

RECLAMATION

Managing Water in the West

Record of Decision on Final Environmental Impact Statement for Fish Passage Improvement Project at the Red Bluff Diversion Dam

**Central Valley Project, California
Mid-Pacific Region**



**U.S. Department of the Interior
Bureau of Reclamation**

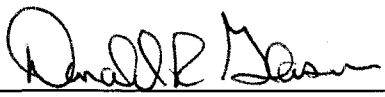
July 2008

**Record of Decision (ROD) on
Final Environmental Impact Statement for
Fish Passage Improvement Project
at the Red Bluff Diversion Dam**

July 2008

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I. Introduction

The Red Bluff Diversion Dam (RBDD) is part of the Central Valley Project's Sacramento Canals Unit, authorized in 1950. In addition to the RBDD, unit facilities include Funks Dam, the Corning pumping plant, the Tehama-Colusa (TC) Canal, and the Corning Canal. Completed in 1964, the RBDD is a concrete gated weir structure 5,985 feet in length, including the earth wings. The dam enables the diversion of up to 2,500 cubic feet per second (cfs) of water by gravity into the TC and Corning Canals for potential delivery to the Sacramento Valley National Wildlife Refuge and to approximately 140,000 acres of irrigable lands along the Interstate 5 corridor between Red Bluff and Dunnigan, California. Diversions are made possible by closing 11 slide gates (referred to as the "gates-in" configuration) located between piers spanning the length of the dam, impeding flow and causing Lake Red Bluff to form. As the lake water surface elevation rises to the canal elevation, water diversions can occur.

For the first 20 years, the dam was operated to provide for year-round diversions. Not long after its construction, as the efficacy of the associated fish ladders were questioned, concerns were raised about the possible impacts of dam operations on salmon migration. This situation was acknowledged in the Central Valley Project Improvement Act of 1992 - Public Law 102-575, Title 32 (CVPIA). Specifically, Section 3406(b)(10) authorizes and directs the Secretary of the Interior to develop and implement measures to minimize fish passage problems for adult and juvenile anadromous fish at the Red Bluff Diversion Dam. The Fish Passage Improvement Project at the Red Bluff Diversion Dam was developed to respond effectively to this CVPIA direction.

When the gates are in, the RBDD impedes, and for some species prevents, fish passage to and from spawning and rearing habitat in the upper Sacramento River. Raising the gates allows the river to flow virtually unimpeded and facilitates fish passage, but precludes gravity diversion into the canals. During gates-in operation, fish passage is impeded because the fish ladders are inefficient at flows greater than about 6,000 cfs, or half the typical summertime flows. At such flows, adult Chinook salmon fail to readily locate the ladders and their passage is delayed an average of three weeks. Additionally, the tailrace and lake created by the dam provide habitat for species that prey on juvenile salmon, reducing the salmon's overall survival rates.

A 1993 Biological Opinion (BO) regarding the effects of the Central Valley Project/State Water Project (CVP/SWP) operations on endangered winter-run Chinook salmon prepared by the National Marine Fisheries Service (NMFS) first required the gates be kept in the raised or gates-out position (i.e., non-diverting) from September 15 through May 14 in order to improve fish passage conditions. This operations criterion has continued, significantly improving fish passage at RBDD, but decreasing the facility's ability to reliably deliver water. This improvement in fish passage, important as it is, primarily benefits only the endangered or threatened salmonids (i.e., winter-run Chinook

salmon, spring-run Chinook salmon, and steelhead). Because the green sturgeon, listed as threatened under the Federal Endangered Species Act (ESA), rarely if ever uses fish ladders about half of the upstream migrating adults are blocked under current operations.

The re-diversion of Central Valley Project water stored in Black Butte Reservoir into the TC Canal (made possible by inducing reverse flow from Stony Creek into the TC Canal through the Constant Head Orifice) makes the continued delivery of water supplies feasible throughout the irrigation season. The Red Bluff Research Pumping Plant (RBRPP) and a few conventional pumps have also been routinely used to pump water from the Sacramento River into the canals. Any further reduction of the gates-in period without a compensating increase in pumping capacity would hamper diversion of full water supplies for agriculture.

In an effort to further reduce fish passage problems while providing water delivery reliability, the Bureau of Reclamation and the Tehama-Colusa Canal Authority (TCCA), in compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), prepared a Final Environmental Impact Statement/Environmental Impact Report (FEIS/EIR) addressing the environmental issues, alternatives, and impacts associated with improvement of both upstream and downstream passage of anadromous fish at the RBDD. The FEIS/EIR provided responses to comments received on the Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) and updated and corrected portions of the DEIS/EIR. This Record of Decision (ROD) documents the decisions made by Reclamation pursuant to NEPA. Decisions to be made by other Federal agencies and State agencies regarding the selection and implementation of an alternative will be recorded separately.

II. Decision

The ultimate goal of the Red Bluff Diversion Dam Fish Passage Improvement Program is to provide necessary improvements in fish passage conditions at the dam pursuant to the CVPIA, while retaining the ability to continue water deliveries. Reclamation has decided that the only reliable way to achieve this goal is to increase the amount of time the dam is operated in the gates-out configuration. Construction of a new pumping plant will provide additional flexibility to continue water deliveries during gates-out dam operation. Currently, Reclamation only has authorization consistent with the ESA to operate RBDD in the gates-in configuration from May 15 through September 15, annually, but has proposed in the recent Biological Assessment regarding the long-term operation of the CVP/SWP (CVP/SWP long-term operations BA) to operate the dam with gates out for approximately ten months annually (July 1 through the end of Labor Day) following implementation of the Fish Passage Improvement Project. The proposed action to re-operate the RBDD gates is subject to approval in the ongoing re-consultation addressing the long-term operation of the CVP/SWP pursuant to Section 7 (a)(2) of the ESA.

Reclamation's decision is to implement the Preferred Alternative as described in the FEIS/EIR (the Selected Alternative). Specifically, the Selected Alternative will consist of the construction of a conventional vertical propeller pumping plant and ancillary facilities at the Mill Site, immediately upstream of the RBDD and Red Bank Creek; and anticipated modified operation of the gates at RBDD. The Mill Site location may be seen in Figure 1-1 of the FEIS/EIR.

All components of this Selected Alternative were addressed in the effects analyses included in the FEIS/EIR. Additional details regarding the Selected Alternative, including gate operations, are outlined below.

Facility

The pumping plant and associated features will consist of trash racks, flat plate fish screens, a forebay, the pump station, a siphon under Red Bank Creek, and piping to convey water to the TC Canal sedimentation basin. The fish screen along the river will act as a positive barrier to keep fish in the river while allowing water to be diverted into the canal system. The screens will be designed to meet applicable fishery criteria, currently to provide a 0.33 foot per second (fps) or lower approach velocity.

The pumping plant will be constructed to allow expansion to a maximum capacity of 2,500 cfs, which is approximately equivalent to the capacity of the TC and Corning Canals. However, the initial installed pumping capacity (and perhaps the associated screened capacity) will be limited to 2,180 cfs. The U.S. Fish and Wildlife Service (Service) and NMFS ESA Section 7 consultations for construction of the plant were based upon the footprint needed to accommodate the maximum capacity.

The length of the fish screen will be determined during final design, and depending on the specific characteristics of the river (e.g. depth, channel geometry, flow volume, and velocity under various operating conditions), but current estimates for a 2,500 cfs footprint facility indicate a screen length of approximately 1,100 feet. Blowout panels will likely be provided as emergency hydraulic relief in the event that differential head between the river and forebay threatens the structural integrity of the facility. The top of the bulkheads will be set at the 25-year flood elevation to limit the amount of debris entering the forebay during most high-flow events.

Water will flow through the fish screens into the pump station forebay and then into the pump station. Approximately 10 pumps will be required for full capacity. Specifics regarding the number and types of pumps to be installed will be determined during final design, as will the precise location of the pump station relative to the fish screens. Considerations will include the cost of excavation versus conveyance piping and the hydraulic flow characteristics of the forebay. During any gates-in operation, it is anticipated that water will be diverted as needed by gravity.

The pumps will lift the water into the pump station outlet transition, and it will flow by gravity through a siphon under Red Bank Creek. The water will discharge into the existing settling basin at the headworks of the canal. The specific details of the conveyance system across Red Bank Creek will be developed during final design and

will likely be sized for a maximum velocity of 8 fps at peak flow. The details of the discharge structure at the sedimentation basin will be determined during final design, but could be located anywhere along the westerly side of the sedimentation basin and possibly will include a direct connection to the Corning Canal. The option to retain drum screens and current intake facilities will be considered during final design. A vehicle access bridge may be constructed across Red Bank Creek to provide access for maintenance vehicles between the Mill Site and existing RBDD facilities.

The footprint of the new pumping facility on the Mill Site overlies a portion of an unlicensed, privately-owned landfill and a former mill site with known and suspected contamination hotspots. As updated in the FEIS/EIR, it is anticipated that estimated but unknown volumes of material excavated during construction will be either transferred to offsite authorized landfill locations, bio-remediated onsite, or permanently stored onsite. Managing the interaction between shallow groundwater and the river as necessary to prevent contaminating the river will also be important. During the pre-design and design phase, Reclamation and the TCCA will work with all appropriate agencies to ensure these issues are addressed in a manner consistent with all applicable laws and regulations.

Operations

The new pumping plant will be capable of any pattern of operation throughout the year and therefore will not constrain future decisions concerning RBDD gate operations. Operations of the new pumping plant and the RBDD will be as described in the CVP/SWP long-term operations BA, as governed by the Biological Opinions (BOs) to be issued by NMFS and the Service. Under the Selected Alternative, the current four-month gates-in (May 15 through September 15) operations are expected to continue until the new pumping plant is constructed and operational. Also, upon NMFS approval, gates-in operation prior to May 15 (emergency gate closures) may occur one time per year during emergency situations where alternative water supplies are unable to meet TCCA demands. In such instances, Reclamation must reopen the gates for a minimum of five consecutive days prior to June 15 of the same year. The maximum diversions under this action will be 2,500 cfs, the approximate combined capacities of the existing TC Canal and Corning Canal.

Reclamation recognizes that local economic activities benefit by the seasonal Red Bluff Lake formed by prior diversion operations; thus, Reclamation will seek measures to reduce the potential impacts of the Selected Alternative on local recreation and economic interests. The principal measure to minimize impacts will be the proposed gates-in operations from July 1 through the Labor Day weekend following construction of the pumping plant provided that is compatible with the new BOs and remains feasible. This proposed two-month gates-in operation would substantially improve green sturgeon and salmon passage over the four-month gates-in operation, while accommodating the local community's interest in maintenance of a seasonal lake during the hotter summer months and saving energy otherwise needed to operate a new pumping plant. Reclamation will also cooperate with any efforts to establish a short gates-in period prior to July 1 each year to accommodate the Memorial Day boat races.

Following installation of the pumping plant, emergency gate closures will not be necessary because the installed capacity would be sufficient to accommodate early season irrigation demand. Likewise, diversions from Stony Creek will no longer be necessary to supplement water supplies before the gates are lowered because adequate water would be available through the new facility. Proposed operations under the Selected Alternative do not include routine use of the RBRPP. While operation of the RBRPP has yielded invaluable data on the efficacy of fish friendly pumping technology and has been vital in providing a portion of the early-season irrigation demand, the RBRPP has relatively high maintenance requirements and high energy use. Accordingly, the potential for increased pumping capacity has been added to the Mill Site facility design to offset the elimination of the RBRPP as a routine water supply source.

Construction

The primary features of construction will be excavation, construction of concrete structures, and fill and re-grading operations. This will require heavy equipment for digging, moving soil, and placing concrete. Additionally, because a large portion of the construction activity will occur at the shore of the Sacramento River, cofferdams will be required to establish dry areas for forming concrete structures.

Overall, approximately 750,000 cubic yards (CY) of material will be excavated to construct the new facilities. Part of the excavated material will be hauled off-site to an authorized disposal facility, in coordination with responsible agencies, including Tehama County, Regional Water Quality Control Board, and California Integrated Waste Management Board.

About 2,000 linear-feet of sheet pile or similar suitable cofferdam material will be required to construct cofferdams in several locations. A complete pile-driving set-up will likely be required to install sheet pile, as well as a construction barge and extensive earthmoving equipment. Divers would most likely be used to cut sheet piling under water.

The construction schedule depends primarily on funding availability, but other factors are also important, such as acquisition of required permits, lands and rights-of-way. These are further enumerated under "Implementing the Decision and Environmental Commitments" below. The construction schedule outlined in the EIS/EIR assumed the most complex combination of facilities; therefore, actual construction time may be reduced from that estimate. Further determinations of construction time will be developed during final design.

Timeline

Design and construction will occur in two phases. The design and permitting phase will commence immediately, subject to the availability of funding, and will continue for approximately 18 to 36 months. Integrated with the design phase will be the

construction, operation, and testing of a physical model. Channel flow characteristics, channel morphology, debris loading, and other parameters shall be assessed using the model, and the design will be refined. As funding permits, acquisition of the Mill Site property will also occur during this period, subject to further environmental site characterization. Funding commitments from non-Federal entities will also be sought during this time. The second phase, construction of the proposed facilities, is also estimated to take approximately 18 to 36 months, but that estimate will be updated during final design and permitting activities.

Adaptive Management Program

As part of the Preferred Alternative, the FEIS/EIR outlined an Adaptive Management Program (AMP) that included systematic monitoring and review of RBDD operations, including fish passage, gate operations, screen function, power management, and other issues of concern. The Selected Alternative AMP will include monitoring and evaluation activities such as the adequacy of the fish screen in meeting biological and engineering criteria and post-construction shallow groundwater and Sacramento River water quality monitoring. During the new pumping plant design process the AMP will be fully defined. Additionally, the final AMP will reflect outcomes of the ongoing CVP/SWP operations consultation. Opportunities will be provided for public comment concerning the design, implementation, and findings of the AMP.

III. Alternatives Considered

Potential alternatives to improve fish passage and provide for continued agricultural water deliveries were designed to encompass the full range of fish ladder, pumping, and dam operations options, as well as, a concept suggested by the public for bypassing the dam by diverting a substantial portion of the river's flow through an old slough. The alternatives were crafted with the understanding that longer gate-in operations were not likely to occur without acceptance of a bypass channel alternative by the fishery agencies. Therefore, the options, with respect to gate operations, ranged from the current four-month gates-in operation to permanent gates-out operation with a new pumping plant.

Selected Alternative

The Selected Alternative is the Preferred Alternative described in the FEIS/EIR. Reclamation has determined that the Selected Alternative is the environmentally-preferred alternative, and includes all practical means to avoid environmental harm. While all of the action alternatives feature construction of a new pumping plant, and the short-term local affects to water quality and loss of a small stretch of riparian habitat associated with this type of construction, the Selected Alternative described above is expected to provide substantial anadromous fish passage benefits. The increased gates-

out period, relative to the No Action Alternative, will particularly provide additional passage opportunities for green sturgeon. Also, the Selected Alternative may allow for the continued formation of Lake Red Bluff while also providing for a reliable improvement in anadromous fish passage, in contrast to the Gates-Out Alternative. Because all the action alternatives feature a new pumping plant with similar footprints at the same site, historic and cultural resources would be similarly affected by all action alternatives.

Alternatives Considered in the FEIS/EIR

2-Month, Existing Ladder - Preferred Alternative

The Preferred Alternative proposed the addition of a new pumping plant with a capacity of 2,180 cfs which would be used in combination with the existing RBRPP to provide a total of 2,500 cfs of capacity. The current fish ladders would be used and the dam would be operated during July and August of each year to provide gravity flows into the TC Canal. The new pumping plant, at the Mill Site, would have a forebay and fish screen sized to accommodate the proposed 2,180 cfs pumping plant. The left- and right-bank fish ladders would be unchanged.

4-Month, Improved Ladder Alternative

Gate operations would remain unchanged, apart from abandoning use of the seasonally installed center ladder, but the left- and right-bank fish ladders would be enlarged to more than twice their present size. A 1,380 cfs plant would be constructed to be used in combination with the RBRPP to give a total pumping capacity of 1,700 cfs.

4-Month, Bypass Alternative

Gate operations would remain unchanged, apart from abandoning use of the seasonally installed center ladder, an increase in the size of the right-bank fish ladder, and construction of a 1,000 cfs river bypass that potentially would provide passage for sturgeon and salmonids. It would be designed to be no steeper than the steepest river gradient below Keswick Dam. A 1,380 cfs plant would be constructed to be used in combination with the RBRPP for a total pumping capacity of 1,700 cfs.

2-Month, Improved Ladder Alternative

Gates-in operations would be confined to the months of July and August, use of the seasonally installed center ladder would be discontinued, the left- and right-bank fish ladders would be enlarged to more than twice their present size, and a 1,680 cfs plant would be constructed to be used in combination with the RBRPP for a total pumping capacity of 2,000 cfs.

Gates Out Alternative

The dam gates would remain out 12 months of the year, the ladders would be abandoned, and a 1,680 cfs plant would be constructed to be used in combination with the RBRPP for a total pumping capacity of 2,000 cfs.

No Action Alternative

At the time that the EIS/EIR was prepared, the No Action Alternative assumed that existing facilities and operations would remain and continue unchanged. Since that time, new information regarding the effects of gate operation on adult green sturgeon mortality lead to a minor change in gate operations. That change, a one-foot-minimum opening size, would now be part of any No Action Alternative. The gates would be out from September 15 to May 14 each year except for emergency closures made in coordination with the NMFS.

IV. Basis for Decision

The CVPIA section 3406 (b)(10) calls for the development and implementation of measures to minimize fish passage problems for adult and juvenile anadromous fish at the RBDD. In order to improve fish passage at the RBDD, while also providing for the continued delivery of water, the EIS/EIR included the following purpose statement for the Fish Passage Improvement Project at the Red Bluff Diversion Dam:

- Substantially improve the long-term ability to reliably pass anadromous fish and other species of concern, both upstream and downstream, past RBDD; and,
- Substantially improve the long-term ability to reliably and cost-effectively move sufficient water into the TC Canal and Corning Canal systems to meet the needs of the water districts served by TCCA.

Regarding the fish passage need, the action alternatives that feature an increase in the gates-out period annually are expected to provide the most reliable fish passage improvements. There are no known existing dam facility fish ladders that effectively pass green sturgeon. Thus, an attempt to design and install large new fish ladders, designed for adult green sturgeon passage at RBDD, would represent a relatively risky approach and a costly experiment. Likewise, the 4-Month, Bypass Channel Alternative would also represent a large-scale experiment that may or may not improve anadromous salmonid and green sturgeon passage.

Reclamation received several Fish and Wildlife Coordination Act Reports addressing this project from the Service, pursuant to the Fish and Wildlife Coordination Act (48 stat. 401, as amended; 16 U.S.C. 661 et seq.). In general, the Service concluded that the "gates-out" alternative described in the EIS/EIR would provide the most passage-related benefits to fish species of concern, although they also acknowledged that any alternative that resulted in a shorter "gates-in" period would improve passage conditions and that alternatives featuring the two month "gates-in" period would substantially improve passage conditions. The NMFS and the California Department of Fish and Game (CDFG), through their concurrence with the Fish and Wildlife Coordination Act Reports as well as through their comments on the EIS/EIR, agree with the Service regarding the level of fish passage-related improvement that is expected for the different alternatives.

All of the action alternatives feature a new pumping plant to be built on the Mill Site, and would facilitate sufficient water deliveries to the TC and Corning Canals during periods of RBDD gates-out operation. A new pumping plant would also facilitate water deliveries without reliance on the RBRPP and the Stony Creek Constant Head Orifice during the early irrigation season. While providing water via a new pumping plant instead of gravity diversion would require additional electrical power and result in potentially higher operational costs, facilitating a longer gates-out operation period provides the only reliable improvement in adult green sturgeon passage at RBDD. Furthermore, construction of a new pumping plant that could be expanded to provide the full capacity of the TC and Corning Canals would provide the most flexibility in operations at RBDD. The Selected Alternative, featuring a new pumping plant and anticipated decreases in gates-in operation, is the only alternative that would reliably serve both of the project purpose components while also retaining the option of gravity water diversion.

Gravity diversion of water during two months in the summer would save energy that would otherwise be needed to operate the new pumping plant and make additional energy available for other uses during this high-demand time of the year. Operation of the RBDD and new pumping facility in this manner could save about 2,900 mega watt hours of electricity as compared to the gates-out alternative. When combined with the purpose and need for this project, the opportunity to save energy, when possible, into the future represents a substantive interest of the Federal Government. While the feasibility of using the RBDD for gravity water diversions during portions of the year after the new pumping plant is built may have to be revisited in the future because of changing circumstances, energy savings in the foreseeable future were a tangible factor in Selected Alternative deliberations.

The City of Red Bluff, commercial interests, and other regional residents raised concerns about the decrease in time that RBDD is operated with the gates in and the resulting decrease in the period that Lake Red Bluff would be formed. Reclamation has determined that the Selected Alternative is the only alternative that would reliably satisfy the project purpose and need while also facilitating formation of Lake Red Bluff for a portion of the year and energy savings from gravity diversion of water into the TC Canal during July and August. Reclamation believes this is a reasonable compromise between needed improvements in fish passage, power conservation, and the seasonal presence of Lake Red Bluff.

Climate Change Impact Analysis

As detailed in the Climate Change Impact Analysis included as Appendix A to the FEIS/EIR, all of the project alternatives (including the Selected Alternative) would include some activities that emit greenhouse gases. These activities include the use of vehicles during construction and the ongoing maintenance of the water diversion facility during operation. The construction-related greenhouse gas emissions are temporary and small in relation to the overall inventory for the State of California. Operational activities are expected to remain similar to current levels, resulting in no appreciable net change

from current efforts. Climate change is by definition global in scope. The mechanisms and interactions that result in global climate change are complex, and uncertainties exist in greenhouse gas feedback mechanisms. While the effects of the project on greenhouse gas emissions and, in turn, climate change was considered, the project's potential impacts on global climate change are speculative.

V. Implementing the Decision and Environmental Commitments

The U.S. Fish and Wildlife Service (Service) completed a May 18, 2007, BO addressing the effects of constructing a new pumping plant on the bald eagle and valley elderberry longhorn beetle, pursuant to Section 7 (a)(2) of the ESA. The Service concluded that construction of a new pumping plant would not adversely affect the bald eagle and would not likely jeopardize the continued existence of the valley elderberry longhorn beetle. Because the project is not within designated critical habitat for the valley elderberry longhorn beetle, critical habitat would not be destroyed or adversely modified.

Nondiscretionary terms and conditions were provided in the Service BO Incidental Take Statement (ITS) addressing the project. The first term and condition mandates implementation of the conservation measures that were proposed in the biological assessment describing the proposed project. These conservation measures were repeated in the "proposed action" section of the Service BO, and are reiterated here:

1. Where possible, a 100-foot buffer area would be established around avoided elderberry shrubs. If a 100-foot buffer area cannot be established, the largest buffer size possible would be established around avoided elderberry shrubs.
2. All areas to be avoided during construction activities would be fenced and flagged. Buffer areas would be protected from adverse effects resulting from the proposed project.
3. Environmental Awareness training would be conducted for all contractors and workers. The training would include information on the beetle, required avoidance measures, and possible penalties for not complying with the requirements.
4. Signs stating that the buffer areas are protected habitat would be posted every 50 feet along the edge of the avoidance areas.
5. Any damage from construction activities within 100 feet of avoided elderberry shrubs would be restored with appropriate native plant species. A written description of how the buffer areas would be protected, restored, and maintained during and after construction would be submitted to the Service.

6. No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant would be used within 100 feet of avoided elderberry shrubs.
7. In accordance with the 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (Conservation Guidelines), Reclamation will utilize 32,400 square-feet (0.74 acre) to accommodate the 9 transplanted elderberry shrubs, containing 30 stems greater than 1.0 inch in diameter, the 67 elderberry shrub seedlings, and the 93 associated native plantings to offset effects to the beetle. The nine elderberry shrubs would be transplanted to an off-site location. The associated natives and elderberry seedlings would also be planted within this off-site area. The created beetle habitat and transplanted shrubs will be monitored in accordance with the Service's 1999 Conservation Guidelines.

The other terms and conditions that were included in the Service BO ITS are:

1. Prior to any ground disturbing activities associated with the proposed project, Reclamation shall: (1) transplant the 9 elderberry shrubs, plant 67 elderberry seedlings, and plant 93 associated natives at a Service-approved off-site location; and, (2) provide a management and monitoring plan for the off-site location to be reviewed and approved by the Service. The off-site location will also require a funding mechanism to ensure the management of the off-site compensation-site in perpetuity.
2. A Service-approved biologist shall be on-site during all groundbreaking activities within 20 feet of the avoided elderberry shrubs to ensure that construction equipment and personnel do not enter the avoided habitat. At least 30 calendar days prior to initiating construction activities, the project proponents shall submit to the Service for approval the names and curriculum vitae of the biological monitor(s) for the project.
3. The biological monitor shall prepare a post-construction report. The report shall include: (1) summary of the work conducted; (2) representative photographs and text verifying that all conservation measures were implemented; (3) if necessary, a discussion of any conservation measures not completed and proposed remediation actions; and, (4) written documentation of environmental awareness training. The report must be submitted to the Sacramento Valley Branch Chief at the Sacramento Fish and Wildlife Office within 3 months after construction activities at the proposed project have ceased.
4. Reclamation will ensure that a copy of this BO is included within its construction documents making the primary contractor responsible for implementing all requirements and obligations included within the BO and to educate and inform all other contractors involved in the project as to the requirements of the BO.

Finally, the Service BO ITS also includes reporting requirements that, in the event of unanticipated adverse effects to listed species, direct Reclamation to inform the Service and CDFG.

Pursuant to Section 7 (a)(2) of the ESA, NMFS completed a May 22, 2008, BO addressing the effects of construction of a new pumping plant on Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, and the Southern Distinct Population Segment (DPS) of North American green sturgeon. The NMFS BO concluded that the proposed construction of the pumping plant was not likely to jeopardize these species, nor destroy or adversely modify designated critical habitat for these species.

Nondiscretionary terms and conditions were provided in the NMFS BO ITS addressing the project, including:

1. Reclamation shall minimize noise-related impacts resulting from pile driving of sheet piles for cofferdams. In order to minimize the magnitude of sound and energy waves produced during pile driving, Reclamation shall mandate that vibratory hammers be used for sheet pile driving wherever it is feasible to do so (where substrate allows the use of vibratory hammers to drive sheet piles).
2. Reclamation shall take the necessary measures to maintain and adaptively manage all conservation measures throughout the life of the project to ensure their long-term effectiveness.
 - a. Reclamation shall minimize bank revetment (riprap) at the Mill Site to the minimum length needed for hydraulic performance and structural integrity of the fish screen.
 - b. Reclamation shall implement the selected mitigation options prior to, or concurrent with, project construction to expeditiously replace habitat values lost due to the proposed project.
 - c. Reclamation shall develop and implement, in cooperation with the Service, NMFS, CDFG, and TCCA, an evaluation and monitoring plan to assess the adequacy of the fish screen in meeting biological and engineering design criteria and propose corrective measures. Reclamation shall:
 - Monitor screen criteria for the period of time necessary to evaluate screen performance at a range of river flows and pumping rates;
 - Identify operational flexibilities that would provide the greatest level of fisheries protection at various river flows and pumping rates; and
 - Perform biological evaluations using available technology (direct observation, video, acoustic/sonar, *etc.*), as appropriate, to evaluate the effectiveness and/or impacts of the screens to juvenile salmonids and other target species.
 - d. Reclamation shall provide a project summary and compliance report to NMFS at the end of each calendar year until the RBPP and all terms and conditions have been implemented. This report shall describe construction dates, implementation of avoidance and minimization measures, and the terms and conditions of the BO; observed or other known effects on Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, and the Southern DPS of North American green sturgeon, if any; and any occurrences of incidental take of Sacramento River winter-run Chinook salmon, Central

Valley spring-run Chinook salmon, Central Valley steelhead, and the Southern DPS of North American green sturgeon.

These terms and conditions are nondiscretionary and will be implemented before, during, and after construction. Additionally, Reclamation anticipates that measures to minimize adverse effects to water quality during construction activities (e.g., best management practices) will be identified during various state and local permitting processes.

As described in the FEIS/EIR for this project, the required approvals for the all the alternatives considered and for the Selected Alternative include:

- Federal Clean Water Act Section 404 permit – U.S. Army Corps of Engineers (USACE)
- Federal Rivers and Harbors Act Section 10 permit – USACE
- National Flood Insurance Program Letter of Map Revision – Federal Emergency Management Agency
- California Fish and Game Streambed Alteration Agreement – CDFG
- Federal Clean Water Act Section 401 Water Quality Certification – California Regional Water Quality Control Board (RWQCB)
- Federal Clean Water Act Section 402 General Construction Activity Stormwater Permit – California RWQCB
- Petition to change Point of Diversion – State Water Resources Control Board
- State Lands Commission Public Agency Lease/Encroachment – State Lands Commission
- Encroachment Permit – State Reclamation Board
- National Historic Preservation Act (NHPA) Section 106 Consultation – California Department of Parks and Recreation, Office of Historic Preservation
- Clean Air Act Permit – Tehama County Air Pollution Control Board

All required authorizations and permits will be obtained as project design and construction planning continues. Relevant Best Management Practices will be implemented during construction.

Reclamation is in the process of complying with Section 106 of the NHPA for the Selected Alternative and is still in the process of determining whether cultural resources identified within the area of potential effects are historic properties pursuant to 36 CFR Part 800.4(c). Reclamation will complete the Section 106 process prior to executing any contracts or agreements for construction activities included in the Selected Alternative. No construction activities will be initiated until Reclamation has met all requirements set forth in 36 CFR Part 800 and has completed Section 106 compliance responsibilities.

As previously mentioned, operations of the new pumping plant and the RBDD would be governed by the biological opinions issued by NMFS and Service long-term CVP/SWP operation BOs. Reclamation has proposed in the CVP/SWP long-term operations BA that following construction, the RBDD would be operated with the gates in for approximately two months annually, and Reclamation will support efforts for a short-term gate closure to form the lake during the Memorial Day weekend. While this is not viewed as mitigation, Reclamation believes that these compromise measures will minimize the effects to Lake Red Bluff and the associated community.

Under NEPA, the ROD must identify the proposed monitoring and enforcement program for each mitigation measure (40 CFR Section 1505.2(c)). Table 1 (located at the end of this document) presents environmental impacts and the mitigation measures adopted by Reclamation as a part of the RBDD ROD. Project-specific mitigation measures, and the previously-mentioned terms and conditions included in the BOs, will be implemented as part of design of the project, during project construction, and/or after completion of construction of the project.

VI. Comments Received on the Final EIS/EIR

The public comment period for the DEIS/EIR opened August 30, 2002. At the request of the City of Red Bluff, the original 60-day public comment period was extended to 90 days. The official public comment period ended on December 6, 2002. A public hearing was held on September 25, 2002, at the Red Bluff Community Center in Red Bluff, to receive public input on the project. A court reporter was used to record all comments and create a complete transcript of the hearing.

On January 30, 2007, Reclamation published a Notice of Availability for the DEIS/EIR in the Federal Register (Volume 72, No. 19), which began an additional comment period lasting through March 16, 2007. Additional requests were made at that time to extend the comment period, and this request was granted by Reclamation. The complete public input process for the project yielded 565 individual comment letters. A response to each comment is included in Section 4.0, Responses to Comments on the DEIS/EIR, of the Final EIS/EIR.

The Final EIS/EIR was released on May 21, 2008, and comments were accepted through July 7, 2008. Two comments letters were received. No information was received during the comment period that would alter the conclusions contained in the Final EIS/EIR. For clarification purposes, additional responses on the issues raised are provided below.

The first comment letter received on the Final EIS/EIR primarily reiterated previous comments provided on the DEIS/EIR related to a preference for the Gates Out Alternative and were addressed in the Final EIS/EIR. The Commenter's primary concerns will be addressed through the monitoring of Sacramento River and adjacent shallow groundwater water quality (including river temperatures).

The second comment letter pointed out that the U.S. Environmental Protection Agency (EPA) revised the air quality attainment standard for surface ozone in March 2008. The new standard is 75 parts per billion (ppb), reduced from 84 ppb. The letter noted that Tehama County will likely be listed as "Federal Non-Attainment" for ozone and that it should be assumed that the project would be constructed under a non-attainment designation.

By March 2009, states must make recommendations to EPA for areas to be designated attainment, nonattainment, and unclassifiable. The EPA will issue final designations regarding attainment by March 2010, unless there is insufficient information to make these designations. States must submit State Implementation Plans outlining how they will reduce pollution to meet the standards, probably no later than 2013. States are required to meet the standards by deadlines that will be announced later, and may vary based on the severity of the problem in the area. Reclamation will continue to monitor this situation and ensure that the project proceeds in accordance with State and Federal law.

The second comment letter also noted several other air quality-related regulation changes that could affect project construction, such as equipment idle times when not in operation and off-road diesel equipment emissions. Reclamation will take these into account and ensure that the project proceeds in accordance with applicable laws.

Table 1. Summary of Environmental Impacts and Mitigation Measures adopted by Reclamation as a part of the RBDD ROD.

Description of Impact	Mitigation Measure	Implementation Responsibility	Schedule
Fishery Resources			
<p>Construction: Indirect and perhaps direct losses of adult and/or juvenile fish would occur during the installation of cofferdams.</p> <p>Adult and juvenile fish may be stranded and lost during dewatering activities.</p> <p>Direct losses and adverse indirect effects could occur from sediment disturbances and turbidity.</p>	<p>Construction: To avoid impacts to the majority of the focus species, sheet pile installation and in-stream heavy equipment activity should occur only during July and August.</p> <p>Dewatered areas would be pumped down with a screened intake. Fish would be removed when water levels within the contained area are suitable for salvage.</p>	Construction Contractor	During Construction
Water Resources			
<p>Erosion: Construction of the proposed facilities would require extensive grading and excavation. Impacts to surface waters could occur during grading and excavation necessary for construction of the pumping plant and associated conveyance facilities.</p>	<p>Erosion: To reduce the potential for sedimentation in the Sacramento River or Red Bank Creek the construction contractor shall obtain a General Storm Water Permit to comply with Clean Water Act Section 402(b) for construction of all facilities. As part of this permit, the contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP), which would include the following best management practices:</p> <ul style="list-style-type: none"> -- All ground-disturbing activities would be limited to the dry season (mid-May through mid-October) to the extent possible; -- Vegetation would be left in place to the degree possible to reduce potential sedimentation; -- All stockpiled material would be placed so that potential erosion is minimized; -- Filter fabric, straw bales, and/or sediment basins would be used to reduce erosion and the potential for in-stream sedimentation; and -- Seeding and re-vegetation would be initiated as soon as possible (timed properly to coincide with fall/winter precipitation) after construction completion. 	Construction Contractor	Prepare SWPPP prior to construction and adhere to SWPPP during construction.

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Description of Impact	Mitigation Measure	Implementation Responsibility	Schedule
<p>Hazardous materials: Construction efforts would include use of materials and equipment that require hazardous materials. Examples include diesel fuel and cleaning solvents. Although not intentional, it is possible that the use and handling of hazardous materials could result in spills that could impact nearby waterways.</p>	<p>Hazardous materials: Implementation of construction best management practices and development of a Spill Prevention Control and Countermeasures Plan (SPCCP) would minimize the risk of an uncontrolled spill and consequent contamination. The identification of staging areas for fueling and maintenance of heavy equipment would limit potential spills to designated areas where observation and cleanup could be readily accomplished.</p> <p>Should an oil or fuel spill occur during construction or maintenance activities, all work would cease immediately, the Central Valley RWQCB, CDFG, and RECLAMATION would be notified immediately if the quantity of the spill were above state and/or federal reporting requirements; and cleanup procedures would begin immediately.</p>	Construction Contractor	Prepare SPCCP prior to construction and adhere to SPCCP during construction.
<p>Groundwater quality (contaminants): Soil contamination at the Pactiv site represents potential impacts to local groundwater resources if contaminated soil is allowed to come in contact with groundwater as a result of project construction activities. Additionally, leaching of soluble or mobile contaminants from soil to groundwater may occur over time if contaminated soil is stockpiled on-site for a long period of time or relocated to a disposal area on-site, through infiltration and other transport processes.</p>	<p>Groundwater quality (contaminants): In the event that contaminated soil is encountered, the contractor shall follow and comply with all applicable federal, state, and local regulations. Soil should be removed immediately from the project area, and taken to an appropriate disposal area. If soil should be temporarily stockpiled in the project area, an impermeable liner should be used to prevent direct contact with non-contaminated areas.</p> <p>The construction contractor shall obtain a General Construction Storm Water Permit to comply with Clean Water Act Section 402(b) for construction of all facilities. As part of this permit, the contractor shall prepare a Storm Water Pollution Prevention Plan, which would include the following best management practices:</p> <ul style="list-style-type: none"> -- All ground-disturbing activities would be limited to the dry season (mid-May through mid-October) to the extent possible; and -- All stockpiled material would be placed so that potential erosion and contamination is minimized. Methods shall include, but not be limited to, covering the stockpile with plastic; installing a berm around the stockpile to prevent runoff from leaving the area; and planting temporary vegetation if stockpiled material would be kept on-site for a longer duration. 	Construction Contractor	Prepare SWPPP prior to construction and adhere to SWPPP during construction.

Table 1. Summary of Environmental Impacts and Mitigation Measures adopted by Reclamation as a part of the RBDD ROD.

Description of Impact	Mitigation Measure	Implementation Responsibility	Schedule
<p>Groundwater quality: The project would result in a reduction in the amount of time Lake Red Bluff would be formed. This would ultimately change seasonal elevations of groundwater in the project area.</p>	<p>If it is determined that wells in the project area are affected by the seasonal fluctuation of Lake Red Bluff, these wells could be relocated or extended to greater depths to meet continuous or seasonal water demands.</p>	TCCA/Reclamation	<p>Evaluate wells prior to construction to determine whether they will need to be relocated.</p>
<p>There is some potential that additional wells may exist in the vicinity of Lake Red Bluff that have not been identified during the development of the EIR. Wells that depend on the additional groundwater recharge and head provided by Lake Red Bluff could require alternate water supplies if the gates remain out during the dry season. However, because the gates are currently out most of the year, wells in the aquifer areas influenced by the filling of Lake Red Bluff are probably already designed to supply water regardless of gate position.</p>			
Biological Resources			
<p>Riparian Habitat: Up to 6.81 acres of riparian habitat would be impacted, including the permanent loss of 2.05 acres of riparian habitat for installation of the access bridge, the conveyance pipeline, and the fish screen and forebay, all on the south side of the river. Up to an additional 4.76 acres of</p>	<p>Riparian Habitat: To the extent possible, areas of riparian vegetation temporarily disturbed during construction would be planted with native riparian trees and shrubs following construction.</p> <p>The permanent removal of riparian vegetation would be mitigated by creating riparian habitat at 3:1 ratio for the impacted acreage. TCCA and Reclamation would work with CDFG and Service to identify sites. Mitigation could also be accomplished by the purchase of credits at an approved mitigation bank, or, with the approval of CDFG and Service, by the preservation and/or enhancement of existing riparian habitat.</p>	TCCA/Reclamation	After Construction

Table 1. Summary of Environmental Impacts and Mitigation Measures adopted by Reclamation as a part of the RBDD ROD.

Description of Impact	Mitigation Measure	Implementation Responsibility	Schedule
<p>riparian habitat could be temporarily removed to accommodate construction activities.</p>	<p>Freshwater Marsh Habitat: To the extent possible, areas of freshwater marsh temporarily disturbed during construction would be planted with native riparian trees and shrubs following construction.</p>	TCCA/Reclamation	After Construction
<p>Freshwater Marsh Habitat: At least 0.05 acre of freshwater marsh habitat would be permanently lost with construction of the conveyance pipeline and access bridge. An additional 0.71 acre of freshwater marsh is within the 200-foot construction area and could be impacted, for a total of 0.76 acre.</p>	<p>The permanent removal of freshwater marsh would be mitigated by creating freshwater marsh at a 3:1 ratio for the impacted acreage. TCCA and Reclamation would work with U.S. Army Corps of Engineers (USACE), CDFG and Service to identify appropriate sites. Mitigation could also be accomplished by the purchase of credits at an approved mitigation bank, or, with the approval of USACE, CDFG and Service, by the preservation and/or enhancement of existing freshwater marsh habitat.</p>	TCCA/Reclamation	After Construction
<p>VELB: VELB are entirely dependent on the elderberry shrub. The six elderberry shrubs and/or groups of shrubs identified in the project area are within the 200-foot buffer area considered to be temporarily impacted. Removal of the elderberry shrubs has the potential to adversely affect the federally-listed VELB.</p>	<p>VELB: TCCA and Reclamation would attempt to avoid elderberry shrubs in locating staging areas, access roads, and other construction areas. Shrubs that can be avoided would be fenced and posted, and workers would be educated about VELB in accordance with the Conservation Guidelines. If elderberry shrubs cannot be avoided, they would be transplanted, and additional seedlings would be planted at a secure mitigation-site in accordance with the Conservation Guidelines.</p>	TCCA/Reclamation	Prior to construction/during construction
<p>Osprey: The three osprey nest platforms on the south side of the Sacramento River would need to be removed during construction.</p>	<p>Osprey: Prior to the start of construction activities all three platforms that can support osprey nesting would be removed. TCCA and RECLAMATION would work with CDFG to identify nearby location(s) to erect two platforms to serve as replacement nesting sites. The relocated platforms would be installed concurrently with the removal of the existing platforms and be completed prior to the start of the nesting season.</p>	TCCA/Reclamation	Prior to construction/during construction

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Description of Impact	Mitigation Measure	Implementation Responsibility	Schedule
<p>Bats: Three bat species were visually confirmed, and a fourth species was acoustically detected in the project vicinity. Numerous roost locations were documented in the two abandoned storage buildings at the Mill Site. Evidence was found that bats roost in some of the structures of RBDD in concrete weep holes and under metal overhangs. Several areas appeared to provide potential roosting and foraging habitat. The two abandoned buildings used as bat roosts are within the 200-foot buffer area. There are no plans to remove these buildings. No significant impacts to bats would occur.</p>	<p>Bats: To further ensure that there would be no significant impact, a 25-foot buffer area would be demarcated and flagged around the buildings. No construction activities would occur within this area. Construction materials would not be stored in the buildings occupied by bats, nor would workers enter the buildings. If these avoidance measures are not possible, TCCA would work with CDFG to coordinate an appropriate avoidance measure.</p>	TCCA/Reclamation	Prior to construction/during construction
<p>If at the time of project construction a decision is made to permanently impact the roosting habitat by removing the buildings, bats would be significantly impacted, and appropriate mitigation for exclusion of bats from the habitat would be prescribed. For detailed mitigation measures refer to Appendix F of the EIS/EIR.</p>	<p>Exclusion and Building Removal: If the current project plans are modified and the buildings were to be demolished, impacts would be considered to be permanent and significant. Removal of the abandoned buildings would displace hundreds and possibly thousands of bats and be a significant loss of roosting habitat. The species currently identified are colonial, and displacement from the roosts may disrupt colony cohesion. Displaced bats may roost in exposed locations and be at increased risk of predation.</p> <p>If the buildings are to be removed, prior mitigation in the form of exclusion would be performed. Exclusion consists of two phases: allowing emergence while temporarily blocking re-entry for 1 week, followed by permanently blocking the roost entrances. Surveys must be conducted to ensure that all bats have exited the roost before the entrances are permanently blocked to avoid direct mortality by entombment.</p>	TCCA/Reclamation	Prior to construction/during construction

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Description of Impact	Mitigation Measure	Implementation Responsibility	Schedule
<p>It is vital that exclusion only be performed in the winter (November through February) after any young of the year are mature. A qualified nuisance control professional should perform the exclusion. A qualified biologist should monitor the bats during the procedures to prevent any mortalities from bats becoming entangled in the netting, and to conduct surveys to ensure that bats are successfully excluded.</p>	<p>Provision of Alternate Roosting Habitat: To mitigate for the loss of roosting habitat, provision of alternate roosting habitat in the form of off-site installation of large bat houses would occur. Large bat houses (bat condos) may be erected.</p> <p>Bat condos are similar to raised wooden chicken coops with internal partitions to form roost crevices. The overall size should be 8 x 8 x 8 feet, and the width of the internal partitions should be approximately 0.75 to 1.0 inch for the free-tail bats and also 1.0 to 1.5 inches for the pallid bats. Bat condos should be oriented properly (usually southern or southeastern exposure), and the temperature regime and humidity inside the condo should replicate that found in the original roosts.</p>		
<p>It is recommended that the existing exterior wall of the abandoned storage building located at the Mill Site with the plywood-backed louvers be reconstructed in a suitable off-site location to provide for myotis bat roosting habitat. Alternately, bat houses mounted on poles may be erected that simulate the existing roost (the gap under the loose board attached to a pole). Managers at the Recreation Area are currently experimenting with bat house style and placement and may provide a cooperative bat management opportunity. With these mitigation measures, impacts to bats would be less than significant.</p>			

Table 1. Summary of Environmental Impacts and Mitigation Measures adopted by Reclamation as a part of the RBDD ROD.

Description of Impact	Mitigation Measure	Implementation Responsibility	Schedule
Recreation			
<p>Recreational activities that would experience limitations associated with the loss of Lake Red Bluff for the additional gates-out period include motor boating, jet skiing, swimming, water skiing, and boat racing.</p> <p>While recreational motor boating and jet skiing are possible on the Sacramento River during the gates-out period, the available water area is considerably reduced for the additional gates-out period. Therefore, less time is available for these activities. Swimming is possible, but unlikely in the cold Sacramento River water. Boat racing and water skiing are not feasible during the additional gates-out period. The activities that are lake-dependent activities would assume the greatest impact.</p>	<p>Mitigation options to address the permanent operations-related impacts include:</p> <p>-- Facilitate the development and implementation of a plan with the City of Red Bluff, Tehama County, local business organizations, appropriate permitting agencies, and local citizens groups to phase in the gate operations changes over a period of five years to:</p> <ol style="list-style-type: none"> 1. Allow the community to transition lake-dependent recreation activities to other opportunities. 2. Identify specific activities and events through the facilitated planning process with local stakeholders. <p>-- Facilitate the development of non-lake dependent recreational activities as part of the planning process mentioned above. This may include, but is not limited to:</p> <ol style="list-style-type: none"> 1. Cooperating on the implementation of recreational trail plans. 2. Cooperating on the rehabilitation and expansion of existing area recreational parkland or facilities. 3. Facilitating identification and acquisition of future recreational parkland. 	TCCA/Reclamation*	Prior to Construction
<p>The Nitro National drag boat races may not be held over the Memorial Day holiday weekend.</p>	<p>Facilitate the creation of other recreation-oriented events as part of the planning process mentioned above. This may include, but is not limited to:</p> <ol style="list-style-type: none"> 1. Facilitating the rescheduling of the Nitro National Drag Boat Festival. 2. Facilitating the development of a land- or river-based festival event (river sports, fishing) of similar size/impact as the Nitro National Drag Boat Festival. 	TCCA/Reclamation*	Prior to Construction

* Reclamation will seek additional authorities as necessary

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Description of Impact	Mitigation Measure	Implementation Responsibility	Schedule
Recreation			
<p>Recreational activities that would experience limitations associated with the loss of Lake Red Bluff for the additional gates-out period include motor boating, jet skiing, swimming, water skiing, and boat racing.</p> <p>While recreational motor boating and jet skiing are possible on the Sacramento River during the gates-out period, the available water area is considerably reduced for the additional gates-out period. Therefore, less time is available for these activities. Swimming is possible, but unlikely in the cold Sacramento River water. Boat racing and water skiing are not feasible during the additional gates-out period. The activities that are lake-dependent activities would assume the greatest impact.</p>	<p>Mitigation options to address the permanent operations-related impacts include:</p> <ul style="list-style-type: none"> -- Facilitate the development and implementation of a plan with the City of Red Bluff, Tehama County, local business organizations, appropriate permitting agencies, and local citizens groups to phase in the gate operations changes over a period of five years to: <ol style="list-style-type: none"> 1. Allow the community to transition lake-dependent recreation activities to other opportunities. 2. Identify specific activities and events through the facilitated planning process with local stakeholders. -- Facilitate the development of non-lake dependent recreational activities as part of the planning process mentioned above. This may include, but is not limited to: <ol style="list-style-type: none"> 1. Cooperating on the implementation of recreational trail plans. 2. Cooperating on the rehabilitation and expansion of existing area recreational parkland or facilities. 3. Facilitating identification and acquisition of future recreational parkland. 	TCCA/Reclamation*	Prior to Construction

* Reclamation will seek additional authorities as necessary

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Geology			
<p>Excavation: approximately 750,000 CY of material would need to be excavated to complete construction. The primary excavation is required to construct the pump station and the conveyance facilities. Approximately 666,000 CY of this material would remain on-site. Approximately 84,000 CY would be hauled off-site to an appropriate disposal area.</p>	<p>Excavation: to minimize soil erosion, movement of sediments, loss of topsoil, and associated water quality impacts, an approved drainage, grading, and erosion control plan would be completed prior to construction. This plan would meet all local requirements and incorporate construction-site best management practices to stabilize areas cleared of vegetation and soil stockpiles. Best management practices may include preservation of existing vegetation, silt fences, and/or straw bales. Covering soil stockpiles with mulch or matting as well as continuous maintenance of erosion control measures would be necessary. Timely revegetation of disturbed sites would minimize post-construction erosion impacts.</p>	Construction Contractor	<p>Prepare drainage, grading, and erosion control plan prior to construction and adhere to the plan during construction.</p>
Cultural Resources			
<p>Unidentified cultural resources: construction activities include excavation and other grading and digging activities. It is possible that currently unidentified cultural resources could be discovered during these activities, and destruction of such resources could result in a significant impact.</p>	<p>Unidentified cultural resources: if during construction activities in generally previously undisturbed areas reveal non-native stone, bone, shell, or prehistoric or historic period artifacts, or if areas that contain dark-colored sediment that do not appear to have been created through natural processes are discovered, then work would cease in the immediate area of discovery, and a professionally qualified archeologist would be contacted immediately for an on-site inspection of the discovery. If any bone is uncovered that appears to be human, the Tehama County Coroner would be contacted. If the coroner determines the bone most likely represents a Native American interment, the coroner would contact the Native American Heritage Commission in Sacramento for identification of the most likely descendants.</p>	Construction Contractor	<p>During Construction</p>

Table 1. Summary of Environmental Impacts and Mitigation Measures adopted by Reclamation as a part of the RBDD ROD.

Description of Impact	Mitigation Measure	Implementation Responsibility	Schedule
<p>Permanent landscape changes from operations: represents a substantial change to the landscape as viewed from the Sacramento River and the Recreation Area. Given the size of the new structure and the sensitivity of the viewing location, operation of these facilities represents a substantial degradation of the visual quality of the site.</p>	<p>Permanent landscape changes from operations: to help mitigate visual impacts, a committee would be formed to develop measures intended to help the new facility blend with the surrounding environment. Potential measures include selection of a concrete color and a finish for the fish screen panels (if available). The committee to evaluate visual resources mitigation measures would be based on the existing Stakeholder Working Group.</p>	TCCA/Reclamation	Prior to Construction
Air Quality			
<p>Fugitive dust emissions: during ground surface preparation, most of the PM₁₀ emissions would be composed of fugitive dust. Short-term impacts with regard to dust generated during construction would be considered potentially significant because of the current exceedance of the state PM₁₀ standards.</p>	<p>Fugitive dust emissions: a dust control program would be implemented, including implementation of an approved fugitive dust emissions control plan (FDECP). The FDECP will be submitted to the Tehama County Air Pollution Control Officer and include at least the following:</p> <ol style="list-style-type: none"> 1) Name(s), address(es), and phone number(s) of person(s) responsible for the preparation, submission, and implementation of the plan; 2) Description and location of operation(s); 3) Listing of all fugitive dust emissions sources included in the large operation; 4) Description of Reasonably Available Control Measures to be applied to each source identified. Such description must be sufficiently detailed to demonstrate Reasonably Available Control Measures will be utilized and/or installed during all periods of active operations. Reasonably Available Control Measures may include the use of wind breaks, use of dust suppressants, clean up of track-out, enclosures around storage piles, the use of fences or barriers, vegetation, or compaction of soil surfaces. 	Construction Contractor	<p>Prepare dust control plan/fugitive dust emissions control plan prior to construction and adhere to the plan during construction.</p>

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Description of Impact	Mitigation Measure	Implementation Responsibility	Schedule
<p>Construction exhaust emissions: total daily emission levels of CO and NOx would exceed their respective significance thresholds of 550 lbs/day, and 219 lbs/day set in the National Ambient Air Quality Standards.</p>	<p>The FDECP would also include the following:</p> <ul style="list-style-type: none"> -- Equipment and manual watering would be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust; -- The contractor or builder would designate a person to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust off-site. This person would respond to citizen complaints; -- Dust-producing activities would be suspended when high winds create construction-induced visible dust plumes moving beyond the site in spite of dust control; -- All trucks hauling soil and other loose material would be covered or would be required to have at least two feet of freeboard; -- All unpaved access roads and staging areas at construction-sites would have soil stabilizers applied as necessary; -- Streets in and adjacent to construction areas would be kept swept and free of visible soil and debris; and -- Traffic speeds on all unpaved roads would be limited to 15 miles per hour. <p>Construction exhaust emissions: an equipment control program would be implemented with the following components:</p> <ul style="list-style-type: none"> -- Properly maintain equipment. -- Limit idling time when equipment is not in operation. 	Construction Contractor	<p>Prepare equipment control plan prior to construction and adhere to the plan during construction.</p>

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Description of Impact	Mitigation Measure	Implementation Responsibility	Schedule
Traffic and Circulation			
<p>Right bank: large construction vehicles could exceed the capacity of Altube Avenue. This roadway is not designed to accommodate heavy truck traffic, and daily commuting by heavy trucks could impact the road surface.</p>	<p>To reduce construction-related impacts on traffic and roadways, the construction contractor would be required to develop a traffic control plan with the Tehama County Public Works, City of Red Bluff Public Works, and California Department of Transportation, which would be subject to review by California Department of Transportation and the Public Works Director. This plan would ensure that construction traffic is routed in a way that maintains acceptable levels of service on all affected roadways and intersections that are currently measured and used by project-related vehicles.</p>	<p>Construction Contractor</p>	<p>Prepare traffic control plan prior to construction and adhere to the plan during construction.</p>
	<p>The traffic control plan would address the structural capacity of roads and bridges along routes that could be traveled by construction-related vehicles. The traffic control plan would ensure that the structural integrity of those roads and bridges would not be damaged by construction-related vehicle trips. If damage occurs, the road surface would be repaired or replaced.</p>		