the Service may estimate take in numbers of species per acre of habitat lost or degraded as a result of the action. Therefore, the Service anticipates that all giant garter snakes inhabiting about 3.84 acres of aquatic and dispersal habitat may be harassed or harmed by loss and destruction of habitat as a result of the project. The Service has developed the following incidental take statement based on the premise that the reasonable and prudent measures will be implemented. Upon implementation of the following reasonable and prudent measures, incidental take associated with the construction of the proposed project in the form of 3.84 acres of aquatic and dispersal habitat will become exempt from the prohibitions described under section 9 of the Act.

Effect of the Take

The Service has determined that this level of anticipated take is not likely to result in jeopardy to the delta smelt or giant garter snake. While the proposed action is located within the area defined as delta smelt critical habitat this action would not impact habitat which contributes to the survival or recovery of delta smelt. Critical habitat has not been proposed or designated for the giant garter snake; therefore, none will be affected.

Reasonable and Prudent Measures

The Service has determined that the following reasonable and prudent measures are necessary and appropriate to minimize the effects of the proposed project on delta smelt and the giant garter snake.

1. CCWD shall implement the project as described in the March 2007 ASIP and this biological opinion.
2. Reduce effects to the delta smelt and giant garter snake.
3. Reclamation shall ensure CCWD's compliance with this biological opinion.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Reclamation and the Corps

must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1. The following Terms and Conditions implement Reasonable and Prudent Measure one (1):
 - a. CCWD shall minimize the potential for harm, harassment, or killing of federally listed wildlife species resulting from project related activities by implementation of the conservation measures as described in the March 2007 ASIP and appearing in the Project Description of this biological opinion.
 - b. CCWD shall make the terms and conditions in this biological opinion a required term in all contracts for the project that are issued by them to all contractors.
2. The following Terms and Conditions implement Reasonable and Prudent Measure two (2):
 - a. Plastic mono-filament netting (erosion control matting) will not be used for erosion control or other purposes at the proposed project site. Snakes may become entangled in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding.
 - b. Upon completion of the proposed action, all giant garter snake habitats subject to temporary ground disturbances, including storage and staging areas, temporary roads, etc. must be re-contoured, if appropriate, and revegetated with seeds and/or cuttings of appropriate plant species to promote restoration of the area to pre-project conditions. Areas of temporary disturbance are expected to be returned to pre-project conditions within one season following construction. An area subject to "temporary" disturbance means any area that is disturbed during the project, but that after project completion will not be subject to further disturbance and has the potential to be revegetated. To the maximum extent practicable (i.e., presence of natural lands), topsoil shall be removed, cached, and returned to the site according to successful restoration protocols. Loss of soil from run-off or erosion shall be prevented with straw bales, straw wattles, or similar means provided they do not entangle, block escape or dispersal routes of listed animal species. A biologist shall ensure that areas subject to temporary disturbance have been adequately restored, and this information is included under the final reports described in the Reporting Requirements of this biological opinion.
3. The following Terms and Conditions implement Reasonable and Prudent Measure three (3):
 - a. If requested, during or upon completion of construction activities, the on-site biologist, and/or a representative from CCWD shall accompany Service or DFG

personnel on an on-site inspection of the site to review project effects to the delta smelt, giant garter snake and their habitats.

- b. Reclamation shall ensure CCWD complies with the Reporting Requirements of this biological opinion. This includes the submission of a report detailing the personnel conducting the fish rescue, methods used, numbers of each special status species collected and relocated, length information for nonlisted species, and estimate of the survival of fish immediately after release. Photographs showing the site and rescue operation will be included. The report will be provided by CCWD to NMFS, the Service, and DFG within 30 days of completing the fish rescue.
- c. At the end of each construction phase Reclamation will ensure that CCWD provides a report detailing the extent and type of habitat impacted and Reclamation will confer with the Service to assess impacts associated with the project on federally listed species and their habitats.

Reporting Requirements

A post-construction compliance report prepared by the monitoring biologists must be submitted to the Deputy Assistant Field Supervisor of the Endangered Species Division at the Sacramento Fish and Wildlife Office within thirty (30) calendar days of the completion of construction activity or within thirty (30) calendar days of any break in construction activity lasting more than thirty (30) calendar days. This report shall detail (i) dates that groundbreaking at the project started and the project was completed; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on the delta smelt and giant garter snake, if any; (v) occurrences of incidental take of the snake; and (vi) other pertinent information.

The Reclamation must require the project applicant to immediately report to the Service any information about take or suspected take of federally-listed species not authorized in this biological opinion. The project applicant must notify the Service within 24 hours of receiving such information. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal. Injured giant garter snakes must be cared for by a licensed veterinarian or other qualified person, such as the on-site biologist; dead individuals should be preserved according to standard museum techniques and held in a secure location. In the case of a dead animal, the individual animal should be preserved, as appropriate, and held in a secure location until instructions are received from the Service regarding the disposition of the specimen or the Service takes custody of the specimen. Any killed specimens of fish that have been taken should be properly preserved in accordance with Natural History Museum of Los Angeles County policy of accessioning (10% formalin in quart jar or freezing). Information concerning how the fish was taken, length of the interval between death and preservation, the water temperature and outflow/tide conditions, and any other relevant information should be written on 100% rag content paper with permanent ink and included in the container with the specimen. The Service contact persons are Chris Nagano, Deputy Assistant Field Supervisor, at (916) 414-6600, and Scott Heard, Resident Agent-in-charge of the Service's Law Enforcement Division at

(916) 414-6660.

Any contractor or employee who during routine operations and maintenance activities inadvertently kills or injures a listed wildlife species must immediately report the incident to their representative. This representative must contact the California Department of Fish and Game immediately in the case of a dead or injured listed species. The California Department of Fish and Game contact for immediate assistance is State Dispatch at (916) 445-0045.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

1. The Service recommends the Reclamation develop and implement restoration measures in area designated in the Delta Fishes Recovery Plan (Service 1996).
2. The Service recommends the Reclamation develop procedures that minimize the effects of all other in-water activities on delta smelt.
3. The Reclamation should assist in the implementation of the draft, and when published, the final Recovery Plan for the garter snake.

To be kept informed of actions minimizing or avoiding adverse effects or benefiting listed and proposed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the proposed Contra Costa Canal Replacement Project. As provided in 50 CFR §402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded, as previously described, or the requirements under the incidental take section are not implemented; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; and/or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Based on the results of Terms and Conditions 3b and 3c, Reclamation will reinitiate consultation with the Service should it become apparent that the proposed action will impact more than 46.76 acres of shallow water habitat potentially occupied by delta smelt or 3.84 acres of aquatic and dispersal habitat suitable for giant garter snake.

If you have any questions regarding this biological opinion on the proposed action, please contact Ryan Olah of the Sacramento Fish and Wildlife Office at (916) 414-6600.

cc

U.S. Army Corps of Engineers, Sacramento, California
California Department of Fish and Game, Stockton, California
U.S. Bureau of Reclamation, Sacramento, California

LITERATURE CITED

- American Farmland Trust. 1999. California's Central Valley Urban Sprawl 2040 Zone of Conflict. Farmland Information Library. Available: <http://farm.fic.niu.edu/fic/ft/cv.html>
- Arthur, J.F. and M.D. Ball. 1978. Entrapment of suspended materials in the San Francisco Bay-Delta Estuary. U.S. Department of the Interior, Bureau of Reclamation, Sacramento, California.
- Arthur, J.F. and M.D. Ball. 1979. Factors influencing the entrapment of suspended material in the San Francisco Bay-Delta Estuary. Pages 143-174 in T.J. Conomos, editor. Pacific Division, American Association for the Advancement of Science, San Francisco, California.
- Arthur, J.F. and M.D. Ball. 1980. The significance of the entrapment zone location to the phytoplankton standing crop in the San Francisco Bay-Delta Estuary. U.S. Department of Interior, Water and Power Resources Service.
- Barton, C. and K. Kinkead. 2005. Do Erosion Control and Snakes Mesh? *Journal of Soil and Water Conservation* 60(2):33A-35A.
- Beam, J. A. and T. M. Menges. 1997. Evaluation of management practices on state-owned wildlife Areas and private duck clubs in the Grasslands Basin of the San Joaquin Valley relative to the giant garter snake (*Thamnophis gigas*). Unpublished report. California Department of Fish and Game, Los Banos, California. 9 pp.
- Beckon, W. N., M. C. S. Eacock, A. Gordus, and J. D. Henderson. 2003. Biological effects of the Grassland Bypass Project. Ch. 7 in Grassland Bypass Project Annual Report 2001-2002. San Francisco Estuary Institute, Oakland, California
- Brett, J.R. 1976. Scope for metabolism and growth of sockeye salmon *Oncorhynchus nerka*, and some related energetics. *Journal of the Fisheries Research Board of Canada* 33:307-313.
- Brode, J., and G. Hansen. 1992. Status and future management of the giant garter snake (*Thamnophis gigas*) within the southern American Basin, Sacramento and Sutter Counties, California. Unpublished report for the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California. January 1992. 24 pp. + Appendix.
- California Department of Fish and Game. 1999. Fall Midwater Trawl [database on the internet]. Available from <http://www.delta.ca.gov/data/mwt99/index.html>.
- California Department of Fish and Game. 2000. 20mm Survey [database on the internet]. Available from <http://www.delta.ca.gov/data/20mm/2000/>.

- California Department of Fish and Game. 2001. 2001 Summer Towntnet Survey [database on the internet]. Available from <http://www.delta.dfg.ca.gov/data/skt/skt2002/index.html>.
- California Department of Fish and Game. 2004. Comment Letter on the Five Year Status Review of the Delta Smelt. 2 pp.
- California Department of Fish and Game. 2005. Fall Midwater Trawl [database on the internet]. Available from <http://www.delta.dfg.ca.gov>.
- California Department of Fish and Game. 2005. Summer Towntnet Survey [database on the internet]. Available from <http://www.delta.dfg.ca.gov>.
- California Department of Fish and Game. 2006. Summer Towntnet Survey [database on the internet]. Available from <http://www.delta.dfg.ca.gov>.
- California Department of Fish and Game and California Department of Water Resources 2005. Delta Smelt Action Plan. The Resources Agency, Sacramento, California. 89 pp.
- California Department of Water Resources and U.S. Bureau of Reclamation, Mid-Pacific Region 1993. Effects of the Central Valley Project and State Water Project on delta smelt. Sacramento County, California. 134 pp.
- California Department of Water Resources and U.S. Bureau of Reclamation, Mid-Pacific Region 1994. Effects of the Central Valley Project and State Water Project on delta smelt and Sacramento splittail. Sacramento, California. 230 pp.
- California Department of Water Resources and U.S. Bureau of Reclamation, Mid-Pacific Region 1993. Effects of the Central Valley Project and State Water Project on delta smelt. Sacramento County, California. 134 pp.
- California Department of Water Resources and U.S. Bureau of Reclamation, Mid-Pacific Region 1994. Effects of the Central Valley Project and State Water Project on delta smelt and Sacramento splittail. Sacramento, California. 230 pp.
- California Natural Diversity Data Base (CNDDDB). 2006. RareFind 3. California Department of Fish and Game, Natural Heritage Division, Sacramento, California.
- Contra Costa Water District. 1999. Letter dated January 6, 1999, to Matt Vandenberg (USFWS) from Richard Denton (CCWD) transmitting the 1998 Annual Reporting for the Biological Opinion on Delta Smelt for the Los Vaqueros Project.
- Contra Costa Water District. 2000a. Letter dated January 14, 2000, to Stephanie Brady (USFWS) from Richard Denton (CCWD) transmitting the 1999 Annual Reporting for the Biological Opinion on Delta Smelt for the Los Vaqueros Project.

- Contra Costa Water District. 2000b. Letter dated December 29, 2000, to Karen Miller (USFWS) from Richard Denton (CCWD) transmitting the 2000 Annual Reporting for the Biological Opinion on Delta Smelt for the Los Vaqueros Project.
- Contra Costa Water District. 2001. Letter dated December 21, 2001, to Karen Miller (USFWS) from Richard Denton (CCWD) transmitting the 2001 Annual Reporting for the Biological Opinion on Delta Smelt for the Los Vaqueros Project.
- Contra Costa Water District. 2003. Letter dated March 12, 2003, to Daniel Buford (USFWS) from Richard Denton (CCWD) transmitting the 2002 Annual Reporting for the Biological Opinion on Delta Smelt for the Los Vaqueros Project.
- Contra Costa Water District. 2004. Letter dated March 25, 2004, to Daniel Buford (USFWS) from Richard Denton (CCWD) transmitting the 2003 Annual Reporting for the Biological Opinion on Delta Smelt for the Los Vaqueros Project.
- Contra Costa Water District. 2005. Letter dated January 26, 2005, to Ryan Olah (USFWS) from Leah Orloff (CCWD) transmitting the 2004 Annual Reporting for the Biological Opinion on Delta Smelt for the Los Vaqueros Project.
- Contra Costa Water District. 2006. Letter dated February 16, 2006, to Ryan Olah (USFWS) from Leah Orloff (CCWD) transmitting the 2005 Annual Reporting for the Biological Opinion on Delta Smelt for the Los Vaqueros Project.
- Contra Costa Water District. 2006a (April). *Initial Study/Proposed Mitigated Negative Declaration for the Contra Costa Canal Encasement Project*. Concord, CA. Technical assistance provided by EDAW, Sacramento, CA.
- Contra Costa Water District. 2006b. *Alternative Intake Project Action Specific Implementation Plan*. Concord, CA. Technical assistance provided by EDAW, Sacramento, CA.
- Dege, M., and L. R. Brown. 2004. Effect of outflow on spring and summertime distribution and abundance of larval and juvenile fishes in the upper San Francisco Estuary. *American Fisheries Society Symposium* 39: 49-65.
- Dickert, C. 2002. San Joaquin Valley giant garter snake project—2001. Unpublished report. California Department of Fish and Game, Los Banos, California. January 11, 2002. 14 pp.
- Dickert, C. 2003. Progress report for the San Joaquin Valley giant garter snake conservation project—2003. Unpublished report. California Department of Fish and Game, Los Banos Wildlife Complex, Los Banos, California. 37 pp.
- Dickert, C. 2005. Giant garter snake surveys at some areas of historic occupation in the

Grassland Ecological Area, Merced County and Mendota Wildlife Area, Fresno County, California. California Department of Fish and Game 91(4):255-269.

Erkkila, L.F., J.F. Moffett, O.B. Cope, B.R. Smith, and R.S. Nelson. 1950. Sacramento-San Joaquin Delta fishery resources: effects of Tracy pumping plant and delta cross channel. U.S. Fish and Wildlife Services Special Report. Fisheries 56. 109 pp.

Fitch, H. S. 1940. A biogeographical study of the *ordinoides* Artenkreis of garter snakes (genus *Thamnophis*). University of California Publications in Zoology 44:1-150.

Fitch, H. S. 1941. The feeding habits of California garter snakes. Department of Fish and Game 27(2):2-32.

Fox, W. 1948. The relationships of the garter snakes of the garter snake *Thamnophis ordinoides*. Copeia 1948:113-120.

Ganssle, D. 1966. Fishes and decapods of San Pablo and Suisun bays. Pp.64-94 in D.W. Kelley, ed.: Ecological studies of the Sacramento-San Joaquin Estuary, Part 1. Calif. Dept. Fish and Game, Fish Bulletin No. 133.

Goodman, D. 1987. The demography of chance extinction. Pages 11-19 in: M. E. Soulé, editor, Conservation Biology: the science of scarcity and diversity. Sinauer Associates, Inc., Sunderland, Massachusetts.

Hansen, E. C. 2002. Year 2001 Investigations of the Giant Garter Snake (*Thamnophis gigas*) in the Greater American Basin: Sutter County. Prepared for Sacramento Area Flood Control Agency. January 30. 18 pp plus appendices.

Hansen, E. C. 2003. Year 2002 investigations of the giant garter snake (*Thamnophis gigas*) in the Middle American Basin: Sutter County, California. Unpublished report prepared for the Sacramento Area Flood Control Agency, Sacramento, California. February 14, 2003. 33 pp.

Hansen, E. C. 2004. Year 2003 investigations of the giant garter snake (*Thamnophis gigas*) in the Middle American Basin: Sutter County, California. Unpublished report prepared for Sacramento Area Flood Control Agency, Sacramento, California. March 10, 2004. 40 pp.

Hansen, G. E. 1986. Status of the giant garter snake *Thamnophis couchi gigas* (Fitch) in the Southern San Joaquin Valley During 1986. Unpublished (final) report for California Department of Fish and Game, Standard Agreement No. C-1433. 31 pp.

Hansen, G. E. 1988. Review of the status of the giant garter snake (*Thamnophis couchi gigas*) and its supporting habitat during 1986-1987. Unpublished (final) report for California Department of Fish and Game, Contract C-2060. Rancho Cordova, California. 31 pp.

- Hansen, G. E. 1995. Recovery of the giant garter snake (*Thamnophis gigas*) and mitigation habitat within the Strawberry Creek enlargement and realignment project: Progress report #4 of 5. Unpublished report prepared for LSA Associates, Inc., Point Richmond, California. October 1995. 4 pp.
- Hansen, R. W. 1980. Western aquatic garter snakes in central California: an ecological and evolutionary perspective. Unpublished masters thesis, Department of Biology, California State University, Fresno. 78 pp.
- Hansen, G. E. and J. M. Brode. 1980. Status of the giant garter snake, *Thamnophis couchi gigas* (Fitch). California Department of Fish and Game, Inland Fisheries Endangered Species Program Special Publication Report. 80-5:1-14.
- Hansen, G. E. and J. M. Brode. 1993. Results of relocating canal habitat of the giant garter snake (*Thamnophis gigas*) during widening of State Route 99/70 in Sacramento and Sutter counties, California. Unpublished (final) report for Caltrans Interagency Agreement 03E325 (FG7550) (FY 87/88-91-92). Rancho Cordova, California. March 3, 1993. 36 pp.
- Hansen, R.W. and G. E. Hansen. 1990. *Thamnophis gigas*: Reproduction. Herpetological Review 21(4):93-94.
- Herbold, B. 1994. Habitat requirements of delta smelt. Interagency Ecological Studies Program Newsletter, Winter 1994. California Department of Water Resources, Sacramento, California.
- Hinds, N. E. A. 1952. Evolution of the California landscape. California Division of Mines Bulletin No. 158. 240 pp.
- Hopkins, W. A., C.L. Rowe, and J.D. Congdon. 1999. Elevated Trace Element Concentrations and Standard Metabolic Rate in Banded Water Snakes (*Nerodia fasciata*) Exposed to Coal Combustion Wastes. Environmental Toxicology and Chemistry 18(6):1258-1263.
- Hopkins, W.A., J.H. Roe, J.W. Snodgrass, B.P. Staub, B.P. Jackson, and J.D. Congdon. 2002. Effects of chronic dietary exposure to trace elements on banded water snakes (*Nerodia fasciata*). Environmental Toxicology and Chemistry 21(5):906-913.
- Hopkins, W. A., B. Staub, J.A. Baionno, B.P. Jackson, J.H. Row, and N.B. Ford. 2004. Trophic and maternal transfer of selenium in brown house snakes (*Lamprophis fuliginosus*). Ecotoxicology and Environmental Safety 58:285-293.

- Knutson, A.C., Jr. and J.J. Orsi. 1983. Factors regulating abundance and distribution of the shrimp *Neomysis mercedis* in the Sacramento-San Joaquin Estuary. Transactions of the American Fisheries Society 112:476-485.
- Mager, R. 1993. Delta smelt culturing. Pages 2-3 in W Kimmerer unpublished minutes of the March 1993 Food Chain Group Meeting. Department of Water Resources. April 22, 1993, memo. 8pp.
- Monroe, M.W. and J. Kelly. 1992. State of the Estuary: A report on conditions and problems in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. San Francisco Estuary Project, Oakland, California.
- Morinaka, J. 1998. *Contra Costa Canal Fish Entrainment Sampling*. Draft Three-Year Summary Report. Prepared for California Department of Fish and Game.
- Moyle, P.B. 1976. Inland Fishes of California. University of California Press, Berkeley, California. 405 pp.
- Moyle, P.B. 2002. Inland Fishes of California. University of California Press. Berkeley, California. 576 pp.
- Moyle, P.B. 2003. Comment Letter on the Five Year Status Review of the Delta Smelt. 4pp.
- Moyle, P. B. and J. Cech, Jr. 1988. Fishes: An Introduction to Ichthyology. Prentice Hall, Englewood Cliffs, New Jersey. 559 pages.
- Moyle, P. B., B. Herbold, D. E. Stevens, and L. W. Miller 1992. Life history and status of delta smelt in the Sacramento-San Joaquin Estuary, California. Transactions of the American Fisheries Society 121:67-77.
- Nichols, F.H., J.E. Cloern, S.N. Luoma, and D.H. Peterson 1986. The modification of an Estuary. Science 231:567-573.
- Orsi, J.J. and W.L. Mecum. 1986. Zooplankton distribution and abundance in the Sacramento-San Joaquin Delta in relation to certain environmental factors. Estuaries 9(4B):326-339.
- Paquin, M. M. 2001. Population structure of the giant garter snake, *Thamnophis gigas*. Unpublished masters thesis, Department of Biology: Ecology and Systematics, San Francisco State University. 27 pp.
- Paquin, M. M., G. D. Wylie, and E. J. Routman, 2006. Population structure of the giant garter snake, *Thamnophis gigas*. Conservation Genetics 7:25-36.

- Patterson, L. 2004. Giant garter snake surveys for the in-delta storage program year-end and summary report. Unpublished report prepared for the Department of Water Resources, Sacramento, California. 18 pp.
- Patterson, L. and E. Hansen. 2003. Giant garter snake surveys on Bacon Island and Webb Tract in 2003. Unpublished report prepared for the Department of Water Resources, Sacramento, California. 24 pp.
- Patterson, L. and E. Hansen. 2003. Giant garter snake habitat evaluations on Bacon Island and Webb Tract in 2003. Unpublished report prepared for the Department of Water Resources, Sacramento, California. 16 pp.
- Radtke, L. D. 1966. Distribution of smelt, juvenile sturgeon, and starry flounder in the Sacramento-San Joaquin Delta. Pp. 115-119 in J. L. Turner and D. W. Kelley, eds.: Ecological studies of the Sacramento-San Joaquin Estuary, Part 2. California Department of Fish and Game Fish Bulletin No. 136.
- Rossman, D.A., N.B. Ford, and R.A. Seigel. 1996. The Garter Snakes: Evolution and Ecology. University of Oklahoma Press, Norman. 331 pp.
- Rossman, D. A. and G. R. Stewart. 1987. Taxonomic reevaluation of *Thamnophis couchii* (Serpentes: Colubridae). Occasional Papers of the Museum of Zoology, Louisiana State University 63:1-25.
- Saiki, M. K. 1998. An ecological assessment of the Grassland Bypass Project on fishes inhabiting the Grassland Water District, California. Unpublished report by the U.S. Fish and Wildlife Service, Sacramento, California.
- Souza, K. and M. Bryant. 2002. Townet Survey and Fall Midwater Trawl. Interagency Ecological Program for the San Francisco Estuary. Newsletter 15(2):21-24.
- Stebbins, R. C. 1985. A field guide to western reptiles and amphibians. Houghton Mifflin Co., New York. 336 pp.
- Stevens, D. E. 1966. Distribution and food habits of American Shad (*Alosa sapidissima*) in the Sacramento-San Joaquin Delta. Pp. 97-107 in J.L. Turner and D.W. Kelley (eds.). Ecological studies of the San Francisco Bay Estuary. California Fish and Game Bulletin No. 136.
- Stevens, D. E. and S. W. Miller. 1983. Effects of river flow on abundance of young chinook salmon, American shad, longfin smelt, and Delta smelt in the Sacramento-San Joaquin river system. North American Journal of Fisheries Management 3:425-437.
- Stevens, D. E., S. W. Miller, and B. C. Bolster 1990. Report to the Fish and Game Commission: A status review of the delta smelt (*Hypomesus transpacificus*) in California. California

Department of Fish and Game Candidate Species Status Rept. 90-2. 149 pages.

- Stitt, E.W., P.S. Balfour, T. Lucklau, and T.E. Edwards. 2005. The southern watersnake (*Nerodia fasciata*) in Folsom, California: History, population attributes, and relation to other introduced watersnakes in North America. Final report to the U.S. Fish and Wildlife Service, Cooperative Agreement No. 11420-1933-CM02. ECORP Consulting, Inc., Roseville, California. 72 pp. + Appendices.
- Stuart, J.N., M.L. Watson, T.L. Brown, and C. Eustice. 2001. Plastic netting: An entanglement hazard to snakes and other wildlife. *Herpetological Review* 32(3): 162-164.
- Swanson, C. and J. J. Cech, Jr. 1995. Environmental tolerances and requirements of the delta smelt, *Hypomesus transpacificus*. Final Report. Davis, California. 77 pp.
- Swanson C, T. Reid, P.S. Young, and J.J. Cech. 2000. Comparative environmental tolerances of threatened delta smelt (*Hypomesus transpacificus*) and introduced Wakasagi (*H. nipponensis*) in an altered California estuary. *Oecologia* 123:384-390.
- Sweetnam, D.A. 1999. Status of delta smelt in the Sacramento-San Joaquin Estuary. *California Fish and Game* 85(1):22-27.
- Sweetnam, D. 1992. Delta Smelt Project Update, October 1992. Unpublished report prepared by California Department of Fish and Game, Bay-Delta and Special Water Projects Division, Stockton, California. 7 pp.
- Sweetnam, D.A. and D.E. Stevens. 1993. Report to the Fish and Game Commission: A status review of the delta smelt (*Hypomesus transpacificus*) in California. Candidate Species Status Report 93-DS. Sacramento, California. 98 pages plus appendices.
- Tenera Environmental. 2006. Unpublished data collected during sieve net sampling at Contra Costa Canal Headworks, January through October 2006. Lafayette, CA.
- Turner, J.L. and D.W. Kelly. 1966. Ecological studies of the Sacramento-San Joaquin Delta. California Department of Fish and Game Bulletin No. 136.
- U.S. Department of Agriculture [Internet] [cited April 15, 2003]. Available at: <http://www.ers.usda.gov/Briefing/Rice/background.htm>
- U.S. Department of the Interior. 1994. The Impact of Federal Programs on Wetlands, Vol. II, A Report to Congress by the Secretary of the Interior, Washington, D.C., March, 1994. Access: <http://www.doi.gov/oepc/wetlands2/>

- U.S. Fish and Wildlife Service (Service). 1993. Endangered and threatened wildlife and plants: Determination of threatened status for the delta smelt. March 5, 1993. **Federal Register** 58(42):12854-12864.
- _____ 1993. Endangered and threatened wildlife and plants; determination of threatened status for the giant garter snake; final rule. *Federal Register* 58(201):54053-54066.
- _____ 1994. Endangered and threatened wildlife and plants: Critical habitat determination for the delta smelt. December 19, 1994. **Federal Register** 59(242): 65256-65279.
- _____ 1994c. Formal consultation on the 1994 operation of the Central Valley Project and State Water Project: Effects on delta smelt. Sacramento, California. 34 pp, plus figures.
- _____ 1995. Formal consultation and conference on the effects of long-term operation of the Central Valley Project and State Water Project on the threatened delta smelt, delta smelt critical habitat, and proposed threatened Sacramento splittail. Sacramento, California. 52 pages, plus figures and attachment.
- _____ 1996. Sacramento-San Joaquin Delta Native Fishes Recovery Plan. Portland, Oregon.
- _____ 1999. Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). U.S. Fish and Wildlife Service, Portland, Oregon. x + 192 pp.
- _____ 2000. Biological Opinion on Implementation of the CVPIA and Continued Operations and Maintenance of the CVP. Sacramento, California.
- _____ 2003. Revised Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). Portland, Oregon. ix + XXX pp.
- _____ 2004. Five Year Status Review for the Delta Smelt. Sacramento, California. 50 pp.
- _____ 2006. Giant Garter Snake (*Thamnophis gigas*) 5-Year Review: Summary and Evaluation U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California. 46 pp.
- U.S. Geological Survey [Internet] Preliminary Assessment of Urban Growth in California's Central Valley [cited April 15, 2003]. Available: <http://ceres.ca.gov/calsip/cv/project.html>
- Wang, J.C.S. 1986. Fishes of the Sacramento-San Joaquin estuary and adjacent waters, California: A guide to the early life histories. Interagency Ecological Study Program for the Sacramento-San Joaquin Estuary. Sacramento, California. Technical Report 9.

- Wang, J.C.S. 1991. Early life stages and early life history of the delta smelt, *Hypomesus transpacificus*, in the Sacramento-San Joaquin Estuary, with comparison of early life stages of the longfin smelt, *Spirinchus thaleichthys*. Interagency Ecological Studies Program for the Sacramento-San Joaquin Estuary. Sacramento, California. Technical Report 28.
- Weihs, D. 1974. Energetic advantages of burst swimming of fish. *Journal of Theoretical Biology*. 48:215-229.
- Williams, T. and V. Wunderlich. 2003. Progress report: 2003 San Joaquin Valley giant garter snake conservation project. Unpublished report. U.S. Fish and Wildlife Service, San Luis National Wildlife Refuge Complex, Los Banos, California. 12 pp.
- Wylie, G. D. 1998a. Results of the 1998 survey for giant garter snakes in and around the Grasslands Area of the San Joaquin Valley. Unpublished report. U. S. Geological Survey, Biological Resources Division, Dixon Field Station, Dixon, California. 9 pp.
- Wylie, G. D. 1998b. Giant garter snake project: 1998 progress report. Unpublished (preliminary) report. U. S. Geological Survey, Biological Resources Division, Dixon Field Station, Dixon, California. 4 pp. + Figures.
- Wylie, G. D. 2003. Results of the 2003 monitoring for giant garter snakes (*Thamnophis gigas*): bank protection project on the left bank of the Colusa Basin Drainage Canal in Reclamation District 108, Sacramento River Bank Protection Project, Phase II. Dixon Field Station, Biological Resources Division, U.S. Geological Survey, Dixon, California. 13 pp.
- Wylie, G. D. and M. L. Casazza. 2001. Investigations of giant garter snakes in the Natomas Basin: 2001 field season. Unpublished report. U. S. Geological Survey, Biological Resources Division, Dixon Field Station, Dixon, California. December 20, 2001. 9 pp.
- Wylie, G.D. and L.L. Martin. 2003. Surveys for giant garter snakes on Service Partners for Fish and Wildlife project sites: 2003 progress report. Unpublished report. U.S. Geological Survey, Biological Resources Division, Dixon Field Station, Dixon, California. December 2003. 25 pp.
- Wylie, G. D. and L. L. Martin. 2004. Results of 2004 monitoring for giant garter snakes (*Thamnophis gigas*) for the bank protection project on the left bank of the Colusa Basin Drainage Canal in Reclamation District 108, Sacramento River bank river protection project, phase II. Unpublished report prepared for U.S. Army Corps of Engineers, Environmental Planning Section, Sacramento, California. November 2004. 18 pp.
- Wylie, G. D., T. Graham, M. L. Casazza, M. M. Paquin, and J. Daugherty. 1995. National Biological Service giant garter snake study progress report for the 1995 field season. Unpublished (preliminary) report. U. S. Geological Survey, Biological Resources

Division, Dixon Field Station, Dixon, California. 6 pp. + Figures.

Wylie, G. D., M. L. Casazza, and J. K. Daugherty. 1997. 1996 progress report for the giant garter snake study. Unpublished (preliminary) report. U.S. Geological Survey, Biological Resources Division, Dixon Field Station, Dixon, California. May 1, 1997. 6 pp. + Figures.

Wylie, G. D., M. L. Casazza, and N. M. Carpenter. 2002. Monitoring giant garter snakes at Colusa National Wildlife Refuge: 2001 progress report. Unpublished report. U.S. Geological Survey, Biological Resources Division, Dixon Field Station, Dixon, California. April 2002. 10 pp.

Wylie, G. D., M. L. Casazza, L. L. Martin, and M. Carpenter. 2003a. Monitoring giant garter snakes at Colusa National Wildlife Refuge: 2002 progress report. Dixon Field Station, Biological Resources Survey, U.S. Geological Survey, Dixon, California. 16 pp.

Wylie, G. D., M. L. Casazza, and L. L. Martin. 2003b. Giant garter snake surveys in the Natomas Basin: 2000-2002. Dixon Field Station, Biological Resources Survey, U.S. Geological Survey, Dixon, California. 20 pp.

Wylie, G. D., M. L. Casazza, and M. Carpenter. 2003c. Diet of bullfrogs in relation to predation on giant garter snakes at Colusa National Wildlife Refuge. *California Fish and Game* 89(2): 139-145.

Wylie, G. D., M. L. Casazza, L. L. Martin, and M. Carpenter. 2004a. Monitoring giant garter snakes at Colusa National Wildlife Refuge: 2003 progress report. Dixon Field Station, Biological Resources Survey, U.S. Geological Survey, Dixon, California. 17 pp.

Wylie, G. D., M. L. Casazza, and L. L. Martin. 2004b. Monitoring Giant Garter Snakes in the Natomas Basin: 2003 Results. Dixon Field Station, Biological Resources Survey, U.S. Geological Survey, Dixon, California. 55 pp.

Wylie, G.D., M.L. Casazza, L.L. Martin, and M. Carpenter. 2005. Identification of key GGS habitats and use areas on the Sacramento National Wildlife Refuge Complex. Unpublished report. U.S. Geological Survey, Biological Resources Division, Dixon Field Station, Dixon, California. 31 pp.

PERSONAL COMMUNICATIONS

Hansen, Eric. 2006. Consulting Environmental Biologist. Provided information on population trends, threats, and recommendations for future actions. May 8, 2006, and August 22, 2006.

Kelly, David. 2006. U.S. Fish and Wildlife Service, Sacramento, California.

Roberts, John. 2006. The Natomas Basin Conservancy, Executive Director. Provided information on population trends, threats, and recommendations for future actions. May 8, 2006, and August 22, 2006.

Wylie, Glenn. 2006. USGS-BRD, Western Ecological Research Center, Dixon Field Station. Provided information on population trends, threats, and recommendations for future actions to benefit the giant garter snake. May 9, 2006.